casas em movimento

SOLAR DECATHLON EUROPE 2012

Press Release

Solar Decathlon 2012

cem+nem-

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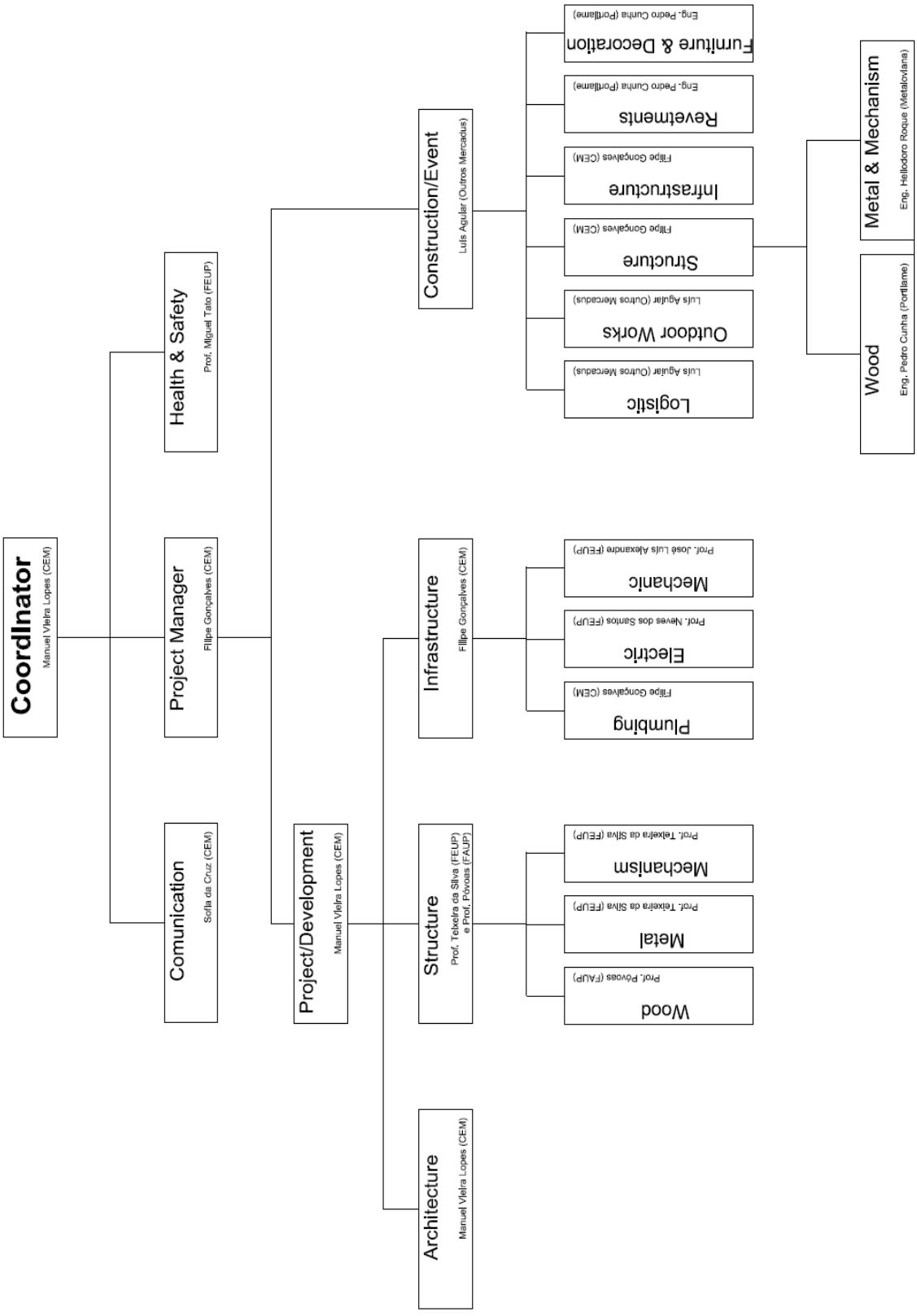
Organizational Flowchart and Authority Model



UP – University of Porto

With origins dating back in the 18th century, the University of Porto is currently the largest education and research institution in Portugal. Close to 31,000 students, 2,300 teachers and researchers along with 1,700 administrative staff attend its 15 schools and 69 scientific research units, spread across 3 university campuses located in the city of Porto.

