



Evaluation of Scottish Bioinformatics Forum

Final Report for Scottish Enterprise

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Executive Summary

The SBF Project

The Scottish Bioinformatics Forum (SBF) is designed to raise awareness, promote collaboration and enhance the life sciences sector in Scotland. Through networking/training events, industrial placements and wider engagement the SBF brings together the key players in academia across Scotland within the field of bioinformatics. The project also has longer term aspirations to engage with the private sector and assist academia-industry collaboration, which to date, has had limited success in achieving.

The four year project is supported through SE and SFC funding (£600,000) and was part of the original Scottish Bioinformatics Research Network (SBRN) project. However, as bioinformatics grew as an important sub-sector within life sciences, so did the need for a project with a specific remit to assist knowledge transfer and commercialisation activities across Scottish universities and industry.

Strategic Rationale

The project has a strong strategic fit and contributes to a number of overarching policies, in particular The Government Economic Strategy (GES) and Scottish Enterprise Life Sciences Strategy. The key contribution the SBF makes towards the objectives of these national policies is through its focus on enhancing and raising awareness of the potential opportunity for collaboration and Knowledge Transfer (KT). However, the lack of collaboration between academia and industry is a key issue for the project.

The key driver and market failure for delivery of the project comes from a lack of networking opportunities and capacity to undertake collaborations e.g. not knowing how or who to approach for potential collaborations. From this, feedback identified that the project, is successfully meeting this gap, although there is still more support required to build on the momentum already generated through the project.

Project Background

In order to ensure the service was impartial, the SBF was relocated from Edinburgh University to the Royal Society of Edinburgh Scotland Foundation, which has further added some 'research prestige' to the reputation/perception of the SBF.

Currently the SBF has almost 500 members from across Scotland (80%) and outwith the UK (20%) with the vast majority from an academic background.

The key support services it offers members includes hosting events and workshops (that look at new and emerging techniques within bioinformatics), delivering training, providing small levels of funding for industrial placements and organising summer schools.

The events/workshops are a key tool to help promote networking and collaboration. The SBF has delivered over 50 events since 2007, with a number of attendees 'repeat customers'. This helps to demonstrate the value of the events to members and generally speaking, events were rated highly.

The summer schools and industrial placements were seen as adding value to the service and provide high levels of additionality – i.e. in the absence of the SBF the members would have been unlikely to experience the benefits/impacts of accessing these resources.

Project Impacts

This assessment has identified a number of key impacts and outcomes generated through the support, these are reported as:

- the SBF is the key organisation in co-ordinating activity in bioinformatics across Scotland and has helped to establish a platform for inter-institution and industry engagement;
- the project has helped to assist a few academia-industry collaboration projects including the NHS Bio-repository Pathology Department and Strathclyde University Drug Discovery Portal, with the latter developing commercial screening capabilities;
- the SBF has supported industrial placements and established summer schools that have helped the research community;
- although not a key target of the project, it has delivered small levels of indirect economic benefit:
 - supported eight research positions
 - supported three industrial placements
 - through identifying research grants, the SBF has helped support nine research jobs over the short term
 - after engaging with the SBF, a small number of organisations undertook new research projects generating six additional research positions in the short term

- supported the enhancement of the Drug Discovery portal's screening capabilities
- the SBF has helped to attract the International Conference of Systems Biology in 2010 which is likely to generate £1.25m-£2m (gross) at the Scotland level.

Issues for Consideration

However, although overall the project has been successful, the assessment has identified a number of key issues with the project:

- miscommunication with project funders as to the targets and goals of the project;
- beyond the submission of annual reports there is no formal monitoring or reporting system to capture the progress and impacts of the project;
- generally speaking, the project has been unsuccessful in engaging with industry and promoting academia-industry collaboration – this is considered a key missed opportunity;
- the project has had limited impact in attracting inward investment and promoting international collaborations through Scottish Development International (SDI); and
- some of the project objectives as detailed within the internal SE approval paper seem overly ambitious and the lack of a regular reporting system makes it hard to measure the success of the project.

Future Delivery

There is a continued strategic fit and need for the project in some capacity, however, there may be a need to refocus the project to secure a greater level of industry collaboration and meet the funding criteria of potential support organisations. There are a number of key issues the project should consider if it is to continue, these include:

- review the strategic objectives of the project to ensure that targets are viable and realistic within the resources of the SBF;
- the project should adopt/implement a more formal monitoring system which details SMART objectives, targets and KPIs, and how these will be recorded;

- the presence of an industry representative within the Steering Group could help promote engagement with industry and highlight commercial benefits of industry-academia collaborations;
- the SBF should review other potential funding sources to support the continued delivery and possible expansion of the project e.g. SFC, ERDF, SPF 7; and
- any change to the key funders may require the SBF to refocus its objectives and activities.

1. Introduction

In March 2010, Scottish Enterprise (SE) commissioned EKOS to undertake an evaluation of the Scottish Bioinformatics Forum (SBF).

1.1 Background

Bioinformatics describes the processes and techniques involved in using computer science, statistical techniques/mathematics and theoretical models to analyse complex data generated through experimental biology e.g. translational biology and molecular genetics/genomics.

The SBF (which was created in 2001) secured additional funding in 2006 to assist knowledge transfer and commercialisation activities arising out of the Scottish Bioinformatics Research Network (SBRN) pooling initiative.

Funding was provided by Scottish Enterprise, Scottish Funding Council and SEERAD, with the vision for the SBF:

“To establish Scotland as a globally recognised and leading location for conducting cutting edge bioinformatics research and sustainable commercial activity”

The SBF has evolved from a bespoke initiative designed to support the four academic institutions represented through the SBRN, to represent both academic and commercial groups across Scotland with an interest in bioinformatics. It now provides a range of support to the bioinformatics and wider life sciences community to encourage and foster collaboration and raise the profile of Scotland’s life sciences.

SE funding support was approved in 2004, although the project in its current form did not commence until 2006, with the successful recruitment of the project director. The evaluation considers the four year period 2006 – 2010.

1.2 Study Objectives

The evaluation objectives, as stated in the study brief, were to provide an assessment of:

- strategic fit - is there a continued strategic fit and contribution;
- strategic rationale - should SE continue to support the SBF;

- project performance and benefits achieved – review of project outputs against objectives;
- economic impact – assessment of the direct and indirect impacts i.e. jobs and Gross Value Added (GVA);
- project delivery and governance – does the current management and governance structure of the SBF provide the best way forward and is there scope/rationale for implementing change;
- management information – review the relevance, monitoring and KPIs of the project – does it add value;
- linkages and dependencies – how does the SBF link with other SE and public sector support, are there gaps, duplication;
- project learning – review the key learning and good practice of the project;
- contribution to the equity and equalities agenda – to what extent does the SBF contribute to SE's equity and equalities agenda; and
- recommendations – assessment on the continued need/demand for the SBF and consideration of the future delivery of the project.

1.3 Study Method

In undertaking the evaluation, the research followed the logic model approach as highlighted below in **Figure 1.1**.

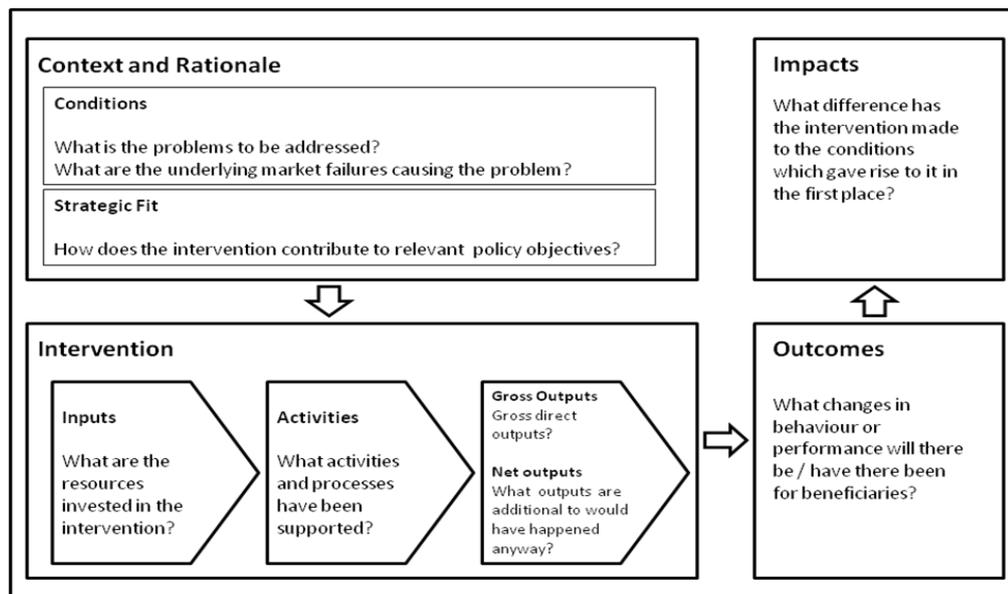
The evaluation was conducted in four stages:

- **Stage 1: Inception.** An inception meeting was undertaken with the Client to confirm the scope of the study and arrange access to relevant background documentation;
- **Stage 2: Background Data Review.** A review of relevant background documents was undertaken to gain a broader understanding of the project including approval paper, project expenditure and project activities;
- **Stage 3: Fieldwork.** Discussions were held with 13 stakeholders and partners (including members of the project Steering Group) regarding perceptions of the wider strategic role, how it links to other support, governance arrangements, performance, etc. The full list of stakeholders and the pro forma used during the fieldwork is contained within **Appendix A**.

