Enhance Understanding of Space in Urban Planning through Game-Inspired Orientation Tools in VR

To provide a better quality of life and place urban planning needs to adapt to the rapid growth of population and the resulting global urbanization. Creative and transdisciplinary movements are already working towards a sustainable and inclusive future and bring experts, businesses, institutions, and citizens together to address complex societal challenges through co-creation. Such participatory planning with community involvement positively affects decision making and getting those decisions and design choices accepted and tested by different members of the community including non-experts and citizens can lead to a better working environment.

Virtual Reality technology can help this public consultation process and has the potential to foster stakeholder participation. This technology’s representation of the real world is a superior way of communicating and understanding the environment compared to mere description and in creating a common language and empowering participants it helps the design and urban planning process. In being able to present additional information about the urban planning process, it makes it an effective tool for communication plans and knowledge exchanges. This improves transparency.

But to successful present this information so non-experts are able to look and participate in the urban planning process it needs to be prepared and presented in a comprehensive way.

This paper will examine the presentation of such information, focusing on a place that may later be the subject of collaborative urban planning. This includes depicting information that might be needed for later design decisions.

Multiple studies have already been conducted about the depiction of the environment itself, focusing on the influence of realism, sound, and light. Therefore, this paper will have its focus on different characteristics. Designing and planning a place is a dynamic process and its effectiveness relies on the human perception. Among other things, places can be characterized by their distinct cultural, social, and economic attributes.

This paper will focus on how to communicate those attributes in the most effective way so that knowledge might later be used for urban planning purposes.

Dass wir diese micht den GIOTs addressieren

Everything useful on urban planning:

In light of the rapid global urbanization, providing a better quality of life in cities is becoming an increasingly critical issue for urban planning.

The rise of urban populations worldwide, caused by rapid population growth and urbanization processes, makes urban quality of life relevant to more and more people.

Quality of place and especially culture has become, consequently, more and more an issue in urban planning

For urban planning through VR tools

--- European Bauhaus, was das will – collaborative design – leute müssen wissen, wo was hin -welche reserarch gibt’s da schon – wir machen es in vr – categorien mit dingen, die places ausmachen – goits – der rest unten besser berschrieben

/\*\*\* The term urban quality of life is not used to describe some physical features but to describe all the relationship, the dynamics, and the reticular relationship that exist between those physical features.

Based on the literature review, it can be deduced of seven main dimensions which contribute to realize the urban quality of life: environmental urban quality of life; physical urban quality of life; mobility urban quality of life; social urban quality of life; psychological urban quality of life; economical urban quality of life; political urban quality of life. \*\*\*/

Hubs erwähnen, collaborative design, damit normasterbliche erkennen, was es gibt

Urban designers and architects play important and determining roles in defining the physical qualities and the characteristics of a place.

Currently, architects and designers concentrate on the physical environment when crafting a sense of place; understanding the influence of and the interaction between perception and placemaking could be a huge benefit to creating both effective and meaningful places.

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Vl anfangen mit – ja, diese research ist entstanden weil – kurz auf diese european bauhaus und collaborative planning eingehen, leute müssen ja wissen wohin, urban planning, wie kann ich den place gut wahrnehmen?

Schon paar research wegen collaborative urban planning – aber wir in vr – weil reasons

Categorien mit dingen, die place ausmachen – goits erwähnen … unten ablauf besser beschrieben

Zu sehr konzentriert auf sense of place or spirit of place – go to urban planning, probier von da zu VR zu kommen, die Kategorizierung und warum kannst du dann später in der Einleitung noch erwähnen.

In literature research part – mehr zu urban planning, wissen was die neighborhood braucht, dafür muss ich wissen, was überhaupt da ist

Deshalb game inspired orientation tools

Gegliedert in dieses und jenes, weil das einen place ausmacht

//A persons perception of their environment is unique, personal, influence by experience, culture and memories. Its highly individual but nevertheless, modern architecture aims to shape it.

It is the Sense of Place, or the Spirit of Place (sometimes used interchangeably (quelle) sometimes as two different concepts (quelle)) that are frequently studied to improve urban planning and design liveable and high-quality environments. //

A lot of studies in the topics on how to use virtual reality in the context of urban planning. There was this and that and someone dabbled in this, but while many focused on the environment aspect of urban planning or something, not many take the other aspects of those places into account.

