

Technology Assessment and Technology Transfer

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- covering -

- **What could the future be?**
- **What are the barriers to uptake of new technologies?**
- **What role does Technology Assessment play?**
- **Possible ways to break the log jam**
- **MATCH consortium**



Perfect Future?

- Typical healthy life span to over 100
- Artificial replacement body parts
- Ubiquitous Telecare / Telemedicine
- Restoring sight
- Robotic assistance



Key questions

● Key questions for exploitation decisions

- ▶ Is there a need for it?
- ▶ Will it work?
- ▶ What is it worth?
- ▶ Will people buy it?



Is there a need?

- **Will there be applications for the technology**
- **Who are the potential users of the technology**
- **How will we find an optimum configuration for the technology?**
- **Major issues**
 - ▶ Ethics of researching needs and value of ATs
 - Intrusiveness
 - Personal information
 - Clinical Trial Ethical Approval



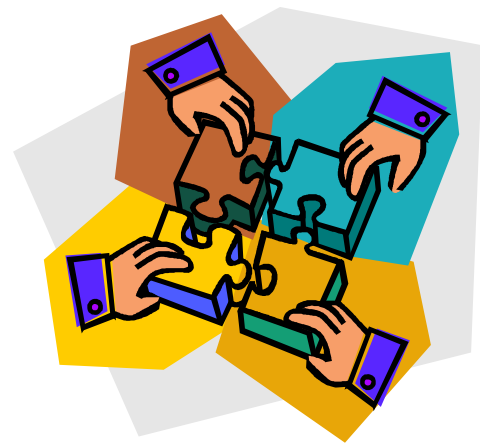
Will it work?

- **Getting it through regulatory hurdles**
- **Will it fit within constraints of current infrastructure?**
- **Is the underpinning science and technology there?**
- **Where are the several technology life cycles?**
- **Are there consumer drivers which will significantly impact cost and availability?**
- **“Design for All”?**



How well does it fit?

- **Fit with industry**
 - ▶ Customer companies
 - ▶ Competitor response
- **When will industry want to get involved?**
 - ▶ Industry cycle:
 - Pharmaceutical industry cycle
 - Information technology cycle
 - ▶ Investment required
 - ▶ Technology scalability
 - ▶ Scope for evolution
 - ▶ Supply chain

