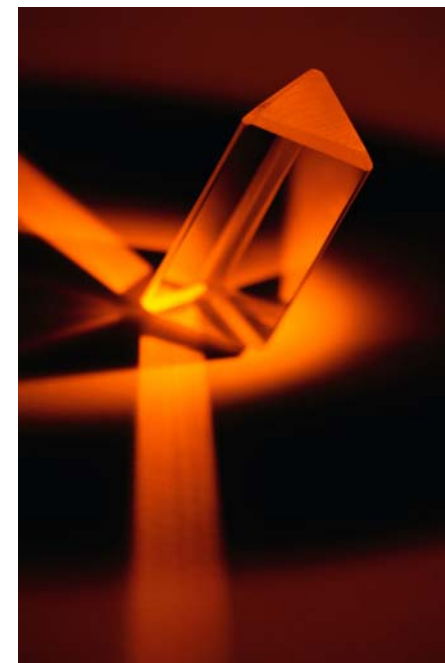


Introduction to Chemistry Innovation

Presentation to Process Intensification Network

16 November 2006

John Whittall



Overview

1. Governance and structure
2. Strategy development
3. Government policy
4. Technology platforms
5. Joining up
6. Projects
7. Company engagement

Our mission

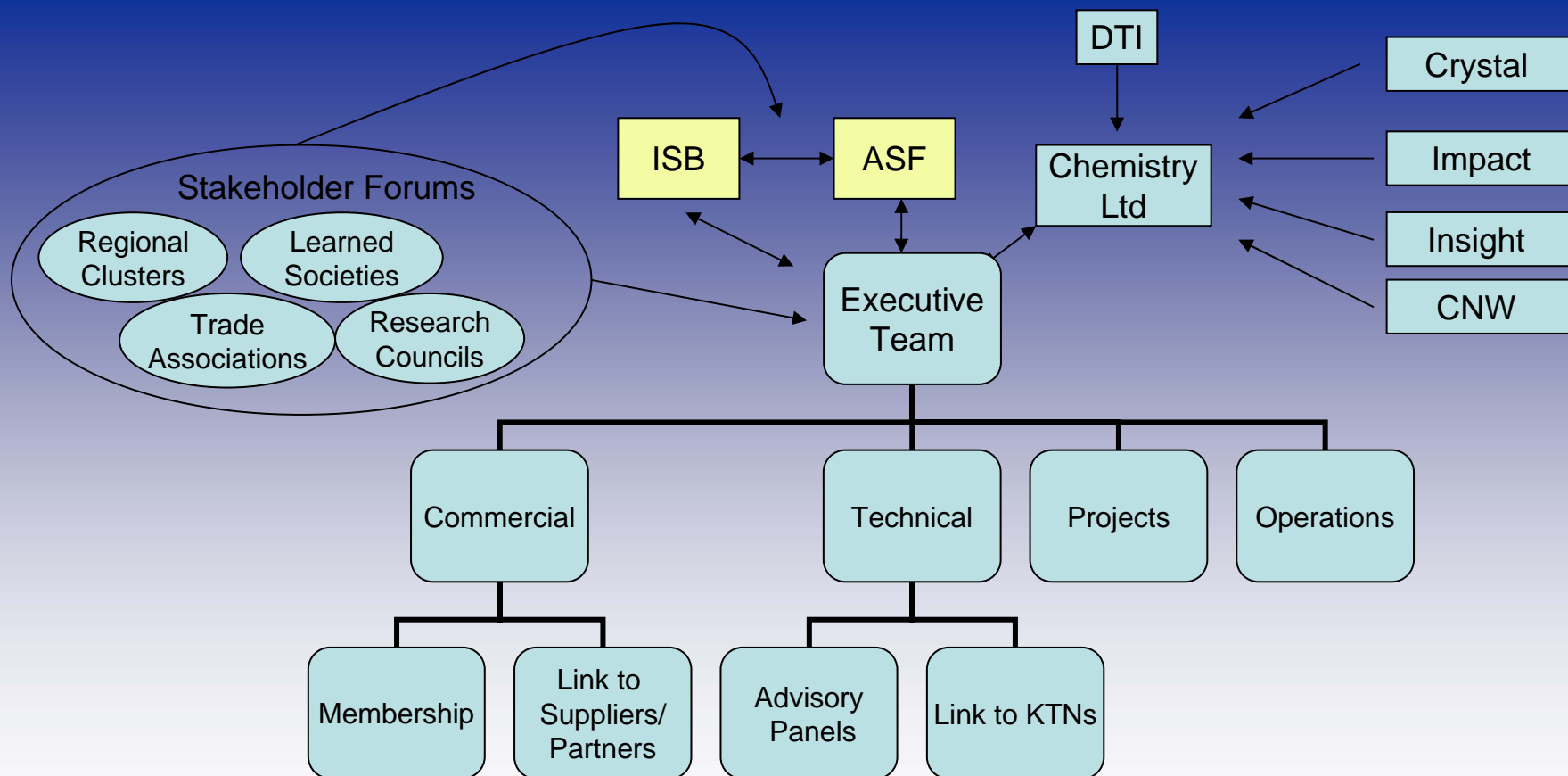
To stimulate and support product and process innovation in the chemistry-using industries, thus enhancing bottom line performance, delivering additional GDP to the UK and ensuring sustainability.

