10 GAMIFIED-ED3D PROJECT

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THE HOSPITAL'S INFRASTRUCTURE

The University Hospital Emergency Departments (ED) are complex organizations in terms of building infrastructure, variety of employment and medical process. Various specific aspects related to these departments are of uttermost importance: **1)** the medical and nursing staff teams are significant, **2)** medical and nursing staff turnover as well, **3)** the clinical activities are highly diversified, and **4)** the time to react, engage and adapt is, by nature, crucial.

THE HOSPITAL, A FEW NUMBERS

The Lausanne University Hospital (CHUV) is a 1500-bed public university hospital that provides primary care to the 300,000 inhabitants of the Lausanne area as well as tertiary care to Western Switzerland (about 1.5 million-population area). The CHUV ED is specifically characterized by an amazing daily activity with more than 60,000 patients hospitalized each year, and initially evaluated by triage nurses. Many of them (~20,000) are admitted for specialized health problems (ophthalmology, gynaecology, psychiatry, etc.) and thus referred from the ED to the specialized clinics or to the ambulatory primary care clinic of the hospital. The remaining patients (~40,000 patients/year) are directly treated in the ED.

THE SOLUTION USED NOWADAYS

A gamified 3D simulation of the CHUV ED infrastructure

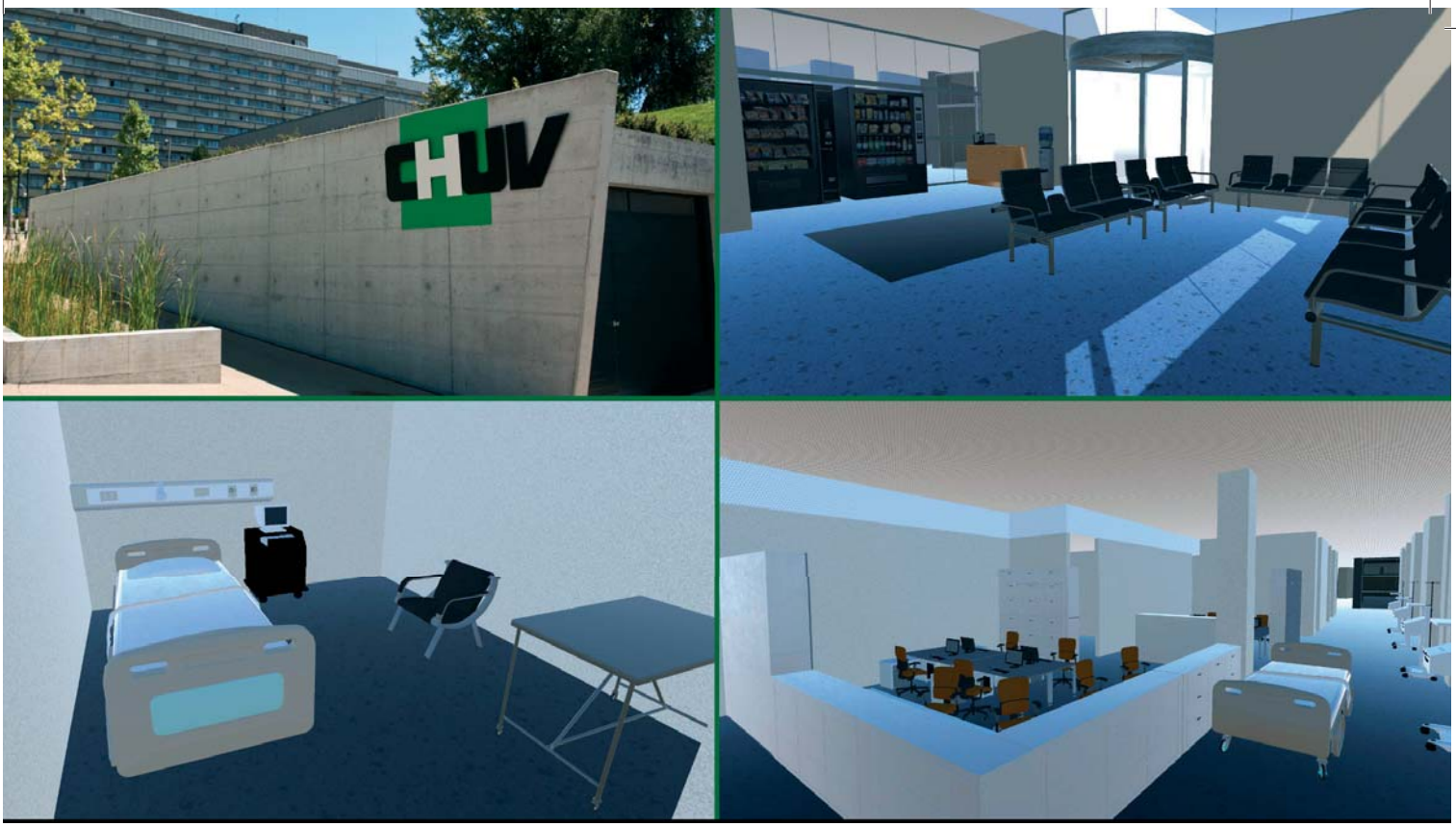
The medical and nursing teams involve a significant proportion of junior physicians and nurses, according to the academic missions of education and training. To support juniors' integration, different strategies are classically proposed during their first days in the ED. For example, slide presentations, skill training or simulations of classical emergency situations are commonly used in the CHUV ED.

THE PROBLEMATICS

To involve and rapidly engage medical teams in life-threatening situations, a comprehensive and effective training is offered, even prior to the first ED shifts. Different information media are used, with paper-based documents sent before arrival in the ED: eLearning or Moodle-based videos. Nevertheless, the issues related to the concrete ED organization and architecture are difficult to understand through these tools.

GAMIFYING THE LEARNING PROCESS

This project proposes a gamified 3D simulation of the CHUV ED infrastructure where any new staff member will be able to visualize key places, team functions and key permanent colleagues. The objective is to promote the team involvement of new collaborators as soon as they arrive in the ED and simplify their positioning in the ED infrastructure.



A FEW WORDS ABOUT THE DEVELOPMENT

The resources which were used during the modelling and development process where the actual architect's plans and a great number of photographs taken during the visits to the ED. The plans have been redone with Autocad to ease further manipulation, then exported to 3ds Max to build the walls among other things. Assets representing medical facilities have been added to their respective rooms or positions. Finally, the game mechanics have been implemented using Unity3D, allowing the character to interact with the environment like walking throughout the hospital, checking his position thanks to a map or seeing actual photographs and photospheres of key places. The textures have been rendered and applied using both 3ds Max and Unity3d.

REFERENCES

Shapiro MJ, Morey JC, Small SD, et al. *Simulation based teamwork training for emergency department staff: does it improve clinical team performance when added to an existing didactic teamwork curriculum?* BMJ Quality & Safety 2004;13:417–421

Sobolewski, B, et al. *The April Effect: a multimedia orientation approach to improve rotation transitions during pediatric residency.* Academic Pediatrics. 2016; 16: 220–223