SUMMARY REPORT
ON
THE 3rd ITU GREEN STANDARDS WEEK

16-20 September 2013
Madrid, Spain

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On Behalf
MALAYSIAN TECHNICAL STANDARDS FORUM BHD

INTRODUCTION

The event is being organized by ITU and hosted by Telefónica at its headquarters in Madrid, Spain, 16-20 September 2013. The main purpose is to raise awareness of the importance and opportunities of using ICT standards to build a green economy and shape smart sustainable cities.

The Study Groups of ITU's Telecommunication Standardization Sector (ITU-T) assemble experts from around the world to develop international standards known as ITU-T Recommendations which act as defining elements in the global infrastructure of information and communication technologies (ICTs).

Standards are critical to the interoperability of ICTs and whether we exchange voice, video or data messages, standards enable global communications by ensuring that countries' ICT networks and devices are speaking the same language.

Members of the Malaysian delegation to the meeting include:

a. En. Faizal Abdul Rahman (SKMM)
b. Cik Suhada Alias (SKMM)
c. Mr Eric Ku Yee Fei (MTSFB/iTrain)
d. En Reza Mohammad Aidid (MTSFB/Maxis)
e. Norazlina Dato' Ghazali (MTSFB/Office Bearer)

PROCEEDINGS

The event tackles agendas featuring 'Smart Sustainable Cities', e-waste, mobile device eco-rating schemes, and climate monitoring and disaster warning using submarine communications networks with the following proceedings:

➢ **16 September 2013**: ITU, UNEP, UNU, CEDARE Forum on E-waste
➢ **17 September 2013** (morning): Forum on Greening Mobile Devices: Building Eco-Rating Schemes
➢ **17 September 2013** (afternoon): 2nd Meeting of the Focus Group on Smart Sustainable Cities
➢ **18 September 2013**: High Level Segment on Smart Sustainable Cities
➢ **19-20 (morning) September 2013**: 3rd ITU/WMO/UNESCO IOC Workshop on Propelling a Pilot Project on Green Cables
➢ **20 September 2013** (afternoon): Closed Meeting of the ITU/WMO/UNESCO IOC Joint Task Force on Submarine Communications Networks For Climate Monitoring and Disaster Warning

1. ITU, UNEP, UNU, CEDARE FORUM ON ENVIRONMENTALLY SOUND MANAGEMENT OF E-WASTE

Session 1 – Quantification and Qualification of the E-waste Challenge
E-waste is the fastest growing component of the municipal solid waste stream. This session will discuss the challenges related to the quantification and qualification of Waste Electrical and Electronic Equipment (WEEE) produced, in order to ensure e-waste generation forecasts and sound recovering of harmful substances such as toxic heavy metals.
Moderator: Silvia Guzmán Araña, Global Director of Sustainability & Environment, Telefónica
Speakers:
- **Federico Magalini**, EWAM Project Manager, United Nations University (UNU): *Quantification and Qualification of the E-Waste Challenge*
- **Scarlett Fondeur Gil**, Economic Affairs Officer, UNCTAD: *International coordination to measure the ICT sector: Producing statistics to inform E-waste policies*
- **José Pérez Garcia**, Chief Executive Officer of Recyclia Spain and President of Tragamovil, Spain: *WEEE Management Model: A Challenge / a Reality ?*

Benefits
Allow the industry to better under about E-waste in the following context:

HOW to quantify WEEE?
- Contain toxic substances
- Other relatively harmless
- Contain concentration of valuable resources
- Some are heavy, other light
- UNU-55 classification has been used to compile harmonized e-waste statistics

E-waste statistics (data) Challenges:
- Multiple sources of data
- Lack of a single internationally agreed classification of e-waste, difficult to assess the «e», and second-hand trade
- Increasing complexity of waste stream

E-waste data allows countries to make decisions on:
- Managing e-waste:
  - Treatment standards and infrastructure vs. costs
  - Establishing and harmonizing regulatory frameworks
  - Cost, environmental protection
- Developing a sustainable ICT sector while protecting the environment
- Seizing economic opportunities: jobs, recycling, "greening" foreign investment
- Establishing public-private cooperation

Recommendation and follow-up
We should compile the definition of E-waste as a term of reference for the industry.

Session 2 – The role of policies, standards and regulations for effective e-waste management

A comprehensive waste management approach, which encompasses environmental and socio-economic considerations, is crucial to help countries and key stakeholders to adopt and improve an effective sound e-waste management. This session will discuss the importance of policies, standards and regulatory frameworks on e-waste issues.

