

# STRATEGIC PLAN

Term 2016-18

December 2016



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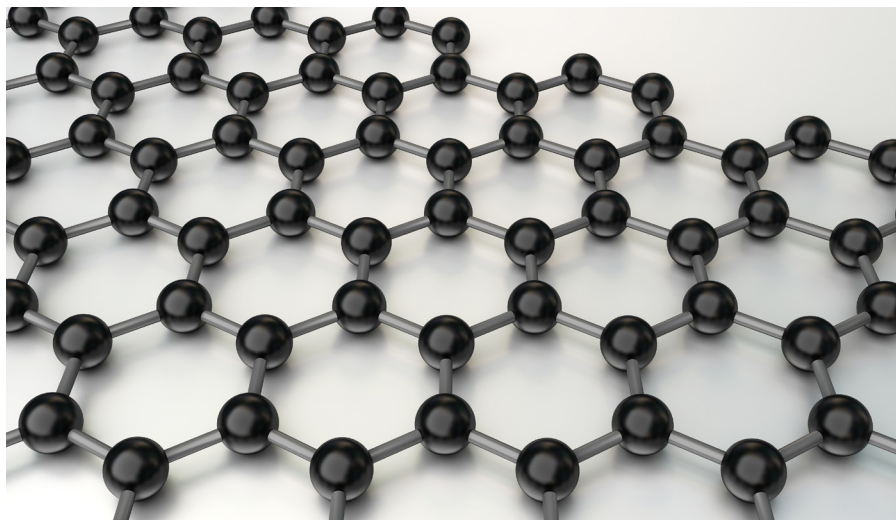
# INTRODUCTION

# 1. INTRODUCTION

This document contains an executive, English version of the Strategic Plan of the IIT.

The objective of this Strategic Plan is to elaborate a set of objectives and actions aligned with the Strategic Plan of the University 2014-18 that allow us to move from what we are to what we want to be during the next three years.

The Strategic Plan starts from an analysis of the status quo of the Institute for Research in Technology (IIT) in section 2. Subsequently, IIT's mission is stated in section 3 and a vision of the IIT is given in section 4. This vision, embedded in the Institute's mission, gives rise to a set of strategic objectives and projects, which are described in sections 5 and 6 and which in turn seek to fulfill the vision.







STATUS QUO

# 2. STATUS QUO

The analysis of the status quo of the IIT is the starting point for this Strategic Plan. A brief overview of figures and facts will be given in this section. The IIT is a research institute founded in 1984 with an on average growing trend in its research activity. The IIT is fully self-financed by means of external funds. Subsequently, trends of the most significant performance indices will be summarized.

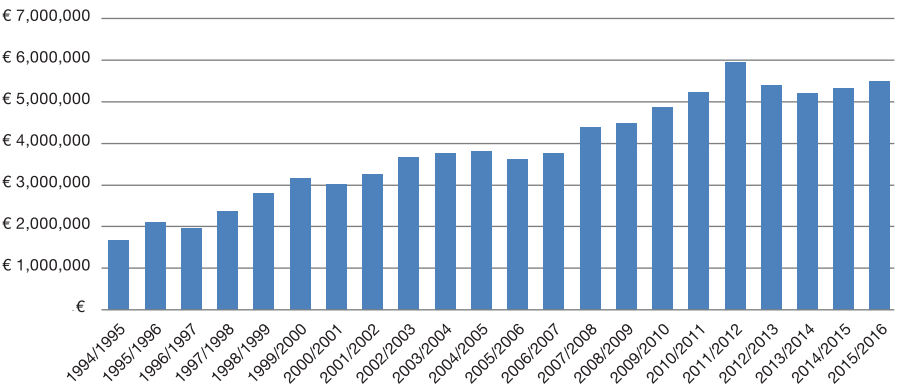


Figure 1. Yearly revenues in current million € during the last twenty years<sup>1</sup>.

During the last five years, yearly revenues of the IIT have been oscillating around values just above the five millions Euros. It can be inferred from Figure 1 that the yearly revenues during the last 20 years generally seem to have grown in a constant and progressive manner.

