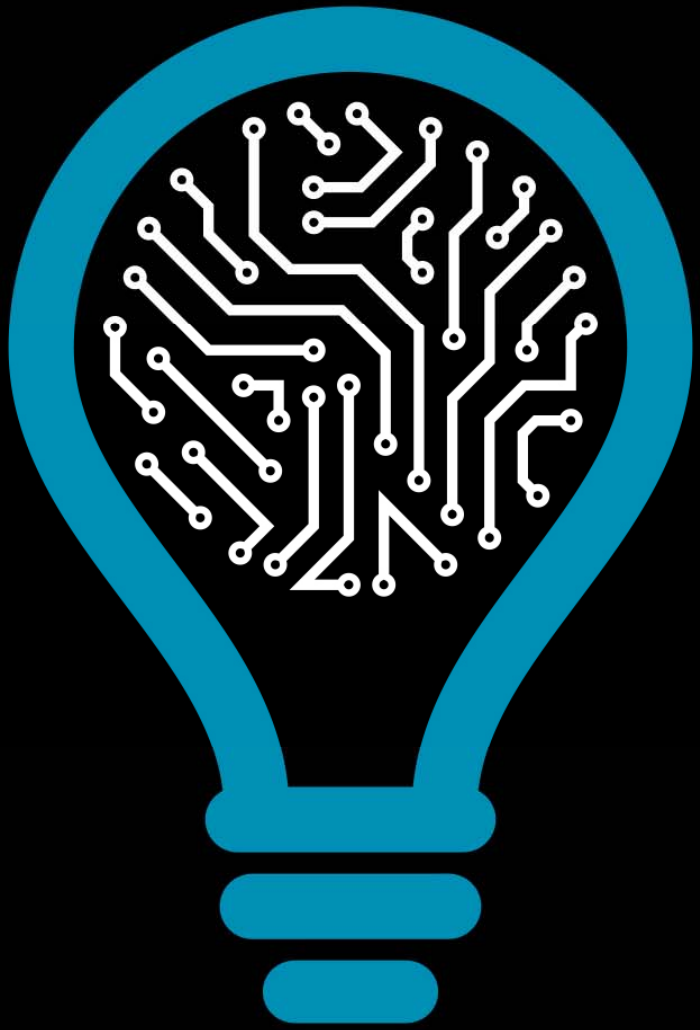
from knowledge production to science-based innovation



INESCTEC

INSTITUTE FOR SYSTEMS AND COMPUTER ENGINEERING, TECHNOLOGY AND SCIENCE

Strengthening the ties between Academia and Society

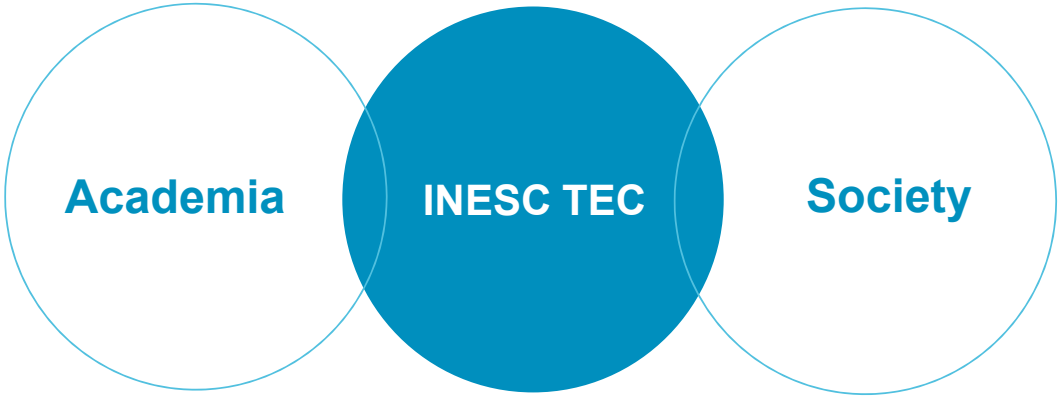
Vision

To be a relevant international player in Science & Technology
in the domains of ***Computer Science, Industry and Innovation, Networked Intelligent Systems, and Power & Energy***

Mission

Foster Pervasive Intelligence
Contribute to the competitiveness and internationalisation of Portuguese companies and institutions

Excel in research
To be socially relevant
To be internationally influential



EXCELENTE FCT
Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

CIT
Centro Interface
RECOGNISED BY THE MINISTRY OF ECONOMY

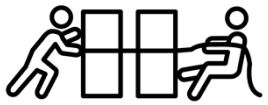
Putting pervasive intelligence to work

Research

Clusters - Science push

Clusters of research centres build a multidisciplinary environment to optimize resources and maximise synergies

- NETWORKED INTELLIGENT SYSTEMS
- POWER AND ENERGY
- INDUSTRY AND INNOVATION
- COMPUTER SCIENCE



Innovation

TEC4 - Market pull

Strategy driven platforms addressing and impacting great societal challenges and market needs

