

Human Computer Interaction

@ the Department of Informatics and Telecommunications

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ΠΑΝΕΠΙΣΤΗΜΙΟΝ ΑΘΗΝΩΝ

- Gesture-based interaction
- Games
- Augmented reality
- User-centred design methods, personalisation, interactive storytelling
- Information visualisation

Gesture-based interaction in immersive VR

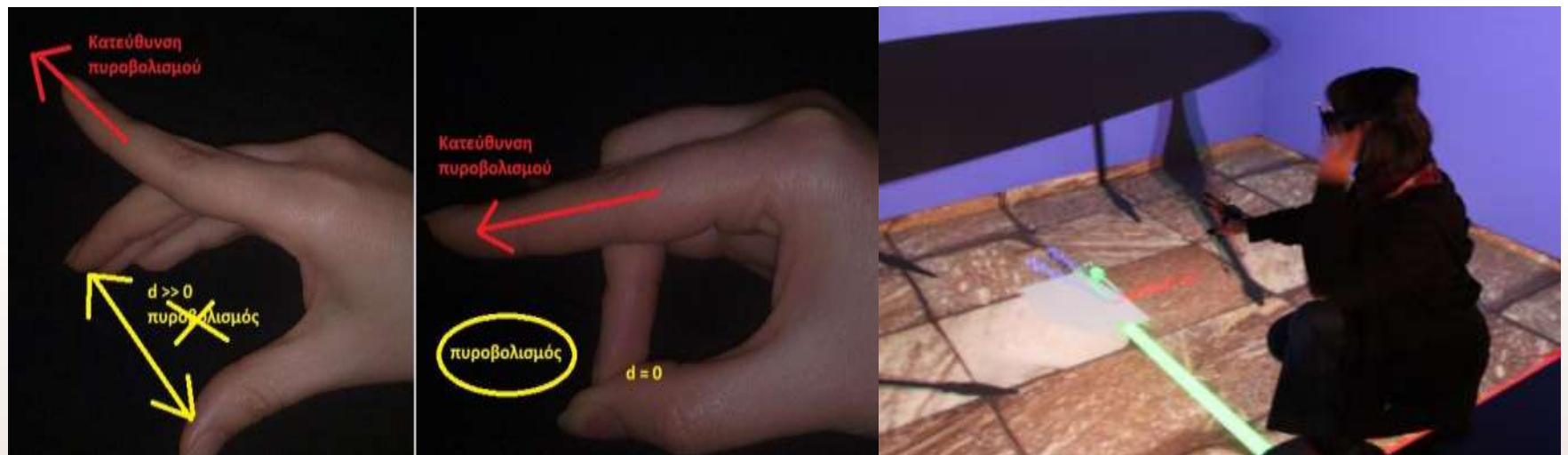
Ms. Anthi Dimara

Supervisors:

Prof. Yannis Ioannidis

Dr. Maria Roussou

Dr. George Drettakis



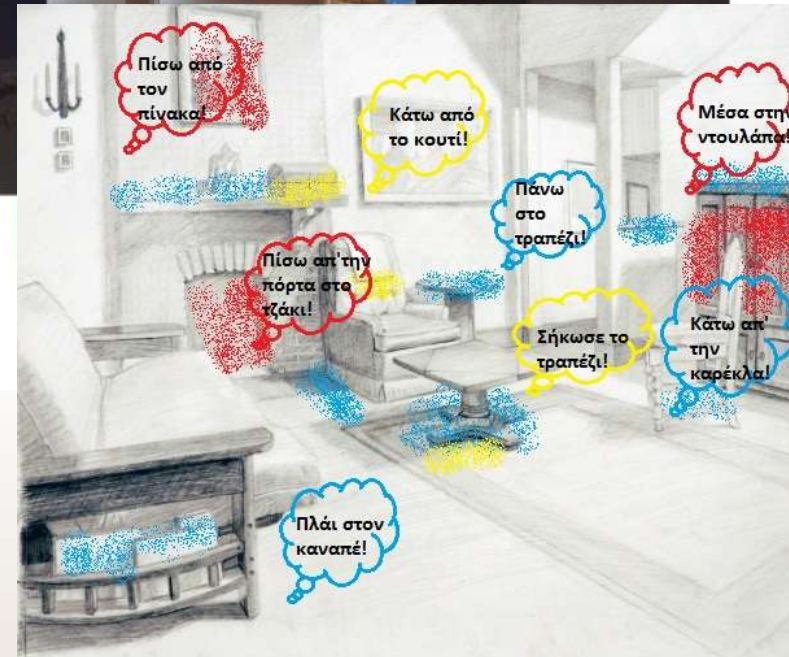
Gesture-based interaction in IVR

Tasks in the VE requiring:

- Push
- Pull
- Pick up
- Put down
- Rotate
- Grab
- Release

...using gesture and finger tracking

- An experiment to compare with wand:
Balance, Multi-Tasking, Speed, Accuracy



Magnetic Poetry: a full-body interactive game

Ms. Marianthi Grizioti

Supervisors:

Prof. Yannis Ioannidis

Dr. Maria Roussou



Magnetic poetry full body interaction

- A one or two-player game using the Kinect
- Players can solve arithmetic equations or co-create a sentence

The screenshot displays the game interface, split into two main sections. The left section is for magnetic poetry, featuring a grey background with word boxes: 'going', 'with', 'beach', 'friends', and 'my'. Below this is a green chalkboard with boxes containing 'I', 'like', 'for', 'walk', and 'a'. A yellow instruction box reads: 'Drag a word with both of your hands and drop it in the border. You can erase any word from the border by dropping and leaving it out of the border!'. A speech bubble says 'I am ready!!'. The right section is for arithmetic, showing a numeric keypad with digits 0-9 and operators '+', '-', '/', and '.'. Below the keypad, an equation is displayed: $45 \div 9 = 5$. A 'CHECK!' button is to the right. At the bottom right, a timer shows 'TIME LEFT: 49' and a 'Score: 3' is displayed. Small inset images in the bottom corners show a person using the Kinect.

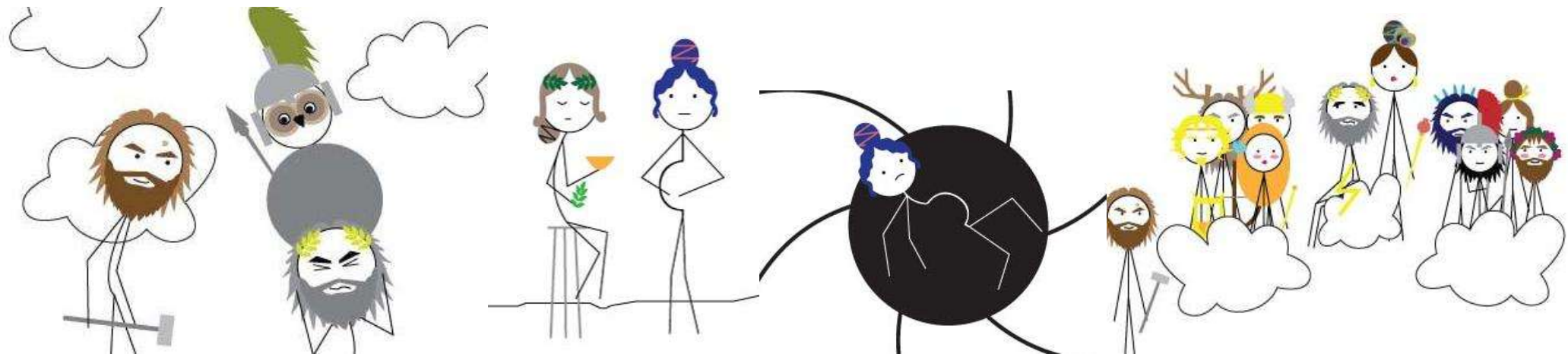
ARcropolis: Augmented Reality game for two players

