



SEMANTIC

end-to-end Slicing and data-drivEn autoMAtion of Next generation cellular neTworks with moblle edge Clouds

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WP5 – Training

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Executive summary

This report summarizes the training activities, including feedback from early stage researchers (ESRs) and involved experts from the final year of activities. It reports on the Courses 3, 4 and 5.



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1 Introduction

Work package 5 (WP5) in SEMANTIC is responsible for planning, organizing and executing the training events, schools and courses of the project. This report summarizes the training activities, including feedback from the early stage researchers (ESRs) and involved experts from the final year of activities.

The training activities within SEMANTIC were as in Table 1.

Table 1. Training activities within SEMANTIC.

	Main Training Events & Conferences	ECTS	Lead Partner	Month
1	School 1: 5G architectures, enabling technologies, vertical industries and KPIs	no	NOKIA (ind)	M14
2	School 2: E2e validation of 5G networks: key analytical, prediction, simulation, experimental tools	no	EUR (ac)	M14
3	First SEMANTIC Industrial Dissemination Day	no	TLN (ind)	M32
4	Course 1: Intellectual skills, scientific writing and research integrity	no	UOA (ac)	M18
5	Course 2: Team skills, leadership, multi-cultural awareness and gender issues	no	PDT (ac)	M18
6	First Workshop	no	CLM (ac)	M21
7	School 3: PHY layer techniques and design principles in 5G New Radio	no	CLM (ac)	M25
8	School 4: MEC-empowered service provisioning and integration in 5G networks	no	FOG (ind)	M25
9	School 5: Emerging models and trends for dynamic network slicing and resource virtualization	no	CTTC (ac)	M29
10	School 6: Leveraging data analysis and machine learning for network management and automation	no	TLN (ind)	M29
11	Course 3: Influence, outreach and communication skills	no	IQU (ind)	M52
12	Course 4: IRP management and standardization	no	NOKIA (ind)	M42
13	Second SEMANTIC Industrial Dissemination Day	no	NI (ind)	M45
14	Second Workshop	no	EUR (ac)	M35
15	Course 5: Fundraising, Strategic Management and Entrepreneurship	no	TLN (ind)	M45
16	Final Conference	no	UOA (ac)	M45
17	Plenary Meetings	no	CTTC (ac)	3 per year

In Chapter 2 we report on Courses 3 “Influence, outreach and communication skills”, Course 4 “IPR & Standardization” and Course 5 “Fundraising, Strategic Management and Entrepreneurship”. All activities were held online, and the content of SEMANTIC Schools and Courses (slides, presentations, photos, etc.) were made available to the ESRs in the SEMANTIC cloud.

2 Courses 3, 4 and 5

Course 3 “Influence, outreach and communication skills”, Course 4 “IPR & Standardization”, and Course 5 “Fundraising, Strategic Management and Entrepreneurship” were composed of 14 speeches by 9 different speakers plus ESR presentations over 2+2+2 days during the period April 18-19, 2024, June 27-28, 2023 and September 12-13, 2023 for Course 3, Course 4 and Course 5, respectively.

2.1 Agenda Course 3

Course 3: “Influence, outreach and communication skills”

From the 18th to the 19th of April 2024

1st Day – 18th April 2024 (half-day)

Time	Speaker	Tentative Title	Syllabus
13.30-15.00	ESRs	Lectures preparation	The ESRs will prepare a presentation on their research findings (10' one presentation for each ESR)
15.00-15:30	Coffee Break		
15.30-17.00	ESRs	Lectures preparation	The ESRs will prepare a presentation on their research findings (10' one presentation for each ESR)



2nd Day – 19th April 2024 (full day)

Time	Speaker	Tentative Title	Syllabus
09:00-10:30	Ferran Adelantado i Freixer	Hands on presentations	<ul style="list-style-type: none"> • Introduction – objectives • Preparation of presentations • Execution of presentations • Comments / corrections • Conclusions – lessons learnt
10:30-11:00	Coffee Break		
11.00-12.30	Ferran Adelantado i Freixer	Hands on presentations	<ul style="list-style-type: none"> • Introduction – objectives • Preparation of presentations • Execution of presentations • Comments / corrections • Conclusions – lessons learnt
12.30-13:30	Lunch Break		
13.30-15.00	ESRs	Revision of lectures	Work individually revising the lectures based on the expert presentation in the morning.
15.00-15:30	Coffee Break		
15.30-17.00	ESRs	Presentation of the revised lectures	<ul style="list-style-type: none"> • Presentations • Comments • Discussion • Conclusions

Speaker

- **Ferran Adelantado i Freixer** – Associate Professor at the Computer Science, Telecommunications and Multimedia Department and Senior Researcher at the Wireless Networks research lab (WINE) at the Universitat Oberta de Catalunya (UOC).

