LUMINOUS

Introducing the Research Community

Eva Pongrácz

Thule Institute

Centre of Northern Environmental Technology
(NorTech Oulu)

http://www.oulu.fi/luminous/

Background – The Research Assessment Exercise (RAE) process

- RAE assesses the quality of research in universities, enabling to produce quality profiles of research activity made by institutions

- The aim of RAE 2013 was to
    - promote multidisciplinary and interdisciplinary research
    - help researchers build larger, innovative and internationally significant research communities (RCs)

- The RAE process started in September 2012, 47 RCs registered by 7.1.2013 – participation voluntary but highly recommended

- Research plans were to be submitted by 31.3. for 2014-2018

- RAE2013 assessment is crucial to determine the scientific profile of the University of Oulu.
    - The RAE2013 evaluation report will be used to determine research trends and priorities
    - The most successful RCs will receive long-term strategic funding

http://www.oulu.fi/english/Info_bank

The RAE terminology

- Three panels:
  - **Health and Biosciences** (H&B)
  - **Human Sciences** (HS)
  - **Technology and Natural Sciences** (T&NS)
    - The RCs selected in which panel(s) they are to be evaluated
    - *We signed up to be evaluated by all three panels*

- Three levels:
  - **Veni** (15) –New research vistas/openings ← *we are this*
  - **Vidi** (21) – On the threshold of international breakthrough recognition
  - **Vici** (11) – World class research

- Key concepts:
  - RC: Research Community: 15-120 members – we are 120
  - RG: Research Group – our is made of 16 groups (5 are 1 person groups)
  - PI: Principal Investigators: research group leaders

http://www.oulu.fi/english/sites/default/files/content/Muokattava_RAE2013_11032013_persons_FINAL.pdf

---

The idea is forming…

- The planning process was initiated by the Thule Institute 2.11.2012

- The idea was based on our SMARCTIC (smart Arctic specialization) project
  - The objective of the project is to formulate a future vision and a roadmap toward the further development a Finnish Arctic expertise
  - The project primarily evaluates how the principles of sustainable development and human well-being shall be realized in future natural resource exploitation projects
  - http://nortech.oulu.fi/eng/SMARCTIC.html

- Based on the expressions of interests, the 1st draft was formulated 22.11.2012, made of three key elements
  - Safe life
  - Smart living
  - Smart energy and materials

- The first workshop meeting on 15.12.2012 formulated the goal: Sustainable Northern Communities

- The research plan then was formulated over several workshops and discussions up until March 2013

RGs

- Equality, Diversity, Change
  - Violence, conflicts and empowered solutions
  - Transnationalism, Border-Crossing and Agency
  - Health and wellbeing
  - Diversity and intercultural education
  - Postcolonial perspectives on diversity and equality
  - Social dialogue, conflict resolution

- Smart structures
  - Smart city
  - Smart architecture
  - Digital society
  - Observing and visualizing the North

- Smart systems
  - Control for sustainable technology
  - Intelligent energy grid
  - Smart water
  - Material flows and smart energy networks
  - Modelling for sustainable technology
  - Multiple use of resources

PIs

- Equality, Diversity, Change
  - Vappu Sunnari
  - Seija Jalagin
  - Arja Rautio
  - Maria-Liisa Järvelä
  - Vanessa de Oliviera
  - Timo P. Karjalainen

- Smart structures
  - Helka-Liisa Hentilä
  - Aulikki Herneoja
  - Anri Kivimäki
  - Elena Kozlovskaya

- Smart systems
  - Kauko Leiviskä
  - Enso Ikonen
  - Jaakko Rämö
  - Eva Pongrácz
  - Esa Muurinen
  - Anne Tolvanen

Equality, diversity and change (55)

- The **Health and wellbeing** RG investigates human stress reactions to environmental and technological changes in the North.

- The **Violence, conflicts and empowered solutions** RG will study violence in interpersonal relations.

- The **Transnationalism, Border-Crossing and Agency** RG focuses on identities and diversities, analyzing northern communities to challenge methodological nationalism.

- The **Diversity and Intercultural Education** RG will promote interdisciplinary and cross-sectoral collaboration in educational contexts.

