IMFP16-UAM

CDTI

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UAM/ 08-04-2016

Outline

- CDTI and its role at Large Scientific Facilities
- Large Scientific Facilities: market, benefits, ….
- Public support for industrial participation at Large Scientific Facilities
- Conclusions

CDTI and its role at Large scientific facilities (1)

Who we are

CDTI (Centre for the Development of Industrial Technology) is a public entity, **under the Spanish Secretariat of Research, Development and Innovation**, that supports industrial research and innovation in Spanish companies.

- Created in 1977; 320 employees and Headquarters in Madrid.
- Network of offices abroad: the United States, Japan, China, Korea, India, Brazil, Mexico, Chile, Belgium, Morocco, South Africa, Egypt, Algeria, Canada, Argentina, Colombia, Taiwan, Malaysia, Australia, Singapore, Indonesia, Thailand, U.A.E., Turkey, Israel and Russia.

CDTI HQ office, Madrid

Our main Objectives are:

- Financial and economic-technical assessment of R&D projects implemented by companies.
- Fostering Spanish participation in international technological co-operation programs.
- Supporting technology transfer.

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CDTI and its role at Large Scientific Facilities (2)

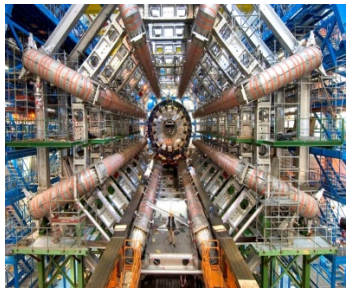
- Promotes the participation of Spanish Industries in Large Scientific Facilities such as CERN, ITER, ESRF, ESS , ESO, XFEL and ILL.
- Industrial Liaison Officer (ILO). Official contact point between the domestic industrial sector and the large R&D facilities.

  All significant research facilities have a network of ILOs (one ILO per Member or Associate State).
- Advisor to the Spanish Delegation the the Finance, Administrative and Purchasing Committees of CERN, ESRF, XFEL, ILL, ESO, ITER

CDTI is the Spanish ILO for **CERN**, **ESRF, ESS, ILL, XFEL, F4E and ESO**

CDTI and its role at Large Scientific Facilities (3)

- **Business Opportunities**: information on opportunities for Industry.
- **Collaborations**: support to R&D collaboration agreements and technology transfer between firms and research organizations.
- **Funding**: specially targeted to R&D projects for research facilities and support during the preparation process of a call for tender (APO)



CERN ESRF ess EUROPEAN SPALLATION SOURCE European XFEL ITER FUSION FOR ENERGY ILL NEUTRONS FOR SCIENCE ESO

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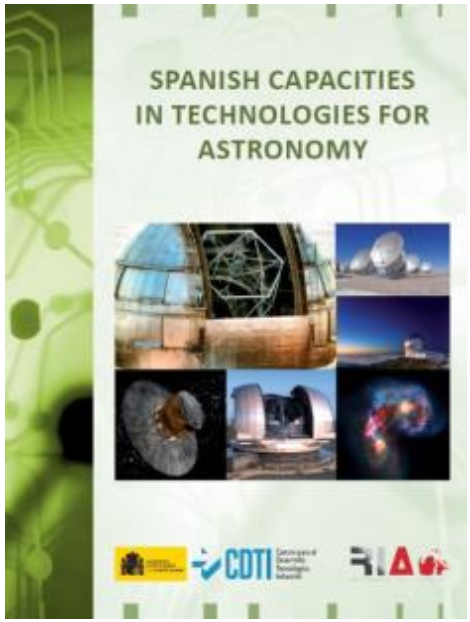
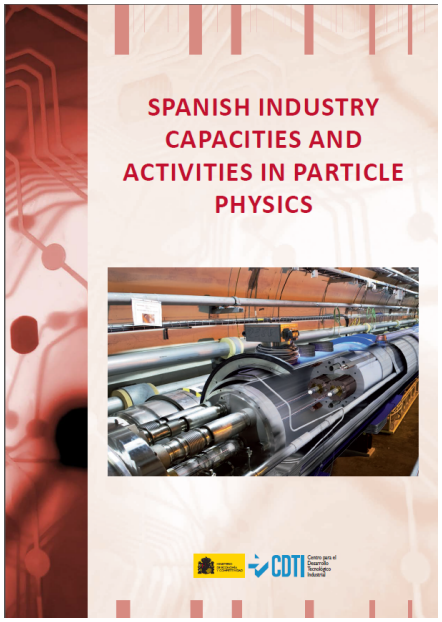
CDTI and its role at Large scientific facilities (4)

