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24 Hrs in Photos (Eric Kessels, 2011); Photography Credit: Gunnar Knechtel

Art embraces technology at the Asian debut of *Big Bang Data*

A colorful collection of diverse, dynamic and data-driven artworks at ArtScience Museum's latest exhibition

Singapore (15 April 2016) – Imagine turning the vast amount of data that the world is generating daily – from emails, selfies, google searches and online purchases – into large-scale immersive art installations. At ArtScience Museum's latest exhibition – *Big Bang Data* – visitors will discover the science of data in data driven art realised through large-scale immersive installations, historical artefacts and contemporary artworks.

Hailing from the Centre de Cultura Contemporània de Barcelona (CCCB) and Fundación Telefónica in Spain – *Big Bang Data* is making its Asian premiere at ArtScience Museum on 21 May after travelling across cities in three continents including Barcelona, Madrid, Buenos Aires, London and Santiago. Through the works of artists, designers, journalists and visionaries, the exhibition explores contemporary issues surrounding the big data explosion of the 21st century that is radically transforming society today.

"Big Bang Data is a show designed for the audiences of the 21st century. It reveals how data is transforming our future, as technology become ubiquitous in all our lives. Through the work of artists, designers, technologists, scientists, journalists and filmmakers, Big Bang Data shows us how the vast quantities of data created by all of us every day, are moved around the world, and used by companies, governments, and individuals, to shape the world we live in today. As Singapore moves towards becoming the world's first "Smart Nation" harnessing data and technology thinking to do so, this show is a timely opportunity to reflect on what the data explosion means to all of us. The exhibition makes the endless oceans of data generated by all of us visible and tangible, and in doing do demystifies what can seem like an abstract topic. We are also privileged to have some of the world's most acclaimed digital artists represented in this exhibition, who are showing visually and conceptually captivating work, alongside projects originating from Singapore. In that sense, Big Bang Data is truly putting the 'art' into Smart Nation," said Honor Harger, Executive Director of ArtScience Museum.

"Focusing on 21st century culture, the exhibition examines the major transformations of our time through an exploration of the interaction between culture, technology and society. Although the exhibition does not predict the future, whether from a utopian perspective or a discourse of progress, it provides a platform for visitors to form their personal opinions on the impact data has on our daily lives," said Rosa Ferré, Director of Exhibitions at the Centre de Cultura Contemporània de Barcelona.

The exhibition comprises a selection of artworks from its first edition in Barcelona, as well as new artworks from the showcase at Somerset House in London. Together with the exhibition co-curators, Olga Subirós and José Luis de Vicente, both specialising in projects exploring the transformations of the digital age, ArtScience Museum has also specially curated a section of the exhibition to tell the story of Singapore's unique relationship with data.

The exhibition is organised into nine chapters, each seeking to explore the intricate relationship that we share with data, as well as the meaning and implications of datafication for our future. Artworks on display range from large-scale immersive installations to historical artefacts and contemporary data driven artworks, from leading international artists renowned in this field.

Introduction

As visitors enter the exhibition, they come face to face with *Data.Tron [WUXGA version]* – a futuristic digital projection by internationally acclaimed new media artist Ryoji Ikeda. Each pixel of the visual image is composed from a combination of pure mathematics and the vast

sea of data present in the world. Visitors are immersed in the work as data is seamlessly projected onto the gallery wall.
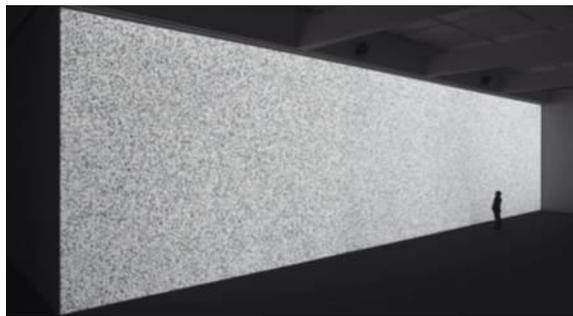
Highlight artwork:	Data.Tron [WUXGA version]
	(Ryoji Ikeda; 2009-10) Ryoji Ikeda tackles the infinite scale of the world's data in this immersive installation. He invites you to experience the universe of data that exists in the infinite space between 0 and 1. Every point in this vast sea of pixels has been strictly calculated by mathematical formulas and data sets.

Understanding the Cloud

This section of the exhibition makes visible the abstract concept of 'The Cloud', which holds and stores all of our personal photos, digital maps and work documents in the digital universe. Through film and photo maps, this section of the exhibition uncovers the network of servers operated from industrial-scale data centres and connected by a series of submarine cables, showing how the storage and transfer of our digital information has a very physical presence in the world.