Currently, nearly 31,000 students (6,500 postgraduates) attend the 273 degrees, master and doctoral courses of the University of Porto. Every year, around 2,000 international students choose this university to complete their higher education.

In recent years, the University of Porto has betted on economic valuation of its research activities and recent partnerships with some of the biggest national companies, already resulted in several innovations with proven success in national and international markets.

For the development of the project was created the company moving houses, Lda, spin-off from FAUP and established a protocol of partnership with the University of Porto. The partnership aims to ensure the construction of prototype cemfaup on the campus of the Faculty of architecture.

Project Description

casas em movimento

The project "casas em movimento |moving houses" relies on the ability to interact with the ambiance and the luminosity variations throughout the day in the Sun's potential Demand., source of light and heat, as well as in the management and mutation of the spaces of the House, resput to the routine life of the 21st century, expressing movement or stop, through a dwelling that draws the path of the Sun and it feeds.

These studies are essential for measuring the impact of innovative responses that the hundred proposes to the routines of our daily lives. For the first time we are proposing a solution that is the space that adapts to the demands of those who inhabit, and not the other way around. The house interacts with the surrounding space and with the brightness variations throughout the day, re-creating every single time a new interior and exterior space, which adapts to human routines, changes in the look throughout the day, and designs the Sun traversal and it feeds on, always.

The project "casas em movimento |moving houses" emerges precisely from the need to find solutions to housing that reverse current state of energy dependency, identified in the national plan and underlined in several community assessments, such as the 2006 Green Paper, the Eu-

ropean Commission. To this end, the hundred proposes a housing based on self-sustaining energy production capacity, which can still evolve for the provision of energy for additional uses, such as for example the loading of an electric car batteries, or the re-entry into the network of energy surpluses, allowing you to monetize their investment building, but especially assuring a permanent ecological balance.

"Casas em movimento |moving houses" participation in the Solar Decathlon Europe (SDE) 2012 is the latest of three strands of a hundred projects currently running, in this case conducted by cem+nem- team. The decision of the submission of an application to the SDE2012, an international competition of reference in the area of energy efficiency and innovation applied to environmental sustainability, was an examination of the characteristics of the hundred, which convinced the jury of the SDE2012 to accept the participation of Portugal, the first ever in the history of this competition.

The project is in SDE2012 represented by a team of a multitude of students from multidisciplinary nature, leading to the contest a part of the solutions prepared in this way and applies it in the prototype built under the Protocol between the "casas em movimento, Lda." and Faculty of Architecture of Porto (FAUP), with the aim to demonstrate the versatility of the model.

FAUP team engages students and collaborators from areas now as engineering, computer science, economics, media and audiovisual production, clearly highlighting the aspects of design and construction of the project but also by studying and analyzing their economic viability and executing a strategy for the dissemination and public awareness of the

concepts underlying the hundred: innovative and sustainable construction, energy balance and perfect environmental interaction.

The project's development within the framework of SDE2012 allowed us to step up to another level of affirmation, with the promotion of their characteristics near to the investors and business partners, collaborating organizations, institutions and persons of recognized competence in the field of engineering, architecture and communication, connected to the scientific and technological area.
Between the various opinions which underline the quality and pioneering of "casas em movimento |moving houses", we highlight the architect Siza Vieira, Pritzker Prize in 1992.