An online survey of SBF member organisations/participants in SBF services was also conducted which yielded 61 responses (12% of total invited to participate) of which, almost 90% of responses were academia; and

- **Stage 4: Analysis and Reporting.** The outputs from previous stages were analysed and this draft report prepared.

Figure 1.1: Evaluation Logic Chain



1.4 Structure of Report

This section details the structure of the report:

- Section 2: Project Background;
- Section 3: Strategic Fit and Rationale;
- Section 4: Project Outputs and Outcomes; and
- Section 5: Project Learning and Recommendations.

2. Project Background

This section considers the project in more detail covering goals and objectives; and delivery.

Note

In order to secure funding, SE developed a number of goals and objectives and economic aspirations (as set out in the approval paper) that, through delivery of project activities, the project sought to achieve.

These did not form part of the letter of award for the wider SBRN project or constitute a condition of funding for the project, and as such, were not communicated to the SBF. This is considered further in Section 5.2.

The goals and objectives reported against within the evaluation are taken from the SE approval paper and do not consider the wider objectives of the SBRN that were outlined within the letter of award.

2.1 Project Goals and Objectives

The SBF has four key over-arching goals:

- to increase the number of multi-disciplinary projects being conducted in Scotland;
- to raise national and international profile of bioinformatics in Scotland;
- to attract quality people, companies, funding and investment; and
- to provide a stimulating environment in bioinformatics skills, learning, training and knowledge in science graduates.

Through this, the SE approval paper identifies a number of bespoke objectives to help the SBF achieve its over-arching goals:

- to develop the SBF network to co-ordinate bioinformatics in Scotland, helping to build critical mass and communicating strengths to key parties;
- to create a one stop contact point for bioinformatics in Scotland through employment of a co-ordinator;
- to attract inward investment through industry focused research;

- to develop a strong bioinformatics network which will effectively link the academic and commercial research community;
- to establish an industrial placement scheme;
- to create an environment which will retain and attract leading scientists and new company investment;
- to assist Scottish Development International (SDI) in marketing bioinformatics as a key strength of Scotland, primarily working closely with SDI to explore and develop international collaborations; and
- to raise the profile of the direct commercial opportunities of bioinformatics within the life sciences market place.

The economic aspirations are identified as:

- secure 20 high-quality research positions within both commercial and academic institutions;
- attract £1m of industry focused and funded research;
- leverage 4 million Euros in collaborative research projects;
- generate five industrial placements for undergraduates; and
- leverage in potential leading global players to have a presence in Scotland.

As the objectives and economic aspirations outlined within the SE approval paper were not communicated to the SBF, they have not been formally monitored or reported against. We have, however, provided a qualitative assessment of progress (see section 4).

2.2 SBF Project Delivery

2.2.1 Project History

The SBF (which was created in 2001) secured additional funding in 2006 to assist knowledge transfer and commercialisation activities arising out of the Scottish Bioinformatics Research Network (SBRN) pooling initiative. The basis for the project was to promote and link bioinformatics expertise across the partner institutions with the Scottish research (both academic and commercial) community.

However, during the lifetime of the project as interest and emphasis on bioinformatics as a key enabler for biological and life science research increased, the SBF engaged with an increasing number of institutions outside the SBRN. This included both academic and commercial organisations from across the wider bioinformatics and life sciences community in Scotland.

Further, with the establishment of other sector-specific organisations with a Scotland-wide remit, such as the Scottish Universities Life Sciences Alliance (SULSA), there was a clear rationale to deliver a pan-Scotland approach to collaboration and to provide a central point of contact for bioinformatics.

The SBF was originally located within the Physics Department of Edinburgh University but was subsequently integrated into the Royal Society of Edinburgh (RSE) Scotland Foundation in January 2008.

There were three key drivers behind the move:

- to enhance perceptions of impartiality and neutrality of the service to encourage participation from across Scotland;
- to take advantage of the prestige that comes from operating under the control of a renowned research institution such as the RSE Scotland Foundation; and
- to capitalise on the existing academic and wider sector links and relationships of the RSE Scotland Foundation.

2.2.2 Project Funding

The SBF is jointly funded through the Scottish Funding Council (SFC) (formerly SHEFC), the Scottish Executive Environment and Rural Affairs Department (SEERAD) and SE¹.

All funding for the SBRN/SBF will be defrayed through the University of Dundee (as the lead SBRN institution) directly to the RSE Scotland Foundation.

Table 2.1 presents the breakdown of the four-year funding period.

¹ The funding was initially defrayed from Scottish Enterprise Edinburgh and Lothian (SEEL)

Table 2.1: SBF Funding and Expenditure 2006 – 2009/10

	Pre-start 2006	2006/07	2007/08	2008/09	2009/10	Total
Income						
Funding		£150,000	£150,000	£150,000	£150,000	£600,000
Sponsorship			£3,630	£5,299.88	£13,817	£22,746.88
Expenditure						
Salaries		£47,579.17	£63,238.43	£69,757.02	£54,950.34	£235,524.96
non-salary costs	£11,758.06	£59,507.11	£98,210.79	£62,476.64	£46,875.75	£278,828.35
Total	£11,758.06	£107,086.28	£161,449.22	£132,233.56	£101,826.09	£514,353.31

Source: Scottish Enterprise – end of Quarter 3 (31/03/2010)

Over the project lifespan, the total cost of the SBF, excluding sponsorship was anticipated to be £600,000 broken down by funding partner as follows:

- SFC (formerly SHEFC) - £360,000; and
- SE - £240,000.

To date, the project has drawn down £514,353.31 (86%) of the original approved expenditure budget.

2.2.3 Project Activities

Membership to the SBF is free and open to computing, medical and life scientists across Scotland. In total, the SBF has 490 registered members, broken down as 416 (85%) from academia and 74 (15%) from industry. Within this, 20% of the members are from outwith the UK, including individuals from India and China.

As reported above, the SBFs key role is to promote and facilitate bioinformatics collaboration/networking and enhance awareness of techniques and their applications. In order to achieve its objectives, the SBF delivers a number of support services, including:

- networking events;
- learning events and workshops;
- summer schools;
- limited grant funding for research and training/placement projects; and
- provide advice and facilitate access to existing bioinformatics data sources.

Events and Workshops

The SBF hosts and sponsors a number of events, seminars and workshops that are designed to attract interest from both academia and industry. In total since 2007, the SBF has helped facilitate approximately 52 events across a number of thematic areas. A full list of the SBF sponsored/hosted events is contained within **Appendix B**:

- 2010 - 11 events;
- 2009 - 19 events;
- 2008 - 19 events; and
- 2007 - 17 events.

In total since the project began, the workshops have attracted in excess of 1,500 attendees to the events with around 66% attending more than one event. This level of repeat attendance was further confirmed through the online survey (70% indicated that they had attended more than two events).

The breakdown of attendees identified that 87% are from academia and 13% from industry. In term of geographic distribution, 90% are resident in Scotland and 10% are from outwith Scotland.

The content of the events and workshops is designed by the Steering Group and the SBF project Manager and focuses on topical/emerging issues within the industry and likely demand from members based on feedback.

Summer schools

Summer schools comprise a week long intensive training course delivered through a series of workshops available to graduate and undergraduate students. Teaching sessions are based on expressed demand and new research and involve expert teaching staff from within and outwith Scotland.

Source book

The source book is essentially a database of expertise and research activities in bioinformatics across Scotland. It contains information on key areas of interest, software usage, programming expertise, etc. The database contains information across 30+ organisations and is accessible through the SBF.

Website

The web site provides information on support services including the industrial placements and summer schools and links to events/seminars. The website is primarily used as a platform for marketing the services offered through the SBF.

2.2.4 Project Governance and Monitoring

The SBF is delivered as a project through the RSE Scotland Foundation with operational staff seconded for the duration of the project. It is managed by a Steering Group which comprises key individuals from within the wider bioinformatics and life sciences sector, primarily from academia.

The Steering Group has responsibility for strategy, integration with institutions, and scientific direction. In addition, the Steering Group includes members from the key funding agencies SE and SFC. The Steering Group is accountable, and reports, to the RSE Scotland Foundation Board of Trustees.

The SBF operational staff comprise a project director and administration support and are responsible for the day-to-day running of the project and are the main point of contact.

In terms of monitoring, the SBF is required to monitor and produce annual reports for the RSE Scotland Foundation and funding partners on:

- key milestones;
- funding and expenditure drawn down;
- activities; and
- progress towards targets.

