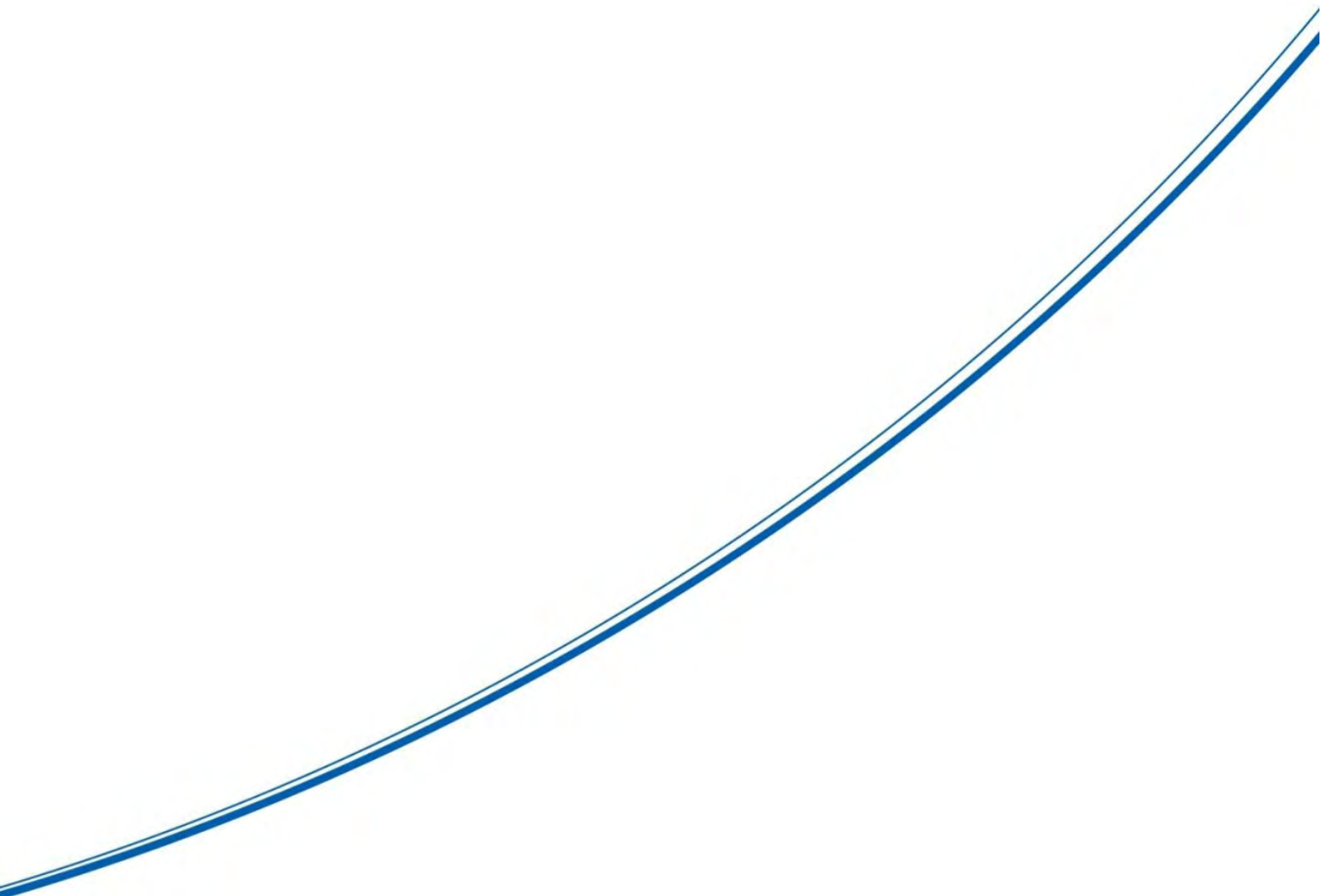




RSM McClure Watters (Consulting)
Connected for Success



Department for Employment and Learning

Evaluation of the Connected 2 Programme

Final Report – December 2013

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1 GLOSSARY

Abbreviation	Definition
A4B	Academic Expertise for Business Programme
AC	Accelerate Clusters
AD	Anaerobic Digestion
AFBI	Agri-Food and Bioscience Institute
ANIC	Association of Northern Ireland Colleges
BCE	Business and Community Engagement Programme
BERD	Business Enterprise Research and Development
BIS	Department for Business, Innovation and Skills
BMC	Belfast Metropolitan College
CAFRE	College of Agriculture, Food and Rural Enterprise
CETIC	Centres of Excellence for Technology and Industrial Collaboration
CIHE	Council for Industry and Higher Education
CMS	Content Management System
COST	European Cooperation in Science and Technology
CPD	Continuing Professional Development
CRM	Customer Relationship Management
CTI	Commission for Technology and Innovation
DARD	Department of Agriculture and Rural Development
DDP	Design Development Programme
DEL	Department for Employment and Learning
DETI	Department of Enterprise, Trade and Investment
DIUS	Department for Innovation, Universities and Skills
DJEI	Department of Jobs, Enterprise and Innovation
EA	Economic Appraisal
ERDF	European Regional Development Fund
ESA	European Space Agency
EW	Expertise Wales
FDEA	Federal Department of Economic Affairs
FE	Further Education

Abbreviation	Definition
FEC	Further Education College
FP7	Seventh EU Framework Programme
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GVA	Gross Value Added
HE	Higher Education
HEA	Higher Education Authority
HEFCE	Higher Education Funding Council for England
HEFCW	Higher Education Funding Council for Wales
HEI	Higher Education Institution
HEIF	Higher Education Innovation Fund
IoD	Institute of Directors
IP	Intellectual Property
IUL	Innovation Ulster Limited
JISC	Joint Information Systems Committee
KHW	Know How Wales
KPI	Key Performance Indicators
KPI	Key Performance Indicator
KT	Knowledge Transfer
KTC	Knowledge Transfer Centre
KTP	Knowledge Transfer Partnership
KTT	Knowledge and Technology Transfer
KTT	Knowledge Transfer Team
MNE	Multi-National Enterprise
NCUB	National Centre for Universities and Business
NESTA	National Endowment for Science, Technology and the Arts
NICVA	Northern Ireland Council for Voluntary Action
NITC	Northern Ireland Technology Centre
NRC	Northern Regional College
NWRC	North West Regional College

Abbreviation	Definition
OPET	Federal Office for Professional Education and Technology
PPRC	Polymer Processing Research Centre
QUB	Queen's University Belfast
QUESTOR ATU	Queen's University Environmental Scheme and Technology Research – Applied Technology Unit
R&D	Research and Development
RCUK	Research Councils UK
RDA	Regional Development Agencies
RDI	Research, Development and Innovation
RI	Research Institution
RIPA	Research and Innovation Promotion Act
SDC	Swiss Agency for Development and Cooperation
SDI	Scottish Development International
SEEDA	South East of England Development Agency
SER	State Secretariat for Education and Research
SERC	South Eastern Regional College
SFI	Science Foundation Ireland
SFC	Scottish Funding Council
SIF	Strategic Innovation Fund
SKTP	Shorter Knowledge Transfer Partnership
SME	Small and Medium Enterprise
SNSF	Swiss National Science Foundation
SRC	Southern Regional College
SWC	South West College
TSB	Technology Strategy Board
UU	University of Ulster
UUK	Universities UK
VFM	Value For Money
VINNOVA	Swedish Agency for Innovation

2 EXECUTIVE SUMMARY

2.1 Introduction

RSM McClure Watters has been commissioned by the Department for Employment and Learning to complete an evaluation of the “Connected 2” programme.

In this section we set out the background to the evaluation, the terms of reference for the evaluation, a summary of the methodology and the report structure.

2.1.1 Background to the “Connected 2” Programme

“Connected” is an initiative funded by the Department and delivered by Queen’s University, the University of Ulster and the six Further Education colleges, to help businesses improve their performance by providing “one-stop-shop” access to a broad portfolio of knowledge and technology support services, taking them right through the whole process from problem definition through to solution identification and implementation.

The current (second) round of the programme, “Connected 2”, commenced in April 2010 with a nominal budget of £4 million over four years (i.e. £1 million per annum).

2.1.2 Aim and Objectives of the “Connected 2” Programme

The overall aim of the programme is to enable the Higher Education (HE) and Further Education (FE) sectors to identify and meet, in a coordinated and holistic fashion, the Knowledge Transfer needs of businesses in particular, and also of the wider community.

The three main areas of activity within the programme are:

1. Enhancing the engagement of business and the wider community in Knowledge Transfer – Project Generation, Management and Development;
2. Knowledge Transfer project delivery; and
3. Internal Knowledge Transfer

2.1.3 Anticipated Outcomes of the programme

The key objectives are supplemented by a number of “Anticipated Outcomes”:

- Universities and FE colleges continue to develop together their Knowledge Transfer missions for the benefit of business and the wider community.
- A strengthening of the holistic approach between the universities and FE Colleges to address the needs of business and the wider community.

- Enhanced engagements between business and the wider community and Northern Ireland's research base, strengthening current partnerships and opening pathways to new collaborations.
- A contribution to Northern Ireland's research base supporting a two-way flow of knowledge and ideas between researchers, academics, public and private enterprises that will work towards ensuring a vibrant research base and wealth creation for Northern Ireland.
- Enhanced capacity of the FE sector, through effective links with the HE sector, to provide timely and appropriate advice and support to SMEs on the adoption of new technology and innovative business practices.
- Greater facilitation of Knowledge Transfer activities by providing business and the wider community with increased opportunities to meet and network with the HE and FE sectors.
- Improved industrial performance through innovations and new collaborations by driving the flow of people, knowledge and experience across business and academia.
- The development of a broader range of sectoral initiatives seeking to address the future needs of business and the wider community and utilising the distinctive provision of the Connected partners.
- An enhanced provision of Connected services to the Social Economy sector by exploring new and innovative ways of embracing the socio-economic benefits of collaborating with this sector.
- The introduction of initiatives and development of networks and contacts aimed specifically at creating increased links to the Agri-Food and Biosciences Institute (AFBI) and the College of Agriculture, Food and Rural Enterprise (CAFRE).
- Greater awareness of Knowledge Transfer successes across internal and external stakeholders through increased marketing and promotional activity. The further development of enterprising and stimulating environments for Knowledge Transfer.
- The development of best practice in building HE / FE collaboration.
- A reduction in the perceived barriers to Knowledge Transfer by Northern Ireland's SME sector.
- An enhanced range of professional and working relationships between HE and FE Knowledge Transfer staff resulting in increased learning and capability.
- Enhanced international linkages across HE and FE and greater sharing of linkages and networks.
- An enhancement of the current monitoring and recording system to allow for better monitoring and reporting of progress against Connected targets.

2.2 Methodology

The methodology used to undertake this Evaluation was agreed with the Project Steering Group and reflected in an agreed Project Initiation Document. It involved seven key work stages, which were as follows:

- Stage 1: Project Planning and Initiation: agreeing the detailed work programme, the desk research, selecting appropriate consultees and setting the timescales for completion of the evaluation.
- Stage 2: Strategic Context and Document Review: a review of the original rationale and the current rationale/need for government support for the Connected 2 Programme. We have examined policy information, statistics and research on local needs.
- Stage 3: Operational Fit and Innovation Ecosystem in NI: We have reviewed the logical and operational fit of Connected 2 within the wider context of DEL's research and knowledge transfer funding portfolio and also that of DETI/Invest NI.
- Stage 4: Output and Impact Assessment: We assessed the overall impact of Connected 2; involving desk based research and analysis (review of performance against costs) and a comprehensive set of consultations.
- Stage 5: Benchmarking Against Similar HE/FE Collaborative Initiatives: We are benchmarking the programme with a range of relevant bodies from across Great Britain and EU in order to scope their HE/FE collaboration initiatives.
- Stage 6: Analysis: We will analyse the data and findings against the Terms of Reference to draw out conclusions and develop recommendations, covering the overall performance of the programme against its specific objectives.
- Stage 7: Presentation and Reporting: Emerging findings will be presented to the Project Steering Group and a draft report prepared for comment before production of the final report.

2.3 Conclusions

2.3.1 Introduction

In this section, we set out conclusions against each aspect of the Terms of Reference, drawing on an evidence base including desk research, consultation with key stakeholders and also survey data (from surveys of companies involved in Connected 2 and those companies that were not involved in Connected 2).

2.3.2 Effectiveness of the programme in meeting its aims and objectives

ToR 1: 'The effectiveness of the "Connected 2" programme in addressing its stated aim and objective'.

To assess the effectiveness of the programme in relation to aims, objectives and outcomes, we considered evidence from Progress Reports and feedback from consultees (including survey respondents).

Table 2.1: Effectiveness of the Programme in meeting aims and objectives

Aim/ Objectives	Evidence
<p>Aim: to enable the Higher Education (HE) and Further Education (FE) sectors to identify and meet, in a coordinated and holistic fashion, the Knowledge Transfer needs of businesses in particular, and also of the wider community</p>	<p>In terms of the extent to which the programme has met its objectives and outcomes below – the Progress Reports and feedback from consultees / survey respondents provides clear evidence that the programme is meeting its aim.</p> <p>See Sections 2.3.9 and 2.3.10 below.</p>
<p>Objective 1: Enhancing the engagement of business and the wider community in Knowledge Transfer – Project Generation, Management and Development</p>	<p>Of the 12 targets per annum, most have been met or exceeded each year:</p> <ul style="list-style-type: none"> • In Year 1, 7 were met / exceeded, 4 were close to target and 1 was not met. • In Year 2, 10 were met / exceeded and 2 were close to target; • In Year 3, 10 were met / exceeded and 1 was close to target and 1 was not met; and • In Year 4 Q1, 4 were met / exceeded, 7 were close to target and 1 was not met. <p>By Year 4 Q1 six of the twelve targets under Objective 1 had been met or exceeded. Considering a key target of particular interest to DEL:</p> <ul style="list-style-type: none"> • Development of Clusters – the full four year target of 4 has already been met.
<p>Objective 2: Knowledge Transfer project delivery</p>	<p>Of the 15 targets per annum most have been met or exceeded each year:</p> <ul style="list-style-type: none"> • In Year 1, 10 were met / exceeded, 2 were close to target and 3 were not met; • In Year 2, 12 were met / exceeded, 1 was close to target and 2 were not met; • In Year 3, 10 were met / exceeded and 5 were not met; • In Year 4 Q1, 5 were met / exceeded, 2 were close to being met and 8 were not met; <p>By Year 4 Q1 12 of the 15 targets under Objective 2 had been met or exceeded. Considering three key targets of particular interest to DEL:</p> <ul style="list-style-type: none"> • Sector Specific Projects – the targets in each year have

Aim/ Objectives	Evidence
	<p>been exceeded and there are 50 unique SSPs against an overall four year target of 30;</p> <ul style="list-style-type: none"> Total number of projects – the full four year target has already been exceeded by more than a factor of 2 (541 vs 267); Total value of projects (ie income/fees paid to HE/FE) – the full four year target has already been exceeded by more than a factor of 1.5 (£1.2m vs £0.8m).
<p>Objective 3: Internal Knowledge Transfer</p>	<p>Of the 4 targets per annum most have been met or exceeded each year:</p> <ul style="list-style-type: none"> In Year 1, all 4 were met / exceeded. In Year 2, 2 were met / exceeded, 1 was close to target and 1 was not met In Year 3, 2 were met / exceeded, 1 was close to target and 1 was not met; and In Year 4 Q1, 3 were met / exceeded and 1 was not met <p>By Year 4 Q1, three of the four targets under Objective 3 had been met or exceeded.</p>

2.3.3 Effectiveness of the programme in achieving outcomes

ToR 2: ‘The extent to which each of the anticipated outcomes has been achieved, or is likely to be achieved by the end of the programme (March 2014)’.

Table 2.2: Effectiveness of the Programme in meeting anticipated outcomes

Anticipated Programme Outcomes	Evidence
<p>1. Universities and FE colleges continue to develop together their Knowledge Transfer missions for the benefit of business and the wider community.</p>	<p>See Section 2.3.9 The synergy between the universities KT Strategies (as required under NI HEIF) and the Connected 2 Programme is clear.</p>
<p>2. A strengthening of the holistic approach between the universities and FE Colleges to address the needs of business and the wider community.</p>	<p>The ethos of the Connected 2 programme is collaborative working to address identified business needs. The scale of activity under Connected 2 and the number of targets that are met or exceeded to date provide evidence that Connected 2 strengthens this holistic approach.</p>

Anticipated Programme Outcomes	Evidence
<p>3. Enhanced engagements between business and the wider community and Northern Ireland's research base, strengthening current partnerships and opening pathways to new collaborations.</p>	<p>The number of completed projects (541 to date against a four year target of 267) indicates the extent of engagement between business and the wider community and NI's research base. These include completed projects with current clients (249), with new clients (229), with re-engaged clients (14), and with current/previous Connected 1 clients in new business areas (49).</p> <p>Furthermore the high levels of satisfaction recorded by participating companies and FE / HE staff provide evidence of the positive way in which these relationships are viewed.</p> <p>From the FE/ HE staff survey, there is evidence that between 50% and 60% of staff had not previously been involved in the Connected 1 pilot programme – again demonstrating the new collaborations that have been developed under Connected 2.</p>
<p>4. A contribution to Northern Ireland's research base supporting a two-way flow of knowledge and ideas between researchers, academics, public and private enterprises that will work towards ensuring a vibrant research base and wealth creation for Northern Ireland.</p>	<p>See 1–3 above</p>
<p>5. Enhanced capacity of the FE sector, through effective links with the HE sector, to provide timely and appropriate advice and support to SMEs on the adoption of new technology and innovative business practices.</p>	<p>Under Objective 3, the Programme has sought to develop Internal Knowledge Transfer. By the end of Year 4 Qtr 1, 3 of the 4 targets in this area had been met or exceeded – relating to training and development engagements, staff exchange visits and international visits.</p> <p>Feedback from the FE-HE staff survey shows that the most common form of activity under this strand was staff training and development (tailored training programmes) followed by company visits and provision of technology awareness / discipline specific training to FE staff.</p> <p>The aspects of FE/HE internal transfer that respondents stated worked best was building relationships, the sharing of knowledge and good practice, and cooperation and collaboration (12 respondents).</p>

Anticipated Programme Outcomes	Evidence
6. Greater facilitation of Knowledge Transfer activities by providing business and the wider community with increased opportunities to meet and network with the HE and FE sectors.	A range of activities were planned and developed under Objective 1 of the programme: Project Generation, Management and Development (see Section 5.2.2, 5.2.5 and 5.2.6). Some of these seek to provide increased opportunities to meet and network with the HE and FE sectors and include: stakeholder meetings, newsletters, events, editorial and press articles, and case studies.
7. Improved industrial performance through innovations and new collaborations by driving the flow of people, knowledge and experience across business and academia.	The Connected 2 programme has delivered a wide range of outputs and impacts for participating companies through a range of initiatives that it has supported including individual projects with companies as well as broader initiatives such as SSPs. See Section 2.3.10 for further commentary
8. The development of a broader range of sectoral initiatives seeking to address the future needs of business and the wider community and utilising the distinctive provision of the Connected partners.	Sector Specific Projects (SSPs) are potentially long-term, strategically focused projects. A strength of the SSP model is that, while strategically focused, such projects can also respond to one-off, quick turnaround enquiries and embrace initiatives such as Invest NI Innovation Vouchers and Knowledge Transfer Partnerships (KTPs). The SSP model demonstrates the effectiveness of the catalytic nature of HE / FE collaboration. These SSP projects developed naturally from the increase in HE/FE collaborative activities i.e. staff exchange visits, internal Knowledge Transfer activities, Knowledge Transfer team meetings in the pilot Connected programme. This model of collaboration was brought to the next stage of development in Connected 2. SSPs have been a success in Connected 2 with the overall four year target of 30 being exceeded substantially by 20 to date. These cover a wide range of sectors and partners.
9. An enhanced provision of Connected services to the Social Economy sector by exploring new and innovative ways of embracing the socio-economic benefits of collaborating with this sector.	Connected 2 has provided services to the social economy sector – this is evident in that: <ul style="list-style-type: none"> • 16 of the 469 completed projects to date (around 3%) involved the social economy sector • 3 of the 50 SSPs to date involve the social economy sector

Anticipated Programme Outcomes	Evidence
<p>10. The introduction of initiatives and development of networks and contacts aimed specifically at creating increased links to the Agri-Food and Biosciences Institute (AFBI) and the College of Agriculture, Food and Rural Enterprise (CAFRE).</p>	<p>There have been a number of engagements with AFBI and CAFRE including meetings, collaborative workshops and a number of SSPs in which AFBI and/or CAFRE are involved. However, in the absence of dedicated funding from DARD for project staff in AFBI or CAFRE to lead on building collaborative working with FE / HE through Connected, the contacts / engagement have tended to be ad hoc rather than strategic.</p>
<p>11. Greater awareness of Knowledge Transfer successes across internal and external stakeholders through increased marketing and promotional activity. The further development of enterprising and stimulating environments for Knowledge Transfer.</p>	<p>A range of activities were planned and developed under Objective 1 of the programme: Project Generation, Management and Development (see Section 5.2.2, 5.2.5 and 5.2.6). Some of these seek to raise awareness of KT successes (e.g.: stakeholder meetings, newsletters, events, editorial and press articles, and case studies). However, a key issue raised in consultation with external stakeholders was a lack of awareness of “Connected” as a brand, though there was familiarity with the types of activity it delivered.</p>
<p>12. The development of best practice in building HE / FE collaboration.</p>	<p>Under Objective 3, the Programme has sought to develop Internal Knowledge Transfer. By the end of Year 4 Qtr 1, 3 of the 4 targets in this area had been met or exceeded – relating to training and development engagements, staff exchange visits and international visits.</p> <p>Under Objective 3 of the Programme, there have also been internal HE/FE events. These included events such as meetings between project partners and Invest NI which provided the opportunity for institutions to showcase their expertise, develop contacts and receive guidance on potential opportunities for serving individual businesses, as well as business more widely.</p>

Anticipated Programme Outcomes	Evidence
<p>13. A reduction in the perceived barriers to Knowledge Transfer by Northern Ireland's SME sector</p>	<p>Feedback from the company survey suggests that there are still barriers (either real or perceived) to KT within the SME sector. The most critical barrier to companies engaging with HE / FE institutes was lack of awareness of the opportunities available (75% respondents found this significant or very significant). Lack of awareness of HE / FE partners and lack of time and resources to pursue collaborations were also considered as significant or very significant barriers (by more than half of respondents).</p> <p>The FE-HE staff survey also indicated that limited awareness amongst SME's and Micro-Businesses that universities can offer problem solving expertise and industry support was a barrier (37.7% of 53 respondents).</p> <p>Whilst these perceptions prevail, it is clear that Connected 2 has had a positive impact on addressing the barriers given the level of engagement in KT by SMEs. For example the number of projects completed to date (with 9 months of the project left to run) is 541 against a 4-year target of 267.</p>
<p>14. An enhanced range of professional and working relationships between HE and FE Knowledge Transfer staff resulting in increased learning and capability.</p>	<p>The scale of activity being delivered through Connected 2 (including project generation, project delivery, SSPs and internal knowledge transfer) provides many opportunities for HE and FE staff to develop and build professional working relationships.</p> <p>The three most common outputs (with at least 94% of FE/HE staff citing these) relate to longer term benefits:</p> <ul style="list-style-type: none"> • Enhanced networks and relationships; • Opportunity for participation in rewarding & on-going collaboration with innovative businesses; and • Development of staff expertise – income generation/ technical skills. <p>The first and last of these provide evidence that this outcome is being met.</p> <p>The aspects of FE/HE internal transfer that respondents stated worked best were building relationships, the sharing of knowledge and good practice, and cooperation and collaboration. The most common aspects respondents highlighted that did not work as well was the need for closer cooperation, better communication / identification of contacts and having more time to develop links/KT.</p>

Anticipated Programme Outcomes	Evidence
15. Enhanced international linkages across HE and FE and greater sharing of linkages and networks.	<p>Under Objective 1, a target was set in relation to International Innovation Recce Visits (4) and to date 3 have been completed (with 9 months of Connected 2 still to run).</p> <p>Under Objective 3, a further complementary target was set in relation to International Visits (target to Year 4 Qtr 1 was 34 and that has already been exceeded by 4). These involved very targeted visits from the partner institutions involved in Connected to establish new relationships and strengthen existing links with other, specific international institutions with the aim of developing future strategic projects and transferring any knowledge gained to other Connected partners.</p>
16. An enhancement of the current monitoring and recording system to allow for better monitoring and reporting of progress against Connected targets.	<p>The implementation of a new Customer Relationship Management (CRM) system was a key target for Connected 2. This has been met (see Sections 5.2.2, 5.2.5 and 5.2.6)</p> <p>See Section 5.5 for details of the new CRM.</p>

2.3.4 The justification for and benefits of the programme

ToR 3: ‘The justification for and benefits of the programme in terms of the need which it was intended to address’.

The justification for the Connected 2 programme arose from evidence of need as follows:

- The success of the pilot Connected programme;
- The UK and NI strategic contexts in relation to the need for increased research, innovation and Knowledge Transfer and the important link between innovation and economic competitiveness;
- The relatively low levels of innovation in NI (particularly the marked reduction in “innovation active” companies: from 38% (2006-08) to 27% (2008-10);
- The crucial role that Knowledge Transfer plays in relation to innovation and hence the role for Universities and FE Colleges (in the transfer of knowledge);
- The fit with Universities’ KT Strategies and Colleges’ increasing focus on engaging with business;
- The support for the initiative from FE, HE and businesses;
- The importance of “joined up” Knowledge Transfer from the HE/FE sectors to business in particular;
- The anticipated benefits of knowledge transfer including its contribution to an innovative and knowledge-based economy;

- The recognition of key barriers to innovation in NI including financial and market barriers.
 - Includes the direct cost of innovation and availability of finance.
 - Also, due to established companies already operating in the market, there is less motivation for SMEs to pursue R&D while uncertainty over demand for innovative goods or services is also detrimental.

2.3.5 Net additionality of the programme

ToR 4: ‘The net additionality of the programme through determining the base case of what would have happened to university / FE college liaison with business and the community in the absence of the programme, generating estimates of deadweight.

Additionality, displacement and deadweight have been assessed from the surveys of companies participating in Connected 2. The table below shows the full and partial additionality of the programme for these companies.

Table 2.3: Additionality of the Programme

	Company Survey
Full Additionality ¹	35% (14 probably, 4 definitely) would not have gone ahead with project
Partial Additionality ²	50% (n=26) would have gone ahead (longer timescales and/or smaller scale)
Deadweight ³	14% (n=7) would have gone ahead with the project with the same result
Displacement ⁴	The companies who indicated partial additionality provided some further explanation of other supports that they might have accessed. However the work completed would have been of a lesser scale and/or over a longer timescale; in addition it is not clear to what extent collaboration might have featured.

Source: RSM McClure Watters November 2013

This represents an improvement compared to the evaluation of the pilot Connected 1 programme for which, the level of full additionality was 22.2%, partial additionality was 22.2% and deadweight was 56%. It suggests that the Connected 2 programme has been more effective at targeting support to focus on those companies which are

¹ **Full additionality** - benefits are wholly attributable to the programme, i.e. deadweight and displacement are zero

² **Partial additionality** - activity would have been carried out earlier, or on a larger scale or to a higher specification or has displaced existing activity.

³ **Deadweight** - activity that would have occurred regardless of the policy

⁴ **Displacement** of activity within a local area (taking market share from other local firms producing the same or similar goods or services)

unaware of, or who have previously not engaged with, the HE/FE sector. This direction of travel is a very positive feature of Connected 2 and should be continued.

2.3.6 Wider “spill-over” benefits of the funding, including additional knowledge transfer projects and other collaborations

ToR 5: ‘The wider “spill-over” benefits of the funding, including additional knowledge transfer projects and other collaborations.

The summary of performance against targets provides a wide range of information on what the programme has achieved (see Sections 5.2.5, 5.2.6 and 2.3.2). This includes 541 completed projects, 50 SSPs and income generated by HE/FE of around £1.26m all after just three and a quarter years of the four year programme. A range of direct outputs and impacts delivered by the programme are discussed in Section 2.3.10. Apart from these:

- Companies also reported other benefits as a result of engagement with Connected 2: the most frequently reported were increased industry knowledge (n=8) and stronger links with FE college / university (n=7); and
- HE / FE staff reported benefits that were not anticipated including: marketing opportunities and training and access to equipment.

2.3.7 Relevance of the programme to the local, national and European strategic contexts

ToR 6: ‘A detailed consideration of the strategic context in which the programme is operating including its contribution to the local, national and EU policies, including, but not limited to:

- **UK Ten Year Science and Innovation Investment Framework (2004 – 2014)**
- **FE Means Business - Department for Employment and Learning (2004)**
- **FE Means Business Implementation Plan – Department for Employment and Learning (2006)**
- **Sainsbury Review of Science and Innovation (2007)**
- **UK Science and Innovation (“Innovation Nation”) White Paper (2008)**
- **Wellings Report on Intellectual Property and Research Benefits (2008)**
- **Standing Together: Universities Helping Business Through The Downturn (2008)**
- **Regional Innovation Strategy for Northern Ireland Action Plan (2008 – 2011)**
- **Varney Review of the Competitiveness of Northern Ireland (2008)**
- **MATRIX Report (2008)**
- **Higher Ambitions: The Future of Universities in a Knowledge Economy - Department for Business Innovation and Skills (2009)**
- **Northern Ireland Executive’s Programme for Government (2011 – 2015)**

- **Northern Ireland Economic Strategy - Department of Enterprise, Trade and Investment (2012)**
- **Graduating to Success: A Higher Education Strategy for Northern Ireland - Department for Employment and Learning (2012)**
- **Preparing for a Lower Corporation Tax Environment (2012)'**

There is evidence of a good fit between the programme and NI, UK and European contexts both at the time the programme was launched and also looking ahead.

At the time that the programme was launched, there was a clear emphasis on the importance of knowledge transfer to the UK innovation ecosystem and economic prosperity. The Sainsbury Review of Science and Innovation highlighted that there was little to be gained from research in universities, research institutes and further education (FE) colleges if there are not strong links between the researchers and industry. Meanwhile the Regional Innovation Strategy 2008-2011 (DETI) called for NI businesses to become more innovative and creative in order to compete in the global market and that there needs to be a championing and exploitation of innovation and R&D. It also makes specific mention of the Connected programme.

Looking ahead, there is also a good potential fit between a further (third) round of Connected going forwards and the broader EU, UK and NI contexts. There is a strong emphasis on the importance of knowledge and innovation and its links to industry. One of the three core principles of the Europe 2020 strategy is Smart Growth; to develop an economy based on knowledge and innovation. This is supported by the Witty Review (2013) which indicates that universities can support growth by working with organisations responsible for setting strategies to drive economic growth (such as the Local Enterprise Partnerships in England). At a NI level, the NI Economic Strategy (2012) emphasises the concept of stimulating Innovation, R&D and Creativity through knowledge transfer activity; and the Innovation Strategy for Northern Ireland 2013-2025 (Draft for Consultation, September 2013) highlights a need for more companies across all sectors to be engaged in innovation.

2.3.8 Fit of the programme within the wider context of DEL's research and knowledge transfer funding portfolio and that of DETI / Invest NI

ToR 7: 'The logical and operational fit of the programme within the wider context of DEL's research and knowledge transfer funding portfolio and also that of DETI/Invest NI'.

In Section 7, we have set out a range of supports in the current innovation ecosystem in NI. There are a wide range of interventions supporting research and knowledge transfer and these are located at different stages of the "innovation escalator". The "niche" for Connected is at the "entry" level – acting very much as a catalyst and introducing companies to the notion of innovation. Looking ahead, however, there is

scope for Connected to consider a role in pushing those companies that are already on the innovation escalator on to the next level.

2.3.9 Effectiveness of the programme in advancing the universities' and FE Colleges' Knowledge Transfer strategies

ToR 8: 'The effectiveness of the programme in advancing the universities' and FE colleges' Knowledge Transfer strategies'.

Both QUB and UU are required to produce a Knowledge Transfer Strategy as a condition of NI HEIF funding. KT Strategies were produced under NI HEIF 3 to cover the period from Academic Year (AY) 10/11 to AY 12/13, reflecting the context around the time Connected 2 was launched. DEL has recently approved KT Strategies from QUB and UU under NI HEIF 4, covering the period from AY 13/14 to AY 15/16, and which reflect the context looking ahead. The FE Colleges are not required to produce KT Strategies.

Under FE Means Business, which was published in 2004, colleges were given a strategic mission to be more supportive of business and responsive to the needs of the economy. As colleges have evolved, post-merger, they have become 'big-hitting' institutions in their own right, with much more enhanced capabilities. It is recognised that there is a need to redefine the role of colleges, in supporting economic development, which will be taken forward in the near future.⁵

The QUB NI HEIF 3 KT Strategy had at its root the concept of partnership working including collaborative working between the two universities, for example through long standing joint initiatives linked to the operation of the KTP scheme (in which QUB is the leading UK HEI) and the (joint QUB/UU) Science Shop. This concept continues to be embraced by QUB in its involvement in initiatives such as Connected and the NISP Connect programme.

UU's NI HEIF 3 KT Strategy aimed to continue to develop innovation, building on previous innovation performance under N HEIF 2 and continuing to support a broad commercial agenda through engagement with staff within the University, external agencies and collaborators who could add value to UU's innovative practice. The strategy was supportive of the development of effective working collaborations with

⁵ It is worth noting that before Connected was established as a pilot programme in 2007, there was a lack of meaningful linkages and coordination between the HE and FE sectors in terms of business engagement. This was particularly evidenced by the Invest NI-commissioned report on "The Role of the FE Sector in Fostering Innovation and Entrepreneurship" (May 2005), which emphasised the need for improved HE / FE collaboration and included the key recommendation that "there should be strong connections between HE and FE in the drive to improve innovation into SMEs". This is important context in considering the performance of HE compared to FE: there is evidence of strong HE performance in delivering on Connected, whilst for FE there is evidence of substantial progress having been made with improving performance and commitment. Connected has produced a real step change in this regard and the FE commitment is becoming stronger.

other relevant bodies. The main activities within UU's KT Strategy were Business Outreach, Knowledge Transfer and Technology Commercialisation.

The new QUB KT Strategy under NI HEIF 4 contains six key aims, one of which is to **stimulate increased business investment in research and development, particularly amongst SMEs**. It also outlines key areas of KT activity going forward which are:

- Research commercialisation and spin-outs;
- Consultancy and technical services;
- Knowledge Transfer Partnerships and FUSION;
- Business alliance;
- Business networking;
- Impact management;
- The Science Shop; and
- Support for Student Enterprise.