Mr. Manolis Giannidakis, Mr. Panagis Papadatos

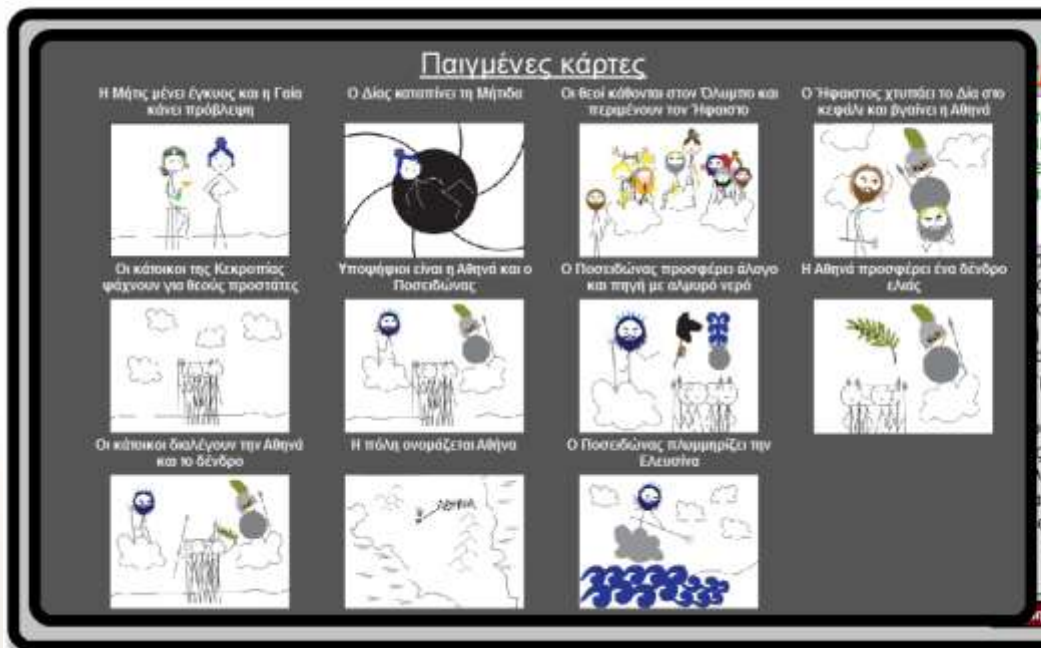
Supervisors:

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- A two-player serious game for primary school students
- Remotely located players use their webcam and 24 printed cards with patterns to co-construct a story about the Greek goddess Athena & the birth of Athens



CHES: Cultural Heritage Experiences through Socio-personal interactions and Storytelling

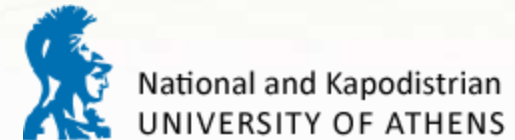
Prof. Yannis Ioannidis

Vivi Katifori, Vassilis Kourtis, Marialena Kyriakidi,
Natalia Manola, Maria Roussou, Manolis Synodinos,
Manolis Tsangaris, Maria Vayanou

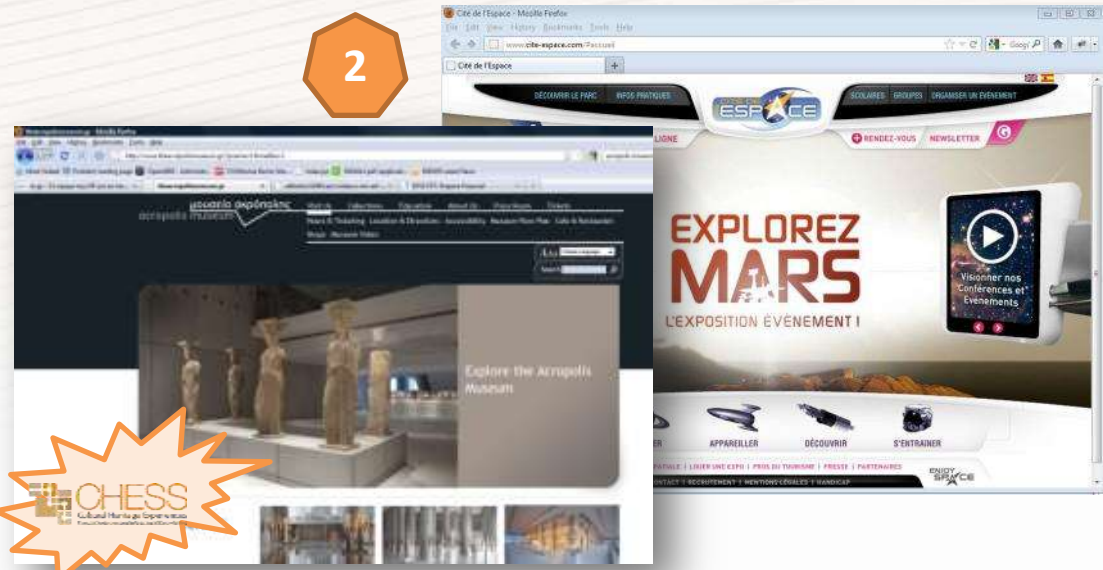


- Project acronym: **CHESS**
- Contract n°: **270198**
- Project type: **STREP**
- Start date: **01.02.2011**
- Duration: **36 months**

