

Leveraging the economic potential of FCC's technologies and processes

through the identification of innovative application fields

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- BSc in Economics & Business Administration



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So... what do I have to do with the FCC study?

- Part of the  EASITrain Innovative training network (H2020)
- Responsible for the evaluation of market potential of technologies involved in building the FCC

Innovation Management

Research & Interest Fields

Technologies

Intercultural Communication

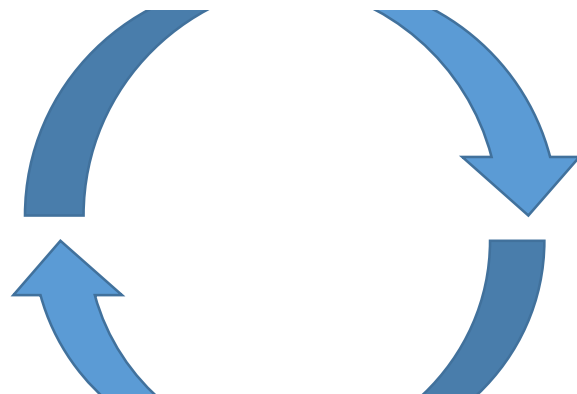
Why is that important?

In the industrial cycle, supporting the industry implies also supporting research

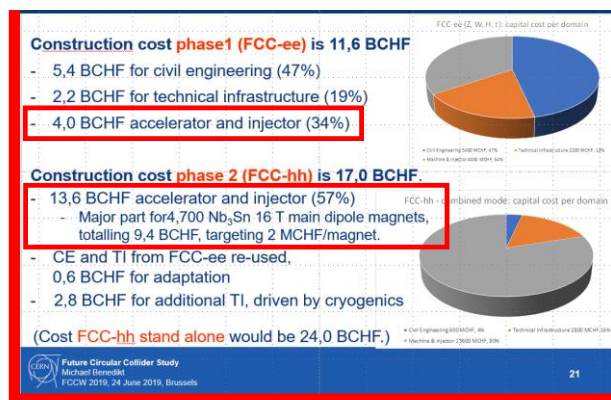


Research

Scientific Advancements



Reduced Manufacturing Costs



Various Industrial Application Fields



Higher Production Rates

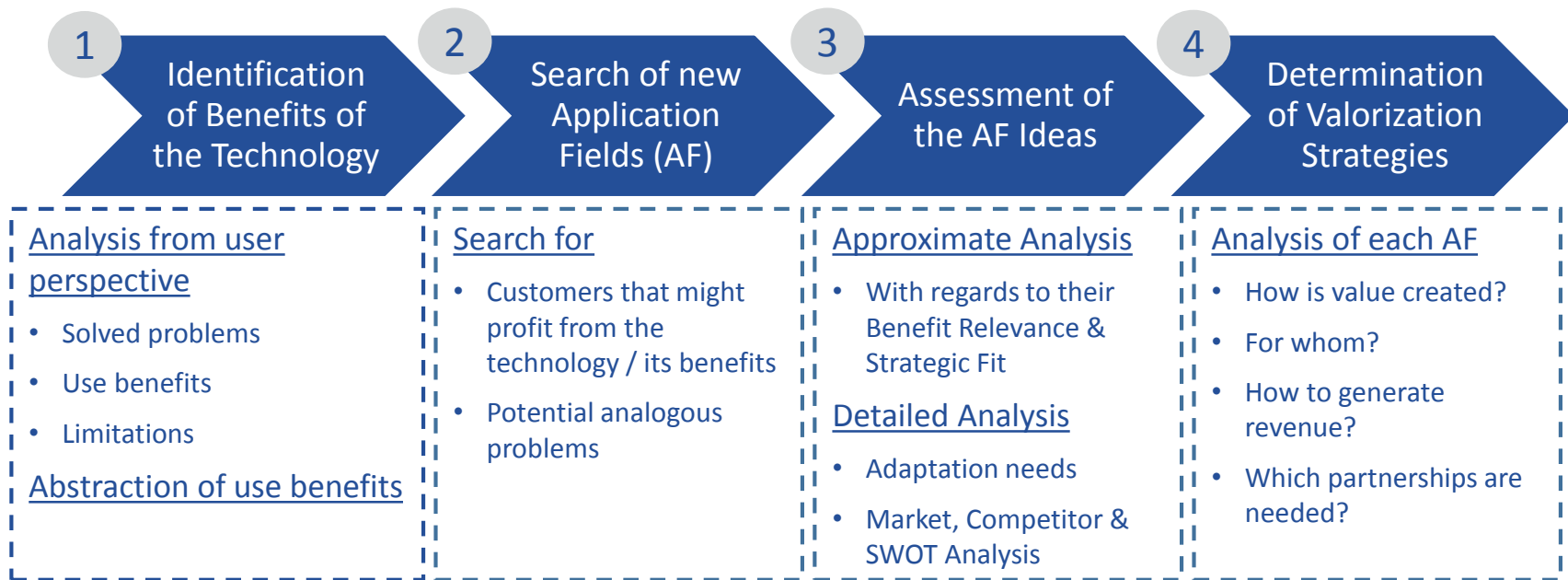
→ the more needs a technology can satisfy:

- Demand
- Economies of Scale & Scope

How to trigger finding innovative application fields

Technology Competence Leveraging*

Systematic, proactive & crowdsourcing-based method to identify and evaluate innovative application fields (AF) for (existing) technologies



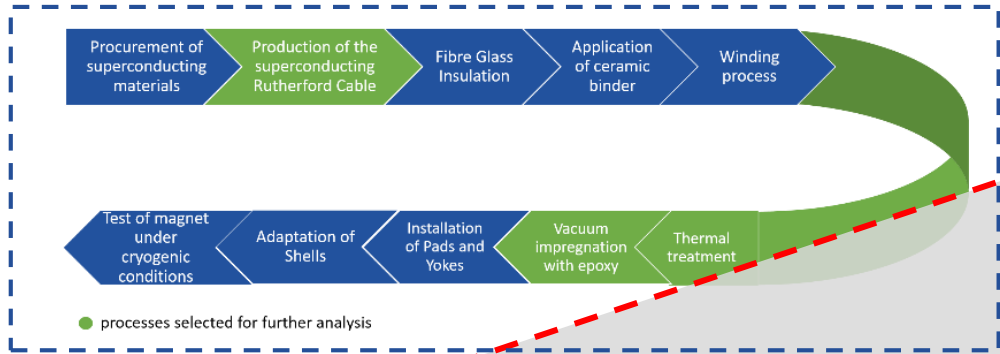
For EASITrain WP5:

- TCL for sc. Magnets as well as the manufacturing value chain of sc. Magnets

* Pioneered by Keinz, P & Prügl, R. (2010)

