Merging our capabilities to multiply excellence.

Strategic Viability and Conversion Plan for the Campus of International Excellence

PROJECT DESCRIPTION
Campus of International Excellence
Project description

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Strategic alliances

The Universitat de Barcelona (UB) and the Universitat Politècnica de Catalunya (UPC) present their joint Campus of International Excellence project called the Barcelona Knowledge Campus (BKC).

The BKC aims to be the primary driver of scientific, social, and business activity in its region, becoming a pole of attraction for international talent.

The alliance of these two universities in developing the BKC establishes a framework for strategic collaboration which is key to providing the local environment with a solid, internationally recognized scientific and technological project, permitting the evolution of the local environment by means of an integrated social model based on innovation and sustainable development.

The broad spectrum of scientific and academic disciplines offered by the campus ranges from architecture and fine arts to biotechnology and pharmacy, and includes civil engineering, computer science, telecommunications and industrial engineering, experimental sciences, and legal and social sciences. Campus activity coincides with much of the activity of the productive sector that gives life to the region, which has led the campus to take on an active role in making the changes to the economic and productive models that will be so necessary in the coming years.

The campus setting, based around university buildings and facilities, has acted as a magnet for talent resulting in one the largest concentrations of human resources in the local area and represents one of the most active and powerful academic, scientific, and technological forces in southern Europe.

The campus covers a total area of 227 hectares. Its buildings and facilities together occupy more than 515,000 m² and house 16 teaching centres including faculties and schools, 90 university departments, more than 15 libraries and learning resource centres, two science and technology parks, and specialized support centres, as well as facilities providing administration, support and services for the university community, and institutional and representative offices.

This environment brings together more than 42,000 university students on a daily basis, beneficiaries of the more than 50 undergraduate degree programmes offered by both universities, which also serve over 6,000 postgraduate students. There are approximately 3,700 members of the permanent teaching and research staff and 2,250 administrative and service personnel.

The alliance includes organizations with their own legal status linked to the two universities in the spheres of research, and the transfer and appraisal of knowledge, such as the Bosch i Gimpera Foundation, the Barcelona Science Park, the UPC Park, the Barcelona Supercomputing Centre (BSC), the International Centre for Numerical Methods in Engineering (CIMNE), the Institute
for Bioengineering of Catalonia (IBEC), and the ICTS wave channel scientific infrastructure.

The strategic UB-UPC alliance that the BKC represents is the strongpoint of the project, which also involves the Barcelona City Council, the Barcelona Chamber of Commerce, and the Spanish National Research Council, along with the main international university networks to which the two universities belong.

- **Barcelona City Council**, in conjunction with the UB and UPC, aims to ensure that the talent and potential derived from all the spheres of knowledge in the area are shared, in addition to demonstrating their value within the BKC itself, consolidating a model of neighbourhood interaction in which respect and harmony with the local environment are compatible with the most advanced technology and progress through innovation.

- The **Barcelona Chamber of Commerce** actively participates in the UB and UPC, developing many university/business programmes including programmes for revitalizing innovation in business, the dissemination and promotion of research, appraisal of research and the transformation of knowledge into an instrument of support for business innovation.

- The Spanish National Research Council (CSIC) has 22 research centres in Catalonia, and boasts a team of more than 1,400 professionals working on lines of research divided into six scientific or technical areas. Of the 22 centres, eight are located in the BKC environment, including the Industrial Robotics Institute (a joint CSIC/UPC centre), and the Molecular Biology Institute of Barcelona (IBMB), which has its headquarters in the Barcelona Science Park. Many specific research agreements are developed on an annual basis between CSIC centres and the centres, institutes, and research groups of the UB and UPC located within the BKC.

- The **UB and UPC** take an active role in several top international university networks of excellence which focus their efforts on joint projects between prestigious institutions with the aim of achieving results that position, publicize, and guide the interests and strategies of these institutions at the highest level. Some of these networks include Eurolife (the Network of European Universities in Life Sciences), Atomium Culture (the European Network for the Dissemination of Research), Red Emprendia (the University Network of Business Incubators), Enterprise European Network, CESAER (Conference of European Schools for Advanced Engineering Education and Research), CINDA (the Centre for Interuniversity Development), CLUSTER (Consortium Linking Universities of Science and Technology for Education and Research), EUA (European University Association), GUNI (Global University Network for Innovation), RMEI (Mediterranean Network of Technical Universities and Engineering Schools), UNITECH, TII (Technology, Innovation, Information), ProTon Europe (European Knowledge Transfer Association), and IASP (International Association of Science and Technology Parks).
II Vision

The Barcelona Knowledge Campus (BKC) will be:

- An international benchmark in teaching, research, knowledge transfer, innovation, and lifelong learning.

- A focal point for university life, socially integrated into the local environment, providing quality services and a policy of sustainable development which permeates all spheres of action.

- A key player in the promotion of social, economic, and business activity both in Spain and in Western Europe, by means of its consolidation as a strategic axis of scientific and technological development.
III Mission

The Barcelona Knowledge Campus (BKC) will direct its activities towards achieving international excellence through:

- The shared skills and complementing strengths of the strategic alliance of the UB and UPC, their associated research and innovation organizations, and the social and governmental stakeholders involved in the proposal.
- Active involvement in changing the economic model through the generation of new activities based on innovation and knowledge.
- The attraction and stimulation of talent.
- An integrated model committed to its local environment which promotes the sustainable development of society.
- Comprehensive internationalization.
- Student-centred teaching processes.

IV Strategic objectives

The BKC is an alliance of university, research, business and social institutions which together make up a framework of strategic collaboration for the purpose of forming an exemplary scientific and technological environment in Europe.

The following strategic objectives have been set in order to achieve the project's vision:

- Coordinate actions and maximize the visibility of the different organizations comprising this alliance in order to place BKC in the global top 100 in its sphere.
- Consolidate teaching excellence in the degree programmes offered during the European convergence process.
- Increase academic efficiency by focusing efforts on preferred or priority areas for the alliance and facilitating employability.
- Commit to active mobility policies which promote and increase student exchanges and the mobility of teaching and research staff.
- Make new research infrastructures and innovation services managed in a professional, efficient manner available to the alliance.
- Combine the concepts of knowledge transfer and appraisal through...
Project description

developing comprehensive, innovative models which allow for the sustainable transformation of the local environment

- Re-convert spaces into **meeting points** favouring collaborative learning, cultural exchange, research, and socialization

- Promote **sustainable development** in the fields of training, research, management, and social interaction and commitment

- Expand the range of **social, cultural, sports, and residential activities** offered according to the current and future collective needs of the students sharing the BKC environment

- Totally adapt the campus for **disabled access**, thereby consolidating its position as a benchmark institution in the research, development and innovation (R&D&I) of **assisted technologies**
**V International promotion plan**

The international promotion plan of the **Barcelona Knowledge Campus** is the cultural element of international relations within the much broader concept of comprehensive internationalization that will permeate campus activities on every level. In this respect, the **UB** and **UPC** are in an excellent starting position due to the actions that have been put into effect up to now, in addition to the following factors:

- The increase in **mobility** that implementing the EHEA adaptation process brings with it

- The capacity of the region in which the campus is located to be a **magnet for innovation** in research and teaching

- The image of modernity and dynamism projected by the **city of Barcelona**

The success of the international promotion of the **Barcelona Knowledge Campus** is based on the coordinated, joint involvement of all its key players.

The plan encompasses four broad spheres of action which include following actions:

a) **Academic**: the creation of the International Postgraduate and Doctoral School, international agreements on double master’s degrees, an increase in the current level of teaching in English on master’s programmes, strengthening relationships and alliances with international universities and research centres and the Agency for International Promotion through the international offices of the Generalitat de Catalunya

b) **Communication**: the design and implementation of an International Marketing Plan with the aim of maximizing the brand potential of the **BKC** on an international level

c) **Relations**: greater participation in international university networks, intensification of the international mobility of students, teaching and research staff and administrative and service staff, the creation of the International Admissions Programme and active participation in international missions organized by the Barcelona City Council and the Chamber of Commerce, taking advantage of their international agendas and networks

d) **Organization**: actions aimed at strengthening management units dealing with international exchange programmes, signage in English, the promotion of cultural exchange activities, and the creation of a website dedicated to an international audience in English, French, and Spanish

The BKC guarantees that international promotion will take place through the coordinated, joint involvement of all its key players.
The BKC was born out of the participation, cooperation and involvement of several groups.

VI Coordination and management structure

The BKC is a collective project which aims to strengthen the idea of participative and cooperative government. The participation of different groups (university, business, institutional, government, and social) in the quest for consensus on activities aimed at changing the current model is essential.

Therefore, all the relevant institutions should be involved in the creation of the BKC coordination and management unit (hereafter “Unit”) from the very beginning to ensure that they are active participants in the project.

To this end, a Unit Governance Committee will be created comprising the rectors of the UB and UPC, the Minister of the Department of Industry, Universities, and Enterprise of the Generalitat de Catalunya, the Mayor of Barcelona, the Chairperson of the Barcelona Chamber of Commerce and the Chairperson of the Spanish National Research Council (CSIC).

In order to share and articulate the different intentions for and feelings toward the strategy, organizational structures for talks and enquiries will need to be established.
1) Scientific Council

The Scientific Council will:

- provide advice on implementing the teaching and R&D&I actions set out in the Strategic Plan;
- publicize and provide information about these activities both internally and externally;
- propose new ideas and initiatives for teaching and R&D&I activities to be promoted by the BKC.

The Scientific Council will be made up of vice-rectors from the different academic arenas of the UB and UPC, deans, directors of campus centres and schools and other external organizations located on campus including the CSIC, as well as BKC researchers and international researchers working in the relevant specialities.

2) Citizens' Council

This would provide a solution to the need to incorporate into the strategy the general sensitivities, concerns, and interests of the different sectors of the local environment which are not of a strictly academic nature. The Citizens' Council will:

- provide advice on implementing the activities set out in the Strategic Plan which deal with the development of an integrated social model and integration with the local environment;
- publicize and provide information about these activities both internally and externally;
- propose new ideas and initiatives in these areas.

The Citizens' Council will be made up of representatives of groups such as students and alumni, the Barcelona City Council, community associations, and vice-rectors of the UB and UPC specializing in the relevant fields.

3) Business Council

The Business Council would strive to bring the vision, culture and real needs of the productive sector to the teaching, research, innovation, knowledge transfer, and services to be developed within the BKC.

The Business Council will be made up of representatives such as those from the business sector related to campus specialities, the Barcelona Chamber of Commerce, the vice-rectors of the UB and UPC specializing in the fields of R&D&I and knowledge transfer, and the directors of the UB and UPC units.
specialising in R&D&I, appraisal, and knowledge transfer.

The primary objectives of the Unit will be to:

- design and implement a BKC International and Institutional Marketing Plan;
- monitor and adapt projects of academic and scientific excellence to social needs and to ensure the appropriate involvement of national and international scientific organizations;
- define new projects and initiatives to be developed by the BKC.

The Unit should:

- not duplicate structures or offer services that can be offered by the universities themselves;
- be flexible, dynamic and adaptable;
- have the leadership capacity for effective decision-making and the most appropriate delegation of responsibilities;
- operate efficiently;
- have a high level of specialization;
- handle specific project management.

An initial structure consisting of the following positions is proposed for the implementation of the Unit:

- A Unit coordinator
- A person who will guarantee and track academic excellence and scientific projects, who will adapt scientific projects to the needs of society and who will ensure that national and international scientific organizations are suitably involved with the actions proposed in the Strategic Plan
- A professional highly specialized in institutional and international marketing
- A project manager for each of the specific projects that cannot be managed by the universities themselves
Starting point

Teaching is the fundamental function of universities. Society demands complete, quality teaching for students which guarantees a suitable level of training and integration into the workforce. The process of constructing the EHEA will bring substantial changes to teaching and learning models, as well as to the quality of teaching and employability.

