2016

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வருடாந்த அறிக்கை

ANNUAL REPORT

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நவீன தொழில்நுட்பவியலுக்கான ஆர்தர் சி. கிளார்க் நிறுவகம்.

Arthur C. Clarke Institute for Modern Technologies.

Content

Arthur C Clarke Institute for Modern Technologies
Katubedda,
Moratuwa.
2018-05-01

Hon. Minister of Science, Technology & Research
Ministry of Science, Technology & Research,
3rd Floor, Sethsiripaya Stage 1,
Battaramulla.

Hon. Minister,

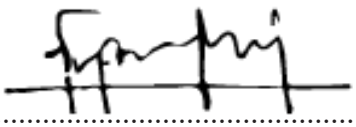
Annual Report of the Arthur C Clarke Institute for Modern Technologies for the period from 1st January to 31st December 2016.

In terms of section 40 of part VII of the Science & Technology Development Act. No. 11 of 1994, I have honour to submit herewith the Annual Report of the Arthur C Clarke Institute for Modern Technologies for the year 2016 along with,

(a) A copy of the Audited Statement of Financial Performance
(b) A copy of the Audited Statement of Financial Position and
(c) Auditor General's Report and the Observations of the Institute on the same,

for being submitted for the approval of the Cabinet of Ministers.

Yours faithfully,



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Eng. Sanath Panawennage
Director General & CEO
Arthur C Clarke Institute for Modern Technologies

1.0 General Information

Governing Legislation

The Arthur C Clarke Institute for Modern Technologies (ACCIMT) is a statutory corporation operating within the purview of the Ministry of Science Technology and Research. The ACCIMT was established on April 1, 1998 by the Science and Technology Development Act. No. 11 of 1994 of the Parliament of Sri Lanka, as successor to the Arthur C Clarke Centre for Modern Technologies (ACCMT) established by the Act No. 30 of 1984.

The functions of the Arthur C Clarke Institute for Modern Technologies as specified in the Act are as follows:

(a) *to accelerate the introduction of modern technologies to Sri Lanka by*

(i) initiating, promoting and conducting research and development in the application of modern technologies

(ii) providing research and development support to the Government and private sector undertakings in the application of modern technologies

(iii) training of personnel in modern technologies to meet the needs of the Government and private sector undertakings

(b) *to promote future studies*

The areas of modern technologies include Communication and related Sciences, Information Technology, Electronics, Micro-electronics, Space Technologies, Robotics, Photonics and New Materials.

Vision

To be a leading Innovation Centre for Modern Technologies in the region.

Mission

To develop, foster and facilitate the domestic base of modern technological capabilities through innovation, R & D, training, industrial services and international collaboratio.n.

Governing Ministry

Ministry of Technology & Research.

Members of Board of Governors
(January 2016 to 16th October 2016)

1.	Prof. Kemal Deen	Chairman – Board of Governors
2 .	Eng. Sanath Panawennage	Director General & CEO - Member, Board of Governors,
3.	Prof. A. K. W. Jayawardena	Member, Board of Governors
4.	Prof. (Mrs). Dileeka Dias	Member, Board of Governors
5.	Prof. Chandana Jayaratne	Member, Board of Governors
6.	Ms. Lakshmi Jeganathan	Member, Board of Governors
7.	Prof. S. J. B. A. Jayasekara	Member, Board of Governors
8.	Prof. P. S. M. Gunarathna	Member, Board of Governors
9.	Mrs. S. A. C. Kulathilake	Member, Board of Governors
10.	Mr. Ashley De Vos	Member, Board of Governors
11.	Mr.K. M. C. Fernando	Member, Board of Governors

Members of Board of Governors
(17th October to 31st December 2016)

1.	Prof. Kemal Deen	Chairman – Board of Governors
2.	Eng. Sanath Panawennage	Director General & CEO-Member, Board of Governors,
3.	Prof. A. K. W. Jayawardena	Member, Board of Governors
4.	Prof. D. A. Tantrigoda	Member, Board of Governors
5.	Prof. (Mrs). Dileeka Dias	Member, Board of Governors
6.	Prof. Chandana Jayaratne	Member, Board of Governors
7.	Mrs. S. A. C. Kulathilake	Member, Board of Governors
8.	Mr. Ashley De Vos	Member, Board of Governors

List of Board Meetings held during 2016

Board Meeting No	Date of the Meeting
2016/01	21/1/2016
2016/02	18/2/2016
2016/03	17/3/2016
2016/04	26/4/2016
2016/05	19/5/2016
2016/06	27/6/2016
2016/07	27/7/2016
2016/08	18/8/2016
2016/09	15/9/2016
2016/10	9/12/2016

2.0 Chairman's Message

The Year 2016 dawned with unique opportunities and many challenges, which led to number of strategic initiatives that the institute successfully launched for development of Sri Lanka's national capabilities in space as well as several other identified core technologies.

In the space domain the institute began a most ambitious projects undertaken our history; the design and launch of the first nanosatellite by Sri Lankan engineers in collaboration with Samara State Research University, Russia. This project would be the country's initial step to mark our space era. The other major landmark achievement was the progress made in setting up the National Hub for Receiving and Distribution of Earth Observation Data, with Chinese and Russian collaboration. For this initiative a plot of land was identified and allocated for the ACCIMT under the Western Megapolis project of the Government of Sri Lanka. Further, after obtaining the membership in 2015, the ACCIMT represented Sri Lanka at the first secession of the Committee on the Peaceful Uses of Outer Space (UNCOPUOS), the highest body on space in the United Nations system during the COPUOS secession held in June 2016.

In addition to space technologies the institute was highly involved in design and development activities pertaining to our core competence areas of technology, and made significant progress in generating some tangible outputs in the form of completed projects, systems and solutions for in-house use as well as for satisfied clientele.

The institute is still struggling to attract and retain quality staff, both technical and non technical, primarily due to prevailing compensation structures. This is causing major hindrance for the progress of the institute.

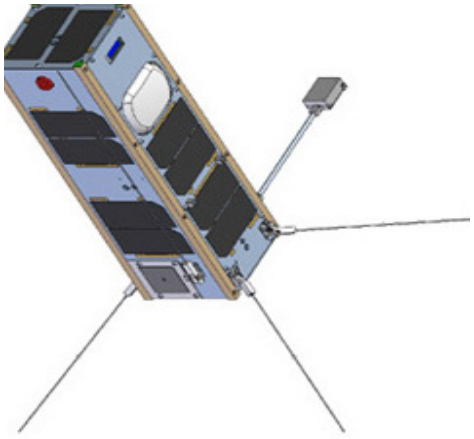
Despite all the constraints the institute achieved significant progress in 2016 and I take this opportunity to appreciate the support extended by the members of the Board of Governors. Also, I would like to thank the Management and the Staff of the ACCIMT for their tireless efforts that led to achieving considerable successes despite facing numerous constraints and for their contributions to maintain the institute image as one of a premier research and development institute of the country.

Prof. Kemal Deen,
Chairman – Board of Governors.

3.0 Executive Summary

During the year under review, the institute managed to make substantial progress in its overall performance in the areas of research and development, technological services, training and consultancy services as well as in contributing to overall national technological capacity development in its domains of specialization, This was despite being continued to be affected by two major constraints namely the difficulties in recruitment and retention of core senior technical staff, mainly due to inadequate remuneration, and the predominantly procedural-compliance-oriented rather than results-oriented control processes.

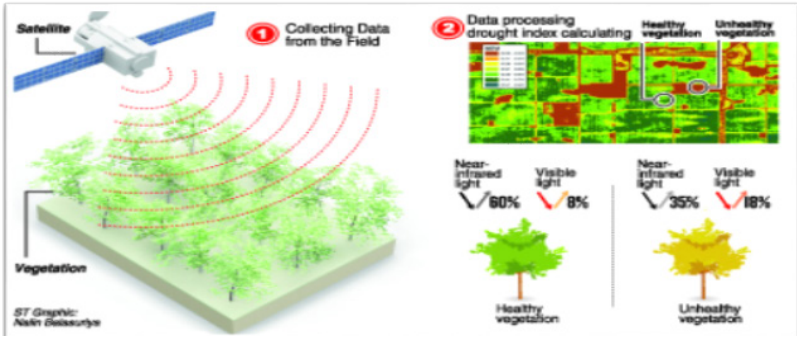
The most notable technological initiative of the year was the initiation of a programme to design, develop, construct, test and launch the first Nano-satellite by Sri Lankan engineers by the year 2020 with technical collaboration from Samara National Research University, Russia. The ACCIMT is also teaming up with academics and professionals from local universities and other related government organizations to make this endeavor a success. This project will be a stepping stone to a space era in the country, aiming to build the country's basic competence on Space Technologies and create a strong foundation for designing satellites having longer life span and advanced Remote Sensing and other scientific capabilities in the future.



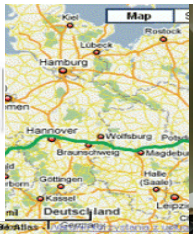
The institute has achieved considerable success during 2016 in the preliminary work towards developing the proposed National Hub for receiving and distribution of satellite data. A ten acre site under the Western Megapolis Master Plan is allocated for this purpose. Further, taking initiative to design our own satellites in the longer run, the ACCIMT has negotiated with a number of international collaborative platforms on space technologies and certain other foreign agencies to receive satellite data free of charge or at an affordable cost. The received data will be stored in a server located at the ACCIMT and will be shared with the public sector organizations who require such satellite data for national development activities.

The project launched in collaboration with United Nations Economic and Social Commission for Asia & Pacific (UNESCAP), to use space technologies for drought monitoring and early warning through the long-standing Regional Space Applications Programme for Sustainable Development (RESAP) is in progress.

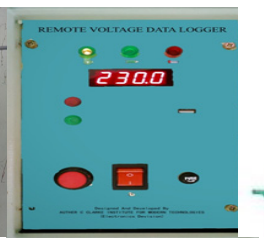
The programme aims to build resilience of the countries in the region against agricultural drought and such other natural phenomena resulting in economic losses. The ACCIMT has been successfully driving the pilot project, as the lead agency, with seven other relevant national agencies namely, Natural Resource Management Centre of Department of Agriculture, Department of Agrarian Development, Irrigation Department, Mahaweli Authority of Sri Lanka, Department of Meteorology, Department of Census and Statistic and Disaster Management Centre. Further the institute in collaboration with UNESCAP organized High Level Progress Meeting on the implementation of the Regional Drought Mechanism in Sri Lanka from 28th to 29th April, 2016. As part of the project concerned, satellite data were downloaded and drought indices such as NDVI, NDVI Anomaly and NDWI were calculated. Ground truth validation of satellite data is in progress.



Other notable area of success was in customer specified advanced design and development solutions offered during year 2016, which included design and development of Remote Voltage Data Logger and Receiver Module (RVDL) for the Public Utility Commission, design and development of panel displays and CCTV security surveillance system for National Water Supply & Drainage Board and collaborative development of a Cancer Care Information System as an Android Application with Mobitel Ltd and Medical Faculty of University of Keliniya. Further deep diagnostics and advanced hardware recovery of Traction Control Units of locomotives of type Alstom Class M9 were carried out for Sri Lanka Railways and recovery of a few other sophisticated electronic systems were carried out for several clients.



Examples of the in – house research, design and development projects which were initiated or continued during the year included design of high performance Surge Protector suitable for Equatorial Belt Countries, design and development of a qadrotor vehicle (drone) and Fleet Tracking and Information Logging system.



The Astronomy Division of the Institute has conducted three major research projects during the year under review and is in the process of writing research papers to be published in local as well as international scientific symposia. The projects carried out includes Mode Identification of Oscillations of Scuti type stars using multicolor photometry and high resolution spectroscopy, Investigation of host galaxies dust extinctions from type 1.a supernovae and Astroseismology of Delta Scuti variable stars in the Beehive Cluster using KEPLER 2 Photometric data. Further the division has undertaken a collaborative undergraduate project with a student from University of Peradeniya titled, Study short period Delta Scuti type variable stars.

In addition, following research projects were undertaken in the area of space technology applications and RS/GIS, Evaluation of spectral signature characteristics of traditional paddy varieties of Sri Lanka in collaboration with Rice Research and Development Institute, Bathelegoda, and Arial photogrammetry application for archaeological exploration and excavation using an Unmanned Aerial Vehicle (UAV) in collaboration with Department of Archaeology.

A number of information system development projects were also carried out by the Information Technology Division, mainly for national universities and other public sector agencies.

During the year, the institute maintained an enhanced level of delivery of its services to the industrial clientele in keeping with the substantial demand for industrial services. The key services that the institute offered include, electronic test and measurement, equipment calibration, performance testing of various types of electronic equipment, accessories and modules, lead acid batteries, surge protective devices, and the testing and measurement services provided to the communication and broadcasting sectors. In year 2016 the institute issued 305 performance test reports and 103 of calibration reports.

On the training domain the institute conducted five types of short term continuing professional development (CPD) programmes on highly specialized areas of technology namely, Modern Power Electronics, Modern Electronic Components, Embedded Control Systems, Designing of Lightning and Surge Protection Systems and Programmable Logic Controller mainly for the benefit of engineers, technologists and other professionals from public and private sector organizations and these courses continued to enjoy substantial demand from the industry.

