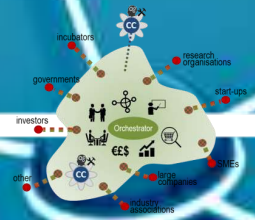
DIGITAL INNOVATION HUBS

TNO| Maurits Butter| 23th of August, 2018



TNO innovation for life

SHARING EXPERIENCES ON INNOVATION HUBS

European Commission

I4MS

BASQUE INDUSTRY 4.0

AREA SCIENCE PARK 40

mKETs ★ Pilot lines

POWERING smart industry

SmartEEs

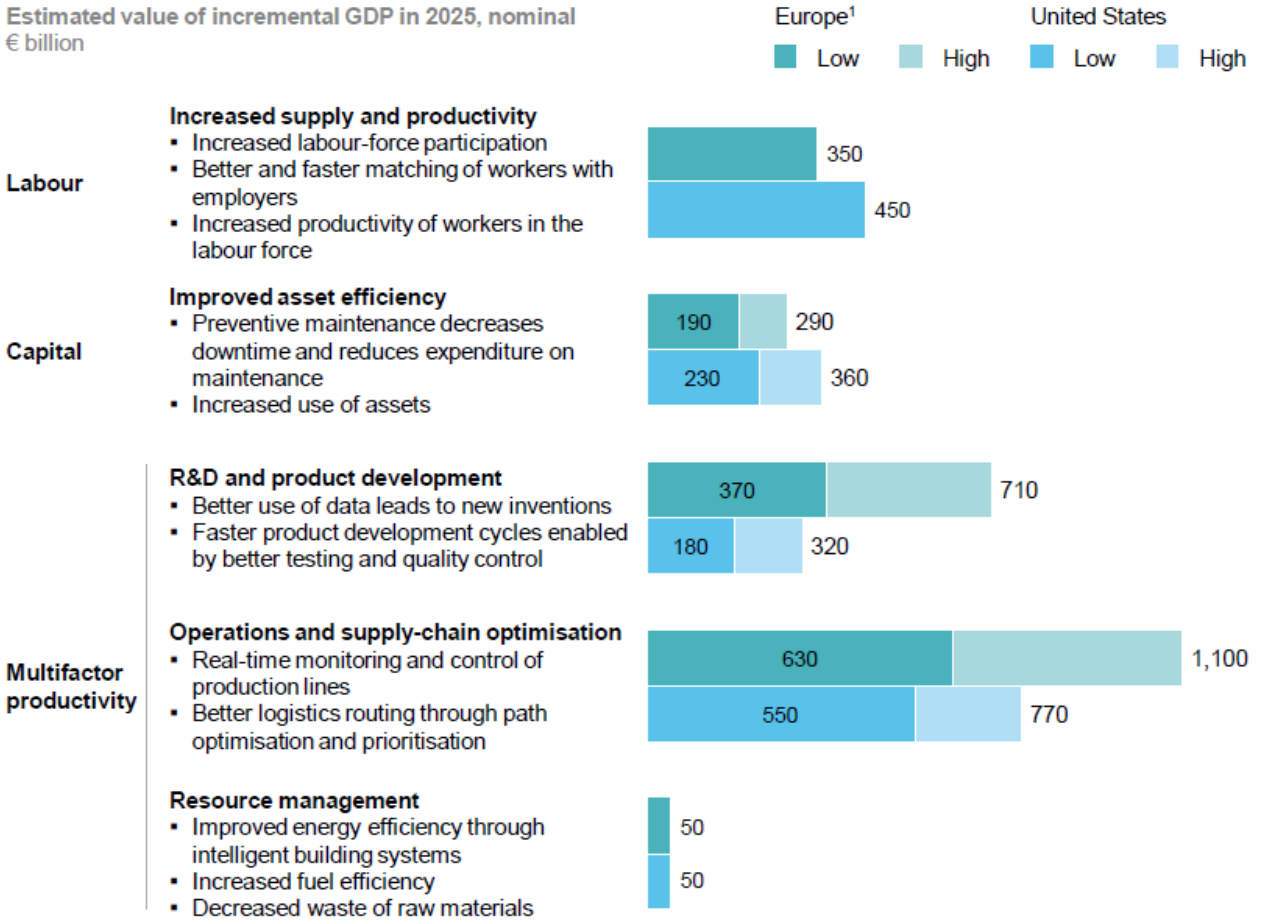
IDEAL-IST

~~Digital~~ Innovation Hubs

MCKINSEY: DIGITISATION COULD ADD UP TO €2.5 TRILLION TO EUROPE'S GDP IN 2025

TNO innovation for life

Total	
Europe	1,590–2,500
United States	1,460–1,950



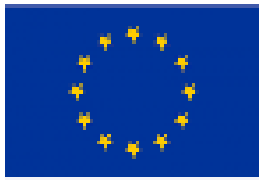
Source: Digital America,
McKinsey Global Institute,
December 2015;
McKinsey Global Institute analysis

EU TRENDS SUPPORTING INDUSTRY 4.0

