

CDTI

"Líneas de ayuda a la I+D+i"

Sensores fotónicos miniaturizados para drones

BCN Drone Center. Moirà

SECPHO

07/Noviembre/2017

Light is everywhere



PHOTONIC IC VS ELECTRONIC IC

FEATURES	PIC	EIC
❖ Data Carrier	Photons	Electrons
❖ Type of components	Functional optical devices	Transistors
❖ No. of components integrated	Limited to a few hundred	Range into millions
❖ Substrate materials	Many different materials in a single chip	Fits nicely onto Silicon

Comparison Between Photonic ICs and Electronic ICs

Parameters	Photonic Integrated Circuits	Electronic Integrated Circuits
Mode of Function	Analog	Digital
Raw materials Used	InP, GaAs, LiNbO ₃ , Si, SOI	Majorly Silicon
Fabrication Technique	Photolithography	Photolithography
Primary Device (component)	No Particular Device is Dominant	Transistor
Data Transfer Rate	Data is Transmitted at the Speed of Light	Data is Transmitted at the Speed of Electron Flow

PHOTONICS

ADVANTAGES

- Lower energy consumption, distance independent.
- Higher bandwidth, Dense Wavelength Division Multiplexing (DWDM).
- Better scalability, no pin limits.
- In some cases, you simply cannot use electrical connections to satisfy the projected requirements.

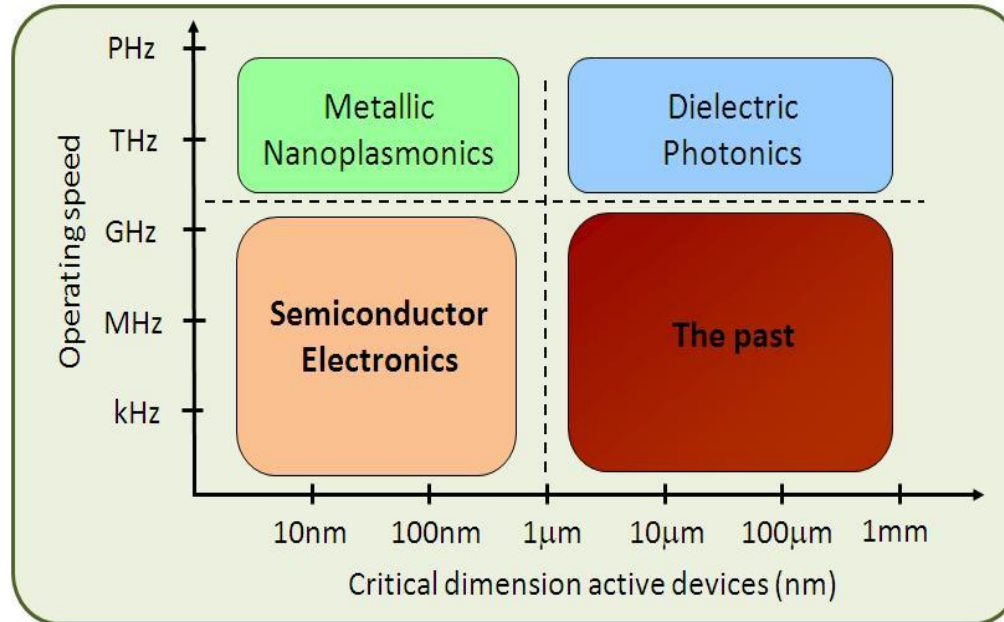
Disadvantages

- Industrial scaling
- Expensive
- Range of applications

PHOTONICS: Future is now

Why Plasmonics/Electric MMs?

PURDUE
UNIVERSITY



- **Plasmonics will enable an improved synergy between electronic and photonic devices**
 - Plasmonics naturally interfaces with similar size electronic components
 - Plasmonics naturally interfaces with similar operating speed photonic networks

M. Brongersma, V. Shalaev, Science (2010)

International Programs Europe Grants

Horizonte 2020

Representante Fotónica: fernando.martin@cdti.es

K.E.T.