It also states that the following areas of focus will be common across many of QUB's KT activities, linking the various areas of activity to QUB high-level goals:

- **Optimising existing business relationships**, and leveraging opportunities for increased engagement at higher stages on the "innovation ladder", particularly in relation to SMEs;
- **Creating new relationships and partnerships** at all levels in the innovation ecosystem;
- **Increasing academic engagement in knowledge exchange and impact realisation**, and creating more porous boundaries between academia and organisations in the private and public sectors to maximise the potential for the achievement of impact; and
- **Increasing public engagement with research and enterprise activities** and developing awareness of Queen's impact on the economy and society.

The new UU KT Strategy under NI HEIF 4 includes the following aims:

- To establish the University of Ulster as the knowledge provider of choice for SMEs across the island of Ireland;
- To be a sector leader in support of creative, digital and social enterprises;
- To be the lead provider of academic consultancy services across Ireland;
- To be a UK top 3 provider of Knowledge Transfer Partnership (KTP) programmes;
- To establish UU's leadership in **academic Open Innovation**;
- To partner with business to increase and expedite the **commercialisation of UU's Intellectual Assets**;
- To extend UU's innovation functions to support student and graduate entrepreneurship; and

- Through its innovation activities to support the research impact agenda of the University of Ulster.

It also states that the key areas of KT activity will be:

- Business Engagement;
- Research Collaboration;
- Technology Commercialisation; and
- Investment and Enterprise.

There are synergies evident between the universities' KT Strategies and the aims and objectives of the Connected Programme. It is evident that in achieving the aims, objectives and outcomes of the programme, there has been a corresponding contribution to the universities' KT Strategies.

Feedback from company surveys indicates that the programme has contributed to key aspects of the universities' KT Strategies – see evidence at Section 2.3.2 and Section 2.3.9.

2.3.10 Overall impact of the programme

ToR 9: 'An analysis of the overall impact of the programme, identifying the costs and benefits of the support, both quantifiable and unquantifiable, taking into account the monitoring frameworks operated by DEL'.

The overall programme costs amount to just over £4m funding over four years from Financial Year (FY) 10/11 to FY 13/14. Although nine months of the programme have still to run, it has already delivered a wide range of benefits (including outputs, outcomes and impacts as previously described in Section 2.3.2 (ToR1) 2.3.3 (ToR2) and Section 2.2.5 (ToR5). Some of these are expressed in monetary terms, others cannot be monetised.

The summary of performance against targets provides a wide range of information on what the programme has achieved (see Sections 5.2.5, 5.2.6 and 2.3.2). This includes 541 completed projects, 50 SSPs and income generated by HE/FE of around £1.26m.

From the company survey, there are a wide range of outputs and impacts reported (see Appendix – Part 2 – Section 3):

- **Main impacts of the programme:** a wide range of impacts was reported. At least 46% of companies mentioned the following impacts: increase in innovation, increase in R&D capability, increase in productivity as a result of up-skilling and new business generated through the project. Around one third also indicated impacts in the following areas: leveraged other funding or support as a result of the collaboration and new exports generated as a result of the collaboration.
- **Outputs of the programme:** a number of outputs were recorded. The most significant, as stated by at least 80% of companies, were: transfer of knowledge from partner(s) to companies and an improvement in existing skill and expertise

levels or a development of new skills and expertise. Other important outputs that were reported by at least 45% of companies were: direct (positive) effect on company turnover, positive impact on the profitability of the company, company developed or invested in a new technology as a result of collaboration with HE/FE partner, and company adopted a new business practice as a result of collaboration with HE/FE partner.

- In terms of **future impacts and other benefits arising from engagement with Connected 2**: at least 57% of companies recorded the following: improved existing skill & expertise levels or development of new skills & expertise, transfer of knowledge from partner(s) to company, impact on profitability of company and company turnover. Around 40% mentioned other positive future impacts that included: company survival, employment, jobs maintained, development or investment in a new technology as a result of collaboration with HE/FE partner, adoption of new business practices as a result of collaboration with HE/FE partner.
- Companies also reported **other benefits as a result of engagement with Connected 2**: the most frequently reported were increased industry knowledge (n=8) and stronger links with FE college / university (n=7).
- In terms of engagement with the programme, at least 66% of respondents found it be very beneficial as all benefits were achieved and 31% felt it was somewhat beneficial as some benefits were achieved.
- Significantly, 52% of companies noted an **increase in turnover in the last 18 months** (of these, 21% by <5%, 12% by 6-10%).

From the FE-HE staff survey, there are a wide range of outputs and impacts reported (see Appendix – Part 2 – Section 5). Staff were invited to comment on **outputs and impacts** in the following areas:

- **Business Development**: At least 73% of FE-HE staff achieved each of the 6 outputs in this area; and at least 67% of FE-HE staff achieved each of the 5 impacts in this area;
- **Curriculum Development**: At least 56% of FE-HE staff achieved 3 of the 5 outputs in this area; the 2 exceptions were identification of new research themes and undergraduate / postgraduate projects (commercial relevance). At least 58% of FE-HE staff achieved the 1 impacts in this area;
- **Academics and KT Staff - FE and HE**: At least 73% of FE-HE staff achieved 6 of the outputs in this area; the 2 exceptions were: increased number of published papers/research articles & improved HE/FE Institution research ratings. At least 88% of FE-HE staff achieved the 2 impacts in this area;
- **Businesses**: At least 55% of FE-HE staff achieved 4 of the 5 outputs in this area; the exception was exposure to KT from CAFRE & AFBI. At least 63% of FE-HE staff achieved 5 of the 6 impacts in this area (the exception being: spill over impacts (supply chains));
- **Link to Research Bases and International Contacts**: At least 47% of FE-HE staff achieved each of the 4 outputs in this area. At least 38% of FE-HE staff

achieved 3 of the 4 impacts in this area – the 1 exception being: submissions to other research funding.

- **Knowledge Transfer- Internal Processes & Culture:** At least 58 % of FE-HE staff achieved 7 of the outputs in this area.

The three most common outputs (with at least 94% of FE/HE staff citing these) relate to longer term benefits:

- Enhanced networks and relationships;
- Opportunity for participation in rewarding & on-going collaboration with innovative businesses; and
- Development of staff expertise – income generation/ technical skills.

Each of these were cited by staff as drivers for participating in the Programme, showing that the Programme is meeting the expectations and needs of the FE/HE staff involved.

The three most common impacts (with at least 86% of FE/HE staff citing these) were:

- Reputation Strengthened with Business and the Community
- Positive feedback from industry on the skills / expertise of FE & HE and suitability of courses to meet business needs
- Increased linkages with Business regarding FE/HE training / Increased participation of employees on courses / Up-skilling employees

These all refer to the improved relationships between the FE/HE institution and the business community and the capacity development of staff.

Benefits that were not anticipated were marketing opportunities and training and access to equipment.

2.3.11 Value for money

ToR 10: ‘An independent assessment of value for money in terms of effectiveness, efficiency and economy focusing on input and output indicators, as well as outcomes’.

In order to assess value for money we consider:

- **Effectiveness:** There is clear evidence of the effectiveness of the programme given the feedback from survey respondents in terms of meeting programme and project aims, objectives and outcomes achieved (see Section 5.2 which refers to programme performance and 5.2.6 which summarises overall performance to the end of Year 4 Quarter 1). In addition, there is positive feedback from Colleges NI, QUB and UU with regard to DEL’s effective management of the programme.
- **Efficiency:** The ratio of funding leveraged (i.e. income generated by FE / HE which is £1.26m) to programme costs (around £4m) is around 0.3:1.0 to date. It

is also worth highlighting that this is likely to be an underestimate of the impact of the programme as there are many other outcomes and impacts, also wider economic benefits that cannot easily be monetised for example. There are also 3 further quarters of the programme to be completed as well as allowing for a lag between current interventions and impacts being realised; and

- **Economy:** The cost to deliver the programme has been estimated from DEL staff time allocated to programme management activities as £36k (i.e. £9k per annum). This represents a very small proportion of overall programme costs (£4m); the ratio being 0.09%.

Taking account of these three key criteria, it would be reasonable to conclude that the programme has offered considerable evidence of Value for Money over the period under evaluation.

2.3.12 Benchmarking

ToR 11: ‘A benchmarking of the programme with any similar HE / FE collaborative initiatives in other regions’.

Knowledge transfer initiatives were considered in several countries across Europe and the UK. These are:

- Switzerland;
- Sweden;
- Finland;
- Scotland;
- Wales;
- Republic of Ireland (RoI);
- Joint Information Systems Committee (UK); and
- National Centre for Universities and Business (UK).

Switzerland, Sweden and Finland have been considered as they are the top 3 EU countries from the Global Innovation Index 2013 (which ranks countries across the world in relation to the enabling environment provided for innovation and on their innovation outputs).

Scotland and Wales are included due to similarities to NI, and the RoI as it shares a land border with NI. The Joint Information Systems Committee (JISC) and National Centre for Universities and Business (NCUB) are also included as two UK initiatives that support links between FE, HE and businesses.

However reflecting the high degree of novelty and uniqueness of DEL’s Connected programme, most of these other initiatives are not directly comparable to Connected 2, with the one possible exception of the Interface Programme (Scotland). Established in August 2005, Interface was designed to address market failure in respect of difficulties companies face in identifying and accessing support, compounded by the mass of information which has to be obtained and examined to assess supply-side capability

and capacity (the Higher Education Institutions (HEIs) and Research Institutions (RIs⁶)), in order to reach the appropriate collaborative partner. The aim of Interface is, 'to develop interaction and stimulate innovation to benefit Scottish companies and the Scottish economy'.

The Interface Programme shares many features with Connected 2. Drawing on the experience of Interface (and in common with Connected 2), there are a number of potential lessons for Connected looking ahead:

- A continued focus on SMEs as its primary target market and particular attention to any key sectors that are under-represented in uptake of the service;
- Consideration of introducing a charge for repeat customers, but services to new customers should remain free;
- Efficiency gains that may be realised through use of ICT / online tools – for example for Connected, this could be further enhancement of the Customer Relationship Management (CRM) system;
- Ensuring that monitoring and evaluation is streamlined to provide reporting on essential issues in line with the main objectives of the service;
- Importance of FE / HE to ensure that the outputs and impacts of all projects are maximised so that businesses realise all of the benefits;
- Maintaining an on-going relationship with clients after a project has been initiated is an important part of the Interface service offering that is likely to become increasingly important as the number of clients assisted increases.

2.3.13 How effectively the programme has been managed by DEL

ToR 12: 'An independent assessment of how effectively the programme has been managed by DEL'.

In order to assess the effectiveness of DEL in managing the programme, we consider:

- DEL programme management costs: These have been estimated as **£36K** over the duration of the programme (4 years). This represents 0.09% of the value of the funding under management by DEL (£4m) and is clearly a relatively low resource cost to deliver the programme in its current format.
- Stakeholder feedback on the Programme: Overall feedback in relation to the management of the programme by DEL has been positive. The stakeholders' comments can be summarised as follows:
 - The programme was generally well regarded;
 - There are good working relationships between the partners and DEL;

⁶ Initially focusing on HEIs only since January 2007, Interface has expanded its remit including Scotland's research institutes adding to its portfolio of partners and now represents over 20 higher education and research institutions.

- The reporting processes and claims draw down processes put in place by DEL are clear and provide a useful means of managing the programme:
 - > Colleges NI is keen to maintain quarterly reporting to ensure it has an accurate picture in terms of what the FE colleges are involved in;
 - > The Universities, however, would be keen to move to less frequent reporting.

There was one main area for improvement identified within DEL – that relates to the involvement of FE Division, as well as HE Division, in the monitoring and management of the programme. This will help to ensure information is shared and exchanged within DEL with regards to programme performance and to avoid any potential duplication by Connected of other initiatives being developed by FE Division. Colleges NI have put forward a proposal in this regard that involves including DEL representatives from both HE and FE Divisions on a new Management Committee (see Section 8.2.4).

2.3.14 Appropriateness of the mechanisms and structures within NI's HE / FE colleges to manage the "Connected 2" funds

ToR 13: 'A consideration of the appropriateness of the mechanisms / structures within NI's universities and FE colleges to manage the "Connected 2" funds'.

In order to assess the appropriateness of the mechanisms/structures within the universities and colleges to manage the Connected 2 funds, we consider:

- The mechanisms / structures in place to manage the Programme. These are largely unchanged from the pilot Connected programme and continue to work well;
- Feedback from FE / HE staff and companies involved in Connected 2. Amongst those directly involved in the programme, their feedback provides an endorsement of the work to date of all of the partners. For example:
 - A generally high level of satisfaction was reported:
 - > From the company survey (see Appendix Part 2 – Section 3), the majority of respondents were mostly satisfied with all aspects of the Connected 2 Programme (all areas considered had at least 75% of respondents stating that they were satisfied or very satisfied). Positive feedback from QUB, UU and Colleges NI on working relationships;
 - > From the survey of HE-FE staff (see Appendix Part 2 – Section 5), over 80% of HE-FE staff were satisfied or very satisfied with every aspect of the Business Development Unit within Connected;
 - Most would take part in the Programme again:
 - > An overwhelming majority of respondents to the company survey (96.4%) would collaborate with HE / FE again in the future;
 - > All HE / FE staff would take part in a similar Programme again.
 - Most would recommend the Programme to others:

- > A large proportion of respondents to the company survey (88.9%) would recommend the service to others;
- > The Programme received a positive endorsement from HE / FE staff, as 100% of 50 respondents stated they would recommend it to peers/colleagues in HE / FE Institutions. Moreover, 100% of 52 respondents stated they would recommend it to SMEs.

2.3.15 Section 75 requirements

ToR 17: ‘Section 75 requirements should be taken into account. In respect of any recommendations made consultants will be required to consider whether there are any likely impacts on anti-poverty social inclusion, equality of opportunity or good relations. In doing so consultants may recommend measures to mitigate against any adverse impacts.’

Section 75 of the Northern Ireland Act 1998 requires the Department for Employment and Learning, in carrying out all its powers, duties and other functions, to have due regard to the need to promote equality of opportunity:

- Between persons of different religious belief, political opinion, racial group, age, marital status or sexual orientation;
- Between men and women generally;
- Between persons with a disability and persons without; and
- Between persons with dependants and persons without.

Considering equality issues in the current Connected 2 programme, we note that QUB and UU and the 6 FE Colleges are designated as Public Authorities, for the purposes of Section 75 of the Northern Ireland Act in 2001. All have had their most recent Equality Schemes approved by the Equality Commission for Northern Ireland (the Commission) in 2012. Both universities have on-going activities to ensure compliance through various policies and action plans which include policy screening, equal pay audit (QUB), gender action plan and good relations audit (UU). The FE colleges also have a range of ongoing activities to ensure compliance with their equality schemes.

2.4 Recommendations

This section presents recommendations arising from the evaluation and in particular addresses the following from the ToR:

ToR 14: ‘Evidenced-based recommendations on future delivery mechanisms for the joint HE / FE Knowledge Transfer activities currently delivered under the programme)’.

ToR 15: ‘Evidenced-based recommendations on the appropriate level of funding going forward.’

ToR 16: ‘Evidenced-based recommendations on the appropriate funding mechanism. This element of the exercise should include an examination of future options, including the status quo (i.e. single joint bid from the two universities and Colleges Northern Ireland), competitive bids or the feasibility of formula allocations through the Department’s annual grant letter to the Universities.

2.4.1 Recommendation 1: Need for Future Programme

There is significant justification for a future round of the programme and much of this reflects the rationale for Connected 2 as well as taking into account the success of Connected 2 and lessons learnt from its implementation. The rationale for a further programme is based on:

- The track record of the programme (Connected 1 pilot and Connected 2) including outputs and impacts as well as the significant improvement in additionality evidenced under Connected 2;
- The consistency of the programme with both the UK and NI strategic contexts in relation to the need for increased research, innovation and Knowledge Transfer and the important link between innovation and economic competitiveness;
- The ongoing relatively low levels of innovation in NI, as particularly reflected in the marked reduction in “innovation active” companies: from 38% (2006-08) to 27% (2008-10);
- The crucial role that Knowledge Transfer plays in relation to innovation and hence the key role for Universities and FE Colleges (in the transfer of knowledge);
- The fit of the programme with the Universities’ KT Strategies and Colleges’ increasing focus on engaging with business;
- The support for the initiative from all of FE, HE and businesses (evident in feedback from surveys as well as the scale of engagement and hence demand for the Programme);
- The importance of “joined up” Knowledge Transfer from the HE/FE sectors to business in particular (and hence the importance of the programme continuing on the basis of both sectors being included);
- The anticipated benefits of Knowledge Transfer including its clear contribution to an innovative and knowledge-based economy;
- The recognition of key barriers to Knowledge Transfer as reported in the company survey and the FE-HE staff surveys;
- The feedback from external stakeholders reflecting the continued need for the programme.

Clearly therefore, there is significant justification for a further (third) round of Connected – ‘Connected 3’.

Recommendation 1: We recommend that DEL continues to fund the Connected initiative.

2.4.2 Recommendation 2: Additionality

The level of additionality is 35% (full) and 50% (partial). It is important that the current levels of additionality are at least maintained if not improved further. Therefore supports should be targeted, where feasible, on those SMEs who would not otherwise engage in Knowledge Transfer and on those with the potential to move up the 'innovation escalator' i.e. companies which, for the most part, are not yet Invest NI client companies.

Recommendation 2: We recommend that in any future programme, that support continues to be targeted to those areas where additionality can be maximised; not only on SMEs which are not innovation active, but also on those companies which are innovation active with the potential to be moved to the next level on the 'innovation escalator'.

2.4.3 Recommendation 3: Appropriate Funding Mechanism

Having established the need to support a future programme, we have considered funding mechanism options to achieve this. These are briefly summarised in section 6.2.1. Based on this analysis, the current funding mechanism is clearly the most appropriate.

Recommendation 3: We recommend that DEL continues to fund the Connected initiative using the same funding mechanism as is used in Connected 2 – a single joint bid from Queen's University, the University of Ulster and the six Further Education Colleges as represented by Colleges NI.

2.4.4 Recommendation 4: Delivery Mechanism – New/Expanded Management Committee

The Steering Committee under the Connected 1 pilot programme had been a sub-committee of the Business Alliance/HE/FE Forum. However, as the Forum has now ceased to operate, the Business Development Unit has put forward a proposal to strengthen the strategic focus of Connected by inviting new representatives from industry, and also from DEL, to sit on the Programme's Management Committee.

This is considered an important proposal to ensure that addressing SME / client needs remains the key focus of the programme. It will also provide a means of ensuring that both HE and FE Divisions within DEL are kept informed and up-to-date with respect to the ongoing activities within the Connected programme. At present, the FE Division has little direct involvement in the programme, which is managed by HE Division.

Recommendation 4: We recommend that DEL ensures that a new management structure is adopted within Connected 3 to ensure sharing of information across all relevant stakeholders, and that Terms of Reference are drawn up for the proposed, new Management Committee and adopted by members.

2.4.5 Recommendation 5: Delivery Mechanism – New Competitive Call for HE/FE Collaborative Projects

In order to encourage and facilitate the movement of SMEs, with limited experience of Knowledge Transfer (KT), up the innovation escalator, it is proposed to introduce a new, competitive call element within the next Connected programme to support high quality, bespoke HE/FE collaborative projects.

The fund, which will be administered centrally by the Business Development Unit, will seek to address an identified gap in support for SMEs which are not (yet) Invest NI clients and which have difficulty in accessing funds (beyond the most basic 'Innovation Voucher' stage) while also potentially reaching out to SMEs with no prior KT experience.

Through an open call, managed by the Connected Business Development Unit, the two HE and six FE partners would be invited to bid, on a collaborative basis, for support under this competitive fund.

The support of these 'special projects' would enable HE/FE partnerships to extend their existing activities under Connected and capitalise on the achievements of Connected's existing portfolio of live Sector Specific Projects (SSPs).

Priority would be given under this new fund to support HE/FE projects that are focused on engaging with SMEs who have had limited knowledge transfer experience, but have the potential to move further along the innovation escalator, i.e. transitioning from Innovation Vouchers to other more substantive innovation support mechanisms (such as Knowledge Transfer Partnerships etc.).

The Connected Business Development Unit will scope the specification, terms and conditions, and criteria by which bids will be evaluated. The Business Development Unit will also manage a team, representative of FE, HE and external representatives, to oversee the evaluation process, ensuring that appropriate transparency and accountability measures are put in place.

As with the current portfolio of SSPs, the costs associated with these 'special collaborative projects' would include salary and internal knowledge transfer costs (typically for know-how and best practice acquisition, and staff training and development).

Based on feasibility studies already undertaken by the Business Development Unit, it is anticipated that projects would fall within the range of £15k to £40k each, with the average cost per project being around £20k. Calls for proposals would be put out annually. It is expected that the first year's call would be issued later than in following years, to enable the governance of the fund to be established.

- Year One: Call issued in June 2014 for projects to be delivered up to end of March 2015.

- Year Two: Call issued in February 2015 for projects to be delivered during the project year April 2015 up to end of March 2016.
- Year Three: Call issued in February 2016 for projects to be delivered during the project year April 2016 up to end of March 2017.
- Year Four: Call issued in February 2017 for projects to be delivered during the project year April 2017 up to end of March 2018.

Table 2.4: Proposed Fund Value – Central Competitive Fund

Year	Fund Value	Project Value Range	Expected number of projects to be supported
Year One June 2014 – March 2015	£80K	£15k - £40k	3
Year Two April 2015 – March 2016	£110K	£15k - £40k	4
Year Three April 2016 – March 2017	£110K	£15k - £40k	4
Year Four April 2017 – March 2018	£110K	£15 - £40k	4

Recommendation 5: We recommend that DEL supports an additional central fund, within the next (third) round of Connected, to address identified gaps in Knowledge Transfer activity, particularly focused on SMEs with no or limited prior experience of Knowledge Transfer, but which have the potential and willingness to be moved further along the innovation escalator.

2.4.6 Recommendation 6: Delivery Mechanism - Project Management / Support

Over the course of the Connected 1 pilot and Connected 2 programme, there have been changes to the role and remit of the various partners involved in the delivery of the programme. In particular, the Business Development Unit which forms a core, central role has a wide range of functions to fulfil in serving the needs of all partners in the programme. Given the successful development of the programme over the period of Connected 2 in particular, a number of additional areas have been identified which could be fulfilled within the Business Development Unit, by upgrading one of the existing posts, namely that of Project Administrator to Project Support Officer. However, it is important that appropriate targets are attached to the additional responsibilities of the upgraded post.

Recommendation 6: We recommend that DEL supports an upgrading of the Project Administrator post within the Business Development Unit to that of Project Support Officer; and that appropriate targets are attached to the additional responsibilities (as set out in Section 8.2.5 of this report).

2.4.7 Recommendation 7 and 8: Funding – Duration and Level

Duration

The pilot Connected programme ran for 3 years, whilst Connected 2 will run for 4 years. A 4-year programme provides greater scope to evaluate activity and reach an informed conclusion on the future of an initiative with sufficient data (at least 3 years' worth) and with enough time to make plans for the future (depending on the outcome of the evaluation). Furthermore, with a duration of only 3 years, there is a tension between having enough data available for a robust evaluation (therefore seeking to leave the evaluation as late as possible) and ensuring there is no funding gap between the end of one programme and the beginning of the next (therefore seeking to evaluate earlier rather than later). Such a funding gap would have serious consequences for the Department. Firstly, it would result in a suspension of ongoing HE/FE services to industry currently supported under Connected. This would undermine the credibility of the programme across the wider business community. Secondly, any funding hiatus would also put at risk the retention of the experienced and highly skilled Knowledge Transfer practitioners employed across the two universities and six colleges under this programme.

Recommendation 7: We recommend that DEL continues to fund the Connected initiative and to do so on the basis of a 4-year Programme.

Level of funding

The level of funding for a future Connected programme should take as its baseline the level of funding for the current programme given the evident demand for the programme (approximately £4.09 million over 4 years / £1.02 million per annum). In addition, there are two other factors to consider:

- The inclusion of additional finance of £410k over 4 years to support a new “competitive” pot of funding to be administered by the Business Development Unit – see Recommendation 5; and
- The upgrading of the Project Administrator post within the Business Development Unit to Project Support Officer (at an additional cost of around £39k over 4 years) – see Recommendation 6.

Recommendation 8: We recommend that DEL increases the funding for the next (third) round of Connected from the current baseline of approximately £4.09 million over 4 years to £4.54 million over 4 years (an increase of approximately 11%) to allow for the introduction of a new competitive call for HE/FE collaborative projects (to be administered by the Business Development Unit and focused on moving SMEs with limited experience of Knowledge Transfer further along the innovation escalator) and also for an upgrading of one administrative post within the Business Development Unit to facilitate a more - appropriate level of support for the Business Development Manager.

3 TERMS OF REFERENCE AND METHODOLOGY

3.1 Introduction

RSM McClure Watters has been commissioned by the Department for Employment and Learning to complete an evaluation of the “Connected 2” programme.

In this section we set out the background to the evaluation, the terms of reference for the evaluation, a summary of the methodology and the report structure.

3.2 Background

3.2.1 Background to the “Connected 2” Programme

“Connected” is an initiative funded by the Department and delivered by Queen’s University, the University of Ulster and the six Further Education colleges, to help businesses improve their performance by providing “one-stop-shop” access to a broad portfolio of knowledge and technology support services, taking them right through the whole process from problem definition through to solution identification and implementation.

The current (second) round of the programme, “Connected 2”, commenced in April 2010 with a nominal budget of £4 million over four years (i.e. £1 million per annum).

3.2.2 Aim and Objectives of the “Connected 2” Programme

The overall aim of the programme is to enable the Higher Education (HE) and Further Education (FE) sectors to identify and meet, in a coordinated and holistic fashion, the Knowledge Transfer needs of businesses in particular, and also of the wider community.

The three main areas of activity within the programme are:

1. Enhancing the engagement of business and the wider community in Knowledge Transfer – Project Generation, Management and Development;
2. Knowledge Transfer project delivery; and
3. Internal Knowledge Transfer.

3.2.3 Anticipated Outcomes of the programme

The key objectives are supplemented by a number of “Anticipated Outcomes”:

- Universities and FE colleges continue to develop together their Knowledge Transfer missions for the benefit of business and the wider community.
- A strengthening of the holistic approach between the universities and FE Colleges to address the needs of business and the wider community.

- Enhanced engagements between business and the wider community and Northern Ireland's research base, strengthening current partnerships and opening pathways to new collaborations.
- A contribution to Northern Ireland's research base supporting a two-way flow of knowledge and ideas between researchers, academics, public and private enterprises that will work towards ensuring a vibrant research base and wealth creation for Northern Ireland.
- Enhanced capacity of the FE sector, through effective links with the HE sector, to provide timely and appropriate advice and support to SMEs on the adoption of new technology and innovative business practices.
- Greater facilitation of Knowledge Transfer activities by providing business and the wider community with increased opportunities to meet and network with the HE and FE sectors.
- Improved industrial performance through innovations and new collaborations by driving the flow of people, knowledge and experience across business and academia.
- The development of a broader range of sectoral initiatives seeking to address the future needs of business and the wider community and utilising the distinctive provision of the Connected partners.
- An enhanced provision of Connected services to the Social Economy sector by exploring new and innovative ways of embracing the socio-economic benefits of collaborating with this sector.
- The introduction of initiatives and development of networks and contacts aimed specifically at creating increased links to the Agri-Food and Biosciences Institute (AFBI) and the College of Agriculture, Food and Rural Enterprise (CAFRE).
- Greater awareness of Knowledge Transfer successes across internal and external stakeholders through increased marketing and promotional activity. The further development of enterprising and stimulating environments for Knowledge Transfer.
- The development of best practice in building HE / FE collaboration.
- A reduction in the perceived barriers to Knowledge Transfer by Northern Ireland's SME sector.
- An enhanced range of professional and working relationships between HE and FE Knowledge Transfer staff resulting in increased learning and capability.
- Enhanced international linkages across HE and FE and greater sharing of linkages and networks.
- An enhancement of the current monitoring and recording system to allow for better monitoring and reporting of progress against Connected targets.

3.3 Terms of Reference for the Evaluation

The Department for Employment and Learning requires an objective assessment of the efficiency, effectiveness, value for money and impact of the Connected 2 programme, as well as of the need for continued investment.

Therefore, this evaluation must consider and provide / report on the following:

- The effectiveness of the “Connected 2” programme in addressing its stated aim and objective.
- The extent to which each of the anticipated outcomes has been achieved, or is likely to be achieved by the end of the programme (March 2014).
- The justification for and benefits of the programme in terms of the need which it was intended to address.
- The net additionality of the programme through determining the base case of what would have happened to university / FE college liaison with business and the community in the absence of the programme, generating estimates of deadweight.
- The wider “spill-over” benefits of the funding, including additional knowledge transfer projects and other collaborations.
- A detailed consideration of the strategic context in which the programme is operating including its contribution to the local, national and EU policies, including, but not limited to:
 - FE Means Business - Department for Employment and Learning (2004);
 - FE Means Business Implementation Plan – Department for Employment and Learning (2006);
 - Sainsbury Review of Science and Innovation (2007);
 - UK Science and Innovation (“Innovation Nation”) White Paper (2008);
 - Wellings Report on Intellectual Property and Research Benefits (2008);
 - Standing Together: Universities Helping Business Through The Downturn (2008);
 - Regional Innovation Strategy for Northern Ireland Action Plan (2008 – 2011);
 - Varney Review of the Competitiveness of Northern Ireland (2008);
 - MATRIX Report (2008);
 - Higher Ambitions: The Future of Universities in a Knowledge Economy - Department for Business Innovation and Skills (2009);
 - Northern Ireland Executive’s Programme for Government (2011 – 2015) ;
 - Northern Ireland Economic Strategy - Department of Enterprise, Trade and Investment (2012);
 - Graduating to Success: A Higher Education Strategy for Northern Ireland - Department for Employment and Learning (2012);
 - Preparing for a Lower Corporation Tax Environment - Department for Employment and Learning (2012).
- The logical and operational fit of the programme within the wider context of DEL’s research and knowledge transfer funding portfolio and also that of DETI/Invest NI.
- The effectiveness of the programme in advancing the universities’ and FE colleges’ Knowledge Transfer strategies.

- An analysis of the overall impact of the programme, identifying the costs and benefits of the support, both quantifiable and unquantifiable, taking into account the monitoring frameworks operated by DEL.
- An independent assessment of value for money in terms of effectiveness, efficiency and economy focusing on input and output indicators, as well as outcomes.
- A benchmarking of the programme with any similar HE / FE collaborative initiatives in other regions.
- An independent assessment of how effectively the programme has been managed by DEL.
- A consideration of the appropriateness of the mechanisms / structures within NI's universities and FE colleges to manage the "Connected 2" funds.
- Evidenced-based recommendations on future delivery mechanisms for the joint HE / FE Knowledge Transfer activities currently delivered under the programme.
- Evidenced-based recommendations on the appropriate level of funding going forward.
- Evidenced-based recommendations on the appropriate funding mechanism. This element of the exercise should include an examination of future options, including the status quo (i.e. single joint bid from the two universities and Colleges Northern Ireland), competitive bids or the feasibility of formula allocations through the Department's annual grant letter to the Universities.

The Terms of Reference also specify that Section 75 requirements should be taken into account in the evaluation. In respect of any recommendations made, the appointed consultants will be required to consider whether there are any likely impacts on anti-poverty, social inclusion, equality of opportunity or good relations. In doing so, the consultants may recommend measures to mitigate against any adverse impacts.

3.4 Methodology

The methodology used to undertake this Evaluation was agreed with the Project Steering Group and reflected in an agreed Project Initiation Document. It involved 7 key work stages, which were as follows:

- Stage 1: Project Planning and Initiation: agreeing the detailed work programme, the desk research, selecting appropriate consultees and setting the timescales for completion of the evaluation.
- Stage 2: Strategic Context and Document Review: a review of the original rationale and the current rationale/need for government support for the Connected 2 Programme. We have examined policy information, statistics and research on local needs.
- Stage 3: Operational Fit and Innovation Ecosystem in NI: We have reviewed the logical and operational fit of Connected 2 within the wider context of DEL's research and knowledge transfer funding portfolio and also that of DETI/Invest NI.

- Stage 4: Output and Impact Assessment: We have assessed the overall impact of Connected 2; this involved desk based research and a comprehensive set of consultations.
 - Stage 4a: Desk Based Research and Analysis: We have reviewed information from programme documents, progress reports, Colleges NI's CRM system and from the HE / FE institutes to analyse the performance against costs. We have also sought and analysed available data to assess the effectiveness of DEL Programme Management, delivery structures within HE / FE institutes and Equality issues.
 - Stage 4b: Interviews with stakeholders and companies: We consulted with key stakeholders and undertook surveys with companies who benefited from Connected 2 as well as prospective beneficiaries; we also surveyed staff from HE Institutions and FE Colleges and Economic Development staff in local government.
- Stage 5: Benchmarking Against Similar HE/FE Collaborative Initiatives: We have documented evidence of good practice and lessons from a range of relevant initiatives and programmes across the UK, Ireland and other European countries.
- Stage 6: Analysis: We analysed the evidence from the stages above against the Terms of Reference to draw out conclusions and develop recommendations, covering the overall performance of the programme against its specific objectives.
- Stage 7: Presentation and Reporting: Emerging findings were presented to the Project Steering Group and a draft report prepared for comment before production of the final report.

3.5 Report Outline against the Terms of Reference

Table 3.1 sets out the sections of the report that address each element of the Terms of Reference.

