Industry Science Relations as the Foundation of the Knowledge Economy

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Knowledge Transfer

Scottish Enterprise

Scotland accounts for approximately 8% of the UK's population, and has a similar GDP per capita

- Population of 5 million
  - 8% of the UK population (60 million)
  - 1% of EU-25 population (460 million)
- GDP at PPP/capita of $28,700*
  - UK average - $29,900*

* 2003 figures

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From history of invention to competitiveness through innovation…

Examples of Scottish inventions:

- *In transport:* **the steam engine, the pneumatic tyre, the pedal bicycle, tarmac, the locomotive, the bus**
- *In communications:* **the telephone, television, the fax machine, the photocopier, video**
- *In medicine:* **the hypodermic syringe, anaesthesia, morphine, antiseptics, insulin, penicillin, interferon, Dolly - the cloned sheep**
- *Other:* **the thermometer, radar, the gravitating compass, the threshing machine, street lighting, the gas mask**

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Asymmetry – knowledge supply & demand

Knowledge supply (Academia)

- 13 Universities in Scotland
- 8% of UK population
- 12% of UK research councils' funding
- 13% of UK's research funding from EU
- 18% of UK's life sciences PhD awards
- ranked 3rd in world for publications/capita (1% of world's research publications)

Knowledge demand (Industry)

- Few corporate R&D centres
- Low business R&D
- Large numbers of SMEs (99%)

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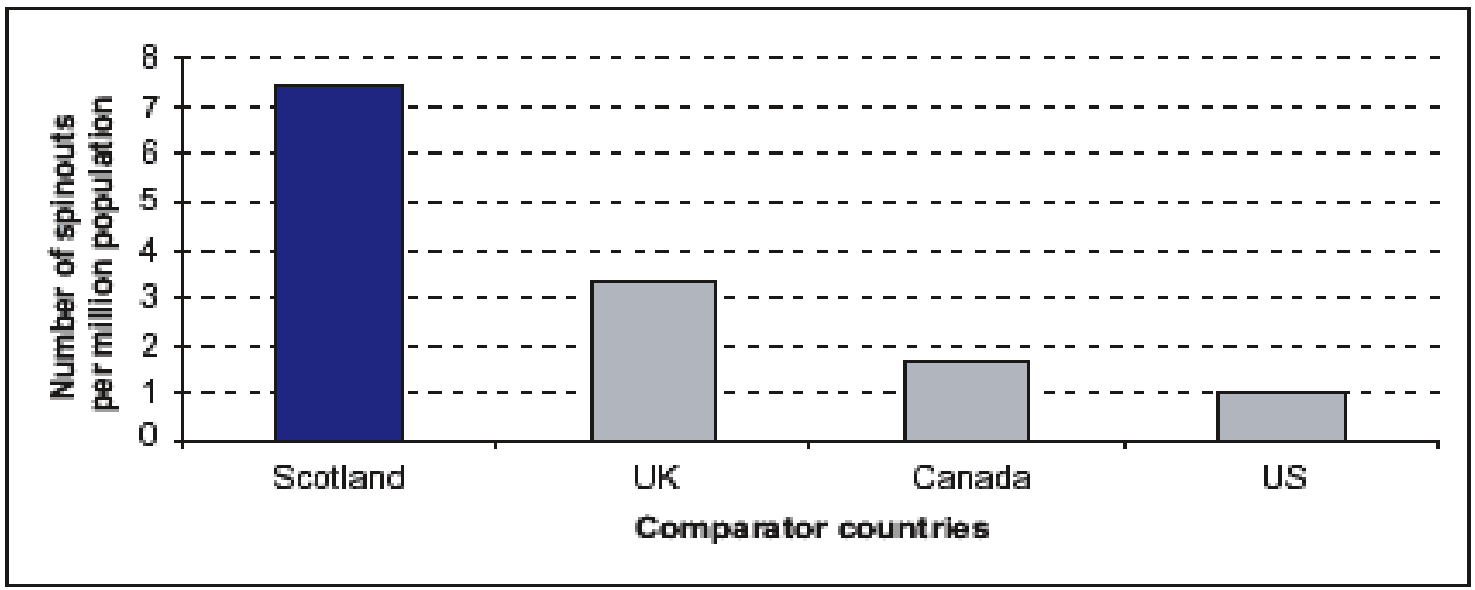
Number of academic spinouts per million of the population (1999-2000)