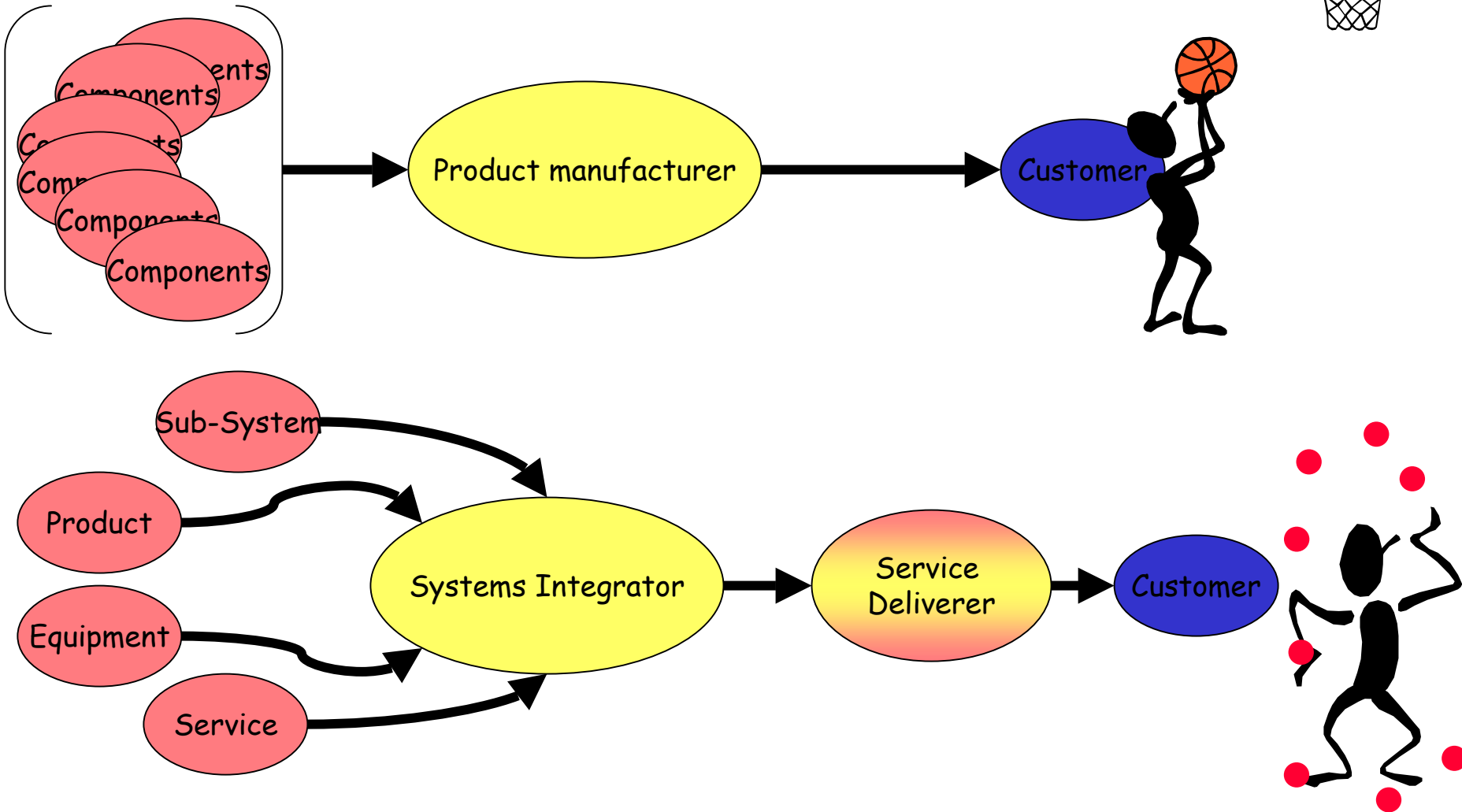


Supply Chain issues

- **What is the supply chain?**
- **What is the value chain?**
- **Who drives the value chain in innovative technologies?**
 - ▶ Customer?
 - ▶ Technology Source?
 - ▶ Service provider?



Products to Systems



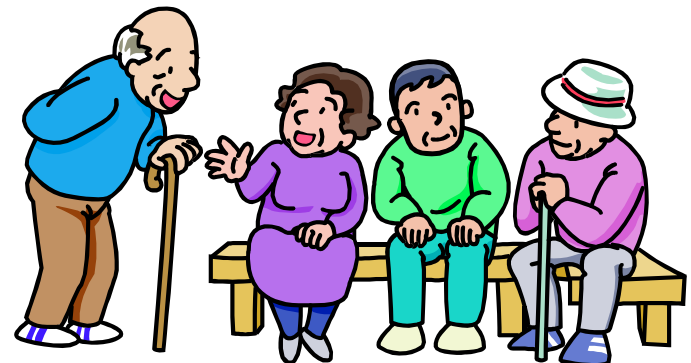
TCPI: TeleCare Planning & Implementation

- **Multidisciplinary Project**

- ▶ Imperial College (was SPRU, University of Sussex)
- ▶ Industry: ICT, Facilities Management, AT suppliers
- ▶ Healthcare Providers: North West Surrey

- **Theoretical study of supply chain issues**

- **Columba Project: assessment of patients to remain at home with Telecare support**



Funding Types

Basic Science & Technology	Research Councils	Is this the real blockage?
Deployment Funding	DH/NHS	What do we have to do to get this started?
Development funding	Industry and DTI support	Effective works comes only after technologies have been proven effective in principle and limited practice

Unless systems are used, we don't know what problems to solve

Procurement of Health Technologies

- **Difference between UK defence and NHS models**

- ▶ Recognise strategic need
- ▶ Motivate a supply chain to design and deliver
- ▶ Procure technology

vs.

- ▶ Hope it is there when we want to buy it

- **Health Technology Procurement Risks**

- ▶ Obsolescence – first generation risks
- ▶ Value of technology
- ▶ “Post code” availability
- ▶ What functions are needed on roll out?



