ASIA-PACIFIC TELECOMMUNITY
TRAINING COURSES IN 2021

2021
## List and Schedule of APT Training Courses in 2021

<table>
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<tr>
<th>No.</th>
<th>Training Course</th>
<th>Schedule</th>
<th>Training Center</th>
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<tr>
<td>1</td>
<td>Intelligent Optical Network Technology &amp; Solutions</td>
<td>18-29 Oct</td>
<td>WRIPT, Wuhan</td>
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<tr>
<td>2</td>
<td>The development and application of artificial intelligence and Blockchain Technology</td>
<td>2-9 Nov</td>
<td>BUPT, Beijing</td>
</tr>
<tr>
<td>3</td>
<td>Artificial Intelligence and 5G Technology</td>
<td>15-26 Nov</td>
<td>E-CAICT, Shanghai</td>
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<tr>
<td>4</td>
<td>Security Measures for the Era of Artificial Intelligence</td>
<td>10-16 Nov</td>
<td>NJUPT, Nanjing</td>
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<td>5</td>
<td>Smart Interconnection for Internet of Things</td>
<td>13-21 Oct</td>
<td>XUPT, Xian</td>
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</tbody>
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### India

<table>
<thead>
<tr>
<th>No.</th>
<th>Training Course</th>
<th>Schedule</th>
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<tbody>
<tr>
<td>6</td>
<td>Spectrum Management and Monitoring</td>
<td>4-17 Aug, 27 Sep- 08 Oct</td>
<td>RGMTTC, Chennai</td>
</tr>
<tr>
<td>7</td>
<td>IOT Technologies &amp; Ecosystem</td>
<td>25-29 Oct</td>
<td>NTIPRIT, Ghaziabad</td>
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<tr>
<td>8</td>
<td>Evolution of Future Networks &amp; Ultra Broadband Internet</td>
<td>6-17 Sep</td>
<td>ALTTC, Ghaziabad</td>
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<tr>
<td>9</td>
<td>Licensing in a Convergent Environment</td>
<td>6-12 Oct, 10-16 Nov</td>
<td>BRBRAITT, Jabalpur</td>
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</tbody>
</table>

### Thailand

<table>
<thead>
<tr>
<th>No.</th>
<th>Training Course</th>
<th>Schedule</th>
<th>Training Center</th>
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</thead>
<tbody>
<tr>
<td>10</td>
<td>Future Broadband Internet and IoT</td>
<td>6 Sep-4 Oct</td>
<td>NT Academy</td>
</tr>
<tr>
<td>11</td>
<td>State of Computing in 5G Network and IoT Analytics (Phase I)</td>
<td>16 Aug – 13 Sep</td>
<td>NT Academy</td>
</tr>
<tr>
<td>12</td>
<td>State of Computing in 5G Network and IoT Analytics (Phase II)</td>
<td>22-26 Nov</td>
<td>NT Academy</td>
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### Calendar

<table>
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<tr>
<th>Country</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
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<tbody>
<tr>
<td>China</td>
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<tr>
<td>India</td>
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<tr>
<td>Thailand</td>
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</tbody>
</table>
Objective of this course are to learn the following knowledge:

1. Intelligent optical network solution
2. Optical access technology, include: EPON, GPON and NG-GPON
3. Broadband optical transmission network technology, including OTN/100G OTN/400G OTN/POTN
4. Optic fiber and cable technology
5. FTTH technology and Solutions
6. The key technology of ODN
7. SPN technology
8. 5G Technology and solution

Overview

- Lectures, online technical investigation and online experiment will be arranged in this training course.
- Online technical investigation will be arranged in CICT group company to learn about products and solutions in the field of optical communication and mobile communication.
- Online experiment will be arranged to test and operate optical network equipment.
- Country report allowed participants from different countries to share developments in ICT industry in each country.

Date | Topic
--- | ---
Day 1 | Opening Ceremony
Day 2 | Optical access technology: EPON, GPON and NG-PON
Day 3 | Broadband optical transmission network technology including OTN/100G OTN/400G OTN/POTN
Day 4 | ODN technology and Solutions
Day 5 | FTTH technology and Solutions
Day 6 | 5G Technology and solution
Day 7 | SPN technology and Solutions
Day 8 | Testing and operating optical communication equipment
Day 9 | Online visit in China Information Communication Technology company
Day 10 | Country report Graduation ceremony

Target Trainees

- Regulators, and Policymakers
- Representatives from academia and international organizations working on regulatory or policy issues
- Management and technical staff in ICT companies
- Capable of listening, speaking, reading and writing in English
1. Mr. Taozhiyong, Professor, ITU expert, vice president of Fiberhome College, WRIPT

2. Dr. Sangziqin, ITU expert, WRIPT

3. Dr. Chengwen, senior engineer, WRIPT

Wuhan Research Institute of Posts and Telecommunications (WRI) is one of the two research institutes directly under Ministry of Posts and Telecommunications (predecessor of Ministry of Information Industry).