Governance

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ISB - Innovation Strategy Board

ASF- Academic Stakeholder Forum

The Innovation Strategy Board (ISB) will consist of 20-30 senior figures predominantly from industry, representing large and small companies, and chaired by the CIKTN Chair

Graeme Armstrong, ICI

John Conti-Ramsden, Intertek Ltd

David Duncan, Unilever

David Brown, IChemE

Sandy Gray, Society of Chemical Industry

David Greensmith, Fujifilm Imaging Colorants Ltd

Colin Harrison, Uniqema Chemicals

Shaun Kennedy, Infineum

Peter Lyne, LGC Ltd

Ian McRobbie, Innospec Inc

Brian Murphy, Robinson Brothers Ltd

Barry Murrer, Johnson Matthey

Randal Richards, EPSRC

David Tapolczay, GSK

Rodney Townsend, Royal Society of Chemistry

Andy Wells, Astra Zeneca R&D Charnwood

Eric Peeters, Dow Corning Coordination Centre SA

Richard Carter, DTI

Ian Shott, Excelcym

Ian Laird, NiTech

Academic Stakeholder Forum

The Academic Stakeholder Forum (ASF) will consist of 20-30 senior figures predominantly from academia, representing a cross section of interests and meeting defined criteria.

Prof	Adisa	Azapagic	The University of Manchester
Prof	Kevin	Booker-Milburn	University of Bristol
Prof	Robbie	Burch	The Queen's University of Belfast
Prof	Barry	Carpenter	Cardiff University
Prof	Stephen	Davies	University of Oxford
Prof	Athene	Donald	University of Cambridge
Mrs	Sue	Fleet	Britest Limited
Dr	Peter	Hedges	EPSRC
Prof	Brian	Hobbs	University of Teesside
Prof	David	Jackson	University of Glasgow
Prof	Elaine	Martin	University of Newcastle upon Tyne
Prof	Raffaella	Ocone	Heriot-Watt University
Prof	Stuart	Sanderson	Bradford University School of Management
Dr	Hugo	Steven	Chemistry Innovation
Prof	Rhodri	Williams	University of Wales, Swansea

Our offering

- Provide a unique network
 - Make efficient contact with potential partners
 - Enhance flow of knowledge
 - Join up initiatives
- Develop understanding and influence policy
 - Voice industry needs from independent perspective
- Facilitate collaborative projects
 - Catalyse projects across boundaries
 - Provide independent project management
- Offer access to a range of innovation services through partners

Strategy Development

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DTI Key Technology Areas

Advanced materials

Bioscience and healthcare

Design Engineering and Advanced Manufacturing

Electronics and Photonics

Information and Communications Technologies

Sustainable production and consumption

Government technology strategy

Role of chemistry in the UK

ITF Research and
Technology Priorities



Chemicals producers
AND
downstream users

ITF R&T Priorities

ITF identified key themes for driving through the innovation process

Growth opportunities

Imaging and displays
Micropatterning with functional materials
Fuel cells
Materials chemistry
Surface coatings
Novel surface effects
Adhesives and sealants

Emerging technologies

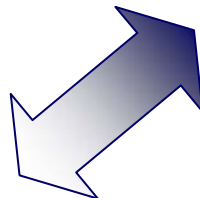
Creative synthesis
Sustainable technologies
Microfluidics