Source: HEBI Survey, 2001; Census of Population, 2001 & OECD Statistical Compendium

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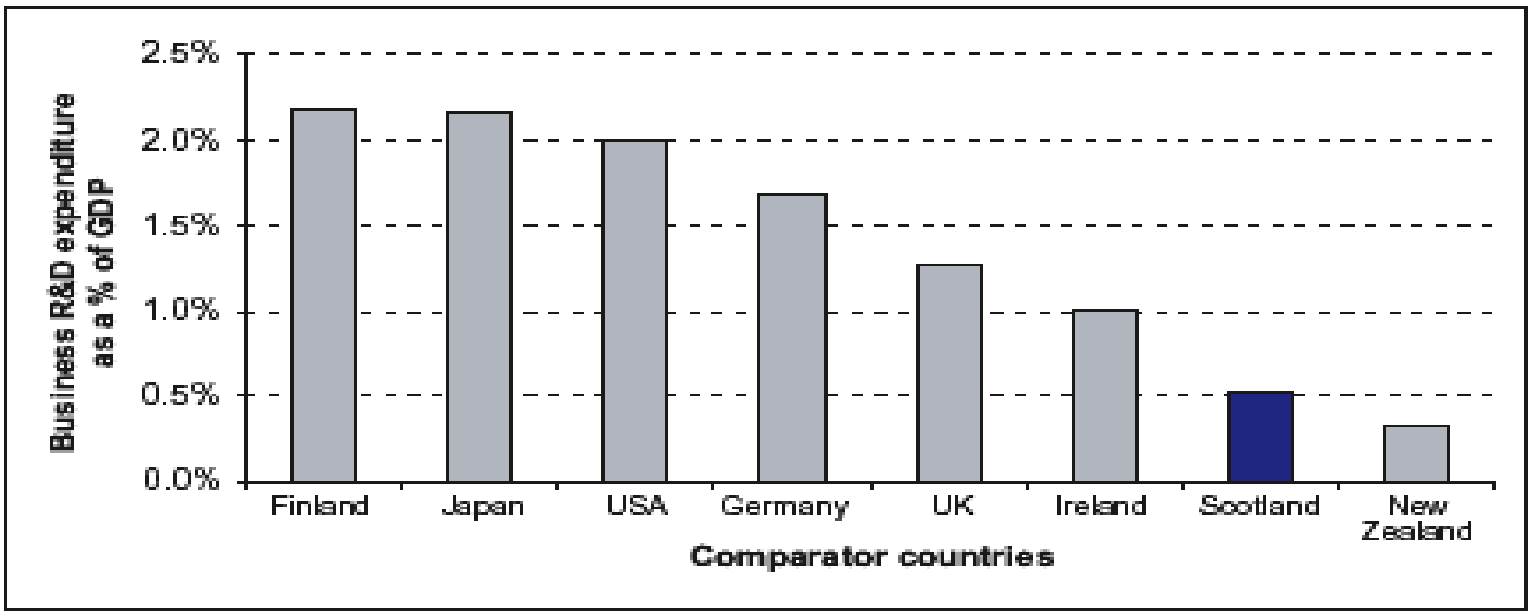
Business research and development investment as a proportion of GDP (1999)



Sources: BERD 2000 and OECD STI Scoreboard Annex Table 5.1.1
Note: Data for Ireland for 1997, others for 1999

