The Importance of Industrial Collaboration in Research

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Introduction – My Background

• Over 35 years experience as a researcher in the electronics industry

• Joined Plessey research laboratories in the 1970s and 1980s

• Worked at two industrial research centres in the USA

• From the early 1990s to 2006 was Technical Director and Chief Scientist at Rohm & Haas’s European Technology Centre in Coventry

• Currently run my own business and am the IeMRC’s Industrial Director
Innovative Electronics Manufacturing Research Centre

- The IeMRC is funded by the UK Government (via EPSRC)

- Part of the Innovative Manufacturing Research Centre programme

- Initially awarded £5.5 million in funding over 5 years from 2005

- Starting a second five year period of research

- Supporting electronics research in academia throughout the UK

- Strong element of industrial collaboration in all our projects
Traditional research and industrial research differ in nature, with universities focused on pure research and industry on applied research. However, they are complementary and should be pursued concurrently and in collaboration where possible. More recent recognition acknowledges the benefits that academics can offer to industry.
Pure versus Applied Research

Academic Research

Industrial Research

Both types of research can be of equal value!
• How do you position your research?

• Concept of Technology Readiness Levels (TRLs)

• Originally introduced by NASA in the 1980s

• Helps in making decisions concerning the development and transitioning of technology
Technology Readiness Levels

- Technology Readiness Levels are used to show the status of R&D activity

- Industrial and academic research are typically at different TRLs

- Collaboration with industry can help to move academic research towards industrial development

- Can ultimately lead to commercialisation
Collaborative Research - Benefits

- Can exploit synergies between collaborating partners and build on individual strengths and expertise
- Build new relationships and/or engage with your customers
- Gain access to facilities, equipment and new ways of thinking
- Possibility of having the project at least partly funded externally
- Helps to share the costs
Specific benefits for academic researchers include:

- opportunity to bring in revenue to your department/university

- chance to work in an industrial environment – broaden experience

- exposure to the demands of the commercial world

- sharing in the success when your work leads to new products

- seeing your research bring real benefits to society
Collaborative Research - Issues

- May be difficult to obtain funding
- How do you find the right partners?
- Needs good co-ordination
- Ownership of Intellectual Property
- Continuity at the end of a project
- University partners can be expensive
Sources of Funding

- EPSRC e.g. the IeMRC
- Technology Strategy Board
- Mix of EPSRC and TSB funding
- European Commission - FP7 calls
- Others – direct industrial funding, Carbon Trust, MoD, RDAs
Sources of Funding – FP7

• FP7 is the European Commission’s mechanism for supporting collaborative European Research

• The budget for FP7 is €50,521 million for the period 2007 – 2013

• The major themes of FP7 relate to **sustainable development**

• Any company, university, research centre, organisation or individual legally established in any country may submit proposals

• Use the Cordis website to get further information;

Examples of Collaborative Research

- SurfEnergy – FP7 project to develop energy use best practice in the PCB and metal finishing industry
- HEPPROC – TSB project to develop more sustainable PCB manufacturing processes
- InBoard – TSB project to utilise RFIX devices to monitor the lifecycle of electronics from manufacture to end of life
- Development of unfired clay bricks
- Reflated – LCD recycling
Example Multi-partner Project

TSB Funded ‘REFLATED’ Project – Liquid Crystal Recycling

[Graph showing LCD TV disposal trends in the UK from 2003 to 2011]

www.leMRC.org
• To develop novel, clean processes for LC segregation and open-loop recycling technology to enable reuse, and diversion from landfill

• Issues addressed in the project were Logistics, Disassembly methods, Recovery and Recycling of LCs and Markets for recovered materials

• New technology for separation of LC and the recovery of other materials e.g. plastics, glass, indium and other metals

• Demonstrator equipment built and patented

• Aim to commercially exploit the technology
Summary

• Collaborative research can offer real benefits to all parties involved
• Including academic research offers additional synergies
• Provides new opportunities to university-based researchers
• If you haven’t worked with industry give it a try!
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