- The **Postcolonial perspectives on diversity and equality** RG will offer innovative forms of analysis and new ways of working together in international and academic-professional partnerships

- The **Social dialogue and conflict resolution** RG focus on environmental and social impact assessment of large-scale mining and energy project

Smart structures (23)

- The **Smart City** RG focuses on ICT supported participatory planning as sources of smart growth, empowerment and wellbeing.

- The **Smart Architecture** RG combines the research fields of lighting design, algorithm aided design and UrbanComp.

- The **Digital Societies** RG foresees 3D mixed reality environments where services and business will evolve in open community environment. Research will focus on citizen engagement through Living Labs.

- The **Observing and visualizing the North** RG provide expertise in organizing multidisciplinary observations of environmental parameters in the North, data management and visualization, utilization of e-infrastructures

Smart systems (42)

- The **Intelligent energy grid** RG will study power plants in energy networks.

- The **Control for Sustainable Technology** RG will integrate control and monitoring energy systems, indoor air quality and water cycles.

- The **Smart Water** RC will focus on monitoring water quality and innovative water treatment technologies.

- The **Material flows and smart energy networks** RG will look at material and energy synergies and resource efficiency in the North.

- The **Multiple use of resources: conflict, co-existence or symbiosis** RG investigates how the ecosystem service concept aids at promoting sustainable land use and can be adopted to natural resource governance

- The **Modelling for sustainable technology** RG will provide input into predicting the dispersion of emissions from industrial activities and human societies and aid the design of better industrial processes

Expected scientific impact

- During 2014–2018 we aim to study what the **constitutive markers of sustainability** are and to **develop methods to measure sustainability**, particularly from the point of view of human communities

- The 5-year period includes shorter cycles of projects that follow the development of sustainability in
  - water, energy and waste systems,
  - built environment, digital systems,
  - education, transnationality, locality
  - diversity, and participatory agency

Expected results

- Long term monitoring and research of the processes that are key in understanding the **change in North** and their impact on human health and community well-being

- Identification of the major missing links between the **life cycle of the northern built environment** and human well-being

- Creating integrated and automated, (aka.) **smart monitoring systems**, technologies and information databases

- Breaking new ground in development of a built environment monitoring system with the aim to improve human well-being that could use **smart automated methods and technologies**