- TEC4 SEA
- TEC4 MEDIA
- TEC4 AGRO-FOOD
- TEC4 INDUSTRY
- TEC4 ENERGY
- TEC4 HEALTH

INESC TEC is international

Research partnerships

MIT Portugal

UT Austin | Portugal

CMU | Portugal

CENTRA

AIR CENTRE

IBM Q Network

EERA

Innovation partnerships

efacec

Continental

EUROPAC Kraft Viana

IKEA

BOSCH

YAZAKI

creativesystems

Volkswagen Autoeuropa

PSA PEUGEOT CITROËN

edp

i68 ondo

SIEMENS

Argonne NATIONAL LABORATORY

SONAE INDÚSTRIA

FLY LONDON

Robotnik

European organisations

eit Digital

eit RawMaterials Connecting matters

eit Manufacturing

enterprise europe network

nem New European Media

ASTPPROTON KNOWLEDGE TRANSFER EUROPE

EFFRA EUROPEAN FACTORIES OF THE FUTURE RESEARCH ASSOCIATION

ERCIM European Research Consortium for Informatics and Mathematics

eu ROBOTICS

European strategic initiatives

MANUFUTURE-EU

PHOTONICS21

AI High-Level Digitising Industry

EuroHPC

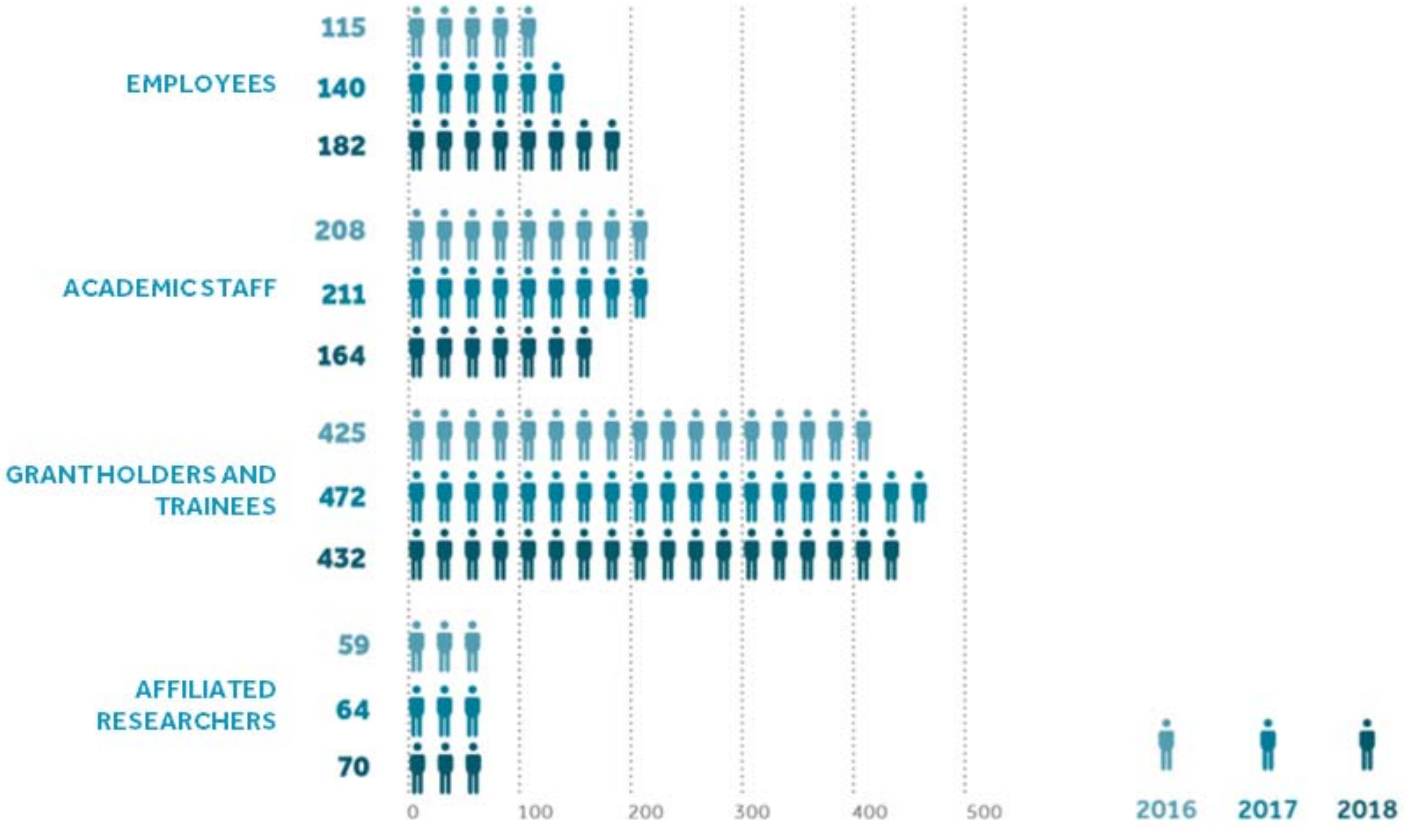
INESCTEC

PEOPLE ARE OUR GREATEST VALUE:
SCALE, DENSITY AND CRITICAL MASS

339 PhDs

102 R&D Employees

432 Grant Holders



Spinoffs are the ultimate stage of former successful research

Scientific output (2018)

303 Papers in international indexed journals (**71% Q1**)
438 Papers in international indexed conference proceedings
40 PhD theses finalized (187 PhD theses on-going)

Valorisation of intellectual property

12 EPO patent applications in 2018 (number 1 in Portugal)
3 US, **2** JP and **1** KR patents granted (2018)
39 patents filed in the last 10 years

Pre-incubation and launching of spin-offs

LETin – Laboratório de Empresas Tecnológicas

19 INESC TEC spin-offs

16 active
- **6** equity
- **4** exits
- **6** no equity

3 closed

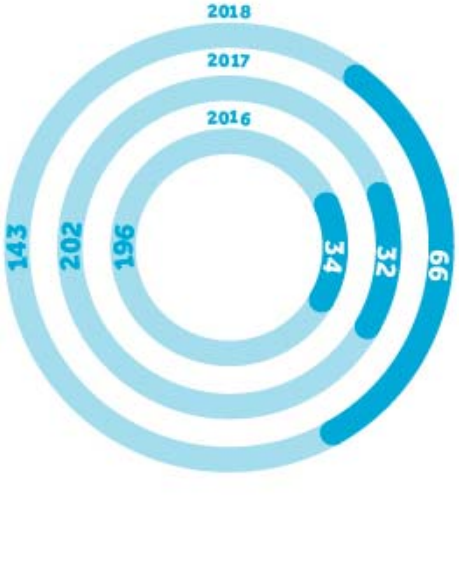
LTP
SafeCloud technologies
MITMYNID
wesenss – Wearable Sensors for Safety
ubirider
iHandU