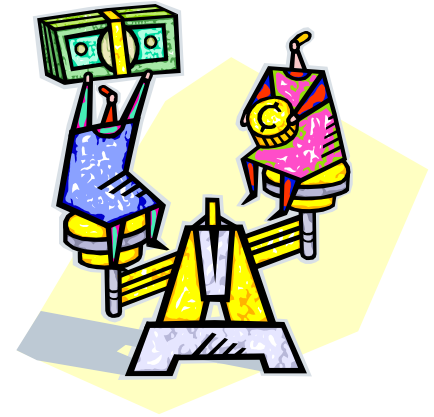
Customer risks

- “Ageing Customer” wealth?
- Technology acceptance?
- Extension of active working life?
- Pensions?



What is it worth?

- **How can we 'measure' the worth of a technology?**
- **Health Technology Assessment**
- **What do we mean by Data?**
 - ▶ Quality
 - ▶ Diversity
- **Modelling vs. measuring**
- **When do we measure a technology's value?**



Engineering based technologies are dynamic

- **Difference between engineering and traditional pharmaceutical 'cures'**
 - ▶ Learning curves for users and developers
 - Reduce cost
 - Improve effectiveness
 - ▶ Continuing technology improvement (2-5 year refreshment cycles)



Value – How to assess it?

- **Value from whose viewpoint?**

- ▶ Users
- ▶ Carers
- ▶ Payers (NHS/DSS)
- ▶ Insurance
- ▶ Society at large Cost

- **Cost**

- ▶ Initial cost
- ▶ Life cost

- **Benefits**

- ▶ Welfare impacts
- ▶ Resources freed
- ▶ Opportunity value

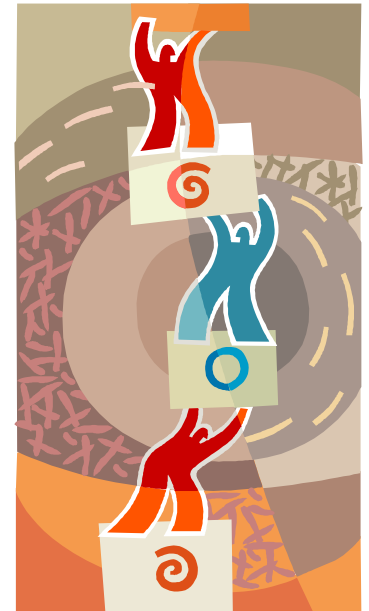
- **Factors external to the technology which can impact value (e.g.. Training)**



Technology Transfer

● Who to transfer to?

- ▶ Large companies
 - Strategic Fit?
 - Capacity?
- ▶ SMEs
 - Insufficient resources for a major technology
- ▶ Consortium
 - Lack of stability to see through to market



Barriers to technology transfer

- **Industry Weaknesses**
- **Technology Complexities**
- **“Product” Definition**
- **Market weaknesses**
- **Capacity to innovate**



Capacity to develop new Technology

- **VC Investment - £5m to £50m**
- **Typical “winner” success rate – 10%**
- **Investment cost per “winner” technology - £200m**
- **Investment cost for 100 new “winner” technologies?**
 - ▶ Money
 - ▶ People



EPSRC Technology Assessment Workshop – 23-24 April 2002

- **Improvement in medical engineering industry performance based on better informed use of technology assessment methodologies leading to:**
 - ▶ Accelerated time to market uptake of good innovative technologies
 - ▶ Improved iterative product development programmes



Research Themes

Pre-clinical assessment of value	<ul style="list-style-type: none">- Modelling and demonstrating value - especially at early project stages (concept onwards), taking into account the whole health system within which the technology is used- Pre-clinical models, and processes to validate models of value throughout development- Assessment and decision-making with small datasets
In-use evaluation	<ul style="list-style-type: none">- Mapping and evaluation of data collection methods
Optimising the product development process	<ul style="list-style-type: none">- Models for improved decision making and development process by using information from technology assessment- Integration of assessment methodologies into the development process: guidance on what methodologies to use when
Transfer of methodologies into practise	<ul style="list-style-type: none">- Mapping of available methodologies and identification of gaps- Translation of existing methodologies for use in the medical devices environment