Eng. Sanath Panawennage
Director General & CEO,

4.0 Divisions of the Institute

Electronics and Microelectronics Division

Communications Division / Robotics Division

Industrial Services Division

Space Technology Application Division / Space Technology Division /

Astronomy Division

Information Technology Division

Administration and Human Resources Division

5.0 Projects of National Interest

Nanosatellite Project

Development of Sri Lanka's National Capabilities in Space Technologies and several other core technologies is key for countries successes in knowledge economy. Launching of Sri Lanka's first ever nanosatellite, designed and built by Sri Lankan Engineers, can be considered as an indicator of technological advancement of the country and hence a feat of National Pride as well as a vehicle for achieving initial space technology capabilities. By undertaking this project the ACCIMT plans

- to develop capabilities and basic confidence in developing satellites in the ACCIMT and other stakeholder organizations
- to acquire national capacity in basic Space Technologies enabling the development of a critical mass of engineers and scientists with capability for design, development, constructing and testing of nanosatellites
- to promote advanced technology developments in Space Technologies and other allied fields leading to the development of a space technology based industry in Sri Lanka Nanosatellites are built in a standard format known as a CubeSat, a 10cm (4 inch) cube, weighing 1Kg to 10Kg. Some nanosatellites comprised units of either two or three cubes. Satellites of this scale and other small satellites are moving from being experimental kit to delivering useful scientific data and commercial services. Nano satellites provide much of the performance of a conventional satellite for a fraction of the cost.

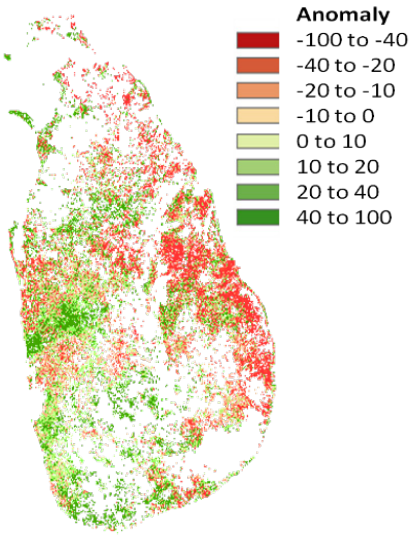
ACCIMT in its capacity as Sri Lanka's national agency mandated with development and promotion of Space Technology capabilities and applications, in collaboration with Samara University of Russia specialized in Aerospace that operates in conjunction with a State Space Rocket Centre, has embarked on a project for design, development, construction, testing and launch of the Sri Lanka's first Nanosatellite with remote sensing capabilities.

A kick-off workshop which was an important part of the initial mission planning exercise was held with the participation of visiting Russian experts in this regard during 18th and 19th of August 2016 at ACCIMT premises.

Agricultural drought monitoring and early warning system (UN-ESCAP Pilot Project)

UNESCAP is implementing the Regional Cooperative Mechanism for Drought Monitoring and Early Warning project in the overall context of building the resilience to the agrarian economies of Asia and the Pacific region. The mechanism envisages providing in-season satellite data, customized drought products and specialized capacity development training in order to enhance the knowledge and capacity of ESCAP member countries for managing agricultural drought more efficiently. Under this initiative Sri Lanka has been selected as a pilot country to implement this drought monitoring and early warning project.

Using space derived data glimpse of drought can be detected long before it is visible to the human eye and thus allowing the decision makers and the authorities to take mitigatory measures well in advance. India and China have come up with their own monitoring systems in harmony with their territories and cutting edge space technologies that they own. With the generous help of China and India, ESCAP is providing technical expertise and training through the local node of the project and the focal point of the space technology in the country, Arthur C Clarke Institute (ACCIMT), to implement the drought monitoring project.



ACCIMT and ESCAP jointly organized a high level progress monitoring meeting on implementation of the Regional Drought Mechanism in Sri Lanka on 28th and 29th of April, 2016 at Mount Lavinia Hotel, Galkissa. Drought indices such as NDVI, NDVI Anomaly and NDWI were calculated using satellite data. Ground truth validation of satellite data is in progress.

National Hub for Receiving and Distribution of Earth Observation Data

The use of Earth Observation and Remote Sensing (RS) data as an effective resource planning and management tool for the country's development activities is hindered due to problems such as, unavailability of RS data at affordable costs and lack of coordination of the use of data and applications amongst relevant organizations. In the long-run, it is a hindrance to the development of country's overall capabilities in the area of space technologies.

The objective of this project is to make the Remote Sensing data available to other organizations at affordable costs and thereby promote the use of space technology for the development of the country. Under infrastructure development, setting up of Blade servers within a new server room was completed. A Virtual Ground Station (VGS) facility was setup. Basic GIS SW for Geoportal was configured with test spatial data.

A 10 Acre land has been identified and allocated for the proposed Satellite Ground Station of the Arthur C Clarke Institute for Modern Technologies (ACCIMT) to receive earth observation satellite data at geographical location 6°49' 38.48"N, 80° 2' 8.20"E under the Megapolis project of the Government of Sri Lanka.

Deep diagnostics and Advanced Hardware Recovery of class M9 Locomotive IGBT driver modules of Sri Lanka Railways

On the request of Sri Lanka Railways two Traction Control units were successfully fault diagnosed, recovered, field tested and submitted to be installed into two locomotives of type Alstom. This advanced hardware recovery exercise included extraction of design details through reverse engineering exercises.

National Astronomical Observatory of Sri Lanka (NAOSL)

The importance of the contribution of Science, Technology and Innovation in achieving a rapid economic growth has been deservedly highlighted in the Development Policy Framework of the Government. Among all the fields of scientific research, astronomy distinguishes itself by the strong interest it spontaneously generates in the public. When focused in educational and research institutions, this interest can result in great cultural and social benefits to the community. As an introduction to science and technology, astronomy attracts and motivates students. The broad range of skills and methods acquired in studying astronomy serves the students well in many fields of science and technology.

We are requesting support from the Government of Sri Lanka to develop a national astronomical observatory consisting of a research class 1.5 meter robotic telescope. This project will play an important role in developing astronomy research and education in the country. The new facility proposed would be the largest optical telescope facility in the country under the magnificent skies of Wilpattu.

Remote Voltage Data Logger and Receiver Module

Remote Voltage Data Logger and Receiver Module (RVDL) to Public Utility Commission was designed and developed by the Electronic and Microelectronic Division.

RVDL was designed to monitor the quality of the mains power supply remotely. This state of the art device provides facilities to measure and record the line voltage fluctuation parameters of a single phase power supply and also live monitoring of data. The device is unique as it can be customizable according to the client's various requirements. RVDL consists with methodology for accurate measurement, data storage facilities, remotely retrieving data and setting parameters and an unique communication protocol.

The prototype was completed and handed over to the client, Public Utility Commission.

6.0 Research Programmes and Technology Services

6.1 Industry-Initiated Research & Development Activities in Engineering/IT

Automated Hospital Bed with Bio-Med International (Pvt) Ltd

The project is to automate the manual beds used in the hospitals with an affordable cost. With this development, it is possible to reduce the strain placed on the hospital staff to take care of a patient. Agreement signed with Bio-Med International (Pvt) Ltd for automating the beds.

Two Industrial wall clocks to Sri Lankan Airlines

This project was to design, develop and install 02 nos of LED industrial wall clocks to Sri Lankan Airlines.

Panel Displays to National Water Supply & Drainage Board

02 panel displays were handed over to National Water Supply & Drainage Board

Development of CCTV security surveillance systems to National Water Supply and Drainage Board (NWSDB)

This project was to design, develop and install security surveillance systems at four NWSDB sites namely Ambatale, Biyagama, Thelawala and Ratmalana. The installation work at Ratmalana and Thelawala site were completed including a project extension (additional PTZ cameras) and more than 90% work of the other two sites have completed. The project is undertaken by the Communication Division of the institute.

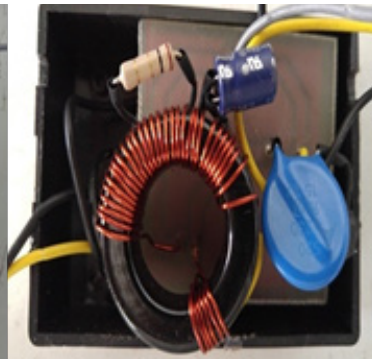
Development of a Cancer Care System as an Android Application

The development of this health-care app facilitates public awareness, help managing clinics and treatment plans. This project is continued with the collaboration of Faculty of Medicine, University of Keleniya and Mobitel (Pvt) Ltd. The development was completed.

6.2 In-house Research and Development Projects in Engineering/IT

Design of High Performance Surge Protector Suitable for Equatorial Belt Countries

The project is to design and develop a high performance surge protector which can protect electronic systems against external transient surges and the product is specially suitable for equatorial belt countries like Sri Lanka.Prototype was developed and laboratory tested for the differential mode. (Laboratory tested a proof of concept prototype for the differential mode.)



Power over Ethernet

The project is to develop an ethernet based display system to show battery inventory and status for the purpose of automating a battery monitoring system

Design and development of a quadrotor vehicle (Drone)

As an effort of the utilization of locally available technologies, the robotics laboratory of the Communication Division developed a flying machine starting from component level for demonstration purposes with flight tests. The proven technology is to be utilized for the proposed development of a hexacopter for land surveying applications carrying the necessary payloads.

Tea Color Grading System

The product aiming for development of a low cost system with features capable of colour separation of tea, at the final stage of the manufacturing process, required by the low grown tea factories. Agreement was signed for the development of the proof of concept working model for tea particle color separation. This phase was successfully completed and the technology transfer actions to ACCIMT completed. The next phase of the FPGA based electronics system development scheduled to next year.

Fleet Tracking and Information Logging System

This has been initiated as an in-house project and continued with Sri Jayewardenepura General Hospital to develop an effective aid for fleet management. The system displays and logs the vehicle operational locations as well as generate reports required by the management. Development of hardware and software for database management and other related activities were completed at the prototype testing level. The system installation in vehicles is continued.

Library Process Automation using RF-ID

The RF-ID technology based tagging for books and users is applied for automating the library functions, incorporating necessary tag reading devices and development of software for a dedicated Management Information System (MIS) for library operations.The system was completed at pilot testing level and currently installed at the library of ACCIMT, and system data feeding is in progress.

Improvements to Power Electronics Measurement Laboratory - Development of facilities for testing Switches/ Plugs/ Socket outlets

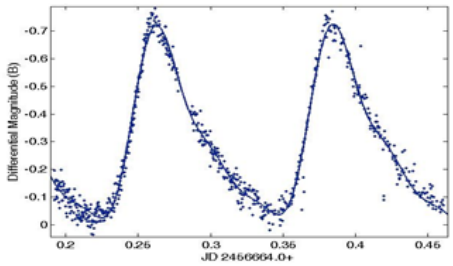
The electronics division designed and developed a mechanism for switch testing (tests of making & breaking capacity, normal operation and temperature rise) as per SLS1000

Further a tumbling barrel was constructed for testing 5A,13A and 15A plugs for mechanical strength as per SLS 734 and SLS 948.

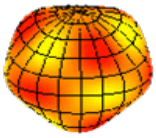
6.3 In-house Research Projects in Astronomy

Mode Identification of Oscillations of Scuti type stars using multicolor photometry and high resolution spectroscopy

Delta Scuti stars are pulsating variable stars of spectral types A to early F with luminosity classes V to III. Delta Scuti type star SZ Lyn (HD 67390) was observed in BVR photometry. Light curves were obtained. Fundamental oscillation period was determined as 0.120 ±0.003 days. Fourier decomposition was done to identify the other oscillation modes. Research paper is being written.



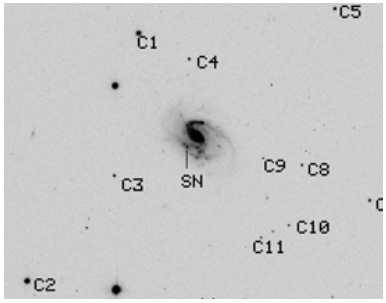
A displacement field with l=2 and m=0.

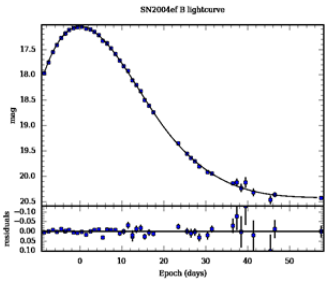


A displacement field with l=5 and m=3.

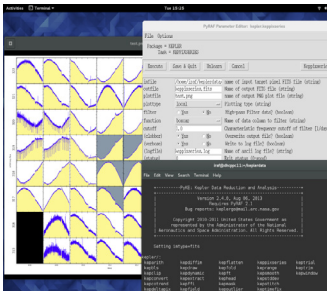
Investigation of host galaxies dust extinctions from type 1a supernovae

Type 1a supernovae can be used to estimate the dust extinction of galaxies. A sample of 20-25 type 1a supernovae, observed by the Carnegie Melon Supernovae Project (CSP) is expected to use for this project. B and V band light curves are fitted and analyzed. Research paper is being written.





Use of Scientific data captured by "Kepler" mission of NASA



NASA Kepler & K2 provide long-baseline, high-precision photometry for exoplanet and astrophysics research. Downloaded and installed data reduction packages on fedora operating system. Research project on "Astroseismology of Delta Scuti variable stars in the Beehive Cluster using KEPLER 2 Photometric data" is completed.