- Developing concepts and tools of smart solutions, systems and structures and test them in **pilot projects**
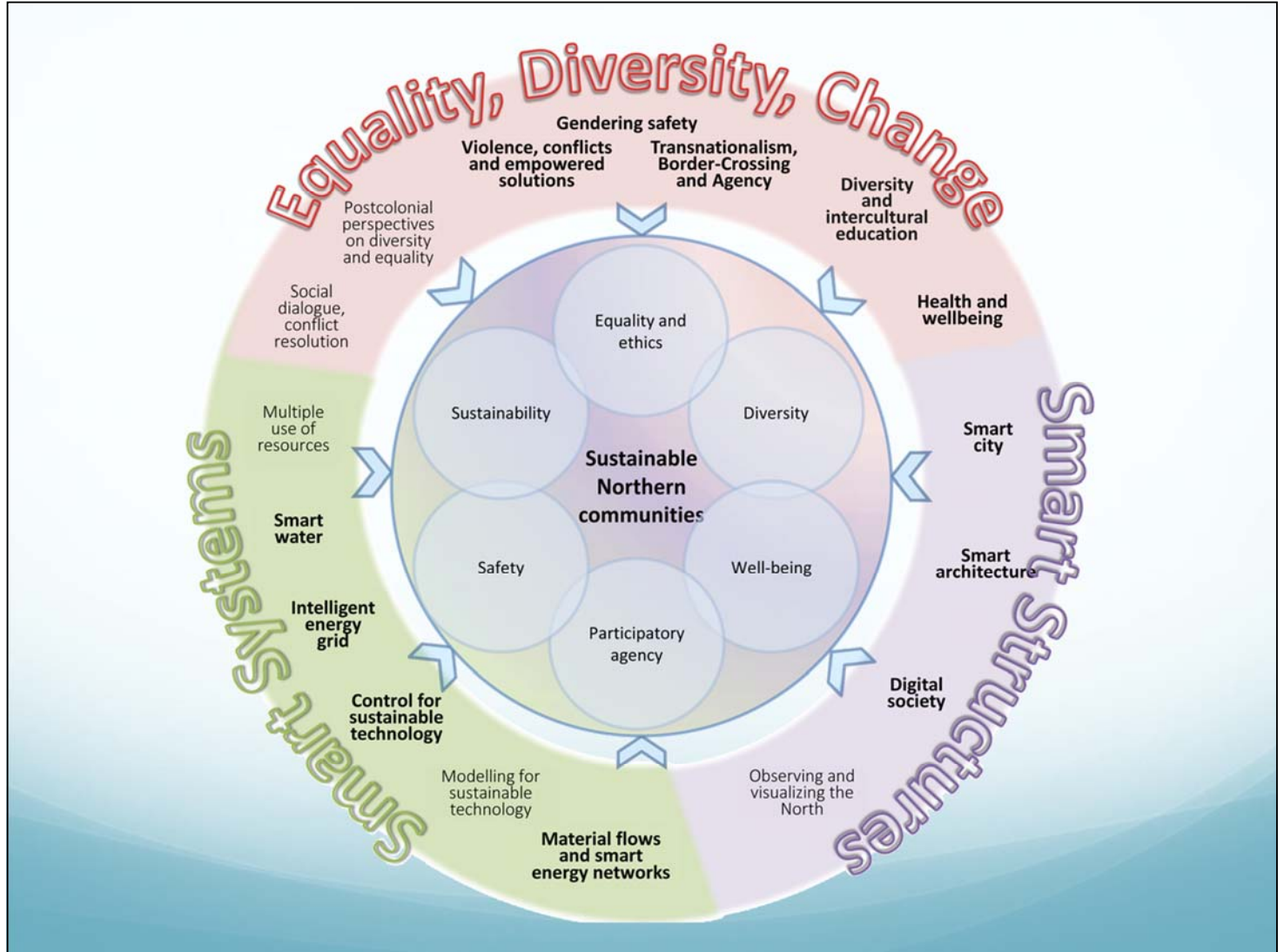 - Pilot areas. Hiukkavaara, Sodankylä

Expectations from the RC

- The RC builds on the well-established and recognized work of the Thule Institute in **northern issues** (global change, health and well-being, sustainability and environmental technology)

- Aimed at a **transdisciplinary approach** in addressing challenges posed by global and local changes that are increasingly more interwoven and call for new solutions and co-creative contributions.

- We see **the far North as a fruitful target for research** because of its long history of both great challenges and smart solutions for human well-being.

- LUMINOUS can thus serve as platform for emerging technologies, structures and human agencies for **enhancing sustainable communities under constant change**.

- We think this transdiciplinary collaborative team is **unprecedented**, and it is expected that this RC can **position itself fast on the top of the international research field**, because of our topical subject and innovative approach.

- The groups in the RC foster a feasible research culture **help find collaborating themes** and multidisciplinary approaches.

Social impacts

- Investigating phenomena of major importance such as human *well-being* and *sociomateriality*

- Strong gender perspective when studying human communities and social impact

- When researching *safety* and *equality*, particular attention will be paid on the realization of the issues through the concepts of *power, agency* and *human capabilities*

- Key for all RGs is the *participatory orientation*, challenging the quality of the relationships in the research

- The RC will also use conceptualizations and approaches such as *transnationlism* and *diaspora*

- *Diversity* (as opposed to monoculturalism) in society and in research methods is considered a valuable goal

What the RC can do?

- Strategic instrument in the scientific integration of different RGs

- Access to national and international research research environments

- Platform for educating the next generation of scientists with capabilities of working in multidisciplinary groups and projects

- Work together on the case study areas (Oulu/Hiukkavaara, Sodankylä)

- Initiate researcher exchange programmes for short-term placement of researchers into other RGs

- Facilitate communication and collaboration among the RGs

- Organize problem-solving think tanks, "Design Factory" and "Researcher hub" events, for planning interdisciplinary projects and publications

- Organize Thematic seminars to provide forums for presenting the research in the RC

- Foster inter- and cross-disciplinary communication