

**HEI-Lab**

Digital Human-Environment Interaction Lab

*HEI-Lab:*

*Digital Human-environment Interaction Lab*

**RELATÓRIO DE ATIVIDADES**  
**2021/2022**

<https://hei-lab.ulusofona.pt/>

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## Capítulo I- Nota Introdutória

HEI-Lab is a *sui generis* R&D unit in the Portuguese landscape. HEI-lab aims at addressing and tackling human mind and behaviour (HMB) complexity, which are traditionally circumscribe to the Social Sciences realm, with ‘hard science’ products, processes, and services (PPS), that (1) create digital contexts against which HMB is modelled and assessed, with (2) the contribution of data that records manifestations of HMB and is recorded by digital PPS.

Since its inception, in 2018, the leading drive of HEI-Lab’s Board of Directors (BD) was to comply with FCT’s 2018 assessment results, which are further disclosed in detailed in Chapter II, and to integrate researchers that came from two distinctive scientific areas and, within the same scientific area (i.e. Psychology) with diverse specializations (i.e. Clinical and Health Psychology, Neuropsychology, Forensics Psychology, Social Psychology and Cyberpsychology) into HEI-Lab’s context. Parallely to these two strategic guidelines, AB compelled its researchers to submit scientific papers to Q1 and/or Q2 outlets and R&D proposals to national and international funding calls (see also Chapter II, sections 2.1. & 2.2.). In conformity with universities strategy for continuous formation, HEI-Lab set up 26 scientific meetings (<https://hei-lab.ulusofona.pt/scientific-meetings/>) where scientific proposals and projects were presented and open for discussion.

## Capítulo II- Atividades desenvolvidas e recursos humanos

Table 1 lists 2021-2022's Plan of Activities and its status by the end of the assessment cycle. All planned activities were concluded, some of them with a positive deviation.

Table 1. Evolution of HEI-Lab activities depicted in 2020-2021 Plan of Activities.

Activity 1: developing digital processes, products and services (PPS), and setting a new agenda	Expected results	Accomplished results	Progress
R&D funded studies	29	34	+18%
Human Resources	3 scholarships	6 scholarships	+100%
Equipment acquisition		All equipment was acquired	-
<b>Activity 2: knowledge transfer</b>			
institutions using HEI-Lab PPS	15	15	0%
<b>Activity 3: internationalization of the team and e-CB agenda</b>			
	Editorial Board: 8; International Committees: 7; Guest Editors: 2; PC member/reviewer: 2.	Editorial Board: 91; International Committees: 44; Guest Editors: 20; PC member/reviewer: 24.	+ 468%
<b>Activity 4: training young researchers in the e-CB agenda</b>			
FCT BIC	3	3	-
Lab research assistants	4	5	+25%
ILIND researchers	2	2	-
FCT projects	2	4	+100%
PhD students	10	10	-
<b>Activity 5: e-CB dissemination</b>			
Papers in scientific outlets	90	95	+5%

Following the FCT's RAE that pinpointed several negative marks, BD set to address them through several actions, that are disclosed in the following table (Table 2).

Table 2. HEI-Lab's measures to tackle FCT's 2018 evaluation.

Remarks	Action	Status
1. "The integration of the projects and strategic management is limited"	Reshape of conceptual HEI-Lab outline into 3 lines ( <a href="https://hei-lab.ulusofona.pt/">https://hei-lab.ulusofona.pt/</a> ).	Done. R&D projects ongoing (section 2.4.).
2. "Management model"	See Figure 1.	Done.
3. "Limited theoretical contribution"	Derive projects from theory.	Ongoing. Researchers are required to fill in a table with project's theoretical/paradigm context (Picture 1: T.F. [1-5]).
4. "Lack coordination between project groups"	Create thematic labs & appoint group leaders	Done. R&D projects ongoing (section 2.4. and Table 3).
5. "Lack of PhD candidates"	PhD in Clinical Psychology	Done. 10 PhD students in Sept. 2021
6. "The scope of research projects realised within the lab is somehow fragmented"	All projects need to run within 3 R&D lines scope ( <a href="https://hei-lab.ulusofona.pt/">https://hei-lab.ulusofona.pt/</a> ). Creation of labs (Table 2).	Done. All projects are now aligned with R&D lines.
7. "Systematic approach to validate the technological solutions has not been proposed. "	HEI-Lab adopted the Craig et al <sup>(1)</sup> approach for developing interventions.	Most ongoing studies already follow this pipeline.
8. "Needs to grow in increasing the internalization of the publication profile of some of its members"	Budget for researchers is distributed according with Q1 2 pubs, internationalization outlook and participation on HEI-lab's scope.	Ongoing. A 100% increase from 2020-2021 on international indicators were observed.
9. "The theoretical contribution is questionable"	See 1., 3. & 6.	Ongoing.
10. "Lack of systematic tests with control groups"	RCT studies will be valued through internal prizes	A few RCT are ongoing.
11. "studies always follow the required ethical standards"	All studies abide to CEDIC: Comissão de Ética e Deontologia para a Investigação Científica-	Done.
12. "Graduate students are needed to carry the load of day-to-day research activities"	See 5.	Done.

<sup>(1)</sup> Craig, P., Dieppe, P., Macintyre, S., et al. (2008). Developing and evaluating complex interventions: the new medical Research Council guidance. *BMJ*, 337.

