

Fundação para a Ciência e a Tecnologia

Evaluation Research Unit 2017/2018

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Part 1: Identification of the R&D Unit, the Management Institutions and the Participant Institutions

01. IDENTIFICATION OF THE R&D Unit

1.0 Reference

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1.1 Name of the R&D Unit

Centre for Studies in Architecture and Urbanism

1.2 Acronym

CEAU

1.3 Coordinator

RUI HUMBERTO COSTA DE FERNANDES PÓVOAS

1.4 Scientific areas

Humanities and Arts - Other humanities

1.5 Keywords

Architecture

Urbanism

Construction

History

Architectural Design

Drawing

1.6 R&D Unit Contacts and Address

Postal Address:

Faculdade de Arquitectura da Universidade do Porto, Via Panorâmica S/N

4150 - 564 Porto

Nº de telefone:226057100

Endereço e-mail:ceau@arq.up.pt

1.7 Link to the R&D Unit's page on the Internet

www.ceau.arq.up.pt

02. Evaluation Panel to whom the R&D Unit submits the current application

2.1 Evaluation Panel to whom the R&D Unit submits the current application

ARTS AND HUMANITIES - Architecture and Urbanism

03. Involved institutions

3.1 Main Management Institution

Faculdade de Arquitectura da Universidade do Porto (FAUP)

3.2 Other(s) Management Institution(s)

3.3 Partnership agreements with Management Institution(s)

3.4 Participating Institution(s)

3.5 Partnership agreements with Participant Institution(s)

Institution Name

[Universidade da Beira Interior \(UBI\)](#)

[Universidade de Coimbra \(UC\)](#)

[Fundação Ensino e Cultura Fernando Pessoa \(FECFP\)](#)

[COFAC, Cooperativa de Formação e Animação Cultural, CRL \(COFAC\)](#)

[Grupo Bel, S.A. \(Grupo Bel\)](#)

04. Description of the main contributions of the team of Integrated Researchers in the current application

4.1 General description of the R&D Unit

CEAU was envisaged and developed as FAUP's institutional research centre, aiming the production and dissemination of Architectural knowledge, based on the understanding of the discipline of architecture as a field where a wide variety of artistic and scientific topics overlap, e.g. theory, history, technology, urban studies. CEAU is currently a medium-sized research unit, having grown steadily in the last decade. In the period 2013-2017, CEAU's body has been growing considerably: from 112 to 140

members in the period 2012-2017, with an even steeper increase in the figures of new members with a PhD degree (from 48 to 88). This increase reflects the capacity of attraction of the CEAU research centre, namely PhD researchers, researchers from other institutions and postdoctoral researchers, instrumental in strengthening FAUP's mission and the national scientific and technological system. CEAU has been also strongly committed with internationalization through different activities and strategies: i) the foundation of thematic research networks; ii) the organization of several international conferences (in leading subjects in the disciplinary field); iii) the participation of its members in a wide range of scientific conferences; iv) the participation in examination panels and scientific committees; v) and the organization of research meetings, seminars and discussions. In the period 2013-2017 CEAU has been organized in seven autonomous, yet interrelated, research groups: 'Architecture and modes of inhabiting' (AMH), 'House Atlas - Housing architectural design and forms of dwelling' (AdC), 'Architecture: Theory, Project and History' (ATPH), 'Centre of Communications and Spatial Representation' (CCRE), 'Digital Fabrication Laboratory' (DFL), 'Territory Dynamics and Morphologies' (MDT), and 'Architecture, City and Territory Heritage' (PACT). Each group is structured around specific projects and research lines. The main level of the centre's governance is the Scientific Board. All the integrated members with a doctoral degree compose this board. This board generally meets four times a year, in which it decides on matters of general logistic, delineates research strategies and votes on new memberships, partnerships and protocols. The second level of CEAU's governance lays in the informal meetings of the centre's direction with the coordinators of each research group, which is key for the discussions about the objectives, the planning of the centre activities and its budget, financing and resource sharing. The internal organization of the research groups constitutes another level of governance, where each coordinator is responsible for managing the scientific activities of the group and the interactions between broader research vectors and specific projects, integrating its developments in a coherent synthesis. This organizational structure and dynamic decision-making processes are a mirror of CEAU's constitutive process, engendered through an early aggregation of different research interest and projects, and consolidated over the last decade. The beginning of the Doctoral Programme in Architecture (PDA) was fundamental for this process of disciplinary consolidation, fostering a close articulation between the centre and post-graduate studies (third cycle). CEAU and PDA overlap in various ways: several of its researchers belong to PDA's faculty and many doctoral candidates are integrated in its research groups. The centre and the doctoral program merge in a wider scientific strategy, fostering FAUP's culture of research, debate and dissemination of knowledge. This circumstance, as mentioned above, led to the remarkable growth of the centre regarding the number of researchers, and more decisively, in the number of researchers with a doctoral degree, enabling a consolidation of the centre's research in terms of production and human resources.

4.2 Identification and brief description of up to 5 contributions the R&D Unit considers most important of those provided in period 2013-2017 by Integrated Researchers registered in the current application, independently of the R&D Unit having existed or not

The aim of the research project 'MAPPING PUBLIC HOUSING: A CRITICAL REVIEW OF THE STATE-SUBSIDISED RESIDENTIAL ARCHITECTURE IN PORTUGAL' (1910-1974) is to build an instrument that will allow weaving data and knowledge referring to state subsidised housing in Portugal, in the form of a complex open access database [<http://mappingpublichousing.up.pt/en/database>]. Until now the construction of this database has allowed the project to have a significant impact on multidisciplinary studies by identifying the public programs and their spatial realizations; recognising construction systems and housing types; establishing a relation between public housing programmes and political and legal contexts; understanding social policies; and georeferencing urban contexts in which the initiatives are inscribed. Another important result already available is the construction of a glossary of terms related to housing theme [<http://mappingpublichousing.up.pt/en/outcomes/glossary>]. The main goal is to explain specific terms in order to accurately define Portuguese vocabulary according to universal quantification and qualification criteria related to Architecture terminology. This project is funded by the Foundation for Science and Technology, between 2016 and 2019.

The research project 'SILENT RUPTURE', funded by FCT, explored the intersections between architecture and cinema, gathering an international team that included young researchers and opening a new field of study in Portugal. Drawing on a range of disciplinary approaches, Silent Rupture shared insight into a filmic discourse on architectural design as well as a spatial reading of film, crossing the boundaries of both disciplines. Outcomes include awarded fictional and documentary architecturally centred short-films, filmed interviews with notable architects and filmmakers, organization of international conferences and summer courses, master and PhD dissertations; the creation of a new optional course at FAUP master's programme; publication of the journal JACK and the books *Revolutions. Architecture and Cinema in the 1960s/70s* and *Straight Stories. Texts on Architecture and Cinema*. The research has been presented at multiple forums, nationally and internationally, and has attracted wide media coverage, a sign of its scientific, cultural and social relevance.

The research project 'ROBOTIC TECHNOLOGIES FOR NON-STANDARD DESIGN AND CONSTRUCTION IN ARCHITECTURE' focused on exploring today's most flexible digital fabrication technology - robotics - investigated its potential to sustain the design and construction of non-standard architectural solutions. Establishing an innovative laboratory equipped with a large-scale industrial robot, this research project was the first of its kind in Portugal and one of a few similar initiatives on a global scale, currently emerging in prestigious architecture schools such as ETHZ in Zurich, MIT, GSD at Harvard or TU in Vienna, opening a new and independent line of experimental architectural research in Portugal. During this period, the newly created laboratory developed custom design and fabrication tools and methodologies and designed and constructed a large set of experimental prototypes, presented and published in major journals and conferences in the field.

In order to achieve results with an international impact, the project was developed by a multidisciplinary team, involving partners in the areas of architecture, engineering (structures, electronics and computer science) and mathematics, as well as an international network of consultants. This project was funded by the Foundation for Science and Technology, between 2013 and 2015, with a value of 199 961.00 Euros.

The project 'TERRITORY: COMMON HOME' continued the research on diffuse urbanisation in which MDT members have been involved since the 1980's. The project has taken the Ave Valley region as a case study and allowed to further explore the analysis of this territory's morphologies and dynamics, as well as to involve local citizens in a broad debate aiming to trigger the production

of collective imaginaries on this diffuse city. The project was commissioned by the Municipality of Vila Nova de Famalicão and it had as main outputs an exhibition, several workshops and focus groups, guided tours, debates and a final conference. It also led to a publication where the developed analysis is presented, together with additional contributions from different authors on the theme, thus presenting a contribution to rethinking territorial studies, as well as the roles of academia and public administration in its transformation. At the moment, a second book is being prepared. This book will gather and analyse all the results from the several initiatives involving local interveners.

A set of coordinated contributions were carried out in order to make bridges and create a body of knowledge transmittable to society, public entities and industry. These actions consider architecture and architectural research part of the cultural identity and a matter of interest to the community, and are, among others: i) research contracts and reports with PUBLIC ADMINISTRATION such as APDL (Harbour Administration), CMP (City Hall of Porto) regarding the Revision of the Municipal Masterplan (PDM | Characterization and Diagnosis of Heritage Values), CCDRN (Arco Metropolitano Noroeste Orientações Estratégicas) and with Rota do Românico (Romanesque Route), as well as ii) contracts and protocols with PRIVATE COMPANIES such as Amorim Isolamentos (MD Fachada MD Coberturas) or Mota-Engil. These projects of applied research are mainly related to advising and creating solutions for specific problems set by public administration or private companies, opening also new opportunities for new topics of research.

4.3 Main publications in 2013-2017 authored by Integrated Researchers registered in the current application

Reference	URL
AFONSO, Rui Braz - Landscape in Translation / Paesaggi in translazione. Em Angelucci, Filippo; Di Silvo, Michele; Ladiana, Daniela (Eds.) - The technological design of resilient landscape. Milano : Angeli, 2015. ISBN 978-88-204-6264-2. p. 178-205.	https://drive.google.com/open?id=1R14w6l2RB5lWGNNUX8qx7Qluj2hUX_XC
CARNEIRO, Luis Soares - Two Theatres by Fortunato Lodi in Portugal. Em FROMMEL, SABINE; ANTONUCCI, MICAELA (Eds.) - Da Bologna all'Europa: artisti bolognesi in Portogallo (secoli XVI-XIX), 2017. ISBN 978-88-6923-244-2. p. 227-242.	https://drive.google.com/open?id=1JxslYx7zIKdDL8pmmirQkckxEElVxi_q
COELHO, João Rodrigo Coelho - A few notes to (re)think the design of public space in the contemporary city. ZARCH: Journal of interdisciplinary studies in Architecture and Urbanism. . ISSN 2341-0531. 2 (2013) 42-51.	https://drive.google.com/open?id=1C-lmKVU5gzKjQ6zPzEkJtjNYus8owC_e
DOMINGUES, Álvaro - Volta a Portugal. 1a. ed ed. Lisboa, Portugal : Contraponto, 2017. ISBN 978-989-666-157-1.	https://drive.google.com/open?id=1cKZdZ9iqqsKioSp_HNdfRsjvRJIQ2jQ
GRAÇA DIAS, Manuel - Albarraque e Weinstein: Dois Discursos de Ruptura. Em URBANO, LUÍS (Ed.) - Revoluções: arquitectura e cinema nos anos 60/70. Porto : AMDJAC, 2013. ISBN 978-989-98494-0-2	https://drive.google.com/open?id=1CFaqvmPD8Rq69ZXeovdOQsqbAWSbGw55
LACERDA LOPES, Carlos Nuno - Fernando Távora, Conversas com Arquitectos. Porto : CIAMH - Centro de Inovação em Arquitectura e Modos de Habitar, 2012. ISBN 978-989-99346-0-3.	https://drive.google.com/open?id=1XvPH-dnbqsyPD-1vuWRr0HorrTMvDKUt
MENDES, Manuel (ED.) - Sobre o «projeto-de-arquitetura» de Fernando Távora. 2013-15. ISBN 978-989-97966-1-4.	https://drive.google.com/open?id=1yqyiZ80DPUQWg8r2XkeX029nAqZUYSU0
OLIVEIRA, Marta; FERRÃO AFONSO, José; RAMOS, Sílvia - Guimarães ad radicem montis Latito. Em Revista Monumentos n.º 33. [S.l.] : Leya, 2013. ISBN 978-972-27-2228-5	https://drive.google.com/open?id=1o5wBbttMfv6Ae3iirD2VoP1p1UExE9rM
RAMOS, Rui Jorge Garcia - Modernidade inquieta: arquitectura e identidades em construção: desdobramento de um debate em português. Coleção Cidade em questão. . 1a. edição ed. Porto : Edições Afrontamento, 2015. ISBN 978-972-36-1397-1.	https://drive.google.com/open?id=1OsCO1viB1IHsUwPijb58i-Nb_s8wUJLH
SOUSA, José Pedro; MARTINS, Pedro Filipe; AZAMBUJA VARELA, Pedro - The CorkCrete Arch project: the digital design and robotic fabrication of a novel building system made out of cork and glass-fiber reinforced concrete. Em Proceedings of the 21st CAADRIA. University of Melbourne, 2016	https://drive.google.com/open?id=176mY7BzivrMhjCTg8MCUchxL_OCZa4uZ
TAVARES, Domingos - Transformações na arquitectura portuense: o caso António da Silva. Porto : Dafne, 2017. ISBN 978-989-8217-41-7. 12	https://drive.google.com/open?id=1_RYQwQOgB1VOX93SKkba0H5HDaoUxQGo
TRAVASSO, Nuno; DOMINGUES, Álvaro (EDS.) - Território: Casa Comum. Em busca de um processo de construção colectiva [on-line]. [S.l.] : FAUP Publicações, 2015.	https://drive.google.com/open?id=1sSbDUStsmJCtjQltglwEMtyEbBwR-KsW
VALE, Clara Pimenta - The City between Project and Reality. Em PORTO VIVO SRU (Ed.) - Aliados Avenue and Centre of Porto?: Memory, Reality and Permanence. ISBN 978-989-98335-5-5 (e-book) UK; 978-989-98335-1-7 (e-book) PT; 978-989-98335-3-1 (print) PT, 2013, p.204-371.	https://drive.google.com/open?id=1N4sMIFLQVj0W5YmiEtYRWOUi5ZZFFGTZ
VENTURA, Susana - Ceci n'est pas un voyage: The journey as research lab in architecture published in Contour Journal. Contour Journal: Divergences in Architectural Research. 2017.	https://drive.google.com/open?id=1r9Yx-jZzXmc7aMGyt5GVQt3AjShNWhW4

