# RESEARCH PROJECT FORM

## 1. General data

1.1. Principal researcher name:
Hande Ayanoglu

1.2. Email: hande.ayanoglu@universidadeeuropeia.pt

1.3. Duration of the project: 12 months
Start date: 05/01/2023 End date: 05/01/2024

1.4. Global budget

| Item | Estimated value (€) |
|---|---|
| Human resources | |
| Missions (international events) | 2.300,00 € |
| Instruments, equipment and/or materials | 1.195,00 € |
| Acquisition of goods and services | |
| Subcontracting | 1.500,00 € |
| Registration of models, designs and patents | |
| Demonstration, divulgation and dissemination (publications) | |
| Others | |
| Total | **4.495,00 €** |

1.5. Budget required to Institution:

| Item | Estimated value (€) |
|---|---|
| Human resources | |
| Missions (international events) | 2.300,00 € |
| Instruments, equipment and/or materials | 1.195,00 € |
| Acquisition of goods and services | |
| Subcontracting | 1.500,00 € |
| Registration of models, designs and patents | |
| Demonstration, divulgation and dissemination (publications) | |
| Others | |
| Total | 4.495,00 € |

## 2. Project details

2.1. Title (provisional):

User Experience of Occupancy Detection System

2.2. Scientific field of the project:

Design and Computer Science

2.3. Is the project a partnership with other R&D centers? (if yes, please mention the name of the centers)

UNIDCOM/IADE

2.4. If the project directly contributes to the elaboration of a master or doctoral thesis, please say the name and number of the student, and the course he/she is attending..

N/A

2.5. Research team:

- Name: Hande Ayanoglu
- Academic degree: PhD
- Project role[1]: PI
- ORCID: 0000-0001-8146-2941
- Affiliation: UNIDCOM/IADE

- Name: Edirlei Lima
- Academic degree: PhD
- Project role[1]: Researcher
- ORCID: 0000-0002-2617-3394
- Affiliation: UNIDCOM/IADE

- Name: André Sabino
- Academic degree: PhD
- Project role[1]: Researcher
- ORCID: 0000-0002-7954-3694
- Affiliation: IADE

**PLEASE NOTE:** In the case you are hiring funded candidates (with a scholarship), add a section identifying the desired profile (max. 1000 characters).

There is a necessity for student(s) who has/have:

Background in computer science and/or design field:

[1] *E.g.: Principal researcher, assistant, expert, consultant.*

2.6. Is it a multidisciplinary project? (if yes, please mention the related disciplinary areas)

Yes: Design and Computer Science

2.7. Does the project involve partnerships with entities outside the National Scientific and Technological System (e.g., companies, NGOs)? (if yes, please mention the involved entities)

N/A

2.8. Does the project includes the use of any of the laboratories of IADE, Universidade Europeia, IPAM Lisboa and/or IPAM Porto (e.g., Media-Lab, 3D Lab, Print Lab, Lab. Psicologia, IPAM LAB, etc…)?

Yes: ◉ No: ○

If yes, please describe the details of its involvement:

UX.Lab - UNIDCOM/IADE

2.9. Does the project provide a design, model or patent registration?

N/A

2.10. Project contributions to your teaching unit strategy.

The project intends to attract students, in the master degree, who are interested in the research project. It is intended to involve them in the research project so that they can get advantage of it to write their dissertation.

## 3. Technical and scientific description of the project

### 3.1. Summary (max. 2000 characters)

This project evaluates an occupancy detection system in a coworking space, focusing on user experience, comfort, and data quality. It involves mapping the space and selecting chairs to be monitored, testing different types of sensors, and implementing a system to receive and store data. A pilot study evaluates the impact of sensors on user comfort and data quality, and a mobile app is developed to visualize occupancy data in real-time. The final phase evaluates user experience with the system and the mobile app. Participants are selected from IADE staff, and their personal information is kept confidential. The project is divided into five phases: Mapping the Environment, Set-up the Experiment, Pilot Study, App Development, and User Experience.