Functionally, HEI-Lab is organized as depicted in Figure 1. HEI-Lab conducts research in the Human Mind and Behaviour (H.M.B.) area,

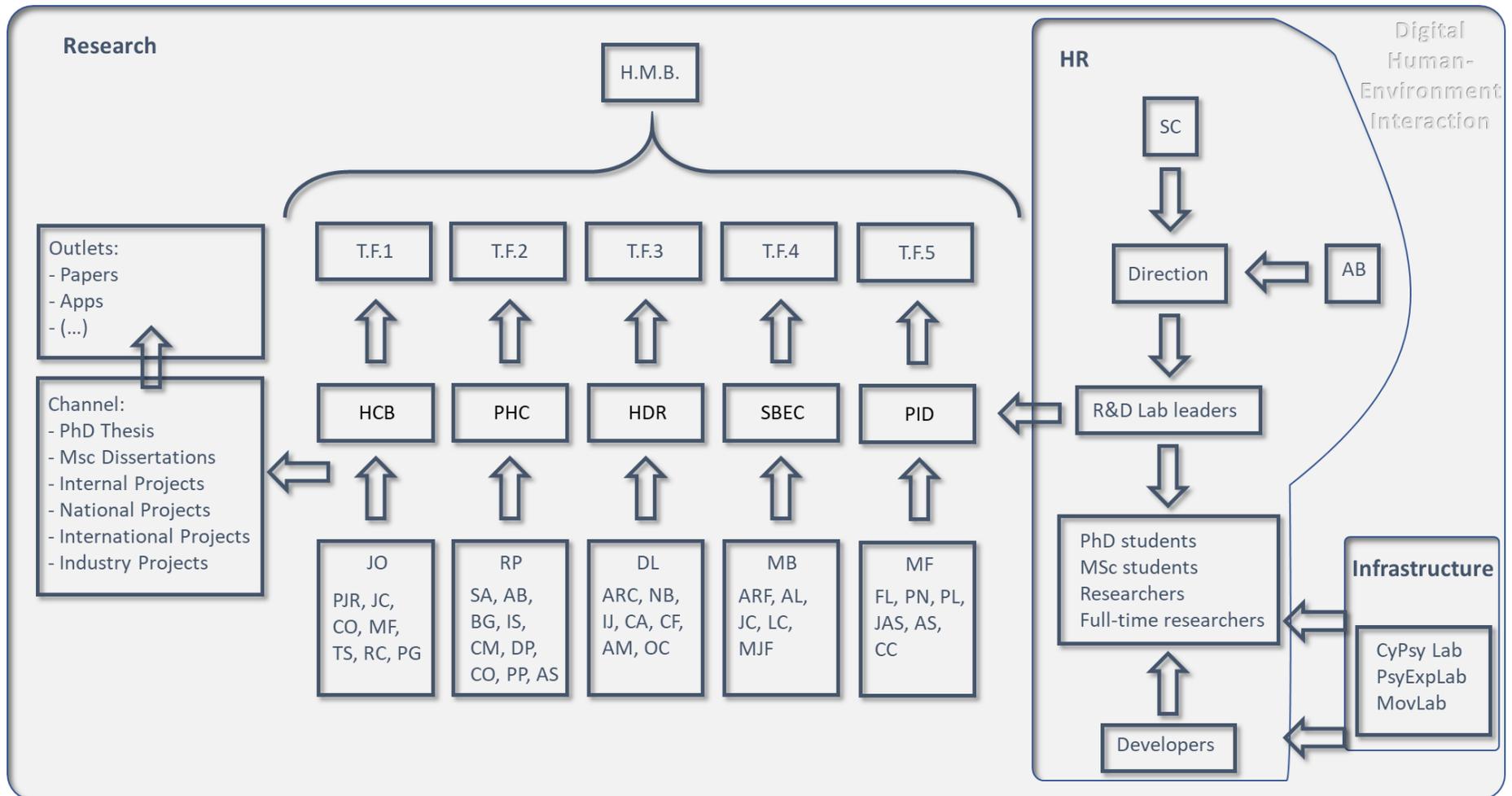


Figure 1. HEI-Lab's organization flowchart

supported by several Theoretical Frameworks (T.F.) that guide the five Thematic Labs (HCB, PHC, HDR, HBS and PID, Table 3) R&D activities. The outcomes of these activities are expressed in the form of papers and apps (among others) that are fed through PhD Thesis, MSc Dissertations, Internal Projects, National, International and Projects. HEI-Lab activities are supported by three research facilities (CyPsyLab, PsyExpLab and MovLab) under the guidance of the Scientific Council (SC) and of the Advisory Board (BD) that steer HEI-lab's executive branch (BD). The Lab leaders act as BD proxies ensuring that all researchers are aligned with HEI-Lab' objective and keep the pace with publications and grants submissions. Researcher's work is supported by a team of developers.

Table 3. HEI-Lab's R&D groups.

HCB: Human Cognition and Behaviour Lab	Teresa Souto (PI) Pedro J. Rosa Célia Oliveira José Teles Jorge Oliveira Rita Conde Pedro Gamito Bruno Faustino Rita Pasion
PHC: Psychopathology and Human Change Lab	Ricardo Pinto (PI) Sara Albuquerque Ana Beato Ágata Salvador Bárbara Gonzalez Isabel Santos Dulce Pinto Cátia Oliveira Paula Paulino Teresa Mendes Bruno Faustino Stephanie Alves Tânia Gaspar
SBEC: Social Behaviour, Environment, and Culture Lab	Leonor Costa (PI) Ana Rita Farias Ana Luísa Marques Loureiro Joana Cabral Sílvia Alves Maria José Ferreira
PID: Playful Interaction Design Lab	Pedro Pinto Neves (PI) Maria Micaela Fonseca Filipe Soares Costa Luz João Domingos Alves de Sousa Phil Lopes Andreia Pinto de Sousa

HDR: Human Development and Relationships Lab	Olga Cunha (PI)
	Ana Rita Cruz
	Nélio Jesus de Freitas Brazão
	Inês Jongenelen
	Carla Antunes
	Célia Ferreira
	Andreia Machado
	Carolina da Motta
	Dulce Pinto
	Tiago Pinto
	Diogo Lamela

*HCB: Human Cognition and Behaviour Lab*

The HCB aims to contribute to HEI-Lab goals by applying the principles of Cognitive-behavioral framework (T.F.1) to study human behavior in virtual reality environments. The focus is placed on investigating the cognitive processes underlying main behavioral functions, both in typical and non-typical populations, with special focus on neuropsychology, forensics and clinical psychology areas.

*PHC: Psychopathology and Human Change Lab*

The main objective of the Psychopathology and Human Change Lab is the development of research in the area of psychopathology, involving multiple life domains and contexts. We take advantage of several methodological approaches as qualitative and quantitative methods in psychology, including virtual reality, in pursuing the study of humans more comprehensively.

The general theoretical background of the Psychopathology and Human Change Lab is based on Cognitive-behavioural Therapy (T.F.2) and their recent developments, Developmental Psychopathology, and Ecological theories.