CDTI has produced catalogues of capacities in Astronomy, Particle Physics and Fusion, including company profiles and technology vs company availability





Electronic versions available at www.cdti.es

[Financiación empresarial/Internacionalización de la I+D+i/Industria de la Ciencia/Grandes Instalaciones]

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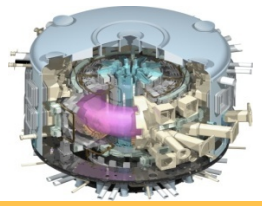
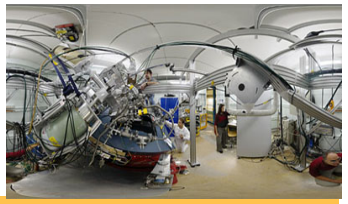
Large Scientific Facilities (1): A global market for industry.

- **Budgets increased or unchanged despite the economic crisis.** Market is not suffering the same dramatic situation as other sectors.
- **Important investments in the coming years.** Particle physics, synchrotron light sources, neutron sources, free electron lasers and irradiation of materials for fusion projects.
- **High technological added value and internationalization of the company.** Working with this research facilities is the best quality label for your products and services.
- **A steady market.** Most of the technologies are common for several scientific facilities (sc magnets, vacuum, cryogenics, RF, etc). Projects in different phases (definition, design phase, construction, operation) provide continuous activity for Industry.
- **Public support.** Public initiatives improve the industrial return on investment.







An attractive market for Industry

Large Scientific Facilities (2): A global market for industry.

SOME FIGURES

- Large potential market: 26 Domestic Scientific and Technological Facilities (ICTS), 600 European Large Scientific Facilities (total budget 7.500 M€/ year), non-European International Large Scientific Facilities

- Spain contributes to 14 International Large Scientific Facilities and 26 Domestic Scientific and Technological Facilities (ICTS)

- CDTI manages the industrial return of the Seven Major International Large Scientific Facilities.

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Large Scientific Facilities (3). Companies

Companies show different profiles and come from multiple sectors

Core business: space, aeronautics, energy, civil infrastructures, industrial equipment

Company size: varies depending on each case: e.g. large companies over SMEs at ITER and ESA; SMEs over Large companies at CERN; equal distribution at ESO

***Science* sector**: excellent performance in multiple facilities, where previous experience in other research facilities is an asset in terms of references and knowledge of the working environment

Large Scientific Facilities (4). Benefits of CERN: Scientific

At CERN physicists and engineers are probing the fundamental structure of the universe. It was one of Europe's first joint ventures and now has 21 member states

Príncipe de Asturias award, 2013

CERN, along with Peter Higgs and François Englert, received the award for "the theoretical prediction and experimental detection of the Higgs boson."

Instituto	Prod. Científica
IFIC	14,16%
CIEMAT	9,25%
IGFAE	8,38%
UB	7,23%
UCM	6,65%
UGR	6,36%
IFAE	6,07%
IFT	5,78%
UZ	5,20%
UIB	3,76%
UPV	3,76%
US	3,76%
CNA	3,18%
UAM	3,18%
IEM	2,60%
IFCA	2,60%
UH	1,73%
UO	1,73%
USAL	1,45%
IMB	1,16%

High scientific activity in Spain in Particle Physics

- Over 20 research institutes working in physics and detector instrumentation
- High experience in accelerators: science and technology