Building the STI eco-system

Launching **8 CoLABs** (ForestWISE (leadership), Vines&Wines, VORTEX, Blue Economy, etc.) and participation in **8 Clusters of Competitiveness**

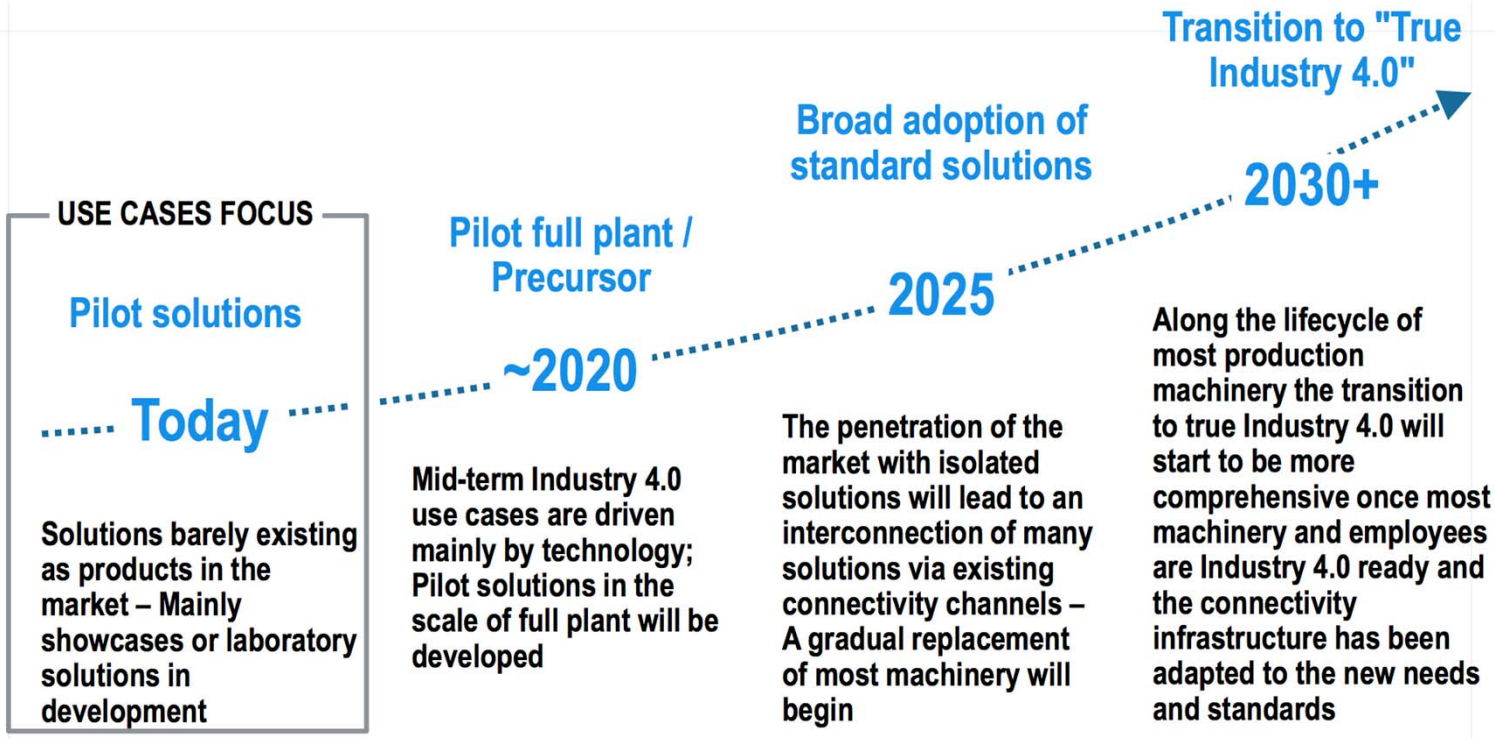
A talent incubator

More than 200 profissionals
transfered to the market per year
(around 18 countries)