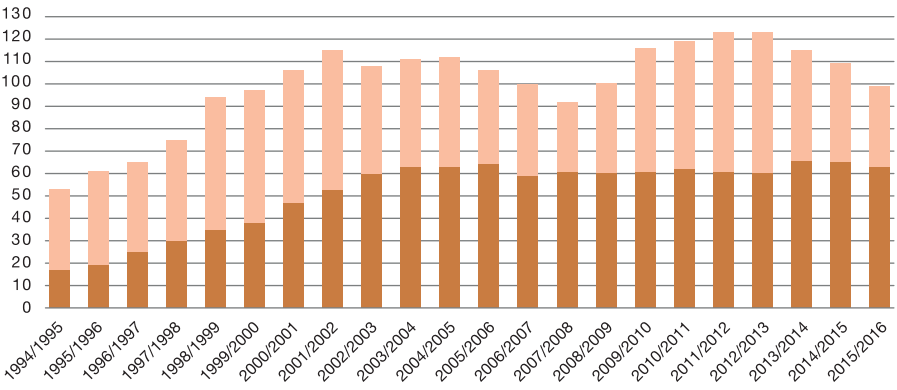
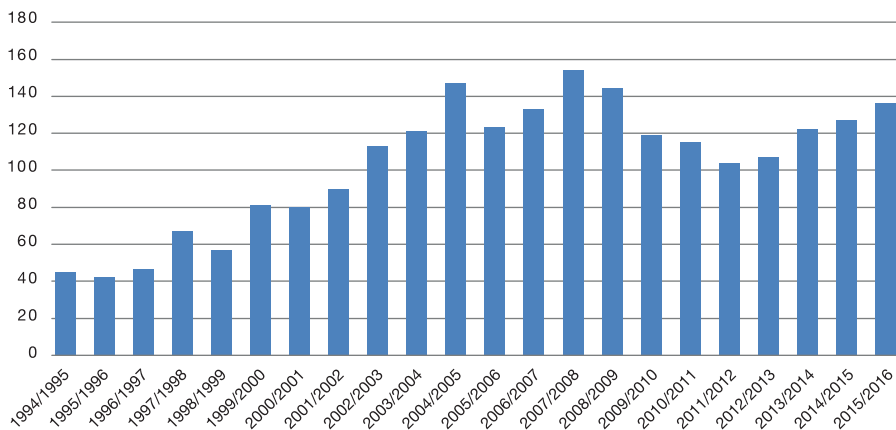


Figure 2. Research staff of the IIT (dark brown: researchers and professors, light brown: PhD students)

<sup>1</sup>I.e., without adjusting the currency for inflation.

With respect to IIT's research staff, during each of the last years more than 60 professors and researchers and around 45 PhD students have been carrying out research activities at the IIT. Figure 2 actually shows that the staff is more or less constant during the last 6 years.

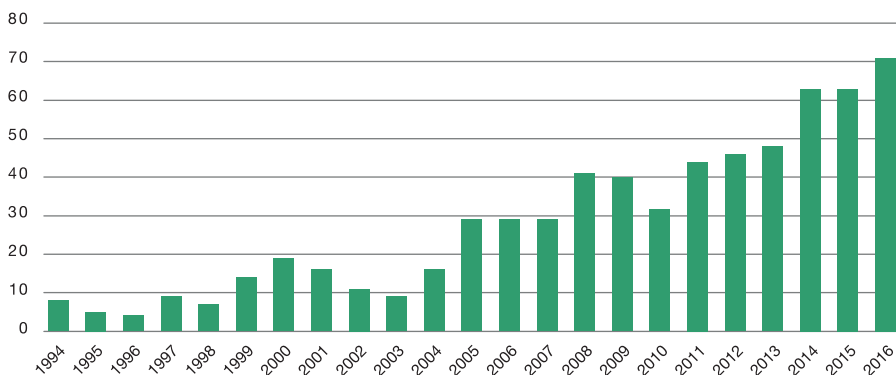
Figure 3 exhibits the number of projects developed at the IIT. The number of projects is somewhat constant over the last years recovering now pre-crisis values.



**Figure 3.** Number of projects developed at the IIT.







**Figure 4.** Papers published in JCR-indexed journals.

Finally, research activity during 2014-15 has resulted in: nine book chapters, 63 papers published in JCR-indexed journals, 11 papers published in other journals, 74 papers presented at conferences, 17 technical reports, nine PhD thesis

defenses and 21 PhD thesis in progress. Figure 4 shows the evolution of the yearly number of papers published in JCR-indexed journals. On average, 53 papers have been published in JCR-indexed journals over the last five years with a growing tendency.