Highlight artwork:	Internet Machine
	(Timo Arnall, 2014. Commissioned and co-produced by CCCB and Fundación Telefónica) *Audiovisual (6 mins)* This installation introduces visitors to the spatial, architectural, and materials aspects of data centres: infrastructures that store millions of data, interactions, applications, and services. It aims to refute the idea that data spaces are immaterial and post-geographical. According to photographer and film maker, Timo Arnall, Europe's largest data center is a

|	700,000 square foot installation that shows "the hidden materiality of our data".

The Data Explosion

Through a timeline installation that reflects the evolution of data storage devices, from punch cards and floppy disks to CD-Rs and USBs, visitors will be invited to study the history of data, and how data generation has exploded in recent years. With the 'big bang' of data explosion generated from our daily lives, data visualisation has become increasingly important, and the artworks on display in this section are mainly visual representations of large and complex sets of data. Works include Lisa Jevbratt's *1:1*, one of the first known visualisations of the World Wide Web from 1999.

Highlight artwork:	**Storage Devices Timeline** (CCCB Production, 2014)
	As storage devices have developed over time, they have been able to hold more and more data. But they have simultaneously become smaller and smaller in physical size. This installation shows that the information once held on a bulky 1960s spool tape recorder is now a minuscule proportion of what we can put on a USB stick or even what we can store within DNA molecules.

A New Era of Knowledge

This section provides a historical framework of data visualisation through maps of the 19th century and presents them alongside contemporary examples. It also demonstrates how fields of knowledge have been profoundly changed by access to big data sets. A key highlight artwork is *Black Shoals: Dark Matter.* Previously showcased at Somerset House in London, this is a real-time representation of the financial markets, driven by live trading data from the world's stock exchanges, including that of the Singapore Stock Exchange. Companies are represented as stars that flicker and glow in real time, and the brightness and duration of the glow change in response to the complex currents of the market.
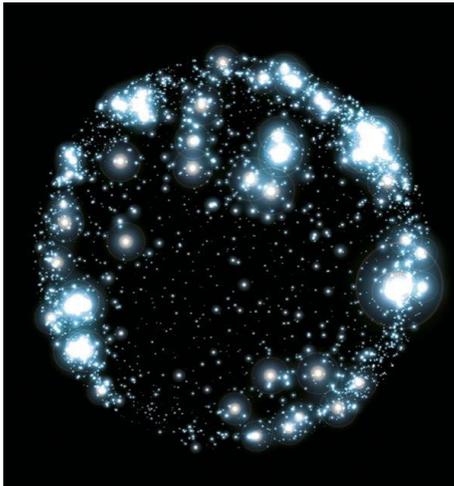
Highlight artwork:	Black Shoals: Dark Matter
	(Lise Autogena and Joshua Portway, 2015) *Real-Time Digital Installation* Black Shoals: Dark Matter is a real-time representation of the financial markets, driven by live trading data from the world's stock exchanges, including real time data from the Singapore Stock Exchange. Companies are represented as stars that flicker and glow in real time as shares are traded around the world. The brightness and duration of the glow indicates the volume of the trading activity. The stars slowly drift in response to the complex currents of the market, clustering and dividing into slowly changing nebulae, galaxies and constellations. Feeding on the light of the stars is an ecology of artificial life creatures. Starting from first principles, initially unable even to move, they must survive in an environment composed entirely of money. The evolution of the creatures is open-ended and it is unknown how sophisticated they can become.

I am Data and We are Data

Both these sections explore the social issues surrounding data privacy and security of personal data generated by millions of people every day. Artists like Eric Kessels and Owen Mundy aggregate pictures and postings published online from individuals across the world, and showcase their inherent place in the public sphere by integrating this information into their artworks. In doing so, they shine the spotlight on the visibility and traceability of each individual's digital footprint.

Highlight artwork: 	**24 Hrs in Photos** (Eric Kessels, 2011) *Installation* This installation is formed by a mound of printed photographs that correspond to the images uploaded to Flickr over a 24-hour period. The purpose of this installation is to show the deluge of images that the Internet condenses daily and how we have become accustomed to consuming them, and also to raise awareness of the fact that private photographs pass from the private sphere to the public domain when they are uploaded to the Internet. The fact that they are printed gives us an overwhelming physical view of what this "over a million images" really means.

