The Abdus Salam International Centre for Theoretical Physics

1964 40th anniversary 2004

School on Digital Radio Communications for Research and Training in Developing Countries

Organizer(s): S.M. Radicella, R.G. Struzak
Trieste - Italy, 09 - 27 February 2004

Venue: Adriatico Guest House Kastler Lecture Hall

Final programme

Monday, 9 February 2004 (Room:Adriatico Guest House Kastler Lecture Hall)

09:30 - 12:00	(Room: Adriatico Guest House (Lower Level 1)) **Registration**
14:00 - 14:30	**K.R. Sreenivasan, Director** / *ICTP, Trieste, Italy* **Opening Speech : "The Abdus Salam ICTP and ICT for Development**
14:30 - 15:00	**E. Longworth, Dir** / *Information Society Division, UNESCO HQs., Paris, France* **UNESCO and ICT for Development**
15:00 - 15:45	**Hamadoun I. Toure', Director** / *ITU Telecommunication Development Bureau, Geneva, Switzerland* **Public Lecture : "The ITU/BDT and ICT for Development**
15:45 - 16:15	--- Coffee break ---
16:15 - 17:00	**W. Luther** / *FCC, Washington, USA* **Information Technology and Telecommunications Impact on Developing Countries**
17:00 - 17:45	**Round Table Discussion**

Tuesday, 10 February 2004 (Room:Adriatico Guest House Kastler Lecture Hall)

09:00 - 09:30	**S. M. Radicella and R. Struzak** / *ICTP School Directors* **Opening Talk "Digital Radio Communications for Research and Training in Developing Countries**
09:40 - 10:10	**R. Saracco** / *TelecomItalia Lab, Torino, It* **The future of Telecommunications**
10:20 - 10:50	**G. O. Ajayi** / *NITDA, Abuja, Nigeria* **The Information and Communication Technologies in Africa**
11:00 - 11:20	--- Coffee break ---
11:20 - 11:50	**E. Pietrosemoli** / *EsLaRed, Universidad de Los Andes, Merida, Venezuela* **Wireless Networking in Venezuela**
12:00 - 12:30	**E. Ekuwem** / *TELEDOM International, Lagos, Nigeria* **Broadband wireless access solutions as platform to bridge the digital divide: a real life experience from Africa**
12:40 - 14:00	--- Lunch Break ---
14:00 - 14:30	**V. Dengkayaphichith, S. Okay, A. Longo** / *JHAI Foundation, Vientiane, Laos; JHAI Foundation, USA* **Laos: the JHAI Computer and Communication System**
14:40 - 15:10	**R. Biliki, PFnet Manager** / *Salomon Islands* **The experience of People First Network at Salomon Islands**
15:20 - 15:50	**A. A. Hasson, Founder** / *First Mile Solutions, Cambridge MA, USA* **Village Area Networks**
16:00 - 16:30	**A. Borsetti, Agent for Italy** / *Alvarion, Milano, Italy* **Model and technologies to build an efficient and scalable broadband data network for rural and growing areas**
16:40 - 17:00	**Coffee break**
17:00 - 18:30	**Open Discussion**
19:30 - 19:30	--- Get Together ---

Wednesday, 11 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 09:20	**S. M. Radicella and R. Struzak** / *ICTP School Directors* **Introduction to the School**
09:20 - 10:00	**J. Grassberger** / *ICTP-SCS, Trieste, Italy* **Introduction to the ICTP computer system**
10:00 - 10:20	--- Coffee break ---
10:20 - 11:20	**W. Luther** / *FCC, Washington, USA* **Role of Radio in Technology Applications**
11:20 - 12:20	**M. Fitton** / *Altera, UK* **Digital Modulation - 1**

12:20 - 14:00 --- Lunch Break ---

14:00 - 15:00 **E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela*
WiFi technology overview

15:00 - 16:00 **R. Struzak** / *ITU, Geneva, Switzerland*
Introduction to electromagnetic compatibility

16:00 - 16:30 --- Coffee break ---

16:30 - 18:30 (Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1))
LAB: "Safety Rules in the Laboratory, RF basics, Instrumentation, Measurement Units, dB math, etc."

Thursday, 12 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00 **M. Fitton** / *Altera, UK*
Digital Modulation - 2

10:00 - 10:20 --- Coffee break ---

10:20 - 11:20 **M. Fitton** / *Altera, UK*
Digital Modulation - 3

11:20 - 12:20 **R. Struzak** / *ITU, Geneva, Switzerland*
Introduction to radio regulations

12:20 - 14:00 --- Lunch Break ---

14:00 - 16:00 (Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1))
LAB: "Measurements on RF trasmission lines and cables characterization"

16:00 - 16:30 --- Coffee break ---

16:30 - 18:30 (Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1))
LAB: "Measurements on RF trasmission lines and cables characterization"

Friday, 13 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00 **R. Struzak** / *ITU, Geneva, Switzerland*
Radio propagation basics

10:00 - 10:20 --- Coffee break ---

10:20 - 11:20 **E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela*
Radio propagation issues in radiolinks design

11:20 - 12:20 **W. Luther** / *FCC, Washington, USA*
Present and Future of Broadband and UWB technologies

12:20 - 14:00 --- Lunch Break ---

14:00 - 16:00	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Power measurements on a RF chain"**
16:00 - 16:30	--- Coffee break ---
16:30 - 18:30	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **Review of the Week, Q&A**

Monday, 16 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00	**C.Fonda** / *ICTP Trieste Italy* **Networking Basics**
10:00 - 10:20	--- Coffee break ---
10:20 - 11:20	**C.Fonda** / *ICTP Trieste Italy* **Routing and Subnetting**
11:20 - 12:20	**E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela* **Hardware for WLANs**
12:20 - 14:00	--- Lunch Break ---
14:00 - 16:00	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Installation and configuration of a WLAN"**
16:00 - 16:30	--- Coffee break ---
16:30 - 18:30	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Introduction to Linux. Routing and Subnetting with Linux"**