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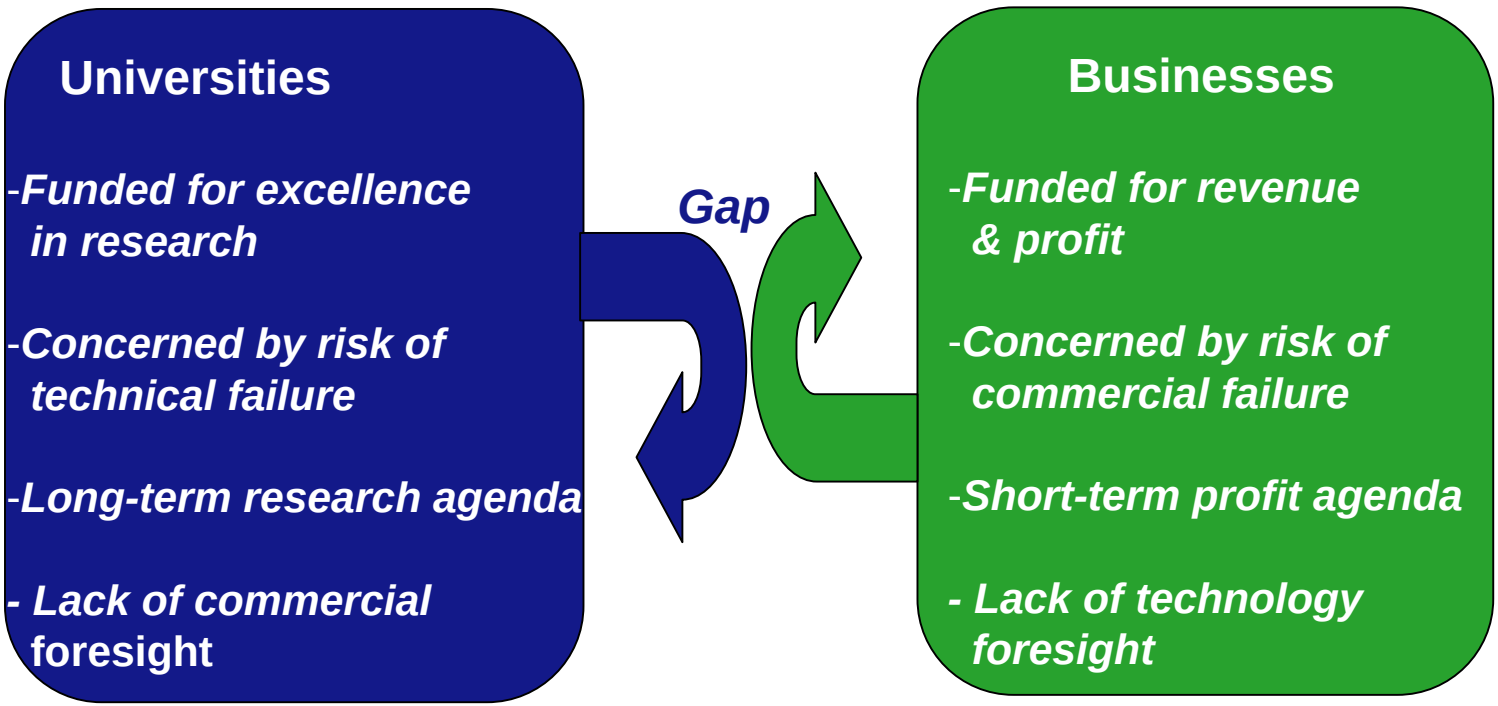
Knowledge transfer gap



