

Show me the way: proximity layered feedback services in smart cities

Workshop: Smart City Learning. Opportunities and challenges

Bernardo Tabuenca, Dirk Börner, Marco Kalz, Marcus Specht

European Conference on Technology Enhanced Learning 2014

16th September, Graz (Austria)



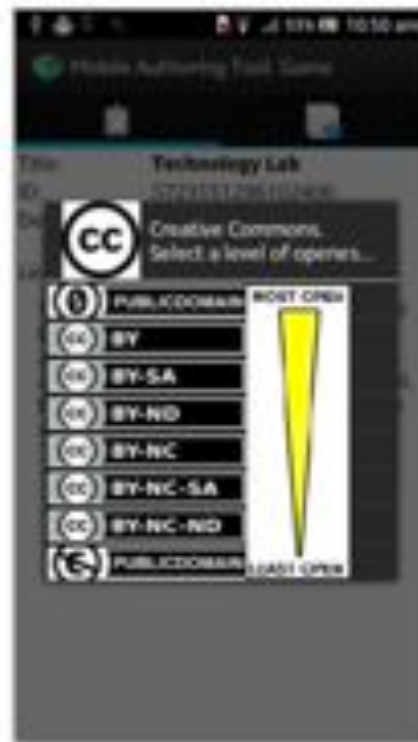
Lifelong learning in smart cities

“Lifelong learning is like a never ending personal revolution.” ~ [@BryantMcGill](#) , Voice of Reason

Latour: “We have developed and shaped technology, but now, technology is shaping us.”

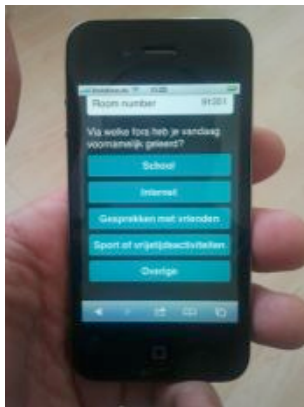
Mobile authoring

Tabuenca, B., Kalz, M., Ternier, S., Specht, M.: Mobile authoring of open educational resources for authentic learning scenarios. *Univers. Access Inf. Soc.* [Special Issue] *The Use of Mobile Technology and Ubiquitous Computing for Universal Access in Online Education* (2014).



Notifications on-action

Tabuenca, B., Verpoorten, D., Ternier, S., Westera, W., & Specht, M. (2012). Fostering reflective practice with mobile technologies. Proceedings of the 2nd Workshop on Awareness and Reflection in Technology Enhanced Learning. (pp. 87-100). ECTEL 2012



- **Reflective practice is accepted** by the majority of the students.
- It is possible to **use smartphones to stimulate meta-learning**
- There is **no habit** in students to see themselves as learners
- School's monopoly is challenged by **Internet.**

Near Field Communication

Tabuenca, B., Kalz, M., Specht, M. (2014), "Tap it again, Sam": harmonizing the frontiers between digital and real worlds in education, In IEEE Proceedings of Frontiers in Education Conference, Madrid. (Accepted) October 2014

