ISCN 2018
SUSTAINABLE DEVELOPMENT: ACTING WITH PURPOSE

JUNE 11 – 13, 2018
STOCKHOLM, SWEDEN
Day 3 ISCN 2018

- Breakout Group Key points
- Charter Design Lab
- Group photo and Coffee
- Rapid Round
- Lunch
- ISCN Advisory Committee & Board conversation
- Leadership for Sustainable Development
- Closing Remarks
- Award Gala

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Case Study Rapid Round

- **Sarah Campbell**, British Columbia Institute of Technology (BCIT): “The Campus as an Ecocity Fractal”
- **Christophe Duwig**, KTH Royal Institute of Technology and **Janne Wikström**, Hanaholmen, Cultural Centre for Sweden and Finland, "Including sustainability into doctoral studies"
- **Tom Heel** and **Rupert Stuart-Smith**, University of Oxford, "Designing effective behaviour change interventions"
- **Nilesh Y. Jadhav**, Nanyang Technological University, "Achieving Sustainability Campus Goals with Virtual Environment Multi-Physics Modelling"
- **Yolanda Mendoza**, Universidad Autónoma de Tamaulipas: “Starting Sustainability: From Research to a Sustainable Development Plan”
- **Francois Miller**, McGill University, “Catalyzing a Culture of Sustainability at McGill University with the Sustainability Projects Fund”
- **Caroline Savage**, Princeton University, “Campus as Lab: Best Practices in North America”
- **Giulia Sonetti**, Politecnico di Torino: “When the buildings become sentient - Exploring tools for human centric energy strategy in Universities”
- **Leendert Verhoef**, Delft University of Technology
The Campus as an Ecocity Fractal

Sarah Campbell
British Columbia Institute of Technology (BCIT)
50% reduction in GHG’s

Employee engagement and living lab opportunities for students

Ecological restoration

commons.bcit.ca/factorfour/
Mixed Use Classrooms, offices, shops (NE1)

FACTOR FOUR AREA

canadianway.ca/factorfour/
Including sustainability into doctoral studies

Christophe Duwig,
Department of Mechanics, School of Engineering Sciences
Pressure on doctoral students is continuously increasing

High (international) competition, Courses, Publish or Perish
But we want them to get perspective, understand how they can change the world.

How to inject perspective, sustainability, diversity, and dream into hard core science?
The philosophy behind *Engineering for a Sustainable Society*

- Give PhD-students the freedom to choose
- Give them the chance to meet others
- Give a sustainable and multidisciplinary perspective
- Inspire by linking science and societal challenges.
- Train to identify relevant data & tools for reviewing technological gaps
- Relate innovation needs with research

*Train students to find the Why*
How we do so ...

- Open PhD-students to the world
  - Invite 9 external speakers, no engineers!
  - Group the students across disciplines and origine
  - Give each group (5 stud.) a coach
- Give them rather free assignments (emotional motivation)
  - Choose a challenge
  - Explain us how big it is (Presentation #1)
  - Tell us about the technology involved (Pres. #2)
  - Tell us about the science needed (Pres. #3)
  - Peer evaluation & discussion leader (All presentations)
And the students

- Showed much interest: 40 demands for 20 seats
- 6 disciplines, 11 nationalities, no drop out
- Most of them chose a SDG disconnected from their research
- Positive and useful feedback
  - Good format with 4x full days
  - Appreciated the discussions
  - Challenged by some the speakers
  - Difficulties separating presentation #2 and 3
  - Felt high workload (above the 3 ECTS)
  - Some request continuation course
Behaviour change interventions for reduced energy use

Best practice for universities

Rupert Stuart-Smith, University of Oxford and IARU Sustainability Fellow, 2017
Report Purpose

- Move to comprehensive, evidence-based campaigns to reduce energy use at universities.
- Sets ‘The Behaviour Change Wheel’ in the context of changing energy use.
- Provides easy-to-follow guide for changing energy behaviours, laying out basic steps to follow and providing flexibility for your institution.
A Path to Success

ENVIRONMENTAL SUSTAINABILITY at OXFORD
### All-encompassing interventions

**ENVIRONMENTAL SUSTAINABILITY at OXFORD**
The key interventions

• Education
• Persuasion
• Incentivisation
• Environmental restructuring
• Modelling
• Enablement
The report provides

- Recommended actions to maximise the success of interventions.
- Summary of the effectiveness of different campaign types.
- An example behaviour change campaign.
- Templates to help design your campaign.

