
Overall Vision and Aim

The seminar focuses on the intersection of social science (cybersociology) and computer science (requirements engineering), aiming to provide a comprehensive and well-structured approach for analyzing Cyber Physical Social Systems design issues, with a focus on the theoretical underpinnings and methodological rigor.

In particular, the seminar emphasizes on the integration of cyber-physical systems, social informatics, and smart technologies to enhance the preservation, management, and dissemination of cultural heritage.

Cyber Physical Social Systems (CPSS), such as smart cities, smart healthcare and smart cultural heritage, constitute a new cognitive object of study that requires further analysis in order to understand its impact on the different social and organizational frameworks. CPSS are complex, heterogeneous systems of systems, consisting of digital structures (e.g., software, data) that interact with physical (e.g., sensors, devices) and social attributes (e.g., persons, organizations), facilitating human endeavours. The boundaries of these systems are not clear and difficult to clarify as people are not only the stakeholders of the systems, but also the system's constituents. As a result, CPSSs not only extend the definition of Cyber Physical Systems (CPS) to the intangibles of the relevant social context, but also, challenge dominant social power structures and influence social practices. Consequently, the successful incorporation of CPSS into an organisation is influenced by a number of non-technical factors, including social culture and norms, personal beliefs and attitudes, and informal institutions of social and cultural interactions. Therefore, studying, analyzing CPSS within the domain of smart cultural heritage, will highlight the interdependencies among social and technical requirements in order to design a solution that addresses the needs of all the involved stakeholders

Learning Objectives:

- Understand the concept of cyber-physical social systems (CPSS) and their application in cultural heritage.
- Explore the role of smart technologies in preserving and promoting cultural heritage.
- Analyze case studies of CPSS implementations in cultural heritage.
- Develop strategies for integrating CPSS in cultural heritage projects.

Methodology

The pedagogic method of **job shadowing between teaching staff** will be employed to foster collaboration, enhance teaching methodologies, and provide students with a comprehensive understanding of the subject matter through real-world examples and case studies.

Outcome

This approach emphasizes interdisciplinarity by bringing together experts and students from diverse academic and cultural backgrounds. It fosters meaningful engagement with academic communities and enhances the societal impact of scientific research, aligning with the core values and objectives of ERUA.

The seminar will combine lectures and workshops, allowing participants from both universities to interact and collaborate on key topics in participatory exhibition design after an initial theoretical presentation. The final lecture will offer a concise overview of major methodological concerns, supported by specific case studies. The job shadowing method ensures active involvement from both instructors and students at both universities, facilitating effective knowledge construction.

Detailed programme of the Travelling Seminar

Seminar Outline:

Introduction to Cyber-Physical Social Systems (CPSS)

- Definition and components of CPSS
- Overview of smart technologies and their relevance to cultural heritage
- The role of social systems in CPSS
- Job Shadowing Methodology
- Explanation of the job shadowing pedagogic method
- Benefits of job shadowing for teaching staff and students
- How job shadowing can be integrated into the seminar

CPSS and Smart Cultural Heritage

- The intersection of CPSS and cultural heritage management
- Examples of smart technologies in cultural heritage: IoT, AI, AR/VR
- Benefits and challenges of implementing CPSS in cultural heritage
- Case Studies and Best Practices
- Detailed analysis of successful CPSS projects in cultural heritage
- Lessons learned from these case studies
- Discussion on how these examples can be adapted and applied in different contexts

Interactive Session: Job Shadowing Experience

- Teaching staff share their job shadowing experiences and insights
- Discussion on how these experiences can enhance understanding and analyzing of CPSS in cultural heritage
- Interactive Q&A session with students
- Group Activity: Designing an idea of CPSS for Cultural Heritage
- Students work in groups to design their idea of CPSS for a specific cultural heritage site or project
- Each group presents their idea, highlighting the use of smart technologies and social systems
- Feedback and discussion on the proposed designs

Conclusion and Future Directions

- Recap of key points discussed in the seminar
- Future trends in CPSS and smart cultural heritage
- How students can stay engaged and continue learning about this evolving field