Application Potential Analysis of sc. Magnet Manufacturing Process

Processes involved in manufacturing superconducting magnets

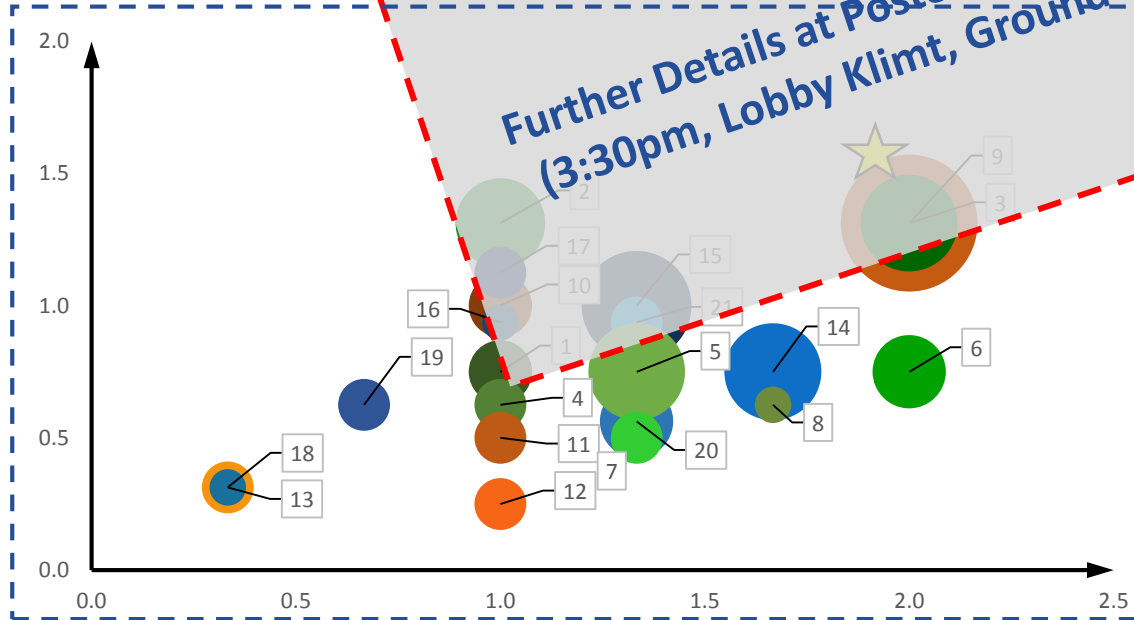


- **Superconducting Rutherford Cable**
 - 1 Aircraft charging
 - 2 Hybrid electric power-trains for cruise ships and aircraft
 - 3 Generators for wind turbines
 - 4 Server farms
 - 5 Vessel charging
 - 6 Medium- and high-voltage power lines
 - 7 Separation of chips and coolants in machines
 - 8 Linear engines

3 New potential Application Fields

Further Details at Poster Session today (3:30pm, Lobby Klimt, Ground Floor)

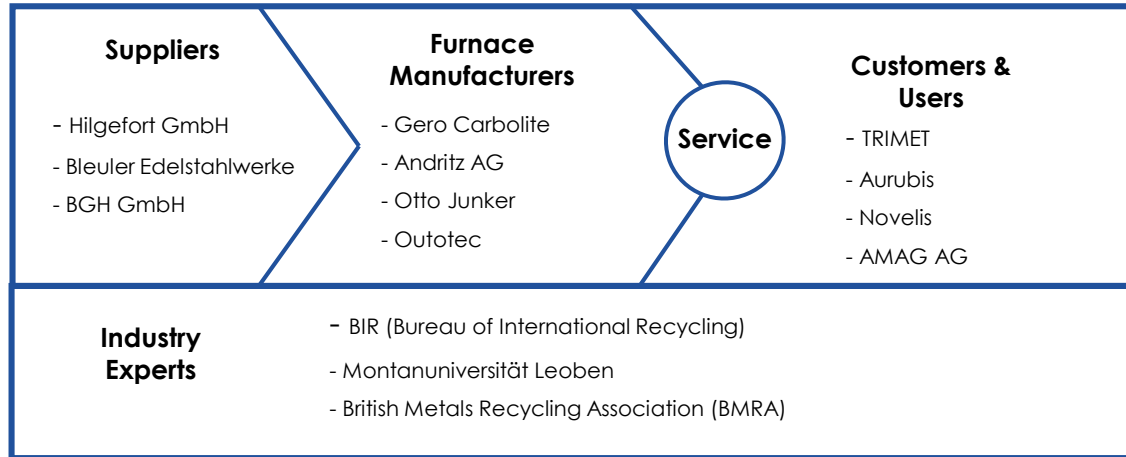
- ★ **Thermal Treatment**
 - 9 Scrap metal recycling
 - 10 Thermal treatment of Al
 - 11 Ceramic compounds
 - 12 Pharmaceutical sterilisation
 - 13 Space equipment
- **Vacuum Impregnation**
 - 14 Low-activation level radioactive waste management
 - 15 High-activation level radioactive waste management
 - 16 Carbon fibre
 - 17 Composite aircraft parts
 - 18 Rocket surface
 - 19 Space surface
 - 20 Conservation of cultural and historical goods
 - 21 Glass



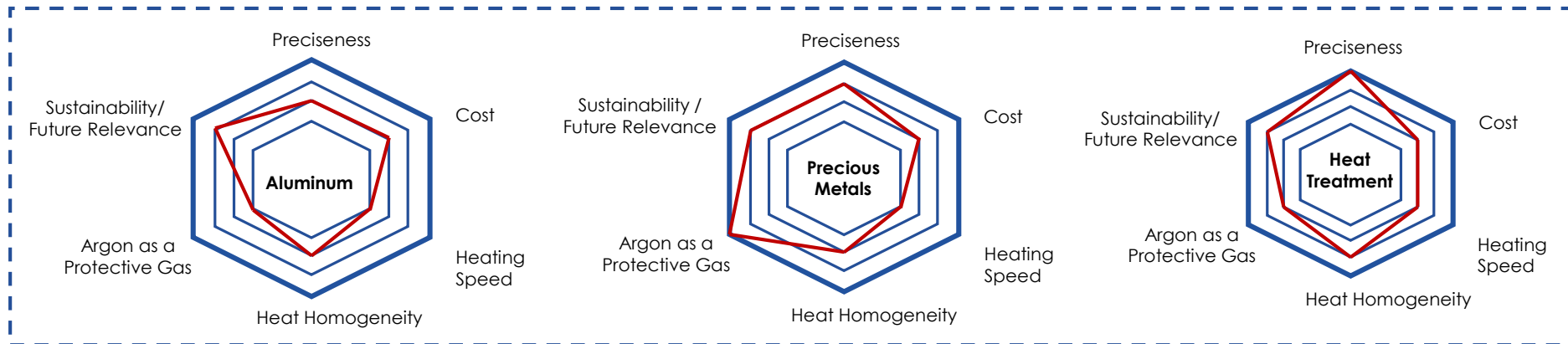
Detailed Market Analysis of the Scrap Metal Recycling Industry