Table 3.1: Report Sections against Terms of Reference

Terms Of Reference	Section
The effectiveness of the "Connected 2" programme in addressing its stated aim and objective.	Section 5.4
	Section 12
The extent to which each of the anticipated outcomes has been achieved, or is likely to be achieved by the end of the programme (March 2014).	Section 5.2
	Section 5.4
	Section 12
The justification for and benefits of the programme in terms of the need which it was intended to address.	Section 5.4
	Section 5.5

Terms Of Reference	Section
	Section 12
The net additionality of the programme through determining the base case of what would have happened to university / FE college liaison with business and the community in the absence of the programme, generating estimates of deadweight.	Section 9.2.1
The wider “spill-over” benefits of the funding, including additional knowledge transfer projects and other collaborations.	Section 5.4 Section 5.5
<p>A detailed consideration of the strategic context in which the programme is operating including its contribution to the local, national and EU policies, including, but not limited to:</p> <ul style="list-style-type: none"> • FE Means Business - Department for Employment and Learning (2004); • FE Means Business Implementation Plan – Department for Employment and Learning (2006); • Sainsbury Review of Science and Innovation (2007); • UK Science and Innovation (“Innovation Nation”) White Paper (2008); • Wellings Report on Intellectual Property and Research Benefits (2008); • Standing Together: Universities Helping Business Through The Downturn (2008); • Regional Innovation Strategy for Northern Ireland Action Plan (2008 – 2011); • Varney Review of the Competitiveness of Northern Ireland (2008); • MATRIX Report (2008); • Higher Ambitions: The Future of Universities in a Knowledge Economy - Department for Business Innovation and Skills (2009); • Northern Ireland Executive’s Programme for Government (2011 – 2015) ; • Northern Ireland Economic Strategy - Department of Enterprise, Trade and Investment (2012); • Graduating to Success: A Higher Education Strategy for Northern Ireland - Department for Employment and Learning (2012); • Preparing for a Lower Corporation Tax Environment - Department for Employment and Learning (2012) 	Section 4
The logical and operational fit of the programme within the wider context of DEL’s research and knowledge transfer funding portfolio and also that of DETI/Invest NI.	Section 7
The effectiveness of the programme in advancing the universities’ and FE colleges’ Knowledge Transfer strategies.	Section 4.4
An analysis of the overall impact of the programme, identifying the costs and benefits of the support, both quantifiable and unquantifiable, taking into account the monitoring	Section 5.4 Section 11

Terms Of Reference	Section
frameworks operated by DEL.	
An independent assessment of value for money in terms of effectiveness, efficiency and economy focusing on input and output indicators, as well as outcomes.	Section 9
A benchmarking of the programme with any similar HE / FE collaborative initiatives in other regions.	Section 10
An independent assessment of how effectively the programme has been managed by DEL.	Section 8 & 11
A consideration of the appropriateness of the mechanisms / structures within NI's universities and FE colleges to manage the "Connected 2" funds.	Section 8 & 11
Evidenced-based recommendations on future delivery mechanisms for the joint HE / FE Knowledge Transfer activities currently delivered under the programme.	Section 12
Evidenced-based recommendations on the appropriate level of funding going forward.	Section 12
Evidenced-based recommendations on the appropriate funding mechanism. This element of the exercise should include an examination of future options, including the status quo (i.e. single joint bid from the two universities and Colleges Northern Ireland), competitive bids or the feasibility of formula allocations through the Department's annual grant letter to the Universities.	Section 12

Source: Evaluation Terms of Reference

This report should be read in conjunction with the Appendices which contain detailed supporting information as follows:

- Appendices Part 1
 - 1 – Strategic Context;
 - 2 – Project Information;
 - 3 – Mapping of Knowledge Transfer Strategies in NI;
 - 4 – Benchmarking; and
 - 5 – Company Case Studies.
- Appendices Part 2
 - 1 - Consultees;
 - 2 - Survey Methodology and Response Rates;
 - 3 - Survey Results – Companies involved in Connected 2;
 - 4 – Survey Results – Prospective Companies;
 - 5 – Survey Results - FE and HE professional staff Involved in Connected 2 projects; and
 - 6 - Survey Results – Council EDOs.

3.6 Acknowledgements

We would like to thank the Project Steering Group members⁷ for being available for meetings and providing access to the information that we required for this evaluation.

We would also like to express our thanks to the wide range of stakeholders who provided their time to take part in interviews and surveys during the course of the evaluation.. A full list of consultees is included in Appendix 6 and details of survey respondents are included in Appendix 7.

⁷ Boyd McDowell (Acting Head of HE Research Policy); Chris Andrew (Head of FE Policy and Strategic Planning), Scott Carson (HE Research Policy); Alan Ramsey (Tertiary Education Analytical Services)

4 POLICY CONTEXT

4.1 Introduction

In this section we consider the original rationale and the current rationale / need for government support for the Connected 2 programme (Connected 2 commenced in April 2010 for 4 years). We have examined policy information, statistics and research on local needs. This is discussed in full in Appendix 2 and summarised in this section; it is examined under the following categories:

- UK Strategic and Policy context at the time that Connected 2 was launched;
- NI Strategic and Policy context at the time that Connected 2 was launched;
- EU Strategic and Policy context looking ahead – in particular Horizon2020;
- UK Strategic and Policy context looking ahead;
- NI Strategic and Policy context looking ahead;
- Universities' and FE colleges' Knowledge Transfer Strategies;
- Research on Good Practice and Reducing Barriers; and
- Statistics and Trends – Knowledge Transfer.

4.2 Context – at the time that Connected 2 was launched

4.2.1 UK Strategic and Policy Context

A number of key UK documents highlight the importance of knowledge transfer to the UK innovation ecosystem and economic prosperity. It is noted in the Sainsbury Review of Science and Innovation⁸ that although research is of great importance to any innovation ecosystem, little is to be gained from research in universities, research institutes and further education (FE) colleges if there are not strong links between the researchers and industry. This is why knowledge transfer, and incentives for it, is so important. The need for collaborative working to stimulate innovation, and thereby productivity and competitiveness is emphasised in *Standing Together: Universities Helping Businesses Through the Downturn*.⁹ In addition, a 2009 report by the Department for Business Innovation and Skills¹⁰ states that businesses 'need to be active partners with universities, not passive customers'. It is also suggested that knowledge transfer now forms an integral part of the strategic planning of many higher education institutions as:

"Four in five universities and higher education colleges now see the exchange of knowledge and expertise with business and the wider community as a central part of their mission."¹¹

⁸ Sainsbury, *Review of Science and Innovation* (2007)

⁹ Universities UK, *Standing Together: Universities Helping Businesses Through the Downturn* (2008)

¹⁰ Department for Business Innovation and Skills, *Higher Ambitions: The Future of Universities in a Knowledge Economy* (2009)

¹¹ Universities UK, *Standing Together: Universities Helping Businesses Through the Downturn* (2008)

4.2.2 NI Strategic and Policy Context

Many of the documents reviewed highlight the importance of education, learning and research to economic development. The Varney review¹² states that in 2008 the number of Knowledge Transfer Partnerships was higher than in many other UK regions. It suggests that high levels of economic support have contributed to the level of interaction between business and universities; however it acknowledges that there may be potential to do more to improve these relationships even further. Varney supports a commitment to an established “third stream” of funding for university knowledge transfer activities alongside core grants for teaching and basic research (the first and second streams). This has been implemented in full by DEL through the delivery of a fully formula driven Higher Education Innovation Fund for Northern Ireland, underpinning the business and community facing infrastructure in Queen’s University and the University of Ulster.

The Regional Innovation Strategy for Northern Ireland¹³ highlights that Northern Ireland’s businesses need to become more innovative and creative in order to compete in the global market and that there needs to be a championing and exploitation of innovation and R&D.

A number of priority sectors for the NI economy were outlined by MATRIX (the NI Science/Industry Panel):

- Advanced Engineering;
- Advanced Materials;
- Agri Food;
- ICT; and
- Life and Health Sciences.

Connected has been acknowledged by MATRIX as playing a key role in linking the HE and FE sectors with SMEs. Indeed, Connected focuses on the five priority sectors for Northern Ireland as identified by MATRIX. Subsequently, MATRIX has produced a number of other reports on priorities including:

- Telecoms;
- Technical Capability;
- Public Procurement of Innovative Science and Technology Solutions; and
- Sustainable Energy.

¹² Sir David Varney for HM Treasury, *Review of the Competitiveness of Northern Ireland* (April 2008)

¹³ Department of Enterprise, Trade and Investment, *Regional Innovation Strategy for Northern Ireland Action Plan (2008 – 2011)* (2008)

4.3 Context – Forward Looking

4.3.1 EU Strategic and Policy Context

A number of EU strategic and policy documents emphasise the importance of knowledge and innovation and its links to industry. One of the three core principles of the Europe 2020 strategy¹⁴ is Smart Growth; to develop an economy based on knowledge and innovation. It is stated that these are the drivers of future growth and so there is a need to ensure that innovative ideas are turned into new products and services. The Europe 2020 flagship initiative Innovation Union also highlights the need for cooperation between business and education institutions. It states that cooperation between the world of science and the world of business must be enhanced, obstacles removed and incentives put in place. The importance of research and innovation is the underpinning thesis of Horizon 2020. One of the three main strands of activity under this programme is Competitive Industries that aims to help innovative SMEs grow into world leading companies.

The Youth on the Move Strategy¹⁵ also notes that Europe's innovation capacity will require knowledge partnerships and stronger links between education, research and innovation (the 'knowledge triangle').

This is further emphasised in the document Integrated Industrial Policy for the Globalisation Era putting Competitiveness and Sustainability at Centre Stage¹⁶ which states that the Commission will promote initiatives bringing together higher education and businesses to improve Europe's highly skilled workforce, such as an e-skills initiative focused on advanced ICT users in industry, and the Universities-Business Forum pilot action funding Knowledge Alliances between universities and businesses.

The commitment of the EU to knowledge transfer is evident in its support for 'knowledge alliances' (i.e. ventures bringing together business and education/training institutions to develop new curricula addressing innovation skills gaps and matching labour market needs).¹⁷

4.3.2 UK Strategic and Policy Context

The Witty review¹⁸ indicates that universities can support growth by working with organisations such as Local Enterprise Partnerships (LEPs), the local bodies responsible for setting strategies to drive economic growth across England. The key emerging themes from this review are:

¹⁴ European Commission, *Europe 2020 Strategy: A Strategy for Smart, Sustainable, and Inclusive Growth* (2010)

¹⁵ European Commission, *Youth on the Move Strategy – An initiative to unleash the potential of young people to achieve smart, sustainable and inclusive growth in the European Union* (September 2010)

¹⁶ European Commission, *An Integrated Industrial Policy for the Globalisation Era putting Competitiveness and Sustainability at Centre Stage* (2010)

¹⁷ European Commission, *An Agenda for New Skills and Jobs- A European Contribution towards Full Employment* (2010)

¹⁸ Witty, Sir Andrew, *Independent Review of Universities and Growth: Preliminary Findings report* (2013)

- Sectoral strengths and clusters are a sound starting point for creating regional growth, and this implies collaboration between LEPs and Universities across the country;
- Universities can play a stronger role in realising the economic benefits of research insights for localities and the Industrial Strategy;
- There is room to improve SME benefit from universities in terms of talent and know how; and
- Incentives, and national organisations supporting research, innovation and growth, can be better aligned to deliver to their full potential for the Industrial Strategy and for local growth.

4.3.3 NI Strategic and Policy Context

The concept of stimulating Innovation, R&D and Creativity through knowledge transfer activity is also evident in the Northern Ireland Economic Strategy.¹⁹ It states that the Executive will support NI Universities and FE colleges to undertake 155 knowledge transfer projects on behalf of local businesses by 2014. It also identified a number of complementary actions to pursue over the medium to longer term to build a more knowledge based Northern Ireland economy. These include, amongst others:

- progressing the alignment of publically funded research with our economic priorities in order to increase the potential for greater knowledge transfer between business and academia;
- working to identify areas where there can be greater collaboration between the health sector and business in order to improve patient care and develop economic development opportunities; and
- examining the need for the establishment of an Innovation Council to ensure that, at the highest level, the Executive, Academia and Business work together to further embed innovation across the NI economy.

The Innovation Strategy for Northern Ireland 2013-2025 (Draft for Consultation, September 2013) identifies the key actions necessary to support Northern Ireland companies to become more innovative. The draft strategy states that, for Northern Ireland, with a relatively small business base engaging in Innovation and R&D, it is of paramount importance that firms, across all sectors, embrace innovation in all its forms. However, while many companies are innovative and compete on a global basis, there is a **need for more companies across all sectors engaged in innovation** because Northern Ireland firms have the lowest level of innovation activity amongst the UK regions^{20,21}.

The focus of this draft Innovation Strategy is on companies and how they can be better supported to engage in innovation in order to achieve the wider economic objectives

¹⁹ Department of Enterprise, Trade and Investment, *Northern Ireland Economic Strategy* (2012)

²⁰ Innovation Strategy for Northern Ireland 2013-2025 – Consultation Document (DETI, Sept 2013)

²¹ Community Innovation Survey 2012

for Northern Ireland. Within the innovation ecosystem, knowledge is **generated** in the form of ideas and **exchanged** through various interactions between individuals, companies, academics, government agencies and so forth. By definition, however, innovation does not occur until this knowledge has been **exploited** to add value, which is ultimately the key objective for Northern Ireland's economy.

The draft Strategy identifies actions under four themes. These are:

- Knowledge Generation - is the catalyst for growth. Focus needs to be on creating an environment which encourages research and creativity. In doing so we must provide our young people and workforce with the skills and attitudes to succeed – across the public and private sector.
- Knowledge Exchange - is about facilitating the exchange and access to quality information across all sectors in order to support economic growth.
- Knowledge Exploitation - is the transformation of knowledge into products and services which can add value and preferably be exported; and
- Cultural Change - is focused upon changed attitudes and behaviour towards collaboration, and the openness towards and use of new ideas, innovation and risk taking.

The importance of investing in research, innovation and knowledge transfer is reflected in the DETI proposals for the European Regional Development Fund (ERDF) Investment for Growth & Jobs Programme 2014-2020. Two of the three proposed priorities relate to **strengthening research, technological development & innovation and enhancing the competitiveness of SMEs**. To achieve this it proposes enhancing research and innovation, promoting technology transfer and facilitating the economic exploitation of new ideas.

4.4 Universities' and FE Colleges' Knowledge Transfer Strategies

Both QUB and UU are required to produce a Knowledge Transfer Strategy as a condition of NI HEIF funding. NI HEIF 3 Strategies were produced to cover the period from Academic Year (AY) 10/11 to AY 12/13, reflecting the context around the time Connected 2 was launched. NI HEIF 4 Strategies covering the period from AY 13/14 to AY 15/16 reflect the context looking ahead. These are briefly summarised below.

4.4.1 NI HEIF 3 Knowledge Transfer Strategies²²

The QUB NI HEIF 3 KT strategy had at its root the concept of partnership working. Indeed, it was considered that the successful development of a knowledge economy necessitated a joined up approach between all economic actors. Examples of effective collaboration between the NI universities were cited as the long standing joint initiatives linked to the operation of the KTP scheme (in which QUB is the leading UK HEI) and the NI Science Shop. The latter also demonstrated collaboration at both

²² For the NI HEIF 3 funding period i.e. Academic Year 10/11 to 12/13

national and European level. Additionally the partnership between HE and FE in the “Connected” programme was considered as unique within the UK region and the “social networking” opportunities through the NI Science Park Connect programme were also cited as leveraging the unique strengths of NI as a region.

UU’s NI HEIF 3 KT Strategy set out as its aim to continue to develop innovation, in its broadest sense, to the benefit of the University and the wider Region. UU’s KT Strategy built on the University’s significant innovation performance and continued to support a broad commercial agenda through engagement with staff within the University, external agencies and collaborators who could add value to UU’s innovative practice.

The strategy aimed to support an environment in which UU’s high-quality, progressive innovation would continue to develop and be effectively disseminated and applied. It would support the training of staff and students in accordance with national guidelines; the development of effective working collaborations with other relevant bodies, and ensure the University was very well placed to fully exploit the benefits of this growing enterprise.

The main activities within UU’s NI HEIF 3 KT Strategy were:

- **Business Outreach:** The focus of the Business Outreach team would be on developing commercial relationships with those businesses and community groups where greatest potential impact existed. The team would capture business requirements, diagnose solutions and broker links with the University.
- **Knowledge Transfer:** The Knowledge Transfer Team would develop and apply knowledge transfer products to ensure the University’s knowledge satisfied the requirements of clients; and
- **Technology Commercialisation:** The Technology Commercialisation team would focus on the creation of market-orientated Intellectual Capital and increase its rate of commercialisation.

4.4.2 NI HEIF 4 Knowledge Transfer Strategies²³

The QUB NI HEIF 4 KT strategy illustrates an integrated and proactive approach to knowledge transfer. It contains six key aims, one of which is to **stimulate increased business investment in research and development, particularly amongst SMEs**. It also outlines key areas of KT activity going forward which are:

- Research commercialisation and spin-outs;
- Consultancy and technical services;
- Knowledge Transfer Partnerships and FUSION;
- Business alliance;
- Business networking;

²³ For the NI HEIF 4 funding period i.e. Academic Year 13/14 to 15/16

- Impact management;
- The Science Shop; and
- Support for Student Enterprise.

It also states that the following areas of focus will be common across many of QUB's KT activities, linking the various areas of activity in service to QUB high-level goals:

- **Optimising existing business relationships**, and leveraging opportunities for increased engagement at higher stages on the "innovation ladder", particularly in relation to SMEs;
- **Creating new relationships and partnerships** at all levels in the innovation ecosystem;
- **Increasing academic engagement in knowledge exchange and impact realisation**, and creating more porous boundaries between academia and organisations in the private and public sectors to maximise the potential for the achievement of impact; and
- **Increasing public engagement with research and enterprise activities** and developing awareness of Queen's impact on the economy and society.

The UU HEIF 4 KT Strategy states that its goal is: 'to advance knowledge by achieving international excellence in our chosen areas of research and to transfer knowledge in support of economic, social and cultural development through the achievement of high quality research outputs in our chosen areas of research and by developing further both interdisciplinary and collaborative research and the translation of knowledge into intellectual assets.'

The principal aims in the UU KT Strategy are as follows:

- To establish the University as the knowledge provider of choice for SMEs across the island of Ireland;
- To be a sector leader in support of creative, digital and social enterprises;
- To be the lead provider of academic consultancy services across Ireland;
- To be a UK top 3 provider of Knowledge Transfer Partnership (KTP) programmes;
- To establish UU's leadership in **academic Open Innovation**;
- To partner with business to increase and expedite the **commercialisation of UU's Intellectual Assets**;
- To extend UU's innovation functions to support student and graduate entrepreneurship; and
- Through its innovation activities, to support the research impact agenda of the University of Ulster.

It also states that the key areas of KT activity will be:

- Business Engagement;
- Research Collaboration;

- Technology Commercialisation; and
- Investment and Enterprise.

4.5 Research on Good Practice and Reducing Barriers

4.5.1 Introduction

The following section reviews current papers and research to add value to this report in terms of good practice in building HE and FE Collaboration and reducing the perceived barriers to Knowledge transfer in Northern Ireland's SME sector (for further details see Appendix 2).

4.5.2 Evaluation of Good Practice in Collaborative Activities with HE and FE

We have reviewed relevant papers and research on best practice in building collaboration between HE / FE and Businesses. The 'Review of Business – University Collaboration Report'²⁴ identified the main challenges faced by all businesses across the UK as:

- Constantly increasing global competition;
- The impacts of the financial crisis; and
- International instability.

A thriving knowledge economy depends upon universities in three critical dimensions:

- The application and exploitation of research capability;
- The enterprise and entrepreneurial culture that is developed amongst students; and
- The applicability of the knowledge and skills of all its graduates.

Public funding for research in the University Sector in the UK is provided through two main routes. The first part of the Dual Support System is the allocation of funds through the Funding Councils in England, Scotland and Wales and the Department for Employment and Learning in Northern Ireland based upon periodic Research Assessment Exercises (RAEs²⁵). This is the mainstream Quality-related Research (QR) component of research funding. The second element of the Dual Support System is research funding allocated through the Research Councils which covers the whole of the UK plus other funders of research such as the European Commission, charities and, locally, Invest NI. The Dual Support System therefore combines forward and backward looking allocation methods.

²⁴ UK: A Review of Business – University Collaboration Professor Sir Tim Wilson – February 2012

²⁵ To be replaced in 2014 by the Research Excellence Framework

A report by the Council for Industry and Higher Education²⁶ clarifies how the various players, mechanisms, underpinning systems and processes within the Knowledge Transfer Partnership (KTP) programme contribute to the success of the individual KTP partnerships and projects.

The study found that KTP builds sustainable capacity to innovate through collaboration with the knowledge transfer base in those businesses which do not already have the ability to engage in successful open innovation. The KTP model achieves this through the way in which it combines a number of good practice approaches which overcome well recognised barriers in the knowledge transfer process of open innovation. The KTP model in its fullest sense, from the identification of business need to the completion of project and final reporting, is not merely a series of processes but one single integrated model of people, processes and mechanisms with important “feedback loops”. The success of the KTP model depends on this integration. Because KTP builds this sustainable capacity to innovate in businesses, there is an opportunity to increase the capacity for innovation in the UK if it is increasingly targeted to those businesses which:

- Are new to open innovation and have the potential to innovate but currently lack the managerial skills and expertise to do so;
- Lack the technical knowledge to exploit external resources from the knowledge base;
- Need a step-change in capability to transform the business for new growth opportunities.

KTP therefore was noted to have the ability to enable an increase in “absorptive capacity” in businesses and the UK innovation system, not only by means of the way it combines the good-practice processes to overcome the barriers to knowledge transfer, but also because the model stimulates and encourages organisational learning.

4.5.3 Barriers to Innovation

In the analysis a number of key barriers to innovation have emerged as the most common which affect Knowledge Transfer and Innovative activities in general in Northern Ireland and across the UK.

These key barriers to innovation are:

- **Business Opportunity Recognition:** - There is an issue with regard to the identification of opportunities and advantages of innovative activity by companies and business. Specifically there is a:

²⁶ CIHE: Key Attributes for Successful Knowledge Transfer Partnerships: August 2012 - Commissioned by the Technology Strategy Board and Research Councils and completed by Philip Ternouth, Cathy Garner, Laurie Wood and Peter Forbes

- **Lack of awareness of the relevance of new knowledge** – companies do not understand how innovation and R&D activities are relevant to their businesses. This can be because of a lack of knowledge or a lack of understanding as to how innovative activities can benefit their company because of the sector they operate in.
 - **Lack of understanding of potential in universities** – companies do not understand the benefits of collaboration with HE and FE Institutions.
 - **Weakness in networks and information** - There is a lack of communication between the companies, HE and FE Institutions and intermediary bodies which fund innovation as to the potential benefits; and
 - **Finding the right information and the right partner** – Lack of a suitable partner in the local area in which the company operates can inhibit innovative practices.
- Co-recognition between business and universities – Difficulties around company and university sensitive issues can also provide a key barrier to innovative activity. Specifically:
 - **Institutional Rules and Regulation** – Regulations within the university / college regarding collaborative activities with outside organisations can complicate the process;
 - **Confidentiality Issues** – Issues around business sensitive or university / college sensitive information can also provide a barrier to collaborative research;
 - **Intellectual Property Rights** – This is often seen as the biggest problem facing company and university / college collaboration. The agreement on the ownership of intellectual property between the company and the HEI can lead to many difficulties in the relationship between the partners. A firm agreement on the ownership of IP, in contract form, is normally essential for the smooth and successful management of a company / HEI research and innovation partnership.
 - Co-Formulation - Issues around the relationships and timescales of the project which may lead to difficulties in the R&D&I partnership. Often this is simple things such as a clash of personalities or bad working relationships, but it can also be disagreements over timescales for research (private sector companies often like short turnaround on research as they operate in a market where innovation is key to success, whereas HEIs often have a longer timescale to complete research).
 - Co-creation - Issues around the ability of the business to absorb the learning of the HEI research. This requires the business team to have a knowledge of the HEI process and terminology and likewise that the HEI team understands the market in which the business operates. Difference or difficulties in this can lead to a breakdown of communication or a divergence in the direction of the research.

Considering all the findings of the research analysed there are a number of key activities that would help to reduce the barriers described above. These include:

- A strong informational base, accessible by companies, so that the benefits of collaborative research with universities and other colleges can be detailed and described. Where this information exists there should be adequate signposting to this so that businesses are aware of it.
- Rules and regulations in HEIs could be made more flexible to ease access for businesses to the skills, expertise and equipment that HEIs have to offer businesses.
- Issues around confidentiality should be addressed at an early stage in a formal agreement so that all parties within the partnership understand the concerns and methods for dealing with confidentiality issues.
- A formal contracted agreement should be set out for the ownership of Intellectual Property Rights so that there is no disagreement or concern from either party involved in the collaborative partnership regarding this issue.
- Business and HEIs should ensure that the partnership is suitable and that parties understand the context surrounding the research and development activities and there is no divergence in activities; and
- There should be regular communication between partners to ensure that timescales are agreed and that all partners are aware of pressures on time and resource and the impact they could have on the delivery of the research.

4.5.4 Summary

Significant barriers to collaborative activities between companies and HE and FE Institutions continue to exist. Among the main obstacles are the companies' lack of awareness of the benefits of collaborative research which stems from poor marketing and networking and the issues around confidentiality and Intellectual Property Rights. Universities and colleges are an integral part of the supply chain to businesses, a supply chain that has the capability to support business health and therefore economic prosperity. It is therefore important that businesses understand the benefits and that universities have channels available to them to approach companies to propose collaborative work.

4.6 Statistics and Trends – Knowledge Transfer

4.6.1 Introduction

As part of the investigation into the need for the 'Connected 2' Programme RSM McClure Watters assessed several key statistical papers in order to assess the position of R&D and Innovation between Higher Education (HE) and Further Education (FE) institutions and businesses and the wider community in Northern Ireland. The papers we assessed included:

- The UK Innovation Strategy 2011 – Northern Ireland Results^{27,28,29};
- The DETI Business Expenditure on R&D and HE Expenditure on R&D Report 2011³⁰;
- The Innovation in NI Tradable Services Report, DETI 2007³¹; and
- Higher Education – Business & Community Interaction Survey for Academic Year 2011/12 – NI Analysis³² (HE-BCI).

4.6.2 The Extent of R&D

The UK Innovation Strategy 2011 – Northern Ireland Results Report highlights the key impact of the economic crisis on levels of R&D in Northern Ireland. Between 2006 and 2008, 38% of companies in Northern Ireland were classed as Innovation Active. In line with the EU and UK definitions, innovation activity refers to whether enterprises were engaged in any of the following:

- Introduction of new or significantly improved products (goods and/or services) or processes;
- Engagement in innovation projects not yet complete or abandoned; or
- New and significantly improved forms of organisation, business structures or practices and marketing concepts or strategies.

However between 2008 and 2010 only 27% of companies in Northern Ireland were classed as innovation active, a decrease of 11%. In cash terms, spending on R&D in Northern Ireland has continued to increase even though the number of innovative companies has decreased as of 2010.

In the DETI Business Expenditure on R&D Report 2010³³ total expenditure on R&D in cash terms in Northern Ireland was £521.4 million, this increased to £567.5 million in 2011, an increase of £46.1 million (9%). Breaking the total figure down, £388.8million (69%) of the 2011 spend was spent by NI Businesses, £164.3 million (29%) was spent by the Higher Education Sector and £14.4 million (3%) was Government Expenditure. In 2011 the NI Business sector again accounted for a greater share of total R&D expenditure (69%) than the Higher Education sector (29%). In 2010 the figures were 66% and 31% respectively. Over the year to 2011, there was an increase in

²⁷ The UK Innovation Survey 2011 is part of a wider Community Innovation Survey (CIS) covering a range of European countries. This is the seventh iteration of the survey covering the period 2008-10, providing information on the extent of business innovation, factors perceived to be limiting innovation, and the impact of innovation on businesses.

²⁸ Northern Ireland had the equal second lowest business innovation activity rate of the UK regions and countries. There is considerable variation in innovation activity across detailed NI industry sectors. However, at the broad industry group level, 27% cent of enterprises in the Production and Construction grouping were innovation active compared to 26% in Distribution and Services.

²⁹ http://www.detini.gov.uk/uk_innovation_survey_2011_ni_results.pdf

³⁰ http://www.detini.gov.uk/2011_r_d_publication_publication_dec2012_v2.pdf

³¹ http://www.detini.gov.uk/innovation_in_ni_tradable_services_8211_phase_1_report.pdf

³² <http://www.delni.gov.uk/es/he-business-and-community-interaction-survey-2011-12-northern-ireland-analysis.pdf>

³³ http://www.detini.gov.uk/spr_2010_r_d_november_2011.pdf

expenditure by Businesses while decreases occurred in Higher Education and Government expenditure. In real terms, expenditure by Businesses increased by £35.6m (10%), Higher Education decreased marginally by £1.8m (-1%) and Government expenditure decreased by £1.6m (-10%) in real terms over the year.

Although these figures are encouraging for R&D in Northern Ireland the proportion of the R&D completed in-house³⁴ accounted for 91% (£354.1m) of total business expenditure in 2011. In-house expenditure increased by 9% between 2010 and 2011. One of the main goals of the Connected 2 Programme is to increase collaborative research between HE and FE sectors and businesses and the wider community in Northern Ireland. Given that 91% of the R&D activity was completed in house it would suggest that there is a need to promote collaborative research.

At a sectoral level, the majority of R&D was carried out by the manufacturing sector (79%) with the remainder (21%) carried out in the Services and Other sectors. This low level of R&D in the services sector is supported by the findings of the Innovation in NI Tradable Services Report, which states that aggregate statistics suggest a consistent picture with firms in the Northern Ireland service sector having significantly lower levels of innovative activity than their UK counterparts across all of the measures considered.

Company size also affected the level of R&D carried out by Northern Ireland companies. The ten largest spending companies in Northern Ireland accounted for 62% of the total R&D spend in Northern Ireland in 2011. Expenditure by businesses with fewer than 250 employees increased by £7.2 million in 2010 / 2011.

Local companies still only account for a small proportion of R&D in Northern Ireland. In 2011 the R&D spend by local companies decreased by 8% and now only 26% of R&D spend in Northern Ireland is spent by local companies. Externally owned companies accounted for 74% of the Business R&D Expenditure in Northern Ireland in 2011.

4.6.3 Higher Education R&D/KT Activities

R&D is very important to the Higher Education Sector in Northern Ireland. According to the DETI Expenditure on R&D Report 2011, the HE Sector accounts for 29% (£163.4 million) of total R&D Expenditure. This is an increase in spending of £2.5m (2%) on the 2010 figure.

The Higher Education - Business and Community Interaction Survey (HE-BCI)³⁵ details the volume and value of research and knowledge transfer links between the Higher Education Institutions in the UK and businesses and the wider community.

In 2011/12, the value of contract research in the UK between HEIs and business and the wider community has risen by nearly 6 per cent from just over £1.05 billion in 2010-

³⁴ Within a company

³⁵ Based upon Table 1b :Research related activities - contract research by HE institution

11 to £1.11 billion³⁶. In Northern Ireland, although on a smaller scale, the value of contract research is still significantly large, almost £20 million in 2011/2012. There are three HE institutions engaged in contract research in Northern Ireland:

- Queen's University Belfast
- The Ulster University; and
- Stranmillis University College

Queen's University Belfast is a member of the Russell Group³⁷³⁸ of research driven universities in the UK. As such it has a unique focus on R&D across a multiplicity of sectors in Northern Ireland. According to the HE-BCI Survey, Queen's University engaged in research with 11 SMEs³⁹ in Northern Ireland in 2011/2012, 302 other (Non-SME) commercial businesses⁴⁰ and 291 non-commercial organisations⁴¹. The total value of the research contracts to Queen's University was £15m 2011/2012.

The University of Ulster is Northern Ireland's other HE institution and it too has a focus on world class research. According to the HE-BCI Survey, the University of Ulster engaged in research with 16 SMEs³⁹ in Northern Ireland in 2011/2012, 17 other (Non-SME) commercial businesses⁴⁰ and 164 non-commercial organisations⁴¹. The total value of the research contracts to the University of Ulster was £4.5m in 2011/2012.

Stranmillis University College is a specialist teaching college which is operated as a separate financial entity under the jurisdiction of Queen's University. According to the HE-BCI Survey, Stranmillis University College engaged in research with 2 SMEs³⁹, 3 other (Non-SMEs) commercial businesses⁴⁰ and 12 Non-commercial organisations⁴¹. The total value of the research contracts to Stranmillis University College was £138,000 in 2011/2012.

While the latest HE-BCI report shows that the overall income received by local universities from business and community interaction has fallen from a record high of £102 million in AY 2010/11 to £87 million in AY 2011/12 - the underlying trend is still very much upwards having increased from £38m in AY 2002/03 and again from £61m in AY 2007/08.

Furthermore, the report shows that Northern Ireland universities are still punching above their weight compared to their UK counterparts with Queen's University's and the University of Ulster's income from business and community interaction now representing 2.5% of the UK total. This is impressive considering the Northern Ireland

³⁶ <http://www.hefce.ac.uk/pubs/year/2013/201311/>

³⁷ The Russell Group represents 24 leading UK universities which are committed to maintaining the very best research, an outstanding teaching and learning experience and unrivalled links with business and the public sector.

³⁸ <http://www.russellgroup.ac.uk/>

³⁹ Small and medium enterprises (SMEs) includes enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million. SMEs include micro, small and medium enterprises and sole traders

⁴⁰ Other (non-SME) commercial businesses includes other commercial businesses which do not match the above definition of SMEs.

⁴¹ Non-commercial organisations includes organisations from which its shareholders or trustees do not benefit financially

economy currently represents 2.2% of UK economic output or Gross Value Added and accounts for 2.0% of full time equivalent academics in the UK.

Contributory factors to this strong overall performance have been:

- Income from collaborative research of some £35.4 million, representing 3.6% of the UK total.
- Income from intellectual property (including the sale of shares) growing exponentially since AY 2002/03 (by 2,550%) to some £5.4 million now representing a substantial 6.9% of the UK total (this is a vital indicator for the value added by a university when interacting with a range of external partners. It is commonly in the form of licences granted to private companies, allowing them to exploit an invention protected by a patent).
- The number of spin-off companies still active after 3 years having increased by 55% since AY 2002/03, now standing at 48 spin-offs representing 4.8% of the UK total.

This performance reflects a high level of collaboration by the two universities with a wide range of industrial sectors. University income from the use of facilities and equipment (for example prototyping equipment or digital media suites) has also increased significantly over the last year - by around one-quarter to £7.3 million. Consultancy income is also up by 4% which is highly creditable given the severity and duration of the current economic downturn.

It is also notable that the proportion of income universities received from direct engagement with small and medium sized businesses, as reflected by HE-BCI, increased by over one-third in 2011/12.

While it is difficult to gauge the impact of Connected on this high level HE-BCI data (particularly given that HE-BCI excludes FE college activities), there is a clear need, as well as policy prerogative, to seek to improve Northern Ireland's innovation performance.

