



Edinburgh Napier
UNIVERSITY

School of
Applied Sciences

Meaningfully Embedding Industry- Relevant Life Sciences Skills in the Undergraduate Biosciences Curriculum

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More than a Decade of Enhancement of Bioscience Skills at Edinburgh Napier University

We will:

Summarise our journey so far

Present lessons learned

Make recommendations for the future

Our Context at Edinburgh Napier University:

- Scottish Modern University
- Applied Sciences undergraduates
 - 1 in 10 from MD20 postcodes
 - 1/3rd are over 21
 - 15% identify as disabled
- Bioscience undergraduate suite
 - 100 – 150 intake per year
 - 50% Biomedical Sciences students

Mid 2000s

Focus on graduate employability across the sector

Concern about confidence of Scottish Graduates

ABPI 'Sustaining the Skills Pipeline in the pharmaceutical and biopharmaceutical industries' report in 2005

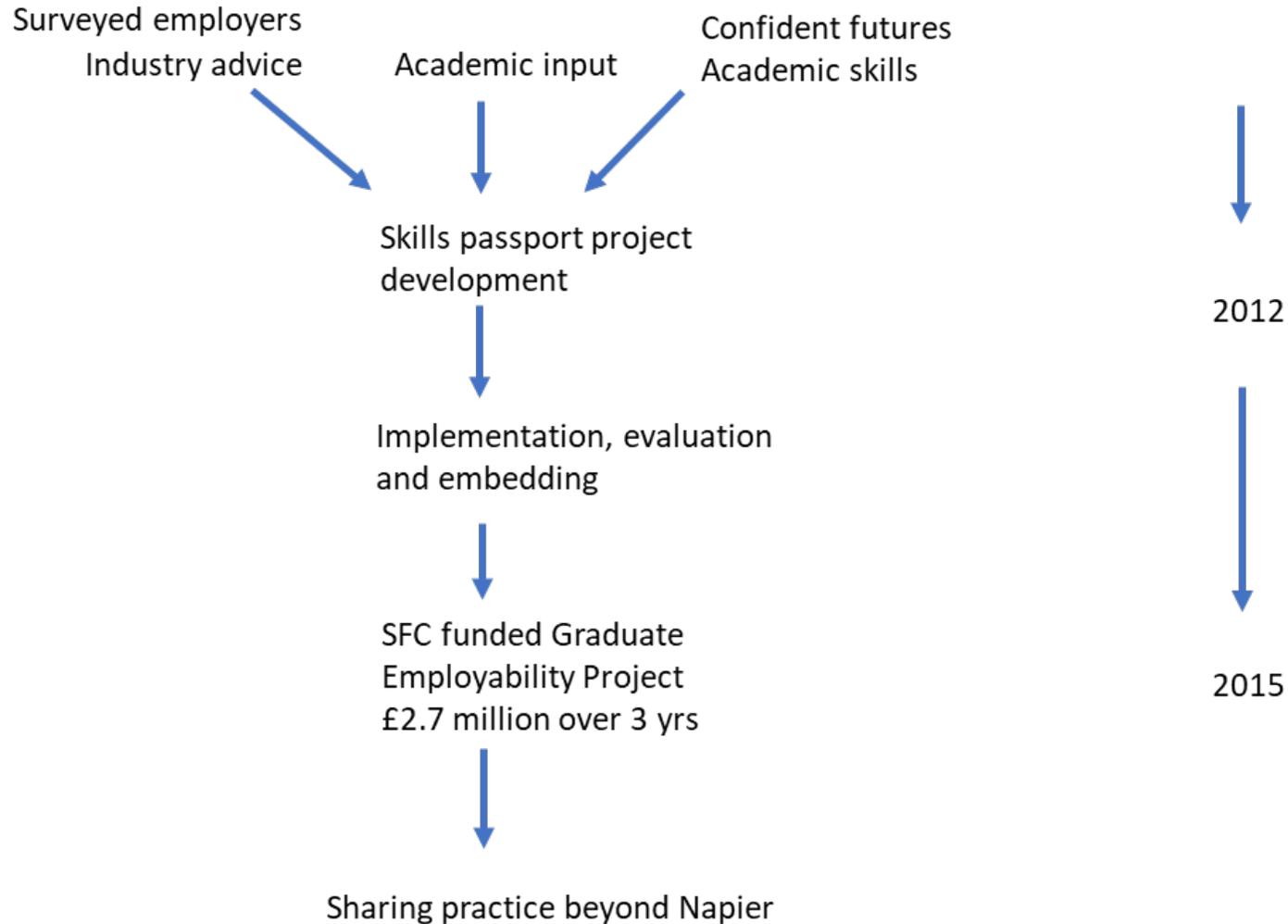


Our Challenge

Improve graduate employability and confidence through curriculum enhancements

Interventions in Undergraduate Biosciences Curriculum

How do we prepare our students for life beyond their programme?