Key interventions

ENVIRONMENTAL SUSTAINABILITY at OXFORD
Read the full report at:

Rupert Stuart-Smith
rupert.stuart-smith@st-hildas.ox.ac.uk
Achieving Sustainability Campus Goals with Virtual Environment MultiPhysics Modelling
Project Objective:
Simulating Campus-wide Technology Impacts for EcoCampus

Methodology:
Interactive, 3D, Visualization and Dynamic Simulation Tool Using MultiPhysics Modelling.

Timeline:
August 2016 – July 2018

Team Members:
Nilesh Jadhav, Priyanka Mehta, Rithika Thomas, Shashwat

Industry Collaborator:
❖ 21 Buildings modelled in details
❖ 12,000 spaces simulated (incl. labs, offices, lecture theatres, etc.)
❖ 1,500 data channels
❖ 20+ Emerging technologies simulated

200 hectares, 100+ Buildings, 33,000 students
Key Energy consuming buildings and spaces on campus simulated

Virtual Models

Data Analysis

20+ Technologies Simulated Including:
- New Tropical HVAC
- Building Envelope & Lighting
- Sensors and smart controls
- User Behaviour
- Renewable Energy
Results of 13 simulated buildings show 21% average campus savings.

Baseline consumption for 13 simulated buildings:

- Baseline Consumption of buildings within 5% deviation from actual measured energy consumption.
Results Example:

- 21% average energy savings simulated through technology implementation on selected buildings
Most optimum locations for Daylight Sensors on campus identified
Most optimum locations for Passive Displacement Ventilation

Results Example:

- Most suitable spaces for demand controlled ventilation savings identified
Thank You!
STARTING SUSTAINABILITY:
From Research to a Sustainable Development Plan

Dr. Yolanda Mendoza
Universidad Autónoma de Tamaulipas

ISCN Conference 2018:
Sustainable Development: Acting with a Purpose
June 11-13 Stockholm.
There is no elevator to success. You have to ....take the stairs.
What happened after?

Operations is still the **weakest** Sustainability category.
Gracias /Thank you / Tack så mycket
Catalyzing a Culture of Sustainability at McGill University with the Sustainability Projects Fund

François Miller
Sustainability Director
McGill University
Student Contribution
(~$0.55/credit) + University Match
$940,000+/year to advance sustainability on campus
190+ PROJECTS APPROVED SINCE 2010

APPROXIMATELY $7 MILLION IN FUNDING ALLOCATED

87% OF PROJECTS ARE COLLABORATIVE

FUNDED PROJECTS RANGE FROM $150 TO $300,000+

MORE THAN 2,200 VOLUNTEERS MOBILIZED

300+ STUDENT JOBS CREATED
Thank you!

For more information, please visit our website:

www.mcgill.ca/sustainability/spf
PURPOSE
ACT WITH PURPOSE
1

Play to your strengths
2
Bloom where you are planted
3
Practice in community
ACT WITH PURPOSE
ACT WITH US FOR PURPOSE

TinyUrl.com/CampusAsLabResources
“Hi, I’m classroom one. Are you happy with this temperature?”
The preliminary workshop

- Interaction
- Psychological implications
- Privacy and Ethics
- User Satisfaction
- Behavioural Change & Awareness
- Business Opportunities
The prototype
How it works
Exploring the Potentials of ICT Tools for Human-Centric Regenerative Design

Giulia Sonetti 1,*  📧, Emanuele Naboni 2  📧 and Martin Brown 3  📧

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FRAMEWORK DEVELOPMENT PROCESS

Initiation / founding (2016)

Literature Review (2017)

Co-creation at Conferences (2017)

Inter-conference work (2017-2018)

(Pre) Testing on Campuses (2018)
WHY, WHAT, AND WHERE ARE LIVING LABS?