Reference**URL**

XAVIER, João Pedro; PINHO, Eliana Manuel - On the Bia's Passé: The Olivier String Model and the Representation of Constructive Solutions for the Skew Arch. Em AMORUSO, GIUSEPPE (Ed.) - Handbook of Research on Visual Computing and Emerging Geometrical Design Tools: Advances in Media, Entertainment, and the Arts. [Em linha]. [S.l.] : IGI Global, 2016.

https://drive.google.com/open?id=1eTYBO86K05o52oznzBT2_ogTJjZgPRI

4.4 Description of other relevant contributions resulting from the activities in 2013-2017 of Integrated Researchers registered in the current application

Furthermore, during the period of 2013-17, CEAU research groups ensured a considerable set of initiatives:

- ORGANIZATION OF INTERNATIONAL CONFERENCES, SEMINARS AND WORKSHOPS such as (1) 'Ludic Architecture - IV Meeting on Architectural Education, Spaces and Devices', 2017, FAUP; (2) '4th International Congress of Housing in the Lusophone Space' (CIHEL), co-organized by the University of Beira Interior (UBI), Porto City Council and the Association Habitar, 2017; (3; 4) 'PTBIM- Building Information Modeling', University of Minho, FAUP, FEUP, IST, Portuguese Association of Architects and Portuguese Association of Engineers, 2016 and 2017; (5) International conference eCAADe 'Future Traditions. Rethinking Traditions and Envisioning the Future in Architecture Through the Use of Digital Tools', FAUP; (6) 'International Seminar on Earth Architecture', 2013, FAUP; (7; 8) International Congress 'On the surface: Photography and Architecture - Crossing Borders and Shifting Boundaries', 2014/2016, FAUP; and (9) the '2nd International Congress on Luso-Brazilian Construction History - 'Shared Cultures'', 2016, FAUP.

- CONTRIBUTION IN NEW COURSES/ADVANCED RESEARCH COURSES. The AIM - Master Module for Art and Science was developed as a pedagogical project for the creation of a Master Module for architecture students, involving the Universities of Porto (CCRE/CEAU-FAUP), Minho (Algoritmi - UMinho), Zaragoza (SEA-UNIZAR), Liverpool (CAVA-UoL) and the Polytechnic Institute of Porto (ESMAD-IPP).

- CONTRIBUTION IN EDITORIAL LINES AND JOURNALS, with (1) the Scopio Editions, 2010-2018, a collection of periodical and non periodical publications focused on Documental and Artistic Photography related with Architecture, City and Territory (more than 30 titles already published, public recognition by peers); (2) the International Architectural Journal 'BIM Is More', a periodical aiming at disseminating new approaches for designing and building Architecture through the use/integration of new digital information and communication technologies; and (3) the aforementioned journal 'JACK'.

- CREATION OF DIGITAL PLATFORMS FOR THE DISSEMINATION OF ARCHITECTURE-RELATED TOPICS: (1) Digital Museum of Architecture and Construction (MUDA); (2) Archive of Architecture Projects (ARPA); (3) Archives of Architecture Materials (ARMA); (4) Construction and Architecture Documents (DOCA); (5) Construction and Architecture Technologies (TECA); (6) Digital Construction Objects Archive (OBJT). Furthermore, the 'Drawings Collection' research line started a visually-driven technological platform to collect and study training drawings produced at the Porto School of Architecture (1911-2015).

- PROTOTYPES AND PRODUCTS DEVELOPMENT. A research contract was established by CEAU researchers with Amorim Isolamentos SA, with the participation of ITeCons and Weber Saint-Gobain and funding by AMORIM. This resulted in the development of a customized and sustainable cork product collection, 'MD Fachada Wave', produced with robotic technologies. Beyond these initiatives, other contributions should be briefly mentioned:

- Organization of Fernando Távora's and Alfredo Matos Ferreira's archives. New and unpublished documentation contributed to a new critical reading of those authors in the context of Portuguese Architecture.

- The research line 'Studies on City and Territorial Heritage' established protocols/research contracts with the Harbour Administration and the City Hall of Porto regarding the Revision of the Municipal Masterplan.

- 'Visual Spaces of Change' was the first stage of an Architecture, Art, Image, and Innovation (AAI2) Project, which has a significant component of Contemporary Photography combined with complementary research in Space Syntax and Information Technology.

Additional information about these and other CEAU's scientific contributions is presented in 9.3.2.

Part 2: Description of the R&D Unit, main contributions of the team of integrated researchers in the application and funding in 2013-17

05. Reports and membership of External Advisory Board

5.1 External Advisory Board reports in 2013-2017

R&D UnitFile

CEAU [CEAU_CEAC_Reports.pdf](#)

CEAU [CEAU_CEAC_Declarations.pdf](#)

5.2 Current External Advisory Board membership

R&D Unit	Member Name	Institution
CEAU	João Ferrão	Instituto de Ciências Sociais, Universidade de Lisboa - Portugal
CEAU	Mário Kruger	Centro de Estudos Sociais, Universidade de Coimbra - Portugal
CEAU	Raquel Henriques da Silva	Instituto de História da Arte, Faculdade de Ciências Sociais e Humanas, Univ. Nova Lisboa - Portugal

CEAU Víctor Pérez Escolano Escuela Técnica Superior Arquitectura, Universidad de Sevilla - Spain

5.3 External Advisory Board membership

Member Name	Institution
Antón González-Capitel Martínez	Escuela Técnica Superior de Arquitectura de Madrid- Spain
Franz Graf	École Polytechnique Fédérale de Lausanne - Switzerland
Vitor Manuel Guimarães Veríssimo Serrão	Faculdade de Letras da Universidade de Lisboa - Portuga

06. Funding in 2013-2017

6.1 Annual funding in 2013-2017

FUNDING SOURCES (TOTAL FUNDING)	2013	2014	2015	2016	2017	TOTAL (K€)
Fundação para a Ciência e a Tecnologia, I.P. - FCT	330	349	433	378	349	1.839
R&D Unit Pluriannual funding	46	29	81	31	96	283
Project funding	52	89	95	66	26	328
Funding for contracts of researchers with PhD (1)	0	0	19	87	37	143
Funding for PhD, PostDoc or other fellowships (2)	232	231	238	194	190	1.085
Other funding	0	0	0	0	0	0
Other national sources	0	50	76	8	19	153
Funding received from Participant or Management Institutions	0	0	1	1	1	3
Public sources (3)	0	35	55	1	18	109
Companies, industry and other private sources based in Portugal (3)	0	15	20	6	0	41
Any other funding source (3)	0	0	0	0	0	0
International sources	0	0	0	0	0	0
European Commission (3)	0	0	0	0	0	0
Companies, industry and other private sources not based in Portugal (3)	0	0	0	0	0	0
Other funding sources (3)	0	0	0	0	0	0
Total (K€)	330	399	509	386	368	1.992

(1) Paid through an institution or directly to researchers with PhD integrated in the R&D Unit

(2) Paid directly to fellows, researchers or students integrated in the R&D Unit

(3) Grants, projects, fellowships, prizes received, etc

07. Integrated Researchers, PhD students and research contracts in 2013-2017

7.1 Total numbers of Integrated Researchers, PhD students and research contracts in 2013-2017

Researchers and students	2013	2014	2015	2016	2017
No. of integrated researchers	112	112	131	135	140
No. of Integrated researchers with PhD	48	49	69	82	88
No. of PhD students advised by integrated members of the R&D Unit	107	93	73	101	92
No. of research contracts with national public or private entities	7	4	5	3	2
No. of research contracts with international bodies	0	0	0	0	0

Part 3: Research team with links to CVs and ORCID record

08. Lists of researchers in the current application

8.1 List of the Integrated Researchers of the R&D Unit who hold a PhD degree

Name	Nuclear CV	ORCID iD
RUI HUMBERTO COSTA DE FERNANDES PÓVOAS	Yes	0000-0003-2913-3002
Álvaro António Gomes Domingues	Yes	0000-0002-3996-2894
ANA ISABEL DA COSTA E SILVA	No	0000-0003-1767-918X
Ana Sofia Pereira da Silva	No	0000-0003-4314-5034
Ana Sousa Brandão Alves Costa	No	0000-0001-7520-3062
André Miguel Guimarães dos Santos	No	0000-0002-1334-9813
António Luís Pereira da Silva Neves	No	0000-0002-5756-2392
carla alexandra garrido de oliveira	No	0000-0001-5854-6397
Carlos Alberto Esteves Guimarães	No	0000-0001-8967-7437
Carlos Manuel de Castro Cabral Machado	No	0000-0001-7642-1379

Name	Nuclear CV	ORCID iD
Carlos Nuno Lacerda Lopes	No	0000-0002-6743-807X
Daniel Casas Valle	No	0000-0003-0003-2590
Domingos Manuel Campelo Tavares	Yes	0000-0003-2119-6543
Eliseu Manuel Vieira Gonçalves	No	0000-0001-9109-8186
Filipa de Castro Guerreiro	No	0000-0002-9088-668X
Francisco José Barata Fernandes	Yes	0000-0001-7406-0549
Helder Francisco Valente Casal Ribeiro	No	0000-0002-2386-5264
João Luís Rebelo Ferreira Marques	No	0000-0001-8125-2944
João Paulo Fialho de Almeida Pereira Delgado	No	0000-0002-6353-1568
João Pedro Alves de Guimarães Serôdio	No	0000-0002-6354-2531
João Pedro Sampaio Xavier	Yes	0000-0003-0551-5292
João Rodrigo Parreira Coelho	No	0000-0001-6361-3283
Joaquim Carlos Pinto Almeida	No	0000-0003-4016-0300
Joaquim José Lopes Teixeira	No	0000-0002-9644-3345
Jorge Humberto Canastra Marum	No	0000-0002-3907-5988
José Alberto Abreu Lage	No	0000-0002-8588-1403
José César Vasconcelos Quintão	No	0000-0002-4337-0277
José Júlio Cabral Faria Frias Dias	No	0000-0002-8472-5062
José Maria da Silva Lopes	No	0000-0003-3201-1022
José Mendes Ribeiro Barbedo	No	0000-0001-6122-0312
José Miguel Neto Viana Brás Rodrigues	Yes	0000-0001-7971-2024
Jose Pedro Ovelheiro Marques de Sousa	No	0000-0003-0024-4622
Ligia Paula Simoes Esteves Nunes Pereira da Silva	No	0000-0002-3997-1598
Luciana da Silva Rocha	No	0000-0002-6325-4556
Luis Filipe Dordio Martinho Almeida Urbano	No	0000-0003-1148-3645
Luis Pedro Ferreira da Silva	No	0000-0002-9018-6456
Luís Sebastião da Costa Viegas	No	0000-0001-5870-4375
Luis Soares Carneiro	Yes	0000-0002-6697-2940
Manuel Augusto Soares Mendes	Yes	0000-0001-6242-4325
Manuel Carlos Sanches da Graça Dias	No	0000-0001-8310-4515
Manuel Joaquim Soeiro Moreno	No	0000-0002-8294-7470
Manuel Pinheiro Fernandes Sá	No	0000-0002-8945-402X
Marco Ginoulhiac	No	0000-0003-1070-8128
Maria Clara de Carvalho Pimenta do Vale	No	0000-0003-3426-7304
Maria Gisela Antunes Lameira	No	0000-0001-7404-7168
Maria José Lopes Casanova	No	0000-0003-1654-0493
Maria Madalena Ferreira Pinto da Silva	No	0000-0002-5398-2461
Maria Sofia Teixeira Gomes dos Santos	No	0000-0001-5855-6931
Maria Teresa Saraiva Pires da Fonseca Dias da Fonseca	No	0000-0002-2203-5963
Mariana Abrunhosa de Carvalho Martins Pereira	No	0000-0001-6196-7766
Marta Maria Peters Arriscado de Oliveira	Yes	0000-0002-0718-5170
marta rocha moreira	No	0000-0001-9310-9045
Noémia Cristina Herdade Gomes dos Santos Ferreira	No	0000-0002-0863-0192
Nuno Miguel Lima Brandão Costa	No	0000-0002-6649-2787
Nuno Rodrigo Martins Portas	No	0000-0002-8945-402X
Nuno Valentim Rodrigues Lopes	No	0000-0002-3798-3114
Pedro Duarte Santos de Alarcão e Silva	No	0000-0002-3281-1700
Pedro Leão Ramos Ferreira Neto	No	0000-0001-6957-5011
Raquel Alexandra Geada e Paulino	No	0000-0001-9649-6810
ricardo fernandes dos santos	No	0000-0002-6176-0009
Rui Américo Branco da Silva Cardoso	No	0000-0001-9604-0426
Rui Fernando Jesus Bastos Tavares	No	0000-0002-3760-3994
Rui Jorge Garcia Ramos	Yes	0000-0001-8234-5974
Rui Manuel Trindade Braz Afonso	No	0000-0002-0312-9729
Rui Manuel Vieira Passos Mealha	No	0000-0003-2136-6565
Sara Adelaide Sucena Gomes Garcia	No	0000-0002-0989-0877
Sérgio Leopoldo Fernandez Santos	No	0000-0002-5396-5637
Sílvia Cristina Teixeira Ramos	No	0000-0003-2150-9407
Susana Matos Abreu	No	0000-0002-7519-7448
Susana Patrícia Ventura Rodrigues	No	0000-0003-2623-879X
Teresa Manuel de Almeida Cálix Augusto	No	0000-0001-6103-3162
Teresa Sofia Faria da Cunha Ferreira	No	0000-0003-4325-4775