Industrial mastering and deployment of Key Enabling Technologies (KETs)

What are KETs?

- Six strategic technologies
- Driving competitiveness and growth opportunities
- Contributions to solving societal challenges
- Knowledge- and Capital-intensive
- Cut across many sectors

- Nanotechnologies
- Advanced Materials
- Micro- and nano-electronics
- **Photonics**
- Biotechnology
- Advanced Manufacturing

European KET Strategy:

- EC Communications (2009)512 & (2012)341
- KET High-level Group

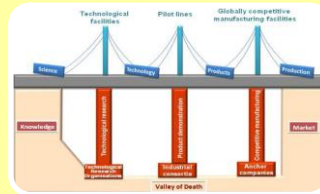
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Research and Innovation

Horizonte 2020

77.028 M€.

Programa Marco de Investigación e Innovación (2014-2020)



Excellent Science

Industrial Leadership

Societal Challenges

European Research Council (ERC)

Future and Emerging Technologies (FET)

Marie Skłodowska-Curie actions on skills, training and career development

European research infrastructures

ICT

Nanotechnology

Biotechnology

Advanced Materials

Advanced Manufacturing & Processing

Space

Access to Risk Finance

Innovation in SMEs

Health, demographic change and wellbeing

Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy;

Secure, clean and efficient energy;

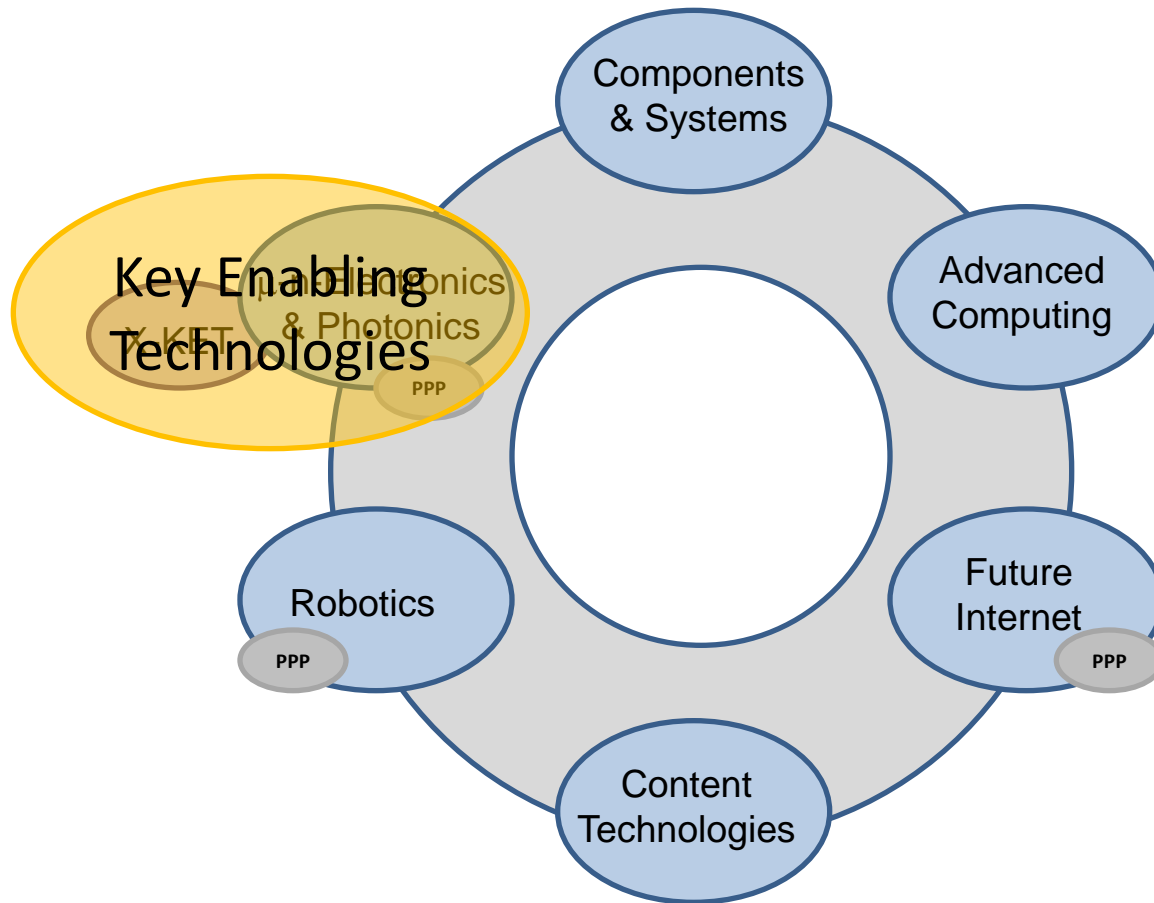
Smart, green and integrated transport;