Relevant
- Sustainable/social
- Urgent

Transdisciplinary
- Complex
- Iterative/Learning

Transformative
- With Co-creation
- In Real Life

Inclusive
- With all Stakeholders (needs and capacities)
WHAT IS A CAMPUS AS LIVING LAB?

... integrated organisational, technological, and socio-economic approach in which a university uses assets and facilities to investigate, test or demonstrate innovative technologies or services from, with and for their community.

... In Co-Creation with all stakeholders

And more definitions, but should not block learning

Verhoef, L.A. et al., *Towards a learning system for University Campuses as Living Labs for sustainability*, to be published
THE FRAMEWORK: A COMMON LANGUAGE

For what use?
Five Values
THE FRAMEWORK: A COMMON LANGUAGE

For what use? Five Values

How to describe? Seven Categories
THE FRAMEWORK: A COMMON LANGUAGE

Verhoef, L.A. et al., Towards a learning system for University Campuses as Living Labs for sustainability, to be published

For what use? Five Values

How to describe? Seven Categories

How to organise? Three Levels
Three step process

I. Filter (general)
Does the idea benefit from a living lab approach?

II. Define (detailed)
- All have defined and understood the desired outcomes for all
- All agree on the Living Lab set-up and participants

III. Approve (Tools),
- All have formal committed to their (financial) support
• Parallel (pre)testing in with a mix of Cases: Value, Category, and Status
• Structured Using 2 documents: Fill-form / Review
• Preliminary results positive, some remarks:
  – Provides guidance and a helpful overview of keyfactors (*various*)
  – Definitions should be improved / Levels splitted (*Stuutgart*)
  – Technically oriented, how to use for social sciences? (*Hamburg*)
  – Identifies and improves participant group (*TUD*)
WE HAVE BECOME A **COMMUNITY OF PRACTICE**

Adapted from: www.frankwatching.com
WHY, WHAT, AND WHERE ARE LIVING LABS?

- Relevant: Sustainable/social, Urgent
- Transdisciplinary: Complex, Iterative/Learning
- Transformative: With Co-creation, In Real Life
- Inclusive: With all Stakeholders (needs and capacities)

THE FRAMEWORK: A COMMON LANGUAGE

- For what use? Five Values
- How to describe? Seven Categories
- How to organise? Three Levels

WE HAVE BECOME A COMMUNITY OF PRACTICE

- Implicit/Hidden Knowledge
- Group/Team Forming
- Common Interest/Theme/Project
- Collective Intelligence
- Shared Practice
- Trust among Members
- In order to
- This knowledge

Adapted from: www.frankwatching.com

JOIN OUR COMMUNITY!
THURSDAY JUNE 14, 9:30 – 11:30

- Why, what, and where are living labs?
- The framework: a common language
- We have become a community of practice

THURSDAY JUNE 14, 9:30 - 11:30

- Relevant
- Sustainable/social, Urgent
- Transdisciplinary
- Complex, Iterative/Learning
- Transformative
- With Co-creation, In Real Life
- Inclusive
- With all Stakeholders (needs and capacities)

- For what use? Five Values
- How to describe? Seven Categories
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- Implicit/Hidden Knowledge
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- This knowledge

Adapted from: www.frankwatching.com

- Delft University of Technology
- ISCN
- DIT
- Hochschule für Technik Stuttgart
- Massachusetts Institute of Technology
- Keele University
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A glimpse at the past (sorry) and “hope(s)” and plans for the (near) future

Since 2007: Annual ISCN Conferences, Secretariat operated by Sustainserv Inc.
Since 2016: **ISCN nonprofit association** under Swiss law, headquartered at EPFL
Board (co-host members 7 (+1))
Advisory Committee (elected members + co-host representatives)
Currently, operation funded entirely by co-host and regular member fees which puts the network not into the most comfortable financial situation

My personal vision:

“**Think big**” and develop ISCN into becoming

**THE leading global network** “owned” by its members for advancing sustainable transformation within universities
Issues/Homework of the Board/AC

*Steve Cannon: There is a Scottish (or is it a Chinese expression) that you “fix the roof when the sun is shining”*

Rethink and develop strategy for network development (focus, future governance, acquisition of additional co-hosts/members, finances, role of annual conference, etc.)