1. Literature Review on NFC technology for learning
2. 3LHub Digital Media Player (chromecast)

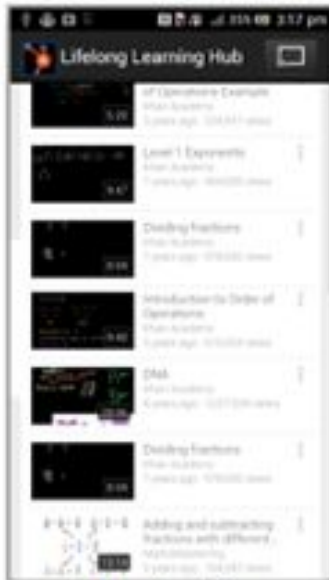


Figure 3. 3LHub Digital Media Player. Video playlist broadcasting

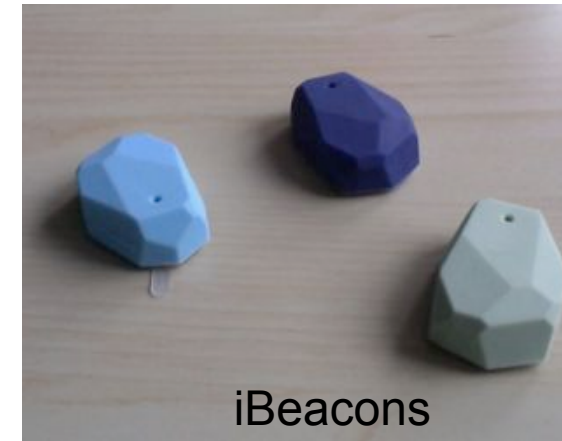
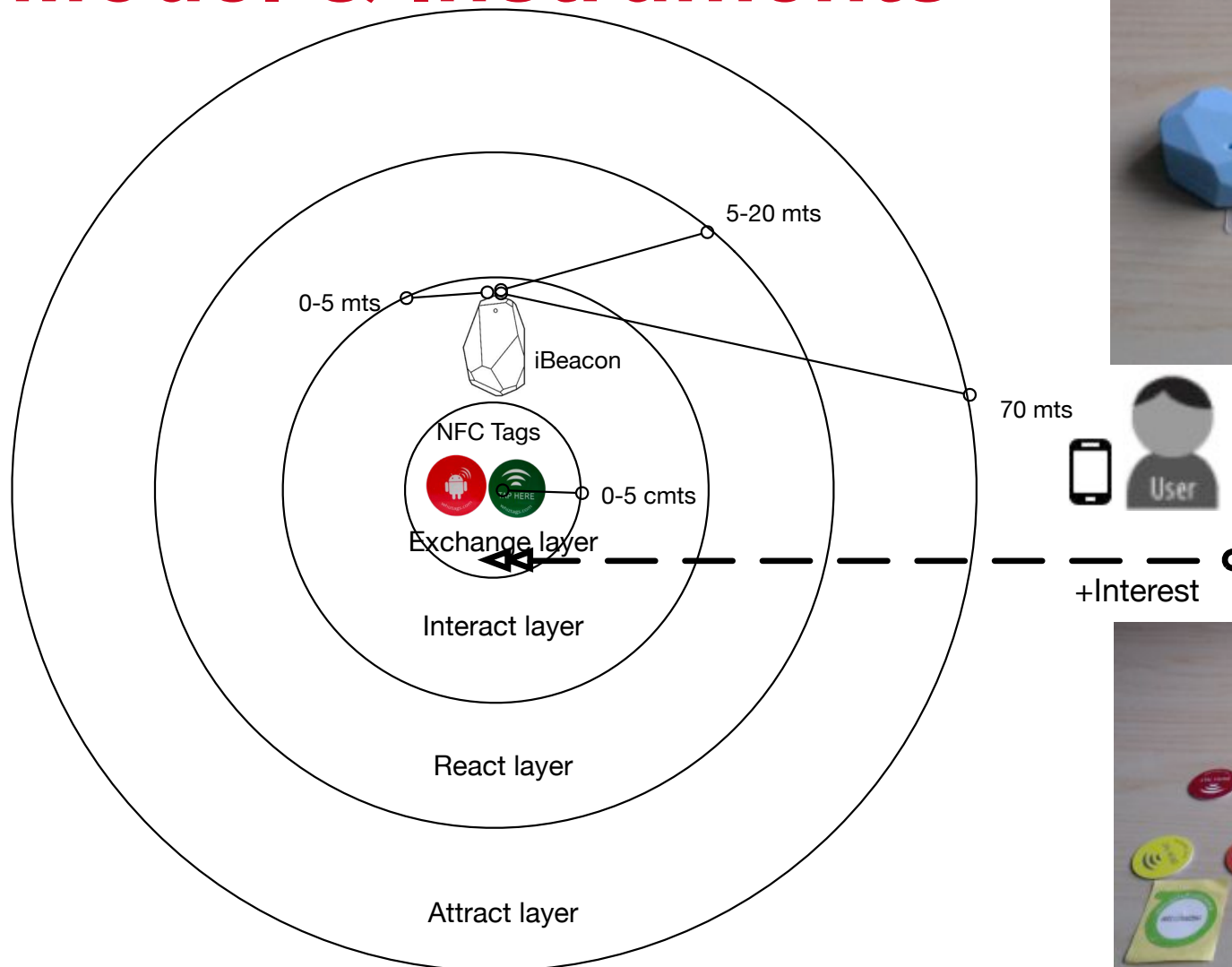
Measure learning time

