

SCIENCE CENTRE SINGAPORE  
CELEBRATES

4  *Years*  
of Inspiring Science

ANNUAL REPORT

16 | 17

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# OUR TEAM



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# CHAIRMAN'S REVIEW

## Introduction

2016 has been eventful for Science Centre Singapore. The Centre continues to champion STEM (Science, Technology, Engineering and Mathematics) via a myriad of avenues and reach new heights with its progressive initiatives and events.

## A Year of Many Firsts

The Centre marks milestone after milestone, through the creation of new exhibitions and the launches of new events and activities. To expand on its life science offerings, the Centre opened the Butterflies Up-Close exhibition in April - Singapore's first indoor butterfly sanctuary that offers an immersive learning experience.

In addition to our permanent exhibitions, we also brought several travelling exhibitions specially curated to offer unique and relevant content to our guests. The crowd favourite *MARVEL'S AVENGERS S.T.A.T.I.O.N.* exhibition was a successful initiative that enhanced interactive science learning using popular cinematic superheroes. Public response for *AVENGERS S.T.A.T.I.O.N.* was fantastic, as over 130,000 visitors thronged the exhibition, many documenting their experience of the science behind their favourite superheroes on social media. For its publicity efforts, the Centre clinched the Bronze award for the 'Best Use of Social Media' at the PR Awards 2017.

Our group of attractions also achieved new firsts:

the Omni-Theatre screened its first 3D digital dome movie, *Natural Selection 3D*, that showcased its use of the latest digital technology developed to provide engaging content to our guests.

Over at KidsSTOP™, we launched the PlayMaker Studio @ KidsSTOP™ to encourage making and tinkering among the younger age group. Snow Fun House, a mobile snow chamber created and designed uniquely by Snow City, made its debut during the Christmas season and brought a truly authentic winter experience to guests beyond Snow City. It was awarded the *Largest Snow-Filled Display House* by the Singapore Book of Records.

## Do Well, Do Good

Beyond its walls, the Centre has reached out to the public, spreading the joy of learning science by bringing science directly to the masses. Through roadshows, programmes and events held at schools, shopping malls and various other venues, tens of thousands of children and adults have had the opportunity to connect with science and the Centre.

Our signature events such as the annual Singapore Science Festival and Maker Faire Singapore performed well consistently, with Maker Faire Singapore alone attracting a record 15,000 visitors to the 330 booths over a two-day period. These well-received touchpoints are evidence that the maker movement will continue to grow in strength, building on the emphasis placed on STEM education and alternative channels of learning aside from common institutional spaces and avenues. They also allow the Centre to test new ideas and offer innovative programmes and activities, ensuring we are up to date.

In doing well, we also did good. The Centre worked with the Community Chest to allow its beneficiaries to enjoy our exhibitions and activities at subsidised prices. Additionally, we worked with one of our exhibition partners, SPACElogic, in welcoming beneficiaries from different underprivileged backgrounds to visit the *MARVEL'S AVENGERS S.T.A.T.I.O.N.* exhibition, where some of the SCS staff stepped in to volunteer and make these experiences meaningful.

Aside from its established vision and mission, the Centre has also rebranded itself with the aim to inspire all who enter through its doors. The "Be Inspired" tagline serves as a driving force for guests, and the Centre's management and staff, to remain curious and passionate about their interest towards all things STEM, and to deliver more relevant and engaging STEM programmes to its many audiences.

## 40 Years of Inspiring Science

With close to four decades of popularising science and technology, the Centre has embarked on a series of year-long celebrations, to commemorate its achievements and involve communities and the public in the festivities through diverse programmes, events and activities that promote science literacy in an engaging and inspiring way.

We kick-started 2017 with the 40th Anniversary announcement, as well as the Festival of Numbers, a week-long slew of math-related events and activities held during the March school holidays and in conjunction with our annual Pi Day celebrations. More has been planned in the calendar of events to mark our 40<sup>th</sup> birthday, and we are most excited to share that with everyone in the coming months.

## Support & Appreciation

Much of our success could not have been achieved without the continuous support of our partners, sponsors and the community. With their immense help, we were able to curate and offer a diverse range of exhibitions, programmes and events that allowed us to share the wonders of STEM with everyone.

I would also like to take the opportunity to thank the Board for their unwavering dedication and express my heartfelt appreciation towards exiting Board members, Mr Kenneth Tan and Mr Jeffrey Siow, for their invaluable contributions during their years of service. I'd like to welcome our new members, Ms Leonie Lee and Mr Howie Lau, who joined us this year.

Last but not least, I am most appreciative of the Centre's management and staff who have been committed and relentless, striving tirelessly to bring bigger and better initiatives to our guests.

As we gear up to mark another milestone this year with SCS turning 40, let us celebrate four decades of science inspiration, and let us look ahead to face new frontiers and seize opportunities so as to build a more innovative and inspirational Science Centre inside out for the many years to come.