- www.chessexperience.eu



The experience starts prior to the visit



The Acropolis Museum



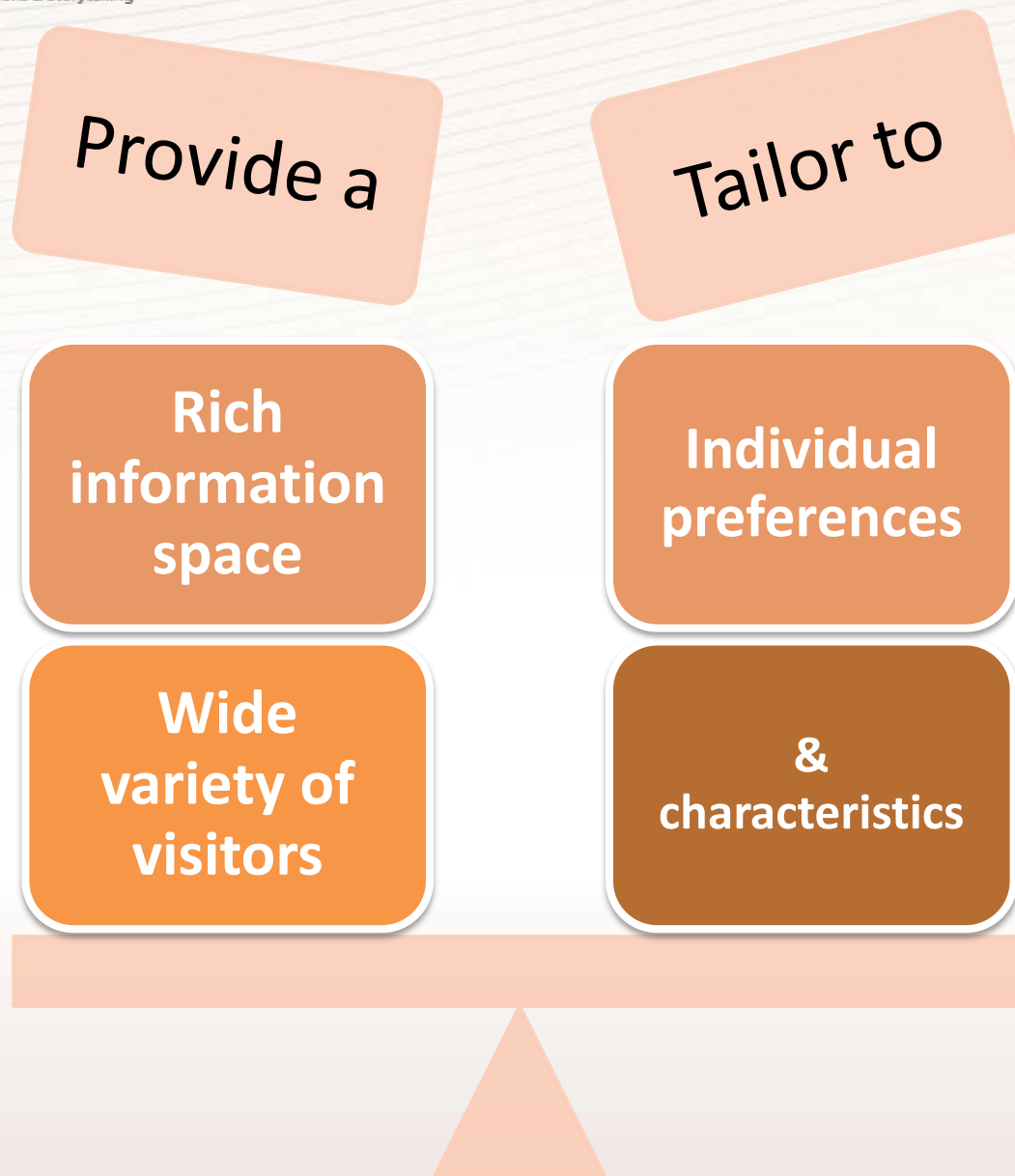


Two pillars of visitor experience



personalisation

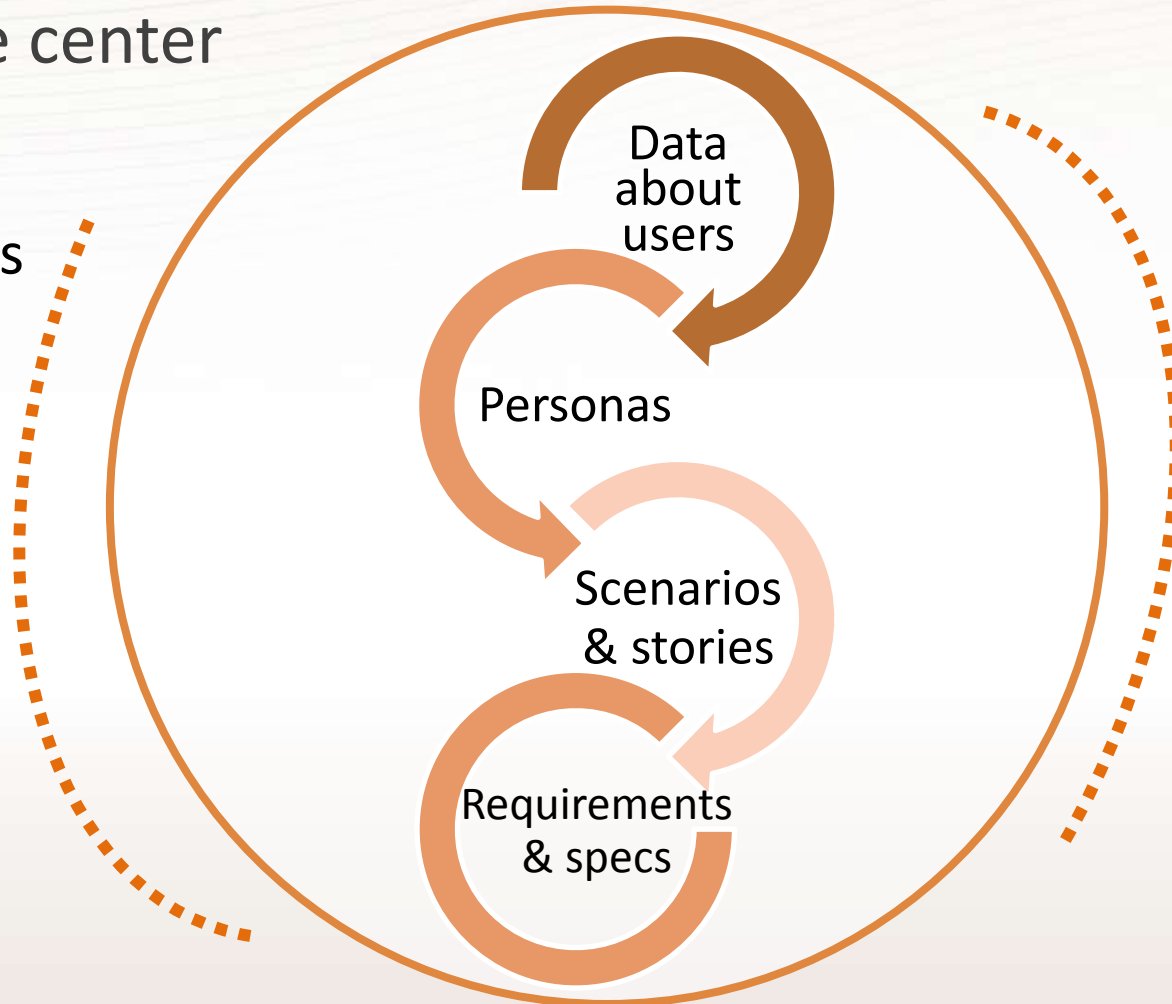
storytelling





An iterative design approach, which makes use of interaction design processes, such as **participatory design**, to keep the user at the center

A continuous design, test with users, measure, and re-design **cyclical** process



Closely linked to **evaluation**, especially formative evaluation



Understanding our users

Data collection: quantitative & qualitative (ethnography)



Personas

Visitors & authors, individuals & groups



Scenarios

UX scenarios & stories



Requirements – Functional Specifications

On-site/in-museum, Off-site/on-line Visitor experience, Author reqs.

**Explicit &
implicit profiling**

**Match with
Personas**

Suggest stories



Before



**Experience
through adaptive
storytelling**

**Create
“souvenirs”**



During



After

Revisit

Explicit elicitation of visitor profile: CVS

- Capture the visitor’s profile through a very **brief** and **engaging** questionnaire, before the experience commences.
- An **iterative** and **complex** process, raising many design issues and challenges at different levels. E.g., :

the need for recording as much information as possible about the user to **support personalisation**



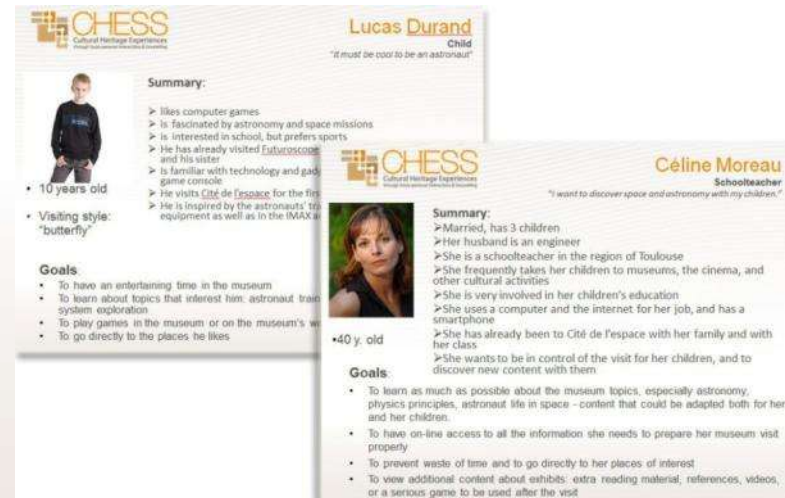
the need to **avoid a time-consuming** and complex questionnaire process

- Subset of **persona variables** considered important for the CITE, in the context of the CHESS personalisation objectives for the Beta version

Lucas → “Training to become an astronaut”

Céline → “A travel in space”

1-on-1 mapping



Lucas Durand
Child
"It must be cool to be an astronaut!"

Summary:

- > likes computer games
- > is fascinated by astronomy and space missions
- > is interested in school, but prefers sports
- > He has already visited Futuroscope and his sister
- > is familiar with technology and game console
- > He visits Cité de l'espace for the first time
- > He is inspired by the astronauts' training equipment as well as in the IMAX

Goals:

- To have an entertaining time in the museum
- To learn about topics that interest him: astronaut training, space exploration
- To play games in the museum or on the museum's website
- To go directly to the places he likes

Visiting style:
"butterfly"

10 years old

Céline Moreau
Schoolteacher
"I want to discover space and astronomy with my children."

Summary:

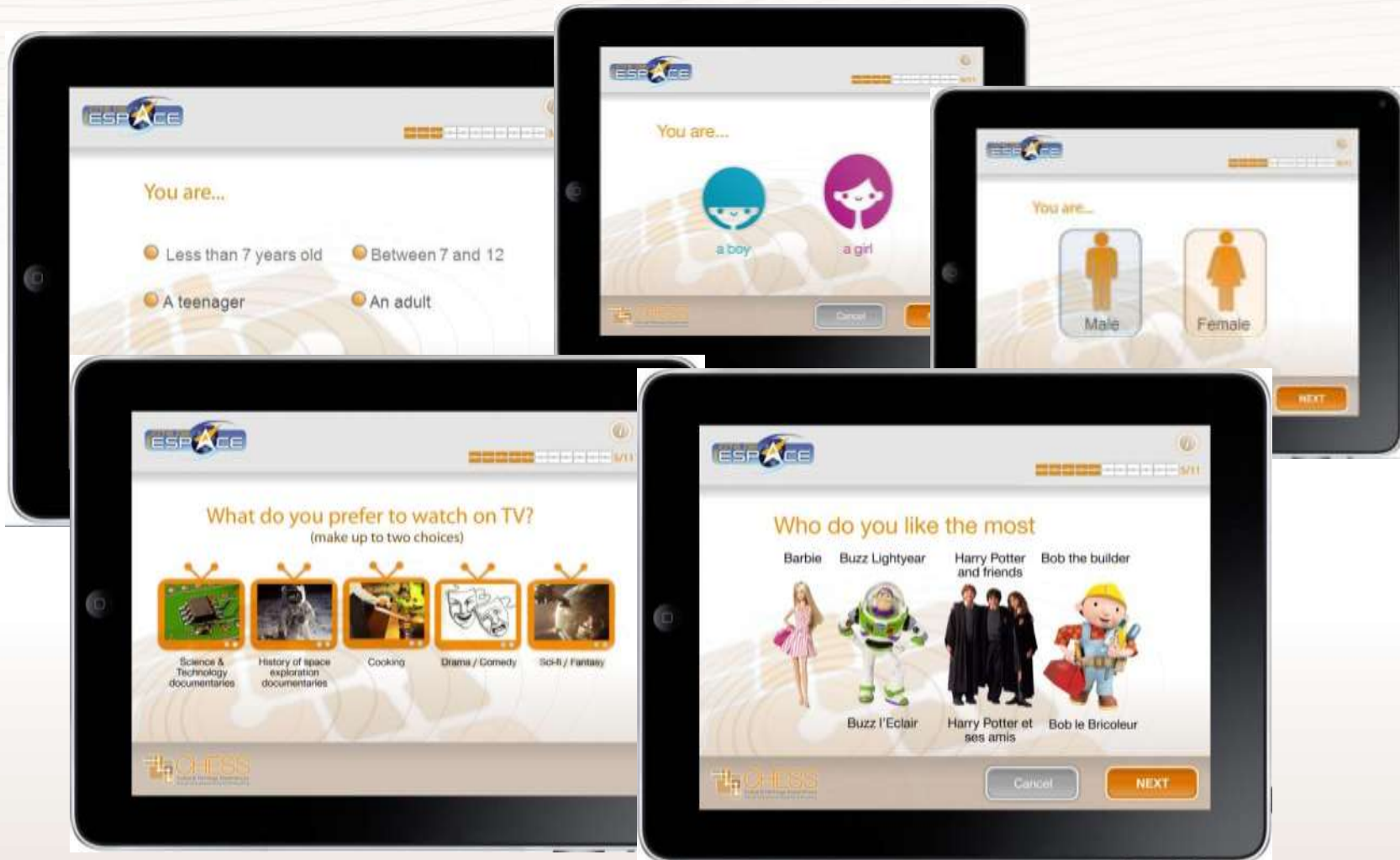
- > Married, has 3 children
- > Her husband is an engineer
- > She is a schoolteacher in the region of Toulouse
- > She frequently takes her children to museums, the cinema, and other cultural activities
- > She is very involved in her children's education
- > She uses a computer and the internet for her job, and has a smartphone
- > She has already been to Cité de l'espace with her family and with her class
- > She wants to be in control of the visit for her children, and to discover new content with them

Goals:

- To learn as much as possible about the museum topics, especially astronomy, physics principles, astronaut life in space – content that could be adapted both for her and her children.
- To have on-line access to all the information she needs to prepare her museum visit properly
- To prevent waste of time and to go directly to her places of interest
- To view additional content about exhibits: extra reading material, references, videos, or a serious game to be used after the visit

+40 y. old

A decision to create two “versions” of the CVS, one for visitors under 12 years old (age Group A) and one for teenagers and adults (age Group B)



- Personas are a set of representative profiles (“archetypes”) for a visitor base
- how a particular profile uses a particular application in a given context
- Effective personas are driven by data

As a design tool:
a powerful way to
communicate behaviors,
goals, wants, needs, and
frustrations

As an implementation
tool: for approaching the
“cold start” problem by
creating profiles (i.e., as a
basis for personalisation)

- 1** Age
- 2** Gender
- 3** Educational level
- 4** Educational background
- 5** General interests
- 6** Occupation
- 7** Country of origin
- 8** Language
- 9** Experience with the use of digital devices
- 10** Disabilities / Health issues
- 11** Visiting style
- 12** Visiting duration
- 13** Part of the collections to visit
- 14** Objective related to the museum collections
- 15** Visiting order preferences
- 16** Returning visit
- 17** Level of interest in the museum topics
- 18** Interests related to the museum topics
- 29** Purpose of visit
- 20** Social visiting habits
- 21** Social interaction style during the visit
- 22** Preferred way to obtain information before the visit
- 23** Preferred way to obtain information during the visit
- 24** Preferred way to use the CHESS system during the visit
- 25** Preferred narration style
- 26** Level of interactivity

Acropolis Museum visitor personas

**Nikos
Athanasiou**



10 years old

“The museum is boring”

**Georgia
Athanasiou**



71 years old

“The museum makes me feel young”

**Jack
Harris**



24 years old

“The museum would be much more interesting if the exhibits could tell me their stories...”

**Natalie
Schmidt**



35 years old

“The museum is an excellent way to relax between meetings!”

**Takis
Karathanasis**



53 years old

“The museum is really great but sometimes it is too much for me.”



The Moreau family

- They live in Toulouse
- High level of education
- 2nd visit
- Period: weekend

father

Nicolas, 43
engineer

mother

Céline, 40
teacher

children

Julie, 10
Théo 7
Léopold 5

- They are interested in space and astronomy
- Parents organise the programme themselves, seeking for the most interesting activities for their children
- They demand high pedagogical quality from the exhibitions and pay attention to the content



The Durand family

- From Saint-Nazaire
- Middle level education
- 1st visit
- Period: Summer holidays

father

Julien, 38
technician

mother

Caroline, 36
admin.
employee

children

Emma, 12
Lucas 10

- They need help to decide their programme.
- They have already visited Futuroscope in Poitiers and Eurodisney near Paris, and they are interested in experiencing exciting exhibits

**Lucas
Durand**



10 years old

*"The museum
is boring"*

**Céline
Moreau**



40 years old

*"I want to discover
space and
astronomy with
my children"*

**Ellie
Petrou**



51 years old

“New technologies are challenging for me but they’re worth the effort”

**Laurent
Boulay**



30 years old

“All new tools are exciting and useful for my work”

Studies with (real) visitors



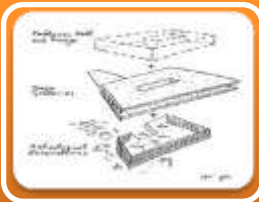
- Full day workshop in June 2011 @ Acropolis Museum
- Next week in Toulouse, at the Cite de l'espace (Ecsite conference)





Plot sketching

- Choose the story concept(s)
- Choose and arrange the main story pieces (i.e., create the storyboard)