8.2 List of the Integrated Researchers of the R&D Unit who do not hold a PhD degree

Name	Is PhD Student?	ORCID iD
Ana Catarina Dinis Costa	Yes	0000-0001-8300-774X
Ana Catarina Neiva	Yes	0000-0003-3821-906X

Name	Is PhD Student?	ORCID iD
Ana Cláudia Cardoso Brás	Yes	0000-0001-7110-6812
Ana Luísa Teixeira de Sá	Yes	0000-0002-8765-9400
Ana Paula Maia Silva Petiz	Yes	0000-0001-5556-9606
Carlos Gustavo Malheiro Machado e Moura	Yes	0000-0003-2908-6402
Daniela Pereira Alves Ribeiro	Yes	0000-0001-7815-8981
Fernando Manuel Cerqueira Barros	Yes	0000-0002-7373-3286
Luís Duarte Ferro	Yes	0000-0002-1270-8239
Maria Alexandra Correia de Castro	Yes	0000-0003-2625-7851
Mariana Ramos Moreira e Sá	Yes	0000-0003-1069-386X
Nuno Miguel Martins Travasso	Yes	0000-0002-6692-720X
Pedro Levi Teixeira Bismarck Paupério	Yes	0000-0002-8525-9315
Pedro Querido Figueiredo Bragança Ribeiro	Yes	0000-0001-7982-6152
Sérgio Alves do Rêgo Dias da Silva	Yes	0000-0002-8223-4075
Vera Lúcia Viana Lopes	Yes	0000-0003-3589-8853

8.3 List of the Collaborator Researchers of the R&D Unit

Name	ORCID iD
Ágata Mendes Terrão	0000-0002-3888-7677
Aitor Varea Oro	0000-0001-6959-2698
Álvaro Vitor Fernandes Andrade	0000-0002-0913-5804
Ana Luisa da Silva Fernandes	0000-0003-1481-9060
Andre Luiz Oliveira Pinto	0000-0002-5880-5122
Andrea Marisa de Pera Vieira	null
Bruno Miguel da Silva Carvalho Moreira	null
Daniel Jorge Fernandes do Vale	null
Daniel Screpanti	null
Edgar Garcia da Silva Brito	0000-0003-1943-5445
Edite Maria Figueiredo e Rosa elisa pegorin	0000-0002-5948-1449
Fernanda Corrêa Giacomini	null
Francisco Manuel Calhau Barrocas de Oliveira Lourido	0000-0003-1624-0597
Germano Manuel Novais de Castro Pinheiro	0000-0002-5313-7962
HELENA ISABEL BARBOSA FERREIRA AMARO	null
Hugo Alexandre Fernandes Machado da Silva	null
hugo pires	null
Iñaki Bergera	0000-0001-5497-4212
Ivo Manuel da Silva Poças Martins	0000-0001-7764-8479
Joana Maria Marques do Vale	0000-0003-0413-7621
Joana Teresa do Nascimento Marques	0000-0003-3308-0820
João Carlos Castro Ferreira	null
José Ferrão Afonso	0000-0001-5438-6058
Jose Virgilio Borges Pereira	0000-0003-0145-0858
Letícia Cabeçadas do Carmo	0000-0002-0671-5248
Lígia Maria da Silva Ribeiro	0000-0001-9225-4590
Lino Augusto Tavares Dias	0000-0002-8544-8212
Luís Emanuel Bravo de Abreu Santos Pereira	0000-0002-9644-7768
Marco Iuliano	null
Maria de Fátima Canteiro Neto	0000-0002-4394-2298
Maria do Pilar da Cunha Coutinho de Abreu e Lima	0000-0002-4684-9056
Maria Fernanda Gaspar Tavares	0000-0002-8739-7754
Maria Isabel Pinhal Neves Salazar Norton	0000-0002-4760-0498
Mariana Soares Martins de Carvalho	0000-0003-0075-5000
Marta Ferreira Martins	0000-0003-4318-2935
Miguel Angel de la Iglesia Santamaría	0000-0003-3473-6115
Nuno Miguel de Sousa Gomes	null
Paulo Adriano Vieira Lousinha	0000-0002-9069-8734
Paulo Alexandre Miranda Monteiro	null
Pedro Augusto de Azambuja Varela	0000-0002-7319-5019
Pedro Barata Fernandes Gomes de Castro	0000-0001-8204-7264
Pedro Filipe Martins Carvalho	0000-0001-9597-9132
Ricardo José Fernandes Rodrigues	null
Rogério Bruno Guimarães Matos	0000-0003-4437-5739
Rogério Bueno Sousa	0000-0002-3464-1637
Rui Alexandre Frias Vilaça Couto	0000-0002-6573-799X
Rui Miguel de Oliveira Neto	null
SABINE RITTER DE PARIS	0000-0002-8145-0649
Tiago Luis de Noronha Lopes Dias	0000-0003-2255-8155

Name
Vanessa Maria Martins Tavares

ORCID iD
0000-0002-8111-6990

09. PROPOSED RESEARCH GROUPS

Reference	Name	Principal Investigator
RG-145-400523	Architecture and Modes of Inhabiting (AMH)	Carlos Nuno Lacerda Lopes
RG-145-400525	Architecture: Theory, Project, History (ATPH)	Marta Maria Peters Arriscado de Oliveira
RG-145-400530	House Atlas - Housing Architectural Design and Forms of Dwelling	Domingos Manuel Campelo Tavares
RG-145-400542	Center for Communication and Spatial Representation (CCRE)	Pedro Leão Ramos Ferreira Neto
RG-145-400543	Digital Fabrication Laboratory	Jose Pedro Ovelheiro Marques de Sousa
RG-145-400544	Territory Dynamics and Morphologies	Teresa Manuel de Almeida Cálix Augusto
RG-145-400545	Architecture, City and Territory Heritage (PACT)	Francisco José Barata Fernandes

(RG-145-400523) Architecture and Modes of Inhabiting (AMH)

09.1. IDENTIFICATION OF THE RESEARCH GROUP

9.1.1 Reference of the research group

RG-145-400523

9.1.2 Name of the Research Group in portuguese

Arquitetura e Modos de Habitar (AMH)

9.1.3 Name of the Research Group in English

Architecture and Modes of Inhabiting (AMH)

9.1.4 Keyword(s)

Building Digitization

Building technology in architecture

Methodology and production

Architectural innovation

9.1.5 Existed in 2008/2012

Yes

09.2. Researchers of the Research Group

9.2.1 List of Integrated Researchers of the R&D Unit who hold a PhD degree and belong to the Research Group

Name	Principal Investigator
Carlos Nuno Lacerda Lopes	Yes
João Pedro Alves de Guimarães Serôdio	No
Rui Manuel Trindade Braz Afonso	No
Rui Fernando Jesus Bastos Tavares	No
Nuno Miguel Lima Brandão Costa	No

9.2.2 List of Integrated Researchers of the R&D Unit who do not hold a PhD degree and belong to the Research Group

Name

09.3. Description of the main contributions of the Research Group in 2013-2017

9.3.1 General description of the Research Group

The Architecture and Modes of Inhabiting (AMH) is a research group focused on the development of innovative strategies applied to Architecture and aimed at understanding the phenomena of production and use of the built architectural space, seeking their interconnection with the new ways of designing, building and inhabiting.

Focusing on the theme of contemporary architecture development, AMH acts as a center of innovation, studying processes and methodologies for creating and designing architectural space based on new simulation methodologies, representation, and evaluation based on digital processes to support the project's realization for its subsequent construction and management. More than just applying a specific technology or methodology in architecture, it is important to research about the advantages and consequences of that usage and to approach the study of the modes of inhabiting related with the perception of the architectural space.

Moreover, AMH also develops new strategies and work processes in order to explore the connection with the industry of Architecture, Engineering, and Construction, following the challenges of Industry 4.0 for a greater communion between the group, the academia and the business environment.

In 2013-2017, the AMH group carried out several R&D activities, which resulted in the publication of books, essays and magazines; the organization of several exhibitions, conferences, seminars and workshops; the creation of digital platforms; and also other activities related with knowledge dissemination.

During these years, the group promoted partnership with different national and international universities, such as the

Massachusetts Institute of Technology, the University of São Paulo, the Federal University of Bahia, the University of Seville, the Università degli Studi di Catania, the University José Eduardo dos Santos, Instituto Universitário de Lisboa, Instituto Superior de Engenharia do Porto and Faculty of Engineering of Porto.

9.3.2 Identification and summary description of up to 3 contributions deemed most important of those provided in 2013-2017 by researchers who belong to the Research Group in the current R&D Unit application

1. The creation of the Architecture Course of the University José Eduardo dos Santos in Huambo, Angola, consisted in one of the most important actions developed. Even if it is not a common task, it necessarily refers to an activity that can be considered relevant and differentiating, not only for its pedagogical character but also for the diffusion and sharing of knowledge that it involves.

There were created programs of curricular units adapted to the reality and the existing means, trying to establish cooperative relations with investigation lines, other schools, and new subjects. This activity was the result of the motivation and the desire to disseminate knowledge, to take on the idea of architecture and of being an architect / teacher / student, closer to the values of social intervention which characterizes the Faculty of Architecture of University of Porto.

2. Creation of digital platforms for the dissemination of Architecture: Digital Museum of Architecture and Construction (MUDA); Archive of Architecture Projects (ARPA); Archives of Architecture Materials (ARMA); Construction and Architecture Documents (DOCA); Construction and Architecture Technologies (TECA); Digital Construction Objects Archive (OBJT). As part of an embryonic project, these digital platforms aimed at the diffusion and dissemination of knowledge in architecture, the dissemination of built heritage and the sharing of new means of representation, design, and communication, the digital platforms created set the guidelines for its own development and differentiation. The strong emphasis on the processes of digitization in architecture and the work carried out in this sense is stratified and prepared for a new phase of development.

3. Creation of the international architectural magazine "BIM Is More", - the first world magazine exclusively about Building Information Modeling (BIM) and the theme of digital construction and new technologies applied to architecture. This initiative allowed the dissemination of knowledge on the subject of innovation in architecture and, at the same time, the affirmation of the AMH as a reference group in the international vanguard of research and innovation of architectural and construction digitization processes.

(RG-145-400525) Architecture: Theory, Project, History (ATPH)

09.1. IDENTIFICATION OF THE RESEARCH GROUP

9.1.1 Reference of the research group

RG-145-400525

9.1.2 Name of the Research Group in portuguese

Arquitetura: Teoria, Projecto, História (ATPH)

9.1.3 Name of the Research Group in English

Architecture: Theory, Project, History (ATPH)

9.1.4 Keyword(s)

Architectural Design

Architectural History

Architectural Theory

Architectural Drawing

9.1.5 Existed in 2008/2012

Yes

09.2. Researchers of the Research Group

9.2.1 List of Integrated Researchers of the R&D Unit who hold a PhD degree and belong to the Research Group

Name	Principal Investigator
	Yes
Marta Maria Peters Arriscado de Oliveira	No
Ana Sousa Brandão Alves Costa	No
António Luís Pereira da Silva Neves	No
carla alexandra garrido de oliveira	No
Carlos Manuel de Castro Cabral Machado	No
Filipa de Castro Guerreiro	No
João Luís Rebelo Ferreira Marques	No
João Pedro Sampaio Xavier	No

Name	Principal Investigator
José Alberto Abreu Lage	No
José César Vasconcelos Quintão	No
José Júlio Cabral Faria Frias Dias	No
José Miguel Neto Viana Brás Rodrigues	No
Luis Filipe Dordio Martinho Almeida Urbano	No
Manuel Augusto Soares Mendes	No
Manuel Carlos Sanches da Graça Dias	No
Maria José Lopes Casanova	No
Maria Madalena Ferreira Pinto da Silva	No
Maria Sofia Teixeira Gomes dos Santos	No
Noémia Cristina Herdade Gomes dos Santos Ferreira	No
ricardo fernandes dos santos	No
Sérgio Leopoldo Fernandez Santos	No
Sílvia Cristina Teixeira Ramos	No
Susana Matos Abreu	No

9.2.2 List of Integrated Researchers of the R&D Unit who do not hold a PhD degree and belong to the Research Group

Name
Ana Catarina Dinis Costa
Ana Luísa Teixeira de Sá
Carlos Gustavo Malheiro Machado e Moura
Luís Duarte Ferro
Maria Alexandra Correia de Castro
Pedro Levi Teixeira Bismarck Paupério
Pedro Querido Figueiredo Bragança Ribeiro
Vera Lúcia Viana Lopes

09.3. Description of the main contributions of the Research Group in 2013-2017

9.3.1 General description of the Research Group

ATPH's research is based on the complementarity between the areas of theory, architectural design, drawing, and history, aiming to build a broad knowledge in the disciplinary field of architecture. A critical understanding of contemporaneity and an analytical study of the past, focusing on the Portuguese context while exploring the connections with other conjunctures, are central foundations for the study of architecture, the city, and the territory. By considering its social, political, cultural and technical dimensions, the group explores different themes: 1) the relationship with science and mathematics, in the question of architectural representation; 2) the intersection with other fields like cinema and sequential art, to explore the fundamental narrative quality of space; 3) the role of theory and architectural treatises in the formation of knowledge; 4) the study of historical Portuguese architecture, city and territory; 5) the critical understanding of contemporary architecture, the urban realm, and its authors; 6) the problematization of architecture within the domain of politics and the narratives of invention; 7) the investigation of methods and practices of research on architecture and the city; 8) the reconstruction of architectural education and pedagogy at FAUP; 9) the exploration of the multiple dimensions of drawing in architectural practice and training. The research activities carried out by the 40 members of the group resulted in a series of international outputs, namely: the publication of books, journals, and essays; participation and organization of exhibitions, conferences, and workshops; the production of films and documentaries. The group has a major role in the interaction between research and teaching at postgraduate level, tutoring in the last five years 123 Master thesis and 64 PhD thesis. Its interests also extend to the community by promoting projects and partnerships with local authorities,

private institutions and building industry.