Ms Tan Yen Yen  
Chairman  
Science Centre Board



# BOARD MEMBERS



Ms Tan Yen Yen



Mr Soh Gim Teik



Mr Hian Goh



Ms Shirley Wong



Mr Bruce Poh



Ms Cherie Nursalim



Mr Chandran Nair



Mr Cheong Chee Hoo



Mr Zaqy Mohamad



Mr Lim Eng Hwee



Ms Melissa Ow



Mr Sin Kim Ho



Mr Chew Kwee San



Ms Tricia Huang



Mr Howie Lau



Ms Leonie Lee

# MANAGEMENT TEAM



A/Prof  
Lim Tit Meng  
Chief Executive



Mr Clarence  
Sirisena  
Deputy Chief Executive

Mrs Anne  
Dhanaraj  
Senior Director,  
Education Programmes



Mr Daniel Tan  
Senior Director,  
Projects & Exhibitions



Mr Aaron Chew  
Director,  
Human Resources



Dr Andrew D Giger  
Director,  
Strategy



Ms Cham Lee Fin  
Director,  
Finance & Administration



Mr Gerald Tee  
Director,  
KidsSTOP™



Ms Kamaria Ghani  
Director,  
Science Upstream &  
Gallery Programmes



Mr Michael Chay  
Director,  
Marketing & Communications



Mrs Ong Me Lan  
Director,  
Resource Development



Mrs Veronica Heng  
Director,  
Operations



Mr Saminathan  
Gopal  
Principal,  
STEM Inc



Dr Lee Song Choon  
Deputy Director,  
Life Sciences



Mrs Susan Chang  
Deputy Director,  
Visitor Services



Dr Tan Ei-Leen  
Deputy Director,  
Physical Sciences



Mr Edwin Teng  
Assistant Director,  
MIS



Mr Lee Lian Soon  
Assistant Director,  
Travelling Exhibitions  
& Special Projects



Mr Lim Ping  
Lim Chin Kin  
Assistant Director,  
Exhibitions



Mr Mohd Jaafar  
Dollah  
Assistant Director,  
Facilities &  
Estate Management



# HIGHLIGHTS



16 Highlights  
18 Awards



# HIGHLIGHTS



BrainFest



Young Learners' Festival



Tech Jam

Science Centre hosted a staggering number of events at its premises, some in collaboration with different educational institutions, government agencies as well as various private organisations. Others focused on engaging members of the community in fostering and co-creating an environment conducive and enjoyable for science learning.

## Centre on STEM

On the education front, the Centre hosted various festivals that touched on STEM topics such as BrainFest 2016, a superhero-themed mass escape game held in collaboration with BRAND's® that involved solving a series of brain teasers, the Young Learner's Festival 2016 themed "Nature's Explorers" that featured a series of fun nature-related activities for pre- and lower-primary school students and allowed them to discover more on plants and animals, as well as Mindfest 2017, that had a total of ten exciting hands-on activities for students to explore science, arts and technology through creative tinkering.

In line with Hour of Code, a global movement that encourages people to engage in one-hour introductory courses in computer science, the Centre also organised Tech Jam 2016, a series of coding-related workshops and activities that ran daily from 5 to 10 December.

## Collaboration

The Centre worked with overseas partners – Petrosains (Malaysia), The Mind Museum (Philippines) and Beijing Science Network (China) – to co-organise the International Science Drama Competition 2016. The competition encouraged



International Science Drama Competition



A Guide to the Exotic Palms of Singapore



Picnic Under the Planets



Festival of Numbers - Circle of Pi

primary school students to combine scientific knowledge with drama to showcase their creativity and talents on an international level, based on the theme "Food for Life".

Science Centre hosted the Free and Open Source Software Asia Summit (FOSSASIA) from 17 to 19 March this year. A celebration of open technology, the event comprised workshops and talks on the theme of Artificial Intelligence and Machine Learning by industry experts and professionals, as well as special sessions on topics like Deep Learning. There were also workshops for beginners and young children under Tech Kids.

The launch of *A Guide to the Exotic Palms of Singapore* marked the latest addition to the Centre's comprehensive series of 49 guidebooks on Singapore's flora and fauna. A mini-exhibition on exotic palms was specially curated to complement the launch of the guidebook on 25 March 2017. Speaker and co-author Adrian Loo delivered an illuminating talk, engaged guests at the mini-exhibition and took them on a guided tour of the exotic palms at the Ecogarden.

## Community

For the first time, the Centre organised an outdoor event together with the viewing of the conjunction of Venus and Jupiter on 27 August. Titled *Picnic Under the Planets*, the evening event featured meet-and-greet with our KidsSTOP™ and Snow City mascots, show-and-tell performances by the winners of the Science Buskers Festival, as well as movie screenings at the open field. The event was very well received, and over 6,000 visitors enjoyed the event.

As one of our 40<sup>th</sup> Anniversary celebratory events and yet another first for the Centre, we held a *Festival of Numbers* throughout the entire March school holidays. From 11 to 19 March, visitors joined the gallery trail that required them to complete a series of math-related challenges in exchange for a special token, participate in hands-on math activities at The Tinkering Studio and KidsSTOP™, as well as participate in workshops on mathematical discovery. The annual Pi Day on 13 March also involved 100 members of the public forming the Circle of Pi around the Atrium.

# AWARDS

## 2017 2017 AVA Digital Awards

New Category/Interactive Media  
Platinum Award for E3  
(E-immersive Experiential Environments)  
Exhibition  
by AVA Digital Awards

## PR Awards 2017

Bronze award for 'Best Use of Social Media' for  
MARVEL'S AVENGERS S.T.A.T.I.O.N.  
Bronze award for 'Best Government Sector PR  
Campaign' for Singapore Science Festival 2016  
by Marketing Magazine

## 2016 ASPAC Creative Science Communication Award 2016

STEM Inc's Applied Learning Programme Using  
Robotics as an Example  
by Asia Pacific Network of Science & Technology  
Centres

## 15th Annual Horizon Interactive Awards 2016 Best Of Category

Gold Winner for E3 (E-immersive Experiential  
Environments) Exhibition  
by Horizon Interactive Awards