*HDR: Human Development and Relationships Lab*

This Lab is devoted to studying human interpersonal relationships as a core process of human development across developmental systems and lifespan. We are primarily interested in examining how close/primary relationships (e.g., dating/marital partner, siblings, parent-child, parent-parent, kin members, family system, peers) are transactionally related to developmental pathways and risk/protection on human adaptation. In particular, the Lab researchers address the etiopathology mechanisms that mediate the association between all

forms of conflict, aggression, and violence in close interpersonal relationships and the emergence of adaptation problems. Under developmental, evolutionary, systemic, and socio-developmental frameworks (T.F.3), our research efforts are also focused on designing and evaluating psychological interventions to promote, prevent, or treat close interpersonal relationships across clinical, forensic, and health settings.

*SBEC: Social Behaviour, Environment, and Culture Lab*

Our research group investigates how individuals think and behave in social situations, from interpersonal to intergroup interaction, considering environmental cues and the cultural context in which these interactions occur. To study these interactions, we combine studies using traditional techniques with studies that take advantage of digital technology and virtual reality environments. We conduct theoretical and empirical investigations based on social cognition and theories of intergroup relations (T.F.4).

*PID: Playful Interaction Design Lab*

The Playful Interaction Design Lab is a multidisciplinary gathering of researchers at the crossroads of the newly-expanded fields of play design and interaction design. Play has expanded beyond games and continues to become more embedded in everyday life and spaces. Interaction is more playful than ever. Design improves effective and engaged interactions. A multiplicity of new experiences, spaces, and understandings has become available. Play, Design, and Interaction are closer to indistinguishable than ever, and hold significant implications in affective computing, artificial intelligence, procedural content generation, adaptivity, embodiment, design research, and the internet of things. These are all aspects of the future of interaction, which warrant a renewed “future-proofing” interdisciplinary research perspective as a multiplicity of new experiences, spaces, and understandings have become increasingly available. The Playful Interaction Design Lab aims to study the new expanded realities of these topics, harness the potential of their heightened interconnectedness for novel social and cultural interventions, and find new, relevant expressions in an ever-more playful, embodied world. We are interested in building theoretical and empirical bridges between virtual playful experiences and how players feel and interact with said virtual experiences from an emotional and interactive perspective (T.F.5). Moreover, we intend to develop a relevant model for agency in games, opening up further avenues of research in media and research in games in a range of applications.

One FCT RAE's special negative remark concerned the internationalization outlook of HEI-Lab's researchers. In Figure 2, are displayed the international indicators grouped in 4 categories: serving in Editorial Boards, as Guest Editors, in International Committees and in Programme Committees (PC) and review duties, totalizing 178 international participations (more than 4 per researcher).

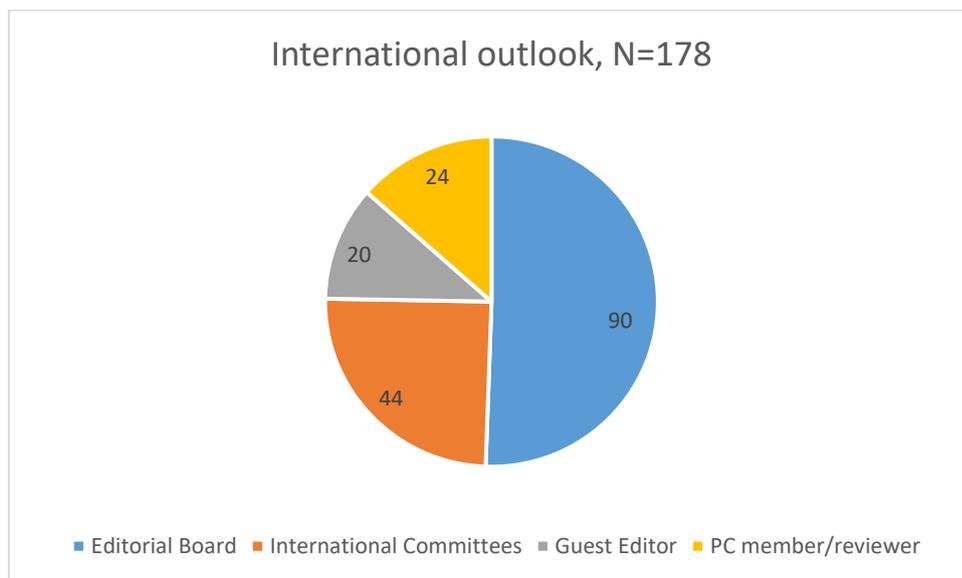


Figure 2. HEI-Lab's internationalization outlook

Figure 3 mirrors unit's evolution from the 2020-2021, reflecting a 100% increase on internationalization indicators.