In 2018, WRI (FiberHome Technologies Group) and Datang Telecom Group restructured and merged into China Information Communication Technologies Group Corporation (CICT).

Now the company is the birthplace of China’s optical communications, one of the main proposers of international standards for mobile communications, and is an internationally renowned provider of information and communication products and integrated solutions.


Trainers
1. Mr. Taozhiyong, Professor, ITU expert, vice president of Fiberhome College, WRIPT
2. Dr. Sangziqin, ITU expert, WRIPT
3. Dr. Chengwen, senior engineer, WRIPT
The objective of this course is to learn the following:

1. The development trend of artificial intelligence and blockchain technology
2. Theoretical basis of artificial intelligence and blockchain technology
3. Cases and applications of artificial intelligence and blockchain technology

Students will learn about artificial intelligence and blockchain technology through lectures and laboratory presentations.

At the country reporting session, they will introduce what they have learned about AI and blockchain technology and discuss the development cases of AI and blockchain technology in their countries.
Target Trainees

- University degree or equivalent degree, working in the artificial intelligence field or telecommunications industry for more than 3 years;
- Professional and technical personnel with certain research in the field of artificial intelligence
- Head of department engaged in artificial intelligence applications
- Sufficient English speaking and writing skills;
- Under the age of 45;
- No military service;
- Healthy physical and mental & Positive attitude

Training Organization

Beijing University of Posts and Telecommunications (BUPT)

- "Project 211"
- "985 Advantage Discipline Innovation Platform"
- An important training base for IT talents in China
- Superior disciplinary resources

Trainers

Dr. Zhang Chuang  Dr. Ma Zhanyu  Dr. Wu Ming  Dr. Xu Weiran  Dr. Deng Weihong

Dr. Ren Leyi  Dr. Zhang Xu  Dr. Yan Haotian  Dr. Xu  Dr. Qiu
No.3  

- **Duration:** 15 – 26 November 2021  
- **Organization:** China Academy of Information and Communications Technology (East China Branch)

**Objectives**

The objectives of this course are:

- to learn some new knowledge and ideas of Artificial Intelligence and 5G Technology, take useful ideas and technologies back to their home country;
- to enhance the international cooperation and communication between countries in Asia Pacific area.

**Overview**

- Trainees can understand the technique of artificial intelligence and 5G better;
- Through the theory learning, case study, and online discussion, trainees can learn more cutting-edge knowledge and ideas;
- Take useful ideas and technologies back to their home countries, and enhance the international cooperation and communication between countries.

**Syllabus**

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<th>Topic</th>
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<tbody>
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<tr>
<td>Day 2</td>
<td>• Reveal the Mysterious of AI</td>
</tr>
<tr>
<td>Day 3</td>
<td>• AI: A Brief Introduction</td>
</tr>
<tr>
<td>Day 4</td>
<td>• Commercialization of Artificial Intelligence</td>
</tr>
<tr>
<td>Day 5</td>
<td>• 5G empowers AI</td>
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<tr>
<td>Day 6</td>
<td>• Online Q&amp;A</td>
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<tr>
<td>Day 7</td>
<td>• 5G Basic Knowledge</td>
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<tr>
<td>Day 8</td>
<td>• 5G Industry Application</td>
</tr>
<tr>
<td>Day 9</td>
<td>• Online Q&amp;A</td>
</tr>
<tr>
<td>Day 10</td>
<td>Graduation ceremony</td>
</tr>
</tbody>
</table>

**Target Trainees**

- Regulators, and Policymakers, etc.,  
- Representatives from government organizations and High-Tech Companies in the ICT field
Training Organization

- China Academy of Information and Communications Technology (East China Branch) was founded in September of 2010. A local government think tank and a R&D and innovation platform.
- Make forward-looking deployments in the fields of smart city, AI and bigdata, intelligent network, information security and communication.
- Provide the government and enterprises with services and solutions of decision-making and support, standard and specification, experiment and verification, test and evaluation, consultation and planning.
- East China Branch is located in the west band of Shanghai, which is the core area of the only strategic emerging cluster of Artificial intelligence in Shanghai.

