

# The ARLearn toolkit for mobile serious games and field-trips

dr. Stefaan Ternier

Open University of the Netherlands

Centre for Learning Sciences and Technologies

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Smartphones  
are too often  
considered toys,  
not useful for learning



# Another view on smartphones

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siteit  
c.org

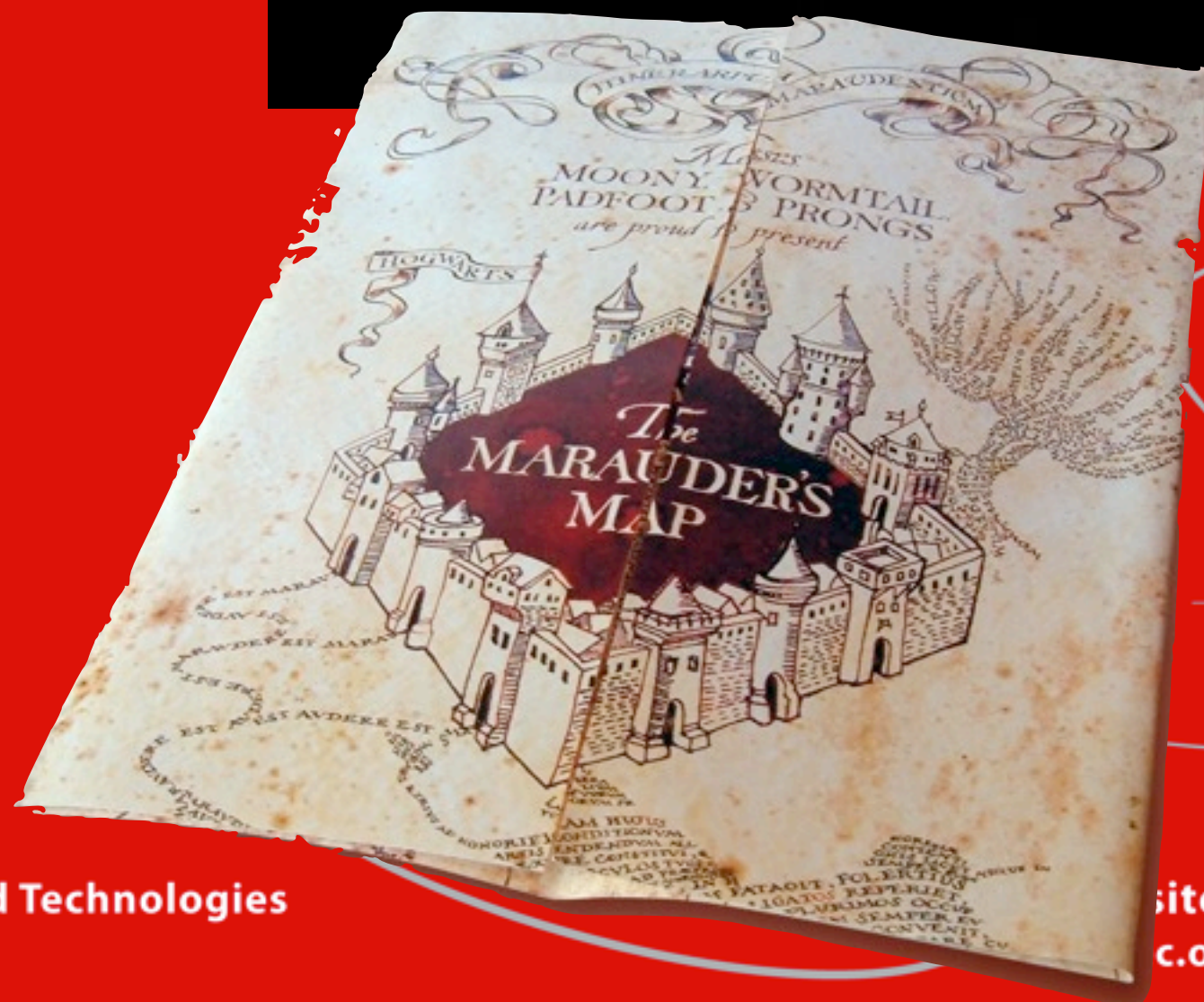








[www.mischiefmanaged.co.uk](http://www.mischiefmanaged.co.uk)



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**Smartphone**  
**=**  
**mobile devices + sensors**

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camera + network

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camera + network

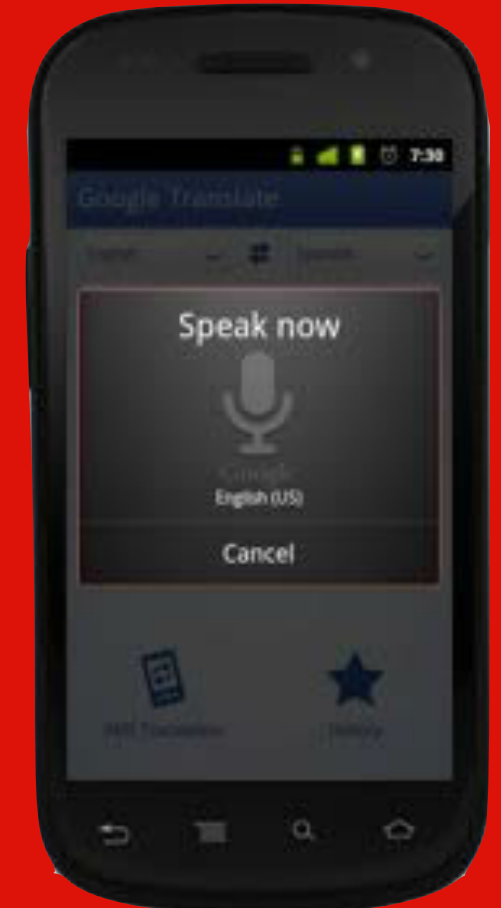
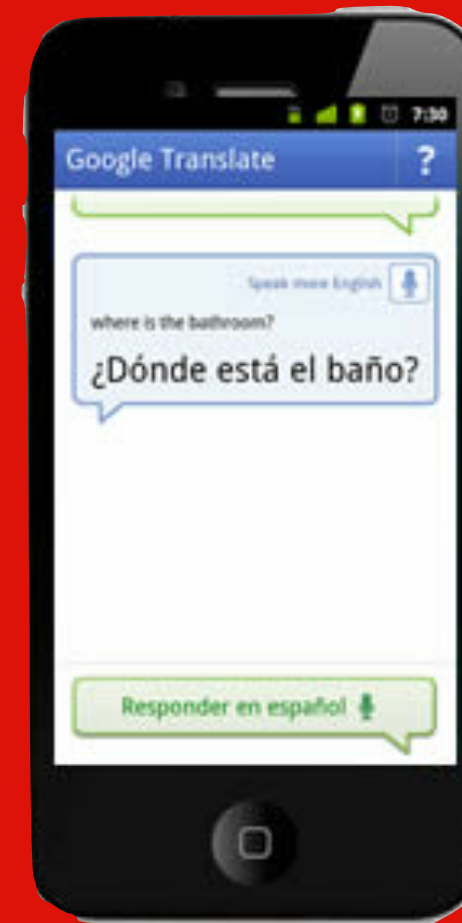
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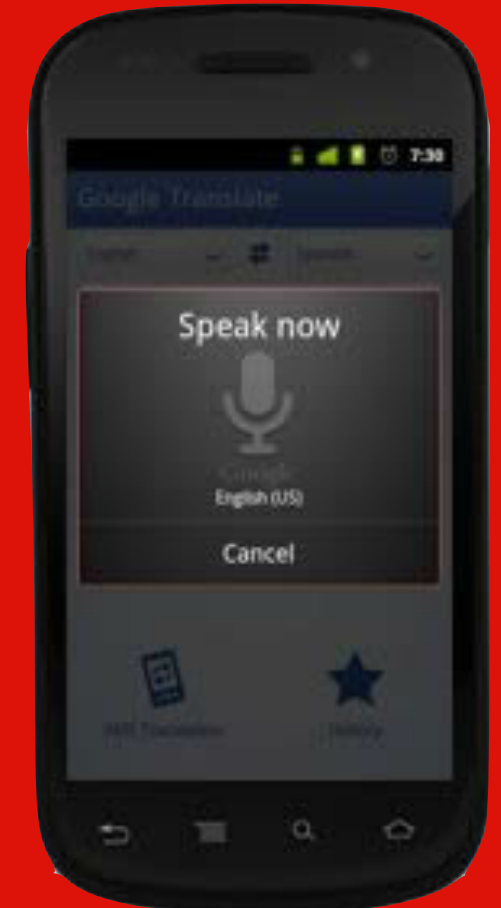