Staging

- Place the story into the physical world
- Link story to spaces and exhibits



Casting & Shooting

- Unfold the story with all the details
- Choose and arrange the digital content



Experiencing

- Make a *production* out of a story given user actions, profile and context

Storytelling Model

Plot sketching

MACRO-ADAPTATION

Staging

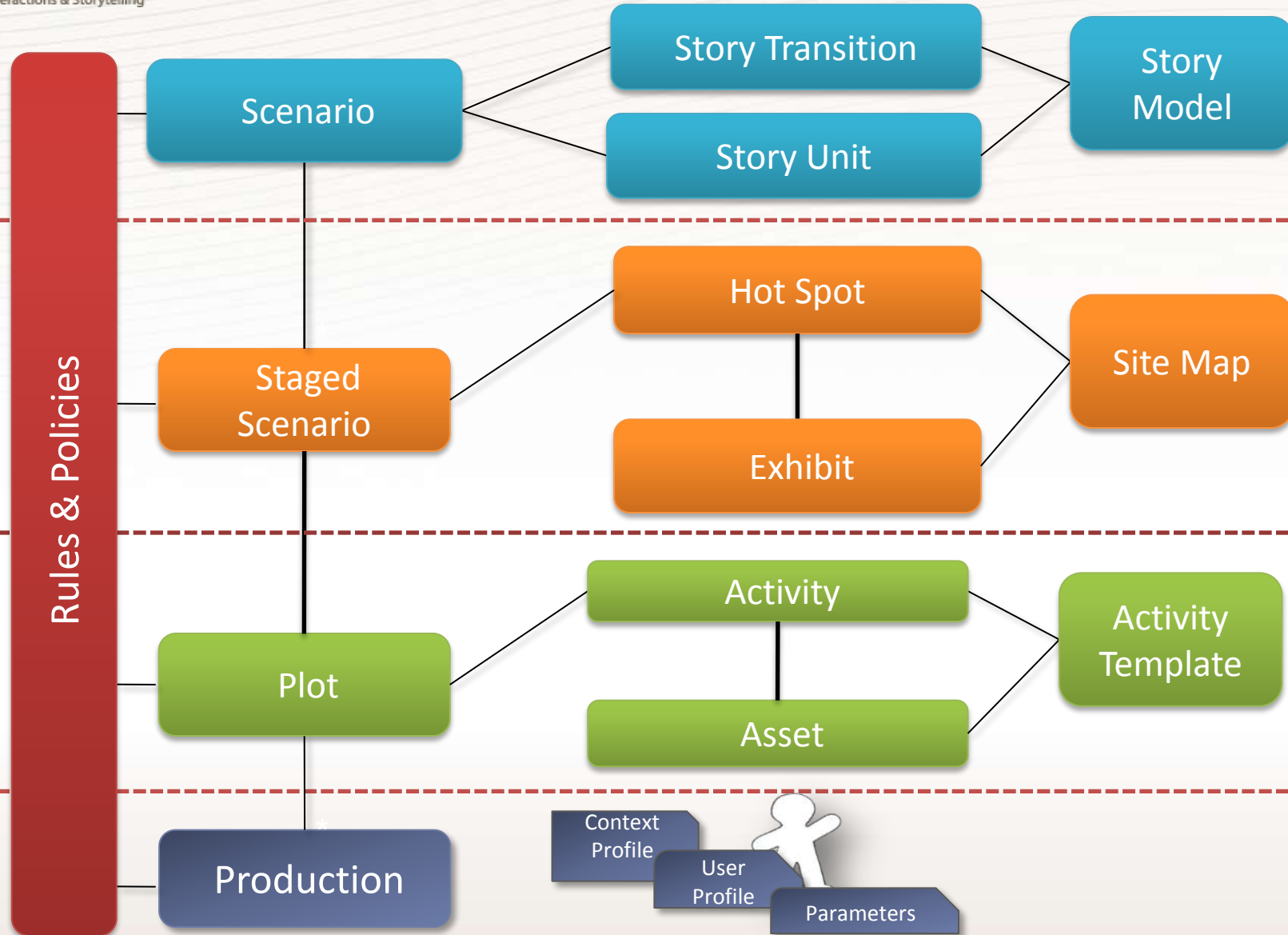
CONTEXTUALIZATION

Casting & Shooting

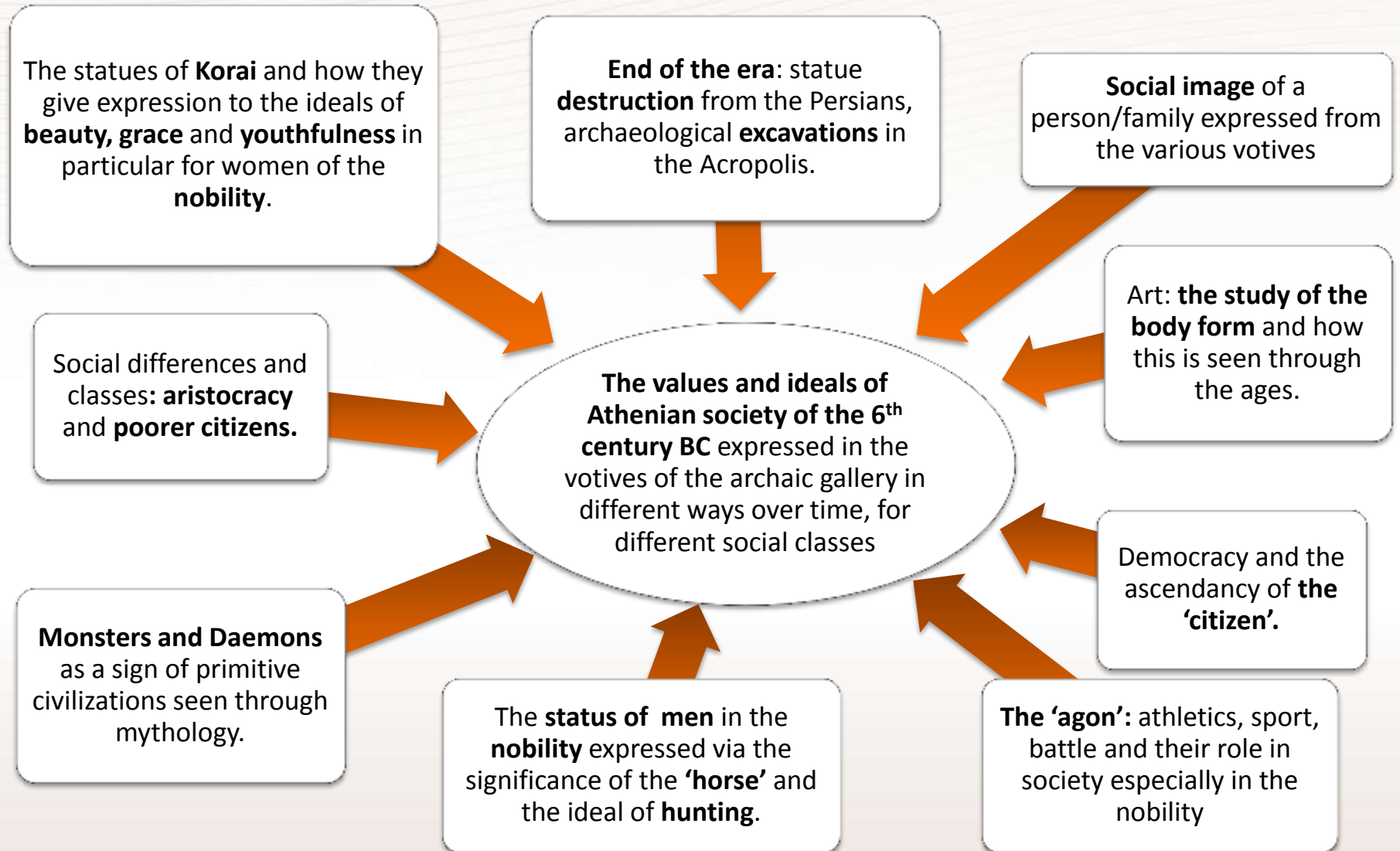
MICRO-ADAPTATION

Experiencing

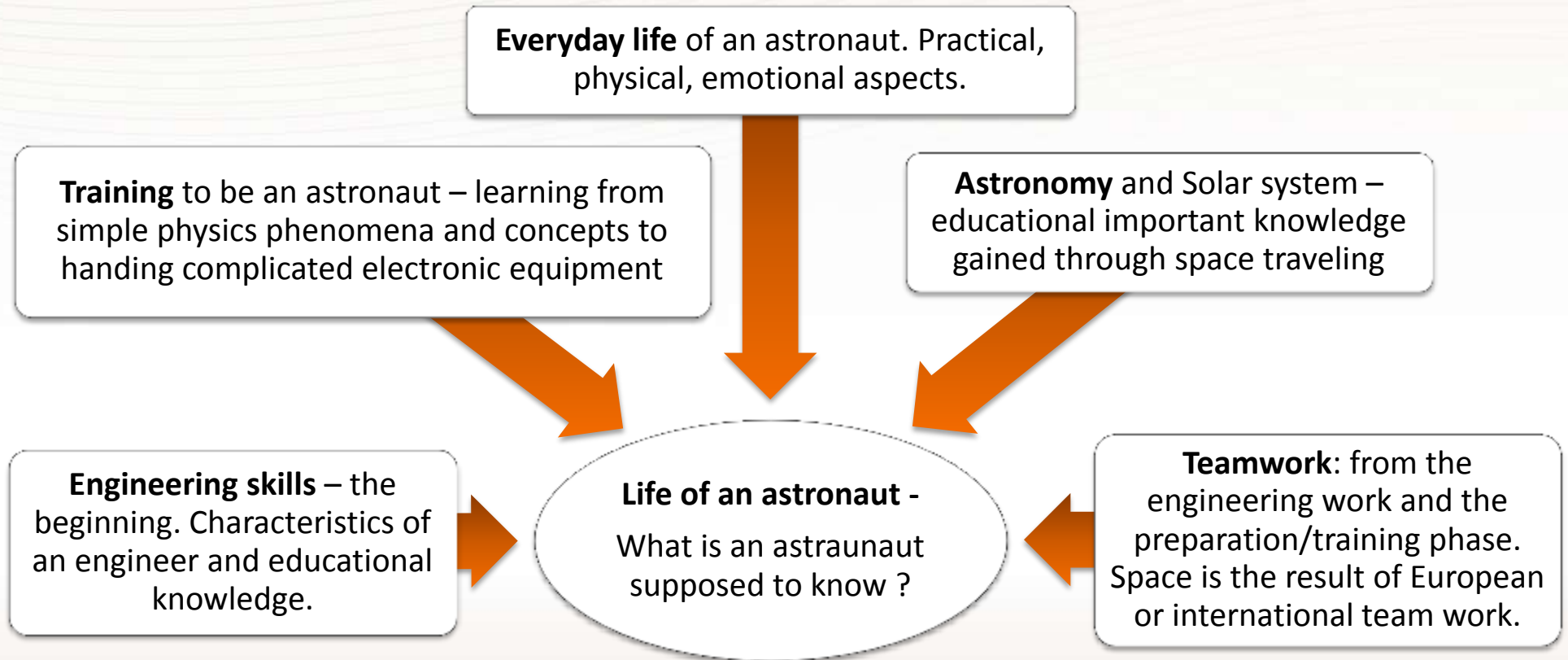
PRESENTATION ADAPTATION



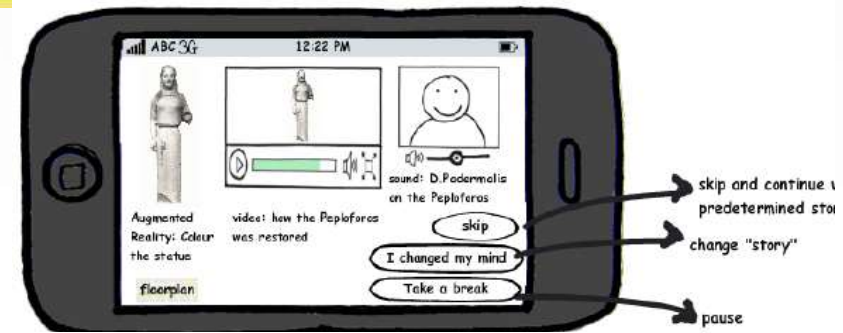
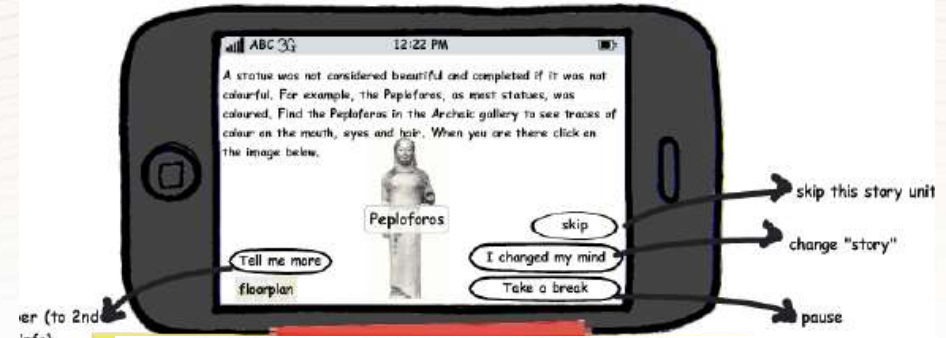
Main story concept / message to convey (specifically for the Archaic gallery)



Main story concept/message to convey



Interactive stories and AR prototypes





Examples of "souvenirs" for Cité de l'espace





e.nventory: the European eInfrastructures Observatory, www.enventory.eu

Prof. Yannis Ioannidis

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e•nventory

The European
eInfrastructures
Observatory

www.enventory.eu

- Project acronym: e•nventory
- Contract n°: RI-261554
- Project type: CSA-SA
- Start date: 01.09.2010
- Duration: 24 months
- Project partners: JNP, NKUA
- www.enventory.eu

Fact sheet

Framework Programme 7 (2007-2013) Research Infrastructures projects e•nventory



e•nventory
The European
eInfrastructures
Observatory
www.enventory.eu

Summary: The e•nventory project targets the formation of the European eInfrastructures Observatory, a single-entry-point and one-stop-shop data warehouse, capable of representing multiple primary and contextual indicators and benchmarks, and a generic tool for progress monitoring, impact assessment, performance analysis and overall evaluation of eInfrastructures at regional and national level across the European Union and beyond. The e•nventory project will carry out extensive consultation with eInfrastructures stakeholders and research and innovation indicator experts and will extend joint knowledge efforts (e.g. ENACTS) by including an extensive set of eInfrastructures components (i.e. computing, communication and services), eventually deploying a prototype web platform dealing with a critically-selected subset of indicators, through intuitive, interactive and user-friendly mappings, plots and graphics.

Objective: The aim of the e•nventory project is to carry out a design study that will set the grounds towards the European eInfrastructures Observatory through the collection and utilisation of appropriate indicators. The project will be able to monitor the status quo and evolution over time of eInfrastructures development and components of findings in related stakeholders but also to the public at large, in a seamless and transparent way.

