Challenges to the stimulation of technology transfer in Portugal

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1) **Incentive Schemes to Foster Industry-Led Collaborative R&D**

   - **Financial Incentives: Demand-Based Dynamics**
   - **Consortia Complexity**
   - **Newcomers and Start-ups**

2) **New Instruments to Act on Knowledge Transfer: The role of interface entities**

3) **People: Mobility and Retention of Qualified Human Resources**

4) **Conclusions**
Working on Knowledge Transfer: Incentives to Industry-led collaborative R&D
### National Financial Incentives to Industry-Lead R&D

<table>
<thead>
<tr>
<th>Year</th>
<th>Scheme</th>
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<tbody>
<tr>
<td>1995</td>
<td>QCA III</td>
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<tr>
<td>1999</td>
<td>QREN</td>
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<td>2000</td>
<td></td>
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<td>2006</td>
<td>PT 2020</td>
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#### Financial Incentive Scheme

<table>
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<tr>
<th>Collaborative schemes</th>
<th>Management agency (at present)</th>
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<tr>
<td>Collaborative R&amp;D projects</td>
<td>ANI</td>
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<td>Mobilizing R&amp;D projects</td>
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<td>Demonstration projects and pilot lines (collaborative and individual)</td>
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<td>Integration of R&amp;D teams in companies (collaborative)</td>
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<td>Individual schemes</td>
<td>IAPMEI</td>
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<td>Individual R&amp;D projects</td>
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<td>Integration of R&amp;D teams in companies (individual)</td>
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<tr>
<td>“Investment Contract Scheme” (RCI)</td>
<td>AICEP Portugal Global</td>
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<td>RCI R&amp;D projects (collaborative and individual)</td>
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</table>
• Demand for collaborative funding schemes has increased from QREN to PT2020
• Demand for individual funding schemes has decreased from QREN to PT2020 (and ~80% of current individual projects involve subcontracting entities)
• Proposals to collaborative R&D during the 4-year period of PT2020 reached 72% of the submitted proposals to collaborative R&D for the whole QREN period (from 2015 to 2016 the demand for collaborative schemes has more than doubled)
• Number of entities engaged in proposals submitted to collaborative funding schemes in average: 2,8/proposal (QCA III) < 3,1/proposal (QREN) < 3,6/proposal (PT2020, until 2017)

• PT2020 has attracted collaborative projects of a higher scale – growing capacity of the National Innovation System to cooperate around common goals
Share of different consortia compositions in proposals submitted to all financial incentives to collaborative R&D

Increasingly enlarged and diversified consortia
MOBILIZING PROJECTS

- QCA III (2001, 2002): 10 funded projects
- QREN (2010): 14 funded projects
- PT2020 (2016): 14 funded projects

Total investment: 121 MEUR
Public funding: 84 MEUR

Total investment: 107 MEUR
Public funding: 71 MEUR

Approved funding to mobilizing programs by type of participant
Newcomers and returning companies in proposals under all financial incentives to business R&D

- **2000-2013**: Enlargement of the companies covered by the programme (2 framework programmes)
- **2008-2016**: 300 new companies/year (48% per year) in average
- **PT2020 (2014-2016)**: a less intensive expansion but a higher consortia complexity – consolidation stage?

![Graph showing the percentage of newcomers and returning companies over the years.](image-url)
% Newcomers with < 5 years of existence – proposals to all financial incentives: the attractiveness of the programme to start-ups

- QREN (2007-2013): 50% of the new companies at the programme were less than 5 years old
- PT2020 (2014-2016): More than 40% of the new companies were less than 5 years old
- Since 2008, 40% to 60% of the new companies at the programme each year were less than 5 years old
New instruments: the role of INTERFACE entities
Technological Infrastructures by district location (headquarters and other facilities)
1200 start-ups were declared by 40 national incubators

Year of startup creation

Startups


Other types   Innovative   Innovative through technology   Innovative through science

4300 jobs were created in the start-ups as declared by the national incubators

Year of startup creation

Jobs


Other types   Innovative   Innovative through technology   Innovative through science
Designing new funding instruments...