**microphone +  
network**

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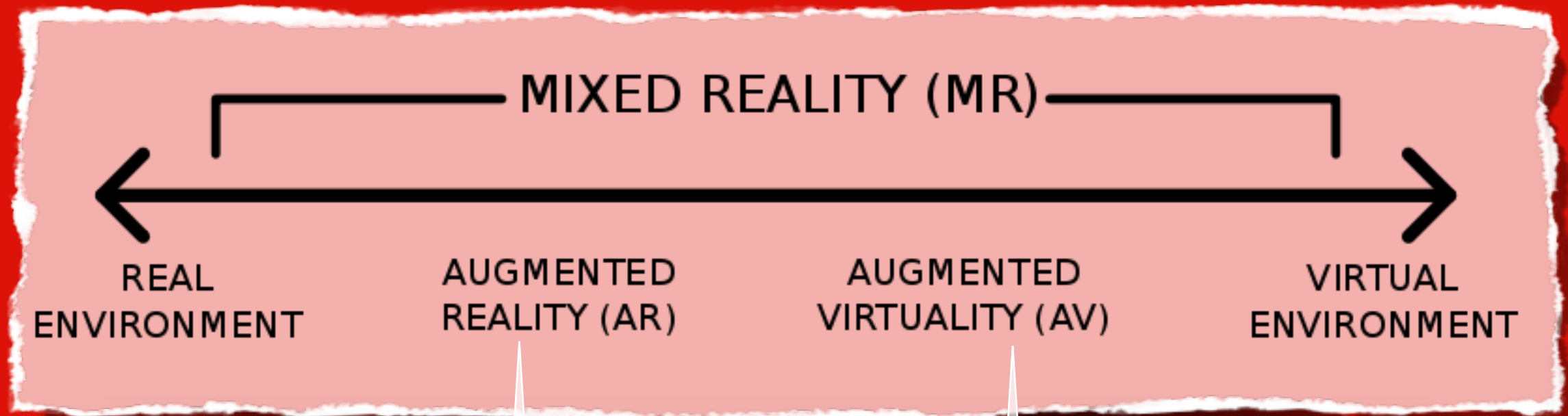


**microphone +  
network**

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Milgram, P. and Kishino, A. F. (1994) Taxonomy of Mixed Reality Visual Displays  
IEICE Transactions on Information and Systems, E77-D(12), pp. 1321-1329.

- Real environment
- enriched with virtual objects

- Virtual environment
- enriched with virtual objects

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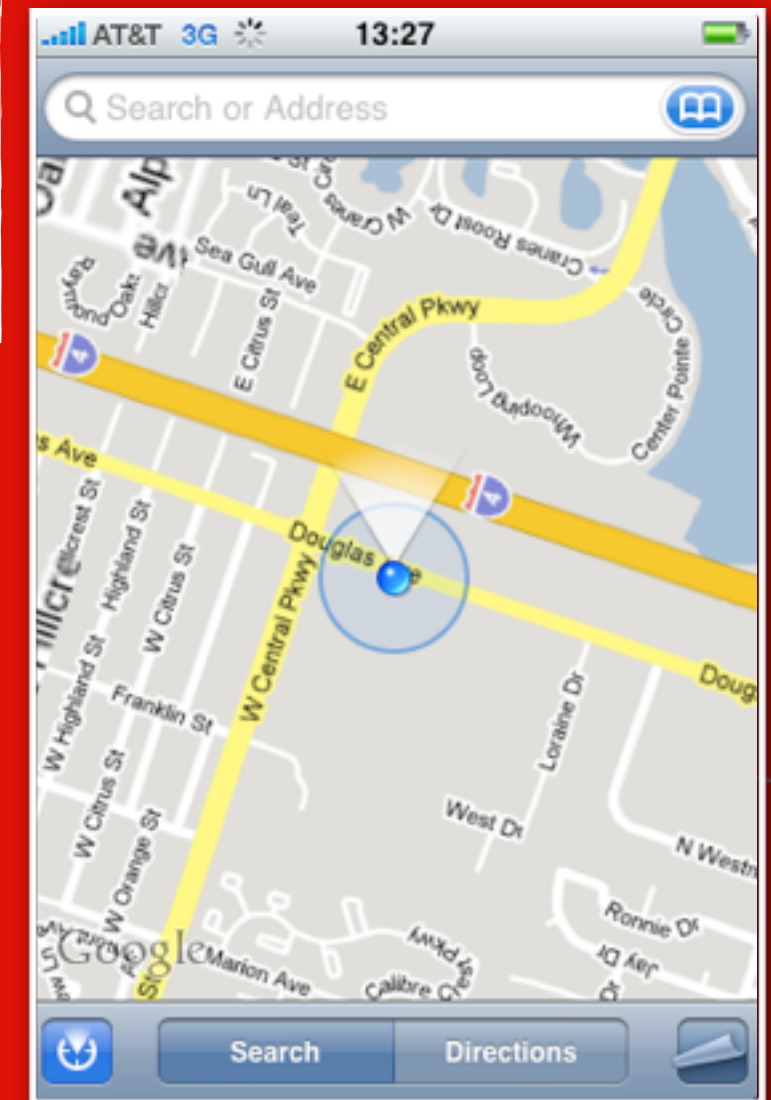




# Augmented Reality

=

## camera + gps + accelerometer



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# Augmented Reality: Locatory