Critical science and technology platforms

Bioprocessing
Responsive manufacturing
Analytical science

CIKTN priorities

Technology
strategy enables
alignment of ITF
themes with
CIKTN
priorities

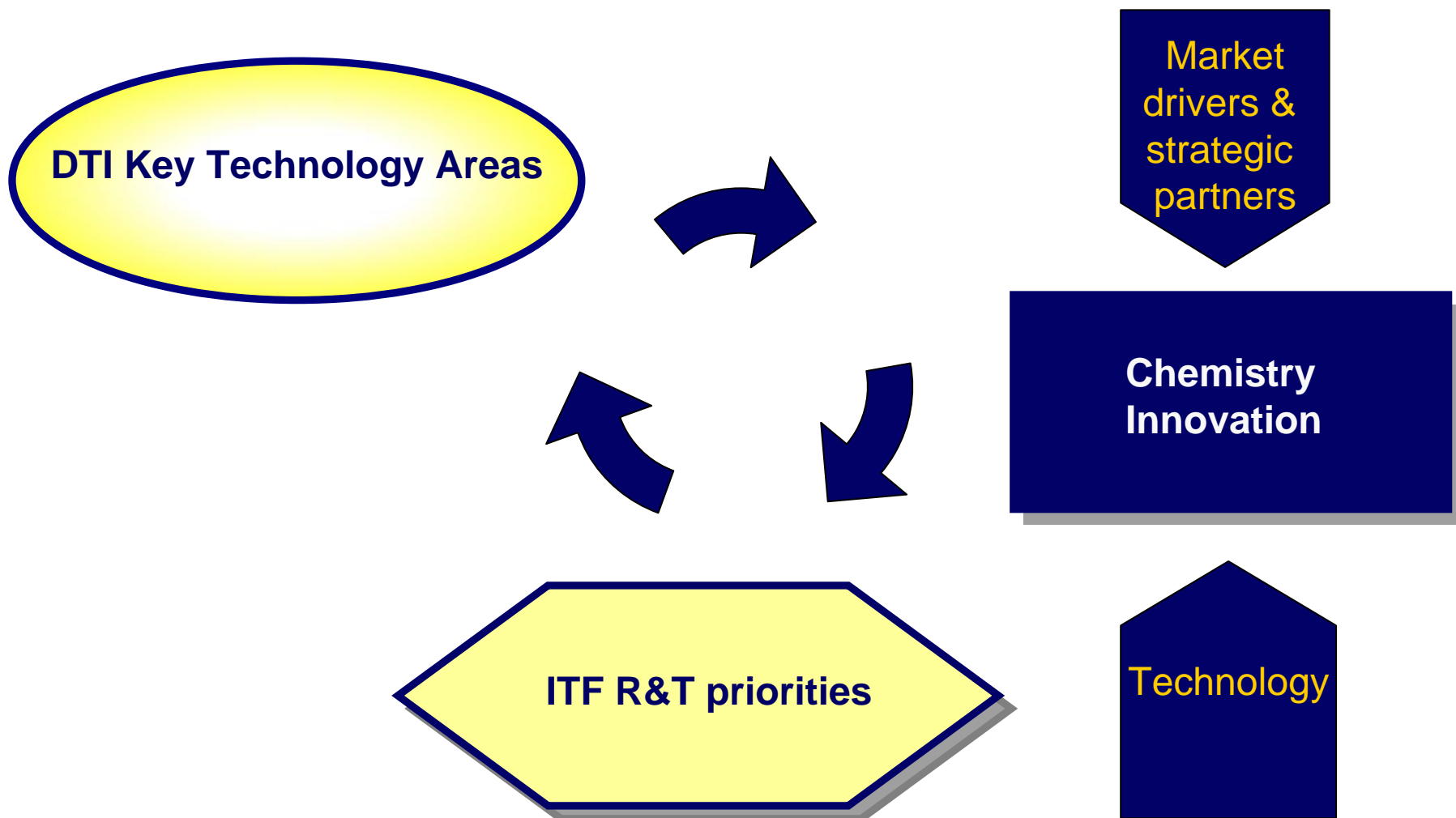


Strategy Alignment

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- DTI Foresight Programme
- Engaged in SusChem Implementation Action Plan
- FP6 Coordination Action CALCAS
- Strong relationship with EPSRC
 - Secondment, Sandpit, KITE
- Links with Wales, Scotland and Northern Ireland
- Link with other KTNs established