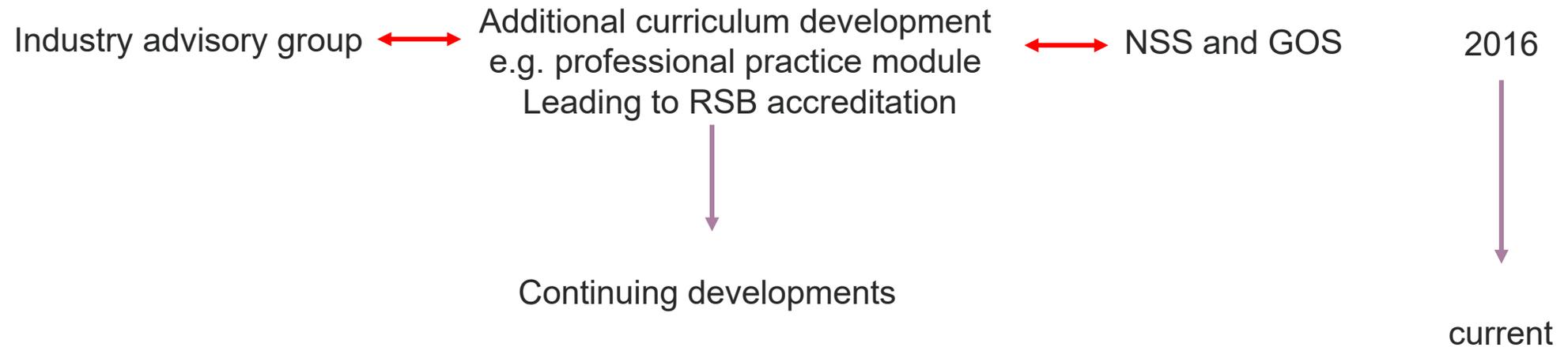
Meaningfully Embedding Skills

- Transferable skills strategically offered across programme
 - E.g. time management, networking
- Identified transferable and specialist, industry-relevant skills
 - E.g. problem solving, numeracy, practical lab skills, Good Laboratory Practice
- Mapped or introduced in programme and explicitly signposted to students
- Student self-evaluation
 - Supported by staff with industry backgrounds
 - Self-led reflection as future-proofing
- Student engagement poor until embedded and contextualised



Context, reflection and engagement with stakeholders

Reflection



ENU Biomedical Sciences Degree Outcomes:

National Student Survey

100%

Overall satisfaction 2022

Ranked:

1st of 75 in the UK for
Biomedical Sciences
1st of 34 for Biosciences

Graduate Outcomes

94%

Positive Destination 2019/20

22% Further study
79% Professional or Managerial
Occupation

Lessons Learned: Meaningfully Embedding Means



Authentic Student Experiences

Future Proof Skills and Knowledge

Delivered in Partnership

Credit Bearing

Lessons Learned: Future Proofing

Table 1: Comparison of 2015 and 2018 top priorities with 2021 top priorities.

Top priorities 2021	Top priorities 2018	Top priorities 2015
Chemometrics	Immunology	Clinical pharmacology/ translational medicine
Formulation science	Genomics	Data mining
Physiological modelling	Clinical pharmacology/ translational medicine	Statistics
Computational chemistry (to include: Chemoinformatics)	Pharmacokinetic/ pharmacodynamics modelling	Bioinformatics/computational systems biology
Epidemiology and pharmacoepidemiology	Medicinal and synthetic organic chemistry	Qualified person PV
Pharmacokinetic/ pharmacodynamics modelling	Bioinformatics/computational systems biology	Qualified person QA
Engineering in manufacturing	Computational science	Veterinary and toxicological pathology
	Automation	Health informatics
	Physiological modelling	Health economics and outcomes
	Metabonomics	Formulation
	Device technology	Clinical pathology
	Computational chemistry	In vivo physiology
	Proteomics	Computational chemistry
	Biomedical imaging	Biomedical imaging
	Chemoinformatics	Proteomics
	Chemometrics	Process chemistry
		Metabonomics
	Chemoinformatics	

- Sector changes rapidly
 - Upskilling
 - Reflection, digital skills and lifelong learning
- Graduate Readiness continues to be a challenge for industry
 - Core skills less of a concern (ABPI 2022)

Lessons Learned: How Best to Engage with Stakeholders

- Regularly & strategically
- Institutional level partnerships with shared purpose
 - Industry Advisory Group
 - Collaborative upskilling initiatives
 - Mutually beneficial visits
 - Guest lecturers



Scaling up Impact: the Challenge

ENU BMS Graduates

60 pa

6% total Scottish Biomedical Science(s) Graduates (HESA)

