

# NATIONAL SCIENCE AND TECHNOLOGY MUSEUM

Annual Report

# 2011



國立科學工藝博物館  
NATIONAL SCIENCE AND TECHNOLOGY MUSEUM

## Foreword from the Director-general

The centenary of the Republic of China was exceptionally meaningful for the National Science and Technology Museum (NSTM), It was also the fifteenth year of operations of the museum. In order to provide a quality museum environment for visitors to feel like participating in a banquet of science knowledge, over the past year we upheld the service spirit of “smile, enthusiasm, self-motivation, and patience”. And based on that, we tried to raise people’s scientific literacy with a careful attitude from three directions- to enrich ourselves, to show the perfect, and to promote from the heart.

In 2011, we made fruitful achievements in collections and research. In addition to continuously studying objects of the petrochemical, home appliance, TV, printing, textile, and bicycle industries, we made revolutionary breakthroughs in the recruitment, interpretation, and promotion of objects. Based on the concept of “collection for the public”, we listed for the first time Open Storage in one of the experiencing facilities, aiming to demonstrate the “close to people” concept of contemporary museums. Besides, we actively coordinate with the education units of the government, and extend the experiencing opportunities from people in urban areas to the students in the schools of the remote areas. Children are the future masters of society. Only by equipping children with good knowledge of popular science can we help them to construct knowledge and develop an interest in science, we officially unveiled the NSTM Library for Popular Science on June 24, 2011. and specially planned a “popular science comics” corner for children. This corner was decorated with four murals, universe, astronomy, nature, and technology, to create an illustrated world of science.

With the assistance of Chunghwa Telecom Co., Ltd. and the Ministry of Education, the brand new permanent exhibition hall “Telecom@Taiwan” was launched in 2011 to display the history of telecommunication and development of telecommunication technology in Taiwan over the past 130 years. A great number of special exhibitions were organized in collaboration with external resources. These included: “Imperial Treasures: Relics of Famen Temple Underground and Flourishing Tang”, “Tales and Facts of Groupers”, “Taiwan 100 Year Living Exhibition”, “Chocolate Exhibition”, “Typhoon is Coming”, and 2011 Science Season “Technologies of Future: Challenges and Dreams”; and all received critical acclaim and positive feedback from the public. With these exhibitions, we hoped to continuously enforce the marketing function and charm of word of mouth and thereby promote science and technology to citizens interested in science and technology.

In order to let technology education take root and bear fruit, with the assistance of government policies, besides organizing the Fun with Science from Reading Picture Books and the Energy Technology Creative Practice Contest, we brought the science experiments of NSTM to remote areas to express concern about underprivileged students and to minimize the technology education divide between urban and rural areas. Thanks to the concerted effort of all colleagues, volunteers, and the public, the number of visitors in 2011 has increased by 10%. We hope that this power will continue like incessantly flowing water. Looking back at the past and forward into the future, let us pick up the same brush of dreams to draw up the perfect vision of a green museum.

Director-general

***Shiunn-Shyang Chen***



戶外展示：希望之塔

# CONTENTS

<b>II</b>	Foreword from the Director-general
<b>2</b>	Introduction
3	1. History
5	2. Organization and Staffing
9	3. Development Missions
<b>10</b>	Performance
11	Collections and Research
14	Exhibition
20	Technology Education
25	Public Service
29	General Affairs and Environment
33	Fund Utilization
	Major Events
<b>37</b>	List of NSTM Personnel
<b>48</b>	

NATIONAL SCIENCE AND TECHNOLOGY MUSEUM

2011

Annual Report

A large, dark metal sculpture of a dragon holding a globe. The dragon is intricately detailed with scales and horns, and is shown in a dynamic, coiled pose. The globe is a complex structure of intersecting metal bands. A large, colorful circular graphic with a gradient from green to blue and orange is overlaid on the scene, partially obscuring the dragon and the globe. The background shows a building and trees under a clear sky.

# Introduction

# 1. History

The National Science and Technology Museum (NSTM) was one of the central cultural facilities constructed in the “Project of County/City Cultural Center Construction” in The Twelve Construction Projects announced by the Executive Yuan in 1979. As the first museum of applied science in Taiwan as well as the first national institute of public education in Southern Taiwan, the focus of the museum is to collect and study scientific and technological objects, hold exhibitions related to science and technology and promote education as well as provide the public with a place for leisure and life long learning.

Located on Jiouru 1st Road, Kaohsiung City (originally City Park No. 6), the museum covers 18.37 hectares of land. The buildings contain a total building area of 20,682.83 m<sup>2</sup> and the floor area is 113,557.69 m<sup>2</sup> with 36.89 meters of structural height.

1.1. North building: 15,007.55 m<sup>2</sup> of building area is used for the administration center, permanent exhibition halls, temporary exhibition halls, IMAX® 3D Theater, Wasic Science Theater, Open Storage and Maintenance Workshop as well as for gifts hops.

1.2. South complex: 5,412.61 m<sup>2</sup> of building area is used for the Library and Audiovisual Center, research center, auditorium, lecture rooms and storage. The LOHAS Energy Conservation House was set up in 2009 and sits on an architectural dimension of 262.67 m<sup>2</sup>



Brief Description of the Preparatory Process:

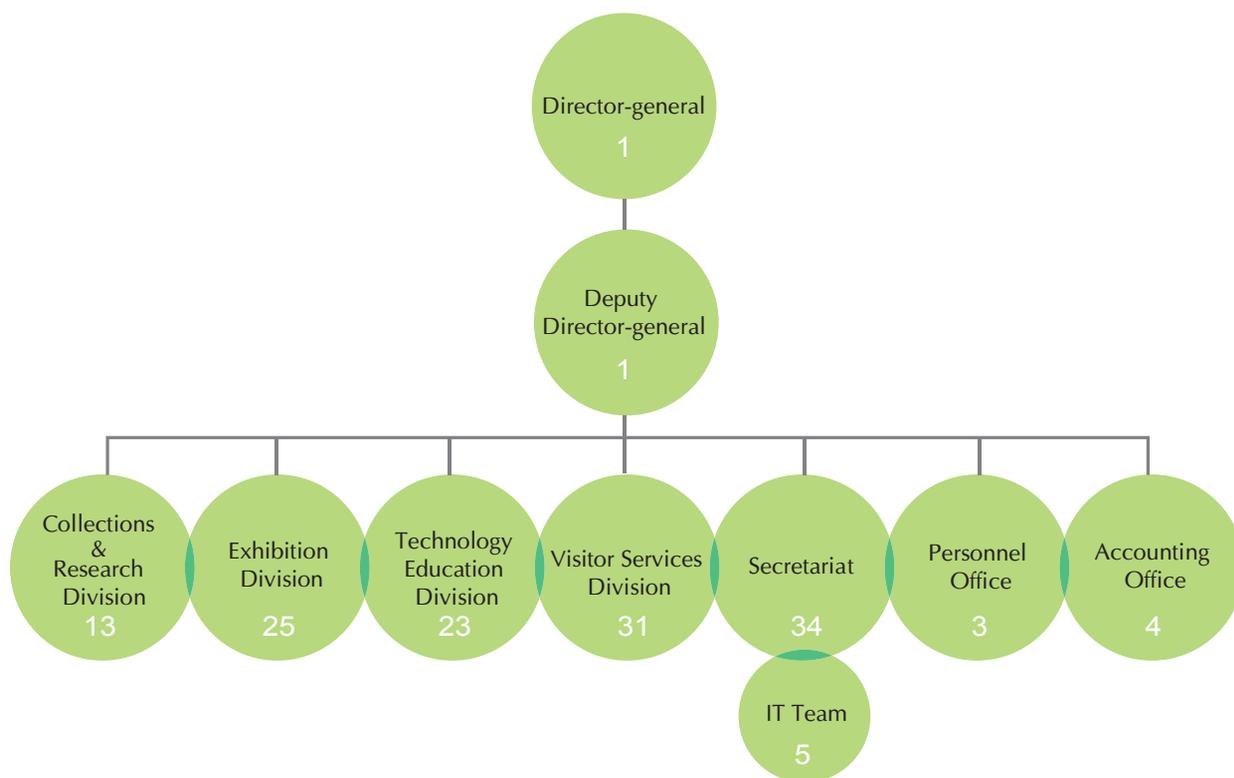
- (1) July 1986 The Planning Council for NSTM was established.
- (2) November 1988 The Executive Yuan approved the construction plan.
- (3) October 2, 1989 Construction of the museum commenced.
- (4) January 1, 1997 The museum was officially established with the approval of the Executive Yuan and the Ministry of Education.
- (5) July 26, 1997 The south complex was opened.
- (6) September 21, 1997 The museum park was opened.
- (7) November 9, 1997 The museum was opened to the public.



# 2. Organization and Staffing

## 2.1. Organization

The temporary regulations and staffing structure of NSTM were established and announced according to the Letter Tai (85) Zhan-Zhi 85504426 issued by the Ministry of Education on 30 December 1996. In this structure, the museum has one director and one deputy director. Under them there are the Exhibition Division, Technology Education Division, Technology Education, Secretariat, Personnel Office, and Accounting Office. The IT team was formed as a taskforce for museum development on 16 July 1998, and the collections and research team was formed on 1 February 2001. The Collections and Research Division was officially established on 1 September 2003 after the temporary organic regulations were revised and announced according to Letter Tai-Zhan-Zhi 0920113739A issued by the Ministry of Education on 5 August 2003. The section was approved for reference by Letter Kao-Tao-Zu-(21)-Zhi 09200079281 issued by the Examination Yuan on 22 September 2003.

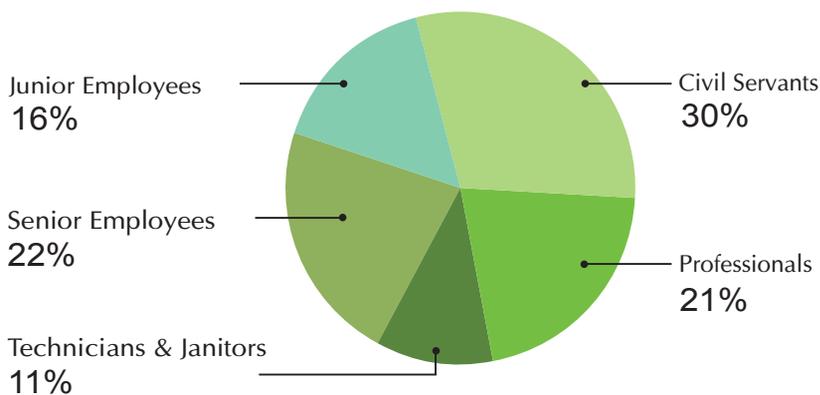


Organizational Structure

2.2. Staff

2.2.1. Statutory Staff

The statutory staffing of NSTM is 90 personnel. According to the staffing structure approved by the Ministry of Education in 2011, the staffing comprised a total of 139 people, including 71 staff personnel (including civil servants and technologists), 30 senior contract employees and 22 junior contract employees, 9 technicians, and 7 janitors. As there were 7 technicians and 3 janitors in excess of the statutory staff, their vacancies will not be refilled after their retirement or termination of employment. Later on, in order to cope with the organizational change and favorable retirement and redundancy policy of the Executive Yuan, we approved the favorable retirement of technician Tau-Hsien Huang (黃子獻) of the Exhibition Section, and the favorable retirement was effective on 2 June 2011. Given that no vacancy of NSTM will be refilled, one vacancy was reduced from the planned staffing from 2 June 2011. After that, the staffing structure became: 71 staff personnel, 30 senior contract employees and 22 junior employees, 9 technicians, and 7 janitors, totaling 138 personnel. As there were 6 technicians and 3 janitors in excess of the Statutory Staff, these 9 vacancies will not be refilled after their retirement or termination of employment.



The diagram below shows the statutory staffing of NSTM in 2011.