TNO innovation for life

	Budget	Funding approach
	Approx. €10 billion	Mixed
	€200 million	Mixed
	€45 million	Public
	€25 million	Mixed
	€97.5 million	Public
	€50 million	Mixed
	€164 million	Mixed
	Not yet defined	Public

THE ORIGIN OF DIGITAL INNOVATION HUBS



"An Action Plan for Digitising European Industry"
19 April 2016

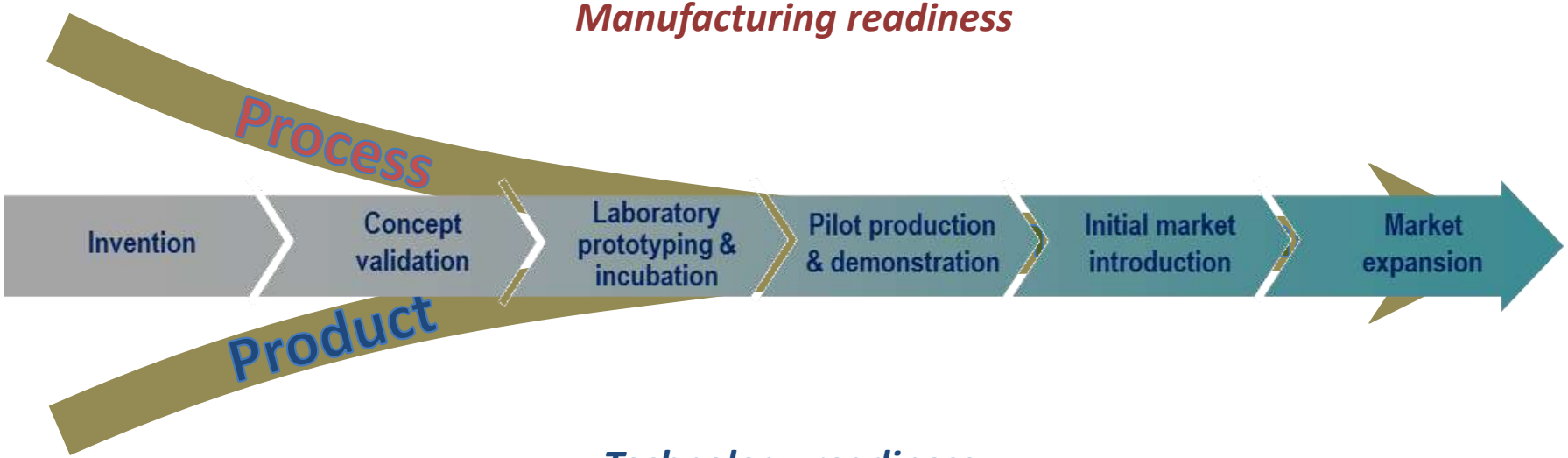
"To bring the benefits of digital innovation to every industry, the Commission will invest €500 million in **Digital Innovation Hubs** (DIHs) so that every industry, large or small, high-tech or not, can understand the digital opportunities and get access to knowledge and testing facilities in the latest technologies."