The pioneering "casas em movimento | moving houses" project highlights the structural movement exploration of the house – the house can rotate on itself – coupled with the specific operations of the photovoltaic panels, and with the use of other equipment, such as adaptive glasses to luminosity - as means of energy recovery. This sunflower effect, combined with the movements of the flap, maximizes the solar energetic winnings at the same time that responds to the needs of the different seasons of the year, allowing the shadows in the summer and the incidence of the Sun in winter.

We also make use of the passive systems such as adaptive glasses to luminosity, concepts of brise soleil and materials with thermal insulation capacity and acoustic, while at the same time monetize national product offering, using wood and corks.

The design versatility allows the consideration of a variety of exterior spaces such as mirrors, water permeable pavements, sand or hard floors and hits land, adapting the housing throughout the actual spaces, according to the location of your deployment, taking advantage of the 4 best surface now, ranging from the sunrise and the sunset, and between the different seasons of the year.

The House's structural movement ensures significant energy efficiency, new concepts of inhabiting and controlling the whole space around housing, being the home actually stays to their residents. The modular construction allows each family adapt hundredfold the House to his life, adding or subtracting modules according to the needs, such as the birth of children, or the moment at which they leave the House. The modules are reusable or recyclable as the special interests.

Management of all the resources implemented is optimized thanks to the introduction of home automation software, responding to the projections of the second building needs and requirements of the architectural and engineering teams. This building applies cutting-edge technological equipment, ensuring the greatest possible use of renewable energy, and making the best management of resources by computer integrating all equipment in a beautiful building that cohabite integral-mind with nature. The mechanisms of functioning of the House can also be purchased at different times, depending on the specific needs, constitute another element for characterization of the versatility of the "casas em movimento – moving houses".

events and activities

Since last february, our project was presented on multitude of events in Portugal and Spain with the purpose of promote our concepts and our participation in SDE 2012. Thus, it is listed our events and activities participations:

1. Cem+nem- Project Presentation, E-learning Café, Porto - on February, 23rd: this presentation was held at "e-learning café" at Porto to the public in general which participates enthusiastically, specially the University of Porto students.

2. Faculty of Arts and Faculty of Economy of Porto – on March 8th - 9th: presentation and promotion for students concerning the admission of new elements to cooperate on the project.

3. Urbaverde 2012 – Sustainable Cities' Fair, Exponor at Porto – on April 14th: conference to show our concepts and a new interactive mockup that reflects the movement of rotation of the house.

4. Presentation at ESAD (Arts and Design University at Oporto) – on April 23rd: presentation for the university students where they were informed about the SDE competition and our cem+nem- project.

5. Participation in Veteco, Madrid – on May 8th - 11th: This fair is an international window, curtain walls and structural glass trade show and it is organised by IFEMA with the purpose of a global promotional project that encompasses different sectors within the fields of architecture and construction, organised around three leading fairs. Our mockup executed one of the project's concepts, the flaps movement, as it will occur at Villa Solar in September.

6. Participation in Tektónica, Lisbon – on May 8th - 12th: This is a meeting point of reference for the building and construction sector, a decisive

tool to stimulate business activity whether it is in Portugal or other international markets. We participated in a conference on May 11th to inform the participants about our project and SDE competition.

7. Energy Cities Annual Rendezvous, Guimarães, Portugal (the 2012 European Capital Culture) – on May 9th - 11th: our team demonstrated another project's concept, the movement of rotation of the house with a new a mockup, as it will occur after our SDE participation, also in Guimarães.

8. University of Porto – May 12th: presentation where our academic and business partners divulgated together the potential of our project and we announced to the media the dates for the beginning of our Prototype's construction. This event was totally organised by our communication team in collaboration with the mass media.

publications about "casas em movimento"

Besides this events and activities where our team was, we also promoted our concepts in mass media, which we emphasize the subsequently:

1. Magazine "Muy Interesante", April 22nd: «University of Porto participates in SDE competition with a proposal of a solar adaptable habitation, which his habitation modules allows to add and remove respecting the family needs.»

2. Newspaper SOL, May 6th: "A Portuguese team dreams with the first world's living village, where a multitude of houses rotates synchronously as in a sunflowers' garden."