The BKC offers 53 EHEA bachelor’s, undergraduate, diploma and engineering degree programmes, 119 university master’s programmes, nine Erasmus Mundus master’s programmes and 59 doctoral programmes carrying quality awards. With the aim of promoting more efficient teaching, a map of shared programmes will be drawn up including two joint UB/UPC degrees, one in engineering (geological engineering) and a new degree adapted to the EHEA (statistics), as well as 12 university master’s degree programmes which feature the involvement of other Catalan universities. The promotion of synergies in this area is one of the objectives for improving teaching activities.

In order to achieve excellence in this field, emphasis will be placed on improving the international positioning of the campus by means of international talent recruitment on a postgraduate and postdoctoral level, which will also contribute to broadening the range of 16 master’s programmes taught in English, as well as the creation of an international admissions point which would improve the level of attention afforded to foreign visiting students, and facilitate their integration.

Similarly, a proposal has been put forth for the creation of a single International Postgraduate and Doctoral School for the campus which would function through close coordination with the units within faculties and offices which currently govern postgraduate and doctoral programmes. This represents an innovative step forward which will influence and emphasize the transversal nature of the campus. In order to achieve this, a joint management structure will be drawn up by the UB and UPC, and academic structures will be defined in line with the fields of speciality of the BKC.

Finally, the BKC fully recognizes the importance of reinforcing existing teaching programmes in terms of student entrepreneurship, as well as the need to incorporate this element as a transversal competence in all the study programmes offered by the campus. To this end, research promotion initiatives will be fostered as an element of teaching innovation and research, with the aim of promoting an entrepreneurial spirit in the individuals that comprise the university community as a whole.
Current activities to promote entrepreneurship jointly organized by the UB and UPC:

The UB, in conjunction with the Bosch i Gimpera Foundation (FBG) facilitate:

- the accessibility of companies, institutions, and society as a whole
- scientific and technical skills
- university research results
- the know-how generated by the UB for the purpose of transferring knowledge to the market through the creation of new technology-based companies and patent licensing
- the promotion of the entrepreneurial spirit in the university setting

The UPC – a pioneer in Spain in entrepreneurship – also has the Innova Programme at its disposal via the UPC Park, which contributes to:

- appraising the research conducted in the institution based on the protection of research in general, licensing, and the creation and consolidation of new, technology-based companies
- publicizing, providing information on and shaping an entrepreneurial spirit through both regulated activities (subjects and skills), and non-regulated activities (seminars and workshops)
- funding large public and private research projects through the K2M programme
- promoting the culture of innovation, both within the university and in its surroundings, collaborating with businesses and communities in the development of local innovation plans

The strategic alliance of the UB and UPC in the BKC project is a key element for increased efficiency in the creation and dissemination of knowledge, and contributes to the increased visibility and international projection of the campus.

Strands of action

A1. International positioning

OBJECTIVE

To consolidate the BKC as an international benchmark for teaching quality and prestige, particularly with regard to master’s degree and doctoral programmes.

ACTIONS

A1.1 International postgraduate and postdoctoral talent recruitment

The BKC currently boasts the highest number of European interuniversity Erasmus Mundus master’s programmes (nine), and has a solid international reputation in this field. Nevertheless, it is important to its international position to consolidate the campus as a magnet for postgraduate and postdoctoral talent. This action has two main aspects:
• Increasing the level of internationalization of the campus, promoting visits from foreign teachers and researchers who are experts in the BKC’s fields of specialization

• Promoting the use of English in the different bachelor’s, master’s, and doctoral programmes available

A1.2 Creation of an international point of admission and attention

One of the actions planned is the creation of the “International Welcome Point”, a meeting point to be located in the facilities of the Rector Gabriel Ferraté Library. The objectives of the Welcome Point are to provide and equip the BKC with a multipurpose, central, visible space from which it can better welcome foreign visitors.

It is important to remember that the BKC is divided by one of the largest and most important thoroughfares in Barcelona – the Avinguda Diagonal – which represents a barrier in campus life. In order to make negotiating the campus as easy as possible for foreign visitors, infrastructure will be incorporated on both sides of the avenue. A space will be provided for this purpose in the CICRIT building in the southern zone, which is slated for construction in the next few years, while another space will also be provided on the northern side of the avenue.

A1.3 Expansion of the range of master’s courses taught in English

The range of master’s courses taught entirely in English is to be extended for the following reasons:

• To increase the geographic origin of international students who currently come mainly from South America because these countries share a common language with Spain

• To provide the opportunity to improve the level of English of the university community in order to effectively take on the challenges posed by the process of internationalization

A1.4 Strengthening international alliances

The two universities at the head of the BKC project are active members of consolidated international networks such as EUA, ProTon Europe, IASP, Cluster, and UNITECH.

This action aims to strengthen planned mobility strategies and create international alliances between the centres of the campus and other recognized international centres. This will ensure that the campus offers stable and academically recognized opportunities for mobility, which will allow for the establishment of double degree programmes with chosen centres. In this
way, each centre on campus will become a point of entry for other prestigious centres in Europe.

A2. International Postgraduate and Doctoral School

OBJECTIVE
To create an International Postgraduate and Doctoral School with a coordination and management structure covering the whole campus with specializations in life sciences, social sciences, and technology.

ACTIONS
A2.1 Creation of the BKC International Postgraduate and Doctoral School

The creation of this school aims to systematize and bring together the different educational programmes offered by the BKC in order to offer a solid approach that will allow graduates to:

- receive peer and academic support during this formative stage in their training in the research arena;
- receive support during the production of their first research projects and subsequent publications in index-linked journals.

The school will:

- develop healthy competition in research;
- introduce components of internationalization consistently and across all training programmes;
- coordinate the BKC’s postgraduate and doctoral programmes by means of two management units focusing on scientific and technological specialities;
- adapt training capacity to existing research groups.

A2.2 Definition of the structure of shared management

Creating a single International Postgraduate and Doctoral School involves the structuring and organization of shared management between the different support units, thereby facilitating the development of master’s and doctoral programmes, as well as the organization of the management and direction of the school itself.

The school will encompass the academic programmes offered by both universities, although academic structures will be established for the specializations in the fields of life sciences, social sciences, and technology.
A3. Entrepreneurship and innovation

To generate research and training programmes in entrepreneurship and innovation in order to promote the recruitment of students in this field, and improve their employability and the transfer of knowledge.

A3.1 Increase training programmes related to entrepreneurship and innovation

The two universities strategically allied in the formation of the BKC will develop activities aimed at promoting the culture of entrepreneurship among future professionals. Nevertheless, those activities alone will not be sufficient to promote real, decisive change in the production model from the university; the knowledge generated by the university must be transferred to the productive sector in order to make progress towards a truly knowledge-based economy.

The expansion of the training programmes currently offered by the campus includes the proposal for carrying out joint specialized courses in subjects such as:

- Research appraisal
- The generation of European patent agents
- International training in entrepreneurship and innovation

A3.2 Integration of entrepreneurship in new study programmes

The adaptation to EHEA study programmes will entail alterations in:

- infrastructure (classrooms, study areas, admission centres, etc.), as detailed in other sections;

- the concept of learning itself.

One of the key aspects for promoting employability is the inclusion of transversal learning segments such as “Innovation and Entrepreneurship” in all courses.

The main objective of this component is to ensure that at the end of their academic careers students have acquired the skills they need to be able to initiate entrepreneurial activity and to exploit their creative and innovative capacities in the development of projects.
This will entail:

- supporting the availability of subjects linked to the creation and management of businesses which are currently taught by the BKC and extend these across all courses at both the postgraduate and doctoral levels;

- offering seminars on specific topics related to study programmes which lead to the award of credits;

- progressively incorporating this topic as a transversal skill in degree programmes to be developed, and evaluating the effectiveness of courses which include this cross-discipline segment compared to those that do not.

**A3.3 Fostering initiatives aimed at the promotion of research on entrepreneurship**

Just as entrepreneurship has become a subject of study in itself – transcending the boundaries of academic activity – the BKC alliance is also a laboratory for innovation and entrepreneurship from the point of view of teaching and entrepreneurship and the application of models such as the UPC’s K2M or UB’s Bioincubator project. The following actions have been planned in relation to this area:

- Creating an International School of Entrepreneurship

- Incorporating entrepreneurial skills as transversal components and fostering interest in research into this field in the different study and research programmes offered by the BKC with the aim of meeting the needs of the student body

- Promoting research into entrepreneurship in conjunction with the BKC as a channel for professional development

**Target results in this area for 2015**

In accordance with the campus strategy and through the development of the actions planned the BKC aims to become an international benchmark in the field of teaching.

The BKC will therefore focus its activity both in the local environment and the international arena, concentrating mainly on an east-west axis (Asia and South America), but without neglecting the countries of Europe and other emerging geographical areas (North Africa, the Middle East, etc.).

Efforts will be strategically focused on the international positioning of master’s and doctoral programmes in order to attract international postgraduate and postdoctoral talent. The campus currently offers 119 master’s programmes adapted to the EHEA, 19 of which are fully taught in English, as well as
nine Erasmus Mundus master’s programmes. By 2015 it is predicted that international master’s and doctoral programmes will comprise approximately 20% of the total programmes on offer, while it is hoped that 15 Erasmus Mundus master’s programmes will be available by that time.

The creation and consolidation of the **International Postgraduate and Doctoral School** specializing in **life sciences, social sciences, and technology**, represents an opportunity to:

- integrate campus strategies;
- achieve excellence in higher education and research.

Currently there is no common management strategy, and the project consists of achieving **maximum synergy** in coordination and management structures by 2015, so that the programmes offered by the **BKC** are also coordinated by **international networks** with international prestige.

Finally, the consolidation of the possibilities for entrepreneurship, as well as the founding of the International School of Entrepreneurship, will facilitate the training of **leaders in research and teaching** in this sphere in order to promote innovation both on local and international levels, with the following aims:

- Strengthening research in this sphere in a long-term, sustainable manner
- Training graduates in entrepreneurship and the creation and management of companies
- Attracting students from all over the world with a landmark range of learning options

### Quantitative results

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Current value</th>
<th>Target for 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgraduate and doctoral students from abroad</td>
<td>3,163 (47%)</td>
<td>60%</td>
</tr>
<tr>
<td>Number of Erasmus Mundus master’s programmes</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Number of master’s programmes taught entirely in English</td>
<td>16%</td>
<td>25%</td>
</tr>
<tr>
<td>International offer of postgraduate and doctoral courses coordinated by the School</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>University master’s programmes in which teaching is shared by the UB and UPC</td>
<td>10%</td>
<td>35%</td>
</tr>
<tr>
<td>Participants in teaching programmes on entrepreneurship and innovation</td>
<td>2,083</td>
<td>3,500</td>
</tr>
<tr>
<td>Degree programmes or similar which include the transversal element of entrepreneurship</td>
<td>16%</td>
<td>40%</td>
</tr>
</tbody>
</table>
IMPROVING SCIENTIFIC ACTIVITIES

Starting point

The BKC is an alliance of teaching, research, and business institutions that together form a framework for strategic collaboration that aims to become a leader in the fields of science and technology in southern Europe.

The BKC currently makes its top quality research facilities and scientific and technical services available to the university community and the productive sector. These include:

- **The Barcelona Science Park** (PCB-UB), a pioneering model for the integration of university researchers in biomedicine, biotechnology, nanobioengineering, and pharmaceutical chemistry in Spain

- **Singular Scientific and Technological Infrastructures** (ICTS):
  - Catalonia Supercomputing Centre Consortium
  - Nuclear Magnetic Resonance Laboratory
  - Barcelona Supercomputing Centre
  - Maritime Research and Experimentation Channel
  - International Centre for Numerical Methods in Engineering

- **Scientific and Technical Services** (SCT-UB), created by the UB to provide research support and staffed by specialized personnel, offer a modern instrumental infrastructure with high technology sites: the Modular Building of the PCB and a central building located near the experimental science faculties of the UB in the BKC.