From Transformation Systems X.0 to Transformation Systems 4.0

Industry 4.0 will have about 10-15 years to reach maturity



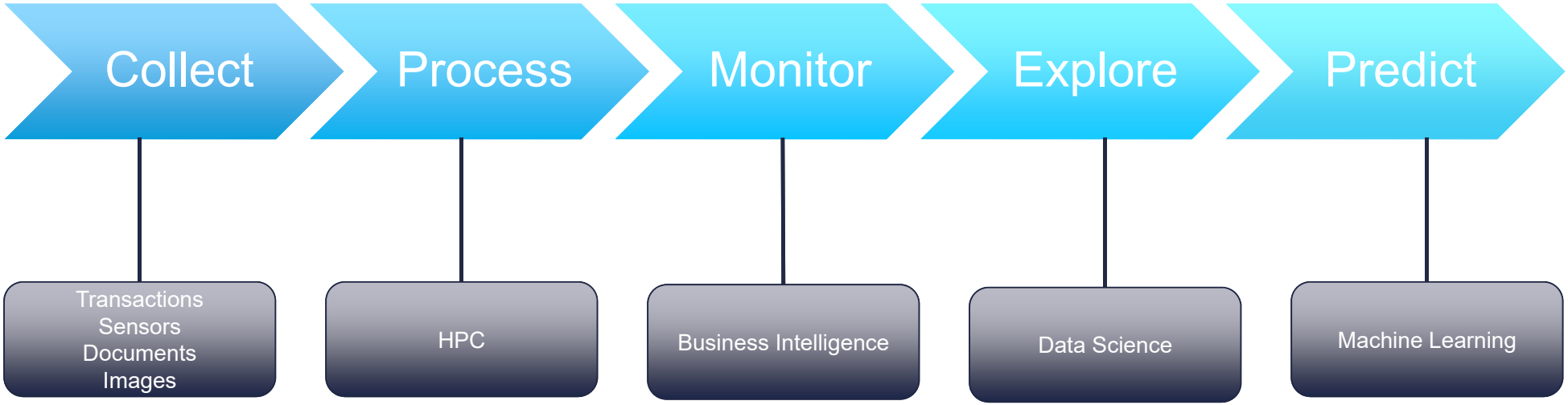
Source: Roland Berger, 2017

INESCTEC

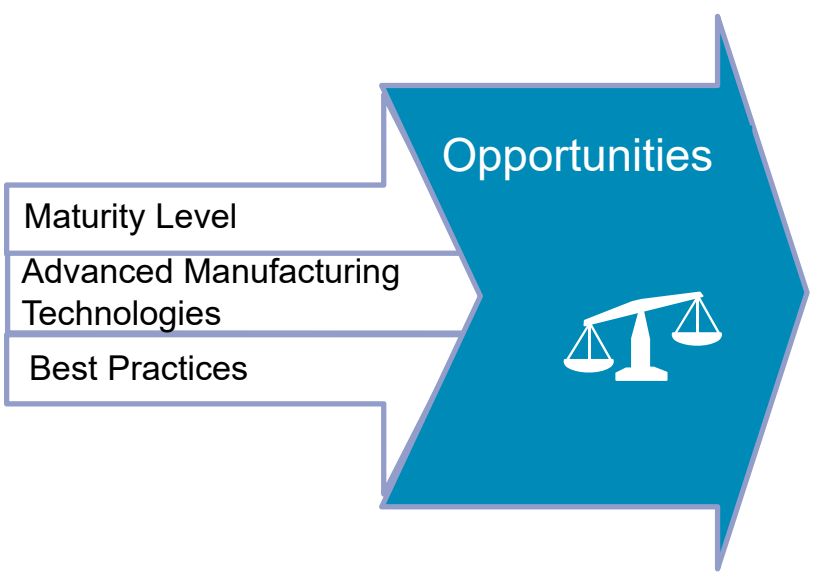
Digitalization Processes

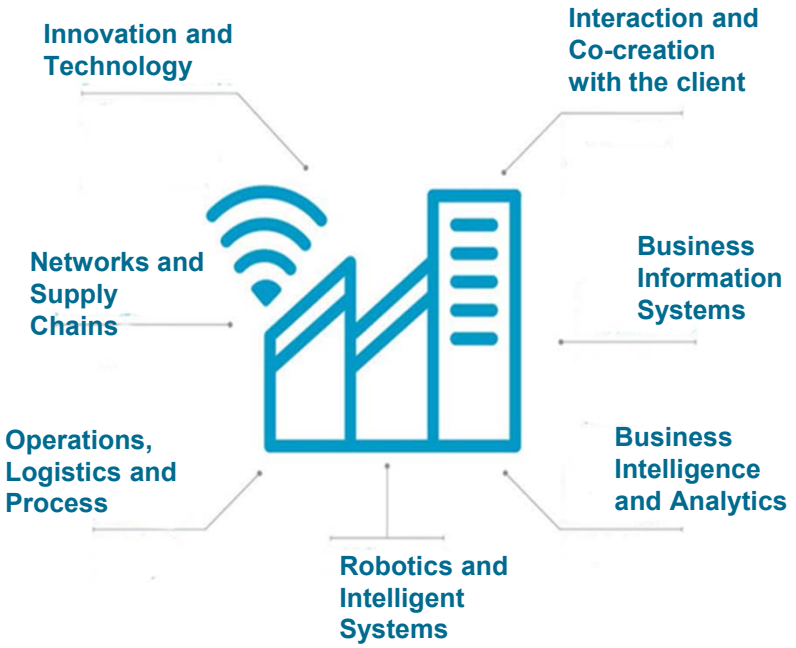