Tabuenca, B., Kalz, M., Specht, M. (2014), Seamless support for lifelong learners with mobile and sensor technology, In Journal of Immersive Education (Accepted) November 2014

Video: <https://www.youtube.com/watch?v=RI-jAll4IN8>



Proximity Layered Feedback Model & Instruments

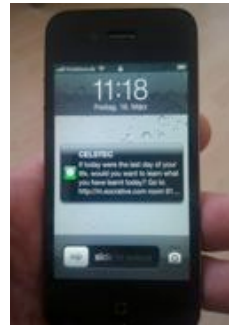


Proximity Layered Feedback Channels

Ambient displays



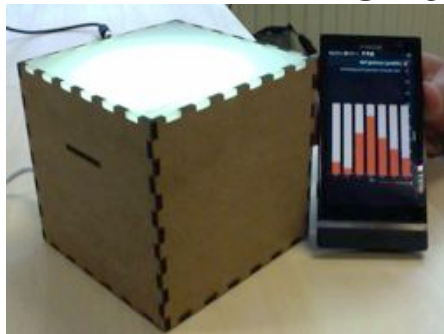
Notifications



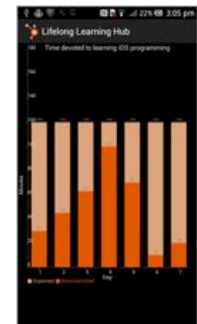
Background / Foreground



Smart home



Analytics



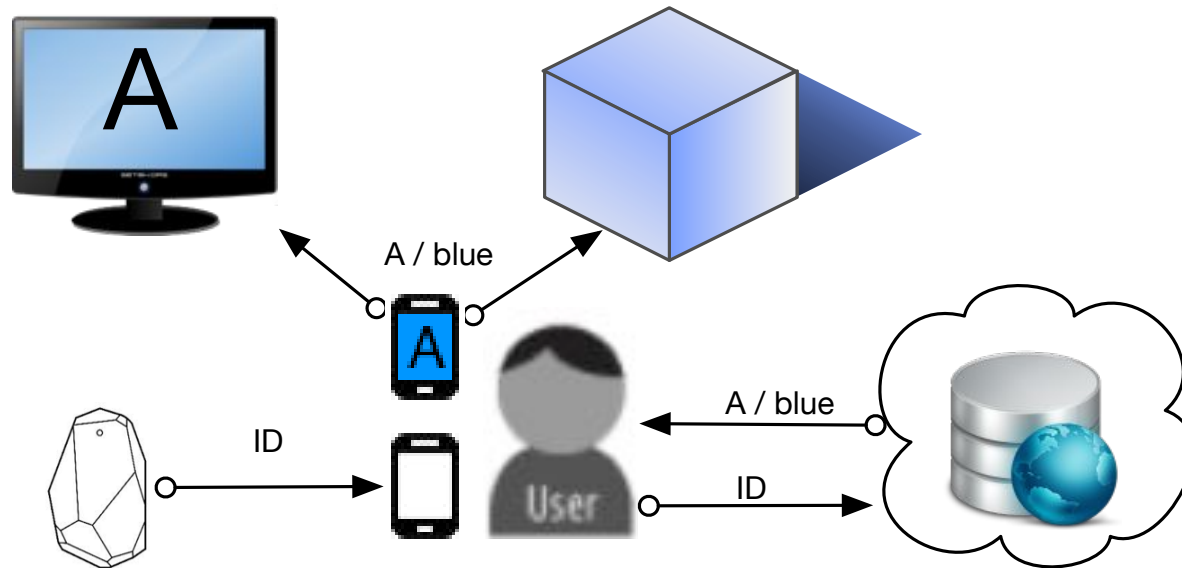
Exchange layer



Examples:

- Register
- Take the proceedings.
- Exchange card ID.
- Vote the poster that you like most.

Scaffold learning ecologies



Questions?



bernardo.tabuenca@ou.nl



nl.linkedin.com/in/btabuenca



[@bernardtabuenca](https://twitter.com/bernardtabuenca)