- **UPC centres on the BKC**:
  - International Centre for Numerical Methods in Engineering
  - International Centre for Coastal Resources Research
  - Institute of Robotics and Industrial Informatics
  - Institute for Space Studies of Catalonia
  - Centre for Innovation in Transport
  - The i2CAT Foundation
  - Barcelona Supercomputing Centre
  - Centre COME Private Foundation
  - The Water Technology Centre, CETAQUA

Despite constant modernization of the scientific equipment available on campus, it has not been possible to consistently update the infrastructure that houses and supports that equipment. In order to exploit the capabilities of this equipment to the fullest, plans have been laid to adapt the science and research infrastructures on campus and, in some cases, to completely modernize these.

The joint alliance and coordination of the BKC’s Scientific and Technical Services, the creation of a Centre for Technological Innovation (see area 5) and the improvement and updating of scientific equipment and infrastructures will promote
research quality, international recognition, effective management and participation with the business sector.

**Strands of action**

**B1. Grouping and coordinating scientific infrastructures and scientific and technical services units**

- To group the infrastructures and Scientific and Technical Services (SCT) units related to specialities in the life sciences (biomedicine, biotechnology, nanobioengineering and pharmaceutical chemistry)
- To organize the Scientific and Technical Services related to technological specialties
- To establish a coordinated management system for Scientific and Technical Services

**B1.1 Concentration and/or coordination of infrastructures and Scientific and Technical Service units**

This line of action focuses on the concentration and coordination of both scientific infrastructures and SCT units to optimize their use and achieve the utmost efficiency in their management.

This would include:

- grouping most scientific infrastructures related to the life sciences in the new building of the Centre of Scientific Infrastructures for Research and Technological Innovation (CICRIT) to provide ideal working conditions and thus achieve maximum performance from scientific teams of the highest calibre (see the construction of the CICRIT building in section F);
- organizing Scientific and Technical Services for technological specialties to provide support services for research and technology transfer, located mainly in the Parc UPC within the framework of the K2M programme;
- creating a coordination unit for Scientific and Technical Services (SCT) through the coordinated management of the highly specialized scientific and technological equipment at the BKC.

The unit will be responsible for:

- developing BKC strategies for acquiring new instrumentation;
- developing areas of research and projects for the BKC;
• making BKC’s services and scientific infrastructures available to the campus research community and the productive sector. The SCT is staffed by specialized personnel and is equipped with modern instrumentation and technology housed within a number of quality facilities. Some of these are unique, focusing on practical and applied research, and are available to public institutions and private businesses.

The concentration of research teams and the coordinated management of the SCTs will have a significant impact on the improvement of processes, services, and research at the BKC which, combined with the modernization of some equipment, will lead to a significant improvement in the quality of research on the campus.

**B2. Improving scientific and technological equipment and modernizing facilities**

**OBJECTIVE**

The BKC is internationally recognized for its excellence in research. Overall, the group has various unique scientific and technological infrastructures. To strengthen the research conducted by scientific groups, the campus plans to modernize and purchase new instrumentation for laboratories, services, workshops, and classrooms for joint research carried out by the organizations that make up the strategic alliance of the campus. Furthermore, the BKC will work to create new research units and promote knowledge transfer to give an important boost to the scientific strength of the campus.

**ACTIONS**  

**B2.1 Renovation and acquisition of new equipment**

The modernization of existing facilities or the creation of new units that cater to a large number of users will have significant effects on the use, costs, and quality of research on the campus.

Specifically, the following measures have been proposed for the purpose of improving existing equipment and acquiring new equipment. The plans include:

• adapting the Signal Theory and Communications (TSC) laboratories;
• acquiring equipment for the micro- and nanotechnology laboratory;
• improving and organizing the Cryogenics Service;
• acquiring helium recovery equipment;
• updating fume hoods;
• improving the service for analogue modelling of geological processes;
upgrading the equipment in the fine arts workshops;

creating a R&D laboratory for audiovisual technologies;

renewing the 3D audiovisual production studio;

adapting the audio recording studio for automatic subtitling systems;

conditioning the reverberation room for acoustical measurements for official approval purposes;

improving the hydraulics department in relation to the wave channel ICTS.

**B2.2 Improvement of the major scientific infrastructure of the Maritime Research and Experimentation Channel**

The maritime engineering laboratory is equipped with an ICTS, as is the wave channel, and with scientific equipment and material that not only allows the laboratory to carry out projects with the utmost efficiency but also to offer these facilities to other institutions and organizations. Far-reaching reform is needed to be able to maintain the laboratory’s position as a leading research centre. Towards that end, various actions will be undertaken, such as:

- implementing new observation areas along and under the channel;
- improving drainage in the service gallery;
- adopting upkeep and maintenance measures for the service galleries in the laboratories;
- purchasing and installing a crane bridge to increase logistic capabilities and to improve the efficiency of new and existing facilities;
- building a new reservoir equipped with a sediment separation system.

**B2.3 Creation of the ChemBioBank laboratory**

The purpose of ChemBioBank is to create an internationally recognized database of chemical and biological data that will be made available to the scientific community and which can be accessed remotely.

This lab will also be equipped with:

- a liquid chromatography/mass spectrometry (LC/MS) unit, for analytical control of compounds;
• a liquid handling device, which will allow compounds to be distributed in solutions and put on slides for experimental screening processes.

This laboratory will allow for the storage and experimental screening of compounds and for coordination and cooperation between Spanish, European, and Iberian-American chemical libraries.

**B2.4 Enlarging and improving the Laboratory Animal Applied Research Platform**

The expansion of the space from 800 to 4,000 m², along with the professional experience, technological resources and ethics of this platform will make it an exemplary international centre in its field.

With its orientation towards service and its specialization in assessing, designing, and implementing projects in the field of biomedicine and biotechnology, the platform aims to be a key player in the field of live-animal research, both for its own purposes and for third parties. Improving this platform will:

• support the research conducted by university groups or public research institutes;

• generate a high added-value range of research services for private sector companies;

• help the platform to develop its own projects and those in collaboration with other organizations to increase know-how;

• develop continuous technological innovation processes that allow for new models and designs that require large investments;

• develop a new legal framework that supports this type of research with laboratory animals (REACH).

*The BKC is today a recognized research environment of excellence.*
B3. Recruitment and training of researchers and technologists

The BKC firmly commits itself to the international training of its academic personnel through promoting international postdoctoral studies and reincorporating excellent researchers with international training.

B3.1 Offer of several predoctoral scholarships and several postdoctoral positions for the incorporation of international staff within the BKC

Predoctoral scholarships will be awarded for the primary lines of research conducted on campus. The aim of the scholarships is to acquire young foreign talent, with scholarship holders having four years to complete their doctoral theses. The new student hall of residence (see section F) will provide accommodation for these scholarship holders. In addition, the new International Postgraduate and Doctoral School (see area A) will help new researchers to participate in the educational programmes that are most suitable for their needs.

In addition, postdoctoral positions will be created in relation to the lines of research conducted on campus. The contracts will last two years, during which time the researchers will be involved in leading areas of research under international doctoral supervision.

B3.2 Mechanisms for publicizing scholarships

The campus will develop mechanisms for publicizing available scholarships.

These types of scholarships represent an effective method of advertising and attract many qualified and talented candidates. Their applications will be forwarded to the relevant research groups.

Target results in this area for 2015

Adopting these measures will strengthen the position of the BKC in terms of international leadership in R&D&I.

This leadership is based on the following key areas:

- Effective management of SCT scientific structures and units through the SCT coordination unit
- The improvement of facilities, scientific equipment and SCT services offered in order to attract talent and conduct research of excellence
- The consolidation of and increase in participation in R&D&I projects through:
– the recruitment of international talent;
– the collective action of all organizations in the alliance;
– the offer of the best scientific services and infrastructure to the campus’s research community and to the private sector.

- The stimulation of relationships between the university and the productive sector through the provision of specialized added-value services
- The increase of research quality and its international recognition through the concentration of talent, coordinated management, and the improvement and renovation of scientific services and infrastructure

### Quantitative results

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Current value</th>
<th>Target for 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of scientific publications produced by the campus</td>
<td>3,896</td>
<td>5,000</td>
</tr>
<tr>
<td>Volume of income from competitions (national and international) obtained by scientific projects of the campus</td>
<td>47,201,469 €</td>
<td>53,155,000 €</td>
</tr>
<tr>
<td>No. of research projects developed between more than one stakeholder in the campus strategic alliance</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>No. of services provided to clients (internal and external) by the SCT of the campus</td>
<td>12,173</td>
<td>15,000</td>
</tr>
<tr>
<td>Volume of income generated by SCT services provided to the private sector</td>
<td>3.2 M€</td>
<td>4.0 M€</td>
</tr>
<tr>
<td>No. of predoctoral and postdoctoral scholarships for the incorporation of international personnel on the campus</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

### CAMPUS EVOLUTION TOWARDS A SOCIALLY INTEGRATED MODEL

**Starting point**

In the beginning, the university’s buildings and equipment were designed, built, and installed to meet internal needs, i.e., to be used almost exclusively by the university.

This vision of what a university campus should be like has changed radically: today, new campuses are conceived as a **creative piece of the urban environment** and as **factor for social, economic and local stimulation**.

And this is why the university as an institution, its teaching and research activities, and the transfer of knowledge to the business and social sectors has taken on crucial significance as a key factor towards creating a socially integrated model.

At this point it must be emphasized that the **BKC** project arises from pre-existing circumstances that were based on other conceptual premises in which the society-university relationship was not defined as comprehensively or as clearly as it is today.

On the other hand, to the difficulties that social and university stakeholders may have in their willingness to apply this new vision, we must also add the obvious
difficulties that transforming the physical space entails, as well as the challenge of creating new architectural works and buildings in general, conceived at the outset for a specific, socially integrated model.

The BKC project can only be conceived from a new standpoint that allows for the coordination, definition and application of the model of society that has been collectively chosen. The main areas of action which can be undertaken from the BKC with the goal of creating a socially integrated model are the following:

- The renovation of the urban landscape to achieve universal accessibility and create common meeting spaces
- The promotion of sustainable development in terms of training, research, management and social interaction and commitment
- The creation of campus environments that are authentic quality centres of university life, socially integrated into the greater urban or regional setting and providing efficient services and environmental and energy-saving improvements

Lastly, it is important to mention that some organization members of the BKC are international leaders in the research and development of assisted technologies for the inclusion of people with disabilities.