- Technology interface centers
- Competitiveness clusters
- Collaborative Labs
- “Suppliers’ club”
NEW INSTRUMENT - THE ROLE OF INTERFACE ENTITIES

- LARGE COMPANIES
- MID SIZE TECH. COMPANIES
- MID SIZE COMPANIES
- SMALL TECH COMPANIES
- MICRO AND SMALL SIZE COMPANIES

DIFERENTIATION OF INTERFACE SERVICES AND RELATED LEVEL OF SOFISTICATION

- UNIVERSITIES
- RESEARCH UNITS
- INTERFACE ORGANIZATIONS
- ENGINEERING CENTERS
- SECTORIAL TECH. CENTERS
- INCUBATORS
- SCIENCE PARKS

TECHNOLOGICAL INTERFACE CENTERS (CIT)
**Technology Interface Centers: acting domains and measures**

- **Funding reinforcement**
  - Multiannual funding
  - Funding for activities
  - Support to the creation, reinforcement and/or strategic redirection of interface structures
  - Equipments

- **Strengthening Human Resources**
  - Professors and researchers from Higher Education Institutions
  - Research in the scope of PhD thesis
  - Young technicians training
  - International exchange

- **Development of new competence areas**
  - Industrial energy efficiency
  - Circular economy
  - “Indústria 4.0”

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**Fontes de Financiamento que suportam as medidas do programa de apoio aos Centros de Interface Tecnológico**

- **FITTEC**
- **Fundos Europeus Estruturais e de investimento**

**4-measures calls for proposals under preparation**

Call for proposals for capacity building under preparation with the Regional Operational programmes
NEW INSTRUMENT - THE ROLE OF INTERFACE entities

LARGE COMPANIES
MID SIZE TECH COMPANIES

MID SIZE COMPANIES
SMALL TECH COMPANIES

MICRO AND SMALL SIZE COMPANIES

DIFERENTIATION OF INTERFACE SERVICES AND RELATED LEVEL OF SOFISTICATION

UNIVERSITIES
RESEARCH UNITS

INTERFACE ORGANIZATIONS

ENGINEERING CENTERS

SECTORIAL TECH. CENTERS

INCUBATORS
SCIENCE PARKS

COLLABORATIVE LABORATORIES

Call for proposals for the classification of national entities as collaborative labs – CURRENTLY OPEN
NEW INSTRUMENT - THE ROLE OF INTERFACE entities

PEOPLE AND KNOWLEDGE CIRCULATION

LARGE COMPANIES
MID SIZE TECH. COMPANIES

MID SIZE COMPANIES
SMALL TECH COMPANIES

MICRO AND SMALL SIZE COMPANIES

DIFFERENTIATION
OF INTERFACE
SERVICES AND
RELATED LEVEL
OF SOFISTICATION

UNIVERSITIES
RESEARCH UNITS

INTERFACE
ORGANIZATIONS

ENGINEERING
CENTERS

SECTORIAL TECH.
CENTERS

INCUBATORS
SCIENCE PARKS
People: mobility and retention of qualified Human Resources
Staff dedicated to R&D as declared by companies engaged in proposals submitted to financial schemes to collaborative R&D managed by ANI

The majority of companies engaged in the proposals submitted to financial incentives to industry-led R&D does not employ R&D staff
**Evolution of the R&D Personnel per Activity Sector**

Researchers (FTE) engaged in R&D activities per activity sector

* Provisional values

Source: DGEEC/MCTES – IPCTN
Conclusions
Main conclusions:

• The system seeks collaborative actions – a success story needing a governance model more aligned with an open innovation approach

• But still, incentives are needed to foster the linkages of the Portuguese Innovation system: enable the companies to cooperate at a more extensive level (catching-up with more innovative economies)

• Attraction and retention of highly qualified R&D people in business sector must be a priority

• The role of interface and collaborative entities – competence and knowledge circulation structures