9.3.2 Identification and summary description of up to 3 contributions deemed most important of those provided in 2013-2017 by researchers who belong to the Research Group in the current R&D Unit application

In addition to the results of the project "Silent Rupture" mentioned in section 4.2, the group ATPH developed a substantial group of activities, namely:

1. In the thematic field "ARCHITECTURE - NAME, VOCATION, LANGUAGE", research aimed the study of architectonic elements and the production of architecture. Together with the direction of FAUP's Documentation Centre, in collaboration with UP's Instituto Fundação Marques da Silva and involving PhD and Master students, the research allowed for the Fernando Távora's and Alfredo Matos Ferreira's archive conservation and the organization of exhibitions, debates and guided tours. These activities resulted in the deepening of knowledge through new and unpublished documentation, contributing to a new critical reading of those authors in the context of Portuguese and Porto's architecture. Other outcomes include a new historical construction on a "project-of-architecture from Porto" and a collaboration with Punkto Journal, emerging as a complementary production platform.

2. In the period 2013-2017 "DRAWINGS COLLECTION" established a stable team of researchers associated with the PhD programme. During this period efforts were focused in the outlining of the project's structure and putting considerable effort to assemble a visually-driven technological platform to collect and study the drawings produced within the formative context of the Porto School of Architecture (1911-2015). This work has been decisive to start a research in an academic field which, despite its distinctiveness, lacked structure within CEAU-FAUP. Alongside these actions, the group organised a series of different activities to explore multiple paths, ranging from master classes and workshops involving national and international partners or inclusive activities addressed to the general public. These actions have effectively contributed to enlarge the aim of the research and to engage with the community.

3. In the scope of the study of the contemporary city, several activities were developed: i) The research project "SAAL OPERATIONS AND CITY PLACES" involved, on the one hand, the study of archives with a view to its safeguarding, which included a contribution to the exhibition "The SAAL Process: Architecture and Participation 1974-1976" (Serralves Foundation, 2014) and, on the other hand, the establishment of a collection of relevant documents, in order to preserve its intelligibility, organizing their public use in an online database, promoting the dissemination of academic studies and informing contemporary interventions in the city and housing. ii) The creation of the editorial project "Participated city: architecture and democracy" integrating a collection of twelve publications on operations involved in the scope of SAAL (1974-1976), with a first volume published in 2016 and five in research and pre-editorial phase. iii) The articulation with post-graduate studies on SAAL-related topics and neighborhood rehabilitation interventions.

(RG-145-400530) House Atlas - Housing Architectural Design and Forms of Dwelling

09.1. IDENTIFICATION OF THE RESEARCH GROUP

9.1.1 Reference of the research group

RG-145-400530

9.1.2 Name of the Research Group in portuguese

Atlas da Casa - Projecto do Espaço Habitacional e Formas do Habitar (AdC)

9.1.3 Name of the Research Group in English

House Atlas - Housing Architectural Design and Forms of Dwelling

9.1.4 Keyword(s)

Architecture

Housing

Architectural Design

Culture Studies

9.1.5 Existed in 2008/2012

Yes

09.2. Researchers of the Research Group

9.2.1 List of Integrated Researchers of the R&D Unit who hold a PhD degree and belong to the Research Group

Name	Principal Investigator
	Yes
Domingos Manuel Campelo Tavares	No
ANA ISABEL DA COSTA E SILVA	No
Ana Sofia Pereira da Silva	No
André Miguel Guimarães dos Santos	No
Carlos Alberto Esteves Guimarães	No
Eliseu Manuel Vieira Gonçalves	No

Name	Principal Investigator
Helder Francisco Valente Casal Ribeiro	No
Joaquim Carlos Pinto Almeida	No
José Miguel Neto Viana Brás Rodrigues	No
Luciana da Silva Rocha	No
Luis Soares Carneiro	No
Marco Ginoulhiac	No
Maria Gisela Antunes Lameira	No
Maria Teresa Saraiva Pires da Fonseca Dias da Fonseca	No
marta rocha moreira	No
Nuno Rodrigo Martins Portas	No
Raquel Alexandra Geada e Paulino	No
Rui Jorge Garcia Ramos	No
João Paulo Fialho de Almeida Pereira Delgado	No

9.2.2 List of Integrated Researchers of the R&D Unit who do not hold a PhD degree and belong to the Research Group

Name

[Ana Catarina Neiva](#)

[Ana Cláudia Cardoso Brás](#)

[Sérgio Alves do Rêgo Dias da Silva](#)

09.3. Description of the main contributions of the Research Group in 2013-2017

9.3.1 General description of the Research Group

In the spirit of the Atlas of Mercator in the sixteenth century, the purpose of this research project is to transform an invisible reality into a visible one.

The house and the house-project (expressions used here in its wider architectural, cultural and political meaning), determine extensively the domestic space. These topics refer to a large set of phenomena which require the understanding of multiple interlinked agents, in areas as diverse as architecture, history, social sciences, geography, engineering materials and technology industry.

The tradition of studies on the dwelling, in general supported by the need for deepening vertical knowledge, drastically ignored its contexts. This led, in all fields of knowledge, to the hasty rejection of the importance of many phenomena discarded as less attractive and visible, characterized as banal and anonymous, or not immediately related to the production of the house, although generally extensive and significant.

More than just replace or upgrade a confused and scattered knowledge, it becomes important to introduce a different approach to the studies of the house, the living and the housing, aiming, with a different approach, a new characterization of a common object, deeply inserted in a grid of rich concepts and structures, that should define and guide the research.

To ensure this goal, the House Atlas, as a group of innovative and interdisciplinary research, started from the house history and genealogy in the belief that it is an indispensable tool for basic knowledge about the home and dwell, to interpret the changes of the twentieth century and mapify the trends of the present.

During 2013-2017, the HOUSE ATLAS - HOUSING ARCHITECTURAL DESIGN AND FORMS OF DWELLING was organized in four projects: P1. Mapping Public Housing in Portugal; P2. Narratives of the Architectural Educational Project; P3. Identity and Transference; P4. Forms of Housing and Public Facilities in the Forms of Public Space.

9.3.2 Identification and summary description of up to 3 contributions deemed most important of those provided in 2013-2017 by researchers who belong to the Research Group in the current R&D Unit application

In addition to the results of the project "MAPPING PUBLIC HOUSING IN PORTUGAL" mentioned in section 4.2, the group House Atlas developed a substantial group of activities, namely:

1. The conference LUDIC ARCHITECTURE - IV MEETING ON ARCHITECTURAL EDUCATION, SPACES AND DEVICES organized within the project Narratives of the Architectural Educational Project in May 2017. This event was structured in two main thematic blocks connecting Education and Architecture: the didactic devices and the educational spaces and activities. The two days meeting brought together more than 120 participants, 15 keynote speakers, and included workshops and didactic games dedicated to kids and a Pechakucha session for the sharing of new projects. The book "Ludic Architecture", an outcome of this

initiative, explores three central themes of the playful architecture: the objects, spaces and experiences. The collected texts synthesize a field of study defined by different researches and experiments, devoted to the processes of familiarisation and learning in Architecture. [https://www.ludicarchitecture.arq.up.pt]

2. The triple event named CCW - an articulation between a Conference by a professor or architect of international prestige, a Colloquium and a Workshop for students of different levels - took place in the years 2013, 2014, 2015, 2016 with the collaboration of CEEA - Centro de Estudos Arnaldo Araújo, Escola Superior Artística do Porto. The main conferences were lectured by Mark Swenarton (Neave Brown: developing a new format for urban housing, 2013), José Ángel Sanz Esquide (Arquitectura, Teoria e Crítica na Escola do Vallés, 2014), Bernard Leupen (Time Based Architecture, 2015) and Frederik Künzel (How to make Thoughts into Things, 2016).

3. The project IDENTITY AND TRANSFERENCE which deals with consolidated personal researches of which we highlight actions from three areas: (1) "Scholar and Popular in Portuguese Architecture", which studies early 20th century architecture through single-family houses, produced 4 books about architectures of homecoming emigrants returned from Brazil to Porto, 3 articles in national journals, 2 participations in international congresses and one in a national congress; (2) "Rebelo de Andrade Brothers", which investigates Rebelo de Andrade's architectural production between the 30s and 60s, produced a book, a conference and complementary dissemination actions; and finally (3) "Portuguese architectural design processes", which researches the modern condition and its reflexes in the contemporary architecture, generated participations in 6 international conferences, 3 international workshops, an exhibition and complementary international dissemination actions.

(RG-145-400542) Center for Communication and Spatial Representation (CCRE)

09.1. IDENTIFICATION OF THE RESEARCH GROUP

9.1.1 Reference of the research group

RG-145-400542

9.1.2 Name of the Research Group in portuguese

Centro de Comunicação e Representação Espacial (CCRE)

9.1.3 Name of the Research Group in English

Center for Communication and Spatial Representation (CCRE)

9.1.4 Keyword(s)

Photography

City

Editorial

Culture

9.1.5 Existed in 2008/2012

Yes

09.2. Researchers of the Research Group

9.2.1 List of Integrated Researchers of the R&D Unit who hold a PhD degree and belong to the Research Group

Name	Principal Investigator
	Yes
Pedro Leão Ramos Ferreira Neto	No
Jorge Humberto Canastra Marum	No
José Mendes Ribeiro Barbedo	No
Manuel Joaquim Soeiro Moreno	No
Susana Patrícia Ventura Rodrigues	No

9.2.2 List of Integrated Researchers of the R&D Unit who do not hold a PhD degree and belong to the Research Group

Name

09.3. Description of the main contributions of the Research Group in 2013-2017

9.3.1 General description of the Research Group

The Center for Communication and Spatial Representation (CCRE) is an open research group able to integrate different studies and works through its sites and platforms. It aims to capture the interest of various people and research, coming from several institutions and diverse fields of studies and interests to its research line City Spaces and Culture. This includes several projects in the following subjects:

ii) Project AAI (Architecture, Art, and Image) Documentary Photography and the critical use of images as an analytical and research tool in Architecture, City, and Territory;

ii) Scopio Editions, an editorial line that works in the fields of Architecture; Art and Image, specifically Documentary Photography and Artistic Photography of Architecture, City, and Territory;

iii) Communication Technologies (ICT) for collaborative work, design, and education in Architecture and Arts.

This research group targets the creation of a collaborative network environment by using Architecture, Art, and Image platforms in the web (<http://scopionetwork.com>; <http://aai2lab.ccre-online.com/content/equipa>). The group integrates different research and studies containing various types of information in order to link contents related to Art, Architecture and Urban Planning. The way people live, understand and transform their city is an important concern of CCRE, as well as connecting different departments and university research centres with public institutions and the general public.

The research line City Spaces and Culture is central to all the research developed by the group, where several projects are integrated, as well as various activities: Master Classes; Workshops; Conferences, Talks; Open classes with invited Professors from other disciplines of the U. Porto and other universities; Exhibitions; development of the scopio Editions with different publications, scientific articles, among others.

9.3.2 Identification and summary description of up to 3 contributions deemed most important of those provided in 2013-2017 by researchers who belong to the Research Group in the current R&D Unit application

CCRE developed a substantial group of activities, namely:

1. INTERNATIONAL CYCLE OF CONGRESSES AND DEBATES:

The Biennial 'On the surface: Photography and Architecture - Crossing Borders and Shifting Boundaries' that began in 2010 has proved to be an important forum for debate and reflection about Photography and Architecture, whose work can be accessed through several internet platforms such as On the Surface (www.nasuperficie.ccre-online.com), scopio Editions publications (<http://scopionetwork.com/taxonomy/term/43?language=pt-pt>), Sophia peer review journal (<http://virose.pt/sophiajournal>), scopio Magazine, Cityzines, Debates, or the catalog On the Surface: Public Space and Architectural Images in Debate. Usually, the conferences take two or three days, with several thematic tables of discussion and open call for papers, bringing together more than 100 participants and several table moderators, keynote speakers and have included exhibitions and workshops (i.e. <http://tv.up.pt/videos/ntnc9-j9>; <http://tv.up.pt/videos/s048xgk8>).

The cycle of scopio Debates:(AAI) Conference Series has also proved a success. Aimed at promoting a global critical analysis around the practice and discipline of architecture and art in general, looking for various intersections between these two worlds, as well as their connection with the universe of images, it has brought together more than 100 participants. Several recognised authors have been invited speakers, i.e. Eduardo Souto de Moura / Rui Chafes; Pedro Gadanho / Paolo Rosselli; Fernanda Fragateiro / Manuel Aires; Valerio Olgiati / Bas Princen; Eduardo Souto de Moura / Luis Ferreira Alves (see <http://scopionetwork.com/search/content/dueto>).

2. EDITORIAL PROJECT SCOPIO EDITIONS - 2010-18

scopio Editions is generically interested in Architecture, Art and Image (AAI) and, specifically, in Documental and Artistic Photography related to Architecture, City, and Territory. SCOPIO Editions with more than 30 titles already published, many of each with public recognition by peers (i.e. <https://www.architectural-review.com/rethink/owen-hatherleys-best-books-of-2017/10026417.article>). Responsible for periodical and non-periodical publications that disseminate several works and authors who contribute to an informed criticism in Architecture, helping to forward a critical analysis of our reality towards an informed Future. (<http://www.scopionetwork.com/tags/scopio-magazine>)

3. CONTEMPORARY VIEW ON CITY SPACES AND ARCHITECTURE IN OPORTO: DOCUMENTARY AND ARTISTIC PHOTOGRAPHY MAPPING (MFDA-ARP)

In partnership with several institutions - DARQ, ESMAE and UBI - and integrating final year Masters students, MFDA-ARP combines various artistic strategies applied to the universe of architectural photography. The development of a monographic approach will turn a contemporary documentary record feasible, so that an enriched and innovative methodology over this universe may be tested (i.e. <http://aai2lab.ccre-online.com/content/projects>).

