Orchestration Framework for Learning Activities in Augmented Reality Environments

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Outline

- Why are we doing this?
- How can we structure learning activities in an AR environment?
- What AR tool elements can help us to achieve our goal?
- Examples of code
- Conclusions and future work
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Oportunity

Augmented Reality is a technology that makes it possible enhancing our senses with virtual or naturally invisible information superimposed on top of the virtual world by digital means.
Motivation

Motivation study with middle-school students at Instituto Enrique Tierno Galván (Madrid) May 2011

Best motivation factors:
+ attention
+ confidence

Cybernarium Workshop at Barcelona on June 2011 about how to build an AR learning sequence.
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Learning Activities

ECTEL: Across Spaces

Introduction

Exploration

Evaluation

September 2011
Attributes of objects

- Identification
- Type
- Size
- Position
- Visibility

...
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Transitions

El nacimiento de Venus (1485-1486, Museo de Viena), es una obra de Sandro Botticelli (1444-1510). Representa uno de los obras cambia del mundo clásico. Fue expuesta en el templo sobre las y vistas S.O. en el en el Museo. Se puede ver en la Galería de los Uffizi, Florencia.
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Frame
Learning sequence: General form

<scene>
  <trigger event="F0" />
  <event id="F0">
    <set object="o_1" what="visible" to="true" />
    ...<set object="on" what="visible" to="true / false" />
  </event>
  <object id="o_1" type="..." skin="..." scale="..." visible="false">
    <event type="onclickdown">
      <trigger event="F1" />
    </event>
  </object>
  <event id="F1">
    <set object="o_1" what="visible" to="true / false" />
    ...<set object="o_m" what="visible" to="true" />
    ...<set object="o_n" what="visible" to="true / false" />
  </event>
  <object id="o_m" type="..." skin="..." scale="..." visible="false">
    <event type="onclickdown">
      <trigger event="F2" />
    </event>
  </object>
  <object id="o_n" type="..." skin="..." scale="..." visible="false">
    <event type="onclickdown">
      <trigger event="F3" />
    </event>
  </object>
  ...<object id="o_i" type="..." skin="..." scale="..." visible="false">
    <event type="onclickdown">
      <trigger event="F_i" />
    </event>
  </object>
  ...</scene>
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- Identification of an AR tool core features relevant to guide a learning sequence:
  - Visibility objects’ attribute
  - Event handling
- Method for specification of learning sequences based on:
  - Frames
  - Transitions
Future Work

- Currently using the framework described to deploy an Authoring Tool for developing learning sequences based on AR.
- Extending the framework to deploy adaptive learning sequences.