the CRM Game:
Digital Edition

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Zoom
Premise: CRM as a Language

- Formal Ontology provides a formal Language
- Learning Language Requires Explanatory Meta-texts
- Learning Language Requires Practice
- Learning Language Requires Connection to the World

Ergo

- Learning Languages Require Learning Tools
Premise: Learning through a Game

- Learning a Language is Difficult
- Learning a Language Requires Reinforcement
- Learning a Language Requires Encouragement
- Learning a Language Requires Levels

Ergo

- Game approach to teaching can make gap between learners and difficult knowledge smaller
CRM GAME: Analogue Editions

- Created in 2016 (G. Bruseker and A. Guillem in ITN-DCH)
- Run in Workshops for Different Groups of Scholars, Scientists and Students Around the World since
- Customized data for mapping to match learner’s interest and knowledge
- Interactive means to approach the application of CRM ontology to data structuring and ordering
CRM Game: Digital Edition Round One

- Alpha Version created in 2018, presented at CAA Tubingen (G. Bruseker and A. Guillem)
- Unity platform for familiarity
- Make game playable independently
- Work on structuring of knowledge acquisition, generation of feedback for learner
- Support reinforcement of learning by many examples and repeat play
- Develop initial basic approach to creating reusable game structure
- Never stabilized for broad release
CRM Game: Digital Edition Round Two

- Inspired by "Interoperable Data for Heritage" Workshop in 2019 organised by the MASA consortium
- MASA Consortium financing and supporting development of digital game
- François Xavier Talgorn (Indytion company), specialist in serious games development organizing and implementing development.
- George Bruseker (Takin.solutions) and Anais Guillem (UC Merced) providing game concept and design.
CRM Game

Learning through play: the example of archaeologists
OpenArchaeo: semantic web platform for archaeologists
Using CIDOC for archaeological data
Training french archaeologists
Thinking about scenarios: learning CIDOC CRM
Thinking about scenarios: archaeological mapping
Learning about instance...

The excavation is an essential concept since all other concepts are linked to this event. It is to the excavation that we associate a date, a place, actors, structures and artefacts found.

Find the good class to represent the excavation.

Archeological artefact is made up of objects manufactured or transformed by human, which are found during excavation (a coin, a knife blade, a tile, etc.).

Find the good class to represent an archeological artefact.

Some human actions leave traces that the archaeologist can observe in the ground, such as a bell mould pit.

Find the good class to represent archeological feature (a wall, a burint, a pit).
The birth of Saint Martin occurred in 316.

Find the good classes and property to represent the link between an event and a dating.
The archaeological report deals with the history of the development of the site.

Find the good classes and property to represent the link between the report and its subject.

**Challenge**

13 / 15

**Instance Modelling (2)**

**CIDOC-CRM Game**

**Score**

80 / 300

**Validate**
The site of Marmoutier was excavated by Elisabeth Lorans.

Find classes and properties required to model more complex relationships.
Sulpice Severus wrote the Vita sancti Martini.

Be aware of the importance of "Events" at the core of the modelling system.
The relation with two different types (E55_Type) can be distinguished using different properties.

How to indicate that the denarius was made to be a coin but was used as a pendant?
CRM Game

A HIGHLY CUSTOMIZABLE PEDAGOGICAL TOOL
CRM Game: A game AND a generic tool

The game is designed to be highly customizable.

You can add new, remove or modify:

- Entities & Properties (RDF file)
- Games
- Challenges within a game
- Instances
- Scoring system

NO CODE REQUIRED
THE GAME ADAPTS DYNAMICALLY
HOW DOES IT WORK (1)?

The game actually is your data
UNDER THE HOOD

Cidoc-Crm RDF

Challenges data

Instances data

CLEAR, HUMAN READABLE, EDITABLE FILES!

THE GAME IS 100% DYNAMIC
MAPPING GAME OBJECT <-> FILE DATA

Actual extract of the 'game4.json' file

```
{
  "ChallengeID": 10,
  "Title": "Learning about instances ...",
  "Statement": "The Marmoutier’s abbey was founded by Martin fo Tours [...]",
  "Score": 20
}
```
INITIALIZING THE BOARD: THE ‘Init’ FIELDS

Actual extract of the ‘game4.json’ file

```json
{
  "ELeftInit": "-E5, E7, E12, [...], E74, E89",
  "EMiddleInit": "-E5, E7, E12, [...], E74, E89",
  "PLeftInit": "-P1, P1i, P2, [...], P108, P108i, P129, P129i",
  "IRightInit": "-I28"
}
```
DEFINING EXPECTED ANSWERS: ‘Answer’ FIELDS

Actual extract of the ‘game4.json’ file

```json
{
  "ELeftAnswer": "-E27",
  "PLeftAnswer": "-P70i",
  "EMiddleAnswer": "-E31",
  "PRightAnswer": "[Blue];[Pink]",
  "ERightAnswer": "**",
}
```
BEBOND CIDOC-CRM ONTOLOGY

● This game version is based on the Cidoc-Crm ontology (RDF)
● It is fully customizable within this context
● It is possible to use any other ontology with some additional effort
  ○ Develop ontology specific parser (read and analyse RDF file)
  ○ Update the decks’ management system (data structure, initialization)
  ○ Update color system, if any
● It is possible to create new cards’ structure with some additional effort
  ○ Design and graphic production
  ○ Update the code to display the cards
  ○ Update the code for the interaction with the cards (buttons, actions), if any
Next Steps for CRM Game

- Use in Teaching Contexts
- Expansion of Game Decks
- Development of Editions for Different Extensions
- Expansion of Functionality beyond Games