

Overview of research, development and innovation activities

Part 4 BIS. Paper reading and understanding

M1 Cyber Physical and Social Systems – Course unit on Overview of research, development and innovation activities
Pierre MARET
Course unit URL: <https://ci.mines-stetienne.fr/cps2/course/data>

What could be found in a document ?

- **Types of documents:** report, scientific article (research result), state of the art, white paper, review, standard, advertisement;
- An **application domain** is addressed (or not, or many/all)
- A **given technology** is presented (or not, or many/all)
- What parts are related to research activities, innovation, development, possibly standardisation;
- What **subdomains** are discussed, especially if there are ones that are related to the CPS2 master's.
- Try to give a **critical opinion** (positive or negative) about the document: what is good about it? what is bad?
- If you find some aspects of the document that relate to what was presented during the lectures, tell them in your synthesis.

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Summarising documents. Transversal analysis

- Take notes about a paper: types of doc, authors, application domains, techniques, proposals, evaluations, etc.
- Identify transversal criterias to report about the papers
- Cite the sources (no plagiarism), give the references.
- Don't give your opinion (except in the Personal opinion section).

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Exercice on document summarizing

- Select 3 papers related for your R&D project (white paper, state of the art paper)
- Read, understand
- Deadline 1: Write a synthesis. 4 to 5 pages.
- Receive feed back
- Make some more research around. Write a section on Next challenges (topics, main ideas, evaluation methods) and on Ethical considerations.
- Deadline 2: Complete your synthesis, present your synthesis.

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Topics of 2023

- Health
- Transport
- Wild fire

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White papers 1/3

1. 2022 - FG-AI4EE D.WG1-10 - Guidelines on the use of digital twins of cities and communities for better climate change mitigation solutions
2. Gaia-x (2021). "Gaia-X and European Smart Cities and Communities white paper"
<https://gaia-x.eu/wp-content/uploads/files/2021-10/Gaia-X%20SCC%20white%20paper.pdf>
3. Microsoft (2022). "The promise of a digital twin strategy - Best practices for designers and manufacturers of products and industrial equipment"
<https://info.microsoft.com/rs/157-GQE-382/images/Microsoft%27s%20Digital%20Twin%20%27How-to%27%20Whitepaper.pdf>
4. LoRa Alliance (2020). "White paper: Sustainable for the planet, people, and profit". URL:
https://lora-alliance.org/wp-content/uploads/2021/05/FINAL_LATIA-White-Paper.pdf

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White papers 2/3

5. Indranil Mitra, Srinivas TK, Vijay Rao, Vishal Kelkarn, Preeti Chhaparia (2019). "How Cyber-Physical Systems Are Reshaping the Robotics Landscape". Cognizant white paper.
<https://www.cognizant.com/us/en/whitepapers/documents/how-cyber-physical-systems-are-reshaping-the-robotics-landscape-codex4484.pdf>
6. Smart Factory Task Group, (2017). "Smart Factory Applications in Discrete Manufacturing"
https://www.iiconsortium.org/pdf/Smart_Factory_Applications_in_Discrete_Mfg_white_paper_20170222.pdf
7. U.S. Department of Energy (2022) "2020 Smart Grid System Report". Only : Challenge in section 5, #D
https://www.energy.gov/sites/default/files/2022-05/2020%20Smart%20Grid%20System%20Report_0.pdf

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White papers 3/3

9. ATOS (2021). "Digital Vision: Energy & Utilities Global report - January 2021"
<https://atos.net/wp-content/uploads/2021/01/atos-digital-vision-energy-utilities-jan-2021.pdf>
10. White paper. 5GAA Automotive Association "Tele-operated Driving: Use Cases, System Architecture and Business Considerations"
https://5gaa.org/wp-content/uploads/2021/12/5GAA_Tele_operated_Driving_White_Paper.pdf
11. Mika Vainio, Laura Ruotsalainen, Osiris Valdez Banda, Juha Rönning, Jukka Laitinen, Jani Boutellier, Sami Koskinen, Pertti Peussa, Ahm Shamsuzzoha, Ahmad Bahoo Toroody, Vadim Kramar, Arto Visala, Reza Ghabcheloo, Kalevi Huhtala, Rathana Alagirisamy. (2022) "Safety Challenges of Autonomous Mobile Systems in Dynamic Unstructured Environments: Situational awareness, decision-making, autonomous navigation, & human-machine interface"
https://autonomous.fi/wp-content/uploads/RAAS-SAAN_WhitePaper_November27_final.pdf
12. Some interesting definitions, references, figures
https://unctad.org/system/files/official-document/tir2020_en.pdf

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8. ATOS (2019). "Digital Vision for Health Global opinion paper - March 2019"

<https://atos.net/wp-content/uploads/2019/03/atos-global-digital-vision-for-health.pdf>