2.2.2. Current Number of Staff

The present staffing of NSTM (excluding volunteers and contractors) comprises 135 personnel, including 63 males and 72 females, representing 46.67% and 53.33% respectively. There are 9 Top & higher-rank officers (including the director and deputy director), including 5 males and 4 females, while the proportion of female Top & higher-rank officers is 44.44%. Other personnel include 28 professionals (12 males and 16 females), 41 civil servants (24 males and 17 females), 51 contract and general employees (18 males and 33 females), and 15 technicians and janitors (9 males and 6 females). The statistics of NSTM personnel by gender are as follows:

*Statistics of Rank 1 or Higher-Rank Officers and Non-Officers by Gender*

	Present Count	Male	Percentage of Male	Female	Percentage of Female
Top & higher-rank officers	9	5	55.56%	4	44.44%
General-employees	126	58	46.04%	68	53.96%
<b>Total</b>	<b>135</b>	<b>63</b>	<b>46.67%</b>	<b>72</b>	<b>53.33%</b>

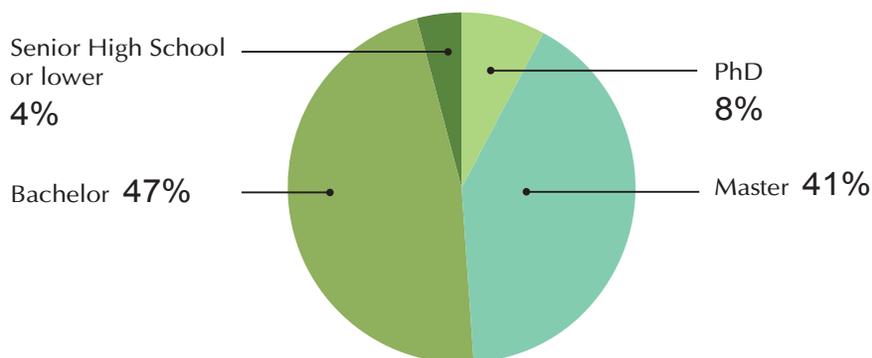
*Statistics of Personnel by Gender*

	Present Count	Male	Percentage of Male	Female	Percentage of Female
Professionals	28	12	42.86%	16	57.14%
Civil servants	41	27	65.84%	17	41.46%
Contract employees	51	18	35.29%	33	64.71%
Technicians & janitors	15	9	60.00%	6	40.00%
<b>Total</b>	<b>135</b>	<b>66</b>	<b>48.88%</b>	<b>72</b>	<b>53.32%</b>

2.3. Education Background of Staff

2.3.1. Statistics of education background of staff

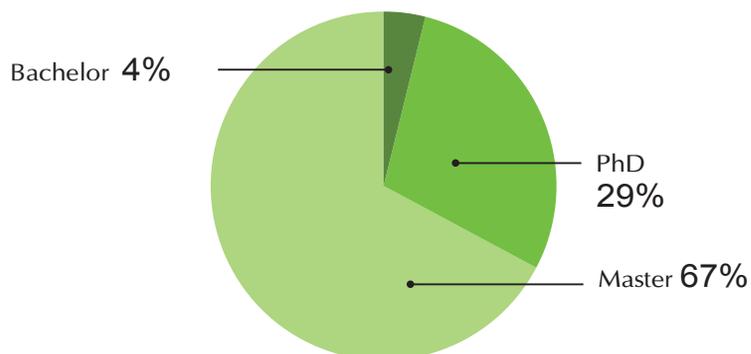
At present, there are 135 personnel, including 11 PhDs, 56 masters, 62 university graduates, and 6 senior high school graduates or lower.



Statistics on Education Attainments of NSTM Personnel

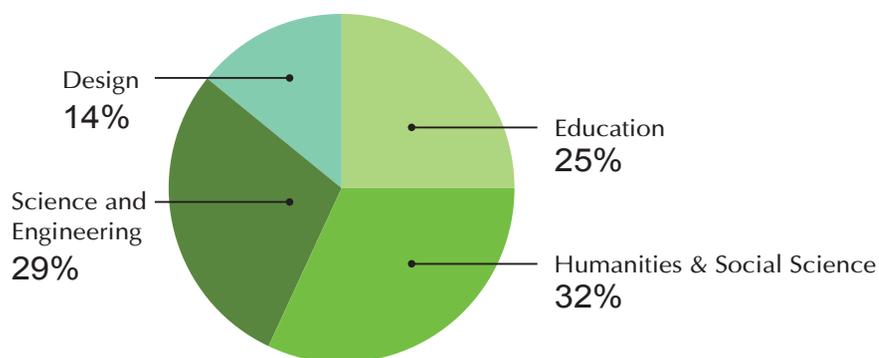
2.3.2. Statistics of professionals' education background

At present, there are 28 professionals, including 8 PhDs, 19 masters, and 1 bachelor's degree holder.



2.2.3. Statistics of professionals' specialty

At present, there are 28 professionals, including 8 specialized in science and engineering, 7 in education, 4 in design, and 9 in humanities & social sciences.





## 3. Development Missions

- (1) To reinforce technological collections management and research: continuation of holding conservation and maintenance seminars and improving the conservation environment, as well as strengthening research and applications for technological collections.
- (2) To establish an exhibition renewal mechanism and gradually alter exhibitions, so as to vitalize the exhibiting functions of the NSTM and make the NSTM a venue for displaying the industrial achievement of Taiwan as well as permanent establishment to record important industrial achievement.
- (3) To develop new teaching aids and combine resources from businesses, schools and society to organize more activities for technology education.
- (4) To enhance public services, utilize the power of the media as well as community resources and establish a diversified marketing strategy to increase the number of visitors.
- (5) To strengthen public safety around the museum and create quality visiting environment for better service.
- (6) To promote automation of administration affairs of the museum and provide life-long learning access on the Internet.
- (7) To improve and enrich network hardware and software equipment to enhance work efficiency.
- (8) To plan a digitalized library to provide the public with information from Internet databases and to create a specialized book repository for different research topics in the museum.
- (9) To strengthen cooperation among museums by holding various seminars and inviting guest speakers to improve research quality.



# Performance



# 1. Collections and Research

## 1. Collections and Research

### 1.1. Study of Objects

To continuously enhance the object recruitment in domestic important industries, we began the study of objects in 2011, with a focus on the following six industries: petrochemical (Kaohsiung Ammonium Sulfate Corporation), home appliance, TV (production), printing, textile, and bicycle industries. In addition to publishing academic papers on our research findings, we continued with object collections, including the recruitment and acquisition of technological and industrial objects, objects interpretation, and promotional activities related to our collections.

### 1.2. Statistics of Collections

In 2011, we completed the registration of 151 objects, including 86 from donation and 51 from recruitment. Also, we temporarily conserved 241 objects for Chunghwa Telecom.

*Statistics of Collections*

Item Year	Total	Recruitment	Purchasing	Donation	Transfer	Others	Accumulated Collections of the Year	Temporary Conservation
2007	82	15	1	61	5	0	887	378
2008	194	7	1	157	29	0	1,081	0
2009	78	0	27	51	0	0	1,159	16
2010	162	5	0	157	0	0	1,321	140
2011	151	51	14	86	0	0	1,472	241

### 1.3. Operation of Open Storage

NSTM is both a collector and conservator of evidence demonstrating Taiwan's technological development. Based on the concept of "collections for the public", we believe that citizens should be given opportunities to "see" most collections stored in our storage as there is little chance to display them. This way, we can skip exhibition planners to pilot interaction between objects and visitors, to demonstrate the "close to people" concept of modern museums and thereby stimulate the public's interests in technology objects.

Open Storage was completed in August 2009. The free trial operation including a guided tour of objects and docent service for object restoration began in March 2010. Official operation began in July 2010, with tickets at NT\$30 per person for individuals and NT\$25 per person for each group of 20 or more people. Visitors could print picture cards with the letterpress proofer and operate the knitting machine. From January to December in 2011, there were 12,096 visitors visiting Open Storage.

In 2011, Open Storage was listed in one of the experience facilities. Coordinating with the Plan for Visits of Schools in Remote Areas of the Ministry of Education, we arranged visits for 7,319 students from remote areas to experience and operate these objects and enjoy our exhibitions and performances at Open Storage. In mid-2011, we arranged special exhibitions to display the collections of amateur collectors and organized exchanges and seminars on the knowledge of maintenance and restoration of these great collections of amateur collectors.



Open Storage  
(Photo by Wenxing Huang)

#### 1.4. Library for Popular Science

Library for Popular Science was established to enforce the belief in “Technology for Life and Life for Technology”. Based on the concept of “Green Museum” and through reading books for popular science, we endeavored to let technology education take root downward, to make the library the center of living and learning of the public, and to broaden the angle and view of learning of visitors, in order to achieve the goal of “reading everyday and science for everyone”.

The library began official operation on 24 June 2011. In its reading room, books are displayed by nine major categories of popular science themes. Also, five featuring themes have been designed according to readers’ interests and colored for management to ensure easy identification. A “popular science comics” corner is specially planned for children and decorated with four murals: universe, astronomy, nature, and technology, in order to create a fun world of science for them. This way, children can gradually contact advanced books for popular science and develop a scientific mind in an easy and relaxing scenario.

Since the library was opened, we have arranged a series of promotional activities, including parent-child reading workshops, guided reading workshops, study group, group education, appreciation of popular science movies, and popular science books reading day. With these activities, we aimed at attracting children to the museum for reading and learning about science, and helping them get into the habit of reading popular science books in the daily lives. From July to December 2011, the library attracted 9,788 visitors.



The Library for Popular Science in planning period.  
(Photo by Qisu Cheng)

### 1.5. Academic Exchange

(1) We organized the International Conference on Procedural Standards of Museums in collaboration with the National Cheng Kung University Museum; Graduate Institute of Conservation of Cultural Relics and Museology of Tainan National University of the Arts; and the Museum Computer Network, Taiwan Chapter



(Photo by Shang-Ching YEH)

(2) We also organized the ICOM International Committee for Museology 34<sup>th</sup> ICOFOM Annual Symposium in collaboration with the Chinese Association of Museums and related units.



(Photo by Shang-Ching YEH)

### 1.6. Statistics of NSTM Publications

*Statistics of Research Results and Publications in 2011*

Item Year	Journal articles	Conference papers	Research projects		Academic presentations	Publications					Academic Conferences	Academic Seminars
			Led by NSTM staff	Participated by NSTM staff		Books	CDs	Newsletters	Brochures	Journals		
2007	33	22	17	12	29	12	1	7	9	3	4	15
2008	31	12	19	17	8	5	1	2	17	0	4	0
2009	23	21	16	22	24	5	0	13	6	1	5	0
2010	32	24	14	14	21	4	1	1	4	2	3	0
2011	29	27	17	6	24	2	3	1	16	2	2	28

## 2. Exhibition

In 2011, we organized 27 exhibitions, opened one brand new exhibition hall, and updated part of the exhibition units in three exhibition halls. For continuous care of the exhibits, we implemented a work quantification system and kept the rate of normal operation higher than 90%. In winter and summer breaks, we organized the IMAX® 3D theater movie festival.

### 2.1. Major Special Exhibitions

#### 2.1.1. Imperial Treasures--Relics of Famen Temple Underground and Flourishing Tang

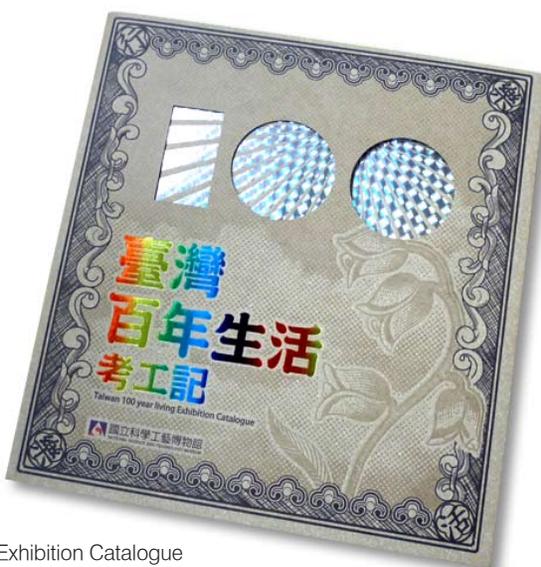
We organized this exhibition in collaboration with the National Museum of History and Tosun Public Interest Foundation. In addition to display the relics collected by Famen Temple Museum, we also borrowed the elegant court relics of the Tang Dynasty from seven museums in Shaanxi. The exhibition displaying a total of 120 sets of relics from 22 January 2011 to 25 April 2011 attracted a total of 10,315 visitors.

#### 2.1.2. Tales and Facts of Groupers

Working in collaboration with Professor Shyh-min Tom Hsiao, PhD, of National Kaohsiung Marine University, we presented the growing process of live groupers in terms of aquaculture in a laboratory setting from the viewpoint of environmental protection and energy conservation. During the exhibition period from 29 January 2011 to 30 June 2011, the exhibition attracted about 31,720 visitors.

#### 2.1.3. Taiwan 100 Year Living Exhibition

To celebrate the centenary of the Republic of China, we specially planned this exhibition to display the museum's technology collections in four topics: entertainment, transport, gambling, and housing. Besides presenting the social progress and prosperity of Taiwan over the last one hundred years, the exhibition displayed evolution of daily life technologies in the same period. The exhibition attracted more than 100,000 visitors during the exhibition period from 25 February 2011 to 29 May 2011.



Taiwan 100 year living Exhibition Catalogue

#### 2.1.4. Chocolate Exhibition

Teaming up with United Daily News Group, we introduced at the exhibition the works of chocolate craft artists from China and added four science education units to the exhibition with our exhibition and technology education functions. These units included “chocolate and health”, “variety and making of chocolate”, “chocolate and cooking”, and “chocolate creation”. The exhibition attracted 350,497 visitors during the exhibition period from 4 June 2011 to 12 September 2011.



Chocolate Exhibition: Chocolate Terracotta Army

### 2.1.5. Typhoon is Coming

The exhibition was presented in collaboration with the National Museum of Natural Sciences and National Taiwan Science Education Center. At the exhibition, we presented using interesting and interactive methods the typhoons Taiwan has experienced over the last one hundred years and the achievements of typhoon observation and research in Taiwan, with the help of the typhoon experimental devices designed and manufactured by the Japan Science Society and the research achievements of the Taiwan Typhoon and Flood Research Institute and National Science and Technology Research Center for Disaster Reduction. During the exhibition period from 28 June 2011 to 25 September 2011, the exhibition attracted 19,894 visitors.



Typhoon is Coming opening ceremony and press conference.

### 2.1.6. Technologies of the Future—Challenges and Dreams

In 2011, the National Science Council of Executive Yuan integrated the knowledge and power of Taiwan's industry, government, academics, and research institutions to organize the Technologies of the Future—Challenge and Dreams exhibition. At the exhibition, content related to daily life, such as food, clothing, housing, transport, education, entertainment, ICT, and healthcare, in the next three decades was presented; and issues related to space, earth, and the human body were explored, in order to re-define the future relations between technology and human beings in terms of "humanity, wisdom, and sustainability."

