

Creating a Personalized Experience at Athens' Benaki Museum Contemporary Art Exhibit

The companies

- Fair Dynamics:

- Milan based consulting firm, specialized in the study of complexity, that aims at providing answers through the simulation of business problems.
- Worth noting costumers:



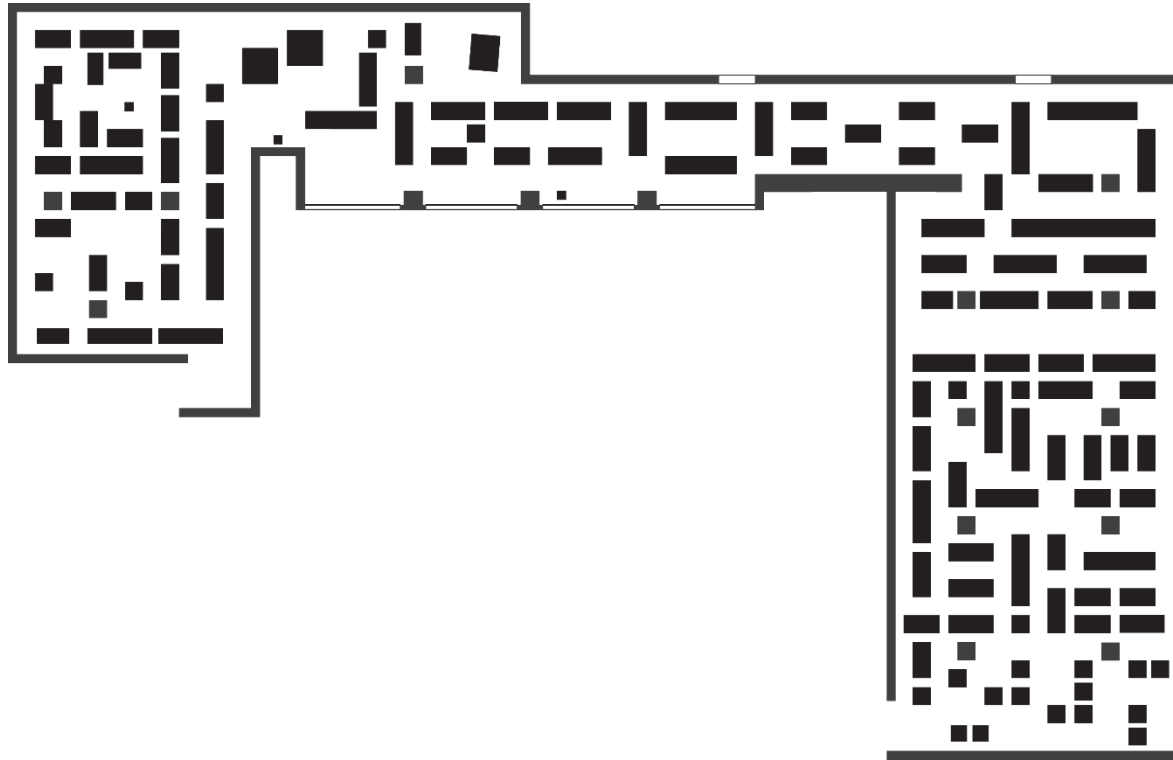
- ArcHITects:

- Milan based architecture company, specialized in art galleries and foundations, recording studios, museum and auditoriums, along with everything concerning interior design.
- Worth noting costumers:



The project: an overview

- The [Ametria](#) project deals with the conceiving and set-up of a contemporary art exhibition, held at the Athens' [Benaki Museum](#).
- The general purpose of the exhibition was to set-up something original and astonishing, a maze-like area able to affect visitors mood, steering their feelings so that to create a complete personal experience.



The project: the customer

- Art foundation aiming to promote new radical developments in contemporary art practice and inspire novel curatorial approaches.
- Drivers:
 - An astonishing layout
 - Hundreds of artworks to be placed
- Objective:
 - Testing different gallery layouts to evaluate ex-ante:
 1. The presence of critical areas (too high or too low density of visitors)
 2. The percentage of visited artworks
 3. The specific artworks visited
 4. The pathway of each visitor inside the gallery
 5. The visitors satisfaction (measured in terms of artworks collected)...in order to define the layout (in terms of cases and artworks location) that better suits customer requirements.

