HLPF 2022 SDG Learning Session

Innovative Tools for Target Setting, Peer Learning and Policy Dialogue on SDG 4 and SDG Competencies

Tuesday 12th July, 2022
World Class Quality Green IT Education: Firsthand Experience in Transnational PERCCOM and Genial Masters Programs

Presenters (EMJMD Genial Full Partners):
Associate Professor Ah-Lian Kor (Leeds Beckett University)
Professor Eric Rondeau, Professor Jean-Philippe Georges (University of Lorraine)
Professor Karl Andersson, Associate Professor Solomon Oyelere (Lulea University of Technology)
Outline of Presentation

- Introduction to the case studies of world quality Green IT education (Associate Professor Ah-Lian Kor)
- How do the case studies support SDG4 and other SDGs? (Professor Eric Rondeau)
- What is the successful innovative operational framework for global collaboration in PERCCOM and Genial? (Professor Jean-Philippe Georges)
- What are the impacts and best practices for PERCCOM and Genial? (Associate Professor Solomon Oyelere and Professor Karl Andersson)
Introduction to the case studies of world class Green IT education

- Two successful case studies: EU Funded EMJMD PERCCOM and EMJMD Genial

**EMJMD PERCCOM (Pervasive Computing and Communications for Sustainable Development)**
  - Pioneer of joint postgraduate provision of Green IT education in Europe
  - 2012-2019
  - 5 Cohorts of students from 39 countries
  - Consortium: 3 Full Partners and 15 International Associate Partners
  - [https://en-gb.facebook.com/PERCCOM/](https://en-gb.facebook.com/PERCCOM/)

**EMJMD Genial (Green Networking and Cloud Computing)**
  - 2019-2025
  - 4 Cohorts of students
  - Consortium: 3 Full Partners (University of Lorraine, Leeds Beckett University, Lulea University of Technology) and 30 International Associate Partners

[Image of logos for High-Level Political Forum on Sustainable Development, EMJMD Genial, and other universities and organizations]
Primary goals
- EMJMD PERCCOM: Promote environmental awareness and equip ICT professionals with Green IT-related competencies for building cleaner, greener, more resource, and energy-efficient cyber-physical systems.
- EMJMD Genial: Train ICT professionals and equip them with green IT skills/competencies to design and implement sustainable ICT applications and services.

Success Stories
- Number of applications: Cohort 1 (150 applicants); Cohort 2 (450 applicants); Cohort 3 (717 applicants)
- EMJMD PERCCOM: 88 trained ICT professionals in pervasive computing and communication technologies with embedded green IT skills. Our survey results in 2019: 44% are in academia (including PhD study), 40% in specialist IT jobs and 16% in non-IT jobs.
- EMJMD Genial: training of Cohort 1 (19 students) and Cohort 2 (21 students) in Green Networking (UL); Green ICT (LBU); Green Cloud Computing (LTU). Expected 100 trained ICT professional with green IT skills by 2025.
How do the case studies support SDG4 and other SDGs?

**Quality education in IT (SDG4):**
- Offer IT technical training that is meaningful for the learner in his or her professional and personal life and in society
- Instilling a vision of ecology, sustainability, well-being, community life and cooperation, whereas the educational world is often focused on training competitors

**Addressing global warming in IT (SDG13):**
- Change the Moore's Law paradigm to a frugal IT paradigm.
- Have a holistic vision in the IT engineering phases (from manufacturing, to use, to recycling).
- Offer uncompromising digital solutions by providing the best IT service to the user while serving the planet.
- Offer intelligent solutions to reduce the impact of human activities on our planet.
A Sustainable IT education with a difference:
- Promote the value of each person's skills, which may be technical or more societal in nature
- Encourage the creation of a vision of a digital world through different sensitivities for a better use in everyday life (among children, elderly, men, women) in various cultures and social categories.

Strengthen global partnerships (SDG17):
- Train student cohorts that are not only gender-balanced, but also internationally diverse to encourage exchange and contradictions from different backgrounds.
- Train students through a panel of experts (academic, industrial) coming from all continents to show particularities but with a common commitment to preserve our planet.
What is the successful innovative operational framework for global collaboration in PERCCOM and Genial?

- Genial Overview
Genial Programme Structure

• Semester 1: Network, Green Networking and Eco-Design (Université de Lorraine, France)
  (a) Communication protocols;
  (b) Internet of Things;
  (c) Quality of Service and Quality in Sustainability;
  (d) Green Networking

• Semester 2: Smart and Sustainable Computing (Leeds Beckett University, UK)
  (a) Green ICT and Environment;
  (b) Eco-Engineering;
  (c) Data Analytics and Visualisation;
  (d) Intelligent Systems and Robotics

• Semester 3: Wireless Communications, Green Storage and Cloud Computing (Luleå University of Technology)
  (a) Network Programming and Distributed Applications;
  (b) Energy Efficient / Advanced Wireless Networks;
  (c) Green Cloud Services

• Semester 4: Masters Research and Dissertation (in full/associate partner institution)

• Annual Summer School – Invited Lectures; MSc Thesis Defense; Research Posters
Awards

• Masters in Complex System Engineering (Ingénierie des systèmes complexes): University of Lorraine (France);

• Masters in Information and Technology - Sustainable Computing: Leeds Beckett University (UK) (note: it is MSc Information and Technology with a specialised route in Sustainable Computing accredited by BCS).

• Masters in Computer Science with specialism in Pervasive Computing and Communications for Sustainable Development: Luleå University of Technology (Sweden).

• Genial Joint Diploma Supplement
What are the impacts and best practices for PERCCOM and Genial?

Within Academia
- New cooperation in research activities
- Improved pedagogical practices and methodologies
- Doctoral students – leading to academic career pathways
- Acquisition of cutting edge and sustainability-related expertise
- Collaboration – administrative, teaching and research
- Exchange of good practices
Outside Academia

- Environmental impact
  - Reduced pollution
  - Reduced earth resource use

- People - Upskilling and progression
  - Closing digital divide
  - Increased employment
  - Increased effective international partnerships

- Profit
  - Reduced environmental costs
  - Reduced capital and operational costs
  - Increased quality of service, quality of experience, and quality of life
Thank You

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