Trainers

Dr. Yue Gao
Associate Professor, Doctoral Advisor, Shanghai JiaoTong University AI Institute
Objectives

- To understand fundamental and advanced digital technology in communication & computer networks based IOT
- To understand the latest standards and privacy protection mechanisms of IoT security industry
- To understand network information security issues and get knowledge about practical network security techniques
- To learn the technology and skills to protect computers, networks, programs and data from unintended or unauthorized access, change or destruction
- To understand the latest development of The Internet of Things required in current innovative technology
- To learn the next generation of intelligence for big data analytics and smart systems
- To understand the Opportunities and Challenges that Big Data brought for competitive intelligence

Syllabus

<table>
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<tr>
<th>Date</th>
<th>Morning Topic</th>
<th>Afternoon Topic</th>
</tr>
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<tbody>
<tr>
<td>Day 1: Morning</td>
<td>Opening Ceremony</td>
<td>Protocol layers and service models (Fundamentals of Internet, Concepts of delay, security, and Quality of Service (QoS)/Application layer protocols and client-server model/The OSI reference model)</td>
</tr>
<tr>
<td>Day 2: Morning</td>
<td>Network layer(The IP Protocol Header/Class-based IP address format/Open shortest path first protocol)</td>
<td>Data link layer(Link layer. Error detection. Multiple access protocols. IEEE 802.3 Ethernet./CRC calculation/Polynomials in a Modulo 2 system)</td>
</tr>
<tr>
<td>Day 3: Morning</td>
<td>Conventional Encryption Principles • Location of Encryption Devices • Key Distribution</td>
<td>Public-Key Cryptography Principles • Digital Signatures • Key Management</td>
</tr>
<tr>
<td>Day 4, Day 5</td>
<td>Weekend reviewing</td>
<td>Weekend reviewing</td>
</tr>
<tr>
<td>Day 6: Morning</td>
<td>Fundamentals of the Internet of Things and its applications</td>
<td>Operational Challenges of Wireless Sensor Networks</td>
</tr>
<tr>
<td>Day 7: Morning</td>
<td>Strategies of Enterprise Competitive Intelligence based on Big Data</td>
<td>New standards &amp; privacy protection mechanisms of IoT security industry</td>
</tr>
<tr>
<td>Day 7: Afternoon</td>
<td>Analyzing, keeping, retrieving, storing, and sending the information with Big Data</td>
<td>Country report, Test and Evaluation, Graduation ceremony</td>
</tr>
</tbody>
</table>

Overview

With the theme of "Security Measures for the Era of Artificial Intelligence", the online training course in NJUPT will give the participants the fundamental and advanced knowledge & technology in the area of Computer Communication Network, Information Security, Big Data and Internet of Things by lively forms like lecturing, case analysis, demonstration, seminar and so on. Furthermore, the training course also will provide the participants with full understanding and exchanges for the latest development and trends in telecommunication technology and manufacturing industry.
The 7 days online training course “Security Measures for the Era of Artificial Intelligence” will be held from Nov.10 to Nov.16, which will all be given by the elite professors from Nanjing University of Posts and Telecommunications.

Target Trainees

- be a university graduate or equivalent with working experience of more than 3 years in the field of telecommunications or information business.
- be currently engaged in planning and/or operation/maintenance of computer network and information security.
- be engineers in telecommunications carriers, telecommunications regulatory, network monitoring or information security officials working at the government.

Training Organization

NJUPT was established in 1942 that enjoys 78 years history. It is approved by the Chinese Ministry of Education (MoE) as the first batch of First-class Discipline Construct on University. also it’s approved by the Jiangsu Provincial People’s Government (JPPG) as High Level Construction University. Now, it owns 2,600 faculties which include 984 supervisors to Doctoral and Master’s degree candidates and offers education to approximately 30,000 students. Four disciplines of NJUPT are among the world’s top 1% on the ESI ranking and the discipline of Communication engineering ranks 25th in the ARWU. NJUPT is engineering-oriented with a focus on information technology, integrating such disciplines as science, engineering, economics, management, literature, education, art and law, and offers multi-layered educational programs leading to bachelor’s, master’s, and doctor’s degrees, as well as post-doctor’s positions. For the past 78 years, it has delivered more than 240,000 outstanding talents for the country, many of them have become leaders, technical elites, and management leaders in information industry at home and abroad, which enjoys the reputation of “the cradle of China IT talents”.

NJUPT actively promote international exchanges and cooperation. At present, it recruits overseas students at three levels: undergraduate, graduate and postgraduate. More than 700 students come from more than 50 countries are studying in our school.

For consecutive 30 years, NJUPT has been serving as one of the training bases of ITU Asia-Pacific Telecommunications Organization (APT) in China that has offered the training courses in telecommunications management and technology for more than 400 friends from the Asia-Pacific region. Through this way, we are not only sharing fruits of scientific and technological development but also building bridges of friendship with people of the Asia-Pacific region.

Trainers

Dr. Zhang Yingzhou
Professor of School of Computer Science, NJUPT

Dr. Ye Ning
Professor of School of Computer Science, NJUPT

Dr. Luo Bingqing
Professor of School of Computer Science, NJUPT
No.5

- **Duration:** 13 – 21 October 2021
- **Organization:** Xi’an University of Posts and Telecommunications

**Objectives**

- This project is for the purpose of promoting our country and the Asia-Pacific region to exchange and cooperate in “Smart Interconnection for Internet of Things”.
- Let participants understand the basic performance of smart interconnection and cutting-edge technology trends, have a whole picture of the best practice and application of Smart City and IoT.