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Sense of place discussed, also in compination with VR and presence and how to übertragen this feeling into a virtual reality. Its not just presence, it consist of mutlible things like this and this and gets categorized by a lot of different things while still being highly subjective.

It s an important factor and gets taken into consideration by architects when doing urban planning ands stuff and build city. Although how to quantify and use that knowledge in praxis.

In vr urban planning has been researched, like this and that, but mostly taking into consideration environmental display of places. (jetzt gibts auch ne quelle dazu) This study will do another take on the sense of place and will address the economic, cultural and social aspect and figure out how to bring that closer to the user to let them acquire a better understanding of the environment. (also wirklich darauf beschrenken, klar definieren)

Um das zu erreichen werden goits emploid and the neighbourhhods component into those three categoriez unterteilt. Hypthesis einfügen.

Places are characterized by their unique and different economic, cultural, social, and emotional qualities and relationships. They are aggregates of social communication, community, and numerous values, which become essential for its genius loci.

Places are characterised by different relationships that are of economic, cultural, psychological, social

The concept, on the one hand, is rooted in the \*\*subjective experiences\*\*

Places – wie sie zusammengesetzt sind. Wie wichtig dieses Konzept für architects and urban planning ist. Sense of place in VR - Capturing it – previous studies – aber eher mehr environmental. Nicht den aspect von economic, cultural and social. Darauf wird in dieser Arbeit eingegangen.

In VR testen weil das am nähesten zur realität ran kommt.

Problem: wie man einen platz gut rüber bringen kann, spirit of place, für eventuelle design decisions und urban planning wichtig

– mit focus auf die social, economical und cultural characteristics of the place, was schon erfoscht wurde und auf was sich die arbeit bezieht (schlüsselbegriffe vom titel)

Integrating game inspired orientation tools like **markers** and **compasses**, when communicating information about the given space, will, **compared to map-based systems**, significantly **enhance** the user's **understanding of the place**, regarding available amenities.

Benutzen GOIT um das zu adressieren und comparen sie zu map, die dann doch schon sehr conventionell ist.

Ziel ist herauszufinden, welche der verschiedenen GOITS am besten dazu in der Lage ist, die available amenities klar zu presentieren und somit einen guten überblick des ortes zu liefern

Gemacht wird es mit diesen und jenen Fragebogen.

Aufbau schaut so und so aus.

Immersive virtual environments allow for more accurate perception of spatial properties [1] and a significantly better understanding of potential architectural designs [2]. However, the information that makes up the spirit of place, the genius loci, involves more then physical and environmental aspects of an environment [3]. It is a concept that also involves psychological, social, economical and historical characteristics which play an important role when designing for urban planning [4].

So in order for the user to truly understand the given space and to discern its needs, more information might be necessary.

The goal of this research is to find a design solution so the user is able to gain understanding of a place.

[1] Lukacevic, F., Skec, S., Perisic, M. M., Horvat, N., & Storga, M. (2020). Spatial Perception of 3D CAD Model Dimensions and Affordances in Virtual Environments. In IEEE Access (Vol. 8, pp. 174587–174604). Institute of Electrical and Electronics Engineers (IEEE). https://doi.org/10.1109/access.2020.3025634

[2] Usman, M., Haworth, B., Berseth, G., Kapadia, M., & Faloutsos, P. (2017). Perceptual evaluation of space in virtual environments. In Proceedings of the Tenth International Conference on Motion in Games. MiG ’17: Motion in Games. ACM. https://doi.org/10.1145/3136457.3136458

[3] Farshadi, A. (2017, May 23). \_Exploring the potential of applying genius loci as a concept in landscape architecture\_. DSpace. https://dspace.emu.ee//handle/10492/3583

[4] Torsi, Silvia & Ardito, Carmelo. (2020). Genius Loci and Cultural Heritage: An Interactive Narrative for the Ruins of Egnatia. https://www.researchgate.net/publication/345165831\_Genius\_Loci\_and\_Cultural\_Heritage\_An\_Interactive\_Narrative\_for\_the\_Ruins\_of\_Egnatia