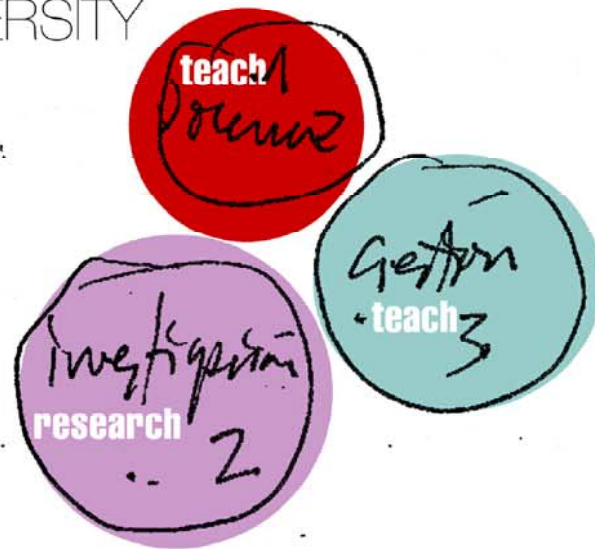




the UNIVERSITY

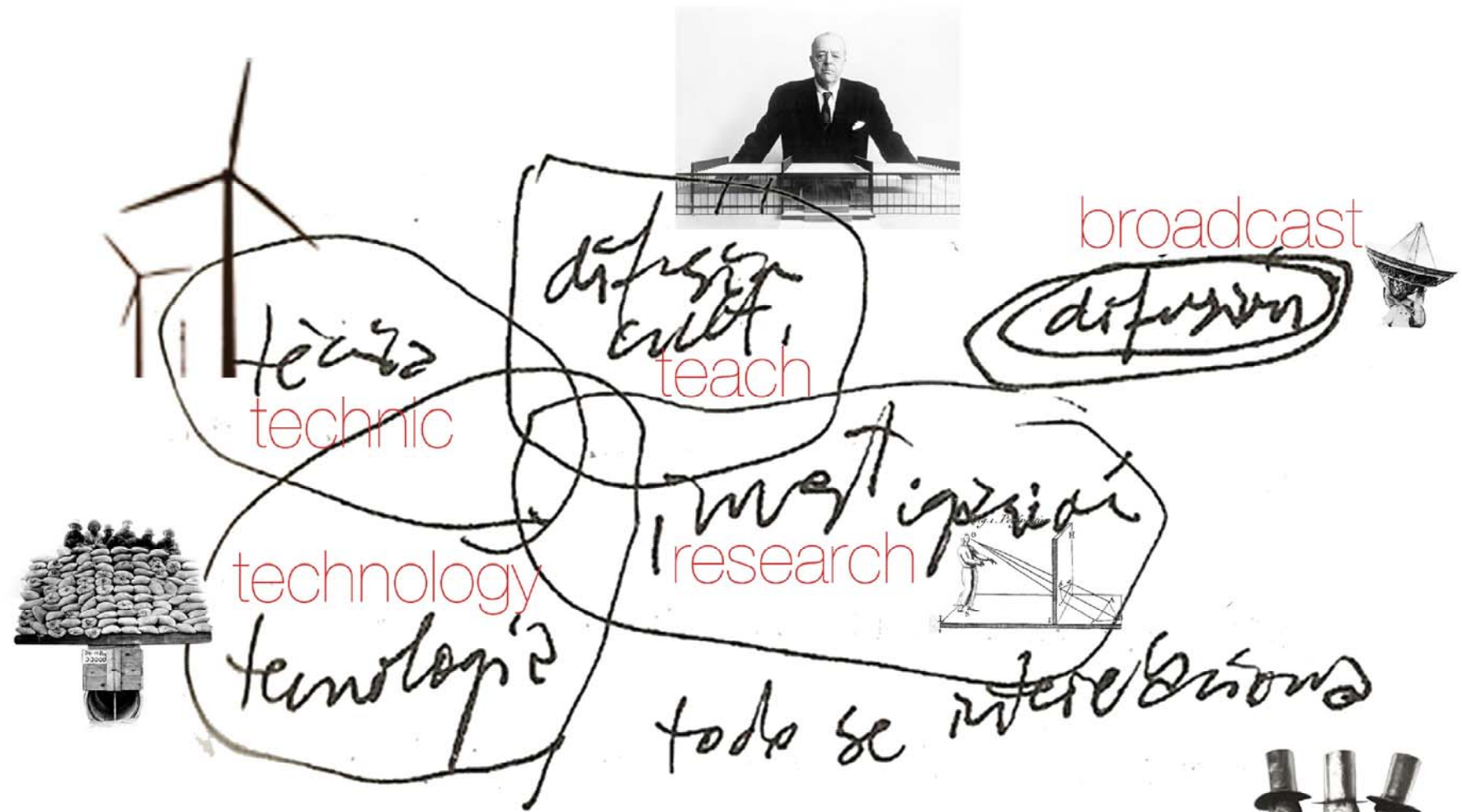


The architectural teaching needs a complex interrelations between departments nowadays. The space has to be the adequate one for every student and every teacher therefore.

The multiple needs and demandings will forced us to design a space for the architecture teaching as flexible as possible.

The actual situation requires a big effort to COORDINATE and to MANAGE every department and course programs to be obtain a common objective, a consistent evolution along the whole student life.

Teachers and students will need multipurpose spaces to process the information and convert it into formation.



the architecture department





Mapa de perfil académico

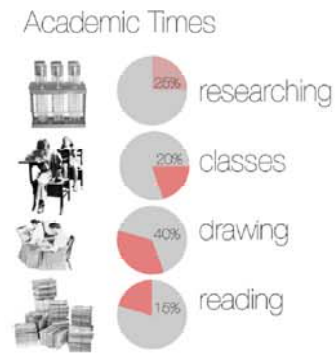
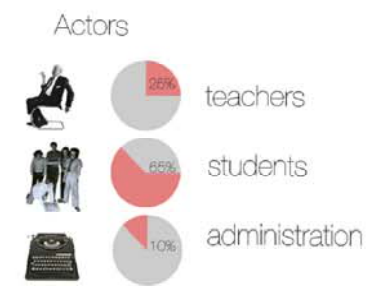
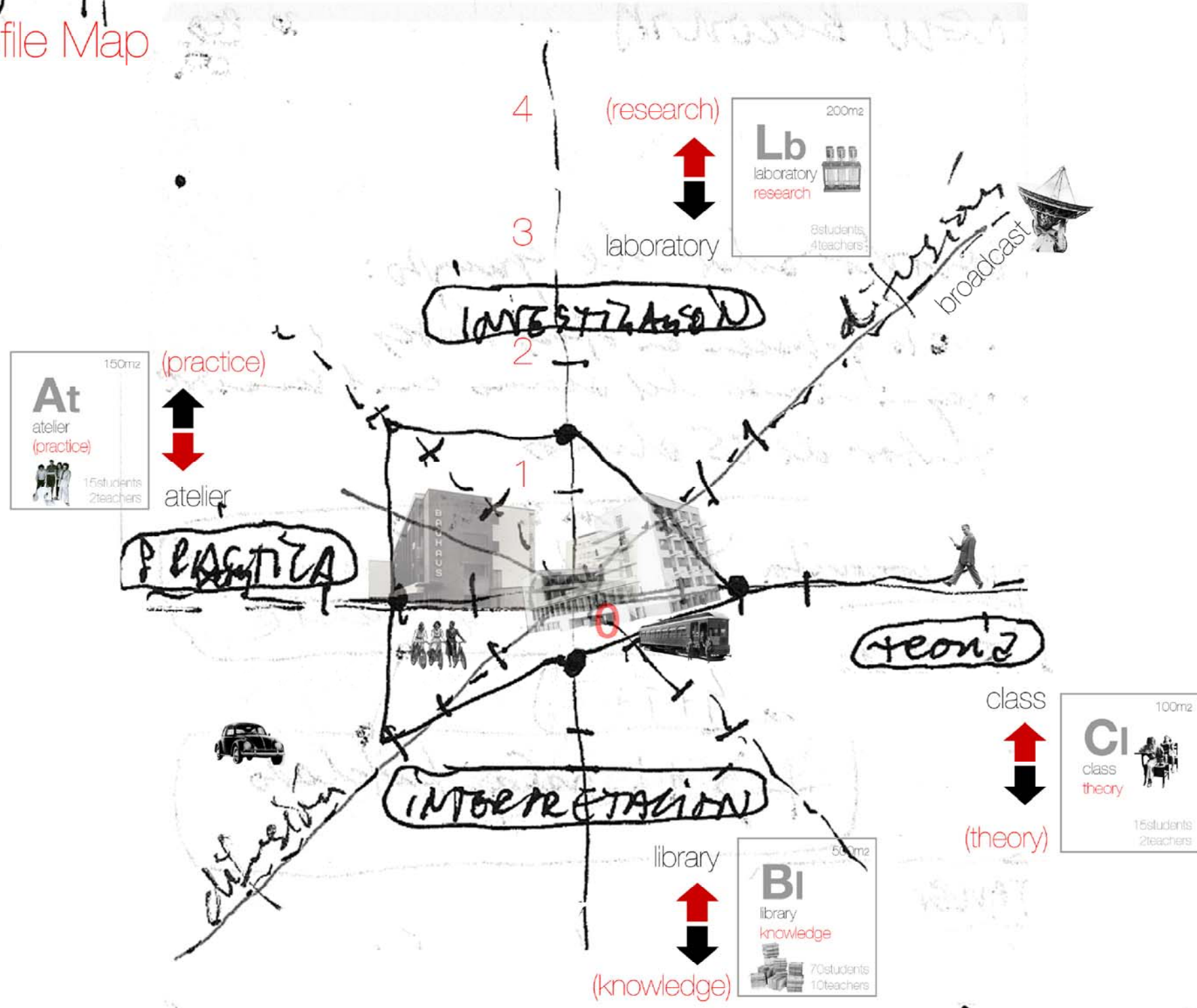
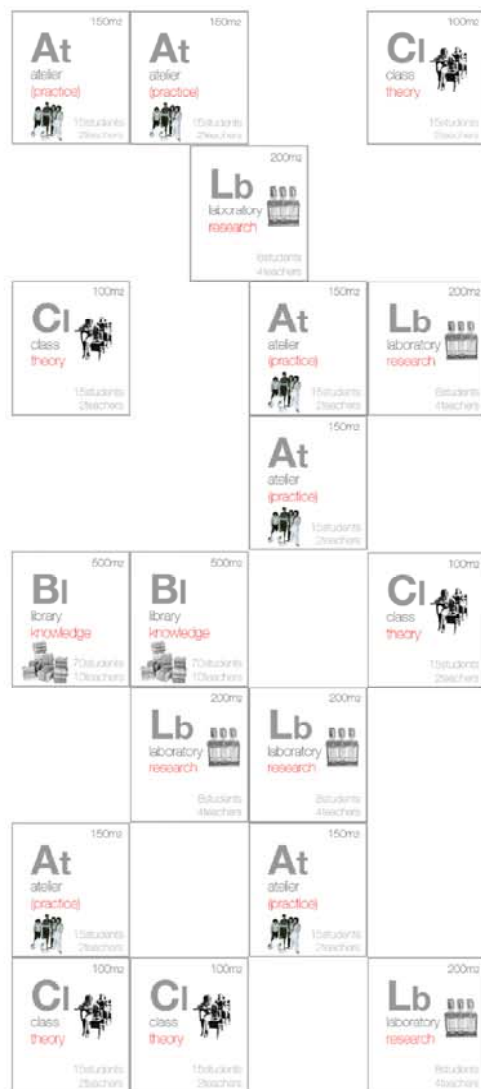
Academic Profile Map