(RG-145-400543) Digital Fabrication Laboratory

09.1. IDENTIFICATION OF THE RESEARCH GROUP

9.1.1 Reference of the research group

RG-145-400543

9.1.2 Name of the Research Group in portuguese

Laboratório de Fabricação Digital (DFL)

9.1.3 Name of the Research Group in English

Digital Fabrication Laboratory

9.1.4 Keyword(s)

Architecture

Construction

Computational Design

Digital Fabrication

9.1.5 Existed in 2008/2012

Yes

09.2. Researchers of the Research Group

9.2.1 List of Integrated Researchers of the R&D Unit who hold a PhD degree and belong to the Research Group

Name

Principal Investigator

Yes

[Jose Pedro Ovelheiro Marques de Sousa](#)

Name	Principal Investigator
João Pedro Sampaio Xavier	No
José Maria da Silva Lopes	No
RUI HUMBERTO COSTA DE FERNANDES PÓVOAS	No
Maria Clara de Carvalho Pimenta do Vale	No

9.2.2 List of Integrated Researchers of the R&D Unit who do not hold a PhD degree and belong to the Research Group

Name

09.3. Description of the main contributions of the Research Group in 2013-2017

9.3.1 General description of the Research Group

The Digital Fabrication Laboratory - DFL, is a research group dedicated to the investigation of digital design and manufacturing technologies in the design and construction fields. Its activities are focused on a theoretical and practical research of innovative architectural and constructive solutions, from the building component to the building form, responding to the challenges of contemporary non-standard architecture. With a multidisciplinary team, the DFL is centered in developing research work, complemented by promoting educational and dissemination activities.

In 2013-2017, the DFL researchers have contributed in several R&D aspects. In this period, many experimental prototypes such as the Corkcrete Arch and the MD Fachada cork panels were developed, built and presented. The group's experimental work also produced several publications in national and international peer reviewed journals and conferences in the fields of architecture, construction and robotics. The DFL also successfully organized four international conferences from which we highlight the Future Traditions conference, promoted by the eCAADe association; several workshops and advanced courses in computational design and digital fabrication, targeting the national and international academic community and, simultaneously, numerous outreach activities such as exhibitions, construction fairs, and other cultural events, promoting the group's work before the general public and institutions.

During the course of its research activities, the group has continuously promoted interdisciplinarity and the transference of knowledge through its association with other research groups in the fields of architecture, civil and robotics engineering, and with partnerships with the major construction industries in Portugal. Finally, throughout this period, the group's growing visibility has attracted visiting students and researchers from countries such as the USA, India, Spain, Czech Republic and Brazil.

9.3.2 Identification and summary description of up to 3 contributions deemed most important of those provided in 2013-2017 by researchers who belong to the Research Group in the current R&D Unit application

In addition to the results of the project 'Robotic Technologies for Non-Standard Design and Construction in Architecture' mentioned in section 4.2, the group DFL developed a substantial group of activities, namely:

- 1 - Research contract with Amorim Isolamentos, SA, in the scope of the research project 'MD Fachada MD Coberturas', with the collaboration of ITeCons and Weber Saint-Gobain, focused on the development from prototype to market, of a customized and sustainable paneling system with cork materials (MD Facade Wave), using subtractive digital fabrication technologies. The importance of this work relies in the dissemination of customized fabrication principles, empowering the architect to contribute directly to construction materials design. This research was financed by Amorim Isolamentos with a budget of 41.184,88 euros.
- 2 - Organization of the international conference, 'Future Traditions. Rethinking Traditions and Envisioning the Future in Architecture Through the Use of Digital Tools' at FAUP, April 4-5, 2013. This was the first Regional International Workshop promoted by eCAADe (Association for Education and Research in Computer Aided Architectural Design in Europe), organized by the DFL group with the presence of 2 keynote speakers renowned in the field and resulting in the publication of the original research of national and international researchers in peer reviewed proceedings.
- 3 - Large plaza at the 'Concreta 2017' construction fair in a promotion, dissemination and outreach action regarding the research conducted by the DFL group. With a large, interactive exhibition stand, the DFL demonstrated several technologies i.e. 1) A large industrial robot assembled an array of customized brick structures; 2) A Virtual Reality stage allowed visitors to experience the immersive visualization of an architecture project; 3) A built for the purpose vault made of laser cut metal sheets assembled with 3D printed joints let foresee the applications of these technologies; 4) A showcase of various prototypes developed by the DFL on the last 4 years.

(RG-145-400544) Territory Dynamics and Morphologies

09.1. IDENTIFICATION OF THE RESEARCH GROUP

9.1.1 Reference of the research group

RG-145-400544

9.1.2 Name of the Research Group in portuguese

Morfologias e Dinâmicas do Território (MDT)

9.1.3 Name of the Research Group in English

Territory Dynamics and Morphologies

9.1.4 Keyword(s)

Territory and Identities
 Contemporary urban dynamics
 Urban policies and planning
 Collaborative processes
 9.1.5 Existed in 2008/2012
 Yes

09.2. Researchers of the Research Group

9.2.1 List of Integrated Researchers of the R&D Unit who hold a PhD degree and belong to the Research Group

Name	Principal Investigator
	Yes
Teresa Manuel de Almeida Cálix Augusto	No
Álvaro António Gomes Domingues	No
Daniel Casas Valle	No
Luis Pedro Ferreira da Silva	No
Luís Sebastião da Costa Viegas	No
Manuel Pinheiro Fernandes Sá	No
Mariana Abrunhosa de Carvalho Martins Pereira	No
Nuno Rodrigo Martins Portas	No
Rui Américo Branco da Silva Cardoso	No
Rui Manuel Trindade Braz Afonso	No
Rui Manuel Vieira Passos Mealha	No
Sara Adelaide Sucena Gomes Garcia	No

9.2.2 List of Integrated Researchers of the R&D Unit who do not hold a PhD degree and belong to the Research Group

Name
Ana Paula Maia Silva Petiz

[Nuno Miguel Martins Travasso](#)

09.3. Description of the main contributions of the Research Group in 2013-2017

9.3.1 General description of the Research Group

The research group Territory Dynamics and Morphologies (MDT) studies the recent territories' transformation processes, by approaching socioeconomic challenges and the role played by key actors.

MDT has a transdisciplinary team of experienced professionals and young researchers, as well as a wide network of national and international collaborators with different backgrounds, such as architecture, urban design and planning, landscape architecture, geography, mobility, economy, sociology, sustainable energy systems and law. The research team's main interest is the engagement in applied research, allowing an action with actual repercussions on the resolution of territorial problems, both in Portugal and in different geographies such as the global south, paying special attention to socioeconomic asymmetries, the role of stakeholders, as well as the involvement of citizens in the decision making processes.

In recent years, the themes of urban forms and dynamics and, in particular, diffuse urbanization have remained a nuclear issue, to which have been added two emerging research lines: 'Practices and Policies for Local Development' and 'Dialogues between Practice and Didactics: Production, Teaching and Research in Architecture'.

Some of the research topics that we have been following correspond to (1) the forms of settlement and, more specifically, to the diffuse settlement; (2) regulatory frameworks and their adequacy or inadequacy to diverse occupation models - the formal and informal dimension of planning; (3) housing policies and programs; (4) public space systems and the diversity and complexity of collective values in consolidated urban areas and disperse occupation contexts; and (5) the practice and didactics associated with architect's training and profession.

At the moment, one of the important challenges is the articulation between academia, public administration and local populations, bringing civil society closer together with contributions to professionals.

9.3.2 Identification and summary description of up to 3 contributions deemed most important of those provided in 2013-2017 by researchers who belong to the Research Group in the current R&D Unit application

In addition to the results of the project 'Território: Casa Comum' ('Territory: Common Home') mentioned in section 4.2, the group MDT developed a substantial group of activities, namely:

1. PROMOTION OF PROJECTS OF APPLIED RESEARCH - The project 'Arco Metropolitano Noroeste: Orientações Estratégicas'

('Northwestern Metropolitan Arch: Strategic Orientations' is a study commissioned by the Northern Portugal Regional Coordination and Development Commission (CCDR-N) that aims to contribute to policies for the territorial cohesion of the northwest of Portugal. To accomplish this task, the team undertook an analysis of the social and territorial impact of the recent economic-financial crisis, simultaneously debating the diversity of the territories and ways to overcome the recurrent implementation of homogeneous solutions. Throughout this process, the research team carried out functional and territorial surveys, having organised focus groups with municipal technicians of this region, in order to discuss demands, capacities and strategies towards improving the existing territories and their management policies. The report produced presents the results of this process and a wider debate on innovative and more adequate approaches to planning.

2. PROMOTION OF SCIENTIFIC NETWORKS AND INTERNATIONALIZATION - The project 'Landscape in Translation', which began in 2014 in partnership with the University of Chieti and the University of Naples - Federico II supported by the CNRS (Centre National de la Recherche Scientifique), has already produced a publication and will produce a second one in 2018, translating into a continuous process of international knowledge sharing and joint production of knowledge. This investigation focuses on the analysis of induced causes and effects of the transformation of the contemporary landscape into urban, peri-urban and rural areas, paying special attention to the study of rural landscapes and interaction between urban and rural landscapes. This research has the objective of defining criteria and principles for supporting the management and intervention in these territories.

3. PROMOTION OF KNOWLEDGE TRANSFER - This contribution, although present in most of the projects and initiatives carried out during this period, corresponds mostly to the actions carried out jointly or in partnership with several municipalities, aiming at the development of the technical capacities of local administration through the accomplishment of studies on relevant and locally identified themes or on critical territories.

(RG-145-400545) Architecture, City and Territory Heritage (PACT)

09.1. IDENTIFICATION OF THE RESEARCH GROUP

9.1.1 Reference of the research group

RG-145-400545

9.1.2 Name of the Research Group in portuguese

Património da Arquitectura, da Cidade e do Território (PACT)

9.1.3 Name of the Research Group in English

Architecture, City and Territory Heritage (PACT)

9.1.4 Keyword(s)

Architectural Heritage

Urban Regeneration

Building Preservation and Rehabilitation

Landscape Heritage

9.1.5 Existed in 2008/2012

Yes

09.2. Researchers of the Research Group

9.2.1 List of Integrated Researchers of the R&D Unit who hold a PhD degree and belong to the Research Group

Name	Principal Investigator
	Yes
Francisco José Barata Fernandes	No
Álvaro António Gomes Domingues	No
João Rodrigo Parreira Coelho	No
Joaquim José Lopes Teixeira	No
José Miguel Neto Viana Brás Rodrigues	No
Ligia Paula Simoes Esteves Nunes Pereira da Silva	No
Manuel Pinheiro Fernandes Sá	No
Maria Clara de Carvalho Pimenta do Vale	No
Maria Madalena Ferreira Pinto da Silva	No
Marta Maria Peters Arriscado de Oliveira	No
Nuno Valentim Rodrigues Lopes	No

Name	Principal Investigator
	No
Pedro Duarte Santos de Alarcão e Silva	No
Rui Fernando Jesus Bastos Tavares	No
RUI HUMBERTO COSTA DE FERNANDES PÓVOAS	No
Teresa Sofia Faria da Cunha Ferreira	No

9.2.2 List of Integrated Researchers of the R&D Unit who do not hold a PhD degree and belong to the Research Group

Name

[Daniela Pereira Alves Ribeiro](#)

[Fernando Manuel Cerqueira Barros](#)

[Mariana Ramos Moreira e Sá](#)

09.3. Description of the main contributions of the Research Group in 2013-2017

9.3.1 General description of the Research Group

The group Architecture, City and Territory Heritage (PACT) develops research within the vast area of Built Heritage, from classical antiquity to contemporary, in different scales and approaches. These range across i) construction history, ii) building's constructive characterization, iii) current anomalies typification, iv) the use of imageology (based on thermography, multispectral photography, photogrammetry) for building conservation assessment v) analysis and definition of rehabilitation procedures for specific architectonic context, vi) analysis and definition of intervention methodologies in traditional historical centers, expanding urban areas of the nineteenth and twentieth centuries, and territorial and landscape units of heritage value. Furthermore, research activities also encompass vii) the domain of interpretation and architectural intervention in areas of archaeological sites, as well as viii) the analysis of interventions on 20th-century architectural heritage. Although the main geographical area of study is the Portuguese national territory, it also extends to influences or parallels with European, Brazilian and Latin American cities and universities, that the research group considers worthwhile to be extended in the scope of its research field.

The different topics described above are organized in three main lines of research: (1) "Studies on City and Territorial Heritage" has the city of Porto as a starting point to understand the urban and landscape transformation processes in other Iberian and European cities. (2) "Architectural Rehabilitation Actions in Built Heritage" focuses on the technological and constructive approach to built heritage in interrelated perspectives (from the construction history to the rehabilitation and maintenance processes). (3) "Atlas of Roads and Ancient Towns of Portugal" studies the relationship between architecture and archeology, from ancient Rome to the present day.

9.3.2 Identification and summary description of up to 3 contributions deemed most important of those provided in 2013-2017 by researchers who belong to the Research Group in the current R&D Unit application

1.KNOWLEDGE TRANSFER - Considering built heritage part of the cultural identity of a population and a matter of interest to the community of which it is part of (with a strong relation and impact in the economic, political, social or business framework), it is crucial to make bridges and create a body of knowledge transmittable to society. In this perspective, PACT has organized (or participated in the organization of) a set of actions, promoting these links and transmitting knowledge at various levels, such as: i) consultancy to public institutions; ii) support for lifelong learning and continuous training of technical staff both from public administration and from private companies; iii) dissemination actions open to general public (homeowners, craftsman, real estate investors, etc). In this scope we can highlight: contract with Porto City Council for Built Heritage Classification and Preservation definition (Masterplan revision); protocols of collaboration with the Municipality of Elvas and CHAIA-UÉvora, Foundation City of Ammaia; development of Maintenance Plans and Manuals (University of Porto; "Rota do Românico"); co-organization of 2 national open seminars about Maintenance; organization of open international conference about Heritage; organization of several actions for 2015 Sustainable Development Week; organization of practical workshops pertaining to heritage conservation such as window frame maintenance or traditional mortars; several publication or audiovisual material.