## 2.2. Update of Permanent Exhibitions

### 2.2.1. Opening of the brand new Telecom@Taiwan permanent exhibition hall

After years of cooperation with Chunghwa Telecom Co., Ltd, we and Chunghwa Telecom launched together the permanent exhibition hall Telecom@Taiwan on 14 April 2011 to present the history of telecommunication and development of telecommunication technology in Taiwan over the past 130 years. At the Telecom@Taiwan, more than one thousand valuable telecommunication relics were displayed, more than 40 interesting multimedia and interactive games were presented, the latest telecommunication services were introduced, and the concepts of future telecommunication technologies were shown.



A corner of Telecom@Taiwan.

### 2.2.2. Update of Magic Tour: Hot Air Balloon at Air Navigation and Aerospace Exhibition Hall

Previously, the heater of the hot air balloon at the exhibition hall was activated by a mechanical button to let the silver aluminum foil balloon fly. As the unit was built a long time ago and has been used for a long time, the performance was reduced. Therefore, we updated the balloon integrated multimedia and device application to present to the public Bernoulli's principle with a virtual balloon.

### 2.2.3. Update of Flying Ball at Open Sesame Exhibition Hall

We designed a brand new 3D track, which was different from the previous 2D track, for visitors to view the “flying ball” at 360°. With the garden as an imagery start, citizens could observe games about sciences and explore how gravitational potential energy changed into kinetic energy. The new flying ball has become an attraction of the museum since it was launched!

### 2.2.4. Upgrade and improvement of exhibits at Climate Change Exhibition Hall

In 2011, we upgraded and improved four exhibits at the exhibition hall including the addition of the automatic voice guide for visitors to learn knowledge voluntarily, the improvement of the entrance image by adding TVs and large major visual image doll to attract visitors. Based on the aim to serve visitors, we added vents and simplified the interactive operating process.

## 2.3. Other Important Achievements

### 2.3.1. Instant Noodle Special Exhibition in collaboration with Guangdong Science Center

Interested in the content related to our daily life at the Instant Noodle Exhibition organized in collaboration with the Uni-President Group in 2008, Guangdong Science Center requested authorization for the exhibition held from 26 January 2011 to 30 July 2011. To extend the exchange and cooperation with Guangdong Science Center, we and the center officially signed a five-year cooperation agreement in August 2011 for personnel exchange and exhibition design and production on exhibition and technology education activities.

### 2.3.2. Addition of the “Self Portrait Machine” experience facility

As an activity celebrating the 14<sup>th</sup> anniversary of NSTM, the brand new experience facility “Self-Portrait Machine” was launched at the hallway on the second floor in the east wing from 13 November 2011. Emphasizing the cooperation between man and machine, the Self-Portrait Machine captures every action of the user in the drawing process, including the user’s submission or rejection to the mechanical actions or anxious movements. Whether looking like or unlike the user, the final outcome is a total reflection of the balance between the user and machine.



The Self-Portrait Machine

### 2.3.3. Formation of the exhibition maintenance taskforce

The maintenance team was formed with system integration, mechanical and electrical, and mechanical personnel to demonstrate the professional competences of NSTM personnel. Also, maintenance volunteers were assigned to the team to enforce the routine check of exhibition halls. With the registration and reporting mechanism, the service quality of the maintenance hotline 6000 was improved and exhibition hall problems were quickly resolved. In November 2011, we combined the maintenance and theatre functions to develop the second specialty of personnel and to enhance the value of division of labor.

### 2.3.4. Upgrade of experience facilities in exhibition hall

In 2011, volunteers were allowed to partake in the operation of the experience facilities in exhibition hall. To cope with the operation problems of volunteers, the exhibition maintenance team demonstrated their professional skills and innovative spirit to improve the functions of the Moon Walker Simulator, Weather-bound Expedition of Rain and Wind Environment, and Earthquake Chamber for easy operation, energy saving, and effort saving.

### 2.3.5. Upgrade of the IMAX® 3D theater

In 2011, we completed the digital upgrade of the IMAX® 3D Theater. From then on, the utilization of IMAX film projector was reduced and digital 3D movies were broadcast. In 2012, we began broadcasting two digital movies (50% of the year). In 2013, complete digitization will be on the way. In doing so, we can minimize equipment failure rate and thereby cut down movie and broadcast maintenance expenses.

### 2.3.6. IMAX® 3D Theater Movie Festival

During the winter and summer break in 2011, we borrowed seven 3D movies from film companies. These movies include different themes for audiences of all ages. These movies were broadcast 282 times for 25,422 audiences. We also conducted a survey on the audiences and box office to provide a reference for selecting four movies for 2012.

### 2.3.7. Increase of venues for special exhibitions

According to the original planning, there are four special exhibition halls in NSTM, including the second special exhibition hall, the third special exhibition hall, the Star in the Universe, and the special exhibition hall on the fourth floor of the North Complex. In order to attract more organizers to hold large exhibitions in Kaohsiung to provide more learning opportunities for citizens in southern Taiwan, we reused the closed permanent exhibition spaces on the second floor of the North Complex and sixth floor of the South Complex. After refurbishing these spaces, we added three special exhibition halls there with an exhibition space of about 2600m<sup>2</sup> (around 776 pings).

## 3. Technology Education

### 3.1. Technology Education Activities at Children's Science Center

In 2011, we planned 214 activities for 8,349 preschoolers. The Fun with Science from Reading Picture Books: Marie Smith and Call: Message from the Sky were organized to pair with reading promotion and the opening ceremony of the Telecom@Taiwan permanent exhibition hall for children to learn with multiple sensory organs, to feel the fun of reading, and to understand the track of development and daily life application of telecommunication technologies.



Kindergarten children at the event

### 3.2. Promotion of Energy Conservation and Carbon Reduction

To respond with the government's energy education promotion policy, we organized the Exhibition of MOE Energy Education Program and Energy Science & Technology Creative Design Contest in collaboration with the Ministry of Education. The exhibition included the presentation of the achievements in the MOE energy education program; the achievements of the Technology Creative Design Contest; energy technology education activities; creative energy technology education agenda; and the creative posters, slogans, and the works from the drawing contest on energy conservation and green life from elementary and high schools. The event attracted more than 10,000 visitors. The overall results included the digitization of award-winning works and production of the achievement DVD. This DVD was

distributed to energy technology education resources and promotion centers to forward to nationwide seed teachers to maximize its follow-up effects. Also, onsite activities were organized at the Typhoon is Coming and Shock: Earthquake Mitigation from the Great East Japan Earthquake special exhibitions. A total of 216 sessions of the LOHAS Energy Conservation House Experience Camp, Tainan University of Technology Model Solar Car Camp, and energy conservation and carbon reduction serial activities were organized to attract 34,061 visitors.



Technology Creative Design Contest

### 3.3. Concern for Remote Areas: Extension of Technology Education

To let technology education take root in remote areas, we applied to the NSC for three-year funding. In 2010, we began organizing the Science and Technology Laboratory Teaching Aid R&D and Promotion Plan for Remote Areas. In 2011, we established six laboratories respectively in Chiayi, Kaohsiung City, and Pingtung County; and organized eleven teaching training courses for 359 teachers and students. We also organized three laboratory opening ceremonies, which attracted more than 12,000 teachers and students. During the winter and summer breaks, we organized two student training courses and two technology creation camps for 156 students.

### 3.4. Promotion of Nanotechnology

In 2011, we planned and organized comprehensive nanotechnology education activities, including the nanotechnology special exhibition, technology education and industry-academy matching, achievement presentation of nanotechnology projects, links and update of the nanotechnology world web, development and demonstration of nanotechnology teaching aids, hands-on breaking through checkpoints, scientific experiments, teaching training, and summer and winter break nanotechnology camps. These activities were planned and organized for the public to understand more and better and experience nanotechnology, hoping to improve the nanotechnology literacy of participants. In 2011, a total of 68 activities were organized for 20, 848 participants.

### 3.5. Cross-Straits Mechanics Exchange and High School Mechanics Summer Camp

In 2004, we began organizing the Mechanics Contest for Domestic Senior High School Students and A Summer Camp of Mechanics Contest for Senior High School Students from both Sides of Taiwan Straits on commission of the Society of Theoretical and Applied Mechanics of the Republic of China. In 2011, there were 30 teachers and students from Taiwan and 80 from China participating in the Mechanics Contest. The effect of the exchange events and contest of mechanics was significant.

### 3.6. Education for Specific Age Groups (including the elderly)

In technology education for the underprivileged, we proposed the Technology Education Theme Event: Technology Everywhere Project to apply for funding to the Shui-Lai Chen Foundation to express our concern about underprivileged students, including students in remote areas and offspring of new immigrants. In that event, we benefited 1,759 students and teachers from 31 schools. In technology education for the elderly, we continued the "active aging" campaign in 2011 and organized a total of 63 events for 1,439 elderly people. In these events, we provided elderly people with more thoughtful packaged tour services and physical development education combined with sports technology through a high teacher-student ratio and highly interactive approaches.

### 3.7. Meeting the Scientists on Sunday Science Lecture Series

In order to promote technology education to the public, in 2003 the National Science Council began subsidizing the Meeting the Scientists on Sunday Science Lecture Series collaboratively organized by National Cheng Kung University, NSTM, National Kaohsiung University of Applied Science, and National Center for High-Performance Computing. In 2011, twelve speeches attracting 3,450 audiences were organized at the auditorium of South Complex. These speeches were also webcasted live for people at home and abroad who were unable to join us on the site to participate in the speeches.

### 3.8. Motech Award–Creative Design Competition Using Solar Cell

The Motech Award–Creative Design Competition Using Solar Cell emphasizing the use of solar cells was organized for university and higher-level students in collaboration with Motech Industries, Inc. In 2011, the second competition attracted 39 teams with about 200 teachers and students from all parts of Taiwan. The judges reviewed the works; and prizes, including gold, silver and bronze medals, were presented on the same day.



Prize Presentation of the Motech Award–Creative Design Competition Using Solar Cell

### 3.9. Hand Launch Glider Flying Competition

To commemorate the success of the Wright brothers for making the Flyer 1 in 1903, the world’s first passenger aircraft heavier than air, and to promote the knowledge of aerospace technology, on December 12 to December 18 in 2011 we organized the Hand Launch Glider Flying Competition 2011 for junior and senior high school students. Gliders were made on the competition day with events including “straight line flying” and “hovering”.

The aim of the competition was to encourage students to blend creativity and flying technology to develop design, thinking, and problem-solving abilities. The competition attracted about 500 contestants from 143 senior high schools and 137 junior high schools.



Photo of award-winning junior high school contestants taken on December 17

3.10. Lifelong Learning Together 2011: From Communities to Museums (Southern Taiwan)

We implemented the Lifelong Learning 331 Project 2011 on commission of the Ministry of Education. Based on the 331 spirit, i.e. exercise 30 minutes a day, learning 30 minutes a day, and one deed a day, we organized a series of events from 29 October 2011 to 25 December 2011. These included nine Popular Science Reading Days, fifty LOHAS Physical Fitness Days, thirty-two Youth Music and Dance Days, four keynote speeches on "a little creativity and big invention", one environmental protection achievement presentation, one sketching and comics contest at NSTM, one Merry Christmas: Concern for Art and Humanities, four days of lifelong learning field trips, four days of technology train, and one learning achievement presentation. These activities attracted more than 20,000 participants.

*Statistics of Technology Education Activities in 2011*

YEAR	Type	Workshop	Seminar	Training	Live Event	Off-museum Service	Other	Total
2007	Sessions	28	4	144	1,329	52	10	1,567
	Participants	1,790	206	10,391	129,759	76,957	829	219,932
2008	Sessions	39	1	276	1,651	82	3	2,052
	Participants	4,991	135	17,939	216,267	30,695	166	270,193
2009	Sessions	22	3	323	1,562	137	13	2,060
	Participants	3,595	412	15,787	151,432	37,722	10,263	219,211
2010	Sessions	79	14	780	1,607	46	135	2,661
	Participants	7,696	935	28,522	199,624	23,539	3,021	263,337
2011	Sessions	28	1	959	1,462	88	24	2,562
	Participants	4,423	198	37,451	185,153	55,540	760	283,525

# 4. Public Service

## 4.1. Enhancing Visiting Rate by Improving Public Facility Functions and Services

Visitor count is one of the indicators of museum operational performance and an important target of the performance of this division. Facing rapidly changing social conditions, NSTM adopted multiple marketing channels, combined with social and civilian resources, and cultivated non-visitors and minority groups, in order to maintain basic customer sources and establish a good interaction mechanism with good service quality and by organizing various friendly neighbor activities. In 2011, there were a total of 2,050,790 visitors, with growth of 10% over the previous year.

*Statistics of Visitors*

YEAR	Exhibition Hall	IMAX® 3D Theater	Charged General or Special Exhibition	South Complex	Others	Outdoor Activity	Total Visitors
2007	498,892	190,502	14,391	202,269	278,492	538,172	1,729,052
2008	580,034	156,462	70,486	224,394	206,321	413,815	1,584,695
2009	533,509	147,606	99,339	225,491	184,985	119,021	1,309,951
2010	665,992	164,627	260,418	194,747	444,277	130,949	1,861,010
2011	672,493	159,299	386,860	136,274	558,343	137,521	2,050,790

\*Others: Technology education activities, open storage, LOHAS Energy Conservation House, Library for Popular Science, off-museum services.

## 4.2. Expanding Marketing Channels by Full Utilization of Media Resources

Information of special exhibitions, activities and important events were spread through press conferences, news releases, media programs, and text to increase the awareness of NSTM and establish good contacts with the media. In 2011, there were 855 reports on graphic media on average, and 313 reports in 52 newsletters were published.