2.2 Agenda Course 4

Course 4: “IPR & Standardization”

From the 27th to the 28th of June 2023

1st Day – 27th June 2023 (full day)

Time	Speaker	Tentative Title	Syllabus
09:00-10:30	Laurent Ciavaglia	From Research to Standardization	Overview of research forums associated with standards organizations like IETF, ETSI, ITU-T... How (and why) to bring research ideas to the standardization and pre-standardization ecosystem Providing a few examples on research to standards paths and some insights on differences between standards organization approaches to technology development
10:30-11:00	Coffee Break		
11.00-12.30	Laurent Ciavaglia	A Brief Retrospective of Autonomic Networking - ITU- T Focus Group on Autonomous Networks (FG-AN)	Overview of research forums associated with standards organizations like IETF, ETSI, ITU-T... How (and why) to bring research ideas to the standardization and pre-standardization ecosystem Providing a few examples on research to standards paths and some insights on differences between standards organization approaches to technology development
12.30-13:30	Lunch Break		
13.30-15.00	Laurent Thiebaut	(network/mobile) Standardization and IPR	Explains how standardization works: organization of a standard body, how a standard meeting works, relationship with IPR via the example of 3GPP
15.00-15:30	Coffee Break		



15.30-17.00	Thibaud Biatek	Standardization in multimedia and multiverse fields	Overview of multimedia ecosystem (codecs, formats, and protocols) Dive into codec standardization area: <ul style="list-style-type: none"> Core SDOs (e.g. MPEG, AOM) Applicative layers and integration in devices (DVB/ATSC, SBTVD, support in browser) Current state of multimedia standardization, trendy research topics, challenges of AI What about “metaverse” ? <ul style="list-style-type: none"> XR and the royalty ecosystem MSF
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2nd Day – 28th June 2023 (half-day)

Time	Speaker	Tentative Title	Syllabus
09:00-10:30	Karine Berthier	IPR	Basics about Intellectual Property Rights, patents, patentability, procedures, IP strategy...
10:30-11:00	Coffee Break		
11.00-12.30	Karine Berthier	IPR	Tips how to draft a good invention report (using the example of Nokia template) – how to search prior art in public patent databases (with practical exercises)

Speakers

- Karine Berthier** – Qualified European and French Patent attorney in charge of Patenting activity for Nokia in France and responsible for a patent portfolio in the field of "Security, Services, Applications and Analytics".
- Thibaud Biatek, PhD** – Senior Standardization Specialist on media connectivity and architecture at Nokia. Active 5G-MAG delegate, co-chair of the WG2 on media production over private network, rapporteur of WI on feasibility analysis for audiovisual production over 5G. He is or was standardization delegate for ISO/IEC, ITU-T, MPEG, JVET, ATSC, DVB, DTG, SBTVD, Alliance for Open Media (AOM), Metaverse Standards Forum (MSF). Previously holding multimedia expert positions at TDF, Qualcomm and Ateame. Author/co-author of 20+ scientific paper in multimedia area.
- Laurent Ciavaglia** – Head of network management, intelligence and data research and standards team at Nokia. Laurent contributes to network automation technologies in various standards working groups and research communities. Laurent serves as co-chair of the IRTF Network Management Research Group (NRMG) and participates/has participated in standardization activities related to network and service automation in IETF, ETSI, O-RAN, ITU-T and TMF.
- Laurent Thiebaut** – Head of Nokia delegation at 3GPP SA2 (group responsible of the overall 3GPP architecture)

2.3 Agenda Course 5

Course 5: “Fundraising, Strategic Management and Entrepreneurship”

12th & 13th of September 2023

1st Day – 12th September 2023

Time	Speaker	Tentative Title	Syllabus
09.00-10.45	Sandor Albrecht	A Swedish approach to ML/AI based innovation & entrepreneurship	<ul style="list-style-type: none"> Innovation & entrepreneurship approaches: innovation vs. research, sustainable innovation vs. disruptive innovation, etc. Selected use cases from the WALP initiative (https://wasp-sweden.org/opportunities/wallenberg-launchpad-walp/).
10.45-11:15	Coffee Break		
11.15-13.00	Sandor Albrecht	A Swedish approach to ML/AI based innovation & entrepreneurship	<ul style="list-style-type: none"> hands-on activity: students’ 3 min presentations of their concepts, using an innovation template for researchers (not focusing on the what, but on the why and what value is delivered).
13.00-15:00	Lunch Break		
15.00-1600	Gabriel Broner	Fostering Innovation in Silicon Valley	<ul style="list-style-type: none"> Gabriel Broner has lived on the cutting-edge of innovation in Silicon Valley at companies such as Cray Research, Silicon Graphics, Microsoft, AWS, Ericsson and startups Rescale and Feeder. Gabriel has developed methods to encourage innovation, and as a consultant he teaches, coaches and mentors teams to innovate.
16.00-16:30	Coffee Break		
16.30-18.00	Nikos Passas	EU project proposals & funding application	<ul style="list-style-type: none"> Dr. Passas is currently a member of the teaching staff in the Department of Informatics and Telecommunications of the University of Athens, and a group leader of the Green, Adaptive and Intelligent Networking (GAIN) research group inside the department. Over the years, he has participated and coordinated many national and European research projects. Dr. Passas will address funding schemes, understanding EU calls for proposals, templates & requirements, he will highlight dos and don’ts, and finally, he will remind the important aspects to address after a successful application.