2.PROMOTION OF SCIENTIFIC RESEARCH, SCIENTIFIC NETWORKS, AND INTERNATIONALIZATION - In the period of 2013-17 PACT established and strengthened ties with other foreign universities, promoting or participating in international scientific events. PACT group members integrated international teams (on-going projects or applications for funding), and participated in international scientific networks, such as: the 2nd International Conference on Luso-Brazilian Construction History; the Seminar "Heritage Safeguarding: Learning from Internationalization" (w/ISISE-UM and Getty C.I. participation); International Workshops on "Architecture, Landscape and Archeology" (w/Uni. of Valladolid & Roma Tre); III Conference "Landscape - (IM)Materiality" (w/CITCEM), scientific session DocGraf '16 (w/Aalto Univ.), among others. PACT members participated in more than 80 International conferences and were members of several events' scientific committees.

3.ADVANCED TRAINING - PACT group has grown in the 2013-17 period, with several of its members obtaining their PhD, having now a good range of researchers at all levels of experience. There is a close connection between research and teaching (in the Master degree, Advanced Course on Architectural Heritage and PhD) with a strong impact of research on teaching and vice versa. PACT contribution to training and supervision is valuable, with 80 master dissertations completed in 2013-17, and 20 PhD candidates under PACT members' supervision in 2017.

Part 4: Plan of Activities for 2018-2022

10. Summaries of the Plan of Activities for 2018-2022

10.1 Summary in Portuguese for general dissemination purposes

A investigação produzida pelo CEAU foca-se no desenho arquitectónico, nos estudos urbanos, na história e teoria da arquitectura, na habitação, no património, na representação arquitectónica, ou ainda nas tecnologias digitais e de construção. Centrando-se no contexto português mas explorando conexões com outras conjunturas, tanto no sentido de uma compreensão crítica da contemporaneidade como para estabelecer um estudo analítico do passado, as actividades de investigação são cruciais para o estudo da arquitectura, da cidade, e do território. A arquitectura e o urbanismo constituem campos disciplinares vastos que integram não apenas uma multiplicidade de interesses mas também diversificados conhecimentos teóricos e práticos. Consequentemente, a actividade global do CEAU organiza-se em sete grupos de investigação autónomos mas inter-relacionados.

Os temas explorados pelos grupos incluem o estudo dos processos de desenho e construção, a arquitectura portuguesa, fenómenos urbanos antigos e contemporâneos, legados de arquitectos eminentes, programas de habitação social, desenho e fabricação digitais em arquitectura, reabilitação do património arquitectónico, intersecções da arquitectura quer com a matemática quer com a música, a fotografia, o cinema e a banda desenhada, o uso do desenho enquanto ferramenta essencial de desenvolvimento e representação do projecto arquitectónico, ou ainda reflexões aprofundadas sobre o ensino da arquitectura. Para que estas actividades possam ocorrer são necessárias equipas robustas e motivadas. Nesse sentido, estudantes de pós-graduações - mestres, doutorandos e pós-doutorandos - são convidados a juntarem-se à equipa do CEAU de forma a consolidar os diversos projectos de investigação. Esta possibilidade decorre da relação de forte proximidade do CEAU com o PDA, o Programa de Doutoramento em Arquitectura da FAUP.

A disseminação regular de resultados é vital para a qualidade da investigação produzida, pelo que a organização de conferências internacionais, seminários e workshops se afirma como uma forte componente do compromisso do CEAU com a produção e difusão de conhecimento. Eventos como "On the Surface", "eCAADe 2019", "Affordable Housing. The XX Century Legacy" ou "Inter[Sections] 2020" serão parte integrante desse esforço. A difusão de conhecimentos ocorrerá também através da programação de cursos livres, construção de sítios electrónicos, publicação de livros e revistas, curadoria de exposições, produção de filmes e disponibilização de bases de dados ao público alargado. A investigação realizada será também apresentada em eventos científicos nacionais e internacionais, reforçando deste modo as redes de investigação já existentes ou estabelecendo novas ligações. Firmar-se-á assim o estatuto da FAUP enquanto instituição de referência a nível nacional e internacional no âmbito da educação e prática arquitectónica, bem como a sua reputação de instituição cimeira no que respeita aos estudos científicos experimentais e la

10.2 Summary in English for general dissemination purposes

The research produced at CEAU is centred on architectural design, urban studies, history and theory of architecture, housing, heritage, architectural representation or building and digital technologies. Focusing on the Portuguese context but exploring the connections with other conjunctures, in a critical understanding of contemporaneity or an analytical study of the past, research activities are instrumental in the study of architecture, the city, and the territory. Architecture and urbanism are large disciplinary fields that integrate multiple interests and theoretical and practical knowledge, consequently, the global activity of CEAU is organised in seven autonomous yet interrelated research groups.

Themes to be explored can encompass the study of design and building processes, Portuguese architecture, contemporary and ancient urban phenomena, the legacy of notable architects, public housing programs, digital design and fabrication in architecture, rehabilitation of architectural heritage, intersection of architecture with mathematics, music, photography, cinema or comics, the use of drawing as a process of imagination and representation, or architectural pedagogy.

For these activities to take place strong and motivated teams are of paramount importance, so postgraduate students - MA holders, PhD researchers, and postdoctoral researchers - will join the CEAU team in order to strengthen its workforce. This is ensured by the close connection of CEAU with PDA, FAUP's PhD programme on architecture.

The regular dissemination of results is vital to the quality of the research produced, therefore the organization of international conferences, seminars, and workshops is a strong part of CEAU's commitment to the output strategy. Events like 'On the Surface', 'eCAADe 2019', 'Affordable Housing. The XX Century Legacy' or 'Inter[Sections] 2020' will be examples of this effort. The diffusion of conclusions will also be undertaken through programming of open-courses, construction of websites, publication of books and journals, curation of exhibitions, production of films, and provision of public access to databases.

The research and its results will be presented in national and international scientific events either reinforcing existing research networks or establishing new ones, fostering FAUP's recognition as a national and international reference institution for architectural education and practice, as well as its recognition as a leading institution for experimental and laboratorial scientific studies.

10.3 Summary in English for evaluation

The research produced at CEAU is centred on architectural design, urban studies, history and theory of architecture, housing, heritage, architectural representation or building and digital technologies. Focusing on the Portuguese context while exploring the connections with other conjunctures, in a critical understanding of contemporaneity or an analytical study of the past, research activities will be instrumental on the study of architecture, the city, and the territory. Architecture and urbanism are large disciplinary fields that integrate multiple interests and theoretical and practical knowledge, consequently the global activity of CEAU will be organised in seven autonomous yet interrelated research groups:

- i) ARCHITECTURE AND MODES OF INHABITING (AMH) group goal is the understanding of contemporary architectural space and its connections with the design and building processes, seeking to develop activities to support the business and economic environment and the communities, through research and innovation.
- ii) ARCHITECTURE: THEORY, PROJECT, HISTORY (ATPH) group encompasses a diversity of research themes in a large field where theory, architectural design and history interrelate. Along with the already established lines of research - Portuguese architecture, the legacy of notable architects, cinema and architecture, mathematics and architectural design, didactic processes

and experiences - the group will also promote new formats for the production and dissemination of knowledge, involving the society and seeking alternative forms of financing.

iii) HOUSE ATLAS - HOUSING ARCHITECTURAL DESIGN AND FORMS OF DWELLING (AdC) group researches the housing transformations occurred in the XXth century, attempting to unveil, map and interpret the set of narratives and interferences, both interdisciplinary and intergenerational, that sustain the construction and transmission of architectural culture. The group plans to deepen the reflection on Public Housing Programs, maintaining an extensive database and transforming existing initiatives into effective didactic values.

iv) CENTRE OF COMMUNICATIONS AND SPATIAL REPRESENTATION (CCRE) is an open research group that aims to nurture the interest of different people and researchers coming from various institutions and diverse fields of studying, with different subjects and interests. Main goals are the organization of an international conference on photography and architecture, as well as several editorial platforms with a critical analysis around the practice and discipline of architecture and art in general, looking for various intersections between these two worlds, as well as their connection with the universe of images.

v) DIGITAL FABRICATION LAB (DFL) will continue its research agenda in the fields of digital design and fabrication in architecture, focusing on themes such as: large-scale additive manufacturing, robotic fabrication, interactive construction and virtual reality. In terms of its operations it intends to develop a growing internationalization of activities, through the participation in European projects, the realization of research in partnership with global companies, and the hosting of conferences, workshops and exhibitions.

vi) TERRITORY DYNAMICS AND MORPHOLOGIES (MDT) group will continue to strengthen the relationship between teaching, research, professional practice and society, considering 3 lines of action: (1) contributing in national/international academic discussion in search of a broader understanding of contemporary urban phenomena and of new intervention tools; (2) developing a broader knowledge transfer and social intervention programme, raising awareness about the importance of territory as a common good and key component of citizenship; (3) ensuring the most specialized knowledge of active architects and planners, anchored in postgraduate and doctoral programmes.

vii) ARCHITECTURE, CITY AND TERRITORY HERITAGE (PACT) group is structured in three complementary lines: (1) Studies on Heritage, City and Territory, which departs from the city of Porto to the broader understanding of urban transformation processes in other Iberian and European cities; (2) actions for the Rehabilitation of Architectural Heritage, which is mainly concerned in technological and constructive issues, either in an historical point of view, either in a close connection with rehabilitation processes; (3) Atlas of Roads and Ancient Towns of Portugal, focused on the relation between architecture and archaeology, from the roman times to the contemporaneity.

For these activities to take place strong and motivated teams are of paramount importance, and consequently studentship recipients - PhD researchers and post graduate students - will join CEAU integrated members in order to strengthen its workforce. This is mostly ensured by the close connection of CEAU with PDA, FAUP's PhD programme on architecture.

The regular dissemination of results is vital to the quality of the research produced, therefore the organization of international conferences, seminars and workshops are a strong part of CEAU's commitment with the dissemination of outcomes. Events like 'On the Surface', 'eCAADe 2019', 'Affordable Housing. The XX Century Legacy' or 'Inter[Sections] 2020' will be examples of this effort. The diffusion of conclusions will also be undertaken through programming of open-courses, construction of websites, publication of books and journals, curation of exhibitions, production of films or provision of public access to databases. The research and its results will be presented in national and international scientific events either reinforcing existing research networks or establishing new ones, fostering FAUP's recognition as a national and international reference institution for architectural education and practice, as well as its recognition as a leading institution for experimental and laboratorial scientific studies.

11. Description of the Plan of Activities for 2018-2022

11.1 Objectives and strategy of the R&D Unit for 2018-2022

FAUP's Center for Studies in Architecture and Urbanism (CEAU) promotes a broad perspective on several scopes of knowledge and scientific fields, reflected in the diversity of its research groups: technology, building innovation and new design strategies and modes of inhabitation (AMH), the issues of architecture in which theory, architectural design, drawing and history are interrelated (ATPH), housing and the different forms of dwelling (AdC) communication and spatial representation (CCRE), computational design and digital manufacturing technologies (DFL), new understandings and characterisation of territorial dynamics and morphologies (MDT), and the study of heritage at architectural, urban and territorial scales (PACT).

The presentation of centre's objectives and strategy for the timeframe 2018-2022 is subdivided in the following points:

1) CONTRIBUTIONS TO ADVANCEMENT AND APPLICATION OF KNOWLEDGE

The contributions to the advancement of knowledge is assured by the ongoing and proposed Research Projects, which will motivate a greater connection with the Centre's structure, capitalizing the considerable increase of its integrated researchers. The produced knowledge will take into account its application to a wider scope, giving continuity to joint initiatives related to the production and dissemination of knowledge already achieved by members of the group, namely Industry, Museums, Archives, and the business sector. For this goal, some of the projects of the Centre have developed formal and material innovation, therefore producing a series of outputs and products.

2) ADVANCED TRAINING AND TEACHING

Increase the link between researchers and doctoral students, exploring the proximity between CEAU's activity and the PhD Program in Architecture, by widening the range of undertaken research and strengthening the role of PhD students (currently 52

non-PhD members, 16 being integrated members).

Complementarily, the Centre will develop experimental and specialised formats of advanced training, widely open to the international academic community. Furthermore, FAUP's PhD Program in Architecture is divided into profiles which relate to CEAU's research groups: profile A addresses housing and living, being closely related with AdC (House Atlas- Housing Architectural Design and Forms of Dwelling); profile B focuses in an interdisciplinary vision of theory, architectural design, drawing, and history, therefore closely linked to ATPH (Architecture: Theory, Project, History); profile C deals with the dynamics of urban forms, in a strong connection with MDT (Territorial Dynamics and Morphologies); profile D focuses in architectural heritage issues, in close connection with PACT (Heritage at Architectural, Urban and Territorial scales).

These connections will allow the exploration of advanced training and teaching in direct connection with the 2nd and 3rd cycle of studies at FAUP, and the involvement of invited teachers from other Universities, contributing to a solid research team through continuous creation of scientific employment.

3) SCIENTIFIC INITIATION OF YOUNG STUDENTS

Beside the development of multiple Master Thesis supervised by CEAU members and in close relationship with current research themes, other 2nd cycle student's initiation and growing involvement in the activities of the centre will be promoted through the creation of complementary activities in connection with curricular units and close articulation with Master Thesis.

CEAU will also seek the promotion of scientific culture in a more open and comprehensive way, covering younger age groups - between 15 and 19 years - and promoting the organisation and participation in a set of activities developed together with other institutions. Examples of these exchanges have already been successfully explored in the organisation of activities in the previous years, which have densely engaged Master and PhD students.