CIKTN Technology Platforms

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Address platform interfaces and knowledge gaps

**Green Product
Technologies
(GPT)**

**Colloids,
Interfaces
and Particles
(CIP)**

**High
Throughput
Technologies
(HTT)**

**Measurement
Science and
Technology
(MST)**

**Manufacturing
Design
(MD)**

Technology platforms

Green Product Technologies

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Green Product Technologies

Creative synthesis

- Novel functional molecules
- Green product design

Responsive manufacturing

- Interface between chemistry and engineering
- Reduce chemical supply chains; continuous processing

Sustainable technologies

- Green product and process design
- Energy saving products; photovoltaics
- Requires further engagement with the engineering community

Bioprocessing

- Controlled chemical modification

Materials chemistry

- Green products, catalysts

Microfluidics

- Process intensification

GPT contributing technologies

- **Green product design**: taking a life-cycle approach to product design
- **Feedstocks**: new routes to chemicals to substitute for non-renewable or hazardous materials
- **Novel reactions**: novel routes to deliver product functionality.
- **Novel catalysts**: increase selectivity, access new chemistry, reduce energy consumption and waste production
- **Solvents**: closed systems, no-solvent systems, neoteric solvents
- **Process improvement**: enhancing atom efficiency and energy usage; continuous processing and process intensification strategies
- **Separation technologies**: new, highly efficient and selective methods for extracting components from reaction systems.
- **Enabling technologies**: new measurement techniques, computational chemistry, LCA, informatics and modeling.

Sustainable Chemical Technology Roadmap

What is it for?

The sustainable chemical technology roadmap is a look into the future of the chemical and chemical-using industries. It asks what do we need to do to deliver a vibrant and sustainable chemical industry in the UK, and what technologies can help?

It will provide key decision makers in industry, academia and the UK government with a clear picture of the challenges, opportunities, gaps and actions that need to be taken to secure a successful future for industrial chemistry.



Who is it aimed at?

- The chemical industry can find out about the business challenges and opportunities and see examples of sustainable chemistry thinking in use;
- Industrial users of chemicals can see what new options are emerging in the drive for a more sustainable chemical industry;
- Academics can find new areas for research, new areas to apply technologies and materials for teaching;
- Government departments can see how different policy options will affect the use of chemicals in the UK;
- The Public can learn more about how this important industry is facing the challenges of the future.

What is available on this site?

- The [trends and drivers](#) encouraging the development of a sustainable chemical industry;
- The [specific needs](#) of the chemical industry and downstream users of chemicals;
- The [business case](#) for sustainability in the chemical and chemical using industries;
- A review of [sustainable technologies](#) available now or in development;
- Information on how some of the [common problems](#) can be solved with sustainable technologies;
- [Case studies](#) of the practical application of sustainable chemical technologies;
- [Key messages](#) for the stakeholders in the UK chemical industry.

Useful background

- [Introduction to sustainability](#)
- [Introduction to roadmapping](#)
- [The chemical industry](#)
- [How to use this roadmap](#)
- [Previous versions](#)

News

2006 Presidential Green Chemistry Challenge Awards announced. [full story...](#)

Suschem draft implementation action plan published. [full story...](#)

[Older news stories](#)

Updates

New section on solvent replacement technologies added. [full story...](#)

Hard copy summary of the Sustainable Chemical Technology Roadmap now available. [full story...](#)