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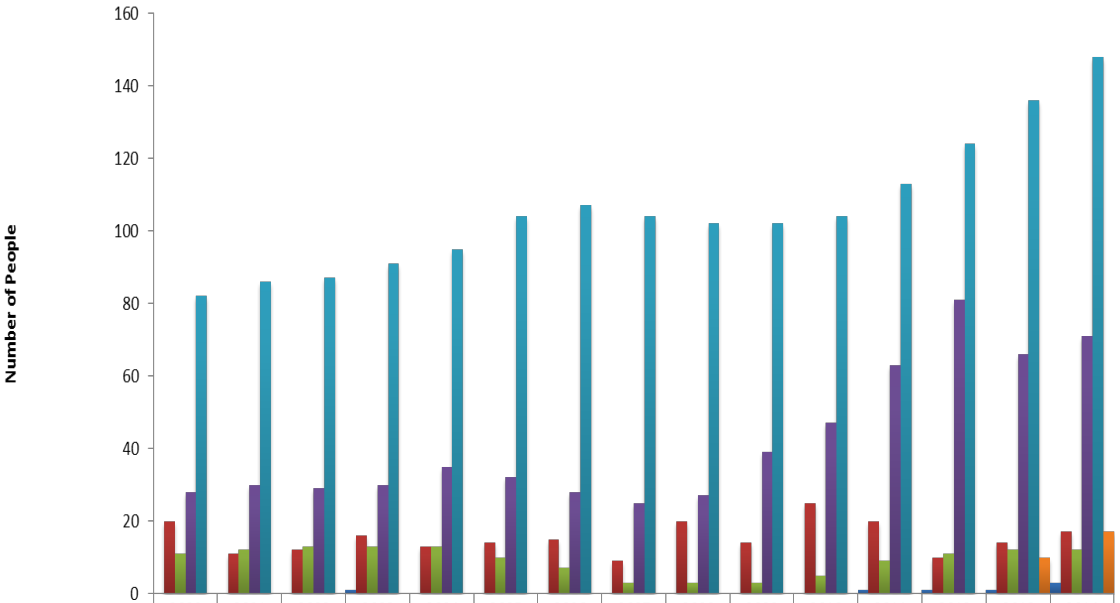
Large Scientific Organizations (5). Benefits of CERN: Technologist formation

FTEC (Formación en las TEcnologías del CERN) is a new initiative (CIEMAT/ MINECO-CERN) for training of young Spanish engineers and applied physicists on key CERN technologies (40 engineers 2015 and 2016).



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Admin Students	0	0	0	1	0	0	0	0	0	0	0	1	1	1	3
Technical Students	20	11	12	16	13	14	15	9	20	14	25	20	10	14	17
Doctoral Students	11	12	13	13	13	10	7	3	3	3	5	9	11	12	12
Fellows	28	30	29	30	35	32	28	25	27	39	47	63	81	66	71
Staff	82	86	87	91	95	104	107	104	102	102	104	113	124	136	148
TTE	0	0	0	0	0	0	0	0	0	0	0	0	0	10	17

Spain and CERN aim to strengthen the presence of Spanish people at CERN. CERN offers opportunities through several training programmes:

- ✓Technician Training
- ✓Technical Students
- ✓Marie Curie
- ✓Doctoral Student
- ✓Admin. Students
- ✓Summer Students
- ✓Fellowships