FUTURE

creation

FUTURO

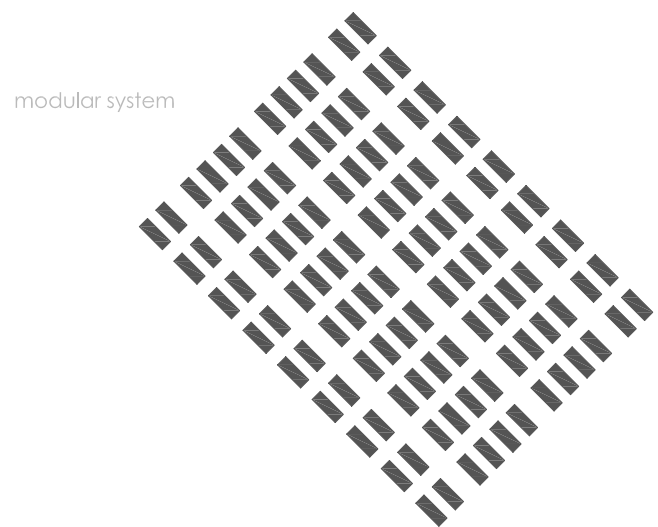
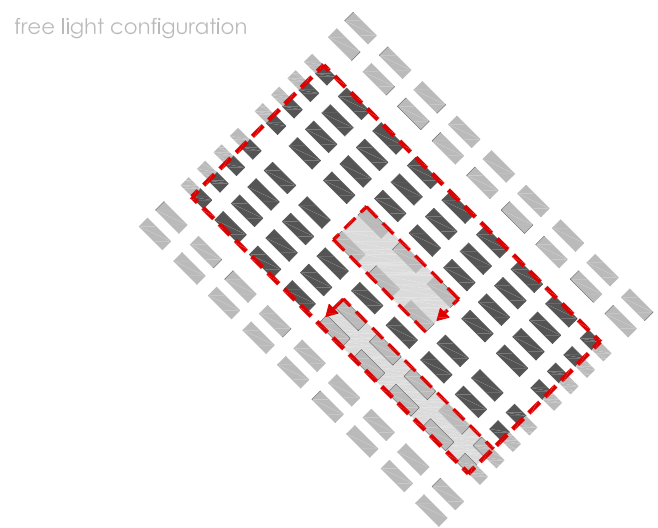
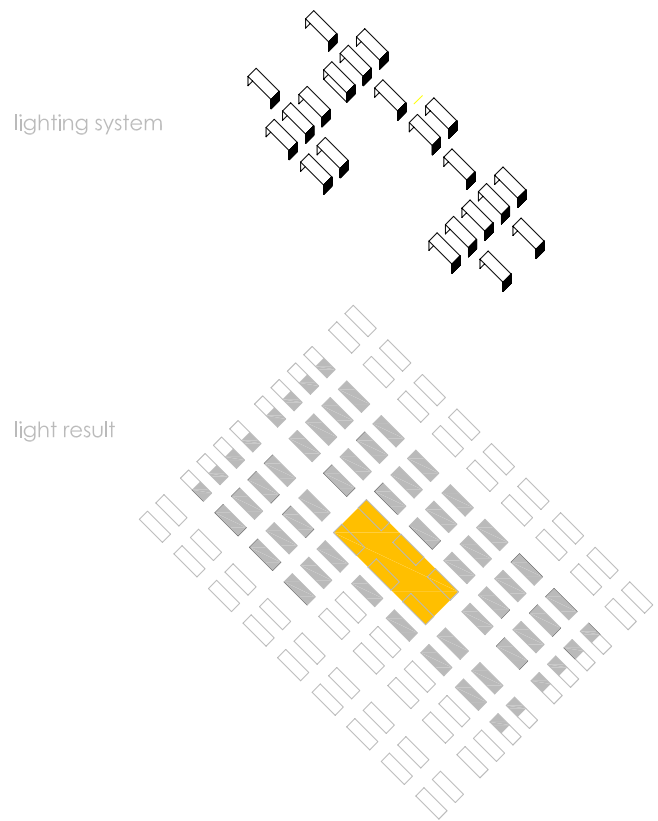
creación



PASADO información

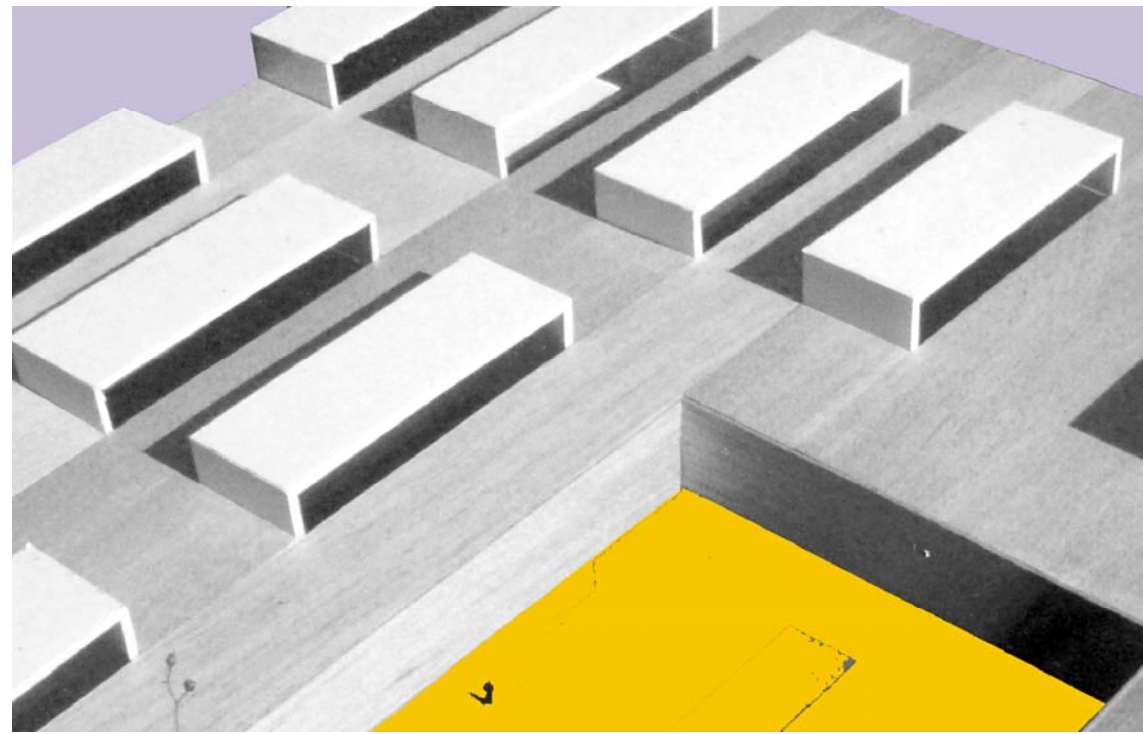
PAST **information**

The theoretical idea of this academic way of design in the department, is based in the mapping of the several fields that the students of architecture will have to manage in the future. Every field of knowledge demands different spatial shapes and sizes to solve their necessities and at same time maintain relationships between them. The idea is to obtain as much information as possible of this demanding and requirements of every field and department, parametrize them and be able to assemble them in graphics. The main objective is to have an intuition of the building in concordance with this different graphics of needs and links and the study of every knowledge space cell.

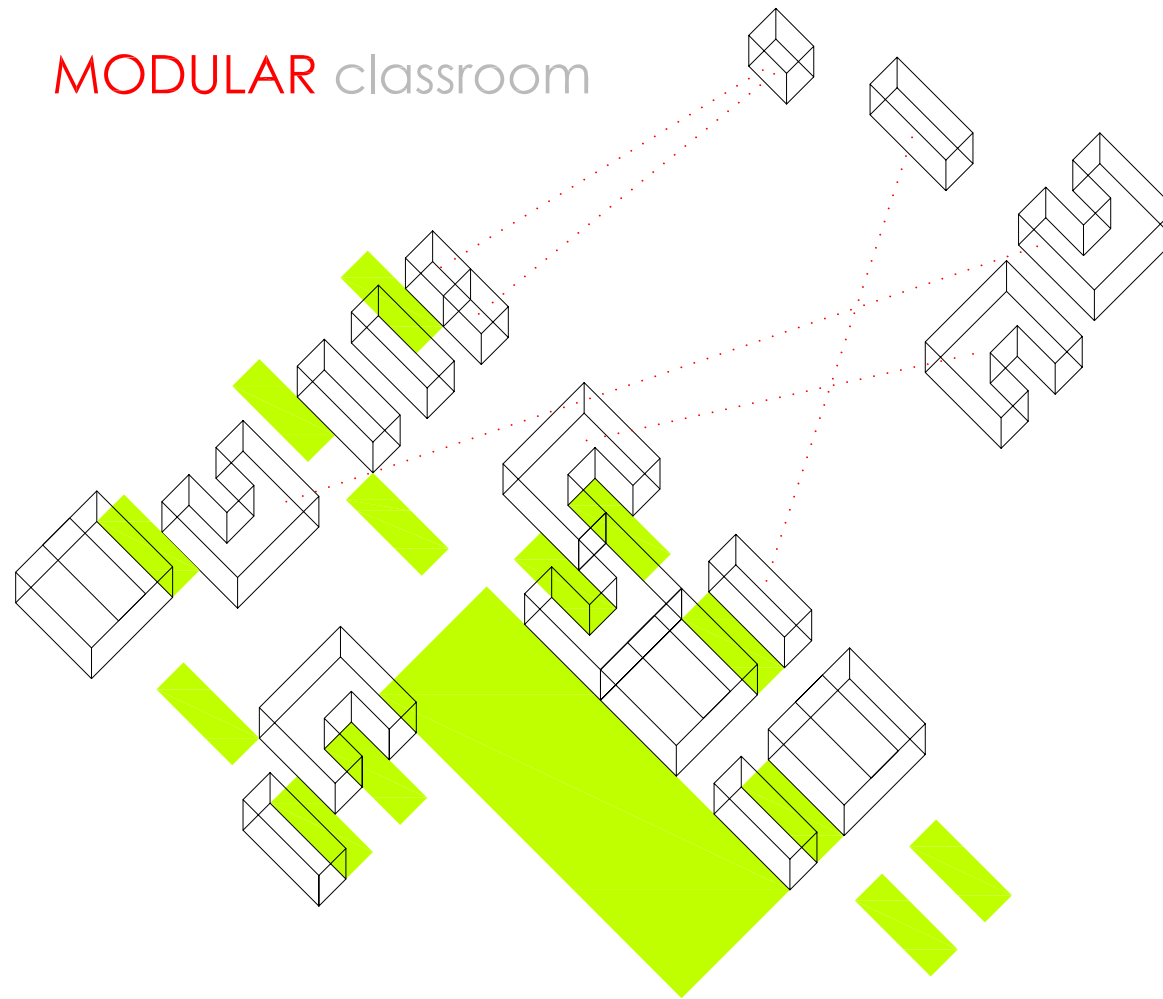


AXO.map

modular SYSTEM

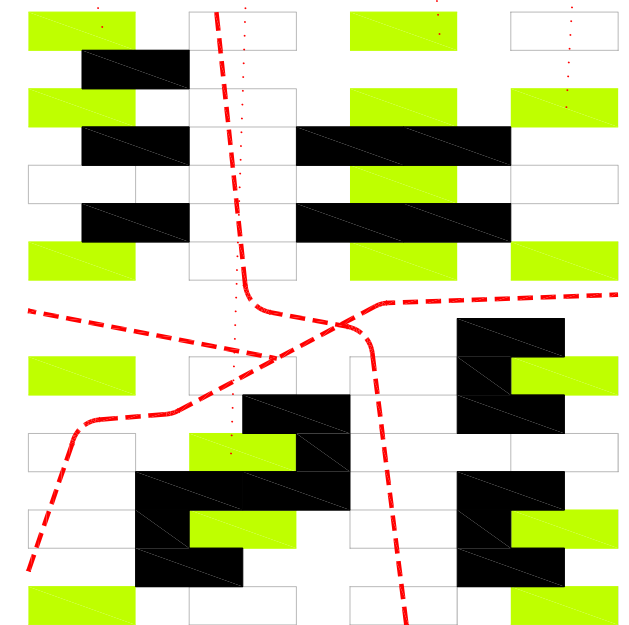
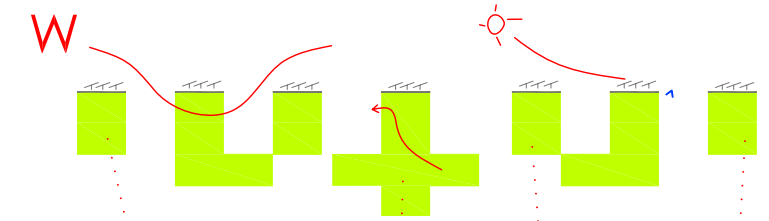
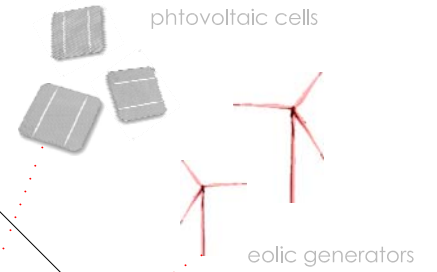