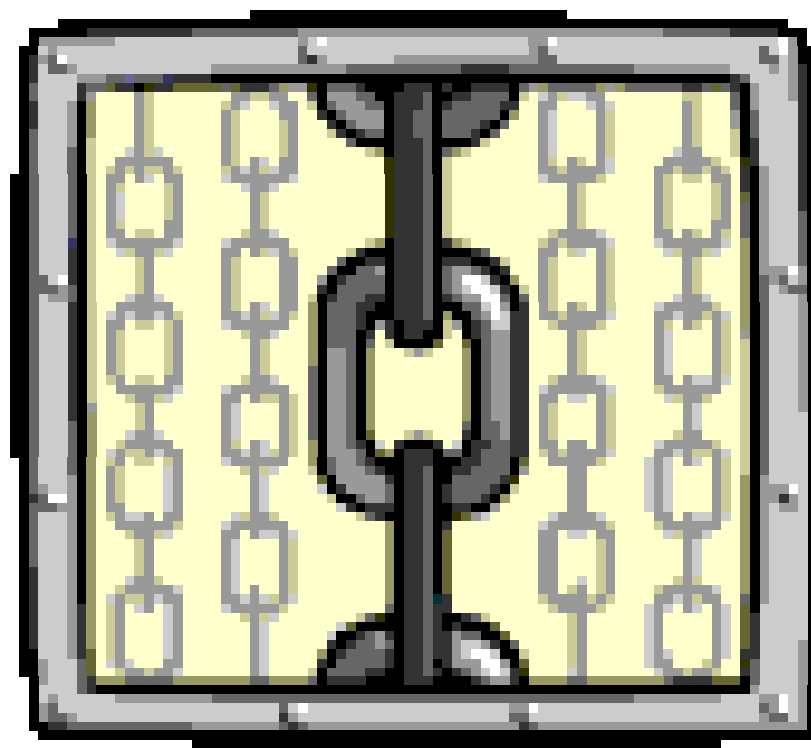
[Older updates](#)

Joining Up

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Current alignment

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- Crystal Faraday
- IMPACT Faraday
- Insight Faraday

- BRITEST
- PICME
- Centre for Process Innovation (CPI)
- NEPIC, CNW, HCF, YCF
- Scottish Enterprise
- EPSRC

- Others in the pipeline...
(SORIS, AIA, BBSRC, Institute for Manufacturing)

Incorporated into one organisation

Strategic Partners
Aligned and linked

Links with trade associations and other bodies

- Work with Chemical Industries Association in particular for ReachReady programme
- Linkage to UKSPA to align programmes where appropriate
- Linkage to AIA with opportunistic actions
 - BCF suggestions for the Innovation Strategy Board
 - BAMA keynote speaker on Chemistry Innovation at the International Aerosols Congress
- Relationship established with the Paint Research Association