A WALL OF CONCEPTS

INTRODUCING THE INNOVATION CHAIN

Basic Implications Observed	Manufacturing Concepts Identified	Proof of Concept Developed	Production Capability In lab	Components Production In relevant env.	System Production In relevant env	Production in Representative environment	Pilot line demo Low rate production	Capacity for full rate production	Full rate, lean manufacturing In place

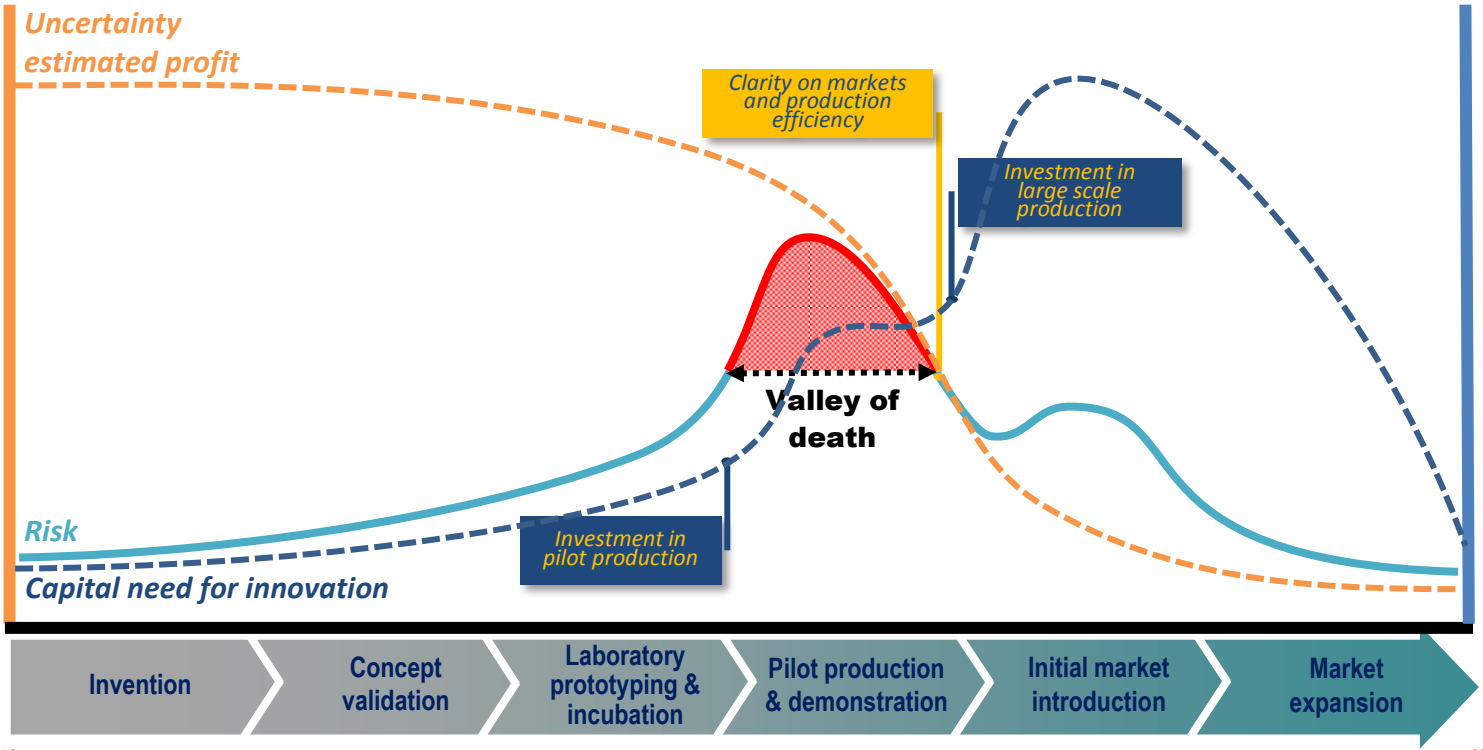
Manufacturing readiness



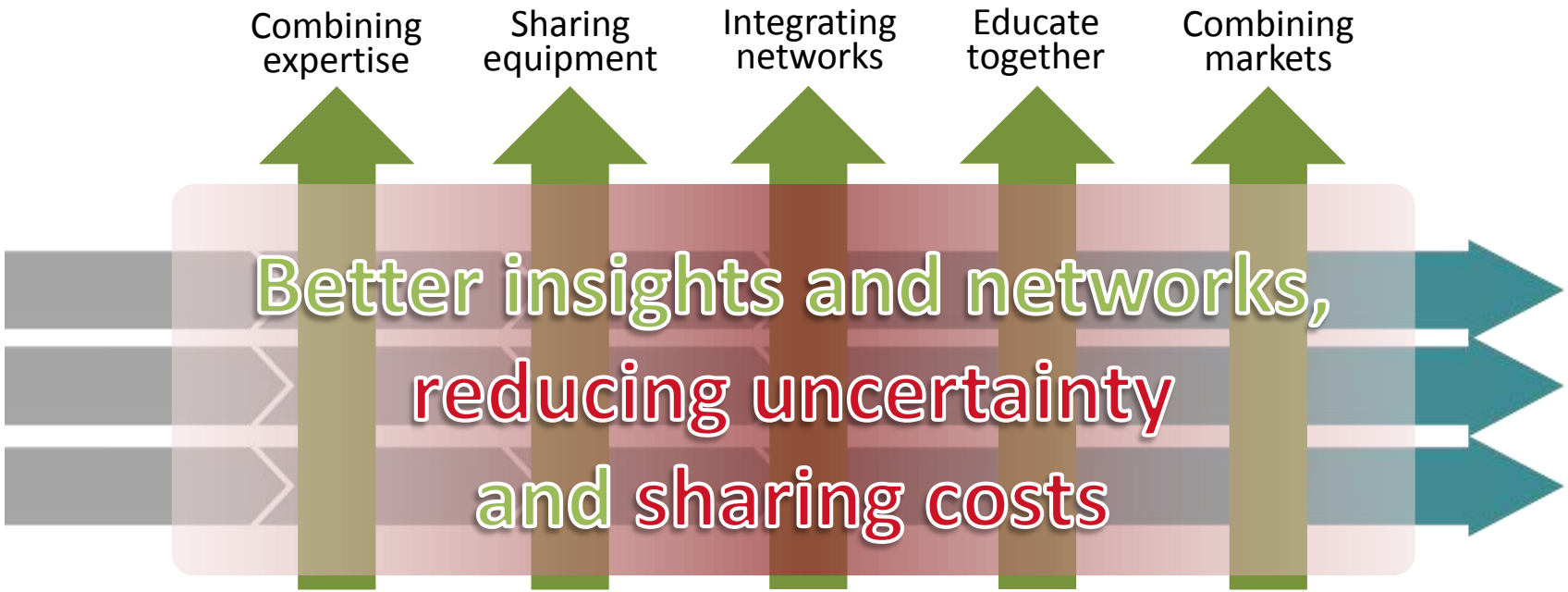
Technology readiness

Basic Priciples Observed	Technology Concept Formulated	Experimental Proof of Concept	Technology Validation In lab	Tech valid. In relevant environment	Demonstration In relevant environment	Demonstration In operational environment	System complete and qualified	Successful mission operations

“REDUCTION OF UNCERTAINTY AND NEEDED CAPITAL ARE OUT OF SYNC”



SHARING AND COMBINING REDUCES RISKS



SUPPORTED BY MANY COUNTRIES

- The Catapult centres (Innovate UK)
- The Dutch Fieldlabs (Smart Industry)
- Mittelstand 4.0 programme (Industrie 4.0)
- The Innovation Institutes (Manufacturing USA)
- The Manufacturing Innovation Centers (Made in China 2025)

The European Competence Centres & Digital Innovation Hubs

SOME GENERAL CHARACTERISTICS

Almost always

- Cooperation between **research and industry**
- (Semi) **open innovation**
- Support from **government**
- Combining **manufacturing** and **product** development
- **Shared** expertise and infrastructure

Can have

- **Regionally** oriented
- Focusing on the **transformation** of research into business
- Cooperation of **government**
- Combination of **network** and **physical** location
- **Training** of personnel
- Validation and **demonstration**
- **Commercial** services

TWO CONCEPTS WITHIN THE EUROPEAN DIGITIZATION STRATEGY

Competence centres

- Creator of awareness on digitalization in their region
- qualified personnel
- Consultant to SMEs how to commercially apply digitization innovations

- *Ecosystem development*
- *Support of business development*
- *Access to finance*

Digital Innovation Hubs

- Provider of infrastructure and technology platforms
- Explorer/developer of (technological) expertise on innovative opportunities

- *Providing infrastructure*
- *Providing related expertise*
- *Best practices*

SO WHAT DO THESE INNOVATION HUBS DO?