2nd Day – 13th September 2023

Time	Speaker	Tentative Title	Syllabus
09.00-10.45	Sina Haghdoo st	Strategic project management	Project management fundamentals: <ul style="list-style-type: none"> • Why Project management (entrepreneur’s essentials)? • common definitions, different methodologies, key terms Project management in action (& tools): <ul style="list-style-type: none"> • Project phases (initiating & planning, execution & monitoring, closure), • Risk assessment and handling, • Stakeholder management, • Performance & reporting, etc • Other considerations: contractual, financial & legal
10.45-11:15	Coffee Break		
11.15-13.00	Sina Haghdoo st	Strategic project management (cont.)	Project management fundamentals: <ul style="list-style-type: none"> • Why Project management (entrepreneur’s essentials)? • common definitions, different methodologies, key terms Project management in action (& tools): <ul style="list-style-type: none"> • Project phases (initiating & planning, execution & monitoring, closure), • Risk assessment and handling, • Stakeholder management, • Performance & reporting, etc • Other considerations: contractual, financial & legal

Presenters

- **Sandor Albrecht** is a driver of the Wallenberg Launch Pad at the Knut and Alice Wallenberg foundation. Before this assignment he was Vice President, and the head of Swedish Institute of Computer Science (SICS) at RISE Research Institutes of Sweden, a position he held 2018-2019. Prior to joining RISE, Albrecht worked at Ericsson for 20 years in several leadership positions in product development and corporate research. As the Director of Research Area Networking Technologies, he was responsible for Ericsson’s corporate research agenda in areas such as 5G transport, software defined networking and optical hardware research. He was also the founder and head of Ericsson Garage, Ericsson’s global innovation and incubation platform.
- **Gabriel Broner** has lived on the cutting-edge of innovation in Silicon Valley at companies such as Cray Research, Silicon Graphics, Microsoft, AWS, Ericsson, and startups Rescale and Feeder. Gabriel has developed methods to encourage innovation, and as a consultant he teaches, coaches and mentors teams to innovate.
- **Dr. Nikos Passas** is currently a member of the teaching staff in the Department of Informatics and Telecommunications of the University of Athens, and a group leader of the Green, Adaptive and Intelligent Networking (GAIN) research group inside the

department. Over the years, he has participated and coordinated many national and European research projects.

- **Sina Haghdooost** is a Senior Project Manager, PMI PMP-certified (Project Management Institute, Project Management Professional) and with a M.Sc. in Mobile Communication. Sina has +15 years' experience of delivering cross-functional projects within Telecom, IoT, Digitalization and Data analytics as technical expert, technical manager, and project manager. Sina is currently active as entrepreneur working as consultant and co-founder of a company developing data-driven digital tools for climate and energy analysis and decision making.

2.4 Survey results

In Fig. 1, Fig. 2 and Fig. 3, we summarize the survey results for Courses 3, 4 and 5. In total 11 out of 15 ESRs responded on the Course 3 evaluation, and 14 out of 15 ESRs responded on the Course 4 & 5 evaluation. As can be seen, the courses were all well received, especially Course 3.

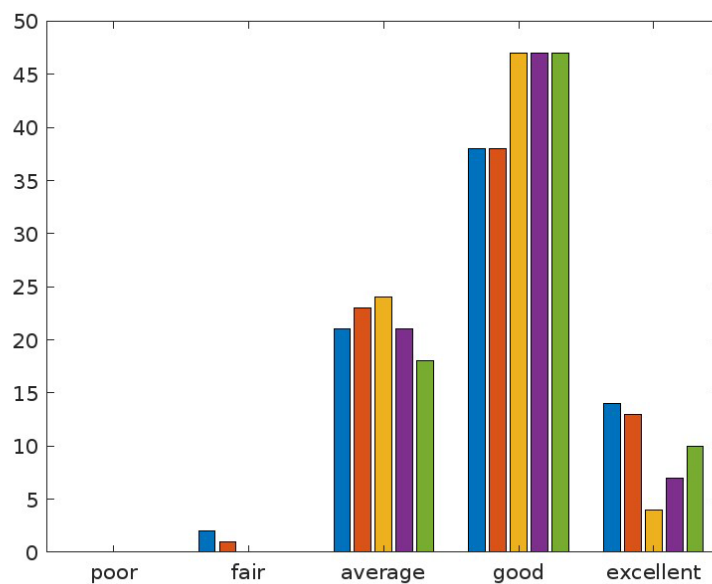


Fig.1. Overview of the feedback on Course 3.

