

# **Centre for Management Studies of IST**

## **Who are We and What We do**

8th October 2015

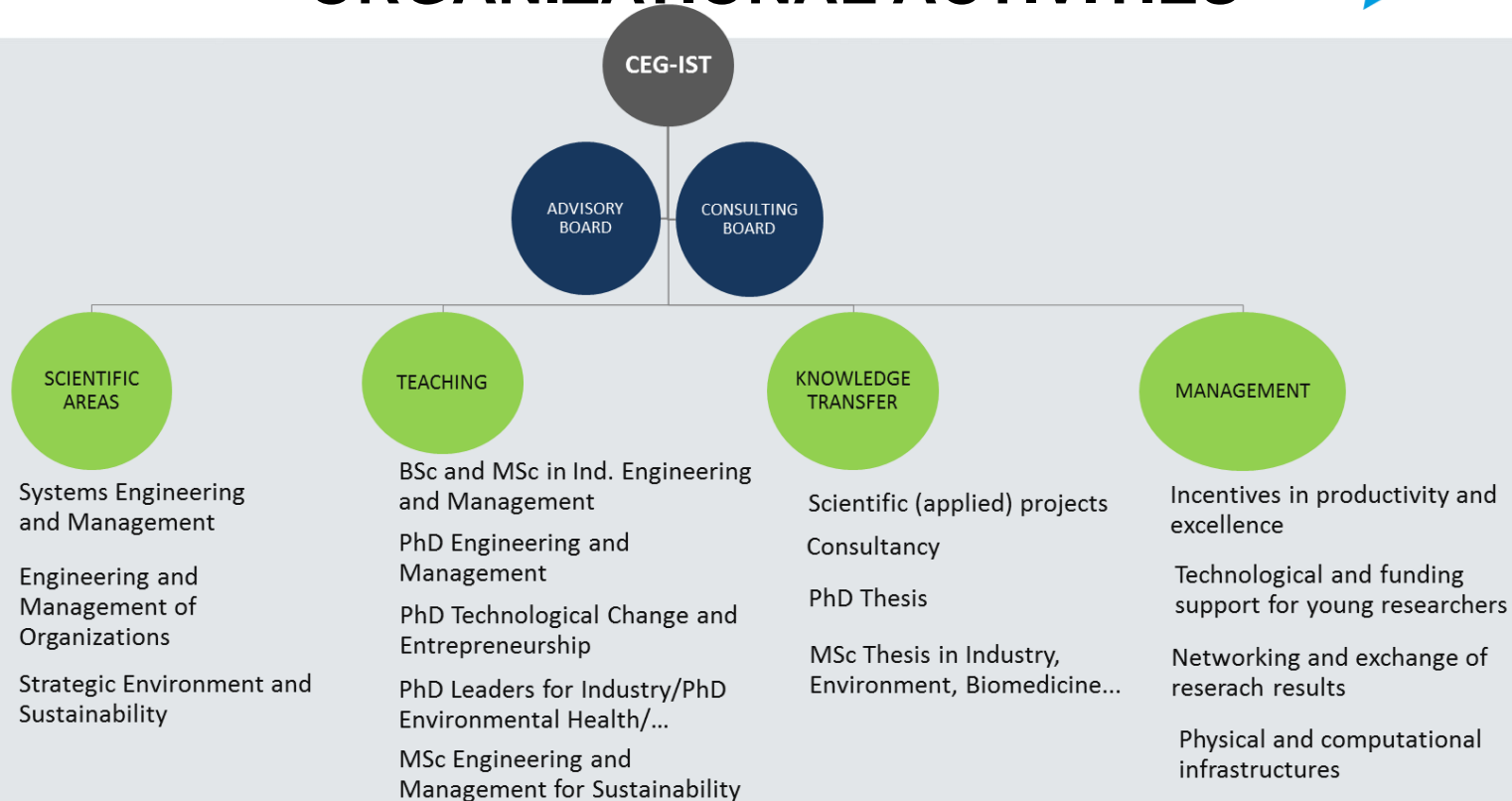


# Centre for Management Studies of IST

A research centre in the IST engineering context  
dedicated to explore and reinforce links between  
**management and engineering**