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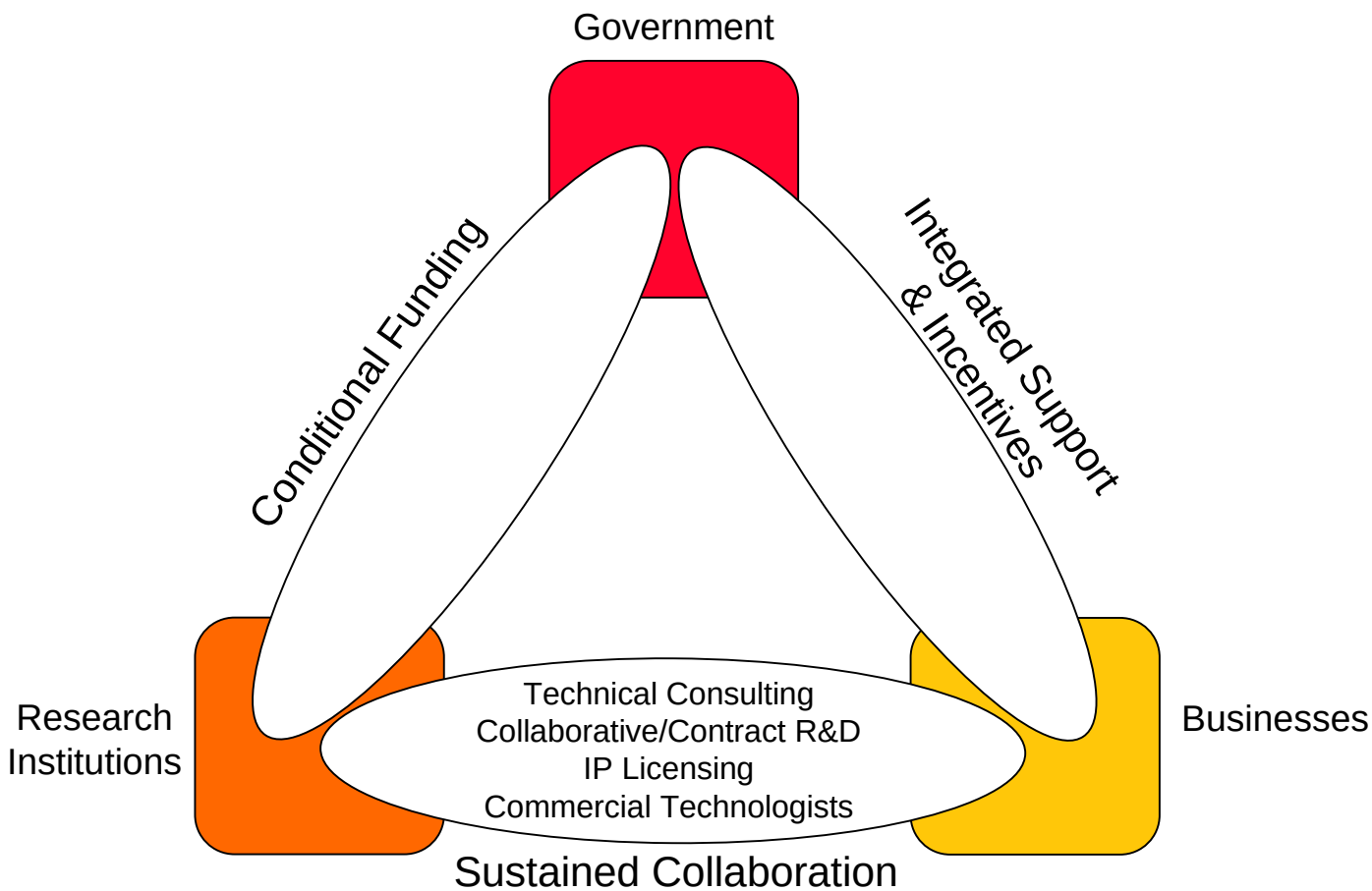
Triple Helix



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Knowledge Transfer – Key activities for SE

- Helping universities **to commercialisation** their science and technology
  - Create innovative spin-outs
  - Create patents
  - Create licencing deals with industry
  - Develop a culture of collaboration with industry

- Helping businesses to absorb innovative technologies and creative thinking to strengthen their **competitive advantage**
  - Increase collaborations with universities and research institutes
  - Access ideas, patents and know-how
  - Develop a culture of collaboration with the academic sector