OVERVIEW SERVICES

Technology

Service	Activities
Strategic RDI	Joint, pre-competitive R&D, secondment from companies
Contract research	Specific R&D, technology concept development, proof of concept
Technical support on scale-up	Concept validation, prototyping, small series production
Provision of technology infrastructure	Renting equipment, low rate production, platform technology infrastructure, Lab facilities
Testing and validation	Certification, product demonstration, product qualification

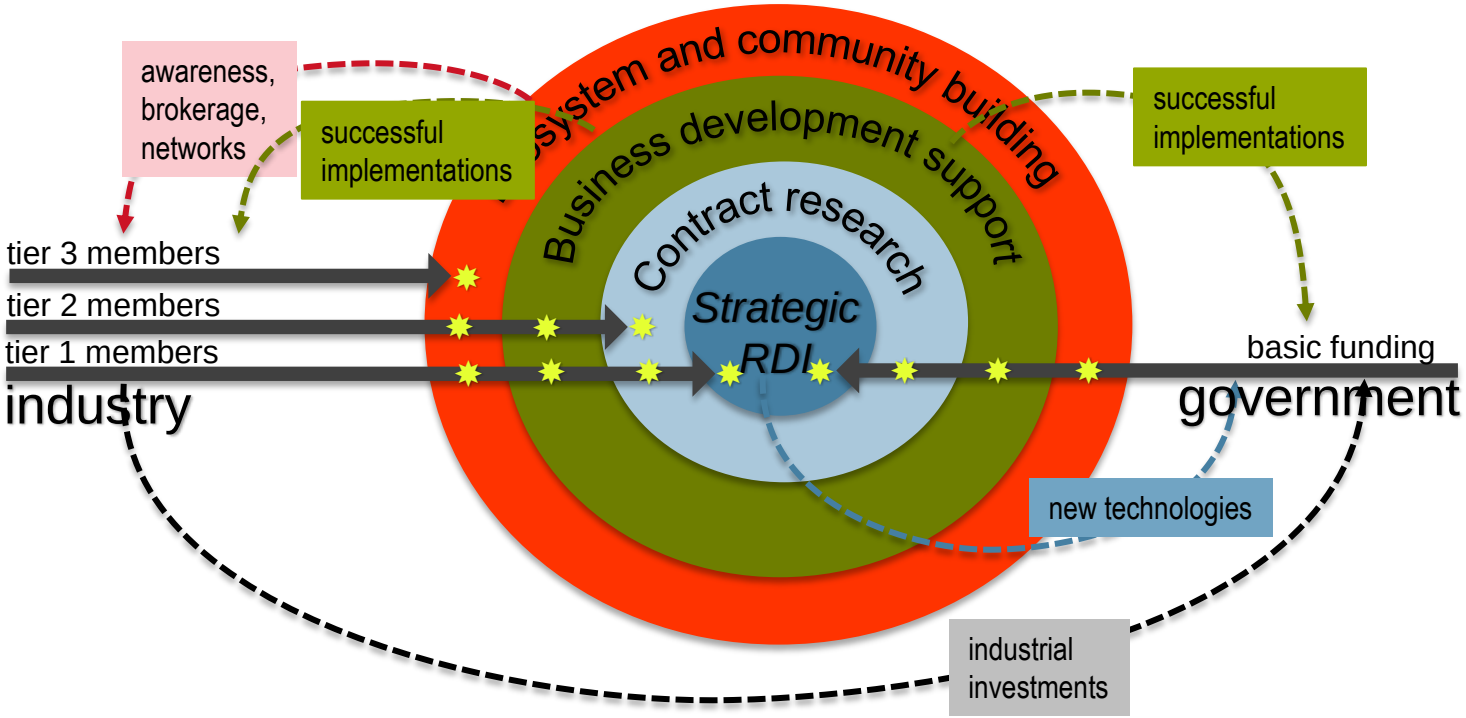
OVERVIEW SERVICES

	Service	Activities
Ecosystem	*Community building*	Scouting, brokerage, awareness creation, dissemination, ecosystem building
	Strategy development	Market intelligence, market assessments, roadmapping, technology watch
	Ecosystem learning	Workshops, seminars to share knowledge and experience
	Representation, promotion	Representing interests during meetings & conferences, organizing (country) visits, roadshows
Technology	*Strategic RDI*	Joint, pre-competitive R&D, secondment from companies
	Contract research	Specific R&D, technology concept development, proof of concept
	Technical support on scale-up	Concept validation, prototyping, small series production
	Provision of technology infrastructure	Renting equipment, low rate production, platform technology infrastructure, Lab facilities
	Testing and validation	Certification, product demonstration, product qualification