Climate action, environment, resource efficiency and raw materials

Europe in a changing world-Inclusive, innovative and reflexive societies

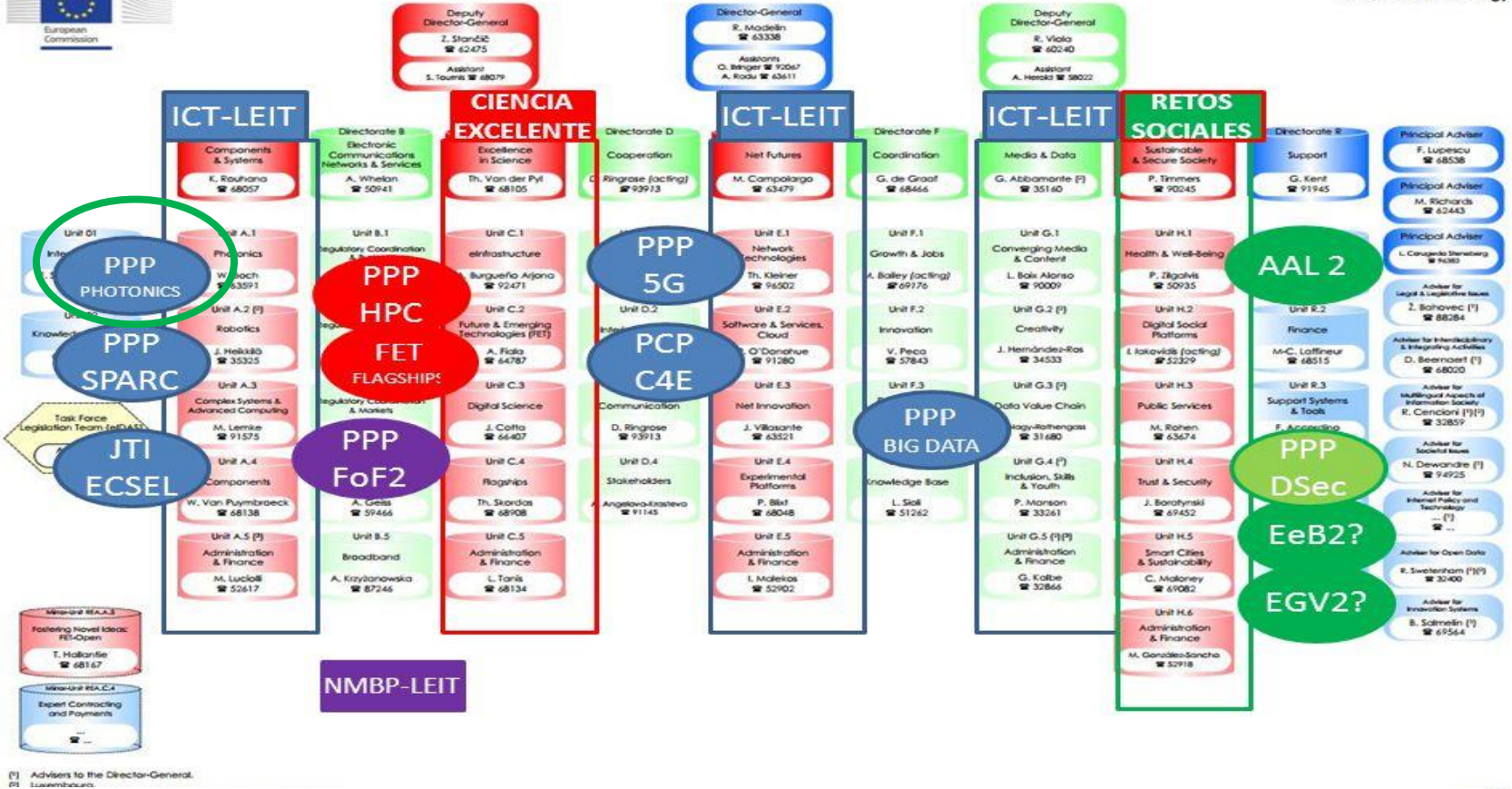
Secure Societies: Protecting freedom and security of Europe and its citizens