**Strands of action**

**C1. Improving accessibility**

- To guarantee universal access to the BKC and all its services
- To adapt emergency and evacuation systems to meet the needs of people with disabilities
- To meet the challenge of implementing technological and management systems that guarantee the safety of all members of the community
C1.1 Improving accessibility for people with disabilities: completing the process of eliminating architectural obstacles

Within the framework of financing the elimination of architectural barriers to make all university facilities accessible to everyone, the following actions have not yet been completed:

- **Access to buildings:**
  - Eliminating loose steps and implementing alternative access routes such as ramps
  - Adding low railings on both sides of outdoor stairs and ramps, with double height ergonomic handrails and tactile paving from beginning to end
  - Reducing the current gradient of the ramps to 6% or adding a platform as an alternative measure
  - Installing counters that can be accessed by users in wheelchairs both in terms of depth and height
  - Including tactile resources (Braille system, high-relief and/or tactile maps) in the visual information available at entrances

- **Interior mobility:**
  - Applying non-skid treatment to pavements
  - Adding skirting boards to glass doors if they are not made of safety glass
  - Including tactile information (Braille and high-relief) on signs identifying different areas

- **Auditoriums and function rooms:**
  - Including furniture with ergonomic and adapted designs
  - Installing magnetic loops
  - Providing audiovisual support with subtitles
  - Acquiring specific support products

- **Adaptation of lifts**

- **Cafeteria and canteen areas:**
  - Adapting bars and counters to accommodate users in wheelchairs
  - Improving existing visual communication
  - Installing alternative communication media
  - Making relevant information available in several languages
  - Including tactile information (Braille and high-relief)

- **Construction and improvement of building access ramps:**
  - Ensuring a longitudinal gradient of between 6% and 8%
  - Ensuring a transverse gradient of less than 2%
  - Ensuring widths of at least 1.20 metres
  - Applying anti-slip materials
  - Ensuring that the maximum length of ramps without landings are correct according to the gradient

The goals and actions of this approach are based mainly on the ONCE Foundation and Grupo Fundosa report on accessibility for facilities, services and processes in the scope of the Campus of Excellence project.
– Installing a low rail on both sides and in the centre for widths exceeding 5 metres
– Installing low rails at appropriate heights (90 cm-70 cm)

• Signage
  – Improving existing visual information
  – Complementing existing signage with acoustic and tactile information (Braille or high-relief)

C1.2 Improving info-accessibility

The actions intended to eliminate or reduce barriers to info-accessibility include:

• the creation of the BKC Technical Office of Info-Accessibility to centralize actions taken towards improving info-accessibility on campus;

• technician training - the development of accessible mobile web services;

• the creation of a style guide for the development of accessible mobile web services;

• a procedure for the creation of accessible online processes;

• accessible computers available to users that contain the primary support products needed to provide people with disabilities access to the information society;

• training on support products for directors of computer centres, libraries and other facilities with publicly accessed equipment;

• user services by means of accessible videoconference;

• a multimedia conference room for use as an info-accessible space;

• the development of wireless information points;

• making accessible audiovisual materials available including audio-description, subtitling and sign language;

• the development of a guide for the incorporation of info-accessibility requirements at interactive information kiosks and vending machines.
C1.3 Improvement of emergency evacuation plans for people with disabilities

In the event of an accident, there must be emergency evacuation protocols in place that are specific to the needs of people with disabilities and that will help them to react appropriately. To that end, the following adaptations must be made:

- Fitting the lifts with emergency exits for people with disabilities
- Updating evacuation routes
- Installing a public-address system for emergency situations
- Ensuring correct positioning of emergency exits
- Installing emergency and safety signs that are accessible to people with visual and acoustic disabilities
- Incorporating specific actions to the building emergency plan, allocating functions for the evacuation of people with disabilities, and assigning personnel in charge
- Providing specific training for the personnel allocated to assist people with disabilities in the event of an emergency

C1.3 Adaptation of campus security to an open environment

Most facilities of the current BKC are unfenced spaces open to the city and thus require more complex security systems than enclosed spaces do.

In the near future, the members of the BCK alliance will have a high performance card that will require:

- the replacement of access control readers with proximity readers;
- the expansion of physical control centres;
- the creation of new security check points
C2. Sustainability

Sustainable development has been and remains a priority in the different strategic plans that have had an impact on the campus in terms of teaching activities, research, adaptation of infrastructure, and energy use.

The **BKC** must be internationally recognized in terms of sustainable teaching, research into sustainable building, energy resources management, and waste minimization and recycling.

To that end, the following objectives have been set:

- To reduce the environmental footprint of the **BKC** in terms of distributed energy generation, and the reduction of:
  - emissions;
  - energy and water consumption;
  - production of urban waste.

- To make the **BKC** an international model of a sustainable campus

C2.1 System of Information on Consumption of Energy Resources and Water (SIRENA)

The **BKC** will consolidate the information system through monitoring energy and water consumption in all campus buildings.

The information provided by monitoring is important in understanding where and how consumption takes place in buildings and it allows resources to be more efficiently managed. This information on the campus environment will also allow resource management to be linked to teaching and research activities.

C2.2 Improvements in energy efficiency

Monitoring and awareness of the **BKC**’s energy efficiency will act as an **environmental audit** from which a set of three specific actions arise. These actions focus on three elements: **CO2**, water, and energy.

- **CO2**: we intend to reduce emission of **CO2** by reducing the number of motorized vehicles on the campus

- **Water**: we intend to reduce its consumption and attain a 100% rate in terms of water recycling

- **Energy**: we intend to reduce its consumption and increase sustainable energy production by using the most suitable means available on the market
C2.3 Research into sustainable building and energy resource management

At the BKC, sustainability is not only seen as the application of innovations and the modernization of facilities and equipment, but also as the commitment to research into sustainable building and the management of energy resources, drawing on the experience of the two universities that make up the BKC project.

Furthermore, research will be undertaken in the urban environment of the future campus: the BKC project will act as a living lab whose know-how can be used to build and redesign new and sustainable urban spaces.

C2.4 Adaptation of specific spaces for safe storage of research laboratory waste

As a result of its teaching and research activities, the BKC generates laboratory waste (over 10 tonnes of chemical waste a year).

At present, there is a lack of possibilities for the temporary storage of waste, mainly due to a lack of specific spaces. The measures planned to deal with this issue are the following:

- Designing and building a series of rooms to provide storage
- Investing in safety cabinets and other infrastructures that allow for the safe temporary storage of any chemical waste produced

C2.5 Waste prevention and recycling programme

Designing and building reduction plants and waste management in all BKC areas aimed at:

- selectively collecting the maximum amount of generated waste possible;
- considering waste as resources whenever possible.

Two of the activities that will take place in the plants are:

- the reuse of IT equipment by social welfare organizations;
- the management of by-products for the purpose of reusing material.

The aim of this measure is to establish the BKC as an exemplary centre for waste management based on prevention and reuse, with an important R&D&I component and an emphasis on the educational value of such action for the university and its environment.
**Target results in this area for 2015**

During the next six years (2010-2015), all the measures laid out here are expected to be implemented and today’s alliance will be forged into an urban campus that is a vital element of a socially integrated model in the spheres of universal accessibility and sustainability.

The implicit goal is therefore to turn the BKC into:

- the urban nucleus that will lead the transformation of the Barcelona metropolitan area based on the aforementioned premises (accessibility and sustainability);

- a benchmark international centre in terms of improvements to the quality of life of the people who study and work on the BKC and of the general public at large.

Beyond the specific measures which will contribute towards the transformation of the physical environment and the achievement of sustainability, the implementation of this plan will promote a transversal interest in sustainability, safety and universal accessibility amongst the members of the BKC (students, teachers and researchers). The implementation will be based on experience so that these concepts and their underlying values become part of users’ personal and professional lives.

Implementation of the planned measures will lead to the creation of the type of campus that BKC is striving for:

- Becoming an authentic focal point of university life

- Becoming socially integrated into the urban and local environment

- Providing quality services and implementing environmental and energy improvements

A BKC coordinating unit is being planned to propose transversal actions in the areas of accessibility, safety and sustainability and to monitor and track progress in these areas.

Monitoring of the expected results will be based on the following indicators, taking into account that the current value for each indicator has yet to be determined and that by 2015 the objective implementation value should be 100%.
EUROPEAN HIGHER EDUCATION AREA: ADAPTATION AND IMPLEMENTATION

Starting point

In order to fully implement the new teaching-learning model adapted to the European Higher Education Area, the BKC project includes an area of action devoted to educational innovation that consolidates existing projects and strengthens the participation of the teaching staff with a clear student-centred orientation.

Quality teaching requires the immediate adaptation of student facilities, especially the classrooms, laboratories, spaces and instruments needed for the new ways of learning that the EHEA promotes.

Other planned improvements include:

- Modernizing IT equipment and computer programs and infrastructures
- Remodelling the Learning and Research Resource Centres (LRRCs)
- Adapting the learning environment with 24-hour service

Quantitative results

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Current value</th>
<th>Target for 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of implementation of actions planned for SIRENA</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>Percentage of reduction in CO2 emissions</td>
<td>-</td>
<td>20%</td>
</tr>
<tr>
<td>Percentage of reduction in water consumption</td>
<td>-</td>
<td>20%</td>
</tr>
<tr>
<td>Percentage of reduction in energy consumption</td>
<td>-</td>
<td>15%</td>
</tr>
<tr>
<td>No. of buildings built/adapted according to sustainability criteria</td>
<td>-</td>
<td>50%</td>
</tr>
<tr>
<td>Percentage of reduction of the production of solid urban waste and other waste</td>
<td>-</td>
<td>20%</td>
</tr>
<tr>
<td>No. of specific spaces adapted for waste storage</td>
<td>-</td>
<td>30%</td>
</tr>
</tbody>
</table>
Furthermore, and as a key element of the new skills-based model, a focus on employability both during and after the course of study is considered of the utmost importance and will be accomplished with the help of professional work experience programmes and a career orientation service.

Finally, in line with the objectives established in the University Strategy 2015, measures will be implemented that will allow for the interaction between secondary education, professional training, and the university activity carried out on the campus.

Collaboration will focus on programmes oriented towards promoting scientific and technological skills in secondary education, while providing training to secondary education teachers to improve teaching and learning in the sciences and technology.

The necessary bridges will be built around the campus environment to link the campus and secondary education and professional training institutes, thereby encouraging the use of campus infrastructures and services, fully adapted to the EHEA, and making it easier for students to progress from one stage of their educational careers to the next, throughout their careers.

To that end, the campus has made significant advances in terms of the number of classrooms with internet connection, as well as in the provision of WiFi areas, classrooms with video equipment, and video-conference rooms. However, overall connectivity is still necessary, as is the maximum modernization of these areas and of laboratories with IT equipment.

Classrooms are currently being adapted to meet the new needs and small work rooms for small group work are being built. The objective for the measures in this area, which plays an extremely important role within the strategic plan, is to have fully adapted the campus space by 2015.

**Strands of action**

**D1. Strands of action**

**OBJECTIVE**

To **strengthen current teaching activities** through promoting the participation of the teaching staff in educational research activities.

**D1.1 Encouraging teaching innovation projects on the campus**

**ACTIONS**

Efforts put into promoting teaching improvement and innovation programmes coordinated through the teaching support services of LRRCs and the Institute of Educational Sciences (ICE) have facilitated the trial of new learning and teaching methods to start adapting university programmes to the ECTS credit system.
The new pedagogical orientations demand a more personalized focus on the student, which is why it is crucial to apply the criteria of quality and social adaptation within the European framework and the framework of the new knowledge society in order to develop university education to the fullest.

Teaching innovation must therefore be stimulated by providing economic and methodological support for the various projects currently being developed on campus.

**D1.2 Encouraging the participation of the teaching staff in educational innovation activities**

Current levels of participation in educational innovation activities must be increased. To that end, all campus teaching staff must be organized and united, systematically getting involved in and committing to improving teaching activities in order further the process of positioning the student at the centre of the teaching-learning process.

**D2. Adaptation of spaces, classrooms and services to the requirements of the European Higher Education Area**

**OBJECTIVE**

To adapt the spaces and services of the campus to the new needs of the teaching and learning methods of the European Higher Education Area.

**ACTIONS**

**D2.1 Improvements in fibre optics and expansion and improvement of WiFi areas on campus**

The purpose of this measure is to implement a guaranteed quality network in all buildings of the BKC. This network must meet the needs that arise from the use of technology in connection with new learning and working methods defined by the European Higher Education Area.

**D2.2 Modernization of equipment, programs and infrastructures of IT classrooms**

In order to adapt IT classrooms to the new regulations of the European Higher Education Area, their equipment, programs and infrastructures must be improved.
D2.3 Remodelling Learning and Research Resource Centres (LRRCs) and adapting the campus for 24-hour learning

The aim of remodelling the libraries is to abandon the traditional format and adapt to the learning modes offered by the European Higher Education Area and the working needs of students and lecturers.

The goal is to turn the LRRCs into spaces that are open to the social life of the campus and provide some of these spaces with around the clock service, especially during exam periods, as well as providing classrooms adapted to small work groups.

