Collaborative Museums: An Approach to Co-Design

Pontifical Catholic University of Rio de Janeiro

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1 Context

Rio de Janeiro, Brazil: Partnership between Pontifical Catholic University of Rio de Janeiro (PUC-Rio) and the Rio de Janeiro City Planetarium and Science Museum.
2 Research

Co-design of collaborative museums, combining ethnography, co-creation workshops and fast iterative prototyping, amongst other Social Science and Human Centered Design methods.
3 Value

Account of a particular human-centered participatory approach to co-design of collaborative museums, showing steps taken and findings of the various stages.
4 Process overview

**Ethnography**
- Exploratory observations and interviews: desires, expectations
- Stakeholders mapping and research protocol definition
- In-depth observations and interviews: problems, needs

**Co-creation**
- Research Analysis: bottom-up clusters, findings and themes
- Research synthesis: extreme personas, and design criteria
- Co-design workshop: collaborative brainstorming, concepts catalogue

**Prototyping**
- Concept grouping and solution composition
- Roleplaying and low fidelity prototyping and testing
- Solution iterating and pivoting to increasingly higher levels

Stakeholders are co-creators throughout the entire process
4 Process | ethnography

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ethnography | observations

Exploratory and in-depth contextual interviews and observations. Stakeholders: visitors (families, private and public school students of different ages and teachers), astronomers, architects, receptionists etc.

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ethnography | sample narratives

“I want to come here [to the Planetarium] and feel that am an astronaut [...], travelling through space, exploring the planets, stars and black holes.” (Ten years old visitor)

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“I always feel like covering my ears when a school group comes in.” (Astronomer)
ethnography | sample narratives

“There is a technology gap here, a lack of interactivity, of using new technologies such as Augmented Reality and touchscreen, that could make experimentation possible.” (Marketing Expert)
4 Process | Co-Creation

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**Contextual Prototyping**

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co-creation | analysis

Bottom-up data clustering - patterns, correlations, recurrent themes, insights, extreme user variables such as number of visits, group size, content knowledge and technology expertise.
co-creation | analysis insights

Lack of integration of the prior-during-post museum visit experience; kilometers of written text answering to questions made by none; mechanical artifacts bring challenges for maintenance; underutilized outside space.
co-creation | synthesis

Findings, problem-opportunity areas, guiding criteria and principles, extreme user personas.
co-creation | synthesis criteria

To activate imagination before museum visit; to provide tour options according to profile; to support authorship; to make the museum experience tangible; to attend to age differences and special needs.
co-creation | workshops

Individual activity journals, criteria and personas presentation and discussion, brainstorming session. For instance, in one of the workshops, in 20 minutes, 14 participants generated 81 relevant ideas.
co-creation | workshop ideas

Museum-School Portal, 2nd Life Planetarium, Online Checkin, Tour Guide Totem, iPad Museum Navigator, Augmented Reality Space Mission, Planet Hunt Collaborative Game, Space Wiki, Visitor Foot Print etc.

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co-creation | idea cluster

Connection Prior to Visit:
School-Museum Portal, My Tour, Playing with the Stars, Visitors Testimonials, Talk to an Astronomer, 2nd Life Planetarium.

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co-creation | idea cluster

Fluid Reception:
Online Checkin, Student Interactive Badge, Online Reception Kit, Alternative Entrance, Entrance Scanner.
co-creation | idea cluster

Personalized and Guided Tours:

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Unforgettable Intergenerational Edutainment:
Recorded Memories and Footprints:
My Footprints, Online Visitor Testimonials, Visitor Digital Book, Visit Photo Album, Your Visit Memories, My Augmented Space Map.
co-creation | idea cluster

Visitor Loyalty:
Planetarium Cultural Card, Online Registration
Connected to Social Networks, Planetarium Feeds,
Suggest to a Friend, Adopt a Star.

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co-creation | idea cluster

Valued External Area:
Spatial Playground, Galileo Water Fountain, Augmented External Exhibits, Terrace to the Stars, Thematic Kiosks, Planetary Picnic.
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Selected participants; Blank Model Prototyping - rapid role-playing using readily available art and craft materials to construct rough physical representations of technological concepts according to scenario; testing; iteration and pivoting.
prototyping | sample solution

Multitouch device representation

Visitors interacting with a multitouch device.
5 Lessons Learned

Computer scientists should join social researchers in the ethnographic study and personally learn visitors points of view, leading to a shift in perception about the user and, consequently, more human centered solutions.
Workshop participants need prior time to be immersed in the ethnography findings to make optimal use of the material.
5 Lessons Learned | sample 3

Group composition within co-creation workshops should consider complementary profiles, so that each can have an equal voice.
Building simple prototypes and testing them in real contexts leads to fast learning about users mental models, which helps to quickly refine and detail groupware interfaces, as well as review functionalities.
Developing twin prototypes in the physical and virtual worlds leads to different but complimentary findings about collaboration, such as behavioral and motivational.
A few references


7 Future work

Inclusive groupware for museums
Wearables for collaborative games
Augmented Reality Galileo
Accessible pathways

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