Welcome to the Neighbourhood

A new approach to the public understanding of science that allows people in public spaces to explore the solar system while standing in a city street. Users control a moving signpost that points to objects in the solar system while navigating through space via a digital interface.

Team

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NESTA Futurelab
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Industrial Design: **Mike Hoddell, Joseph Ottewill** (Springboard Design Partnership)
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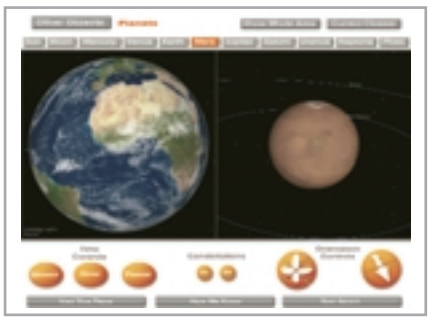


Technology

Celestia (www.shatters.net/celestia)
Lua (programming language for Celestia scripting, www.lua.org/)
C++
Macromedia Flash
LED displays
Touchscreen interface
Custom control system

Outline

Welcome to the Neighbourhood is a combination of sculpture and multimedia that helps people to inhabit the solar system (without leaving the surface of the earth). A signpost in a street, a park or some other public place points directly at objects in space, tracking them as they move across the sky, displaying their name and their exact distance from the sign's location (which changes constantly) with an electronic display. Close to the signpost is a kiosk with a touchscreen from which passers-by can select objects for the sign to point to. Users' relationships with the cosmos are transformed through interaction with the installation.

Any object in the solar system can be selected, including spacecraft. The whole system is modelled in the computer. As the sign slews round to its target, the computer takes the user through space to a detailed three-dimensional representation of the object, illuminated by a virtual sun. The user then has the option of navigating through the model or calling up information about what the object would be like to visit. Users can also change the rate at which time passes in the model (for instance to observe the orbits of the moons of jupiter or how day and night passes on earth).

Learning and Research Objectives

Through the development of the prototype NESTA Futurelab is asking whether it is possible:

- To create a resource that enables members of the public to feel confident in asking questions about the solar system that are of relevance to them;
- To 'scaffold' users to achieve an understanding of the heliocentric model of the solar system without resorting to formal pedagogic techniques.

In addition, the prototype will allow NESTA Futurelab:

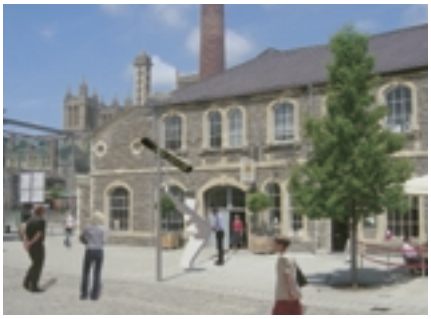
- To establish the extent to which direct reference to real space (in the form of physical sculptures indicating the actual location of objects in relation to the user) helps users to make sense of virtual representations.

Research and Development Process

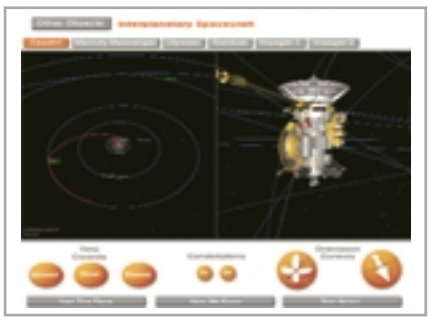
This consists of three major strands of activity being developed simultaneously:

- understanding the user;
- developing the digital interface;
- and developing the physical sculpture.

Our initial focus was to understand what models of the solar system are currently held by members of the public and the questions that arise from them. This was achieved by interviewing people in public spaces and at the SOFA project in Bristol, a site that offers the opportunity to research those groups who are often excluded from participation in conventional public understanding of



The Space Signpost in situ in a public space. Objects are selected from a touchscreen



The touchscreen display. A user has selected the space probe Cassini

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science activities (for example, those who are long term unemployed, youth offenders and refugees).

The first technical challenge was the need to develop a playful and exploratory interface for existing (open source) astronomical software. Development has involved a series of design iterations with Year 6 pupils at Charborough Road Primary School, participants from the SOFA project and members of the general public. The second challenge was to develop a mechanical system that drives the sign about two axes as it points to and tracks celestial objects. As the technical development progressed, we returned to work with our selected user groups to assess how far these different representational systems offered a useful way for individuals to understand and explore the solar system. This iterative cycle informed both the functionality and the aesthetic design of the interface and overall sculpture. A longitudinal study with a wider sample of participants is planned to begin when the physical sculpture is in situ.

Early Findings

To date NESTA Futurelab has worked with a small, selected sample of potential users, predominantly from groups who would be recognised as socially excluded and many of whom have few or no formal educational qualifications. This early research suggests that for this group there is a need for resources:

- that exist outside the financial, cultural and spatial constraints of current sites of public communication of science – many research participants, for example, expressed enthusiasm for free resources in public spaces rather than in science centres;
- that can be 'played with' rather than being approached as a formal educational experience;
- that offer visual representations rather than text-based descriptions of complex issues such as the relationship between earth, moon and sun.

Results are being interpreted within the context of larger surveys of public understanding of astronomy and existing research into the 'alternative frameworks' by which people make sense of space. Our research supports earlier studies that indicate a need for resources:

- that pay due attention to users' existing (even if mistaken) ideas about the cosmos and their own interests (even where these diverge from astronomers' interests).

Final results from the full trials of the proof of concept will be made public in early 2005.

Partners

Adam Nieman is the originator of the Welcome to the Neighbourhood Project. He has a background in science communication research and new media theory and was funded by NESTA Futurelab over a 13 month period to work full time on the project developing all three strands of activity.

Springboard Design Partnership designed the installation to NESTA Futurelab's specification and will maintain it throughout the experimental period.

The SOFA Project in Bristol is a not-for-profit organisation with activities in social inclusion, training and environmental issues through the provision of low-cost refurbished and re-used furniture and electrical appliances for people on low incomes.

Charborough Road Primary School has 280 children on roll. It is situated in a built-up industrial suburb ten miles north of Bristol.

Copus provided substantial funding for this project through the 'Major Grant' scheme that enabled Adam to work full time on all aspects of the project. In addition to this funding, financial support was given by NESTA and the DTI.