An Ecology of Devices Towards Self-Regulation

Bernardo Tabuenca

Seamless Learning Experiences Workshop

13th World Conference on Mobile and Contextual Learning,

Istanbul, Turkey, November 3–5, 2014

Welten Institute
Research Centre for Learning, Teaching and Technology

Open Universiteit
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Background

Ubiquitous support for lifelong learning

"*Lifelong learning is like a never ending personal revolution*"

@BryanMcGill, Voice of Reason

1. No support for learning activities across locations, devices, and environments.
2. Need to link learning activities with everyday life activities, physical world objects.

Previous Research

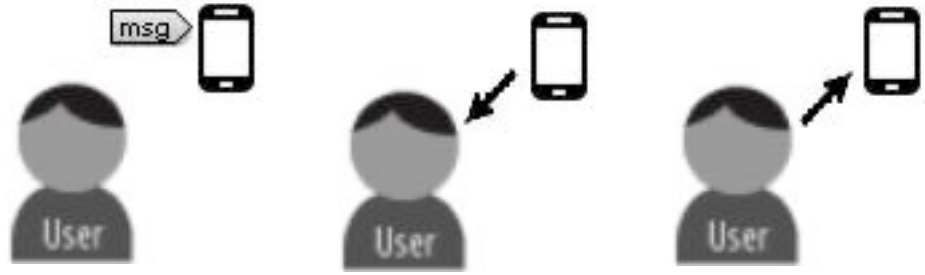
Using mobile devices for learning in daily spaces

	Listen	Watch	Write	Read
In the living room				
Having breakfast	12,24	8,16	8,84	29,24
Cleaning	37,4	1,36	0,68	2,04
Sitting in the sofa	34,01	44,89	50,34	62,58
Having lunch	11,56	10,88	8,84	20,4
During cofee/time	19,72	11,56	27,2	38,77
Watching TV, during advertisement time	12,92	15,64	32,64	47,61
In my room				
Waking up in the morning in bed	18,36	2,72	7,48	25,84
Getting dressed	19,72	0,68	1,36	2,04
Sitting at my desk	37,41	29,92	51,69	54,42
Lying on bed anytime	34,69	34,01	33,32	50,33

Figure 4. Learning activities in context with mobile devices. Percentage of individuals.

Tabuenca, B., Ternier, S., & Specht, M. (2013)

Where is my time? Identify productive learning moments



Receive Notification

Dispatch Question

Provide Answer

Experience Sampling Method
A classification Framework

Tabuenca, B., Kalz, M., Börner, D., Ternier, S., & Specht, M. (2014)

Background

Literature Review on NFC for learning

- Zero Clicks / Natural Interaction
- Near Field Communication
- Evolution (1st RFID enabled phone (2007) to iPhone 6 (2014))
- Distributing materials, Enriching printed materials, P2P between devices, Integration social networks, Control lab materials, Exams ID cards, activity recognition, wearables, logistics …

Tabuenca, B., Kalz, M., & Specht, M. (2014a).

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

NFC LearnTracker

Goal definition

Tabuenca, B., Kalz, M., Specht, M. (2014b)

NFC LearnTracker

Perform Learning Activity

A. Write two paragraphs for a journal article taking the first coffee

B. Reading scientific literature during waiting times

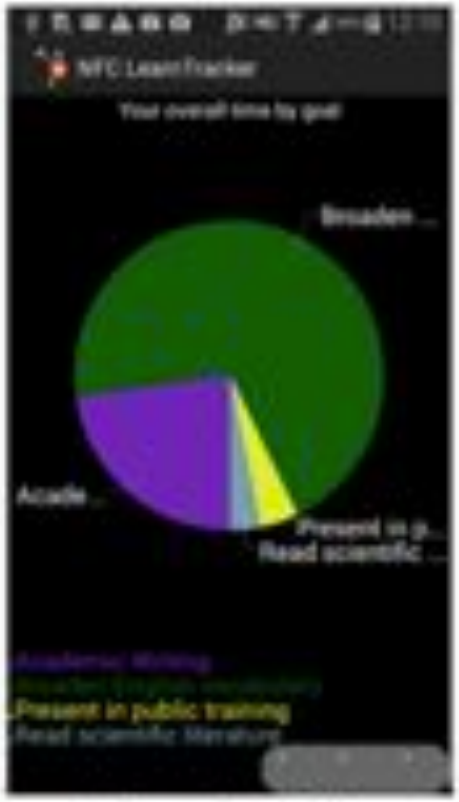
C. Listening english podcasts commuting to work, college, gym…