Moderator: Carmen Martín Marino, Head of Electrotechnology and ICT Standardization, Standardization Department, AENOR: *The Role of Policies, Standards and Regulations for Effective e-Waste Management*

Speakers:

- **Matthias Kern,** Senior Programme Officer, UNEP Basel Convention: *E-waste: Priority Waste Stream under the Basel Convention*
- **Cristina Bueti**, Advisor, ITU and **Flavio Cucchietti**, Vice Chairman of ITU-T Study Group 5: *Overview of ITU activities on e-Waste:*
- **Helen Cynthia Nakiguli**, Environment Management Specialist, Uganda Communication Commission (UCC): *Model Policy Framework on E-waste Management in the East African Region*
- **Paolo Gemma**, Senior Expert Energy & Green ICTs, Huawei: *E-Waste: Huawei Action*
- **Belén Gállego Peire**, Technician, Recycling Promotion Department, Catalan Waste Agency (Agència de Residus de Catalunya): *The organisation of WEEE collection in Catalonia*

Benefits

There are numbers of policies, standards and regulations for E-waste already created in the world which can be a reference to MTSFB. Below is the example discussed in the conference:

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

- Adopted on 22 March 1989
- Entered into force on 5 May 1992
- 180 Parties to the Convention as of September 2013
- E-waste is listed in Annex VIII as A1180 (hazardous waste) and Annex IX as B1110 (waste containing materials with hazardous characteristics)

The document can be downloaded at http://www.basel.int/Portals/4/Basel%20Convention/docs/text/BaselConventionText-e.pdf

Mobile Phone Partnership Initiative (MPPI)

In 2002 the Mobile Phone Partnership Initiative (MPPI) was launched, during the sixth meeting of the Conference of the Parties to the Basel Convention, when 12 manufacturers signed a Declaration entering into sustainable partnership, with the Basel Convention and in cooperation with other stakeholders, to develop nd promote the environmentally sound management of end-of- life mobile phones. In addition three telecom operators also signed a Declaration entering into sustainable partnership in July, 2005. The event is set to tackle an agenda featuring 'Smart Sustainable Cities', e-waste, mobile device eco-rating schemes, and climate monitoring and disaster warning using submarine communications networks.

The objectives of the partnership are to:
- Achieve better product stewardship;
- Influence consumer behaviour towards more environmentally friendly actions;
- Promote the best disposal/recycling/refurbishing options;
- Mobilize political and institutional support for environmentally sound management;
- Create an initiative that could be replicated to build new public/private partnerships for the environmentally sound management of hazardous and other waste streams.

MPPI Documents and Guidelines can be downloaded at http://archive.basel.int/industry/mppi/documents.html

Partnership for Action on Computing Equipment (PACE)
PACE products that have been developed:
- Guidelines on Environmentally Sound Testing, Repair and Refurbishment
- Guidelines on Environmentally Sound Material Recovery and Recycling
- Overall Guidance Document on Environmentally Sound Management of Used and End-of-Life Computing Equipment

It can be downloaded at
http://archive.basel.int/industry/compartnership/

ITU-T Study Group 5 "Environment & Climate Change"
ITU-T SG5/WP3 work areas: Q 13/5 - Environmental impact reduction including e-waste
It can be downloaded at
http://www.itu.int/en/ITU-T/studygroups/2013-2016/05/Pages/q13.aspx

2 case studies has been discussed:
- Paolo Gemma, Senior Expert Energy & Green ICTs, Huawei: E-Waste: Huawei Action
- Belén Gállego Peire, Technician, Recycling Promotion Department, Catalan Waste Agency (Agència de Residus de Catalunya): The organisation of WEEE collection in Catalonia

Recommendation and follow-up
- Government commitment and related institutions is critical,
- Consistent M&E of policy implementation to enable incorporation of emerging issues like rapid changes in technology, changes in statistical data of e-waste generation- effective improvement of e-waste management systems,
- Strong partnerships and collaborations,
- Adequate awareness framework

Session 3 – Training and Awareness Raising on the E-waste Challenge
This session will highlight the importance of providing trainings on e-waste management and of promoting the environmentally sound handling of used and end-of-life electronic equipment at producer, recycler and consumer level, also fostering strategic public-private partnerships.
Moderator: Flavio Cucchietti, Vice Chairman of ITU-T Study Group 5
Speakers:

- **Hossam Allam**, Regional Programme Manager, Strategic Concerns Programme, Centre for Environment and Development for the Arab Region and Europe (CEDARE): *eLearning for eWaste*
- **Igor Boguslavsky,** President and CEO, Belmont Trading: *Challenges and Benefits of Electronic Recycling Programs*
- **Gilles Dretsch**, Waste Management Corporate Coordinator, Orange: *E-waste challenges and opportunities for Orange in AMEA zone*
- **Daniel Seager**, Take Back Regulations Manager EMEA, Environmental Business Management Organisation (EBMO), HP: *E-waste in emerging markets, challenges and opportunities. An OEM perspective*

Benefits
We can obtain E-waste e-learning for Free of Charge at the following e-learning website:
CEDARE (Centre for Environment and Development for the Arab Region and Europe http://cedare.org/moodle/
We may also take exam at USD50 if you intend to get a certificate of e-waste management.