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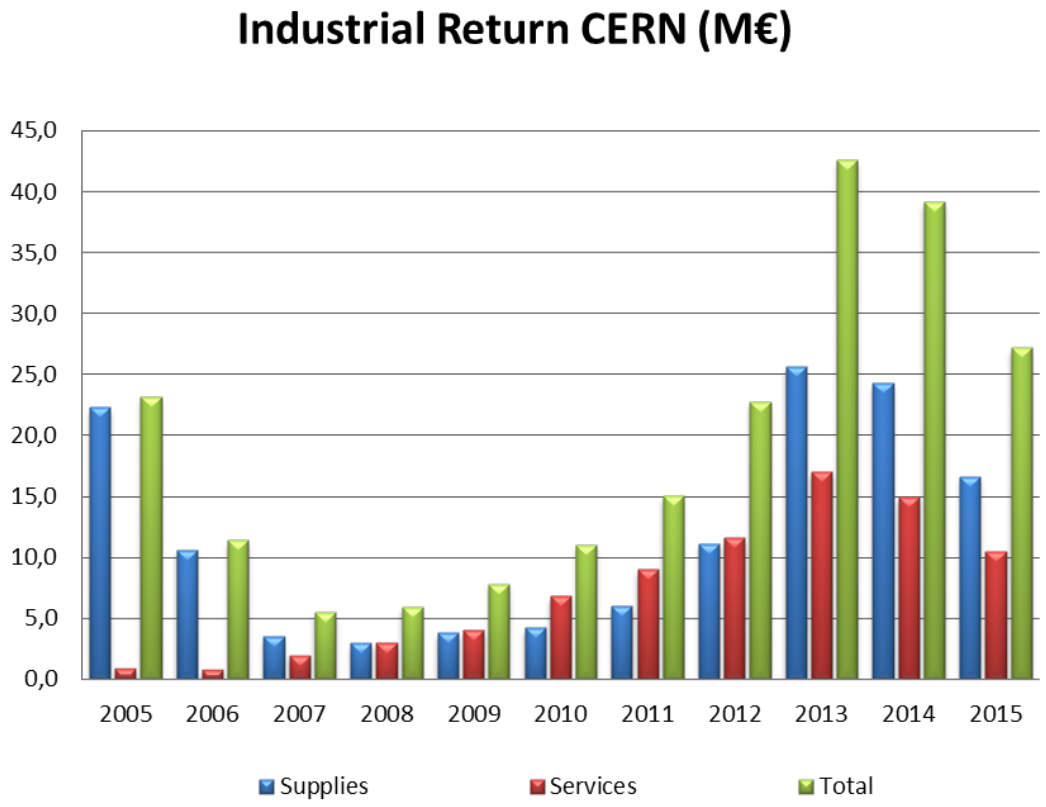
Spain in Large Scientific Organizations (6). Benefits of CERN: Industrial Return

In 2015, Spanish Industry was awarded 26,5M€ in contracts in areas of mechanical engineering, control systems, magnets, power systems, vacuum equipment, electronics, civil and electrical engineering, etc. CDTI has a ILO permanent at CERN.



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Spain in Large Scientific Organizations (6). Benefits of CERN: new business opportunities****

CERN's purchasing expenditure will reach 650 M€ in 2017 and 2018 and a significant share is devoted to internal R&D in promising technologies

Outstanding new technologies developed at CERN:

- Software developments led to Internet.
- Hadrons research with high potential in medical applications.
- Madical Imaging.

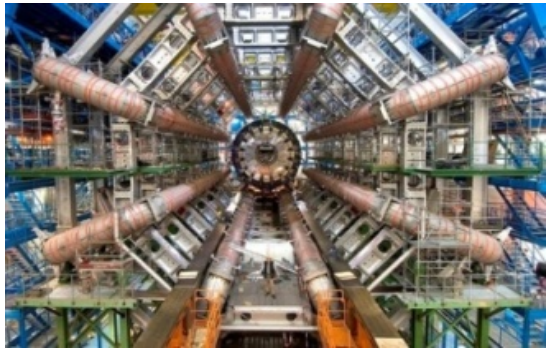
Future areas of opportunity: mechanical engineering, magnets, power systems, vacuum and cryogenics equipment, RF, etc.