Collaborative undergraduate level Research projects in astronomy

Study short period Delta Scuti type variable stars (Collaborative research with University of Peradeniya)

Analyzed photometric data obtained from 1.2m Cassegrain telescope at Mount Abu Observatory, Gurushikar, India. Average density of the star and harmonics of the pulsations were determined. Thesis was submitted to the university.

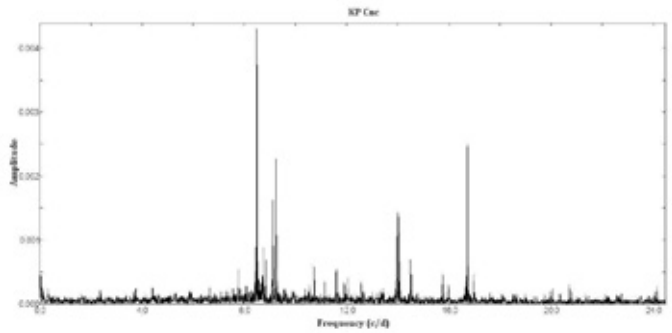
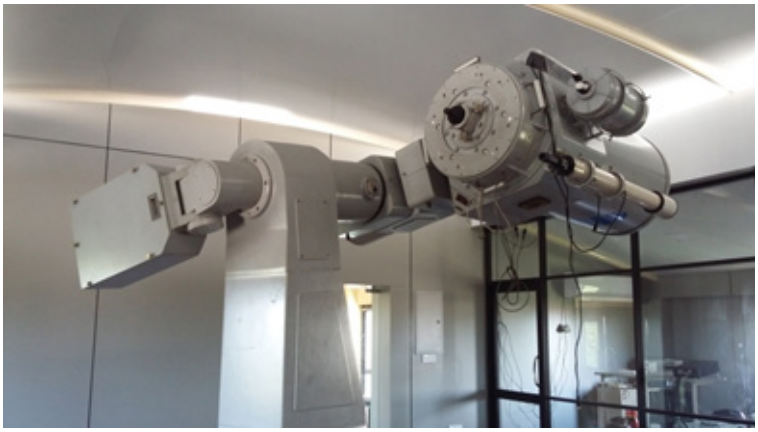


Figure 18: The periodogram of KP Cnc.

Reconstruction of the telescope room

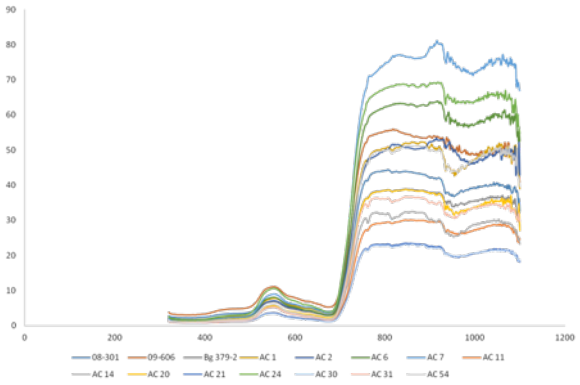
The telescope room of the ACCIMT which houses the largest optical telescope in Sri Lanka, GOTO 45 cm telescope, was reconstructed during the year 2016. MS DOS based telescope controller program was reinstalled. A PLC based sliding roof controller and the protection system to prevent telescope from colliding the sliding roof was designed and installed.



6.4 Research in Space Technology Applications

Evaluation of spectral signature characteristics of traditional paddy varieties of Sri Lanka

A growing number of studies have focused on evaluating relationship within spectral indices and plant biophysical and structural properties. Spectral characteristics of plants at various wavelengths are governed by leaf inter and intra cellular structure, biochemical contents such as chlorophyll, carotenoid, nitrogen, and water content. This study was conducted to evaluate spectral characteristics of paddy varieties. Spectral signature measurements were carried out using a Field Spectroradiometer in the range of 320-1100 nm under natural light and environmental conditions and number of sample collected respect to each 22 traditional paddy varieties. A research paper was published at Wayamba International Conference (WinC 2016) at Wayamba University of Sri Lanka.



Arial photogrammetry application for archaeological exploration and excavation using an Unmanned Aerial Vehicle (UAV)in collaboration with Department of Archaeology

Being located near on the equator Sri Lanka has high cloud coverage over a year and it is somewhat difficult to obtain cloud free images from space. Normally, UAVs fly below cloud level and can perform aerial imaging effectively. They can even fly very low, bellow 100m, and acquire high resolution images (less than 2cm). Aerial imaging solutions allow survey and geospatial professionals to collect large amounts of data (several square kilometers) in a short time (less than one hour) from a safe location for use in a variety of applications. The Department of Archeology has already expressed the need of having aerial imagery for managing the archeological sites.

UAV was procured. Product offerings were studied and familiarized with the flight plan and the technical aspects. A test flight was conducted.

6.5 Publications

1) "Enhanced True RMS Voltage Recorder": J.P.D.S Athuraliya, N.L Rathnayake, N A A N Dilrukshi, P.Mahadevan, T M S Dias, S R J S Bandara, C.D Panamaldeniya: Annual Transactions of IESL, 2016.

2) "Evaluation of Spectral Signature Charateritics of Traditional Paddy Varieties of Sri Lanka": Marasinghe B. S., Fonseka H. P. U., Jayawardana W. G. N. N. Mohomed Rila A. R, Ratnayake W. M.U. K, Sirisena D. N., Bentota A. P.
WinC 2016 Procedings, Wayamba International Conference, Wayamba University of Sri Lanka.

6.6 Test and Measurements, Hardware Recovery and Consultancy Services

Test and Measurement Services of Power Electronics Measurement Laboratory- Electronics and Microelectronics Division

During the year, the division issued 215 performance test reports mainly for testing of Batteries, Surge Protective Devices(SPDs), Residual Current Circuit Breakers(RCCBs), Miniatures Circuit Breakers(MCBs), Plugs, Socket outlets, Switches, LTEs, PSTN phones and Routers. Further division carried out safety testing and power quality measurement of electrical/ electronic products apart from the power quality measurements undertaken at customer locations.

Key customers include Orel Corporation, Micro Power Engineering,Sri Lanka Telecom, Kevilton Electrical Products (Pvt) Ltd, Softlogic Holdings PLC, Sri Lanka Standards Institution, Diesel & Motor Engineering PLC, Association of Battery Manufacturers etc.

Troubleshooting/Repair Services and Consultancy Assignments Carried Out by Electronics and Microelectronics Division

During the year under review 52 major consultancy and hardware recovery assignments were undertaken by the Electronics and Microelectronics division.

Key hardware recovery assignments undertaken include, Repairing of 02 nos fork lift charger circuit cards to Brandix Apparels Solution Ltd, Repairing of an oscilloscope to Technical College, Rathmalana, Repairing of an oscilloscope to Laboratory Equipment Company Limited, Repairing of fiber optical transmitter, oscilloscopes, power supplies and function generators to University of Ruhuna, etc

Test and Measurements and Hardware Recovery Services and Consultancy by Communication Division

Under test and measurement services 04 Radio Frequency related and cable characteristic measurement jobs and 05 special consultancies in the related area were carried out to the clients namely, Lakviru Radio, Kelani Cables (Pvt) Ltd, Cedar International (Pvt) Ltd, Special Task Force, Peoples Bank, IE Technics (Pvt) Ltd etc.

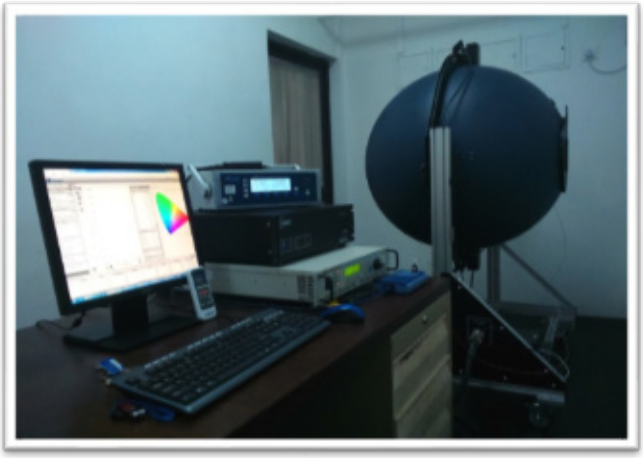
Instrument Calibration Service / Performance test services offered by the Calibration Laboratory - Industrial Services Division

Instrument calibration service mainly on Electronics and Electrical test instruments were performed during the year and 103 calibrations reports were issued for various types of test instruments on industrial requests. The instruments that were calibrated include Digital / Analogue multimeters, Oscilloscopes, AC/DC clamp meters, High voltage testers, Hipot tester, Process meter, Power and harmonic analyzer, Watt meters,Volt meters, Power quality analyzers, Portable appliance testers, Insulation continuity testers, Earth testers, RCCB testers and Loop testers.

Our key customers were SGS Lanka, Lanka Transformers Ltd, Kohoku Lanka, Sri Lanka Navy, Venora International and David Pieris Motor Co. Ltd.

Light Measurement Service offered by the LMS Laboratory - Industrial Services Division

Light measurement service to test CFL and LED bulbs were carried out through out the year and 90 test reports were issued with the collaboration of Sri Lanka Standard Institute. Our key customers were Kevilton Electrical Products (Pvt) Ltd, Orel Corporation and Philips Lighting Lanka.



Warranty Maintenance and Contractual Services

05 of Enhanced True RMS Voltage Recorders units designed and developed for Public Utilities Commission were maintained for successful operation during the year under review.

Contractual maintenance of Databases and other Information Systems

Accounts System – University of Moratuwa
Accounts System – University of Sri Jayewardenepura
Payroll System – Development Lotteries Board
Accounts System – Buddhist and Pali University

7.0 Training, Education and Information Dissemination

7.1 Continuing Professional Development (CPD) Training Programmes for Professionals

Modern Power Electronics

One CPD course was conducted for 26 participants earning an income of Rs. 273,000/=. The participants were given the knowledge and practical experience on usage, applications, advantages and limitations of Modern Power Electronics such as Earth resistance measurements, Power quality analyzer and harmonics, Switch mode power supplies, Characteristics of components, Batteries and UPS s, etc.

Modern Electronic Components

One CPD course was conducted for 22 participants earning an income of Rs. 341,000/=. The participants were given the knowledge and practical experience on modern electronic component families both analog and digital together with data conversion components.

Designing of Lightning and Surge Protection Systems

This CPD training programme was conducted for the benefit of the industrial participants as well as the ACCIMT technical staff by Associate Professor in Electronic Engineering Nihal Kularatna, attached to the University of Waikato, New Zealand. The programme was opened to external participants for a nominal fee and the institute was able to earn Rs. 56,000/= from 14 participants.

The programme was about the surge protection concepts applicable for low voltage systems in an end user perspective. Further the overall presentation was based on a balanced mix of relevant theory, applicable techniques, relevant international standards, available technologies and industrial practices and a summary of the state of the art and future directions, supported by a selected set of research publications.

Embedded Control Systems

Two CPD programmes conducted for 43 participants mainly from the industry.

Programmable Logic Controller

Five day CPD course on S7-200 PLC was conducted in two batches for 69 personals consisting Technical Managers, Engineers, Technical Officers from industry and to other sectors and for undergraduate students . Key participating organizations included Ceylon Electricity Board, Air Port and Aviation, Sri Lanka Rupavahini Corporation, Ceylon Petroleum Corporation, Colombo Dockyard, Industrial Development Board, German Railway, NERD Center and Regnis Lanka PLC.

7.2 Basic and Intermediate Level Technical Training Programmes

Workshop on Astronomical Data Reduction for Science Undergraduates

Two day workshop on astronomical data reduction was conducted for 25 undergraduates of local universities. Dr. Nalin Samarasinghe, Senior Research Scientist of Planetary Science Institute of USA served as a resource person in this workshop.

7.3 Science and Technology Popularization and Information Dissemination

ACCIMT Library

ACCIMT Library, one of the highly rated technical library in the country on few dedicated fields of technology consists a fair collection of books, periodicals and other educational materials in the fields of Communications, Information Technology, Electronics, Photonics, Robotics and Space Technology.

The aims and objectives of the library are to facilitate and provide information to professionals and personnel engaged in Research and Development, graduates, postgraduates, students, etc.

Library Collection

The Library has a fair collection of very expensive specialized reports and publications with frequent updates obtained from reliable and independent organization both in and out of the country. The Library consist of handbooks, data libraries, user surveys, product guidelines, application notes, design-oriented text books, state-of-art reviews, encyclopedias, dictionaries, directories, VHS, VCDs, DVDs, CD-ROM data bases, standards etc. and also specific magazines dedicated to Communication, Information Technology, Space Technologies, Electronics are available in the periodical section.

Total collection:-

Books	- 8947
CD-ROMs	- 745
Video Tapes	- 368
Audio Tapes	- 94
VCDs	- 130
DVDs	- 87

New Acquisitions

Books	- 67

Library Services

(a) Lending & Reference Facilities:- ACCIMT staff and trainees

(b) Reference Facilities: - Visiting lectures and instructors, graduate and Postgraduate students engage in projects, Continuing Professional Development (CPD) course participants, and Personal and Institutional membership.

(c) Reader Services:- Photocopying service, Scanning facility, Internet facility, Electronic library facility, Inter library loan, Current awareness services, Information and document supply service, and Online catalogue.