MODULAR classroom



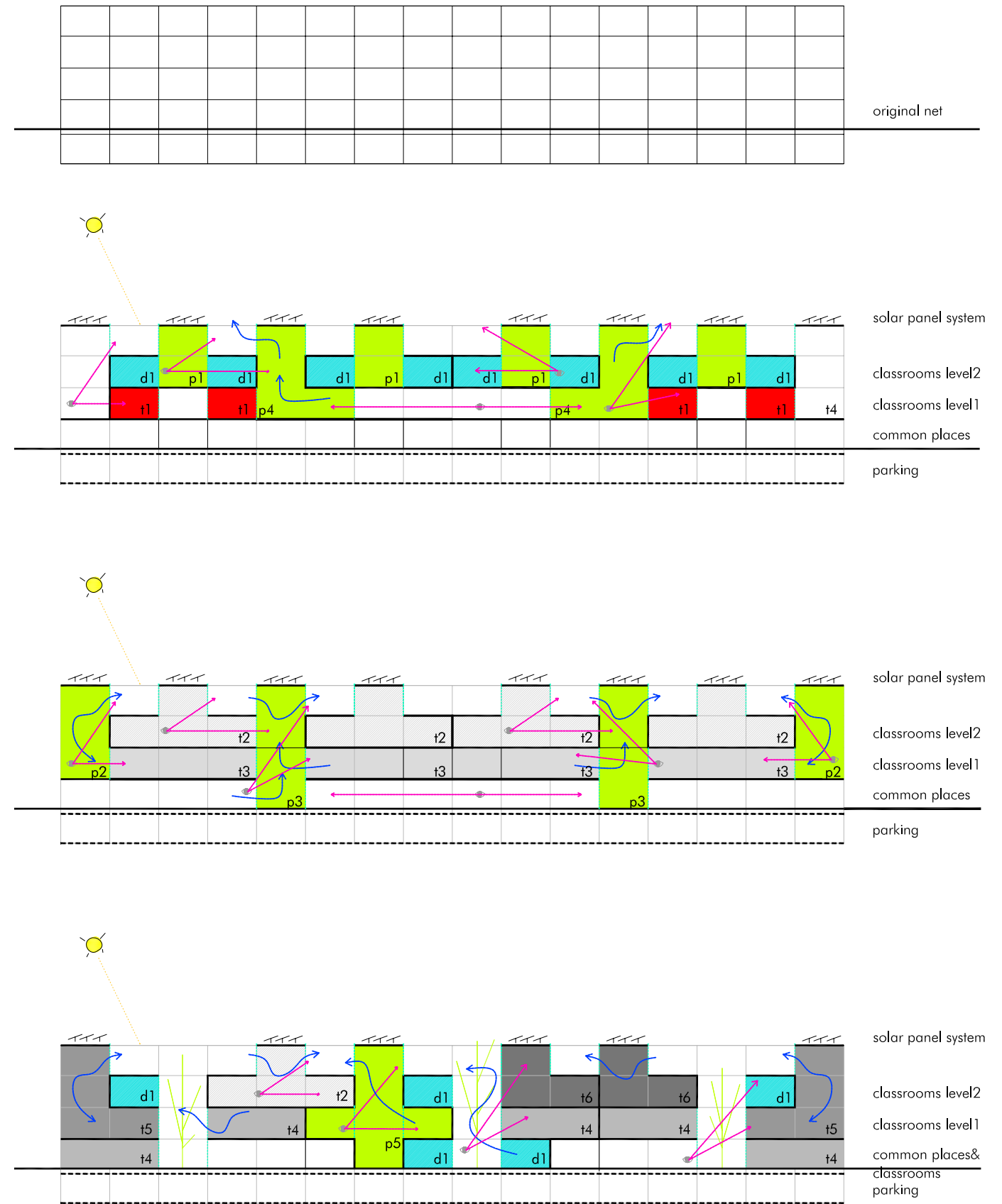
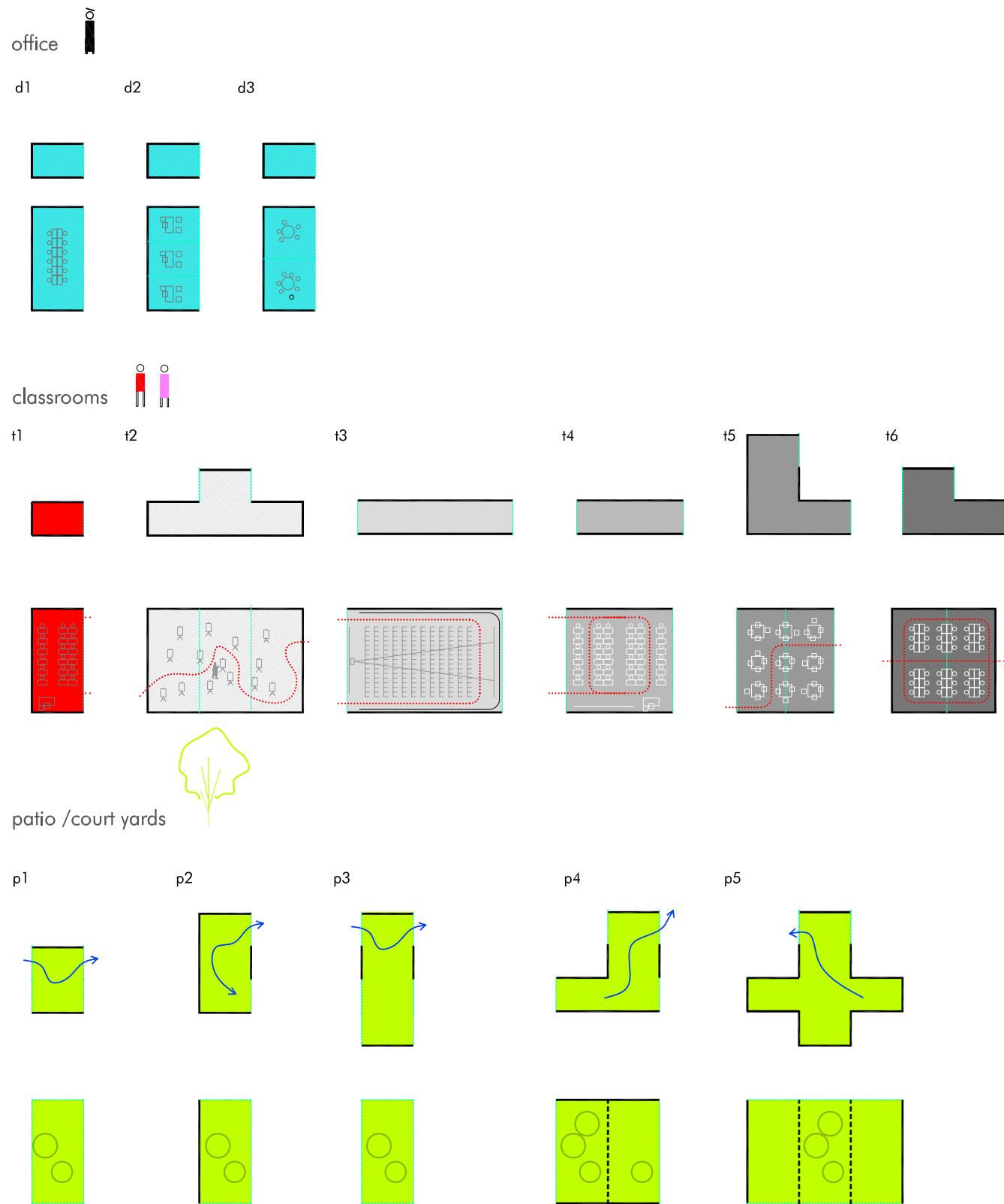
lighting SYSTEM