## 2016 2016 Certificate of Excellence

by TripAdvisor

## MOE Innergy Awards 2016

Commendation Award for Science Centre Analytics –  
Online Data Visualisation Platform

## Water Efficient Building (WEB) Certification Silver Award

by Public Utilities Board

## Singapore Book of Records 2016

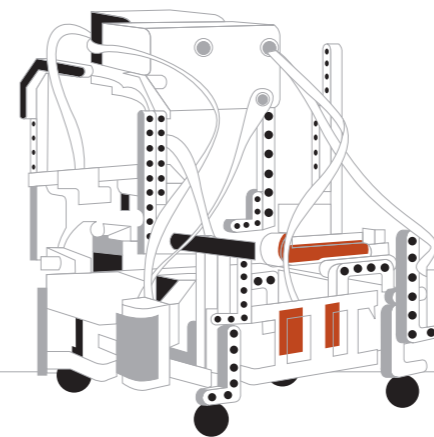
Largest Snow-Filled Display House, Snow City

## People Love Science Centre

by Yelp

# E

## EVENTS, EXHIBITIONS & PROGRAMMES



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# EVENTS TIMELINE

2016

**APRIL**

Launch of Butterflies Up-Close Exhibition

**MAY**

Singapore Science and Engineering Festival 2016  
A\*STAR Talent Search 2016  
BrainFest 2016  
Tan Kah Kee Young Inventors' Award

**JUNE**

International Science Drama Competition 2016

**JULY**

Singapore Science Festival 2016  
Visual SG 2016  
Maker Faire Singapore 2016  
Science Buskers Festival 2016  
Sony Creative Science Award 2016  
The Tinkering Studio:  
Creators-In-Residence Programme

**AUGUST**

Amazing Science-X Challenge 2016  
Picnic Under the Planets

2016

**SEPTEMBER**

Launch of Digital Movie – *Dinosaurs at Dusk: The Origins of Flight*  
Tinker Fest  
National Junior Robotics Competition 2016  
National Science Challenge 2016

**OCTOBER**

Launch of the *MARVEL'S AVENGERS*  
*S.T.A.T.I.O.N.* Exhibition  
Oktoberfest in the Snow  
Young Learners' Festival  
Big Dream Climber Race 2016 (KidsSTOP™)

**NOVEMBER**

Real Snow, Real Christmas  
Launch of Russian Space Exhibition  
Launch of First 3D Digital Movie at Omni-Theatre  
– *Natural Selection 3D*  
Tinker Camp

**DECEMBER**

Tinker Fest  
Hour of Code - Tech Jam 2016  
Launch of Snow Fun House (Snow City)

2017

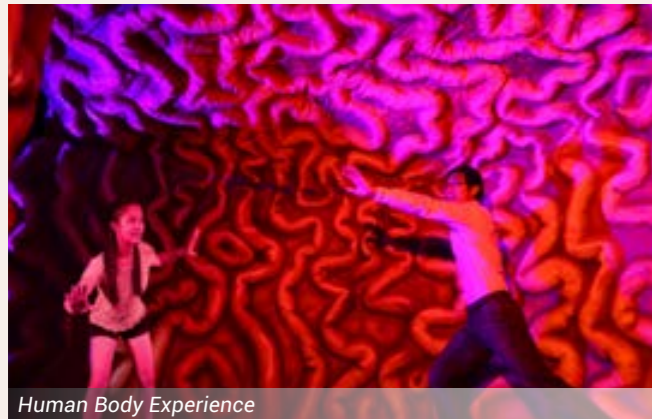
**JANUARY**

National Science Experiment 2016  
Launch of PlayMaker Studio @ KidsSTOP™

**MARCH**

Young Scientists Symposium  
Singapore Science and Engineering Fair 2017  
Festival of Numbers & Pi Day  
Singapore Amazing Flying Machine Competition 2017  
FOSSASIA 2017  
Mindfest 2017  
Launch of *A Guide to Exotic Palms of Singapore*

# EXHIBITIONS



Human Body Experience

## Human Body Experience

Launched on 31 May 2014, the Human Body Experience travelling exhibition was a joint venture between the Centre and Newman Entertainment International Pte Ltd. The first of its kind in the region, Human Body Experience offered visitors a larger-than-life thrill as they climbed into a mouth and embarked on an immersive adventure through the digestive, respiratory, circulatory and nervous systems of the human body. A series of educational programmes on the human anatomy were also organised in conjunction with the well-received exhibition. In its highly successful run of more than two years, a total of 214,000 people visited the Human Body Experience.



Marvel's Avengers S.T.A.T.I.O.N.

## MARVEL'S AVENGERS S.T.A.T.I.O.N.

Produced by Victory Hill Exhibitions and proudly presented by Science Centre Singapore, Mediacorp VizPro and SPACElogic Pte Ltd, the MARVEL'S AVENGERS S.T.A.T.I.O.N. (Scientific Training and Tactical Intelligence Operative Network) exhibition made its Southeast Asian debut at Science Centre Singapore last October. Over 10,000 tickets were sold before AVENGERS S.T.A.T.I.O.N., the fifth and largest exhibition in the series thus far, opened to public. The Singapore edition featured the world premiere of Loki's costume. Visitors came in droves



The Tinkering Studio - Creators-in-Residence Programme

to participate as recruits in the Avengers' extensive combat support network and explored the "training facility" that featured original props, costumes and interactive activity stations. The exhibition also allowed them to learn about the science behind their favourite superheroes such as Iron Man, the Hulk, Captain America and Thor. Over the four-month run, the exhibition attracted over 130,000 visitors and received extensive coverage and publicity from mainstream media, bloggers, and local and foreign visitors alike.