The project: the requirements

- The gallery layout should be conceived as a maze in which the visitors get lost. This particular configuration of the cases should affect people mood.
- Visitors enter the gallery without knowing the artworks exhibited, neither the number of artworks nor their location.
- Visitors move along the gallery's areas trying to collect the greater number of artworks, lingering especially in front of the masterpieces.
- Visitors present different involvement degrees towards the exhibition and this affects the time and the effort spent in the gallery.
- To consider a masterpiece as collected, visitors have to follow particular rules. These rules depend on the masterpiece's typical features (e.g. look at the masterpiece from a particular location).
- Visitors tend to join in groups.
- Visitors' mood is affected by the achievements collected: spending too much time without collecting artworks moves the visitor to a progressive state of dissatisfaction that, at its maximum peak, force the visitor to exit the gallery.

The project: the elements considered

- A maze-like layout for the exhibition location
- Two types of artworks exhibit:
 1. “Common” artworks 🎨
 2. Masterpieces ★
- Different ways to look at the artworks, depending on each artwork features
- Visitors with different features:
 1. Preferences
 2. Goals
 3. Interest in the exhibition
 4. Mood
 5. Other features specific for each visitor...

The project: the «visitor» agent

- The simulation model has been realized referring to the [Agent Based Modelling and Simulation approach](#).
- The greater effort has been spent on modelling a “visitor” agent able to reproduce the behavior of a person roaming inside an area it doesn’t know, with some simple goals to be reached, but with no specific support on how to reach them.
- The visitors movement inside the gallery has been modelled resorting to the items of [AnyLogic Pedestrian library](#). Thanks to this library, it has been possible to join strengths of pedestrian dynamics to the power of ABMS approach, providing each visitors with specific features and behaviors.

ANYLOGIC PEDESTRIANS:

- ☐ Move according to rules that have been determined by detailed theoretical studies;
- ☐ Move at predetermined rates;
- ☐ Don't occupy the same physical space as walls or other agents;
- ☐ Adjust their distance and speed based on the congestion of the crowds around them.

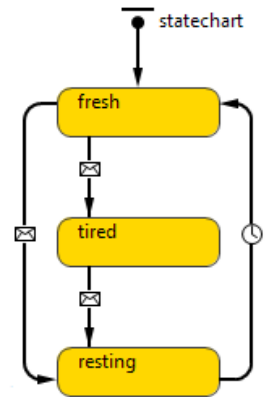


ABMS:

- ☐ Involvement rate
 - ✓ Max time per artwork;
 - ✓ Max time per section of the gallery;
 - ✓ Max time in gallery.
- ☐ Mood, affected by different endogenous and exogenous variables:
 - ✓ personal inclination to anxiety;
 - ✓ proximity of other visitors;
 - ✓ good/bad achievement in artworks collection;
 - ✓ etc.
- ☐ Physical state (fresh, tired, resting).
- ☐ Preference for some artworks rather than others.