## 4.3. Use of Social Media and Network Communities

With the rise of network communities, NSTM established a marketing platform on Facebook to keep closer to the lifestyle of citizens. In October 2009, we established a Facebook fan club at <http://www.facebook.com/ilovenstm>. By 31 December 2011, there were 4,220 fans. The information delivered to members over the facebook included information on permanent and general exhibitions, various technology education activities, choice collections, environmental education issues, and related text, pictures, flashes, photo albums etc. We also offered free souvenirs and interacted with fans in the chat area.

#### 4.4. Organizing Holiday Art Events to Integrate Technology and Art

To combine art, humanities and technology together, and enhance the quality of performing arts and art literacy in southern Taiwan, we organized performing activities on holidays for citizens to enjoy musical and dramatic performances while visiting our technology exhibitions. In doing so, we aimed at bringing art education to daily life and rich the intellectual and spiritual life of citizens. In 2011, we organized eight Holiday Art Performances attracting 2,350 visitors.

#### 4.5. Expanding Visitor Sources through Cross-industrial Integration

NSTM launched discount packages in collaboration with tourism hotels and travel agents to attract tourists and graduation tours to visit NSTM. In 2011, we worked together with hotels with a total ticket purchasing amount at NT\$100,650. We also offered a 30% discount for travel agents and special discounts for purchases of more than NT\$200,000 a year. By the end of 2011, fifty-one travel agents signed a cooperation contract with us.

#### 4.6. Supporting Minority Groups with Social Resources

NSTM strived for resources from enterprises and social groups with aggressive actions, and properly utilized these resources to fund children from minority groups to visit the museum. In doing so, we hoped to effectively increase the income and visitor rate of the museum, to promote museum education, enforce education for popular science, and concern about society at the same time. In 2011, we organized the Children's Charity Program which recruited a sum of NT\$401,590 to fund 3,175 children from minority groups. When compared with 2010, the amount increased by 52%.

#### 4.7. Enriching Museum Tour Contents with Quality Docent Services

In 2011, we arranged fixed point and fixed time docent services for 1,619 times on holidays. The docent services were mainly arranged for the Science and Technology Season 2010: Climate Change Exhibition and the Science and Technology Season 2011: Technologies of Future: Challenges and Dreams organized in collaboration with the National Science Council; the Typhoon Is Coming organized in collaboration with the Japan Science Society, National Museum of Natural Sciences, National Taiwan Science Education Center, Taiwan Typhoon and Flood Research Institute, Department of Atmospheric Sciences of National Taiwan University, and the Dynamics and Modeling Research Group of the Department of Atmospheric Sciences of National Taiwan University; the Telecom@ Taiwan organized in collaboration with Chunghwa Telecom; and the Chocolate Exhibition and "Imperial Treasures: Relics of Famen Temple Underground and Flourishing Tang" organized in collaboration with the media.



Children Charity Program

#### 4.8. Establishing Good Community Relationships with Friendly Neighbor Activities

By organizing friendly neighbor activities, we provided opportunities for locals to use the museum resources. The friendly neighbor activities in 2011 included:

- (1) From June 23 and June 24, we organized the Wonder 100 Friendly Neighbor Activity, which attracted 19 person-times.
- (2) We organized two sessions of movie screenings, including one from February 29 to February 27, which attracted 1,795 locals; and another from September 17 to September 25, which attracted 1,918 person-times.
- (3) From October 19 to October 26 we organized community visits to NSTM, and the event attracted 8,937 person-times.
- (4) From October 19 to October 26, we organized the Lantern Painting Contest for NSTM Anniversary, which attracted 1,625 person-times (including 1,500 from schools in five nearby boroughs and 125 person-times).



Friendly Neighbor Activity

#### 4.9. Smart Use of Social Human Resources

As important assistance of the museum, volunteers have been promoting the smooth operation of various museum affairs over the past decade or so. According to the Volunteer Service Act, we recruited volunteers from society and arranged education and training for them, aiming to help those interested in volunteer service better understand the content and laws and regulations related to volunteer service; the founding aim and mission, functions, and operation of NSTM; and our positioning and expectation on volunteers, in order to enable them to display their functions when they are on duty. Every year, we establish the annual volunteer education and training plan to help volunteers learn and grow, learn for life, acquire new knowledge, respect personal esteem and value, approve self achievement, improve professional service abilities, and enrich personal professional competence.

To cope with the need for operating various experience facilities, and to combine social education enthusiasm with the professional skills of technology personnel, volunteers were assigned to replace part-time student workers in operating these experience facilities in 2011, in order to enforce personnel streamlining and effective utilization of human resources. By equipping volunteers with professional knowledge and improving their service attitude, we

aimed at requiring communities and demonstrating the technology education achievements of Taiwan. The overall operating performance increased by 100% of 2010. This year, we expanded the scope of volunteer services, hoping that volunteers would work together with us based on the spirit of “we are family”, in order to witness the beautiful future of NSTM. By the end of 2011, there were 1,011 volunteers working for NSTM. In the same year, 511 volunteers participated in seven volunteer seminars arranged by NSTM; and 700 volunteers joined the volunteer commendation ceremony.



Technology trip for volunteers

#### 4.10. Technology Education for Remote Township Program

In order to provide students living in remote areas with fewer resources with the opportunities to learn and experience the wonder of science and technology and thereby plough the seeds of technology education, we strived to implement the Technology Education for Remote Township Program organized by the Ministry of Education. In this program, we invited students and teachers of junior high and elementary schools in remote townships to visit NSTM. These included visits to the permanent and special exhibitions and the open storage; movie appreciation at the IMAX® 3D Theater; and participation in the technology DIY activities. The program was planned for subsidizing students of junior high and elementary schools in remote townships in Kaohsiung City, Pingtung County, Tainan City, and Taitung County.

From April 19 to November 3 in 2011, a total of 10,015 students and teachers from 89 junior high and elementary schools in remote townships visited NSTM under this program, with a total expense of NT\$4,637,931. When compared with the planned vacancies for 9,206 students, there were 809 more. The visitors included 5,694 from 41 schools in Kaohsiung area, 996 from 10 schools in Pingtung Area, 2,257 from 26 schools in Tainan Area, and 1,068 from 12 schools in Taitung Area.

#### 4.11. Update of Breastfeeding (Milk Collection) Room Equipment

In order to provide visitors and employees with a comfortable and private breastfeeding (milk collection) environment, and to maintain women’s right to breastfeed in public areas, we planned and established a breastfeeding (milk collection) room at NSTM in November 2011. The breastfeeding (milk collection) room is equipped with sofa, countertop, basin, diaper changing counter, and emergency alarm. Besides complying with the general requirements for breastfeeding (milk collection) rooms, we furnished the breastfeeding (milk collection) room at NSTM with a warm and private atmosphere.

## 5. General Affairs and Environment

### 5.1. General affairs

#### 5.1.1. Open tendering procedures to cut back spending

In 2011, there were 72 procurement contracts over NT\$ 100,000, and the accumulated tender budget was NT\$ 100,014,033, while the award amount of contracts was NT\$ 89,591,787. Therefore, NT\$ 10,422,264 in total was saved, and 10.42% of reduction was reached. There were 409 procurement contracts between NT\$10,000- 100,000 , and the accumulated tender budget was NT\$15,877,274, while the award amount of contracts was NT\$14,182,641. Therefore, NT\$1,694,633 in total was saved and 10.67% of reduction was reached.

#### 5.1.2. Venue rentals adding to revenues

By actively promoting and expanding the business, the revenues of venue rentals were NT\$1,307,271 in 2011, an increase of 15.2% from 2010.

#### 5.1.3. Implementing archives disposal plans

In 2011, the NSTM Archives Check and Destruction 5-Year Plan with relevant working standards were revised and established. A total of 1,143 volumes of permanent records were re-bound and replaced into acid-free paper folders. All permanent records were stored in archival repository on the 4th floor by environmental control.



Use of paper folders for permanent records retention

## 5.2. Electrical Services

### 5.2.1. Becoming a green museum from saving water, electricity, oil, and paper

In 2011, the facility improvements and energy-saving policies were continually implemented, the electricity usage was 13,380,800 kilowatt-hours in 2011. Comparison with 2010, the electricity usage was reduced 707,000 kilowatt-hours in 2011, which recorded a saving of 5.02%. By carried out the system of plumbing anti-drip inspection , the water usage was 72,549 cubic meters in 2011, reduced 9,763 cubic meters than in 2010, recording a decrease of 11.86%. By eliminating fuel-inefficient motorcycle and posted on foot, the fuel usage was reduced 140 liters. Also, electronic files and projection were applied in meetings to reduce paper consumption.

### 5.2.2. Emergency response drill preventing damage from the unexpected

One flood drill was conducted to boost the flexible response to the electrical maintenance staff and contractors. And two fire drills were conducted in order to reinforce the staff's knowledge and skills in equipment operation and emergency response. On June 30, 2011, it was the first time for NSTM to conduct the fire drill at the museum lobby and was open to the public in order to implement disaster prevention.



Everyone can participate in the fire drill.

### 5.2.3. Promoting sustainable use for environmental protection

In the Go! LOHAS NSTM Activity, six activities were conducted during from March to December to promote environmental protection in daily life and to demonstrate the education function of NSTM. Teaming up with the Buddhist Compassion Relief Tzu Chi Foundation, a recycling education station was built with recycled materials in the unoccupied outdoor space for environmental education courses in the future. Also, DuPont Taiwan Limited donated environmental-friendly stylish chairs made of “healthy” and “recycled” materials with green recycling technologies. The arrangement of these chairs and the space they formed became installation art on the museum site to spread environmental protection in an interesting and interactive manner.



Environmental Protection Achievement Thanksgiving Ceremony organized in collaboration with the Buddhist Compassion Relief Tzu Chi Foundation.

### 5.2.4. Awards and Honors

The public restrooms of NSTM won the second and third place in the 2011 Quality Public Restroom Campaign, Recreational Facility Category. Also, NSTM won the Excellent Performance Award in the 2011 MOEA Energy Conservation Commendation on October 5, 2011. (No. Energy Technology 10004067020).

### 5.3. Information system

#### 5.3.1. Completion of i-Taiwan Government Indoor Public Area Free Wi-Fi Access

To meet the i-Taiwan Government Indoor Public Area Free Wi-Fi Access Plan, which established by the Research, Development and Evaluation Commission, 44 hotspots were completed by the museum and launched nationwide on October 7, 2011.

#### 5.3.2. Completion of virtual server implementation

To cope with the trend of cloud computing, virtual server implementation was built to integrate computing resources, storage resources, and network resources, in order to significantly reduce server update cost and electricity consumption.

#### 5.3.3. Formation of the Personal Information Protection and Management Implementation Team

The Personal Information Protection and Management Implementation Team was established according to Personal Information Protection Act. The responsibility is to check all personal information on business and listed the title, purpose, classification and act in accordance and made public on NSTM website.

#### 5.3.4. Going Live of the Employee VPN Service

To allow employees to ubiquitously handle business or search for information to support museum administration, off-site Intranet service through VPN was approved at the 1st Information Security Management Meeting in 2011. Employees must apply for a VPN account before they can access the Intranet via a VPN.



Government Indoor Public Area Free Wi-Fi Access

## 6. Fund Utilization

### 6.1. Annual Incomes and Expenses

In FY 2011, the total incomes of NSTM was NT\$343,591,000. The major income sources included NT\$231,045,000 from the subsidy for the development of social education Institutes, representing 67.24% of the total; and self-raised fund of NT\$112,546,000, representing 32.76% of the total. Among all sources of self-raised funds, the income from museum services of NT\$32,985,000 was the highest, representing 9.60%; the income from cooperative education at NT\$27,030,000 was the second highest, representing 7.87%; the income from assets and royalties at NT\$21,507,000 was the third highest, representing 6.26%; the income from continuing education of NT\$12,926,000 was the fourth highest, representing 3.76%. In FY 2011, the operating cost and expense was NT\$419,106,000, representing 121.98% of the total incomes. Therefore, the shortage for 2011 was NT\$75,515,000. This is the result of the regulatory amortization and depreciation of the operations fund. In terms of incomes, the ratio of self-raised fund was 32.76% in 2011.



*Financial Statement of Income, Expense, and Shortage for 2011*

(expressed in NT\$1,000)

Title	Budget of the Year	Final Account of the Year	Final Account of the Previous Year
	Amount	Amount	Amount
Operating Income	278,498	319,716	351,455
Service Income	33,783	32,985	25,003
Exhibition Halls	18,500	15,890	17,191
Theater	15,283	11,394	7,812
General Exhibitions	0	5,701	0
Cooperative Education Income	7,253	27,030	75,416
Continuing Education Income	7,716	12,926	7,865
Income from the Subsidy for the Development of Social Education Institutes (A)	229,746	231,045	232,746
Other Subsidy	0	15,730	10,425
Non-operating Income	19,452	23,875	25,513
Interest	600	1,332	1,136
Asset Use and Royalties	18,700	21,507	23,078
Breach Penalty (including compensations)	50	41	501
Miscellaneous	102	995	798
Total Incomes (B)	297,950	343,591	376,968
Operating Cost and Expense	418,539	419,106	453,210
Service Cost	242,219	237,050	223,490
Cooperative Education Cost	7,253	22,185	71,567
Continuing Education Cost	7,716	4,226	5,753
Managerial Fee and General Affairs	161,351	155,645	152,400
Total Expense	418,539	419,106	453,210
Balance (Shortage) of the Period	-120,589	-75,515	-76,242
Proportion of Current Government Subsidy (A)/(B)	77.11%	67.24%	61.74%
Proportion of Current Self-raised Fund of Organization 1-(A)/(B)	22.89%	32.76%	38.26%
Income from Self-raised Fund	68,204	112,546	144,222

Source: Budget plans and financial statements of all FYs. Since this year, the income from general exhibitions will be adjusted from "Incomes from Asset Use and Royalties" to "Service Incomes".

