National Institute of Telecommunications

Sylwester Laskowski

4th Steering Committee Meeting of ITU CoE for Europe
12 December 2017, Copenhagen, Denmark

NITs ITU CoE area

Capacity Building
in Internet Governance

ITU CoE workshops in 2017

Two e-learning course

- **Strategic Aspects for Internet Governance and Innovations**
  (3 - 10 April 2017)

- **Wireless Access Technologies to Internet Network**
  (25 September - 2 October 2017)

Two face-to-face workshop

- **Security and QoS in Internet Network**
  (26-27 October 2017)

- **Legal and regulatory barriers to the introduction of cloud services in the EU** (14-15 December 2017)

INSTYTUT ŁĄCZNOŚCI
PAŃSTWOWY INSTYTUT BADAWCZY

ITU CoE e-learning course on:

Strategic Aspects for Internet Governance and Innovations
3 – 10 April 2017

- The course was organized by the ITU CoE of National Institute of Telecommunications (NIT), Warsaw, Poland, and was coordinated by Dr. Sylwester Laskowski, who has produced **the videos** for all lectures **from face-to-face ITU training held in November 2015** at NIT, Warsaw, Poland (this was second edition of this e-learning course; the first was in 2016).

- **The course was tutored by Prof. Dr. Toni Janevski** from the Faculty of Electrical Engineering and Information Technologies, Ss. Cyril and Methodius University in Skopje, Macedonia. Prof. Toni Janevski was the tutor for the duration of the course, as well as he was managing the course from the beginning until its end.

This e-learning course was delivered via **ITU Academy platform** using the following methodology:

- The course material were studied and discussed over a time period of **one week**;

- Course materials, consisted of **10 recorded video lectures** with total time of approx. **10 hours**, as well as **offline presentations**, were made available on a daily basis, that is, **two video lectures per day**, via the ITU Academy, where each participant could access the video materials at any time during the course;

- **Discussion forum** was organized based on discussion topics given on a daily basis (one per day);

- Final Quiz test was given on 10th of April (Monday), at the end of the course (within a given time window for accessing the Quiz, on 10th of April, and given time period for solving the Quiz after accessing it, while the Quiz itself was based on multiple choices questions);

- All **announcements for all events** (video lectures, quiz and forums) were given in a timely manner by the course tutor.

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ITU CoE e-learning course on:

Strategic Aspects for Internet Governance and Innovations
3 – 10 April 2017

Program of the course:

Lecture Number	Title of the Video Lecture	Video Duration
1	Convergence in Telecommunications toward Internet	77 min
2	Broadband Strategies and Innovations	87 min
3	Internet Standardization and Policy	61 min
4	Innovation management in ICT	43 min
5	Google model vs. Apple model	47 min
6	Mobile and Internet telephony	86 min
7	IPTV innovations	74 min
8	Innovative services and applications	48 min
9	Network neutrality	72 min
10	Management and regulation of Internet	23 min
	Overall	10 h 18 min

ITU CoE e-learning course on:

Strategic Aspects for Internet Governance and Innovations
3 – 10 April 2017

34 participants (3 more than in 2016):

1. Pakistan – 1 (Asia)
2. Nigeria – 7 (Africa)
3. Albania – 2 (Europe)
4. Georgia – 4 (Europe)
5. Mongolia – 1 (Asia)
6. Nepal – 2 (Asia)
7. Moldova – 2 (Europe)
8. Saint Kitts and Nevis – 1 (North America)
9. Lithuania - 1 (Europe)
10. Ghana – 1 (Africa)
11. Latvia – 1 (Europe)
12. Thailand – 1 (Asia)
13. India - 1 (Asia)
14. Papua New Guinea - 2 (Oceania)
15. Argentina – 1 (South America)
16. Bosnia and Herzegowina - 2 (Europe)
17. Malawi – 1 (Africa)
18. Samoa – 2 (Oceania)
19. Spain – 1 (Europe)

Participants by continents:

Europe – 13

Africa – 9

Asia – 6

Australia and Oceania – 4

North America - 1

South America – 1

Success in final quiz

31 persons (from 34)

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PAŃSTWOWY INSTYTUT BADAWCZY

ITU CoE e-learning course on:

Wireless Access Technologies to Internet Network
25 September – 2 October 2017

- The course was organized by the ITU CoE of National Institute of Telecommunications (NIT), Warsaw, Poland, and was coordinated by Dr. Sylwester Laskowski, who has produced **the videos** for all lectures **from face-to-face ITU training held in November 2016** at NIT, Warsaw, Poland (this was the first edition of this e-learning course).