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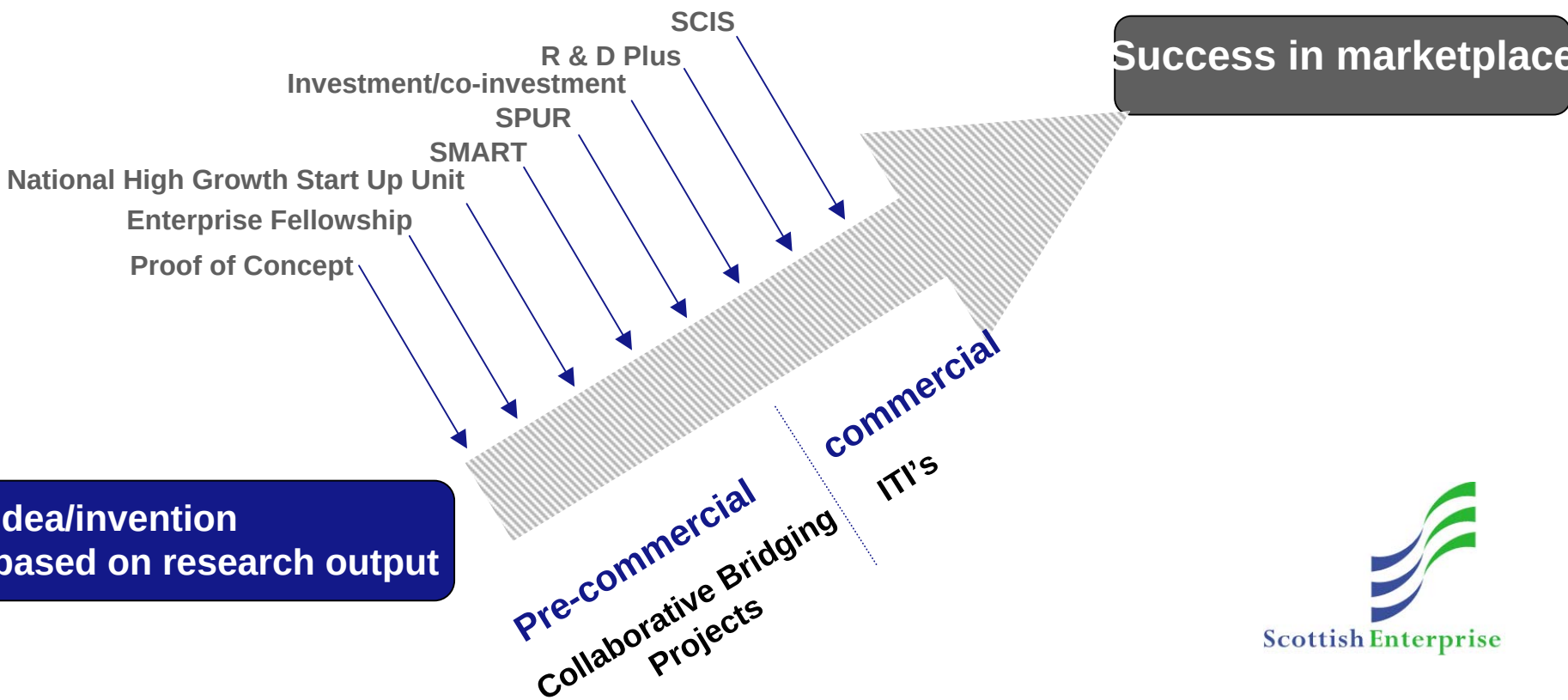
Research to Revenue - Pipeline



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Scottish Enterprise has implemented five “bridges”, each with unique scope & objectives