6.2. Annual Budget and Final Accounting of Capital

The result of capital execution in 2011 was NT\$10,057,000 (construction, improvement, and expansion of fixed assets), and the entire amount was disbursed with self-raised fund. The fixed asset resulting from specific subsidy programs of Ministry of Education and Ministry of Economic Affairs was NT\$3,694,000. The entire fixed asset comes to NT\$13,751,000.

*Annual Budget and Final Accounting of Capital 2011*

(expressed in NT\$1,000)

Planned Title	Disbursable Budget	Final Accounts of the Year
Construction, improvement, and expansion of fixed assets	10,064	10,057
Government Subsidy	0	0
Capital Surplus-Donated asset received	0	3,694
Self-raised Fund	10,064	10,057

6.3. Budget and Final Accounts of Income after the Implementation of Operation Fund Over the Years.

(expressed in NT\$1,000)

Item FY	Budget					Final Accounts				
	Total	Subsidy for the development of social education institutes	%	Self-Raised Fund	%	Total	Subsidy for the development of social education institutes	%	Self-Raised Fund	%
2007	285,366	219,208	76.82	66,158	23.18	321,744	219,208	68.13	102,536	31.87
2008	290,529	222,682	76.65	67,847	23.35	339,550	222,682	65.58	116,868	34.42
2009	292,280	222,552	76.14	69,728	23.86	340,319	222,552	65.39	117,767	34.61
2010	303,024	232,746	76.81	70,278	23.19	376,968	232,746	61.74	144,222	38.26
2011	297,950	229,746	77.11	68,204	22.89	343,591	231,045	67.24	112,546	32.76

Source: Budget plans and financial statements of all FYs.

6.4. Budget and Financial Accounts of Expense after the implementation of operation fund

Item Year	Budget					Final Accounts						
	Total	Current Expenditure	%	Capital Expenditure	%	Total	Current Expenditure		%	Capital Expenditure	%	
							Personnel Expense	Current Expenses				
2007	303,964	285,166	93.82	18,798	6.18	534,471	116,781	347,698	86.90	69,992	13.10	
2008	335,070	290,246	86.62	44,824	13.38	518,767	117,709	344,815	89.16	56,243	10.84	
2009	302,051	291,997	96.67	10,054	3.33	551,295	119,405	331,970	81.88	99,920	18.12	
2010	376,828	366,764	97.33	10,064	2.67	513,683	121,574	331,636	88.23	60,473	11.77	
2011	428,603	418,539	97.65	10,064	2.35	429,163	122,749	296,357	97.66	10,057	2.34	

Source: Budget plans and financial statements of all FYs.





# Major Events



# Major Events

No.	Date	Item	Event Summary	Proposing Unit
1	Jan 1- Feb 13	Exhibition	Co-organized the Great Migrations 3D International Photography Exhibition with National Geographic Channel	Exhibition Division
2	Jan 4	VIP	Kaohsiung Mayor Chu Chen led rank-one officials and district governors to visit the Tibet: Treasures from the Roof of the World Exhibition.	Visitor Services Division
3	Jan 6	VIP	Chiayi Mayor Minhui Huang led rank-one officials and religious groups to visit the Tibet: Treasures from the Roof of the World Exhibition.	Visitor Services Division
4	Jan 21- Feb 10	Exhibition	The opening ceremony at the Triangular Lobby on the first floor of the Centenary of ROC: One Hundred Years of Schools Exhibition organized by the Ministry of Education and implemented by the Kaohsiung City Government, presided upon by Vice President Vincent W.C. Siew, Deputy Education Minister Tsong-ming Lin, Deputy Kaohsiung Mayor Yong-de Lee, and NSTM Director-General.	Exhibition Division Visitor Services Division
5	Jan 22- Apr 24	Exhibition	The opening ceremony of the Imperial Treasures: Relics of Famen Temple Underground and Flourishing Tang Exhibition co-organized with Tosun Public Interest Foundation, with the appearance of Kaohsiung City Education Director-General Qinghua Lin, Chinese Steel ex-Chairperson Yentu Guo, and others.	Exhibition Division Visitor Services Division
6	Jan 22	Seminar	Artist Xinxong Lin of the liberty lottery was invited to deliver a speech on the manufacturing process, drawings, and drawing techniques of the liberty lottery at the Relic Maintenance Workshop II at the Open Storage.	Collections and Research Division
7	Jan 26	Others	Chief Xiujuan made the oath for the completion of the Technology Education Division.	Personnel Office
8	Jan 27	Seminar	Held the 1 <sup>st</sup> meeting of the Enhancing NSTM R&D Capacity Seminar.	Personnel Office
9	Jan 27	Event	2000 NSTM staff year-end conference.	Secretariat

No.	Date	Item	Event Summary	Proposing Unit
10	Jan 28- Jun 30	Exhibition	Co-organized the Tales and Facts of Groupers in collaboration with Professor Shyh-min Tom Hsiao, PhD, of National Kaohsiung Marine University. Tainan City Deputy Education Director-General Pangchen Cheng was invited to the opening ceremony.	Exhibition Division Visitor Services Division
11	Feb 8	Event	Spring Festival Gathering.	Personnel Office
12	Feb 25- May 9	Exhibition	Taiwan 100 Year Living Exhibition was held at the Star in Universe on B1. Kaohsiung City Deputy Education Director-General Jinyuan Chen and Kaohsiung City Deputy Environmental Director-General Chufeng Chen were invited to the opening ceremony.	Visitor Services Division
13	Mar 1	Event	Introduction of the museum environment and work environment adaptive training presentation for recruits recruited according to the Multiple Employment Initiatives.	Personnel Office
14	Mar 1- Mar 4	Others	The Instant Noodle Exhibition was migrated to Guangdong Science Center. Director-General Shunxiang Chen, Chief Peixiu Wu, Chief Xiujuan Zhang, and responsible person Rujing Lee traveled to Guangdong Science Center for exchange.	Exhibition Division
15	Mar 5	Event	The Taiwan qualifying competition of the FIRST LEGO League 2011 co-organized with E-Sun Robot Association Taiwan ended smoothly. The winner represented Taiwan to participate in the FLL 2011 in the USA or Holland.	Technology Education Division
16	Mar 9	Others	Completion and opened to the public of the Magic Tour: Hot Air Balloon at Air Navigation and Aerospace Exhibition Hall.	Exhibition Division
17	Mar 9	Others	Won the Golden Carnation Award from the 9 <sup>th</sup> Golden Carnation Awards for Promoting Women Participation in Decision-Making. Director-General Shunxiang Chen received the award at the Executive Yuan.	Personnel Office
18	Mar 12	Event	Organized the Plantation for Happiness under the GO! LOHAS NSTM Series.	Secretariat

No.	Date	Item	Event Summary	Proposing Unit
19	Mar 21	Event	Organized the Volunteer Commendation Ceremony 2011, with Special Honor for 64 volunteers, Honor First Class for 64 volunteers, Honor Second Class for 35 volunteers, Perfect Attendance Award for 190 volunteers, Support Award for 74 volunteers, and the MOI Gold, Silver, and Bronze awards for 22 volunteers.	Visitor Services Division
20	Mar 29	Seminar	Held the 2 <sup>nd</sup> meeting of the Enhancing NSTM R&D Capacity Seminar.	Personnel Office
21	Apr 8	Seminar	Co-organized with the Department of Commerce, MOEA, the Demonstrating Technology Application and Knowledge Sharing Conference: From Expositions to Museums—Creating the Cultural and Creative Blue Ocean of Taiwan with Technology Creativity	Exhibition Division
22	Apr 13- Apr 18	Event	Organized the volunteer annual tour for 2011.	Visitor Services Division
23	Apr 14	Others	Won the Excellence Award from the MOE Government Service Quality Award 2010. Deputy Director-General Xiezhu Cai received the award.	Secretariat
24	Apr 15- Apr 24	Event	Organized the Nanotechnology Education and Research Achievements Presentation Festival 2011.	Technology Education Division
25	Apr 16	Exhibition	The Telecom@Taiwan permanent exhibition was launched on the second floor of the North Complex. Chunghwa Telecom Chairperson Xuejin Lu and Social Education Minister Chengfeng Du were invited to the opening ceremony.	Exhibition Division Visitor Services Division
26	Apr 17	Event	Organized the Robot Birthday Party and Children Charity Program.	Visitor Services Division
27	Apr 20	Exhibition	Organized the Shock: Earthquake Mitigation from the Great East Japan Earthquake Exhibition at the east lobby on the first floor.	Exhibition Division

No.	Date	Item	Event Summary	Proposing Unit
28	Apr 23	Event	Co-organized the Earth Warming and Life Poster Exhibition under the GO! LOHAS NSTM with Wen Xin Universal Education Association.	Secretariat
29	Apr 24	Event	Co-organized the Cherish Earth and Love Taiwan: Sanmin Community Friendly Culture Festival 2011 with Taiwan Soka Association.	Visitor Services Division
30	Apr 29	Event	Organized the thanksgiving ceremony for the Technology Education Theme Event: Technology Everywhere Project. Deputy Director-General Xiezhu Cai expressed gratitude to heated support of Shui-Lai Chen Foundation on behalf of the underprivileged children in southern Taiwan and presented a certificate of appreciation to Chairperson Zhangqing Chen of the foundation. Also, 168 teachers and students from Dazhu Elementary in the remote area of Tainan City were invited to the ceremony.	Technology Education Division
31	Apr 30	Event	Organized the Open Storage Exhibition 2011, featuring The Revival of Antique Computers: Apple, MPF1 and PC Exhibition.	Collections and Research Division
32	May 7- May 15	Exhibition	Co-organized the 51 <sup>st</sup> Elementary and High School Science Fair at the second and third exhibition halls with Kaohsiung City Department of Education.	Exhibition Division
33	May 24- May 31	Event	Organized the volunteer tour 2011.	Technology Education
34	May 28- May 29	Event	Co-organized the final and prize presentation of the Motech Award–Creative Design Competition Using Solar Cell with Motech Industries. About 200 teachers and students from 39 universities and colleges entered the final.	Technology Education Division
35	Jun 2	Event	Held the opening ceremony and press conference for the Chocolate Exhibition co-organized with the United Daily News Group at the lobby on the first floor. Kaohsiung City Mayor Chu Chen, Social Education Minister Chengfeng Du, and Deputy Tainan City Mayor Cuncho Yen were invited.	Visitor Services Division Exhibition Division

No.	Date	Item	Event Summary	Proposing Unit
36	Jun 7	Others	Associate Research Fellow Meichen Zhang of the Technology Education Division was awarded the MOE & MOE Organizations Outstanding Education Staff Award 2011.	Personnel Office
37	Jun 7	Others	Updated the Flying Ball at Open Sesame Exhibition Hall and opened to the public.	Exhibition Division
38	Jun 16	Event	Opening ceremony of the LOHAS Energy Conservation House experience activities.	Technology Education Division
39	Jun 18- Oct 10	Exhibition	Migrated the Taiwan 100 Year Living Exhibition co-organized with the National Taiwan Science Education Center to the center.	Exhibition Division
40	Jun 24	Others	Opening ceremony of the Library for Popular Science at South Complex transformed the Library Audiovisual Center. The press conference was held after Director-General Shunxiang Chen unveiled the library marking the official opening of the library for popular science.	Collections and Research Division
41	Jun 28	Exhibition	Launched the exhibit of the Technology in News Event: Clouding Agent Contamination Incident at the New Concept Kitchen of the Food Industry Exhibition Hall.	Exhibition Division
42	Jun 28- Sep 25	Exhibition	Co-organized the Typhoon Is Coming with the Japan Science Society, National Museum of Natural Sciences, National Taiwan Science Education Center, Taiwan Typhoon and Flood Research Institute, Department of Atmospheric Sciences of National Taiwan University, and the Dynamics and Modeling Research Group of the Department of Atmospheric Sciences of National Taiwan University. At the opening ceremony, Chairperson Ohshima Mieko of Japan Science Society, Deputy Director Yonghe Wang of Taiwan Typhoon and Flood Research Institute, and Director Xinlong Qin of the Regional Meteorological Center in Southern Taiwan, Central Weather Bureau, attended the ceremony. The exhibition was held at the Star in the Universe on B1.	Exhibition Division
43	Jun 30	Event	Organized the GO! LOHAS NSTM activities and Fire Drill for the first half of FY 2011.	Secretariat

