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**PhD Title:**

***Analyzing the potential of serious gaming to stimulate social learning for triple Access planning under high uncertainty.***

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**Proposal for a journal paper:**

Systematic review of 'serious games' for accessibility planning under (deep) uncertainty

**Abstract:**

As a new planning perspective, Triple Access Planning (TAP), initially proposed by Lyons and Davidson (2016), is yet an underdeveloped perspective that requires further understanding to be adopted by planners in practice. Triple access planning calls for widening the perspective of sustainable mobility plans to include *spatial proximity* and *digital connectivity*, as equally essential alternatives to *physical mobility*. These three concepts, if approached together, can aim at *accessibility* (to services) as an ultimate goal. In a (deeply) uncertain world, accessibility should be the main concern of sustainable mobility planners (a goal that was highlighted by the change in mobility dynamics during COVID-19 pandemic). Among many other benefits (e.g. environmental, social, economic), thinking from a TAP perspective can secure alternative accessibility options, and by this, improve the adaptivity of plans under (deep) uncertainty.

To practically establish TAP under (deep) uncertainty, social learning among concerned stakeholders is needed. Stakeholders need to learn more about the Triple Access System (TAS), its components, actors, dynamics, as well as explore its relevant uncertainties. As social learning is best achieved in a participatory context, participatory methods to facilitate and stimulate social learning should be used for enriching the theoretical and practical understanding of TAP under (deep) uncertainty. One very crucial methods in this regard is, serious gaming.

Serious games have, for long, been used in the fields of mobility and land-use planning for their ability to stimulate learning by practice in a safe and free environment. While, in planning for the future, games can further stimulate players' imagination to explore different perspectives, and think of alternative solutions. Remarkably, differences in gaming approaches (e.g. facilitation, display of complexity, approaching uncertainty....etc.) can highly influence the learning outcomes (Flood et al., 2018). In order to provide a theoretical base for understanding the TAS and exploring the use of games in planning under (deep) uncertainty, throughout a systematic literature review, this paper aims at:

1. Evaluating different serious gaming approaches to stimulate learning in the fields of mobility, land-use, telecommunication, adaptivity, and uncertainty.
2. Inductively exploring TAS components through the reviewed gaming approaches, to be able to identify the most crucial system elements.

This review generally aims at answering the question "*Which serious gaming approaches can improve social learning in triple access planning under (deep) uncertainty?*". By answering this question, a better theoretical understanding of TAS can be achieved; besides recommendations for suitable gaming approaches for TAP under (deep) uncertainty. The literature selection will be done following backward and forward snowballing using relevant words, on search engines like Web of Science and google scholar. Systematic review is chosen as there is a large existing body of literature on each of the approached topics, yet there is not so much literature on linking gaming with TAP under (deep) uncertainty.

**References:**

Flood, S., Cradock-Henry, N. A., Blackett, P., & Edwards, P. (2018). Adaptive and interactive climate futures: systematic review of 'serious games' for engagement and decision-making. *Environmental Research Letters*, 13(6), 063005.

Lyons, G., & Davidson, C. (2016). Guidance for transport planning and policymaking in the face of an uncertain future. *Transportation Research Part A: Policy and Practice*, 88, 104-116.