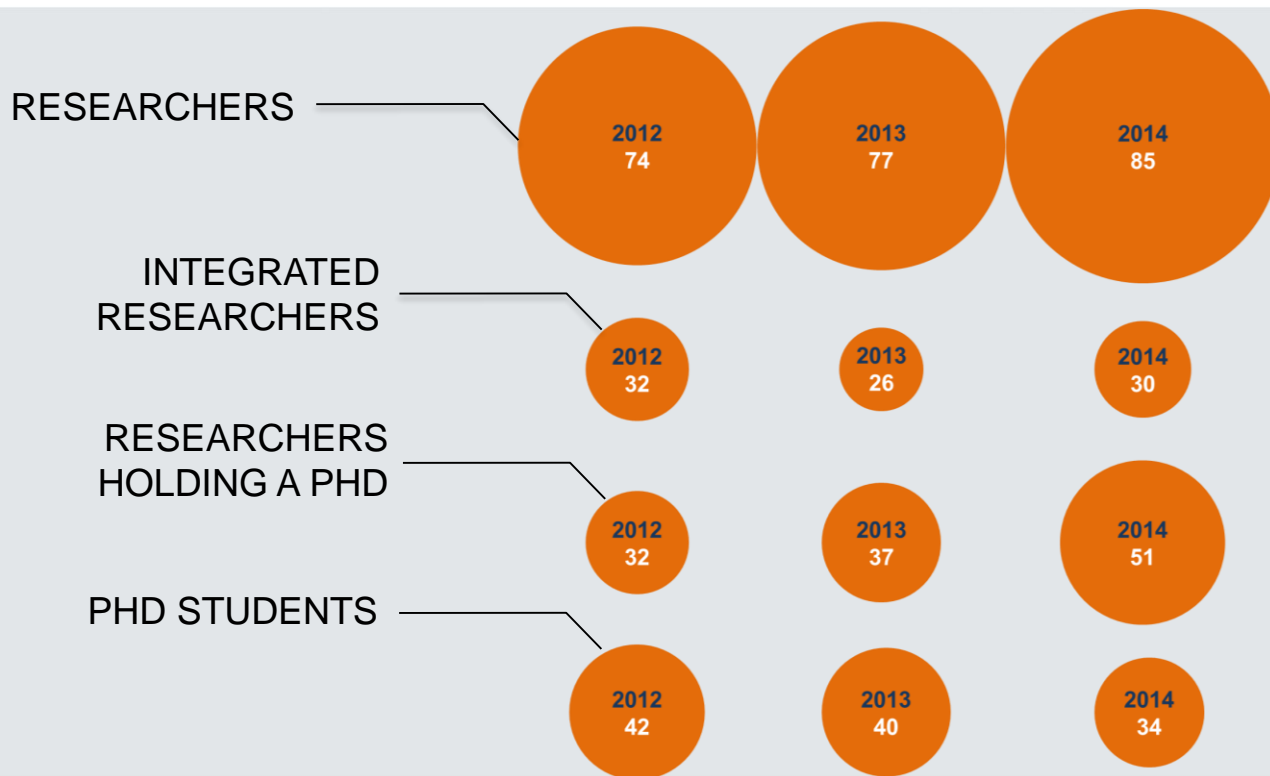


# ORGANIZATIONAL ACTIVITIES



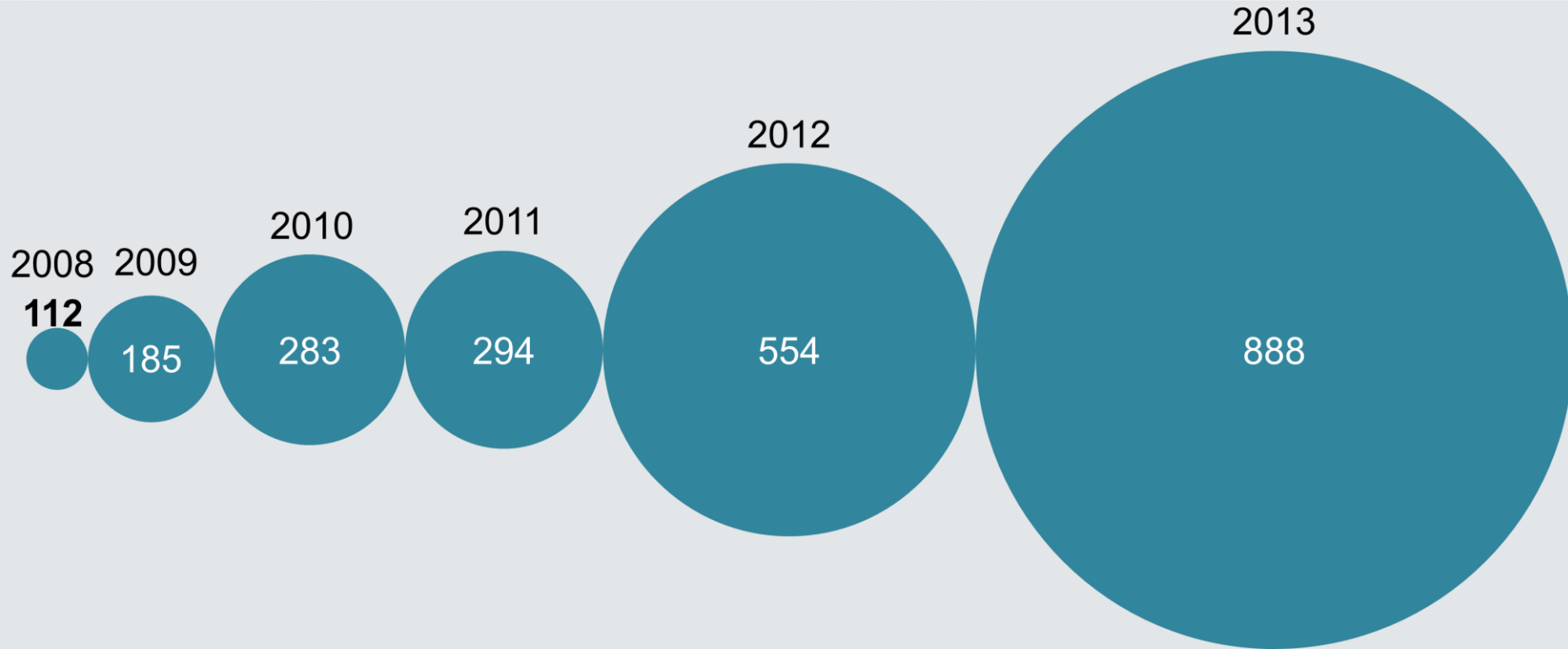


# FACTS & FIGURES



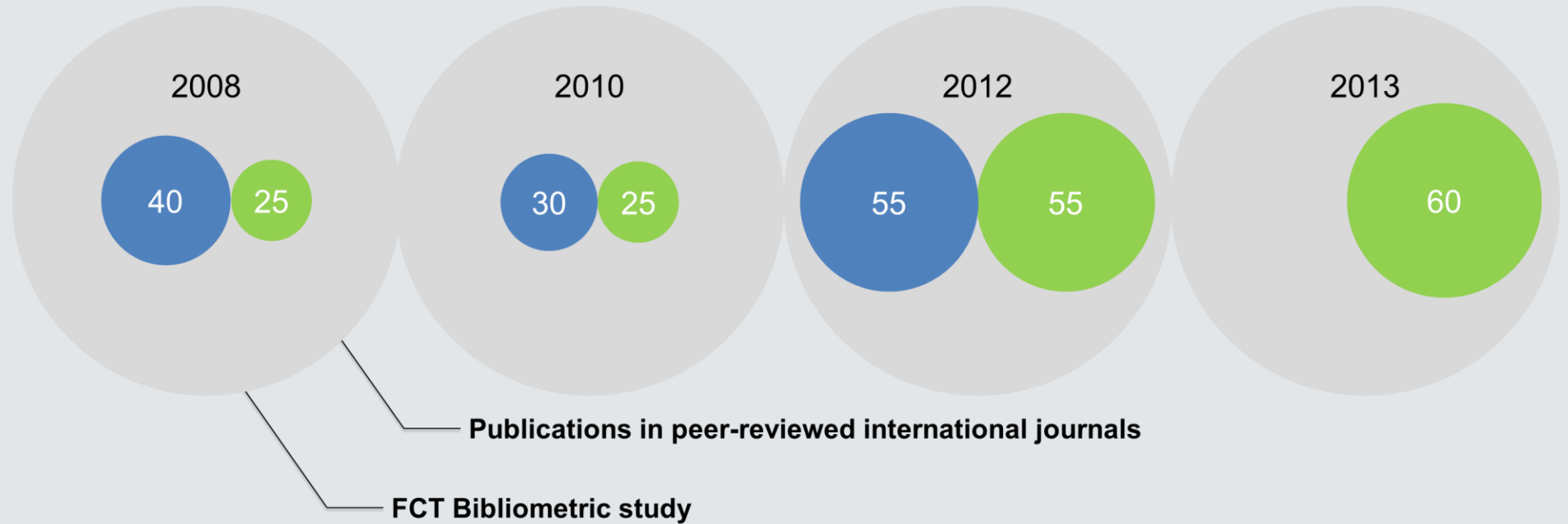


# CITATIONS



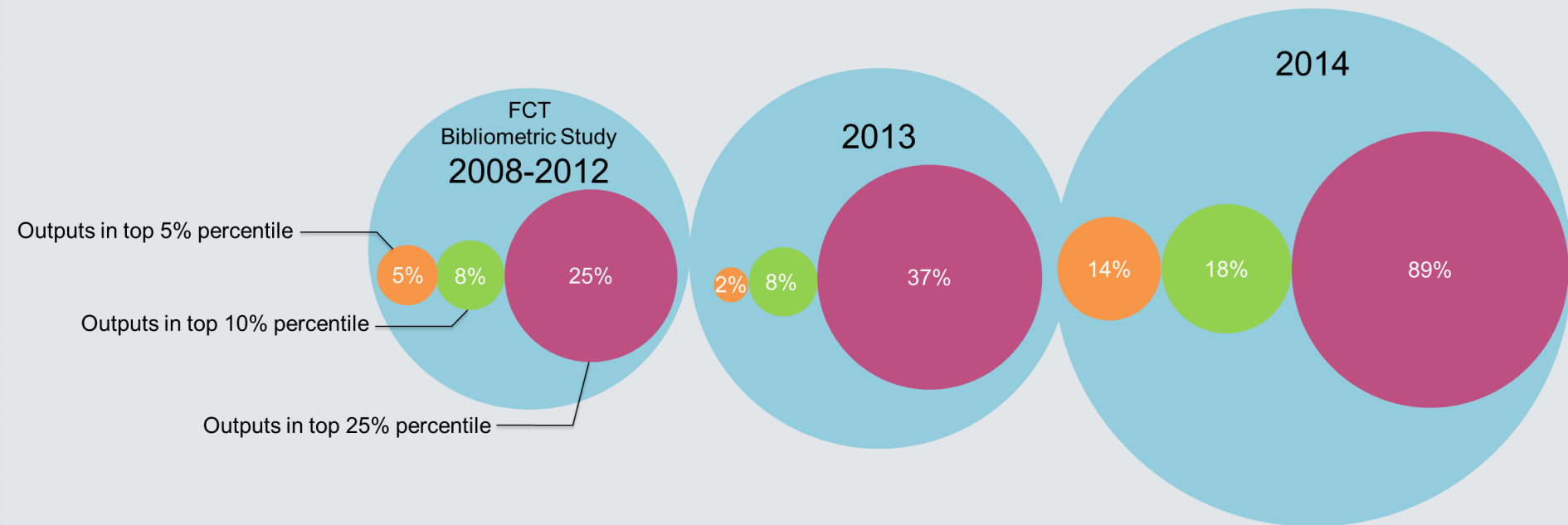


# NUMBER OF OUTPUTS



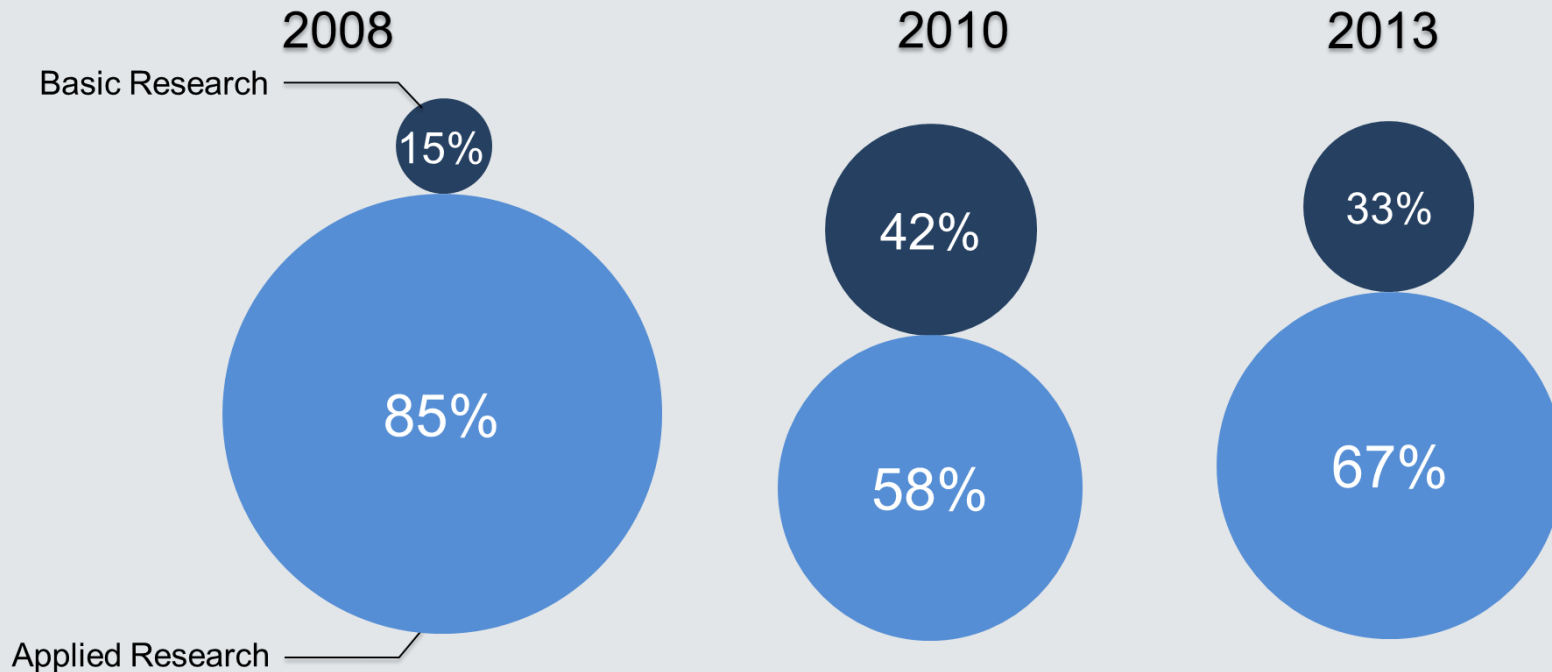


# WoS PUBLICATIONS PERCENTILS





# BASIC AND APPLIED RESEARCH





# STRUCTURE

**S E M**

**S**ystems **E**ngineering and **M**anagement

**E M O**

**E**ngineering