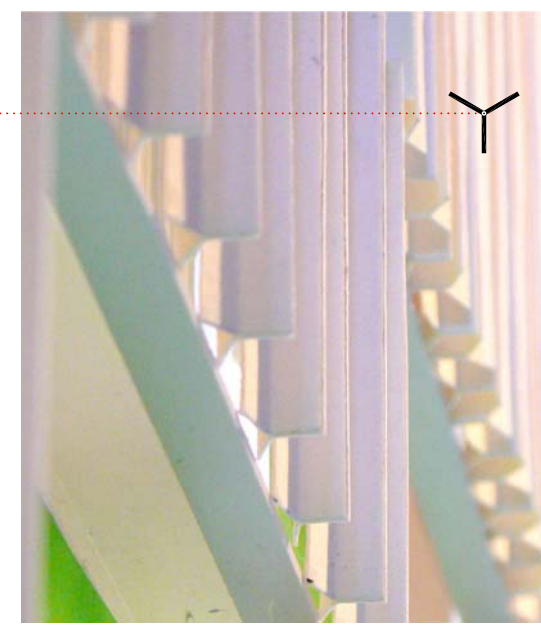
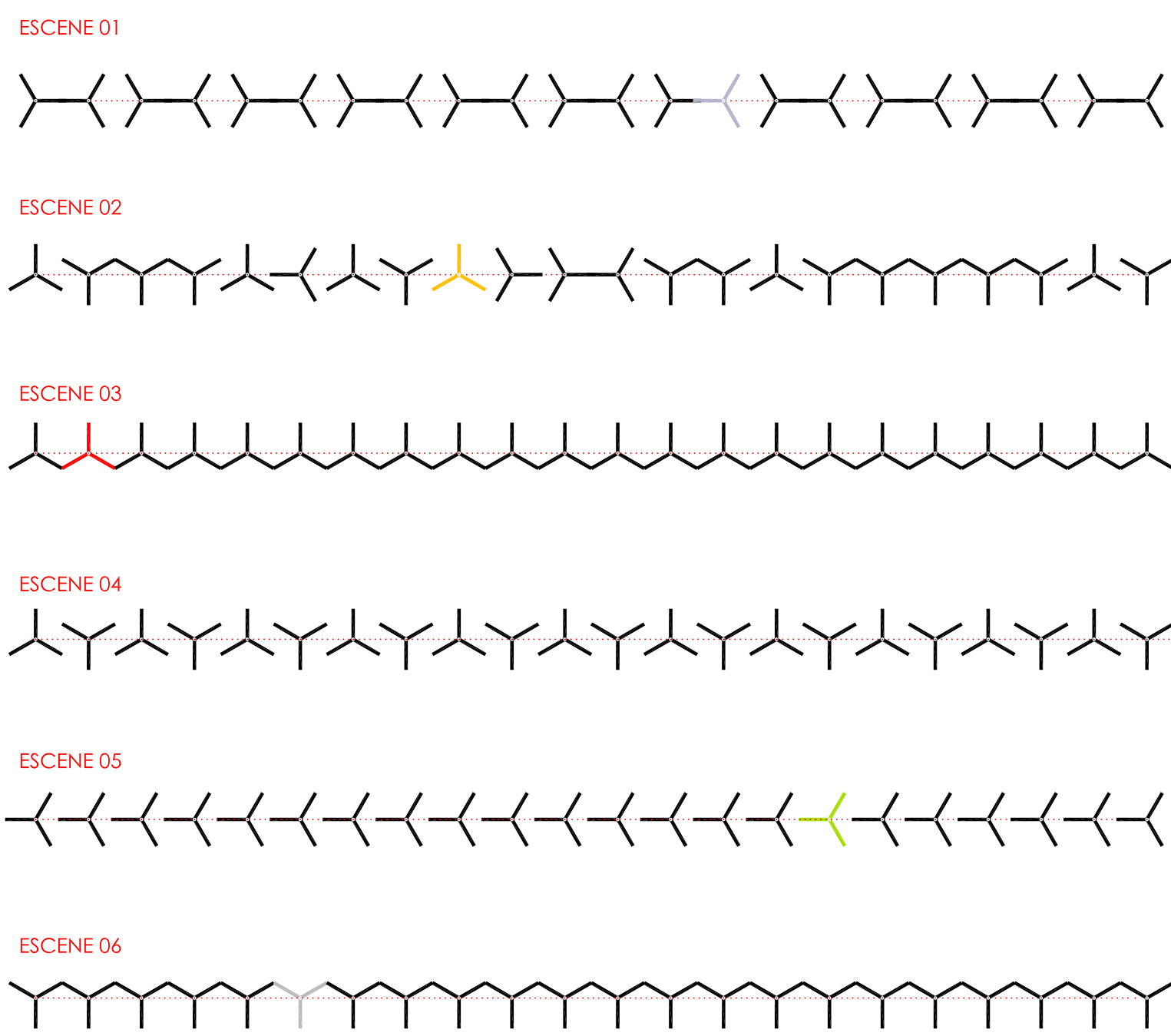
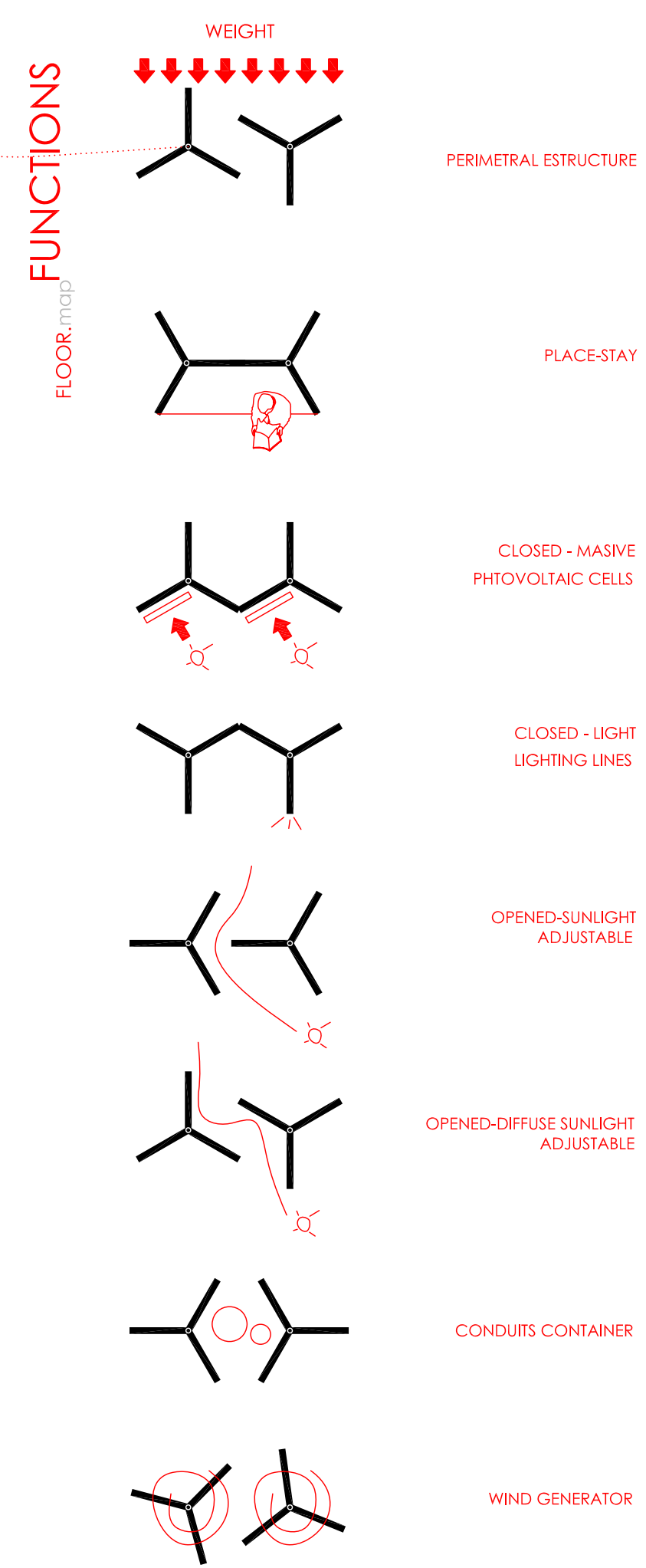
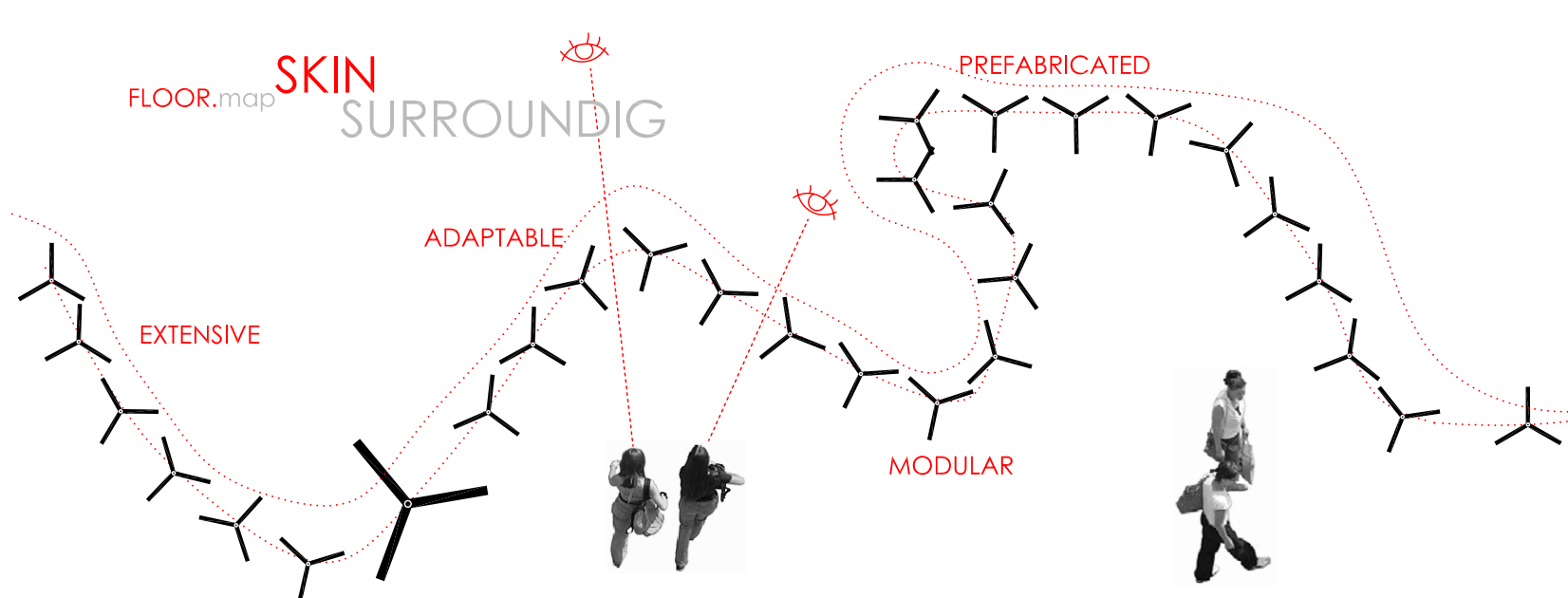
DIFFUSE + TECHNIC CONTAINER



FREE associations

modular system: different kinds of associations





CAPABILITY & MERITS

Picado-de Blas architects. web place: www.picadodeblas.com. Adress: c/González Amigó 23 2ºdrcha . 28033 Madrid.Spain

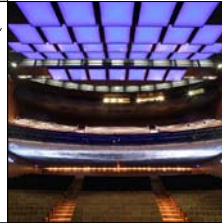
Architects:

Rubén Picado Fernández. Projects teacher of the UEM-ESAYA Architecture University.Madrid. Spain(cel: 615150834)

María José de Blas Gutierrez .Projects teacher of the CEU Architecture University. Madrid. Spain (cel: 690818586)



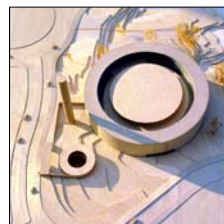
title: Theater in San Lorenzo de El Escorial, Madrid. Spain
client: Comunidad de Madrid
state: Built since 2006
budget: 47.119.360,16 €
prizes:
STONE'S AWARDS 2008
Coauthor:
Enrique Delgado Cámara
Collaborators:
Fernando García Colarado
Elsa Pérez de la Cruz
Carmen Ballesteros
Mª Antonia Fernández Nieto



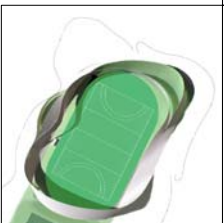
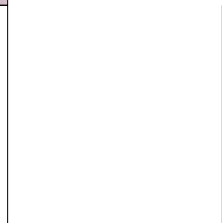
title: Courts building, Cervera de Pisuerga, Palencia.Spain
client: Law Ministry
state: Built since 2005
budget: 1.172.421,79 €
prizes:
FIRST PRIZE OF STONE'S AWARDS 2006
FINALIST OF FAD'S AWARDS 2004
FINALIST OF SALONI'S AWARDS 2004
Collaborators:
Elsa Pérez de la Cruz
Fernando García Colarado
Carmen Ballesteros



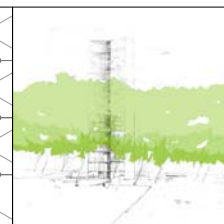
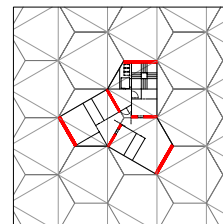
title: Kindergarten in Arganda del Rey, Madrid.Spain
client: City council of Arganda del Rey.
state: Built since 2007
budget: 1.336.452,81 €
prizes:
SELECTED FOR JAE (HOUSING-MINISTRY OF SPAIN)
SELECTED FOR THE XI BIENNAL OF SPANISH ARCHITECTURE
SELECTED FOR THE XI BIENNAL OF VENECIA 2008
FIRST PRIZE OF SALONI'S AWARDS 2008
FINALIST OF ENOR'S AWARDS 2009
Collaborators:
Blas Antón Palomo
Elsa Pérez de la Cruz
Covadonga Ríos
Jorge Frías Montes



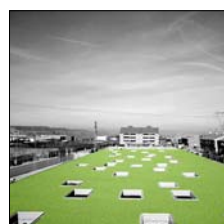
title:112 Madrid.Emergency Centre Madrid. Spain
client: Comunidad de Madrid
state: Built since 2000
budget: 18.030.363,13 €
prizes:
FIRST PRIZE OF EENA'S AWARDS TO THE BEST 112 EUROPEAN CALL CENTER 2009
Coauthor:
Enrique Delgado Cámara
Collaborators:
Fernando García Colarado
Elsa Pérez de la Cruz
Carmen Ballesteros



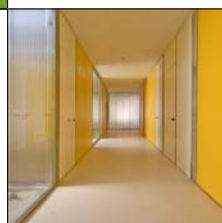
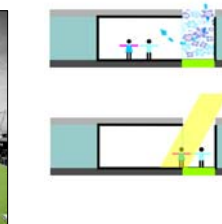
title: Hockey Olympic Stadium Madrid 2016.Spain
INTERNATIONAL COMPETITION, FIRST PRIZE (2008)
client: City council of Madrid.
state: In project
Collaborators:
Jorge Frías Montes
Ayda Muñoz de Santos
Roberto García Torés
Alfredo Sica Soto
Irene Calle



title: 96 vanguard houses in Alcalá de Henares, Madrid. Spain
INTERNATIONAL COMPETITION, FIRST PRIZE (2006)
client: Housing Ministry of Spain.
state: In project
budget: 13.562.873,71 €
Collaborators:
Elsa Pérez de la Cruz
Ayda Muñoz de Santos
Jorge Frías Montes
Blas Antón Palomo



title: Special Education Centre in Arganda del Rey, Madrid.Spain
client: City council of Arganda del Rey.
state: Built since 2006
budget: 2.985.210,28 €
Collaborators:
Fernando García Colarado
Elsa Pérez de la Cruz
Blas Antón Palomo



title: Park in Espasa's beach, Asturias. Spain
client: Concejo de Caravia, Asturias.
state: Built since 2007
budget: 1.253.256€
prizes:
FINALIST OF THE 5º EUROPEAN BIENNAL OF LANDSCAPE ARCHITECTURE
Collaborators:
Blas Antón Palomo
Elsa Pérez de la Cruz
Luis Urcillo
Covadonga Ríos
Jorge Frías Montes



title: Decanato of the Law's Town, Madrid. Spain
INTERNATIONAL COMPETITION, FIRST PRIZE (2002)
client: Comunidad de Madrid
state: In project
budget: 20.804.154 €
Collaborators:
Blas Antón Palomo
Ayda Muñoz de Santos