The priority given to this by the NI Executive is reflected in DEL's recent decision to increase by close to 30% the Department's core funding for Queen's University's and the University of Ulster's business and community facing activities from the start of AY 2013/14 through Round 4 of the Higher Education Innovation Fund. (There had been no increase in funding in the previous nine years). The aim of the Higher Education Innovation Fund is to encourage the sector to increase its capability to respond to the needs of business and the wider community, with a clear focus on the promotion of wealth creation. The long term aim of this funding is to improve Northern Ireland's innovation performance as a key element in raising productivity and delivering economic growth.

In supporting the universities' underlying KT infrastructure, NI HEIF very much complements the specific role of Connected in driving greater collaboration between the HE and FE sectors focussed on the needs of business and the wider community.

This context would suggest that, dependent on the performance of Connected as assessed in this evaluation, there may be a case for DEL also to consider further and/or increased investment in knowledge transfer through Connected itself.

4.6.4 Barriers to Innovation

The barriers to innovation in Northern Ireland have largely been shaped by the financial crisis and the effects of the economic downturn. Many sectors in Northern Ireland faced exceptionally tough market conditions and as such often neglected R&D funding to spend the money on more immediate operational costs.

In the UK Innovation Survey 2011 – Northern Ireland Results, the barriers to innovation are broken down into four main categories:

- Cost Factors;
- Knowledge Factors
- Market Factors; and
- Other Factors.

Of the companies surveyed in Northern Ireland, **cost factors** came out as the largest barrier to R&D. Specifically, 15% of all businesses surveyed stated that the direct cost of innovation was too high, 17% of the companies surveyed stated that the cost of finance was too high, 15% of the companies surveyed stated that there were excessive perceived economic risks and 17% stated that availability of finance was the number one barrier to innovation in Northern Ireland.

Market Factors also were indicated as significant barriers to innovation in Northern Ireland. 6% of the companies surveyed stated that because of establish companies already operating in the market, they felt there was no point in pursuing R&D whilst a further 6% indicated that uncertainty over demand for innovative good or services was also a significant factor for companies in Northern Ireland not pursuing R&D.

The Innovation in NI Tradable Services Report identifies several key barriers affecting companies in Northern Ireland. For innovating firms, a number of internal and external factors were highlighted as acting as a barrier to innovation. In terms of internal barriers, the most commonly cited constraint related to **human resources and employee related issues**. For example, for some firms problems existed in recruiting suitably skilled labour, with this being closely aligned to a high investment in training. The need to invest heavily in employee training represented a barrier to innovation in two ways. First, the lack of skills often prevented potential innovations being identified and implemented. Second, where new services or managerial and organisational innovations were introduced (typically initiated through a top-down management approach) training was often required to ensure staff adapted to new processes.

Other issues identified by the tradable service firms as being a significant barrier to innovation related to **business scale**. Across the sectors, smaller firms highlighted the scale of their business as a barrier to bidding for large contracts. This is reinforced by

the statistics presented earlier which state that the ten largest spending companies in Northern Ireland accounted for 62% of the R&D spending.

Interestingly unlike the UK Innovation Survey 2011 – Northern Ireland Results the Innovation in NI Tradable Services Report states that **financial factors** were not widely cited by the firms as the main barrier to innovation.

External barriers to innovation were less frequently cited than internal barriers. At the same time, across the tradable service sectors, firms identified the **receptiveness of the local market** as a barrier to innovation. Although different in nature these findings are in agreement with those of the UK Innovation Survey 2011 – Northern Ireland Results which indicated that **market factors** did contribute to the barriers for Innovation.

Other external barriers to innovation across the tradable service sectors related to **regulatory barriers**, the **difficulties of building strong links with clients**, and **ever increasing competition**.

4.6.5 Stakeholders Involved

Although this is not the focus of these statistical reports the UK Innovation Survey 2011 – Northern Ireland Results does identify the types of partners in collaborative research. 45% of collaborative, broader innovators reported co-operation arrangements compared to 51% in 2006-08. Among broader innovators who collaborated, 74% had agreements that operated at a local/regional level, which was 23 percentage points higher than in the UK.

The most frequent partners for co-operation among NI (and UK) broader innovating enterprises were clients or customers (65% of NI and 72% of UK enterprises) followed by suppliers (58% of NI and 61% of UK enterprises). The least likely co-operation arrangement in NI and the UK was with government or public research institutes. Interestingly the percentage of NI respondents stating that they collaborated with Universities or other Higher Education Institutions was 12% compared to 8% across the UK as a whole.

4.6.6 Impact on Rationale for ‘Connected 2’

The analysis presented above of the 4 statistical papers into innovation and R&D in Northern Ireland show several key points:

- There has been a marked reduction in companies classed as innovation active in Northern Ireland due to increased business pressures and a more inhospitable market;
- The total spend on company/business R&D has increased in Northern Ireland however it is dominated (91%) by in-house research rather than collaborative innovation projects;

- Business and community interaction is a valuable activity for the Universities and Higher Education Institutions in Northern Ireland, estimated to be valued at £87 million in AY 2011/2012;
- There are key barriers to innovation in Northern Ireland including financial barriers and market barriers.
- NI companies collaborate with Universities and HE Institutions more than companies on the whole across the UK.

As can be seen from the research above, there is need for support for companies, especially SMEs and locally based companies, who find it difficult to establish collaborative partnerships for R&D, innovation and knowledge transfer projects. The Connected 2 Programme can provide valuable support to reduce the barriers highlighted and encourage more companies to undertake research and innovation in order to make them more competitive, production efficient and profitable.

Some of the activities supported under the Connected 2 Programme which would help to reduce the barriers identified in this research include:

- Signposting existing financial supports to aid research between companies and the HE and FE organisations, such as KTPs, Innovation Vouchers and Invest NI's Grant for R&D.
- Training and providing best practice information to address the skills shortage and high cost of staff training which have been cited as key barriers to innovation and R&D.
- Supporting project generation and development and supporting companies in identifying demand in order to help negate companies' concerns over market receptiveness / demand for innovative goods and services. This was achieved through development of sector expertise maps, Content Management Systems, stakeholder meetings etc.

The Connected 2 Programme aims to tackle the barriers to innovation and R&D in Northern Ireland and make companies in Northern Ireland more productive and competitive through new processes, products and other innovative actions. The need for this support is clear given the evidence presented above. The financial climate has not yet stabilised and companies are increasingly faced with more competition and continued strains on resources. This support from Connected 2 is vital, especially for SMEs and local business who wish to innovate and invest in R&D in a collaborative manner with the HE and FE Institutions in Northern Ireland.

5 PROGRAMME AND PROJECT INFORMATION

5.1 Introduction

“Connected” is an initiative funded by the Department for Employment and Learning and delivered by Queen’s University, the University of Ulster and the six Further Education colleges, to help businesses improve their performance by providing “one-stop-shop” access to a broad portfolio of knowledge and technology support services, taking them right through the whole process from problem definition through to solution identification and implementation.

A pilot of this programme ran for 3 years (April 2007 to March 2010). It had a budget of £3 million (i.e. £1 million per annum) with the overall aim of enabling the HE and FE sectors to identify and meet, in a coordinated and holistic fashion, the knowledge transfer needs of businesses in particular, and also of the wider community. An evaluation of the programme was conducted by FGS McClure Watters in September 2009 which found that Connected had been effective in meeting its agreed targets. Subsequently, the two universities and ANIC provided a full NIGEAE⁴² Economic Appraisal (EA) for a second round of funding. Following approval from the (then) Minister, Sir Reg Empey, a four year proposal was developed by promoters based on the preferred option and was approved by DEL’s economists (Tertiary Education Analytical Services Branch) in consultation with Higher Education Research Policy Branch. Connected 2 commenced on schedule from 1 April 2010.

The objective of Connected 2 is to develop and build upon the achievements of the pilot project and to continue to facilitate Northern Ireland’s two universities to extend the range and depth of their collaboration with the Further Education sector with a primary focus on meeting the needs of business innovation

The overall aim of the programme remained to enable the Higher Educational (HE) and Further Education (FE) sectors to identify and meet, in a coordinated and holistic fashion, the Knowledge Transfer needs of businesses in particular, and also of the wider community. Similarly, the three main areas of activity also remained as:

- Enhancing the engagement of business and the wider community in Knowledge Transfer – Project Generation, Management and Development (in the pilot programme this was known as enquiry generation and handling);
- Knowledge Transfer project delivery; and
- Internal Knowledge Transfer.

However in the Connected 2 programme these three areas are more interlinked and integrated across all elements of programme delivery than they were during the pilot phase. Key changes from the pilot phase include:

⁴² The Northern Ireland Guide to Expenditure Appraisal and Evaluation which has now superseded the NI Practical Guide to the Green Book

- Central Unit renamed the Business Development Unit. More challenging targets were set for the Unit under Connected 2 and to meet these it worked in greater collaboration with all project partners in achieving higher exposure for Connected;
- Connected 2 took a sector focused approach and become more project based. This is reflected in the target sectors which focused on those set out in the MATRIX Review; and
- In relation to Internal Knowledge Transfer, activity undertaken, for the most part, aimed to be more interlinked with the two other key areas of Connected activity (i.e. 'project generation, management and development' and 'Knowledge Transfer project delivery').

In this section, we present information on:

- Performance of Connected 2 against operational targets set;
- Programme activity including analysis of Connected 2 project activity;
- HE / FE Collaboration and Internal Knowledge Transfer;
- Key Findings from surveys;
- Stakeholder Consultations - key findings; and
- Company Case Studies.

5.2 Performance of Connected 2 against Operational Targets Set

5.2.1 Introduction – Performance: Year 1 – Year 4

The tables in this section provide a summary of the Connected 2 Programme and its annual performance against set targets covering the period from April 2010 to June 2013. For each of the three strands within Connected 2, there is a table which sets out the indicators for that strand, the target each year, the actual performance and an assessment of whether the target was met or not.

An overall summary table brings together the information for each of the three strands, outlining the number of targets met, close to being met or not met for each strand of the Programme.

It should be noted that only Quarter 1 data is available for Year 4, meaning that in a number of instances targets have not yet been met; however there is scope for these to be achieved in the remaining quarters. To provide an accurate reflection of Programme progress to date, the variance for Year 4 is measured against one quarter of the target.

5.2.2 Performance – Strand 1: Project Generation, Management and Development

Table 5.2 details the targets for Strand 1 of the Programme, what was achieved during Years 1 – 3 and quarter 1 of Year 4 and whether the targets were met, close to being met, not met or not yet met. Overall, in Strand 1 the Programme met or exceeded the majority of its targets. Of the 12 targets per annum:

- In Year 1, 7 were met / exceeded, 4 were close to target and 1 was not met;
- In Year 2, 10 were met / exceeded and 2 were close to target;
- In Year 3, 10 were met / exceeded and 1 was close to target and 1 was not met; and
- In Year 4 Q1, 4 were met / exceeded, 7 were close to target and 1 was not met.

In the first year of the Connected Programme one **HE/FE cluster** (creative design) was developed, which by the end of Year 1 had delivered a number of training programmes across the Internal Knowledge Transfer element of the project. A second HE/FE cluster was also being explored towards the end of Year 1 within the renewable energy sector and this was fully established during Year 2. At the end of Year 2, the HE/FE creative design cluster was transferred to BMC to allow the Connected Business Manager to focus on the energy cluster. In Year 3, two additional clusters were established, the Industrial Advisory Board (IAB), which had a focus on the development of a training programme with members from the entire construction sector (16 representatives), and a Renewable Development Forum which was still in the early stages of development at the end of Year 3.

In Year 1 the contract to develop the **Content Management System** was awarded to Metecpus and by the end of the first year it was fully designed and tested. In subsequent years there was on-going development of the system, including the building of bespoke reports and work on finalising user accounts. In addition, training on the site was delivered to all Programme partners in Year 2.

Development of the **Sector Expertise Map** which linked AFBI and CAFRE to the Connected Programme and included them in a map of R&D provision in NI began in Year 1. The Connected Business Development Manager set up a HE/FE working group to assist in the development of this. By the end of the first year the style, outline and objectives for the map had been agreed and a first draft was expected to be produced early in Year 2. The map was published on the Connected website. Thereafter there was on-going development of the map, including a review of information currently held.

In total 12 **stakeholder meetings** were held during Years 1 – 3 and in Q1 of Year 4. These included management committee meetings⁴³ and steering committee meetings. The programme was close to achieving its target number of meetings across the 3 years and Q1 of Year 4.

The Programme successfully conducted **3 international recce visits** in Years 1 – 3. These were to Germany (Year 1) and Japan (Years 2&3), thereby exceeding its target. From the perspective of the participants the visits were very successful and in respect of the visit to Japan in Year 2 participants felt their objectives for the visit had been met

⁴³ The Management Committee is as follows: Gerry Campbell and Lynn Connaughton CNI. Eddie Friel and Michael Patterson Ulster and Tom Edgar and Michael McCleave Queen's. Catherine McCoe acts as administrator.

or had the potential to be realised in the long term.⁴⁴ Moreover, a significant outcome of this visit was the agreement that Northern Ireland should host the third International Symposium on Expertise in Sustainable Society. The table shows the number of international recce visits during Years 1 – 3 (1 in each year) - to Germany (year 2) and Japan (year 1 and 3). There were no international recce visits in Q1 Y4.

Table 5.1: International Recce Visits

International Visit (Region)	Date	Description
Year 1		
Germany	6th – 8th September 2010	The study visit focused on engineering and technology for which Germany is a world renowned leader. This trip developed and built networks for a HE/FE visit in February/March 2011. ⁴⁵
Year 2		
Japan	January 2012	The study visit focused on Disaster Recovery and Management using GIS and statistical analysis in land and property; Robotics – Stochastic regression modelling; and Fibre optic technologies FTTX.
Year 3		
Japan	23rd November - 2nd December 2012	The cohort involved Researchers and Directors from the University of Ulster, Queen’s University, Colleges Northern Ireland and South Eastern Regional College. This visit was most successful with meetings held with the following companies, Colleges and Universities: Invest Northern Ireland, British Council, Dupont Japan, Japan Institute of Science and Technology, Toyama National College, Nagaoka University of Technology, Union Peck, Kanazawa University, Hive Nagoka, Eco-Town Exchange, Jaist, Adeka Corporations and Takigi Seiko.

Source: Connected Quarterly Reports (April 2010- June 2013)

The Programme had fewer **Knowledge Transfer Team meetings** than anticipated (target of four per annum). The target was not met in Years 1 and 3, though it was met in Year 2 and none were held in Q1 Year 4. This was due to a number of factors including the high volume of Connected events taking place that year making it difficult to coordinate diary meetings, staff changes at University of Ulster and the restructuring of the Connected Steering Committee.

⁴⁴ HE-FE Collaboration Fund Progress Report October – December 2012

⁴⁵ An international recce visit to Germany took place on Sunday 27th February to Thursday 3rd March 2011. 13 Connected project staff across HE and FE took part in the trip which was hosted for the Connected project by the European Business School (EBS). The trip comprised of both classroom sessions and industry visits.

Overall the Programme met the targeted number of **newsletters** to be produced in Years 1 – 3 (with one less in Year 1 and an additional one in Year 2), highlighting the achievements of the Programme on a six-monthly basis.

The Programme exceeded the **number of events attended and delivered** in Years 1 – 3 and Q1 of Year 4. The highest proportion of events was attended in Year 1 (37%) with an even distribution across Years 2 and 3 and a positive start for the first quarter of Year 4. Events were attended by QUB, UU and the colleges to represent Connected on both a collaborative (i.e. more than one of the partners attended the same event) and an individual basis (in Year 2), although only the collaborative events are recorded against the target. Events attended included Knowledge Transfer Awards, Social Media events and conferences. Events delivered included lectures, conferences and seminars, some of which directly related to a Sector Specific Project. This indicates that networking and Programme promotion opportunities were utilised on a regular basis. Moreover, the number of events collaboratively delivered reflects the growing relationship between HE / FE / AFBI & CAFRE (for example, the “Food for Thought” energy and waste showcase event was jointly delivered in Q1 of Year 3 and raised awareness of energy and waste support services available to food business).

Editorial and press articles relating to the Programme gathered pace as it progressed, and while it did not meet the target in Year 1 (four against a target of 10) this was met or exceeded in Years 2 and 3. Publicity included a number of editorial and press articles published in national newspapers which promoted the project and its role in the current economic climate as well as university and college publications which highlighted key developments within the Programme.

The number of **case studies** published on the Connected website have either met or exceeded the target set for it in Years 1 – 3, most notably in Year 3 when the target was exceeded by seven (140%). These showcase the achievements of the individual projects and the increasing number by the end of Year 3 highlights the progression of the Programme.

The Programme also provided the opportunity for partners to attend **internal HE/FE events** and in Years 1 – 3 five were attended against a target of six. These included events such as meetings between project partners and Invest NI which provided the opportunity for institutions to showcase their expertise, develop contacts and receive guidance.

Table 5.2 Assessment of Performance vs. Targets – Years 1 – 4: Strand 1: Project Generation, Management and Development

Target	Year 1 Target	Year 1 Actual	Variance	Year 2 Target	Year 2 Actual	Variance	Year 3 Target	Year 3 Actual	Variance	Year 4 Target	Year 4 Target (Q1 only)	Year 4 Actual (Q1 only)	Variance (Q1 only)
Development of HE/FE clusters	1	1	Met Target	1	1	Met Target	1	2	Exceeded Target by 1	1	0.25	0	Target Not Yet Met
Development of Content Management System	1	CMS developed by Metecplus; system fully designed & tested.	Met Target	On-going development	Continues to be developed / work well and is utilised by project staff	Met Target	On-going Development ⁴⁶	On-going	Met Target	On-going	On-going	On-going	Met Target
Development of sector expertise map ⁴⁷	1	On-going: Working group established; style, outline & objectives for map agreed.	Close to Target (first draft due early in Yr 2)	On-going development	On-going	Met Target	On-going development	On-Going. Version 1 on website	Met Target	On-going development	On-going Development	On-Going. Version 1 on website	Met Target
Stakeholder meetings	5	4	Close to Target (-1)	5	4	Close to Target (-1)	5	3	Close to Target (-2)	5	1.25	1	Close to Target (-0.25)
International innovation recce visits ⁴⁸	1	1	Met Target	1	1	Met Target	1	1	Met Target	1	0.25	0	Close to Target (-0.25)

⁴⁶ A recommendation from the evaluation of the Connected pilot was to introduce a Customer Relationship Management (CRM) system that would monitor and record progress against objectives and targets. The system was developed by an external company following a tendering process in Year 1 and continued to be developed in the subsequent years (aspects such as the building of bespoke reports and work on finalising user accounts. In addition, training on the site was delivered to all Programme partners in Year 2).

⁴⁷ A recommendation from the evaluation of the Connected pilot was to develop a Sector Expertise Map which linked AFBI and CAFRE to the Connected Programme and included them in a map of R&D provision in NI. The Connected Business Development Manager set up a HE/FE working group to assist in the development of this.

⁴⁸ Collaborative visits were to Germany in Year 1 and Japan in Years 2 & 3. As a result of the latter visit to Japan the third International Symposium on Expertise in Sustainable Society was held in Lisburn in June 2013. In addition, a visit to Germany took place in September 2013 with a focus on engineering.

Target	Year 1 Target	Year Actual 1	Variance	Year Target 2	Year Actual 2	Variance	Year Target 3	Year 3 Actual	Variance	Year 4 Target	Year 4 Target (Q1 only)	Year 4 Actual (Q1 only)	Variance (Q1 only)
Knowledge Transfer team meetings ⁴⁹	4	2	Close to Target (-2)	4	4	Met Target	4	1	Target Not Met	4	1	0	Close to Target (-1)
Newsletters ⁵⁰	2	1	Close to Target (-1)	2	3	Exceeded Target (+1)	2	2	Met Target	2	0.5	0	Close to Target (-0.50)
Events attended	8	33	Exceeded Target (+25)	8	19 (an additional 23 attended - not collaborative)	Exceeded Target (+11)	8	18	Exceeded Target (+10)	8	2	6	Exceeded Target (+4)
Events delivered ⁵¹	6	14	Exceeded Target (+8)	6	13 an additional 8 delivered - not collaborative)	Exceeded Target (+7)	6	14	Exceeded Target (+8)	6	1.5	8	Exceeded Target (+6.5)
Editorial and press articles ⁵²	10	4	Target Not Met	10	10	Met Target	10	11	Exceeded Target (+1)	10	2.5	2	Close to Target (-0.50)
Case Studies Published on Connected internet site	5	5	Met Target	5	5	Met Target	5	12	Exceeded Target (+7)	5	1.25	0	Close to Target (-1.25)
Internal HE/FE Events	2	2	Met Target	2	1	Close to Target (-1)	2	2	Met Target	2	0.5	0	Close to Target (-0.50)

Source: Targets from: Connected 2 Proposal for Collaboration (2010); Quarterly Progress figures from: HE-FE Collaboration Fund –Quarterly Progress Reports (April 2010 – March 2012); Year 1, 2, 3 & 4 totals: RSM McClure Watters

⁴⁹ These meetings are used as an opportunity to showcase expertise at various HE/FE locations this helps to build up awareness of each other's expertise. Therefore, different academics attend based on areas of interested. In addition, these meetings are used to highlight particular areas of work and presentations often delivered by academics.

⁵⁰ The Connected newsletter is issued twice per annum to all project partners who in turn issue to their clients current and potential. Colleges NI also a small list of companies who have registered to receive the newsletter. It highlights key achievements of the Connected programme.

⁵¹ Events that were delivered by QUB, UU and the colleges. Events included lectures, conferences and seminars, some of which directly related to a Sector Specific Project. For example, a conference entitled 'Mental health across the lifespan' was held at NWRC in May 2010 with the support of Connected.

⁵² A number of editorial and press articles were published in national newspapers which promoted the project and its role in the current economic climate as well as university and college publications which highlighted key developments within the Programme.

5.2.3 Performance – Strand 2: Knowledge Transfer Project Delivery

Table 5.3 details the targets for Strand 2 of the Programme, what was achieved during Years 1 – 3 and quarter 1 of Year 4 and whether the targets were met, close to being met, not met or not yet met. Overall, in Strand 2 the Programme met or exceeded the majority of its targets. Of the 15 targets per annum:

- In Year 1, 10 were met / exceeded, 2 were close to target and 3 were not met;
- In Year 2, 12 were met / exceeded, 1 was close to target and 2 were not met;
- In Year 3, 10 were met / exceeded and 5 were not met; and
- In Year 4 Q1, 5 were met / exceeded, 2 were close to being met and 8 were not met.

The Programme has been very successful in **generating general enquiries** and significantly exceeded its target in each year, including already exceeding the target for the whole of Year 4 in Quarter 1. This target was exceeded by 500% in Year 1 and then by 295%, 213% and 154% in Years 2, 3 and Q1 of Year 4 respectively. However the figures do illustrate a gradual decrease in the number of enquires as the Programme progressed despite the target for these increasing.

The target number of **Sector Specific Projects** was consistently exceeded in each year, including the entire target for Year 4 in Quarter 1. In Year 1, 15 sector specific projects were delivered, 25 in Years 2 & 3 and 33 in Quarter 1 of Year 4. The sectors targeted through these projects include construction, engineering, digital media, health and life sciences, renewable energy, food technology, manufacturing, digital media and green and sustainable enterprise. Examples of these are a Skills Set Media Academy, Social Economy Project, Employer Engagement and Business Development and Digital Mapping/GIS (see further details in Section 5.3.4).

Overall, in Years 1 – 3 the target for the **total number of completed projects** was exceeded, although not met for Year 4 Q1. Performance against target also varied according to the type of projects completed. In Year 1, the majority of projects were with current clients (202 of 294 projects or 69%) whilst in Years 2 and 3, the majority were with new clients (67 of 120 projects and 76 of 118 projects respectively). The number of projects completed with current clients was exceeded in Years 1&3 however this was not met in Year 2 (nine completed against a target of 33). The number of projects completed with current Connected 1 clients in new business areas varied throughout the duration of the Programme to date (close to target in Year 1, exceeding target in Year 2 and not meeting target in Years 3&4). However the target for number of completed projects with re-engaged clients (not involved with Connected 1) did not meet target in any of the years, although was close to target in Year 2. A focus on new clients meant that the resources available to address the needs of current clients (including with new projects) and / or re-engaged clients were limited. Indeed, the number of projects completed with new clients was exceeded in all years,

including for Year 4 in Quarter 1, which indicates the success of the Programme's promotional strategy.

The total number of **NPV cases** completed was exceeded in Year 2 however this target was not met in Years 1, 3 or Q1 of Year 4. NPV cases are completed in batches and are reported to DEL in batches as projects are completed. Those completed to date are included in Appendix Part 1 Section 2.10; another batch is due to be completed before the end of 2013.

Knowledge Transfer Partnerships were established between academic institutions and companies involved in the Programme. The Programme was more successful in establishing these in Years 1 and 2 (target was almost met in Year 1 and met in Year 2, however it was not met in Year 3 or Q1 of Year 4 as no partnerships were established. This was due to the hiatus in the availability of KTP funding as set out below.

The Programme has been very successful in attaining **Invest NI Innovation Vouchers** and the target set has been consistently exceeded in Years 1 – 3 and met in Q1 of Year 4. These allowed small enterprises to access expertise from knowledge providers such as training, technology transfer etc.

The Programme has also been extremely successful in terms of the number of **other projects** involved in the Programme. This target was also exceeded in Years 1 – 3, most notably in Year one by 133 projects. These included full cost recovery projects for industry such as robotic training, mechanical to electrical upskilling and hydraulics training.

In terms of the **value of the projects delivered**, the Programme exceeded its overall target in Years 1 – 3. However, the extent to which it met targets for individual sources of income varied. In Years 1-3 the majority of income was generated from other (including Full Cost Recovery) and exceeded the target in terms of quantity and value for this source of income each year. The quantity of Innovation Vouchers was also exceeded in Years 1-3. However in Years 1 and 2 the value target was not met. Moreover each year, including Year 4 Q1, the Programme did not meet target for income generated from Knowledge Transfer Partnerships.

KTPs projects are funded jointly by the Technology Strategy Board (TSB) and Invest NI. Generally, the funding split is a 50:50 split. In some cases, if a project does not meet Invest NI eligibility criteria, the TSB (or one of the UK Research Councils) may fund the project @ 100% of the Government contribution.

Post the Comprehensive Spending Review (October 2010) and faced with on-going pressures on their budgets, the Technology Strategy Board was forced to take

significant steps to reduce the number of KTPs available⁵³. In particular, the increased requirements regarding the strategic nature of projects, affected the ability for the FE partners to deliver given their more applied activities. Also during the period Invest NI undertook an extensive evaluation of its commitment to the programme and although it was a successful evaluation, the delays incurred resulted in a significant funding hiatus⁵⁴ which also affected the programme numbers.

On the other hand, Connected 2 exceeded its targeted income from Innovation Vouchers across all years and the target for other projects in Years 1 – 3. Therefore, while a target was not met in one area, by exceeding targets in another area the Programme was able to exceed its overall targets.

⁵³ These measures included increasing the bar significantly on innovation, impact and challenge, reducing the number of application dates from 9 to 6 per annum, reducing the number of KTP Advisers from 35 to 27 and the limiting the size of their portfolios.

⁵⁴ At no point was there a lack of funding for KTPs. Over the period of the recent review, Invest NI had reached agreement that the TSB would solely fund all projects (in the absence of Invest NI match funding)

Table 5.3 Assessment of Performance vs. Targets – Years 1 – 4: Strand 2: Knowledge Transfer Project Delivery

Target	Year 1 Target	Year 1 Actual	Variance	Year 2 Target	Year 2 Actual	Variance	Year 3 Target	Year 3 Actual	Variance	Year 4 Target	Year 4 Target for Q1	Year 4 Actual (Q1 only)	Variance (Q1 actual vs. Q1 target)
General Enquiries generated	100	604	Exceeded Target (+504)	110	434	Exceeded Target (+324)	120	376	Exceeded Target (+256)	130	32.5	50	Exceeded Target (+17.5)
No of Sector Specific Projects ⁵⁵	Total 12: 8 (A)+ 4(B) = 12(C)	4 (A) + 11 (B) = 15	Exceeded Target (+ 3)	Total 14: 8 (A)+6(B) = 14(C)	8 (A) + 17 (B) = 25	Exceeded Target (+11)	Total 16 10(A) + 6 (B) = 16 (C)	18 (A) + 7 (B) = 25 ⁵⁶	Exceeded Target (+9)	Total 18: 12(A) + 6(B) = 18 (C)	4.5	22 (A) + 11 (B) = 33	Exceeded Target (+28.5)
Completed projects with current clients	31	202	Exceeded Target (+171)	33	9	Target Not Met	34	35	Exceeded Target (+1)	37	9.25	3	Target Not Yet Met
Completed projects with new clients	10	80	Exceeded Target (+70)	10	67	Exceeded Target (+57)	12	76	Exceeded Target (+64)	12	3	6	Exceeded Target (+3)
Completed projects with re-engaged clients (not involved with Connected 1)	10	4	Target Not Met	11	8	Close to Target (-3)	11	2	Target Not Met	12	3	0	Target Not Yet Met

⁵⁵ SSPs are calculated as follows: A + B = C

A = projects carried over from previous year**

B = total no. of new projects for current year

C = total no. of projects delivered in one year

** Not all SSPs will be carried over from one year to the next as some will naturally come to an end or become self-sufficient, this natural progression will allow for new SSPs to be developed and delivered. Therefore A in the following year is those SSPs being carried forwarded from the previous year, net those that have completed

⁵⁶ Two of these projects involve collaboration with CAFRE.

Target	Year Target 1	Year Actual 1	Variance	Year Target 2	Year Actual 2	Variance	Year Target 3	Year 3 Actual	Variance	Year Target 4	Year 4 Target for Q1	Year 4 Actual (Q1 only)	Variance (Q1 actual vs. Q1 target)
Completed projects with current Connected 1 clients in new business areas	10	8	Close to Target (-2)	11	36	Exceeded Target (+25)	11	5	Target Not Met	12	3	0	Target Not Yet Met
TOTAL of all above completed projects	61	294	Exceeded Target (+233 ⁵⁷)	65	120	Exceeded Target (+55)	68	118	Exceeded Target (+50)	73	18.25	9	Target Not Yet Met
NPV cases completed	24	10	Target Not Met	32	38	Exceeded Target (+6)	32	20	Target Not Met	32	8	0	Target Not Yet Met
Innovation initiatives supporting the above completed projects is segmented below:													
Knowledge Transfer Partnerships	3	2	Close to Target (-1)	3	3	Met Target	2	0	Target Not Met	3	0.75	0	Target Not Yet Met
Invest NI Innovation Vouchers	18	43	Exceeded Target (+25)	20	33	Exceeded Target (+13)	22	30	Exceeded Target (+8)	24	6	6	Met Target
Other projects ⁵⁸	40	173	Exceeded Target (+133)	42	84	Exceeded Target (+42)	44	88	Exceeded Target (+44)	46	15	3	Target Not Yet Met
Value of the projects delivered (i.e. income/ fees paid to HE/FE):													
KTPs	£60,000	£17,475 ⁵⁹	Target Not Met	£60,000	£3000	Target Not Met	£60,000	£0	Target Not Met	£60,000	£20,000	£0	Target Not Yet Met
Innovation Vouchers	£72,000	£150,400	Exceeded Target by £78,400	£80,000	£137,306	Exceeded Target by £57,306	£88,000	£124,600	Exceeded Target by £36,600	£96,000	£24,000	£31,200	Exceeded Target by £7,200

⁵⁷ Progress figure for Y1 Q1 was reported as 41 in the Quarterly Report. Based on the figures provided, the total should be 43. The actual and variance for Year 1 is based on the figure of 43.

⁵⁸ incl: full cost recovery projects for industry. i.e. prototype work, material testing, training, consultancy.

⁵⁹ Y1 Q3 figure was reported as £218,384 in the Quarterly Report. Based on the figures provided, the total should be £218,348.

Target	Year Target 1	Year Actual 1	Variance	Year Target 2	Year Actual 2	Variance	Year Target 3	Year 3 Actual	Variance	Year Target 4	Year 4 Target for Q1	Year 4 Actual (Q1 only)	Variance (Q1 actual vs. Q1 target)
Other Projects	£60,000	£341,123	Exceeded Target by £281,123	£63,000	£213,108	Exceeded Target by £150,108	£66,000	£228,139	Exceeded Target by £162,139	£69,000	£17,250	£13,268	Close to Target (£3,982 below)
TOTAL	£192,000	£508,998	Exceeded Target by £316,998	£203,000	£353,414	Exceeded Target by £150,414	£214,000	£352,739 ⁶⁰	Exceeded Target by £138,739	£225,000	£56,250	£44,468	Close to Target (~20% below)

Source: Targets from: Connected 2 Proposal for Collaboration (2010); Quarterly Progress figures from: HE-FE Collaboration Fund – Quarterly Progress Reports (April 2010 – March 2012); Year 1, 2, 3 & 4 totals: RSM McClure Watters

⁶⁰ The figure for Y3 Q4 was reported as £85,595 in the Quarterly Report. Based on the figures provided, the total should be £150,118. Total and variance for Year 3 is based on the figure of £150,118.

5.2.4 Performance – Strand 3: Internal Knowledge Transfer

Table 5.4 details the targets for Strand 3 of the Programme, what was achieved during Years 1 – 3 and quarter 1 of Year 4 and whether the targets were met, close to being met, not met or not yet met. Overall, in Strand 3 the Programme met or exceeded the majority of its targets; of the 4 targets per annum:

- In Year 1, all 4 were met / exceeded;
- In Year 2, 2 were met / exceeded, 1 was close to target and 1 was not met;
- In Year 3, 2 were met / exceeded, 1 was close to target and 1 was not met; and
- In Year 4 Q1, 3 were met / exceeded and 1 was not met.

In the first year of the Connected Programme the Programme exceeded its target number of **placements** undertaken by staff within the Project Partner organisations (FE staff taking placements with HE and HE staff taking industry placements) however in Years 2, 3 & Year 4 Q1 this was not met. This was due the difficulty in releasing academics from their timetable.

The Programme was very successful in relation to **training and development** of staff and exceeded the target set in all years.

A number of **staff exchange visits** were also undertaken between the project partners involved in Connected. While these measures also had the highest targets, in Years 1-3 these targets were either met or exceeded. Although the number of staff exchange visits continued to fall each year this still met the target set. The Year 1 Quarter 4 Progress Report noted that in Year 1 there was a significant increase in the number HE and FE staff exchange visits. These visits were considered to have strengthened the HE and FE partners' knowledge of complementary expertise and have resulted in innovative projects, many the first of their kind in Northern Ireland.