## The Tinkering Studio

### Creators-In-Residence Programme

In July 2016, The Tinkering Studio hosted two artists, Mr Kevior John and Mr Garip Ay, under the Creators-in-Residence programme. During their residencies, Mr John shared his knowledge of working on interactive exhibits and facilitated prototyping with the visitors, while Mr Ay conducted live demonstrations and taught visitors Ebru painting, one of the oldest Turkish arts that involve making patterns in a water tray and transferring them onto paper to create a marble effect.

### Tinker Fest

In collaboration with Imagin8ors, The Tinkering Studio organised Tinker Fest to connect children, parents, educators and makers in two week-long festivals through play, exploration and experimentation. The festivals, held during the September and year-end school holidays, saw more than 3,000 people engaged in hands-on activities and tinkering workshops.

### Tinker Camp

From 25 to 26 November 2016, The Tinkering Studio held an inaugural two day, one night sleepover camp with a total of 26 participants aged between 7 and 12 years old. The camp allowed the participants more opportunities to deeply engage in various tinkering activities.

## Butterflies Up-Close

Hundreds of exotic butterflies from around the region were introduced to the Centre's visitors in April 2016, as part of the newly launched exhibition Butterflies Up-Close. Developed in partnership with Butterfly Park & Tours Pte Ltd, Butterflies Up-Close is Singapore's first

indoor butterfly sanctuary and a major addition to the Centre's life science offerings. Here, visitors can learn about the life cycle of a butterfly and observe different species of live butterflies at close range. Amongst them are beautiful species such as the Common Rose, Tailed Green Jay, Swift Peacock, Malay Lacewing and Common Birdwing. Another unique feature is the opportunity to interact with Exhibition Guides who are able to further inspire curiosity about butterflies.

Close to 50,000 visitors have visited the attraction since it opened, including many school students who were delighted and fascinated by this fragile group of insects.

## Russian Space Exhibition

As part of Days of Moscow, a celebration of Russia and Singapore's bilateral relations, and Russia's numerous space travel achievements, the Centre collaborated with the Moscow City Government Department for External Economics and International Relations and the Embassy of the Russian Federation in Singapore to put together the Russian Space Exhibition. The temporary exhibition featured archival photos of the first man in space, Yuri Gagarin, and documented key events in the preparations leading up to his flight into space. It also featured personal photos taken by Mr Anton Shkaplerov, a Russian cosmonaut who travelled and stayed on board the International Space Station (ISS) in 2011 and 2014.



# SCIENCE OUTREACH & COMPETITIONS



A\*STAR Talent Search

## A\*STAR Talent Search 2016

From amongst the top 78 SSEF 2016 students, eight outstanding finalists were shortlisted for the A\*STAR Talent Search (A\*TS). The A\*TS 2016 judging was helmed by Chief Judge Professor Johann Deisenhofer, who was awarded the Nobel Prize in Chemistry in 1988. He noted that the demonstration of passion and aptitude for scientific research by our young student researchers was remarkable for their age.

The first prize went to Victoria Emily Hui Ting Buckland from National Junior College; Koh Jin Ming and Huang Feiyang from NUS High School of Mathematics and Science won the second and third prizes respectively.



Sony Creative Science Award

## Singapore Amazing Machine Competition 2016

More than 200 students from primary, secondary and pre-tertiary institutions conceptualised and built 58 Rube Goldberg machines based on the Singapore Amazing Machine Competition 2016 theme of how technology could be used to tackle problems for Singapore in the future.

At the awards ceremony held at the Centre on 20 July, Mr Ong Ye Kung, then-Acting Minister for Education (Higher Education and Skills) and Senior Minister of State, Ministry of Defence, attended as Guest-



Shell STEM Youth Innovation Challenge

of-Honour and presented the winners with their accolades.

At the event, Mr Ong highlighted the importance of science and technology in today's context, as people currently "live in an era of big challenges – climate change, terrorism and security, and ageing. As a new generation, we have to solve these problems. If we use (science and technology) well, we can solve tomorrow's problems." He also urged the students to take up science and technology as a calling, remain inquisitive and sharpen soft skills like teamwork.

## Shell STEM Youth Innovation Challenge 2016

Organised by STEM Inc, Science Centre Singapore, sponsored by Shell Singapore and strongly supported by MOE, the Shell STEM Youth Innovation Challenge is a competition open to secondary schools offering the STEM Applied Learning Programme (ALP).

For its 2016 edition, the Challenge engaged Secondary Three students from all streams to create solutions to solve real-world issues by using STEM. Under this main theme and in collaboration with the five Polytechnics in Singapore, a total of five different competitions themes were created – these were Data Analytics & Visualisation, Night Solar Race, Health & Food Analytics, SMART Driverless Cars and Search & Rescue with 3D Printed Tools.

A total of 48 secondary schools, 116 teams and 580 students participated in the challenge.

## National Science Challenge 2016

Broadcast from August through October 2016, the National Science Challenge aimed to spark an interest in science amongst students as well as members of the public. In its 13<sup>th</sup> season, the televised science quiz auditioned over 150 students from 38 schools and crowned Bukit Panjang Government High School in first place, marking a comeback for the secondary school since their last championship win in 2012.

## Sony Creative Science Award 2016

Over the past 19 years, the Sony Creative Science Award (SCSA) received nearly 60,000 toy submissions from close to 69,000 students (individuals or two-member teams). One of the largest toy invention competitions held locally, it is open to all school students. Students as young as Primary One and Two had the opportunity to experiment and create science-based toys even before they get exposed to formal science education in school.