4) PRESERVATION, CURATION, AND DISSEMINATION OF DATA AND RESULTS

Besides the current scientific production, and as a way of promoting a more dynamic and interactive access to knowledge, the activities of the centre will be articulated with the development of several digital products, databases and platforms, which will explore technological innovations in the transfer of knowledge.

An editorial production with regular periodicity will also be assured, as well as a continuous curatorial activity in several groups, in order to give visibility to the production of the centre and the dissemination of its results. Contributing to this editorial production, the study of archives will also result in the construction of open-access digital databases.

CEAU will also continue to organize national and international conferences and seminars, encouraging a greater articulation of the research in development by the various groups in these environments. Besides, the participation of its members in other activities promoted by other institutions will be determinant in the sharing of knowledge, and in finding ways to open it to the general society and other areas of the University of Porto.

5) INTER-INSTITUTIONAL COLLABORATION

In order to undertake applied research, involve different stakeholders and increase the impact of scientific work, the centre will strengthen partnerships outside the University, namely the collaboration with different national and foreign institutions such as: industry, museums, archives, companies, municipalities and cultural tourism association; regional and municipal public administration in the fields of territorial and urban studies and policies; industry and companies of the building sector, as well as academic and research entities, amongst others.

The participation in networks and other complementary forms of association with other R&D units, documentation centres, institutions, and enterprises - namely from the building and tourism sectors - will also be fostered in the development of research projects and collaborative practices.

6) SOCIAL INVOLVEMENT AND IMPACT

The production of knowledge in the disciplines of Architecture and Urbanism, which is CEAU's main mission, involves a relevant participation in social, economic, technological and cultural issues.

Understanding this responsibility, the centre has been actively engaged in several activities with direct impact in civil society. Through applied research, the centre has worked in partnership with different institutions and public, directly influencing current decision-making processes, namely on local development, housing policies, municipal masterplans and regional strategies, in a set of practices that the centre aims to strengthen.

Additionally, the centre has put added effort in the dissemination of knowledge through a variety of formats and aiming at diversified public, through organising and participating in a set of activities promoted by other institutions, aimed at society in general and other areas of knowledge of the University, such as workshops, focus groups with young and elderly people or participatory processes.

7) INTERNATIONALIZATION AND COMMUNICATION

The investment in international positioning will be a determinant strategy of the Centre and its forms of communication as to strengthen CEAU as a recognised reference at the international level. The foreseen actions, taking advantage of already established partnerships, include: i) strengthening and expanding the participation in networks of architecture schools, documentation centres and other partner international institutions; ii) supporting exchanges of researchers and teachers, also through new formats of advanced training open to the international academic community, thus easing the knowledge transfer and the exchange of practices, information and points of view; iii) promoting the creation of new joint research projects that may involve several institutions; iv) spreading the undertaken research in international conferences and journals, thus taking part in the forefront of the international debate; v) organising international conferences, congresses, symposia and events; vi) improving the international dissemination of the centre's editorial production, both at the Portuguese speaking territories (with whom CEAU has established strong work relations) as in a wider and global level.

8) FUNDING

The Centre will also be actively involved in the attraction of funding, putting efforts into closely following various programmes of institutional support for research and to assist the researchers in applications, namely the ones promoted by FCT at a national level and others at the European scale.

Supplemental financial support will be sought through the exploration of a growing proximity with the business sector and national and international industries, with whom some research groups have already been working and undertaking activities together.

CONCLUSION

FAUP belongs to a tradition of Architectural education directed towards the community and to the understanding of the diverse and complex phenomena that characterise the circumstance or the reality of the community to which it belongs.

CEAU's research unit is fundamental for FAUP's future development and for its ability to attract students and researchers, an essential contribution for strengthening the already recognised international positioning of FAUP.

The strengthening of CEAU's work will foster FAUP's recognition as a national and international reference institution for architectural education and practice, as well as its recognition as a leading institution for experimental, specialised and applied scientific research, which will also constitute a broader contribution for society's cultural, social and patrimonial development.

11.2 Organization of the R&D Unit for 2018-2022

FAUP's Center for Studies in Architecture and Urbanism is managed through a Direction and a Scientific Board, having a Permanent External Advisory Board that accompanies its work. The centre is currently divided into seven research groups with specific interests around the common architecture theme, each being lead by a Coordinator.

This structure (previously described in the 4.1 field) is planned to be maintained for the period of 2018-2022, while strengthening the teams and related research. Each of these levels of organisation is interrelated, thus providing a network of articulated evaluation of ongoing practices and active decision-making on the several issues that concern the scientific research.

DIRECTION AND SCIENTIFIC BOARD

The Director and Vice-Director are responsible for the management, internal articulation and representation of the centre.

The Scientific Board, constituted by all the integrated researchers of the centre with doctoral degree, discusses in assembly the relevant scientific subjects, thus ensuring that these researchers have direct influence in the decision-making of issues regarding the scientific research strategy. The Scientific Board usually gathers around four times a year, though this frequency may vary according to the contents to be addressed.

PERMANENT EXTERNAL ADVISORY BOARD

The Permanent Advisory Board, currently constituted by four members that have the task of reporting on the research undertaken in the centre, has often been appointed to closely supervise ongoing researches and practices in key moments of the processes, thus contributing to refining strategies, detecting unexplored areas of knowledge, improving the scientific quality and strengthening the impact of the results.

These members have been selected not only for being recognised national and international scientific references, but are also by being actively engaged in the improvement of the fields of research undertaken at the centre, thus contributing to positioning this R&D unit at high international levels. For 2018-2020 a new Permanent Advisory Board constitution is proposed.

RESEARCH GROUPS

The seven research groups that form the centre are quite diverse in their interests and thematic lines, as well as in their characterization, regarding the number of members, scientific background of the researchers, levels of experience and relation with practice. Nonetheless, it is this diversity - both amongst groups and within each of the teams - that has proved to be highly enriching for the undertaken research, allowing for the broadening of horizons, approaches and used tools.

The close relation with academic training, specially with masters, advanced courses (CEAPA - Advanced Studies Course on the Architectural Heritage) and doctoral studies, has allowed the introduction of students to research, both at an initiating level and in broader research projects, as well as within advanced studies through hosting doctoral researchers and putting efforts into their further progressions.

Each of the groups is lead by a coordinator who, according to the group scale and the dynamic and ongoing tasks within the team, will contribute to facilitating the conditions for the researchers to undertake the different scientific activities, articulating resources and efforts when needed.

RESEARCH GROUPS' INTERNAL ORGANISATION

Some groups are subdivided into subtopics of research, while researchers may be involved in several of these themes.

The ARCHITECTURE AND MODES OF INHABITATION (AMH) group will continue its structure in three complementary lines: (1) Architecture and Ways of Living; (2) Architecture and Ways of Designing; (3) Architecture and Ways of Building, always having Man, the Environment and the Circumstances at the center of the architectural project.

The ARCHITECTURE: THEORY, PROJECT AND HISTORY (ATPH) group, which is the largest in number, is constituted by nine research lines: (1) the city and the architecture; (2) the Portuguese architecture; (3) architecture as a vocation, service and language; (4) drawing and architecture; (5) architecture in interdisciplinary relation with mathematics; (6) architecture in interdisciplinary relation with mathematics, cinema and other arts; (7) the treatise and the formation of knowledge; and (8) learning-teaching of architecture. The research is developed in the complementarity of the modalities of Theory, Project, History and Design, as a process of imagination and representation.

The HOUSE ATLAS - HOUSING ARCHITECTURAL DESIGN AND FORMS OF DWELLING (AdC) group is organized around five research lines feeding the group's main objectives: (1) mapping programmed housing in Portugal; (2) narratives of the architectural educational project; (3) identity and transfer; (4) forms of housing and public facilities in the forms of public space; and (5) multifamily dwelling: theory, design and teaching.

The CENTRE OF COMMUNICATIONS AND SPATIAL REPRESENTATION (CCRE) group is organized around a main research line on 'City and Culture Spaces' where all projects are located, namely those related to research on Architecture, Art, Image, Photography and Collaborative Work Platforms. The proposed activities are thus the result of the projects developed around the topic of City and Culture Spaces, having all the activities their autonomy, yet being strategically connected with each other.

The DIGITAL FABRICATION LABORATORY (DFL) has a very focused research agenda in one main research line which deals directly to digital fabricated materials and components for the construction and/or architecture. The team consists of researchers with PhD, PhD students and final year Master students. Due to the international visibility of the DFL's work, the group regularly includes visiting researchers from other countries with diverse levels and areas of training (currently from India and Spain). DFL collaborates with a number of research partners (eg INESC-TEC, FEUP, ISCTE-IUL, FAU.USP (Brazil), BAU (Lebanon)) and the technology area (eg, ESI, KUKA) and industry (eg. Amorim, Mota Engil).

The TERRITORY DYNAMICS AND MORPHOLOGIES (MDT) group has three main thematic lines: (1) Diffuse Urbanization, (2) Practices and Policies for Local Development, and (3) Dialogues between Practice and Didactics: Production, Teaching and Research in Architecture, each gathering a specific group of researchers from diverse scientific backgrounds that include, besides architecture and urbanism, also geography, urban economy, sociology and law. However, this partition is not rigid since some researchers contribute to more than one of the existing lines. A new line on public space is expected to be created at short term. The ARCHITECTURE, CITY AND TERRITORY HERITAGE (PACT) group will maintain the structure in three complementary lines: (1) Studies on City and Territorial Heritage; (2) Architectural Rehabilitation Actions in Built Heritage; (3) Atlas of Roads and Ancient Towns of Portugal.

12. Thematic Lines

The minimum number of confirmed integrated researchers in order to fill thematic lines information is 100 and you have only 72.

13. Ethical issues

13.1 Ethical issues

N/A

14. Aspects of the Plan of Activities involving requests of Programmatic Funding

14.1 Pluriannual plan for PhD fellowships to be awarded in 2019-2022

NAME OF INSTITUTE THE PHD PROGRAM	DATE OF ACCREDITATION	PRESENTLY FUNCTIONING	R&D UNIT INVOLVEMENT/ CONTRIBUTION OF PHD RESEARCHERS/ SCOPE OF THE WORK	2019	2020	2021	2022	NO. OF EXPECTED FELLOWSHIPS
PhD Programme in Architecture (PDA)	Faculdade de Arquitectura da Universidade do Porto (FAUP)	Yes	CEAU has a relevant tradition in advanced training of Phd students, as aforementioned in table 7.1. Furthermore, the contribution of PhD students has been very relevant to the renovation and permanent qualification of the research in the R&D unit. In this way, it is important to maintain this relevant connection by assigning PhD fellowships related to research lines and projects, an integral part of the development of the R&D research agenda which can be improved. Research topics will be part of broader research projects within the research unit. Thus, PhD students, while attending doctoral-degree courses, will have the opportunity to work closely with top R&D members on on-going research projects and therefore gain valuable training and experience applied to specific projects towards a career in academic research.	3	3	3	3	12

The development of research in the scope of PDA profile of studies

NAME OF INSTITUTION THE PHD PROGRAM	DATE OF ACCREDITATION	PRESENTLY FUNCTIONING	R&D UNIT INVOLVEMENT/ CONTRIBUTION OF PHD RESEARCHERS/SCOPE OF THE WORK	2019	2020	2021	2022	NO. OF EXPECTED FELLOWSHIPS
			A, 'Housing Project and Ways of Inhabiting', aims to present and develop guidelines dedicated to the theme of housing in its different, conceptual and operative variations, from the single house to the collective housing, in its relationship with the materialization of the urban space and as a result of constructive options and technology. Within the profile of studies B, 'Architecture: Theory, Project, and History', the awarding of PhD studentships will contribute to explore in-depth the complementarity of the triad theory, project, and history. In the scope of profile of studies C, 'Urban Forms and Dynamics', the awarding of PhD fellowships will strengthen the scarce research in Portugal in the fields of urban design and planning. The awarding of PhD fellowships within the scientific research of profile of studies D, 'Architectural Heritage' will contribute to develop and disseminate research on theories, methodologies, and practices of safeguarding, preservation and rehabilitation in different scales such as territory, landscape, cities and buildings.					

14.2 Pluriannual plan for hiring new researchers holding a PhD in 2019-2022

NEW RESEARCHERS TO HIRE

No. researchers	2019	2020	2021	2022	Total
	4	2	0	0	6

Short description of the type of researchers to hire, their expected added-value to the R&D Unit activities, expect contract duration, conditions of co-responsibility of higher education or research institutions through which the contracts will be awarded, and of the financial and material conditions that still need to be fulfilled.

CEAU intends to secure the contracts of several PhD researchers to ensure the development of some advanced research and coordination activities within existing research groups, lines and projects. The funding of full-time researchers with this level of expertise and with an exclusive dedication to research activities will increase CEAU's productivity and competitiveness. Additionally, it will provide the ability to further develop some of the current projects and to secure new applications for other funding sources. These contracts are also decisive in ensuring the link between the R&D unit and the University's higher education programmes, ensuring the collaboration of researchers in high profile initiatives. All these aspects have been largely demonstrated in recent years by the activity carried out within the Center by postdoc fellows, despite their relatively small number.

Currently, CEAU has PhD researchers without contract, as well as researchers who have recently discussed their PhD Thesis or are concluding their PhD studies who will be available to give a profitable contribution in the R&D Unit through research contracts; some of these PhD theses were distinguished and opened interesting fields of research for future development in the R&D Unit. Adding to this point of view, the integration of candidates with doctorates outside FAUP, obtained in national or international institutions of reference, will also be considered.

The contract of PhD researchers would strongly enrich CEAU's human resources, creating the desirable conditions to strengthen CEAU activity in scientific research and services. Without this kind of support, CEAU's mission (evolution of knowledge, continuity of projects, competitiveness, and competences) is severely affected.

CEAU intends to contract Junior Researchers as well as an Auxiliary Researcher to guarantee the continuity of existing research projects and of coordination activities within existing research lines.