To date there appears to be no formal reporting system in place to monitor progress towards the project objectives, in particular, any direct/indirect economic impacts (e.g. inward investment leveraged) that are generated through the project activities. However, the SBF project director did provide monthly updates to the SE project manager via informal meetings on the key progress and activities of the project.

3. Strategic Fit and Rationale

This chapter considers the key evaluation questions of strategic fit and contribution and the market failure rationale for public sector intervention.

3.1 Strategic Fit

The original strategic rationale and fit, from an SE perspective, was detailed in the 2004 approval paper and focused on the project's anticipated contributions to the '*SE Biotechnology Cluster Strategy*' and '*A Smart Successful Scotland (2001)*'.

The approval paper outlined the key contribution of the SBF as helping to capitalise on new technologies and growing the size of the bio-technology industry through increasing the levels of R&D in companies and improving interaction between academia and industry. Further, the approval paper identified that the project would contribute towards, and have a close alignment with, the following policies:

- SE Biotech Framework for Action (2000);
- A Strategy for Scottish Science (2001):
 - the SBF would contribute towards Objective 1 – 'Maintaining and connecting the science base' through offering a networking platform for academia and industry to share knowledge and collaborate; and
- SEEL Biotechnology Operating Plan (2004-2007).

All three policies emphasised raising the awareness and capacity of the life sciences sector and supporting techniques associated with improving research across Scotland, a key objective of the SBF itself. Based on this, it is possible to identify a strong strategic fit during the initial stages of the project.

That being said, a key objective of the evaluation has been to assess whether the strategic value remains valid and whether the project continues to fit well (and potentially make a valuable contribution towards) over-arching national policy and strategy i.e. is the project still relevant and does it contribute towards national objectives. This is considered in relation to key documents in more detail below.

Government Economic Strategy (2007). The strategy sets out the economic development and enterprise priorities for Scotland. Developing a supportive business environment is vital for sustainable economic growth, and the strategy identifies a number of key objectives:

- responsive and focused enterprise support to increase the number of highly successful, competitive businesses;
- targeted support to business in the pursuit of opportunities outside of Scotland and the development of internationally competitive firms;
- a broader approach to business innovation in Scotland that moves beyond viewing innovation as the domain of science and technology alone;
- a clear focus on strengthening the link between Scotland's research base and business innovation and addressing low levels of business R&D;
- a particular policy focus on a number of key sectors with high growth potential and the capacity to boost productivity; and
- a competitive tax regime which incentivises business growth and attracts mobile factors of production.

The SBF contributes towards the strategy through trying to facilitate and promote collaborations between the academic R&D base and the commercial sector. Further, the project specifically targets a high growth priority sector with a focus on improving productivity through promoting the use of bioinformatics.

Scottish Life Sciences Strategy - 20/20 Vision Achieving Critical Mass (2008)². The main vision of this strategy is to pull together the various facets of the life sciences and promote Scotland's life sciences sector 'brand'. It identifies five key thematic areas to enhance Scotland's offering:

- people - we will attract the best and provide them with opportunities for employment;
- technology - we will invest in innovation and develop a streamlined process for commercialisation;
- capital - we will create an academic and business environment that sources of capital will seek to support;

² Strategy refreshed from 2005

- infrastructure - we will provide facilities and communications to facilitate research and its exploitation; and
- collaboration - working together as Life Sciences Scotland will enable us to compete more effectively globally.

The SBF supports the life sciences strategy through providing access to technology and data sources and to a platform for collaboration between academia and industry. Indeed, the SBF is highlighted by the Strategy as one of the key organisations across the various life sciences thematic areas that promotes collaboration.

Scottish Funding Council Corporate Plan (2009-12). The SFC's key role is the national, strategic body for funding teaching and learning provision, research and other activities in Scotland's 43 colleges, and 20 universities and higher education institutions.

Three key outcomes the SFC aims to generate through its activities include promoting knowledge exchange, collaboration and world class research. The SBF contributes to these outcomes through:

- promoting knowledge exchange – the SBF publishes information via the source book on interest/expertise and highlights key industry developments. In addition, the project organises networking events and brings together organisations in a neutral location to mitigate any inter-institution competition;
- collaboration – a key objective of the SBF is to encourage and facilitate collaboration between academia and between academia and industry. The SBF actively targets, promotes and contacts members with potential collaboration projects e.g. multi-centre collaborations; and
- world class research – the SBF hosts and sponsors training events that showcase cutting edge techniques and tools. Further, it provides small levels of funding for industrial placements and summer schools.

Scottish Government Science Strategy (refreshed 2006) The Scottish Science Strategy sets the framework for the development of policy to support the wider sciences, including life sciences. It outlines five key objectives:

- to maintain a strong science base fully connected to UK and international activity and funding sources;

- to increase the effective exploitation of scientific research to grow strong Scottish businesses and provide cutting edge science to meet the needs of the people of Scotland;
- to ensure that enough people study science to a standard which will enable the future needs of the country to be met;
- to promote the awareness, appreciation and understanding of science across society; and
- to ensure the effective use of scientific evidence in policy formulation and resource allocation by government.

The SBF contributes to the objectives of the Scottish Science Strategy through providing funding for summer schools and industrial placements which helps to enhance the student knowledge base. Further the SBF promotes the profile and raises awareness of the role of bioinformatics through events and seminars.

To a lesser extent, the project helps promote and showcase the benefits of research to grow Scottish businesses and exploit commercialisation internationally.

Overview

The SBF contributes towards and maintains a close fit with over-arching national policy and strategic guidance. In particular, the SBF plays a significant role in raising awareness, promoting networking and delivering a pan-Scotland approach to collaboration within the bioinformatics/life sciences sector.

However, it should be noted that whilst the project continues to demonstrate a strong strategic fit, across policy guidance the emphasis on collaboration is between both industry and academia. To date, the project has had limited penetration and engagement with regards to the corporate base, although this is a key objective for the SBF. This is discussed further within Section 4.

3.2 Market Context

Although applicable across multiple disciplines, increasingly bioinformatics is used as a key tool and technique within the life sciences and in particular, the Biotech Cluster (as identified in the approval paper).

An annual review of the life sciences industry³ identifies the contribution of the life sciences sector to the Scottish economy and shows that the sector employs approximately 32,500 people across 630 businesses. Based on this, the sector represents 1.3% and 0.3% of the Scottish employment and business base respectively.

Further, the annual review identifies a number of key baseline statistics:

- life sciences in Scotland has experienced annual GVA growth rates of 7-8% - nearly four times the medium term, average growth rate of the Scottish economy. (Source: Young Company Finance Report: Life Sciences in Scotland, May 2007);
- life sciences companies in Scotland attract in excess of £400 million of research funding each year;
- Scotland has more than 50 academic research facilities offering services to the life sciences community;
- global life sciences companies with a presence in Scotland include Wyeth, Invitrogen, Aptuit and Organon (Schering Plough) MSD;
- Scotland has a highly skilled workforce, with a large pool of graduates and post doctoral researchers in life sciences. Compared to EU and US locations, Scottish employers also enjoy competitive labour costs;
- Scotland has a highly developed network of specialist suppliers to the life science industry; and
- Scotland has a number of science parks and dedicated life science parks around its major cities.

Therefore, while not necessarily a major sector in terms of absolute scale, the life sciences sector offers a range of economic opportunities and is identified as a priority high growth potential industry within the Scottish economy⁴.

³ Life Sciences In Scotland, Scottish Enterprise (2010) http://www.scottish-enterprise.com/sedotcom_home/your-sector/life_sciences_sector/lifesciences-facts.htm

⁴ The Government Economic Strategy, Scottish Government (2007)

3.3 Market Failure Rationale

Market failure is the key rationale for public sector intervention. It is important when designing interventions that proposed projects are able to clearly identify the root causes of market failure (as opposed to its symptoms) and design and implement interventions that will address the constraints.

Market failure occurs when an imperfection in market mechanisms prevents economic efficiency⁵. HM Treasury policy clearly identifies market failure as a key rationale for public sector intervention. Where there is clear evidence that markets cannot, or will not, provide the best outcomes there is a strong rationale/justification for public sector intervention.

Rationale for Intervention

The original Scottish Enterprise approval paper identifies the market failure for the SBF as:

“It is time-consuming for a biotechnology organisation or academic institute at present to identify what Scottish bioinformatics strengths are or where to access them”.

Whilst not specified/articulated, it is clear from a review of the approval paper and feedback from stakeholders and members that the key market failure /barrier constraining activity was a lack of knowledge on the potential for collaboration and sharing of knowledge (the who, how and why). In addition, there is an overall lack of co-ordination within the bioinformatics sector.

Overall, these market failures can be categorised as information deficiencies.

Based on EKOS review of the project and sector activity, we have further defined the information deficiencies as follows:

- many academic departments and SMEs may be somewhat limited in terms of knowledge of bioinformatics, its uses and of sources of expert advice and support. They may also not be aware of either where to access support (which is the appropriate organisation to approach) or in many cases be aware of what support is available:

⁵ Appraisal and Evaluation in Central Government http://www.hm-treasury.gov.uk/d/green_book_complete.pdf

This message came across strongly in the stakeholder consultations where a lack of awareness on how to and who to approach on potential collaborations or knowledge transfer issues was identified as a key issue constraining activity.