3 Case Studies has been discussed in this session.
- Belmont Trading Company
- Orange, UK
- Hewlett Packard Company

And it can be summarized with the below challenges:
- Educating consumers that electronic recycling is good for the environment and therefore benefits everyone in society.
- Logistics - offering collection points outside of major metropolitan centers is quite challenging and expensive.
- Lack of legitimate in-country recycling/refining facilities requires all materials to be exported increasing costs and complexities.
- Compliance with import-export regulations especially when the exporter of records is not the original importer of records.
- Remaining competitive in spite of high logistics and handling costs

Recommendation and follow-up
Collaboration is essential in order to ensure the success of raising the awareness of e-waste.
- The solution will revolve around changing mindsets
- Stimulating drivers for sustainable business models to recover value from all e-waste
- Creating markets for fractions of e-waste which currently have no market

Session 4- Best Practices for Designing E-waste Management Systems
This session will provide an overview of best practices and standards to promote a life cycle approach in the design of ICT equipment (eco-design), taking more account of how to avoid the use of heavy pollutants and of how components in a device can be disassembled, recycled and reused.

Moderator: Ernesto Lluch, Director, Garrigues Medio Ambiente Ltd. Spain **Maya Ormazabal**, Head of Environment, Telefónica S.A.: eWaste nin Telefónica
- **Markus Terho**, Head of Sustainability, Nokia: *Designing Products for End-Of-Life*
- **Javier Gonzalez**, Managing Director Iberia, Dataserv Spain: *Eco-design and the impact in ICT assets End Of Life*

Benefits
Importance of Green ICT Standards for E-Waste Management
- Lifecycle analysis approach
  Expertise on ICTs, environment and climate change
- Efficiency & transparency on e-waste management
  Promotion of eco-design, re-use and responsible management
- Consensus among all parties
  Discussion between governments and ICT companies (manufacturers & operators)

Nokia's case study - Designing Products for End-Of-Life
- Designing for Recycling is a broad topic for Product Design
  - Functionality, technology, materials
  - Technically products are challenging, they contain almost every element from the periodic table
- Circular Economy need across-industries dialogue and a global view
  - Product use patterns and WEEE/EPR
  - People do not know that you can recycle electronics -> collection amounts are low
  - Recyclers need to introduce advanced recycling technology to get all possible materials from mobile phone in an environmentally sound manner
- Better Solution:
  - All stakeholders work together (government, manufacturer, retailer, operator, recycler, consumer)

Recommendation and follow-up
Eco-design and the impact in ICT assets End Of Life.
- Eco design, a powerful tool to reduce environmental impact
- Reusing is good for environment and cost effective

2.   FORUM ON GREENING MOBILE DEVICES: BUILDING ECO-RATING SCHEMES

Session 1- Eco-Rating Schemes And The Need For Standardization
This session will highlight the need to have a standardized approach for eco-rating schemes for mobile phones, taking into consideration market trends and the industry response.

Moderator: Paolo Gemma, Working Party 3 Chairman of ITU-T Study Group 5
Speakers:
1. **John Smiciklas,** Principal, MRDJ Assessment Inc.: *Review of Mobile Handset Eco-Rating Schemes*

2. **Markus Terho**, Head of Sustainability, Nokia: *Communicating Sustainability of Handsets – Nokia Experiences*
3. **William F. Hoffman,** Senior Scientist, UL Environment Inc.: *UL 110 – Standard for the Sustainability of Mobile Phones*
4. **Elisabeth Dechenaux**, R&D Engineer, Expert in LCA, ORANGE Labs: *ORANGE Environmental Labeling for mobile and fixed devices*

Benefits

Mobile telecom operators and other organizations around the globe have developed various eco-rating schemes to communicate the sustainability performance of their product to consumers.

ORANGE Case Study
- ORANGE Eco labelling was developed with WWF and BIO Intelligence Service
- First launched on Nov 2009 in France it has been applied to other ORANGE operators including Spain, OBS, Romania and Armenia
- Main achievement of the program:
  - o New methodology published each year
  - o Development of an automatic web tool
  - o Implementation of audit for 14 suppliers via PWC
  - o Rated total of 325 mobiles and 121 DECT
  - o Contributed to GSMA and ITU unique solution for 2015
- Provided recommendation for ITU standards on eco labelling for telecom devices from key learning of own implementation

Key challenges faced by operator in implementing eco-rating:
- Data gathering
- Quality verification
- Comparability and relevance fauctor

ITU-T deliverables
- ITU-T undertook study in 2012 to review the various initiatives and determined a potential framework for global standardised methodology for eco-labels.
- ITU-T Study Group 5 is now looking into the potential basis for a standardised eco-rating mobile handset.