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KING'S
College
LONDON
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Match proposal

Multidisciplinary Assessment of Technology Centre for Health

University of Ulster

University of Nottingham

University of Birmingham

Kings College London

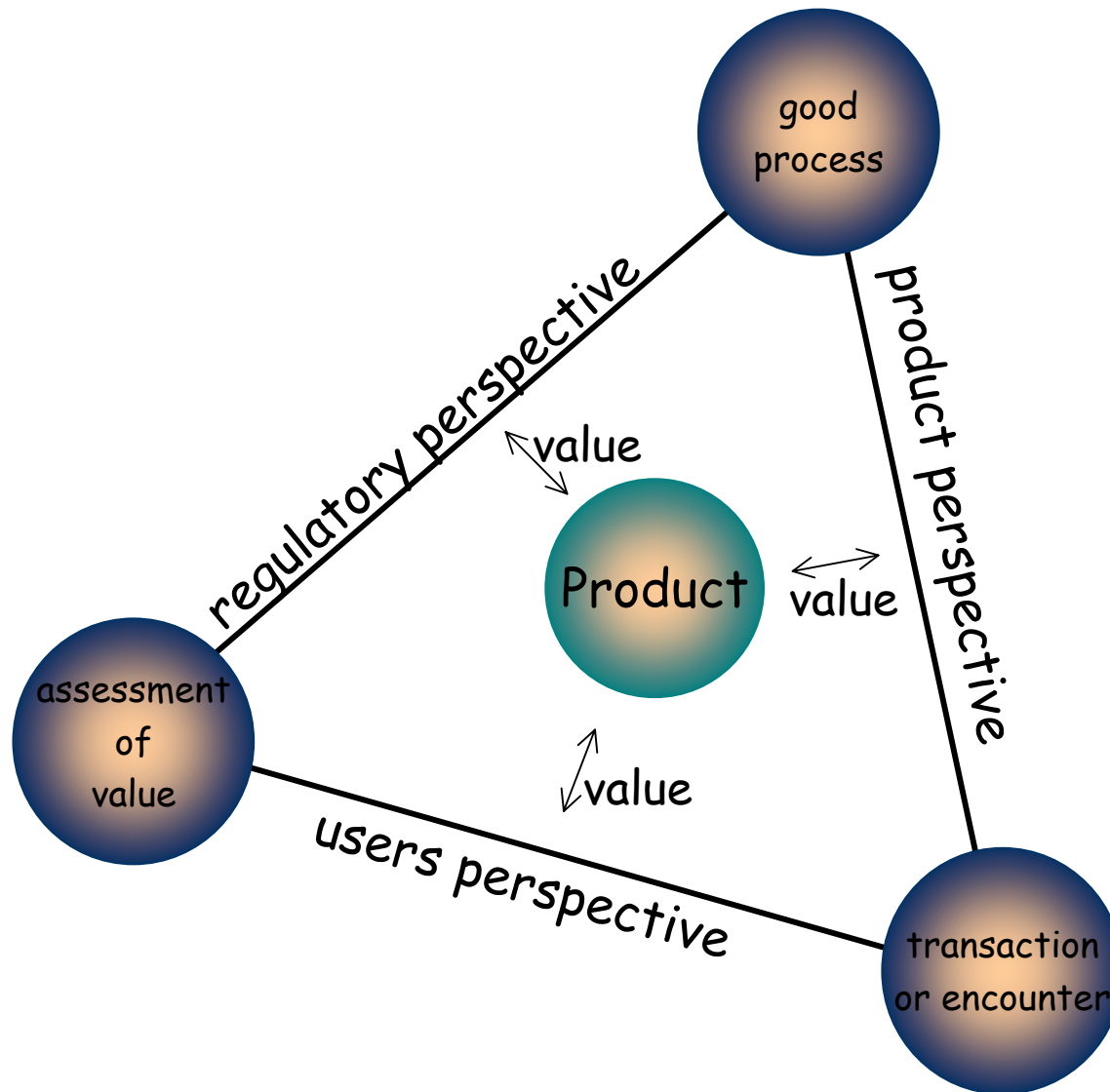
Brunel University

Hubs

The Medical Technology sector

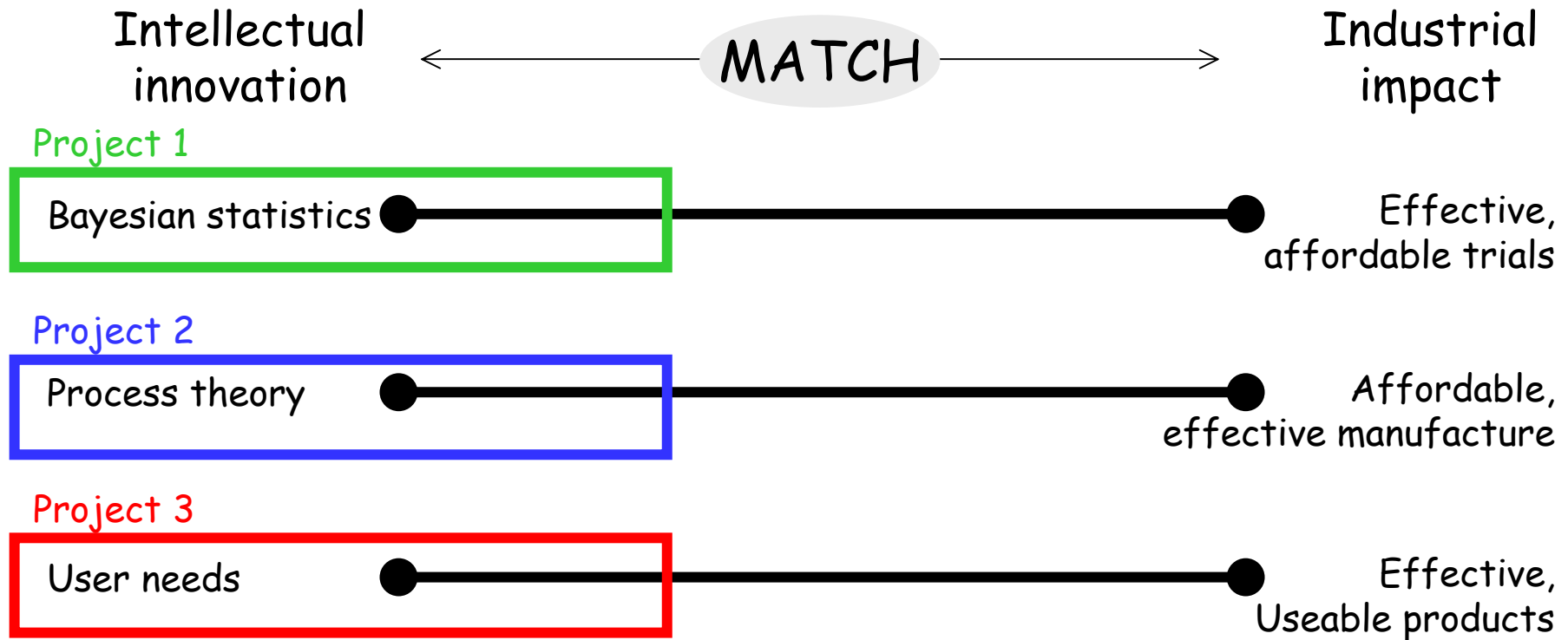


How can we untangle this?



So why should a group of academics hope to make any impact?

Because there is compelling academic research for each critical industrial problem



What can we do in these areas?

Intellectual
innovation



MATCH

Project 1

New methods for assessing
value at all stages

Prof Richard Lilford (Birmingham & DoH R&D)

Prof Martin Buxton (Brunel)

Prof Hywel Williams (Nottingham

& Director, Trent Inst. Health Service Research)

Project 2



Project 3



What can we do in these areas?