**Overview**

- Participants will understand and grasp the related technologies and applications of smart interconnection networks through lectures, seminars and demo which cover technologies of smart interconnection of Internet of Things (IoT), network framework etc. All of these will finally make trainees be able to have further knowledge on development reviews and application prospects of smart interconnection for communication networks, and can have a preliminary understanding of key technology and development trend of smart interconnection of Internet of Things.

**Syllabus**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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</table>
| Day 1 | Opening ceremony  
Antenna Techniques for 5G Networks |
| Day 2 | “TianyiCloud” Architecture of China Telecom |
| Day 3 | RFID and Applications for IoT |
| Day 4 | 5G Application for Intelligent Home |
| Day 5 | 5G Heterogeneous Network and Intelligent City |
| Day 6 | Rural e-commerce in China under the background of ICT |
| Day 7 | Country Report |

**Target Trainees**

- Have had engineering experience in telecommunications industry, or telecommunications regulatory organization in the government
- Be a university graduate with working experience in software development.
Training Organization

- XUPT is a comprehensive university covering seven fields of engineering, management, science, economics, literature, law and arts with IT and communications as its main feature. It is the only university in northwest of China majoring in telecommunications.

- XUPT has established cooperative relationships with approximately 40 universities and academic institutions from more than 10 countries, including Germany, the United States, the UK etc. XUPT has built strategic cooperative partnerships in scientific research and talent training with domestically renowned enterprises Huawei Company, ZTE Cooperation, China Telecom etc.

Trainers and Research Field

- Xi’an University of Posts and Telecommunications
  - Prof. Shang Feng (Microwave Antenna)
  - Prof. Li Pengfei (E-commerce)
  - Prof. Zhang Xin (Mobile Interconnection)
  - Dr Yan Xiaohong (IoT)

- China Telecom Shaanxi Branch
  - General Manager of Market Zhang Yonghui (Smart City)
  - Senior Engineer OU Yang Chenji (Smart City)
Objectives

The objectives of this course are to learn:

- Spectrum Principles and Characteristics
- Spectrum Planning, Allocation, Licensing and Pricing
- Spectrum Monitoring and Auditing
- Spectrum Strategies and Enforcement
- Advanced Technologies in Spectrum Management
- Spectrum Econometrics and Pricing
- Operator’s requirement on Spectrum Management
- Technical Study, Visit to field
- Group Discussion, Presentation, Issues and Case
- Studies on Spectrum Management.

Syllabus

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<th>Day</th>
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<td>Registration, Trainees Introduction and Inauguration Speech</td>
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<td>Spectrum Management – An Introduction</td>
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<td>2</td>
<td>I</td>
<td>Spectrum Management - A Broader Perspective</td>
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<td></td>
<td>II</td>
<td>Spectrum Management - A Broader Perspective</td>
</tr>
<tr>
<td>3</td>
<td>I</td>
<td>Evolution of Wireless Technologies</td>
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<tr>
<td></td>
<td>II</td>
<td>Spectrum Management - An operator View</td>
</tr>
<tr>
<td>4</td>
<td>I</td>
<td>Emerging Wireless Technologies</td>
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<tr>
<td></td>
<td>II</td>
<td>Emerging Wireless Technologies</td>
</tr>
<tr>
<td>5</td>
<td>I</td>
<td>Recent trends including Cognitive Radio, White Space and Disaster management of spectrum</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>Recent trends including Cognitive Radio, White Space and Disaster management of spectrum</td>
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<tr>
<td>6</td>
<td>I</td>
<td>Spectrum Monitoring and Enforcement</td>
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<td>II</td>
<td>Spectrum Monitoring and Enforcement</td>
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<tr>
<td>7</td>
<td>I</td>
<td>Spectrum Management - A Regulator View &amp; QOS</td>
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<tr>
<td></td>
<td>II</td>
<td>Spectrum Management - A Regulator View &amp; QOS</td>
</tr>
<tr>
<td>8</td>
<td>I</td>
<td>Advance topics in Spectrum Management like Short range and Low interference devices, Small &amp; Nano Satellites</td>
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<tr>
<td></td>
<td>II</td>
<td>Advance topics in Spectrum Management like Short range and Low interference devices, Small &amp; Nano Satellites</td>
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<tr>
<td>9</td>
<td>I</td>
<td>Pricing and Econometrics of Spectrum Management</td>
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<td></td>
<td>II</td>
<td>Presentation by Participants</td>
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<td>I</td>
<td>Online Evaluation by trainees and Validation of the course</td>
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<tr>
<td></td>
<td>II</td>
<td>Online Evaluation by trainees and Validation of the course</td>
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</table>
Overview

Spectrum is one the rare resources available for communication and by managing the spectrum efficiently. The network capacity as well as the reach can be increased. This course mainly focuses on the issues related to Spectrum Management.