For its 19<sup>th</sup> edition, SCSA 2016 attracted 101 participating schools, 6,432 toys and over 7,000 participants. Participants had to submit a toy based on the theme of "Rise and Shine" for the WhizKid category, the ScizKid category remaining open to toys based on any theme.

For the first time, the SCSA 2016 expanded its activities to two satellite schools – teachers' briefings, various workshops as well as the collection of toy submissions were held at Cedar Primary School and Yew Tee Primary School.

The competition continues to provide a platform for young inventors to embark on experiential learning that is integral to their development. It allows them to have fun as they journey through the fascinating world of science.



National Science Challenge



Singapore Science Festival



Singapore Science Festival



Singapore Science Festival



Singapore Science Festival

## Singapore Science Festival 2016

Themed "Smart Future", Singapore Science Festival 2016 set out to share with members of the public the important role of science and how it improves lives. It also gave them a glimpse into the possibilities of what a Smart Nation could offer. Over 50 events were held under the Festival, with an estimated participation of around 150,000 people. Many of the festival events aimed to inspire people, particularly children and young adults, to develop an interest in science, technology, engineering and mathematics (STEM).

The launch event, X-periment! which was held at a local mall, gave visitors the chance to interact with research institutions, universities, polytechnics and partnering companies as they showcased their ground-breaking research in a public space. Performers from The Franklin Institute in the U.S. also brought some fun and engaging science shows to their thrilled and delighted audiences.

In its fifth year, Maker Faire Singapore saw a record 700 makers, 330 booths and 15,000 visitors over a two-day event held at the Singapore University of Technology and Design, the biggest Maker Faire organised locally thus far.

More than 1,400 students aged 13 to 18 attended the STAR Lecture presented by medical doctor and British science show personality, Dr Kevin Fong. His talk on "How to Survive In Space" touched on how science, medicine and engineering come together to help answer questions about life, the Earth, and the Universe, and highlighted human survival against all odds.

Aside from Dr Fong, several other prominent personalities from STEM fields shared their own stories with the public, including Mr Edward Tiong who spoke at the National Engineers Day 2016 about his journey creating the Sesame Ring, and how he started a tech company in the U.S. and debunked misconceptions people had towards engineering.



Singapore Amazing Science-X Challenge

## Singapore Amazing Science-X Challenge 2016

The 8<sup>th</sup> Amazing Science-X Challenge (ASXC) saw a record 162 teams vie for top honours. Teams showcased exhibits that demonstrated and explained various physical science phenomena, answering questions such as: "What causes a football to spin while in trajectory?", "How is magnetism used in roller coaster braking systems?" and "How may invisibility be achieved through light deflection?"

After two days of intense judging, the organisers awarded 6 Gold, 10 Silver and 12 Bronze awards to 28 deserving teams across four categories. The best-performing schools of 2016 in their respective categories were NPS International School, NUS High School of Mathematics and Science and Anglo-Chinese School (Independent) – they were awarded the respective Challenge Trophies for their categories.

## National Junior Robotics Competition 2016

Over the last 17 years, NJRC has hosted over 50,000 participants and 230,000 supporters at the Science Centre. For its 18<sup>th</sup> edition, NJRC 2016 saw a total of 564 teams take part in the robotics competition, which saw the incorporation of video presentations, as well as a new challenge – the Advanced Robotics category.

The champion teams from each category were then sponsored by NJRC to represent Singapore at the World Robot Olympiad 2016, held end November at New Delhi.

## Singapore Science and Engineering Fair 2017

The 17<sup>th</sup> edition of SSEF received 672 project report submissions with an increased number of projects for the Junior Scientist category. For the first time, the finals of Singapore's largest and most prestigious science fair for upper secondary and JC students was held outside Science Centre, in the Big Box Event Hall. 330 projects were shortlisted for the final round of the competition and more than 2,000 students, teachers, mentors and parents came on the public viewing day on 9 March.

The SSEF Special Awards were given out by the Action Community of Entrepreneurship (ACE) and winners of these awards were selected by the organisations based either on their project reports or interviews held during SSEF Judging Day. Organisations that sponsored the SSEF 2017 Special Awards were the Action Community of Entrepreneurship, The Institution of Engineers, Singapore Society for Microbiology and Biotechnology, Singapore Association for the Advancement of Science and Yale-NUS College.

A total of 123 awards were given out, along with 3 awards for the junior scientist category. Two teams and four individual winning projects were selected to represent Singapore at the Intel International Science and Engineering Fair (Intel ISEF) held in USA in May 2017.

## Singapore Amazing Flying Machine Competition 2017

The ninth edition of the Singapore Amazing Flying Machine Competition (SAFMC) saw the competition format tweaked for both the presentations and challenge to be held on the same day.

SAMFC 2017 concluded on 18 March at NUS High School, and a total of 424 teams (including 52 overseas teams) competed across five categories in Singapore's largest flying machine competition.

# STEM Inc



Shell STEM Youth Innovation Challenge 2016  
@ Singapore Polytechnic - SMART Driverless Car



Shell STEM Youth Innovation Challenge 2016  
@ Ngee Ann Polytechnic - Night Solar Car

Since 2014, STEM Inc has reached out to 55,000 students through its STEM Applied Learning Programmes (ALPs) in 70 secondary schools. Its other initiative, the STEM Industrial Partnership Programme (IPP), also saw a growth in the partners' network to 37 organisations adopting 68 schools.

In 2016, STEM Inc developed the continued support model for STEM ALP schools from 2017 and beyond.