The member survey asked respondents to identify the key constraints they faced prior to engaging with the SBF, with a large proportion reporting that a lack of knowledge of support was the key barrier engaging with SBF helped them to overcome:

- *38% reported there was no opportunity/knowledge of how to network with academics and industry*
 - *28% reported they had no knowledge of who to approach for training*
 - *24% reported they had no knowledge on the type of training available*
 - *60% reported they had limited knowledge of new emerging techniques and resources;*
- *the costs (both financial and time) of obtaining commercial or market information to individual academic units and businesses may be seen to generate uncertain and/or insufficient benefits (returns):*

The approval paper identified the cost and high risk associated with SMEs investing in high-tech equipment or expert advice as they are largely dependent on research funding. Further, a lack of co-ordination restricts access to equipment and shared services.

- *organisations may be unable to access information on up-to-date research, new technical or operating practices or may not be aware of where to access this information. This in turn may restrict their ability to compete by keeping up with trends and new opportunities:*

Stakeholders identified a lack of knowledge transfer and sharing of data sources within the wider life sciences as constraining the activity at a Scottish level, In particular inter-institution was a key factor. Further, 65% of members identified access to research as a key gap they are likely to require support for in the future.

The approval paper and direct feedback from stakeholders and members highlights a number of aspects of information failure. To some extent the project has helped alleviate the persistence of market failures, and provided a more co-ordinated approach and a platform for networking. However, it is recognised by many stakeholders that there is still progress to be made to fully remove the market failures.

4. Project Outputs and Outcomes

This section reports on project performance and covers:

- progress towards SE objectives and economic aspirations;
- performance of SBF; and
- contribution towards SE's equality objectives.

4.1 Progress towards Objectives

Below we have provided a review of the project's progress towards, and achievement, of SE objectives and economic aspirations as outlined in the approval paper.

As highlighted above, the SE objectives and economic aspirations did not form part of the letter of award for the wider SBRN project and have not been formally captured. However, our assessment represents a qualitative review based on stakeholder feedback, the member's survey and EKOS independent review of background documents:

1. Develop the SBF network to co-ordinate bioinformatics in Scotland, helping to build critical mass and communicating strengths to key parties.

The SBF has evolved considerably since its initial inception as the commercialisation body for the SBRN. The evaluation considers a number of points that provide evidence of the SBFs contribution to co-ordinating bioinformatics developments and building a critical mass across Scotland, including:

- *the SBF helped facilitate two multi-centre collaborations – the Drug Discovery Portal and the West of Scotland Bio-Bank;*
- *the development of the bioinformatics source book that highlights research activities and experience in 30+ institutions across Scotland;*
- *the move to the RSE Scotland Foundation ensures the service is viewed as impartial and credible and raises the profile of bioinformatics across the life sciences sector. This is reflected in both the stakeholder consultations and the members survey (77% of members reported that the SBF is open to all organisations across Scotland);*

- *the number of members has increased annually since its inception and currently stands at 490. The membership is comprised mostly of members from academia (85%);*
- *stakeholder feedback identified that all the key academic institutions and university departments within bioinformatics/life sciences are currently engaged with the project;*
- *the SBF is identified within the Life Sciences strategy as a key enabling tool to raise awareness and the profile of bioinformatics across Scotland; and*
- *the SBF hosts or sponsors a number of events, seminars and training workshops across a number of thematic areas to meet the demand of support provision across the entire spectrum of life sciences within Scotland.*

However, to date the SBF has not been as successful in engaging with industry and providing linkages/building relationships between academia and industry as originally envisaged. Stakeholders identified that currently the SBF events are targeted more towards academia and do not clearly promote the benefits of engaging with the SBF or highlight the potential beneficial impacts that could be generated through industry-academia collaborations.

2. Create a one stop contact point for bioinformatics in Scotland through employment of a co-ordinator.

The pan Scotland approach adopted by the SBF is viewed as one of its key strengths and having one key contact (and overall co-ordinator) helps to promote and ensure consistency of service. However, more generally, the support landscape for the life sciences sector and bioinformatics is confusing with a number of organisation and initiatives e.g. Scottish Universities Life Sciences Alliance (SULSA), ProspeKT Initiative, National e-science centre, etc. Nevertheless, the feedback was strongly that SBF has a unique role to play, complements other provision well and does not duplicate other activity.

3. Attract inward investment through industry focused research.

The approval paper outlined that the project sought to attract £1m of industry focused and funded research and leverage 4 million Euros in collaborative research projects. As reported above, these have not been formally monitored or reported.

Based on stakeholder feedback, we are able to provide a qualitative assessment which indicates that the SBF played an informal role in assisting the Translational Medicine Research Collaboration (TMRC) with Wyeth Pharmaceuticals.

The project comprises four Scottish universities (Aberdeen, Dundee, Edinburgh and Glasgow), Wyeth Pharmaceutical Co, Scottish Enterprise and NHS Scotland Grampian, Greater Glasgow, Lothian and Tayside, and has attracted approximately £50m of inward investment from both private and public sector partners to Scotland.

However, given the mainly academic focus of the project, it is unlikely the SBF has had or will have any significant direct impact/influence on the leveraging of inward investment.

4. Develop a strong bioinformatics network which will effectively link the academic and commercial research community.

To date, the SBF has had limited success and opportunities in promoting/fostering projects and collaborations with commercial organisations.

However, there have been a few successful collaboration projects including:

- *the NHS Bio-repository Pathology Department (Greater Glasgow and Clyde Valley – the SBF helped develop a framework and explore new methods of facilitating access to research, supported the NHS lobbying the European parliament and raised the profile of issues within informatics as it relates to health research; and*
- *Drug Discovery Portal at Strathclyde University – the SBF provided support for studentships at the summer schools and also for staff to work on data coding (equivalent to 0.5 Full Time Equivalent) over a three year period. The support has helped the university enable the further development of its screening capability.*

Overall, whilst the SBF has helped to establish a network and linkages between academia, to date there have been limited collaborations between academia and industry. This is a key goal of the SBF and it is acknowledged through the stakeholder consultations that this has not happened to the extent originally envisaged and is a missed opportunity for the project.

5. Establish an industrial placement scheme.

Through providing small amounts of funding, the SBF has helped support industrial and research placements that otherwise would not have happened.

The SBF/SBRN has helped secure eight research positions (original SE aspiration of 20) across Scotland and has developed a formal mechanism for industrial placements – three have been delivered to date (original aspiration of 5).

There is a high level of additionality associated with this element of the project as feedback indicates that without the SBF intervention, these placements would not have happened. In addition, feedback indicates that at least one of the industrial placements is now employed on a full time basis.

6. Create an environment which will retain and attract leading scientists and new company investment.

The SBF has helped to promote bioinformatics and encourage collaboration, and anecdotal evidence from stakeholder feedback suggests that Scotland is growing in stature as a leader in life sciences and R&D. In addition, the geographic breakdown of membership suggests that the SBF has a reach outwith the UK (20% international). This broad distribution of members will help raise the profile of bioinformatics in Scotland.

However, this assessment is unable to measure the progress of the project in attracting leading scientists or the extent to which it has leveraged/attracted company investment. Given the nature of the project, it is unlikely it will have had any significant direct impact upon this.

7. Assist Scottish Development International (SDI) in marketing bioinformatics as a key strength of Scotland, primarily working closely with SDI to explore and develop international collaborations.

The SBF has engaged in collaborative marketing activities with SDI and helped produce brochures that are distributed at international conferences/seminars. These brochures highlight bioinformatics as a key theme in the Scottish life sciences R&D sector.

Based on feedback from stakeholders, to date there has been modest amounts of engagement with SDI e.g. Wyeth international student industrial placement.

Stakeholders considered this lack of engagement with SDI as a missed opportunity to promote Scottish bioinformatics on an international stage and develop international collaborative commercial projects.

8. Raise the profile of the direct commercial opportunities of bioinformatics within the life sciences market place.

The stakeholder feedback identified that there has been little progress towards engaging with commercial organisations or assisting academia to commercialise products/techniques etc. None of the survey respondents reported that they had developed any new commercial products or projects since engaging with the SBF.

However, three respondents indicated that due to their engagement with the SBF, they will potentially generate commercial research employment in the future.

Currently the SBF is perceived as being academia-focused with a key role of facilitating networking and not as a mechanism to identify/enable exploitation of commercial opportunities.

The member's survey identified that only one member thought the SBF provided support for commercialisation and developing new products/processes. It should also be noted that a number of stakeholders and members were not aware that SBF has a remit to engage with commercial industries.

However, it should be noted that whilst there is a strong focus on collaboration and commercialisation opportunities, there is no explicit identification of what the potential target market is, where it is located and how many organisation/individuals are within this market.