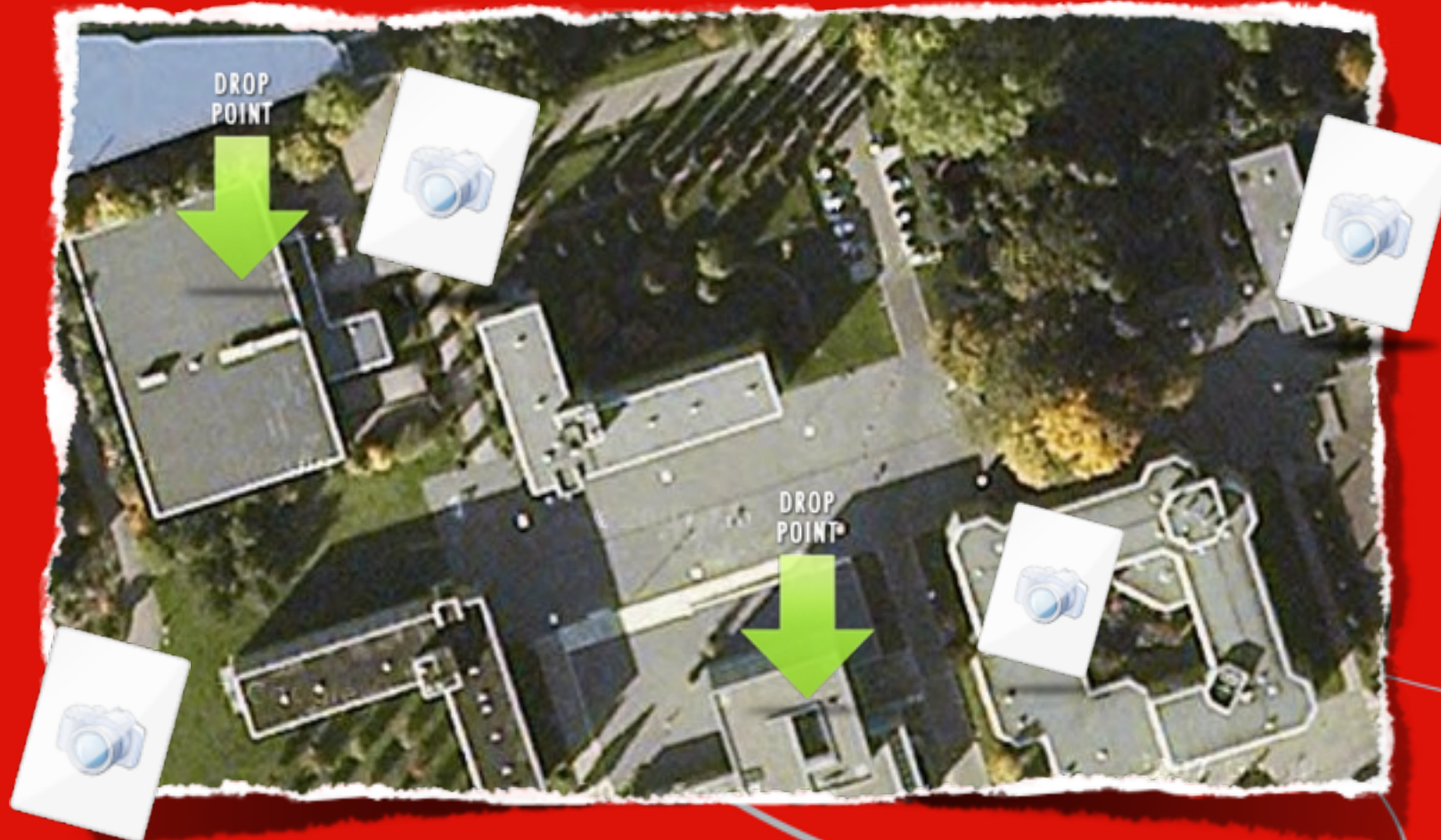
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# Augmented Reality: Locatory



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# Augmented Reality: Locatory

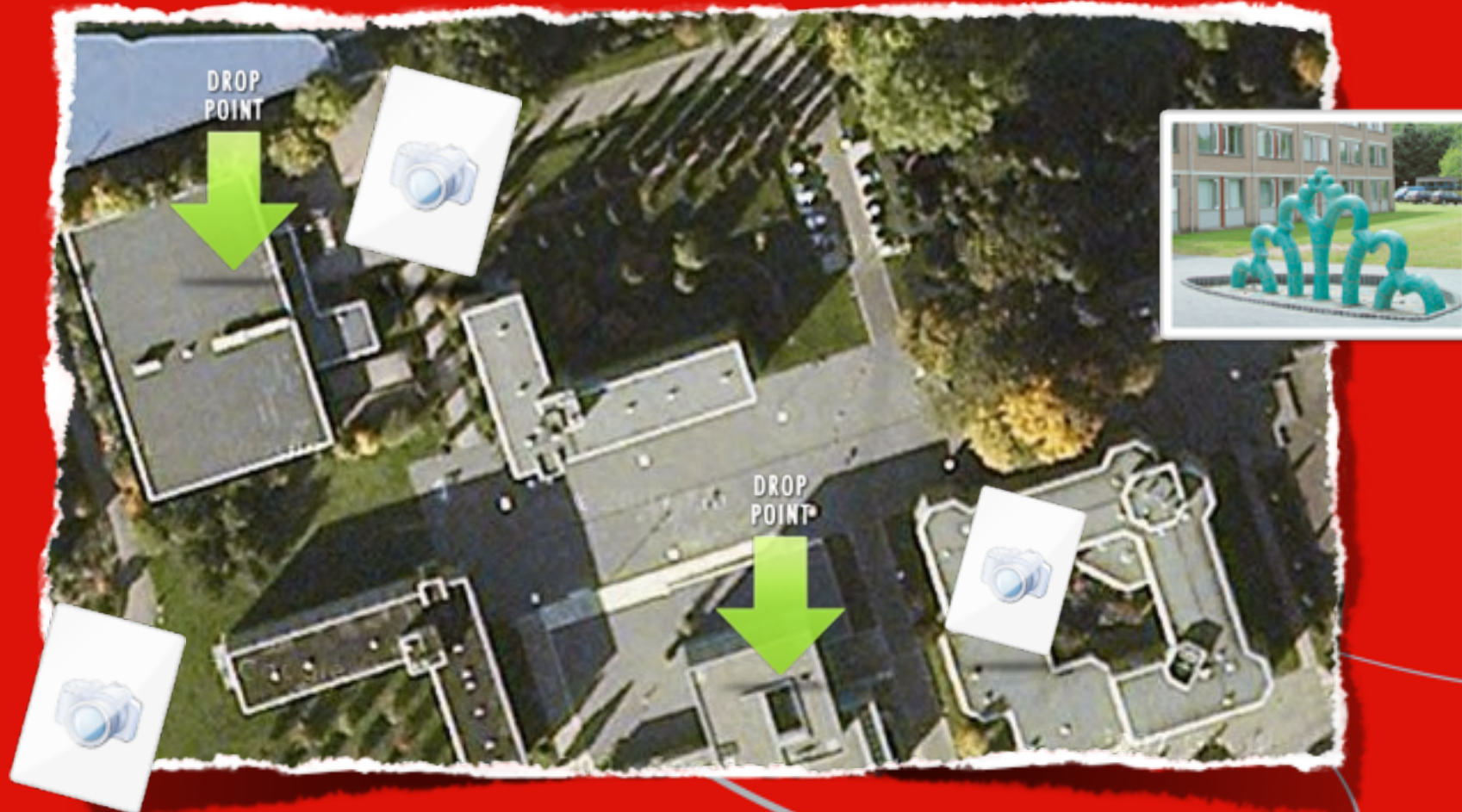


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# Augmented Reality: Locatory