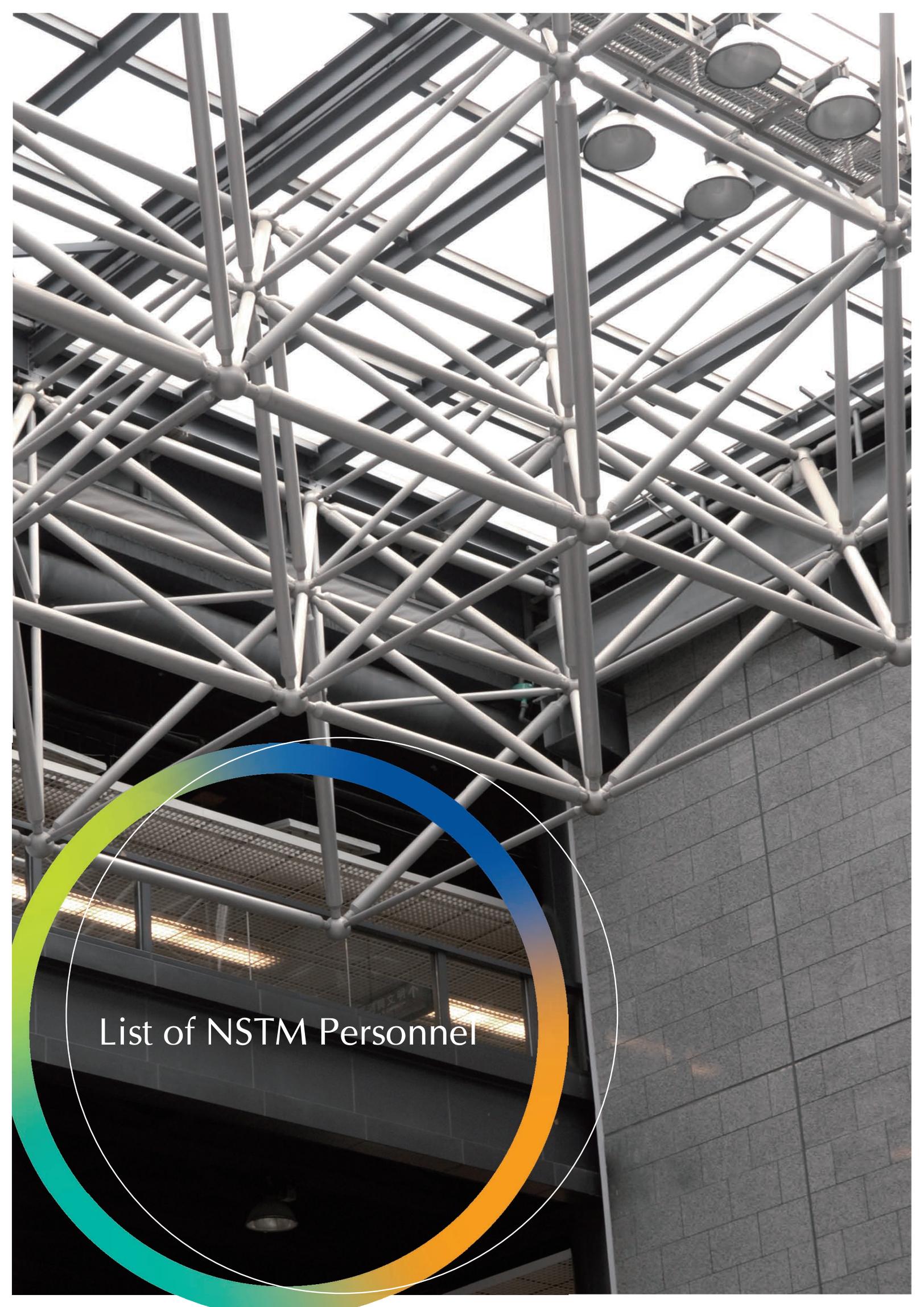
No.	Date	Item	Event Summary	Proposing Unit
44	Jul 1	Exhibition	Co-organized with TWNIC the Digital Life with IPv6 Exhibition at the central corridor on the fourth floor.	Exhibition Division
45	Jul 1- Aug 31	Exhibition	Organized at the Open Storage the Showcase of Collections: Treasures Exchange with Amateur Collectors.	Collections and Research Division
46	Jul 1	Exhibition	Continued the Technology Train Exhibition Series with Little Ding-Dong Science Park and migrated the exhibition to the Fundamental Science Exhibition Hall at the Little Ding-Dong Science Park.	Exhibition Division
47	Jul 5- Jul 7	Event	Organized the Taipei Session of the Disease Prevention Summer Camp 2011 Part 3: Disease Prevention Expert Lab.	Exhibition Division
48	Jul 5- Jul 31	Exhibition	Organized the Nanotechnology and You Exhibition at the central corridor on B1.	Technology Education Division
49	Jul 9- Oct 2	Exhibition	Organized the Shanxi Pingyao Wentaofang Ancient Weapon Culture Research Museum Ancient and Modern Excellent Swords and Sabers Exhibition and Modern Taiwan Outstanding Artistic Swords and Sabers Creation Exhibition at the Café Gallery on the second floor.	Exhibition Division
50	Jul 12- Jul 14	Event	Organized the Kaohsiung Session of the Disease Prevention Summer Camp 2011 Part 3: Disease Prevention Expert Lab.	Exhibition Division
51	Jul 12- Oct 18	Others	Organized the NSTM Life: Summer Touch touching photo recruitment.	Personnel Office
52	Jul 19- Jul 22	Event	Co-organized with iEARN Taiwan the iEARN 18 <sup>th</sup> International Conference and 15 <sup>th</sup> Youth Summit.	Technology Education Division

No.	Date	Item	Event Summary	Proposing Unit
53	Aug 18- Aug 28	Others	Organized the Goodwill Angel Selection 2011.	Personnel Office
54	Sep 11	Event	Organized the Gramophone Years: Vinyl Concert at the Open Storage.	Collections and Research Division
55	Sep 19	Event	Organized the growth training course for NSTM volunteers, featuring the Sustainable Environment and Vegetarianism given by Deputy Minister of Education Tsongming Lin.	Visitor Services Division
56	Sep 17	Event	Co-organized with the Kaohsiung City Tzu Chi Foundation the Cherish Earth in September: Recue Redundancy for the GO! LOHAS NSTM Series.	Secretariat
57	Oct 5- Oct 6	Seminar	Co-organized with the National Cheng Kung University Museum; Graduate Institute of Conservation of Cultural Relics and Museology of Tainan National University of the Arts; and the Museum Computer Network Taiwan Chapter the International Conference on Procedural Standards of Museums.	Collections and Research Division
58	Oct 7	Others	Launched the i-Taiwan Government Indoor Public Area Free Wi-Fi Access service along with the Research, Development and Evaluation Commission. The public can use this service at both complexes of the museum.	Secretariat
59	Oct 8	Event	Co-organized with the National Taiwan Normal University and Taiwan Creativity Development Association the southern Taiwan heat of the 2011 PowerTech: Virtual Organic Robot Contest.	Technology Education Division
60	Oct 15	Others	Co-organized with the Kaohsiung City Tzu Chi Foundation the Environmental Protection Achievement Presentation for the GO! LOHAS NSTM Series. Social Education Minister Chengfeng Ko was invited to the opening ceremony.	Visitor Services Division Secretariat

No.	Date	Item	Event Summary	Proposing Unit
61	Oct 15- Oct 16	Event	Organized the final of the Energy Technology Creative Practice Contest 2011 at the Star in the Universe with MOE subsidy.	Technology Education Division
62	Oct 16-	Exhibition	Organized the Wind in the Hallway: Outdoor Wind Power Exhibition at the entrance to the administration area on the first floor.	Exhibition Division
63	Oct 19	Others	Won the Excellent Performance Award in the 2011 MOEA Energy Conservation Commendation	Secretariat
64	Oct 22	Event	Organized the Lost for 40 Years: Revival of Authentic Kai Style at the Open Storage.	Collections and Research Division
65	Oct 22	Others	Won the second and third place in the Quality Public Restroom Campaign Recreational Facility Category 2010 from the KCG.	Secretariat
66	Oct 23- Oct 26	Seminar	Co-organized with the Chinese Association of Museums and related units the Kaohsiung Workshop of the ICOM International Committee for Museology 34th ICOFOM Annual Symposium.	Collections and Research Division
67	Oct 25- Nov 30	Exhibition	Organized at the Star in the Universe and central corridor on B1 the Energy Technology Creative Practice Contest 2011 Achievement Presentation.	Exhibition Division
68	Oct 25- Oct 30	Others	NSTM personnel appeared at the International Conference of East-Asian Science Education 2011 held at Chosun University in Korea.	Technology Education Division
69	Oct 28- Oct 29	Event	Co-organized with the Kaohsiung City Education Department the 30 <sup>th</sup> Kaohsiung City Junior High and Elementary School Science Fair. Kaohsiung City Education Director-General Qinghua Cai and NSTM Director-General Shunxiang Chen presided at the opening ceremony.	Technology Education Division

No.	Date	Item	Event Summary	Proposing Unit
70	Oct 29- Dec 25	Event	Organized the Lifelong Learning Together: From Communities to Museums (Southern Taiwan) on commission of the Ministry of Education.	Technology Education Division
71	Nov 6- Nov 27	Event	Organized the Sunspot Observation Equipment Docent Training and Observation at the lobby on the first floor.	Collections and Research Division
72	Nov. 8 2011- Jan 5 2012	Exhibition	Co-organized with the Kaohsiung City Department of Environmental Protection the Green Forest: Recycled Art Exhibition outside the North Complex and on the east wing of the first floor.	Exhibition Division
73	Nov 12- Nov 30	Exhibition	Organized the Exhibition of MOE Energy Education Program and Energy Science & Technology Creative Design Contest 2011 at the Star in the Universe.	Technology Education Division
74	Nov 13 2011- Jan 15 2012	Exhibition	Co-organized with the Society of Plastics Engineers-Taiwan Section, Plastics Industry Development Center, and Pontex Group the Taiwan Plastics Environmental Aesthetics Technology Exhibition at the central corridor on the first floor.	Exhibition Division
75	Nov 13	Event	The 14 <sup>th</sup> anniversary of NSTM	Visitor Services Division
76	Dec 1	Others	Added three new exhibition spaces on the second floor of the North Complex and the sixth floor of the South Complex.	Exhibition Division
77	Dec 10	Event	Organized the Kaohsiung Ammonium Sulfate Corporation Old Photos Exhibition and Senior Seminar at the Open Storage.	Collections and Research Division
78	Dec 13	Contract Execution	Organized the Multi-Mode Tandem Bicycle Donation Ceremony. Director-General Shunxiang Chen and President Yuanren Wang of Far East University signed the donation agreement.	Collections and Research Division

No.	Date	Item	Event Summary	Proposing Unit
79	Dec 15	Exhibition	Co-organized with the National Kaohsiung University of Applied Science the Apollo Solar Car Exhibition at the east corridor on the first floor.	Exhibition Division
80	Dec 15	Others	Updated the projection equipment of the IMAX® 3D Theatre.	Exhibition Division
81	Dec 17- Dec 18	Competition	Organized the Hand Launch Glider Flying Competition.	Technology Education Division
82	Dec 17	Event	Organized the opening ceremony and press conference for the Lifelong Learning Together 2011: From Communities to Museums.	Visitor Services Division
83	24 Dec 2011- 10 Feb 2012	Exhibition	The Technologies of Future: Challenges and Dreams Exhibition organized by National Central University on commission of the National Science Council was migrated to the sixth floor of the North Complex.	Exhibition Division
84	31 Dec 2011- 4 Mar 2012	Exhibition	Co-organized with ArtSource Corporation The Speaking Mona Lisa: A Classical Exhibition at the second and third exhibition halls.	Exhibition Division



List of NSTM Personnel

# List of NSTM Personnel

## STAFF

CHEN, SHIUNN-SHYANG

TSAI, HSIEH-TSU

YU, JUI-CHEN

HUANG, JUN-FU

YE, SHANG-CHING

TSENG, CHI-SHU

CHEN, SHU-CHING

HSIAO, KUO-HUNG

LU, THAO-RONG

HUANG, CHENG-CHONG

WU, CHING-TAI

TSAI, CHIA-JUNG

HUANG, WEN-HSIN

HUNG, HSUEH-CHIN

LIU, CHING-HO

WU, PEI-HSIU

WANG, CHU-LIN

HONG, SHUN-CHENG

LIOU, JR-YUNG

HSIEH, SHAN-HO

KUO, WEN-CHING

WANG, TSUNG-CHI

TSENG, HUI-CHANG

LEE, CHIEN-HSING

CHEN, MEI-TSEN

WU, SU-HUA

LI, JU-CHING

KAO, SHIH-WEN

SU, FANG-YI

HONG, WAN-JHEN

HUANG, CHI-HONG

WU, YU-CHUN

CHUANG, CHUN-LIN

LIN, CHAO-HUNG

CHUANG, SHENG-TENG

LEE, HOUNG-JYH

LIN, CHIEN-HSIU

YANG, SHIH-YI

LIN, WEN-HSIEN

LIN, SHU-CYU

CHANG, HSIU-CHUAN

CHANG, MEI-CHEN

WANG, CHI-HSIANG

TSENG, JUI-LIEN

WANG, YU-HUNG

CHEN, CHENG-CHIH

CHAN, LI-SHAN

HSIAO, DER-REN

JIANG, SHU-FANG

SU, CHIU-LAN

CHOU, WAN-RONG

CHENG, JUI-CHOU

CHENG, CHIEN-CHI

LIU, JIA-RU

MAI, HSIU-WAN

LIN, SUNNY-S

YE, CHIN-YU

HO, SHU-MIN

LIN, LI-CHUN

KUO, HONG-BIN

CHEN, YI-CHEN

CHEN, YU-HSIN

LIN, CHIH-CHENG

LIN, JONG-I

JHENG, ZONE-JHE

CHUANG, FU-SHAN

CHANG, CHUN-CHING

HORNG, JING-YI

TSENG, I-HSUN

FAN, CHENG-WE

CHENG, HSIEN-JEN

PU, CHING-CHING

WANG, YUN-YING

HUANG, HUI-TING

LEE, KUAN-CHING

CHEN, I-WEN

LAI, JUO-NAN

LO, SZU-YI

JUNG, CHUNG-LIE

CHEN, HSIANG CHUNG

TSAI, PEI-YING

CHENG, CHUN-HSIANG

WU, YI-NA

LIU, FUN-RU

TU, MEI-FANG

LEE, CHIA-FEN

WEN, LI-TING

LIN, SZU-YUAN

HSIEH, YA-WEN

TSAI, HUI-CHING

HUANG, SHIH-TING	CHUANG, TING-YU	SU, YU-JEN
CHIU, PING	ZOU, JIA-PING	KUO, CHUNG-HAO
HUANG, PEI-YU	CHU, PEI-YING	LIU, CHIN-HUNG
CHENG, TING -FANG	TSAI, CHENG-TE	HONG, JHIH,MING
WANG, CHANG-HUA	LIU, JIN-YI	WU, TING-FANG
CHANG CHIEN, CHIH-TING	SU, PEI-JHEN	YOU, SHUN-PING
SUN, YI-JEN	LI, CHANE-WEN	WANG, LIANG-CHUAN
CHANG, CHAO-HO	OU, HUI-LING	LIAO, CHUN-HSIANG
CHEN, CHI-HSIA	LIAO, MIN-LING	YANG, MEI-HUI
WU, CHENG-JIA	SUN, MING-SHENG	WU, HUI-JEN
WU, CHING-YUN	CHENG, JIA-HWAI	FAN CHIANG, KSIU-KUEI
WU, CHIA-YUAN	LIN, SHIH-TANG	HUANG, SHU JUNG
CHEN, TAI-WEI	GER, TZU-HSIANG	LIU, SHU-YI
YEH, CHIA-HSING	LEE, SHUN-HSIUNG	
CHEN, LIN-YUAN	JU, YUAN-CHING	
LIN, HUI-CHUAN	HO, JUNG-FU	