The target for **international visits** was exceeded initially in Year 1 and thereafter in Year 4 Q1; it was close to being met in Years 2 & 3. These involved visits completed by representatives from the partner institutions involved in Connected to establish new relationships and strengthen existing links with other international institutions with the aim of developing future strategic projects and transferring any knowledge gained to other Connected partners.

Table 5.4 Assessment of Performance vs. Targets – Years 1 – 4: Strand 3: Internal Knowledge Transfer

Target	Year 1 Target	Year 1 Actual	Variance	Year 2 Target	Year 2 Actual	Variance	Year 3 Target	Year 3 Actual	Variance	Year 4 Target	Year 4 Target for Q1	Year 4 Actual (Q1 only)	Variance (Q1 actual vs. Q1 target)
Placements	3	7	Exceeded Target (+ 4)	3	0	Target Not Met	3	1	Target Not Met	3	0.75	0	Target Not Yet Met
Training and development engagements ⁶¹	20	66	Exceeded Target (+46)	20	84	Exceeded Target (+64)	20	72	Exceeded Target (+52)	20	5	12	Exceeded Target (+7)
Staff exchange visits ⁶²	30	57	Exceeded Target (+27)	30	43	Exceeded Target (+13)	30	30	Met Target	30	7.5	8	Exceeded Target by (+0.5)
International visits ⁶³	6	19	Exceeded Target (+13)	8	7	Close to Target (-1)	10	7	Close to Target (-3)	10	2.5	5	Exceeded Target (+2.5)

Source: Targets from: Connected 2 Proposal for Collaboration (2010); Quarterly Progress figures from: HE-FE Collaboration Fund –Quarterly Progress Reports (April 2010 – March 2012); Year 1, 2, 3 & 4 totals: RSM McClure Watters

⁶¹ This aimed is to ensure that staff were up to date with business and community practices and enhance the ability of project staff to engage with business more effectively, particularly with emerging technologies and within priority areas. Funding also included supported international visits and network as well as accredited and non-accredited training.

⁶² Refers to staff exchange visits between the project partners involved in Connected. In addition, it would also include visits whereby only one partner is connected staff. Often staff will be trying to prime new projects and research particular areas of expertise and will therefore visit certain researchers or academics.

⁶³ These included visits completed by representatives from the partner institutions involved in Connected to establish new relationships and strengthening existing links with other international institutions, with the aim of developing future strategic projects and transferring any knowledge gained to other Connected partners.

5.2.5 Performance – Summary

The table below presents the number of targets that were met or exceeded, close to being met or were not met in Years 1 – 3 and Q 1 of Year 4 by programme strand. It shows that the majority of targets were met or exceeded and that for Q1 Year 4 the majority have been met or exceeded or are on course to be met.

Table 5.5: Performance Summary

Strand	No of targets		Year 1	Year 2	Year 3	Year 4 (Q1 only)
Project Generation, Management and Development	12	Targets met or exceeded	7	9	10	4
		Targets close to being met	4	3	1	7
		Targets not met	1	0	1	1
Knowledge Transfer Project Delivery	15	Targets met or exceeded	10	12	10	5
		Targets close to being met	2	1	0	2
		Targets not met	3	2	5	8
Internal Knowledge Transfer	4	Targets met or exceeded	4	2	2	3
		Targets close to being met	0	1	1	0
		Targets not met	0	1	1	1
Total	31	Targets met or exceeded	21	23	22	12
		Targets close to being met	6	5	2	9
		Targets not met	4	3	7	10

5.2.6 Overall Programme Performance Year 1 – Year 4 Q1

The overall performance of the Connected 2 Programme from Year 1 to Year 4 Q1 is presented in the tables below. These show the full target value for Years 1 to 4 and pro rata target value for Year 1 to Year 4 Q1, performance to date, variance against both the full and pro rata target and performance to data as a percentage of the full and pro rata target.

The tables shows that overall, by Year 4 Q1 six of the twelve targets from Strand 1 had been met or exceeded. In relation to Strand 2 twelve of the 15 targets had been met or exceeded and for Strand 3 three of the four targets had been met or exceeded.

Significantly, the four key targets which reflect the overall outcomes and impact of the programme, and also considered of most importance to DEL (i.e. clusters, Sector Specific Projects, total number of projects delivered and total value of projects delivered) have all been met or exceeded:

- Development of Clusters – the full four year target of 4 has already been met (123% of target to date);
- Sector specific projects – the targets in each year have been exceeded and there are 50 unique SSPs against a target of 30 (205% of target to date);
- Total number of projects – the full four year target has already been exceeded by more than a factor of 2 (541 vs 267) (249% of target to date); and
- Total value of projects (i.e. income/fees paid to HE/FE) – the full four year target has already been exceeded by more than a factor of 1.5 (£1.2m vs £0.8m) (186% of target to date).

Table 5.6 Programme Performance Yr 1 – Yr 4 Q1: Strand 1 – Project Generation, Management and Development

Target	Target (Yrs 1-4)	Target to date (Y1- 3, & Y4 Q1)	Actual to date (Y1- 3, & Y4 Q1)	Variance against 4-year target	Actual as % of 4 year target	Variance against target to date	Actual as % of target to date
Development of HE/FE clusters	4	3.25	4	0	100%	+0.75	123%
Development of Content Management System (CMS)	Develop a CMS	Develop a CMS	CMS developed	0	100%	0	100%
Development of sector expertise map	Develop Sector Expertise Map	Develop Sector Expertise Map	Sector Expertise Map developed	0	100%	0	100%
Stakeholder meetings	20	16.25	12	-8	60%	-4.25	74%
International innovation recce visits	4	3.25	3	-1	75%	-0.25	92%
Knowledge Transfer team meetings	16	13	7	-9	44%	-6	54%
Newsletters	8	6.5	6	-2	75%	-0.5	92%
Events attended	32	26	76	+44	238%	50	292%
Events delivered	24	19.5	49	+25	204%	29.5	251%
Editorial and press articles	40	32.5	27	-13	68%	-5.5	83%
Case Studies Published on Connected internet site	20	16.25	22	+2	110%	+5.75	135%
Internal HE/FE Events	8	6.5	5	-3	63%	-1.5	77%

Table 5.7 Programme Performance Yr 1 – Yr 4 Q1: Strand 2 – Knowledge Transfer Project Delivery

Target	Target (Yrs 1-4)				Target to date (Y1- 3, & Y4 Q1)	Actual to date (Y1- 3, & Y4 Q1)				Variance against 4-year target	Actual as % of 4 year target	Variance against target to date	Actual as % of target to date
General Enquiries generated	460				373.75	1464				+1004	318%	+1090.25	392%
No of Sector Specific Projects ⁶⁴													
A = projects carried over from previous year	8	8	10	12	n/a	4	8	18	22	n/a	n/a	n/a	n/a
B = total no. of new projects for current year	4	6	6	6	n/a	11	17	7	11	n/a	n/a	n/a	n/a
C= total no. of projects delivered in 1 year	12	14	16	18	n/a	15	25	25	33	n/a	n/a	n/a	n/a
No. of unique SSPs ⁶⁵	30				24.4	50				+20	167%	+25.63	205%
Completed projects with current clients.	135				109.7	249				+114	184%	+139.3	227%
Completed projects with new clients	44				35.75	229				+185	520%	+193.25	641%
Completed projects with re-engaged clients (not involved with Connected 1)	44				35.75	14				-30	32%	-21.75	39%

⁶⁴ SSPs are calculated as follows: A +B = C where: A = projects carried over from previous year
= total number of projects delivered in one year

B = total number of new projects for current year C

⁶⁵ As projects are carried over from one year to the next, it is not appropriate to sum the total no. of projects in each of the 4 years as there would be a risk of double counting.
No of unique SSPs = sum of total SSPs (Yrs 1 – 4) minus sum of projects carried over (Yrs 2-4)

Target	Target (Yrs 1-4)	Target to date (Y1- 3, & Y4 Q1)	Actual to date (Y1- 3, & Y4 Q1)	Variance against 4-year target	Actual as % of 4 year target	Variance against target to date	Actual as % of target to date
Completed projects with current Connected 1 clients in new business areas	44	35.75	49	+5	111%	+13.25	137%
TOTAL of all above completed projects	267	216.9	541	+274	203%	+324.1	249%
NPV cases completed	120	97.5	68	-52	57%	-29.5	70%
Innovation initiatives supporting the above completed projects is segmented below:							
Knowledge Transfer Partnerships	11	8.9	5	-6	45%	-3.9	56%
Invest NI Innovation Vouchers	84	68.25	112	+28	133%	+43.75	164%
Other projects including: full cost recovery projects for industry. I.e. prototype work, material testing, training, consultancy.	172	139.75	348	+176	202%	+208.25	249%
Value of the projects delivered (i.e. income/ fees paid to HE/FE)							
KTPs	£220,000	£178,750	£20,475	-£199,525	9%	-£158,275	11%
Innovation Vouchers	£336,000	£273,000	£443,506	+£107,506	132%	+£170,506	162%
Other Projects	£258,000	£209,625	£795,638	+£537,638	308%	+£586,013	380%
TOTAL	£814,000	£677,625	£1,259,619	+£445,619	155%	+£581,994	186%

Table 5.8 Programme Performance Year 1 – Year 4 Q1 Strand 3 – Internal Knowledge Transfer

Target	Target (Yrs 1-4)	Target to date (Y1- 3, & Y4 Q1)	Actual to date (Y1- 3, & Y4 Q1)	Variance against 4-year target	Actual as % of 4 year target	Variance against target to date	Actual as % of target to date
Placements	12	9.75	8	-4	67%	-1.75	82%
Training and development engagements	80	65	234	+154	293%	+169	360%
Staff exchange visits	120	97.5	138	+18	115%	+40.5	142%
International visits	34	27.6	38	+4	112%	+10.4	138%

5.3 Analysis of Connected 2 Programme Activity

5.3.1 Introduction – Programme Activity

The tables in this section provide a summary of the various activities delivered during the Connected 2 Programme from April 2010 to date including:

- General Enquiries;
- Completed Projects including:
 - Number of Completed Projects;
 - Income Generated by Completed Projects and Income by FE / HE
 - Project Partners
 - Categorisation of Completed Projects by KT Type
 - Categorisation of Completed Projects by Product Categorisation
- Sector Specific Projects including:
 - Sector Specific Projects by FE/HE
 - Sector Specific Projects by Industrial Sector
 - Sector Specific Projects by FE/HE Lead
- Links with AFBI and CAFRE; and
- Recording Activity.

5.3.2 General Enquires

The table below details the number of enquires for Years 1-3 and Q1 Y4. It shows that the highest number of enquires was in Year 1 (604; 40% of the total number of enquires to date at Q1 Y4). There is a relatively even distribution of enquires between higher and further education (47% and 52% respectively) however of the higher education enquires significantly more are attributed to Queen's University Belfast (70%).

Table 5.9 Number of Enquiries

	No.					
	Year 1	Year 2	Year 3	Year 4 (Q 1 only)	Total	%
Further Education	259	231	190	44	724	47
Higher Education*	345	190	240	28	803	53
*of which:						
Queens University	214	152	196	0	562	70
University of Ulster	131	38	44	28	241	30
Total	604	421	430	72	1527	100%

Source: Colleges NI

5.3.3 Completed Projects (Number, Income Generated, FE/HE, KT Type, Product Categorisation Sector)

5.3.3.1 Number of Completed Projects

Table 5.10 details the number of completed projects in Years 1-3 and Q1 of Y4. It shows that the majority of completed projects were from higher education (around two thirds relative to one third from FE) and of the HE projects, over two thirds were from Queen's University Belfast (211 projects or 67.6% of HE projects).

Table 5.10 Number of Completed Projects

	No. of Projects					
	Year 1	Year 2	Year 3	Year 4 (Q 1 Only)	Total	%
Further Education	69	45	40	3	157	33.5
Higher Education*	155	71	80	6	312	66.5
*of which:						
Queen's University	132	39	47	0	211	67.6
University of Ulster	23	32	33	6	101	32.4
Total	224	116	120	9	469	100%

Source: Colleges NI

5.3.3.2 Income Generated by Completed Projects

Table 5.11 details the income generated during Years 1-3 and Q1 of Y4. To date, over £1.2m has been generated, the highest level was in Year 1 (£508,998; or 40% of total income to date). The total income generated is evenly distributed between further education and higher education (47% and 53% respectively) and within HE, there is a fairly even split between QUB and UU (49.9% and 50.1% respectively).

Table 5.11 Income Generated by Completed Projects

	Income Generated					
	Year 1	Year 2	Year 3	Year 4 (Q 1 Only)	Total	%
Further Education	£214,200	£198,729	£143,253	£13,268	£569,450	47
Higher Education*	£294,798	£134,485	£228,945	£31,200	£689,428	53
*of which:						
Queen's University	£214,298	£48,885	£80,989	£0	£344,172	49.9
University of Ulster	£80,500	£85,600	£147,956	£31,200	£345,256	50.1
Total	£508,998	£333,214	£372,198	£44,468	£1,258,878	100%

Source: Colleges NI

5.3.3.3 Number of Completed Projects and Income by FE / HE

Table 5.12 Connected Partners – Income Generating Projects Completed

Project Lead	Total No. of Projects (including shared)	Income Total
SERC	10	73,548
SRC	17	56,575
NWRC	34	121,393
NRC	65	250,197
SWC	23	57,054
BMC	8	10,680
University of Ulster	101	368,256
Queen's University	211	321,172
Total	469	1,258,875

Source: Colleges NI

The table above presents the income generated by project of each of the Connected partners. It shows of a total income of £1,258,875. The most income was generated by the University of Ulster and Queen's University (£368,256 and £321,172 respectively) and the least income was generated by BMC (£10,680). However this is reflective of the number of projects associated with each organisation.

5.3.3.4 Categorisation of Completed Projects by KT type

Table 5.13 profiles knowledge transfer projects by knowledge transfer type. It shows that of the 469 projects in total, a large amount of the activity related to product development (36%) and consultancy (28.8%). However there was no recorded activity under skills development (student placement), although it should be noted that the information in this table only reflects outputs from SSPs where income has been generated and so does not reflect the entire outputs of the projects.

Table 5.13 Categorisation of Connected CMS activity for all completed knowledge transfer projects where there has been income generated (by knowledge transfer type)

Product categorisation by knowledge transfer type	Total	
	Total number	%
Product development	169	36
Process development	84	17.9
Skills development (student placement)	0	0

Product categorisation by knowledge transfer type	Total	
	Total number	%
Skills development (other)	80	17.1
Equipment and facilities	1	0.2
Consultancy	135	28.8
Total*	469	100

Source: Colleges NI

5.3.3.5 Categorisation of Completed Projects by Product Categorisation Sector

Table 5.14 profiles completed knowledge transfer projects by product categorisation sector. It shows that of the 469 projects in total, almost half were from the advanced engineering and advanced materials sector (192 projects or 40%) and almost a quarter from the renewables sector (105 projects or 25%). The sectors with the fewest projects were life and health sciences (11 projects or 2.3%) and social economy (16 projects or 3.4%).

Table 5.14 Categorisation of Connected CMS activity for all completed knowledge transfer projects where there has been income generated (by product categorisation sector)

Product categorisation Sector	Total	
	Total number	%
Advanced engineering and advanced materials	192	40.9
Agri food	42	9.0
Life and health sciences	11	2.3
Creative industries and digital media	47	10.0
ICT and business services	35	7.5
Renewables	105	22.4
Social economy	16	3.4
Other (includes retail, tourism, sport and education)	21	4.5
Total	469	100

Source: Colleges NI

5.3.4 Sector Specific Projects

5.3.4.1 Sector Specific Projects by FE/HE

The table illustrates the number of Sector Specific Projects (SSPs) led by each project partner. It shows that of 50 SSPs NWRC led the most (10) while the University of Ulster led the least (3).

Table 5.15 Connected Partners Sector Specific Project (SSPs)

Project Status	Total No. of Projects (including shared)
SERC	6
SRC	7
NWRC	10
NRC	7
SWC	7
BMC	4
University of Ulster	3
Queen's University	6
Total	50

Source: Colleges NI

5.3.4.2 Sector Specific Projects by Industrial Sector

Table 5.16 presents the SSPs by industrial sector. Of the 50 projects, the highest number was from the renewables sector (12) followed by the advanced engineering and advanced materials sector (11). The smallest number of projects was from the agri food and social economy sectors. The majority of SSPs were Further Education led projects (41) with 9 led by Higher Education.

Table 5.16 Connected Sector Specific Projects (SSP) by industrial sector

Sector Specific Project by Sector Type	Total		
	Total number	Of which HE	Of which FE
Advanced engineering and advanced materials	11	3	8
Agri food	3	0	3
Life and health sciences	4	1	3
Creative industries and digital media	6	0	6

Sector Specific Project by Sector Type	Total		
	Total number	Of which HE	Of which FE
ICT and business services	5	1	4
Renewables	12	4	8
Social economy	3	0	3
Other (includes retail, tourism, sport, education and international)	6	0	6
Total	50	9	41

Source: Colleges NI

5.4 Links with the Agri-Food and Biosciences Institute (AFBI) and the College of Agriculture, Food and Rural Enterprise (CAFRE)

A recommendation from the evaluation of the pilot Connected Programme was that:

“DEL should liaise with the Connected Central Unit⁶⁶ and with DARD to explore the potential of linking AFBI and CAFRE to the Connected Programme. In particular, the scope for collaboration in respect of promotional and awareness raising activities should be considered, with a view to these public sector institutions being included within a map of R&D provision in Northern Ireland as proposed at Recommendation 6.”

This was reflected in one of the “Anticipated Outcomes” for Connected 2:

- The introduction of initiatives and development of networks and contacts aimed specifically at creating increased links to the Agri-Food and Biosciences Institute (AFBI) and the College of Agriculture, Food and Rural Enterprise (CAFRE).

However, following the review of the pilot phase of Connected, DARD did not agree to any funding for project staff so there has not been a single designated contact within AFBI or CAFRE with responsibility in relation to Connected 2. Nonetheless, through the Connected 2 Programme and as a result of the pilot Connected evaluation, Colleges NI has indicated that there has been some collaborative activity:

- an increase in the level of interaction with AFBI and CAFRE and FE / HE through Connected funded work and this has identified areas where collaboration can take place. This collaboration cuts across a number of projects.
- a number of contacts within AFBI/CAFRE that would be linked to Connected project work.

⁶⁶ Now called the Business Development Unit

- Connected 2 Meetings (including Business Development Manager and the Knowledge Transfer Team) held at Loughry (CAFRE) and with AFBI to establish and build networks and discuss potential opportunities for collaborative working;
- UU / AFBI sustainability workshop (January 2011);
- UU / Sector Skills bodies and Loughry – meetings regarding qualification provision;
- QUB (Questor) and AFBI discussions regarding collaborative working;
- NWRC and NRC secured funding for SSPs involving CAFRE; neither of these colleges had previously collaborated with CAFRE.
- Inclusion of CAFRE and AFBI on Sector Expertise Map.

Arising from all of the above, there have been a number of projects (SSPs) that are working with AFBI and CAFRE. The table below shows that 4 institutions (UU, QUB, SERC and NWRC) collaborated with both AFBI and CAFRE and 1 further institution collaborated with CAFRE (NRC). However 3 institutions (BMC, SRC and SWC) have not collaborated with AFBI or CAFRE to date.

An audit of work being undertaken with AFBI and CAFRE across the Connected 2 partners (January 2012) was undertaken to map the level of collaborative activities with AFBI and CAFRE. This demonstrated that universities are collaborating with AFBI and CAFRE. Currently, both SERC and NRC are collaborating but at various levels. The range of collaboration varies and includes; use of facilities, staff training, attendance at events, provision of advice, networking and signposting. All colleges have participated in a Food Technology visit to Loughry College. It is anticipated that an audit will be carried out at least once a year to keep track of the range of linkages established through Connected with AFBI and CAFRE (a further audit is underway at the time of writing this report).

Further details on the links with AFBI and CAFRE are included in Appendix Part 1 – Section 2.5.

Table 5.17: Collaboration between Colleges and Universities and AFBI / CAFRE

Knowledge Provider / Lead Partner	Through Connected collaborated with AFBI	Through Connected collaborated with CAFRE	Overview of collaboration	Overview of future plans for collaboration	Current Status
UU Karen McCann	Yes	Yes	Assistance on Innovation Vouchers / signposting / staff exchange visits, and collaborative event delivery to industry.	Food for Thought event to be delivered in April 2012.	Event completed 4 th April 2012. Karen McCann has recently left UU. Restructuring of Office of Innovation has recently taken place.
QUB (QUESTOR) Julie-Anne Hanna	Yes	Yes	<p>Knowledge exchange on Anaerobic Digestion (AD).</p> <p>Development on collaborative research proposal for INTERREG submission.</p> <p>QUESTOR now routinely sends samples for micro analysis to AFBI.</p> <p>Tender enquires, exchange visits both to AFBI and AFBI staff visits to QUESTOR.</p> <p>Help given by AFBI on a micro analysis Innovation Voucher.</p> <p>CAFRE has partnered with QUESTOR, SWC and UU on a joint Innovation Voucher</p>	On-going collaborations and knowledge exchange will continue.	Live on-going collaborations.

Knowledge Provider / Lead Partner	Through Connected collaborated with AFBI	Through Connected collaborated with CAFRE	Overview of collaboration	Overview of future plans for collaboration	Current Status
			for Sustainable Kilkeel. Work commenced January 2012.		
SERC John Ross	Yes	Yes	<p>Advice on heat pump tender provided.</p> <p>Staff training and learning material provided by SERC for AFBI staff.</p> <p>Number of events attended including co-operative working and rural matrix.</p> <p>Food technologies visit at Loughry, renewable energy day attended.</p> <p>On-going knowledge exchange between AFBI and SERC, networking and signposting.</p>	<p>Working with David Trimble (CAFRE), SERC has a proposal to work with CAFRE and QUB staff (Prof. Sharon Turner and Dr Peter Doran) and environmental master students on putting together a 'Rural Energy Matrix'. The idea revolves around the idea of examining a data log of all the rural farming provision in terms of community size (village, cluster, independent farm dwelling) and looking at the energy needs for each area and the possible natural energy resources for each sample. The scope of information can then be used to set down basis energy concepts that would keep the farming industry competitive and sustainable if/when poverty or fossil fuel depletion effect farming performance and security for food and fuel supply.</p> <p>Links have also been established with Dr Peter Frost at AFBI on the area of</p>	Live on-going

Knowledge Provider / Lead Partner	Through Connected collaborated with AFBI	Through Connected collaborated with CAFRE	Overview of collaboration	Overview of future plans for collaboration	Current Status
				Anaerobic Digestion (AD) Technology and local company Quanta. These links have led to SERC recently arranging to set up a KTP for the company with QUESTOR at QUB.	
NRC Tony Madden, Head of School for Business and Hospitality	No	Yes	Use of facilities for Connected events	Interest in investigating the possibility of collaboration with CAFRE for Year 3 Connected project. Due to the location of CAFRE it is ideal for running events and NRC plans to continue to avail of this service.	Collaboration was investigated but project did not progress. NRC would continue to use CAFRE facilities for events, including conferences.
NWRC Karen McLaughlin	Yes	Yes	Previous to Connected funding NWRC had no experience in collaborating with AFBI or CAFRE. NWRC was keen to develop their knowledge of the expertise of both organisations and develop linkages. This project is in its second year of delivery. To date companies have been signposted to both AFBI and CAFRE for the delivery of Invest Northern Ireland Innovation Vouchers.		On-going

Knowledge Provider / Lead Partner	Through Connected collaborated with AFBI	Through Connected collaborated with CAFRE	Overview of collaboration	Overview of future plans for collaboration	Current Status
SERC Darren Anderson	No	Yes	SERC has identified a gap in its provision to the agri-food sector. The college has identified a particular area where their expertise could complement the needs of the sector and wishes to engage and gather expertise from CAFRE in the area of mechatronic business support solutions for the agri-food sector.	This project has only recently been approved. However the plan would be to pilot the project for the remainder of this round of funding and then roll out a fuller project from April 2014 onwards.	Live, in early stages of delivery.

Source: Colleges NI

5.5 Recording Connected 2 Programme Activity – Customer Relationship Management

A recommendation from the evaluation of the Connected pilot was to introduce a Customer Relationship Management (CRM) system that would monitor and record progress against objectives and targets. This is included as one of the targets under Strand 1 of the programme and discussed at Section 5.2.

In Year 1 the contract to develop the CRM System was awarded to Metecpus and by the end of the first year it was fully designed and tested. In subsequent years there was on-going development of the system, including the building of bespoke reports and work on finalising user accounts. In addition, training on the site was delivered to all Programme partners in Year 2.

The Connected CRM system provides a central means of capturing data on all engagements within the Connected 2 Programme. Staff in FE Colleges and HE Institutions all have access to the system (each organisation only has access to its own data) and Colleges NI has access to all of the data on the system. The CRM system allows users to work across the following main tabs - on each of these new records can be added as well as existing records being edited:

- Organisations
- Contacts
- Enquiries
- Projects: details of projects that have been approved by the Connected Project Manager, Lynn Connaughton, are stored; there is also scope to record targets and outputs, project income, articles and events associated with a project.
- Internal Knowledge Transfers: proposals that have been submitted and approved by Lynn Connaughton are uploaded.

Further details on the CRM are included in Appendix Part 1 – Section 2.7.

5.6 Feedback from Consultation (Surveys and Interviews)

Four questionnaires have been developed in collaboration with the Project Steering Group to gather information to contribute to addressing the Terms of Reference. These were targeted at the following groups:

- Participating Companies – working with QUB, UU and FE Colleges through Connected 2;
- Prospective Companies – not currently working with QUB, UU and FE Colleges through Connected 2 but which have scope to do so;
- HE / FE professional staff involved in Connected 2; and
- Economic Development Officers (EDOs) in 26 Local Councils.

The questionnaires focused on the Connected 2 programme sought to gather views on some or all of the following key areas (the areas covered and level of detail varied according to the target group of respondents):

Company Survey:

- Section 1: Company Profile and Background
- Section 2a: Previous Work with HE / FE
- Section 2b: Rationale for Involvement in Current Programme
- Section 3: Confirmation of Involvement with HE / FE
- Section 4: Project Level Outputs and Impacts
- Section 5: Additionality
- Section 6: Programme and Project Management
- Section 7: Case for Future Funding

Prospective Company Survey:

- Section 1: Company Profile and Background
- Section 2: Level of engagement with FE / HE
- Section 3: Awareness of the Connected 2 Programme

Higher Education / Further Education Professional Staff Survey:

- Section 1: Individual Profile
- Section 2: Knowledge Transfer – Barriers and Enablers
- Section 3: Involvement in Connected 2 Programme
- Section 4: Programme Outputs and Impacts
- Section 5: Programme Management
- Section 6: Case for Future Funding

Further details on survey responses are included in Appendix Part 2.

5.7 Company Case Studies

Nine case studies have been developed; these examine a number of projects which have taken place under the auspices of Connected 2 and illustrate the scope of activity which it has supported. These include examples of: a Sector Specific Project (NI Creative Skillset Media Academy), two HE-FE Clusters (Industrial Advisory Board and Renewable Development Forum) and international links (Global Partnership between NI and Japan). The nine case study companies are listed below and the detail is included in Appendix Part 1 – Section 5.

- Case Study 1: Sepha Ltd (QUB);
- Case Study 2: AWP Environmental Ltd (now trading as Viltra Ltd (QUB));
- Case Study 3: Precision Group – Turning FOG to Fuel (UU);
- Case Study 4: Fresh Programme – (BMC);
- Case Study 5: NI Creative Skillset Media Academy (NICSMA) (NWRC);



- Case Study 6: Industrial Advisory Board (SWC);
- Case Study 7: Renewable Development Forum (SRC);
- Case Study 8: Global Partnership Between NI and Japan (SERC); and
- Case Study 9: Rainey Engineering Solutions (NRC)

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6 FINANCE AND FUNDING MECHANISM

6.1 Introduction

In this section, we consider:

- Funding mechanism for Connected 2;
- Projected expenditure for Connected 2 from the 2010 Economic Appraisal; and
- Actual Expenditure to date on Connected 2.

6.2 Funding Mechanisms

6.2.1 Allocation of funding for Connected 2

Connected funding is currently allocated based on a single joint proposal from Queen's University and the University of Ulster supported by ANIC (now Colleges NI). This is the same approach as used in the Connected 1 pilot and whilst another approach was considered in the 2010 Economic Appraisal (EA), these were discounted.

An alternative approach was considered in the Economic Appraisal for Connected 2 – this option involved two separate competitive proposals led by QUB and UU. Under this option, each University would submit a separate bid for the fund in competition with one another. The Department would undertake a call for proposals from the Universities, each required to incorporate Colleges NI (or a sub-set of FE Colleges) as a partner in its submission. Each bid would be assessed by an independent assessment panel against set criteria in line with the overall objectives of the programme. Funding would be allocated directly to the Universities, given current legislation, which would be responsible for distributing to Colleges NI/FE Colleges.

The 2010 EA notes that whilst this option does have the potential to meet the programme objectives it was explored during the 2007 EA and found not to represent best value for money and difficult to implement. In practical terms this option presents obstacles as to how Colleges NI and the FE Colleges could be involved in two competing bids.

The notion of competitive funding was discounted in the 2010 EA – given the experience of the pilot project, the 2009 evaluation of Connected and the fact that the option did not align with the then successes and achievements of the pilot project. In addition, the 2010 EA emphasised the impractical nature of competitive funding:

- this model would not support cross-referrals across the full scope of all project partners;
- a significant number of projects that evolved during the pilot phase would undoubtedly be diminished without the input of all project partners i.e. they would not be viable without the input of QUB, UU and one or more of the FE Colleges;



- two separate project bids would have been likely to compound the confusion that already existed in the business community in particular in terms of accessing HE and FE expertise
- separate bids would not have underpinned the collaborative ethos of the HE/FE fund as this option would have promoted competition rather than collaboration.

The table below sets out alternative funding mechanisms for the allocation of Connected funding and considers the pros and cons of each. Option 1 is the mechanism has been used for Connected 1 and Connected 2 and would be the preferred option for any future initiative.

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Table 6.1: Funding Mechanisms - Options

Option	Pros	Cons
1. Status quo (i.e. single joint bid from the two universities and Colleges Northern Ireland)	<p>Consistent with programme ethos of collaboration</p> <p>Supported by CNI, QUB & UU</p> <p>High level of satisfaction</p> <p>Single point of contact – easier to promote / access for the business community</p> <p>Maintain process that all are familiar with</p>	<p>In the absence of competitive bids, the question might arise as to whether funding is being allocated to the “best” programme</p>
2. Competitive bids	<p>Through competitive bids, there might be some assurance that funding would be allocated to the “best” programme</p>	<p>Not consistent with programme ethos of collaboration</p> <p>Not favoured by Colleges, NI, QUB and UU</p> <p>Opportunities for cross-referrals across the 2 HEIs and the 6 FECs diminished by the existence of two separate, competing projects</p> <p>Some projects not viable without input of all (i.e. QUB, UU & FEC)</p> <p>Two separate projects would be likely to compound the confusion that already exists in the business community, in particular in terms of accessing HE and FE expertise</p> <p>A single point of contact is likely to generate more interest, enquiries and, ultimately, projects</p> <p>Change in process / may cause some disruption / “bedding in”</p>
3. Feasibility of formula allocations through the Department’s annual grant letter to the Universities	<p>Opportunity to “streamline” management of the programme for DEL and universities</p>	<p>DEL HE cannot fund FE</p> <p>DEL FE cannot fund on the basis of HE metrics</p> <p>Difficult to manage if 2 separate funding streams introduced – 1 for HE and 1 for FE</p> <p>Change in process / may cause some disruption / “bedding in”</p>

6.2.2 Draw down of funds for Connected 2

Given the positive experience of the management of funds during the pilot project, the same process has been continued for Connected 2. Funds are paid to and administered by the universities on behalf of the Department. Payments in respect of the FE sector activities are made by the University of Ulster to Colleges NI who administer financial arrangements on behalf of the FE Colleges.

Funding is paid by the Department to the universities on a quarterly 'in arrears' basis, with Colleges NI reimbursed for costs in a particular quarter by the University of Ulster on receipt of a list of approved costs, with evidence of appropriate paperwork and payments made. The reimbursed Colleges NI costs are then added to UU's costs and included within its quarterly claim made to the Department. QUB also makes a separate quarterly claim in respect of its costs.

Renewed Partnership Agreements setting out the financial and management arrangements between QUB, UU and ANIC (now Colleges NI) were established on receipt of the Letter of Offer. All three parties signed the Partnership Agreement and this was a requirement in the Letter of Offer from the Department, stipulating that no payments would be made until this Partnership Agreement was in place and a copy submitted to the Department.

6.3 Projected Expenditure

6.3.1 Total Project Expenditure

The table below presents the estimated expenditure for Connected 2 as set out in the 2010 Economic Appraisal (and in the subsequent Higher and Further Education Collaboration Fund Proposal). Expected breakdown by expenditure sub-category is presented in Appendix IV of the EA (cost of Option 4).

Table 6.2: Projected Expenditure per year by cost category (2010/11 – 2013/14)

Cost Category / Sub-Head	2010/11	2011/12	2012/13	2013/14	Total
Business Development					
Unit Manager	46,800	48,000	49,200	50,300	194,300
Clerical	19,000	19,500	20,100	20,600	79,200
Promotional Activities	30,000	32,000	35,000	40,000	137,000
Programme/International Development	5,000	5,000	5,000	5,000	20,000
IT/Office Equipment/Consumables	2,600	2,600	2,600	2,600	10,400
Website development	5,300	4,000	4,000	4,000	17,300
Total	108,700	111,100	115,900	122,500	458,200

Cost Category / Sub-Head	2010/11	2011/12	2012/13	2013/14	Total
Knowledge Transfer Project Delivery					
Salaries (FE)	420,000	430,500	441,258	452,292	1,744,050
Salaries (HE)	339,000	347,476	356,162	365,066	1,407,704
Travel/subsistence	9,400	9,400	9,400	9,400	37,600
IT/Office Equipment	6,400	6,400	6,400	6,400	25,600
Marketing FE	4,800	4,800	4,800	4,800	19,200
Total	779,600	798,576	818,020	837,958	3,234,154
Internal Knowledge Transfer					
Know-how and best practice acquisition	40,094	36,094	33,094	30,094	139,376
Staff training and development	72,708	68,232	62,546	56,642	260,128
Total	112,802	104,326	95,640	86,736	399,504
TOTAL	1,001,102	1,014,002	1,029,560	1,047,194	4,091,858

Source: 2010 EA of the HE/FE Collaboration Fund and Source: Higher and Further Education Collaboration Fund, Round 2, Proposal For Collaboration, "Connected 2", QUB, University of Ulster and ANIC March 2010

The budget was allocated across the three main delivery areas as follows:

- 11.2% of the total budget was allocated to the Business Development Unit;
- 79.0% was allocated to knowledge transfer project delivery (focusing on the employment of staff within each of the Partners); and
- 9.8% was allocated to internal knowledge transfer activities.