3. RTP - Portuguese Radio-Television, May 6th: "Houses that move as sunflowers to better take advantage from the solar energy will be pre-

sented by a Portuguese architecture in an international competition at Madrid. This project is named "casas em movimento | moving houses" and we will use traditional Portuguese materials as cork and portuguese style pavement, also known as "calçada à portuguesa".

4. Primeiro Jornal in SIC, May 7th: "Faculty of Architecture of Porto student present an house project that follow the sun as a live being, producing twice more the needed energy for consuming.

Participation in contests, fairs and national and foreign events is part of the dissemination strategy of building hundred or portions thereof, which introduces innovation in terms of sustainability and energy efficiency, with the advantage of being able to attract potential investors and partners. Alongside these activities continues to be the project 100 with entrepreneurs looking for specific reference, support for its implementation. Articulating the disclosure on the specialized press with the national and local media coverage of the activities of general interest and team are in development efforts for the dissemination of concepts, particularly those aspects which one related to the nature, ecological balance, energy efficiency and green economy, with the school community.

Houses in motion there are thus in the forefront of architecture and engineering, finding in the ecological sustainability of inhabiting and living with quality of life every day, drawing the "House as a living element", which interacts with evolutionarily all other dimensions of human life, family and social.

Collaborations / Partnerships

Collaborating institutions

INEGI – Instituto de Engenharia Mecânica e Gestão Industrial

The INEGI is an institution created in 1986 in connection with the FEUP (Faculdade de Engenharia da Universidade do Porto), and that makes the interface between the University and industry. Its field of action moves around ID projects in partnership with private companies. It was used to support the development of the project and ensure the efficiency and smooth functioning of housing mechanical systems, allowing interaction with the HUNDRED nor – mechanical equipment, studying the most favourable to the development of the project.

INESC – Instituto de Engenharia de Sistemas e Computadores

INESC is a private non-profit association, which are associated with various Colleges and institutes of higher education, dedicating himself to education, incubation, scientific research and technological consulting. The collaboration of this Institute is part of the development of home automation, building energy management programs of the House and interact with the inhabitants of the House.

LNEG – Laboratório Nacional de Engenharia e Geologia

The LNEG aims to promote science, technology, activities based on natural resources, promoting social and economic development, and integrates into the Ministry of economy, innovation and development. The presence of LNEG in this project assumes the responsibility of managing, studying and developing the thermal systems of the building as well as

liabilities and open perspectives for the development of the project of architecture.

Sponsoring companies

ADENE, Agência para a Energia

The INTEREST ENTITIES is the Portuguese Agency for energy, which aims to promote and carry out activities of public interest in the field of energy. The on-demand Association of Portuguese State has among other private equity and public energy sector, the participation of laboratories to collaborate in this project as the LNEG.

Promoting energy development policies, has found himself in an INTEREST ENTITIES support since the beginning of the project, promoting and encouraging the development team. Their participation in the European network of Energy agencies are involved in several European projects in the same scope have been an asset for the dissemination of the project "casas em movimento | moving houses " with the International market, and about providing the best knowledge of the energy sector for the model CEM-SDE.

EDP – Energias de Portugal

EDP is a leading company in the energy sector and we include in our culture values and commitments regarding our customers, society and environment.

EDP vision to be an integrated energy company, a leader in value creation in the markets where we can make a difference is shared by the universe of EDP employees, spread across different continents and countries - the Iberian Peninsula (Portugal and Spain), France, Belgium, Po-

land, Romania, United States and Brazil - a diversity that enriches us and brings us together in the respect for the different cultures of the markets where we operate.

EDP are among the major European operators in the energy sector; we are one of the largest energy operators of the Iberian Peninsula, the largest Portuguese industrial group and the 3rd largest producer of wind energy. Besides the electricity sector - generation, distribution and trading - we also have a significant presence in the gas sector of the Iberian Peninsula.