(d) Service to Community:- Membership offers for the professionals in the public and private sector organizations, Information & document supply service for professionals and scholars (a. Industrialists b. University academics & Researchers. c. General public with a special interest in related technologies), Providing display items for exhibitions and Astronomy promotion programmmes.

Open Public Access Catalogue (OPAC) via Internet (http://www.accimt.ac.lk).

Information about the collection can be accessed through the ACCIMT Library on-line catalogue from internet (www.accimt.ac.lk). Computer facilities are also provided to search and access the library collection via our LAN.

Astronomy & Space Science Popularization Programmes

Astronomy Lectures for School Children, University Students and Sri Lanka Military

About 580 persons visited the ACCIMT and participated in the astronomy lectures and telescope demonstrations.

Public Observation Session on Transit of Mercury

Public observation session on the event of transit of mercury on 9th of May 2016 was organized at the institute.

Astronomical Information and Space Science Dissemination for Schools

Information on astronomy and space science were disseminated among 10 students.

Water Boost Rocket Competition -2016

With a view to promoting space science activities among school children, the ACCIMT organizes a water rocket making workshop and a water rocket competition annually. 57 students and 54 teachers from various parts of the country participated for Water Rocket Designing Workshop and Water Rocket Competition. The winners of the local water rocket completion participated in the international competition held during the 23rd session of the Asia-Pacific Regional Space Agency Forum (APRSAF-23), Manila, the Philippines, November 15-18, 2016.

Poster Competition Organized by APRSAF

The Poster Making Contest aims to engage elementary students aged eight (8) to eleven (11) years in creative presentation and learning of space science. Local Poster competition was organized under the theme of "My Dream Planet" among school children and selected the best 3 posters for the international competition held during the 23rd session of the Asia-Pacific Regional Space Agency Forum (APRSAF-23), Manila, the Philippines, November 15-18, 2016.

8.0 Special Events & Exhibitions

Arthur C Clarke Memorial Lecture – 2016

The Arthur C Clarke Memorial lecture was organized on 31st of May 2016 at the Bandaranayake Memorial International Conferences Hall (BMICH) to mark the eighth anniversary of the demise of Sri Lankabhimannya Sir Arthur C Clarke, the founder patron of the institute. The lecture was delivered by one of the eminent Sri Lankan scientist Dr Sarath Gunapala, Director, Center for Infrared Photodetectors, NASA - Jet Propulsion Laboratory, California Institute of Technology Pasadena, California, USA.

The lecture, titled “Exploration of Our Solar System and Beyond…”, was attended by a large audience of policy makers, senior public officials, engineers, scientists, academic and other professionals and students.

Exhibitions

The ACCIMT participated for Techno 2016, the key National Engineering and Technology exhibition organized by the Institute of Engineers Sri Lanka, held from 07th to 9th of October 2015 at the BMICH. Apart from that the institute participated for several school exhibitions.

9.0 Human Capacity Development

Staff Position

Number of cadre positions approved by the Department of Management Services for the ACCIMT were 177. Out of that by the end of 2016, 91 positions were filled and 86 positions were remain vacant. Majority of vacancies are in technical fields where prospective employee requires basic qualifications of an engineering degree or equivalent professional qualifications.

Seventeen new appointments were done during the year 2016. They were Deputy Director General (Admin & Finance), two Research Engineers, five Research Scientists, Works Superintendent, two Engineering Assistants, two Management Assistants, three Drivers and an Office Aide.

Seven employees were resigned during the year. They were two Research Engineers, four Engineering Assistants and a Driver.

During this year two promotions were done. They were a Research Scientist and a Management Assistant.

Numbers of staff Grade employees were 56 as at 31st December 2016.

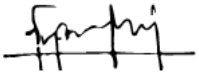
Two workshops and eight local training opportunities were given to the staff of the ACCIMT.

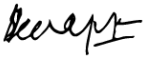
10.0 Financial Statements of Year 2016

10.1 Statement of Financial Position

	NOTE		2016 Rs.'000 s		2015 Rs.'000 s
ASSETS					
Current Assets					
Cash and Cash Equivalents	2		58,896		73,859
Short Term Investments	2a		20,417		19,154
Trade and Other Receivables	3a&b	32,178		32,738	
Less					
Provision for Bad Debts		(2,480)	29,698	(5,019)	27,719
Inventories / Stocks	4		9,357		9,392
Prepayments	5		3,128		2,496
			121,496		132,620
Non - Current Assets					
Investments					
Staff Loan	3.a. a		7,955		7,060
Property, Plant and Equipment	6		231,911		198,548
			239,866		205,608
Work - in - Progress-Construction	7		18,502		12,730
Total Assets			379,864		350,958
LIABILITIES					
Current Liabilities					
Payables	8		9,930		10,848
Accrued Expenses	9		4,933		4,038
			14,863		14,886
Non - Current Liabilities					
Deferred Income	10		10,206		10,711
Retirement Benefit Liability	11		29,795		27,131
			40,001		37,842
Total Liabilities			54,864		52,728
Net Assets			**325,000**		**298,230**
NET ASSETS / EQUITY	12				
Capital contributed by Govt			371,627		325,201
Reserves			73,550		71,892
Accumulated Surplus/(Deficit)			(120,177)		(98,863)
Total Net Assets / Equity			**325,000**		**298,230**

The Accounting policies on pages 7 to 13 and Notes on pages 14 to 38 form an integral part of these financial Statements. The Board of Directors responsible for the preparation and presentation of these Financial Statements. These Financial Statements were approved by the Board of Directors and signed on their behalf.





Chairman **Director General & CEO** **Senior Deputy Director (Finance)**

10.2 Statement of Financial Performance for the Year Ended

		2016	2015
		Rs.'000	Rs.'000
Revenue			
Recurrent Grant		92,878	111,500
Other Revenue		17,029	17,376
Amortization		29,772	23,200
Total Revenue		**139,679**	**152,076**
Expenses			
Personal Emoluments		75,811	79,679
Travelling Expenses		4,437	3,270
Supplies &Requisites		11,575	6,948
Depreciation		29,772	23,200
Repairs & Maintenance		7,638	6,689
Transportation, Communication			
Utility & Other Services		17,144	16,466
Project Expenses		7,555	4,832
Other Operating Expenses		1,034	1,480
Total Expenses		**154,966**	**142,564**
Surplus / (Deficit) for the period		**(15,287)**	**9,512**
Income & Expenditure Appropriation Account for the Year Ended 31.12.2016			
Surplus / (Deficit) for the period		(15,287)	9,512
Transfer of surplus out ofgenerated from PC a/c	(Note 13)	(6,027)	(6,363)
Net Surplus/(Deficit) for the period		**(21,314)**	**3,149**

10.3 Detailed Financial Performance for the Year Ended

2015 Rs.	Revenue	2016 Rs.	
111,500,000.00	Govt.Grant - Recurrent		92,878,000.00
4,863,700.00	Course Fees	4,489,057.14	
9,013,818.75	Project Income / Consultancy Income	9,033,554.16	
416,842.37	Interest Income on Treasury Bills	574,072.80	
339,890.23	Interest Income	319,206.41	
549,000.00	Tender Deposits	100,000.00	
2,192,252.96	Sundry Income	1,694,639.56	
	Grant Income		
	Sponsorship Income	735,925.64	
	Income from Disposal of Fixed Assets	82,617.93	
23,200,087.85	Amortization	29,772,155.52	46,801,229.16
152,075,592.16	**Total Revenue**		139,679,229.16
	Expenses		
	Personnel Emoluments		
57,869,532.91	Salaries & Wages	55,742,480.60	
1,036,951.38	Overtime & Holiday Pay	1,462,785.43	
300,000.00	Allowance to Board Members	324,000.00	
6,791,141.00	Other Allowances	5,736,929.00	
8,008,330.73	E.P.F.	8,091,172.09	
1,601,666.19	E.T.F.	1,618,234.80	
4,071,298.46	Gratuity	2,835,497.91	75,811,099.83
79,678,920.67			
	Travelling Expenses		
653,908.83	Travelling - Local	379,514.75	
2,615,963.55	Travelling - Overseas	4,057,355.88	4,436,870.63
3,269,872.38			

2015 Rs.		2016 Rs.	
	Supplies & Requisites		
1,060,233.42	Stationery & Office Requisites	1,710,169.65	
3,512,928.21	Fuel	8,409,432.07	
(13,960.41)	Mech & Elect Goods / Lab Components	114,360.90	
77,029.20	Uniforms	218,024.00	
29,185.50	Periodicals	768.00	
908,994.40	Welfare Items	736,964.27	
1,373,846.93	Exhibitions & Seminars	105,747.50	
-	Stocks Adjustment	280,239.42	11,575,705.81
6,948,257.25			
	Repairs & Maintenance		
2,785,546.47	Buildings	3,218,997.60	
2,477,303.66	Equipment	1,468,349.35	
1,426,089.02	Motor Vehicles	2,950,802.83	
23,200,087.85	Depreciation	29,772,155.52	37,410,305.30
29,889,027.00			
	Transportation, Communication Utility & Other Services		
3,815,523.90	Telephone	4,982,983.06	
105,305.00	Postage	99,850.00	
93,800.00	Bank Charges	65,730.00	
2,966,941.02	Insurance	4,206,473.38	
2,485,428.75	Advertisement	1,399,658.40	
130,271.20	Hospitality & Entertainment	98,317.88	
1,434,772.00	Security	1,853,606.86	
1,108,471.10	Other Expenses	1,522,402.79	
4,353,533.50	Electricity	5,173,403.86	
306,335.83	Water	280,451.77	
(334,785.57)	Bad Debts	(2,539,175.25)	17,143,702.75
16,465,596.73			
	Project Expenses		
4,832,358.95	Courses/Projects	7,554,709.48	7,554,709.48
4,832,358.95			

2015 Rs.		2016 Rs.	
	Other Operating Expenses		
172,052.08	Membership Fees	149,159.57	
1,307,620.00	Staff Training	884,706.42	1,033,865.99
1,479,672.08			
142,563,705.06	**Total Expenses**		154,966,259.79
9,511,887.10	**Surplus / (Deficit) for the period**		**(15,287,030.63)**

10.4 Cash Flow Statement

Cash Flows From Operating Activities	2016 Rs. 000	2015 Rs. 000
Surplus/(deficit) from ordinary activities	(15,287)	9,512
Non-cash movements		
Depreciation	29,772	23,200
Amortisation	-	(23,200)
Provision for Bad Debts	(2,539)	(335)
Provision for Defined Benefit Plans	2,835	4,071
Operating Profit/(Loss) before Working Capital Changes	14,781	13,248
(Increase)/ Decrease in Trade and Other Receivables	(335)	1,847
(Increase)/ Decrease in Inventories	35	(83)
(Increase)/ Decrease in Prepayment	(632)	(444)
Increase/ (Decrease) in Payables	(918)	(1,691)
Increase/ (Decrease) in Accrued Expenses	895	802
Cash Generated from Operations	13,826	13,679
Defined Benefit Plan Costs paid	(201)	(1,462)
Profit on Sale of Discarded item	(83)	-
Deferred Revenue	(505)	(405)
Net Cash From/(Used in) Operating Activities	(789)	(1,867)
Cash Flows from / (Used in) Investing Activities		
Acquisition of Property, Plant & Equipment	(57,522)	(30,272)
Short Term Investments	(1,266)	(996)
Interest and other	-	(2,609)
Interest and Other Received	286	869
Proceed from Disposal of PP&E	167	-
Capital Work in Progress	(20,406)	(361)
Net Cash Flows from/(Used in) Investing Activities	(78,741)	(33,369)
Cash Flows from (Used in) Financing Activities		
Proceeds From Capital Grant	85,433	31,409
Utilization of Fund	(34,692)	-
Net Cash Flows from/ (Used in) Financing Activities	50,741	31,409
Net Increase/(Decrease) in Cash and Cash Equivalents	**(14,962)**	**9,852**
Cash and Cash Equivalents at the beginning of the year	73,859	64,007
Cash and Cash Equivalents at the end of the year	**58,896**	**73,859**

10.5 Notes to the Financial Statements - Significant Accounting Policies

General Policies

Reporting Entity

Arthur C Clarke Institute for Modern Technologies (hereafter referred to as the "Institute") was incorporated by the Science and Technology Development Act No.11 of 1994, and is situated at Bandaranayake Mawatha, Katubedda, and Moratuwa.

Principal Activities and Nature of Operations

The Principal activities of the Institute are:

a. To accelerate the introduction of modern technologies to Sri Lanka by

I. Initiating, promoting and conducting research and development in the application of modern technologies.

II. Providing research and development support to the government and private sector undertakings in the application of modern technologies, and

III. Training of personnel in modern technologies to meet the needs of the government and private sector undertakings, and

b. To promote future studies
The areas of modern technologies include communication and related sciences, information and technology, electronics, telecommunications, microelectronics, space technologies, robotics, photonics and new materials.

The number of employees

The number of permanent employees as at the end of the reporting period was 90.

Basis of preparation

a) Statement of compliance

The financial statements comprise the Statement of financial Position, Statement of Financial Performance, Statement of Changes in Net Assets/Equity, Cash Flow Statement and notes to the financial statements. These statements have been prepared in accordance with the Sri Lanka Public Sector Accounting Standards (SLPSAS) issued by the Institute of Chartered Accountants of Sri Lanka.

b) Basis of measurement

The financial statements have been prepared on historical cost basis except where the appropriate disclosures are made with
regard to fair value under the relevant notes.

c) Comparative Information

Comparative information including quantitative, narrative and descriptive is disclosed in respect of the previous period for all amounts reported in the financial statements in order to enhance the understanding of the financial statements of the current period and to improve inter-period comparability.

