

EPICENTER

# research summit

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## Session C: Entrepreneurship programming and unprogramming

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# **1. What are the drivers for establishing programs of engineering entrepreneurship education (EEE)?**

# Drivers for establishing EEE programs:

- Discrete EEE courses driven by individual faculty members
- University-driven commitment to the entrepreneurship and innovation (E&I) agenda
- Government-driven strategic investment in technology-driven entrepreneurship education
- Student-driven entrepreneurship movement

# Course-level EEE program



Technology Strategy and Business Planning (est. 2002)  
University of Sheffield, UK



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# Institutional commitment to EEE



Skylab (est. 2013)  
Denmark Technical University  
Denmark



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- **Government-led strategic investment in technology-driven entrepreneurship education**
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# Government-led investment in EEE

Engineering 2030 (est. 2014)  
PUC, Chile



Skolkovo Institute of Science and  
Technology (est. 2012)  
Russia





# Drivers for establishing EEE programs:

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- **Student-driven entrepreneurship movement**

# Student-driven entrepreneurship movement

Startup Sauna and AaltoES (est. 2010)  
Aalto University  
Finland



## **2. What role have students played in advancing capabilities in and commitments to entrepreneurship in universities?**

# Development of university E&I capabilities

## **Model A: 'top down' with tight IP control**

- Often driven by the university TTO and triggered by a desire to realize income from university research
- Focus on university IP often leaves students, alumni and the regional E&I community marginalized

## **Model B: 'bottom up' with loose IP control**

- Often triggered by regional/national economic constraints and driven by students and alumni
- Investment is in regional rather than institutional capacity, quickly creating a vibrant and inclusive ecosystem

# Student-led entrepreneurship activities

- Student-led entrepreneurship appears to be a major driver for the development of university E&I capacity
- Often formed in reaction to dissatisfaction with the *status quo*, driven by students with existing experience and networks in the regional entrepreneurial community
- Most effective where the student movement is autonomous, empowered, inclusive and bold, with external support
- Brokers relationships of trust between university and local entrepreneurial community, often catalyzing the ecosystem
- Offers a wide array of highly imaginative EEE activities, open to students across campus
- But...is often not connected into the 'core' university functions

### **3. What assessment tools are most effective in evaluating program impact?**

# Evaluating student learning in E&I:

- An key area of weakness
- Highly variable but generally only conducted within EEE courses where specific entrepreneurship learning objectives are stated
- Where undertaken, most appear to rely on an interpretation of a students reflective project
- Some consider student self-efficacy in key E&I activities
- Significant opportunity to develop a set of tools that could be more widely applied

# Evaluating EEE program impact:

## 1. Input indicators: institutional approach

University policies and activities

Education/development opportunities offered

## 2. Process indicators: entrepreneurial culture and innovation capacity within the university

Individual staff/student skills, attitudes and aspirations

Connectivity and university/industry engagement

Relevance and quality of research output

## 3. Output indicators: ecosystem impact

Technology transfer office throughput

The creation of sustainable companies

The impact of university graduates

Broader ecosystem development



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# Thank you!



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