New elements for STEM Inc's continued support include 48 new prototypes for ALP lessons, the STEM ambassadors/pathfinders' initiative, communities of practice for teachers to network and gain insights on industry trends, and STEM co-op clubs for students to hone their STEM skills while developing entrepreneurship skills. For media support, STEM Inc grew its social media platforms (Facebook, Instagram and YouTube) and also introduced a quarterly electronic direct mail (EDM) to share information and upcoming events.

STEM Inc also collaborated with several companies to organise competitions and special programmes for students to apply their STEM skills in solving real-world problems. One such competition was the UNEP-DHI Eco Challenge 2016 in which 1,800 students competed to build environmentally sustainable virtual townships through game-based learning.

For the Shell STEM Youth Innovation Challenge 2016, 116 teams from 48 STEM ALP schools participated in the challenge under five different themes anchored by the Polytechnics, which were night solar race, smart driverless car, search and rescue with 3D printed tools, data analytics and visualisation, and health and food analytics.

Other local programmes include Stratasys' 3D Design and Printing workshops and STEM'in with Google. STEM Inc also brought 50 students from five schools which had Flight & Aerospace ALPs to participate in an international educational project on space science called *Youth Mission to Mars*, where students went through online course sessions and hands-on experimentation to design products or processes that could support human life on Mars.

# SCIENCE CENTRE HOLDINGS



Science resource kits



Air Kit workshop for students



Electricity Kit workshop for teachers

Science Centre Holdings Pte Ltd (SCH), a wholly-owned subsidiary of Science Centre Board, was set up as the commercial arm to bring Science Centre's products and services to the globe.

Recognising the interest in our content and the demand for Singapore-based science resources and Science Centre expertise, the management is in the process of restructuring the entity, and putting in place a new Board to capitalise on the potential.

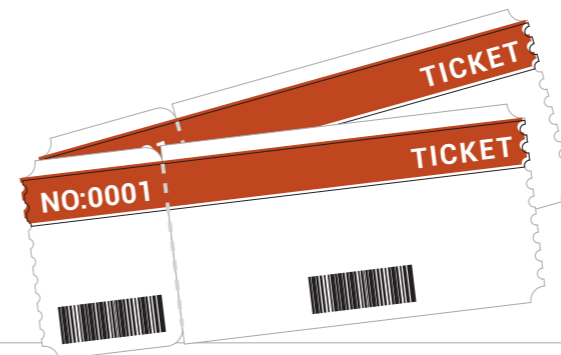
The STEM ALP programme has generated much interest from other countries, and we are now offering similar programmes and professional training to neighbouring countries. One of the enrichment centres in Singapore has also licensed the primary-level programme for their students, recognising the strong lesson content and science activities.

With the support of IMDA and SingTel, as many as 50,000 "I am a Young IT Whiz" cards have been distributed to all primary schools in the past two years. Students are tasked to respond to questions listed on the card aimed at equipping students with cyber safety skills like critical thinking, making informed choices about what they share online, taking responsibility for their online interactions, as well as recognising online risks to protect themselves and others. Another 25,000 cards will be distributed in the coming year.

In 2016, SCH came up with specially designed teaching resources like the Light Box Kit, Simple Machine Kit and Fun with Shadow Kit for use in schools and enrichment centres. All resource kits include activities to prompt engagement, enquiry, and allow participants to discover science concepts. Selected resource kits are also retailed at some of the major bookstores in Singapore.



# GATED ATTRACTIONS



- 34 KidsSTOP™
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- 36 Omni-Theatre

# KidsSTOP™



Launch of the PlayMaker Studio @ KidsSTOP™



Guest-of-Honour Ms Low Yen Ling interacting with a preschool student



Ms Low trying out one of the interactive tech toys

KidsSTOP™ provides a safe and exciting learning environment for children to discover the wonders of the world. The attraction continued to maintain its good visitorship with more than 170,000 visitors interacting with our numerous unique exhibits and participating in the educational programmes. Regular gallery activities such as Fun Spot, Artsy Science Craft, PlayMaking and Tinkering sessions continue to wow and engage our visitors.

On 12 May 2016, KidsSTOP™ introduced the Oceans' Buddies Exhibit, the first of its kind virtual ocean with sea creatures in 3D form to educate children on marine life and how they could do their part to protect the environment. The exhibit uses immersive technology as part of experiential play: children personalise their sea creatures by colouring on a template before scanning their completed work into a special computer programme that enables their own creative artwork to appear in the virtual ocean projected on a giant screen.

KidsSTOP™ also piloted its first series of TOTally Science programmes catering to toddlers aged 2-3 years old. An adult-accompanied programme, it is Singapore's first toddler science programme that offers a multitude of opportunities to learn through inquiry and play. The TOTally Science series proved an overwhelming success, as activities are appropriately designed to engage toddlers and help them construct knowledge, explore, experiment and develop a love for science.

In collaboration with Infocomm Media Development Authority (IMDA), KidsSTOP™ unveiled the PlayMaker Studio @ KidsSTOP™ on 26 January 2017. Aimed at providing a community space for children to dabble in hands-on maker activities involving an exciting array of tech toys and tools, KidsSTOP™ hopes to inspire young children to inquire, investigate and innovate through tinkering and making activities available at the PlayMaker Studio.

# SNOW CITY



Corporate Event: Dining in the Snow



Oktoberfest in the Snow



Snow Fun House - Awarded "Largest Snow-Filled Display House" by Singapore Book of Records

After the revamp, Snow City, the first indoor snow centre in Singapore, focused its efforts on creating and providing visitors of all ages and nationalities with more unique and immersive wintry experiences through edutainment events and activities.