The accounting policies set out below have been applied consistently to all periods presented in these financial statements, unless otherwise indicated.

d) Functional and presentation currency

The financial statements are presented in Sri Lankan Rupees, which is the functional and presentation currency of the institute.
All financial information presented in Sri Lankan Rupees has been rounded to the nearest thousand, unless stated otherwise.

e) Use of estimates and judgments

The preparation and presentation of financial statements in conformity with SLPSAS requires management to make judgments, estimates and assumptions that effect the application of accounting policies and reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates and judgments used.

Estimates and underlying assumptions are reviewed on an on-going basis. Revisions to accounting estimates are recognized in the period in which the estimates is revised if the revision effect only that period or in the period of the revision and future periods if the revision effect both current and future periods.

Information about significant areas of estimates, uncertainty and critical judgments in applying accounting policies that have the most significant effects on the amounts recognized in the financial statements is included in the notes to the financial statements.

Assets and the bases of their valuation

Property, plant and equipment

a) Recognition and measurement

Items of property, plant and equipment are stated at cost or at fair value less accumulated depreciation.
All items of property, plant and equipment are initially recorded at cost less accumulated depreciation. Significant components of an asset are identified and depreciated separately. When significant parts of property, plant and equipment are required to be replaced at intervals, the entity derecognizes the replaced part, and recognizes the new part with its associated useful life and depreciation. All other repair and maintenance costs are recognized in the income statement as incurred.

b) Cost

The cost of property, plant and equipment is the cost of acquisition or construction together with any incidental expenses thereon.
The cost of property, plant and equipment comprises its purchase price and any directly attributable cost of bringing the asset to working condition for its intended use.

Subsequent expenditure incurred for the purpose of acquiring, extending or improving assets of a permanent nature in order to carry on or increase the earning capacity of the assets has been treated as capital expenditure.

Expenditure incurred to replace a component of an item of property, plant and equipment that is accounted for separately, including major inspection overhaul expenditure, is capitalized. Other subsequent expenditure is capitalized only if it is probable that the future economic benefits embodied within the part will flow to the institute and its cost can be measured reliably.

The land value is not stated in the financial statements since land is a property of Ministry of Higher Education and transferred to Ministry of Science and Technology to carry out the activities of the Institute. If Institute operations will not be continued the land should be handed over to the University of Moratuwa as per the MOU signed between University of Moratuwa and the Institute.

c) Depreciation

Depreciation is not charged on freehold land and construction in progress. Depreciation is charged on all other Property, Plant & Equipment on the straight-line basis over the estimated useful lives by equal installments as follows.

Asset Category	% per Annum
Building	5
Computers & Peripherals	20
Satellite Antenna, Lab Equipment	10
Office Equipment, Furniture & Fittings	10
Motor Vehicles	20
Library Books	15

Depreciation of an asset acquired begins when it is available for use whereas depreciation of an asset ceases at the earlier of the date that the asset is classified as held for sale and the date that the asset is derecognized.

Inventories

Inventories consist of Stationery Stock Items, Electronic Components, Accessories and Tools etc. Inventories are stated at the lower of cost and net realizable value. Net realizable value is the estimated selling price in the ordinary course of business less the estimated cost of completion and selling expenses.

Trade and Other Receivables

Trade receivables are stated at the amounts they are estimated to realize net of allowances for bad and doubtful receivables.

Other receivables and dues from Related Parties are recognized at cost less allowances for bad and doubtful receivables.

General Bad Debt Provision is determined as follows:

Overdue Period	Provision Required
1 – 2 years	50%
2 – 3 years	75%
More than 3 years	100%

Investments

Investments in Treasury Bills have been stated at cost. Income from such investments has been accounted on accrual basis.

Cash and Cash Equivalents

Cash and cash equivalents are cash in hand, demand deposits and short-term highly liquid investments, readily convertible to known amounts of cash and subject to insignificant risk of changes in value. For the purpose of cash flow statement, cash and cash equivalents consist of cash in hand and deposits in banks net of outstanding bank overdrafts. Investments with short maturities i.e. three months or less from the date of acquisition are also treated as cash equivalents.

Liabilities and provisions

Liabilities classified as current liabilities on the Statement of Financial Position are those which fall due for payment on demand or within one year from the reporting date. Non-current liabilities are those balances that fall due for payment after one year from the reporting date.

All known liabilities have been accounted for in preparing these financial statements. Provisions and liabilities are recognized when the Institute has a legal or constructive obligation as a result of a past event and it is probable that an outflow of economic benefits will be required to settle the obligation.

Employee Benefits

a) Defined Benefit Plans

Gratuity is a defined benefit plan. In order to meet this liability, a provision is carried forward in the statement of Financial Position. The provision is calculated based on a formula method considering the future salary increment rates, discount rates and the expected staff turnover rate (these assumptions are shown in the Note 11.1 to the financial statements) The resulting difference between the brought forward provision at the beginning of the year and the carried forward provision at the end of the year is dealt within the statement of comprehensive income. However, as per the payment of Gratuity Act No. 12 of 1983, Gratuity liability is not externally funded. This liability is grouped under non- current liabilities is the statement of Financial Position.

b) Employees' Provident Fund

The Institute and employees, contribute 15% and 10% respectively, on the salary of each employee to the approved provident fund.

c) Employees' Trust Fund

The Institute contributes 3% on the salary of each employee to the Employee's Trust Fund.

Trade and other payables

Trade and other payables are stated at cost.

Taxation

The Institute is exempt from Income Tax under Section 7 (b) (ii) of the Inland Revenue Act. No. 10 of 2006.The Institute is registered for Value Added Tax (VAT).The income received from projects and other earnings are liable to VAT payments except income generated from courses.

Capital commitments and contingent liabilities

Contingent liabilities are possible obligations whose existence will be confirmed only by uncertain future events or present obligations where the transfer of economic benefits is not probable or cannot be reliably measured. Capital commitments and contingent liabilities of the Institute are disclosed in the respective notes to the financial statements.

Accounting for Grants

Grants that compensate the Institute for expenses incurred are recognized as revenue in the Statement of Financial Performance in the same period in which the expenses are recognized. Grants that compensate the Institute for the cost of an asset are recognized in the income statement on a systematic basis over the useful life of the related asset.

Revenue Recognition

Revenue is recognized to the extent that it is probable that the economic benefits will flow to Institute and that it can be reliably measured.

a) Course fees from students are recognized as revenue on accrual basis.
b) Project income, consultancy income are recognized as revenue on accrual basis
c) Interest income is recognized on accrual basis.
d) Grants related income is recognized when control of the contribution or right to receive the contribution is confirmed.
e) Other income is recognized on accrual basis.

Disbursement of surplus income of projects

The surplus of income on projects undertaken over and above of the normal quantum of activities in the annual action plan has been disbursed in accordance with the Public Finance Circular No.380 applicable for universities and research institutions.

Expenditure

a) Expenses are recognized in the Statement of Financial Performance on the basis of direct association between the cost incurred and the earning of specific items of income.
All expenditure incurred in the running of the Institute and in maintaining the capital assets in a state of efficiency has been charged against revenue in arriving at the surplus for the year.

b) Expenditure on courses, projects, consultancy works and other activities are recognized in the Statement of Financial Performance on accrual basis.

Cash Flow Statement

The cash flow statements have been prepared in accordance with SLPSAS 2.

Events after the reporting date

The materiality of events occurring after the reporting date has been considered and appropriate adjustments, wherever necessary, have been made in the accounts.

(2) Cash & Cash Equivalents

	Rs.
Bank of Ceylon - C/A 7054733	43,340,842.47
Bank of Ceylon - C/A 307144	10,288,815.63
FINDS Bank A/c - S/A 326764	107,467.31
NASDA Bank A/c - S/A 328391	6,644.33
Directors Fund Bank A/c - C/A 307399	49,221.76
Revolving Fund Bank A/c- C/A 2479737	4,402,364.10
Peoples Bank -CA 313-1-001-9-0012847	674,804.83
Commercial bank-CA 1114029211	26,500.00
	58,896,660.43

(2a) Short Term Investments

Invest. of surplus funds in Treas.Bills - Projects/Courses Fund	7,620,339.66
Invest. of surplus funds in Treas.Bills - Directors Fund	1,107,069.44
Invest. of surplus funds in Treas.Bills - Revolving Fund	2,156,124.03
Invest. of surplus funds in Treas.Bills - FINDS Grant	5,668,455.76
Fixed Deposit 01(76387182)-Revo.Fund	552,257.25
Fixed Deposit 02(76387290)-Revo.Fund	552,257.25
Fixed Deposit 03(76387299)-Revo.Fund	552,257.25
Fixed Deposit 04(76387310)-Revo.Fund	552,257.25
Fixed Deposit 05(76387322)-Revo.Fund	552,257.25
Fixed Deposit 06(76387328)-Revo.Fund	552,257.25
Fixed Deposit 07(76387343)-Revo.Fund	552,257.25
	20,417,789.64

(3a) Trade and Other Receivables

	Rs.	Rs.
Staff Debtor - TG		302.00
Insurance Corporation Debtor		9,700.00
Accounts Receivable - TG		1,058,649.94
Accounts Receivable - P/C		9,366,238.97
Debtor - Mr P T Fernando		4,000.00
Debtor - Mr C R Ranasinghe		426.78
Debtor - Mr.Jayathu Fernando		106,894.72
Debtor - Mr B R P Perera		45,699.66
Debtor - Mr S D J Sankalpa		1,250.00
Other Deposits		155,315.00
R.S.Debtor		14,434.91
Elections Dept		8,159.60
Ministry Debtor - Dish TV Package		33,381.50
Festival Advance		58,750.00
Staff Loans		
Distress Loan	8,243,647.00	
Motor Cycle Loan	267,526.00	
Motor Vehicle Loan	2,111,969.00	
	10,623,142.00	
Staff loans receivable after one year	(7,954,876.00)	
Staff loans receivable within one year		2,668,266.00
LC Margin Control A/c		4,321,376.00
Guarantee A/c		101,000.00
PC Control		734,671.49
		18,688,516.57

3.a.a

Staff loan receivable within One year	2,668,266.00
Staff loan receivable after One year	7,954,876.00
	10,623,142.00

(3b) Trade and Other Receivables
Work-In-Progress

	Rs.
Courses	
SPD Course (Elec)	27,684.20
	27,684.20
Projects	
Tea Colour Separator Project (Comm Div)	4,209,066.13
Light Measurment Alarm System Project	10,975.00
SPG LED Light Project	251.45
RFID Library Automation - ACCIMT (Comm Div)	91,854.36
Hardware Recovery of Jingle Boxes HRJB	55,790.19
Project 2012/ 2013 - SS - CCTV - NWSDB	8,726,217.07
Sri Jayawardenapura Gen Hospital Bed Project 2015	251,177.59
AC Powerd LED Lamp Proj(Elec)	1,053.00
Hardware Rec SLR Two CRTs 2015	101,098.27
Vehicle Tracking System	14,250.00
	13,461,733.06
Total (3a+3b)	**32,177,933.83**

(4) Inventories/Stocks

Electronic Components	3,727,274.15
Stationery	1,161,417.40
Others	38,443.56
Electrical & Mechanical	213,923.93
Welfare	124,870.00
Accessories -TG	199,218.03
Inventory Items - TG	518,035.98
Inventory Items - Projects (P/C)	1,990,140.32
Tools - TG	1,383,466.69
	9,356,790.06

(5) Prepayments

	Rs.
Pay-in Adv - TG	3,074,766.94
Stamp Imprest	53,251.00
	3,128,017.94

(6) PROPERTY, PLANT & EQUIPMENT

Description	Cost as at 01.01.16	Additions during the year	Disposals during the year	Adjustments	Total as at 31.12.16
Buildings	124,672,004.70	16,892,792.38			141,564,797.08
Satellite Antenna	2,959,797.83	-			2,959,797.83
Computers	66,274,686.27	8,703,782.24	(22,420,006.05)	(31,004.42)	52,527,458.04
Lab Equipment	175,478,889.44	27,701,725.37	(12,430,364.51)	47,040.00	190,797,290.30
Office Equipment	26,911,472.19	2,813,525.03	(2,449,053.25)	(825.00)	27,275,118.97
Furniture & Fittings	14,768,967.76	1,252,586.92	(1,696,819.57)	(13,372.93)	14,311,362.18
Motor Vehicles	22,068,489.00	6,390,000.00			28,458,489.00
Library Books	23,795,969.65 -	40,666.25			23,836,635.90 -
	456,930,276.84	**63,795,078.19**	**(38,996,243.38)**	**1,837.65**	**481,730,949.30**

Depreciation has been provided on original cost or valuation on a straight-l
that of previous year, and is calculated to write off the asset over their estin

Rates at which the depreciation provided are as follows.

Buildings	5%
Satellite Antenna, Lab Equipment	10%
Office Equipment, Furniture & Fitting	10%
Library Books	15%
Computer, Motor Vehicles	20%

Rs.

