

FACT SHEET FOR SMART LEARNING SPACES

Background

Educational spaces outside the school environment provide useful informal learning for students. Examples include the Science Centre, our national museums, parks and heritage sites, which are frequently visited by students, either with their teachers or parents. These spaces can be technology-enabled to make the learning experience more tailored to the needs of the different target groups of students. Museums¹ are also increasingly looking for more participatory experiences to better engage visitors.

Objectives

IDA's Smart Learning Spaces Proof of Concept (POC) aims to test the use of beacon sensors and analytics at the Singapore Science Centre to deliver rich digital learning experiences for students and even the public visitors, supplementing onsite exhibit information. By creating a dynamic and responsive solution, the Science Centre will also be able to understand visitors' behavioural patterns and preferences to better design and enhance future exhibition spaces.

Key Features

The Smart Learning Space solution makes use of a mobile app that visitors will be able to download onto their mobile device, and specify their profile as a primary or secondary school student, or as an adult. They are then able to use the app to move through the exhibition to gain additional information and interact with different points of interest.

- **Beacon Technology**

Beacons installed at points of interest throughout the exhibition are able to communicate wirelessly via Bluetooth with the smartphone via the mobile application. Bluetooth technology is also range-sensitive and can be designed to detect and engage audiences by triggering a variety of different content and at different distances from each beacon, customised to the venue operator's content and preferences.

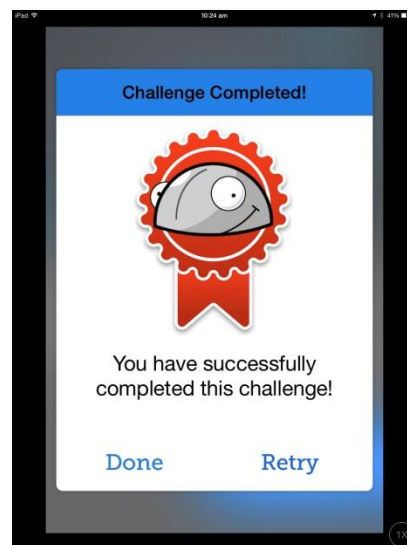
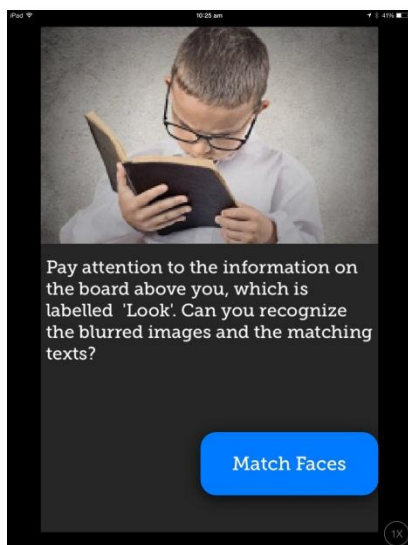
¹ Based on the 2015 New Media Consortium Horizon Report (Museum Edition)
<http://www.nmc.org/publication/nmc-horizon-report-2015-museum-edition/>

- **Customised User Content**

The learning content and activities shown on the visitor's mobile devices can be customised based on specified user profiles. For example, primary school students can receive bite-sized information and knowledge, coupled with games and quizzes to make the experience more fun and entertaining. The student can also be enticed to gather information while touring the exhibition and can complete various activities, earning badges for their achievements.

For secondary school students, the content can be customised to provide more in-depth information about the exhibition and specific items to complement their learning of relevant topics in school. The content can be further customised to cater to the needs of the adult visitor, where additional resources and information could be provided for further discovery and exploration.

Hence, instead of building different learning spaces to cater to different groups of visitors, customised content allows one learning space to cater to the learning needs of various learners and visitors, thus improving the relevance and increasing the engagement of the visitors.

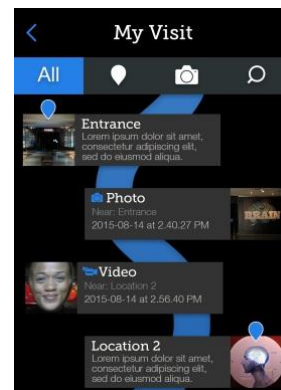
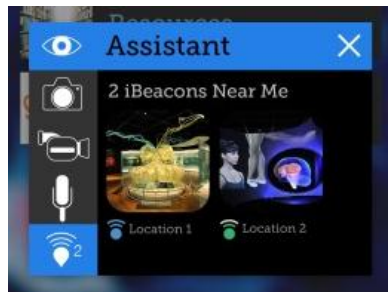


Screenshots of smart learning app: Science Centre's "Tuning In: Brain and Body" exhibit, adapted for primary school students

- **Collaborative Learning**

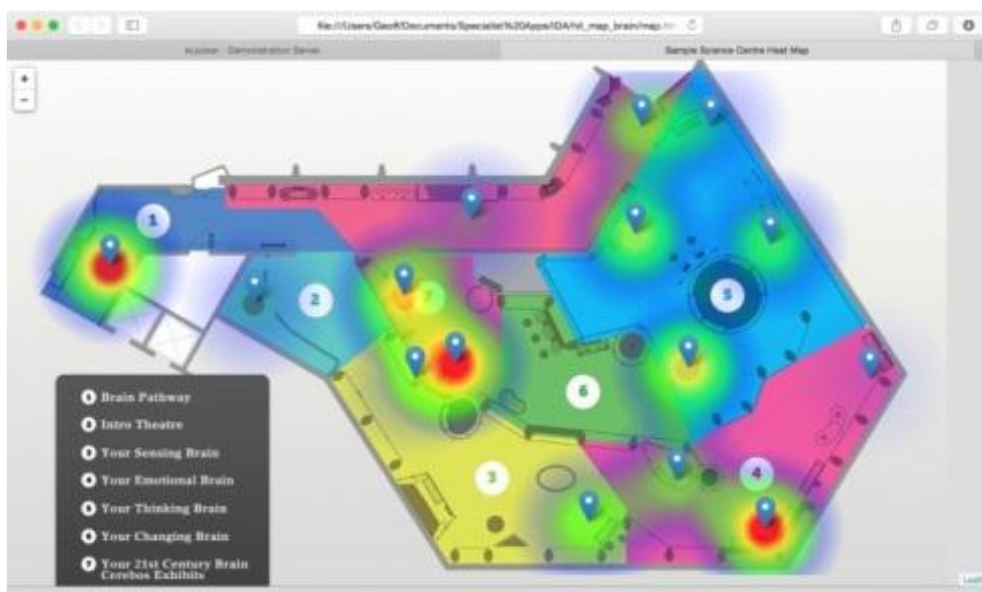
The Smart Learning app offers a collaborative platform that allows the user to share contents with others, such as allowing students to take photos, videos, and voice recordings, and save the created content onto the app. The content can be shared

with teachers and peers during post-visit classroom discussions, hence helping to reinforce their learning experience.



- **Location-based Analytics**

For Science Centre Singapore, heatmap data of visitor movement patterns can be collected for analysis, providing useful information for the Science Centre to better design and enhance their exhibits based on their visitors' behaviour and preferences.



Heatmap view of visitor behaviour at the exhibit

Benefits

For users: The customised content based on the learners' profiles and location sensitivity will enrich learning experiences to make content targeted directly towards relevant, specifically determined audience segments, offering richer content and more engaging experiences when visiting places of interest.

For venue operators: Data and analytics will be put in place to understand the visitors' patterns and preferences so as to better design and enhance their exhibition spaces in future.

For media clarifications:

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