What Data Can't Tell

This section of the exhibition explores the limitations of data, and presents works that reflect certain societal issues which cannot simply be resolved through data analysis. Visitors are invited to ponder on the dangers of data-centrism and over-dependence on data analysis to find solutions to all societal problems. Jonathan Harris' manifesto *Data Will Help Us* questions if the world's decision-makers have abandoned timeless tools like wisdom, morality and personal experience for something which simply says "show me the data", and explores the positive and negative possibilities of this data-based logic.

Highlight artwork:	**Data Will Help Us** (Jonathan Harris, 2013) *Graphic Production* Data Will Help Us is a manifesto about the positive and negative possibilities of data-based logic. Harris suggests that in fields such as politics, advertising, and dating, we're abandoning conventional decision-making tools such as wisdom, morality and personal experience. Instead we are finding answers by saying "show me the data", often ignoring context and common sense.

Data for the Common Good

This gallery highlights the social benefit of datafication, with a collection of works demonstrating the creative possibilities that 'big data' can bring for the future. It shows how citizens, communities and institutions are shaping the future form of our data society for the common good. Cartographer and digital artist Eric Fischer presents a map of the world that shows the wealth of data stored by *OpenStreetMap*, one of the most successful examples of a data infrastructure created with the contribution of individual people.

Highlight artwork:	**OpenStreetMap's Contributor Community Visualised - Individual by IndividualData** (Design by Eric Fischer) *Printing from interactive map* OpenStreetMap is an online map service that is built by a community of mappers who contribute and maintain data about roads, trails, cafés, railway stations and more all over the world. With contributions from over a million participants in the last decade, OpenStreetMap offers a personal alternative to its commercial equivalents such as Google Maps. Cartographer and digital artist Eric Fischer has produced these images that show the wealth of data stored by OpenStreetMap.

What Data Means To Us

The final section of the exhibition looks to Singapore to take a thought-provoking and reflective approach at the significance and importance of data for our society and future, especially in the context of Singapore, where 82% of the population uses the internet and 67% are active on social media. The vision of Singapore becoming the world's first Smart Nation involves harnessing data and info-comm technologies to improve the lives of citizens, create opportunities and build stronger communities. If citizens are at the heart of the Smart Nation initiative, how do we feel about it?

The exhibition will run from 21 May to 16 October 2016.

Tickets for *Big Bang Data* will be available soon at all Marina Bay Sands box offices and website. For more information on the exhibition, please visit www.marinabaysands.com/ArtScienceMuseum

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About Marina Bay Sands Pte Ltd
Marina Bay Sands is the leading business, leisure and entertainment destination in Asia. It features large and flexible convention and exhibition facilities, 2,560 hotel rooms and suites, the rooftop Sands SkyPark, the best shopping mall in Asia, world-class celebrity chef restaurants and an outdoor event plaza. Its two theatres showcase a range of leading entertainment performances including world-renowned Broadway shows. Completing the line-up of attractions is ArtScience Museum at Marina Bay Sands, which plays host to permanent and marquee exhibitions. For more information, please visit www.marinabaysands.com

About ArtScience Museum
ArtScience Museum at Marina Bay Sands is Southeast Asia's leading cultural institution that explores the inter-relationship between art, science, technology and culture. Featuring 21 galleries totaling 50,000 square feet, the iconic lotus-inspired building has staged major exhibitions by some of the 20th century's key artists, including Salvador Dalí, Andy Warhol and Vincent Van Gogh, as well as major exhibitions which explore aspects of scientific history.

About The Centre de Cultura Contemporània de Barcelona
The Centre de Cultura Contemporània de Barcelona - CCCB is a space for the creation, investigation, divulgation and debate of contemporary culture where the visual arts, literature, philosophy, film, music and transmedia activities are interconnected in an interdisciplinary programme. The CCCB works in a network with international institutions and agents, and is linked at the same time to artists, creators' groups, curators and independent cultural agents from the Barcelona area, supporting their proposals to participate in their creative capital and give them visibility.

The challenges of 21st-century society, the expansion of the literary universe; the intersection of art, science, humanities and technology; the hegemony of the audiovisual galaxy; the commitment to cultural research and innovation; the challenge represented by new audiences and the emergence of new real and virtual communities. The renewal of languages and lexicons, the rebirth of the commons; the challenges of participation and co-creation; the tensions between privacy and transparency; the advent of new social and political models; the risks and opportunities of the scientific and technological revolution. These are some of the decisive processes in a culture undergoing deep transformation and that define the thematic lines of the CCCB over the next few years.

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For high-res images
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