79% work in professional/ managerial occupations

22% choose further study

Course constraints:

Broad range of skills, knowledge and applications

Practical emphasis limits numbers

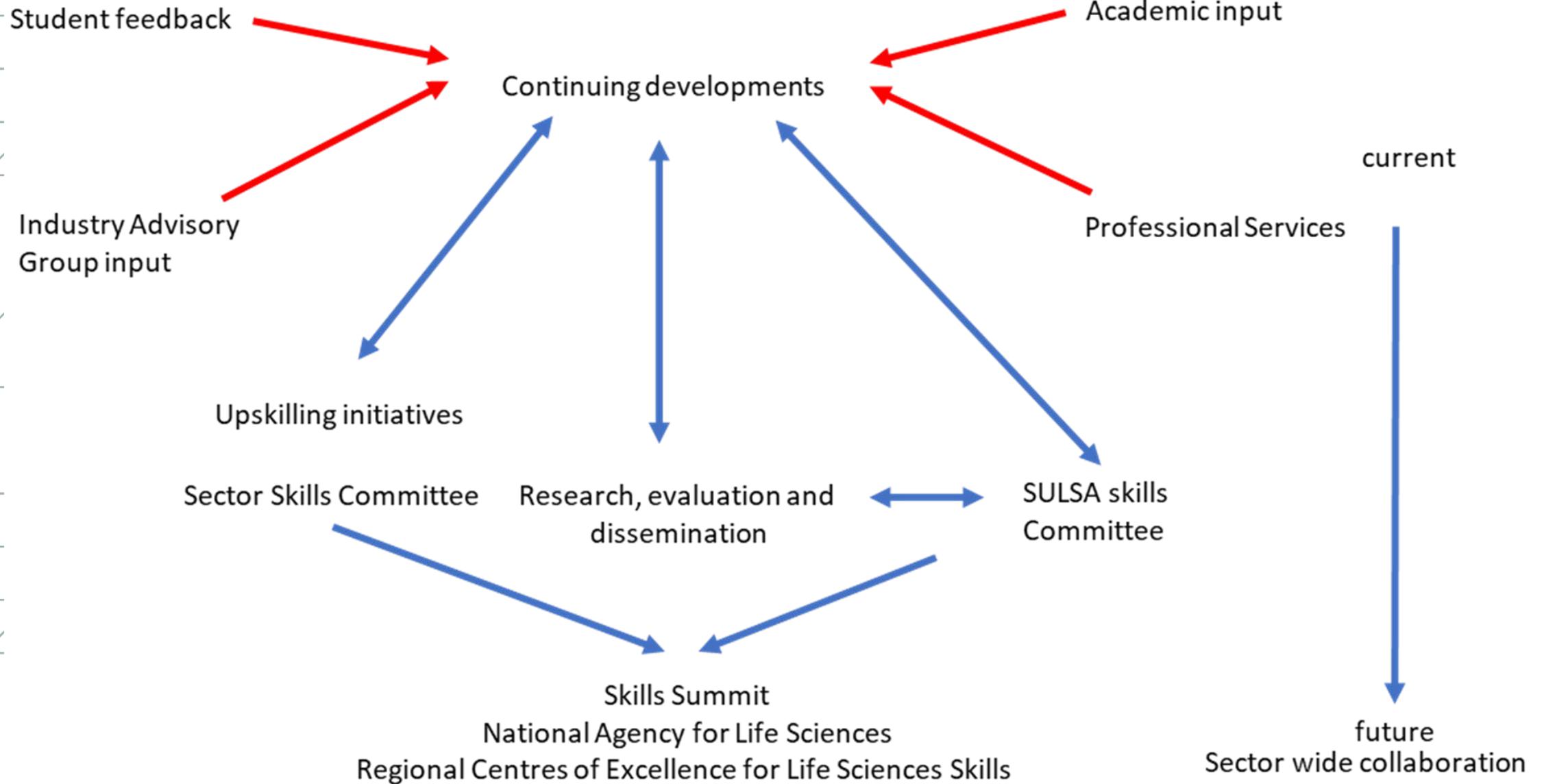
Life Sciences Sector Needs

3,500 pa

Job postings in sector in 2022

1/3 skills sourced from new (post)graduates (2021 UK Cell and Gene Therapy Skills Demand Survey Report)

Digital skills major concern (ABPI 2022)
Entrepreneurial, scaling programmes and more 'Employer-Ready Graduates' needed (2021 Campbell report)





Core skills, embedded reflection and applied experience

Adaptable core skills provision
Lifelong approach to skills
development
Flexible provision and
workforce

Supported, centralised industry engagement

Authentic learning
experiences:
Placements, Internships, CPD
Off the shelf curriculum
enhancements
Guest lectureships
Train the trainer