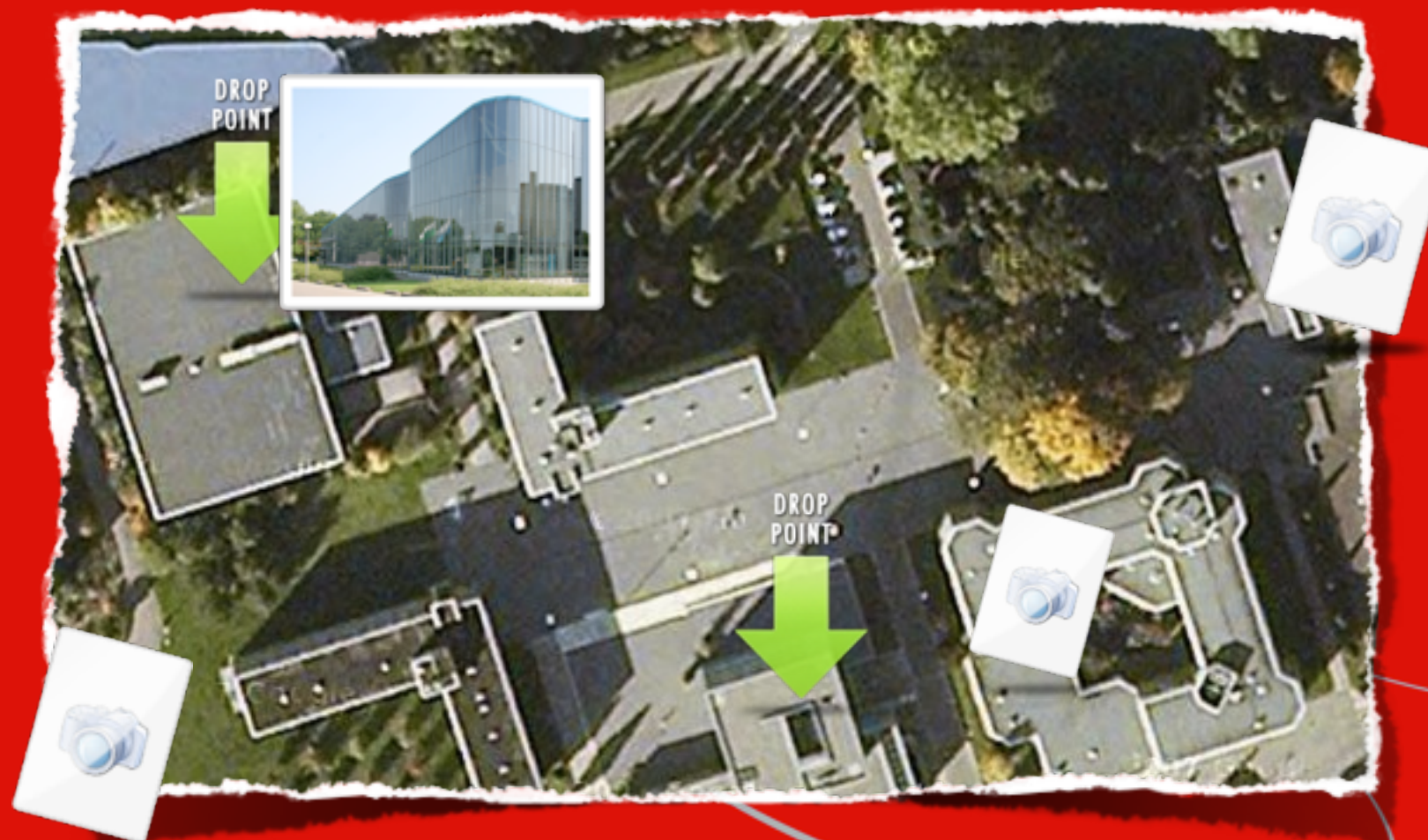
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# Augmented Reality: Locatory



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# Augmented Reality: Locatory





# Augmented Reality: Locatory

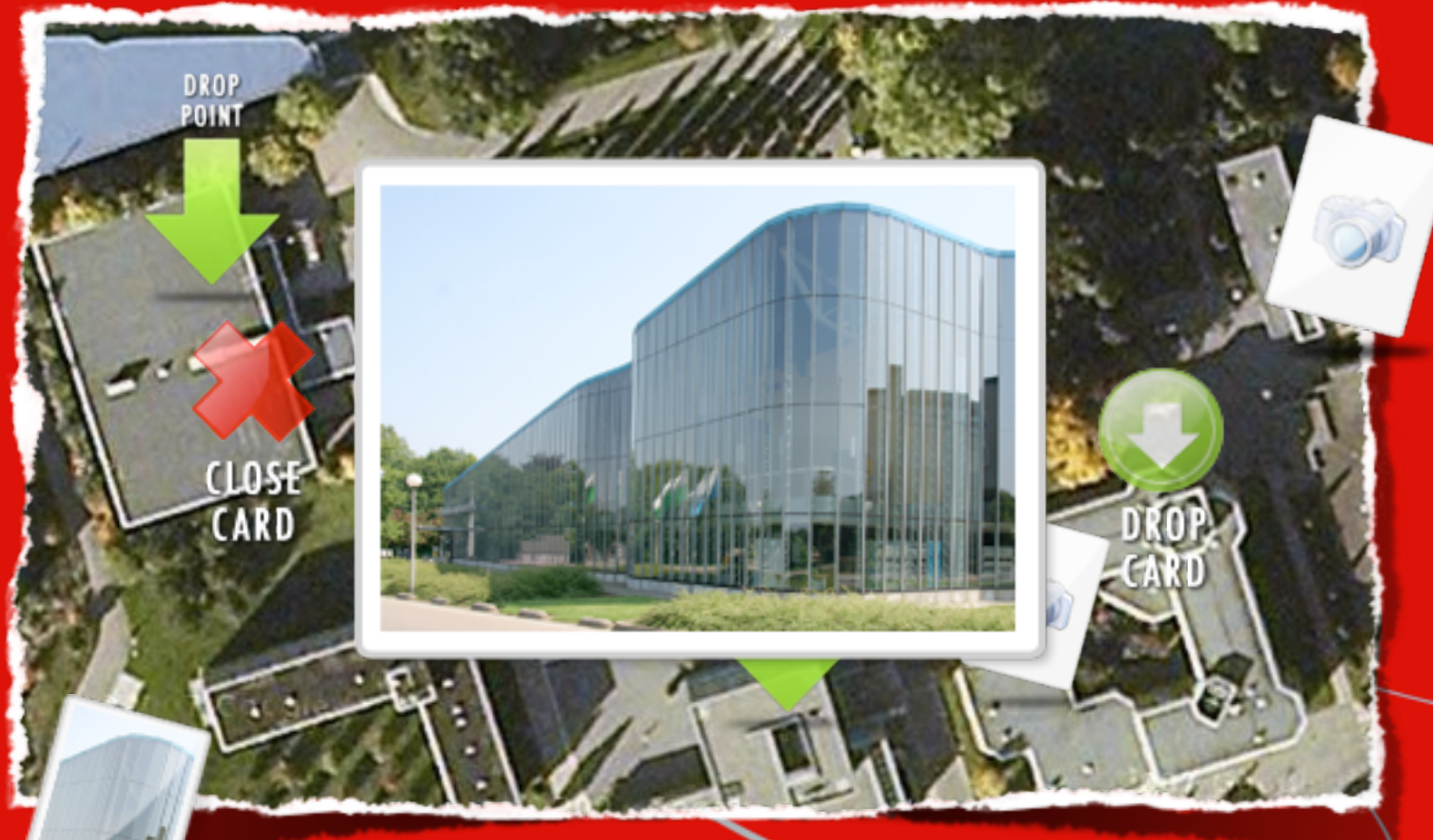


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# Augmented Reality: Locatory