Industrial Leadership.- ICT :



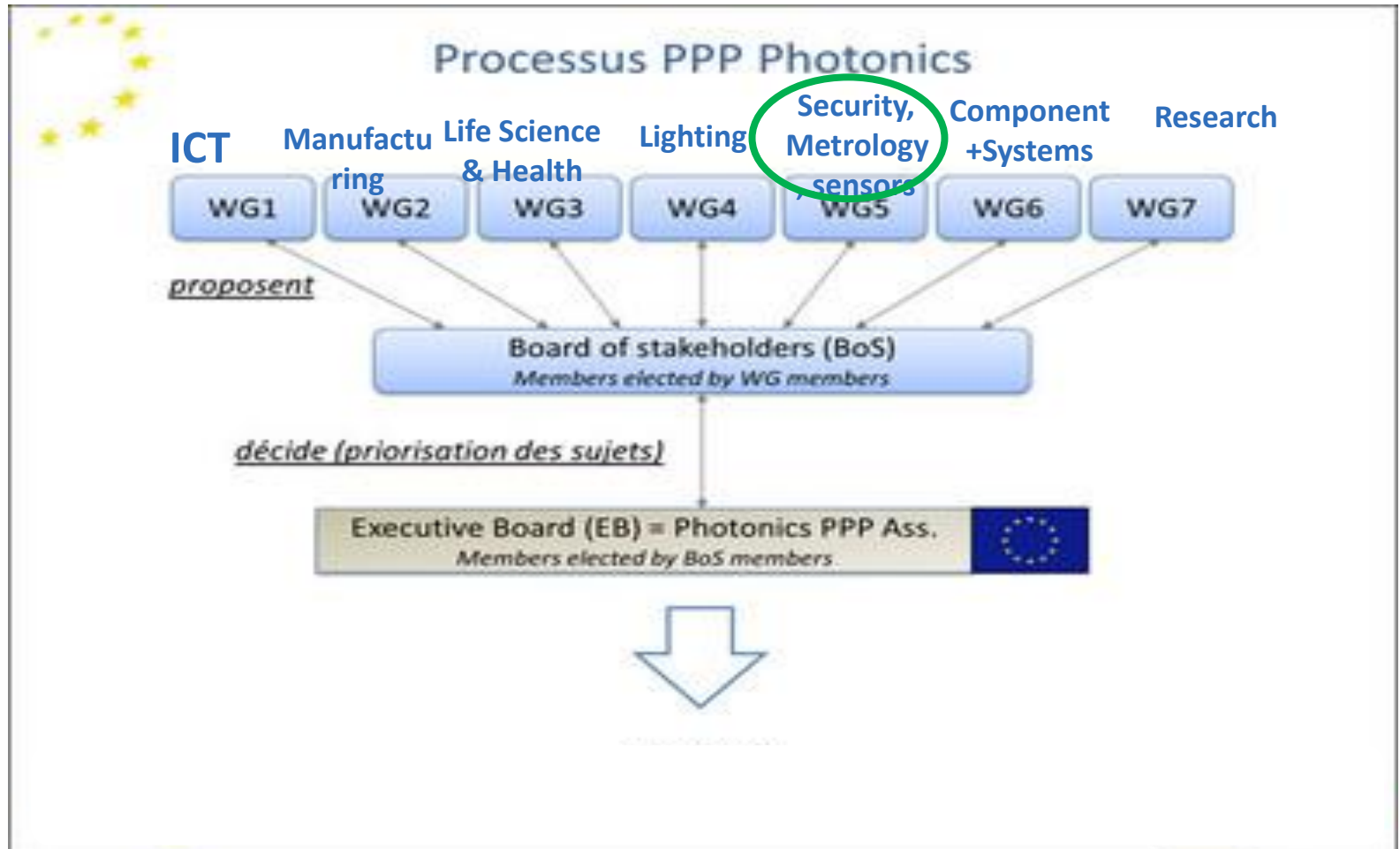
PPP Photonics 700M€.