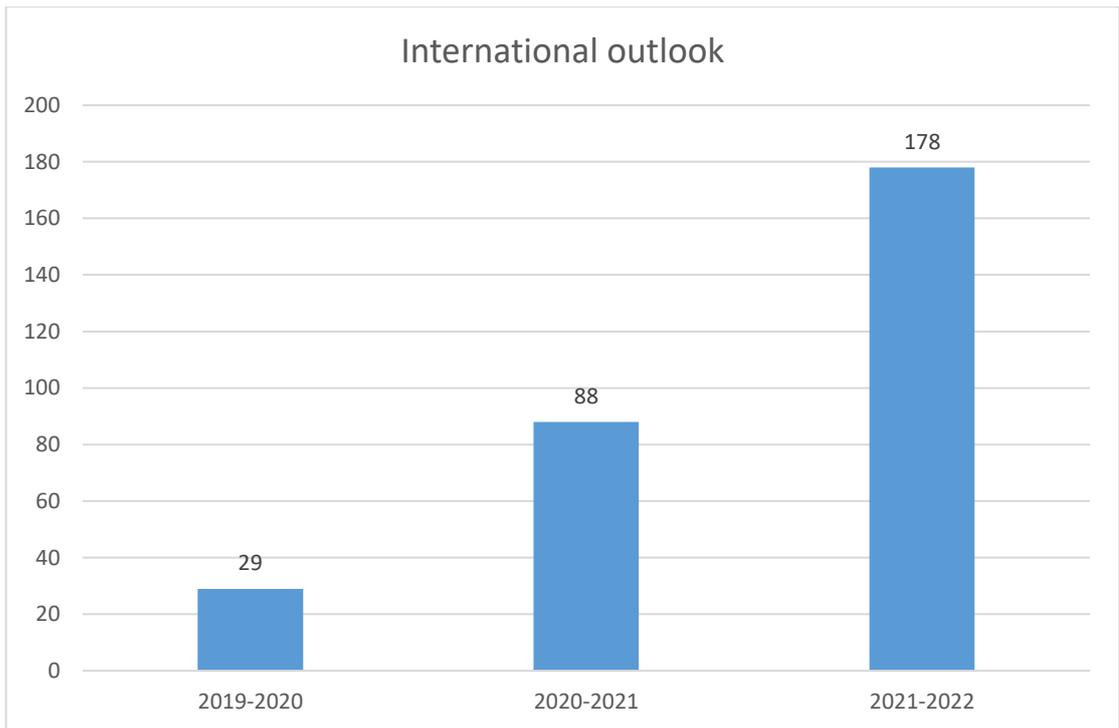


Figure 3. Evolution of HEI-Lab's internationalization indicators.

## 2.1- Candidaturas e Propostas financiadas

HEI-Lab is now running 34 funded projects, 8 from FCT, 11 from EU and 11 from internal funding (Figure 4).

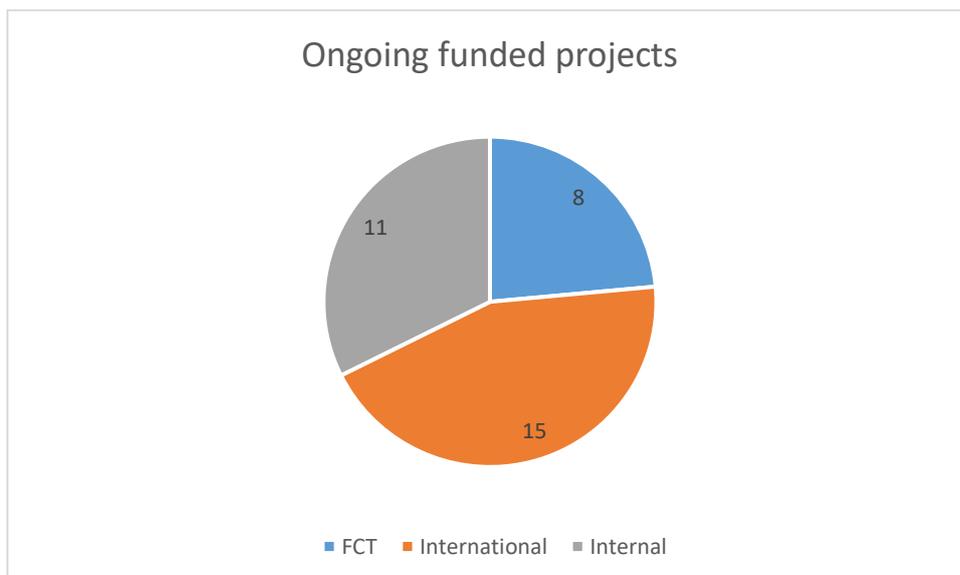


Figure 4. Funded R&D proposals.

... representing an increase of 40% from 2020-2021 (Figure 5).

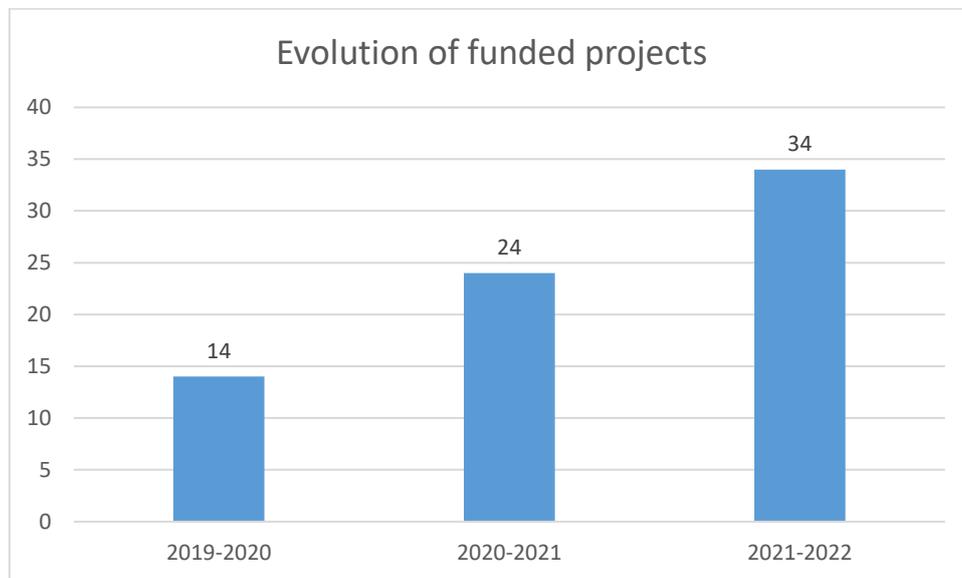


Figure 5. Evolution of R&D funded projects.

## 2.2- Publicações

HEI-Lab researchers published 95 papers in indexed scientific journals, a 67% increase from 2020-2021. See Figure 6.

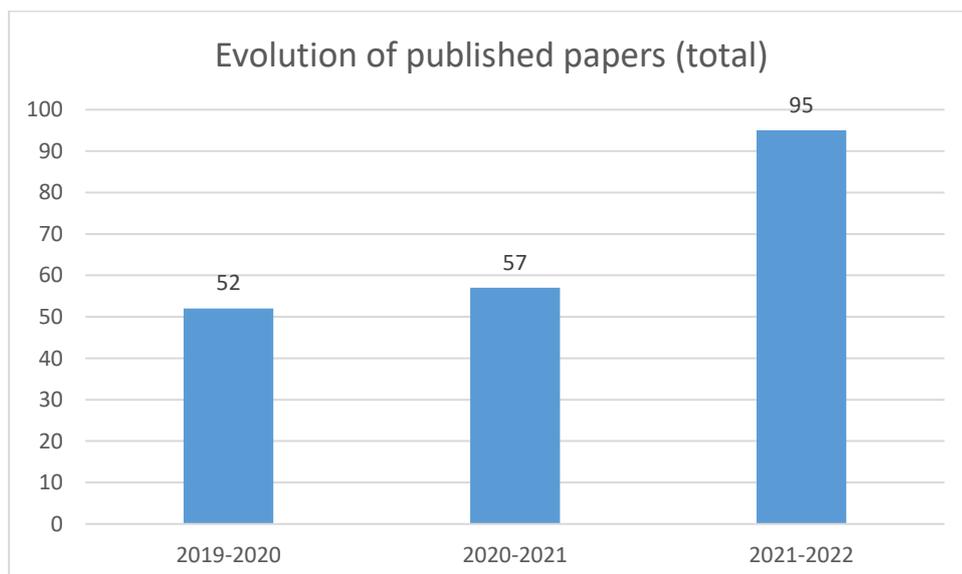


Figure 6. Evolution of published papers.