Value Chains

Data Driven Organizations



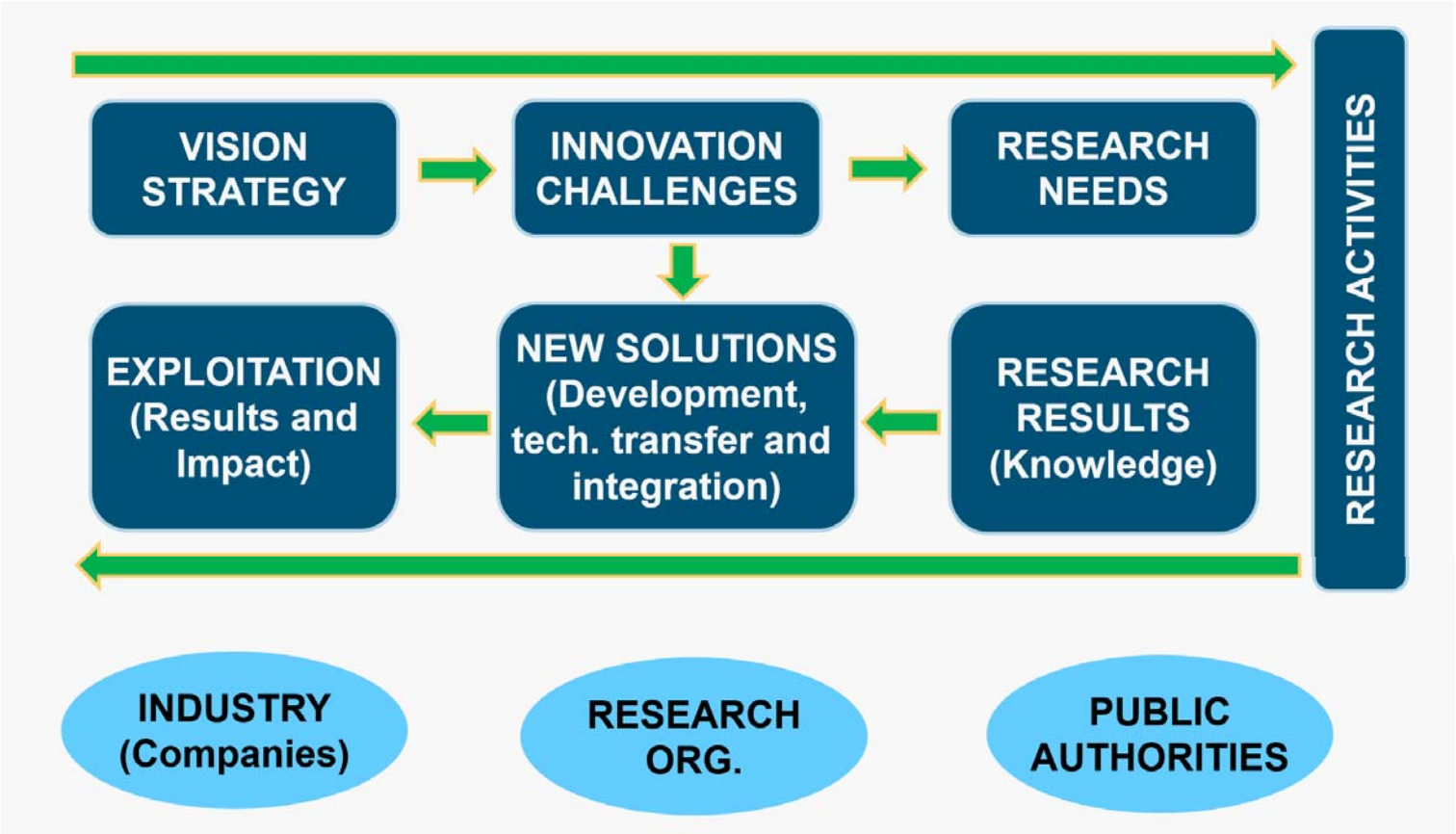
Design an i4.0 Organization





Innovation cycle and its main activities

Roadmap / Knowledge valorization / Impact



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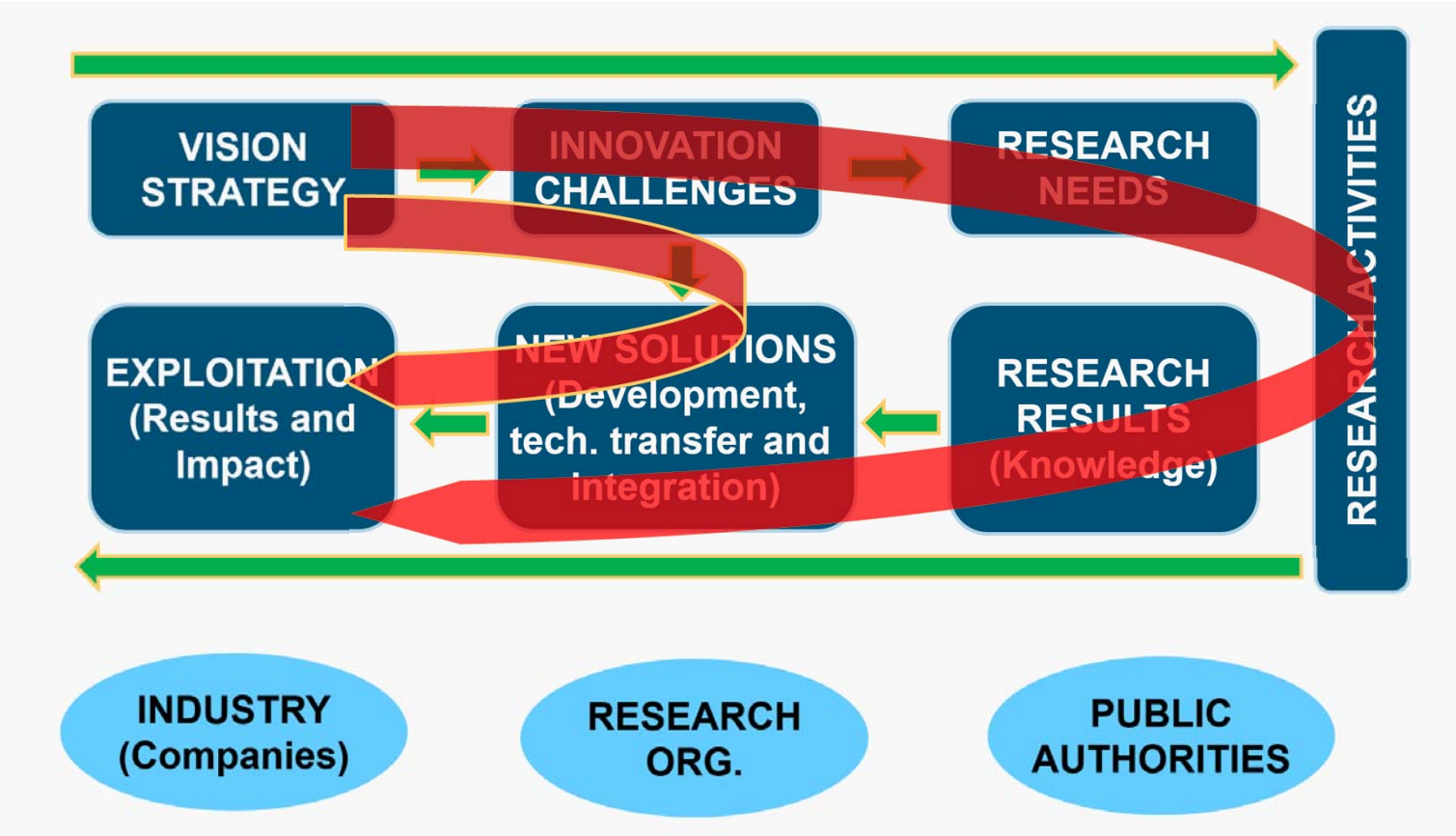