D. Watch top presenters' videos during commercial breaks

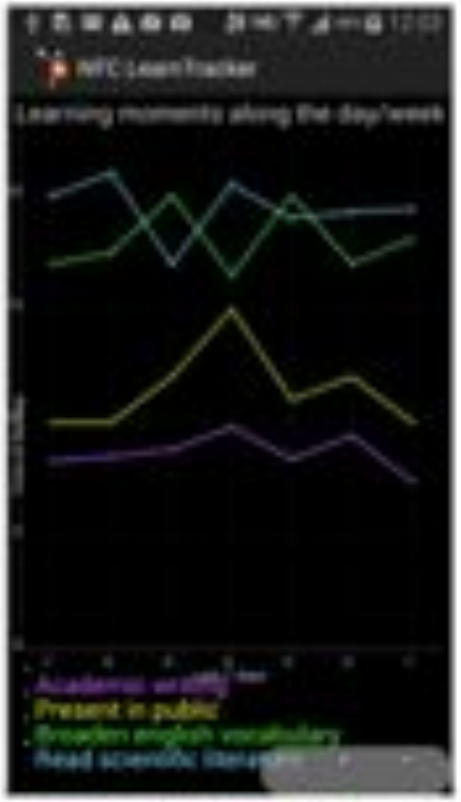
Tabuenca, B., Kalz, M., Specht, M. (2014b)

NFC LearnTracker

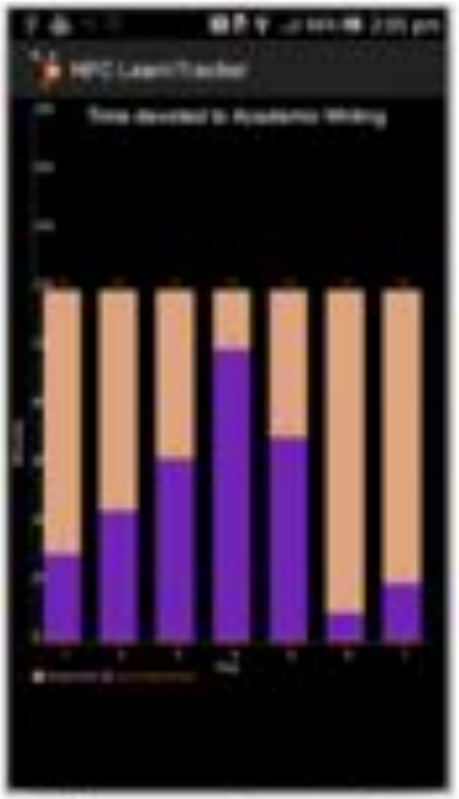
Monitor learning analytics



A. Quantity of time invested in learning goals (Percentage or overall time and number of minutes)



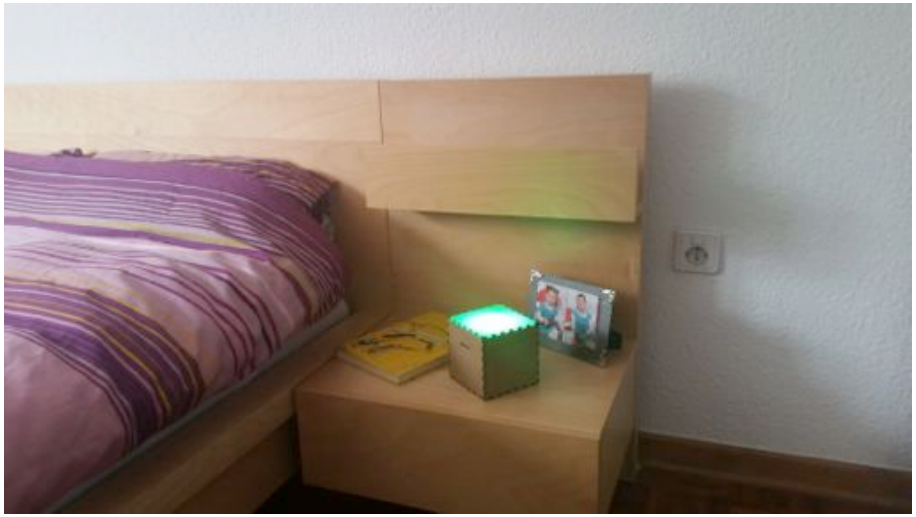
B. Distribution of learning moments along the day in the last 7 days