Allocation across the Partners was as follows:

- Queen's University – 19.6%;
- Ulster University – 19.6%; and
- Colleges NI (for Business Development Unit and the activities of the 6 FE Partners) – 60.9%.

6.3.2 Total Project Expenditure by QUB, UU and ANIC

The table below provides a breakdown of this total (£4,091,858) across cost categories and FE / HE.

Table 6.3: Costs Across QUB, UU & ANIC

Cost Category/Sub-Head	QUB (£)	UU (£)	ANIC (£)
Project Generation, Management & Development			
Total Costs of Business Development Unit			458,200
KT Project Delivery			
Salaries	703,852	703,852	1,744,050
IT equipment/consumables	3,200	3,200	19,200
Travel/subsistence	6,800	6,800	24,000
FE Marketing			19,200
Internal KT			
Know-how/best practice acquisition	29,500	29,500	80,373
Staff training/development	56,648	56,648	146,835
TOTAL	800,000	800,000	2,491,858

Source: DEL Higher and Further Education Collaboration Fund Round 2 Proposal for Collaboration "Connected 2" March 2010

6.4 Actual Expenditure

6.4.1 Overall Expenditure

To examine actual against expected expenditure, a review of funds drawn down (as reported in quarterly progress reports) and financial claims paperwork held by DEL has been completed. Details on actual expenditure were available up to the end of the quarter ending June 2013 i.e. the end of Year 4 Quarter 1. This information is presented in the table below.

Table 6.4: Actual Expenditure: April 2010 – June 2013

Quarter	QUB Spend Profile Total (£)	UU Spend Profile Total (£)	Colleges NI Spend Profile Total (£)	Total (£)
	Actual	Actual	Actual	Actual
Apr – Jun 2010	£276	£15,090	£77,090	£92,456
Jul – Sep 2010	£84,807	£39,680	£133,594	£258,080
Oct – Dec 2010	£44,437	£43,066	£125,025	£212,528
Jan – Mar 2011	£66,696	£69,884	£248,449	£385,029
Total Year 1	£196,216	£167,720	£584,158	£948,094
Apr - Jun 2011	£46,043	£46,651	£154,750	£247,444

	QUB Spend Profile Total (£)	UU Spend Profile Total (£)	Colleges NI Spend Profile Total (£)	Total (£)
Quarter	Actual	Actual	Actual	Actual
Jul– Sep 2011	£46,888	£44,754	£128,028	£219,670
Oct – Dec 2011	£53,346	£45,324	£150,766	£249,436
Jan – Mar 2012	£47,499	£52,924	£201,243	£301,666
Total Year 2	£193,777	£189,653	£634,787	£1,018,216
Apr – June 2012	£50,192	£57,847	£95,626	£203,665
Jul – Sep 2012	£46,089	£50,970	£94,111	£191,170
Oct – Dec 2012	£43,900	£42,954	£117,652	£204,506
Jan – Mar 2013	£50,974	£68,216	£274,181	£393,371
Total Year 3	£191,156	£219,987	£581,570	£992,712
Apr – June 2013	£55,721	£42,808	£97,408	£195,937
Total Year 4 (Q1)	£55,721	£42,808	£97,408	£195,937
Total spend	£636,869	£620,168	£1,897,923	£3,154,960
Total budget	£800,000	£800,000	£2,491,858	£4,091,858
Spend as % of budget	79.6%	77.5%	76.2%	77.1%

Source: Quarterly spend from HE-FE Collaboration Fund –Progress Reports (April 2010 – June 2013)

Figures for Colleges NI adjusted for Yr 2 Q1, Yr 3 Q2 and Yr 3 Q4 (due to timing issues, totals in Progress Reports do not always reflect total drawn down per quarter hence adjustments above)

At June 2013, actual expenditure under Connected was £3.1m, or 77.1% of the total budget. Thirteen out of sixteen quarters have now elapsed for the project – that equates to 81.25% of the project timescales. Therefore, the level of spend is broadly as expected to date.

Looking across the partners, QUB, UU and Colleges NI (including FE Colleges) are almost on track in terms of expected expenditure. By the end of Year 4 Quarter 1,

- Queen’s University has spent 79.6% of its budget;
- University of Ulster has spent 77.5% of its budget; and
- Colleges NI (including FE Colleges) has spent 76.2% of its budget.

6.4.2 Connected Business Development Unit - Actual and Projected Costs

Financial monitoring returns held by DEL do not present a breakdown of expenditure by area of activity. However, the Connected Business Development Unit collates this

information for Business Development Unit activities, FE staff costs and internal knowledge transfer activities. A summary of the financial information held by the Connected Business Development Unit is summarised in the table below.

This confirms that by the end of Year 4 Quarter 1, overall expenditure for the Business Development Unit, FE costs and internal knowledge transfer activity is at 76.2% of the budget. This represents a slight underspend of around 5% (given that expected expenditure would be 81.25% to this point in the project timescales).

By the end of Year 4 Quarter 1,

- 78.1% of the Business Development Unit has been spent (there are some areas of over and under spend under this category; however, the most significant area of underspend is in relation Promotional Activities – for which less than half of the budget has been spent. However of the budget left to spend, over £15K is ring-fenced for activities taking place in the next quarter and the remainder for activities in the final quarter and to cover over spend in web development);
- 73.8% of the Knowledge Transfer Project Delivery budget has been spent; and
- 90.8% of the Internal Knowledge Transfer budget has been spent.

Table 6.5: Connected 2 – Colleges NI & FE Partner Allocation – Budget vs Actual expenditure breakdown (Year 1 to Year 4 Quarter 1)

Cost Category / Sub-Head	Yr1	Yr1	Yr2	Yr2	Yr3	Yr3	Yr4	Yr4 Q1	Total	Total	Total	Total
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Actual vs. budget	
Business Development												
Unit Manager	46,800	45,957	48,000	54,527	49,200	50,846	50,300	12,199	194,300	163,529	30,771	84.2%
Clerical	19,000	23,493	19,500	24,502	20,100	26,804	20,600	6,273	79,200	81,072	-1,872	102.4%
Promotional Activities	30,000	7,713	32,000	30,594	35,000	9,497	40,000	15,524	137,000	63,328	73,672	46.2%
Programme/International Development	5,000	8,336	5,000	2,194	5,000	7,841	5,000	0	20,000	18,371	1,629	91.9%
IT/Office Equipment/Consumables	2,600	4,513	2,600	3,495	2,600	2,990	2,600	1,122	10,400	12,120	-1,720	116.5%
Website development	5,300	0	4,000	17,085	4,000	2,515	4,000	0	17,300	19,600	-2,300	113.3%
Total	108,700	90,012	111,100	132,397	115,900	100,493	122,500	35,117	458,200	358,019	100,181	78.1%
Knowledge Transfer Project Delivery												
Total	435,600	421,699	446,100	435,544	456,858	418,914	467,892	57,536	1,806,450	1,333,693	472,757	73.8%
Internal Knowledge Transfer												
Total	56,802	72,448	56,802	66,845	56,802	62,163	56,802	4,755	227,208	206,211	20,997	90.8%
TOTAL	601,102	584,159	614,002	634,786	629,560	581,570	647,194	97,408	2,491,858	1,897,923	593,935	76.2%

Source: Budget data from 2010 EA of the HE/FE Collaboration Fund and Higher and Further Education Collaboration Fund, Round 2, Proposal For Collaboration, "Connected 2", QUB, University of Ulster and ANIC March 2010; Actual data from Connected 2 Working Budget Final Review (November 2013).

7 OPERATIONAL FIT AND INNOVATION ECOSYSTEM IN NI

7.1 Introduction

In this section we briefly describe other programmes which are working to increase KT in NI. The programmes considered – as agreed with the Project Steering Group - include:

- NI HEIF (DEL)
- Employer Support Programme 2011/2012 – 2014/2015 (DEL)
- EU Framework / Horizon 2020 and DEL / DETI supports to access Horizon 2020 funding
- Knowledge Transfer Partnerships (Invest NI)
- Innovation Vouchers Initiative (Invest NI)
- Other Invest NI R&D and KT Supports including:
 - Technical Advisory Unit
 - Design Service
 - Grants for R&D
 - Framework Mentoring Programme
 - Innovation Advisors
 - Collaborative Networks Programme (CNP)
 - Proof of Concept Programme
 - Competence Centres
 - Intellectual Property
 - Technical Development Initiative (TDI) Scheme
- Other supports in Northern Ireland including:
 - MATRIX – Northern Ireland Science/Industry Panel
 - NISP “Connect” Initiative
 - UK Technology Strategy Board “Knowledge Transfer Networks”
 - Local Council Programmes
 - DARD / CAFRE Knowledge and Technology Transfer Activities
 - AFBI R&D and Knowledge Transfer Activities
- Cross Border Supports including:
 - Innovation for Competitive Enterprises (ICE) Programme
 - Cross-border Collaboration Vouchers
 - All-Island Innovation Programme
 - Fusion
 - INNOVA.

Each of the programmes is described in more detail in Appendix Part 1 – Section 4 – this includes information – where available – on:

- Eligibility
- Aims and objectives
- Supported offered
- Process of Delivery

- Funding
- Scale of Support
- Impacts and Outputs.

7.2 Summary - Fit of Connected 2 within the wider context of research and knowledge transfer

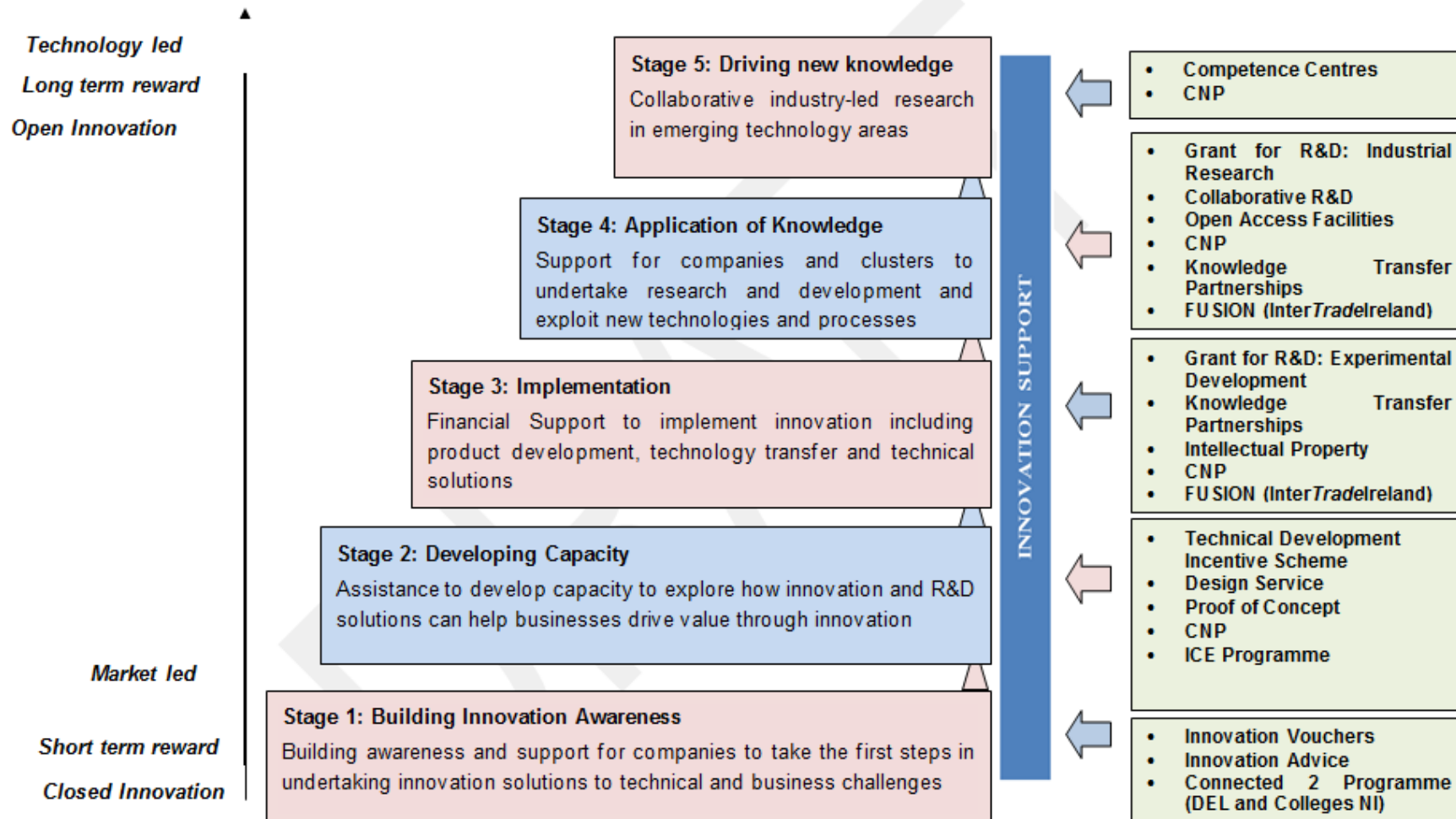
Collectively, the supports listed above constitute key elements of the current innovation ecosystem in NI. There are a wide range of interventions supporting research and knowledge transfer and these are located at different stages of the “innovation escalator”. The diagram on the following page illustrates how many of these supports work together to support innovation catering for a range of needs and capacity with SMEs.

Some similarities exist between the aims of HEIF (encouraging the embedding of knowledge transfer as a strategic priority within Higher Education Institutions), the Innovation Fund (encouraging collaborative working between FE colleges and local businesses) and Connected (encouraging collaborative working between HEIs, FE Colleges and businesses). However, each of these has a different focus and they are complementary.

Connected 2 also has a very particular role to play in encouraging the uptake of Innovation Vouchers and KTPs, both of which have similar aims but have a focus on longer term engagement and whilst Connected can build and develop relationships, these provide resources to implement ideas.

Overall Connected is well positioned within existing KT activities – its focus on awareness raising and engaging businesses at an early / entry level stage of the KT process is essential for those businesses not currently involved in the HE/FE network. It is therefore well positioned to act as a conduit for progression for businesses into existing KT activities i.e., Innovation Vouchers and KTPs. The “niche” for Connected is at the “entry” level – acting very much as a catalyst and introducing companies to the notion of innovation. Looking ahead, however, there is scope for Connected to consider a role in pushing those companies that are already on the innovation escalator on to the next level.

Figure 1: Innovation Escalator



Source: Invest NI

8 PROGRAMME MANAGEMENT, STRUCTURES AND IMPLEMENTATION COSTS

8.1 Introduction

In this section, we consider:

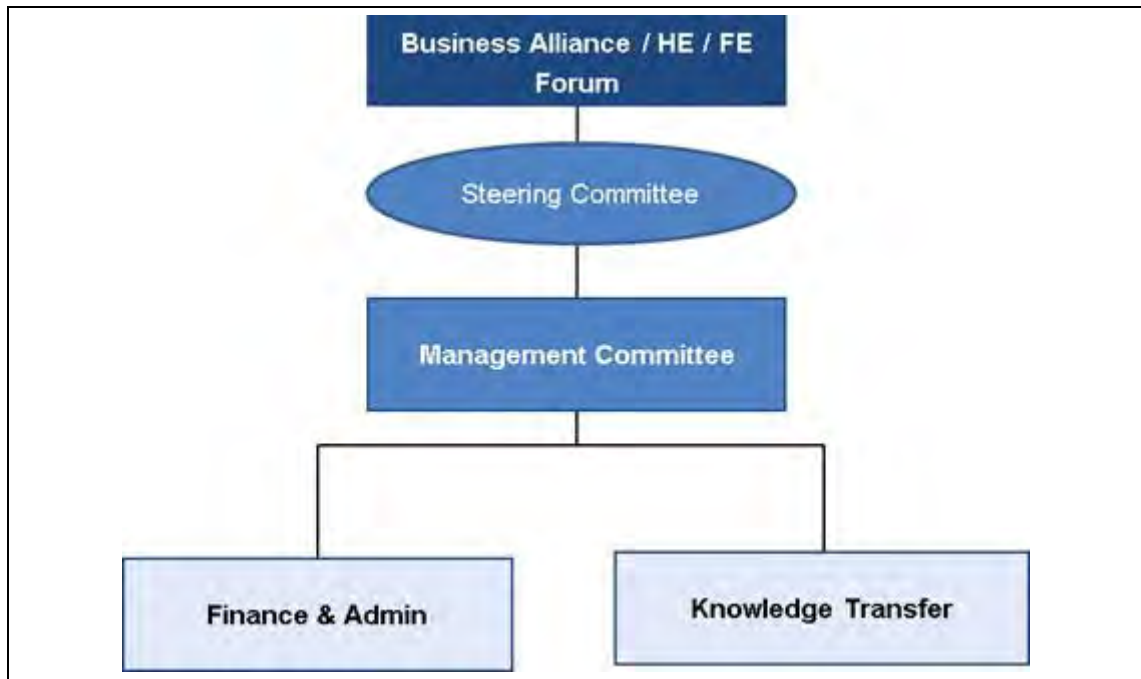
- The overall management structure for Connected 2 including proposed Steering Committee and Management Committee;
- The mechanisms and structures and staff in the Universities and FE Colleges to manage and deliver Connected 2;
- Implementation costs; and
- Consultation feedback on Structures and Mechanisms.

8.2 Management and Operating Structures

8.2.1 Management Structure for Connected 2

The management structure proposed for Connected 1 worked well but was adapted slightly during the delivery of the programme and an additional Steering Committee was introduced in November 2008. The management structure adopted for Connected 2 is as shown below:

Figure 8.1: Connected 2 Management Structure



Source: Higher and Further Education Collaboration Fund, Round 2, Proposal For Collaboration, "Connected 2", QUB, University of Ulster and ANIC March 2010;

8.2.2 Steering Committee and Management Committee for Connected 2

The **Steering Committee** for the Connected pilot (and intended for Connected 2) was chaired by Dr Ian McMorris and operated as a sub-committee of the Business Alliance/HE/FE Forum, serving as a practical catalyst between the Management Committee and the strategic input of the Business Alliance HE/FE Forum. Dr Ian McMorris is a Director at Genesis Consulting and board member of the Economic Research Institute for Northern Ireland and former Chairman of the CBI Northern Ireland. In addition to Dr McMorris, the Steering Committee comprised the Connected Project Manager and representatives from each of QUB, UU, DEL and Invest NI. Minutes of the meetings are forwarded to the Business Alliance/HE/FE Forum and to the Connected Project Officer in DEL.

The Business Alliance/HE/FE Forum was intended to provide the overall direction for the project. At the time that Connected 2 was being proposed, the Forum was an already active and effective group which had Knowledge Transfer from HE and FE into business as one of its key remits, having been established in response to the Northern Ireland Regional Innovation Strategy. It had a relevant composition, was chaired by a representative from industry and was the de facto Steering Group for the Higher Education Innovation Fund which provides the core funding for the universities' engagement with business and the wider community.

The Forum would be responsible for informing the strategic development and implementation of the overall project, for advising and informing HE and FE on the development of effective linkages in the private, community and public sectors, and for 'championing' the benefits of Knowledge Transfer in those sectors. It was planned that the Forum would meet four times per year.

However, in practice the Steering Committee did not meet and the future of the Committee was discussed at the Management Committee in 2012 (as reported in the Year 3 Quarter 3 Progress Report:

"The latest Management Committee meeting took place at Colleges Northern Ireland on the 3rd October 2012. During this meeting the Connected Steering Committee was discussed. This Steering Committee is hosted by Dr Ian McMorris. The Committee was set up during the pilot phase of Connected and was an additional reporting structure than that originally planned, operating as a sub-committee of the Business Alliance/HE/FE Forum. During a recent meeting with Dr Ian McMorris and further discussed at the Management Committee, it was felt that going forward this structure would no longer be tenable. The Business Alliance/HE/FE Forum has not met for a substantial time and it appears that this forum no longer exists. In addition, Dr John Anderson, who was the industry representative on the Committee, sadly passed away very suddenly. Dr Ian McMorris has suggested that going forward a new Steering Committee be established. The Management Committee has since discussed this proposal and would agree this as a favourable way forward."

The Connected **Management Committee** has representatives from the two universities and Colleges NI and is responsible for planning and implementation at the operational level, for the effective allocation of resources, for ensuring quality of delivery, and for reporting activity to the Business Alliance/HE/FE Forum and to the nominated DEL Project Officer. It aims to meet four times per year.

8.2.3 Business Development Unit for Connected 2

The Business Development Unit staffed by a Business Development Manager supported by a Project Administrator is responsible for a wide range of activities – particularly those reported in Section 5.2 under Strand 1 of the programme activities (Project Generation, Management and Development). The Unit has a co-ordinating role across all of the partners with responsibility for:

- co-ordinating the engagement of HE and FE staff across all key project areas working with HE industrial units and FE Business Development Units. This area of work includes links and collaborations with external stakeholders such as industry bodies, support agencies and innovation networks.
- monitoring and developing SSPs and working with project partners in identifying new projects (including an increased focus on the Social Economy and with AFBI and CAFRE).
- agreeing yearly plans with each project partner.

8.2.4 Proposed Management Structure for Connected 3

The Connected Management Committee is responsible for planning and implementation at the operational level, for the effective allocation of resources and for ensuring quality of delivery. Discussions have been held with Dr Ian McMorris and the Management Committee on the structure going forward under the new phase of Connected. Due to the demise of the Business Alliance HE/FE Forum the consensus is that going forward; this current structure would no longer be tenable.

Given the current situation, it has been suggested that under the new phase of Connected, the current Management Committee would remain but with additional representatives from industry and DEL. Colleges NI have come up with the following proposal on the management of Connected.

The Management Committee will meet quarterly. Chaired by Colleges Northern Ireland, the Committee will inform the overall strategic direction and leadership for the project, and ensure that associated activities are in line with the vision and aim of the project. The Committee will also inform on the development of effective linkages in the private, public and community sectors and support project staff by championing the benefits of knowledge transfer. Both internal and external stakeholders would be represented and therefore provide an overall strategic direction for project implementation. Furthermore, representation from DEL HE and FE Divisions would

complement the HE/FE vision of the project and ensure that Connected complements both DEL HE and DEL FE strategies.

The following committee members are proposed:

- Department for Employment and Learning - 2 representatives one from HE Division and one from FE Division
- Colleges Northern Ireland - 2 representatives
- University of Ulster - 2 representatives
- Queen's University - 2 representatives
- Industry - 2 representatives

8.2.5 Proposed re-grading of Project Administrator post to Project Support Officer for Connected 3

Under Connected 3 it is proposed that the Project Administrator post be re-graded to a Project Support Officer post. The current Project Administrator post has evolved over the course of Connected 2 and it is envisaged that going forward under Connected 3 the current scope of this post will be limited to offer the necessary administrative and additional support needed.

The main areas that this re-graded post will have responsibility for are the following:

- Management and development of CRM
- Management and development of Connected website and associated marketing materials
- Budget responsibility for CRM and website development
- Managing associated contracts with CRM and Website
- Delivery of CRM training to user group
- Ensuring the CRM system is integrated and facilitates a co-ordinated approach to the communication and interaction with project teams and project beneficiaries, i.e. industry, social economy, public sectors
- Developing and strengthening partnerships working with a range of external stakeholders and supporting project teams in raising awareness of Connected, particularly across projects resulting from those supported under the proposed competitive bidding process

The current Project Administrator post was written to support the pilot phase of Connected (2007 – 2010), for which none of the above duties and responsibilities would have been needed. This post was purely administration with no management responsibilities.

The current post and its associated duties have evolved since the pilot phase and is now being considered for a re-grading to offer the adequate support to the Business Development Manager post and the Connected project teams based at the University of Ulster, Queen's University and the six FE Colleges.

This new post would be required to pro-actively pursue marketing and promotional opportunities and feed them through the Connected CRM, website and associated marketing materials. This will be important under Connected 3 as support offered to companies will include moving them along the innovation escalator. The new post will also be expected to work closer with the project teams in raising awareness of the project both internally and externally.

There is an increasing demand on this current post from project teams to support and deliver training to the CRM user group, including the development of training materials. As part of the re-graded post, it would be the Project Support Officer's role to develop and deliver CRM training across both HE and FE. Going forward under Connected 3 it is proposed that the management and associated budget of the CRM and website will be given to the Project Support Officer post.

Cost:

- The current salary for the Project Administrator Post is £21,519
- The Project Support Officer post is proposed at point 33-36 salary band £27,849 - £30,012.

Taking into account, associated costs, the total additional cost would be: £39,293 over 4 years⁶⁷.

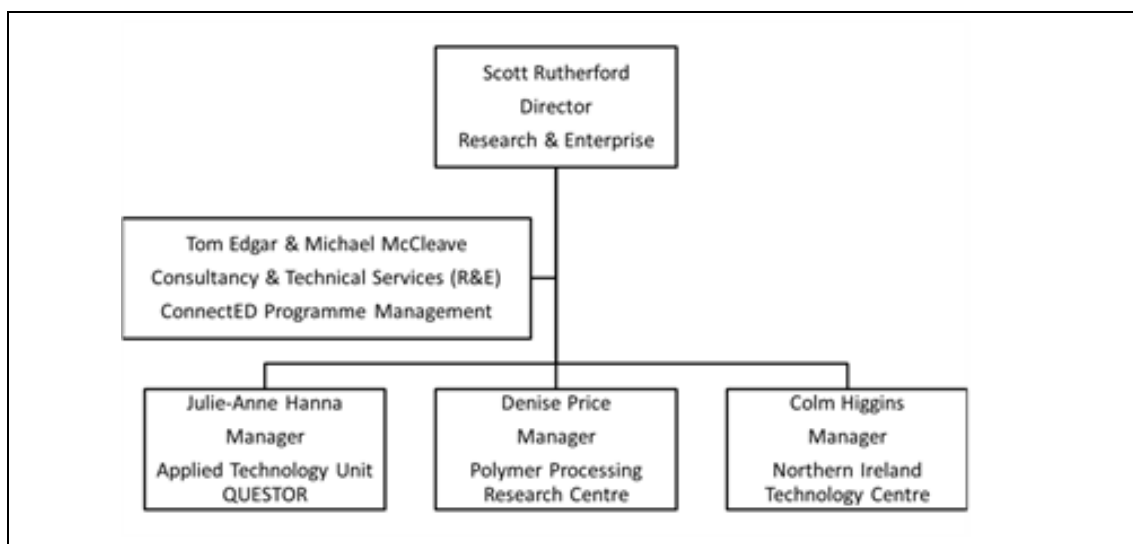
⁶⁷ Cost of post is:

- salary plus Employer National Insurance Contribution (13.8%) and Pension Contribution (6%) and car allowance (£1,239 per annum).
- current post: salary is assumed to be at current level (top of current band) with annual uplifts of 1% in April 2014 and 2% in each of April 2015, April 2016 and April 2017. Total cost over 4 years: £110,477.
- proposed upgraded post: assumed to be point 33 in April 2014, rising one point each year and assuming that there is an annual uplift of 1% in April 2014 and 2% in each of April 2015, April 2016 and April 2017. Total cost over 4 years: £149,770

8.3 Mechanisms and Structures in the Universities and Colleges to Manage Connected 2

8.3.1 Queen’s University Belfast

Figure 8.2: Queen’s University- Connected 2 – Delivery Team Structure



Source: QUB

Tom Edgar, Head of Consultancy & Technical Services, within the Research and Enterprise Directorate is the nominated Project Manager for the overall Connected 2 programme at QUB (supported by Michael McCleave from Tom’s office); Tom is the contact point for the Department for Employment and Learning (DEL).

With over 25 years’ experience in providing technology transfer services to industry, including 12 years as Director of the Northern Ireland Technology Centre, Tom has been responsible for a wide range of industrial and academic support services within the University, which includes design consultancy, rapid prototyping, manufacturing and business process re-engineering and the provision of continuing professional development courses in engineering. He has also been the programme manager on a number of technology transfer programmes funded by Invest NI, the Technology Strategy Board and the European Commission.

The Connected 2 Delivery Team which provides the on-going direction and governance of the programme at QUB consists of the managers of each of the 3 main delivery units within QUB i.e. Questor, PPRC and NITC which are all internationally recognised technology transfer Centres in their own specific fields of expertise. Each Centre provides application specific applied research and development expertise to generate knowledge and technologies for the needs of the local industry, and each is ideally placed to exchange complementary knowledge and expertise with FE colleagues in the appropriate disciplines. Tom Edgar facilitates the Delivery Team

meetings and is the authorised signatory for the financial aspects of the Connected 2 project with the University.

The Finance Directorate within the University provides the professional support and accounting services for the project including the collation and preparation of all the quarterly claims and financial reports to DEL.

The unit managers identified above participate directly in the Connected 2 programme as knowledge brokers in their own right, but are also managing agents and representatives of a wider group of experienced service providers within their specialist units who provide the breadth of knowledge exchange activities that makes the programme successful. As agreed by DEL the University received funding for 3 Full Time Equivalents (FTEs) to facilitate access to this wider knowledge base, the funding provided on a “back-filling” basis. In practice this funding has acted as a gateway to some 33 experienced staff within the units (and also within Research & Enterprise) in delivering support to the programme dependent on the nature of each individual enquiry. This facilitates a flexible and enhanced response that would not be possible via 3 dedicated individuals.

Given that each of these units have a requirement to be sustainable in their own right, prior to the introduction of the Connected programme the commercial pressures on each unit forced them to reduce their outreach or missionary role in favour of a guaranteed return on their investment of time and resources i.e. they were moving to a business model where they only worked with companies on a fully chargeable basis. Connected has enabled them to reinvigorate this outreach aspect of their knowledge exchange activities to include the more time-consuming and less financially rewarding engagement with micro-SMEs, and also with the Colleges.

8.3.2 University of Ulster – Management of Connected 2

8.3.2.1 Staff

The Office of Innovation is led by the Director of Innovation, Tim Brundle, and the Management of the Connected project falls to the Head of Business Development, Eddie Friel. Mike Patterson, Business Development Manager organises the Internal Knowledge Transfer Project Competitions within the faculties and prepares quarterly claims, based on information provided from the Finance system.

Prior to a review and restructuring within the Office of Innovation the University recruited a number of individuals to work solely on the Connected programme to support 4 areas, the Creative Industries, Life and Health Sciences, Green/Sustainable and Enterprise Development. Additionally certain other members of staff were mapped to the Connected project who were carrying out specific Connected tasks. These included clerical support to the Connected team, as well as Office of Innovation staff carrying out projects, involving FE Colleges and aligned to the Connected targets.

At the end of 2012 the Office of Innovation underwent a re-structuring and following a discussion between Boyd McDowell (DEL) and Tim Brundle, DEL confirmed it would be in order for Office of Innovation staff to book time to Connected, providing that the University ensured that there was a corresponding reduction in the salary bookings to HEIF. At present there are 16 staff with percentages of their time allocated to the Connected programme.

8.3.2.2 Internal Knowledge Transfer (IKT) Projects

Throughout the period funding has been made available for supporting Best Practice Acquisition and Staff Training and Development which is made available to the Faculties on a competitive basis as detailed below.

Regarding the funds allocated by the University for IKT projects, each Faculty is awarded an equal share of these funds and there is then an open competitive process, by application form, under which researchers in each Faculty are invited to apply. Funds are allocated by Faculty, assuming that the project meets the Connected criteria detailed in the application form, and the spend is approved against the stated outputs in the original application. All project spend is approved by Office of Innovation staff prior to procurement. If a faculty has unused funds the surplus is made available to other faculties.

8.3.2.3 UU Quarterly Claims to DEL

The claims submitted to DEL consist of two components as per the Letter of Offer:

- Claim from the University of Ulster
- Claim from Colleges NI and the FE Colleges

The Claim from UU has two components namely: salaries and Internal KT project costs:

- The UU salary funding is mapped against specific salaries and is agreed, and reported accordingly to DEL, as detailed above.
- For project funding, each faculty is awarded an equal share of the funds available as detailed above.
- The claim is prepared quarterly by request of payroll and transaction list data from the Research Management Accountant. The claim is made up of the salaries for the quarter and any project funds appearing on the Transaction list.

The Claim from Colleges NI and the FE Colleges:

- Colleges NI and the 6 FE colleges have Purchase Orders assigned to them based on the Letter of Offer and their projected spend for the programme.
- The invoice from Colleges NI is submitted to UU along with supporting documentation and approved by the Office of Innovation.



- The FE colleges spend is vouched and approved by Colleges NI in line with the Connected Partnership Agreement. Colleges NI retains all supporting paperwork and gives approval for FE College invoices to be paid, as per the Partnership Agreement. Once the invoices from the FE colleges for the quarterly claims are received and authorised for payment they are signed off by the Office of Innovation for payment.
- The Colleges claim is the sum of invoices received and paid for the quarter being claimed.

Figure 8.3: University of Ulster – Connected Structures



Note: names in red text indicate posts to which Connected funding contributes.

Source: University of Ulster 2013

8.3.3 HE and FE staff involved in Connected 2

Taking into account the information on HE staff involved in Connected 2 and also those from FE Colleges involved in Connected 2, there are over 90 staff in total with a role in either managing aspects of the programme (15) and elements of project delivery (77) – as shown in the table below.