Recommendation and Follow-Up
- Eco-rating should be implemented by local operators to help consumers make informed decision **a**nd drive industry improvement to reduce product life cycle impact.
- However implementation of eco-rating should be put on hold until a harmonized standard is released by ITU-T to ensure uniformity in the industry.

Session 2- Eco-Rating Schemes: Driving Green Innovation
This session will discuss possible challenges related to the implementation of a standardized eco-rating scheme and the role that the ICT sector can play to drive green ICT innovation for mobile devices. It will also provide some suggestions on what should be included in the draft ITU-T recommendation on eco-rating schemes.

Moderator: Ahmed Zeddam, Chairman of the ITU-T Study Group 5 and Chairman of the Forum
Speakers:
1. **Anders Andrae,** Senior Expert, Energy Efficiency/Emission Reduction/Ecodesign /Sustainability/LCA, Huawei Technologies: *Requirements on a standardized mobile device eco-rating*
2. **Alice Valvodova**, Manager, Information and Communications Technology, BSR: *Towards a Common Understanding of Sustainability- Stakeholder Engagement in International Standards Development*
3. **James Taplin**, Principal Sustainability Advisor, Forum of the Future: *Keeping it simple – the characteristics of a successful eco rating scheme*
4. **Casper Jorna**, Manager, Business Development & Sustainability, Vodafone Group: *Eco rating schemes and Consumers – What do they care?*

<u>Benefits</u>
Successful eco rating scheme should be set to drive green innovation as the goal. Rating systems and labelling can drive progress to address sustainability concerns of increasing mobile devices.

Vodafone case study:
- Vodafone launched their Eco rating in 2011, being live in 11 countries and has rated over 200 devices
- In Northern EU 7%-10% while Southern EU 25%-27% of consumers considers environmental impact in choosing new mobile devices
- Sustainability still comes far behind importance of price, features and brand
- There's many eco-rating in the market thus the need for harmonization and standardization

Recommendation by Huawei:
- There is a significant difference in the output using Life Cycle Analysis (LCA) and "locked" Eco Rating (ER) metrics
- To close the gap the requirements identified are in terms of
  - Clarity – It should be clear how a certain ER is obtained
  - Transparency – It should be understood which CO2e gives a certain ER for a certain specification
  - Validation – Each specification and criteria validation should be clarified explicitly

The key success criteria for eco-rating should be:
- Simple
- Accessible
- Relevant
- Intentional
- Non-contentious

- Transparent
- Self-contained
- Challenging
- Evolving

Recommendation and Follow-Up
Eco-rating schemes could be used as a tool to drive Green ICT innovation in the industry especially in reducing product life cycle impact to the environment.

3. *HIGH LEVEL SEGMENT ON SMART SUSTAINABLE CITIES*

Session 1- Building Smart Sustainable E Cities: Shaping A New Digital World

This session will explore the role ICTs play in shaping smart sustainable cities. ICT is the catalyst to transform cities into a place for opportunities and economic growth improving the quality of life of their citizens through the implementation ICT solutions into their urban planning and service.

Moderator: Ahmed Zeddam, Chairman of ITU-T Study Group 5
Speakers:
1. **Francisco de la Torre**, Mayor, Malaga Smart City
2. **Concepción Gamarra**, Mayor of Logroño and Vice President of the Spain Network of Smart Cities (RECI): *RECI, Red Española de Ciudadades Inteligentes*
3. **Bettina Tratz-Ryan**, Research Vice-President, GARTNER Inc.: *Smart Cities enable Smart Citizens*
4. **Mercè Griera I Fisa**, Scientific Officer, European Commission: *Smart Cities and Communities - Activities at EU level*
5. **Javier Gil Arenales**, Director, Smarter Cities Business Development, Smarter Planet Growth Initiatives Spain, Portugal, Greece and Israel, IBM: *Data, a Critifcal Resource for Smarter Cities*

Benefits

Two case studies was presented and discussed:
- *Malaga Smart City* – uses ICT to improve management, reduce cost of service delivery and create value for citizens.
- *Spain Network of Smart City (RECI)* – objective is to exchange experiences and work together to develop a sustainable management model and improve the quality of citizens' life.