C. Foreseen learning time (orange) versus effective time invested (in purple) on *Academic Writing* in the week

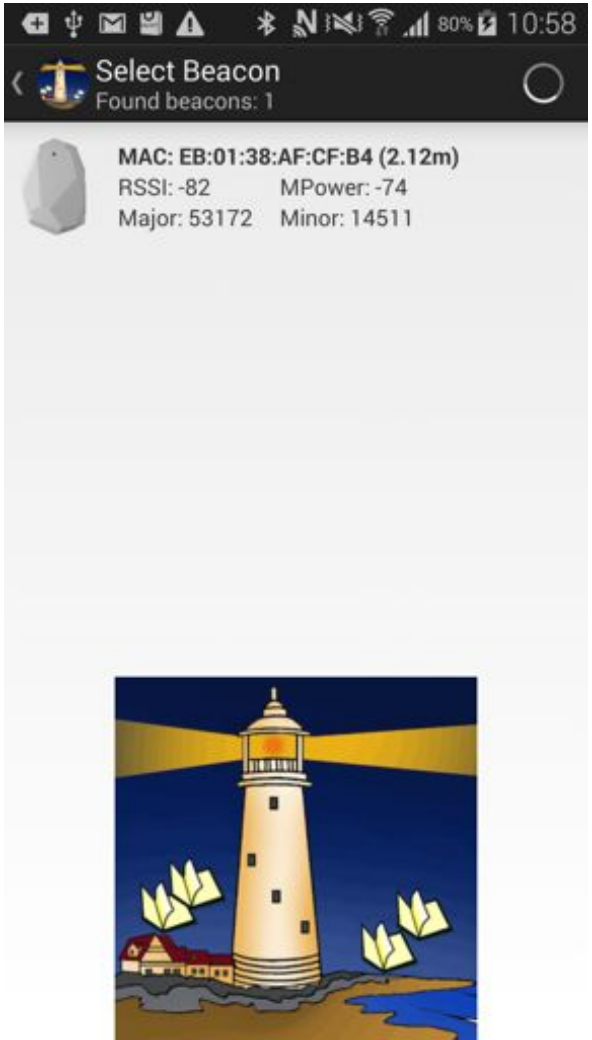
Feedback via ambient learning displays

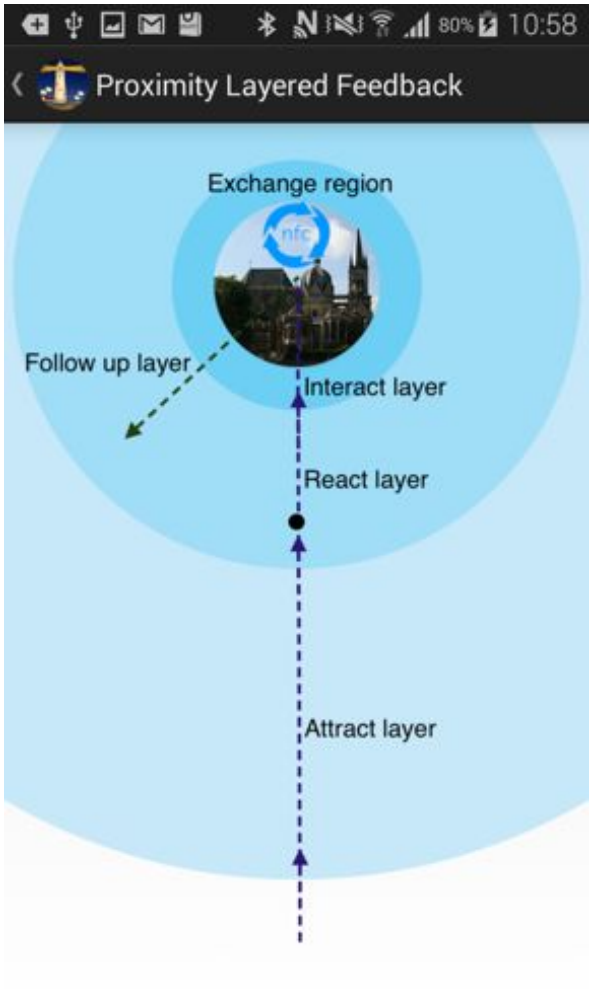
Feedback Cube



Feedback via ambient learning displays

iBeacons

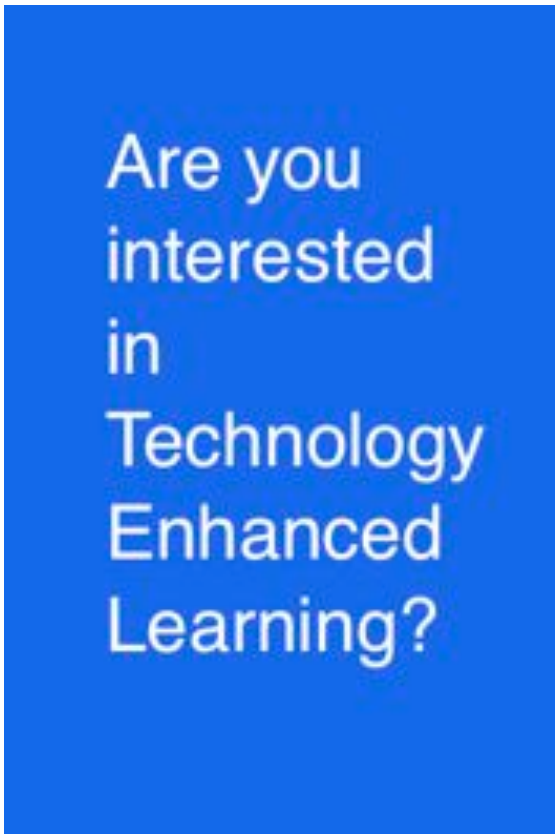




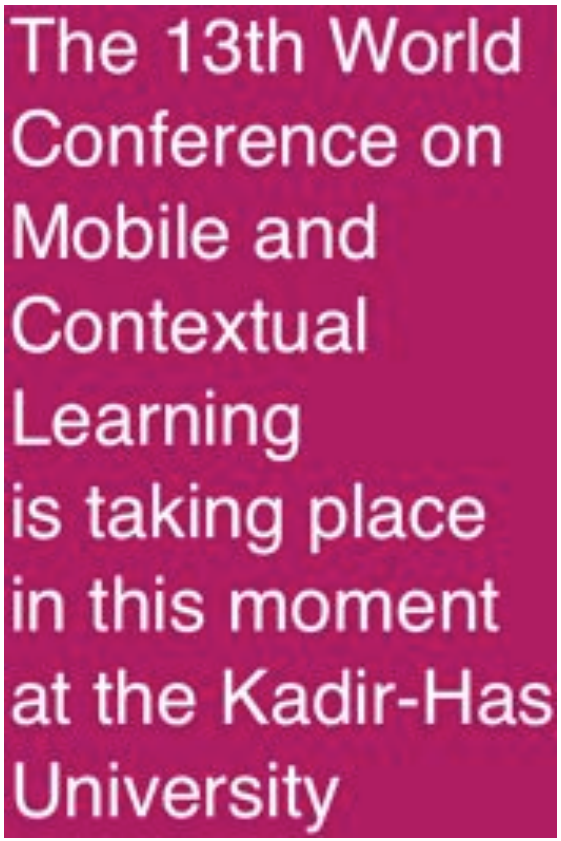
Feedback via ambient learning displays

iBeacons

Far