DG CONNECT
Communications Networks,
Content & Technology



[?] Advises to the Director-General.
[?] Luxembourg.

PPP Photonics 700M€.



Plataforma Tecnológica Fotónica 21



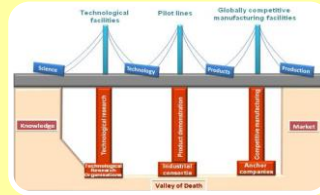
- Public-Private structure.
- Support to define Spain R&D+i Strategy
- Prioritize technological needs
- Led by Industry
- Lining agents strategies and concentrate R&D+i efforts
- Coordinate activities.
- Promote technological advances



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Programas Nacionales Financiación Nacional

CDTI

El CDTI y la innovación empresarial



Ministerio de Economía, Industria y Competitividad

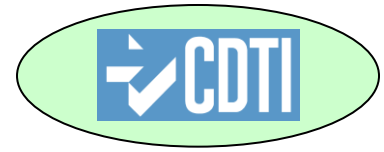
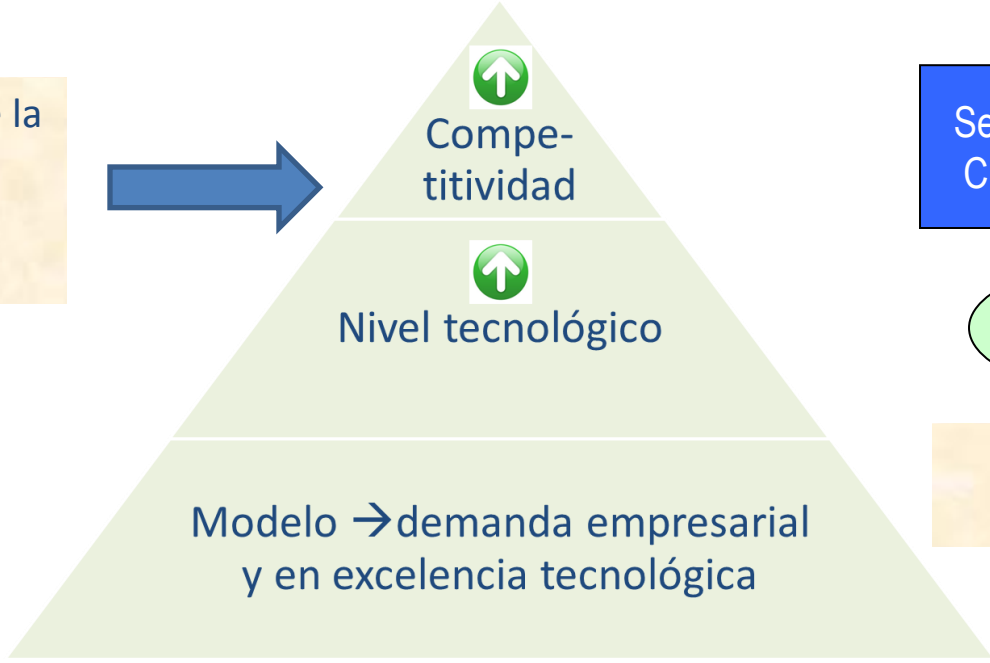
Secretaría de Estado de Economía y Apoyo a la Empresa