D2.4 Setting up spaces for small work groups

In keeping with the pedagogical guidelines provided by the European framework, a need has been identified for the adaptation of small classrooms for discussion, preparation of work and presentations, group work, etc. that will allow students and the lecturers to do their work more comfortably in a setting in which they can concentrate.

D2.5 Adapting classrooms to the new needs of the European Higher Education Area

When they were built, the classrooms met the needs of the universities at the time; they now need to undergo a thorough process of adaptation in order to meet the new needs of the EHEA.

These reforms consist of:

- redistributing the spaces;
- installing a data line;
- using emergent technologies;
- reforming the services in order to adapt them to people with disabilities;
- improving the general conditions of the setting.

D2.6 Expanding the academic infrastructures to meet the needs of the bachelor's, master's and doctoral programmes

The tower of the new CICRIT building will be the new face of the student, lecturer, researcher, and foreign visitor services centre in the south of the campus.

The CICRIT building will house:
• a direct general student services office;
• units and sections linked to the management of international relations;
• the UB School of Modern Languages;
• the International Postgraduate and Doctorate School.

The northern zone of the BKC will have dedicated areas providing coordinated services, meeting the divergent demands of life sciences, social sciences, and technologies.

Meeting spaces for the student body (squares, International Welcome Point) and student services offices are also planned on the north side of the Avinguda Diagonal (institutional building L2).

**D3. Student employability**

**OBJECTIVE**

To improve the level of university student employability both during the course of their studies and upon graduation.

The EHEA sets out the need for a greater link between the student body and their teaching centres, therefore a priority objective – in addition to the scholarships policy – is to help students find paying work close to the campus. The BKC has vast experience in that respect through cooperation with laboratories, libraries, museums, student services, and other employers. Nevertheless, more effort is still needed to enhance the options provided by the BKC.

Because the disciplines that one can study at the BKC are in high demand in society, employability is not a problem on this campus. However, experience has shown that providing support during the initial stages of entering the labour market is very positive as it allows for a better match between offer and demand. This positive effect is especially marked if support is provided before graduation through professional work experience programmes, job banks, business skills seminars, or similar initiatives.

**ACTIONS**

**D3.1. Increasing collaboration offers on the campus to balance study and work needs.**

Promoting the BKC as a source for work will improve work habits among students and optimize cooperation possibilities with the various centres and services on the campus. This will lead to an increase in offers of cooperation and will promote students’ employability, while promoting coordination between study and work, and the commitment to and identification with the BKC.
D3.2 Increasing the availability of professional work education placements and personal attention to students in their last year to help them enter the workforce.

It has been shown that professional work experience in companies and institutions are a key factor in the acquisition of social and personal skills among university students.

Because work experience placement facilitates future professional integration, the university’s network of relationships with the business sector will be used to increase external work experience opportunities.

D3.3 Strengthening the professional career orientation service

Universities currently have occupational and professional career services that liaise with companies and institutions and university students to manage the availability and demand for positions.

The BKC will expand this service in order to increase the level of professional placement of graduates.

D4. Secondary and professional training cooperation programmes

- To consolidate a cooperation policy with secondary institutions and professional training centres to promote the use of campus infrastructures and services and to attract the best talent
- To assist students in the transition between the different stages of their education and throughout their professional careers.

D4.1 Programmes to motivate secondary school students to undertake university studies

Improvements aimed at the adaptation and introduction of the European Higher Education Area involve the construction of a higher education model that conveys an open, accessible image.

Up until now the universities have participated in fairs, seminars, and visits and projects in secondary school classrooms, as well as in other initiatives on the Internet to stimulate students’ interest.

There are currently 16 projects designed to motivate Spanish schoolgoers to attend university, both in the cases of students...
in compulsory secondary education (Educación Secundario Obligatoria, or ESO) and students in baccalaureate studies in upper secondary education (Bachillerato). However, the programmes that have proved successful need to be consolidated and extended.

**D4.2 Programmes to promote science and technology studies in secondary education**

12 programmes have currently been developed between the two Barcelona Knowledge Campus universities to stimulate schoolgoers’ interest in science and technology studies.

The purpose of this action is to incorporate programmes, prizes, competitions and workshops to give schoolgoers in secondary education the opportunity to familiarize themselves with the world of research and to use partnerships with Campus organizations to alleviate their fears and show them what higher education can offer.

**D4.3 Secondary school teacher training to improve science and technology teaching and learning**

At present, between both universities, there are 70 permanent training courses for secondary school and professional training teachers developed in cooperation with the Institute of Education Sciences (ICE).

The purpose of this activity is to improve the teaching and learning of science and technology through providing training to this group.

**Target results in this area for 2015**

The BKC is immersed in the process of adapting its facilities and services to the new technological and methodological requisites of the European Higher Education Area (EHEA). 2015 is projected as the final date for the full adaptation of infrastructures, as well as the innovation of teaching programmes. To this end, the maximum participation of the student body and teaching staff will be promoted in these planned projects.

In 2015 the various activities designed to adapt to the present EHEA strategy will have materialized, with 100% of classrooms connected to the Internet, with multimedia video, WiFi cover in all areas, laboratories with computer equipment and fully adapted classrooms.

Furthermore, the Learning and Research Resource Centres (LRRCs) will offer study rooms available 24 hours based on demand and especially during examination times, as well as classrooms for working in small groups.

Another expected result consists of improving the employability of university graduates in accordance with EHEA recommendations regarding:
• establishing consultation and comparison processes with productive sectors to improve skills training, with special emphasis on entrepreneurship and innovation;

• providing professional career services.

The goal is that by 2015 all students will be able to gain work experience in off-campus companies or institutions and that a much higher percentage of university graduates will directly enter the workforce.

Cooperation agreements will have been established with secondary schools and professional training institutions in secondary education in order to:

• make better use of infrastructures and services;

• promote university values among young people in training programmes;

• assist students in the transition between the different stages of their education and throughout their professional careers.

Quantitative results

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Current value</th>
<th>Target for 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching innovation projects</td>
<td>76</td>
<td>30% increase</td>
</tr>
<tr>
<td>Percentage of classrooms connected to the Internet and with WiFi coverage</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>Laboratories with adequate computer equipment</td>
<td>40%</td>
<td>100%</td>
</tr>
<tr>
<td>Video conference rooms</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Fully adapted classrooms</td>
<td>30%</td>
<td>100%</td>
</tr>
<tr>
<td>Intercampus scholarships for student employability</td>
<td>2,097</td>
<td>30%</td>
</tr>
<tr>
<td>Secondary school student participants in campus initiatives</td>
<td>-</td>
<td>30%</td>
</tr>
<tr>
<td>Estudiantes de secundaria participantes en iniciativas del campus</td>
<td>10,333</td>
<td>30% increase</td>
</tr>
</tbody>
</table>

TRANSFER TO THE BUSINESS SECTOR OF KNOWLEDGE AND TECHNOLOGY RESULTING FROM ACADEMIC RESEARCH

Starting point

In recent years, the Universitat de Barcelona (UB) and the Universitat Politècnica de Catalunya (UPC) have made considerable efforts to become leaders in the generation of knowledge. Twenty-three research centres, the Barcelona Science Park (a pioneer model in Spain in the integration of university researchers), over 200 start-ups, 47 spin-offs (9 of them affiliates), the large volume of national and international patents (192 in the last three years) and numerous appraisal and knowledge transfer instruments have made the BKC a leader in the process of innovation through scientific and technological knowledge.
In the future, without a loss of leadership in basic research, the BKC must:

- make better use of research results by consolidating appraisal processes;
- strengthen, at the same time, research directed at social and productive demands.

**Strands of action**

**E1. Creation of the Centre of Technological Innovation (CIT)**

**OBJECTIVE**

The creation of the CIT of the BKC aims to consolidate international leadership in R&D in the scientific and technological disciplines being developed at the UB and UPC.

**ACTIONS**

**E1.1 Definition, launching and implementation of the CIT**

The CIT will mainly be involved in the following speciality areas:

- Food safety and quality/food sector
- Sustainable development/environment – energy – water sector
- Improving industrial processes/sectors such as construction, civil engineering, the automobile industry, plastics, and coatings
- Information or knowledge society/instruments, computer linguistics, software, ITC technologies sectors
- Health and quality of life/pharmaceutical, biotechnology and medical technologies sectors
- Socioeconomic sciences/sectors such as education and economy

The CIT would aim to be:

- **the unifying force** between UB and UPC research groups and centres;
• the meeting point between research groups and companies interested in developing R&D&I projects.

The CIT will develop its activities based on the following specific objectives:

• Promoting international alliances and partnerships to ensure a strategic presence in Europe and the world

• Improving and assigning personnel to projects and intellectual property management

• Promoting the mobility of project management personnel between sectors and institutions to improve abilities

• Increasing and diversifying funding for R&D&I projects

E2. Programmes to stimulate innovation

• To increase the transfer of knowledge between the university and society

• To transfer resources to society which the university allocates to training people for research: sufficient professional opportunities for doctors, young lecturers and researchers on the labour market through improving knowledge about innovation and the competences which the market requires

• To professionalize the management of research group innovation

• To create new incubation infrastructures to carry out collaborative projects and achieve a higher intensity of service provision

E2.1 International Centre for Business Accommodation

The centre is a commitment to the internationalization of public and private research, allowing companies in other countries to be involved in the BKC and therefore to participate in the most significant business, scientific and technological innovation platforms and networks in our country.

The campus has already demonstrated the success of business incubation through the Barcelona-Santander Bioincubator Science Park and the attraction of international companies like INTEL LAB of Parc UPC.
E2.2 Knowledge to Market Programme (K2M)

The aim of this programme is to improve the transfer of knowledge and research results generated by the university for the benefit of society and the productive environment, reducing the difference between business needs and opportunities in the fields of R&D&I and boosting the BKC’s effectiveness in the contribution of knowledge and research results.

In the K2M Programme, research programmes are closely related to the market and come from linked organizations, companies, spin-offs or research groups. Essentially, it is a meeting place for projects of excellence which, regardless of the impetus, fosters cooperation and partnership, bringing research into the general industrial and social arena.

E2.3 R&D&I Mini-Cluster Programme

Mini-clusters are groups of talent that stem from the initiative of a research group. These thematic mini-clusters are made up of:

- doctoral and postdoctoral programmes;
- spin-off businesses from the research group;
- research centres generated from the research group;
- the research assistants involved;
- international master’s degree programmes.

The BKC intends to go further and integrate university, business, and research knowledge into this structure, attracting international talent and renowned researchers; creating mini-cluster structures as a basis which sustains the organic growth of the alliance in order to achieve high levels of return for society.

E2.4 University-Business Programmes

- Programme to stimulate business innovation:
  A programme designed to boost the technological innovation process in small and medium-sized enterprises (SMEs) through the incorporation of human resources (graduates, engineers, master’s degree holders, doctoral students and doctors) qualified in innovation management into the productive sector. The project is divided into two phases, one for training and the other to stimulate business innovation.

- Researcher mobilization programme in the business environment:
  Programme for BKC lecturers and researchers, institutions and companies in order to:
  - promote the exchange of knowledge;
  - improve university-business/institutional relations;
– identify and analyse business/institutional needs;
– analyse the state of the art of technology/knowledge used by the company/institution or related technologies;
– give support to the business/institution in the design and implementation of training and research projects, development and innovation.