Action plan: The project action plan is structured so as to achieve (a) identification of a core set of baseline indicators for the European eInfrastructures Observatory that will be the baseline for monitoring eInfrastructures development progress; (b) eInfrastructures stakeholders' feedback and consensus on the proposed structure and functionality of the European eInfrastructures Observatory; and (c) European eInfrastructures Observatory functionality demonstration through a prototype web platform that will be available to all eInfrastructures communities and to the general public.

Project structure: The project has been structured in four operative groups of tasks (workpackages), each one comprising of support activities that deal with specific aspects of the project implementation:

The first group of support activities addresses the initial conceptual analysis for the design and implementation of the European eInfrastructures Observatory, including its structure, methodology and data organisation approach, as well as defining the complete indicator list (selection of what (and how) data will be monitored, registered and updated with regard to eInfrastructures' development status).

The second group deals with activities that will help to liaise with key eInfrastructures stakeholders to create the European eInfrastructures Observatory Advisory Board for providing guidance and reflection to the e•nventory workshop, such targeted Advisory Board members include, but are not limited to, representatives from eInfrastructures projects, eInfrastructures policy bodies, and other eInfrastructures organisations, as well as individual experts.

The third group of support activities involves the creation of the necessary technical platform (first at a pilot/prototype level) through which access to the European eInfrastructures Observatory data warehouse will be given. The portal will allow for various representation and statistical data aggregation methods, including graphs, distribution, and other visualisations means that will enable accessible and user-friendly utilization of the e•nventory data.

The last group of support activities aims to increase visibility through dissemination and outreach, informing the eInfrastructures community and increasing awareness on the features and capabilities of the e•nventory web portal, including the demonstration through an interactive workshop addressing an extensive group of eInfrastructures stakeholders.



Project acronym:

e•nventory

Contract n°:

RI-261554

Project type:

CSA-SA

Start date:

01/09/2010

Duration:

24 months

Lead partner:

JNP, NKUA

EU Funding:

4 478 000

EU Funding:

4 478 000

Lead funded entity:

www.enventory.eu

Web site:

www.enventory.eu

Contact partner:

Dr. Angelika Lichtenfeld

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F: +352 43 98 91 94

Project partners:

JNP, NKUA, ENACTS, ENACTS

www.enventory.eu

Keywords:

eInfrastructures,

Observatory, benchmarking,

impact assessment

Collaboration with other EC

initiatives:

ENACTS - ENACTS

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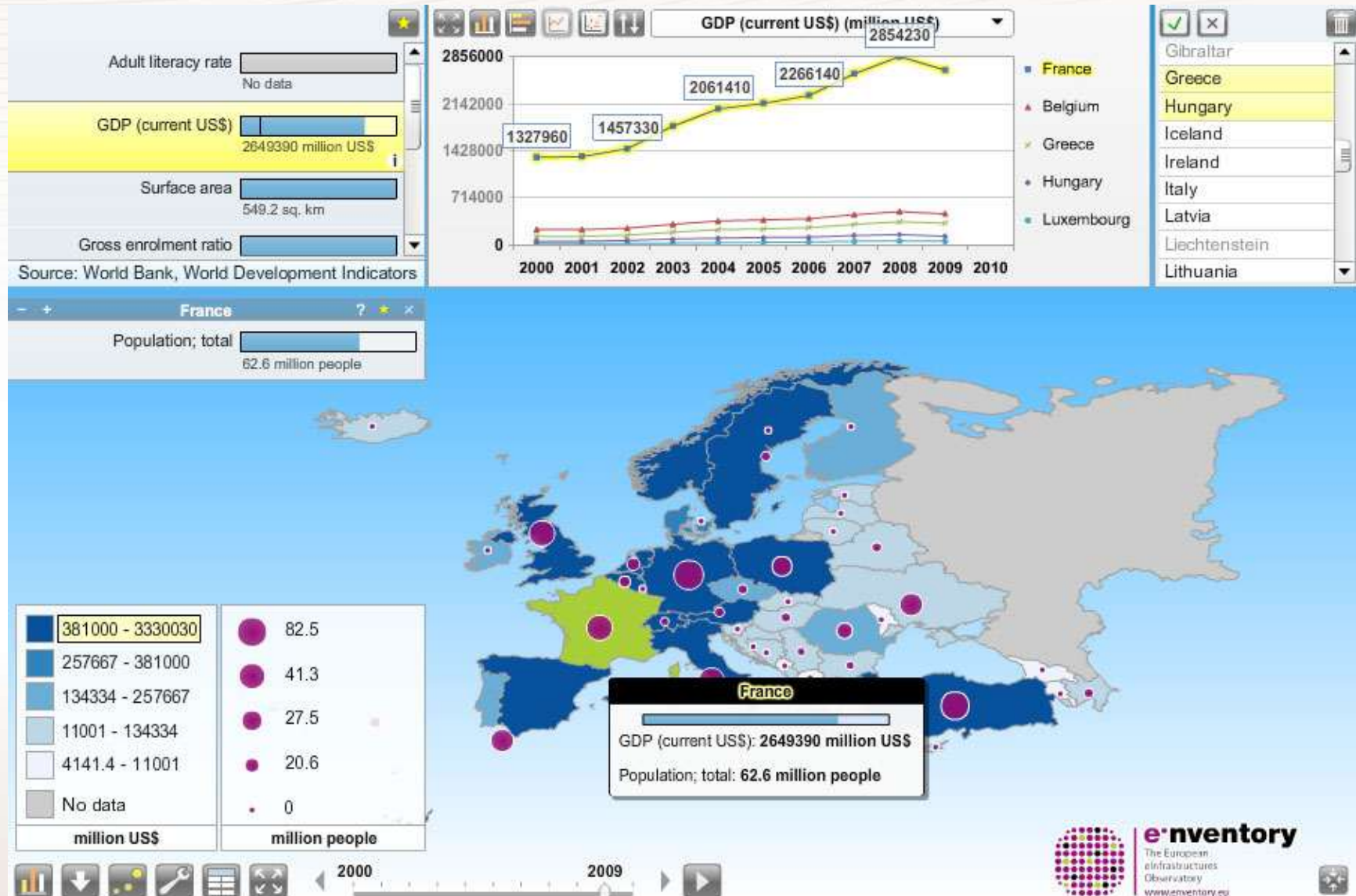
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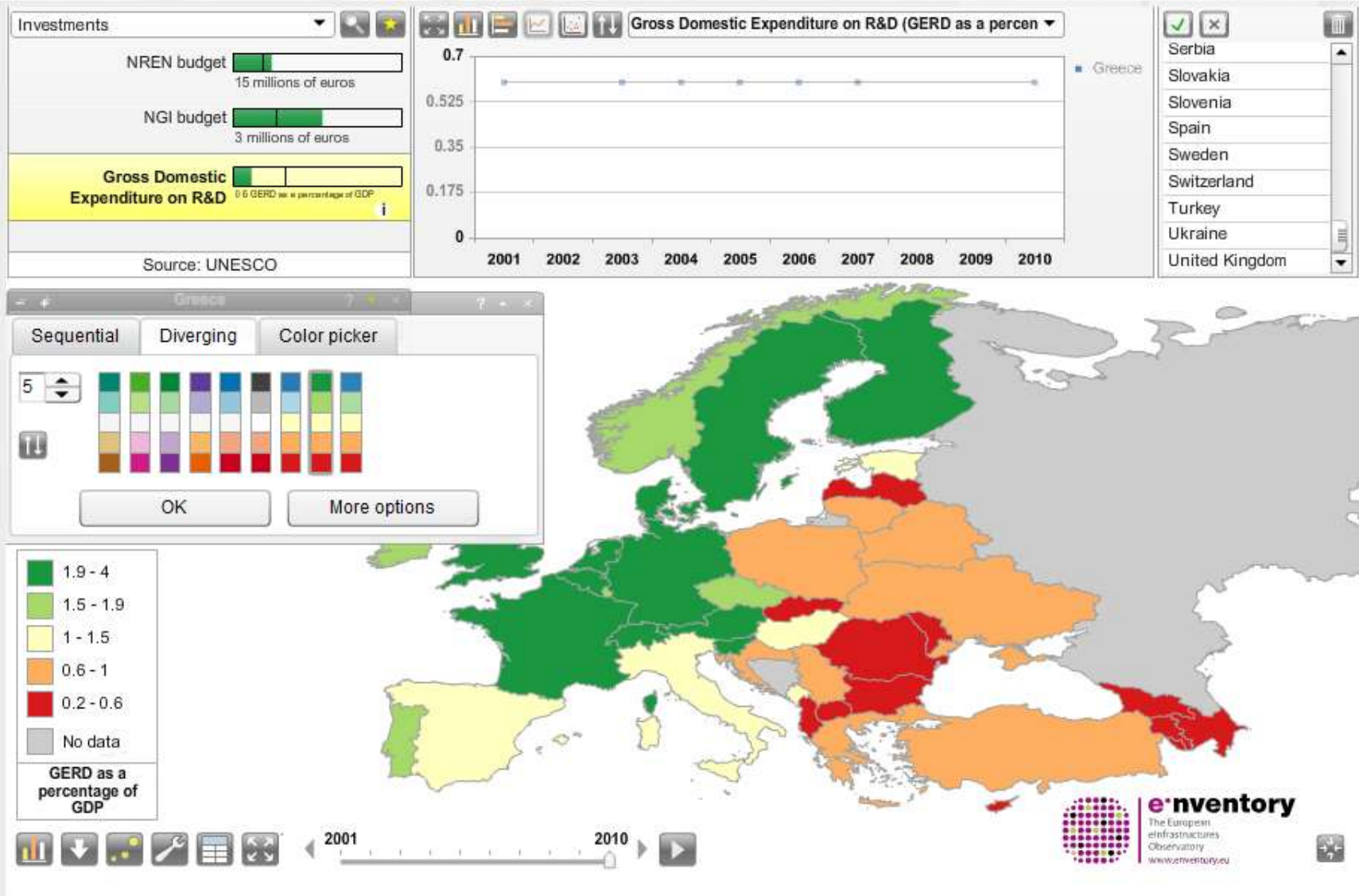