14.3 Support for participation in infrastructures or international networks in 2019-2022

CEAU's members and research groups are integrated in European / International research networks and infrastructures. CEAU intends to increase the participation of researchers in International Forums, Meetings and Conferences related to networks in the period 2019-2022, in order to strengthen the R&D unit position at an international level.

CEAU is strongly committed in exploring and increasing international partnerships, as well as the access to knowledge and dissemination networks. For the period 2019-2022 CEAU will secure the continuity of existing networks such as EURAU

(European Symposium on Research in Architecture and Urban Design), NEXUS (Relationships Between Architecture and Mathematics), HERITAGE (Heritage and sustainable development), PNUM (Portuguese-Language Network of Urban Morphology), CIHLB (Congress on Luso-Brazilian Construction History), EAAE-EHNSA (European Association for Architectural Education), ENHR (European Network for Housing Research), eCAADe (European Association for Education and Research in Architecture Design), ICOMOS (International Council of Monuments and Sites; representation in different International Scientific Committees), IAHS (International Association for Housing), Building Smart International, AAi2 Lab (Architecture, Art and Image AAi2 Lab), AESOP (Association of European Schools of Planning), 'Diffuse City After Growth' International Network, International Workshops of Architecture, Landscape and Archaeology, among others.

Besides the organization and participation in major International Conferences, CEAU requires support for participation in its periodic meetings and forums. All the activities require funding: missions; exchange of researchers; workshops and publications; platforms and websites for dissemination, among others.

The engagement of CEAU research groups/members in international scientific research networks and their related activities requires a global budget of 50K€ in the period 2019-2022.

14.4 Other types of support for which the R&D Unit requests Programmatic Funding in 2019-2022

Following the aforementioned strategy of increasing the merit and the research quality of the R&D Unit, CEAU's priority for 2019-2022 is to ensure the contract of PhD researchers. It's also expected that the investment on the qualification of the research team will contribute to the research relevance and innovation of the R&D Unit, considering internationalization, productivity, consistency, accuracy and relevance of results, fostering more relevant publications in peer-reviewed academic journals or conferences. Thus, a considerable percentage of the programmatic funding will be dedicated to human resources, particularly PhD Researchers as well as some PhD fellowships.

The investment on the qualification of the research team implies the acquisition of equipment and the guarantee of the budget for missions, as well as expenses related to the disclosure and spreading of results.

Another issue in the programmatic funding is the supporting of dissemination actions. The report of activities of 2013-2017 highlighted the importance of dissemination actions in the overall R&D Unit activity (see 4.2. and 4.4.).

CEAU will continue to strengthen the relationship between teaching, research, industry, professional practice and society through the organization and implementation of dissemination actions, raising awareness and promoting discussions about the territory and the architecture issues.

The R&D Unit requests funding for the following dissemination activities:

- Organization of international Conferences. At the moment two International Conferences are being organized by CEAU's research groups for 2019: 'eCAADe' and 'On the Surface / Na Superfície'. It is expected that in the three subsequent years, at least two international Conferences per year will be organized by CEAU's research team - funding is requested for proceedings, catering, rents, flights and accommodation of keynote speakers, registration kit, and other services;
- Conferences and debates - funding is requested for invited foreign researchers and advertising;
- Participation of CEAU researchers in international conferences - funding requested includes expenses with fees, transports and accommodation;
- Workshops - funding is requested for advertising, work material, transports, accommodation and meals for invited experts;
- Publications of the initiatives within international networks - funding is requested for edition;
- Publications from its editorial lines Scopio Editions, as well as the other editorial lines and Journals - funding requested includes expenses with graphic design, printing and human resources for additional research;
- Maintenance of CEAU's website for the diffusion of its research and the promotion of new international partnerships - funding is requested for hiring a technician for the development of the website.

For this topic CEAU requires a global budget of 50K€ in the period 2019-2022.

15. Expected funding and budget for 2018-2022 for evaluation purposes

15.1 Expected funding of the R&D Research Unit for 2018-2022

FUNDING SOURCES (TOTAL FUNDING)

	2018	2019	2020	2021	2022	TOTAL (K€)
Fundação para a Ciência e a Tecnologia, I.P. - FCT	428	226	114	29	0	797
R&D Unit Pluriannual funding awarded for 2018	98	0	0	0	0	98
Project funding expected to be received	65	0	0	0	0	65
Expected funding for contracts of researchers with PhD (1)	37	37	6	0	0	80
Expected funding for PhD, PostDoc or other fellowships (2)	228	189	108	29	0	554
Other funding	0	0	0	0	0	0
Other national sources	0	0	0	0	0	0
Funding expected to be received from Participant or Management Institutions	0	0	0	0	0	0
Public sources (3)	0	0	0	0	0	0
Companies, industry and other private sources based in Portugal (3)	0	0	0	0	0	0
Any other funding source (3)	0	0	0	0	0	0
International sources	0	0	0	0	0	0
European Commission (3)	0	0	0	0	0	0
Companies, industry and other private sources not based in Portugal (3)	0	0	0	0	0	0
Other funding sources (3)	0	0	0	0	0	0
Total (K€)	428	226	114	29	0	797

(1) Payed through an institution or directly to researchers with PhD integrated in the R&D Unit

(2) Payed directly to fellows, researchers or students integrated in the R&D Unit

(3) Grants, projects, fellowships, prizes received, etc.

15.2 Expense budget of the R&D Research Unit in the Main Management Institution for 2018-2022

Faculdade de Arquitectura da Universidade do Porto (FA/UP)

Expense Budget items	2018	2019	2020	2021	2022	TOTAL (K€)
Human Resources	297	227	114	29	0	667
Contracts of researchers with PhD	37	37	6	0	0	80
PhD, PostDoc or other fellowships	260	190	108	29	0	587
Contracts of technical or secretarial staff	0	0	0	0	0	0
Researchers external missions	45	0	0	0	0	45
Temporary visiting researchers or consultants	0	0	0	0	0	0
Patents registration and maintenance	0	0	0	0	0	0
Service or product procurement and acquisition	45	0	0	0	0	45
Equipment	8	0	0	0	0	8
Adaptation of facilities and buildings	0	0	0	0	0	0
Other expenses	0	0	0	0	0	0
Total (K€)	395	227	114	29	0	765

15.3 Expense budget of the R&D Research Unit in the other Management Institutions for 2018-2022

15.4 Estimated percentages of application by general expense budget items of Base Funding in case it will be awarded by FCT, I.P. for 2018-2022 following the evaluation

Expense Budget items	%
Human Resources	20 %
Contracts of researchers with PhD	0 %
PhD, PostDoc or other fellowships	20 %
Contracts of technical or secretarial staff	0 %
Researchers external missions	25 %
Temporary visiting researchers or consultants	5 %
Patents registration and maintenance	0 %
Service or product procurement and acquisition	25 %
Equipment	5 %
Adaptation of facilities and buildings	0 %
Other expenses	20 %
Total	100 %

16. Justification of the budget for 2018-2022

16.1 Justification of the total proposed budget

In the last years, CEAU researchers have put a great effort in dissemination activities and in the establishment of connections with units of research and other institutions in related areas. This effort will persist in the next years and is reflected in this budget, particularly considering expenses with scientific visits, conferences (participation and organization), publications, exhibitions and all their supporting tasks and materials. The education of students and their integration in the research practice and research networks is also a priority, with implications in the budget. Technological development, most relevant for some of the Research Groups, is expected to be partially covered by competition based funding.

Studentships and contracts of PhD researchers help on the success of investigations (general research work, specific applied high technological work, data to be processed and reinterpreted), as well as on applications for external funding which will empower the lines of research. Furthermore, missions are important in the promotion and internationalization of these young researchers.

CEAU will organize various events, such as the hosting of an International Conference by AdC, a Biennial International Conference On Surface by CCRE and the organization of Education and Research in Computer Aided Architectural Design in Europe 2019 by the DFL. Sharing acquired knowledge as well as diffuse it will be carried out mainly by the participation in national and international conferences and exhibitions such as AESOP, PNUM, ACADIA or RobArch. The organization of seminars, courses, and workshops help to bridge a network of national and international researchers and share and open the research outputs with the society. Diffusion work will also be carried out with books, exhibitions and web publishings.

New equipment will allow for new projects to be undertaken, such as material for film creation and editing in a new Multimedia Laboratory, digital manufacturing machines for new material experimentation on digital fabrication; on the other hand, computers, cameras, and scanners are important for stock renovation and updating of technologies, increasing the quality of the outputs. The investment will be made in the creation of networks that allow for the involvement of society (administration and citizens), as well as specialized researchers and agents of areas such as photography (scopio Network) or urban studies.

In compliance with the clarifications provided by FCT to U.Porto regarding the current application, the annual amounts considered in Table 15.1 (and consequently in Tables 15.2 and 15.3), regard only the ones already contracted and / or the ones R&D unit expects to receive.

It should be noted, however, that in addition to the financing already contracted or assured, it is estimated that other projects will be approved, which means that the R&D unit's funding amounts will possibly be higher than those reported in those tables.

16.2 Justification of the Human Resources component in total proposed budget

CEAU intends to undertake the continuous updating and upgrading of its ongoing research, with persistent investment in the training and consolidation of its team.

The importance of investing in human resources has been largely demonstrated, namely by the work carried out by master, doctoral and post-doctoral researchers with individual funding (as expressed in 6.1 and 15.1) guaranteeing the natural consolidation and growth of the centre's research lines.

For these reasons it is considered a significant increase in human resources budget.

Within this scope, four different types of human resources are considered in the research centre's budget: i) the hiring of new researchers holding a PhD, ii) the awarding of PhD studentships, iii) the doctoral and iv) post-doctoral researchers with individual funding.

As expressed and clarified in 14.1 and 14.2, the hiring of new researchers holding a PhD, and the awarding of PhD studentships are key. In the first case the hiring of full-time researchers holding PhD, with a high level of expertise and with exclusive dedication to research activities, will increase CEAU's productivity and competitiveness. In the second case the contribution of PhD students is crucial to the renovation and permanent requalification of the research unit. It is also expected to build upon the existing connection with the PhD programme, considering an improved trans-disciplinary approach and an increased collaboration with other national and international schools and institutions. Moreover, individual research grants will also allow the development of important relations linking personal investigation with editorial lines, creating new synergies and knowledge networks.

Within this scope, MDT and AdC groups propose a significant increase in human resources, not only because it is intended to consolidate the results of the existing lines of research but also because it is considered necessary to disclose the results of the research abroad, which requires a significant level of writing and graphic communication effort.

CEAU proposes doctoral research contracts and PhD studentships focused on multiple interdisciplinary research projects that cover the interest of all CEAU's research groups, as well as more than one of the PhD Profiles in FAUP. The research projects will focus, among others, on themes such as: Contemporary View on City Spaces and Architecture in Oporto: Documentary and Artistic Photography Mapping (MFDA-ARP); Visual Spaces of Change; AIM - Master Module for Art and Science; Digital Fabrication with Concrete.

For DFL Group the allocation of PhD grants allows for these candidates to develop their activity on the laboratory, contributing to the activities of ongoing research. A dedicated Laboratory Assistant is important for a thorough and permanent knowledge of the machines, maintenance, and organization. Analogously, AMH Group considers a 10 month grant to implement one of its projects. The PACT Group projects depend on human resources that may be provided by grants of short duration (3 months), to perform specific tasks related to fieldwork, like surveys, data collection, processing of primary sources, and production of new documentation. Those researchers will also be enrolled in other tasks related to dissemination and publication of research, namely in the support to publications, conference organization, etc.

For ATPH Group, human resources will assist the development of the tasks previewed in the research projects and the organization of related initiatives, including planned expositions, and scientific meetings.

CEAU understands that the challenging continuity of the different research groups, the possibility of integrating investigators as qualified resources and the attainment of the main objectives envisioned in the programs imply the funding by other sources, namely through research projects won in competitions, which will be one of the pursued goals.

16.3 Justification of the Equipment component in total proposed budget

The equipment expenses may be grouped under three major sets: 1. Computers, specific software and hardware, indispensable tools subject to regular renovations, also determined by CEAU members growth (UPorto already supports basic software with campus licensing) 2. A set of equipment related to image, its capture, treatment and presentation, such as digital tools, plotters and cameras, necessary for architecture related imagery generation, editing and production; 3. Specific equipment, mostly covered by funded projects, which imply the purchase of supporting equipment and consumables that some groups depend on. The relative weight of each of the sets 1, 2 and 3, varies within the 7 Research Groups.

AdC, ATPH, MDT and PACT expect a visible growth of their teams, which implies corresponding investments in the sets 1 and 2, which include specific programs such as GIS and photogrammetry softwares.

AMH, AdC and CCRE have a need to ensure collaborative platforms and network systems linked to the dissemination of specific research, which respond to the necessities raised by the projects and areas of research linked to cinema, the territory and buildings, the organization of collections and databases, requiring recording means and measurements (cameras, scanners), data storage systems and documentary archives.

ATPH will create a multimedia laboratory with film editing hardware and software, which will serve researchers and students engaged on the research of the intersections between architecture and film.

CCRE intends to enlarge the effectiveness and usability of scopic platforms Network and AAi2 lab, since they constitute collaborative working, communication and dissemination platforms of CCRE's research and other CEAU groups and R&D of the U.Porto, addressing cross-cutting issues to the interdisciplinary debate on Architecture, City and Territory.

DFL intends to acquire a large laser cutting machine and 3D printer to expand possibilities in applied research on digital

17. REVIEWERS PROPOSED BY THE R&D Unit(S)

17.1 Proposed experts for consideration of FCT, I.P. for eventual request of opinion about applications submitted by R&D Units for evaluation

Name	Institution	Email	Scientific Areas
Carolina Di Biase	Politecnico di Milano	carolina.dibiase@polimi.it	Other humanities
Javier Monclus	Universidad de Zaragoza	jmonclus@unizar.es	Other humanities
Juan Navarro Baldeweg	Escuela Técnica Superior de Arquitectura de la Universidad Politécnica de Madrid	composicion.arquitectura@upm.es	Other humanities