SELECTION OF THE MOST REPRESENTATIVE CONFERENCES, PRIZES, PUBLICATIONS, EXHIBITIONS AND WORK

CONFERENCES AND LECTURES:

- 2001 Conferencia "Proyectos en construcción" . ARQUITECTURA Y PROYECTO CONSTRUIDO. Departamento de proyectos de Universidad SEK. Segovia.
- 2004 Ponencia en el FORUM de ATENAS de EUROPEAN 7. Abril 2004.
- 2006 Conferencia y Comisariado del "Ciclo Tenis". Colegio de Arquitectos de Buenos Aires, Argentina.
- 2006 Comisariado "Obra Reciente", BIERNAL ARQUITECTURA IBEROAMERICANA . Montevideo, Uruguay. Dic 06.
- 2007 Ponencia y mesa redonda "Ciudad de la Justicia. Edificio del Decanato". Casa de América, Madrid.CJM. Dic 07.
- 2008 Ponencia "Proyectos Sistema" en el FORO 2008 de la ETSARQ-UIC, Barcelona. Oct 08. Director: Borja Ferrater.
- 2008 Ponencia sobre "Nueva Educación-Guarderías" en el Parlamento de Navarra, Pamplona. 10 de diciembre 2008.
- 2009 Jury PFC y Conferencia en la UPV . Dep de Proyectos Catedrático José MºLozano. Valencia. 2Abr09

PRIZES:

- 1994 Concurso Anteproyecto **Palacio Museo de Viana**. Córdoba. CajaSur. 1 , 2. **PRIMER PREMIO**.
- 1999 Concurso del **Proyecto de Ejecución del Teatro de Ópera de San Lorenzo de El Escorial** . Comunidad de Madrid. **PRIMER PREMIO**.
- 1999 Concurso de ideas ejecución **Zoco Artesano en el Albalcín** . Fundación Albaicín y Ayuntamiento de Granada. 1. **PRIMER PREMIO**.
- 2000 Concurso Internacional **European 5**. Viviendas adosadas y apartamentos en Ceuta, España. 1. **Segundo Premio**.
- 2001 **PREMIO DE URBANISMO ARQUITECTURA Y OBRA PÚBLICA 2000** .Restaurante "La Broche. Sergi Arola". Ayuntamiento de Madrid. 1
- 2002 **PREMIO NACIONAL PAD 2002 Arquitectura en Piedra**. Edificio de Juzgados en Hellín.
- 2002 **PREMIO AYUNTAMIENTO DE MADRID DE DIFUSIÓN DE LA ARQUITECTURA** , a la Comisión de Cultura FUCOAM por: exposición "Revista Arquitectura" y accésit al ciclo "El Autor enseña su obra".
- 2002 **PREMIOS COAM 2002 DE ARQUITECTURA** , Mención de Honor por el Centro de Estética Felicidad Carrera en Madrid
- 2003 Concurso Internacional **European 7**. Parque Botánico e Instalaciones Deportivas, Guadalajara. España. **PRIMER PREMIO**.
- 2005 **PREMIO SALONI y PREMIOS FAD 2004**: Finalista con el Edificio de los "Juzgados de Cervera de Pisuerga".
- 2005 Concurso Restringido de Ideas para la redacción del proyecto "**Parque-Playa de la Espasa**", Principado de Asturias. **PRIMER PREMIO**.
- 2006 **PREMIO DE Arquitectura Piedra 2006**. Edificio de Juzgados en Cervera de Pisuerga.
- 2006 Concurso Internacional de ideas para **Edificio del Decanato de la Ciudad de la Justicia de la Comunidad de Madrid**. **PRIMER PREMIO**.
- 2007 Concurso de ideas para **96 Viviendas de Vanguardia en Alcalá de Henares** , Madrid. Ministerio de Vivienda.**PRIMER PREMIO**.
- 2007 **PREMIOS FAD 2007**: Finalista con el "Centro de Educación Especial APSA". Expuesto en PIÇA dels Angels, Sede de los Fad, Barcelona.
- 2008 **PREMIO DE Arquitectura Piedra 2008**. Edificio de Teatro de San Lorenzo de El Escorial .
- 2008 **PREMIO ENOR de Arquitectura** con el Edificio del **Teatro de San Lorenzo de El Escorial**. Madrid.
- 2008 **PREMIO SALONI de Arquitectura** con el Edificio de la **Guardería Municipal 0 a 3 años** en Arganda del Rey. Madrid.
- 2008 **XXII PREMIO DE ARQUITECTURA del AYUNTAMIENTO de MADRID 2000**. Centro de Estética en Castelló 67. Ayuntamiento de Madrid.
- 2008 **PREMIOS FAD 2008 "50 aniversario"**: Finalista con dos obras: Intervención Paisajística en la **playa de La Espasa-Asturias** y **Guardería Municipal 0 a 3 años** en Arganda del Rey.
- 2008 Concurso de ideas **Estadio Olímpico de Hockey para la Candidatura de los JJOO de Madrid 2016**. Ayto. de Madrid. **PRIMER PREMIO**.
- 2009 Concurso de ideas **Centro de Interpretación del Palacio de San Telmo, Sevilla** . (Con EMPTY). Junta de Andalucía.Dic **PRIMER PREMIO**.

PUBLICATIONS:

- ARQUITECTURA COAM Nº 348, Oct 2002. Págs. 34-35. Centro Integrado de atención a Discapacitados APSA. Arganda del Rey.
- ON DISEÑO nº287, pag166-176. Premios FAD. Centro Integrado de atención a Discapacitados APSA. Dic07.
- LIBRO "EXCEPTO16- PICADO DE BLAS"- Monografía sobre los arquitectos publicada por el COAM. Editorial ea!.Oct 07.
- ON DISEÑO nº296,Premios FAD "50 aniversario". Guardería de Arganda, pág.150>159. Playa de la Espasa pág.268>273.Oct08
- ARQUITECTOS (CONSEJO SUPERIOR). ESQUELETOS nº185. "Aunque se vista de seda" págs72>75. Guardería. Nº3/2008
- ARQUITECTURA COAM Nº 354, Págs. 16>23. Teatros de San Lorenzo de El Escorial. Madrid. Dic 08.
- Catálogo de la Exposición JAE, págs.498-505 Guardería Municipal de 0-3 en Arganda del Rey, Madrid. Ministerio de Vivienda.
- Catálogo de la Exposición en la XI BIENAL DE VENECIA, págs.112-115. "De lo construido a la Arquitectura sin papel".

EXHIBITIONS:

- 2004 Diseño de la Exposición **ADOLF APPIA**, "Escenografías", mayo-abril 04. *Circulo de Bellas Artes, Sala Juana Mordó, Madrid.*
- 2005 Exposición de maqueta de **European7** y Guardería en Arganda, en la Galería de Arquitectura de la revista "El Croquis" *Sede central de "El Croquis". San Lorenzo de El Escorial, Madrid.*
- 2007 Exposición del Edificio Teatro-Auditorio San Lorenzo de El Escorial. *Feria Internacional de Piedra, Diseño y Tecnología. VERONAFIERE-42ºMARMOMACC.*
- 2007 Exposición de la **Monografía EXCEPTO16-PICADO DE BLAS** , oct>nov 07. *Fundación COAM (Colegio de Arquitectos de Madrid), calle Plamonte, Madrid.*
- 2008 Exposición JAE, Jóvenes Arquitectos de España. Guardería Municipal de 0 a 3 años en Arganda del Rey, Madrid. *Galería de Exposiciones del Ministerio de Vivienda , Arquería de los Nuevos Ministerios, Madrid.sep>oct 08*
- 2008 Seleccionados para la Exposición de Obra reciente: "De lo construido a la Arquitectura sin Papel". *Pabellón de España de la Biennale di Venezia. Italia. sep 08*

WORK AND PROJECTS :

- 1993 Anteproyecto del Urbanismo y Edificación del Campus Universitario de Estepona, Málaga.
- 1993 Proyecto Ejecución de la Nueva CASA CONSISTORIAL DE ALGETE, Madrid. 2
- 1995 Proyecto ejecución de AMPLIACION DEL PALACIO MUSEO DE VIANA, Casco histórico de Córdoba. 1,2
- 2000 RESTAURANTE DE "SEGI AROLA": "La Broche". Hotel Miguel Angel, Madrid. 1 Premio Ayuntamiento 2000.
- 2000 Edificio de los Nuevos JUZGADOS DE HELLÍN, Albacete. Ministerio de Justicia. 1 Premio Nacional de la Piedra PaD 2001.
- 2001 RESTAURANTE LA BROCHE MIAMI, Estados Unidos. Premio de Diseño del Ayuntamiento de Miami 2001. USA.
- 2002 CENTRO DE ESTÉTICA "FC" . C/ Villa de Marín, Madrid. Finalista Premio SALONI 2002. Premio Arquitectura Interior COAM 2002
- 2003 CENTRO DE GESTIÓN DE EMERGENCIAS "MADRID 1-1-2" . (Proyecto1) y colaboración en dirección de obra: Somosaguas, urbanización La Finca, Comunidad de Madrid.
- 2003 JUZGADOS DE CERVERA DE PISUERGA, Palencia. 1. Ministerio de Justicia. Finalista Premio SALONI y FAD 2005. Premio de ARQUITECTURA PIEDRA 2006 -IFEMA.
- 2006 TEATRO DE OPERA Y AUDITORIO DE SAN LORENZO DE EL ESCORIAL. (Proyecto1) Comunidad de Madrid. Premio de ARQUITECTURA ENOR 2007. Premio de ARQUITECTURA PIEDRA 2008 - IFEMA.
- 2006 CENTRO de Minusválidos Psíquicos para la Asociación APSA. Arganda del Rey, Madrid. Finalista Premios FAD 2006
- 2007 Proyecto de Ejecución de 96 VIVIENDAS VPP y Locales en Alcalá de Henares, SEPES - Ministerio de Vivienda.
- 2007 LAND ART- Intervención Paisajística "Parque-Playa de la Espasa", Concejo de Caravia, Principado de Asturias. Finalista Premios FAD 2008 - Barcelona. Seleccionado para la IV Bienal del Paisaje - Barcelona
- 2008 Guardería municipal 0-3 años en la calle Piragua, Arganda del Rey, Madrid. Premio SALONI de ARQUITECTURA 2008.
- 2008 Proyecto Ejecución del EDIFICIO DEL DECANATO DE LA CIUDAD DE LA JUSTICIA de la Comunidad de Madrid.
- 2008 Anteproyecto del nuevo ESTADIO DE HOCKEY para los Juegos Olímpicos MADRID 2016. Ayuntamiento de Madrid.

PROCESS

COLLABORATORS:

Arquitects of Picado de Blas Architects: Jorge Frías Montes, Roberto García Torés, Ayda Muñoz de Santos.