### 3.2. 3.2. Aim and relevance of the project (max. 1500 characters)

The aim of this project is to investigate the occupancy of co-working spaces using sensors embedded in seats, with a focus on ensuring a good user experience for occupants. The project seeks to understand the preferences of remote workers for co-working spaces and how these preferences are related to attributes such as location, price, environment, and others. By using sensors to measure occupancy, the project aims to provide insights into how co-working spaces can better meet the needs of their users. The project is relevant in the context of the increasing number of independent workers and the rise of new types of workplaces in the digital age. Understanding the preferences of remote workers for co-working spaces can help inform the design and

### 3.3. 3.3. Literature review (max. 20.000 characters with spaces)

The evolution in new ways of communication have led to changes in society. The advances of the internet have provided people with information from various places with fewer barriers. Today, people, goods, and information are moving quickly and easily to all parts of the globe (Frand, 2000). The tendency is the daily use of communication devices, such as smartphones and mobile internet, along with the growing need for information while “on the go”. The mobile technologies allow a high degree of interaction between people, places and even things. According to Nascimento (2015), since the birth of the internet, the huge growth in new technologies have put on the market a legion of mobile devices that can allow the access of the internet, such as notebooks, netbooks, tablets, smartphones, and many others. As a result, the personal computer is no longer the primary source of web browsing and internet has become easily accessible (Nascimento, 2015).
The continued advancement of digital technology and the rise of the gig economy led to the growth of new ways of working1 (Hannam et al., 2013), the increasing need for flexibility (Gibson font-style:normal;font-weight: normal">umber of self-employed workers, and the increasing use for public spaces as a workplace (Weijs-Perree et al., 2019). All these, along with the growth in the use of new technologies, decreased and changed the need for office space (Weijs-Perrée et al., 2019). These changes blurred the distinction between where a person lives (i.e., first place or home), where a person works (i.e., second place or office) and where a person spends time in between (i.e., third place) (Lee, 2018). Oldenburg (1989) defined this third place as a “generic designation for a great variety of public places that host the regular, voluntary, informal, and happily anticipated gatherings of individuals" and listed public places like cafés, coffee shops, community centres, general stores, and bars as exemplary third places. However, as mentioned, different changes blurred this distinction, as nowadays, cafés and coffee shops are loosely associated with work environments due, to the accessibility of tables and limitless coffee. (Lee, 2018). Aside from this, there are other advantages like fast WIFI and space to work for the cheap price of a cup of coffee. Flexible workers often choose to work at such third places that are neither their homes nor offices (Lee, 2018). Independent consultants, short-term contractors, and freelancers creating portfolios of work in lieu2 of full-time jobs, keep transforming the way we work by disconnecting work from the office (Mulcahy, 2017).

With new ways of working and the increased number of independent workers it is possible to witness the rise of new types of workplaces (emerging as third places) to work in the digital age. Mulcahy (2017), refers to Coworking spaces as the optimum third places to work, since they can combine the best of both first and second places (i.e., working at home and traditional office), offering “control, autonomy, and scheduling flexibility of remote work, combined with optional access to the structure and community of an office if and when the worker wants it”. These spaces have risen in prominence globally along with the growth of the gig economy (Cheng, 2018), and gain popularity over the past years (e.g., Huwart et al., 2012; Moriset, 2013; Parrino, 2015). Their

### 3.4. Methodology (max. 5.000 characters)

This project involves the evaluation of an occupancy detection system using sensors placed in chairs of a coworking space, with a focus on the user experience, comfort, and quality of the data collected. Additionally, a mobile app will be developed to visualize the space occupancy in real-time, and its user experience will also be evaluated.

The project is divided into five phases: (1) Mapping the Environment; (2) Set-up the experiment; (3) Pilot Study; (4) App Development; and (5) User Experience.

### 3.5. Research plan and timeline[2] (max 15.000 characters with spaces)

The project has 4 Work Packages (WP).

WP 1: Project Management: The main goal of WP1 is to facilitate the successful implementation of the project.

Description of work that is broken down into tasks:

Task 1 (Month 1)-Set-up of project management boards: Establish the Management roles; Contact and establish the Advisory Board; Set meeting dates; Provide documents templates.

Task 2 (Month 1 to Month 12)-Development and implementation of a dissemination of the project: Set up a comprehensive dissemination plan with the support of the partners; Identify the relevant dissemination target groups; Prepare promotional materials (leaflet, poster, video); Identify dissemination channels (scientific publications, conferences and seminars, social network and media).

Task 3 (Month 1 to Month 2) - Financial management: Management and monitoring of payments and transfers to partners; Cost and time management by maintaining the project budget, and managing the allocation of resources (human, financial) and accounting.