Target Trainees

The Participant is supposed to have a basic knowledge of Electromagnetic Spectrum and cellular networks.

Training Organization

- RGMTTC, the training centre unit of BSNL, is in the forefront of Telecom industry with core focus on Telecom technologies & Networking.

- Being the Service Provider of Landline, GSM, CDMA, 3G, 4G, LTE, Internet Services, MPLS-VPN, Broadband, Telecom Switching, Optical Fibre, Rural Communication, Web-Hosting, Wi-Fi, Wi-MAX, Satellite Phone, IoT service, Cloud and so many others, we assure to make a difference with the training pattern with all high end equipments.

- Some of our corporate Clientele includes Tamil Nadu Skill Development Corporation (TNSDC), NSDC, Verizon, Power Grid Corporation Of India Limited, Southern Railway, Chennai Metro Rail Ltd, TCTS, Infosys, India Post, University of Madras etc.

Trainers

<table>
<thead>
<tr>
<th>NAME OF TRAINER</th>
<th>Designation and Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sri. Pani Prasad, ITS</td>
<td>Director (SAS), NCCS, DOT Bangalore</td>
</tr>
<tr>
<td>Sri. R. David Koilpillai</td>
<td>Qualcomm Institute Chair Professor, Indian Institute of Technology (IIT)-Madras, Chennai</td>
</tr>
<tr>
<td>Sri. S. Abbas, ITS</td>
<td>Advisor (Network, Spectrum &amp; Licensing) Telecom Regulatory Authority of India (TRAI)</td>
</tr>
<tr>
<td>Sri. R. Guruprasad</td>
<td>Deputy General Manager (CA (Retd), BSNL, Chennai</td>
</tr>
<tr>
<td>Sri. R. Saji Kumar, ITS</td>
<td>Principal General Manager, Nagarkoil SSA, Tamilnadu Circle, BSNL, Chennai</td>
</tr>
<tr>
<td>Sri. Jayakumar Jayavelu</td>
<td>General Manager, Pondicherry SSA, Tamilnadu Circle, BSNL</td>
</tr>
<tr>
<td>Sri. H. Dominic Savio</td>
<td>Sub – Divisional Engineer (Retd), RGMTTC BSNL, Chennai</td>
</tr>
<tr>
<td>Sri. S. Raja Kumar</td>
<td>PRINCIPAL / Deputy General Manager, RGMTTC, BSNL, Chennai</td>
</tr>
<tr>
<td>K M BALAJI</td>
<td>Sub – Divisional Engineer, RGMTTC, BSNL, Chennai</td>
</tr>
<tr>
<td>P. VENKATA PATANJALI SARMA</td>
<td>Junior Telecom Officer, RGMTTC, BSNL, Chennai</td>
</tr>
</tbody>
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Objectives

The objectives of this course are to:

- Understand the IOT technologies and the IOT ecosystem
- Potential Use cases and the way these technologies can be used to address the issues being faced in development work
- Enable policy planners to devise a mechanism of checks and balances for addressing the issues of security and data privacy.

Syllabus

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<td>IOT Overview, IOT Network Architecture &amp; Design</td>
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<td>Day 2</td>
<td>“Things” in IOT &amp; M2M Gateway, Communication Technologies for IOT, LP WAN &amp; 3GPP based technologies and Use Cases</td>
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<tr>
<td>Day 3</td>
<td>5G for mMTC, eSIM and Use Cases, One M2M Framework for interoperability</td>
</tr>
<tr>
<td>Day 4</td>
<td>Application Protocols for IOT, Drone Technology: Cellular Connected Drones, IOT Security &amp; Data Privacy</td>
</tr>
<tr>
<td>Day 5</td>
<td>AI in Edge Computing, Smart City Solutions</td>
</tr>
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Overview

The course covers the following:

- Various IOT Technologies and IOT Ecosystem including the opportunities and challenges.
- Communication Technologies like LP WAN, 3GPP based technologies, WiFi HaLow, ZigBee and 5G for massive machine type communication (mMTC)
- Application Protocols viz. CoAP and MQTT, Cellular Connected Drone
- IOT Security and Data Privacy
- Artificial Intelligence in Edge Computing and Smart City Solutions

Target Trainees

An applicant should preferably be:

- Officials from Ministries/Licensor/Operator from APT Member countries.
- have working knowledge of English language i.e. having skills of reading/writing/understanding/speaking English language.
Training Organization

National Telecommunications Institute for Policy Research Innovation and Training (NTIPRIT) is the premier training institute of Department of Telecommunications, Government of India, involved in conduction of induction Training for probationary officers of Indian Telecommunication Service Group – A (ITS Group A) recruited through All India based Engineering Services Examination. Apart from Induction Training, NTIPRIT also conducts various In-Service Trainings, Management Development Programmes, Regional and International Trainings, Capacity Building workshops for Officers of Government of India in various aspects of Information and Communication Technology Administration in India.