eInventory

The European
eInfrastructures
Observatory

www.enventory.eu

customisation possibilities



eInventory

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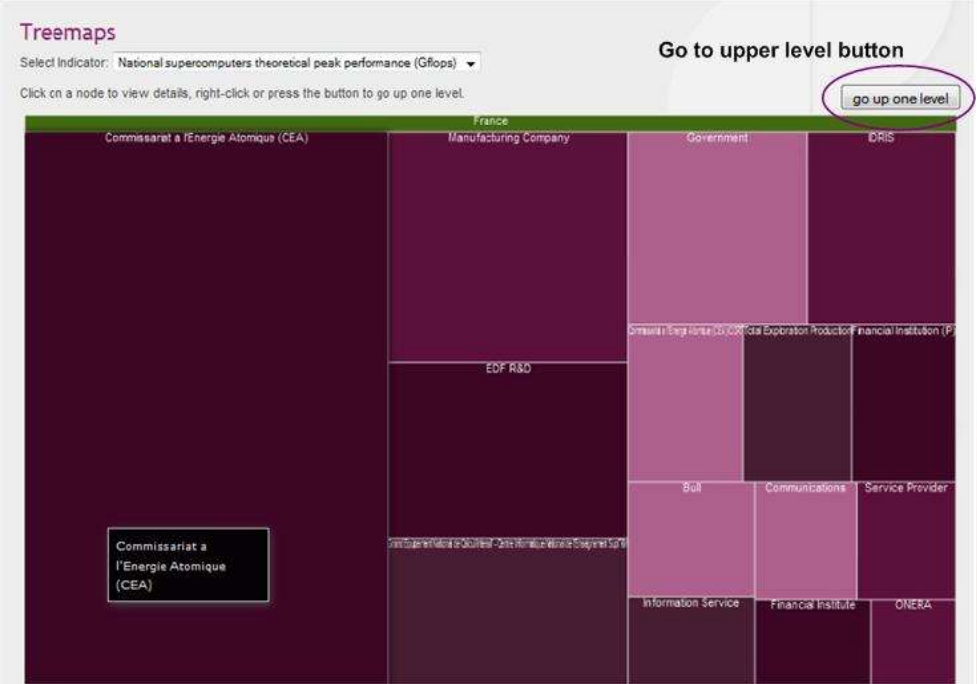
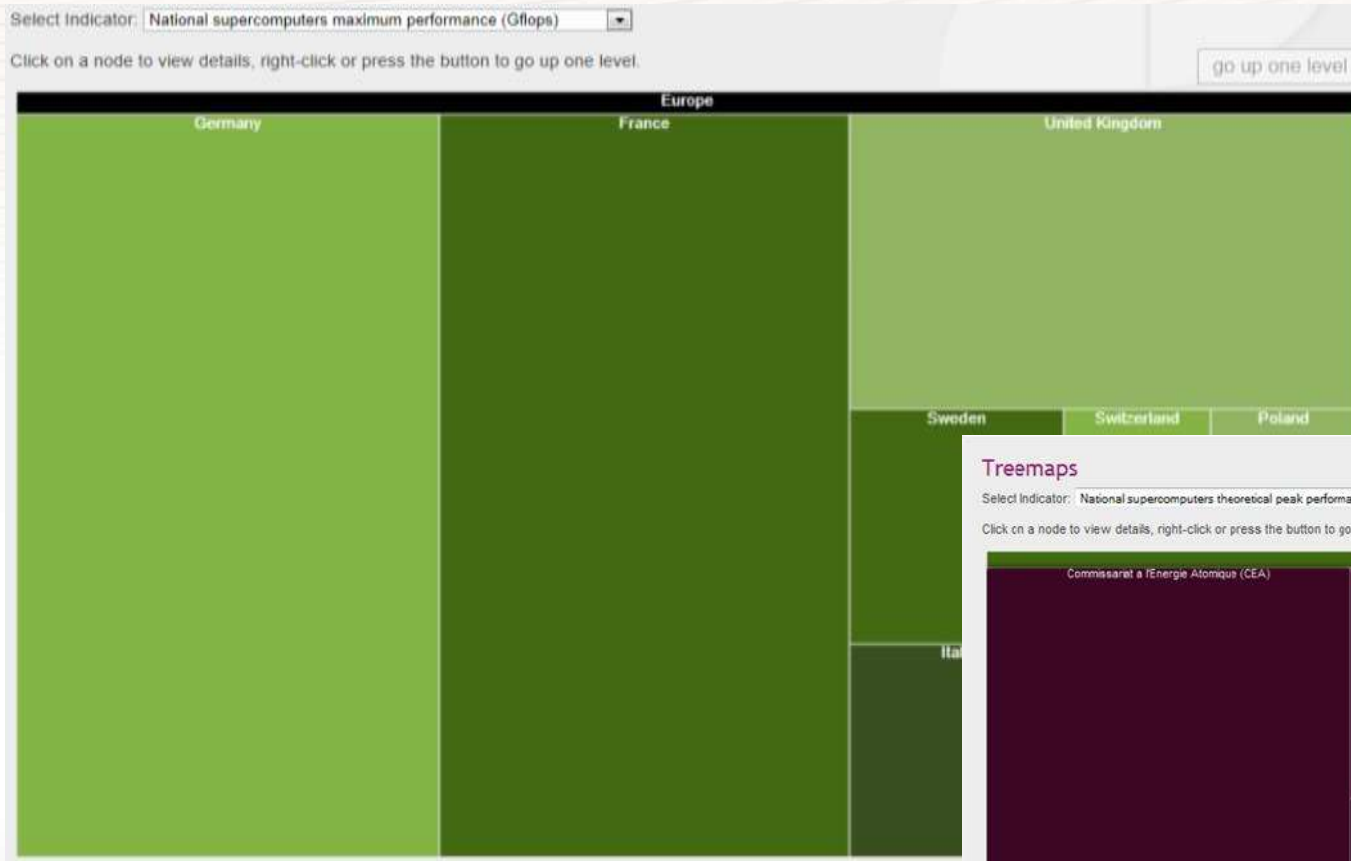


eInventory

The European
eInfrastructures
Observatory

www.enventory.eu

Treemaps service





e.nventory

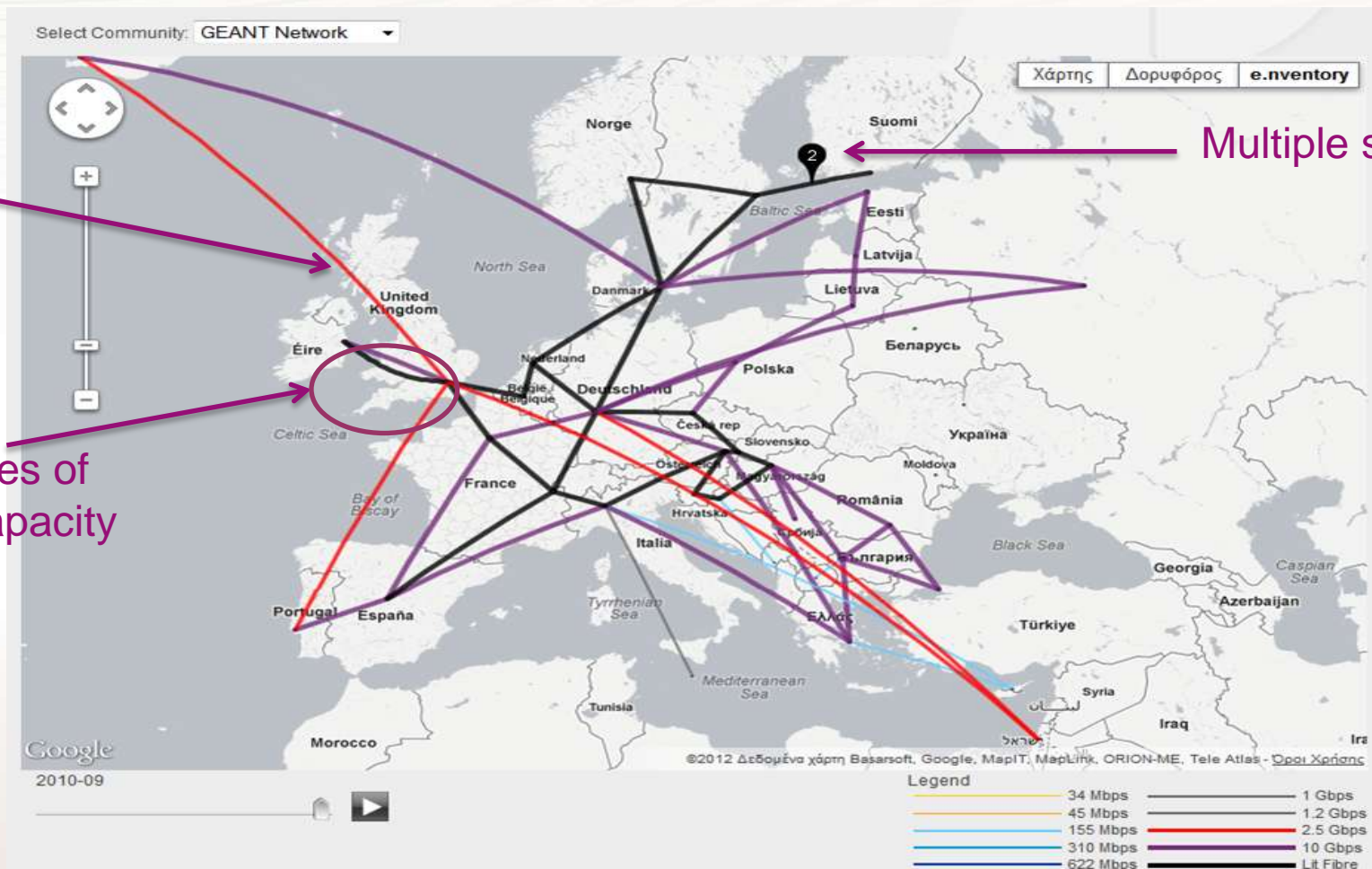
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Pan-European network connectivity

Geodesic
line

Multiple lines of
different capacity

Multiple similar lines



Thank you

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ΠΑΝΕΠΙΣΤΗΜΙΟΝ ΑΘΗΝΩΝ