iMan Norte Hub (DIH) | Stakeholders

MAN NORTE HUB

iMan Norte Hub Coordination:

PRODUTECH · UPTEC · citeve TEXTILE TECHNOLOGY · catim · INESCTEC · ctcp centro tecnológico do calçado de portugal · CTCOR

Regional, National and European Platforms, Agencies and Authorities

Competence Centers

R&D Organizations
Technological centers

Industrial Ecosystem

Manufacturing companies
Industrial Associations
Clusters

Start-ups Ecosystem

Incubators
Science and Technology Parks

Labs, Demonstrators and Experimental Facilities

Production Technology Suppliers

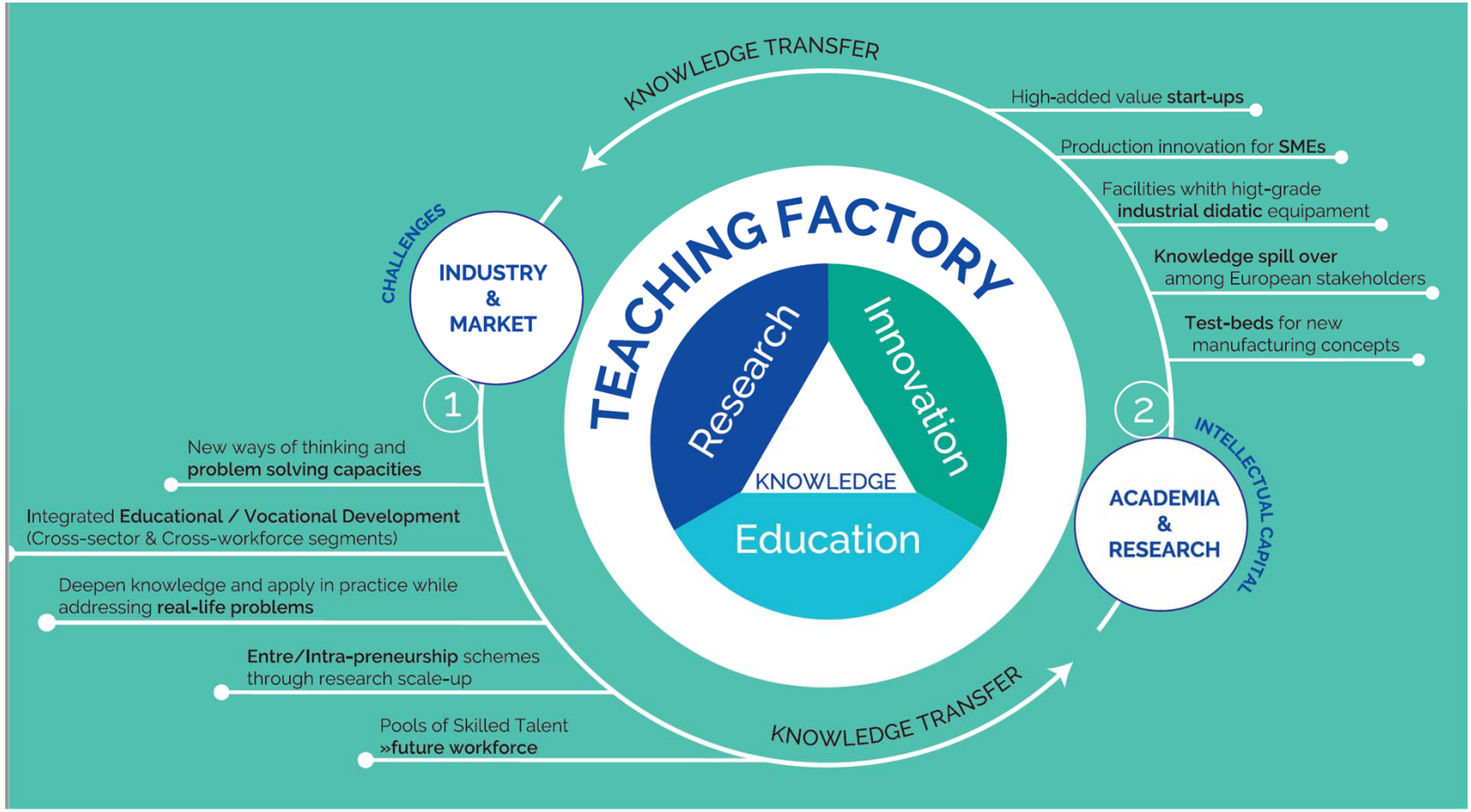
Cyber-physical systems and robotics solutions providers

Education & Training Ecosystem

Universities
Business Schools
Training Centers

The iMan Norte Hub has received funding from the European Union's Horizon 2020 research and innovation programme.