In September 2016, Snow City introduced Dining in the Snow, a dining package targeted at corporate groups and their guests, offering guests a unique dining experience in the middle of the Snow Chamber. In late October, Snow City organised Singapore's first-ever Oktoberfest in the Snow, where over 160 guests were entertained by live music, beer-drinking contests and dance performances in celebration of the German beer festival – all in sub-zero temperatures.

For the year-end holidays, Snow City worked on the Real Snow, Real Christmas campaign to highlight the authentic winter experience the attraction has to offer. Christmas-related activities were held weekly to engage the young ones and their families in wintry festivities.

Leading up to the festivities, Snow City launched the Snow Fun House in December 2016, the first mobile snow chamber in Singapore that can house up to 20 tonnes of snow. In the mobile snow chamber, visitors can make a snow angel in the snowfield, go sledding on the snow luge, or take selfies with the snow-themed displays. The Snow Fun House is also suitable for various commercial events and activities such as product launches and sub-zero entertainment in the form of ice bars, ice galleries and cryogenic labs to name a few.

# OMNI-THEATRE



Visitors wearing Active 3D glasses for a truly immersive 3D dome experience



Scene from Natural Selection 3D: Charles Darwin at home



Scene from Natural Selection 3D: Giant tortoise of the Galapagos Islands

The Omni-Theatre, which was upgraded in 2015, continues to establish itself as the leading digital dome theatre in the region with its wide variety of high quality dome movies and live planetarium shows. In FY2016, it attracted more than 134,000 visitors with its staple offerings and new movies such as *Mysteries of the Unseen World*, a National Geographic production uncovering natural phenomena that cannot be seen with the naked eye, and *Dinosaurs at Dusk: The Origins of Flight*, an adventure through prehistoric ages. It also added a Christmas special entitled *Secrets of the Christmas Star* to its slate of live planetarium shows.

In November 2016, the Omni-Theatre launched its first 3D digital dome movie, *Natural Selection 3D*, revealing for the first time its cutting edge technology and securing its position as South-east Asia's first 8K 3D digital dome theatre. Through realistic, brilliant images and the high clarity of Active 3D glasses, visitors literally boarded the HMS Beagle to join renowned naturalist Charles Darwin on his scientific journeys around the world to learn about the evolution of life on Earth and his theory of natural selection.



COMMUNITY



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# VOLUNTEER PROGRAMME



Our student volunteers interacting with visitors through simple science experiments



Observatory volunteers facilitating telescope viewing on Asteroid Day



Our RSVP senior volunteers demonstrating why certain buildings are safer than others during an earthquake

Our volunteers have contributed significantly to Science Centre's programmes and events. We continued the collaboration with the Retired & Senior Volunteer Programme (RSVP) organisation, inducting five new RSVP volunteers that brought the total to 18. In total, the RSVP volunteers clocked 1,799 hours of volunteering services at the Centre. We also continued our partnership with NTU-YEP Hall 7 and Singapore Polytechnic Library Club who helped out at Mindfest and Young Learners' Festival respectively.

In addition, the Centre saw new schools and companies embarking on their volunteering journeys with us, among them Integrated DNA Technologies who volunteered for BrainFest 2016, as well as the Sony Creative Science Awards 2016, and Amgen who set up a CSR event together with volunteers from River Valley High School.

Volunteers at the Observatory also joined in outreach stargazing events at iLight Marina Bay and VivoCity, and most recently, a group of volunteers from School of the Arts Singapore worked on a storytelling project to share astronomy with the younger audience in a more artistic manner.

Besides helping out in events, our regular student and adult volunteers continue to engage visitors in the galleries. This year, our student volunteers clocked in 8,500 volunteering hours, while our adult volunteers clocked in 609 volunteering hours.

# LIST OF SPONSORS

1. Abbott Laboratories (Singapore) Pte Ltd
2. Agency for Science, Technology & Research
3. Applied Materials South East Asia Pte Ltd
4. Autodesk Asia Pte Ltd
5. Bloomberg L.P.
6. Cognizant Technology Solutions Asia Pacific Pte Ltd
7. DSO National Laboratories
8. Education Development Center, Inc
9. Hong Leong Foundation
10. Hope Technik Pte Ltd
11. In2 Marketing & Consulting Pte Ltd
12. Info-communications Development Authority of Singapore
13. Info-communications Media Development Authority
14. Keppel Offshore & Marine Ltd
15. M1 Limited
16. Media Literacy Council
17. Mouser Electronics (Hong Kong) Ltd
18. National Heritage Board Museum Roundtable
19. National Research Foundation
20. Pacific Light Power Pte Ltd
21. Pilot Pen (S) Pte Ltd
22. Questacon-The National Science and Technology Centre of the Government of Australia
23. Shell Eastern Petroleum Pte Ltd
24. Singapore Totalisator Board
25. Singapore Technologies Aerospace Ltd
26. Singapore Technologies Endowment Programme
27. Singapore Telecommunications Ltd
28. Singapore University of Technology & Design
29. Sony Electronics Asia Pacific Pte Ltd
30. Spring Singapore
31. Tides Foundation
32. Workforce Development Agency

# SPONSORSHIP FUND

## Science Centre Board Sponsorship Fund Programmes & Activities

The principle activities of the Science Centre Board Sponsorship Fund are to:

- Promote interest, learning and creativity in science and technology through imaginative and enjoyable experience and contribute to the nation's development of its human resource;
- Conduct supplementary science classes, lectures, demonstrations and workshops to complement the school syllabi;
- Produce and publish scientific literature in the form of magazines and guidebooks;
- Organise activities and programmes for general and targeted audiences so as to bring science closer to the people; and
- Screen planetarium programmes and OMNIMAX films to students and general public, using state-of-the-art audio-visual projection systems.