Activities at EU level
- *The Green Digital Charter* – Political commitment and specific actions towards ICT-enabled sustainability targets and greening ICT itself to connect and enable European cities
- *European Innovation Partnership on Smart Cities and Communities* – The European Commission focuses its efforts on smart cities across portfolios to optimise outputs and ensure public policy coherence
- *H202* - A European Research & Innovation funding programme (2014-20) with a considerable size (77 billion Euro) to support a set of the Smart Cities and Communities SIP

What citizens and city leaders want to become "smarter"?
- Leveraging information to make better decisions
- Coordinating resources and processes to operate efficiently
- Anticipating problems to resolve them proactively

Technology can help these through
- Analyzing data through analytics technology and leveraging multiple data sources
- Leveraging citizens and business and fostering collaboration
- Leveraging predictive algorithms to resolve issues proactively

Recommendation and Follow-up
- Review best practices of implementing successful Smart Cities
- Encourage a solutions based approach that maps an initiative to a citizen benefit immediately
- Build a roadmap of ICT projects that present swift benefits to urban environment and citizens, and focus on the gradual integration of those in the broader smart ecosystem

Session 2- Building Smart Sustainable Cities: The Industry Response

The ICT industry plays a key role in materializing cost-efficient technological solutions to make worldwide cities smarter and cleaner at every step in their planning, design, financing, commissioning, construction and operation. This session will look at the ICT industry's response to the need of building more sustainable and inclusive urban environments by spurring on new ways of integrating technologies and data.

Moderator: Sekhar Kondepudi, Associate Professor, National University of Singapore and Working Group Coordinator of the ITU-T Focus Group on Smart Sustainable Cities

Speakers:
1. **José Luis Diez Huber,** Head of Smart Cities, Telefónica Spain: *Smart Cities: The role of technology in the city*
2. **Minoru Takeno**, Head, Corporate Environmental Strategy Unit, Fujitsu Ltd.: *The Power of ICT for Sustainable Smart Cities*
3. **Eliseo Sánchez Trasobares**, Marketing and Solutions Director, Huawei: *Building a Future oriented Smart City*
4. **Alberto Zilio**, Director, Public Affairs Europe, AT&T: *The Connected Cities*
5. **Pernilla Bergmark**, Master Researcher, Ericsson: *Leveraging ICT in Smart Sustainable Cities*

Benefits

Each presentation showcased technology & solutions of their organization:

Telefonica – Smart City Platform & Services with Big Data capabilities by centralizing information on one platform and transformation of services.

Fujitsu
- Transportation – Real time integrated road management system to reduce traffic jam and energy consumption of vehicle
- Energy – Energy harvesting technology for M2M to build autonomous wireless sensor system for monitoring of facilities and infrastructure
- Healthcare – Regional medical network solution to enable cross-referencing of patient medical information
- Safety – Compact container data center to ensure resilient information processing by decentralization

Huawei
- Virtual desktops and Green data centers
- Energy efficiency collaboration projects
- UCC technologies

- Healthcare cloud
- Video surveillance

AT&T – Information and Communication technology solution e.g. Digital Life – Home security

Ericsson – Sustainable City Solutions – a methodology evolution

Recommendation and Follow-up
Review and evaluate available technologies and solutions available for possible introduction into Smart City ICT requirements.

Session 3- Building Smart Sustainable Cities: The Need of Cities
A city can only be sustainable if it is shaped to be economically, socially, environmentally and technologically sound. This session will present some worldwide examples of cities achieving sustainability by providing clean and efficient solutions for urban challenges, such as optimising constrained resources; reducing a city's environmental impact; and improving citizens' quality of life within urban settings.

Moderator: Daniela Torres, Working Group Coordinator of the ITU-T Focus Group on Smart Sustainable Cities
Speakers:
1. **Roberto Saracco**, Director, Future Centre, Telecom Italia: *The IEEE Urbanization Challenge*
2. **Ziqin Sang**, Technical Director, Fiberhome Technologies Group, China: *Mode of building Smart and Sustainable Cities*
3. **John Smiciklas**, Director, Energy and Environment, BOMA, Canada: *BOMA BEST Energy & Environment Report - Benchmark Environmental Data for Canadian Commercial Real Estate*
4. **Pablo Bello**, Secretary General, Ahciet: *Building Smarter Cities in Latin America*

Benefits
A smart city model in the EU encompasses the following holistic view:
- Economy
- Environment
- Governance
- Living
- Mobility and people

Two countries shared their Smart Cities development and focus:
- China
  - ICT infrastructure pilot (Chengdu, Shanghai, Chongqing, Nanjing…etc)
  - Smart industry driven (Tianjin, Hangzhou, Guangzhou, Xi'an…etc)
  - Intelligent service booting (Beijing, Shenyang, Wuhan, Shenzen…etc)
- Latin America
  - Smart government
  - Smart people
  - Smart mobility

Recommendation and Follow-up
- Review current strategic roadmap and criteria in creating smart sustainable cities taking into account the definition for a Smart City.
- Close cooperation and contribution from all sectors is important through standardization and activities such as forums and workshops.