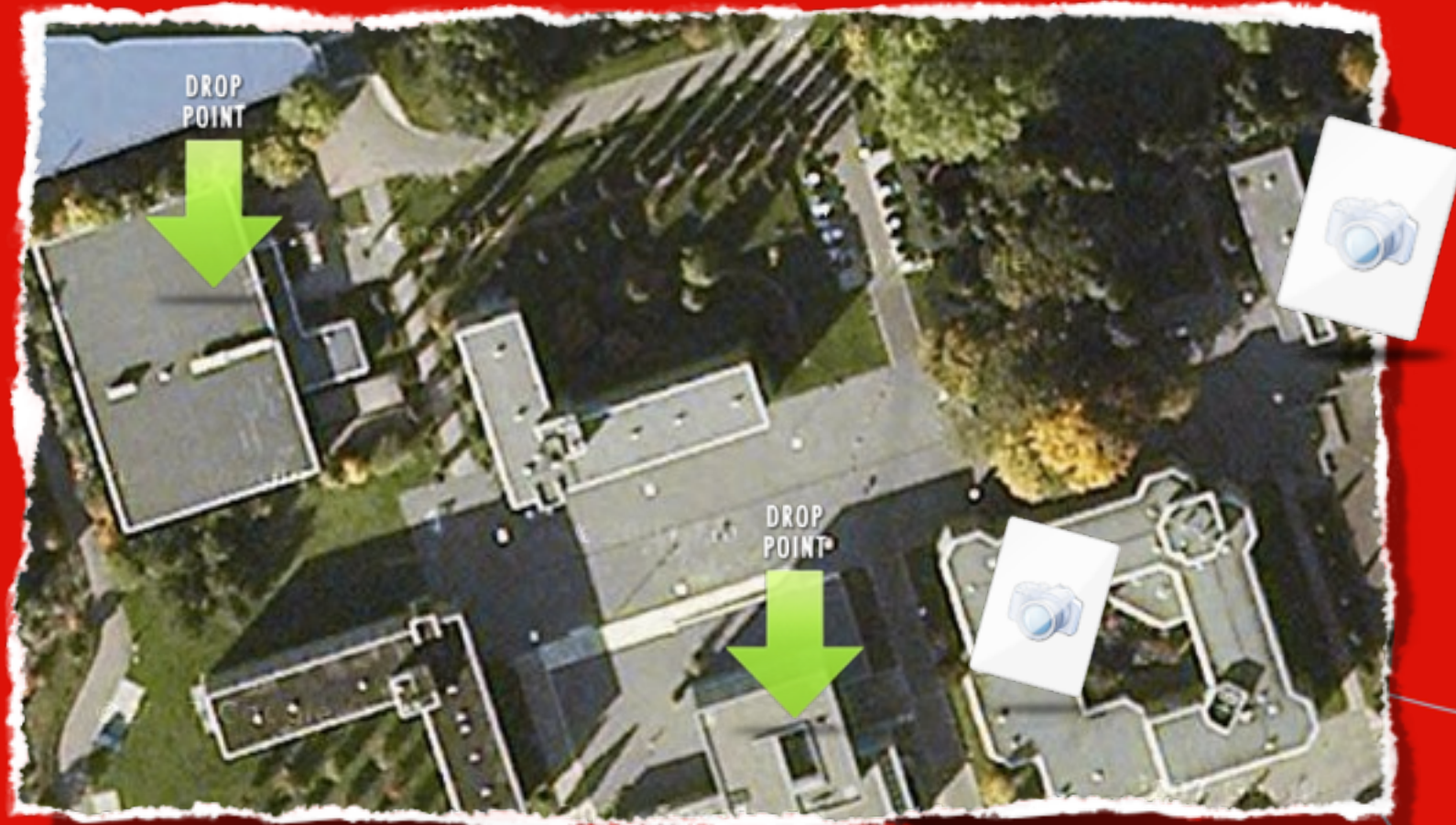
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# Augmented Reality: Locatory



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# Senses

- sight
- hearing
- taste
- smell
- touch
- balance
- ....



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# ARLearn: hearing



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# ARLearn: hearing

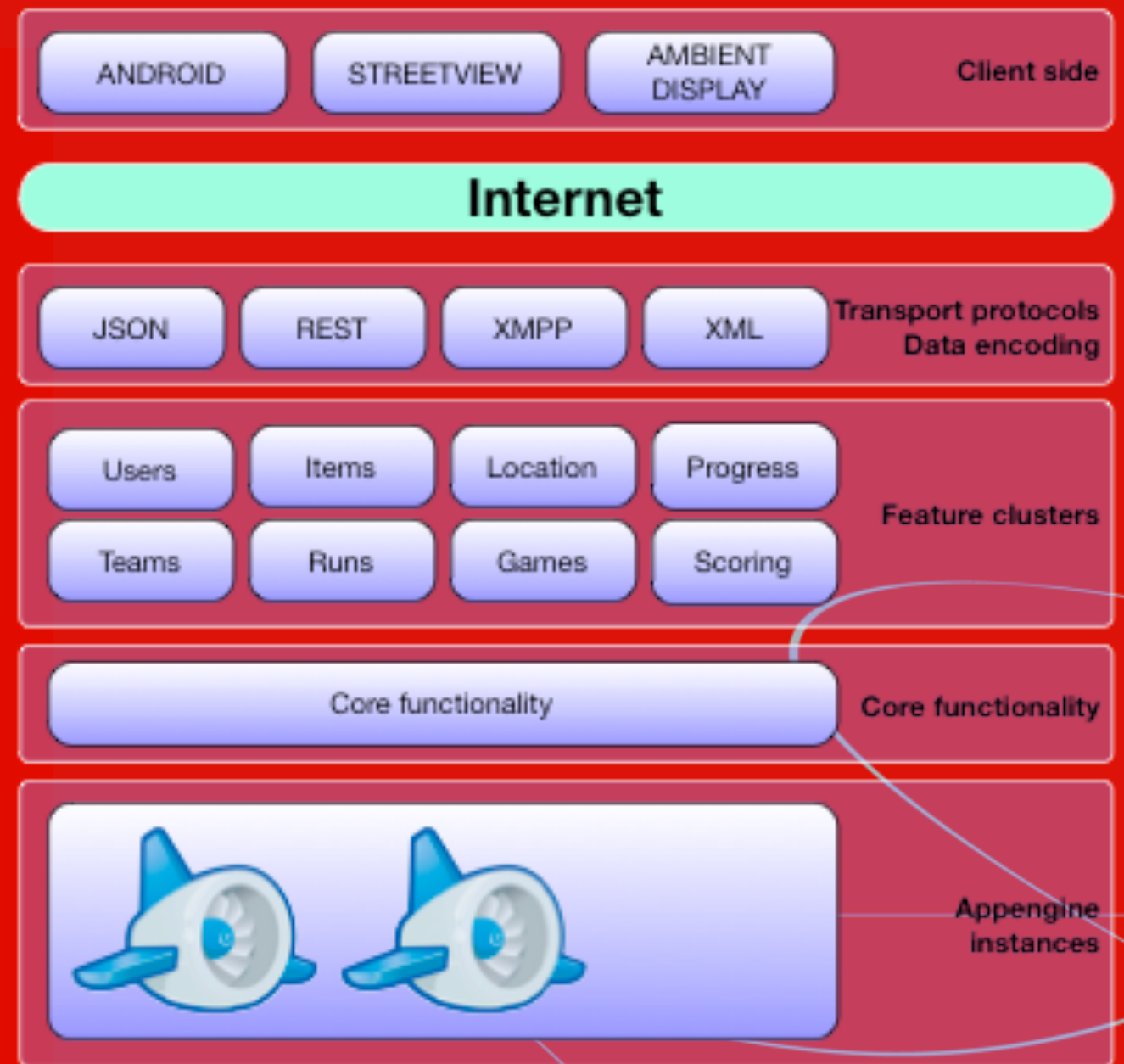


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# ARLearn Architecture

- Serious game engine
  - Score
  - Progress
  - Team play
- Android and streetview clients
- excursions possible
- notification framework
- Rich media: video, audio, multiplechoice questions, ...
- location based assignments and triggers Media