and **M**anagement of **O**rganizations

**S E N S U**

**S**trategic **E**nvironmental and **S**ustainability assessment and management



**SEM**

**Risk Analysis**

**Optimization**

**Supply chains and  
Operations management**

**Decision  
Sciences**

**Performance  
measurement**

ENABLING TECHNOLOGY TRANSFER  
IMPROVING PRODUCTIVITY  
DECISION PROCESSES  
SUPPORT TO DECISION MAKING  
RISK MANAGEMENT  
DESIGN AND MODELING OF SYSTEMS  
DESIGN AND OPERATION OF SUSTAINABLE SYSTEMS  
OPTIMAL PROBLEM FORMULATIONS AND SOLUTIONS

**Project  
Management**

**Strategic  
Environmental  
Assessment for  
sustainability**

**Entrepreneurship  
and Innovation**

SUSTAINABILITY PATTERNS  
STRATEGIC SUSTAINABILITY ASSESSMENTS  
TRANSITION TO SUSTAINABILITY  
PROCESSES OF TRANSFORMATION  
RESILIENCE BUILDING  
BUSINESS ECOSYSTEMS  
COLLABORATIVE APPROACHES  
ENGAGING STAKEHOLDERS AND PEOPLE  
DYNAMIC ENVIRONMENTAL IMPACT ASSESSMENT