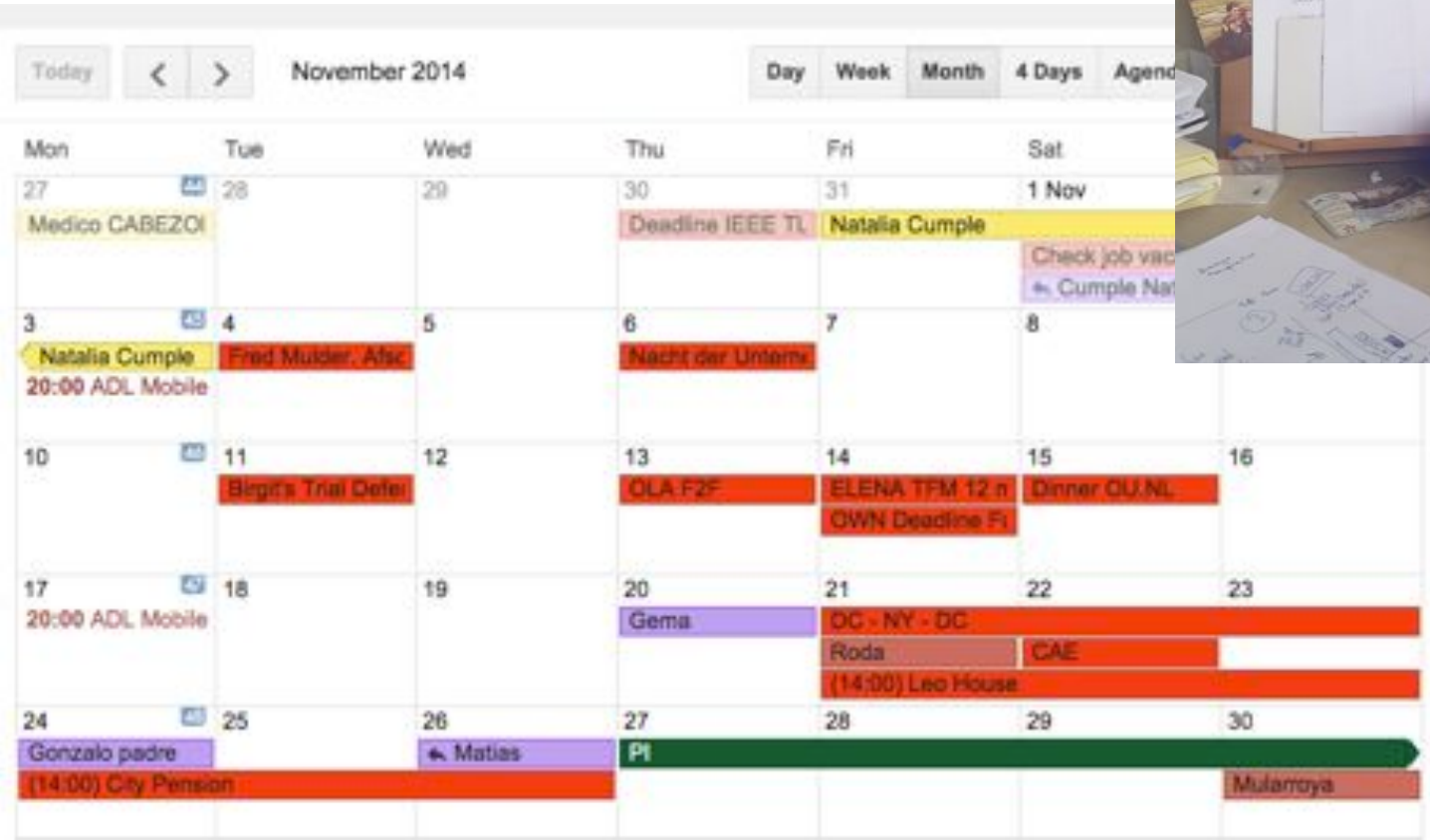
Near



Immediate

Feedback via ambient learning displays

iBeacons



Thanks!

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- Tabuenca, B., Ternier, S., & Specht, M. (2013). Supporting lifelong learners to build personal learning ecologies in daily physical spaces. International Journal of Mobile Learning and Organisation
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- Tabuenca, B., Kalz, M., & Specht, M. (2014a). “Tap it again, Sam”: harmonizing the frontiers between digital and real worlds in education. In Frontiers in Education Conference. Madrid: IEEE Computer Society.
- Tabuenca, B., Kalz, M., Specht, M. (2014b), NFC LearnTracker: Seamless support for learning with mobile and sensor. In Journal of Immersive Education (In Press) November 2014

JIGSAW

Bernardo Tabuenca, Dirk Börner

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What is JIGSAW?