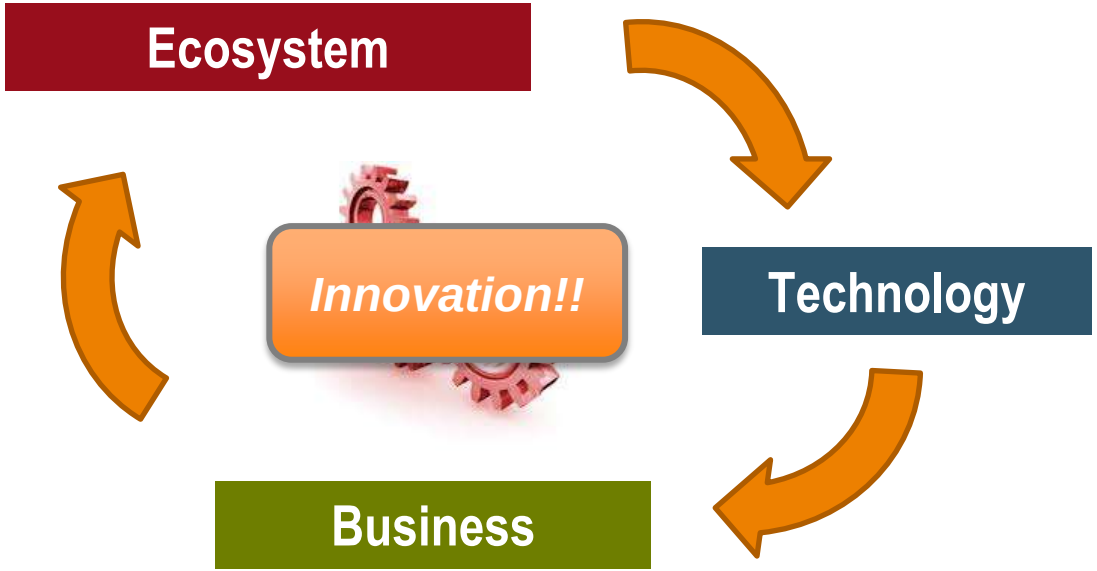
OVERVIEW SERVICES

	Service	Activities
Ecosystem	*Community building*	Scouting, brokerage, awareness creation, dissemination, ecosystem building
	Strategy development	Market intelligence, market assessments, roadmapping, technology watch
	Ecosystem learning	Workshops, seminars to share knowledge and experience
	Representation, promotion	Representing interests during meetings & conferences, organizing (country) visits, roadshows
Technology	*Strategic RDI*	Joint, pre-competitive R&D, secondment from companies
	Contract research	Specific R&D, technology concept development, proof of concept
	Technical support on scale-up	Concept validation, prototyping, small series production
	Provision of technology infrastructure	Renting equipment, low rate production, platform technology infrastructure, Lab facilities
	Testing and validation	Certification, product demonstration, product qualification
Business	*Incubator/accelerator support*	VoiceOfCustomer, market assessment, business development, legal. IPR, location, sales strategy
	Access to finance	Financial engineering, connection to funding sources, investment plans
	Skills and education	Courses, bilateral mentoring, workshops, technological infrastructure for education, secondment
	Project development	Identification of opportunities, creating consortia, development of proposals
	Offering housing	Office space and space for experimentaton and pilot manufacturing