84.21% of the papers were published on Q1 or Q2 journals, a 40% increase form 2020-2021 (see Figure 7).

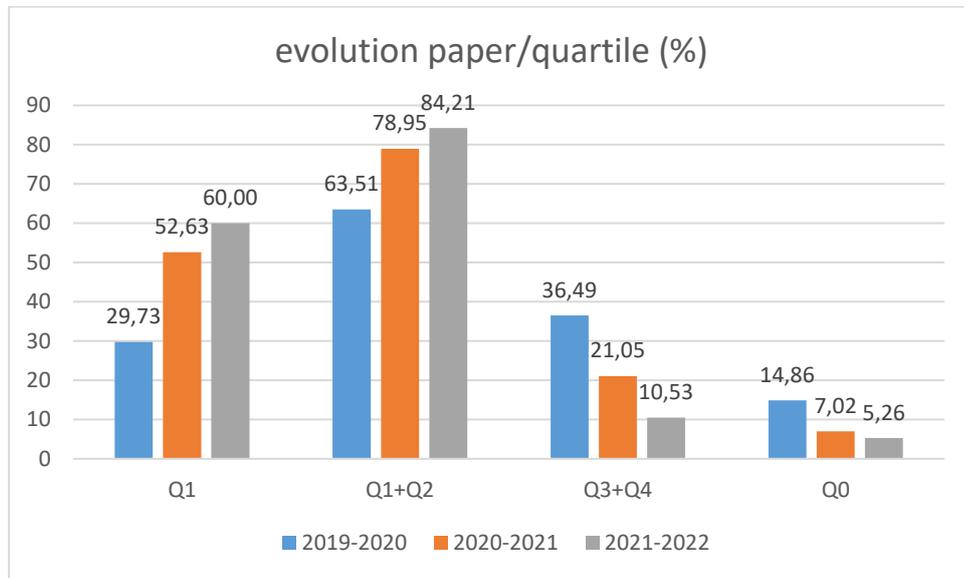


Figure 7. Evolution of % of papers per Quartile.

From the previous cycle, published papers increased on Q1 and Q2 journals, decreasing on Q3 and Q4.

Now, the ratio of published papers per researcher is of 2.26, a 30% increase from 2020-2021 (Figure 9).

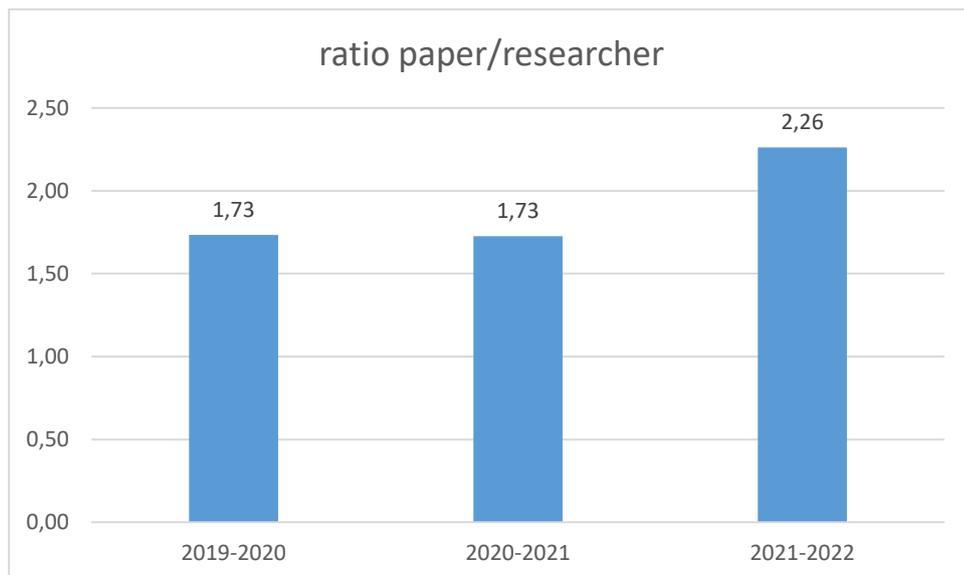


Figure 9. Evolution ratio of published papers per researcher.

When book chapters and conference papers are included, HEI-Lab researchers have produced 137 publications (Figure 10).

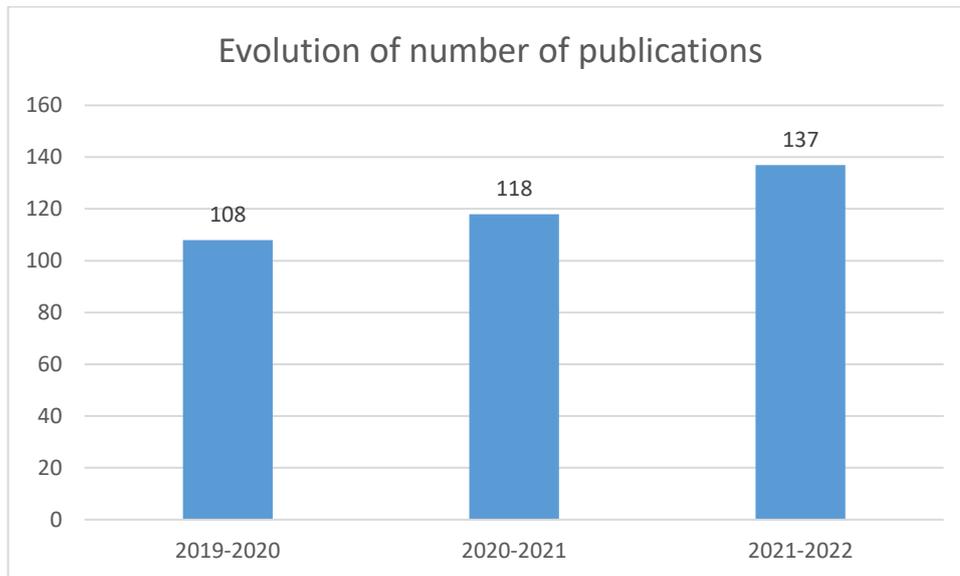


Figure 10. Evolution ratio of publications.