- **The course was tutored by Prof. Dr. Toni Janevski** from the Faculty of Electrical Engineering and Information Technologies, Ss. Cyril and Methodius University in Skopje, Macedonia. Prof. Toni Janevski was the tutor for the duration of the course, as well as he was managing the course from the beginning until its end.

This e-learning course was delivered via **ITU Academy platform** using the following methodology:

- The course material were studied and discussed over a time period of **one week**;

- Course materials, consisted of **10 recorded video lectures** with total time of approx. **11 hours**, as well as **offline presentations**, were made available on a daily basis, that is, **two video lectures per day**, via the ITU Academy, where each participant could access the video materials at any time during the course;

- **Discussion forum** was organized based on discussion topics given on a daily basis (one per day);

- Final Quiz test was given on 2nd of October (Monday), at the end of the course (within a given time window for accessing the Quiz, on 2nd of October, and given time period for solving the Quiz after accessing it, while the Quiz itself was based on multiple choices questions);

- All **announcements for all events** (video lectures, quiz and forums) were given in a timely manner by the course tutor.

7

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PAŃSTWOWY INSTYTUT BADAWCZY

ITU CoE e-learning course on:

Wireless Access Technologies to Internet Network
25 September – 2 October 2017

Program of the course:

Lecture Number	Title of the Video Lecture	Video Duration
1	Wireless and Mobile Internet Fundamentals	75 min
2	4G access technologies by 3GPP: LTE/LTE Advanced	77 min
3	Evolved Packed Core (EPC) for Mobile Internet Network	60 min
4	4G access technologies by IEEE: Mobile WiMax	33 min
5	WiFi access technologies: IEEE 802.11n/ac/ad	68 min
6	QoS in wireless and mobile networks	61 min
7	4G mobile VoIP and mobile IPTV	85 min
8	OTT broadband Internet services in wireless and mobile networks	74 min
9	QoS assesment and QoS parameters for mobile services	35 min
10	Regulatory and business aspects for wireless and mobile broadband access technologies	81 min
	Overall	10 h 49 min

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PAŃSTWOWY INSTYTUT BADAWCZY

ITU CoE e-learning course on:

Wireless Access Technologies to Internet Network
25 September – 2 October 2017

54 Participants

1. Latvia (Europe) – 3
2. Nigeria (Africa) – 7
3. El Salvador (Central America) – 3
4. Malta (Europe) – 3
5. Costa Rica (Central America) – 2
6. Netherlands Antilles (Central America) – 9
7. Lithuania (Europa) – 1
8. Albania (Europe) – 2
9. Kenya (Africa) – 1
10. Georgia (Europe) – 2
11. Curacao (South America) – 1
12. Vanuatu (Oceania) – 1
13. Poland (Europe) – 1
14. Qatar (Asia) – 1
15. Zambia (Africa) – 2
16. Dominican Republic (North America) – 3
17. Bosnia and Herzegowina (Europe) – 3
18. Angola (Africa) – 1
19. Sierra Leone (Africa) – 1
20. Sri Lanka (Asia) – 2
21. United States Of America (North America) – 1
22. Madagascar (Africa) – 1
23. Iceland (Europe) – 1
24. Montenegro (Europe) – 1
25. Tanzania (Europe) – 1

Participants by continents:

Europe – 18

Central America – 14

Africa – 13

North America - 3

Asia – 3

South America – 1

Australia and Oceania - 1

Success in final quiz

47 persons (from 54)

ITU CoE Workshop on:

Security and QoS in Internet Network
26-27 October 2017

- The course was organized by the ITU CoE of National Institute of Telecommunications (NIT), Warsaw, Poland, **in the period 26-27 October 2017,** and was coordinated by Dr. Sylwester Laskowski.

- **The course was tutored by Prof. Dr. Toni Janevski** from the Faculty of Electrical Engineering and Information Technologies, Ss. Cyril and Methodius University in Skopje, Macedonia.

- The course **have been recorded**.

- At the end of the training, the participant should have gained an understanding of the key aspects of:

    - Internet fundamentals
    - Internet security by IETF
    - ITU's security architectures providing end-to-end communications
    - Cybersecurity
    - Cloud coumputing and Internet of Things (IoT) security
    - Internet QoS
    - QoS parameters
    - QoS for data and mobile broadband services
    - Network neutrality and Internet KPIs measurements
    - ITU guidelines for QoS regulation

Deep Packet Inspection (DPI):

...cols TCP and UDP port number...