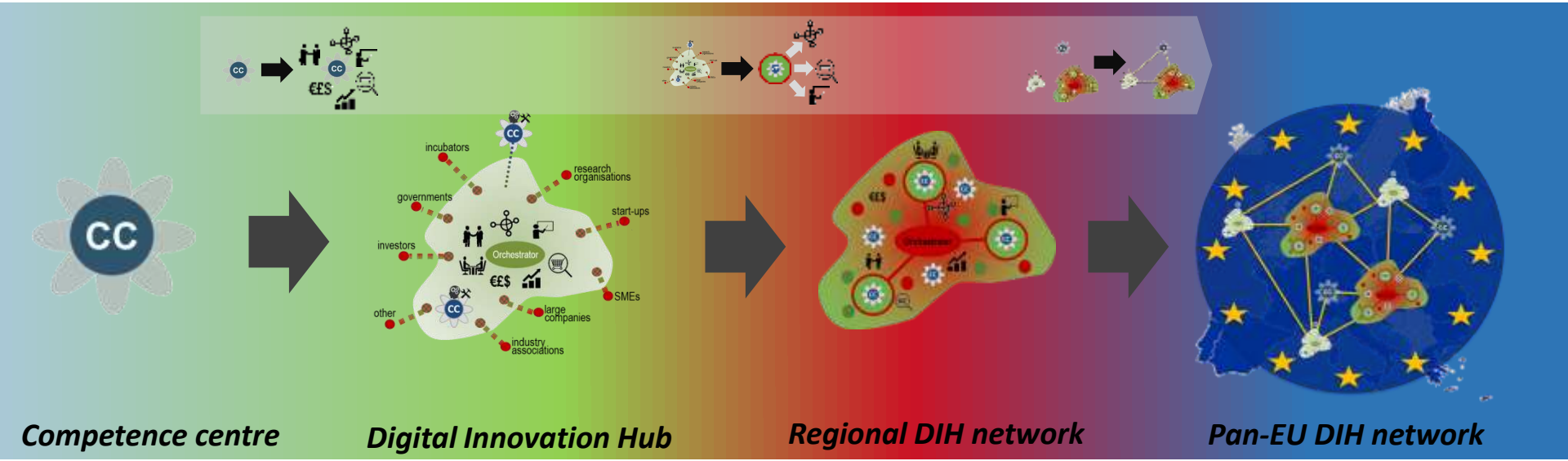
THE BUSINESS MODEL



CRUCIAL: SHARED MINDSETS BETWEEN BUSINES, TECHNOLOGY AND THE ECOSYSTEM

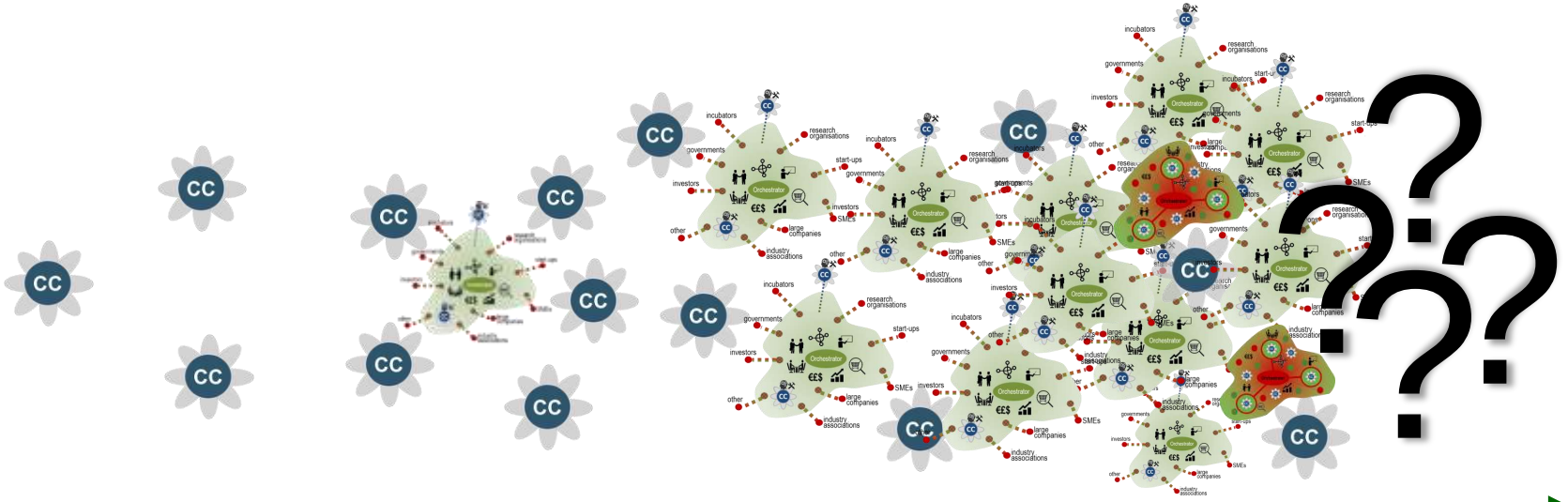


FROM COMPETENCE CENTRES TO PAN-EUROPEAN NETWORKS



LOOKING AT THE EU LANDSCAPE

TIMELINE OF DIH DEVELOPMENT



THANKS FOR YOUR ATTENTION

Questions & follow-up:
Maurits Butter: maurits.butter@tno.nl

TNO innovation for life

SOME CHARACTERISTICS

- Total turnover (estimation): £60m
- Basic funding: 30%
- Contribution industry: 30%
- Commercial projects: 30%
- Initial regional funding: >£40m
- Lloyds Training centre: £18.18m
  - *Lloyds contributes £1m annualy!*

- Rapid growth 2011-2018
  - 44 => 700+ personnel
- From 16 industrial “members” to over 100 “members“
- From 60%governmental funding to approx. 40%
- From £15m turnover to £60m (annualy)

The Centre will deliver a range of innovation training elements

- Manufacturing Engineering Apprenticeships (SME access opportunity in year 3 and 4)
- Up-skilling of Manufacturing Engineers (internal, external)
- Graduate development
- Industrial Design incubation

Supported by

- Training equipment via Industrial members (technology providers)
- MTC technical infrastructure (equipment, trainer)
- Expertise via Industrial members

CATAPULT