Session 4 – The Role of Green ICT Standards To Promote Smart Sustainable Cities
This session will look at how efficient policies, comprehensive strategies, international standards and methodologies can help revitalize cities and support their transition towards a low carbon economy, safeguarding quality of life while minimizing their environmental footprint.

Moderator: Flavio Cucchietti, Vice Chairman of ITU-T Study Group 5: *Shaping Smart Sustainable Cities*
Speakers:
1. **Ahmed Zeddam**, Chairman of ITU-T Study Group 5 : *The Role of ITU in Shaping Smart Sustainable Cities*
2. **Yoshiaki Ichikawa**, Senior Chief Engineer, Hitachi Ltd. and Chairman of ISO TC 268/SC1: *Standardization Activities on Smart Cities in ISO and IEC*
3. **Juan Corro**, Head of Cabinet of the Secretary of State for Telecommunicactions and Information Society, Spain

Benefits
ITU has existing forums to shape Smart Sustainable Cities:
- ITU-T Study Group 5: Environment and Climate Change
  - Working Party 1: Damage prevention and safety
  - Working Party 2: Electromagnetic fields: emission, immunity and human exposure
  - Working Party 2: ICT and climate change
- Focus group on Smart Sustainable Cities – established in February 2013
- Focus group on Smart Water Management – established in June 2013

ISO also has related forums:
- ISO/TC 268/SC 1:Smart Community Infrastructure
  - WG 1: Infrastructure metrics – Scope: Smart community infrastructure metrics
  - AHG 1: System aspects – Scope: Common framework for development and operation of smart community infrastructure

Recommendation and Follow-up
Upgrade membership from an observing country to a participating country in order to contribute and gain experience from the forum.

4. 3RD ITU/WMO/UNESCO IOC WORKSHOP ON "PROPELLING A PILOT PROJECT ON GREEN CABLES" SUBMARINE COMMUNICATIONS NETWORKS FOR CLIMATE MONITORING AND DISASTER WARNING

Understanding the deep ocean is indispensable to sustaining humankind on planet Earth and avoiding major disruptions to the climate and life systems, yet only limited funds are dedicated to collecting data in the deep ocean and at the seafloor. A new generation of scientific cabled ocean observatories is emerging at a few selected sites, but there is a need and opportunity to extend observations and monitoring over much wider area of the global oceans.

Submarine telecommunication cables equipped with sensors to measure key variables such as water temperature, pressure and acceleration on the ocean floor are viewed as vital to monitor climate change and to provide tsunami warnings. Developing such a real-time ocean-wide monitoring system of green cables is a bold vision that has full chances for success. Some pioneering scientific observatory projects have already proven the concept, launching ambitious initiatives in small regions of the deep ocean.

This Joint Task Force (JTF) Workshop in Madrid in September 2013 workshop focuses on the strategic steps for the pilot project to facilitate the deployment of dual-purpose submarine telecommunication cables in the high seas. It will explore scientific and societal needs, new engineering technology requirements sensor standards and testing protocols, business opportunities, and legal implications, all to promote the development of submarine telecommunication cable projects that wish to be equipped with a suitable suite of sensors.

Opening Ceremony
o **Silvia Guzmán Araña,** Global Director of Sustainability & Environment, Telefónica
o **Malcolm Johnson**, Director, Telecommunication Standardization Bureau, International Telecommunication Union (ITU)
o **Thorkild Aarup**, Head of Section for Tsunami Early Warning Systems, Intergovernmental Oceangraphic Commission of United Nation Educational, Scientific and Cultural Organization (UNESCO-IOC)
o **Edgard Cabrera,** Chief Ocean Affairs Division, World Meteorological Organization (WMO) [

Summary of the objectives, activities and future plans of the ITU/WMO/ UNESCO-IOC Joint Task Force to investigate the potential of using submarine telecommunications cables for ocean and climate monitoring and disaster warning (JTF)

Chris Barnes, Professor Emeritus, University of Victoria, Canada and Chairman of the JTF
Keynote speech:
Nigel Bayliff, Chief Executive Officer, Huawei Marine Networks: *Perspectives on Buying & Building Green Cables*]

Session 1: Key scientific questions being addressed, latest ideas of most suitable sensors, limiting factors

The Science and Society Committee has developed draft texts for a JTF White Paper dealing with the key scientific issues of the climate, tsunamis, and seismic hazards. Looking towards advancing the science in the future when there is access to green cables: how could large numbers of sensors advance climate and tsunami science; what would be the most suitable sensors; what would be key limiting factors; how best to advance the operational uses of the green cable data (e.g. rapid hazard response, finite-fault analysis of earthquakes for tsunami warning). The management of green cable data can be accommodated by the substantial capabilities that currently exist to both achieve and distribute scientific climate, tsunami, and earthquake data through existing data centres.