Strategic, funded cross- sector collaboration

Pooled specialist, applied
teaching
Shared curricula
Flexible provision

Recommendations



Summary

Surveyed employers
Industry advice

Academic input

Confident futures
Academic skills

Skills passport project development

Implementation, evaluation and embedding

SFC funded Graduate Employability Project £2.7 million over 3 yrs

Sharing practice beyond Napier

Reflection

Additional curriculum development e.g. professional practice module, RSB accreditation

Student feedback
NSS and GOS

Industry Advisory
Group input

£100k Upskilling initiatives
Sector Skills Committee

Continuing developments

Research, evaluation and
dissemination

Skills Summit, National Agency for Life Sciences, Regional Centres of Excellence for Life Sciences Skills

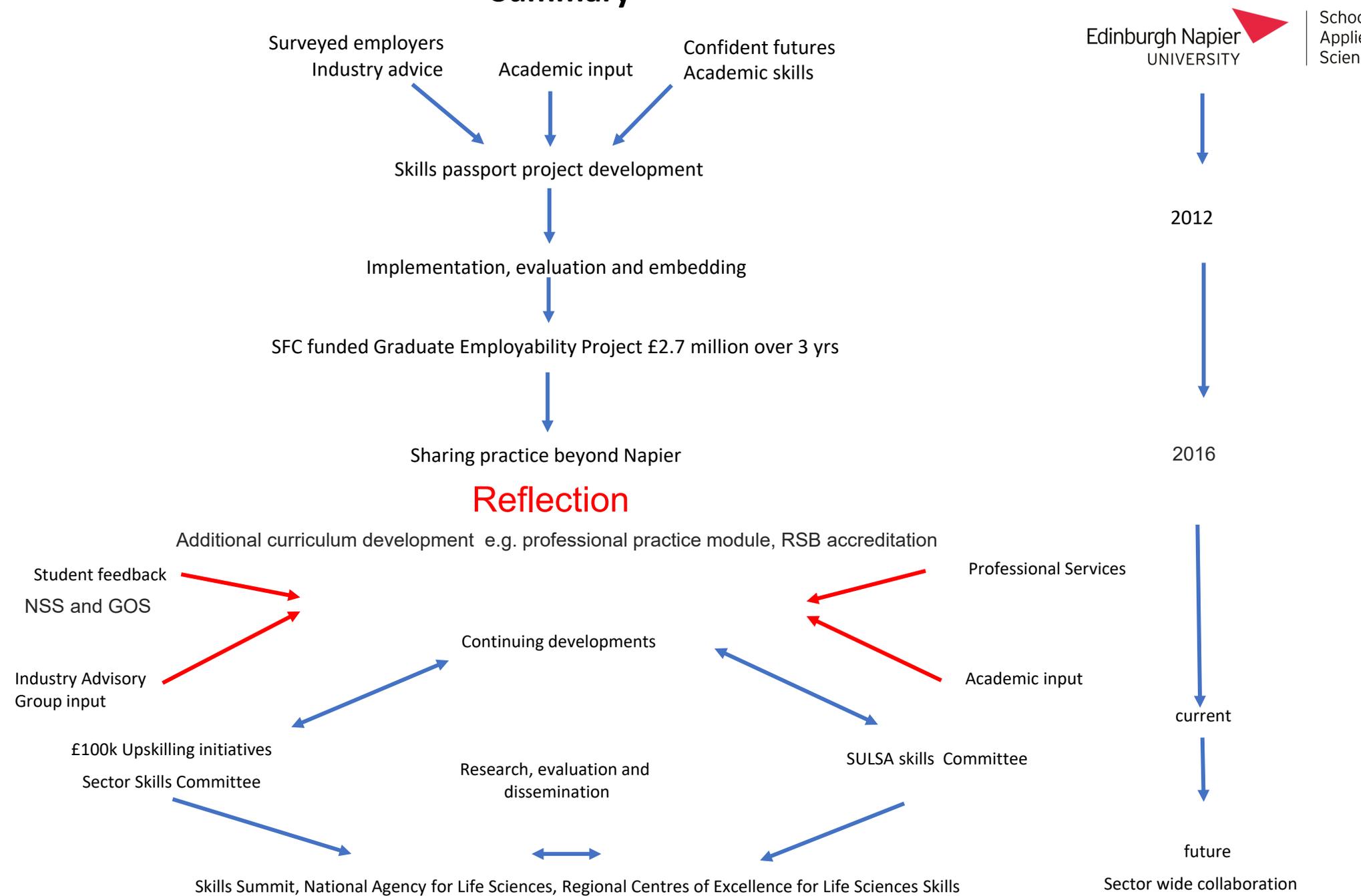
2012

2016

current

future

Sector wide collaboration



Acknowledgements and Sources

- **Colleagues, collaborators and students at Edinburgh Napier University and beyond**
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