Improve/intensify Board/AC communication and involve AC in strategical discussions

Increase transparency within the network (statues, finances, decisions on projects, etc.)

Increase efforts to raise 3rd party funding to support activities and projects of ISCN members
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Leadership for Sustainable Development

Sigbritt Karlsson, President of KTH Royal Institute of Technology

Patrick Prendergast, President & Provost, Trinity College Dublin, the University of Dublin

Moderator: Steve Cannon, ISCN Board President
Leadership for Sustainable Development

Inspiring Sustainability: 2017 Highlights

Energy & Climate
- 26% Improvement in Energy Efficiency
- 213% Increase in Renewable Energy
- 6% Increase in Renewable Energy
- 7% Decrease in greenhouse gas emissions
- 10% Decrease in greenhouse gas emissions
- 3% Decrease in Renewable Energy

Water & Wastewater
- 48% Reduction in water use per student in residence
- 41% Decrease in water use per student in residence

Waste & Recycling
- 46% Recycling rate maintained
- 5% Increase in waste generated
- 5% Decrease in hazardous waste

Sustainable Transport
- 97% Staff & Students use sustainable transport for commuting
- 2% Increase in bottled water cooler use

Resource Use & Food
- 51% Reduction in paper use vs. 2013 baseline

Trees & Biodiversity
- 1200+ Trees across University grounds
- Campus Pollinator Plan launched

Education & Research
- 50%+ Staff, Student & Residents Sustainability guides launched
- 100% of key tenders issued to certified environmental standards

Green Procurement
- 15th Annual Sustainability week
- University’s green pages website updated

Communication & Student Involvement
- Professor’s Advisory Committee on Sustainability & Low Carbon Living

For further details please visit the trinity green pages website www.tcd.ie/greenpages
Student Leadership
Fossil Fuel Divestment
Student Entrepreneurship

Greener Globe
• Produces a LED timed shower-head called “Aquacica”

Seashore Veg
• About harvesting seaweed to make natural products

FoodCloud
• Hooks up restaurants and retailers with charities on their area

Fumi
• An initiative to eliminate single-use plastic on campus
Leadership from the Board
Engineering, Energy and Environment: E3
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SUSTAINABLE DEVELOPMENT:
ACTING WITH PURPOSE

Profª Dr.ª Patricia Iglecias

The sustainability in the context of the University of São Paulo in 2017.
SEVERAL PARTNERSHIPS WERE SIGNED IN 2017

exchanging teaching and research in sustainability
The Regional Office of the Cities Program (UN Global Compact) was inaugurated on October 2017 at the USP main campus (São Paulo City).
UN Regional Office

incentivize educational projects and research to be carried out in enterprises and governmental agencies

pushing themes as the Sustainable Development Objectives
The USP's Environmental Policy was enacted and covers 11 themes such as water and effluents, land use, sustainable buildings, energy, green areas and ecological reserves, mobility, greenhouse gases emission, fauna, administration, solid waste and environmental education.
“Let’s Bike” - Bike Sharing System

Pirassununga Campus

Cicloway
COMMUNITY VEGETABLE GARDEN PROJECT

USP – main Campus
“Fauna and Flora Virtual Museum”
São Carlos Campus

a game for environmental education that integrate the local Fauna and Flora Museum with the activities done at their school
Center for Chemical Waste

decontamination services and appropriate waste disposal
Monitoring the Culture of Sustainability at the University

GREEN AREAS

ENERGY SAVING BEHAVIOR

MOBILITY BEHAVIOR
“Species’ Genetic Diversity Bank “
Ribeirão Preto Campus

It establishes guidelines that lead to the preservation of areas belonging to the USP-RP Ecological Reserves
To develop the Environmental Master Plans

To put into practice the USP's Environmental Policy

To develop the Environmental Management Plan

CHALLENGES AND FUTURE PLANS
THANK YOU

Profª. Drª. Patricia Iglecias
patricia.iglecias@usp.br
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