The Challenge of Education and Training



Source: MANUFUTURE VISION 2030

Industry and Innovation Lab

iilab INDUSTRY & INNOVATION LAB

Mission

Disseminate the state-of-the-art in advanced production technologies by **demonstrating** results from research, **experimentation** and advanced **training.**

The importance of understanding the potential of technology

iilab INDUSTRY & INNOVATION LAB

Know and Understand the Challenge of Digital Transformation Technologies

11 Modules

Objectives:

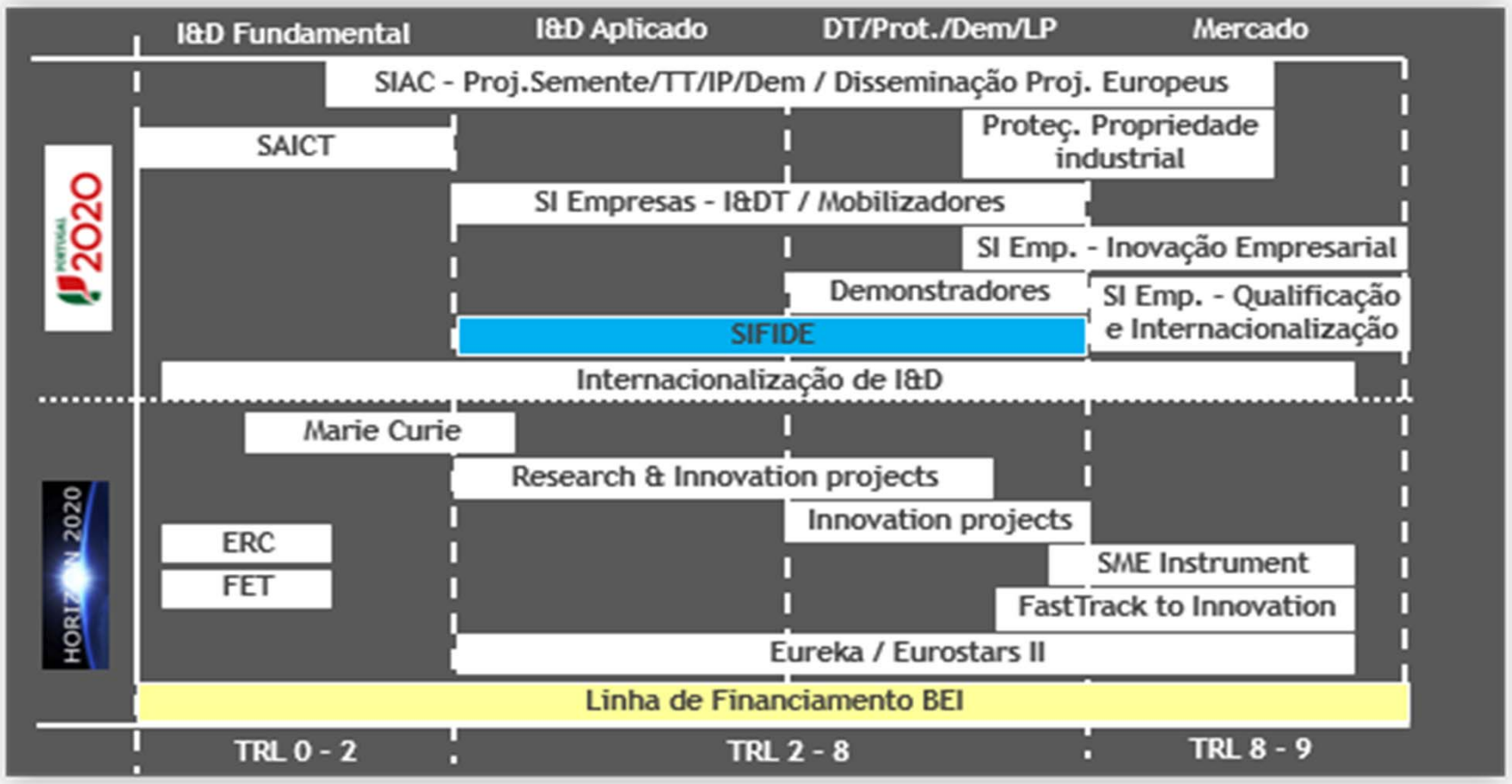
- To make known the themes involved
- Understanding the potential and implications of adopting each of the technologies
- Examples and Use Cases
- Experiencing technologies in key applications

Schedule:

- 2 modules per week in different days

INESCTEC

The Challenge of Funding and Financing



Fonte: Agência Nacional de Inovação

The Challenge of Funding and Financing: PT2020

Incentive Systems for companies (Areas)	Project Typologies	Contract
Research and Technological Development (R&TD)	Companies – R&TD	Consortium/Individual
	Pilots and Demonstrators	Consortium/Individual
	Large scale mobilizing projects	Consortium
	R&TD Teams in enterprises	Consortium/Individual
	Protection of intellectual and industrial property	Consortium/Individual
	R&TD Internationalisation	Consortium/Individual
	R&TD Voucher	Individual
Entrepreneurship and Business Innovation	Productive innovation for non-PME's	
	Productive innovation for PME's	
	Qualified and creative Entrepreneurship	
	Entrepreneurship Voucher	
Qualification and Internationalisation of SMEs	Internationalisation of SMEs	
	Qualification of SMEs	
	Internationalisation and Innovation Vouchers	