Trainers

Mr. Deepak Sharma
Mr. Ashok Kumar
Mr. Aurindam Bhattacharya

Mr. Sharad Arora
Mr. Anil Chandaliya
Mr. Bipin P Kumar
No.8 · Duration: 6 – 17 September 2021
· Organization: ALTTC, BSNL Ghaziabad, UP-201002, INDIA

Objectives

The objectives of this course are to learn:

- Migration from Conventional network to All-IP, evolution for Future Network.
- O&M activities for High Speed Internet services.
- Concept of UFBB and 4G-LTE, 4G-EPC,5G/5G-NR technologies, network Architectures and standards ,WiFi6.0, Satellite Broadband.
- Planning to harness potential offered by technologies to cater future network and service requirement.
- Equip with technologies for fast data processing and communication like Next gen. servers, MPLS, MPLS- TP/TE, MNG-PAN,OTN, FTTx, MGfast, xDSL etc.
- Regulatory framework and standards to achieve required QoS in future wireline and mobile network.

Syllabus

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<th>Date</th>
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<td>Registration/Inauguration/Overview of the course Future Wire line BB Access Technologies</td>
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<tr>
<td>Day 2</td>
<td>Broadband Network Architecture Components and Connectivity Broadband Servers: Role and Connectivity</td>
</tr>
<tr>
<td>Day 3</td>
<td>Core Data Network Technology: MPLS MPLS -TP Technology</td>
</tr>
<tr>
<td>Day 4</td>
<td>Next Generation Broadband Network: MNG-PAN Future Optical Transport Network: OTN</td>
</tr>
<tr>
<td>Day 5</td>
<td>WiFi 6.0 FTTx Technology</td>
</tr>
<tr>
<td>Day 6</td>
<td>Evolution of Future Mobile Network LTE/LTE-Advanced Network Architecture</td>
</tr>
<tr>
<td>Day 7</td>
<td>5G Network Architecture LTE Air interfaces</td>
</tr>
<tr>
<td>Day 8</td>
<td>5G New Radio Feature 5G MIMO/Massive MIMO and Beam Forming Technique</td>
</tr>
<tr>
<td>Day 9</td>
<td>5G Use Cases Advance Satellite BroadBand</td>
</tr>
<tr>
<td>Day 10</td>
<td>IPv6 and Migration Techniques Trainees Feedback, Evaluation &amp;Discussion</td>
</tr>
</tbody>
</table>
Overview

In the future, to facilitate services to 100s of millions of connected devices, operators need to device policies incoherence to service requirements, e.g. low latency, low power sensor networks, hi mobility, wide area cellular connectivity, and data aggregation. conventional way of accessing Internet isn’t enough to ever growing data needs of businesses and users. in the view of Covid-19 event, internet is playing a crucial role to maintain essential services, together the globe into a family. Connecting every nuke and corner of habitat, getting entertained, run business and empowering human being in fighting this common enemy. Ultra Fast Broadband (UFBB) Internet is the need of hour as per broadband forum and we are getting new standards frequently with assured QoS along with underlying technologies like MNG-PAN, PTN, FFTx, MPLS/MPLS- TP etc. Along with the Technological Framework for UFBB, a regulatory framework is also needed to the technocrats for making an informed decision about ultra-reliable ultrafast broadband with a shield to prevalent cyber-attacks. 5G also a contender in this race. 5G represents not only a new generation of technologies that impact the core and access network, but also a restructuring of the business models opening new avenues of revenue generations such as IoT/M2M, Industry 4.0, AI on a much larger scale.

Target Trainees

- Engineers working in lower and middle management for Operation and maintenance, Operation expansion planning for telecom companies
- Executives working in Government as advisor and decision makers, Regulators, and Policymakers for govern telecom services.
- Representatives from academia and international organizations working on research, regulatory or policy issues associated with various technologies.

Training Organization

- ITU-COE in Broadband and Cyber Security for South Asia
- A premier institute of BSNL, INDIA to impart advance Telecom Trainings to Govt. and Private Customers
- Use to be referred as Lung of the CITY to signify it’s lush green campus full of serene beauty.
Objectives

The objectives of this course are to

- Understand the drivers of convergence in telecommunications, broadcasting, technology and media.
- Comprehend the impact of such rampant convergence on erstwhile wireline, wireless and broadcasting services.
- Identify which regulatory systems have to evolve.