“Bridge”	Research Institutions	Sector Scope	Principal Technology Transfer Objectives				
			Spin-outs / Start-ups	IP Licensing	Technical Consultancy	Collab./ contract R&D	Staff training /transfer
Proof of Concept Programme	*All Scottish Universities*	*All technology sectors*	✓	✓			
Enterprise Fellowship Programme	*All Scottish Universities*	*All technology sectors*	✓				✓
Kelvin Institute	*2 University partners initially*	*Opportunity-driven*	✓	✓		✓	
Edinburgh-Stanford Link	*Edinburgh & Stanford Universities*	*Speech & language technology-related*	✓	✓	✓	✓	✓
Photonix	*Glasgow & Strathclyde Universities*	*Opto-electronics-related*	✓	✓	✓	✓	✓

OUTCOMES
1999 – 2005 : 29% increase in business R&D expenditure

Enterprise Fellowships

Business and Economic Performance Review

- **52 awards in the last five years**
- **44 businesses have been incorporated and a further 8 are planned**
- **35 businesses have started to trade**
- **Total investment across portfolio is £70m of which £62m is from private sector**
- **220 graduates and postgraduates employed**

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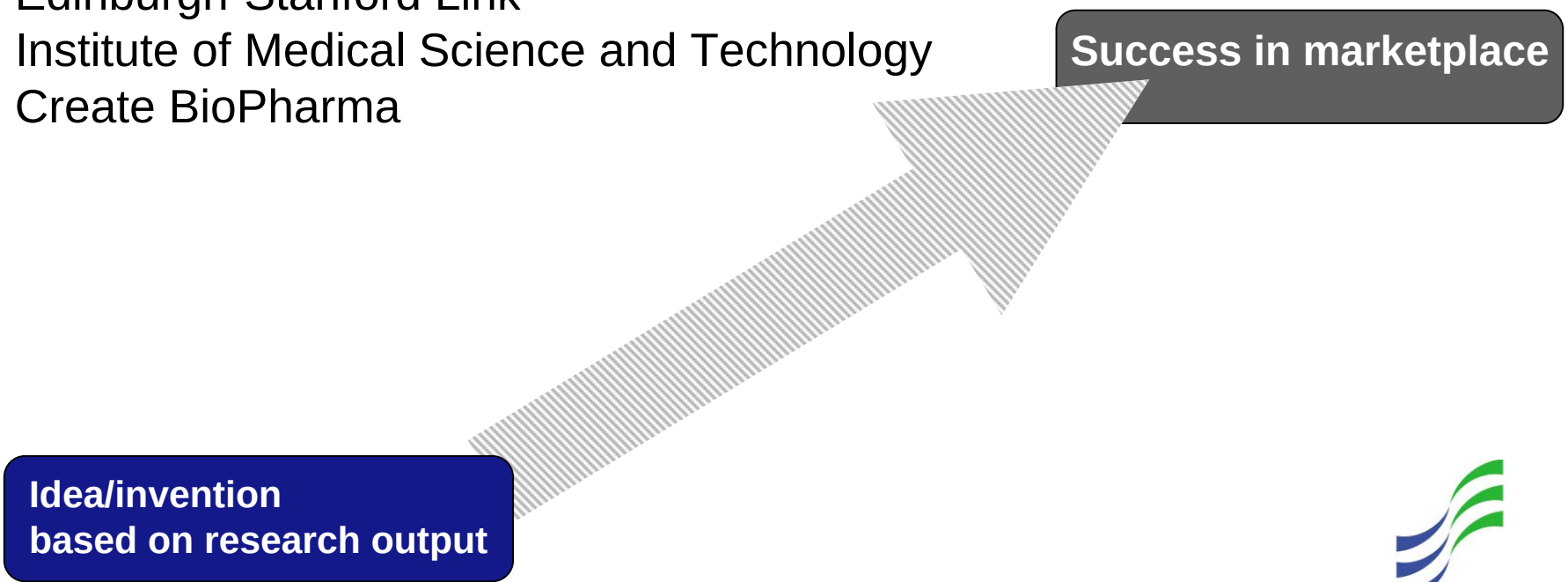
Examples of collaborative bridging projects:

Kelvin Institute
Photonix
Edinburgh-Stanford Link
Institute of Medical Science and Technology
Create BioPharma



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Thank You

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