CONSULTANTS:

OVE ARUP. (Look pdf file attached)

VUT, Melbourne



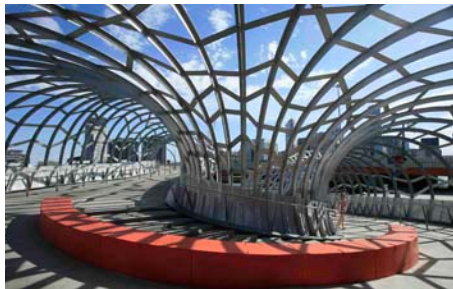
City University, Hong Kong



Swinburne, Melbourne



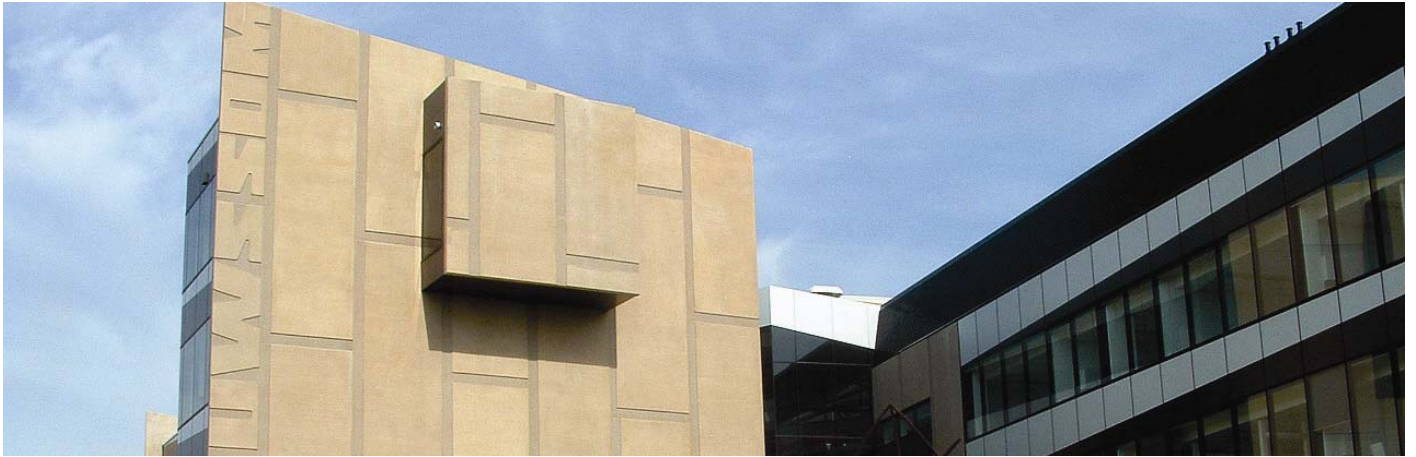
NICA, Melbourne



Web Dock Bridge Melbourne

Architectural Design Competition

New Building for the Faculty of Architecture Building and Planning



Revision 0.1

23 April 2009

Contents

Introduction	1
Why Arup?	3
The Arup Approach	4
About Arup	5
Core Values	5
Evaluation Criterion 1 Built Pedagogy	7
Evaluation Criterion 2 The Academic Environment	8
Evaluation Criterion 3 The Design Studio	9
Evaluation Criterion 4 The Living Building	10
Evaluation Criterion 5 Capability and Process	12
The Arup Service	18
Evaluation Criterion 6 Merit	19
Appendix A Discipline Information	
Appendix B Arup Team Members	



Introduction

Arup is pleased to present our credentials in relation to the University of Melbourne's Architectural Design Competition for the Faculty of Architecture, Building and Planning.

We understand that the aspirations for this \$90 million, 18,000 m² project are that it should be:

- a distinctive and highly innovative building that will set a new standard for campus facilities in the region
- outstanding in level of quality for both the processes of design and development and in the finished product
- a building of international architectural merit with highly integrated landscaping and urban design features
- a 6 star GreenStar rated building
- it will use advanced construction, structural and servicing techniques
- utilising the best available technologies for sustainable design and for the use of materials, energy, air and water
- delivered robustly to budget and programme.

As such it accords entirely with that for which Arup stands.

Within this document we have described our philosophy and the contribution we can make to ensure the success of this significant project.

We applaud the University of Melbourne in initiating an international competition for this project. We pride ourselves on taking a high-quality, design-led approach which has made us the engineer of choice for the world's leading architects.

We are certain that our team can provide you with an unbeatable combination of skill, creativity, experience and expertise. We continue to lead the industry in technical and digital innovation which will provide tangible benefits throughout the design, documentation and construction phases of this project.

Our solutions are cast within a framework that encompasses and is driven by clever innovative and integrated design, balanced by fundamental criteria, notably buildability, cost efficiency and finally programme.

We are excited about this project and our potential involvement. We look forward to discussing our proposal with you in more detail.



Arup is pleased to offer our services for the design of the proposed School of Architecture, Building and Planning building.

Arup understands that universities are a community asset and they serve community purposes far wider than just education. They are information exchanges, social support centres, and sponsors of learning for life strategies.

As such, we are aware of the importance of the successful delivery of this project. Our focus is on the design and delivery of a new building that the entire university community can be proud of, now and for future generations.

Arup will provide engineering services for the proposed development to achieve the best possible outcomes for the university.

- We will provide a service which exceeds that achieved by a basic and non-responsive alternative.
- Arup will meet programme, quality and budget expectations for this project.
- Our commitment is to provide a far-reaching exceptional service – a partner that will help drive and deliver this development.

Arup will work closely and proactively all stakeholders to produce a highly integrated and efficient design that exceeds the aspirations of the university.

Arup is actively engaged with the planning and delivery of education facilities across the globe. Our extensive education experience include all types of facilities such as secondary and university buildings, class rooms, lecture theatres, laboratories, and auditoria; and ranges from new build and extensions through to the modernisation of existing buildings.

Arup look forward to working closely with the design team and the University of Melbourne in delivering a high quality iconic building that will be celebrated by students, staff and the wider community.



Why Arup?

Arup understands that the educational design and planning process must deliver effective, adaptable and innovative learning environments for students and educators.

Delivering sustainable outcomes on all projects is Arup's objective. Our focus on designing educational facilities as visible demonstrators of practical sustainable technologies is part of our commitment to building for a sustainable future.

Our collaborations with major government departments and public and private educational institutions have seen Arup involved at every level of the facility procurement process:

- We provide high level strategic advice including major program level planning, stakeholder management and risk management.
- Using the diverse skills and professional experience of our project managers, we provide functional briefing, design management and technical reviews of project design and documentation.
- We understand contemporary imperatives in educational facility planning, and foster designs that enhance student engagement and retention and support improved learning outcomes.

As a client-centric organisation, we react quickly to our clients needs and provide timely services which allow projects to be delivered on budget and on time. Indeed, our focus on responding and understanding our client's needs.

We understand that time, cost and quality are of paramount importance to our clients, whilst appreciating that projects demand an exceptional management approach that focuses on strategic issues and which is capable of delivering real benefits.



The Arup Approach

Committed Leaders and Senior Team

Arup understands that the success of such projects is ensuring a dedicated and appropriate level of key senior leaders who are engaged throughout the project's development and execution.

Arup's leaders who will be responsible for the delivery of this project are renowned for designing and delivering outstanding engineering for many of the landmark buildings in Melbourne, across Australia and internationally.

Our discipline leaders are foremost in the industry. They are committed to maintaining ownership of issues and delivering solutions to their completeness.



Responsive - Robust – Reliable

The approach adopted by Arup is one which is driven by providing clear and effective solutions. Our commitment is to deliver on time and on budget. We adopt advanced engineering techniques and methods to develop solutions that are responsive, efficient and highly buildable.

We use focussed application of highly advanced modelling and analysis to maximise benefits to the client and project delivery.

Optimisation and Integration

As part of the suite of tools available and developed within Arup, we will use advanced technologies to provide highly optimised and integrated solutions. These will vary from complex parametric modelling of geometry for repetition and rationalisation, to the interactive optimisation scripts developed to reduce tonnage or maximise structural efficiency.



About Arup

Arup is a global organisation of designers, engineers, planners and business consultants, founded in 1946 by Sir Ove Arup (1895 – 1988). It has a constantly evolving skills base and works with local and international clients around the world.

Arup is owned by Trustees established for the benefit of its staff and for charitable purposes, with no external shareholders. This ownership structure, together with the core values set down by Sir Ove Arup, are fundamental to the way the firm is organised and operates.

Independence enables Arup to:

- Shape its own direction and take a long-term view, unhampered by short-term pressures from external shareholders
- Distribute its profits through reinvestment in learning, research and development, to staff through a global profit-sharing scheme, and by donation to charitable organisations.

Core Values

Arup's core values drive a strong culture of sharing and collaboration.

All this results in:

- A dynamic working environment that inspires creativity and innovation.
- A commitment to the environment and the communities where we work that defines our approach to work, to clients and collaborators, and to our own members.
- Robust professional and personal networks that are reinforced by positive policies on equality, fairness and knowledge sharing.
- The ability to grow organically by attracting and retaining the best and brightest individuals from around the world, and from a broad range of cultures, who share those core values and beliefs in social usefulness, sustainable development and excellence in the quality of our work.

With this combination of global reach and a collaborative approach that is values-driven, Arup is uniquely positioned to fulfil its aim to shape a better world.

Evaluation Criteria

MFB Burnley Training Centre- Image Credit: Peter Hyatt



Evaluation Criterion 1 Built Pedagogy

Advanced Building Modelling

Arup is the clear industry leader in the field of advanced digital engineering and building modelling. We will bring to this project unrivalled geometric, building and analytical modelling skills for the benefit of design development through to construction efficiency and logistics.

Use of total building modelling allows us to ‘virtually’ construct and hence assess and improve coordination.

Arup made a global commitment to move from drawing to modelling in 2005 and is able to fully model the structure and services on all projects. This means that every structural element, penetration and level change will be fully resolved and all ducts, conduits and plant will be included. Our digital workflow provides an integrated project delivery.

Drawings are one output from a model, but our advanced modelling capability means we can work from the earliest sketches with flexible parametric models, all the way to a virtual construction dress-rehearsal where we provide construction planning linking project programmes to models.

We link our models with engineering analysis so that the Virtual Building can be fully simulated, not just represented.

By producing a virtual model of building system components, it is possible to effectively visualise and manage design coordination, thereby improving confidence in the design and reducing the chance of late changes and clashes between building systems on site.

A Research and Education Virtual Model

For this project we propose to offer our virtual model for research and education. This means access to our digital content through design and construction to be then used as a resource over the life of the building. This will also apply to any extended services we offer from our modelling approach, such as:

- Accurate quantity take-off and associated cost estimate
- Construction programming and phasing
- Component scheduling and direct manufacture
- Facility management and assessment.

Coordination

The Virtual Building approach allows the project team to respond quickly and effectively to both planned and unplanned change in a coordination fashion. The interaction between the building services systems (electrical, mechanical and hydraulics), the structure and the external facades can be extremely complex.

By producing a virtual model of building system components, it is possible to effectively visualise and manage design coordination, thereby improving confidence in the design and reducing the chance of late changes and clashes between building systems on site.

We see our ability to combine models from various disciplines over one-another in the Virtual Building environment promotes a “right first time” approach to the design, procurement and construction process.

Evaluation Criteria

Chapman University, California USA Image Credit: Berger Conser Architectural Photography



Evaluation Criterion 2 The Academic Environment

Arup can proudly claim to be the creative force behind many of the world's innovative and sustainable building and engineering projects.

A key differentiator is the global nature of our operations and hence, skill-base – our designers, engineers and consultants provide professional services to an ever expanding group of clients around the world. In doing so, we have to excel at understanding and working locally.

Outstanding solutions, innovation and value characterise our work and as professional consultants, we have a vast pool of technical expertise from across the world, enabling us to achieve the best possible results for our clients on any project.

Our maxim – we shape a better world – captures our creativity, drive for sustainability and the global nature of the firm.

Evaluation Criteria

California College of Arts & Crafts, San Francisco- Image Credit: Richard Barnes



Evaluation Criterion 3 The Design Studio

Arup's experience in education has enabled us to develop a detailed appreciation and understanding of the key drivers that contribute to the successful delivery of tertiary education projects. Specifically, we have identified unique and tangible benefits Arup can bring to the University of Melbourne.

Knowledge and Experience

Arup has worked on many of Melbourne's tertiary education facilities and delivered landmark community and public buildings. Our knowledge gained from this experience is invaluable. We understand client drivers can vary and as such, we establish these as defining a strong framework for project success.

Arup has a global Skill and Knowledge network for the Education sector where international best practice developments and ideas are shared.

In a number of recent UK education facilities, key issues similar to those here in Australia have been successfully resolved as follows:

Summertime overheating/effective ventilation

With the increased use of IT, effective comfort strategies are harder to achieve. Significant effort and accuracy is to model seasonal performance to ensure spaces remain within prescribed temperature and CO2 limits.