Moderator: Chris Barnes, Professor Emeritus, University of Victoria, Canada and Chairman of the JTF
Speakers:
> **1. David Murphy**, Director of Science, Sea-Bird Electronics: *The Feasibility of Measuring Abyssal Ocean Temperatures with Thermometers Embedded in Trans-Ocean Communication Cables*
> **2. David Meldrum**, Research Fellow, Scottish Association for Marine Science (SAMS) and JCOMM Observations Programme Area (UNESCO-IOC): *Science and Societal Requirements for Sensors in Submarine Telecommunication Cables*
> **3. Thorkild Aarup**, Head of Section for Tsunami Early Warning Systems, Intergovernmental Oceangraphic Commission of United Nation Educational, Scientific and Cultural Organization (UNESCO-IOC)
> **4. Edgard Cabrera,** Chief Ocean Affairs Division, World Meteorological Organization (WMO): *Oceans in the UN and International arena The role of WMO*

Session 2: Latest ideas on possible options for designing the green cable, limiting factors

The Engineering Committee has been exploring options for designing the green cables and possible limiting factors. What is the current thinking of industry for modifying cables or repeaters to incorporate suitable sensors? Specifically, for the pilot project: what are the engineering requirements, and what would be the scope and the costs of the wet demonstrator phase. The work would incorporate sensor recommendations from the Science and Society Committee and this workshop. The wet demonstrator could deploy a full-suite of science sensors on an industry system or on one of the existing science cabled observatories, but including communications and packaging that would test a dual-use deployment. The latter option could be completed in 1-2 years.

Moderator: David Meldrum, Research Fellow, Scottish Association for Marine Science (SAMS) and JCOMM Observations Programme Area (UNESCO-IOC)
Speakers:
> **1. Christian Meinig,** Director of Engineering, National Oceanic and Atmospheric Administration (NOAA), United States: *Preliminary Ideas on Sensor Configurations and Challenges for the Green Cables*

2. **Peter Phibbs**, Mallin Consultants Ltd. : *Green Subsea Cable System*
3. **Maurice Kordahi,** TE SubCom: *Undersea Technology Latest ideas on possible options for designing the green cable*

Session 3: Open Discussion

Moderator: David Mel Moderator: David Meldrum, Research Fellow, Scottish Association for Marine Science (SAMS) and JCOMM Observations Programme Area (UNESCO-IOC)

Session 4: Protocols and schedule for testing the green cable in tanks and then on a cabled observatory and possibly on a new cable deployment

This session will examine in more detail the options discussed in Session 2. What options or offers exist to test the green cables industry tanks or on new cable deployments. Are there options or advantages to use scientific cabled observations? What specific protocols need to be addressed and what schedule opportunities exist in the near future?

Moderator: Christian Meinig, Director of Engineering, National Oceanic and Atmospheric Administration (NOAA), United States
Speakers:
1. **Ron Rapp**, Director, Industry and Marine Liaison - Undersea Cable Maintenance, TE SubCom: *Requirements and Options – Wet Demonstrators for Sensors and Interfaces to Telecom Cables*
2. **Jean-Francois Rolin**, European Seas Observatory NETwork (ESONET)
3. **Canjun Yang**, Professor, Zhejiang University: *Review of the developing technologies of cabled ocean observatory in China*

Session 5: Potential industry support and concerns, input and partnership

What are the benefits, interests and concerns of industry in green cables and in the pilot project in particular? What balance does industry see between commercial, operational and public service benefits of green cables ? What suitable partnerships could be developed between industry, government, academia and NGOs? How can JTF and its three sponsoring agencies foster that collaboration?

Moderator: Kent Bressie, Partner and Head of International Practice, Wiltshire & Grannis LLP
Speakers:
1. **Guillen Lopez**, Product Engineer, Nexans Norway AS: *Marine Surveillance System, LoVe Project*
2. **Nigel Bayliff**, Chief Executive Officer, Huawei Marine Networks: *Industry Support and Potential Partnerships*
3. **Simon Webster,** NEC: *Telecom Cables for Monitoring: Reconciling Differing Objectives*

Session 6: Estimates of required funding for green cable, modifications, sensor suite and tank/ observatory testing

What are the estimated costs expected to be incurred, and over what timeframe, in a) the testing and b) the development phases of green cables? What density of sensors along a green cable is desirable and what would be the incremental cost? What are the relative costs of testing the pilot project by industry (direct or in-kind costs) versus a scientific cabled observatory?