E3. Consolidation and internationalization of research appraisal

- To consolidate and internationalize appraisal, improving the results of the use and transfer of knowledge from the BKC
- To stimulate the transfer of technology and the use of knowledge in general from all the organizations comprising the university setting, considered to be a driving force behind economic and social development
- To professionalize knowledge transfer and appraisal through the international training of the units’ technical experts
- To enhance and promote research synergies and activities and the cooperative transfer of equipment and university R&D units and other research centres with businesses, institutions and spin-offs
- To incorporate technology appraisal mechanisms into university/business transfer contracts in the transfer of knowledge from research groups to spin-offs
- To implement a spin-off model as an agent of appraisal and marketing for the research groups’ own technologies
- To give appropriate employment stability and compensation to staff outside the structure of the research groups, offering them a highly qualified professional opportunity in the group spin-off
- To make support and training available from the appraisal unit to help develop and internationalize spin-offs

E3.1 Programme for the appraisal and transfer of knowledge generated by research groups

The Appraisal Unit will be set up as an internal, transversal structure of the BKC with the capacity to coordinate and optimize existing structures of the UB and UPC linked to the transfer, appraisal and commercialization of research results in all knowledge areas. The following projects have been established:
• Appraisal of research projects
In general, academic research concentrates on very early stages and therefore is at high risk within the value chain in the application of results in the economic environment. The creation of concept or prototype testing constitutes a vital stage in the marketing process. During the next four years the support and appraisal system will be consolidated, through equity as well as private funds and public tenders.

• Project appraisal fund
The objective of the initiative is to increase the value of projects with a high transfer potential, thereby improving the possibilities for the protection and commercialization of university research projects. The aim is to create an annual appraisal fund to cover the requirements of specific actions which would allow the progress or recovery of projects that already have a head researcher or may obtain one within a short period of time.

E3.2 Training of technical transfer personnel in the international arena

The BKC is already in contact with various renowned international centres that market their technology throughout the world. However, it is essential to define new specialized professional profiles for different university missions, especially in the fields of research and international transfer of knowledge and technology.

E3.3 Promoting the internationalization of knowledge transfer

With the aim of stimulating the transfer of knowledge generated in the international arena, the campus will:
• take advantage of the existing cooperation between research groups, businesses and international institutions within the international research programme framework to encourage the transfer of knowledge;
• use the available instruments to disseminate technological advances on an international level (Enterprise Europe Network, Innoversia, Inberso);
• actively take part in fairs and brokerage events;
• promote reciprocal exchanges between research groups and spin-off companies and generated knowledge transfer in the international arena through strategic agreements with universities, science parks and transfer networks.

E3.4 Marketing of industrial and intellectual property

The appraisal and transfer of knowledge system is completed by the protection and marketing of generated intellectual property.

The most significant aims are to:
• increase the number and value of licensing contracts for R&D&I results;
• increase tangible licence contracts;
• increase software and database licences.

**E3.5 Creation of platforms and springboards for entry into research groups and spin-off companies**

• Services for technology-based enterprises

Enterprises installed in BKC incubators will receive strategic advice, business and financial services. They may also benefit from the internationalization programmes sponsored by ACC1Ó of the Generalitat de Catalunya, such as visits to incubators in the USA and the analysis of international industrial property.

• Incubation and post incubation
  – Expansion and modernization of incubation areas
  – Post incubation areas for the growth of incubated businesses. The companies currently accommodated in campus incubators can stay for a maximum of four years, meaning that in about 2011, all of them will cease to enjoy the special conditions they have been offered. The BKC will reserve newly constructed areas for companies which wish to remain when incubation has terminated.

**E3.6 Creation of a seed fund for technology-based companies**

There is a clear need for funding in the early stages of business creation. For that reason, the creation of our own Seed Fund has been proposed, which will invest in university projects.

This is an early stage capital venture which will take place during the early stages of the enterprise, when the investment is aimed at diminishing technological risk (investment in additional industrial property, alfa and beta prototypes, concept trails, etc.) and where private risk capital is reluctant to invest.

**E3.7 Alliances with leading organizations in their areas of specialization, receivers of knowledge generated in R&D&I programmes**

The actions planned in this area are to:

• establish new alliances with companies in the BKC’s priority disciplines;
• increase the volume of collaborative R&D&I programmes with institutions belonging to different national and international knowledge transfer networks;
• generate synergies at the BKC level between the networks and alliances generated by the UB and UPC during the past years.
Target results in this area for 2015

The development of activities in this area will enhance the international leadership of the BKC in the field of R&D&I.

This leadership will be based on the following premises:

- **Attracting international talent** through programmes designed to stimulate innovation: an international business accommodation centre and programmes to stimulate innovation such as the K2M Programme, R&D&I Mini -cluster Programme

- **Improving infrastructure and the availability of quality technical and scientific services** in order to conduct excellent research through:
  - the creation of the CIT;
  - the addition and articulation of scientific infrastructure and Scientific and Technical Services;
  - the acquisition and modernization of technological scientific equipment.

- **Consolidating and increasing participation in International R&D&I projects** through:
  - attracting international talent;
  - internationalization of research appraisal;
  - training technical transfer personnel in the international arena;
  - alliances with leading organizations in their areas of expertise, who receive knowledge generated through R&D&I programmes.

- **Stimulating relations between society and the university** through:
  - programmes to foment innovation and the momentum of the transfer of knowledge;
  - researcher mobilization programmes within the business environment;
  - marketing of industrial and intellectual property.

- **Creating technology-based enterprises** (TBEs) through:
  - strategic advice on entrepreneurship;
  - the creation of entrance platforms and springboards for investigation groups and spin off enterprises;
  - the creation of a Seed Fund for TBEs
Starting point

In December 2001 the Barcelona City Council passed the Master Urban Plan for the Portal del Coneixement (immediately prior to the Barcelona Knowledge Campus project) as a result of an agreement between the Barcelona City Council, the l’Hospitalet de Llobregat City Council, the UB and the UPC. The contents of this Master Plan are divided into four areas:

- Improving accessibility for this urban sector in relation to the whole metropolitan area of Barcelona
- Systemizing open spaces
- Streamlining for initiatives for large organizations
- Structuring the distribution of new buildings

The Master Plan is applied to a perfectly defined area of 227 hectares. Nevertheless, the Master Plan stems from the premise that this campus where the UB and UPC converge is not clearly identified by the citizens of Barcelona as a physical or symbolic unit. At the time the Master Plan was drawn up, the university campuses adjacent to the Avinguda Diagonal were described as barely penetrable with regards to the city of which they are a part, and improvements were needed in the planning of common public urban spaces – in spite of the fact that the campus is considered to be the main cluster of training, research and transfer of knowledge in southern Europe. For this reason, the main purpose of the Master Plan is to reorganize the public spaces of the BKC, to plan the layout of its streets and to make it compatible with the rest of the city. More precisely, the actions that the Master Plan promotes are:

### Quantitative results

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Current value</th>
<th>Target for 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue generated by transfer activity</td>
<td>€35,428,098</td>
<td>€41,086,000</td>
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<tr>
<td>National and international patents generated in the past 3 years</td>
<td>192</td>
<td>240</td>
</tr>
<tr>
<td>Licensing contracts to external entities</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Attraction of researchers through calls of a competitive nature</td>
<td>149</td>
<td>200</td>
</tr>
<tr>
<td>Number of international and European projects</td>
<td>46</td>
<td>60</td>
</tr>
<tr>
<td>Spin-offs created during the past 5 years</td>
<td>47</td>
<td>60</td>
</tr>
<tr>
<td>Affiliated spin-offs</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>M² available for spin-offs and knowledge enterprises</td>
<td>60,000</td>
<td>105,000</td>
</tr>
<tr>
<td>People/year trained in project management and innovation management</td>
<td>136</td>
<td>170</td>
</tr>
</tbody>
</table>
moderately expanding and correcting the existing street system to achieve better internal communication and better connection with the city (two streets - structural boulevards);

- planning new potential constructions;

- recovering Avinguda Diagonal as a public space, a gateway to the city of Barcelona and the university campus;

- promoting and improving accessibility through the use of public transport.

To accomplish this, the interaction between the BKC and the surrounding area will rely on:

- reducing traffic, especially private vehicles, in favour of collective public transport: metropolitan rail, tram and intercity bus;

- promoting the urban tramway (Trambaix) axis, connecting the BKC with the metropolitan territorial area of Baix Llobregat to the Plaça Francesc Macia;

- developing urban transport by bicycle, in accordance with the layout and consolidation of this transport system in the urban area of the city of Barcelona. The necessary urban transformation will require an effective provision of service as well as the additional construction of bike lanes and new stations;

- improving both internal and external BKC communication with the construction of the Metro line 9, which will have two stations on Campus: BKC North and BKC South;

- expanding the system of open public spaces increasing the wooded area beginning at Pedralbes park, the Torre Girona Gardens, Cervantes Park and the sports area to the south of Barcelona’s Avinguda Diagonal.
Strands of action

F1. The creation of didactic, cultural, social and sports areas

The overall objective of this area is to enhance the BKC’s own university activities as much as those that are defined as common values for all members of the university community in relation to its surroundings: mobility, urban landscape, social identification, signposting and services and social and cultural activities. To do this, the following specific objectives are proposed:

- Remodelling of the present BKC urban space according to the content of the 2001 Master Plan, in keeping with existing urban developing instruments
- Incorporating the BKC project into the new concept of the 21st century university campus, promoting the capacity to attract talent and economic activity related to the economy of knowledge, towards an urban environment with a high standard of living
- Making the campus accessible, as much from an urban point of view as a social one, strengthening the interaction between university and society through policies promoting and publicising activities carried out on campus in conjunction with neighbourhood associations and organizations in the city
- Integrating and strengthening existing mechanisms for student participation in the BKC to make students the key players in the implementation of the planned actions
- Reaching the appropriate level of campus services offered, converting the campus into an enjoyable place to live, study and work (catering services, university housing, sports facilities, an optimal level of resources available in libraries, etc.)

F1.1 Adapting multipurpose spaces for cultural activities and public events open to the city

The facilities and equipment of the BKC are conceived as resources at the service of the citizens of Barcelona, and therefore this action is intended to facilitate:

- the scheduling of cultural activities and public events intended to bring the university community and broader society closer together;
• the provision of cultural events and presentations of all kinds put on by citizen and cultural organizations in the area of influence of the BKC.

Several different museum projects will be promoted, including the following:

• Didactic initiatives intended to encourage citizens to visit university centres (Geological Garden)
• Activities related to historic resources of campus libraries
• Adaptations of unique centres (instrument, zoological, medical, art collections, etc.)
• Recovery of the buildings of the Gaudí pavilions to allow its facilities to be offered to the community as a whole

F1.2 Urban renewal to create new social spaces

The vision of the BKC as a city-campus of the future in which people live, work, study and enjoy themselves implies a certain degree of urban renewal to adapt current public spaces into new physical spaces suitable for social interaction.

These actions are based on the premise that we must modify the legacy of existing space associated with obsolete urban and architectural concepts. Reforming this physical space is absolutely necessary and implies the creation of new civic squares and cores of interaction for the BKC community and the general citizenry derived from the provision of services.

F1.3 Remodelling of auditoriums and meeting rooms to adapt them to new formats of participation, presentation and conferences

This includes remodelling the different auditoriums and meeting rooms to adapt them to new formats of participation, presentation and conferences as well as the construction of a new auditorium.

In socio-cultural terms, this includes:

• the creation of multiuse spaces for use in the endeavour to promote cultural activities that represent the educational values of the arts, music and corporal expression, such as converting the foyers of some centres into exhibition and meeting rooms open to the public;

• the generation of a multilingual platform which will allow for the transmission of valuable information and interaction among all members of the university community.
F1.4 Improving sports facilities

Having the possibility to get physical exercise in athletic facilities is an essential condition for a campus with a high quality of life and promotes social interaction with the local citizenry.

This is why plans have been set forth to upgrade existing athletic services incorporating a pricing policy that aims to provide services self-sufficiently. At the same time, new sports services and programmes will be created for members of the BKC community as well as the local population.

F1.5 University halls of residence in the athletic area

The BKC campus includes an area which combines all of the modalities of athletic activities in the university community, from official competitions to individual practice to collective free-time sports activities.

It is difficult to get there by car, but once there, it comprises an area of 10 hectares with great potential as a space for urban development.