---

#### VOLUNTEERS

---

TSENG CHIUNG-HUI	TSENG WEN-CHEN-YING	DAN BA SONG
KUO SHU-TUAN	CHEN TSUNG-TA	CHANG HUNG-CHING-TSAI
CHUANGT MEN- CHU	SHEN MEI-LING	DI ZHEN ZHONG
ZHENG XIU LING	ZHENG,XIU-ZHEN	CHEN CHENG-HSIN
ZHEN JIA XIANG	TSAI LI-SHU	CHANG SHU-MEI
CAI NENG SHENG	JIANG MIN RONG	WANG CHUN LIAN
CHIU YU-MEI	ZHEN MEI LAN	LAI HENG HUA
LI XIAO MEI	HE YI TING	LIANG CHIN-O
XUN SHU SHAN	HSU CHI-FU	YANG KUEI-TAO
YANG KUN SHAN	HONG SU ZHEN	YANG HSUEN-O
ZHEN YANG YU	TU WENG CHUN-HWA	CHENG SU-FEN
CHUANG YU CHUNG	FU YU CHUAN	ZHEN SHU YAN
ZHAO LI FENG	HUANG KUEI-FENG	LIU JIN FENG
HUANG SHU HUI	ZENG SHU LING	LIN CHAO-YIN
CHIANG CHIN CHU	LIN LIANG-HSIU-YUAN	ZHEN,NING
ZHEN YONG XUN	CHEN CHAO-HUA	HUNG MEI-YING
ZHENG,SHOU-YAN	CHUANG MEI CHING	LO YUEH-HSIU
YANG LEE-JU	ZHANG YAN LING	LEE HSLU-MIN

WANG TA-YAO	YEN YIN IZU	HSIEH SHIANG-ER
CHANG LUO-WEI	LOR CHUN SHIA	LIN HUI-MEI
TSENG PAO-HUI	CUI AI YAN	CHUNG HUI LAN
LIAO CHEN-HSING	LI JIN LIN	CHEN SU-CHIN
KONG FUN-CHUAN	HUANG KUI FEN	CHEN YOUNG-CHING-MEI
KU BAIR-HWA	CHEN I LUN	CHENG YUEH -CHIAO
SHAO YU-TANG	CHEN PAO CHU	KUO SHUN -HSIEN
LAI RONG-JER	LEE YUEN YUN	HUANG SHU-JU
CHUNG WU-LING	TU PI LIEN	CHEN MAY-LIE
HUANG HUI-LIEN	YANG GAO GUI	HSU FENG-HSIANG
LEE TZU-HUI	TSAO YU HSIU	LI SIAO-LING
YANG SU-MEI	WU YUEH CHEN	WU RUEI-JHU
CHENG CHIN-KUEI	WANG SHU JING	HUANG SHIH
HU SHU ZHEN	LEE TERNG CHUAN	LIN SIOU-BEI
ZUO ZONG YI	CHENG RUEY SHAN	CHENG SU-CHEN
WU XIU LING	SHIH CHUAN CHUAN	SHIH PAO-HSIU
DAN, SHOU-JU	LEE FANG YING	HUANG SUN-MAO
YANG CAI	LIANG CHIN WEI	LEE SHING-HUNG
KU KUEI LI	CHOU FANG HUA	HUANG CHIU-HSUEA
HUANG CHIUNG FANG	WU WEN CHING	SHEN FU-CHIEN
CHEN KAO LI CHU	CHOU HUI LIEN	LIN SHU-WAN
WANG LI CHING	WU CHING HUNG	ZENG SHU-SHEN
LEE HSIU CHIN	HUANG SU-SHIA	YU CHEN PI-LIEN
LIANG YU YING	CHIH CHEN KNEI-YING	HUANG TSAI-FZNG
XIE YU FENG	SU SU-HUI	LIN EN-HSIUNG
LI CHUN-RONG	LIN HSIU- FANG	LIN CHUEN-MEEI
WANG JIAN HUA	CHAN PEI-YING	HUANG LIN-LIANG-HUI
SUN LU HUA	LI LI-HSIANG	CHEN LI-HUA
HONG XIU JUAN	CHANG MAI-LING	LIN WU-MEI-LAN
SHIAI SHAO ERE	HU CHIN-CHAI	WU JUI-PIN
LIN ZHENG DUAN	CHENG MEI-HSIANG	TSAI SHU-HSIEN
CHEN SUE-HUA	WANG HUI-CHING	LEE YA-LING
HONG KO MENG LI	TSOU HSING-YING	CHEN CHUNG-SHENG
HONG KO MENG LI	YANG HSIU-YNU	SU TENG KUEI-YING
WANG CHIN CHENG	HUANG MEI-LAN	WU HSIN-HUI
HSIEH A MEI	LIN CHAN	WU TUAN- MEI
HUNG HSIN HUA	LEI CHING-YEH	HO YUAN-PIN

YANG SHU-FEN	CHEN YANG-SHOW-CHING	LAN MEI-CHU
SHIEH CHI-HUI	WEI CHANG CHIU-JUNG	CHU LI-YU
SHIU LI-CHUAN	CHENG CHUN-HUA	WANG CHIN-HUAN
LAI TSAI-CHIN	SU HUI-MIN	YEH SHUI-TUNG
CHEN LI-CHU	YU JUNG-SHIN	LI HUI-CHEN
CHANG HSIU-CHIN	LIOU SHOU-YING	LIN KUEI-FEN
LIN KUEI-CHEN	YANG LING-FEI	YANG LI-CHU
CHEN MEI-HUEI	CHENG CHUN-HUA	CHEN CHUN-TAO
YANG SHU-HUA	LIU MING-CHU	HUEY SHIAN-JUANG
WANG JEN-HSIU	WU CHIN-TUAN	CHEN JIAN-LONG
CHUANG CHIA-NU	WU CHIN-JUI	LIU CHIN-YEH
LEE LING-FENG	CHAO PI-LIEN	WU HSIU-LIN
TSAI TENG-YEH	WU SU-SHIH	LIN HUNG HSIN YUAN
CHEN MEI-CHU	LIU KE-SHIU	HUANG HAI-PING
OU CHIN-YUAN	WU SHU-YUE	CHANG HUI-HSIEN
LIN HUI-YANG	SU LEE-CHIN	HUANG SHIH-LIAN
WANG YO-LI	LU LI JUNG	TSENG SHU-HUI
WANG JUI-HAN	TAI CHING-MEI	YANG HSUEH-CHIH
KAO FEN	CAI JHEN-FEN	GUO LAN
CHANG SU-YING	TAI CHIEN-HUI	HANG SEA-RONG
JHENG LI-SIANG	CHOU SHIN-MEI	KUO HSUEH-LU
CHOU HSIU-TSU	LIN CHEN-MING-SHOW	LIU CHEN-CHEAN
LI SIOU-HUA	LEE HSIU-HSIANG	TSENG YEN-HSIN
SHIH LI-HUA	LIN SHU-CHEN	HUANG LINE-LINE
WU PEI-HSUAN	HUANG YU-LI	CAI JIA-JUAN
CHUANG PI-YUN	JHEN CIOU SIANG	CHAO JUI-CHU
HSU WANG-LI-YU	SUN YU -CHU	TING MEI-HUI
WANG LEE-BAO	HUN SHU-YING	HE SHU-LIOU
KUO MEI-JU	CHEN CHAI-CHIN	LIOU SHYH-KANG
WEN CHIU-CHU	FENG JU-HSIN	DU SHU-FANG
YU JUI-CHIA	CHEN NENG-YU	CHEN TSAN-CHI
WEI YANG HSIU- HUA	HUANG SHU-JHEN	LIU MAM-NING
LIN SU-LING	WANG BI-SIA	KUO FANG-MING
YUAN-HSIEN LI	HONG SIOU-CIN	LEE LING- FIENG
CHENG YEN-PIN	WU SHE	WU SU- HUA
LIN KUEI-MEI	WU SHU-FEN	HSUEH TUNG PAO
CHAO LI-KUEI	WANG FENG-YI	MANG LING- CHANG

HSU HSUEH-YU	CHOU YU- CHIAO	CHENG LI-LAN
LIM SHU-LI	HUANG CHING- MEI	LIN BI-CHEN
FENG SHU-JUNG	TSUI YU-YU	CHANG YUEH-YUN
ZHAO SHU-ZHEN	HUANG MEI-YING	LEE YU-HSIA
CHAN LAI-MEI	LIU GUO-CHIEN	HUANG SHENG-TS
WANG MING-CHOU	SUN JUI-HUNG	WEN YI-MING
LEE CHUAN-CHUAN	CHEN MING-HUANG	LIN LEE MU-HWA
LIU YU-HUA	YANG MEI-LI	KUO CHAO-HSU
LIEN CHING-YUN	LEE FUNG-YING	WANG LI-YU LI
LEE SHOU-EI	LEE CHIN-YUAN	LEE TING-LAN
WANG LI-HUA	KUO CHIU-TAO	HSIAO LY-ING
HSIEH PAO-HUA	CHEN CHIN-CHUEH	LI LI-FENG WANG
LIN MIN-YI	SU YUNG-PING	CHEN-SHOW-WONG
CHEN AI-LING	LIN ENG-MIN	TSZN YEI-MEI
CHIANG TAI-CHEN	HUANG CHIEN-CHENG	SHYU HUEY-LI
HSU SHU-YING	CHANG CHIN-CHENG	HSU CHING-HUA
HUANG HOU-HSUEH-YUEH	HUANG LIEN-HSIANG	WANG YA-CHIH
PAN KUEI-SHAN	TENG CHIN-HSIANG	CHANG JUNG-CHUN
WANG YU-CHUNG	LIU HUI-WEN	LIU FONG-HSIUNG
CHAO TZU WEI	LAI KE-NAN	LEE TZU-HUI
CHEN YUEN-HSIA	CHEN YUEH-HSIA	LIN SHU-CHUAN
TUNG MEI-CHU	CHOU SHIU-CHU	YIN WEI- HUNG
WU MEI-CHIN	LI CHIN-YUAN	TSAI LI-HSIANG
CHENG CHUANG-CHUEI	HUANG MING-HUA	HUANG HSUEH-FENG
TSOU CHENG-YI	HSU LI-HSIA	CHANG FENG-YING
HUANG FENG-CHIEN	FAN CHENG-YI	TAI(DAI) KE-LI
CHEN CHI-YUAN	CHEN HUI-HUA	LU SHU-CHEN
LEE CHI-HOU	HWANG GWO-SHENQ	HUANG HSUEH- CHIAO
YEH HSIEN WEN	YU CHIU-I	TAI CHIUNG-MEI
CHANG CHIN- YON	CHEN LI-CHOU	YANG LING-CHEN
LIN HUANU SHU HSIA	SU PAI-WEI	SHAO YI-CHAO
MEI CHEN- HSIEH	CHAN MEI-CHU	WANG YUAN-YU
HSU SU-CHEN	CHEN HSIUNG	LIU LIN CHAO-HUA
CHEN KU-LAN	YANG WU-YUNG	CHEN TLU-CH
KUO YU-LING	CHIANG AN-NAN	CHANG LIEN-CHU
CHENG YU-MEI	TSAI SU-CHEN	WANG TENG-HSIUNG
HOU WEN-FU	CHOU SHENG-CHING	SHEN MING- CHIN