Cum Dep as at 01.01.16	Depn during the year	Disposals during the year	Adjustments	Cum Dep as at 31.12.16	W D V as at 31.12.16
29,727,107.02	6,306,998.29			36,034,105.31	105,530,691.77
2,959,778.83				2,959,778.83	19.00
45,115,971.70	6,150,514.54	(22,402,421.05)	(27,331.42)	28,836,733.77	23,690,724.27
111,138,255.14	10,784,825.31	(12,379,725.04)	18,816.00	109,562,171.41	81,235,118.89
18,059,793.15	1,680,587.79	(2,448,981.25)	(45.66)	17,291,354.03	9,983,764.94
9,452,239.47	907,925.03	(1,680,213.97)	(31,458.93)	8,648,491.60	5,662,870.58
18,898,489.00	4,314,946.95			23,213,435.95	5,245,053.05
23,030,657.23	242,809.01			23,273,466.24	563,169.66
258,382,291.54	**30,388,606.92**	**(38,911,341.31)**	**(40,020.01)**	**249,819,537.14**	**231,911,412.16**

ine basis consistent with
nated useful lives.

(7) Work In Progress - Construction

	Rs.
W I P - Main Auditorium	4,400,000.00
WIP - Furniture & Fitting(Lunch Room)	110,264.00
WIP Building - Roof ('C" Building)	500,000.00
WIP Building - 06 no's Toilets("C" Buil)	1,600,000.00
WIP Buil - New Aluminium Window(Auditorium)	775,273.95
WIP Buil - New Timber backwall	1,809,645.75
WIP Buil - Electrical System MDB	1,215,782.52
WIP Buil - Demarcation & Protection(Pitipana)	3,545,744.40
WIP buil - Improvem Electrical System	2,235,234.13
WIP Buil - Sound Proof Wall panelling(Mai Audito)	1,780,614.00
WIP Buil - Wash Rooms(A)	528,947.52
	18,501,506.27

(8) Payables

	Rs.
Accounts Payable -TG	1,003,127.26
Accounts Payable -PC	4,600.63
E.P.F.Control	1,166,892.18
E.T.F.Control	140,027.06
Welfare Society Control	1,713.00
Creditor - General Treasury	906,359.63
Refundable Deposit	120,000.00
VAT Payable on receipts - P/C	1,005,059.90
VAT Payable on receipts - T/G	126,190.11
NBT Payable - TG	19,677.77
NBT Payable - P/C	149,896.30
Stamp Duty Payable - TG	8,775.00
Paye Tax Payable - TG	43,788.00
Disbursement Control	2,714,512.42
Buildings Dept Creditor	984,403.00
Arpico Interiors - Creditor	145,083.20
TG Control	734,671.49
Retention	655,238.95
	9,930,015.90

(9) Accrued Expenses

	Rs.
Treasury Fund	4,773,505.69
Projects/Courses	160,032.24
	4,933,537.93

(10) Deferred Revenue

	Rs.
	10,205,848.64

(11) Retirement Benefit Liability

	Rs.
As at 1 January	27,131,466.39
Recognition of Transition Liability	-
Charge for the year	2,835,497.91
Payments made during the year	(171,329.75)
As at 31 December	**29,795,634.55**

(11.1) Assumptions

	2016
Discount Rate	6.50%
Salary Increment	8%
Staff Turnover	8.93%
Retirement Age	60 Years

(12) Net Assets / Equity

	2016 Rs.		2015 Rs.
Government Capital Grant			
Opening Balance	322,031,396.20		284,282,034.05
Grants received	79,043,000.00		62,959,000.00
Adjustments			(5,179,550.00)
Capacity Building programmes	(9,234,889.61)		
Amortization	(25,457,207.57)	*	(20,030,087.85)
	366,382,299.02		**322,031,396.20**
Non Monetary Government Capital Grant **			
Opening Balance	3,170,000.00		6,340,000.00
Grants received	6,390,000.00		
Amortization	(4,314,947.95)		(3,170,000.00)
	5,245,052.05		**3,170,000.00**

Reserves	2016 Rs.		2015 Rs.
General Reserve	272,721.64		272,721.64
Celltel Donation	213,333.34		213,333.34
Research & Consultancy Fund	1,341,446.90		1,341,446.90
Foreign Grant	3,464,295.25		3,464,295.25
Re - valuation Surplus	26,682,504.54		26,682,504.54
Research Pool	182,953.96		-
Other Grants Donation			
Opening Balance	24,483,547.98		25,076,430.83
Fixed Assets received	47,040.00		
Adjustments			
Depreciation	(576,431.39)	**	(592,882.85)
	23,954,156.59		**24,483,547.98**
Revolving Fund			
Opening Balance	8,929,686.66		7,363,739.04
Receipts	1,547,889.54		1,565,947.62
Expenses			
	10,477,576.20		**8,929,686.66**
Directors Fund			
Opening Balance	1,074,744.75		1,016,213.81
Receipts	80,856.27		58,530.94
Expenses			
	1,155,601.02		**1,074,744.75**
FINDS Grant			
Opening Balance	5,423,835.41		5,122,849.29
Interest Income	375,184.11		300,986.12
Expenses			
	5,799,019.52		**5,423,835.41**

NASDA Grant		
Opening Balance	6,383.61	-
Adjustments		6,133.78
Interest Income	260.72	249.83
Expenses		-
	6,644.33	**6,383.61**
	73,550,253.29	**71,892,500.08**

	2016	**2015**
	Rs.	**Rs.**
Accumulated Surplus/(Deficit)		
Opening Balance -TG	(121,151,928.51)	(120,070,824.29)
Opening Balance - P/C	22,288,520.39	18,971,086.39
Adjustments - TG		(906,733.61)
Adjustments - PC		(6,133.78)
Excess of income over expenditu	(21,314,395.74)	3,149,197.16
	(120,177,803.86)	**(98,863,408.13)**
TOTAL NET ASSETS / EQUITY	**324,999,800.50**	**298,230,488.15**

* Capital grant received has been amortized according to the Sri Lanka Accounting Standard No.24.

** **Depreciation on items received on donations/grants**

Depreciation on item received under donations/grants have been adjusted to the donations/grants accounts as per the instructions given by the Treasury.

11.0 Summary of short and medium activities planned

- National Hub for Receiving and Distribution of Earth Observation satellite data - Establishment of 03 Nos. of Ground Stations for receiving data from civilian earth observation satellites. Mainly involves development of a Ground Station Complex for receiving earth observation satellite data from Civilian Earth Observation Satellites and associated infrastructure facilities for technical control, data processing and distribution. National Earth Observation Agencies of two leading space faring nations have pledged to locate Ground Stations each at the National Hub.
- Acquisition & Development of National Capacity in Basic Space Technologies–
    - Furtherance of collaborative initiatives with foreign national agencies including State Space Corporation and Samara National Research University (SNRU) of the Russian Federation for the development of a nano-satellites
    - Development of a cube-satellite with Kyushu Institute of Technology (Kyutech), Japan
- Development of Aerospace Design and Manufacturing Capabilities in Sri Lanka - Development of Fixed Wing UAVs and Quad-rotor/ Hexa-rotor Coptor technologies with improved versions of stability, controllability, structure suitable for different applications
- Development of Mechatronics & Robotics Capabilities in Sri Lanka – Development of a Mobile robot platform for Autonomous application, industrial applications.
- Human Resource capacity development in Aerospace Technologies, Space Technologies and Applications, Robotics and Bio-medical Engineering by way of specialized short term training, Post-graduate training, expert missions and other associated measures.
- Remote Sensing & Geographic Information Systems (RS/ GIS) activities - Projects using Earth Observation (EO) satellite imagery and air borne platform (UAV) imagery in the fields of application including agriculture, environment, urban developments, natural resource management etc. Expansion of Spectral Signature Bank and Research in the area of Spectroradiometry.
- Electronics, Microelectronics & Communications Projects [for development of electronic products and industrial solutions].
- Continuing Professional Development (CPD) programmes in the fields of Electronics, Communications and Information Technology

- **Integration of SMS and Web technologies (Collect data through SMS, analyze and display over the Web) for remote-monitoring/ web based MIS systems**

  - Disaster Relief Management Decision Support System

- Astronomy research projects and Astronomy popularization activities
- Performance Testing/Certification and Calibration related activities
- Hardware Recovery of sophisticated electronic systems (eg. Master Control Units of Locomotives), measuring instruments, medical instrument

12.0 Report of the Auditor General

විගණකාධිපති දෙපාර්තමේන්තුව
கணக்காய்வாளர் தலைமை அதிபதி திணைக்களம்
AUDITOR GENERAL'S DEPARTMENT

මගේ අංකය எனது இல. My No. ETC/B/ACCIMT/1/16/63 ඔබේ අංකය உமது இல. Your No. දිනය திகதி Date 28 January 2018

The Chairman,

Arthur C Clarke Institute for Modern Technologies

Report of the Auditor General on the Financial Statements of the Arthur C Clarke Institute for Modern Technologies for the year ended 31 December 2016 in terms of Section 14(2)(c) of the Finance Act No.38 of 1971.

The audit of financial statements of the Arthur C Clarke Institute for Modern Technologies for the year ended 31 December 2016 comprising the statement of financial position as at 31 December 2016 and the statement of financial performance, statement of changes in equity and cash flow statement for the year then ended and a summary of significant accounting policies and other explanatory information was carried out under my direction in pursuance of provisions in Article 154(1) of the Constitution of the Democratic Socialist Republic of Sri Lanka read in conjunction with Section 13(1) of the Finance Act No.38 of 1971 and Section 40(3) of the Science and Technology Development Act No.11 of 1994. My comments and observerations which I consider should be published with the annual report of the Institute in terms of Section 14(2)(c) of the Finance Act appear in this report.

1.2 **Management's Responsibility for the Financial Statements**

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Sri Lanka Public Sector Accounting Standards and for such internal control as the management determines is necessary to enable the preparation of financial statements that are free from material misstatements whether due to fraud or error.

අංක 306/72, පොල්දූව පාර, බත්තරමුල්ල, ශ්‍රී ලංකාව. . - இல. 306/72, பொல்துவ வீதி, பத்தரமுல்லை, இலங்கை. - No. 306/72, Polduwa Road, Battaramulla, Sri Lanka
+94-11-2887028-34 +94-11-2887223 ag@auditorgeneral.gov.lk www.auditorgeneral.gov.lk

1.3 **Auditor's Responsibility**

My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with Sri Lanka Auditing Standards consistent with International Auditing Standards of Supreme Audit Institutions (ISSAI 1000-1810). Those Standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatements.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement , including the assessment of the risks of material misstatements of the financial statements, whether due to fraud or error. In making those risks assessments, the auditor considers internal control relevant to the Institute's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of financial statements. Sub-sections (3) and (4) of Section 13 of the Finance Act, No.38 of 1971 give discretionary powers to the Auditor General to determine the scope and extent of the audit.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

1.4 **Basis for Qualified Opinion**

My opinion is qualified based on the matters described in paragraph 2.2 of this report.

2. Financial Statements

2.1 Qualified Opinion

In my opinion, except of the matters described in paragraph 2:2 of this report the financial statements give a true and fair view of the financial position of the Arthur C Clarke Institute for Modern Technologies as at 31 December 2016 and its financial performance and cash flow for the year then ended in accordance with Sri Lanka Public Sector Accounting Standards.

2.2 Comments on Financial Statements

2.2.1 Sri Lanka Public Sector Accounting Standards

The following deficiencies were observed in the cash flow statement in terms of Sri Lanka Public Sector Accounting Standard 2.

(i) The payment of gratuities for the year under review amounted to Rs.171,000. However, this had been shown as Rs.201,000 while computing the cash flow generated from operating activities.

(ii) The capital grant obtained from the Treasury during the year under review amounted to Rs.79,043,000. However, this had been shown as Rs.85,433,000 while computing the cash flow generated from financing activities.

2.2.2 **Accounting Policies**

Although it had been stated in the financial statements that the policy of the Institute is to follow the accrual basis for accounting, the total income of Rs.1,504,800 invoiced during the years 2014, 2015 and 2016 for 19 income projects subjected for distribution among officers had been shown as deferred income in the financial position statement instead of being included in the financial performance statements of the relevant years.

2.2.3 **Accounting Deficiencies**

The following observations are made.

(a) The computation of provision for accumulated depreciation of office equipment costing Rs.453,295 disposed of, during the year under review had exceeded by Rs.91,637. As a result, the profit on sale of goods had been overstated by Rs.91,637.

(b) The rent income receivable from the Telecommunication Regulatory Commission for the services supplied during the year under review amounting to Rs.1,035,657 had not been brought to account.

(c) The expenditure incurred on manufacturing a machine for tea quality grading and colour separating system project during the period 2012 to 2016 amounted to Rs.4,209,066. Of this, a sum of Rs.1,102,586 had been shown as work-in-progress in the financial position statement instead of being accounted as expenditure on research.

(d) An expenditure of Rs.9,234,889 had been incurred on conducting workshops and seminars for research projects. This had been deducted from capital grants in the statement of changes in equity instead of being shown as research and development expenditure and income from utilization of capital grants in the statement of financial performance.

2.3 Balances Receivable and Payable

The following observations are made.

(a) The sum of Rs.4,178,088 receivable out of the balances of Rs.8,986,777 as at 31 December of the year under review on behalf of conducting projects and courses had not been recovered even by November 2017. Of these, the balances exceeding 2 years aggregated Rs.1,586,990.