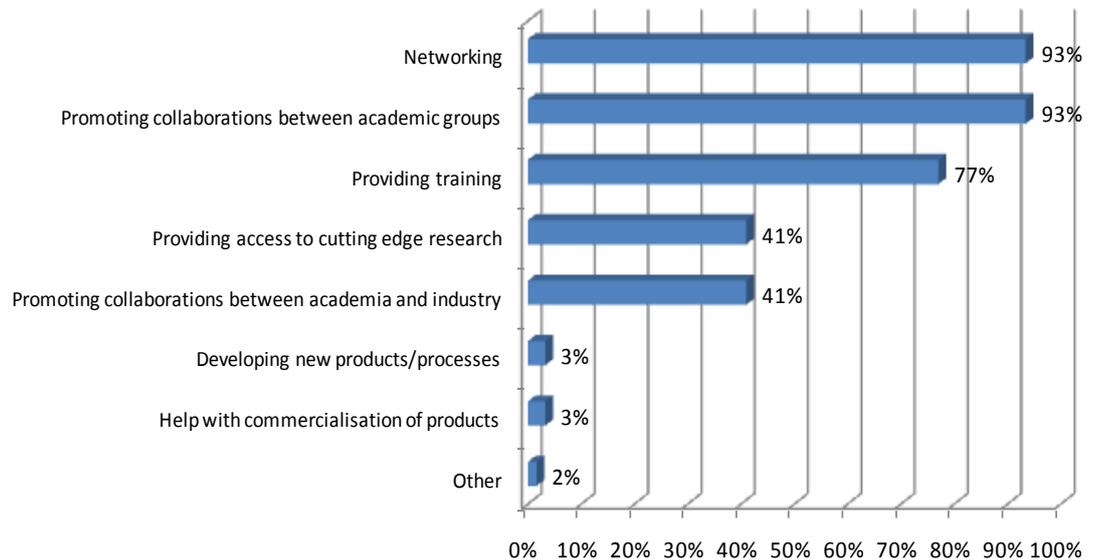
4.2 Performance of SBF

4.2.1 Members Feedback on Performance

An online survey of members was undertaken to assess the impacts and benefits generated through engaging with the SBF and a copy of the questionnaire is given in **Appendix C**.

In total, 61 members responded to the survey, representing a response rate of 12%. It should be noted that the majority were academics (90%), which roughly reflects the total breakdown of membership (80% of total SBF members are from academia) and, generally speaking is representative of the membership base. **Figure 4.1** shows what members perceive are the key roles for the SBF.

Figure 4.1: Perceived Role of SBF



N=60

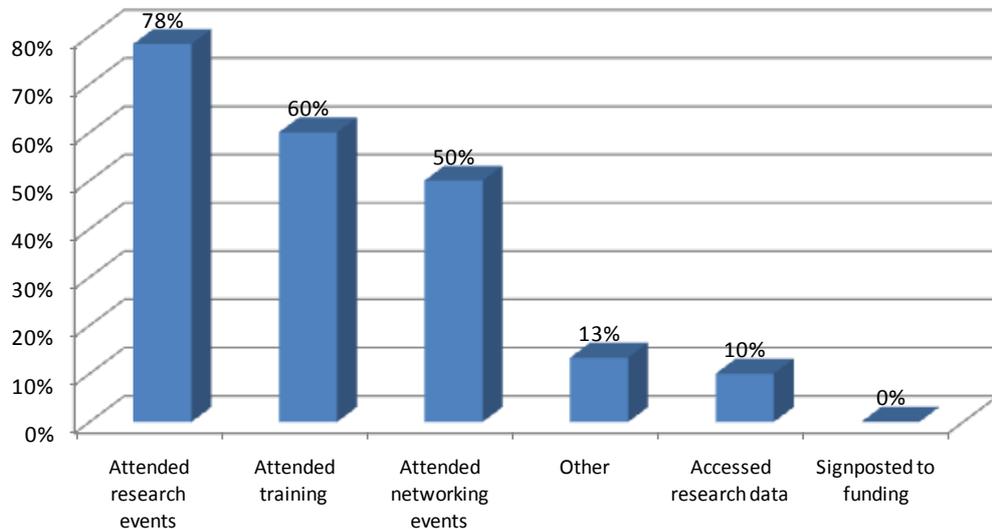
It is clear that members view the key role of the SBF as promoting networking and academic collaborations (93% of respondents), with only one respondent indicating that the SBF is designed to help commercialise or develop new products/processes.

The SBF, operating from within the RSE Scotland Foundation has helped to enhance the perception of the SBF as impartial, with 77% of members reporting that the service is available to all life sciences organisations. Further, 32% of members indicated it has had a positive impact on their ongoing relationship with SBF, with no members identifying any negative impacts arising from the move.

In terms of the type and level of support accessed (reported in **Figure 4.2**), members primarily used the SBF for the networking, training and research events.

Attending events for research, training and networking (78%, 60% and 50%) is the main type of support accessed by survey respondents. The survey asked members how often they have attended these events and where possible, how they rated them.

Figure 4.2: Support Accessed through SBF



N=60

The number of events attended by members shows that there appears to be a high level of ‘repeat customers’, with 70% of members attending more than two events:

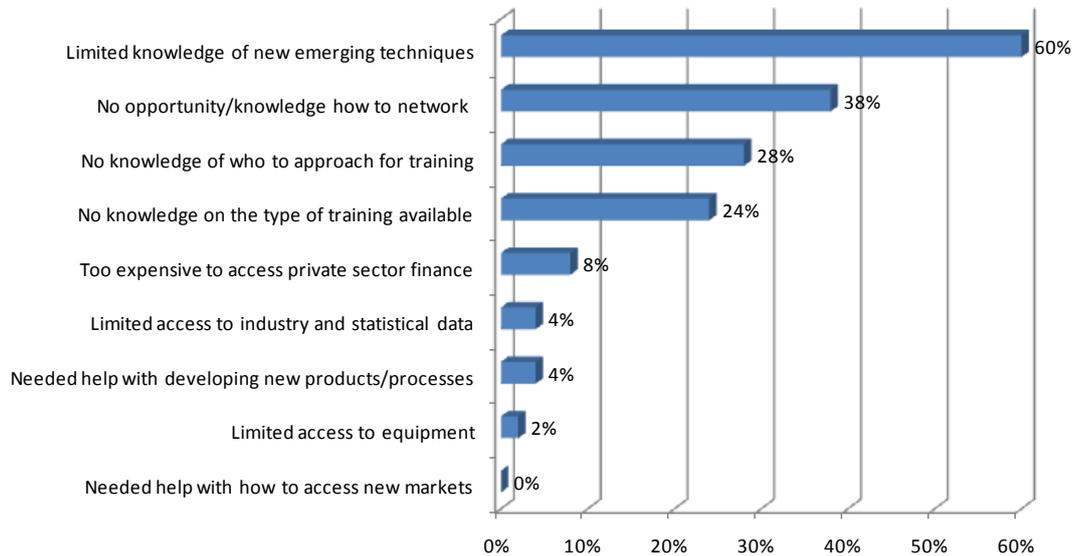
- 1-2 events – 29%;
- 3-5 events – 23%;
- 6-10 events – 41%; and
- 10+ events – 7%.

This indicates how valuable/effective members perceive the events hosted/sponsored by the SBF and this is considered below.

Whilst the survey asked members to rate the events they attended, the absolute number of responses was low and the responses may not be representative of the wider sample. That being said, those that did rate these as good/very good, with only one member reporting the event they attended as poor. In particular, the opportunity to network and the good quality speakers at the events were identified as key to the events being considered successful.

Figure 4.3 reports the constraints respondents identified as being a key motivation for their engagement with the SBF.

Figure 4.3: Constraints the SBF has Helped Organisations Overcome



N=50

The figure shows that the key motivation was a lack of knowledge/information on new emerging techniques and networking. This lack of knowledge/information is the key market failure which the project was designed to address.

Through engagement with the SBF, respondents were asked to identify the main benefits to their organisation, reported in **Figure 4.4**.

Establishing new contacts and learning about new emerging techniques, as reported by 81% and 79% of the respondents respectively are the key benefits reported through the survey of members. This provides evidence that the support delivered through the SBF is meeting the needs and addressing the key constraints/issues faced by its members (reported in **Figure 4.3**).