Secretaría de Estado de Comercio

Secretaría de Estado de I+D+i

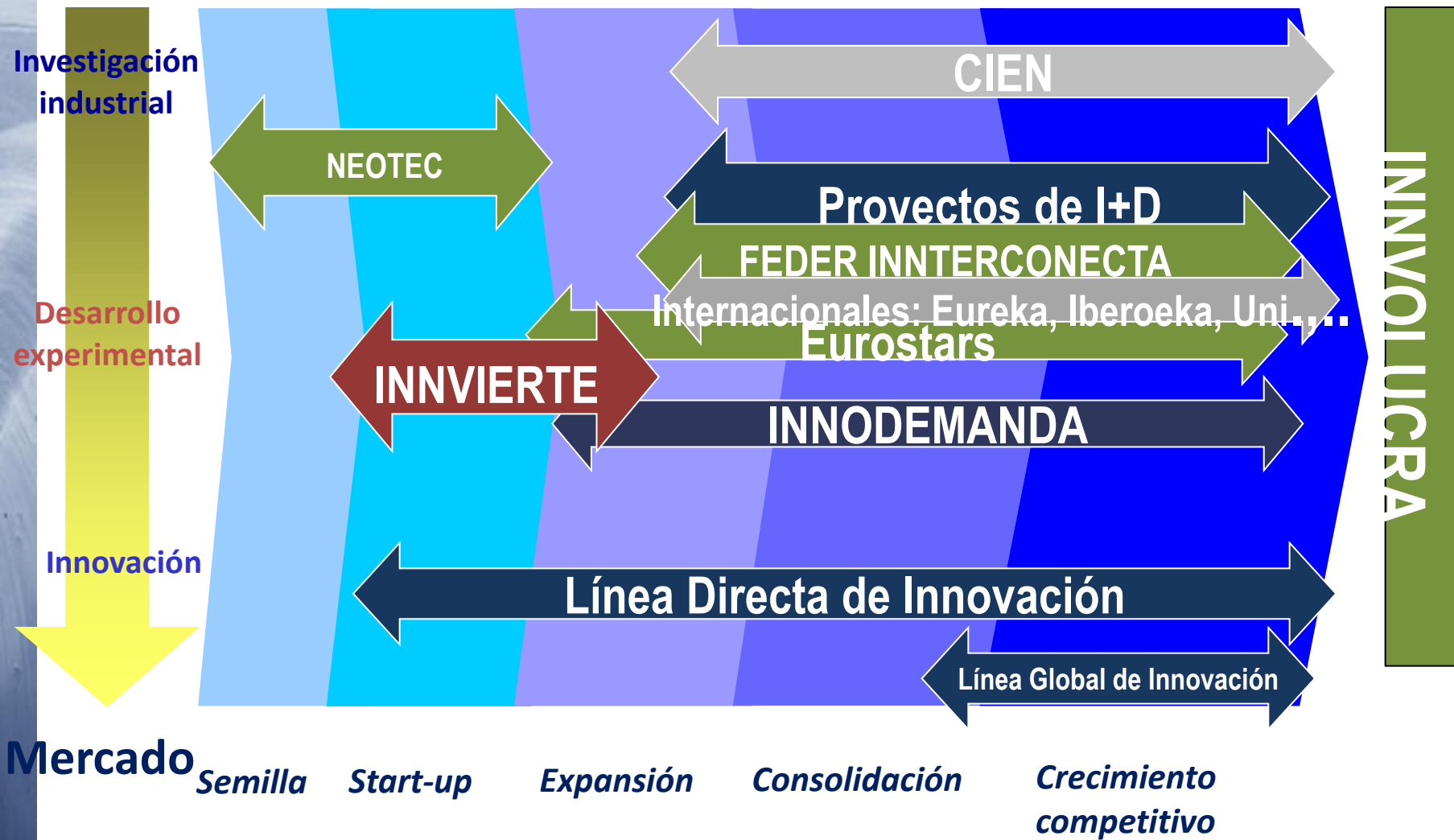
Secretaría General de Ciencia e Innovación

Agente de financiación de la innovación empresarial (LCTI del 1 de junio de 2011).