Ubiquitous support for lifelong learning

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1. No support for learning activities across locations, devices, and environments.
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Stage 1. Groups and roles

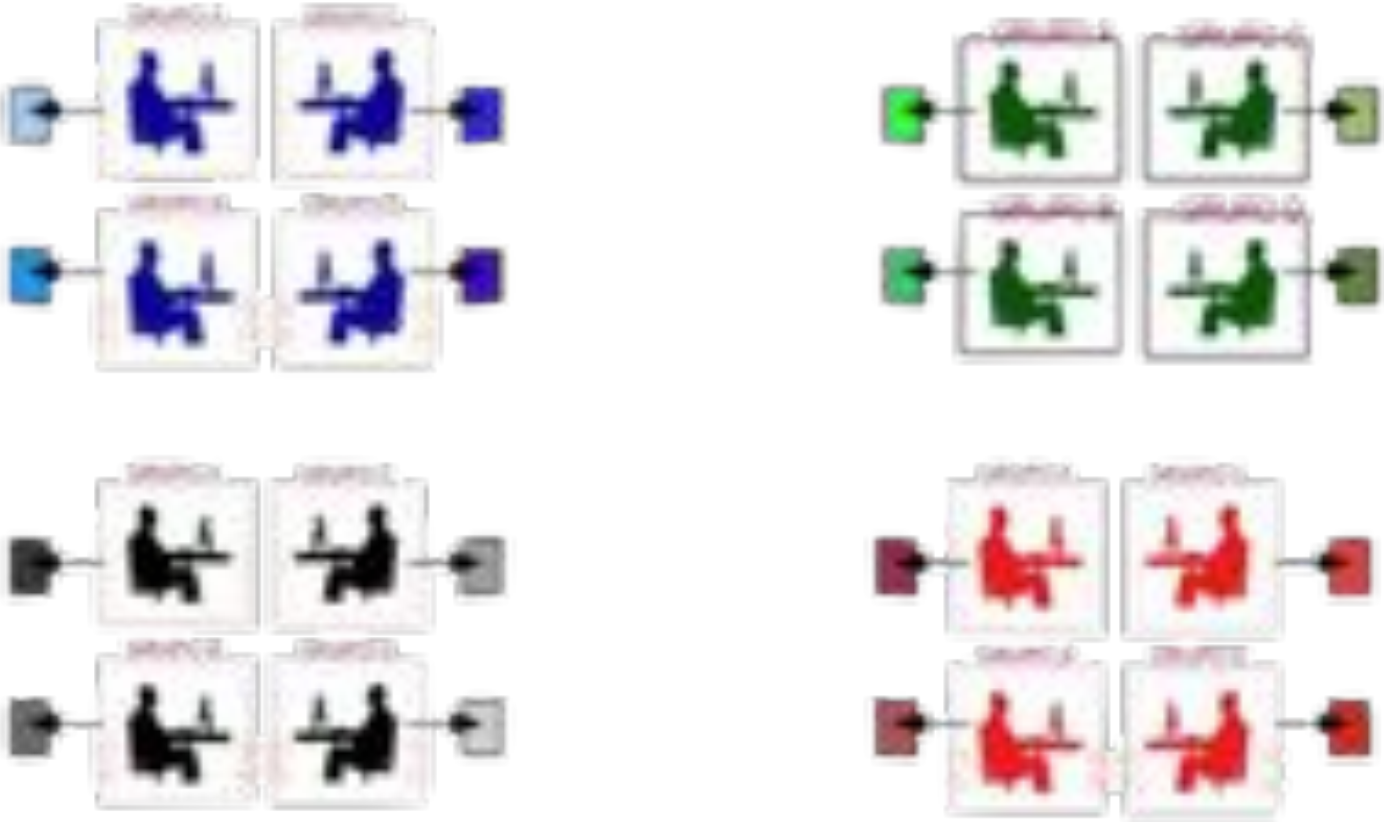
10 mins