Table 8.1 HE and FE Staff Involved in Connected

FE / HE	No. of Staff involved in Connected				
	Total	Project Management		Project Delivery	
		N	Details	N	Details
BMC	7	2	Project Manager Project Admin	5	Composites (1), Digital media (1), Connected health (2), Creativity and innovation (1)
NRC	29	7	Management (6) Project administration (1)	22	Clean Green Construction (2), Composites primary Processes (1), Composites secondary processes (1), Counselling for Health – Research and Development Activity (3), Development of Sports /Coaching online resources (1), Energy / renewables (2), ICT & Programming Skills Needs Analysis (1), Mobile Robotics (1), Research and IT development (2), Science (5), Sheet metal and secondary processes (1), Technical Skill Training Models (2)
NWRC	11*	2	Project Officer Finance	8	Advanced Engineering (1), Building STEM Connectivity (1), Employer engagement (1), Food development (1), Mental health (2), Skillset media (1), Software & gaming (1)
SERC	9	0	-	9	Composites Materials and Processing Upskilling (1), Developing International links (1), Engineering Solutions - Agri-Food (2), Environmental skills centre (2), Japan International project (3)
SRC	8*	0	-	7	Advanced Engineering (2), Business Innovation (1), Food Technology (1), Integrated Sustainable Build Technology (2), Life & Chemical Sciences (1)
SWC	9	0	-	9	Construction Infrastructure dev. (2), Creativity design & innovation (1), Digital Visualisation (2), ICT (1), Manufacturing productivity (1), Smart Homes (1), Sustainable &

FE / HE	No. of Staff involved in Connected				
	Total	Project Management		Project Delivery	
		N	Details	N	Details
					renewables (1)
Total FE	73*	11	n/a	60	n/a
Queen's University	5	2	Programme Management (2)	3	PPRC (1), Questor (1), NITC (1)
University of Ulster	16	2	Head of Bus. Dev. & Business Dev. Mgr	14	Range of areas
Total HE	21	4	n/a	17	n/a
Grand Total (FE and HE)	94*	15	n/a	77	n/a

*2 individuals - role not specified

Source: Based on information from Colleges NI, QUB and UU

8.4 Cost of Implementing the Programme (DEL Resources)

Table 8.3 illustrates the resources allocated by DEL to managing the Programme; these are associated with ongoing / regular activities and do not include costs associated with developing the new programme, securing the necessary approvals or commissioning this evaluation.

Table 8.2: DEL Resources Allocated to Managing the Connected 2 Programme

Activity involved in managing the "Connected 2" programme	Resource	Resource Time
Reviewing Quarterly Reports and Meeting with HEIs and Colleges NI	Deputy Principal	5% FTE DP
	Principal Officer	1% FTE PO
Processing Claims and Financial Monitoring	Staff Officer	5% FTE SO
	EOII	10% FTE EOII
Briefings / AQs etc	Deputy Principal	3% FTE DP
Note: These costs do not include costs for developing the new programme, securing the necessary approvals or commissioning this evaluation etc. Source: DEL		

Applying average costs per grade for 2011/12 and 2012/13, the total cost of DEL resources to manage the programme are: £9,004 pa. Given the programme ran from

April 2010 to March 2014 (4 years), this equates to £36K for the duration of the programme overall.

8.5 Consultation Feedback on Structures and Mechanisms

8.5.1 FE / HE staff feedback on the Business Development Unit

Respondents to the FE / HE staff survey (see Appendix Part 2 – Section 5) were invited to comment on their involvement in various aspects of the Connected 2 Programme. In relation to the Business Development Unit, respondents were most satisfied with the project management and reporting mechanisms (92.6% of 54 respondents); at least 83% of respondents were also satisfied with marketing and PR, business development, communication with FE / HE staff and overall support provided to FE / HE staff. The only aspects that a minority of respondents were dissatisfied with were: marketing and PR and overall support (2 respondents) provided to FE / HE staff (1 respondent).

HE/FE staff were also asked what aspects of the Business Development Unit worked best. The most common responses were the support provided (16 respondents) and good communication (10 respondents). The aspects that some respondents referred to that did not work as well were: the need for further networking with the delivery team (5 respondents), the CRM system and marketing / PR issues (3 respondents).

8.5.2 Company feedback on FE / HE staff and programme

Results from the company survey (see Appendix Part 2 – Section 3) show that overall respondents were mostly satisfied with all aspects of the Connected 2 Programme (all areas considered had at least 75% of respondents stating that they were satisfied or very satisfied). The knowledge, skills and experience of the HE / FE staff was rated highly by most respondents (86.3%), followed by the quality of match between the company and knowledge transfer provider (85.2%) and the timelessness of HE / FE responses to queries (84.9%). Although communication with FE / HE staff was the issue with which respondents expressed they were most commonly dissatisfied, the figure was still very low (only 7.7% of the 52 respondents). This shows that the companies responded well to the methods used by Connected 2 in facilitating knowledge transfer.

When asked to describe the aspect of Connected 2 that worked best, 10 of 45 respondents cited the quality of match, 8 respondents felt it was well coordinated and 7 respondents were satisfied with the accessibility of the programme. Other responses cited level of advice (n=5), timelessness (n=4) and funding (n=2).

17 respondents recommended improvements that could be made to the engagement between their company and the knowledge transfer provider (note that 11 respondents stated 'None' in response to this question). A better initial setup process was most

frequently stated (n=4), followed by a desire for more regular contact (n=2), more time (n=2) and more structured programmes (n=2).

8.5.3 FE / HE staff feedback on Internal Knowledge Transfer and working with other FE / HE staff in other institutions

Respondents to the FE / HE staff survey (see Appendix Part 2 – Section 5) were invited to comment on their involvement in various aspects of the Connected 2 Programme. Under the third strand of activity (Internal Knowledge Transfer) the most common form of activity for 54 respondents was staff training and development (tailored training programmes) (74.1% provided or participated in / attended activities relating to this. A further 60% were also involved in this activity in relation to company visits). This was followed by the provision of technology awareness / discipline specific training to FE staff (66.7% provided or participated in / attended activities relating to this). The remaining activities involved 39-56% of the 54 respondents, indicating a high level of involvement in most aspects of the strand.

The aspects of FE/HE Internal Knowledge Transfer that respondents stated worked best was building relationships, the sharing of knowledge and good practice, and cooperation and collaboration (12 respondents). The most common aspects respondents highlighted that did not work as well was the need for closer cooperation, better communication / identification of contacts and having more time to develop links/KT.

Over 71% were satisfied or very satisfied with almost all aspects of the Programme regarding working with other professional staff in their own and other FE/HE institutions. The only aspect which rated lower was access to additional physical resources / equipment / infrastructure of other FE / HE institution(s) (64.2% found this to be satisfactory or very satisfactory), this was also the only aspect which one respondent cited as being dissatisfied with. The aspects that worked best in engaging with other FE/HE staff were collaboration / building relationships (14 respondents) and the sharing of ideas and knowledge (9 respondents). Those which did not work as well included the need for more meetings / networking (4 respondents), more time to build relationships (2 respondents), the timeliness of HE responses (2 respondents) and time/funding issues (2 respondents).

9 VALUE FOR MONEY

9.1 Introduction

This stage reviews: the Base Case, what would have happened in the absence of the programme, and the additionality levels (full and partial). This draws on evidence from consultation with stakeholders as well as findings from surveys with those companies involved in the Connected 2 programme and those companies who were not involved.

We have also reviewed the Economy, Efficiency and Effectiveness of the Programme, the overall impact (including wider / regional impacts) of funding and the costs and benefits of this support.

9.2 Additionality, Deadweight and Displacement

Additionality: An impact arising from an intervention is additional if it would not have occurred in the absence of the intervention. A project is regarded as fully additional if, without intervention, it would not happen at all. However, additionality may be partial e.g. if an activity is undertaken on a larger scale, or earlier, or to a higher standard, or within a policy target area, as a result of public sector intervention. In cases of financial assistance, additionality should be assessed to establish that the proposed assistance is the minimum necessary.⁶⁸

Displacement: The degree to which an activity promoted by government policy is offset by reductions in activity elsewhere⁶⁹.

Deadweight: Expenditure to promote a desired activity that would in fact have occurred without the expenditure. In terms of financial assistance, deadweight is any excess over the minimum assistance required to secure a project.

Additionality, displacement and deadweight have been assessed from the surveys of companies participating in Connected 2. The table below shows the full and partial additionality of the programme for these companies.

⁶⁸ <http://www.dfpni.gov.uk/index/finance/eag/eag-glossary.htm>

⁶⁹ The Northern Ireland Practical Guide to The Green Book- Department of Finance and Personnel 2003

Table 9.1: Additionality of the Programme

	Company Survey
Full Additionality ⁷⁰	35% (14 probably, 4 definitely) would not have gone ahead with project
Partial Additionality ⁷¹	50% (n=26) would have gone ahead (longer timescales and/or smaller scale)
Deadweight ⁷²	14% (n=7) would have gone ahead with the project with the same result
Displacement ⁷³	The companies who indicated partial additionality provided some further explanation of other supports that they might have accessed. However the work completed would have been of a lesser scale and/or over a longer timescale; in addition it is not clear to what extent collaboration might have featured.

Source: RSM McClure Watters November 2013

9.3 Value for Money

In order to assess value for money we consider:

- **Effectiveness:** involves considering whether an intervention's objectives have been met. This normally requires a judgement on the extent to which the achieved outcomes mean that objectives have been achieved.
- **Efficiency:** considers the benefits (the net outputs or outcomes) compared to the intervention costs (expressed in the form of cost benefit or cost effectiveness ratios).
- **Economy:** Economy considers the extent to which activities were delivered at minimum cost, so requires looking at some ratio between activities and inputs.

Based on available evidence, we see that:

- **Effectiveness:** There is clear evidence of the effectiveness of the programme given the feedback from survey respondents in terms of meeting programme and project aims, objectives and outcomes achieved (see Section 5.2 which refers to programme performance and 5.2.6 which summarises overall performance to the end of Year 4 Quarter 1). In addition, there is positive feedback from Colleges NI, QUB and UU with regard to DEL's effective management of the programme.

⁷⁰ **Full additionality** - benefits are wholly attributable to the programme, i.e. deadweight and displacement are zero

⁷¹ **Partial additionality** - activity would have been carried out earlier, or on a larger scale or to a higher specification or has displaced existing activity.

⁷² **Deadweight** - activity that would have occurred regardless of the policy

⁷³ **Displacement** of activity within a local area (taking market share from other local firms producing the same or similar goods or services)

- **Efficiency:** The ratio of funding leveraged (i.e. income generated by FE / HE which is £1.26m) to programme costs (around £4m) is around 0.3: 1.0 to date). It is also worth highlighting that this is likely to be an underestimate of the impact of the programme as there are many other outcomes and impacts, also wider economic benefits that cannot easily be monetised for example. There are also 3 further quarters of the programme to be completed as well as allowing for a lag between current interventions and impacts being realised; and
- **Economy:** The cost to deliver the programme has been estimated from DEL staff time allocated to programme management activities as £36k. This represents a very small proportion of overall programme costs (£4m); the ratio being 0.09%.

Taking account of this evidence, it would be reasonable to conclude that the programme has offered considerable evidence of Value for Money over the period under evaluation.

10 BENCHMARKING

10.1 Introduction

This section gives an overview of numerous comparable knowledge transfer programmes in several countries across Europe and the UK. These are:

- Switzerland;
- Sweden;
- Finland;
- Scotland;
- Wales;
- Republic of Ireland;
- Joint Information Systems Committee (UK); and
- National Centre for Universities and Business (UK).

Switzerland, Sweden and Finland have been considered as they are the top 3 EU countries from the Global Innovation Index 2013 (which ranks countries across the world in relation to the enabling environment provided for innovation and on their innovation outputs).

Scotland and Wales are included due to similarities to NI, and the RoI as it shares a land border with NI. The Joint Information Systems Committee (JISC) and the recently established National Centre for Universities and Business (NCUB) are also included as two UK initiatives that support links between FE, HE and businesses.

The table in section 10.2 provides an overview of the similarities and differences between Knowledge Transfer Supports in other countries and Connected 2 in Northern Ireland. The table aims to identify any lessons which can be learnt from benchmarked countries which would improve future delivery of Connected 2. Detailed descriptions of the benchmarking exercise can be found in the appendices to this document in Section 5.

10.2 Summary of International Benchmarks

Country	Key Lessons / Best Practice Learning
<p>Switzerland</p>	<p>In Switzerland R&D Funding is distributed from Government Funding Agencies. Of this funding 68% goes directly to institutions who are involved in performing R&D such as Universities, Technical Institutes and Universities of Applied Sciences. Only 32% of the funding goes directly to specific Projects or Programmes run by Government through Intermediary Agencies or Institutions such as the afore mentioned.</p> <p>Switzerland is widely regarded as the most innovative country in Europe and as a result their methods are used as a source of best practice across the world. The Swiss have multiple agencies tasked with promoting R&D and Innovation both nationally and internationally. Basic research mainly takes place at the federal institutes of technology and at universities. Applied research and development and the transfer of knowledge into marketable innovations, however, is primarily the domain of the private sector and universities of applied sciences. The public sector finances research according to liberal principles. This means that funds are awarded on the basis of the researchers' individual initiative on a competitive basis, where the decisive factor is the quality of the proposals submitted. Promotion of international cooperation is another cornerstone of this policy.</p> <p>Although there are no directly comparable programmes operating in Switzerland, the method of awarding funding may be constructive to Northern Ireland in any future restructuring of current policy. Switzerland has successfully increased the levels of R&D&I by awarding funding to specific institutions and individuals that are tasked with completing research on a specific area.</p>
<p>Sweden</p>	<p>There are two key agencies responsible for the delivery of innovation in Sweden: the Swedish Research Council; and the Agency for Innovation Systems (VINNOVA).</p> <p>Although the Swedish Research Council does not have a scheme which is directly comparable to the Connected Programme they do provide funding to similar activities including:</p> <ul style="list-style-type: none"> • Grants for Recruitment of Researchers; • Grants to hold Innovation Conferences which act as network events for companies and universities; and • Grants for scientific research. <p>The Connected Programme could learn from the methods employed with the Swedish Research Council to improve the aspects of the support they provide which are similar to these schemes.</p> <p>The Agency for Innovation Systems (VINNOVA) is Sweden's innovation agency. VINNOVA stimulates collaboration between universities, companies and research institutes via the encouragement of a greater use of research, and by making investments in solid research and innovation settings.</p>

Country	Key Lessons / Best Practice Learning
	<p>Although there is not presently a scheme which is directly comparable to Connected, the VINNOVA does fund some of the activities that Connected would support such as:</p> <ul style="list-style-type: none"> • Graduate placements; • Financial support for collaboration; • Advice and guidance on difficult issues such as confidentiality and Property Rights. <p>Some of the mains barriers to innovation present in Northern Ireland are in relation to the issues of confidentiality and Intellectual Property Rights. Investment in an advice scheme similar to that run through VINNOVA could help to alleviate some of the obstacles around this area. This could be in the form of advice and guidance to companies or support in the form of workshops on contractual agreements between University / Colleges and business.</p>
Finland	<p>There are two main bodies responsible for the innovation system in Finland, namely the Ministry of Employment and the Economy, and the Ministry of Education and Science. In addition to these, Tekes is the main funding agency for increasing innovation, development and research in Finland. Although Tekes is the main funding agency there is presently no scheme for the promotion of collaborative research between companies and educational institutions. Instead Tekes provide funding to businesses and education institutions individually to undertake R&D. This approach has led to SME co-operation towards innovation in Finland growing at a faster rate than the average across Europe. Given this, there may be lessons to be learnt in terms of the structure of the funding streams for R&D in Northern Ireland.</p>

10.3 Benchmarks in the UK and Ireland

Country	Key Lessons / Best Practice Learning
Wales	<p>Although there is no directly comparable scheme currently in Wales there are a number of initiatives which could be adapted or incorporated into the future delivery of Connected.</p> <p>One element is Expertise Wales (EW). This is a government funded searchable database which provides businesses with a link to the services, facilities and experience offered by Welsh Universities and Colleges. A system like this could operate in Northern Ireland as a signpost to the universities and colleges in Northern Ireland and to the Connected Programme. This could be used as an initial method of contact for business looking to engage in research and innovation and who are unsure what support is available. This may help to alleviate some of the barrier with regard to weakness in networks and information which was identified in Section 4.5.3 of this report.</p>

Country	Key Lessons / Best Practice Learning
Rol	<p>There are a multiplicity of Cross-Border Schemes promoting innovation and R&D between Northern Ireland and Rol. Some of these include Innovation Vouchers and The R&D Fund. At present Connected is only available to SMEs in Northern Ireland.</p> <p>Other agencies in Ireland including Enterprise Ireland, Science Foundation Ireland and the Industrial Development Agency (IDA Ireland) provide a range of supports to encourage innovation in business and academia.</p> <p>The Department of Jobs, Enterprise and Innovation (DJEI) recently launched a one-stop-shop service, similar to the Wales EW site which brings together a number of important resources that companies can access directly. Unlike the Welsh version, the DJEI site contains accessible databases of researchers and funders that a company can use to locate the appropriate research body / individual or the most appropriate stream of funding. A system like this could operate in Northern Ireland as a signpost to the universities and colleges in Northern Ireland and to the Connected Programme. This could be used as an initial method of contact for business looking to engage in research and innovation and who are unsure what support is available. This may help to alleviate some of the barriers with regard to weakness in networks and information which was identified in Section 4.5.3 of this report.</p>
Joint Information Systems Committee (JISC)	<p>The JISC is a charity which is funded by the FE and HE Sector with a goal to providing leadership in the ICT support of Education within the UK.</p> <p>One of the programmes offered under the suite of supports is a Business and Community Engagement Programme (BCE). This aims to encourage FE and HE to support business and the wider community through the ICT innovation related technologies they develop which could lead to significant efficiency savings.</p> <p>Connected 2 aims to encourage a transfer of Knowledge from HE and FE to the wider community and methods employed in the BCE programme could be used in any future Connected programme to maximise efficiency benefits to the wider community.</p>
National Centre for Universities and Business (NCUB)	<p>Supported by all of Department for Business, Innovation and Skills (BIS), Research Councils UK (RCUK), Technology Strategy Board (TSB), Higher Education Funding Council for England (HEFCE), Scottish Funding Council (SFC), Higher Education Funding Council for Wales (HEFCW) and DEL, NCUB was established following the Wilson Review of 2012 with the overall aim of growing value by enabling the UK to be the best in the world at business-university collaboration.</p> <p>NCUB aims to support UK businesses and HE institutes in a competitive global market, and has a vision of the UK becoming world-leading for university and business collaboration. Its aim is to find practical ways of harnessing the talent being developed in UK universities, and the UK's strength in ground-breaking research and development, for the benefit of the nation's economy.</p> <p>Although some of the specific objectives of NCUB are comparable to those of the Connected 2 Programme, they are to be achieved through distinctly</p>

Country	Key Lessons / Best Practice Learning
	<p>different means. NCUB is primarily concerned with finding ways to improve the entrepreneurial skills, employability skills and opportunities for students who are in Higher Education. The result of this is the Global Graduates Project which brings together senior leaders in HE and business to help increase UK graduate mobility and examine how universities can embed the skills needed for global employability into the student learning experience.</p> <p>While students do participate in the Connected 2 Programme, there may be scope to increase focus on the development of their entrepreneurial and employability skills, ensuring the Programme meets the needs of both businesses and students. This would mean a focus on what students can learn from businesses as well as how businesses can improve their performance. The work undertaken by NCUB may provide a good understanding of how collaboration can deliver high quality work placements that meet the needs of students and business.</p>

10.4 Scottish Interface

10.4.1 Interface Programme

The Interface Programme is the most comparable benchmark programme to the Connected 2 Programme in Northern Ireland, hence we have considered this programme individually.

Interface was established in August 2005 based on recognition that despite SMEs representing the largest share of the business sector in Scotland they accounted for approximately only 2 to 5% of businesses engaging with Universities. Specifically Interface was designed to address market failure in respect of difficulties companies face in identifying and accessing support, compounded by the mass of information which has to be obtained and examined to assess supply-side capability and capacity (the Higher Education Institutions (HEIs) and Research Institutions (RIs⁷⁴)), in order to reach the appropriate collaborative partner. The aim of Interface is, 'to develop interaction and stimulate innovation to benefit Scottish companies and the Scottish economy'.

Several evaluations of the Interface Programme have been carried out; the learning from the Scottish Interface Programme (and in particular lessons for Connected) are discussed in the next section.

⁷⁴ Initially focusing on HEIs only since January 2007, Interface has expanded its remit including Scotland's research institutes adding to its portfolio of partners and now represents over 20 higher education and research institutions.

10.4.2 Learning from Scottish Interface Programme

The Interface Programme shares many features with Connected 2. Drawing on experience of Interface (and in common with Connected 2):

- There is a need for such an intervention in addressing issues of confusion and lack of transparency for businesses seeking to tap into the (FE) / HE sector's expertise and resources;
- It is stimulating demand in the marketplace;
- It is widening the spectrum of business interactions with HEIs;
- It complements other initiatives and has built up good relationships with these;
- It plays a useful role as a first port of call and signposting agency for companies, HEIs / RIs and other business support organisations and stakeholders;
- It has a distinctive and important role and has helped raise the profile of knowledge exchange while addressing known market failure constraining HE / Business interaction;
- The importance of a central point of entry for companies into the academic expertise / academic knowledge base;
- The programme delivers benefits in a range of areas including: health, environmental and sustainability benefits;
- The programme is fulfilling an important gap in the knowledge exchange landscape by helping to make engagement between SMEs and academia more cost effective and efficient;
- There is evidence that Interface is effectively reaching 'harder to reach' small and micro enterprises with little experience of engaging with academia;
- The value of services that Interface provides does not necessarily diminish as businesses gain experience of engagement.

Specific lessons that apply to Connected looking forward include:

- A continued focus on SMEs as its primary target market and particular attention to any key sectors that are under-represented in uptake of the service;
- Consideration of introducing a charge for repeat customers, but services to new customers should remain free;
- Efficiency gains that may be realised through use of ICT / online tools – for example for Connected, this could be further enhancement of the CRM system;
- Ensuring that monitoring and evaluation is streamlined to provide reporting on essential issues in line with the main objectives of the service;
- Importance of FE / HE to ensure that the outputs and impacts of all projects are maximised so that businesses realise all of the benefits;
- Maintaining an on-going relationship with clients after a project has been initiated is an important part of the Interface service offering that is likely to become increasingly important as the number of clients assisted increases.

11 CONCLUSIONS

11.1 Introduction

In this section, we set out conclusions against each aspect of the Terms of Reference, drawing on an evidence base including desk research, consultation with key stakeholders and also survey data (from surveys of companies involved in Connected 2 and those companies that were not involved in Connected 2).

11.2 Effectiveness of the programme in meeting its aims and objectives

ToR 1: ‘The effectiveness of the “Connected 2” programme in addressing its stated aim and objective’.

To assess the effectiveness of the programme in relation to aims, objectives and outcomes, we considered evidence from Progress Reports and feedback from consultees (including survey respondents).

Table 11.1: Effectiveness of the Programme in meeting aims and objectives

Aim/ Objectives	Evidence
<p>Aim: to enable the Higher Education (HE) and Further Education (FE) sectors to identify and meet, in a coordinated and holistic fashion, the Knowledge Transfer needs of businesses in particular, and also of the wider community</p>	<p>In terms of the extent to which the programme has met its objectives and outcomes below – the Progress Reports and feedback from consultees / survey respondents provides clear evidence that the programme is meeting its aim.</p> <p>See Sections 11.9 and 11.10 below.</p>
<p>Objective 1: Enhancing the engagement of business and the wider community in Knowledge Transfer – Project Generation, Management and Development</p>	<p>Of the 12 targets per annum, most have been met or exceeded each year:</p> <ul style="list-style-type: none"> • In Year 1, 7 were met / exceeded, 4 were close to target and 1 was not met. • In Year 2, 10 were met / exceeded and 2 were close to target; • In Year 3, 10 were met / exceeded and 1 was close to target and 1 was not met; and • In Year 4 Q1, 4 were met / exceeded, 7 were close to target and 1 was not met. <p>By Year 4 Q1 six of the twelve targets under Objective 1 had been met or exceeded. Considering a key target of</p>



Aim/ Objectives	Evidence
	<p>particular interest to DEL:</p> <ul style="list-style-type: none"> Development of Clusters – the full four year target of 4 has already been met.
<p>Objective 2: Knowledge Transfer project delivery</p>	<p>Of the 15 targets per annum most have been met or exceeded each year:</p> <ul style="list-style-type: none"> In Year 1, 10 were met / exceeded, 2 were close to target and 3 were not met; In Year 2, 12 were met / exceeded, 1 was close to target and 2 were not met; In Year 3, 10 were met / exceeded and 5 were not met; In Year 4 Q1, 5 were met / exceeded, 2 were close to being met and 8 were not met; <p>By Year 4 Q1 12 of the 15 targets under Objective 2 had been met or exceeded. Considering three key targets of particular interest to DEL:</p> <ul style="list-style-type: none"> Sector Specific Projects – the targets in each year have been exceeded and there are 50 unique SSPs against an overall four year target of 30; Total number of projects – the full four year target has already been exceeded by more than a factor of 2 (541 vs 267); Total value of projects (ie income/fees paid to HE/FE) – the full four year target has already been exceeded by more than a factor of 1.5 (£1.2m vs £0.8m).
<p>Objective 3: Internal Knowledge Transfer</p>	<p>Of the 4 targets per annum most have been met or exceeded each year:</p> <ul style="list-style-type: none"> In Year 1, all 4 were met / exceeded. In Year 2, 2 were met / exceeded, 1 was close to target and 1 was not met In Year 3, 2 were met / exceeded, 1 was close to target and 1 was not met; and In Year 4 Q1, 3 were met / exceeded and 1 was not met <p>By Year 4 Q1, three of the four targets under Objective 3 had been met or exceeded.</p>

11.3 Effectiveness of the programme in achieving outcomes

ToR 2: ‘The extent to which each of the anticipated outcomes has been achieved, or is likely to be achieved by the end of the programme (March 2014)’.

Table 11.2: Effectiveness of the Programme in meeting anticipated outcomes

Anticipated Programme Outcomes	Evidence
1. Universities and FE colleges continue to develop together their Knowledge Transfer missions for the benefit of business and the wider community.	See Section 11.9 The synergy between the universities KT Strategies (as required under NI HEIF) and the Connected 2 Programme is clear.
2. A strengthening of the holistic approach between the universities and FE Colleges to address the needs of business and the wider community.	The ethos of the Connected 2 programme is collaborative working to address identified business needs. The scale of activity under Connected 2 and the number of targets that are met or exceeded to date provide evidence that Connected 2 strengthens this holistic approach.
3. Enhanced engagements between business and the wider community and Northern Ireland’s research base, strengthening current partnerships and opening pathways to new collaborations.	The number of completed projects (541 to date against a four year target of 267) indicates the extent of engagement between business and the wider community and NI’s research base. These include completed projects with current clients (249), with new clients (229), with re-engaged clients (14), and with current/previous Connected 1 clients in new business areas (49). Furthermore the high levels of satisfaction recorded by participating companies and FE / HE staff provide evidence of the positive way in which these relationships are viewed. From the FE/ HE staff survey, there is evidence that between 50% and 60% of staff had not previously been involved in the Connected 1 pilot programme – again demonstrating the new collaborations that have been developed under Connected 2.
4. A contribution to Northern Ireland’s research base supporting a two-way flow of knowledge and ideas between researchers, academics, public and private enterprises that will work towards ensuring a vibrant research base and wealth creation for Northern Ireland.	See 1–3 above
5. Enhanced capacity of the FE	Under Objective 3, the Programme has sought to

Anticipated Programme Outcomes	Evidence
<p>sector, through effective links with the HE sector, to provide timely and appropriate advice and support to SMEs on the adoption of new technology and innovative business practices.</p>	<p>develop Internal Knowledge Transfer. By the end of Year 4 Qtr 1, 3 of the 4 targets in this area had been met or exceeded – relating to training and development engagements, staff exchange visits and international visits.</p> <p>Feedback from the FE-HE staff survey shows that the most common form of activity under this strand was staff training and development (tailored training programmes) followed by company visits and provision of technology awareness / discipline specific training to FE staff.</p> <p>The aspects of FE/HE internal transfer that respondents stated worked best was building relationships, the sharing of knowledge and good practice, and cooperation and collaboration (12 respondents).</p>
<p>6. Greater facilitation of Knowledge Transfer activities by providing business and the wider community with increased opportunities to meet and network with the HE and FE sectors.</p>	<p>A range of activities were planned and developed under Objective 1 of the programme: Project Generation, Management and Development (see Section 5.2.2, 5.2.5 and 5.2.6). Some of these seek to provide increased opportunities to meet and network with the HE and FE sectors and include: stakeholder meetings, newsletters, events, editorial and press articles, and case studies.</p>
<p>7. Improved industrial performance through innovations and new collaborations by driving the flow of people, knowledge and experience across business and academia.</p>	<p>The Connected 2 programme has delivered a wide range of outputs and impacts for participating companies through a range of initiatives that it has supported including individual projects with companies as well as broader initiatives such as SSPs.</p> <p>See Section 11.10 for further commentary</p>
<p>8. The development of a broader range of sectoral initiatives seeking to address the future needs of business and the wider community and utilising the distinctive provision of the Connected partners.</p>	<p>Sector Specific Projects (SSPs) are potentially long-term, strategically focused projects. A strength of the SSP model is that, while strategically focused, such projects can also respond to one-off, quick turnaround enquiries and embrace initiatives such as Invest NI Innovation Vouchers and Knowledge Transfer Partnerships (KTPs).</p> <p>The SSP model demonstrates the effectiveness of the catalytic nature of HE / FE collaboration. These SSP projects developed naturally from the increase in HE/FE collaborative activities i.e. staff exchange visits, internal Knowledge Transfer activities, Knowledge Transfer team meetings in the pilot Connected programme. This model of collaboration was brought to the next stage of development in Connected 2.</p> <p>SSPs have been a success in Connected 2 with the overall four year target of 30 being exceeded substantially by 20 to date. These cover a wide range of</p>

Anticipated Programme Outcomes	Evidence
	sectors and partners.
9. An enhanced provision of Connected services to the Social Economy sector by exploring new and innovative ways of embracing the socio-economic benefits of collaborating with this sector.	<p>Connected 2 has provided services to the social economy sector – this is evident in that:</p> <ul style="list-style-type: none"> • 16 of the 469 completed projects to date (around 3%) involved the social economy sector • 3 of the 50 SSPs to date involve the social economy sector
10. The introduction of initiatives and development of networks and contacts aimed specifically at creating increased links to the Agri-Food and Biosciences Institute (AFBI) and the College of Agriculture, Food and Rural Enterprise (CAFRE).	<p>There have been a number of engagements with AFBI and CAFRE including meetings, collaborative workshops and a number of SSPs in which AFBI and/or CAFRE are involved. However, in the absence of dedicated funding from DARD for project staff in AFBI or CAFRE to lead on building collaborative working with FE / HE through Connected, the contacts / engagement have tended to be ad hoc rather than strategic.</p>
11. Greater awareness of Knowledge Transfer successes across internal and external stakeholders through increased marketing and promotional activity. The further development of enterprising and stimulating environments for Knowledge Transfer.	<p>A range of activities were planned and developed under Objective 1 of the programme: Project Generation, Management and Development (see Section 5.2.2, 5.2.5 and 5.2.6). Some of these seek to raise awareness of KT successes (e.g.: stakeholder meetings, newsletters, events, editorial and press articles, and case studies). However, a key issue raised in consultation with external stakeholders was a lack of awareness of “Connected” as a brand, though there was familiarity with the types of activity it delivered.</p>
12. The development of best practice in building HE / FE collaboration.	<p>Under Objective 3, the Programme has sought to develop Internal Knowledge Transfer. By the end of Year 4 Qtr 1, 3 of the 4 targets in this area had been met or exceeded – relating to training and development engagements, staff exchange visits and international visits.</p> <p>Under Objective 3 of the Programme, there have also been internal HE/FE events. These included events such as meetings between project partners and Invest NI which provided the opportunity for institutions to showcase their expertise, develop contacts and receive guidance on potential opportunities for serving individual businesses, as well as business more widely.</p>
13. A reduction in the perceived barriers to Knowledge Transfer by Northern Ireland’s SME sector	<p>Feedback from the company survey suggests that there are still barriers (either real or perceived) to KT within the SME sector. The most critical barrier to companies engaging with HE / FE institutes was lack of awareness</p>

Anticipated Programme Outcomes	Evidence
	<p>of the opportunities available (75% respondents found this significant or very significant). Lack of awareness of HE / FE partners and lack of time and resources to pursue collaborations were also considered as significant or very significant barriers (by more than half of respondents).</p> <p>The FE-HE staff survey also indicated that limited awareness amongst SME's and Micro-Businesses that universities can offer problem solving expertise and industry support was a barrier (37.7% of 53 respondents).</p> <p>Whilst these perceptions prevail, it is clear that Connected 2 has had a positive impact on addressing the barriers given the level of engagement in KT by SMEs. For example the number of projects completed to date (with 9 months of the project left to run) is 541 against a 4-year target of 267.</p>
<p>14. An enhanced range of professional and working relationships between HE and FE Knowledge Transfer staff resulting in increased learning and capability.</p>	<p>The scale of activity being delivered through Connected 2 (including project generation, project delivery, SSPs and internal knowledge transfer) provides many opportunities for HE and FE staff to develop and build professional working relationships.</p> <p>The three most common outputs (with at least 94% of FE/HE staff citing these) relate to longer term benefits:</p> <ul style="list-style-type: none"> • Enhanced networks and relationships; • Opportunity for participation in rewarding & on-going collaboration with innovative businesses; and • Development of staff expertise – income generation/ technical skills. <p>The first and last of these provide evidence that this outcome is being met.</p> <p>The aspects of FE/HE internal transfer that respondents stated worked best were building relationships, the sharing of knowledge and good practice, and cooperation and collaboration. The most common aspects respondents highlighted that did not work as well was the need for closer cooperation, better communication / identification of contacts and having more time to develop links/KT.</p>
<p>15. Enhanced international linkages across HE and FE and greater sharing of linkages and</p>	<p>Under Objective 1, a target was set in relation to International Innovation Recce Visits (4) and to date 3 have been completed (with 9 months of Connected 2 still</p>

Anticipated Programme Outcomes	Evidence
networks.	to run). Under Objective 3, a further complementary target was set in relation to International Visits (target to Year 4 Qtr 1 was 34 and that has already been exceeded by 4). These involved very targeted visits from the partner institutions involved in Connected to establish new relationships and strengthen existing links with other, specific international institutions with the aim of developing future strategic projects and transferring any knowledge gained to other Connected partners.
16. An enhancement of the current monitoring and recording system to allow for better monitoring and reporting of progress against Connected targets.	The implementation of a new Customer Relationship Management (CRM) system was a key target for Connected 2. This has been met (see Sections 5.2.2, 5.2.5 and 5.2.6) See Section 5.5 for details of the new CRM.

11.4 The justification for and benefits of the programme

ToR 3: ‘The justification for and benefits of the programme in terms of the need which it was intended to address’.