## 2.3- Patentes e Modelos de utilidade

Inserir breve descrição relativa à submissão e registo de patentes e modelos de utilidade pela UI&D.

Table 4. Patents.

Indicador	Número	Observações
Patentes	N/A	
Modelos de utilidade	N/A	

## 2.4- Eventos de reforço e dinamização de atividades de I&D

During this period, HEI-Lab organized 26 Scientific Meetings (<https://hei-lab.ulusofona.pt/scientific-meetings/>).

... and set a new agenda: UCORE – Ubiquitous, COmposite and REsponsive Agenda

New researchers imply new lines of research, and new collaborations, pushing further the already collaborative and diverse research panorama of HEI-Lab., and contributing to the new HEI-Lab’s R&D agenda UCORE. Technological evolution brought about new ways of modelling and capturing human behaviour. Digital environments, such as Virtual Reality

(VR), can be adapted to incorporate therapists/researcher/participant's requirements and software and hardware can be used to monitor and record multiple sets of data on participant's performance and behaviour. Thus, technology seems to be mature enough to give birth to assessment and intervention frameworks that can replicate close to real settings that trigger human behaviour that can be recorded and studied via data from an extensive array of sources (psychophysiology, eye tracking, electroencephalography, emotion recognition, among many others). Merging rich multi contextual meaningfulness stimuli (i.e. VR) with composite multi sensing sets of data is UCORE key objective. As such, UCORE unfolds all the way through several activities that comprehend designing and developing a multi sensing framework that will record, analyse, and integrate data from a network of measures. These data will be fed into a digital platform (i.e. VR) that will adapt accordingly, providing a contextual environment that moulds into participant's profile and performance. The complexity and novelty is already under evaluation through three experimental studies where several assessment measures available at HEI-Lab are in use.

### 2.5- Quadro de Promoção de Investigadores

HEI-Lab researchers' evaluation is conducted at the end of each academic year based on production indicators, chiefly number of paper published in Q1|Q2 outlets and on R&D submitted/granted and on their involvement on unit activities, mainly its internal R&D projects and participation on HEI-Lab scientific events. The outcome of this evaluation is expressed in the form of funds available for each researchers to spend in R&D activities.

## 2.6- Reuniões

Besides the scientific meetings that take place every three weeks (<https://hei-lab.ulusofona.pt/scientific-meetings/>), HEI-Lab held each year two scientific board meetings and 10 board meetings. Every Wednesdays, a meeting with HEI-Lab developers take place with the participation of several researchers. This meeting covers all development and application of the ongoing projects in the unit that required the intervention of HEI-Lab's developers (Table 5).

Table 5. Developers' Meetings.

Project Name	State	Proponent	Manager	Progress	Work Load	Days Left	Deadline	Folder Link
<a href="#">Automotive</a>	Finished	Pedro Gamito	Filipe Pinto	100%	73	-31	20/5/21	<a href="#">Folder Link</a>
<a href="#">VREthics</a>	Finished	Pedro Gamito	Fábio Dias	100%	32	-30	21/5/21	<a href="#">Folder Link</a>
<a href="#">Conformity</a>	Finished	Ágata Salvador	Filipe Pinto	100%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">CovFear</a>	Finished	Ricardo Pinto	Marco Conceição	100%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">Firefighters</a>	Finished	Ricardo Pinto	Rodrigo Pinheiro	100%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">SLB 1</a>	Data Collection & Analysis	Pedro Gamito	Filipe Pinto	100%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">EmoRec</a>	Data Collection & Analysis	Mauro Bianchi	Shivani Atul	100%	3	-41	10/5/21	<a href="#">Folder Link</a>
<a href="#">LadyInDist</a>	Data Collection & Analysis	Pedro Gamito	Shivani Atul	100%	11	-41	10/5/21	<a href="#">Folder Link</a>
<a href="#">Dissonance</a>	Data Collection & Analysis	Ágata Salvador	Shivani Atul	100%	8	-41	10/5/21	<a href="#">Folder Link</a>
<a href="#">Virtual Landscapes</a>	Finished	Ana Loureiro	Shivani Atul	55%	51	-41	10/5/21	<a href="#">Folder Link</a>
<a href="#">TypeD</a>	Finished	Bárbara Gonzalez; Isabel Santos	Fábio Dias	86%	71	-38	13/5/21	<a href="#">Folder Link</a>

<a href="#">Care4Myself</a>	Active Development	Ana Beato	Marco Conceição	56%	34	-20	31/5/21	<a href="#">Folder Link</a>
<a href="#">DARTE</a>	Finished	Jorge Oliveira	Diogo Sousa	24%	752	70	1/9/21	<a href="#">Folder Link</a>
<a href="#">Bidirectional V</a>	Finished	Andreia Machado	Filipe Pinto	0%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">ACT</a>	Active Development	Ágata Salvador	Shivani Atul	2%	82	-31	20/5/21	<a href="#">Folder Link</a>
<a href="#">VRMnesis</a>	Finished	Pedro Gamito	Micaela Fonseca	71%	7	-21	30/5/21	<a href="#">Folder Link</a>
<a href="#">CBT Digital SR</a>	Active Development	Ana Beato	Fábio Dias	33%	46	70	1/9/21	<a href="#">Folder Link</a>
<a href="#">VRACT</a>	Active Development	Ana Beato	Fábio Dias	92%	39	70	1/9/21	<a href="#">Folder Link</a>
<a href="#">DigitalNudging</a>	Data Collection & Analysis	Rita Farias	Fábio Dias	63%	8	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">VRinvisuais</a>	Data Collection & Analysis	Joana (Jorge Oliveira)	Lucas Viana	89%	18	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">ALERRT IDEAL</a>	Finished	Pedro Gamito	Marco Conceição	0%	1	70	1/9/21	<a href="#">Folder Link</a>
<a href="#">Druida</a>	On Hold	Micaela Fonseca	Pedro Neves	0%	10	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">Adaptive</a>	On Hold	Phil Lopes	Rita Rosa	0%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">Com@Rehab</a>	On Hold	Micaela Fonseca	Proponent Name	0%	1	99	30/9/21	<a href="#">Folder Link</a>