4

Overview Aluminum Supply Chain



Industry – Technology Fit



Application Potential Analysis of Superconducting Magnets

Core benefits

1. High current capacity on small scale
2. Generating strong electromagnet fields
3. Longterm energy storage / instant release of high power

Hackathon (2017)



3



★ Fruit Sorting

NMR-based system enables producers to accurately determine:

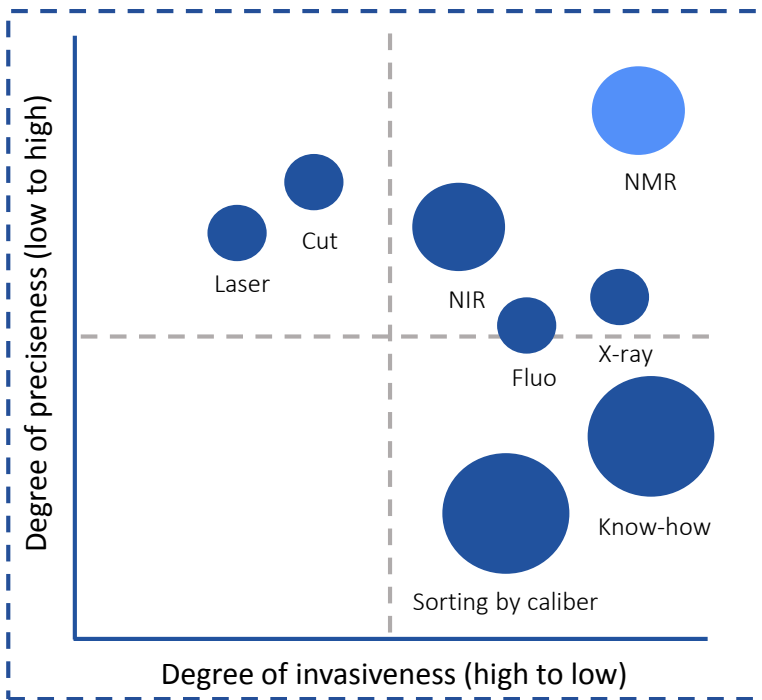
- Ripeness
- Compressive strength
- Absence of seeds
- Cavities & Density differences