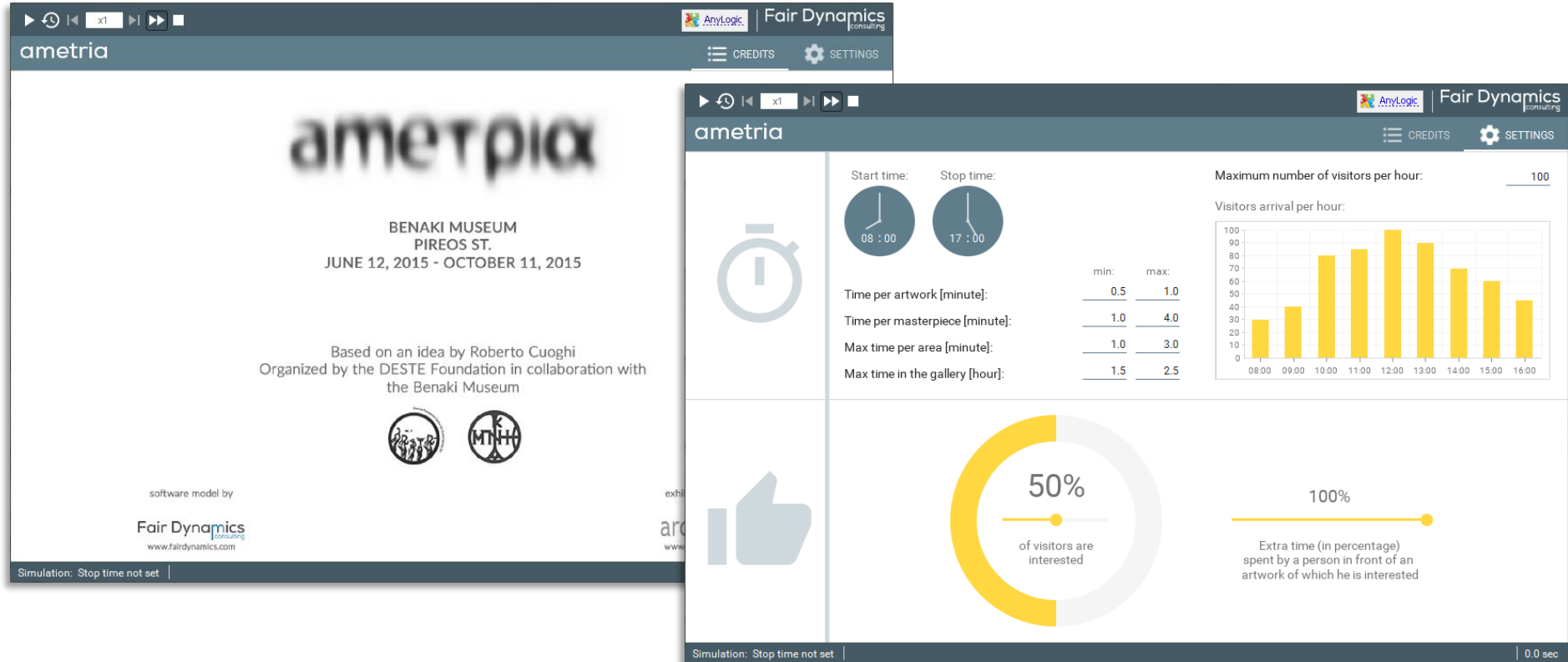
The project: the «visitor» agent

- A new visitor enters the gallery according to a user defined schedule.
- The visitor join a group that have not yet reached its maximum size. Groups are composed by various members and a leader that takes decision about how to move and when to stop inside the gallery.
- While moving along the gallery, visitor establish connection with the artworks, which are modeled as agents as well. If the visitor and the connected artwork agent are not separated by walls, the artwork agent is considered as seen (i.e. collected).
- When the visitor enters in the area of influence of a masterpiece artwork, it assumes a behaviour in line with the masterpiece particular collection rules (e.g. the visitor lingers in a particular location staring at the masterpiece).
- The visitor agent is equipped with a statechart that keeps track of its physical state: while people walk through the artworks they get more and more tired, until they reach a limit threshold that force them to stop as soon as they reach a rest area.
- Visitor agent embeds a variable which keeps track of its level of dissatisfaction. If the visitor roams in the maze-like gallery with low success in achieving goals, its level of dissatisfaction increases until a threshold level, beyond which the visitor decide to give up and exit the gallery.



The simulation approach: innovative features

- A [brand new user interface](#), conceived to provide a nice look and feel as well as easy-to-read performance indicators. The attempt has been to replicate an interface similar to the one provided by the new concept of design introduced with Google Material Design.
- This has been achieved through the flexibility of AnyLogic in integrating the components provided by the Java Swing class and HTML.