Daylighting

There is a proven link between good levels of daylighting and learning. The challenge is whether this can be achieved uniformly across the floorplate, as opposed to only at the perimeter. The added benefit is to reduce energy consumption and carbon emissions. To integrate a successful daylight strategy without adding to the overheating challenge also requires analysis and modelling.

External acoustics

UK Building Regulations require very low internal noise levels in education facilities and there are issues with most urban or even suburban sites due to ambient noise from roads, rail or aircraft. This makes it harder to develop simple natural ventilation strategies, i.e. opening windows.

These issues and their interrelationship are illustrated in the simple adjacent diagram.



Evaluation Criteria

Bond University - Image Credit: Alan Jensen



Evaluation Criterion 4 The Living Building

Building Sustainability

Arup has a very strong background in all aspects of sustainability from ESD related to building construction to strategic sustainability and complex modelling. We have been involved in new and existing buildings and also those combining both building types like this project.

In July last year the Property Council of Australia (PCA) launched the “existing buildings // Survival strategies – a toolkit for re-energising tired assets”. This was compiled by Arup for the PCA from the team in Melbourne and will provide a strong basis for investigating the opportunities for sustainability within the Old Commerce Building.

We have the distinction, as a fully multi disciplinary organisation, of being able to cover not just the building related issues of sustainability but also strategic sustainability which will be a key issue in positioning the School of Architecture, Building and Planning in the international spectrum.

We can draw on our global expertise and networks to establish current practices and trends that may affect outcomes for the Faculty

Building Physics

An appropriate level of simulation would be undertaken at each stage of the design process using specialised software packages as required. The ability to use our technical and analytical experience to interpret, communicate and apply the results of complex simulation results is an essential part of the Arup design process.

The following provides an overview of the analytical capabilities that Arup can deliver, categorised in broad terms as follows:

- Energy consumption and demand (and associated carbon emissions);
- Visual amenity (daylight and glare);
- Thermal comfort (human comfort prediction);
- Natural / mechanical ventilation (control of mixed mode systems); and
- Façade performance (heat gain/loss, reflectivity, radiant effects, shading).

Evaluation Criteria

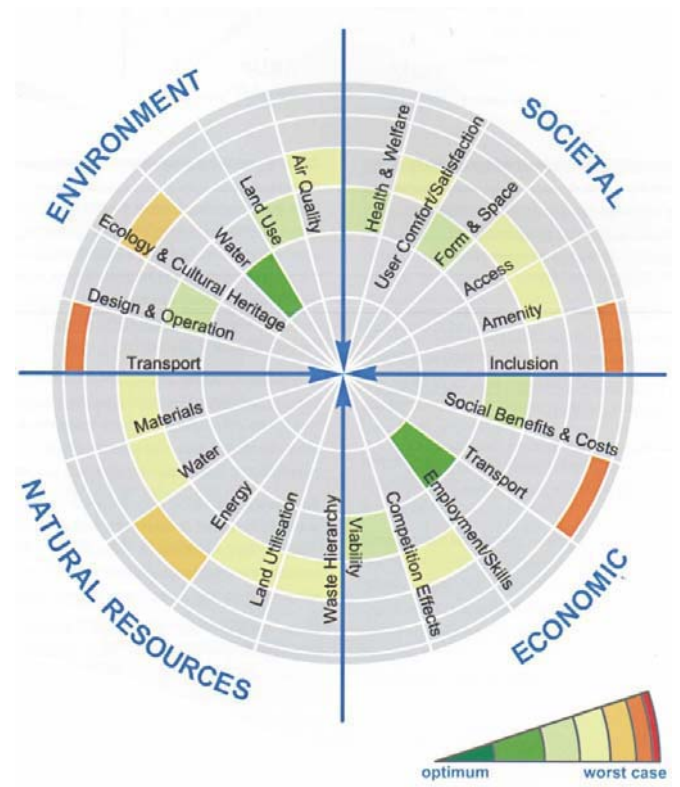
Strategic Sustainability

One of the most successful sustainability techniques which Arup has applied to projects of a similar size and scope to the proposed Faculty of Architecture, Building and Planning building is Arup's SPeAR® (Sustainable Project Appraisal Routine) tool. SPeAR® seeks to provide a structured process for planning, assessing and reporting on sustainability in its most holistic sense by addressing issues of environment, natural resources, society and economics.

The key output of a SPeAR® appraisal is a SPeAR® diagram, such as the adjoining example. The diagram provides a graphic illustration of the diverse issues that may be considered when assessing the sustainability of a project. SPeAR® appraisals can highlight where a project performs poorly in terms of sustainable principles and areas which require optimisation, or where the balance between positive and negative needs to be investigated in more detail.

We are able to assist the University of Melbourne by:

- defining sustainability for the University of Melbourne and the architectural design of the ABP new building;
- planning and designing for sustainable outcomes across a multidisciplinary project team;
- supporting the achievement of environmental performance aspirations;
- assessing and informing sustainability aspects of design and ongoing performance; and
- communicating sustainability.



Evaluation Criteria

National Assembly of Wales- Image Credit: Arup



Evaluation Criterion 5 Capability and Process

Local Board and Authority Registrations

Arup is a member of:

- Engineers Australia;
- Association of Consulting Engineers Australia;
- Property Council of Australia; and
- Australian Construction Industry Forum

Arup is also on numerous consultant panels for the:

- Departments of Transport;
- Department of Human Services;
- Department of Sustainability and Environment;
- Department of Defence;
- Department of Foreign Affairs and Trade; and
- Department of Innovation, Industry Science and Research.

Client and User Engagement Methodology

We are appreciative of the broad range of agendas that will need to be managed by the Design Team. A fundamental objective of Arup's approach will be to work with the University of Melbourne and the project's Design Team so that all involved view us with confidence, and place reliance upon our professional competence and integrity.

Client References

Mr Peter Stewart

General Manager (School Resources)
Office of Resources and Infrastructure
Department of Education and Early Childhood Development
Level 2, 2 Treasury Place, Melbourne, 3002
Telephone: (03) 9637 3051

Sean Sweeney

Executive Director, Major Projects Victoria
Level 8, 121 Exhibition Street, Melbourne 3000
Telephone: (03) 9655 8622

Relevant Projects

A brief selection of current and completed tertiary education projects follows.

Through the substantial experience gained on these and similar projects, we have been able to continuously refine our designs to the benefit of our clients.

We share our knowledge with our global commercial groups and this network allows us to share and exchange information on best practice examples and current trends throughout the world



Image Credit: Peter Hyatt

National Institute of Circus Arts

The building is a state of the art teaching and performance studio for NICA at the Prahran Campus of Swinburne University.

The response to the brief was a light weight, modular steel braced frame structure that was simple and efficient to detail and construct. Open, clear, flexible spaces were provided by the structural system, whilst also allowing provision of rigging in all areas.

3D modelling was used extensively to provide a fully integrated multi-disciplinary engineering design. This draws together the collaborative efforts of Arup disciplines (structures, MEP, fire, acoustics, security and civil), together with architectural disciplines and client user groups. Arup provided true integration in the provision of a full suite of engineering services.



Image Credit: Peter Hyatt

Swinburne Centre for Sustainability

Arup provided building services from design to construction for this university building that incorporates sustainable technologies as a teaching tool. This development included a new 'leading edge' sustainable building and refurbishment of two existing buildings.

The new building developed as part of this project possesses a range of design features which give it excellent environmental performance. These include:

- Reduced energy consumption through minimised heat transfer into and out of the building
- Reduced energy consumption through maximised use of available daylight.
- Reduced water consumption through the use of low usage fixtures and fittings and rainwater collection.

Relevant Projects



Image Credit: Arup

Bio 21, University of Melbourne

This was the first stage in the Victorian government's joint BIO 21 initiative to produce a multi-storey laboratory building for biotechnology research. Part occupied by Melbourne University, the remainder of the building houses start up organisations in biotechnology research.

This project incorporated a number of NMRs, the siting of which were a key factor in the building design

Vibration control for specialist equipment was a key aspect of the structural design and led to innovative use of a precast flooring system that achieved simple construction and clear span laboratories. Sustainability was at the heart of the project, with particular emphasis on the façade design, which Arup were responsible for, and its ability to provide the maximum daylight to laboratories.



Image Credit: Monash University

Monash Law School

Arup has provided a range of input to the proposed Monash University Law Building in Melbourne. We have produced a preliminary ESD strategy encompassing Green Star and other initiatives that complements the functions of the building, the university's project goals, and the architect's vision. Arup has also been designing the mechanical services for the building, including underfloor displacement and VAV air supply systems to contribute to a low energy building.



Image Credit: Peter Hyatt

School of Sustainable Development, Bond University

This is the first Australian university to attain six-star "World Leadership" status from the Green Building Council of Australia (GBCA).

Arup provided vital advice to Bond University, the project architect and the design team on the use of the Australian green building rating tool, Green Star, and opportunities for moving beyond a six star rating to achieving a more holistic approach to delivering sustainable development. This was an important exercise in cost savings and minimising risks.

The application of SPeAR®, Arup's own Sustainable Project Appraisal Routine as the overarching sustainability framework enabled the broadest possible design approach addressing all areas of sustainability. SPeAR® was used to guide sustainability workshops, perform a gap analysis with rating tools and underpin the action plan being implemented by the design team.

The design team has successfully achieved an integrated approach to total project delivery, including the commissioning of the building as a 'living laboratory'.

Relevant Projects



Image Credit: Alan Jensen

Victorian College of the Arts

This project incorporates a substantial extension to the library, café and student and staff lounges, as well as the addition of the new Centre for Ideas. This facility is a cross-disciplinary multi-media teaching facility with a mission to foster critical cultural discourse and collaborative arts practices.

The new works are meshed together within the existing buildings, achieving and drawing together their diverse uses.



Image Credit: Peter Hyatt

Swinburne X-change

Arup provided Building Services and Sustainable Design for this mixed-use development consisting of residential, academic, office, retail and basement parking. The project was a collaborative one, working with the Contractor to achieve a guaranteed maximum price for construction, and a 4-star rating using the Green Star tool.



Image Credit: John Gollings

University of Tasmania

This project provided the University of Tasmania with a new Faculty of Arts and Riawunna (Aboriginal Studies) building. It included new classrooms, faculty offices, a 350-seat lecture theatre, and audio-visual space and computer teaching laboratories.

Particular attention was given to meeting the university's low energy, ventilation, lighting and acoustic needs.

Structurally, unusual elements of the development included the use of crossed wishbone supports under an upper-storey, extensive steel cladding and detailing.

Relevant Projects



Image Credit: Daniel Hopkinson

Informatics Collaboratory of the Social Sciences (ICoSS), University of Sheffield

The award-winning ICoSS is a state-of-the-art IT-based research facility, which is visually striking, low-energy and has established an interactive approach to research.

The client brief was to establish a landmark building in terms of architecture, engineering and sustainable design. The accommodation over five floors provides 2,100m² of open plan and conference accommodation.

Arup developed a services strategy to help fulfil this brief incorporating innovative lighting, ventilation and acoustic solutions.

Arup's involvement with the university has continued after handover to monitor and optimise the energy use and performance of ICoSS's internal environment.

Architect: CPMG Architects Ltd

Capital Cost: £3,300,000

Award: International Green Apple Awards for the Built Environment & Architectural Heritage Educational Buildings - Gold Award 2006

Completed 2004



Image Credit: Studio Daniel Libeskind

School of Creative Media, City University of Hong Kong

Arup is responsible for the geotechnical, structural, facade, mechanical, electrical and public health engineering design plus lighting for a 32,750m² building to provide facilities for the School of Creative Media. Accommodation includes a multi-purpose theatre, sound stages, laboratories, classrooms, exhibition spaces, and a cafe and restaurant.

Architect: Daniel Libeskind / Leigh & Orange JV Ltd

Capital Cost: HK\$550,000,000

Status: Ongoing



Image Credit: 3xN

Salford University, Greater Manchester, United Kingdom

Arup is the lead consultant for a new 18,900m² building for the Faculty of Arts Media and Social Sciences including teaching, performance and rehearsal spaces plus support services and communal areas, together with a number of specialist spaces such as TV and recording studios.