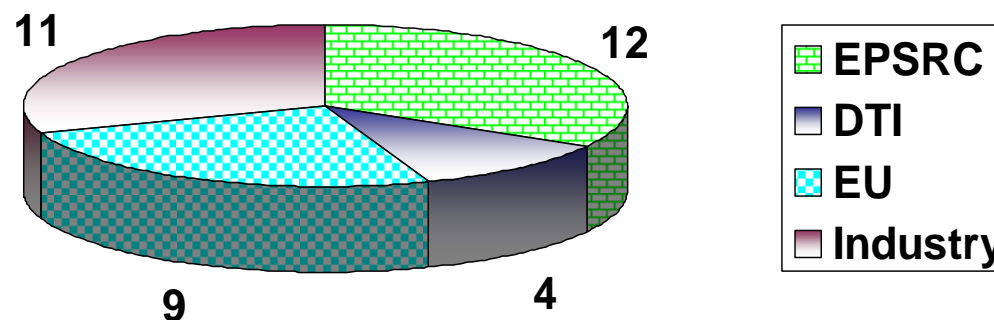
Current projects

Knowledge Transfer Networks

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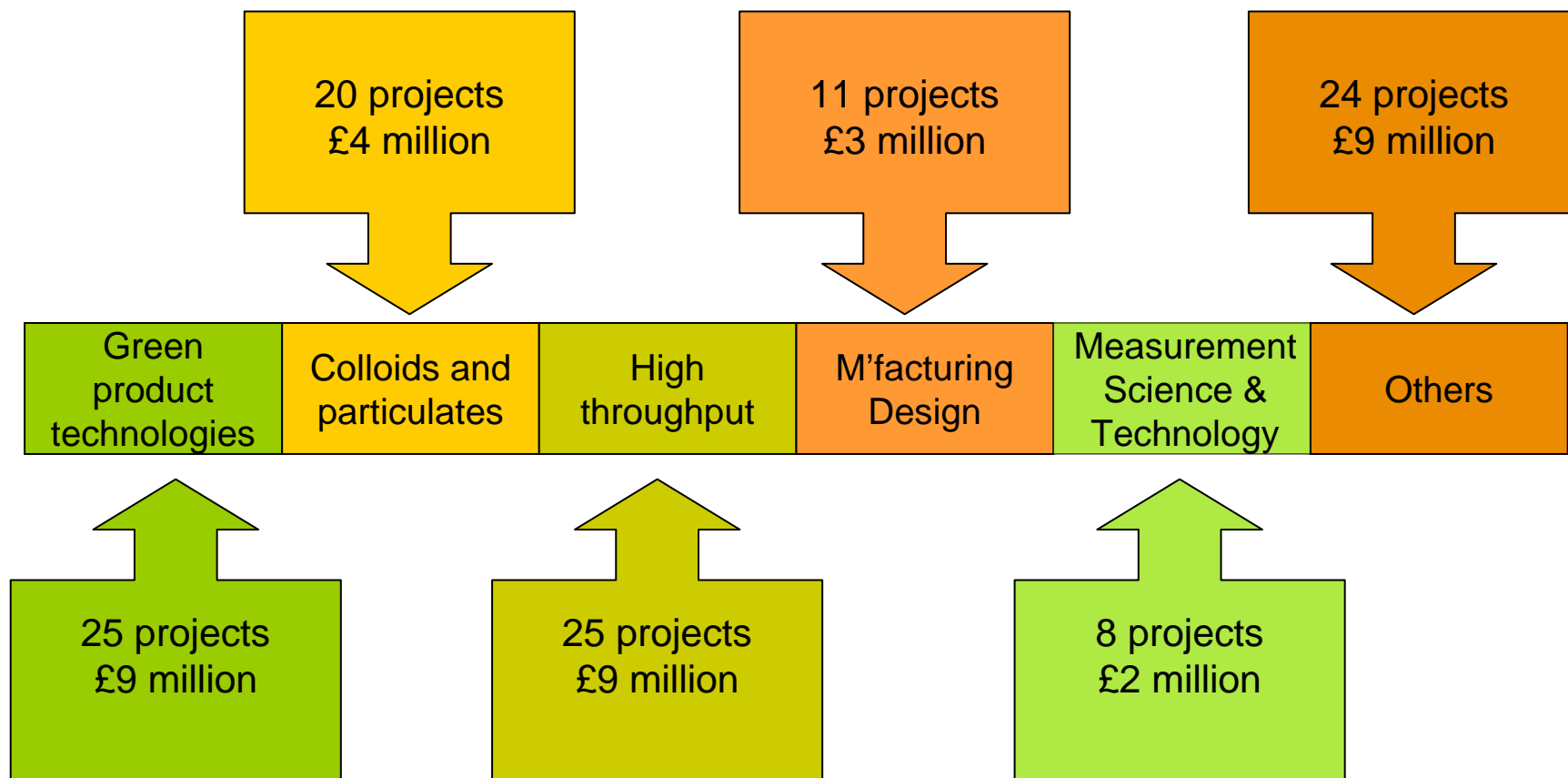
- Directly involved in a programme of projects totalling over £36m, funded by:



- Covering the spectrum from basic science through to demonstration of new science and technology
- Directed by the needs of industry
- Under continuous development and renewal - project in stem cell differentiation awarded from last DTI call

Current projects

- Projects cover a range of science and technology themes that are crucial to the chemistry using sectors, including:



- 113 current projects
 - 105 EPSRC funded
 - including 56 Industrial CASE, 17 with SMEs
 - 4 DTI Collaborative Projects
 - involving 6 SMEs
 - 2 European Projects
 - 2 from other funding sources

EPSRC Green and Sustainable Technologies call now open!

Company Engagement

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Our role

Link /Advise
Open Access Facility
Link to University Centre
Market Development
DTI Collaboration
Knowledge Transfer Partnership