Tuesday, 17 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00	**H. Cerdeira and E. Canessa** / *ICTP, Trieste, Italy* **e-Journals Delivery Service**
10:00 - 10:20	--- Coffee break ---
10:20 - 11:20	**C.Fonda** / *ICTP Trieste Italy* **Spread Spectrum Radio**
11:20 - 12:20	**E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela* **The 802.11a/b/g family of protocols**
12:20 - 14:00	--- Lunch Break ---
14:00 - 16:00	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "NoCat Auth"**
16:00 - 16:30	--- Coffee break ---
16:30 - 18:30	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Working with RF Cables and Connectors"**

Wednesday, 18 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00	**E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela* **5GHz technologies, 802.16 protocol and WiMAX**
10:00 - 10:20	--- Coffee break ---
10:20 - 11:20	**R. Struzak** / *ITU, Geneva, Switzerland* **Antenna theory basics**
11:20 - 12:20	**E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela* **Mesh Networks**
12:20 - 14:00	--- Lunch Break ---
14:00 - 16:00	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Building an omnidirectional antenna for WiFi"**
16:00 - 16:30	--- Coffee break ---
16:30 - 18:30	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Introduction to Antenna Measurements: SWR and antenna tuning, Gain, Radiation Pattern"**

Thursday, 19 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00	**E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela* **Advanced technologies for Antennas**
10:00 - 10:20	--- Coffee break ---
10:20 - 12:20	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **R. Flickenger** / *Seattle Wireless, Seattle, USA* **LAB: "Pebble and Wireless Tools for Linux"**
12:20 - 14:00	--- Lunch Break ---
14:00 - 16:00	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Building a 'biquad' antenna for WiFi"**
16:00 - 16:30	--- Coffee break ---
16:30 - 17:30	**Geometry of parabolic reflectors**
17:30 - 18:30	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Using a biquad antenna as feeder for a parabolic dish"**

Friday, 20 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00	**R. Struzak** / *ITU, Geneva, Switzerland* **Basics of satellite-based and high-elevation platform-based radio links**

10:00 - 10:20	--- Coffee break ---
10:20 - 12:20	**CASE STUDIES of Participants**
12:20 - 14:00	--- Lunch Break ---
14:00 - 16:00	**CASE STUDIES of Participants**
16:00 - 16:30	--- Coffee break ---
16:30 - 18:30	**Open Discussion on the Case Studies and Week Review, Q&A**

Monday, 23 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00	**C.Fonda** / *ICTP Trieste Italy* **Power budget Calculation**
10:00 - 10:20	--- Coffee break ---
10:20 - 12:20	**E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela* **Software for Wireless Link Design**
12:20 - 14:00	--- Lunch Break ---
14:00 - 16:00	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Exercises with the 'Radio Mobile' Software"**
16:00 - 16:30	--- Coffee break ---
16:30 - 18:30	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **R. Flickenger** / *Seattle Wireless, Seattle, USA* **LAB: "Building a 'Pringles cantenna' for WiFi"**

Tuesday, 24 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00	**E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela* **Site Survey and Antenna Mounting Considerations**
10:00 - 10:20	--- Coffee break ---
10:20 - 11:20	**E. Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela* **Grounding and Lightning Protection**
11:20 - 12:20	**E, Pietrosemoli, EsLaRed** / *Universidad de Los Andes, Merida, Venezuela* **Voice over IP in Wireless Networks**
12:20 - 14:00	--- Lunch Break ---
14:00 - 15:00	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "Powering remote sites with sun and use of ethernet-over-powerline bridges"**
15:00 - 16:00	(Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1)) **LAB: "On-the-field antenna measurements"**

16:00 - 16:30 --- Coffee break ---

16:30 - 18:30 (Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1))
Competition: "ARPL Prize for the better-performing cantenna"

Wednesday, 25 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00 **Preparation of the on-the-field activities**

10:00 - 12:30 **EXTERNAL ACTIVITY: "Short-distance Radiolink: Miramare-Trieste, 7 Km"**

12:30 - 14:00 --- Lunch Break ---

14:00 - 19:00 **EXTERNAL ACTIVITY: "Short-distance Radiolink: Miramare-Trieste, 7 Km"**

Thursday, 26 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00 **G. Repici** / *Telecom Italia, Rome, Italy*
Planning Intranet-Extranet: General Approach-Preparing and Implementing

10:00 - 10:20 --- Coffee break ---

10:20 - 11:20 **G. Repici** / *Telecom Italia, Rome, Italy*
Implementing Intranet-Extranet: Estimate of Cost and Feasibility Check

11:20 - 12:20 **G. Repici** / *Telecom Italia, Rome, Italy*
Intranet-Extranet: Case Studies

12:20 - 14:00 --- Lunch Break ---

14:00 - 16:00 **R. Flickenger** / *Seattle Wireless, Seattle, USA*
Wireless Security

16:00 - 16:30 --- Coffee break ---

16:30 - 18:30 (Room: Adriatico Guest House - Eklund Informatics Lab (Lower Level 1))
LAB: "Googling the Web for Wireless Equipment and Home-made Antennas"

Friday, 27 February 2004 (Room:Adriatico Guest House Giambiagi Lecture Hall)

09:00 - 10:00 **ROUND TABLE**

10:00 - 10:20 --- Coffee break ---

10:20 - 11:20 **ROUND TABLE**

11:20 - 12:20 **CLOSING CEREMONY and SCHOOL CERTIFICATES**