The justification for the Connected 2 programme arose from evidence of need as follows:

- The success of the pilot Connected programme;
- The UK and NI strategic contexts in relation to the need for increased research, innovation and Knowledge Transfer and the important link between innovation and economic competitiveness;
- The relatively low levels of innovation in NI (particularly the marked reduction in “innovation active” companies: from 38% (2006-08) to 27% (2008-10));
- The crucial role that Knowledge Transfer plays in relation to innovation and hence the role for Universities and FE Colleges (in the transfer of knowledge);
- The fit with Universities’ KT Strategies and Colleges’ increasing focus on engaging with business;
- The support for the initiative from FE, HE and businesses;
- The importance of “joined up” Knowledge Transfer from the HE/FE sectors to business in particular;
- The anticipated benefits of knowledge transfer including its contribution to an innovative and knowledge-based economy;
- The recognition of key barriers to innovation in NI including financial and market barriers.

- Includes the direct cost of innovation and availability of finance.
- Also, due to established companies already operating in the market, there is less motivation for SMEs to pursue R&D while uncertainty over demand for innovative goods or services is also detrimental.

11.5 Net additionality of the programme

ToR 4: ‘The net additionality of the programme through determining the base case of what would have happened to university / FE college liaison with business and the community in the absence of the programme, generating estimates of deadweight.

Additionality, displacement and deadweight have been assessed from the surveys of companies participating in Connected 2. The table below shows the full and partial additionality of the programme for these companies.

Table 11.3: Additionality of the Programme

	Company Survey
Full Additionality ⁷⁵	35% (14 probably, 4 definitely) would not have gone ahead with project
Partial Additionality ⁷⁶	50% (n=26) would have gone ahead (longer timescales and/or smaller scale)
Deadweight ⁷⁷	14% (n=7) would have gone ahead with the project with the same result
Displacement ⁷⁸	The companies who indicated partial additionality provided some further explanation of other supports that they might have accessed. However the work completed would have been of a lesser scale and/or over a longer timescale; in addition it is not clear to what extent collaboration might have featured.

Source: RSM McClure Watters November 2013

This represents an improvement compared to the evaluation of the pilot Connected 1 programme for which, the level of full additionality was 22.2%, partial additionality was 22.2% and deadweight was 56%. It suggests that the Connected 2 programme has been more effective at targeting support to focus on those companies which are unaware of, or who have previously not engaged with, the HE/FE sector. This direction of travel is a very positive feature of Connected 2 and should be continued.

⁷⁵ **Full additionality** - benefits are wholly attributable to the programme, i.e. deadweight and displacement are zero

⁷⁶ **Partial additionality** - activity would have been carried out earlier, or on a larger scale or to a higher specification or has displaced existing activity.

⁷⁷ **Deadweight** - activity that would have occurred regardless of the policy

⁷⁸ **Displacement** of activity within a local area (taking market share from other local firms producing the same or similar goods or services)

11.6 Wider “spill-over” benefits of the funding, including additional knowledge transfer projects and other collaborations

ToR 5: ‘The wider “spill-over” benefits of the funding, including additional knowledge transfer projects and other collaborations.

The summary of performance against targets provides a wide range of information on what the programme has achieved (see Sections 5.2.5, 5.2.6 and 11.2). This includes 541 completed projects, 50 SSPs and income generated by HE/FE of around £1.26m all after just three and a quarter years of the four year programme. A range of direct outputs and impacts delivered by the programme are discussed in Section 11.10. Apart from these:

- Companies also reported other benefits as a result of engagement with Connected 2: the most frequently reported were increased industry knowledge (n=8) and stronger links with FE college / university (n=7); and
- HE / FE staff reported benefits that were not anticipated including: marketing opportunities and training and access to equipment.

11.7 Relevance of the programme to the local, national and European strategic contexts

ToR 6: ‘A detailed consideration of the strategic context in which the programme is operating including its contribution to the local, national and EU policies, including, but not limited to:

- **UK Ten Year Science and Innovation Investment Framework (2004 – 2014)**
- **FE Means Business - Department for Employment and Learning (2004)**
- **FE Means Business Implementation Plan – Department for Employment and Learning (2006)**
- **Sainsbury Review of Science and Innovation (2007)**
- **UK Science and Innovation (“Innovation Nation”) White Paper (2008)**
- **Wellings Report on Intellectual Property and Research Benefits (2008)**
- **Standing Together: Universities Helping Business Through The Downturn (2008)**
- **Regional Innovation Strategy for Northern Ireland Action Plan (2008 – 2011)**
- **Varney Review of the Competitiveness of Northern Ireland (2008)**
- **MATRIX Report (2008)**
- **Higher Ambitions: The Future of Universities in a Knowledge Economy - Department for Business Innovation and Skills (2009)**
- **Northern Ireland Executive’s Programme for Government (2011 – 2015)**
- **Northern Ireland Economic Strategy - Department of Enterprise, Trade and Investment (2012)**

- **Graduating to Success: A Higher Education Strategy for Northern Ireland - Department for Employment and Learning (2012)**
- **Preparing for a Lower Corporation Tax Environment (2012)'**

There is evidence of a good fit between the programme and NI, UK and European contexts both at the time the programme was launched and also looking ahead.

At the time that the programme was launched, there was a clear emphasis on the importance of knowledge transfer to the UK innovation ecosystem and economic prosperity. The Sainsbury Review of Science and Innovation highlighted that there was little to be gained from research in universities, research institutes and further education (FE) colleges if there are not strong links between the researchers and industry. Meanwhile the Regional Innovation Strategy 2008-2011 (DETI) called for NI businesses to become more innovative and creative in order to compete in the global market and that there needs to be a championing and exploitation of innovation and R&D. It also makes specific mention of the Connected programme.

Looking ahead, there is also a good potential fit between a further (third) round of Connected going forwards and the broader EU, UK and NI contexts. There is a strong emphasis on the importance of knowledge and innovation and its links to industry. One of the three core principles of the Europe 2020 strategy is Smart Growth; to develop an economy based on knowledge and innovation. This is supported by the Witty Review (2013) which indicates that universities can support growth by working with organisations responsible for setting strategies to drive economic growth (such as the Local Enterprise Partnerships in England). At a NI level, the NI Economic Strategy (2012) emphasises the concept of stimulating Innovation, R&D and Creativity through knowledge transfer activity; and the Innovation Strategy for Northern Ireland 2013-2025 (Draft for Consultation, September 2013) highlights a need for more companies across all sectors to be engaged in innovation.

11.8 Fit of the programme within the wider context of DEL's research and knowledge transfer funding portfolio and that of DETI / Invest NI

ToR 7: 'The logical and operational fit of the programme within the wider context of DEL's research and knowledge transfer funding portfolio and also that of DETI/Invest NI'.

In Section 7, we have set out a range of supports in the current innovation ecosystem in NI. There are a wide range of interventions supporting research and knowledge transfer and these are located at different stages of the "innovation escalator". The "niche" for Connected is at the "entry" level – acting very much as a catalyst and introducing companies to the notion of innovation. Looking ahead, however, there is scope for Connected to consider a role in pushing those companies that are already on the innovation escalator on to the next level.

11.9 Effectiveness of the programme in advancing the universities' and FE Colleges' Knowledge Transfer strategies

ToR 8: 'The effectiveness of the programme in advancing the universities' and FE colleges' Knowledge Transfer strategies'.

Both QUB and UU are required to produce a Knowledge Transfer Strategy as a condition of NI HEIF funding. KT Strategies were produced under NI HEIF 3 to cover the period from Academic Year (AY) 10/11 to AY 12/13, reflecting the context around the time Connected 2 was launched. DEL has recently approved KT Strategies from QUB and UU under NI HEIF 4, covering the period from AY 13/14 to AY 15/16, and which reflect the context looking ahead. The FE Colleges are not required to produce KT Strategies.

Under FE Means Business, which was published in 2004, colleges were given a strategic mission to be more supportive of business and responsive to the needs of the economy. As colleges have evolved, post-merger, they have become 'big-hitting' institutions in their own right, with much more enhanced capabilities. It is recognised that there is a need to redefine the role of colleges, in supporting economic development, which will be taken forward in the near future⁷⁹.

The QUB NI HEIF 3 KT Strategy had at its root the concept of partnership working including collaborative working between the two universities, for example through long standing joint initiatives linked to the operation of the KTP scheme (in which QUB is the leading UK HEI) and the (joint QUB/UU) Science Shop. This concept continues to be embraced by QUB in its involvement in initiatives such as Connected and the NISP Connect programme.

UU's NI HEIF 3 KT Strategy aimed to continue to develop innovation, building on previous innovation performance under N HEIF 2 and continuing to support a broad commercial agenda through engagement with staff within the University, external agencies and collaborators who could add value to UU's innovative practice. The strategy was supportive of the development of effective working collaborations with other relevant bodies. The main activities within UU's KT Strategy were Business Outreach, Knowledge Transfer and Technology Commercialisation.

⁷⁹ It is worth noting that before Connected was established as a pilot programme in 2007, there was a lack of meaningful linkages and coordination between the HE and FE sectors in terms of business engagement. This was particularly evidenced by the Invest NI-commissioned report on "The Role of the FE Sector in Fostering Innovation and Entrepreneurship" (May 2005), which emphasised the need for improved HE / FE collaboration and included the key recommendation that "there should be strong connections between HE and FE in the drive to improve innovation into SMEs". This is important context in considering the performance of HE compared to FE: there is evidence of strong HE performance in delivering on Connected, whilst for FE there is evidence of substantial progress having been made with improving performance and commitment. Connected has produced a real step change in this regard and the FE commitment is becoming stronger.

The new QUB KT Strategy under NI HEIF 4 contains six key aims, one of which is to **stimulate increased business investment in research and development, particularly amongst SMEs**. It also outlines key areas of KT activity going forward which are:

- Research commercialisation and spin-outs;
- Consultancy and technical services;
- Knowledge Transfer Partnerships and FUSION;
- Business alliance;
- Business networking;
- Impact management;
- The Science Shop; and
- Support for Student Enterprise.

It also states that the following areas of focus will be common across many of QUB's KT activities, linking the various areas of activity to QUB high-level goals:

- **Optimising existing business relationships**, and leveraging opportunities for increased engagement at higher stages on the "innovation ladder", particularly in relation to SMEs;
- **Creating new relationships and partnerships** at all levels in the innovation ecosystem;
- **Increasing academic engagement in knowledge exchange and impact realisation**, and creating more porous boundaries between academia and organisations in the private and public sectors to maximise the potential for the achievement of impact; and
- **Increasing public engagement with research and enterprise activities** and developing awareness of Queen's impact on the economy and society.

The new UU KT Strategy under NI HEIF 4 includes the following aims:

- To establish the University of Ulster as the knowledge provider of choice for SMEs across the island of Ireland;
- To be a sector leader in support of creative, digital and social enterprises;
- To be the lead provider of academic consultancy services across Ireland;
- To be a UK top 3 provider of Knowledge Transfer Partnership (KTP) programmes;
- To establish UU's leadership in **academic Open Innovation**;
- To partner with business to increase and expedite the **commercialisation of UU's Intellectual Assets**;
- To extend UU's innovation functions to support student and graduate entrepreneurship; and
- Through its innovation activities to support the research impact agenda of the University of Ulster.

It also states that the key areas of KT activity will be:

- Business Engagement;
- Research Collaboration;
- Technology Commercialisation; and
- Investment and Enterprise.

There are synergies evident between the universities' KT Strategies and the aims and objectives of the Connected Programme. It is evident that in achieving the aims, objectives and outcomes of the programme, there has been a corresponding contribution to the universities' KT Strategies.

Feedback from company surveys indicates that the programme has contributed to key aspects of the universities' KT Strategies – see evidence at Section 11.2 and Section 11.9.

11.10 Overall impact of the programme

ToR 9: 'An analysis of the overall impact of the programme, identifying the costs and benefits of the support, both quantifiable and unquantifiable, taking into account the monitoring frameworks operated by DEL'.

The overall programme costs amount to just over £4m funding over four years from Financial Year (FY) 10/11 to FY 13/14. Although nine months of the programme have still to run, it has already delivered a wide range of benefits (including outputs, outcomes and impacts as previously described in Section 11.2 (ToR1) 11.3 (ToR2) and Section 11.5 (ToR5). Some of these are expressed in monetary terms, others cannot be monetised.

The summary of performance against targets provides a wide range of information on what the programme has achieved (see Sections 5.2.5, 5.2.6 and 11.2). This includes 541 completed projects, 50 SSPs and income generated by HE/FE of around £1.26m.

From the company survey, there are a wide range of outputs and impacts reported (see Appendix – Part 2 – Section 3):

- **Main impacts of the programme:** a wide range of impacts was reported. At least 46% of companies mentioned the following impacts: increase in innovation, increase in R&D capability, increase in productivity as a result of up-skilling and new business generated through the project. Around one third also indicated impacts in the following areas: leveraged other funding or support as a result of the collaboration and new exports generated as a result of the collaboration.
- **Outputs of the programme:** a number of outputs were recorded. The most significant, as stated by at least 80% of companies, were: transfer of knowledge from partner(s) to companies and an improvement in existing skill and expertise levels or a development of new skills and expertise. Other important outputs that

were reported by at least 45% of companies were: direct (positive) effect on company turnover, positive impact on the profitability of the company, company developed or invested in a new technology as a result of collaboration with HE/FE partner, and company adopted a new business practice as a result of collaboration with HE/FE partner.

- In terms of **future impacts and other benefits arising from engagement with Connected 2**: at least 57% of companies recorded the following: improved existing skill & expertise levels or development of new skills & expertise, transfer of knowledge from partner(s) to company, impact on profitability of company and company turnover. Around 40% mentioned other positive future impacts that included: company survival, employment, jobs maintained, development or investment in a new technology as a result of collaboration with HE/FE partner, adoption of new business practices as a result of collaboration with HE/FE partner.
- Companies also reported **other benefits as a result of engagement with Connected 2**: the most frequently reported were increased industry knowledge (n=8) and stronger links with FE college / university (n=7).
- In terms of engagement with the programme, at least 66% of respondents found it be very beneficial as all benefits were achieved and 31% felt it was somewhat beneficial as some benefits were achieved.
- Significantly, 52% of companies noted an **increase in turnover in the last 18 months** (of these, 21% by <5%, 12% by 6-10%).

From the FE-HE staff survey, there are a wide range of outputs and impacts reported (see Appendix – Part 2 – Section 5). Staff were invited to comment on **outputs and impacts** in the following areas:

- **Business Development**: At least 73% of FE-HE staff achieved each of the 6 outputs in this area; and at least 67% of FE-HE staff achieved each of the 5 impacts in this area;
- **Curriculum Development**: At least 56% of FE-HE staff achieved 3 of the 5 outputs in this area; the 2 exceptions were identification of new research themes and undergraduate / postgraduate projects (commercial relevance). At least 58% of FE-HE staff achieved the 1 impacts in this area;
- **Academics and KT Staff - FE and HE**: At least 73% of FE-HE staff achieved 6 of the outputs in this area; the 2 exceptions were: increased number of published papers/research articles & improved HE/FE Institution research ratings. At least 88% of FE-HE staff achieved the 2 impacts in this area;
- **Businesses**: At least 55% of FE-HE staff achieved 4 of the 5 outputs in this area; the exception was exposure to KT from CAFRE & AFBI. At least 63% of FE-HE staff achieved 5 of the 6 impacts in this area (the exception being: spill over impacts (supply chains));
- **Link to Research Bases and International Contacts**: At least 47% of FE-HE staff achieved each of the 4 outputs in this area. At least 38% of FE-HE staff

achieved 3 of the 4 impacts in this area – the 1 exception being: submissions to other research funding.

- **Knowledge Transfer- Internal Processes & Culture:** At least 58 % of FE-HE staff achieved 7 of the outputs in this area.

The three most common outputs (with at least 94% of FE/HE staff citing these) relate to longer term benefits:

- Enhanced networks and relationships;
- Opportunity for participation in rewarding & on-going collaboration with innovative businesses; and
- Development of staff expertise – income generation/ technical skills.

Each of these were cited by staff as drivers for participating in the Programme, showing that the Programme is meeting the expectations and needs of the FE/HE staff involved.

The three most common impacts (with at least 86% of FE/HE staff citing these) were:

- Reputation Strengthened with Business and the Community
- Positive feedback from industry on the skills / expertise of FE & HE and suitability of courses to meet business needs
- Increased linkages with Business regarding FE/HE training / Increased participation of employees on courses / Up-skilling employees

These all refer to the improved relationships between the FE/HE institution and the business community and the capacity development of staff.

Benefits that were not anticipated were marketing opportunities and training and access to equipment.

11.11 Value for money

ToR 10: ‘An independent assessment of value for money in terms of effectiveness, efficiency and economy focusing on input and output indicators, as well as outcomes’.

In order to assess value for money we consider:

- **Effectiveness:** There is clear evidence of the effectiveness of the programme given the feedback from survey respondents in terms of meeting programme and project aims, objectives and outcomes achieved (see Section 5.2 which refers to programme performance and 5.2.6 which summarises overall performance to the end of Year 4 Quarter 1). In addition, there is positive feedback from Colleges NI, QUB and UU with regard to DEL’s effective management of the programme.

- **Efficiency:** The ratio of funding leveraged (i.e. income generated by FE / HE which is £1.26m) to programme costs (around £4m) is around 0.3:1.0 to date. It is also worth highlighting that this is likely to be an underestimate of the impact of the programme as there are many other outcomes and impacts, also wider economic benefits that cannot easily be monetised for example. There are also 3 further quarters of the programme to be completed as well as allowing for a lag between current interventions and impacts being realised; and
- **Economy:** The cost to deliver the programme has been estimated from DEL staff time allocated to programme management activities as £36k (i.e. £9k per annum). This represents a very small proportion of overall programme costs (£4m); the ratio being 0.09%.

Taking account of these three key criteria, it would be reasonable to conclude that the programme has offered considerable evidence of Value for Money over the period under evaluation.

11.12 Benchmarking

ToR 11: ‘A benchmarking of the programme with any similar HE / FE collaborative initiatives in other regions’.

Knowledge transfer initiatives were considered in several countries across Europe and the UK. These are:

- Switzerland;
- Sweden;
- Finland;
- Scotland;
- Wales;
- Republic of Ireland (RoI);
- Joint Information Systems Committee (UK); and
- National Centre for Universities and Business (UK).

Switzerland, Sweden and Finland have been considered as they are the top 3 EU countries from the Global Innovation Index 2013 (which ranks countries across the world in relation to the enabling environment provided for innovation and on their innovation outputs).

Scotland and Wales are included due to similarities to NI, and the RoI as it shares a land border with NI. The Joint Information Systems Committee (JISC) and National Centre for Universities and Business (NCUB) are also included as two UK initiatives that support links between FE, HE and businesses.

However reflecting the high degree of novelty and uniqueness of DEL’s Connected programme, most of these other initiatives are not directly comparable to Connected 2, with the one possible exception of the Interface Programme (Scotland). Established in

August 2005, Interface was designed to address market failure in respect of difficulties companies face in identifying and accessing support, compounded by the mass of information which has to be obtained and examined to assess supply-side capability and capacity (the Higher Education Institutions (HEIs) and Research Institutions (RIs⁸⁰)), in order to reach the appropriate collaborative partner. The aim of Interface is, 'to develop interaction and stimulate innovation to benefit Scottish companies and the Scottish economy'.

The Interface Programme shares many features with Connected 2. Drawing on the experience of Interface (and in common with Connected 2), there are a number of potential lessons for Connected looking ahead:

- A continued focus on SMEs as its primary target market and particular attention to any key sectors that are under-represented in uptake of the service;
- Consideration of introducing a charge for repeat customers, but services to new customers should remain free;
- Efficiency gains that may be realised through use of ICT / online tools – for example for Connected, this could be further enhancement of the Customer Relationship Management (CRM) system;
- Ensuring that monitoring and evaluation is streamlined to provide reporting on essential issues in line with the main objectives of the service;
- Importance of FE / HE to ensure that the outputs and impacts of all projects are maximised so that businesses realise all of the benefits;
- Maintaining an on-going relationship with clients after a project has been initiated is an important part of the Interface service offering that is likely to become increasingly important as the number of clients assisted increases.

11.13 How effectively the programme has been managed by DEL

ToR 12: 'An independent assessment of how effectively the programme has been managed by DEL'.

In order to assess the effectiveness of DEL in managing the programme, we consider:

- DEL programme management costs: These have been estimated as **£36K** over the duration of the programme (4 years). This represents 0.09% of the value of the funding under management by DEL (£4m) and is clearly a relatively low resource cost to deliver the programme in its current format.
- Stakeholder feedback on the Programme: Overall feedback in relation to the management of the programme by DEL has been positive. The stakeholders' comments can be summarised as follows:

⁸⁰ Initially focusing on HEIs only since January 2007, Interface has expanded its remit including Scotland's research institutes adding to its portfolio of partners and now represents over 20 higher education and research institutions.

- The programme was generally well regarded;
- There are good working relationships between the partners and DEL;
- The reporting processes and claims draw down processes put in place by DEL are clear and provide a useful means of managing the programme:
 - > Colleges NI is keen to maintain quarterly reporting to ensure it has an accurate picture in terms of what the FE colleges are involved in;
 - > The Universities, however, would be keen to move to less frequent reporting.

There was one main area for improvement identified within DEL – that relates to the involvement of FE Division, as well as HE Division, in the monitoring and management of the programme. This will help to ensure information is shared and exchanged within DEL with regards to programme performance and to avoid any potential duplication by Connected of other initiatives being developed by FE Division. Colleges NI have put forward a proposal in this regard that involves including DEL representatives from both HE and FE Divisions on a new Management Committee (see Section 8.2.4).

11.14 Appropriateness of the mechanisms and structures within NI's HE / FE colleges to manage the "Connected 2" funds

ToR 13: 'A consideration of the appropriateness of the mechanisms / structures within NI's universities and FE colleges to manage the "Connected 2" funds'.

In order to assess the appropriateness of the mechanisms/structures within the universities and colleges to manage the Connected 2 funds, we consider:

- The mechanisms / structures in place to manage the Programme. These are largely unchanged from the pilot Connected programme and continue to work well;
- Feedback from FE / HE staff and companies involved in Connected 2. Amongst those directly involved in the programme, their feedback provides an endorsement of the work to date of all of the partners. For example:
 - A generally high level of satisfaction was reported:
 - > From the company survey (see Appendix Part 2 – Section 3), the majority of respondents were mostly satisfied with all aspects of the Connected 2 Programme (all areas considered had at least 75% of respondents stating that they were satisfied or very satisfied). Positive feedback from QUB, UU and Colleges NI on working relationships;
 - > From the survey of HE-FE staff (see Appendix Part 2 – Section 5), over 80% of HE-FE staff were satisfied or very satisfied with every aspect of the Business Development Unit within Connected;
 - Most would take part in the Programme again:
 - > An overwhelming majority of respondents to the company survey (96.4%) would collaborate with HE / FE again in the future;

- > All HE / FE staff would take part in a similar Programme again.
- Most would recommend the Programme to others:
 - > A large proportion of respondents to the company survey (88.9%) would recommend the service to others;
 - > The Programme received a positive endorsement from HE / FE staff, as 100% of 50 respondents stated they would recommend it to peers/colleagues in HE / FE Institutions. Moreover, 100% of 52 respondents stated they would recommend it to SMEs.

11.15 Section 75 requirements

ToR 17: ‘Section 75 requirements should be taken into account. In respect of any recommendations made consultants will be required to consider whether there are any likely impacts on anti-poverty social inclusion, equality of opportunity or good relations. In doing so consultants may recommend measures to mitigate against any adverse impacts.’

Section 75 of the Northern Ireland Act 1998 requires the Department for Employment and Learning, in carrying out all its powers, duties and other functions, to have due regard to the need to promote equality of opportunity:

- Between persons of different religious belief, political opinion, racial group, age, marital status or sexual orientation;
- Between men and women generally;
- Between persons with a disability and persons without; and
- Between persons with dependants and persons without.

Considering equality issues in the current Connected 2 programme, we note that QUB and UU and the 6 FE Colleges are designated as Public Authorities, for the purposes of Section 75 of the Northern Ireland Act in 2001. All have had their most recent Equality Schemes approved by the Equality Commission for Northern Ireland (the Commission) in 2012. Both universities have on-going activities to ensure compliance through various policies and action plans which include policy screening, equal pay audit (QUB), gender action plan and good relations audit (UU). The FE colleges also have a range of ongoing activities to ensure compliance with their equality schemes.

12 RECOMMENDATIONS

This section presents recommendations arising from the evaluation and in particular addresses the following from the ToR:

ToR 14: ‘Evidenced-based recommendations on future delivery mechanisms for the joint HE / FE Knowledge Transfer activities currently delivered under the programme)’.

ToR 15: ‘Evidenced-based recommendations on the appropriate level of funding going forward.’

ToR 16: ‘Evidenced-based recommendations on the appropriate funding mechanism. This element of the exercise should include an examination of future options, including the status quo (i.e. single joint bid from the two universities and Colleges Northern Ireland), competitive bids or the feasibility of formula allocations through the Department’s annual grant letter to the Universities.

12.1 Recommendation 1: Need for Future Programme

There is significant justification for a future round of the programme and much of this reflects the rationale for Connected 2 as well as taking into account the success of Connected 2 and lessons learnt from its implementation. The rationale for a further programme is based on:

- The track record of the programme (Connected 1 pilot and Connected 2) including outputs and impacts as well as the significant improvement in additionality evidenced under Connected 2;
- The consistency of the programme with both the UK and NI strategic contexts in relation to the need for increased research, innovation and Knowledge Transfer and the important link between innovation and economic competitiveness;
- The ongoing relatively low levels of innovation in NI, as particularly reflected in the marked reduction in “innovation active” companies: from 38% (2006-08) to 27% (2008-10);
- The crucial role that Knowledge Transfer plays in relation to innovation and hence the key role for Universities and FE Colleges (in the transfer of knowledge);
- The fit of the programme with the Universities’ KT Strategies and Colleges’ increasing focus on engaging with business;
- The support for the initiative from all of FE, HE and businesses (evident in feedback from surveys as well as the scale of engagement and hence demand for the Programme);

- The importance of “joined up” Knowledge Transfer from the HE/FE sectors to business in particular (and hence the importance of the programme continuing on the basis of both sectors being included);
- The anticipated benefits of Knowledge Transfer including its clear contribution to an innovative and knowledge-based economy;
- The recognition of key barriers to Knowledge Transfer as reported in the company survey and the FE-HE staff surveys;
- The feedback from external stakeholders reflecting the continued need for the programme.

Clearly therefore, there is significant justification for a further (third) round of Connected – ‘Connected 3’.

Recommendation 1: We recommend that DEL continues to fund the Connected initiative.

12.2 Recommendation 2: Additionality

The level of additionality is 35% (full) and 50% (partial). It is important that the current levels of additionality are at least maintained if not improved further. Therefore supports should be targeted, where feasible, on those SMEs who would not otherwise engage in Knowledge Transfer and on those with the potential to move up the ‘innovation escalator’ i.e. companies which, for the most part, are not yet Invest NI client companies.

Recommendation 2: We recommend that in any future programme, that support continues to be targeted to those areas where additionality can be maximised; not only on SMEs which are not innovation active, but also on those companies which are innovation active with the potential to be moved to the next level on the ‘innovation escalator’.

12.3 Recommendation 3: Appropriate Funding Mechanism

Having established the need to support a future programme, we have considered funding mechanism options to achieve this. These are briefly summarised in section 6.2.1. Based on this analysis, the current funding mechanism is clearly the most appropriate.

Recommendation 3: We recommend that DEL continues to fund the Connected initiative using the same funding mechanism as is used in Connected 2 – a single joint bid from Queen’s University, the University of Ulster and the six Further Education Colleges as represented by Colleges NI.

12.4 Recommendation 4: Delivery Mechanism – New/Expanded Management Committee

The Steering Committee under the Connected 1 pilot programme had been a sub-committee of the Business Alliance/HE/FE Forum. However, as the Forum has now ceased to operate, the Business Development Unit has put forward a proposal to strengthen the strategic focus of Connected by inviting new representatives from industry, and also from DEL, to sit on the Programme's Management Committee.

This is considered an important proposal to ensure that addressing SME / client needs remains the key focus of the programme. It will also provide a means of ensuring that both HE and FE Divisions within DEL are kept informed and up-to-date with respect to the ongoing activities within the Connected programme. At present, the FE Division has little direct involvement in the programme, which is managed by HE Division.

Recommendation 4: We recommend that DEL ensures that a new management structure is adopted within Connected 3 to ensure sharing of information across all relevant stakeholders, and that Terms of Reference are drawn up for the proposed, new Management Committee and adopted by members.

12.5 Recommendation 5: Delivery Mechanism – New Competitive Call for HE/FE Collaborative Projects

In order to encourage and facilitate the movement of SMEs, with limited experience of Knowledge Transfer (KT), up the innovation escalator, it is proposed to introduce a new, competitive call element within the next Connected programme to support high quality, bespoke HE/FE collaborative projects.

The fund, which will be administered centrally by the Business Development Unit, will seek to address an identified gap in support for SMEs which are not (yet) Invest NI clients and which have difficulty in accessing funds (beyond the most basic 'Innovation Voucher' stage) while also potentially reaching out to SMEs with no prior KT experience.

Through an open call, managed by the Connected Business Development Unit, the two HE and six FE partners would be invited to bid, on a collaborative basis, for support under this competitive fund.

The support of these 'special projects' would enable HE/FE partnerships to extend their existing activities under Connected and capitalise on the achievements of Connected's existing portfolio of live Sector Specific Projects (SSPs).

Priority would be given under this new fund to support HE/FE projects that are focused on engaging with SMEs who have had limited knowledge transfer experience, but have the potential to move further along the innovation escalator, i.e. transitioning from

Innovation Vouchers to other more substantive innovation support mechanisms (such as Knowledge Transfer Partnerships etc.).

The Connected Business Development Unit will scope the specification, terms and conditions, and criteria by which bids will be evaluated. The Business Development Unit will also manage a team, representative of FE, HE and external representatives, to oversee the evaluation process, ensuring that appropriate transparency and accountability measures are put in place.

As with the current portfolio of SSPs, the costs associated with these ‘special collaborative projects’ would include salary and internal knowledge transfer costs (typically for know-how and best practice acquisition, and staff training and development).

Based on feasibility studies already undertaken by the Business Development Unit, it is anticipated that projects would fall within the range of £15k to £40k each, with the average cost per project being around £20k. Calls for proposals would be put out annually. It is expected that the first year’s call would be issued later than in following years, to enable the governance of the fund to be established.

- Year One: Call issued in June 2014 for projects to be delivered up to end of March 2015.
- Year Two: Call issued in February 2015 for projects to be delivered during the project year April 2015 up to end of March 2016.
- Year Three: Call issued in February 2016 for projects to be delivered during the project year April 2016 up to end of March 2017.
- Year Four: Call issued in February 2017 for projects to be delivered during the project year April 2017 up to end of March 2018.

Table 12.1: Proposed Fund Value – Central Competitive Fund

Year	Fund Value	Project Value Range	Expected number of projects to be supported
Year One June 2014 – March 2015	£80K	£15k - £40k	3
Year Two April 2015 – March 2016	£110K	£15k - £40k	4
Year Three April 2016 – March 2017	£110K	£15k - £40k	4
Year Four April 2017 – March 2018	£110K	£15 - £40k	4

Recommendation 5: We recommend that DEL supports an additional central fund, within the next (third) round of Connected, to address identified gaps in Knowledge Transfer activity, particularly focused on SMEs with no or limited prior experience of Knowledge Transfer, but which have the potential and willingness to be moved further along the innovation escalator.

12.6 Recommendation 6: Delivery Mechanism - Project Management / Support

Over the course of the Connected 1 pilot and Connected 2 programme, there have been changes to the role and remit of the various partners involved in the delivery of the programme. In particular, the Business Development Unit which forms a core, central role has a wide range of functions to fulfil in serving the needs of all partners in the programme. Given the successful development of the programme over the period of Connected 2 in particular, a number of additional areas have been identified which could be fulfilled within the Business Development Unit, by upgrading one of the existing posts, namely that of Project Administrator to Project Support Officer. However, it is important that appropriate targets are attached to the additional responsibilities of the upgraded post.

Recommendation 6: We recommend that DEL supports an upgrading of the Project Administrator post within the Business Development Unit to that of Project Support Officer; and that appropriate targets are attached to the additional responsibilities (as set out in Section 8.2.5 of this report).

12.7 Recommendation 7 and 8: Funding – Duration and Level

Duration

The pilot Connected programme ran for 3 years, whilst Connected 2 will run for 4 years. A 4-year programme provides greater scope to evaluate activity and reach an informed conclusion on the future of an initiative with sufficient data (at least 3 years' worth) and with enough time to make plans for the future (depending on the outcome of the evaluation). Furthermore, with a duration of only 3 years, there is a tension between having enough data available for a robust evaluation (therefore seeking to leave the evaluation as late as possible) and ensuring there is no funding gap between the end of one programme and the beginning of the next (therefore seeking to evaluate earlier rather than later). Such a funding gap would have serious consequences for the Department. Firstly, it would result in a suspension of ongoing HE/FE services to industry currently supported under Connected. This would undermine the credibility of the programme across the wider business community. Secondly, any funding hiatus would also put at risk the retention of the experienced and highly skilled Knowledge Transfer practitioners employed across the two universities and six colleges under this programme.

Recommendation 7: We recommend that DEL continues to fund the Connected initiative and to do so on the basis of a 4-year Programme.

Level of funding

The level of funding for a future Connected programme should take as its baseline the level of funding for the current programme given the evident demand for the programme (approximately £4.09 million over 4 years / £1.02 million per annum). In addition, there are two other factors to consider:

- The inclusion of additional finance of £410k over 4 years to support a new “competitive” pot of funding to be administered by the Business Development Unit – see Recommendation 5; and
- The upgrading of the Project Administrator post within the Business Development Unit to Project Support Officer (at an additional cost of around £39k over 4 years) – see Recommendation 6.

Recommendation 8: We recommend that DEL increases the funding for the next (third) round of Connected from the current baseline of approximately £4.09 million over 4 years to £4.54 million over 4 years (an increase of approximately 11%) to allow for the introduction of a new competitive call for HE/FE collaborative projects (to be administered by the Business Development Unit and focused on moving SMEs with limited experience of Knowledge Transfer further along the innovation escalator) and also for an upgrading of one administrative post within the Business Development Unit to facilitate a more - appropriate level of support for the Business Development Manager.