- HL-LHC (High Luminosity LHC Upgrade): 850 M€ in 2016-2022
- The new accelerators & infrastructures LINAC 4, HIE-ISOLDE and Injectors Upgrade PS, SPS

Spain in Large Scientific Organizations (7). Benefits of CERN: success cases

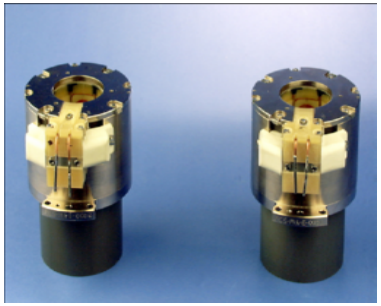
About 35 Spanish companies participated in the construction of the LHC

CERN/ATLAS - Cryostat

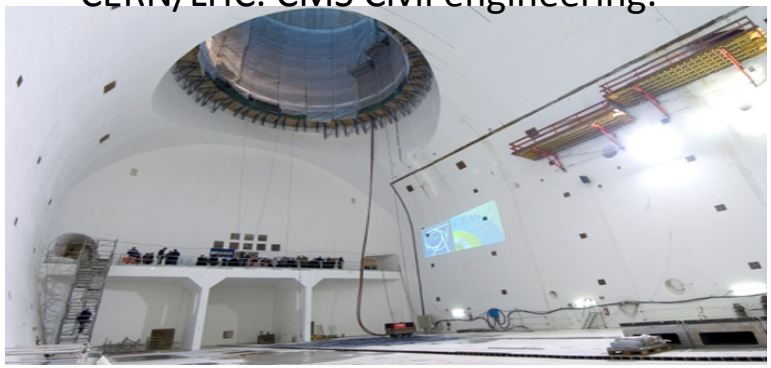


CERN/LINAC 4

CERN/ LHC – Correct magnet



CERN/LHC. CMS Civil engineering.



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- Spain in Large Scientific Facilities
- **Public support for industrial participation at Large Scientific Facilities**
- Conclusions

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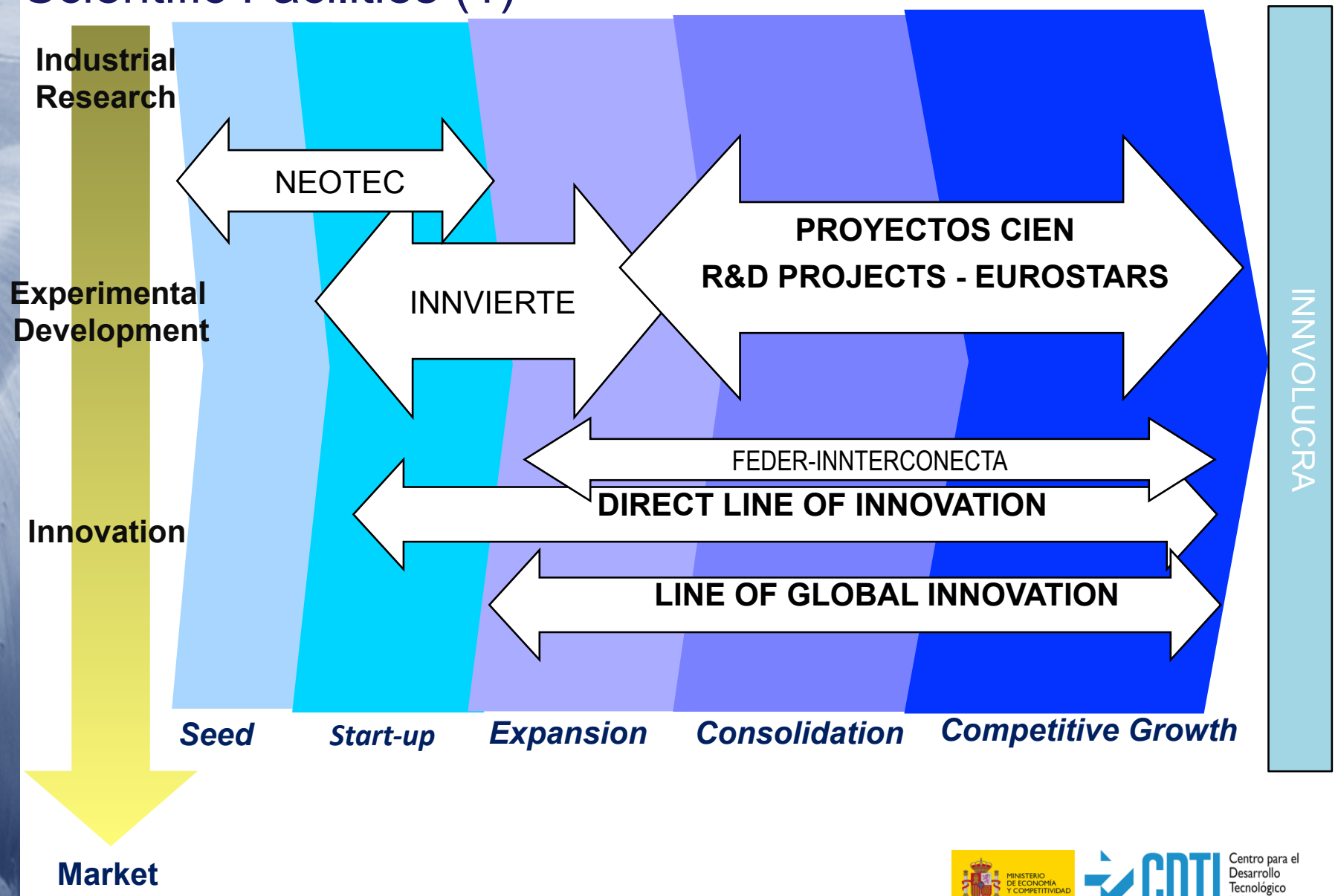
Public support to the industrial participation at Large Scientific Facilities (1)