EDP are the only Portuguese company that integrates the Dow Jones Sustainability Indexes (World and STOXX), the world's most demanding ranking, that distinguishes the best performing companies on issues related to transparency, sustainability and excellence in economic management and social environment.

KÖMMERLING

The German company Kömmerling, sponsor of Solar Dechatlon Europe is a pioneer in the production of plastics, and manufacturer of PVC frames. Representing themselves on the world market for excellence and quality of their products, presents with the GreenLine a concept / strategy of reuse or recycling of their profiles by promoting energy savings and raw material. Whereas the principles of bioclimatic respect close to Kömmerling, is an asset to have a partnership with this company, valuing the future strategy of the "casas em movimento | moving houses", as well as the ideals of the CEM+NEM- team.

With this company you can reach a consensual understanding about the profile most suitable to apply in Kömmerling model 100-SDE. It is also an asset to cooperate with a company that invests heavily in ID and

which are enormous expectations of architecture and engineering for the application in inhabited spaces for future generations.

MARTIFER / MARTIFER SOLAR

Martifer is a multinational industrial group with over 3,000 employees and an activity which is based on metallic construction and solar energy sectors. Martifer SGPS, SA is a holding company of the Group and has been listed on Euronext Lisbon since June 2007. In 2010, operating revenues from its core activities totalled 602.1 million Euros.

Martifer Solar is focused on EPC, O&M and the distribution of PV modules and components, via its subsidiary MPrime. Based in Portugal it is present in Europe, North and Latin America, Africa and Asia. The company has already participated in the implementation of 200 MW of photovoltaic solar energy worldwide.

OUTROS MERCADUS

Outros Mercadus centres its activities in the offer of solutions in modular equipments to the construction of Stands, Offices, Public Spaces, Museums, Exhibitions and Display. It is the exclusive representative in Portugal, Angola and Mozambique of the concept of modular construction from the prestigious German brand Burkhardt Leitner constructiv. As well as the exclusive representation in Portugal of the modular system Modulbox mo-systeme. Recently, Outros Mercadus obtained the exclusive representation in Portugal for more two German trademarks: Frank Europe with specific solutions for the Museums and Exhibitions, and Banner Lifter.

PORTILAME

The history of Portilame began in 2004 with a group of friends who, combining the three knowledge - be, be, do - the ability of some entrepre-

neurial know-how and other advanced-car solved by creating a company come to believe fill gaps in the market. In 2011 started with the acquisition of new facilities in Viana do Castelo with 27,000 m2 and more than 7,000 m2 covered.

SAINT-GOBAIN

The SAINT-GOBAIN is a company of French origin with origin in the 17th century, focusing among others the production and marketing of glass. His presence in the world market is also distant glassblower. We highlight a dedication to Innovation, and sustainable development, establishing University research partnerships and being also the main sponsor of Solar Dechatlon Europe.

The partnership with this company allows an expansion of architectural requirements regarding the properties of glass, in order to find the best technical solution and aesthetics into space, being special glass for relevance in the prototype CEM-desired spatiality EDS. Saint-Gobain is a partner in the decision and handing over of glass for the prototype.

SONAE – SONAE Indústria, Worten

SONAE is one of the most important Portuguese business groups, attributed its growth, rigor and solidity to the entrepreneur Belmiro de Azevedo, a successful reference and entrepreneurship in the national economy. The company is betting on innovation and modernity, endeavoring to future projects and supporting universities among student's finalists, providing job opportunities. The company's investment areas focus on retail, food retail industry and specialized, communications and real estate management. The areas of partnership with this company rely on the communications sector of industry and domestic appliances, looking for the laminated support and specialized equipment sectors.

TEKEVER

The TEKEVER Group develops innovative technologies for the Enterprise, Aerospace, Defense and Security Markets. TEKEVER currently has subsidiaries in Europe, Asia, South and North America, focused on developing innovative technology, creating and distributing products, supporting partners and servicing customers around the world.