- Review the concept of licensing as a key element of telecommunications regulation.
- Devise strategies to migrate from traditional and emerging licensing regimes with a focus on industry best practices.
- Follow best practice licensing for interconnection in a converged multi-operator and multi-platform telecommunications markets.

Syllabus

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>Registration and Welcome, Regulator’s duties in Licensing, Convergence, Legacy Licensing regimes - road to convergence</td>
</tr>
<tr>
<td>Day 2</td>
<td>Fundamental of licensing, Spectrum Management and Licensing, Licensing best practices, Key elements of Pricing and Regulations</td>
</tr>
<tr>
<td>Day 3</td>
<td>Financial issues in Broadband Development, USO Funding for rural broadband access, Regulating special / OTT services,</td>
</tr>
<tr>
<td>Day 4</td>
<td>Unified licensing framework, Implementation plan for a unified licensing regime, Case study on NOFN from regulatory angle, Net Neutrality</td>
</tr>
<tr>
<td>Day 5</td>
<td>Broadcasting regulation, Syndicate Presentation by participants, Online Test and Group Discussion Validation and Farewell</td>
</tr>
</tbody>
</table>

Overview

- This five-day training program will showcase the participants’ different drivers and perspectives of convergence, how regulators have dealt with convergence including international case studies, price regulation, and real licensing in a converged environment.
- The course aims to cover the following:
  - Understand Convergence & the drivers of convergence in telecommunications, broadcasting, technology and media
  - Comprehend the impact of such rampant convergence on erstwhile wireline, wireless and broadcasting services
  - Licensing and Regulator’s duties
  - Licensing implementation
Target Trainees

- Telecommunication Regulators and Policymakers, engineers, economists, managers and other professionals with an interest in licensing
- Representatives from academia and international organizations working on regulatory or policy issues
- Executives from Telecom Operators

Training Organization

- BRBRAITT, Jabalpur, India is a premier Training Institute in the field of telecommunication & IT. It is an apex training center of BSNL.
- It started working at Jabalpur since 22nd April, 1942.
- It has a campus of 35 acres with administrative building of 17280 square meters.
- Training centre is ISO 9001:2015 certified.
- The strength of BRBRAITT is its state-of-the-art telecom equipment.

Trainers

Dr. Manish Shukla, ITS  
General Manager, BRBRAITT, Jabalpur

Shri R K Gangwar,  
AGM, BRBRAITT, Jabalpur

Shri Gaurav Kapoor,  
SDE, BRBRAITT, Jabalpur

Shri J K Bachani,  
AGM, BRBRAITT, Jabalpur

Shri Pankaj Rai,  
SDE, BRBRAITT, Jabalpur
Objectives

The objectives of this course are:

- to introduce trainees to Broadband technologies, both wired line and wireless
- to introduce trainees to implement AI or Smart Computing to create digital services
- to provide knowledge for understanding Future Telecom Services
- to discuss and share experience of how to work with future challenges in Telecom networks and services.

Syllabus

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td><strong>Module 1: Current and future broadband technologies.</strong> The concept of Broadband and Digital infrastructure. Broadband technologies, both wired line and wireless. 5G mobile network and IoT as the platform for Industry revolution 4.0 and digital society. Low-speed satellite internet as the new coming technology.</td>
</tr>
<tr>
<td>Week 2</td>
<td><strong>Module 2: State computing in telecom networks</strong> Introduction to Big Data and AI. Basic cloud computing and its implementation in telecom network. Edge/Fox computing. Security concerns in telecom networks</td>
</tr>
<tr>
<td>Week 3</td>
<td><strong>Module 3: Future telecom networks and services</strong> Future of Software-based telecom networks (SDN and NFV) and SD-WAN. Future telecom services and OTT services. Business and regulatory aspect for future telecom services. Challenge of broadband networks to cope with disaster and any kind of state emergency</td>
</tr>
</tbody>
</table>

Overview

This course focuses on Future Broadband Internet, and its services, especially digital services. To realize future digital services, we need to integrate new innovation on Big Data, AI, and etc. into telecom network. In the course, we focus on 3 tropics, namely current and future broadband technologies, state of computing in telecom networks, and future telecom network and services.

This online course is arranged into 3 modules to study within 3 weeks, one module per week. At the end of each week, there would be evaluation test before moving to the next module. After three-week study, trainees are required to write the short country report on the topic of IoT implementation in their countries, as part of completing the online study.
Target Trainees

- Engineers or IT persons who are working in the network/service providers to provide 5G services, or
- Persons who are working in the national regulatory agency or government agency, and are in charge of 5G service policy and regulation.