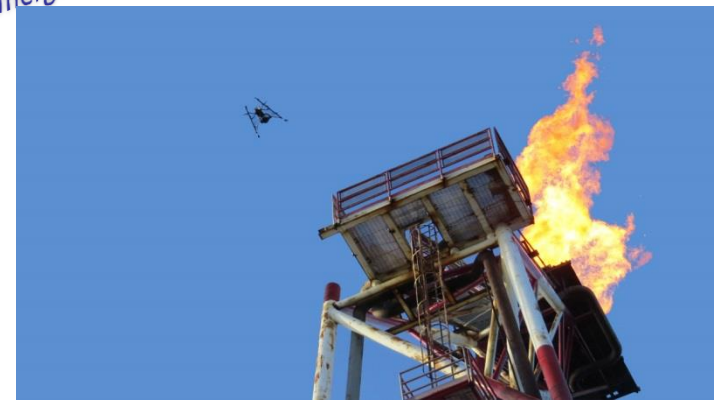
Entidad Pública Empresarial (1977)

Líneas de ayuda CDTI y ámbitos de actuación.



Ejemplos

- Sistema de visión artificial e inteligente para anticiparse a colisión
- Sistema de giroestabilización
- Monitorización remota de trasvase de petróleo
- Monitorización de medioambiente con sistemas embebidos en UAV
- Análisis del estado geomorfológico en suelos
- Agricultura de Precisión
- Radar de apertura sintética + LIDAR: de puntos o de medición de fase
- Piloto Automático: posición (sensores+navegación), energía, alertas, etc
- Aterrizaje y lanzamiento autónomo
- Automatización para movilidad autónoma
- Soporte a comunicaciones para operativos móviles de emergencias
- Inspección en túneles.
- Aplicación Logística
- Teledetección aérea
- ETC.



EUREKA CLUSTERS

Fechas de fin de presentación



Evolución CATRENE

PO:

FPP:



Project Outline: **20/09/2017**

Full Project Proposal:



PO:

FPP:

Co-Summit:



CPP1: 24/mayo/2017

Proposers Day : 20/junio/2017



PO/FPP:

PO/FPP:



PO:

FPP:

WEB CDTI

CDTI Centro para el Desarrollo Tecnológico Industrial

Iniciación - Financiación - Innovación

english / euskara / català / galego

¿Qué es el CDTI

Financiación empresarial

Servicios

Información Corporativa

Publicaciones

Área Privada

Presentación de solicitudes de financiación

Sede Electrónica

Área de colaboración para

Redes Capital Riesgo

Comunidades Autónomas

Red de Nodos I+D+i

isíguenos!
social media
www.cdti.net

innvierte

Le ASESORAMOS
para presentar su PROPUESTA

Financiación I+D+i

Solicitud de proyectos on-line

si de la I+D+i

planes de euros

Comunidades Autónomas

Red de Nodos I+D+i

EUROPEAN UNION FEDER 2014-2020 PIDI portal de la transparencia

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C/ Col 4 - 28001 Madrid

Aviso legal
Conforme XHTML 1.0 | CSS 2.0
Contacto
Web optimizada para 1024x768

150 NODOS INFO

Redes sociales

Envíenos su solicitud

red pidi+

Puntos de Información sobre I+D+i un proyecto innovador sin ayuda

www.cdti.es/pidi

ENVIAR SOLICITUD ... PINCHA AQUÍ

CDTI CENTRO PARA EL DESARROLLO TECNOLÓGICO INDUSTRIAL

Social Media Hub

CDTI Oficial www.cdti.net

Smartphone/tablet ready

¡GRACIAS POR SU ATENCIÓN!

Luis Maeso de la Morena
Dpto. Energía, Transporte Fabricación y Sociedad Digital
Dirección de Promoción y Cooperación