Architect: 3XNielsen A/S

Capital Cost: £39,000,000

Completed: 2008

Relevant Projects



Image Credit: Massimiliano Fuksas Architects

African Institute of Science and Technology, Abuja, Nigeria

Arup was responsible for the master planning followed by geotechnical, infrastructure, structural, mechanical, electrical and public health engineering concept, scheme and detailed design for Phase 1 of the new university campus for the African Institute of Science and Technology providing state-of-the-art teaching and research facilities for science and engineering.

Client: Nelson Mandela Institution

Architect: Massimiliano Fuksas Architects

Capital Cost: \$360,000,000

Completed 2008



Image Credit: Arup

University of California, Merced, California, USA

Arup was the prime consultant for the 2,000 acre development of a greenfield site into the 10th University of California campus that will eventually accommodate 25,000 students. The project scope included infrastructure, communications engineering and sustainable design for the first phase of Infrastructure to be completed by 2004.

Services included preparation of the project planning guides for site planning and infrastructure, the DPP, as well as being appointed to the masterplan team with SOM to provide overall sustainability advice for the new campus.

Architect: SOM

Award: AIA Institute Honor Award for Architecture 2007

Award: AIA San Francisco Chapter - Excellence in Architecture Design Honor Award 2006

Capital Cost: £53,190,000

Completed: 2006



The Arup Service

Arup is pleased to offer the following services to the project:

- Structural Engineering
- Civil Engineering
- Mechanical Engineering
- Electrical Engineering, including IT, Communications and Security
- Buildings Sustainability
- Strategic Sustainability
- Façade Engineering
- Hydraulic Engineering
- Fire Protection
- Fire Engineering
- Acoustics and AV
- Transport Planning and Traffic Engineering
- Pedestrian Planning and Vertical Transport

Please refer to [Appendix A](#) for a summary of the above disciplines, and [Appendix B](#) for the Arup team members nominated for this project.



Evaluation Criterion 6 Merit

Local Projects

- 2008 ASI (Australian Steel Institute) VIC/TAS Division - The Travellers, 'Creative Innovations Steel Design Award'
- 2008 ASI (Australian Steel Institute) VIC/TAS Division - NICA (National Institute of Circus Arts) 'Architectural Steel Design Award'
- 2008 ACEA (Association of Consulting Engineers Australia) National Awards - NICA (National Institute of Circus Arts), Melbourne 'Building' category – 'Certificate of recognition'
- 2008 ACEA (Association of Consulting Engineers Australia) National Awards, 'Project of the Year' - The Water Cube
- 2008 ACEA (Association of Consulting Engineers Australia) National Awards - Stockland Head Office, Sydney 'Specialist' category – 'Gold Award of Special Merit'
- 2008 ACEA (Association of Consulting Engineers Australia) National Awards - 2 Market St, Sydney 'Building services' category – 'Silver award of Highly Commended'

International Projects

- 2008 Australian Engineering Excellence Awards, 'The Sir William Hudson Award' - The Water Cube
- 2008 ACEA (Association of Consulting Engineers Australia) National Awards - The Water Cube 'International/Export' category – 'Gold Award of Special Merit'
- 2007 AIA (American Institute of Architecture) 'Institute Honor Award for Architecture' – University of California, Merced
- 2007 Structural Engineers Association of Arizona 'Excellence in Structural Engineering Award' – Northern Arizona University Applied Research and Development Facility
- 2006 AIA (American Institute of Architecture) San Francisco Chapter 'Excellence in Architecture Design Honor Award' – University of California, Merced
- 2006 International Green Apple Awards for Built Environment and Architecture Heritage 'Gold Award' – ICoSS
- 2005 Holcim Awards for Sustainable Construction North America, 'Acknowledgement' - Northern Arizona University Applied Research and Development Facility



Appendix A Discipline Information

Structural and Civil Engineering

Our structural team is expert in working closely with both client and project team in developing responsive solutions that can be built efficiently and economically whilst maintaining (or even enhancing) the architectural aspiration.

The design is developed with due allowance for the numerous constraints and specific project parameters identified. These include programme and cost, site access and logistics, substructure constraints, passive design, renewables, material availability and suitability.

The process of design development aims to recognise inherent risks that may be associated with part of the works or design. Arup endeavours to provide solutions that minimise such risks or at least quantify, where possible, their extent and effect such that appropriate contingencies can be allocated.

Our civil team have an intimate understanding of design issues and interfaces associated with education projects incorporating vehicular access, car parking, and pedestrian and building interfaces.

As Civil and Infrastructure Engineers, some of our best work ends up buried in the ground. Our detailed coordination approach to service coordination reduces the risk of services clashes and interface problems with the building structure.

With consideration of the nature of the project we will commit a team to the project with previous experience in the design of education facilities to ensure past relevant civil project experience is utilised and optimised design outcomes are achieved.

Building Services

Arup's primary aim in Building Services design is to create comfortable, well-designed and well-maintained environments for the benefit of building users, operators, and owners.

Arup understands the importance of integrating building services into a modern teaching facility which focuses on flexibility of design. Services should provide for versatile teaching spaces that adapt to changes in differing teaching styles.

The mechanical systems should provide a comfortable working environment which will provide "creative thinking" spaces for both staff and students.

Electrical and communication systems should be capable of meeting the demands of developing IT technologies.

Hydraulic systems should be efficient with a focus on capture and reuse of precious resources.

Mechanical Engineering

Mechanical engineering skills are applied to the core activity of designing services for buildings and to specialist activities such as research and development of leading-edge techniques and technologies. Work carried out ranges from the design of highly serviced systems, for example those required by pharmaceutical research laboratories, to passive environmental control where the building fabric is used as the main climatic modifier.

The firm's philosophy is to design mechanical services that ensure the comfort, health and wellbeing of the occupants who will use a building. The aim is not only to produce buildings that function well but also to achieve energy efficiency with minimal environmental impact



Appendix A Discipline Information

Electrical Engineering, including IT, Communications and Security

Electrical engineering is an integral part of building services design as well as specialist 'stand-alone service'. Arup's expertise covers a wide variety of projects ranging from office and commercial buildings to theatres and opera houses.

Specialised fields incorporate museums and art galleries. Heavy power and industrial designs include laboratories, factories and manufacturing plants.

Building and Strategic Sustainability

Please see Criterion 4.

Fire Protection

The building will be provided fire protection and fire detections that comply with the requirements of the BCA and Australian Standards. The system shall be designed to complement the fire engineered solution for the building design when Building Code of Australia compliance cannot be fully achieved due to design constraints.

The latest technology in fire detection and fire suppression systems shall be utilised to ensure that the building and its occupants have the best protection available.

The design shall be closely coordinated with the architectural features of the building to provide the most aesthetic install for the learning environment.

Facade Engineering

Arup Façade Engineering will contribute to the success of this project for the following reasons:

Our Team – our approach to our team is to hire the best, most experienced consultant-based creative designers and ex-industry individuals possible.

Our Expertise, Experience and Thoroughness – the benefits of the combination of our designers and our ex-industry staff is their ability to meet client's objectives, as well as their extreme thoroughness. These two factors are crucial to any project's success, both architecturally and practically. Success in façades is about following appropriately defined principles rigorously, through to every last detail.

Our Track Record – Arup Façades understands the elements of the project that will contribute to its overall success. We will consult closely with the design team at all times throughout the commission, proactively suggesting technical solutions which will support the realisation of this exciting project. We will approach this project objectively and with an open mind and unrestricted vision.

Building Physics – We have an in-house buildings physics team which allows us to provide an holistic solution to the façade. The building physics team has an extensive database of the material properties of cladding elements. This allows an independent review of the influences and effects of the proposed buildings on the surrounding landscape and properties.



Appendix A Discipline Information

Hydraulic Engineering

Our hydraulic engineering services cover a wide and varied range of infrastructure and piped services systems, including: hot and cold water systems, fire protection services, wastewater disposal; along with infrastructure systems including: sewerage, water supplies, drainage, and irrigation. We are also involved in energy and environmental issues and have specialist skills in a wide range of areas.

Fire Engineering

Design for fire safety is a rapidly developing field in which Arup Fire has established an excellent track record and reputation for introducing new ideas and approaches.

Our approach to fire safety design is one of being pro-active and communicative with the design team. Our philosophy is to link the latest scientific research to building design. We use advanced calculation techniques which allow the demonstration of fire safety performance targets, whilst being practical in our application. This allows fire safety designs to be developed from first principles, to suit the architectural design and project risk management objectives.

We are able to apply fire engineering concepts to the design of the building, which specifically address a building's unique features and uses. The overall aim of the fire safety strategy will be to provide an efficient and cost-effective fire safety solution.

Arup Fire has provided the fire engineering services for numerous tertiary institutions, for example:

- Menzies Building at Monash University
- University of Otago, Information Services Building
- University of Nottingham Library, UK
- Leibler Yavneh College, Elsternwick
- Various RMIT buildings
- UNSW Science Building
- NICA, Melbourne

Acoustics and AV

Arup Acoustics is well established internationally in providing world-class acoustic and audio-visual designs for educational environments. Our expertise in acoustic design of university facilities ranges from complete campuses through to libraries, individual lecture theatres, and classrooms/seminar rooms. Our scope ranges from sound-isolation design between classes in teaching buildings, to detailed design of the interior acoustics, lighting, stage infrastructure and audio-visual systems for multi-purpose halls and theatre spaces.

We are committed to sustainable development and all principles associated with “green design”. Our company has developed a reputation as a leader with respect to sustainability solutions. It is through close integration with our colleagues and work on independent projects that we have developed an in-depth knowledge of sustainable design issues. We have developed a proven track record for deriving effective acoustics solutions which support energy efficiency initiatives, but which are not at the expense of occupant comfort.

Our innovative “SoundLab”, located in our Melbourne office, is a purpose built and engineered space for creating, listening to and analysing sound. It uses sound rather than words to describe the acoustical design of the client's building. This design tool allows the client and architect to listen to a virtual design of their space, interact with the development of geometry and materials, and compare it with iterations of the design or less expensive designs. It can also be used to demonstrate background noise and external noise ingress levels with natural ventilation compared to mechanical ventilation, so that the client can make informed decisions about the integration of sustainable design options. This work is pioneering and sets our design approach apart from other acoustic consultants in Australasia.



Appendix A Discipline Information

Transport Planning and Traffic Engineering

Arup Transport Planning applies the knowledge and experience of the team to a range of development and masterplan applications across Australia and internationally. Our expertise lies in analysing and designing innovative solutions to access and movement issues and promoting travel choice.

Our traffic engineers design solutions for a range of issues from parking provision and vehicle site access to the complex issues of traffic modelling and design mitigation for large demand developments such as stadia.

Our planners and engineers provide a combined understanding of what is required and how to implement design solutions for access, parking, public transport, walking and cycling and have a proven track record in delivery.

We work closely with international experts in sustainable transport to ensure we provide contemporary global thinking to our projects.

Pedestrian Planning and Vertical Transport

Universities, due to the dense occupancy and peak passenger movements, particularly during class/lecture breaks, are highly demanding on the vertical transport installations. To enable efficient people movement, (which is critical to user satisfaction, speed of service and comfort) Arup can assist in formulating the arrangements of systems that work in with the overall building design and layout.

To facilitate the appropriate volume and location of breakout spaces, circulation and vertical transport, our Pedestrian Planners are available to test the movement of patrons within the built form and the consequences to the design process.

Our pedestrian planners can draw upon their project work for other University buildings, including analysis of arrival and departure profiles to assist with surge demands during lecture turn around periods. Arup are also able to model people movement within the Virtual Building, using our own software called Mass Motion. Mass Motion models exhibit the kinds of behaviour that occur every day in the real world. The virtual environment allows the user to identify occupant flows, queuing, and overall efficiency of the site access and exit system.

Arup also has extensive experience in the planning, design and modelling of emergency people movement; from evacuation from stadia to high-rise buildings and (underground) stations.

Since every building has unique features that will have a significant influence on the design and installation of the vertical transportation system, the Arup team can ensure that all types of vertical transportation options are considered, including efficient grouping of lifts, escalators and moving walks.