# MISSION STATEMENT



### 3. MISSION STATEMENT

*"The IIT, Institute for Research in Technology, is part of the School of Engineering (ICA) of Comillas Pontifical University in Madrid.*

*Its main aim is to promote research and postgraduate training in diverse technological fields through participation in specific research projects of interest for the Industry and Administrations."*

Further:

*"The IIT aims at contributing to society by transferring its research results. This transference of knowledge is based on the strictest respect of freedom and manifoldness of opinions of its researchers and professors as rigorous and independent experts."*



Within this mission statement, collaboration with industry and other external institutions plays a key role, being at the same time means and purpose. In other words, members of the IIT contact and correlate with the industry and administrations to produce research results, transfer knowledge and educate researchers.





VISION

## 4. VISION

The vision reflects the future of the IIT we attempt to build; it shows where we want to go to and what we will be like once there.

This vision includes the following complementary elements:

- a. The IIT shall be an institute of scientific excellence dedicated to applied research. It is a place of knowledge creation, innovation and technological transfer. The IIT shall be an international reference in its current fields of research, namely electric power systems, energy system models, smart and sustainable grids, energy economics and regulation, railway systems, smart industry and cities, and bioengineering. It shall also be open to emerging fields of research.
- b. The IIT shall be further an institute of educational excellence, transferring its research results to higher education. It is able to attract and retain talented persons, to educate them by contributing to high quality doctoral programs, including the participation in projects for industry and administrations. The IIT's operation centers on PhD students.
- c. IIT's activities will route on its ability of self-administration through a close relationship with both industry and administration.
- d. The IIT shall be an institute able to self-manage, to think and act independently, where work is done in a flexible and effective manner.
- e. Members of the IIT shall be aware of the impact of technology on society and they conceive their work with a strong ethical commitment and social responsibility. This impact of technology shall be positive by contributing to justice and sustainability actively.
- f. The IIT will offer a creative and cooperative working environment for researchers and professors, where an ambience of positive personal relationships is fostered, making work better and more pleasant, and allowing for a personal and professional development of all its members.





# STRATEGIC OBJECTIVES



## 5. STRATEGIC OBJECTIVES

To put the vision into practice, it is necessary to define a set of objectives. These objectives are:

- Excellence in applied research and post-graduate training.
- Internationalization by means of joint programs and projects in Europe and America, and alliances with inter-

national prestigious institutes.

- Prestige and public presence.
- Sufficient and stable funding for research.
- Independence of thinking and capability of self-management.
- Ethical consciousness of the impact of technology and social responsibility.



### 5.1 Excellence in applied research and post-graduate training

- Improve the quantity and the external recognition of the scientific production of IIT's researchers and professors.
- Increase the number of emblematic first-class projects with maximum visibility.
- Recruit talented post-graduate students for applied research under PhD programs.
- Maintain leadership position of consolidated research groups in power

and railway systems and make an effort to achieve leadership position of other groups.

- Develop new research areas; in particular those that support existing degrees of the School of Engineering and those that are demanded by society within our field of expertise (e.g., research lines in bioengineering and industry 4.0 are currently starting to be developed).

## 5. STRATEGIC OBJECTIVES

- the interchange of PhD students and researchers and professors with international institutes.
- Strengthen the figure of international post-doc, both for attracting new talents and for stimulating research stays of future researchers at prestigious institutes.



### 5.3 Prestige and public presence

- Improve the international visibility of the IIT (in academia, clients and other collaborating entities).
- Develop activities to disseminate IIT's research results to a wider audience and increase public presence, both within and outside Comillas Pontifical University.



## 5.4 Sufficient and stable funding for research

- Diversify funding resources for grants and contracts for PhD students.
- Implement methodologies for internal cost auditing to be eligible for private and public funding.
- Guarantee the quality in terms of duration and type of projects that finance IIT's activities.

## 5.5 Independence of thinking and capability of self-management

- Be sufficiently flexible when managing IIT's resources.
- Ease the development of IIT research areas, foster and strengthen

the collaboration among them, and facilitate their consolidation.

- Improve the reconcilability between academic and self-funding requirements.







STRATEGIC PROJECTS

## 6. STRATEGIC PROJECTS

Strategic projects comprise actions to achieve the strategic objectives.