MTC MEMBERS

TIER 1

Access to research outputs across all themes
Programme board seat
(with voting rights)

TAB board seat
(with voting rights)

TIER 2

Access to research outputs across all themes
Programme board seat
(with no voting rights)
TAB board seat
(with voting rights)

MTC MEMBERS

TIER 3

1 year commitment
No cash outlay required
Opportunity to engage with major OEMs and Tier 1's

THE UK MANUFACTURING TECHNOLOGY CENTRE

MANUFACTURING TECHNOLOGY CENTRE

- **FOUNDED IN 2010**
  - Independent RTO
  - Company limited by guarantee (profit re-invested in MTC)
  - Purpose built facility (12,000m²) - to allow industry & academia to perform industrial scale projects
- **FOUNDED BY LEADING RESEARCH ORGANISATIONS:**
  - University of Birmingham
  - Loughborough University
  - University of Nottingham
  - TWI
  - With support of industry

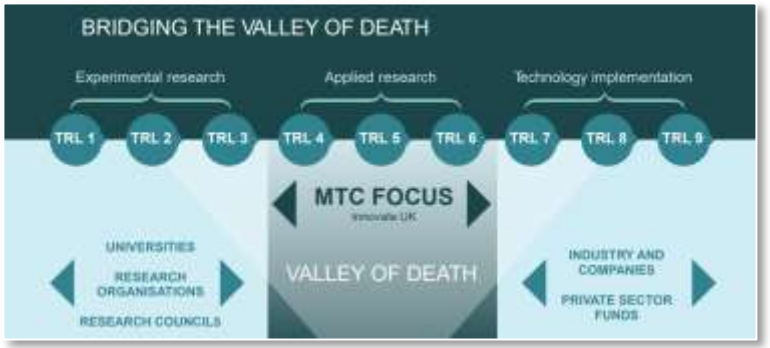
mtc Manufacturing Technology Centre

CORE RESEARCH PROGRAMME

Core Research Programme with shared results

Supported with additional Government contribution to generate collaborative R&D funding pot

Foreground IP owned by the MTC and licensed back to members royalty free

Directed research

Project commissioned by members either on a 1-to-1 basis with MTC or involving other members