Present Research Question
Define Roles

Stage 2. Expertise Summit

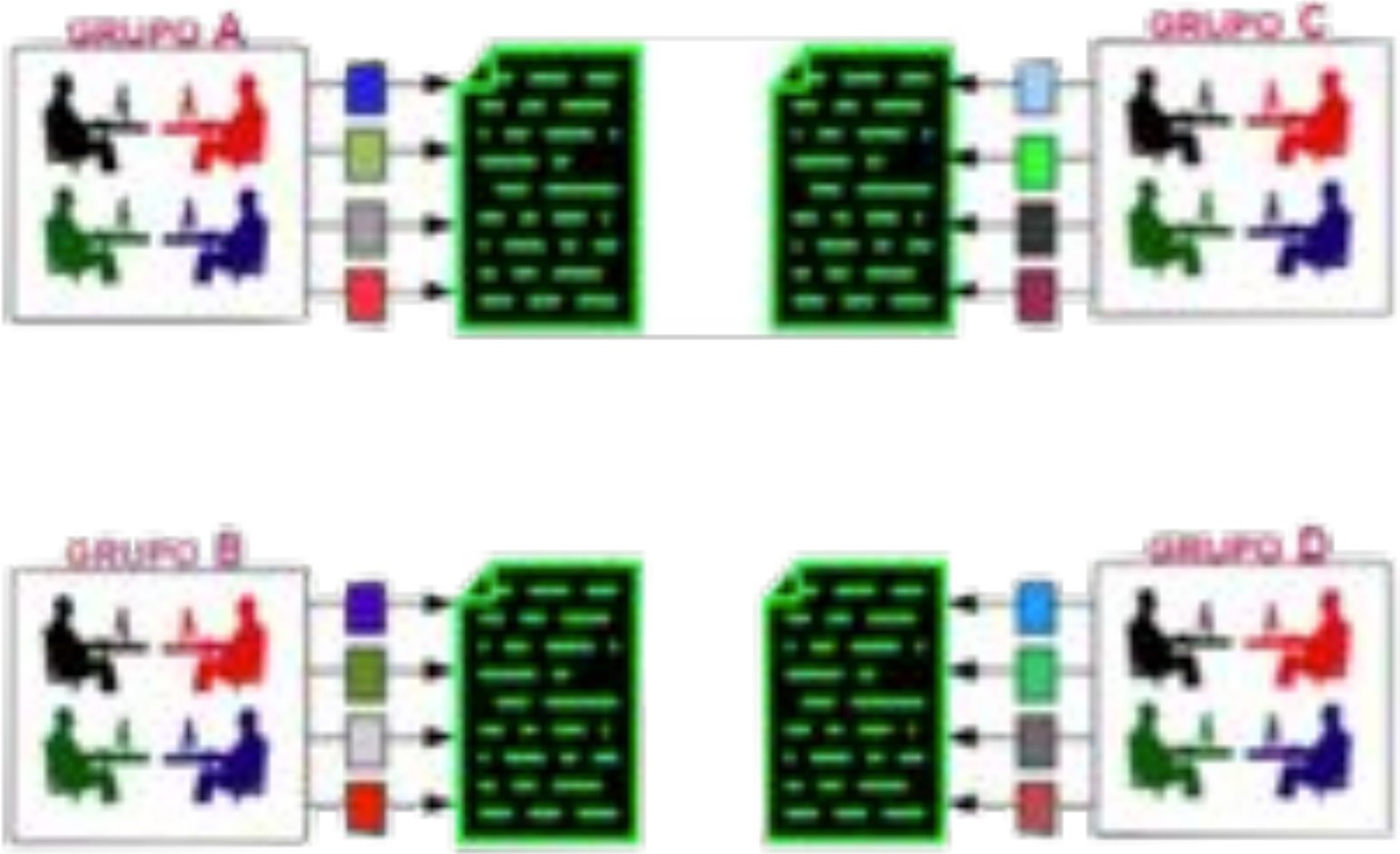
Discussion on expertise groups

10 mins



Stage 3. Define group solution

10 mins



Stage 4. Present group solutions

Research Question

How can technology support seamless learning experiences?