in a non-destructive way

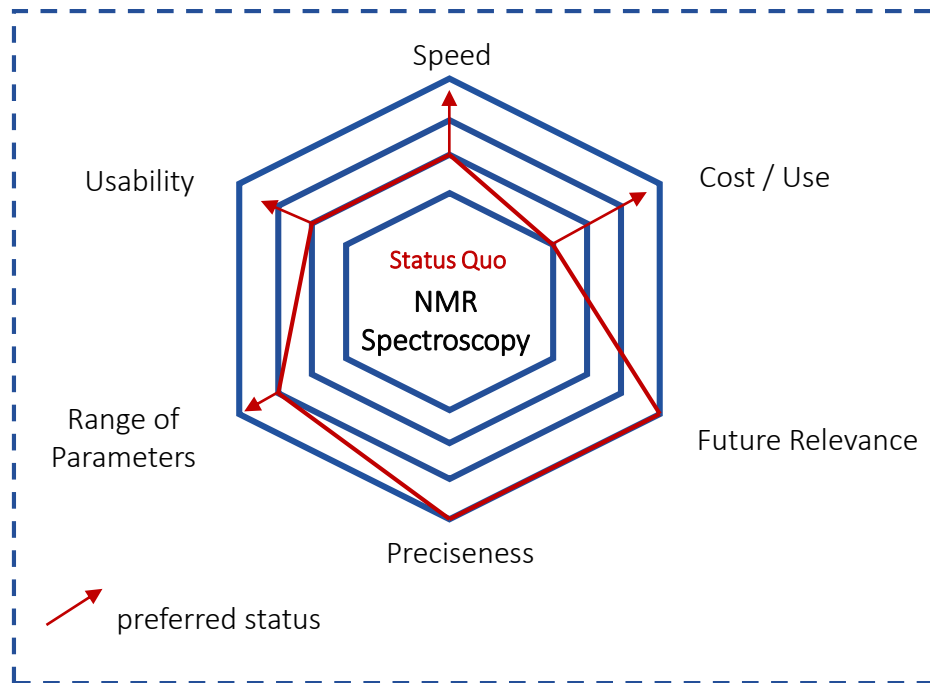


Detailed Market Analysis of Fruit Sorting Industry 4

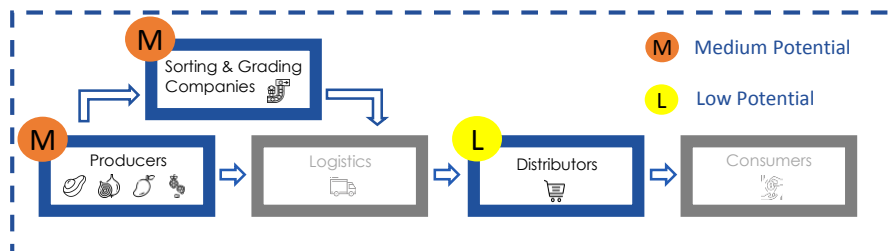
Fruit Sorting Competitor Analysis



Technology Adaptation Needs



Supply Chain & Potential



Identification of a new application field



- Chick Culling (cruel method to get rid of male chicks)
- Industry in need for early determination of sex (in the egg)
- NMR may be able to determine size of chromosomes
- Currently in the process of being validated

What's next?



**Identification of application fields
for superconducting magnets & their manufacturing process**

→ TCL Report

→ Detailed Market Analysis for specific application fields

Oct. '19

**Identification of application fields
for radiofrequency cavities & their manufacturing process**

→ TCL Report

→ Detailed Market Analysis for specific application fields

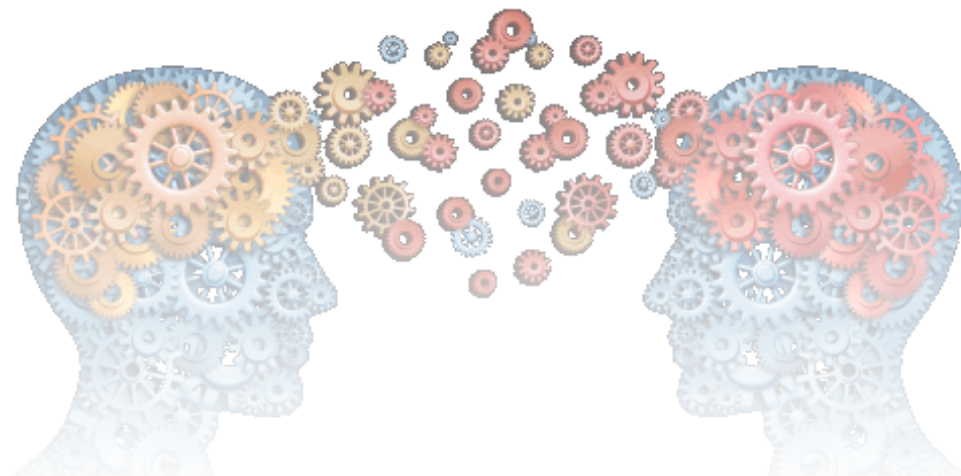
Sept. '20

Hackathon (tbd)

Things that I've learned and that you should remember from this presentation

Key Learnings

- **Consider** not only the final product but **knowledge, processes & technologies** involved in **manufacturing** the product when assessing **market potential**
- **Anticipate** dead ends & unexpected turns in finding suitable & valuable application fields → **Iterative process**
- **Work together**. There is **nothing more important than the exchange of knowledge & interdisciplinary collaboration** between scientists & industry



Thank you!

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