**Design and  
Strategies for  
Sustainability**

**Human Capital**

INNOVATION STRATEGIES  
TECHNOLOGICAL CHANGE  
DECISION PROCESSES  
KNOWLEDGE MANAGEMENT  
POLICY EVALUATION  
NEW BUSINESS CREATION  
ORGANIZATIONAL CHANGE

**Social  
Innovation**

**EMO**

**Organizations and  
Markets**

**SENSU**



# STRATEGY

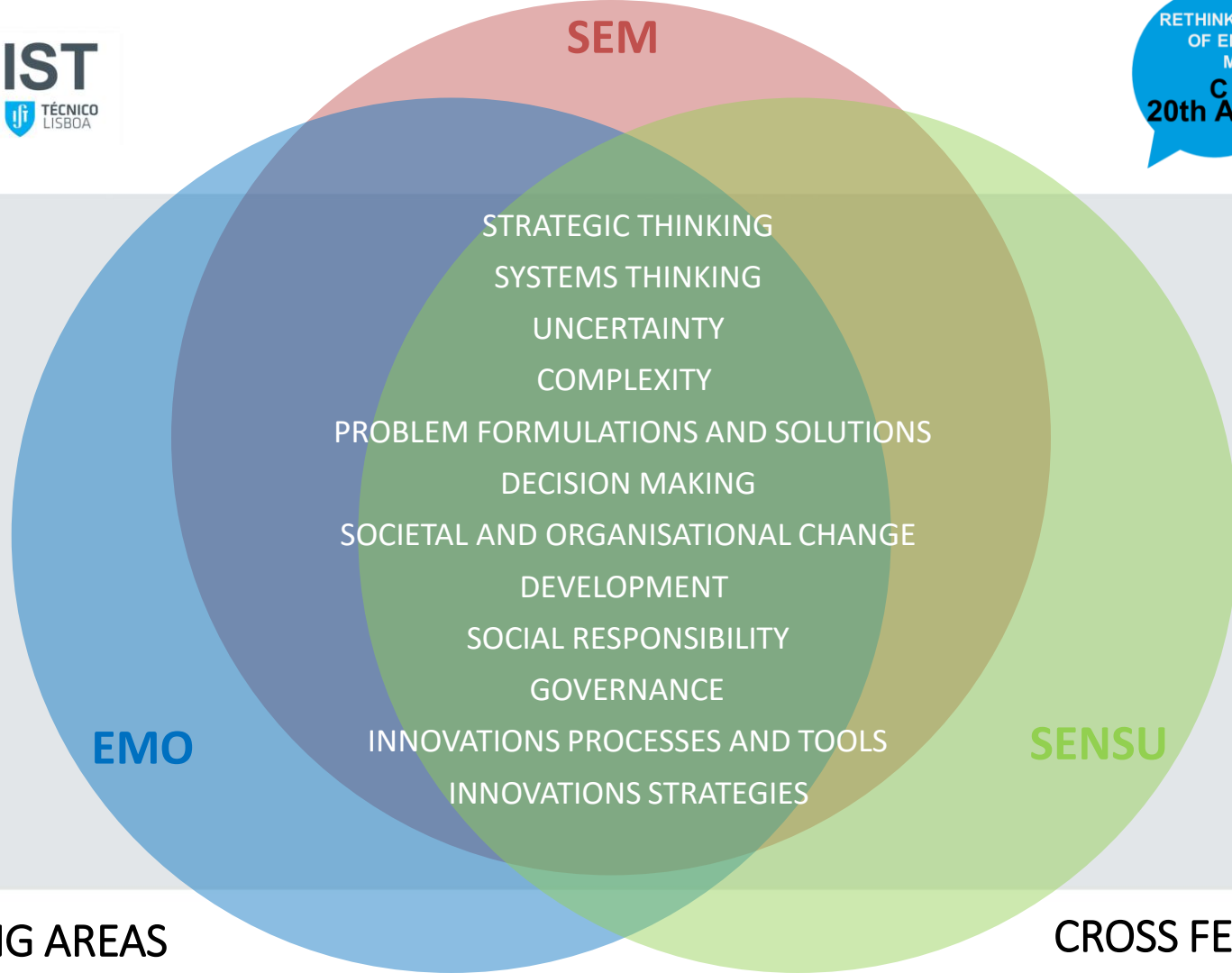
CEG-IST strategy is to

**ENCOURAGE CROSS-FERTILIZATION**

to **promote transversal research themes**

that can engage researchers with distinct backgrounds and interests  
into **TRANSDISCIPLINARITY**, and **encourage integrated research**  
developments and findings **PUBLICATION IN TOP JOURNALS.**









**OPERATIONS AND LOGISTICS GROUP** develops innovative, theoretically sound and user friendly...



... in a closed **collaboration** with national and international:

- Industrial Organizations
- Academic Partners

Targeting

- economic
- environmental and
- social

**drivers**



## Operations and Logistics Research Projects

**I&EC research**

**Solution Methodology for Scheduling Problems in Batch Plants**

Samuel Morais<sup>1,2,3</sup>, Ana Paula Barbosa-Póvoa<sup>1</sup>, Jorge Pinto de Sousa<sup>1,4</sup> and Pedro Duarte<sup>1</sup>