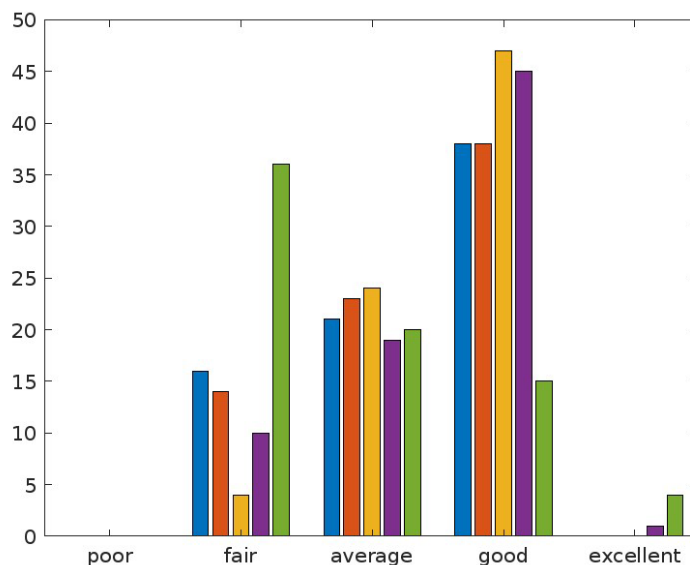


Fig.2. Overview of the feedback on Course 4.

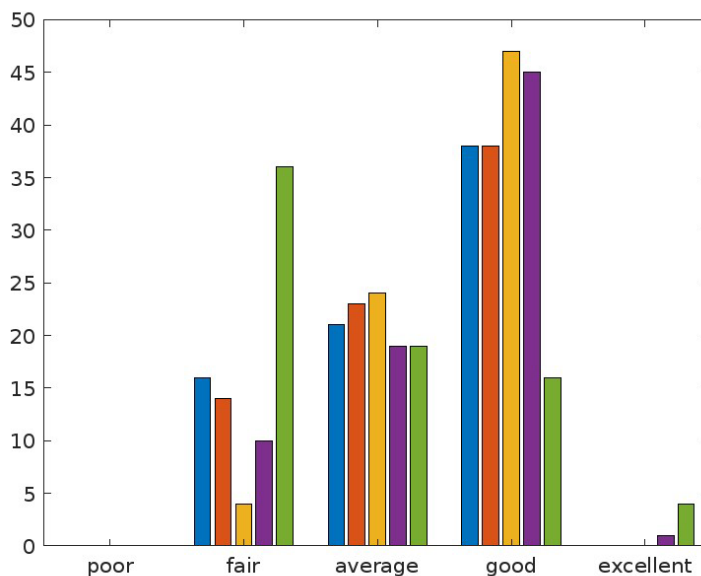


Fig.3. Overview of the feedback on Course 5.

In the surveys there were also the opportunity to provide additional comments. There were no comments on Course 3, whereas for Course 4 & 5 the following comments were received.

Comments from ESRs on Course 4

- From Research to Standardization by Laurent Ciavaglia:
"Insightful lecture pointing out the reasons of failure to move from research ideas to standardization and how to bridge this gap. Shared some very interesting related papers."
- A Brief Retrospective of Autonomic Networking - ITU-T Focus Group on Autonomous Networks (FG-AN) by Laurent Ciavaglia:
"Presented a very interesting real example of how a research concept was adopted into standards. Useful insights about the differences between standards organizations."
- (network/mobile) Standardization and IPR by Laurent Thiebaut:
"Insightful lecture. Presented a very useful example of how to build a standard according to 3GPP procedures."
- IPR by Karine Berthier:
"A useful overview of IPR and the basics of patenting."

Comments from ESRs on Course 5

- Fostering Innovation in Silicon Valley by Gabriel Broner:
"Very experienced speaker and interesting lecture. Shared his knowledge about innovation and provided real examples."
- EU project proposals & funding application by Nikos Passas:
"An ideal course about how to write research proposals and apply for EU funding."

3 Conclusions

The final year of the SEMANTIC Training activities have been implemented with the scope as planned in the DoA. Courses 3, 4 and 5 were well received by the ESRs. This is especially encouraging, given that they were held online.

4 References

None.