(b) Action had not been taken to recover the balances of Rs.222,270 exceeding 3 years due from 3 persons and 4 external institutions.

(c) The balances payable to outsiders for over 3 years aggregated Rs.1,877,338. Action had not been taken to settle these balances.

(d) Four advances of Rs.195,150 granted during 2014 and 2015 had not been settled even by end of the year under review.

2.4 Non-Compliance with Laws, Rules, Regulations and Management Decisions

---

The following non-compliances with laws, rules, regulations and management decisions were observed.

	Reference to Laws, Rules and Regulations	Non-Compliance
(a)	Establishments Code of the Democratic Socialist Republic of Sri Lanka	
(i)	Section 10 of Chapter VII and 2(a) and (c) of the Public Administration Circular No. 21/2013 of 07 October 2013.	The Chief Executive Officer of the Institute had obtained Rs.81,620 as holiday pay for working on 22 holidays of the year under review without obtaining the approval of the Secretary to the Ministry.
(ii)	Section 12.5.4 of Chapter VII	Twenty five percent only of the initial salary of a post could be paid as acting pay.But, allowances had not been paid to 2 officers who had acted in the post of Senior Deputy Director. Instead, a sum of Rs.2,778,116 had been paid as transport and fuel allowances for the period May 2015 to 31 December of the year under review.

As a result, a sum of Rs.2,214,602 had been overpaid to the relevant officers than the amount due to them as acting allowances.

(b) Public Finance Circular No.380 of 19 January 2000.

The surplus derived from projects such as battery testing and RCCB testing which had not been referred to in the circular should not be distributed among the direct/revolving staff dealing with it. Instead, Rs.831,897 of such income had been distributed among the staff during the yer under review

3. Financial Review

3.1 Financial Results

According to the financial statements presented, the financial results of the Institute for the year ended 31 December of the year under review had resulted in a deficit of Rs.15,287,030 as against the surplus of Rs.9,511,887 of the previous year showing a deterioration in financial results of the year under review by Rs.24,798,917 as compared with the previous year. The decrease in recurrent grant by Rs.18,622,000 and the increase in operating expenditure by Rs.5,830,487 of the year under review had mainly attributed to the above deterioration in financial results.

An analysis of the financial results of the year under review and 04 prior years show that the surplus of Rs.18,679,669 of 2012 had decreased up to Rs.9,511,887 by the year 2015 resulting in a deficit of Rs.15,287,030 in 2016. However, the contributions of Rs.77,249,669 of the Institute in 2012 had improved up to Rs.90,296,226 as at end of 2016 while readjusting the remuneration of employees and the depreciation for fixed assets in the financial results. However, it had decreased by 10 per cent as compared with the year 2015.

4. Operating Review

4.1 Performance

In terms of paragraph 22 of the Science and Technology Development Act No. 11 of 1994, the functions of the Institute are to accelerate the introduction of modern technologies by initiating, promoting and conducting research and development in the application of modern technologies, providing research and development support to the Government and private sector undertakings and training of personnel in modrn technologies to meet the needs of Government and private sector undertakings and to promote future studies. However, the following matters were observed during the course of examination of performance of the Institute.

(a) Manufacture of a machine for Tea Quality Grading and Colour Seperating System Project

(i) A project for manufacture of a machine for tea quality grading and colour separation with minimum cost had been commenced in 2012. However, a plan had not been prepared regarding the period of completion of the project and the duties to be performed each year. Action had not been taken to manufacture the machine even by end of 2016. The cost incurred on behalf of this as at end of 31 December of the year under review amounted to Rs.4,209,066.

(ii) A feasibility study report had not been prepared before commencement of the project in order to show how it was expected to introduce new technologies for the tea industries of this country by means of this research project, the speciality expected of this machine rather than the machines presently existing in the market, the expected markets, the expected cost and how this could contribute to the improvement of the tea industry.

(iii) The electronic science too belongs to the new technology in terms of the Science and Technology Development Act and an electronic science division had been established at the Institute. But, an agreement had been entered into with a private institution for Rs.8,000,000 in March 2016 for further continuation of the above project stating that the Institute was not in possession of the special knowledge required for improvement of the electronic science. The 4th stage of it should have been completed by August 2017 as per agreement. However, a physical verification revealed that the activities relating to the first stage alone had been completed.

(b) Utilization of New Technology for Archeological Research and Mining

An aircraft without pilots valued at Rs.10,564,677 had been purchased in August 2016 to obtain photocopies for archaeological research and mining activities for the Department of Archeology. Two officers had been trained abroad by incurring an expenditure of Rs.110,322 with regard to its operation before purchasing the craft. In spite of this. the craft had been damaged during its maiden flight on 30 November. The craft had been repaired by sending it to the country of origin, However, a physical verification revealed that it was not fit for operation even by 30 October 2017.

4.2 **Management Activities**

The following observations are made.

(a) The lease agreement entered into by the Institute with the Sri Lanka Telecommunication Regulatory Commission in 2013 to give on hire the telecommunication tower belonging to the Institute had expired on 31 January 2015. But, it had been made use of, from February to July 2015 without renewing the said agreement. The rent of Rs.638,134 receivable by the Institute in this connection had not been recovered.

Further, an agreement had been signed for a two year period of 01 August 2015 to 31 July 2017. However, the rent of Rs.2,079,768 recoverable for the said period also had not been recovered even by 30 November 2017.

(b) The National Centre to obtain and distribute Global Observation Data

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A project for establishing a satellite centre had been commenced with the participation of the government of China with the objective of motivating the utilization of space technology for development of the country without carrying out a feasibility study. According to the memorandum of understanding entered into with the Chinese Agency, both parties should participate in selecting a suitable site for establishing the Centre. However, a land had been selected without the participation of the Chinese Agency on the discretion of the Institute. However, the Chinese Agency which made an observation tour subsequently had stated that the land was not suitable for the project and as such action should be taken to select a land elsewhere. However, the Institute had paid a sum of Rs.3,545,744 to the Urban Development Authority on 16 December, 2016 to erect a fence around the land. However, the fence concerned had not been erected even by November 2017 and action had not been taken to recover the amount concerned.

(c) Stocks costing Rs.4,091,099 had been lying idle since 2012. However, action had not been taken to identify stocks which could not be used and the stocks that were slow moving for either disposal or for making provision in the financial statements.

(d) Recommendations had been made at the preliminary inquiries to recover the loss of Rs.50,063 caused to vehicles during the year under review from the driver. However, action had not been taken to recover the amount even by August 2017, the month of audit.

4.3 Staff Administration

The approved cadre as at 31 December of the year under review was 177 and the actual cadre was 91 resulting in vacancies in 86 posts. The following observations are made in this connection.

(a) The vacancies existing in 29 posts as at 01 January of the year under review were 96. Of these, newspaper advertisements had been published for filling the vacancies in 9 posts only and of these, recruitments had been made for 8 vacancies in 2 posts only.

(b) This Institute which functions with the objective of research and development activities also functions as the Institute with specialized priority in micro electronic, telecommunication, information technology, space technology, robo science and new technology subjects and other related fields. The existence of 70 vacancies in 34 posts consisting of officers directely connected with these fields could deter the achievement of objectives of the Institute and as such the problems faced with regard to filling of vacancies should be resolved. But, action had not been taken accordingly.

(c) According to Section 13.3 of Chapter II of the Establishments Code of the Democratic Socialist Republic of Sri Lanka, acting appointments could only be made as a temporary measure till such time a permanent appointment is made and a permanent appointment should be made without delay provided the services of a full time officer is needed. But, action had not been taken up to 30 May 2017 to fill the vacancies in 4 posts of Senior Deputy Directors for which acting appointments had been made from the years 2013 and 2015.

5. Accountability and Good Governance

5.1 Action Plan

(a) The estimated amount required for each function, except 25 functions had not been shown out of the 77 functions included in the Action Plan for the yer 2016. Meanwhile, the actual amout spent had not been shown with regard to any project even during the evaluation of performance at end of the year.

(b) By carrying out a percentagewise evaluation while reviewing the extent and progress expected to be executed by each project during the year, the progress of the Institute during the existing year could be compared with the financial cost incurred which could also facilitate best planning of activities during the ensuing year. However, such disclosures had not been made in the Action Plan and the progress reports.

5.2 Procurement Plan

Procurement of 60 goods and services with an estimated value of Rs.24,064,881 included in the procurement plan prepared for the year under review had not been fulfilled during the year. Further, 14 procurements with an estimated value of Rs.20,910,419 included in the procurement plan of 2016 due to inability to purchase them in 2015 had not been completed in the year 2016 too. Accordingly, it was unable to ascertain in audit whether the procurement activities had been efficiently planned.

6. Systems and Controls

Deficiencies observed during the course of audit were brought to the notice of the Chairman of the Institute from time to time. Special attention is needed in respect of the following areas of systems and controls.

Systems and Controls	Observations
(a) Human Resources Management	(i) Prior approval should be obtained for working on holidays. But, approval had been obtained after performing the work.
	(ii) An authorized officer had not certified the correctness of arrival and departure shown in the register of attendance.
(b) Financial Control	(i) "Paid" stamp had not been affixed on vouchers while making payments for work on holidays so that repetition of payments could not occur.
	(ii) Claims for holiday pay had not been prepared on the required specimen forms.
(c) Control over Operations	(i) Files containing full details such as invitations for foreign trips, applications and letters of approval had not been maintained.

(ii) Letters denoting resumption of duties had not been filed of record in the foreign travel files or personal files.

Sgd./ H.M. GAMINI WIJESINGHE
Auditor General

H.M.Gamini Wijesinghe

Auditor General

13.0 Answers to the Auditor General Report

Answers to the Report of the Auditor General, on the Financial Statements of the Arthur C Clarke Institute for Modern Technologies for the year ended 31 December 2016, in terms of Section 14(2)(C) of the Finance Act No. 38, of 1971.

2.2 Comments on Financial Statements

2.2.1 Sri Lanka Public Sector Accounting Standards

(i) It was observed that the difference of Rs. 30,000.00 as revealed in the audit report in relevant to payment of gratuity in the Statement of Cash Flow of the year under review has been arisen as a result of an adjustment for the relevant payment.

(ii) As observed in the audit report capital grant of Rs. 79,043,000/- has been received by the Treasury in the year under review. However, Rs. 6,390,000/- has been received under non-current grant. Actual received amount of the grants is Rs. 85,433,000/-.

2.2.2 Accounting Policies

Even the revenue is accounted as differed income in the year under review as mentioned in the observation, accrual basis accounting has been initiated from July 2017.

2.2.3 Accounting Deficiencies

(a) Accrual depreciation amounted to Rs.91,637/- has been overstated by a mistake. Actions were taken to rectify it in year 2017.

(b) Rental income of Rs 1,035,657/- has not been accounted due to delay in signing agreement between the Telecommunication Regulatory Commission (TRC) and the ACCIMT for the relevant period by the TRC as mentioned in observation. As the relevant agreement has been signed by now this has been accounted in 2017 financial year.

(c) Action will be taken to include the relevant adjustment notes in the accounts for the year 2017 as observed in the audit report.

(d) Research and Development expenditure will be accounted as expenditure in the statement of Financial Performance from the year 2017. The relevant value for this expenditure will be stated as an income in the Capital Grant Account in the statement of Financial Performance.

2.3 Balances payable and receivable

(a) The balance receivable for projects and courses for the 31 December of the year under review is Rs.8,986,777/- as stated in the Audit Report. Rs.4,186,528/- has been recovered by

31.12.12017. Invoices valued at Rs. 622,160/- have been cancelled. The actual amount of Rs.4,178,088/ has to be recovered.

Total balances valued at Rs.1,655,681/- and Rs.25,132/- that exceeds more than 3 years have been recovered by 31.10.2017. The actual amount to be recovered by now is Rs. 1,505,444 and actions will be taken to recover this amount.

(b) The value mentioned in the audit report has been prepared as follows.

Persons	Rs.	
Debtor – Mr. P.T.Fernando	4,000.00	
Debtor – Mr. Jayathu Fernando	106,894.72	
Debtor – Mr. P.B.R. Perera	45,699.66	156,594.38
Institutions		
Insurance Corporation Debtor	9,700.00	
R.S.Debtor	14,434.91	
Elections Department	8,159.60	
Ministry Debtor – Dish TV Package	33,381.50	65,676.01
		222,270.39

Actions will be taken to recover the above amounts.

(c) The above value is compiled with the retention money for delivering services and other refundable amounts.

(d) In the year 2017, actions were taken to settle 4 advances given in year 2014 and 2015 that are valued at Rs. 195,150/-.

2.4 Non-compliance with Laws, Rules, Regulations and Management Decisions.

(a) Establishment Code of the Democratic Socialist Republic of Sri Lanka

(i) It is observed that the Establishments Code and the matters in the para 2(a) of the Public Administration Circular dated 07th October 2013 issued amending the Establishments Code has been based for the Audit Query. However this institute is a Statutory Board established under another Act passed by Parliament (Science and Technology (Amendment) Act No.11 of 1994) and provisions in the Establishments Code is not directly applied in relevant to such institutes. This has also been mentioned in the Establishments Code. Some of the provisions in the Establishments Code are followed by the institute with the approval of the Board of Governors once adjusting these to suit the institution when only such provisions are proper guidelines for the institutional functions. (Ex; Provisions in the Establishments Code are used

as the Disciplinary Procedure of the institute with the approval of the Board of Governors adjusting them as appropriate)

The Board of Governors has the authority power to take decisions as appropriate in relevant to internal administration of the institution in delivering statutory functions of the institution. If such decisions are in compliance with any provision in a Circular, or a decision of a Cabinet of Ministers or a relevant court decision issued based on an Act approved by the Constitution or a regulation issued in compliance with such Act or a certain provision stipulated in such Act/ regulation these decisions are deemed to be legitimate decisions.