<sup>1</sup>Centro de Estudos de Gestão, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>2</sup>INESC TEC (Instituto INESC Porto), 4200-465 Porto, Portugal  
<sup>3</sup>Faculdade de Engenharia da Universidade de Porto, 4200-465 Porto, Portugal  
<sup>4</sup>FEUP, Faculdade de Engenharia da Universidade do Porto, 4200-302 Porto, Portugal

**OOPs**

Planning and Scheduling of Pharmaceutical Processes

(FCT/Industrial Project)

**Omega**

**Integrated scheduling and inventory management of an oil products distribution system**

Susana Rebelo<sup>1,2</sup>, Suelen N. Brocheto Magalhães<sup>3</sup>, Ana Paula F.D. Barbosa-Póvoa<sup>1</sup>, Flávio Neves Jr.<sup>4</sup>

<sup>1</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>2</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>3</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>4</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal

**CLC**

Oil Supply Chain Planning and Scheduling

(CAPES/Industrial Project)

**Journal of Cleaner Production**

**Towards supply chain sustainability: economic, environmental and social design and planning**

Bruno Neto<sup>1,2</sup>, Maria Isabel Gomes<sup>1</sup>, Ana Carvalho<sup>1</sup>, Ana Paula Barbosa-Póvoa<sup>1</sup>

<sup>1</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>2</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal

**PEERChain**

Design and Planning of Energy Efficient and Resilient Supply Chains

(FCT Project)

**European Journal of Operational Research**

**Production, Manufacturing and Logistics**

**Simultaneous design and planning of supply chains with reverse flows: A generic modelling framework**

Maria Isabel Gomes-Soleiro<sup>1,2</sup>, Ana Paula Barbosa-Póvoa<sup>1</sup>, Augusto Q. Novais<sup>3</sup>

<sup>1</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>2</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>3</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal

**LOGInv**

Management and Modelling of global supply chains with reverse flows

(FCT Project)

**Computers and Chemical Engineering**

**3i-objective optimization approach to the design and planning of supply chains: Economic versus environmental performances**

Isabel Pinto-Varela<sup>1,2,3</sup>, Ana Paula F.D. Barbosa-Póvoa<sup>1</sup>, Augusto Q. Novais<sup>4</sup>

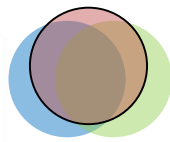
<sup>1</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>2</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>3</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal  
<sup>4</sup>INESC TEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal

**WholeChain**

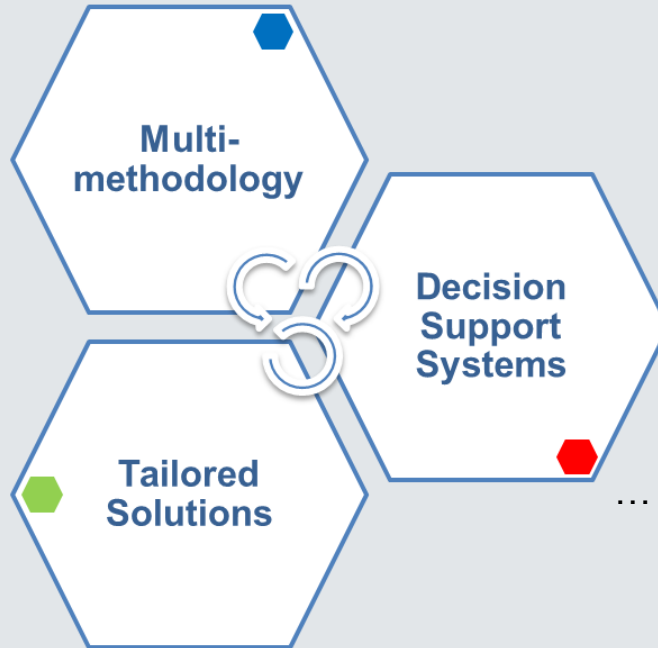
Quantitative Framework for Perishable Food Supply Chain Management

FCT Project)

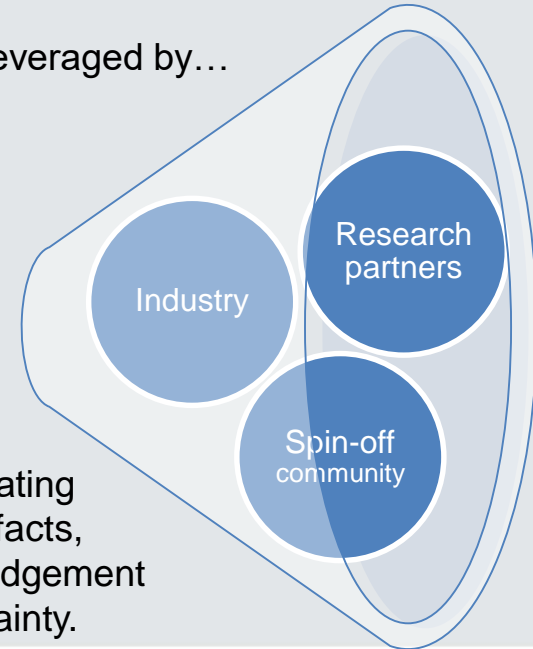




**DECISION ENGINEERING GROUP** develops innovative, theoretically sound and user friendly...



...leveraged by...