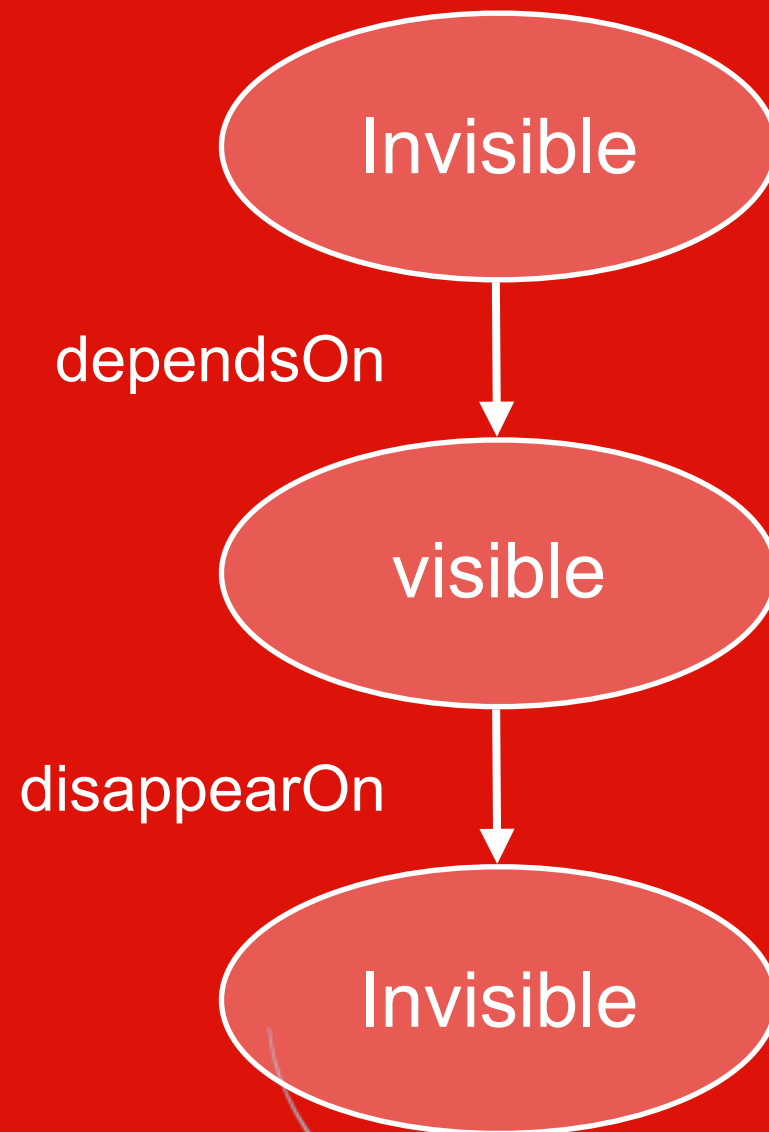


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# Lifecycle of a media item

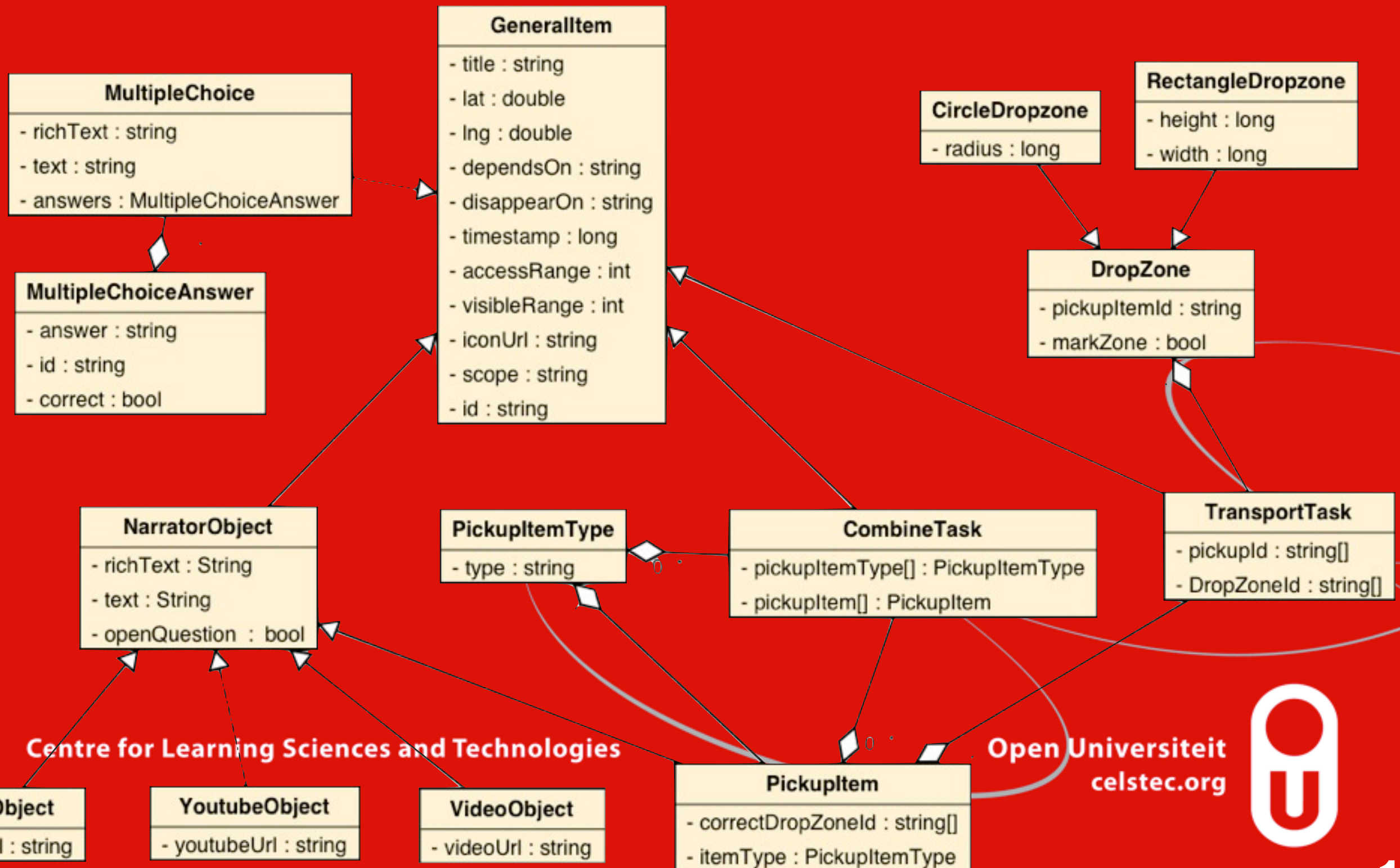


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# ARLearn data model



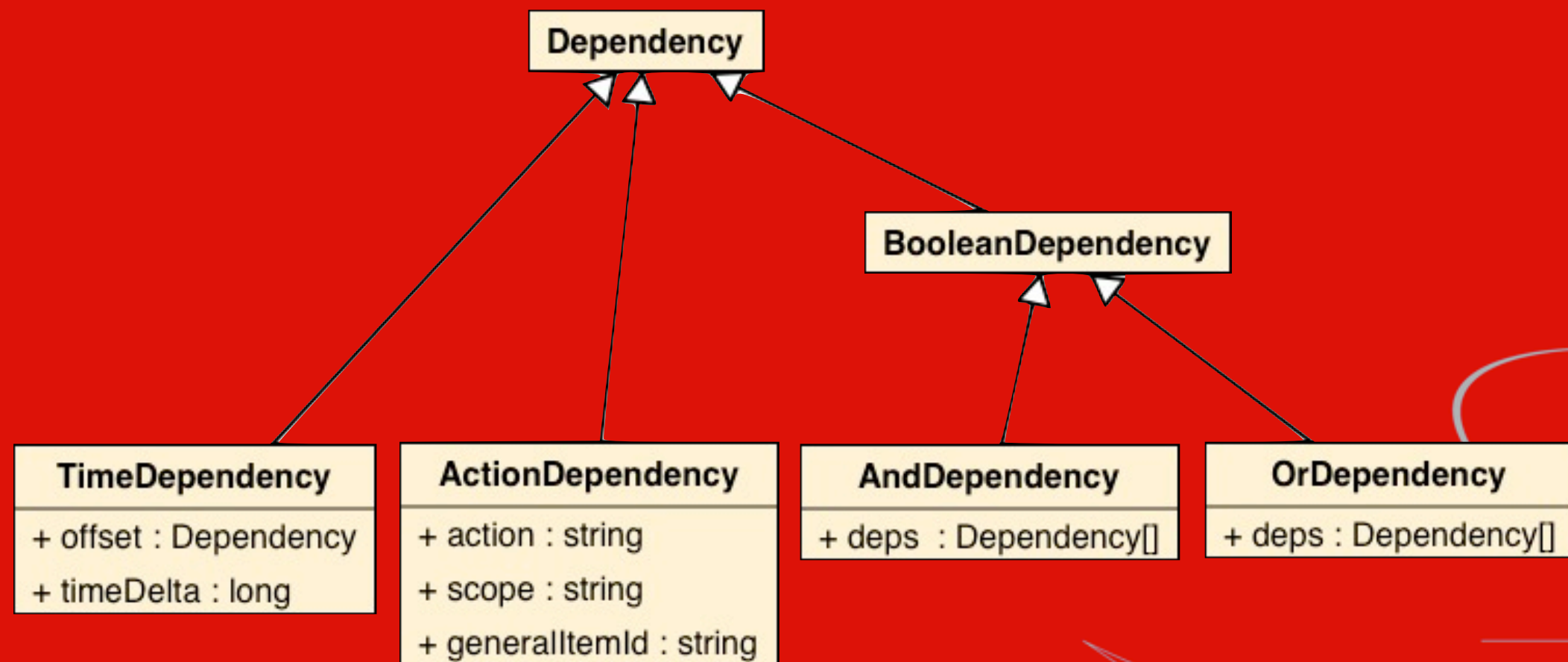
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# ARLearn dependency model



# ARLearn Case studies

	<i><b>Florence case</b></i>	<i><b>Amsterdam case</b></i>	<i><b>Hostage case</b></i>
<i><b>Game design</b></i>	Scavenger game	Adventure game	Decision game
<i><b>Delivery Channel</b></i>	augmented reality	augmented virtuality	augmented reality
<i><b>Pedagogic approach</b></i>	situated learning	expository learning	learning through decision taking

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# Cultural Science Fieldtrip in Florence



# Lessons Learned

- Choose a location for fieldwork with proper GPS reception
  - High buildings, narrow streets :(
- Reserve time for users to make themselves acquainted with the smartphone
- Battery life ~ GPS/network operations
- Balance between automatic start and manual start of audiofragments.





# Hostage Simulation: Real World Training for critical situations



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# Roles / teams

Head of Office - Security Officer - Staff Welfare

a role is performed by a small group with smartphone.