Intellectual
innovation

MATCH

Project 1

New methods for assessing
value at all stages

Prof Richard Lilford

Prof Martin Buxton

Prof Hywel Williams

Project 2

Methods for optimised
processes

Prof John Anderson & Dr Brian Meenan (Ulster)

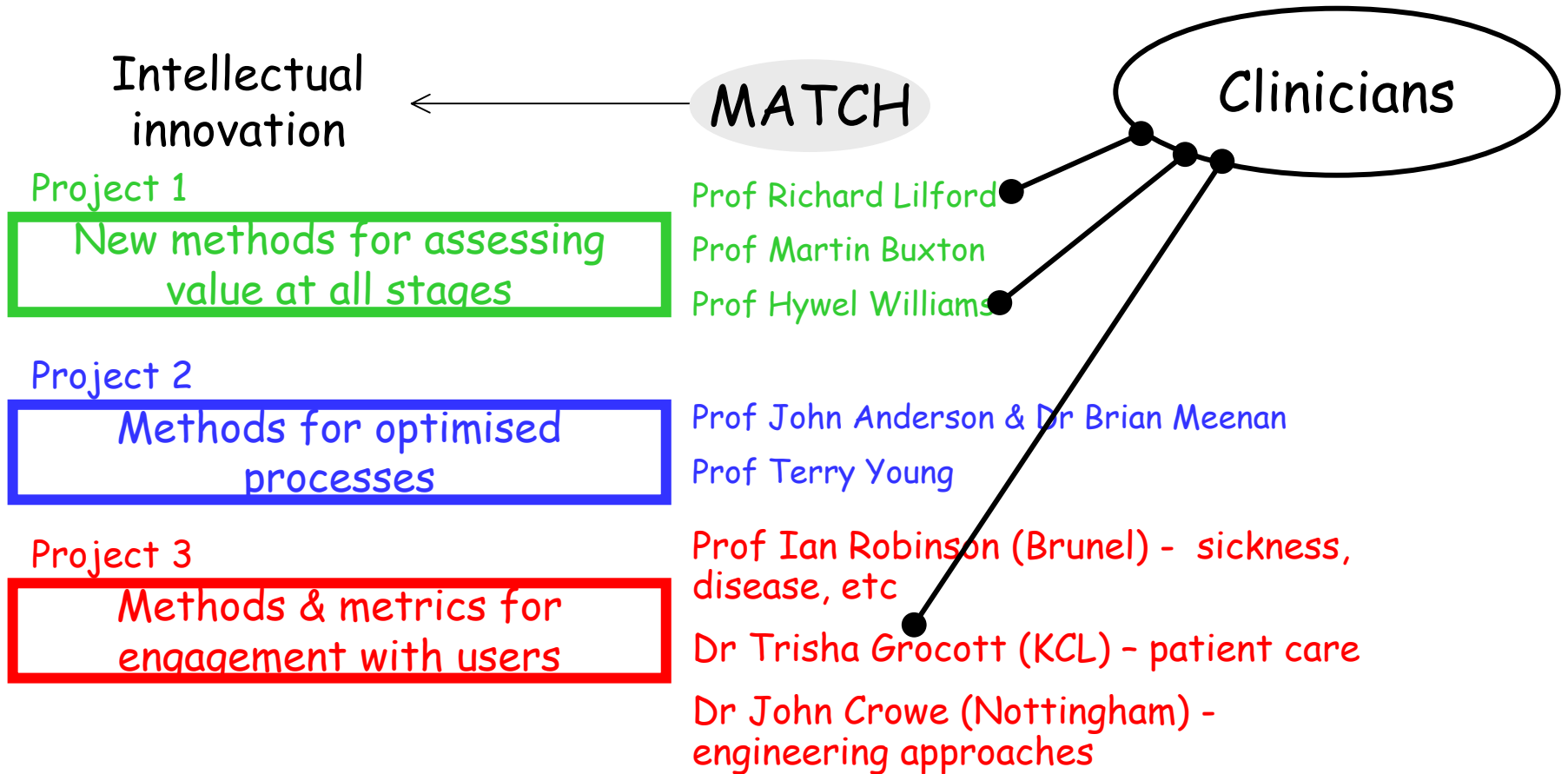
- strong industrial engagement

Prof Terry Young (Brunel) - 16 years in industry

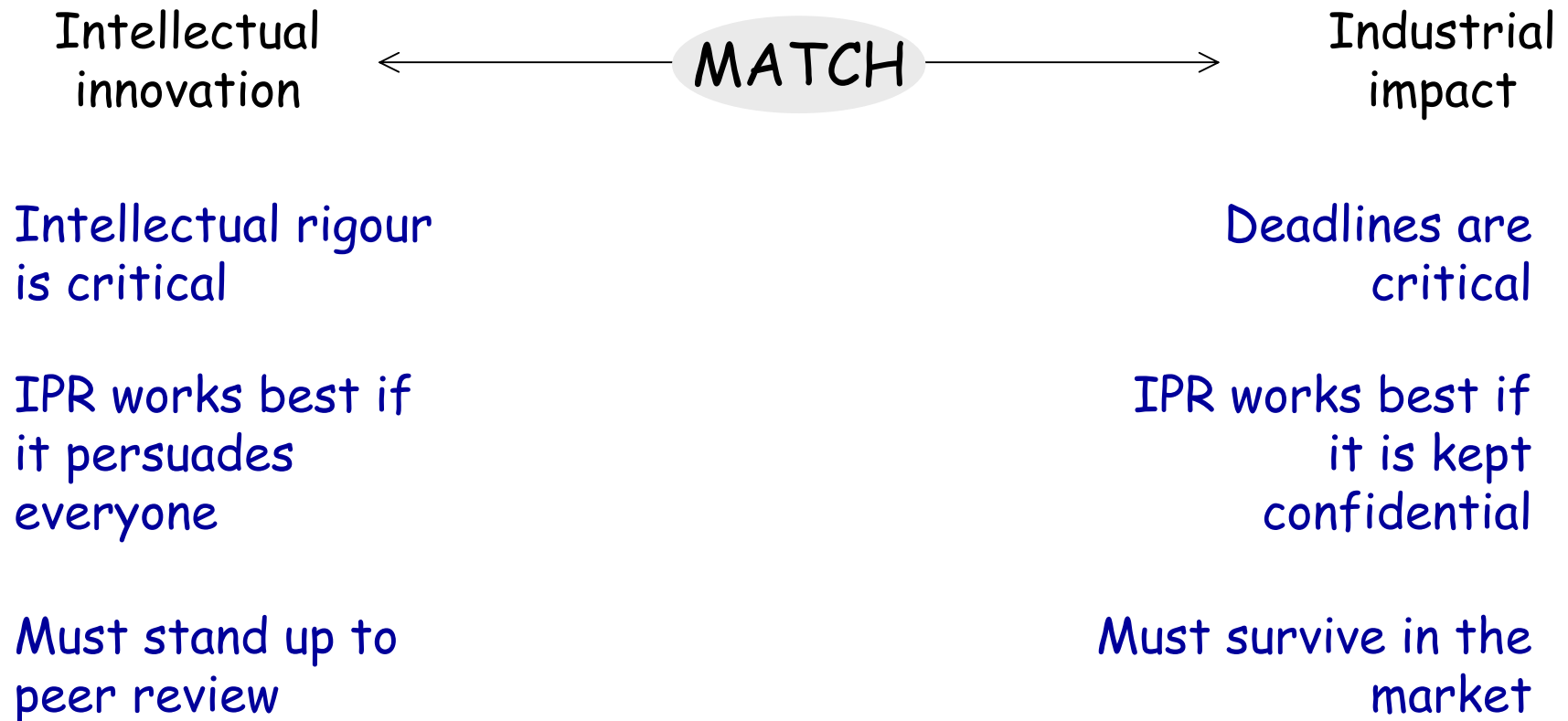
Project 3