Training Organization

NT Academy,
National Telecommunication Public Company Limited
5 Ngamwongwarn 17 Alley, Bang Khen,
Mueang Nonthaburi District, Nonthaburi 11000

Trainers

Tong Srihacha, Ph.D
Senior Director ICT Training and Knowledge Development Sector,
NT Academy,
National Telecommunication Public Company Limited

Jesada Sivaraks, Ph.D
Head of Government and Industry Relationship,
Ericsson (Thailand) Ltd

Pongthiti Pongsilamanee, Ph.D
Senior Instructor,
NT Academy,
National Telecommunication Public Company Limited

Sanparith Marukatat, Ph.D
Principle Researcher
Image Processing and Understanding team
AI Research Group,
National Electronics and Computer Technology Center (NECTEC)
Objectives

The objectives of this course are:

- to introduce trainees to the 5G network and its perspective design applications
- to describe the paradigm of computing that will change social life and environments
- to be familiar with and able to implement AI or Smart Computing to create digital services
- to discuss and share experience of how to withstand or challenge with future directions in smart computing of Telecom Services.

Syllabus

<table>
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<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Module 1: Basic concept of Telecom connectivity</td>
</tr>
<tr>
<td></td>
<td>This module provides the knowledge of how mobile networks are evolved, especially 4G/5G mobile networks, and also how the concept of Internet of thing (IoT) is introduced.</td>
</tr>
<tr>
<td>Week 2</td>
<td>Module 2: Basic concept to IoT network infrastructure and its standard</td>
</tr>
<tr>
<td></td>
<td>This module provides basic concept of IoT network infrastructure, IoT value chain, and IoT standard, namely, overview of IoT Platform and network architecture, IoT standards, and IoT value chain and eco-system.</td>
</tr>
<tr>
<td>week 3</td>
<td>Module 3: Security Concerns for IoT implementations</td>
</tr>
<tr>
<td></td>
<td>This module provides basic concept of IoT security, namely, understanding major security risks and issues in IoT, and also designing security into IoT</td>
</tr>
</tbody>
</table>

Overview

The Internet of Things (IoT) becomes part of life and environment, being established as the new computing paradigm, which is bound to change the ways of everyday working and living. Phase 1 online training is the one-month online learning program providing basic concept necessary to build up the IoT knowledge for a better understanding, such as

- Basic concept of Telecom connectivity
- Basic concept to IoT network infrastructure and its standard
- Security Concerns for IoT implementations
Target Trainees

- Engineers or IT persons who are working in the network/service providers to provide 5G services, or

- Persons who are working in the national regulatory agency or government agency, and are in charge of 5G service policy and regulation.

Training Organization

National Telecommunication Public Company Limited
5 Ngamwongwarn 17 Alley, Bang Khen, Mueang Nonthaburi District, Nonthaburi 11000

Trainers

Pongthiti Pongsilamanee, Ph.D
Senior Instructor,
NT Academy,
National Telecommunication Public Company Limited

Jesada Sivaraks, Ph.D
Head of Government and Industry Relationship,
Ericsson (Thailand) Ltd.
State of Computing in 5G Network and IoT Analytics (Phase 2: Virtual Classroom Training)

**Objectives**

The objectives of this course are:

- to introduce trainees to Broadband technologies, both wired line and wireless
- to introduce trainees to implement AI or Smart Computing to create digital services
- to provide knowledge for understanding Future Telecom Services
- to discuss and share experience of how to work with future challenges in Telecom networks and services.

**Syllabus**

<table>
<thead>
<tr>
<th>Date</th>
<th>Syllabus</th>
</tr>
</thead>
</table>
| Day 1 | • Opening ceremony  
• Fundamentals of 5G Mobile Networks and Eco System  
• IoT Architecture and Framework |
| Day 2 | • Cloud Computing Reviews  
• The Paradigms of Cloud and Mobile Computing |
| Day 3 | • Taxonomy of Edge and Fog Computing  
• Machine Learning and AI perspective |
| Day 4 | • AI as a Micro-service at the Edge Network  
• Building Blocks Design and Implementation of a Fog Computing for IoT Analytics |
| Day 5 | • Challenges and Future Directions in Smart Computing  
• Closing ceremony |

**Overview**

The Internet of Things (IoT) becomes part of life and environment, being established as the new computing paradigm, which is bound to change the ways of everyday working and living.

Phase 2 is a one-week virtual classroom discussing in more in-depth on followings: 5G Mobile Networks and Eco System, IoT architecture and framework, cloud and mobile computing, Edge and Fog Computing, machine learning and AI perspective, AI as a micro-service, and challenges and future directions in smart computing.
Target Trainees

- Engineers or IT persons who are working in the network/service providers to provide 5G services, or
- Persons who are working in the national regulatory agency or government agency, and are in charge of 5G service policy and regulation.

Training Organization

NT Academy,
National Telecommunication Public Company Limited
5 Ngamwongwarn 17 Alley, Bang Khen,
Mueang Nonthaburi District, Nonthaburi 11000

Trainers

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Principle Researcher
Image Processing and Understanding team
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