...values.

...different vendor...

...ters, gateways)

Some application-specific architectures:
Security architecture for mobile web services

- The mobile web services security architecture (ITU-T X.1143) consists of the following components:
  - Mobile terminals, as clients.
  - Mobile Web Services Security Gateways (MWSSG).
  - Policy Server, which manages security policies.
  - Application Service, for value-added services to clients.
  - Discovery Service, and
  - Registry Service, for internal function of the mobile operator.

...computing functional architectu...

...layer: It is the user ...ce (e.g., Web interface).

...s layer: It provides ...s mechanisms for ...nting the cloud service ...lities (e.g., web pages).

...ce layer: It contains the ...entation of the cloud ...es and controls the ...re components.

...rce layer: It contains ...ources, such as servers ...a centers), switches and ...s for the networking, ...e devices, and non-...software.

Example of KPIs for data services

- **Data** (i.e., **Over-The-Top**) services a...provide...neutrality and best effort Internet tra...agem...
- The **best-effort Internet** is about the...treatment...transmitted over the Internet, i.e. that "...est efforts" a...data, no matter what it contains, whic...cation trans...("application-agnosticism"), where it c...m or wh...

Application	Data transmission speed	
	Downstream	Upstream
Browse (text)	++	-
Browse (media)	+++	-
Download file	+++	-
Transactions	-	-
Streaming media	+++	-
VoIP	+	-
Gaming	+	++

ITU CoE e-learning course on:

Security and QoS in Internet Network
26-27 October 2017

9 Participants

1. Romania (Europe) – 1
2. France (Europe) – 1
3. Albania (Europe) – 2
4. Slovenia (Europe) – 2
5. Latvia (Europe) – 1
6. Slovakia (Europe) – 1
7. Brazil (South America) – 1

Participants by continents:

- Europe –8

- South America – 1

Success in final quiz

- 8 persons (from 9)

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PAŃSTWOWY INSTYTUT BADAWCZY

ITU CoE Workshop on:

Legal and regulatory barriers
to the introduction of cloud services in the EU
14-15 December 2017

- The course will be organized by the ITU CoE of National Institute of Telecommunications (NIT), Warsaw, Poland, **in the period 14-15 December 2017,** and was coordinated by Dr. Sylwester Laskowski.

- **The course will be tutored by Dr. Andrzej Krasuski** legal advisor, Poland.

- The course **will be recorded**.

- At the end of the training, the participant should have gained an understanding
  of the key aspects of:

  - Description of the "cloud computing" – phenomenon; depiction of common characteristics in the light of a wide variety of different definitions
  - Sources of law relating to cloud computing in the context of the lack of specific regulations concerning cloud computing
  - The role of standardization in the development and provision of security measures aimed at protecting services offered in the cloud
  - Different types of information as the subject matter of services delivered in the cloud
  - The role of participants in cloud computing contracts and its legal aspects
  - Legal and regulatory burdens related to the provision of services in the cloud
  - Auditing the cloud – the aim, scope, results and benefits of an audit
  - Enforcement of contracts for the provision of services in the cloud
  - Access to cloud services and access barriers
  - Application of cloud services to the local and state government

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ITU CoE e-learning course on:

Legal and regulatory barriers
to the introduction of cloud services in the EU
14-15 December 2017

5 (maybe 10) Participants

1. Poland (Europe) – 2
2. Lithuania (Europe) – 1
3. Saudi Arabia (Asia) – 2
4. Comoros (Africa) – 4 (?)
5. Macedonia (Europe) – 1 (?)

Participants by continents:

Europe – 3 (4?)

Asia – 2

Africa – 4 (?)

Experiences

- Finding participants for face-to-face workshops is still a challenge

- E-learning courses are the winners

- Face-to-face workshops can be the way to build e-learning courses

- E-learning courses can be the way to recoup the costs or increase the profit of face-to-face workshops

Plans for 2018

Four e-learning courses:

- 5-12 February 2018
  Strategic Aspects for Internet Governance and Innovations

- 5-12 March 2018
  **Legal and regulatory barriers to the introduction
  of cloud services in the EU**

- 2-9 April 2018
  Wireless Access Technologies to Internet Network

- 24 September - 1 October 2018
  Security and QoS in Internet Network

One face-to-face workshop:

- 25-26 October 2018
  Technical, business and regulatory aspects of 5G Networks

Thank you for your attention!