Technology Evaluation
Market Possibilities



Link to other KTNs
Help with DTI collaborative project

CIKTN architect
from knowledge base
to final product

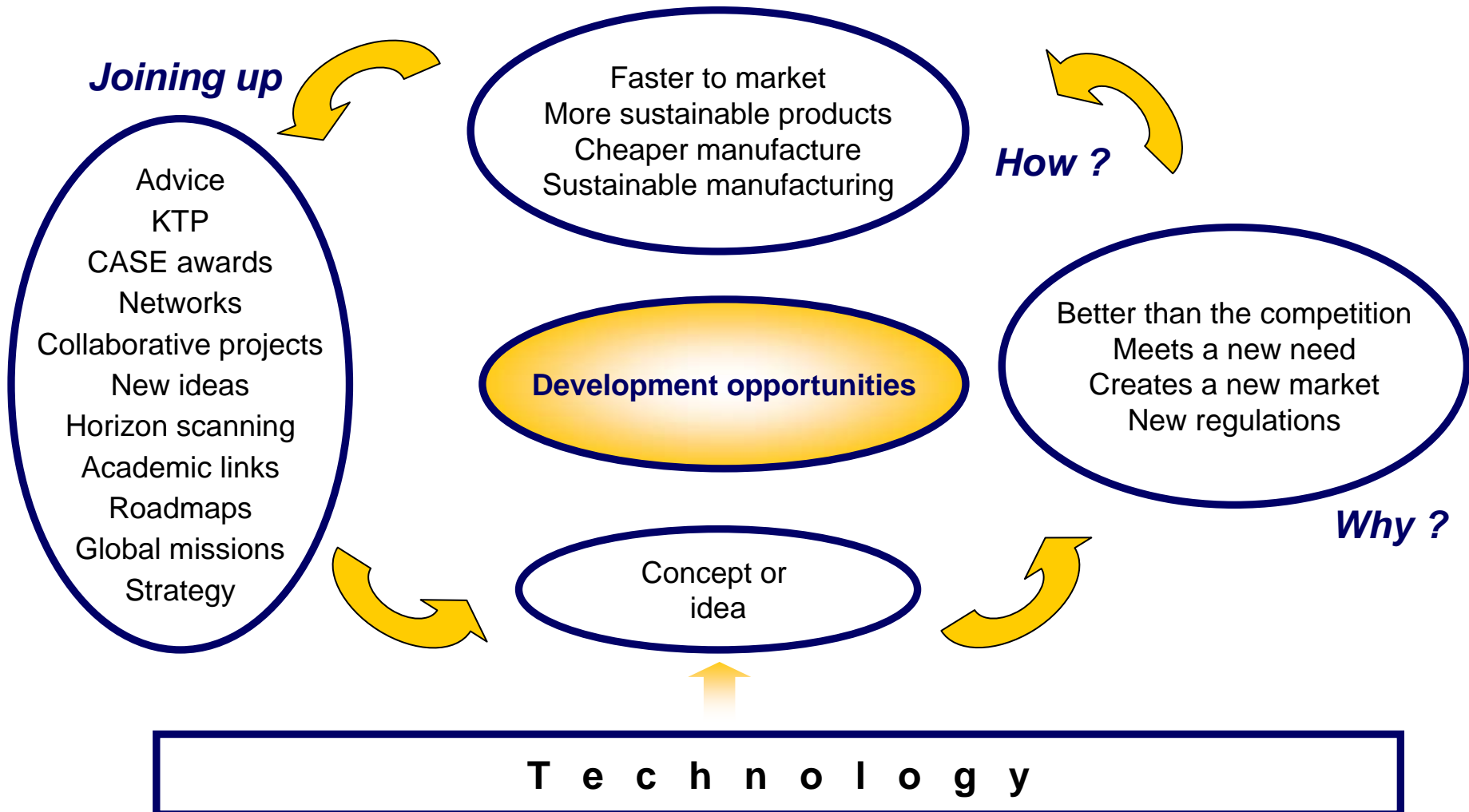
Project management

Generation of Development Opportunities

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Membership for business

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Open member (individual)

- Purpose: belong to a community
- Information and participation e.g. portal, events, contacts
- Mainly self-service
- Free

Company member

- Purpose: gain advantage by use of KTN resources
- Proactive alerts for projects and matches
- Discounted events
- Additional services
- RCI* members to gain automatically, otherwise small fee

Strategic member

- Purpose: have KTN working to deliver specific value
- Tailored, dedicated service e.g. market “eyes and ears”
- Flexible fee £10k+

What's included (examples)

Open member

- KTN's policy input (e.g. technology strategy)
- Newsletter
- Website including self-matching
- Project proposals on behalf of the community
- Missions

Company member

- Proactive alerts for opportunities
- Consultation on policy
- Events (discounted) and webinars
- Special networks (e.g. Fluorum)
- Additional information services

Strategic member

- Active search for partnership opportunities
- Bespoke support e.g. market reviews, REACHStart, private conferences

Questions

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