## Board Members

<b>Chairman</b>	Ms Tan Yen Yen
<b>Members</b>	Mr Soh Gim Teik
	Mr Hian Goh
	Ms Shirley Wong
	Mr Bruce Poh
	Ms Cherie Nursalim
	Mr Chandran Ramesh Nair
	Mr Cheong Chee Hoo
	Mr Zaqy Mohamad
	Mr Lim Eng Hwee
	Ms Melissa Ow
	Mr Sin Kim Ho
	Mr Chew Kwee San
	Ms Tricia Huang
	Mr Howie Lau
	Ms Leonie Lee

## Key Executive Management

<b>Chief Executive</b>	A/Prof Lim Tit Meng
<b>Deputy Chief Executive</b>	Mr Clarence Sirisena
<b>Senior Director, Education Programmes</b>	Mrs Anne Dhanaraj
<b>Senior Director, Projects &amp; Exhibitions</b>	Mr Daniel Tan
<b>Quality Service Manager</b>	Mrs Veronica Heng

## Conflict of Interest Policy

The Science Centre Board has implemented a conflict of interest policy that covers both the Board members and the staff. The document procedures require the Board members and staff to make a declaration of potential or actual conflicts of interest at the start of their term of office or at the start of their employment of service respectively. Thereafter, Board members are required to provide updates whenever there are changes to the original declaration, while staff are required to make such declarations annually.

Reserves policy is not applicable as funds received are used for their intended purposes.

## DISTINGUISHED VISITORS

2016

### APRIL

#### Dr Tarek G. Shawki

Secretary General of Presidential Specialized Councils in Egypt and Chair of the Specialized Presidential Council for Education & Scientific Research

### MAY

#### Professor Johann Deisenhofer

Nobel Prize in Chemistry 1988

#### Dr Marcelo Jenkins

Minister of Science, Technology and Telecommunications of Costa Rica

#### Dr Amy Khor

Senior Minister of State, Ministry of Environment and Water Resources & Ministry of Health

### JUNE

#### Dr Janil Puthucheary

Senior Minister of State, Ministry of Communications and Information & Ministry of Education

2016

**JULY****His Excellency Ambassador****Jairo Hernandez Milian**

Ambassador of Costa Rica to Singapore and  
Concurrent Ambassador to Australia

**AUGUST****Professor Brian Cox OBE**

Royal Society University Research Fellow, PPARC  
Advanced Fellow and Professor of Particle Physics  
at the University of Manchester

**SEPTEMBER**

**Delegation from the Qatari Ministry of Education  
and Higher Education**

**NOVEMBER****His Excellency Sergey Cheremin**

Minister of the Government of Moscow, Director  
of the Department for External Economic and  
International Relations of the City of Moscow

**His Excellency Andrey Tatarinov**

Ambassador of Russia to the Republic of  
Singapore

**Mr Anton Shkaplerov**

Russian Cosmonaut (Former Director of  
Operations, Russian Space Agency)

**DECEMBER**

**Delegation from the Ministry of Youth and Sports  
Affairs in the Kingdom of Bahrain**

2017

**JANUARY****Professor David Gross**

Nobel Prize in Physics 2004

**Professor Ada Yonath**

Nobel Prize in Chemistry 2009

**Professor Stephen Smale**

Field Medal 1966

**Ms Low Yen Ling**

Senior Parliamentary Secretary, Ministry of  
Education & Ministry of Trade and Industry, and  
Mayor, South West CDC

**MARCH**

**Delegation from Ministry of Science and  
Technology National Science Museum, Thailand  
(NSM) and NSM Board of Committee**



# SUB-BOARD COMMITTEES

## Executive Committee

**Chairman:** Ms Tan Yen Yen  
**Members:** Mr Soh Gim Teik  
 Mr Hian Goh  
 Ms Shirley Wong  
 Mr Lim Eng Hwee  
 Mr Sin Kim Ho  
 Mr Chandran Nair

## Audit Committee

**Chairman:** Mr Soh Gim Teik  
**Members:** Mr Bruce Poh  
 Mr Sin Kim Ho  
 Ms Tricia Huang  
 Ms Leonie Lee

## Finance & Investment Committee

**Chairman:** Mr Hian Goh  
**Members:** Mr Chew Kwee San  
 Mr Zaqy Mohamad  
 Ms Cherie Nursalim  
 Mr Cheong Chee Hoo  
 Mr Howie Lau

## Advancement Committee

**Chairman:** Ms Shirley Wong  
**Members:** Ms Melissa Ow  
 Mr Lim Eng Hwee  
 Mr Chew Kwee San  
 Mr Chandran Nair  
 Ms Cherie Nursalim  
 Mr Howie Lau

# PROJECT COMMITTEES

1. A\*STAR Talent Search 2016 Awards Committee
2. CRADLΣ 2016 Steering Committee
3. National Junior Robotics Competition 2016 Advisory Committee
4. National Science Challenge 2016 Review, Working & Science Content Committees
5. SAYES 2016 Executive Committee
6. Science Buskers Festival 2016 Advisory Committee
7. Singapore Science & Engineering Fair 2016 Working Committee
8. Singapore Science Festival 2016 Steering and Working Committees
9. Sony Creative Science Award 2016 Organising Committee