Public support to the industrial participation at Large Scientific Facilities (2)

R&D Projects

- Goal: To create a new production process, product or service or a significant improvement to existing ones.
- Applicants: A single company or a consortium. Research Labs and Institutes as collaborators or subcontractors.
- All technological areas and industrial sectors.
- Permanent open call.
- Financing 75% - 85% of the total project with a loan (fixed rate euribor) + non-refundable rate (30%).
- Minimum bugdet per company: 175.000 €.

APO (Support in the preparation process of a call for tender for Large Scientific facilities) –INNVOLUCRA Program

- Goal: Foster Spanish industrial participation in tenders for Large Scientific Facilities
- Applicants: Bidders to Large Scientific Facilities to which Spain contributes (ESS, CERN, ITER, ESO, ESRF, ILL,..etc)
- Loans of up to 30.000€ (fixed rate euribor). Only refundable if the applicants are awarded with the contract, the bid is technically disqualified or the price exceeds the awarded price by more than 25% .

Public support to the industrial participation at Large Scientific Facilities (3)

Business Opportunities

- Distribution and technical information on call for tenders.
- Organization of company meetings at Large Scientific Facilities.
- Follow up on the awarded contracts.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Neotec Capital Riesgo
Comunidades Autónomas
Red de Puntos PI+D+I
Un puente al nuevo Programa Marco: Horizonte 2020
Zaragoza, 29 Nov. 2012
http://www.cdti.es/6ConferenciaPM
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Solicitud de proyectos on-line
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Última Hora
Agenda CDTI
21/12/2012
El Consejo de Administración del CDTI aprueba 177 proyectos de I+D empresarial y ayudas a empresas de base tecnológica
17/01/2013
La industria española obtiene 14 contratos para participar en el proyecto ITER
16/01/2013
Se abre la primera llamada conjunta para la presentación de propuestas Eureka entre varios países de la iniciativa Eureka.
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CONCLUSIONS

1. **Spanish participation in Large Scientific Organizations generates both scientific return for the users and economic return for industry. Win Win Scheme.**

2. **CDTI, as the Spanish Innovation Agency, supports Spanish industry in its participation in Large Scientific Organizations (CERN, CTA,….). R&D funding available and support from CDTI in the preparation of call for tender.**

3. **Spanish industry has achieved very good return on Spanish public investments in Large Scientific Organizations thanks to its technological level and competitiveness.**

4. **Large Scientific Organizations has contributed to scientific excellence, industrial innovation, new business opportunities, technologist formation and knowledge society in Spain**

5. **Large Scientific Organizations will offer outstanding opportunities for Spanish scientist and industry in the coming future.**

Thank you for your attention

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