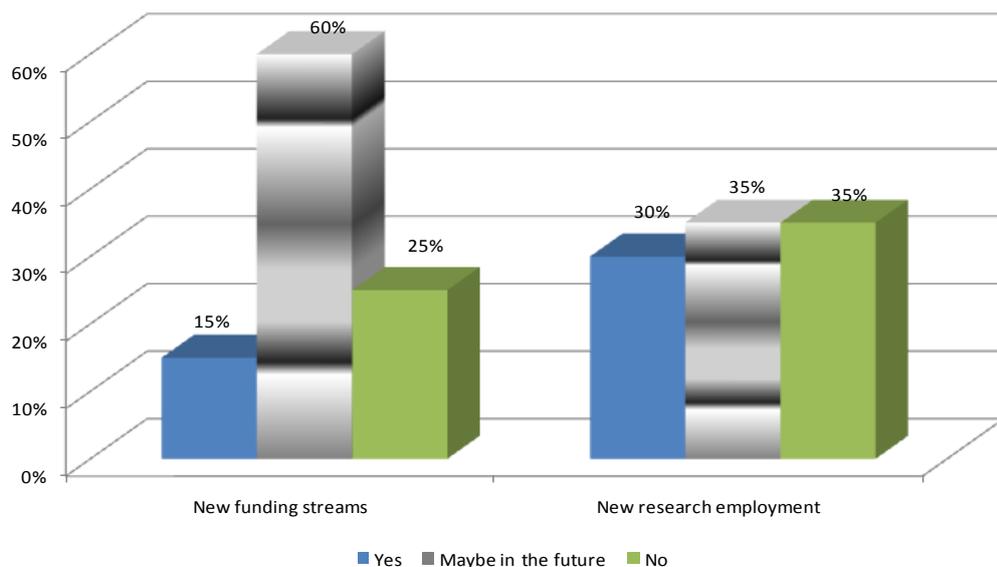
Figure 4.4: Main Benefits from Engaging with the SBF



N=58

A number of respondents undertook new research projects on the back of engaging with the SBF. The respondents that undertook research projects (either individually, 17% or collaboratively, 33%) after engaging with the SBF were asked to detail any impacts they have or are likely to experience. The results are reported in **Figure 4.5**.

Figure 4.5: Impacts Resulting from New Research Project



N=20

The figure shows that a few respondents have experienced quantifiable benefits since engaging with the SBF, which includes three (15%) accessing new research funding streams and as a result taking on research staff and three (30%) organisations reporting an increase in research employment. In total this equates to 15 new research staff over the short-medium term.

In addition, 12 (60%) and 7 (35%) respondents reported they anticipate accessing new funding streams and taking on new research staff respectively as a result of engaging with the SBF.

It should be noted that no respondents reported developing any commercial projects through their engagement with the SBF.

The survey asked respondents to identify what they perceive as the key strengths and weaknesses of the SBF:

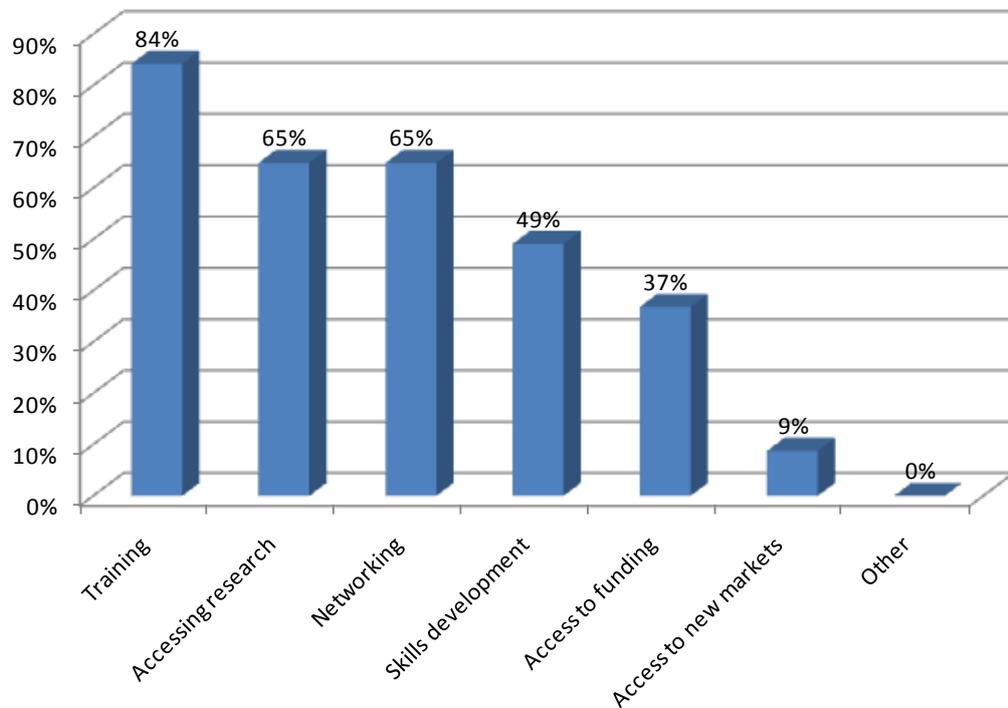
- Strengths:
 - networking opportunities
 - quality speakers and training events
 - brings together the main academic organisations that have a focus on bioinformatics; and
- Weaknesses:
 - scale – can only provide limited support
 - does not promote/facilitate opportunities to engage with industry.

The key strengths and weaknesses reported through the survey of members are also identified within the stakeholder feedback (Section 4.2.2).

The final aspect of the survey asked members to consider their future support needs. The results are reported in **Figure 4.6**.

Generally speaking, the future support needs that members identified are broadly similar to the key issues that currently constrain their organisation – access to training, research and networking. From this, we can see that whilst the SBF has made progress in removing some of the constraints/barriers there is a continued need/demand for further support.

Figure 4.6: Future Support Requirements



N=57

4.2.2 Stakeholder Feedback on Performance

The stakeholder feedback identified a high level of additionality associated with the support. The SBF provides a platform for networking and engaging which proactively targets the bioinformatics community, who otherwise would be unlikely to engage/network with one another.

Again this provides evidence on the persistence of information failures i.e. organisation do not know how or who to approach for support with networking and (or) potential collaborations.

Further, the level and variation of events and seminars is seen as specialist and tailored and members would be unlikely to access the same level of support/expertise elsewhere within Scotland.

However, it was identified that there is some duplication of support with the ProspeKT Initiative. ProspeKT is a project funded through SE and Edinburgh University to encourage commercialisation, industry-academia collaboration and entrepreneurship in the field of informatics, specifically arising from the Department of Informatics in Edinburgh University.

To date there has been no interaction or linkages established between the two services. This was identified as a missed opportunity in terms of generating synergy and delivering a joined-up package of support for Scotland's bioinformatics community.

Stakeholders were asked to comment on the key strengths and areas of good practice, these are highlighted below:

- bespoke demand driven support delivered through events and seminars, in particular the summer schools;
- brings together the most appropriate people from academia - enhances the credibility of the project; and
- provides an opportunity to network and learn about new industry research.

In addition, stakeholders identified the weaknesses and gaps within the SBF, highlighted below:

- little industry engagement or incentive for industry to engage e.g. no industry representative on the Steering group; and
- limited funding and resources means that the SBF is constrained in terms of what services can be delivered and what it can be expected to achieve.

4.3 Contribution towards the SE Equalities Agenda

An important aspect of the evaluation is to assess the contribution towards the Scottish Enterprise Equalities Agenda.

The Agenda is based on the Government Economic Strategy for sustainable economic growth and sets out the criteria for all SE funded projects to be fully inclusive. The agenda states that projects should consider three strategic approaches:

- sustainable economic growth. Projects will not discriminate on the grounds of race, gender, disability, age, religion/belief and sexual orientation;
- balanced economic growth. Projects will, where possible, remove rural barriers to enterprise, innovation and investment and promote growth in the priority rural sectors; and

- economic growth and environmental quality. Projects will promote resource efficiency and where possible encourage business opportunities in renewable energy and waste management.

The guidance identifies an Equality Impact Assessment as a key tool in quantifying how a project impacts on various groups. This guidance is relatively recent, and as such, an impact assessment was not carried out when designing the SBF project.

The SBF is designed to be fully inclusive to both academia and industry within the life and medical sciences and computing sectors. As it is part of the RSE Scotland Foundation (a legal entity) it therefore has a responsibility to develop and implement an equal opportunities policy. The policy states that the RSE Scotland Foundation will ensure its staff and those it engages with:

“Have quality of opportunity and work in an environment free from harassment, victimisation, discrimination or bullying on the grounds of age, colour, race, nationality, ethnic origin, gender, gender reassignment, religion or beliefs, sexual orientation, marital status, disability and any other irrelevant difference or personal characteristic of an individual, e.g. social background, working pattern”.

In addition, the project is delivered at the Scotland wide level (inclusive of rural areas) and is focused on supporting the wider life sciences sector. It is not appropriate to assess the project against its contribution to the growth of rural priority industries (energy, tourism and food and drink), although it does not adversely affect these industries.

The SBF does not provide any information on the promotion of resource efficiency or impact the project has had on the environment.

Through the RSE Scotland Foundation’s bespoke equal opportunities policy, the SBF contributes towards the SE equity and equalities agenda. It should also be noted that the universities and commercial organisations that engage with the SBF are likely to have their own individual equity and equality policies and practices in place in line with current legislation.

5. Project Learning and Recommendations

This section presents the project learning/conclusions set against the study objectives and includes recommendations on the future delivery of the project.

5.1 Project Learning

We have considered the project against the study objectives outlined in Section 1.2:

1. Strategic fit - is there a continued strategic fit and contribution.

There remains a strong strategic fit with national policy and strategy, most notably the Life Sciences Strategy. In particular the project contributes to encouraging collaboration and knowledge sharing amongst academia but to a limited extent with industry.