<a href="#">Norte2020</a>	On Hold	Micaela Fonseca	Proponent Name	0%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">SLB 2</a>	On Hold	Pedro Gamito	Proponent Name	0%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">Selective Att</a>	On Hold	Ágata Salvador	Filipe Pinto	0%	8	70	1/9/21	<a href="#">Folder Link</a>
<a href="#">AlcoVR</a>	On Hold	Pedro Gamito	Proponent Name	0%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">Depression P</a>	On Hold	Pedro Gamito	Fábio Dias	0%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">VROT</a>	Active Development	Fábio Dias	Fábio Dias	0%	78	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">Laboratorio</a>	Active Development	Jorge Oliveira	Shivani Atul	0%	1	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">Tools</a>	Active Development	Pedro Gamito	Phil Lopes	3%	91	99	30/9/21	<a href="#">Folder Link</a>
<a href="#">Logistica</a>	Active Development	Micaela Fonseca	Phil Lopes	38%	39	10390	1/5/50	<a href="#">Folder Link</a>

## Capítulo III- Autoavaliação

As it happened with the last exercise, the 2021-2022 plan was executed with positive deviations. In all the assessed R&D production indicators, an increase was observed. The researchers doubled their exposure in several international fora, obtained 40% more grants, and produced 67% more scientific papers (84% of which in Q1|Q2 outlets) than in the previous cycle. The ratio paper/researcher is now of 2.26. Also, HEI-Lab organized 26 scientific meetings where research ideas and projects were presented and discussed within the unit's community, composed by both national and international researchers. Since 2021, the board of directors includes a junior researcher and HEI-lab's labs meet monthly to discuss and organize proposals and joint papers' submissions. A particular focus has been given to cross-seeding between labs.

### 3.1- Análise SWOT

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>- Interdisciplinary focus of HEI-Lab</li> <li>- Researchers have diverse research interests in psychology</li> <li>- Early career researchers with promising track records</li> <li>- Scientific production and internationalization have been increasing</li> <li>- Access to different clinical populations gained from partnerships with community institutions</li> <li>- Most researchers are advisors in different PhD programs</li> <li>- Diversified scientific knowledge of the members allows the submission of projects in various areas.</li> <li>- Member's availability and ease to add value to projects (development; applications)</li> <li>- Reimbursement of members' expenses is done quickly</li> <li>- Career Peak Researchers</li> <li>- Support and Motivation for Funding Submissions and Projects</li> </ul>	<ul style="list-style-type: none"> <li>- Members contribute asymmetrically to HEI-Lab's publication ratio</li> <li>- HEI-Lab members spend a lot of time in procedures associated with internationalization - congresses (registration of events, booking travel and accommodation). In comparison to other research centers, it would be much more profitable to have 1 person organizing all these processes</li> <li>- The impossibility of accumulating the scientific productivity prize (maximum 1400 euros) for the following year, makes it impossible to attend events in the USA due to its high cost</li> <li>- Scarce resources for project development and data collection in Porto</li> <li>- Absence of Communication and Dissemination Strategy</li> <li>- Needs exceed available physical facilities</li> <li>- Lack of available time for research</li> </ul>

<p>-Strong Junior Researchers and Grantees</p> <ul style="list-style-type: none"> <li>- Expanding equipment</li> <li>- Hybrid group of researchers from different areas (Psychology - all fundamental areas; data analysis; engineering; videogames; design etc)</li> <li>- Organization in small Labs, according to the area of expertise of group members (, allowing to develop projects better defined, under the general scope of HEI-Lab.</li> <li>- Well-equipped Laboratory</li> <li>- National + International partnerships</li> <li>- Diversity of scientific domains, experiences and skills</li> <li>- Diverse research methodologies and complementary knowledge</li> <li>- Link to clinical practice and intervention projects</li> </ul>	<ul style="list-style-type: none"> <li>- Misuse of development resources</li> <li>- "Young" research centre with strong growth in a short period of time (resource management problems: equipment, human resources).</li> <li>- Limited internal funding.</li> <li>- Laboratory's external communication strategy (e.g., social media, European portals for dissemination)</li> <li>- Researchers overloaded with teaching tasks</li> <li>- Geographic Distance between Oporto and Lisbon researchers</li> <li>- Available time for research</li> <li>- Lack of prior collaborating experience</li> <li>- Lack of funded projects involving the team's members</li> <li>- Lack of training on more complex statistical analysis</li> <li>- Lack of engagement due to few presential meetings and/or compatible schedule</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>- Facilities and available equipment in Lisbon</li> <li>- Access to a development team with expertise in virtual reality</li> <li>- Attendance to HEI-Lab scientific meetings</li> <li>- Possibility of holding group meetings remotely</li> <li>- Local partnerships and study contexts</li> <li>- PhD Students</li> <li>- Multidisciplinary cross-training</li> <li>- New national and European master's degrees</li> <li>- Consolidation</li> <li>- The centre focus: research covering several areas with the digital medium as the common ground.</li> </ul>	<ul style="list-style-type: none"> <li>- The scope of partnerships is restricted mainly to national institutions</li> <li>- There is a lack of formal partnerships with universities/research team (national/international)</li> <li>- Lack of external funding from research projects</li> <li>- Low mobility to international research institutions</li> <li>- Lack of full-time researchers (most researchers are in academic careers)</li> <li>- The high frequency of submissions to different calls and several simultaneous tasks (administrative, teaching) of the members lead to a greater weariness, since it is a small group.</li> </ul>

<ul style="list-style-type: none"> <li>- First (and unique) centre in Portugal with this focus (human resources and technological facilities - e.g. Virtual Reality)</li> <li>- Given the hybrid nature of its human resources, greater capacity to attract European funding, namely by integrating competitive multidisciplinary projects</li> <li>- Submission to National + International applications for funding</li> <li>- Cooperation on preparation and submission of papers</li> <li>- Co-Supervision of thesis and dissertations</li> </ul>	<ul style="list-style-type: none"> <li>- Distance between campuses and multiple schools</li> <li>- Multidisciplinary outputs difficulties</li> <li>- Project tempo</li> <li>- Low rotativity of data collection for the different studies: 1) lack of rooms in the laboratory; 2) difficulty in attracting participants to studies conducted in the laboratory.</li> </ul>
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## Capítulo IV- Propostas de melhoria

Table 6. Proposals for improvement.