As shown in the audit query the staff officers are allowed to engage in duties on weekends and holidays only for a maximum of two days, however in some instances they have to engage in some crucial duties of the institution more than two days exceeding this limit. Due to the duties assigned to the present staff within a limited time frame, additional service has to be obtained. Approval of the Board of Governors' has been obtained to engage in duties for maximum 5 days per month giving clarifications on the nature of assigned duties by the paper submitted to the Board of Governors' on 09/09/2013 in this regard.

Since the approval is given as a lawful decision within the authority power of the Board of Governors to engage in duties on weekends it has been done in accordance with the decision of the Board of Governors. Your kind attention is drawn to the matter that any regulation in relevant to institutional matter has not been breached.

As per the matters mentioned in the audit query, there is no need to obtain the prior approval of the Secretary to the Ministry on this background where the rightful approval has been granted by the Board of Governors.

(ii) As the external candidates are not applying for these vacancies exist at the senior level positions, qualified officers in the institute are appointed to act in the vacant posts in addition to the duties of their permanent post with the approval of the Board of Governors to carry out administration and other functions of the institute without hindrance. Transport allowance and fuel allowance has been granted as per the decision of the Board of Governors to incur the expenses for all official duties including travelling by themselves. I would like to further inform that the institute does not pay 12% of the salary of the acting post for these officers as per the Establishments Code.

(b) As it is expected to review the prevailing methodology used to share the surplus income earned by the researches, consultancy services, and inspection and measurement services and also by training programmes among the members of the staff as per the provisions provided in the Public Finance Circular No.380, actions will be taken to introduce suitable revisions considering the observations in the audit report

3. Financial Review

3.1 Financial Result

Lower amounts of recurrent grants received by the Treasury has been mainly affected the shortage of Rs. 15, 287,030/- as observed in the audit report. Since the balance of the recurrent grant that had been allocated for the year 2015 has been utilized in year 2016, recurrent grants allocated for the year under review has been reduced. Increase in fuel allowance, transport allowance and communication allowance of the senior level officers on a policy decision of the government has affected the increase in operational expenses by Rs. 5,830,487.00 as observed in audit report. Accordingly our view it is not accurate to define as depreciation in the financial result.

By the analysis of added value for the year under review and 4 preceding year, 10% decrease has been observed compared to year 2016. Shortage for the year 2016 has mainly affected this 10% decrease and gradual increase is shown in total added value.

4. Operating Review

4.1 Performance

(a) Project for Manufacturing Tea Color Grading System

(i)/(ii) There are two components in feasibility study of such technically complex project viz. general feasibility and technical feasibility. Several demonstrations were done to the Board of Governors with necessary details of the project including matters like demand for proposed system for a tea factory, main function of such system in a tea factory, models available at present and manufactured country and approximate price, savings to the country due to halting importation, defects in existing machines and further technical improvements to them, no. of machines of same type operated in the country at present, maximum lifespan of these machines and demand in tea factories for these machines that are to be considered in general feasibility. General feasibility was initiated after June 2011 and the project proposal was submitted for the approval of the Board of Governors and demonstrations were done after completing the feasibility study in December 2011 by including several components to it.

After receiving the approval of the Board of Governors in 2012, technical procedure in relevant to first stage of the project was initiated. As per the project proposal one year period has been allocated for the first stage. Pre-preparation for technical fabrication is the main objective of the first stage and technical feasibility study has being carried out in line with this.

Meantime the Electronic Engineer and the only Mechanical Engineer recruited to the project under the contract basis were resigned. The two engineers who were recruited to the project

started the project works by acquiring the technical knowhow and they also resigned after 6 months period to leave for overseas jobs. Another two Engineers who joined thereafter have also leave the project within a very short period and therefore the first stage of the project "Single camera based tea color Identification system" could not be completed. Lack of knowledge to precede the project components that involve FPGA technology during the project has also been observed.

It is true that about Rs. 3.2 Mn has been spent on some outputs and for purchasing equipment. This is not merely an expenditure but also fruitful future investment in a research and development programme.

(iii) There is an electronic division in the institute, but high tech electronic knowledge like FPGA (Field Programmable Gate Array) has been required to manufacture this equipment. A normal Electronics Engineers do not have such a broad knowledge (university education has very low practical knowledge in this regard) and this capability can be achieved only by a special training in foreign country.

Therefore the proposal has been presented for the approval of the Board of Governors with justifications to outsource that type of technical knowledge.

This equipment uses both technologies, Mechanical Engineering and Electronic Engineering at maximum level. Even agreed to outsource FPGA Electronics technology it has been mentioned to complete the mechanical equipment by the ACCIMT as its responsibility. This function should be get done by institutions that involve in manufacturing mechanical products and such institutions are very rare and due to this reason phase 1 and phase 3 of the project was quite delayed. However every possible action has been taken to achieve the objective.

(b) <u>Using Modern Technology for Archeological Explorations and Excavations</u>

Unmanned Aerial Vehicle (UAV) is purchased as most of the developed countries use the photographs taken from the air for development projects of various fields and some other purposes as revealed at feasibility study. Archeology is only a one field among a large no. of fields.

The institute has obtained evaluation committee report in relevant to the UAV damaged by an accident on 30th November 2016 and immediate actions were taken to repair the UAV drone.

The UAV drone was handed over the local agent for repairing on 06th February 2017 and it was returned to the institute on 12th May 2017 after repairing. It was revealed by the inspections carried out by our institution that technical defects were further existed and UAV drone was again handed over the local agent to rectify these defects. At the end November

2017 the institute has informed that the defects of the UAV drone has been repaired and necessary actions are being taken to obtain letter of authorization for technical assistance and flying in air with the assistance and monitoring of the technical officers of the local agent. Further 03 day foreign training provided for the two officers as observed in audit report is only a basic training provided for operating the vehicle.

4.2. Management Activities

(a) Even the payments have to be made in December 2014 and January 2015 as per the agreement between the ACCIMT and Sri Lanka Telecommunication Regulatory Commission (TRC), the TRC has informed in writing that they reject to make payment since the office they use has not been constructed in accepted standards. However actions will be taken to recover this amount discussing with the TRC.

In year 2015 enter into a new agreement between the ACCIMT and the TRC for two years with the concurrence of both parties and as per this agreement revised rental should be received to our institute from August 2015. Since the maintenance works of the office has been carried out by them during the period from 01st of February to 31st July 2015 this period was not covered by the agreement.

Invoices for the period from 01st of February to 31st July 2015 which carried out maintenance by them has not been covered by the new agreement. As per the lease agreement payment have been made for 03 months from August to October at a rate of Rs.91,162/- per month. However as per the new agreement only the amount in relevant to 5% increase in monthly rental should be recovered. Accordingly an amount of Rs 24,022.41 should be recovered to the institute.

After signing the agreement, actions were taken to issue the invoices for the period of 12 months starting from 01 February 2016 to 31 January 2017.

(c) <u>National Hub for receiving and distribution of Earth Observation data</u>

(d) This land with an extent of 10 acre was granted to this institute by the Megapolis development division of the Ministry of Megapolis and Western Development. It is expected to establish a National Hub for receiving and distribution of Earth Observation data in this land as agreed with the government of China. However, further studies revealed that it is more appropriate to acquire a suitable land (with an extent of 15 acres) for the construction of a Research and Educational Hub on technical fields that have potential to develop in related to this Centre. Further studies carried out by the ACCIMT and UDA on this are in the final stage. Accordingly the centre will be established in a land that is expected to be vested to the institute in near future.

As per the audit query an amount of Rs.3,545,744/- Mn has been paid to the UDA for construction of a fence around the land that has been already given to the institute and this fence has not been constructed yet. The UDA will construct the fence when another suitable land is allocated for this purpose.

(e) The underutilized stocks as observed in the audit report are the technical apparatus that will be required for the ongoing projects and there is also a possibility to use these for the projects that are to be implemented in future. As an institute that carried out technical functions, it is not practical to dispose/ remove such apparatus without an extensive assessment. Most of these apparatus are not in outdated or unusable condition.

(f) Independent inspection has been carried out in this regard and the relevant matters were presented at the Audit and Management Committee Meeting of the Institute. The members of the Board decided to inform the driver to pay the damages to the institute and accordingly he was informed in writing. He has appealed to give a relief to pay this amount in installments as he could not pay the total amount at once. As this sum of Rs. 50,063.00 has been confirmed as an amount to be recovered by the driver it has been included as a receivable amount.

4.3 Staff Administration

(a) Although vacancies were existed at the post of Engineers these should be filled after filling the vacancies of technical grade senior level posts that have to be recruited as heads of divisions of the institute. As per the recruitment and promotion procedure of these senior level posts, educational qualifications and experience is considered, but due to low salaries paid to them compared to the other public sector and private sector institutions qualified candidates had not applied for these posts and the candidates who had applied had not attended the interview keeping these senior level posts vacant. Further the recruitments to non technical supporting staff are made in parallel to the technical staff without imbalances.

(b) As mentioned in the audit query about 70% vacancies are existed in the technical division of the institute and it is kindly informed that anticipated goals of the institute can be achieved by the existing staff at present. You are also informed that the institute has achieved optimal level progress against the aforesaid hindrances that are beyond the control of the institute.

(c) These posts still exist vacant due to lack of applications received from qualified candidates even if the institute made efforts to fill these vacancies publishing paper advertisements in several instances. The main issue face by the institute is recruitment and retention of qualified personnel to these posts due to the huge salary gap (for an applicant of relevant qualifications) in salary market.

These officers have been appointed with the approval of the Board of Governors to act in the higher level vacant posts, in addition to their normal duties to prevent the critical situation that

could be arisen in administration and other functions of the institute due to not applying external applicants for the existing vacancies at the senior level posts. However actions will be taken to fill these vacancies permanently.

5 Accountability and Good Governance

5.1 Action Plan

(a) High-tech equipment of common nature are required for the activities of technical divisions of the institute and these are used for several projects that are implemented in the same year or next years. Due to this reason capital expenditure could not be identified separately and only the capital expenditure that cannot be distinctively estimated has been depicted separately.

Actions were already being taken giving special attention to represent the actual expenditure that could be specifically identified for projects in the Performance Report in the end of the next year.

(b) There is no interconnection with the capital expenditure and the physical progress of the project under the conditioned described in the part (a) above. However in the future actions will be taken to reveal the percentage of expected physical progress for each project in preparation of the Action Plan.

5.2 Procurement Plan

(a) Most of the goods purchased by the institute are technical goods and therefore differences could be seen between the estimated value and the actual value and the balance amount of the estimated value has also been included in the audit observation. In some instances certain procurements have to be cancelled as they are not met with the qualifications required by the institute and considerable time period will be taken to call the quotations again and therefore there are some instance that the provisions allocated for the relevant year has not been used and such procurements are processed within the provisions of the next year.

Further we would like to inform that necessary actions will be taken to improve the prevailing procurement procedure more efficiently focusing on the matters observed in the audit report.

There are some procurements that are complex and hard to select a supplier and these will take time period more than one year. There are some instances where the suppliers do not responded to the requests forwarded for quotations in accordance with the specifications prepared by the institute, due to arrival of new technical equipment to the market. In such instances sometimes it may have to prepare the specifications as per the goods available in the market cancelling the earlier procurement. These procurements could not be completed during the relevant year and

expenditure has to be incurred within the provisions of the year that completed the procurement. Such cases have been based on the audit observation.

Even the conditions for charging delay charges for late delivery of goods have been mentioned in the tender some instances the supplier rejects the relevant payment.

We would like to inform that actions will be taken to make the procurement procedure more efficient enabling to carry out purchases in the due year focusing on special attention to the matters observed in the audit report.

6 Systems and Control

(a) Human Resources Management

(i) Even the prior approval is obtained to work on holidays when urgent situations are arisen approval has been obtained after delivering the duties on request of the Head of the Division. When an employee is necessary to report duty on a holiday to deliver an urgent duty assigned to him approval is obtained verbally by a telephone call and later the proper approval is obtained by submitting the due form. In here priority is given to the necessity of the institute and capacity to fulfill it.

(ii) Since the attendance in the attendance register is recorded in line with the finger machine the records in the register is accurate even if it is not certified by a relevant officer. However attention will be paid to certify the attendance register as pointed out in the audit report.

(b) Financial Control

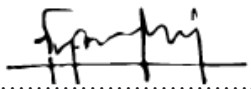
(i) As observed in the audit report payments were made for all the vouchers based on relevant annexures. Actions were already taken to keep the seal.

(ii) The institute currently uses the same form that is used to apply overtime in applying for duties on holidays.

(c) Operational Control

(i) In updating the files in relevant to leave out of the country sometimes approval of the Ministry is not received on due dates and files are updated immediately on receipt of relevant information.

(ii) Leave entitle to an officer is obtained by mentioning the date for reporting the duty after returning. However a letter has not been received yet to inform the duty report and actions will be taken to obtain this letter in future.



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