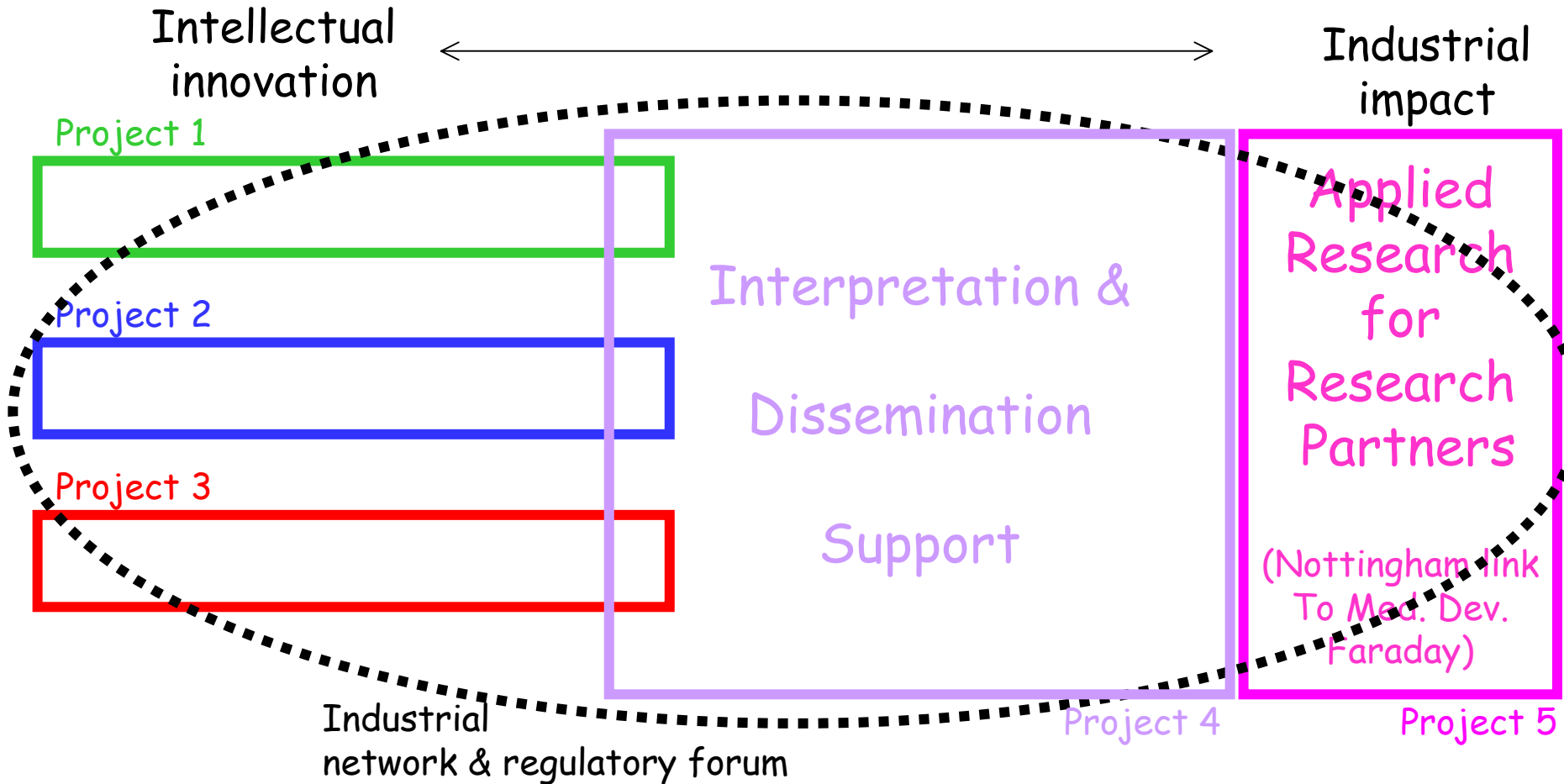
What can we do in these areas?



It's a two speed economy



So we partition the programme



...with two links

Will MATCH make an impact?

● What are the critical success factors ?

- ▶ Compelling intellectual innovation linked to critical industrial impact
- ▶ Commitment to industry's needs
- ▶ A highly cross disciplinary team of exceptional people who can work together
- ▶ Partitioning and management structures to handle the academic/industrial interface
- ▶ Commitment to the wider community
- ▶ A growing international network.

MATCH meets them all

Conclusion

- **Focus on improving procurement of good Assistive Technologies**
- **Partnership with healthcare funding bodies:**
 - ▶ Researchers
 - ▶ Industry
 - ▶ Healthcare
- **New methodologies to determine value of technologies at earliest stage**