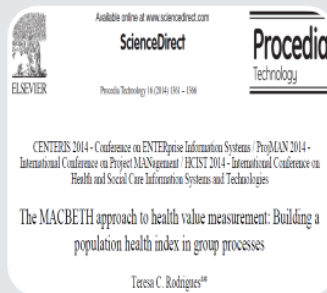


... accommodating  
hard data, facts,  
informed judgement  
and uncertainty.





## Decision Engineering Research Projects



**EURO-HEALTHY**  
Shaping European policies to promote health equity  
(H2020 Project)



**Foresight and decision support tools for improved healthcare workforce planning and policy analysis**  
(FCT Project)



**IRIS**  
Project risk management: Improving risk matrices using multiple criteria decision analysis  
(FCT Project)



**RENOIR**  
Resource allocation for management support: Interactive tools, models, and applications  
(FCT Project)



**Algorithmic Decision Theory**  
Improving decision support in the presence of massive data bases, ...  
(Cost Action)





# FCT Project: Polarization within and across firms

*Studying the effects of labor substituting technologies*

## Research Team:

Francisco Lima (PI)	CEG-IST
Tiago Fonseca	CEG-IST
Sónia Pereira	Columbia U.
Pedro Faria	Groningen U.

## Routinization

**Technology**

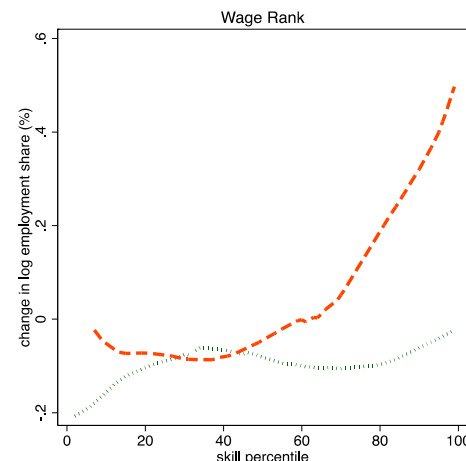
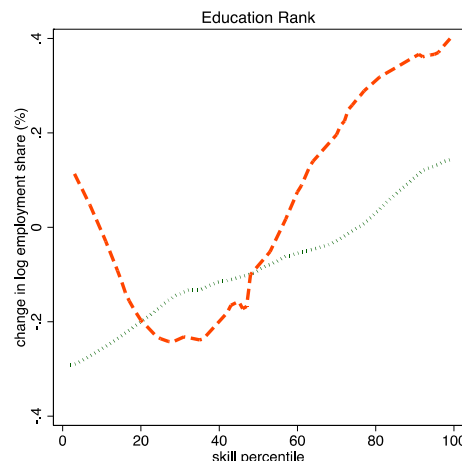
**Complements Abstract workers**

Employment, wages ↑

**Substitutes Routine workers**

Employment, wages ↓

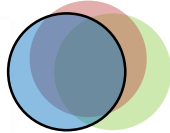
**Neutral to Manual workers**



..... 1986-1994      - - - - 1995-2007

Abstract – e.g. engineers, managers, physicians  
Routine – e.g. office clerks, routine assemblers  
Manual – e.g. plumbers, cleaners, mechanics





## FCT Project: Innovation and the Global Economy

### ***Do Entry Regulations Deter Entrepreneurship and Job Creation? Evidence from Recent Reforms in Portugal***

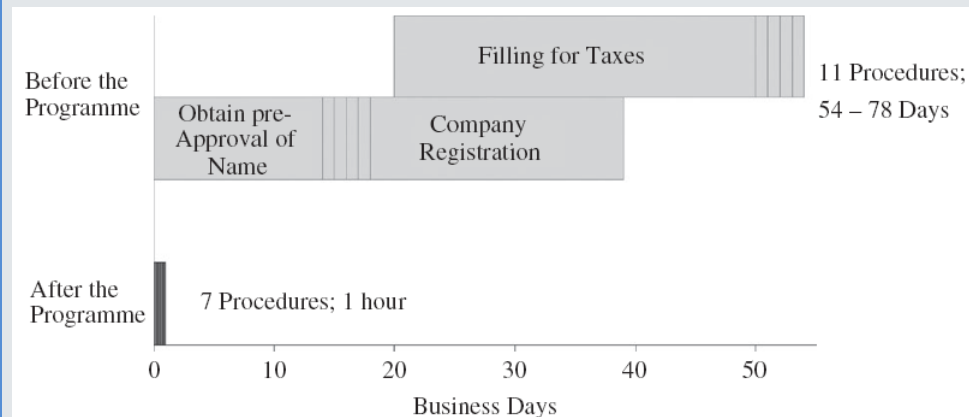
(published in *Economic Journal*, 2014 / presented at the NBER and World Bank)

#### Research Team:

Francisco Lima (co-PI)	CEG-IST
Ana Venâncio	ISEG
Lee Branstetter	CMU

Project also with Fernando Branco (UCP) and Pedro Faria (Groningen U.)