This is where the construction of the new university hall of residence is planned. This will cover the following needs:

- It will create a new focal point for university endeavours.
- It will promote activities.
- It will improve accessibility.
- It will increase available on-campus housing.

F1.6 A space for student and neighbourhood associations and associations affiliated with the municipality

Making the BKC accessible to the local citizenry and wider society does not happen merely by permitting cultural activities to take place on campus; rather they must be proactively promoted. An ideal way to achieve this is by offering meeting spaces which social groups can use for their activities.

This is why it is critical to involve the BKC student body as active participants in the transformation that the campus will undergo in the coming years. Another key element of the BKC project is to create municipal centres in the local area which provide citizen services; a measure that will have repercussions in day-to-day campus-neighbour relationship.
F2. Mobility

OBJECTIVES

A key factor of quality of life in a city of knowledge is being able to get from one place to another comfortably and efficiently. The BKC has taken considerable steps forward in this respect, but an even stronger push is needed to offer university students a real alternative in their choices of mobility to satisfy their needs for getting around on campus. Furthermore, it is important to ensure real permeability between the BKC and its metropolitan and regional environment.

To do this, the following objectives have been established:

- Promoting the use of bicycles as much as possible; the university group boasts the ideal conditions for leading the use of bicycles in the city.
- Transforming the physical space to facilitate the walkability of the BKC with convenient connections between the different physical urban units that make up the campus.
- Encouraging the use of collective public transport to facilitate the permeability of the BKC urban complex within its urban and regional environment.

ACTIONS

F2.1 Promoting the use of bicycles

- Convert the bicycle into a common means of transport in the urban setting.
- Promote the improvement of bicycle transport infrastructures in the regional setting of the campus.

The university group boasts the ideal conditions for leading the use of bicycles in the city. The Bicicampus project provides a bicycle lending service and mobile multi-service bicycle point which raises awareness, provides information and makes minor mechanical repairs (Punto Bicicampus). It has been in operation since 2007 and has received a very positive response. The proposal presented here attempts to consolidate and expand the scope of the project to make the bicycle a common means of transport in the university setting.

The project should also serve to promote the improvement of bicycle transport infrastructure in the regional environment of the BKC, facilitating co-operation between the universities and the Barcelona City Council in the area of mobility.
F2.2 Promoting the walkability of the campus

Urban reform actions will be undertaken to ensure that the constructed space of the BKC places pedestrians at the centre of the mobility structure. Some of the more outstanding actions in this area include ensuring the appropriate regulation of motor vehicles, adapting routes for people with reduced physical capacities, signposting, eliminating architectural barriers, optimizing walking routes, managing intersections to give priority to pedestrians and establishing a 30 km per hour speed limit for motor vehicles.

F2.3 Creating internal collective transport to link buildings and areas distant from the campus

It is clear that the interconnection among the different facilities that make up the BKC is of key importance in ensuring its coherence. To achieve this interconnection, several minibus routes will be designed and implemented. The frequency with which the buses run will be determined by demand, thereby providing an effective service that benefits the general operation of the campus.

F2.4 Promoting the use of public transport to access the campus (bus, tram, Metro lines 3, 5 and 9, car sharing)

The efficient connection of the BKC with its metropolitan environment is ensured by the more than sufficient means of public transport that connect the campus to its urban and metropolitan environment.

With the means in place, the members of the BKC community must be encouraged to use them – this is especially true for the student body but also for other groups, such as the teaching staff.

A set of incentive measures will be planned to encourage the use of public transport and shared private vehicles and the use of these means of transport will be monitored. The information obtained from such observation can then be applied in redesigning the measures proposed.
F3. Planned architectural infrastructures

**OBJECTIVES**

By 2015, the BKC will become a new urban showpiece that will consolidate Barcelona and its metropolitan area as a model of city planning, known as the “Barcelona Model”, internationally recognized for its combination of landmark, functional and quality architecture, along with urban management promoting public-private collaboration.

With good reason, the Barcelona School of Architecture will be located on the BKC – a school in which the majority of the architects who have participated in the great urban changes of the city were trained – providing the academic and intellectual environment that has resulted in buildings that set the standard in quality architecture, such as the Coderch building housing the Law Faculty of the Universitat de Barcelona.

Alongside the creation of learning and cultural environments and the promotion of sustainable mobility, the infrastructures proposed below aim to provide the BKC with its own architectural personality, setting out to create a new metropolitan hub, founded on the provision of services linked to the knowledge society, as well as a new visual landmark in the urban landscape of the city.

In addition, the BKC also aims to provide the campus community with landmark new buildings, making the BKC an international benchmark in terms of architecture, city planning and construction. As such, the following objectives have been set:

- To implement an infrastructure designed to strengthen academic activity and direct it towards the European Space for Knowledge
- To schedule actions aimed to stimulate and manage the flow of knowledge and the transfer of technology between universities, research groups, local, professional and social organizations, and businesses
- To provide value-added services, particularly ones oriented towards the corporate world

**ACTIONS**

**F3.1 Construction of the CICRIT Building**

The CICRIT (Centre of Scientific Infrastructures for Research and Technological Innovation) building will house different services designed to support science, knowledge transfer and general activities:

- This compact 4-floor module will house the scientific, laboratory and research support infrastructures of the scientific-technical life sciences
services, currently spread across different areas of the campus

- The same 4-floor module will also house the spaces belonging to the Scientific Specialities Area of the Technological Innovation Centre (CIT)

- Located on one side is the tower, where all the offices relating to information and communication technologies (ICT) will be located

Furthermore, given the visual impact of this tower, which will make it a spatial landmark for the campus, plans are in place to install here:

- the Campus Coordination Office

- the future International Reception and Service Office

- the International Postgraduate and Doctoral School

- Classrooms and services for the teaching of foreign languages

- Spaces for teaching Spanish language and culture

The architectural proposal is arranged around a solid volume occupying the entire plot, and from which emerges, in the eastern part, a tall tower that visually identifies the building within the campus. From a construction and also formal point of view, a double façade to "overcome the difficult composition of the façade resulting from the multiple and diverse internal requirements" allows values of flexibility to be incorporated into the building's form, while providing excellent protection from the sun. The materials to be used in its construction will make this building a leading example in terms of sustainability.
F3.2 AUEB building

The BKC aims to become a benchmark at both national and European levels with regards architecture, city planning and construction in Barcelona (AUEB). As such, one of the campus objectives is to house the AUEB building, designed to strengthen academic activity and direct it towards the European Space for Knowledge, with actions designed to stimulate and manage the flow of knowledge and the transfer of technology between universities, research groups, local, professional and social organizations, and businesses, as well as to provide value-added services and in particular a business incubator.

This building is integrated into the wider context of the BKC and shares the mission of encouraging excellence, research, innovation, the transfer of results and technological progress, as well as that of becoming a revitalizing socio-economic agent between the university, public administrations and businesses.

Four strategic areas of action are proposed:

- Area of access to new technical scientific infrastructures and services
- Area for the promotion and creation of exceptional new research opportunities
- Area for the creation or interconnection of new research and technology transfer structures: creation of business incubator
- Area for the promotion of the current research bodies in the field of architecture, city planning and construction

F3.3 Construction of the L2 services building

A building of 2,300 m² is to be constructed, with four floors of office space plus a basement, all of which are completely flexible in terms of distribution while being equipped with all of the necessary communications facilities. The aim of the building is to create a space of offices and services for the BKC community, including the following facilities:

- A function hall for an audience of 180 people
- Meeting rooms
- Space for the Internationalization Area
- Space for the Orientation and Work Placement Office
- Spaces for knowledge transfer and appraisal services
- Incubating space for spin-off businesses
- Space for the Alumni Association of the BKC Campus
F3.4 Construction of the new student hall of residence

Within the sports area, the construction of a new student hall of residence is planned. The hall of residence will generate a new focus for university activity, permitting the shared use of multiple facilities, both residential and for sport.

The new facilities will provide accommodation for students, teachers and foreign researchers in order to facilitate their stay at the BKC and their incorporation into the university community, the campus and the city.

The building has a strong vertical component, which unmistakably marks this new access point to the grounds. It also allows all the planned activities to be harmonized, as well as permitting spaces and services to be shared, including those corresponding to canteen-restaurant facilities and others necessary for residential life.

F3.5 Construction of the Doctoral Studies Building in the area of technology for research groups

The Postgraduate and Doctoral School of the BKC specializes in the knowledge areas of life sciences, social sciences and technologies. The goal of the school is to foster postgraduate and doctoral training by making the best use of synergies between the two universities in order to enhance quality and international promotion. However, specific infrastructures for different areas of specialization may be required.

In this context, plans have been made for the construction of a building devoted completely to doctoral programme activities in the fields of technologies. Such a building will make specific services and spaces available for doctoral candidates. The building will overcome the challenges posed by the physical and functional dispersion of the teaching and research work spaces on campus and will improve social relationships, resulting in improved productivity and the
creation of synergies among students.

The building will consist of 2,250 m² of floor space on five floors and will be located in the northern side of the BKC, which is where most facilities for technology related fields are concentrated. The basement will house specific laboratories that require electromagnetic screening as well as workshops for experiments and work experience and two meeting rooms. The building reception area, an access control station, a common area and doctoral candidate offices will be located on the ground floor. The first floor will accommodate more offices for doctoral candidates and lecture halls.

General work rooms and laboratories will be located on the second and third floors. The addition of these facilities will lighten the load on the labs that are currently in highest demand. Finally, on the fourth and fifth floor there will be spaces for offices, lecture halls, meeting rooms, project and presentation rooms and multipurpose spaces.

**F3.6 Structures and equipment for the campus and its future configuration**

- **Housing** for university staff and researchers, which will be placed between the CICRIT Building and the Civic Square, increasing the accommodation on offer and offering places for staff staying on the campus for longer periods

- The **Civic Square**, at the heart of the campus, will be the site of interaction and communication for the academic staff and the neighbouring community

- The **Student Centre**, which will flank the Civic Square on the west, will house multiple services for students and staff on campus: student associations, a student job bank, canteens, shops, etc.

- **Municipal Building** (Barcelona Campus), which will provide a space for neighbourhood associations and other services, such as a Campus nursery and municipal outbuildings

- **Rehabilitation of spaces** to enhance life on campus, informal communication between its users and the integration of the local community

**Target results in this area for 2015**

By 2015, the creation of educational and cultural environments on the BKC, the implementation of all the actions designed to improve mobility, together with the planned construction of the buildings and the rehabilitation of infrastructures will come together to form a campus that is permeable in terms of its urban and metropolitan environment, within both the urban and the social setting.
The most notable result will be the knitting of urban, social and university fabrics, thus overcoming the historical situation of mutual exclusion between the city and the university.

With this set of actions, **BKC** will become a new urban area which is fully integrated into the city of Barcelona as well as an international benchmark for the configuration of the knowledge city. It will be an urban environment hosting activities for training, research, the transfer of knowledge, living, cultural leisure, the creation of public initiatives and, in short, for the integral training of the scientist and professional of the 21st century, and all within an urban environment which is in permanent dialogue with the metropolitan city and with international knowledge networks.

More precisely, the expected results will be:

- Integration of the current campuses into a single urban showpiece which is interconnected and permeable in terms of the urban and social plan of its metropolitan environment

- A stronger capacity to attract and retain talent internationally

- Conversion of the **BKC** project into a benchmark for how cities in the knowledge society are built

- Availability of a high-quality social, urban and architectural environment which is oriented towards facilitating the activities of students, teachers and researchers, without forgetting the productive activities of the corporate world and the cultural activities of the general public

The list of specific target indicators for the monitoring of the activities which are to be carried out is as follows:

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**Quantitative results**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Current value</th>
<th>Target for 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creation of educational, cultural, social and sporting environments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptation of multi-purpose spaces</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Urban rehabilitation of new social spaces</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Mobility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage implementation of the actions contained within the bike - campus project</td>
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<tr>
<td>Preparation of the <strong>BKC</strong> walkability plan</td>
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<tr>
<td>Planned architectural infrastructures</td>
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<tr>
<td>Construction of the CICRIT building</td>
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<td>100%</td>
</tr>
<tr>
<td>Construction of the AUEB building</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>Construction of the L2 building</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>Construction of the student hall of residence</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>Construction of the doctoral studies building in the area of research group technologies</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>Constructions and equipment for the campus and its future configuration</td>
<td>-</td>
<td>20%</td>
</tr>
</tbody>
</table>
In conclusion, below we indicate the results which can be expected regarding the 12 objectives to which article 4.9 (h) of Order PRE/1996/2009 refers.