2. Strategic rationale - should SE continue to support the SBF.

Feedback from both stakeholders and members identified that whilst the project has helped alleviate/mitigate a number of issues within the wider bioinformatics community the persistence of information deficiencies and an overall lack of co-ordination continues to impact upon the sector.

Based on the persistence of market failure and a strategic review, there is a clear role and rationale for continued support of the project. That being said, in order for the project to receive further funding it needs to refocus from a project directed towards supporting academia and move towards developing provision to support commercial opportunities and engaging with industry.

SE will continue to support the project but without a focus on developing commercial opportunities and supporting economic development it will prove challenging for the SBF to secure future funding based on its current activities.

The approval paper identifies an exit strategy after the four year funding period – based on the SBF being fully self sustaining. The project has not reached a stage where it generates sufficient income to be self-sustaining, and therefore will require additional public sector funding to continue operating.

3. Project performance and benefits achieved – review of project outputs against objectives.

We have demonstrated the project’s contribution towards wider strategic objectives (section 4.1). Overall, the project has been successful in establishing a networking platform and engaging with the most relevant academia across Scotland. However, it is recognised there has been little industry engagement or commercial opportunities generated through the SBF.

It should be noted that whilst the project has made progress in achieving the qualitative objectives outlined in the approval paper i.e. establishing a network of academics and supporting bioinformatics across Scotland, there were a number of economic aspirations (identified within the SE approval paper) which in practice seem to have been out with the scope and resources of the project. This is considered below.

4. Economic impact – assessment of the direct and indirect impacts i.e. jobs and Gross Value Added (GVA).

Direct Impacts

The project, whilst mainly focused on awareness raising and promoting networking/collaboration had a number of economic aspirations it sought to achieve. To date the project has been successful in supporting eight research positions and three industrial placements, with one industrial placement leading to a permanent full time position.

A key objective of the project was to leverage research focused inward investment and new company investment. The project has had limited success in achieving this objective.

However, it should be noted that given the scale and resources available to the project, it seems unrealistic the SBF would have any significant impact on generating direct economic outputs.

Indirect Impacts

The survey of members identified that three respondents reported the SBF has helped them to identify research grants, which in turn has helped to support up to nine research jobs over the short-medium term. Further, the survey identified that a further three organisations have created short-term research employment (6 positions) through new research projects undertaken after engaging with the SBF.

The SBF's support of the Drug Discovery Portal at Strathclyde University has allowed the department to further develop their screening capabilities and potentially offer this service on a commercial basis.

In addition, stakeholder feedback has identified that the SBF is predicted to generate indirect impacts for the Scottish economy through hosting an international event.

The SBF has played a key role in attracting/securing the International Conference of Systems Biology, due to be hosted in Edinburgh (hosted over five days in October 2010). The conference is estimated to attract over 1,000 delegates from over 40 countries and generate approximately £1.25m - £2m at the Scottish level⁶.

5. Project delivery and governance – does the current management and governance structure of the SBF provide the best way forward and is there scope/rationale for implementing change.

The governance and delivery structure of the SBF consists of a project manager responsible for the day-to-day operations, a Steering Group with overall responsibility that is accountable to the board of RSE Scotland Foundation Trustees.

The move to the RSE Scotland Foundation is seen as a positive step and has helped establish a transparent management and legal structure. One third of survey respondents indicated that the move to within the RSE Scotland Foundation has had a positive impact on their relationship and no members identified it as having any adverse or negative impacts.

However, it was highlighted that the presence of an industry representative within the Steering group could promote a greater level of industry awareness, engagement and collaboration.

6. Management information – review the relevance and monitoring and KPIs of the project – does it add value.

There are no monitoring reports submitted to SE on a regular basis that capture the progress and impact of the project. Our assessment has largely relied on feedback from stakeholders.

⁶ The expenditure estimate is a gross figure based on proxy indicators of spend per head for international conferences – Delegate Expenditure Survey, UK National Tourist Boards 2006. It does not consider the level of attribution to the SBF.

Currently, progress is reported in the form of annual reports with no defined structure or reporting template. The lack of a formal monitoring system or process is a key weakness of the project.

7. Linkages and dependencies – how does the SBF link with other SE and public sector support, are there gaps, duplication.

Stakeholder feedback indicated that there has been a reasonable level of interaction with Scottish-wide organisations e.g. SULSA and National e-science centre. However, there has been no interaction with the SE funded ProspeKT initiative and there is potential for some overlap/duplication of services between the two projects.

8. Project learning – review the key learning and good practice of the project.

The key strengths and areas of good practice identified by stakeholders include the range and bespoke nature of the events and seminars, the opportunity to network and the engagement with key departments and individuals from academia.

9. Contribution to the equity and equalities agenda – to what extent does the SBF contribute to SE's equity and equalities agenda.

The project contributes towards the agenda, is open to all and does not discriminate on the grounds of race, gender, disability, age, religion/belief & sexual orientation. The organisations engaging with the project also have their own individual equality policies which helps ensure the project is fully inclusive.

10. Recommendations – assessment on the continued need/demand for the SBF and consideration of the future delivery of the project.

Stakeholder and survey feedback identify a continued demand for the project particularly in relation to delivering a pan Scotland approach to bioinformatics support.

There remains a strategic rationale for continued delivery of the project due to the persistence of market failure and high levels of additionality i.e. in the absence of the project there is unlikely to be any significant level of Scottish-wide engagement.

Whilst there is a continuing rationale for SE support, the SBF would require refocusing its activities more in line with the economic development agenda of SE and promoting commercialisation opportunities.

Any future requests for SE funding should be considered on the basis of economic gains and commercial opportunities generated through the project.

However, this should be considered in the context of existing support provision. Specifically the ProspeKT initiative has a remit to support commercialisation within informatics arising out of Edinburgh University. Any significant change within the focus of the SBF has the potential to duplicate resources.

Recommendations for the future delivery of the SBF are presented in Section 5.2.

5.2 Recommendations

Our preliminary recommendations that should be considered for the future delivery of the project are as follows:

- there is a need to review the strategic objectives of the project to ensure that targets are viable and realistic within the limited resources of the SBF, particularly in relation to leveraging investment. Whilst the project has been successful in networking and promoting bioinformatics across Scotland, there is little industry engagement/penetration or help with commercialisation to generate any significant economic impacts;
- the project should adopt/implement a more formal monitoring system which details SMART objectives, targets and KPIs, and how these will be recorded. Further, the SBF should adopt a system where progress is recorded quarterly – this will be particularly important if other sources of public sector funding is sought/secured;
- there is an issue with regards the effective communication of targets and outcomes between SE and SBF. The internal SE approval papers identified a number of quantifiable targets and economic aspirations which did not form part of the letter of award to the SBF. Any future support from SE should be formally measured based on their funding criteria, in addition to the wider SBF/SBRN objectives;
- if SE were to support the project then it would have to undertake a Equalities Impact Assessment to capture the projects contribution towards promoting equality and measure the impact of this;
- the presence of an industry representative within the Steering Group could help promote engagement with industry and highlight commercial benefits of industry-academia collaborations; and

- our assessment shows a continued need/demand and justification for the project and SBF should review other potential funding sources to support the continued delivery and possible expansion of the project e.g. ERDF, SPF 7 and SFC.

The SBF is not at a stage where it can generate sufficient income to become self-sustaining, and in the short-medium term should undertake a review of potential public sector funding sources.

In particular, there is a potential opportunity to access funding through one of the SFC pooling initiatives which has a focus on bioinformatics (e.g. SULSA - life sciences; SICSA - computing & informatics; SUPA - physics). Given the established linkages with these organisations, there may be a coordination role that SBF could play in ensuring efficient knowledge transfer between the various groups and with industry. Funding for such a role could conceivably come from SFC's strategic Knowledge Exchange Project awards ('SPIRIT' awards).