- We find that **job creation** and **firm formation** increased with the **reduction of entry barriers**
- Firms induced to enter tended to be **small**, in **low-tech** industries, run by **less educated** and experienced entrepreneurs, and more likely to fail 2 years after founding
- Our **theoretical model** show that entrepreneurs deterred by entry barriers were mostly “**marginal**” whose firms have limited scope for growth and expansion
- The **social impact** of deregulation may be **limited** by the relatively low quality of firms brought into the market



Start-up Procedures Before and After the ‘On the Spot Firm’ Programme





**Research Team:**

Rui Baptista	CEG-IST
Francisco Lima	CEG-IST
Joana Mendonça	IN+
Miguel Torres Preto	IN+
Steven Klepper	CMU

## FCT Project: Human Capital, Entrepreneurial Careers and Knowledge Based Entrepreneurship

### ***The Impact of Human Capital on the Early Success of Necessity vs. Opportunity-based Entrepreneurs***

(published in *Small Business Economics*, 2014 / presented at Academy of Management; Strategic Management Society)

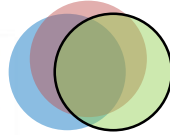
- We examine whether **founders' backgrounds** influence **new firm survival** focusing in particular on the impact of **unemployment-driven entrepreneurship**.
- Results suggest that **human capital plays an important role in the early success of opportunity-based entrepreneurs, but has little influence on the early success of necessity-based ones**.

### ***How Former Business owners Fare in the Labor Market? Job assignment and Earnings***

(published in *European Economic Review*, 2012 / presented at Academy of Management; Strategic Management Society)

- We examine the **impact of entrepreneurial experience on job assignments, careers, and wages**.
- Former business owners enter firms at **higher job levels** and **progress faster up the hierarchy** than wage employees without entrepreneurial experience.
- However, most former business owners find jobs in **small firms** that pay below average wages, so business ownership experience is **worth less** than wage employee experience





**LOCAL SUSTAINABILITY STRATEGIES (ELoS)**  
MR Partidário, BR Augusto, RC Gomes



**PPDA 2009-2011**



**Observatório de Sustentabilidade Empresarial**  
Índice de Sustentabilidade Empresarial  
Conceito e Metodologia

**1. PURPOSE**

- Policy and management instruments for sustainable development;
- Cyclic processes or planning and action, that emphasize strategic management of planning processes rather than the production of a plan.

**2. METHODOLOGY**

**ELoS Cyclic processes**

**3. CASE STUDY: LOULÉ MUNICIPALITY**

To backup the review of the Local Master Plan and the integration of sustainability issues into the planning process.

**Multi-Stakeholder Process:** More than 5000 people directly and indirectly involved

- 4 sessions of the Forum
- 28 interviews
- Interviews to general public
- 7 thematic workshops
- One day meeting with the Municipal Assembly
- One meeting with the business sector
- Website

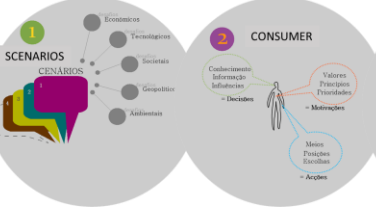
**Deliverables:**

- Advisory Council ELoS;
- Institutional adaptation in the municipal organizational structure;
- Stakeholders network to promote inter-sectoral actions;
- Monitoring programme and indicators;
- Three years review time;
- Development of specific studies;
- Integration with the master plan;
- Local Agenda 21.

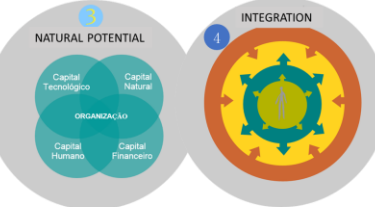
**Project outcomes:** new dynamics in the community and strategic and project actions.

## INNOVATION FOR SUSTAINABILITY

### MACRO SCENARIOS WHICH CONTEXTUALIZE AND RELATE CHALLENGES AND OPPORTUNITIES



### MEASURING NATURAL POTENTIAL



**TO DETECT**

- MASS BEHAVIOUR
- NICHE BEHAVIOUR
- TREND BEHAVIOUR

**CONSUMER CONCERN'S STRATEGIC VALUE AXES**

**IMPACTS ON VALUE CHAIN**

**ORG. CULTURAL & STRUCTURAL REQUIRED CHANGES**

**POLICIES AND REGULATIONS**

**U LISBOA**

**PhD Program in Climate Change and Sustainable Development Policies**  
Centro de Estudos em Gestão - Instituto Superior Técnico

**Socioecological resilience of local communities to climate change**  
KÁTIA VIRGÍNIA CARELLAS  
Supervisor: Dr. Maria Rosário Partidário

**CONTEXT**

**RESEARCH APPROACH**

**THESIS DESIGN**

**CLIMATE CHANGE**

**CONCEPTUAL STRUCTURE**

**ACTION PLAN**

**PAPERS PLAN**

**OBSERVATORY CONCEPT AND INDEX**

**SDS concept and functions**

**METHODOLOGY**

**RESULTS**

**Individual Performance Charts**





**E-HIGHWAYS**  
– European  
electricity  
network  
strategic  
environmental  
and  
sustainability  
assessment  
  
(FP7 project)

Guidance for  
Integrating  
Climate  
Change and  
Biodiversity  
into Strategic  
Environmental Assessment  
(SEA)  
(EU-DGE)

SMAILE  
Mental health  
– Impact  
assessment of  
local and  
economic  
context  
  
(FCT project)

MOBIA  
Monitoring  
Biodiversity in  
impact  
assessment  
(FCT project)

BLOSSOM

Futures thinking  
Long-term  
governance and  
institutional  
arrangements

(EEA)





Diversity  
Integrity  
Excellency

**Thank you for your attention**