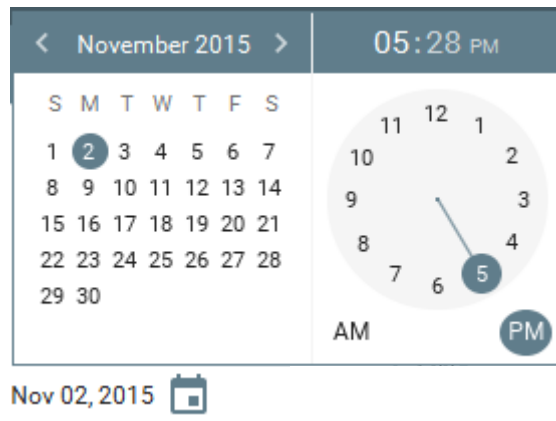


The simulation approach: innovative features

TOOLBAR



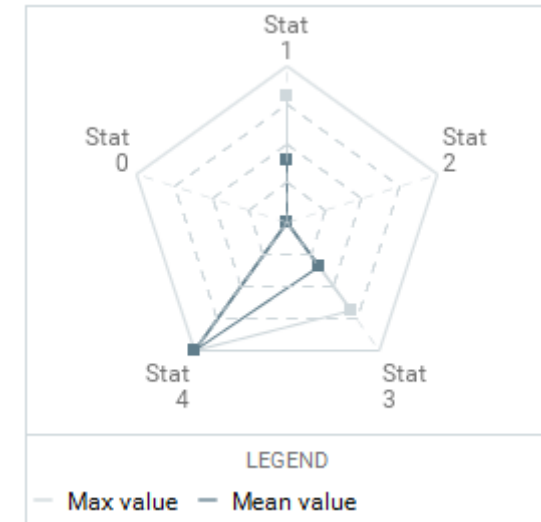
DATE PICKER



BUTTONS



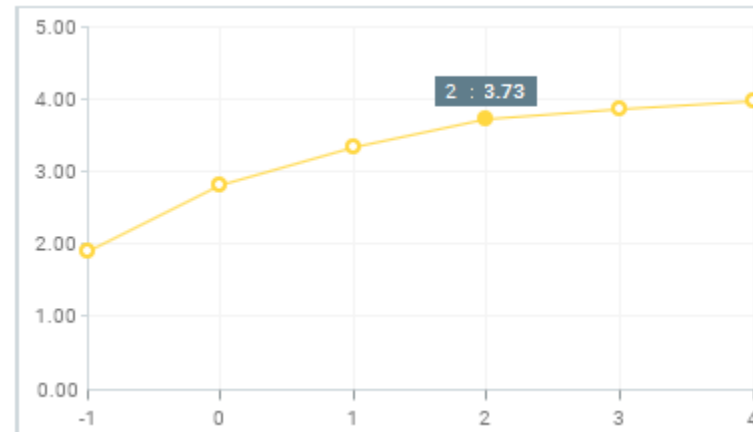
RADAR CHART



NAVIGATION TOOL



INPUT PLOT



Concluding remarks

FAIR DYNAMICS PERSPECTIVE

- Spreading of the simulation beyond the usual application fields.
- Improving of the user experience through an intuitive interface, that has dramatically reduced the effort required from the customer to approach simulation.
- Development of new visual indicators and documentation tools (e.g. Possibility to save the path of each visitor as a high resolution file, available for printing).
- Evidence of the strengths, flexibility and unlimited usage of the ABM approach.
- A reusable library of graphical elements (buttons, datepicker, dynamic input plots).

CUSTOMER PERSPECTIVE

- Possibility to test several layouts, to find the one that best suits the main requirements:
 1. Balanced areas' saturation.
 2. Best location for each specific artwork/masterpiece.
 3. Best location and right sizing for resting areas.
 4. Gathering multiple pathways information to produce 1.000 different and unique exhibition booklet.
- Possibility to test the maximum number of visitors that can concurrently visit the exhibition avoiding overcrowding problems (safety evacuation).

The output: animation



The output: animation



The end

- Thank you for your time today
- Further information available on:
 - www.fairdynamics.com
 - www.hit-architects.com
- ...or grab us for a coffee or a glass of wine later