WORK DONE IN THE PAST (aligning EU and NR)
EXAMPLE 1

Development of a Highly Flexible Logistic System for Customized Products

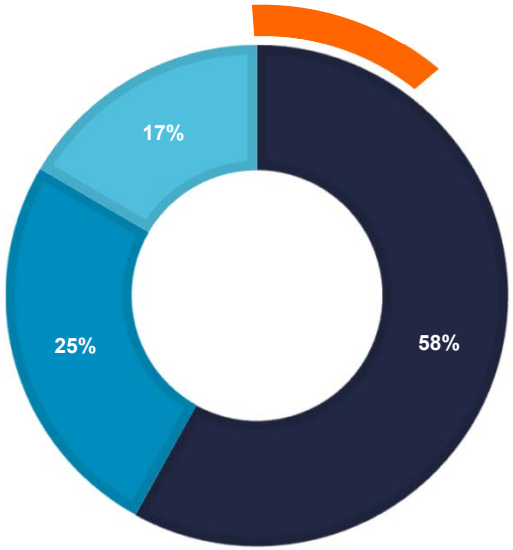
IPP Pilot Plant
Shoe Sector
Vigevano – Italy
Funded by National Funds

Cross Fertilization
Metalworking Sector (Company)
Demonstrator
Porto – Portugal
Funded with Structural Funds

INESC TEC Funding Model: 1€ FCT strategic funding = 6€

Diversification and sustainability

- National Competitive Funding
- European Competitive Funding
- R&D and Consulting services
- FCT Strategic Funding



2018

409 Projects

18M Funding

27% of project funding from international sources

The only Portuguese R&D institution developing projects in each and every societal challenge as defined for the Horizon Europe Research Programme

25+ years partnering with technology vendors and *lead users* in the shoe sector

National projects

SABE
Balancing/Scheduling Support System

AQUINOS

SIMULOG
Simulation and Operation

HSSF
High Speed Shoe Factory

FASCOM
Fashion Cognizant Manufacturig

FOOTURE 4.0
Roadmap of the footwear sector for the digital economy

FACAP
Shoe Factory of the Future

FATEC
High Tecnology for Shoe

SAPIR
Support System to the Integrated Planning for Shoe Prodution Networks

AGILPLAN
Agile System for Network Planning

SIBAP
Production Lines Balancing

ShoeID
RFID

ADIRA
Internal Logistics

1985 — **2018**

International projects

EUROShoe
Tools for the extended user oriented shoe enterprise

CICLOP
Computerised and Integrated Closing Operations

Patented

CEC-made-shoe
Custom, Environment, and Comfort made shoe

Patented

Fit4U
Framework of Integrated Technologies for User Centred Products

BEinCPPS
Cyber Physical Production Systems, integrate a Future Internet based machine-factory-cloud service platform

IKEA

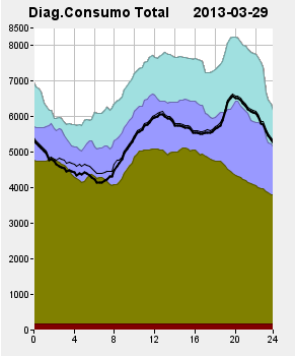
Simulation Pigment Furniture production line

IKEA Plants:
Portugal
Lithuania
Russia
Czech Rep.

1994
- 240 M € exports
- 80% of production

2017
- 2.000 M € exports
- 95% of production
- 75 + million pairs

A leading country in renewable integration – smart grids



Managing the Power System with large scale integration RES: Forecasting, reserve management, stability studies

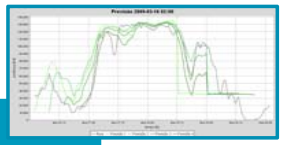
> 5100 MW instaled capacity in Portugal (7th in Europe)

World record: over 4 days with electricity out of hydro, wind, solar, biomass

Pilot for a Smart City: Évora – 33,000 consumers using Smart Grid technology

Portuguese Technology on advanced EMS/DMS tools (EFACEC), Smart Metering and Smart Grids solutions

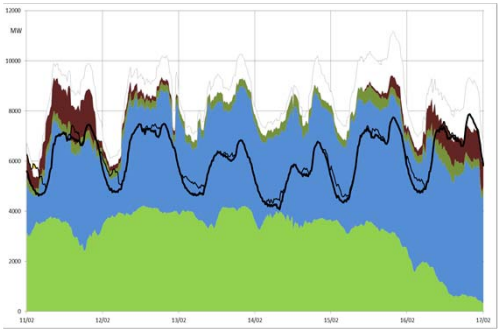
Prewind



Wind power forecasting services

Provides short-term forecasts up to 72 hours ahead, 4 times per day

75% of the wind power forecasts in Portugal

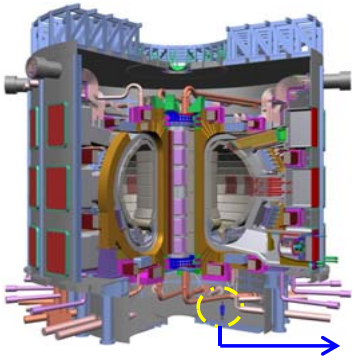


2016 Feb - renewables enough to feed all the country load and export during 106 h

From the physics lab to international markets

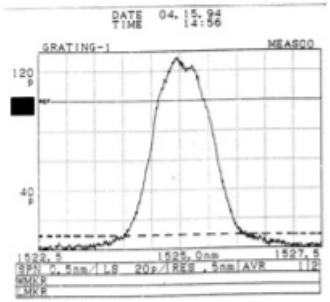
Photonics research started - **1985**

ITER reactor



Hundreds of FBG sensors to operate at cryogenic temperatures (up to 10 K)

First fiber Bragg grating fabricated in Portugal - **1994**



Acquisition by Multinational HBM - **2014**

INESC TEC spin-off in fiber optic sensing - **2004**

FiberSensing
bringing light to measurement

Siemens
Airbus
Thales
Porsche

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