LI YU	CHANG YUEN-YING	LEE MEI-YUEH
YANG SHU-CHEN	HUANG CHIN-PEN	FANG HSIAO-LING
SU JUI-CHUAN	LIN CHIN-MEI	LIU SHU-HUI
LIN PI-CHAO	JYU JIA-LING	LU HSIAO-I
HUANG TSAI-YUN	TUNG SHU-CHEN	LIU WEN-CHI
CHEN LE E	CHEN TING-SHENG	LEE LI-YUN
LIU WANG-WAN-MAN	CHU LIEN-HWA	LIU CHING-HIN
SU CHENG-CHIAO	WANG CHAO-YUAN	WANG HSU-SHU-LI
ZHAO CHEN-HUAN	CHEN LIN	HSIEH SHIU-MEI
CHEN LE YUEH	WU HUAN-JAN	HSIEH PEI-CHU
CHUNG CHIG-YEN	CHEN CHIH-YUAN	TSAI SU-CHEN
SHIH LING-TZV	TSENG CHUAN-SUNG	JHOU AI-YING
LIN PEI-YU	LU KAI-CHUAN	LIN LONG-MIN
YANG SHU-YING	LEE BAO-NAN	CHEN LIOU-JIN-YING
JUHN LEI-FNA	WENG TSAI-CHIEH	HOU JHAO-WUN
MONG MING-JUU	CHANG LI MEI	WU SU-CHING
CHEN YU-YING	HUANG YU-LAIN	HUNG LI-HWA
CHEN HSIU-FENG	HSU CHENG-CHEN	HUNG JU-RUNG
CHIU CHI-SHENG	SU JU -SHU	TSO TSNNG YI
CHANG SHU WEN	LEE YU-CHIN	LU DU-MEI
PAN MEI-HSIANG	TSAI LI-MAN	LEE CHIA-PIN
CHEN TAI-RONG	LIN KUAN JUNG	HU FU JHIH
SHIH WAN-YI	CHEN LINH- LI	SONG LONG SHENG
CHEN HSIU-CHU	TSAI CHIA-YEN	LIN SEN TIAN
YANG MAY-JU	WU KUEI-MEI	LIAO YU ZANG
YU LEE- MSI	TSENG FONG- O	CHIANG KUO-YAO
HUANG WEN-HSIUNG	CHEN SHEN	JHEN RUEI GUANG
TUNG WAN	CHEN AI-LING	HUANG HE
HOU CHUN-HUA	TSAI SHU-YUAN	JHENG MEI-JHU
WEN CHI-CHEN	WANG YU-YUN	HUANG YU-HSIN
LIN HSIU-LING	LEE MING-HUI	CHOU PO-SHIUN
LEE KUEI-MAN	WANG CHIA-TSENG	LIU MEI-MAN
LEE YUH-HUA	CHANG HSIAO-HIS	CHANG KUEI-YING
HUNG YI-WEN	YI CHEN-YU	CHEN YI-LI
CHEN LIN-CHIN-LUN	LAI SHU-YING	SU SYUE-MEI
HUANG SHU-YEN	HSIEH MEI-YING	WU FU-I
KUO KUEI-CHU	KUO CHIUNG-CHU	CHUANG PING-HAO

YU CHIU-TAO	YU CHIEH	HUANG ZONG-SIAN
JHENG SIOU-CING	TSAI CHIA-YI	LIN MEI-FEI
LIU CHUN-YUEH	CHEN SHU-FEN	HUANG CYONG-YI
JHEN SHU-SIN	CHANG SHENG-CHI	LIN KUNG-SHU-MAN
TSAI HSIU-MEEI	HSU CHIA-CHUAN	KUO KUEI-LAN
CHEN TENG-CHAO	CHEN HSIAO-HUAN	CHUNG MEI-LEE
CHAO CHENG-CHIEH	CHOU HUI-LING	SHIAO HUEI-TEN
TSO MING-HO	TESNG YUEH-HSING	LIU ZHEN YU
HIS CHING-PING	CHENG LI-HUA	CAI HUI CI
WANG HSIU-CHU	CHAO HSI-CHING	ZHANG LI JING
LIN KUN-CHIN	YIN JIAN-CHUNG	HU XUE MEI
YANG ZN-YUAN	CHIANG YU-YUN	ZHU MEI YUN
TSAI JU	LIANG CHANG-XING	YANG HUI LING
CHEN NENG-CHI	JHEN JIE-PIAN	LIN AI RONG
WANG CHIN-GYU	LI YUN-YIN	WU CHIEN SHENG
PAN JIN-LONG	CHANG CHIEN-CHUN	TSAI TSAI-LING
LU CHUN-LI	CHEN SHAN	CHANG MEI-CHIN
HSU KUEI-HUA	CHIANG HSIU- MAN	LEE LI-YING
WANG YU-HSIANG	LIN MEI- LAN	CHANG CHAN-YANN
TSAI SHU-JU	CHIANG HUI-CHIN	LIN SIOU-LUAN
SHEN YANG-CHENG	NITA, WANG	HSU HSIEN-TANG
HUANG TZU-CHUAN	JHOU LING-JYUAN	LIN CHUN- SHIA
CHUNG YAN-SUH-JAU	JHONG SYONG-CE	SHE BAO-CI
WANG CHIU-HSIANG	HSU MEI-JEN	CHUNG HUNG-SHING
CHEN MEI-YIN	HU SHU-CHEN	CHUANG CHEN-CHIN-YUEH
JHEN NA-SHENG	CHEN WEN SHAN	CHEN LEE- HUA
CHUANG CHI-YU	CHOU CHIU-LAN	SUN KUO- MEI
HU YING-YU	LIU SING-LIAN	CHANG CHIEH-YUN
CAI JIN-JHANG	LIU HSIANG-JU	LEE SHU-FEN
LIN JIA-HONG	LIN DAR-NAN	HSIEH CHIH LIN
LIN MEI-LING	TAI KUO TAI	JHEN YAN-JHU
HONG JHEN SHAN	HUANG SU-MEI	TUNG CHENG-LIANG
YAO-CHU-LI-HUA	YANG HSIU-YING	LEE YI-HOUN
HON MI-SHOW	CHEN TZU-JIUN	HUANG KUN-TSE
JHEN SIANG-SYUE	CHEN TZU-LING	CHEN HSIU-HUA
HSU SHIH-CHENG	PENG HUI-CHEN	CHEN CHI-HSING
HSIAO LI-CHING	CHEN FENG-CHUAN	LEE MIAO- CHEN

LU FU-MEI	HSIAO CHIN-CHAO	GUO MING HUI
CHU YU-FANG	HSIAO SHU-HUA	ZHUANG ZAN LI
TONG MING CONG	YEH PAI-MEI	LIN RONG-BIN
HUANG XIU MEI	HSU SHU-CHUN	FENG YU-KUEI
WANG LI-MEI	CHENG CHEN-SU-LUAN	LIN SHIU-SHIA
JI SHU-JIN	CHENG CHI-MING	WU SHIU-CHU
CHEN SU-CHEN	TSIENG YEN-HUANG	CHEN MAI-YEH
CHEN CHENG-HSIUNG	WEI CHIN-SHUN	SONG LI ZHU
KUO HUNG-CHUN	CHEN SU-ING	CHAN CHIN- YUEH
CHANG MING-SUNG	KUO YU-CHING	SONG, LI-ZHU
CHANG,SHIH-HAN	WANG LUNG-YUAN	LIU CHIN-HSIU
LIU YU LAN	YUAN YA- CHIN	LIU MEI-HSUEH
WANG CHENG NAN	JUAN YUEH -YUN	CHEN YUAW- MING
HSU CHIH-MING	KAO CHIN YUN	CHUNG LO CHUN-YING
CHANG LI CHIEN-YIN	CHUANG CHIN CHI	HU CHIA-LIN
CHEN YUNG-CHIANG	HUANG SU -HUA	LEE CHIN LING
CHOU YUNG-CHI	CHEN PI-ER	SHI YI TING
CHEN SHUI-WANG	TSAI CHEN-YUAN	GUO XIANG RUI
LIU JIA-WEN	HUANG YI-CHING	DONG HUI JUAN
CHEN YI-CHUN	CHANG FU- SHAN	HUANG XIANG TING
CHEN WAN-FU	LAI MING HUNG	TSAI HSIU-CHIN
WU XIU HUAN	CHEN TSUNG HUNG	HUANG YUE YING
CHENG RUEY-SHAN	HUANG HUI-HIS	CHANG MAY-CHING
HE JIA CI	WU CHIN KUEI	CHEN XIN WEI
TU HSIN-WEN	LIAN SHENG LIN	CHEN MENG XIN
LI YUAN CHANG	YANG YIH AN	LIN SUI JU
LIN SOU-SAN	WU TSUN NENG	YANG, YI-XIN
LIU CHIN-CHIH	HUANG YI-CHENG	TU RUI XIN
HSU YUEH YING	CHEN HSIU MIN	SHIH LING-TZV
HUANG CHIN-HUEI	HUANG PI YU	YAN YU RU
CHEN JIUNN-NAN	LIU RUI YU	WEN HUI-YEN
LIN HUI-LI	CHU MAN-CHEN	YAN QING GAO
LIU YEN-CHUN	HSIEH HO-MING	ZHENG BO XIONG
HUANG JEN-TSUNG	FANG SHU-LING	XU MING HE
YEN SHU-EK	TSEN HUI-CHAO	GUO QIN QIN
TSAI HSUEH-HSIANG	CHIU CHIN-HUI	CHUANG SHUN-RONG
HSU KUEI-JEN	TSAO EN-TE	LEE TI-PEI
LO YU-HUG	WU CHIU-HUAN	WANG FENG ZHU
CHEN TSAI-CHI	HSU MING-FU	HUANG PO-HSIANG

DAN CHIEN-MEN	ZHEN KUN LONG	LIN DE YU
ZHUANG YI YUAN	HUANG YANG-CHIH-HUI	JHOU LI YUE
ZENG SU JIN	YANG CHAO QUN	LIN LI-CHKNG
LI YAN XIANG	LI DE HANG	LI RUEI SIANG
KUO KUEI-HSIA	WANG SHU LAN	HUANG WEI-PING
ZHANG GUAN ZHEN	LIN BI ZHU	SHEN MEI-FENG
HUANG MEI -CHI	YANG HSIU-CHAO	SHEN MEI-CHIN
CHEN CHUN-KUANG	LIAO YING-YU	PENG GUANG TANG
ZHONG MING XUN	SHE XIU RONG	LI FU AN
XUE YU QING	CHENG LI -CHING	LUO,JIN-DAO
LI, XIU-ZHU	XUE XIAO WEN	KUO CHUNG-RU
WAN YU LING	ZHEN WEI TING	LEE SHAO- MEI
YANG WEN ZHUAN	HUANG YA HUI	WON LEE- ZHU
GUO YUN LI	LEE MU-HUNG	SIE GUAN-JHENG
GUO YI JING	HSU SU-CHEN	GUO CIOU YUE
LIAO CHIN-SHIA	WU CUI HUA	WANG YAN-RU
LO CHIEH-TSUN	HUANG YU-CHUAN	TANG FONG-JIAO
CHENG YING-YI	LIN YU-YING	JHEN BI-JHU
KUNG LEE-SU-FEN	YANG CHING -YUN	LU SHAO-YU
KUNG TING-HUI	ZHANG LI QIAO	LYU JIN DUAN
YU CHIH-HUA	CHEN HSIN CHIAO	SHIH NAI-YING

---

#### TEMPORARY

---

PUBLIC SERVICE	TECHNOLOGY	EXHIBITION	COLLECTIONS
LIAO JHENG JYUN	EDUCATION	CHENG, SHUN-SHENG	AND RESEARCH
CHEN JO-CHIA	KAO JUNG TING	HSU,AN-CH	LIN TI- WEI
LIANG YUM-HSUAN	PAN HUEI RU	CHEN,KUAN-FU	YU AN-SHUN
	LIU SHIH TING	CHEN,YEN-CHUAN	
	Chiang CHIH YI	WU, TZU-JUN	ACCOUNTING
PERSONNEL		HSUEH, YU-CHUN	FONG YU-TING
CHEN YU-WEN			

---

#### SERVICE SUPPLIERS STATIONED IN THE NSTM

---

SANG KEE ELECTRICAL & ENGINEERING CO., LTD.	SHIUAN TUNG CO., LTD.
VANGUARD SECURITY GROUP.	SHENN CHINN INDUSTRIAL CO., LTD.
DAU MING CO., LTD.	JI YE COMPUTER CO., LTD.
SUN RHINE ENTERPRISES, LTD.	
NATIONAL TECHNIC EQUIPMENT CO., LTD.	

## National Science and Technology Museum 2011 Annual Report.

- Publisher CHEN,SHIUNN-SHYANG
- Editing Committee
- Convener TASI, HSIEH-TSU
- Editorial Committee Publication Committee of the National Science and Technology Museum
- Executive Editor HUANG, WEN-HSIN; HSIAO,KUO-HUNG
- Researchers and Proofreaders WANG, CHU-LIN; CHU, PEI-YING; WU, HUI-JEN; HUANG, WEN-HSIN;  
LIAO, CHUN-HSIANG; LO, SZU-YI; YEH, SHANG-CHING;  
HSIAO,KUO-HUNG
- Translators President Translation Service Group International
- Designer Hug Top Design Co.
- Photography of the Cover Tszili Photo
- Publishing Institute National Science and Technology Museum  
720, Jiouru 1st Road, Kaohsiung 807, TAIWAN (R.O.C.)  
Tel: (07) 3800089  
Fax: (07) 3878748  
<http://www.nstm.gov.tw>
- Publication Date April, 2012
- Edition 1st Ed.
- Price NT\$ 150
- GPN:4810100819
- ISBN:978-986-03-2431-0



國立科學工藝博物館  
NATIONAL SCIENCE AND TECHNOLOGY MUSEUM

807 高雄市九如一路720號 tel: (07)380-0089 fax: (07)387-8748  
720, Jiouru 1st Road, Kaohsiung 807, TAIWAN ( R.O.C. ) <http://www.nstm.gov.tw/>

ISBN : 4810100510



GPN : 978-986-03-2128-9