First of all, plans have been set out for the creation of academic environments which promote university life, with installations designed to boost the university’s international attraction: the landmark new CICRIT building, conceived as an authentic nerve centre for the northern area of the campus and designed to house different services which will support campus activities; the new International Postgraduate and Doctoral School; the new student hall of residence; and the International Welcome Point for foreign visitors.

By promoting the actions planned within the strategic areas of this project, the intention is to improve the academic efficiency indicators of graduates and to strengthen the attraction of young talent by increasing the level of internationalization of undergraduate, postgraduate and doctoral students.

To this effect, international researchers and technologists are to be drawn to the campus and trained via the granting of postgraduate grants and postdoctoral places, as well as by increasing the number of master’s programmes offered entirely in English and by intensifying the importance given to the increasingly extensive and solid networks and alliances within the international inter-university master’s degree programmes that are currently offered.

By attracting international lecturers, the use of English among the student body will be promoted and future university graduates will be provided with a much broader education. In this way, the degree of internationalization of the students – but also, and in particular, of the constantly updated university teaching staff – will be increased. The effect that the initiatives of this objective will produce among the staff dedicated to providing support for academic activity will become very clear.

It will be possible to measure the improvement in the performance and academic efficiency of the student body via certain impact indicators, among which that of the employability of future graduates must necessarily feature.

As such, emphasis will be placed on professional career services as a key element in the relationship between the university and production sectors, and consulting and monitoring processes with the business sectors and institutions hiring university graduates will be encouraged, bringing together the two groups and facilitating an increased comprehension of the professional skills that are needed for the adequate development of a professional career.

The promotion of professional practices among undergraduate and master’s students, both on and off the campus, will take place within the framework of a comprehensive employment policy designed to combine study and work
within the activities of the **BKC**. Examples of this are actions that consider the students to be central to the development of sporting and museum activities, which provide the campus with an educational model which is in itself a service to society.

The campus environment has one of the highest concentrations of human resources in the region, as well as great academic, scientific and technological potential drawn together around university buildings and installations - among the most active and dynamic in southern Europe.

The objective of the alliance of the **UB** and **UPC**, a move which possesses a strategic value in itself, is to form a campus which is fully integrated, both socially and in urban terms, into its local environment, with high-quality service provisions and energy and environmental improvements. The planned improvements in terms of mobility, accessibility and sustainability will undeniably contribute to an increase in the quality of life in the area. On this point it is worth pointing out the involvement of the Barcelona City Council in this project, as well as the Neighbourhood Association of the Les Corts district.

The **BKC**, in bringing together two of the most important and well-known universities in Spain, means the promotion of a new comprehensive policy in the area of education, research, transfer and appraisal of knowledge, and professional and business activity. An example of this are the planned actions for teaching innovation, which include the promotion of initiatives dedicated to fostering research into entrepreneurship and innovation.

Similarly, the **BKC** aims to increase the quality of its research and its international recognition through the renovation and acquisition of research infrastructures and the coordination of scientific-technological units so as to provide the research community of the **BKC** and the productive sector with the services and scientific infrastructures available on campus.

The Technological Innovation Centre will be defined and set in motion and programmes designed to stimulate innovation will be implemented. Workgroups will be created to carry out projects aimed to respond to market needs and opportunities; for example, the K2M Programme of the UPC, the Mini-cluster Programme and the International Business Welcome Centre. Likewise, all of the space needs of the Barcelona Science Park (PCB), which has been working on the campus since 1999, will be met.

All of the planned actions are integrated into an innovative international promotion plan, which will involve, among other things, moving from a culture of International Relationships to the much wider concept of Full Internationalization.

Finally, it is important to emphasize the role that the university student plays in the new European model, with which the **BKC** will be fully in-line by 2015. The student is the centre of the teaching and learning process and the coordination
and management authorities which are necessary to integrate students into the participation and decision-making processes are being planned.

In this way, the BKC project will contribute to improving the quality of Spanish universities as a whole, so as to position them amongst the best in Europe, demonstrating a commitment to their position internationally and to attracting the best talent in the fields of life sciences and technology.
Table summarising the relationship between the expected results (art. 4.9.H) and the areas of action

<table>
<thead>
<tr>
<th>Objectives 4.9.h</th>
<th>Areas</th>
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</thead>
<tbody>
<tr>
<td>1. To improve the quality of Spanish universities with the aim of positioning</td>
<td>A: • • • • • • • • • •</td>
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<td>them amongst the best in Europe and internationally, overall or in terms of</td>
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<tr>
<td>a particular aspect.</td>
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<td>2. To increase the quality of research and its international recognition,</td>
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<td>through improving research infrastructures that affect educational and</td>
<td></td>
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<td>scientific development.</td>
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<td>3. To create academic environments that promote university life, with</td>
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<tr>
<td>facilities designed to attract the best international higher-education</td>
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<td>university and research applicants.</td>
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<td>4. To form campuses that are integrated both socially and in urban terms into</td>
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<td>the urban or local environment in which they are located, increasing</td>
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<tr>
<td>quality of life and providing high-quality services and energy and</td>
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<td>environmental improvements.</td>
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<tr>
<td>5. To promote an integral policy in the area of education, research, transfer</td>
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<tr>
<td>and appraisal of knowledge, and professional and business activity.</td>
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<td>6. To boost the singularity and specialization of the campuses, so that they</td>
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<td>can form part of a diversified Spanish map, based on their corresponding</td>
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<td>strengths.</td>
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<tr>
<td>7. To improve the academic efficiency indicators of graduates and increase</td>
<td>A: • • • • • • • • • •</td>
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<tr>
<td>the level of internationalization of students at all learning levels.</td>
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<tr>
<td>8. To increase the degree of internationalization of students, researchers,</td>
<td>A: • • • • • • • • • •</td>
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<tr>
<td>lecturers and academic activity support staff.</td>
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<tr>
<td>9. To promote employment policies designed to combine study with work within</td>
<td>A: • • • • • • • • • •</td>
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<tr>
<td>the activities of the university campuses.</td>
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<tr>
<td>10. To propose an innovative communication plan for the international CIE</td>
<td>A: • • • • • • • • • •</td>
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<td>project.</td>
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<tr>
<td>11. To bring together projects from various universities in the Master Plan.</td>
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<tr>
<td>12. To participate in the student group project.</td>
<td>A: • • • • • • • • • •</td>
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</tbody>
</table>

International Promotion Plan

Coordination and management structure
APPENDIX

List of Abbreviations

ACC1Ó  Agencia de Apoyo a la Competitivitat de la Empresa Catalana
AEI  Agrupación de Empresas Innovadoras
APTE  Asociación de Parques Científicos y Tecnológicos de España
Atomium Culture  Red Europea de Divulgación de la Investigación
AUEB  Arquitectura, Urbanismo y Edificación en Barcelona
BKC  Barcelona Knowledge Campus
BSC  Centro Nacional de Supercomputación
CCP  Centro Catalán del Plástico
CENIT  Centro de Innovación del Transporte
CESAER  Conference of European Schools for Advanced Engineering Education and Research
CESCA  Consorci Centre de Supercomputació de Catalunya
CETAQUA  Centro Tecnológico del Agua
ChemBioBank  Base de Datos Internacional Quimicobiológica
CIBER-BBN  Centro de Investigación Biomédica en Red- Bioingeniería, Biomateriales y Nanomedicina
CICRIT  Centro de Infraestructuras Científicas para la Investigación y la Innovación Tecnológica
CID  Centro de Investigación y Desarrollo
CIDEM  Centro de Desarrollo Empresarial
CIEM  Canal de Investigación y Experimentación Marítima
CIIRC  Centro Internacional de Investigación de los Recursos Costeros
CIMNE  Centro Internacional de Métodos Numéricos para la Ingeniería
CINDA  Centro Interuniversitario de Desarrollo
CIT  Centro de Innovación Tecnológico
CLUSTER  Consortium Linking Universities of Science and Technology for Education and Research
CRAG  Centro de Investigación en Agrigenómica
CRAIs  Centros de Recursos para el Aprendizaje y la Investigación
CREDA  Centro de Investigación en Economía y Desarrollo Agroalimentario
CRM  Centro de Investigación Matemática
CSIC  Consejo Superior de Investigaciones Científicas
CTAE  Centro Tecnológico para la Industria Aeronáutica y del Espacio
CTM  Centro Tecnológico de Manresa
CTTC  Centro Tecnológico de Telecomunicaciones de Cataluña
EBT  Empresas de Base Tecnológica
EEES  Espacio Europeo de Educación Superior
ESADE  Escuela Superior de Administración y Dirección de Empresas
ESO  Enseñanza Secundaria Obligatoria
ETCS  European Credit Transfer and Accumulation System
EUA  European University Association
Eurolife  Consorcio Biomédico de Universidades Europeas
FBG  Fundación Bosch i Gimpera
FCIM  Fundación Centro CIM
FP  Formación Profesional
Giroct  Centro Tecnológico de Gestión Integral de Residuos Orgánicos
GUNI Global University Network for Innovation
I+D+i Investigación, Desarrollo e Innovación
IASP International Association of Science and Technology Parks
IBEC Instituto de Bioingeniería de Cataluña
IBMB Instituto de Biología Molecular de Barcelona
IC3 Fundación Instituto Catalán de Ciencias del Clima de Cataluña
ICE Instituto de Ciencias de la Educación
ICFO Instituto de Ciencias Fotónicas
ICTJA Instituto de Ciencias de la Tierra “Jaume Almera”
ICTS Infraestructura Científico Técnica Singular
IdeG Instituto de Geomática
IDIBAPS Instituto de Investigaciones Biomédicas August Pi i Sunyer
IDIBELL Instituto de Investigación Biomédica de Bellvitge
IEEC Instituto de Estudios Espaciales de Cataluña
IESE Instituto de Estudios Superiores de la Empresa
IP Investigador Principal
IQAC Instituto de Química Avanzada de Cataluña
IRB Instituto de Investigación Biomédica
IRI Instituto de Robótica e Informática Industrial
K2M Knowledge to Market
LC/MS Equipo de Cromatografía/Espectrometría de Masas
LIM Laboratorio de Ingeniería Marítima
Living Lab Laboratorio Viviente
OTRI Oficinas de Transferencia de Resultados de Investigación
PCB Parque Científico de Barcelona
PRBB Parque de Investigación Biomédica de Barcelona
ProTon Europe European Knowledge Transfer Association
PyMES Pequeñas y Mediana Empresas
REACH Registro, Evaluación y Autorización de Sustancias Químicas
Red Emprendia Red Universitaria de Incubación de Empresas
REDFUE Red de Fundaciones Universidad-Empresa
RMEI Réseau Méditérranéen des Ecoles d’Ingénieurs
SCT Servicios Científico-Técnicos
SIRENA Sistema de Información de Recursos Energéticos y Agua
TIC Tecnologías de la Información y la Comunicación
TII Technology, Innovation, Information
TSC Teoría de la Señal y Comunicaciones
UB Universidad de Barcelona
UPC Universitat Politècnica de Catalunya
XIT-CIDEM Red de Centros de Apoyo a la Innovación Tecnológica
XPCat Red de Parques Científicos y Tecnológicos de Catalunya