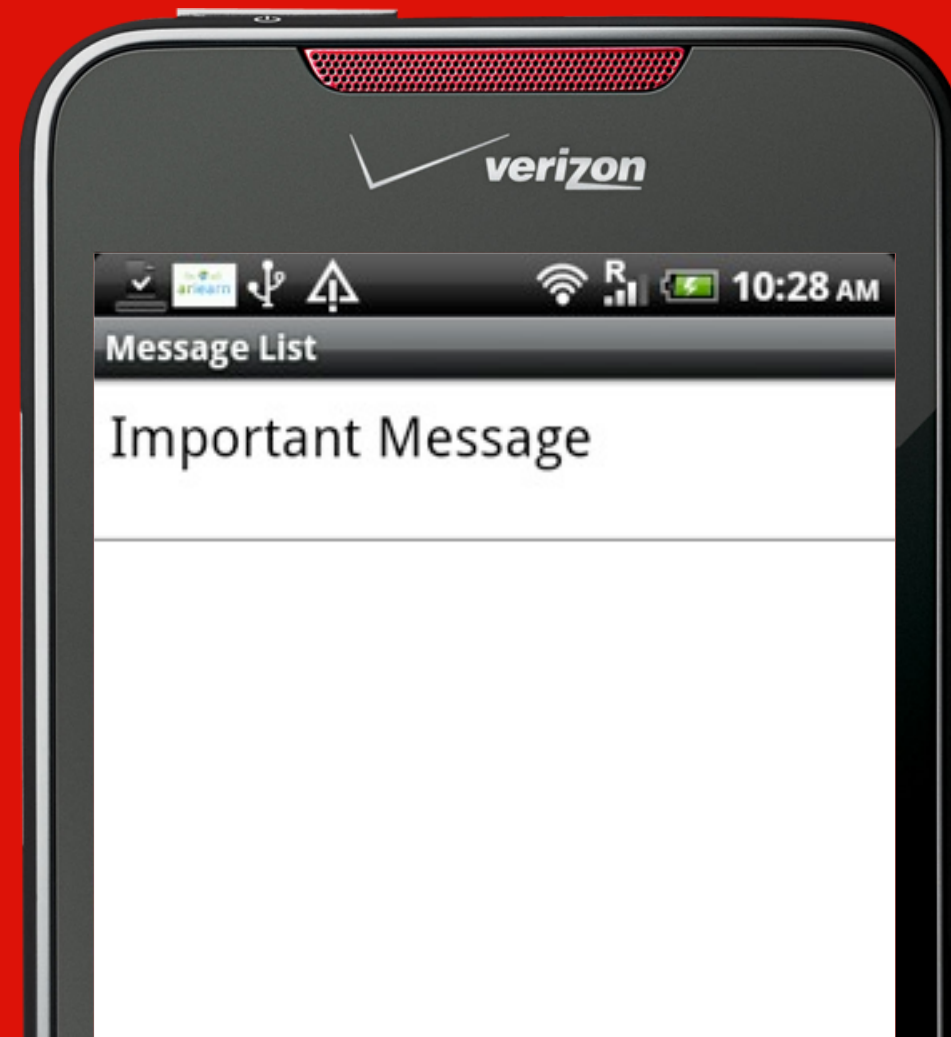
advance organizer for real drill

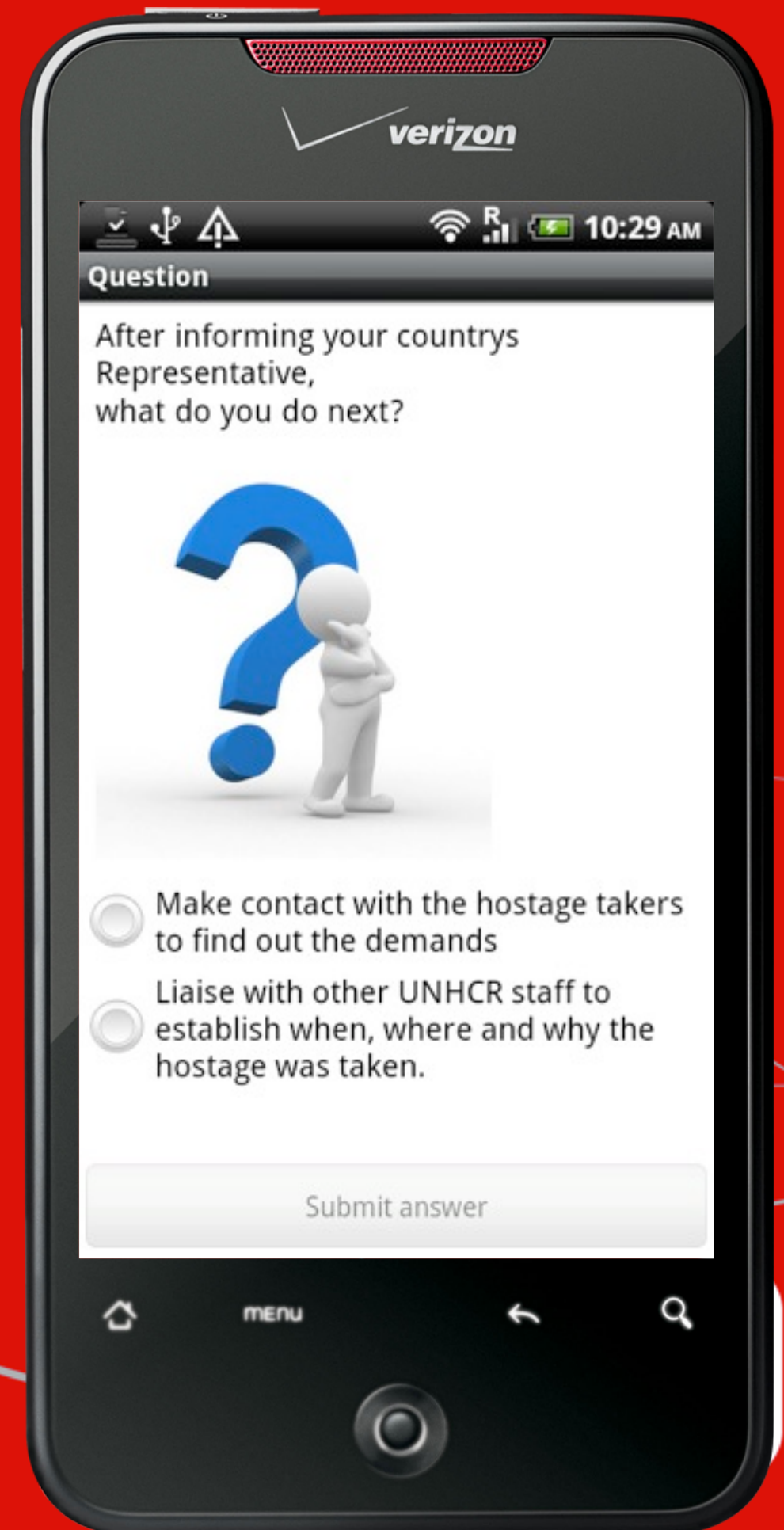
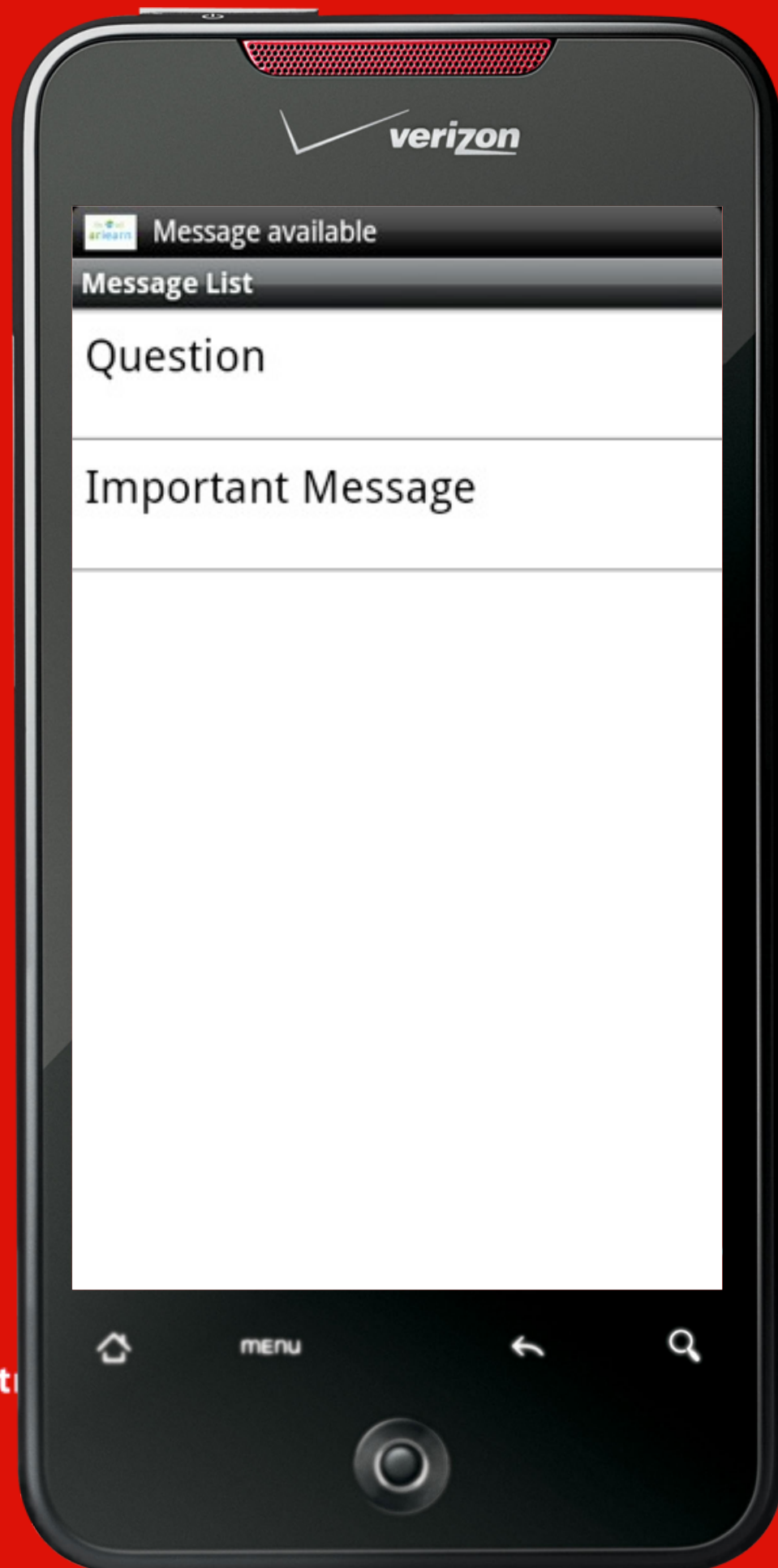
take decisions / collaborate

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# Streetlearn: ARLearn streetview client

- cultural heritage case :  
Amsterdamse grachtengordel
- Unesco site with 100% google streetview coverage
- storyboard based on real historic event:  
smuggling marihuana from Libanon in early 1970s
- Player takes role of Ada Jobse, a police officer

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# Streetlearn: ARLearn streetview client

The interface is overlaid on a Google Street View of Keizersgracht, Amsterdam. The address is shown as "Keizersgracht, Amsterdam" with a note "Address is approximate".

**Team Scores:**

Team	Teamscore	Bonus	Score
Team One	10	0	40 (you)
Team Two			50 226.088m

**Architecture of the gallery**

A visitor in the gallery is proud of her knowledge about the debate over the architecture of this building. She says, that a famous architect state: "Hier wil ik geen discussie over hebben, dit ontwerp keur ik zonder meer goed". But she forgot who it was. Can you help?

From which architect was the quote?

- A. ☐ F.J. Dupont
- B. ☐ A. Bodon
- C. ☐ J.F. Staal

Next

**Locations:**

- 2021.913m
- 2172.137m
- 8.987m
- 12.576m
- 7.283m
- 12.908m
- 213.407m

**Pickups**

**Inventory**

**Help**

**About**

The background shows a street view of Keizersgracht, Amsterdam, with a blue question mark icon and a green flag icon overlaid on the street.