Appendices

Appendix A: Stakeholder Consultations

Appendix B: Breakdown of SBF events

Appendix C: Online Members Survey

Appendix A: Stakeholder Consultations

Table A1: Stakeholder Consultees

Name	Position	Organisation
Dr Ed Hutchinson	Project Manager	SE
Rhona Allison	Head of Life Sciences	SE
Dr Chris Janssen	Project Director	SBF
William Duncan	Chief Executive	RSE Scotland Foundation
Professor Nigel Brown	Steering Group	Edinburgh University (Vice-Principal and Head College of Science and Engineering)
Professor Igor Goryanin	Steering Group	Edinburgh University (Professor of Computational Systems Biology)
Professor John Coggins	Steering Group (chair)	Glasgow University (Professor of Molecular Enzymologist and Honorary Research Fellow in the Faculty of Biomedical and Life Sciences)
Professor Richard Sinnott	Steering Group	Glasgow University (e-Science Technical Director)
Dr Daniel Crowther	Head of Bioinformatics	Wyeth (TMRC)
Professor Mike Barrett	Theme Director (systems biology)	SULSA
Sandhya Kapitan	Senior Policy Officer	SFC
Jane Hair	Deputy Director	NHSGGC (bio-repository)
Dr Catherine Breslin	Business Development Manager	Strathclyde University

Bioinformatics Stakeholder Consultation Pro Forma

1. Please describe the nature of your involvement with the SBF to date?
2. What about your organisations involvement?
3. What do you perceive as the key role/purpose of the SBF?
4. Was this appropriate and does it remain so?
5. Does it communicate its role well? How could it be improved?
6. Who are the main target beneficiaries for its services? Is this appropriate
7. What is the main way in which you think the SBF can support Life Sciences organisations?
8. Can you identify the original market failure the SBF was trying to address and is this still valid?
9. Was the relationship between the SBRN and SBF effective? If not why not?
10. Did the move of SBF to the Royal Society of Edinburgh make sense in terms of retaining impartiality, independence and to be associated with such a prestigious institution? What would have happened otherwise?
11. Has the SBF been effective in securing 'buy-in' from the life sciences community? i.e. is the body representative at the Scottish level,
12. What have been the main benefits for your organisation? *prompt with the benefits mentioned in Q13 ? Probe further for evidence of economic impacts, attribution and additionality if appropriate*
13. What have been the main benefits for others engaging with the SBF e.g. commercialisation, developing new products, knowledge transfer, making new contacts?
14. What would have happened in absence of SBF? i.e. would you or the beneficiaries have achieved these benefits anyway
15. Do you think the SBF is good value for money for public sector investment? Why do you say this?
16. Do you think the SBF has achieved the right balance in engaging both academics and industry at the events and subsequent activities? (Please expand)

17. Are there any key Scottish businesses, industry bodies or academics that are currently not engaging with the SBF which should be? Do you have any comments on the market penetration of the SBF?
18. How does the SBF link with other support and networks aimed at the sector?
19. What about linkages to specific initiatives:
 - Propekt Initiative
 - Nexus and other industry networks
 - Interface and other KT initiatives
 - SDI
20. Do you think there are any issues of overlap, duplication or remaining gaps?
21. Since the SBF has been delivered by the Royal Society of Edinburgh (since Jan 2008) do you think this has changed the focus of the support or created any new opportunities or barriers?
22. What SBF services have worked particularly well and what could be considered 'good practice' for continued or future delivery of support within a different format?
23. Main strengths and weaknesses of the SBF?
24. What do you see as being the key issues for the Life Sciences sector in the future, and what role (if any) do you envisage the SBF playing?

Appendix B: Breakdown of SBF events

Table A1: Breakdown of Events 2007 - 2010

2010	<p>National Grid Service Training MBO Workshop on Visualizing Biological Data (VizBi) Access To Biological Databases (Perl) bioinformatics for Next Generation Sequencing R User Meeting Computing with cells: Membrane Computing" Seminar and Discussion on Membrane Computing</p>
2009	<p>Next Generation Sequence Assembly Workshop bioinformatics for Next Generation Sequencing Microarray Data Analysis IWPLS'09 International Workshop on Portals for Life Sciences Systems Biology Seminar: Modelling and Inference of Transcriptional Regulatory Networks Comparative Genomics one-day International Conference Bio++ workshop: rapid development of robust applications bioinformatics for Next Generation Sequencing Supplement to Summer School - Conference Dinner Summer School - bioinformatics and Comparative Genomics bioinformatics for Next Generation Sequencing The 2nd CLSS-UK North Area Life Science Symposium High-throughput approaches and bioinformatics for breast cancer research Scottish Systems Biology meeting Aberdeen Proteomics and Protein Structures - SBF/EBI Training Event in Scotland bioinformatics for Next Generation Sequencing interactions and Pathways - SBF/EBI Training Event in Scotland Ensembl Advanced Workshop - 2 day workshop Scottish Biosystems Modelling Network meeting - 19th Feb 09</p>
2008	<p>Scottish Biosystems Modelling Network meeting bioinformatics for Next Generation Sequencing Joint Scottish - Swiss Forum for bioinformatics Reception Microarray Data Analysis bioinformatics for Next Generation Sequencing Development of mathematical tools to understand and predict biological systems Applications of Information Visualisation in bioinformatics 9th Workshop on Membrane Computing, WMC9 bioinformatics and Systems Biology in Scotland bioinformatics for Next Generation Sequencing</p>

	<p>Fifth Systems Biology Symposium at University of Aberdeen Applied bioinformatics & Public Health Microbiology Symposium on Chemical and Translational Biology at the University of Edinburgh bioinformatics for Next Generation Sequencing Finding Hidden Knowledge: Text mining for biology and medicine bioinformatics tools for a new generation of metabolomics Simulation and Modelling of the MAP Kinase Pathway "The detection of DNA-binding proteins by means of structural motifs" SBF - European bioinformatics Institute Training Event in Scotland</p>
<p>2007</p>	<p>New Frontiers in Metabolomics Comparative Genomics and Genome annotation/assignment of gene functions Protein Structures & Interactions Data, Metadata and Reporting Standards for Metabolomics Field Programmable Gate Arrays (FPGAs) computing High-yield electricity or hydrogen generation using bacteria and microbial fuel cell technologies Edinburgh-RIKEN Symposium: From Systematic to Synthetic Biology</p>

Appendix C: Online Members Survey

25. What sector best describes your organisation?

	✓
Academic	52
Commercial	1
Public Sector	6

26. What do you perceive as the key role/purpose of the SBF?(Tick all that apply)

	✓
Promoting collaborations between academic groups	57
Promoting collaborations between academia and industry	25
Help with commercialisation of products	2
Networking	57
Developing new products/processes	2
Providing access to cutting edge research	25
Provide Training	47
Other (please detail)	1

27. Do you think the SBF is equally accessible to all organisations, regardless of institution or location?

	✓
Yes	46
To some extent	13
No	1

28. Please describe the nature of your organisation's involvement with the SBF to date? i.e. what support have you accessed (tick all that apply)

	✓
Attended training	36
Attended research events	47
Attended networking events	30
Accessed research data	6
Signposted to funding	0
Other (Please detail)	8

29. Including the networking events, how many events have you attended since 2007?

	✓
1 – 2 events	16
3 – 5 events	13

5 – 10 events	23
More than 10 events	4

30. If you have attended events organised or sponsored by the SBF, please indicate which ones? Please detail how you rated these events 1 v poor to 5 v good

Please explain your rating of events

.....

.....

.....

31. What constraints/issues do you think engaging with the SBF has helped you/your organisation overcome? (please tick all that apply)

	✓
No opportunity/knowledge how to network with academics and industry	19
Needed help with how to access new markets	0
Needed help with developing new products/processes	2
No knowledge of who to approach for training	14
No knowledge on the type of training available	12
Limited access to industry and statistical data	2
Limited access to equipment	1
Limited knowledge of new emerging techniques	30
Too expensive to access private sector support	4

32. What have been the main benefits for your organisation as a direct result of engaging with the SBF? (please tick all that apply)

	✓	Please detail outcomes
Learning about new developments/techniques/tools	46	
Learning about funding opportunities	6	
Learning about market opportunities	2	
Establishing new contacts/networks with academics	47	
Establishing new contacts/networks with companies	6	
New collaborative research projects	19	
New individual research projects	10	
New collaborative commercial projects	1	
New individual commercial projects	0	
New international trade/exports	0	

33. Did this new research project lead to attracting any new funding streams?

	✓
Yes	3
Possibly in the future	12
Don't know	5

Please detail how much and where from?.....

34. Did this new research project lead to an increase in employment?

	✓
Yes	6
Possibly in the future	7
Don't know	7

Please detail the number and length of contract?.....

35. Has this new commercial project lead to any of the following impacts?

	Now	In the future
Increased investment	0	3
Product patents	0	1
Product launches	0	0
Increase in sales	0	0
Increase in employment	0	4

Please detail.....

36. Did this new international trade/exporting have any of the following impacts?

	✓
Increase in sales	0
Increase in employment	0

37. Do you think the SBF has achieved the right balance in engaging both academics and industry at the events and subsequent activities?

	✓
Yes	20
No	4
Don't know	36

Please explain.....
.....

38. Main strengths and weaknesses of the SBF?

39. Do you think there is any overlap or duplication between the services provided by SBF and those of other organisation involved with Life Sciences e.g. ProspeKT (the commercialisation programme run by Dept. Informatics, Univ. Edinburgh), Nexxuus, the life sciences networking organisation.

	✓
Yes	3
No	32
Don't know	24

If yes, who and how please explain
.....
.....

40. Since Jan 2008 the SBF has been overseen as a project by the Royal Society of Edinburgh. How has this impacted upon your relationship or level of engagement with the SBF?

	✓
Positive impact	19
Negative impact	0
No impact	40

Please explain.....

41. Looking to the future, please detail what specific areas you think your organisation will require support? (Please tick all that apply)

	✓
Accessing research	37
Networking	37
Access to funding	21
Skills development	28
Access to new markets	5
Training	48
Other (Please detail)	0