To put in practice each strategic project, it is necessary to identify (i) the actions required, (ii) strategic objectives affected by the project, (iii) the coordinator and responsible of the project (normally a member of the board of directors), (iv) performance indexes which allow eva-

luating the degree of fulfillment periodically, and (v) the necessary resources to be employed.

Some of the strategic projects directly depend on the board of directors of the IIT, whereas others correspond to decisions of the board of directors of the School of Engineering or the rector's office.



### 6.1 Relative to the management of the IIT

- Improve the recognition of educational tasks and scientific production carried out by researchers and professors. It is important that collaboration with industry is recognized (also with regard to promotions), that academic post-graduate activities are recognized (thesis supervision, student supervision, etc.), and finally that activities related to public relation and institutional development carried out

by senior researchers are recognized.

- Improve the communication between the board of directors of the IIT and researchers and professors.
- Increase the collaboration between researchers and professors of different research groups within the IIT.
- Improve the accounting and audit procedures to establish a procedure for the annual computation of the indirect costs of the IIT.

## 6.2 Relative to the staff of the IIT

- Analyze whether negative asymmetries exist between the careers of professor and researcher and whether it makes sense to work in reducing some of them.
- Improve the processes of monitoring and evaluation of professors and researchers of the IIT in a systematic manner.
- Promote the presence of senior researchers in prestigious positions (e.g., editorial boards, fellowship of international associations, etc.).
- Foster research stays of researchers and professors in prestigious institutes and maintain stable collaborations with those institutes. Design mechanisms that stimulate these stays.
- Foster the interchange of PhD and Master students. Create a visiting program for external staff. Design mechanisms that stimulate these interchanges.
- Design a strategy to manage the funding of PhD students and the type of contracts of PhD students in accordance with the strategic lines of the IIT, searching an equilibrium between different research groups.
- Review the performance of the current figure of post-doc.
- Incorporate into the training of PhD students, in collaboration with the doctoral program, communication skills and other

complementary activities required to work in projects of applied research.

- Design a career plan for research. For junior researchers, training in searching and managing projects, involving senior researchers or professors.
- Recruit new full or partial time researchers and professors by maintaining the established selection and monitoring criteria with regard to:
  - Academic excellence and scientific production
  - Ability to get funding to finance the professor's or researcher's research activities as well as those of his or her research group and PhD students
- Create a training program for undergraduate and graduate students, with its corresponding academic recognition, to collaborate with the IIT through participation in research projects (*IIT training program*).





## 6.3 Relative to the technical resources

- Improve external (national and international) visibility of the IIT via its web page as well as the university's communication services.
- Analyze alternatives for hosting the IIT staff in one single building and managing the available space, together with the School of Engineering, for working spaces and laboratories.
- Analyze alternatives for re-distributing space and resources within the two IIT buildings that foster mobility (open-space areas and use of notebooks, laptops), and create areas for meetings and discussions.
- Improve the ability to self-manage computer and computation resources for the internal management of the IIT, the mobility of researchers and professors, and for carrying out projects requiring huge computational efforts. Push the development of internal web tools for management.

## 6.4 Relative to the collaboration with industry and other institutions

- Foster the participation in large, emblematic and transversal projects. Select those of interest and make contact.
  - Expand institutional relations beyond the projects. Select those of interest and make contact.
  - Create international alliances with prestigious institutes mainly (but not only) in Europe and the USA.
  - Increase IIT's public presence.
- Organize dissemination activities that could have an impact within and outside Comillas Pontifical University. Promote the IIT among undergraduate and graduate students.
- Define and promote synergies with business activities (e.g., spin-offs).
  - Increase the participation of IIT research staff in external expert groups (e.g., Cigré, IEC, IEEE, ISGAN, etc.).

## 6.5 Relative to research results

- Create the Scientific Advisory Board of the IIT and develop processes for external evaluation.
- Define incentives to actively foster high quality research publications.
- Foster patenting and support the creation of spin-offs that allow commercializing products, that benefit both IIT and the spin-off), and that do not conflict with IIT's activities. Provide support and advice to researchers in order to carry out these activities.
- Stimulate the dissemination of research results by other means such as blogs, newspaper articles, interviews, etc.



C/ Santa Cruz de Marcenado 26,  
28015 Madrid  
Tel: +34 91 542 2800  
[www.iit.comillas.edu](http://www.iit.comillas.edu)