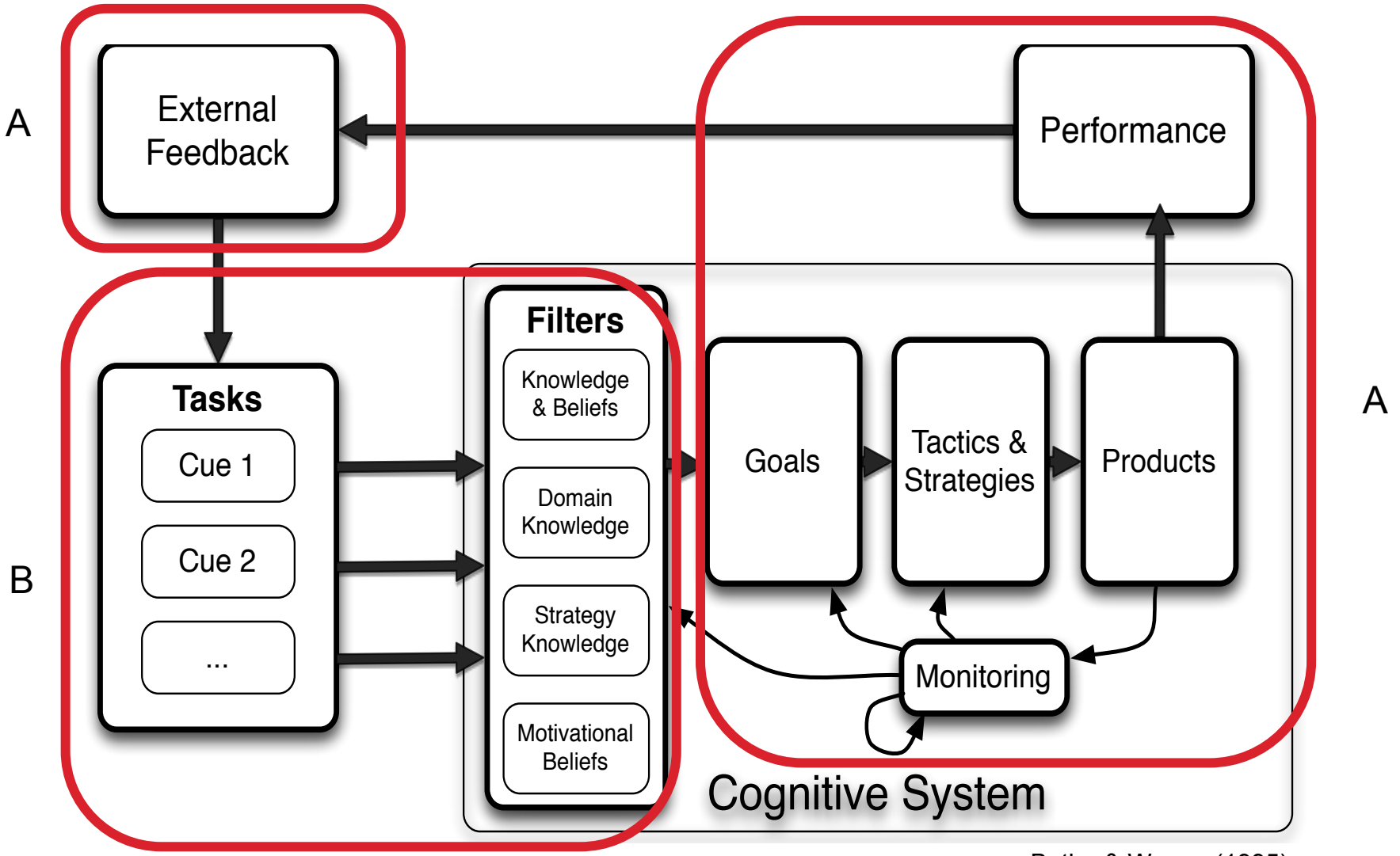
Pilots presented:

- SWIFT framework
- Presentation trainer
- NFC LearnTracker
- Feedback Cube
- iBeacons

The 10 Seams

1. Encompassing formal and informal learning;
2. Encompassing personalized and social learning;
3. Across time;
4. Across locations;
5. Ubiquitous knowledge access;
6. Encompassing physical and digital worlds;
7. Combined use of multiple device types;
8. Seamless switching between multiple learning tasks;
9. Knowledge synthesis;
10. Encompassing multiple pedagogical or learning activity models.

A model of Self Regulated Learning



Butler & Wonne (1995)

Expertise

Expertise A
- Feedback & Awareness expert
- Fedback cube, Kinnect

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Expertise B
- Instructional designer
- Mobile serious games, NTC tags

Expertise C
- Learner
- Lifelogging, Goal definition, Monitoring

References

Butler, D., & Winne, P. (1995). Feedback and Self-Regulated Learning A Theoretical Synthesis. Review of Educational Research. Retrieved from http://rer.sagepub.com/content/65/3/245.short