Âmbito	Melhoria(s) a implementar	Ação (es) a desenvolver	Grau de prioridade (baixo, médio, alto)	Tempo de implementação - calendarização	Indicador(es) de implementação	Resultados Esperados
Contracts	Full time researchers	Hiring (internal + CEEC)	High	2022	N of contracts	2
Funding	Research + Industry Grants	Apply to Horizon Europe and national envelopes	High	2021 - 2023	N of submissions/N grants	15 submissions/year
Research	Teamwork	Increase cross-seeding between labs	High	2022 - 2023	N of cross-seeding papers and submissions	
Contracts	Developers	From internal and external grants, hire senior developers	Medium	2023-2024	N of developers	2 developers
Research	Increase ratio paper/researcher	Cross-seeding projects	High	2022-2023	Joint papers submission	3
Mobility	Increase in&out mobility	Discussion of university's measures to promote mobility	High	2022-2023	N of mobilities	10
Advanced training	Masterclasses + workshops	Plan already devised (Table 7)	High	2022-2023	N of masterclasses and workshop	>20

(\*) matriz a usar

Table 7. Advanced training.

	June 2022	July 2022	September 2022	October 2022	November 2022	December 2022	January 2023	February 2023	March 2023	April 2023	May 2023
<b>Career Development Courses</b>		<b>Writing a scientific paper*</b> Andrew Moore	<b>Writing Scientific Proposals HORIZONS -Health Cluster</b> Isabel Carvalho Oliveira Agência de Investigaçã o Clínica e Inovação Biomédica	<b>Grant-Writing Skills for Early-Career Researchers*</b> Julia Staykova-McKinnon		<b>Researcher Management and Leadership Training*</b> Anne Libby		<b>Science communication for researchers</b> Ana Carvalho (UCoimbra)	<b>Creativity in Research Introductory Session</b> <b>How can creativity help you do more innovative research?*</b> Anja Svetina Nabergoj		<b>Research Methods for studying social processes in clinical settings</b> Manuel Muñoz
		<b>Meta-analyses Training</b> Rita Passion	<b>Establishing Networks for Consortiums in European Calls</b> Joana Carvalho	<b>Applied Psychophysiology: choosing measures (applied examples)</b> Pedro Joel Rosa & Jorge Oliveira	<b>Analysing Psychophysiology: analysing measures (applied examples)</b> Pedro Joel Rosa & Jorge Oliveira	<b>Guidelines for Data Protection in Research with Children and Youth*</b> Inês Jongenelen	<b>Structural Equation Analyses*</b> Mariana Moura-Ramos		<b>Designing and conducting Longitudinal Research</b> Raquel Costa	<b>Advanced Qualitative Methods</b> Dulce Pinto	<b>Work-Family Balance and Self-care for Researchers</b> Helena Martins (Nova SBE)

<b>Conference s</b>	<b>Conference Academic Year Opening ULP</b>	Masterclass 1 Óscar Gonçalves Eugénia Fernandes	Masterclass 5 Rosa Baños	Masterclas s 9 Chiara Ionio	Masterclass 11 Erick Janssen	<b>Conferenc e</b> Jim Blascovich	<b>Conferenc e</b> José Gutiérrez Maldonad o	<b>Conferenc e</b> Pim Cuijpers
	<b>Conference Academic Year Opening</b>	Masterclass 2 Gehrad Andersson	Masterclass 6 Bruce Chorpita	Masterclas s 10 Helena Moreira	Masterclass 12 Rizzo			
	Mariano Alcañiz	Masterclass 3 Alytia Levendosky	Masterclass 7 Sheree Toth		Masterclass 13 Miguel Gonçalves			
		Masterclass 4 Michelle Craske	Masterclass 8 Armando Machado					

<b>PhD Students Training</b>	<b>Worksho p Scientific Writing Skills (8h)</b> Sérgio Carvalho	<b>Worksho p Planning Scientific Project</b> Tiago Pinto	<b>Workshop Research Ethics</b> Ana Loureiro	<b>Workshop Online Data Collection with Qualtrics</b> Joana Cabral	<b>Workshop Selectionin g the right Journal for your paper</b> Diogo Lamela	<b>Workshop science communicatio n and dissemination</b> Patrícia Pascoal
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## Conclusão

HEI-Lab keeps on increasing its R&D production indicators. During 2020-2021, all evaluation criteria that were set by FCT to evaluate the unit were addressed and its indicators were improved.

A) Quality, merit, relevance and internationalization of the R&D activities of the Integrated Researchers in the R&D Unit Application. The internationalization outlook, as measured by participation in Editorial Boards and International Committees, doubled from the last cycle.

(B) Merit of the team of Integrated Researchers. The number of papers (+67%) and of grants funded (+40%), also increased. Nevertheless, an additional effort must be made to capture Horizon Europe funding schemes. 84% of papers were published in Q1|Q2 outlets.

(C) Appropriateness of objectives, strategy, plan of activities and organization. HEI-Lab, although having stick to its founding objectives, has adapted its strategy, plan of activities and organization towards FCT evaluation results and team's profile. In 2019 HEI-Lab gave birth to three R&D lines that better reflect team's R&D activities, and, in 2021, Thematic Labs were created to better organize team's work. HEI-Lab strategy still leans on providing its researchers with freedom to conduct their R&D activities in the field of their choice, but strongly encourages them to take advantage of HEI-Lab's digital footprint.

Nevertheless, HEI-Lab's strongest challenge is to preserve its members and to increase the number of full-time researchers.

## Nota informativa

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