Moderator: Chris Barnes, Professor Emeritus, University of Victoria, Canada and Chairman of the JTF
Speakers:
1. **Masuo Suyama**, General Manager, Fujitsu: *Estimates of required funding for green cable development phase*
2. **Michael Costin**, Director, International Cable Protection Committee: Perspectives/*Questions/ Issues*

Session 7: Open Discussion
Moderator: Chris Barnes, Professor Emeritus, University of Victoria, Canada and Chairman of the JTF

Session 8: Business Plan: potential sources of funding and in-kind support for pilot project and also for overall JTF project support

What are the main elements of a Business Plan that would secure adequate funding or in-kind support for both the green cable pilot project and the activities of the JTF? What could be the potential balance of support from industry, government, academia and NGOs. Are there special grant application opportunities within, for example, the EU Commission, the US National Science Foundation, or other foundations and funding agencies?

Moderator: Peter Phibbs, Mallin Consultants Ltd.
Speakers:
1. **Antoine Lecroart**, Business Development Director, Alcatel Lucent Submarine Networks: *Green Cable: Any idea of how much it would cost ?*
2. **Michael Costin**, Director, International Cable Protection Committee: *Business Plan Funding ?*
3. **Paul Holthus,** Founding CEO and President, World Ocean Council: *"Smart Cables": Potential Resources and Support Through Multi-Industry Collaboration*

Session 9: Next Steps and Wrap-up: agreed actions, summary comments and advice to JTF
   o **Chris Barnes**, Professor Emeritus, University of Victoria, Canada, and Chairman of the JTF

Closing Ceremony
o **Cristina Bueti**, Advisor, International Telecommunication Union (ITU)
o **Thorkild Aarup**, Head of Section for Tsunami Early Warning Systems, Intergovernmental Oceanographic Comission of United Nations Educational, Scientific and Cultural Organization (UNESCO-IOC)
o **Edgard Cabrera,** Chief Ocean Affairs Division, World Meteorological Organization (WMO)

Benefits

A project to pursue the concept of using telecommunication undersea cables for climate monitoring and disaster warning was further developed at a recent event, held as part of the 3rd ITU Green Standards Week in Madrid.

These new 'green cables' will enable the collection and delivery of data to the scientific community, and other industries such as fisheries and energy. The event consisted of a workshop on Propelling a Pilot Project on Green Cables followed by the 9th plenary meeting of the ITU/WMO/UNESCO-IOC Joint Task Force (JTF), a closed group meeting.

The idea of the JTF, with more than 80 members, is to develop a pilot project (a so-called 'wet demonstrator') with the active participation of cable suppliers, owners and researchers from existing ocean observatories, explained Chris Barnes, professor at the University of Victoria in Canada, and Chairman of the JTF.

Experts have deemed the project to be technically feasible with the JTF members now working on how to solve business, legal and economic issues. Specific issues discussed at the recent meeting included proposals for studies on Engineering Functional Specifications and the development of a business model. A communiqué soliciting funding for both is being prepared and will be sent to possible sponsors.

The JTF is also working on supporting publications including white papers on Science and Societal Requirements for Sensors in Submarine Telecommunication Cables and Engineering Functional Requirements for Supporting Sensors in Submarine Cables.

FINDINGS

The knowledge and insights gained from the Conference/Training Session would benefit the delegates in the area of work in Green ICT Working Group, especially in the following aspects:

a. In accordance with Green ICT Working Group's role in driving the Green ICT agenda, especially in the Green ICT standards and guidelines development for the country;
b. Provide leadership and subject matter expertise to drive the Green ICT Working Group;
c. Benchmark, review and adopt relevant best practices for the Green ICT Standards/Guidelines development; focusing on the following ITU-T recommendations:
    i. Recommendation ITU-T L.1400 (overview and general principles of methodologies for assessing the environmental impact of ICT)
    ii. Recommendation ITU-T L.1410 (methodology for environmental impacts of information and communications technologies (ICT) goods, networks and services)

iii.   Recommendation ITU-T L.1420 (methodology for energy consumption and greenhouse gas emissions impact assessment of information and Communication Technologies (ICT) in organisations.

CONCLUSION

Malaysian delegation continued active participation in the future ITU Green Standards Week as it is an important platform for Malaysian delegates to gain latest insights on the key standardization topics and regional issues discussed in ITU.

The key benefits for the MTSFB delegates are as follows:-
•   Gained knowledge on latest development in Green ICT Standards and related recommendations by ITU;
•   Raised the awareness of the importance and opportunities of using ICT standards to build a green economy and shape smart sustainable cities;
•   Gained knowledge in global trends in green ICT technologies in area such as Green Smart City, Smart Grids, ICT supply chain and e-Waste initiatives, shape smart sustainable cities

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