Task 4 (Month 1 to Month 12)-Coordination: Monitor and report of the research progress, the communication strategy, and the consolidation of the project's elements and deliverables.

### 3.6. Project expenses (with justification) (max. 1000 characters) – see the section "Global Budget"

To set-up the experiment, the project needs the following hardware components which cost: 1.195,00 €

10 units of Arduino (500 €) + A kit of Jumper Wire for Arduino (20 €) + Arduino Components Kit (50 €) + 20 Rechargeable Battery (200 €) + 3 Battery Charger (50 €) + 15 contact sensors (45 €) + 15 light sensors (30 €) + 15 ultrasonic proximity sensors (75 €) + 15 infrared proximity sensors (75 €) + 15 capacitive proximity sensors (75 €) + 15 passive infrared sensors (75 €)

### 3.7. References (APA, v7) (max. 20 references)

[2] Please specify the *Work Packages*.

## 4. DISSEMINATION OF RESULTS

4.1. Describe a plan of action regarding communication and dissemination of scientific activity and its results (máx. 2000 characters with spaces):

It is expected that the research team will participate at the main international conferences in the area, to have contact with the latest design approaches, methodologies, and the latest technology advances. A total of 2 missions will be located to disseminate the User Experience vs system as well as the methodologies to visualize the data.

Action 1 - Participation to International Conference

HCI 2024_International conference on Human Computer Interaction conference: The dissemination of the User Experience with the system (location of sensors, visual elements the system have, knowledge of data collection)

Action 2 - Participation to International Conference

## 5. OUTPUTS

5.1. Expected outcomes:

| Output | Number |
|---|---|
| A - Publications | |
| Books | |
| AArticles published in international journals | |
| Articles published in national journals | |
| B - Communications | |
| Communications in international scientific events | 2 |
| Communications in national scientific events | |
| C - Reports | |
| D - Organization of seminars and conferences | |
| E - Advanced courses | |
| PhD thesis | |
| Master thesis | 1 |
| Others | |
| F - Models | |
| G - Computational applications | |
| H - Pilot installations | |
| I - Laboratory prototypes | |
| J - Patents | |
| K - Others | |

## 6. Responsibility

6.1. Is the project directly associated to any Sustainable Development Goals (SDGs) and/or 2030 Agenda? (if yes, please mention which – see the list below)


6.2. Was the project submitted to an evaluation request by the Ethics Committee (if yes, and if you have received a favorable opinion, attach a copy of the opinion)

N/A

# APPENDIX

**Evaluation Criteria (Academy of Finland)**

## 1. QUALITY OF RESEARCH DESCRIBED IN THE PLAN

1.1 Scientific quality, novelty and innovativeness of the research (sub-rating scale from 1 to 6)

Significance of the project; objectives and hypotheses; ambitiousness and state of the art of objectives (possible novel concepts and approaches or development across disciplines); scientific impact of the research; potential for breakthroughs or exceptionally significant outcomes; etc.

## 2. IMPLEMENTATION

2.1. Feasibility of the project (sub-rating scale from 1 to 6)

(bearing in mind the extent to which the proposed research may include high risks); materials, research data and methods; human resources and management of the research tasks; research environment including research infrastructures; identified potential scientific or methodological problem areas and mitigation plan; etc.

2.2. Human resources, expertise and collaborations (sub-rating scale from 1 to 6)

Competence and scientific expertise of applicant (in case of consortium: applicants) in terms of project implementation; complementary expertise of the team (i.e. project personnel directly working/funded for the project), including appropriateness and sufficiency for the proposed project; adequateness of human resources in terms of project implementation; contribution of national and/or international research collaborators and their environment to the success of the project (i.e. collaborators engaged in the project with their own funding); significance of planned mobility for implementation of research plan and researcher training; etc.

## 3. SUMMARY ASSESSMENT AND RATING

3.1 Main strengths and weaknesses of the project, additional comments and suggestions (no numerical rating)

Please list major strengths and weaknesses of the application as well as any additional comments.
Attention will be paid to 'responsible science' and 'societal effects and impact of the project'

## 4. OVERALL RATING (Rating from 1 to 6)

Please note that the final rating should not be a mathematical average of the sub-ratings. For example, the application should not be penalised if it has a slight weakness in one evaluation item that is later strengthened in another item (e.g. lack of some expertise in a local team but compensated through international collaboration).