73. Diffusion of Research - Demonstrating of the Technology of a PhD

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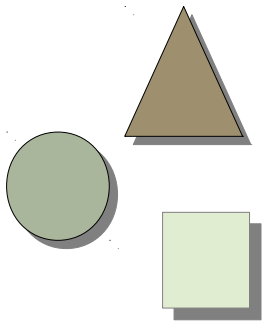
1) Technology Dossiers of the group
2) Demonstration and Technology Transfer
3) Demonstration at Transfer Workshops

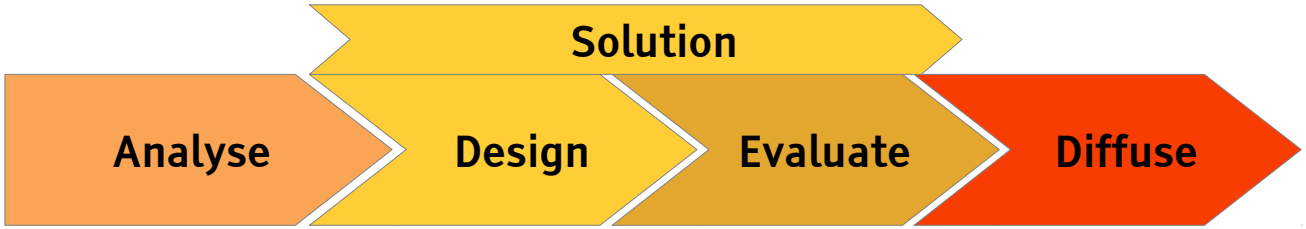


Literature

- [Carlson-Wilmot] Curtis R. Carlson, William W. Wilmot. Innovation. The Five Disciplines for Creating what Customers Want SRI International. Crown Business, US, 2006 !Excellent!
- [Maurya] Ash Maurya. Running Lean. Iterate from Plan A to a Plan That Works. O'Reilly. Excellent for Startup Founding.

Remember: Standard Research Process ADED [Österle/Otto]

- [Hubert Österle, Boris Otto. A Method For Consortial Research. Report No. BE HSG/ CC CDQ/ 6, University of St. Gallen http://works.bepress.com/hubert_oesterle/196/]
- **Analyse** existing technologies, literature, background, problems
- **Design** new technologies (new solution)
  - Think, Research and develop
- **Evaluate** technologies (new solution)
  - Show why the new technology is superior; use success criteria
- **Diffuse** (publish and demonstrate)
  - Demonstration for creating a vision
  - Find out for whom your research is relevant
  - Popularize (position) your research results
  - Be a „visible scientist“



Why Is It Important to Diffuse and Demonstrate?

Satisfaction
Nothing is more rewarding than people who are interested

Maturity

Maturity of software
Maturity of concept and idea
Clearification of relevance

Publications
Demo can be a start of a paper

For the PhD student

For the group

Collaborative Research

• Demonstrating the ability to collaborate in integrated projects

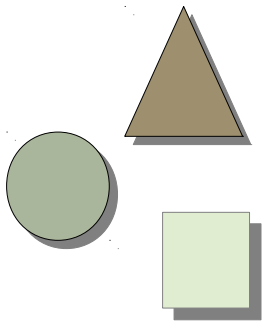
Validation of innovation potential (VIP)
is my research result really relevant for customers?
which Need does it fill (NABC)?
is it a pain killer?

Building up a trademark

showing long-term competence
Improve ability to get grants

73.1 Relevance of Research and Value Proposition Analysis

- "Why should I spend 10000 bucks for your research result?"



How Relevant is a Research Problem?

- For researchers:
  - How large is the community that will be interested in your results?
- For selling:
  - How large is the distance to commercialization and product or service
- How well-studied is the research area?
  - Age of problem
  - Maturity of field: how long it has been investigated?

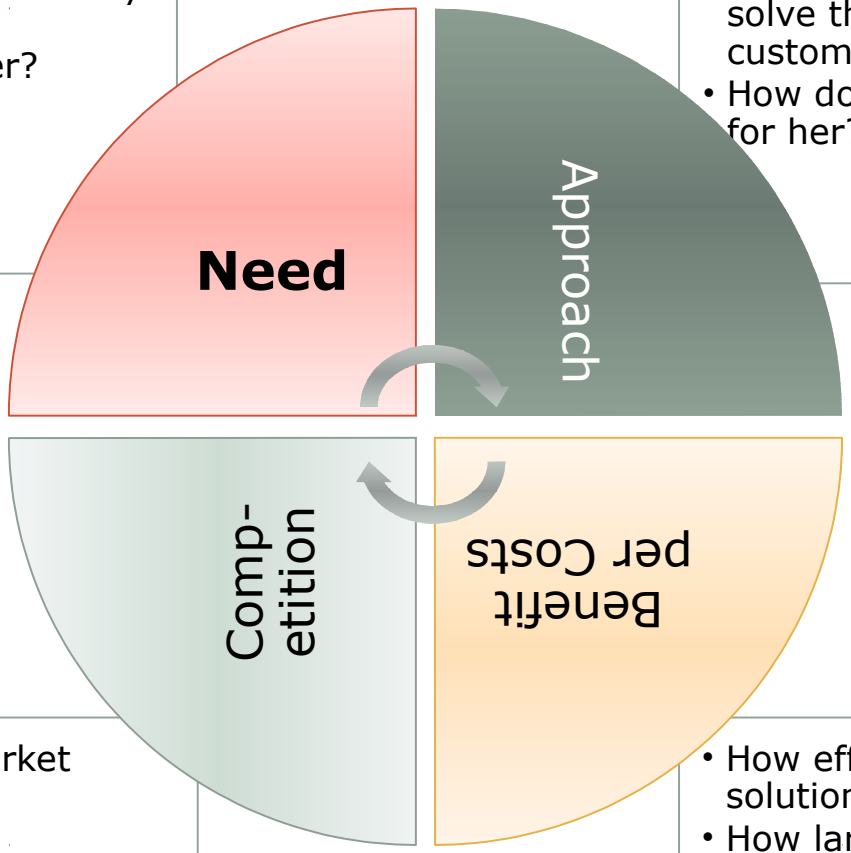
Value Proposition Analysis

- VPA is a specific Problem/Goal Analysis for the users, customers and clients of your technology
- It thinks about the **pains** and the **gains** of the customer or target group.
  - Pains are problems that hurt the customer
- Usually, the goal is to reduce pain and improve gain.
- A VPA is important for *scoping:*
  - in the beginning, in the middle, and also after a Master's or PhD process,
  - it helps to clearify the scope of the work.
- For VPA, you may use
  - Pain-Gain-ZOPP
  - B-POPP
  - Innovation Scorecard
  - NABC from Carlson/Wilmot

NABC Analysis [Carlson-Wilmot]

- What does the customer really need?
- What is of value for her?
- What is a *pain* for the customer?

- How does your company solve the needs of the customer?
- How does it create value for her?



- Who is in the market already?

- How efficient is the solution?
- How large is the benefit?
- How large are the costs?

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

Exercise: Application

- For preparing your next application for a job,
- Analyze the future employer with NABC
  - What are his needs?
  - What is your approach?
  - What is his benefits?
  - Who are your competitors?
- Learn the answers for these questions by heart, to be able to present them in the interview!

73.2 The Technology Dossiers of the Researcher's Group

- For Master's and PhD students

Technology Dossiers of Your Research Group

Group vision slides

Done by group leader

Group research slides

Group transfer field slides

Group vision document

Individual Research Leaflet

Done in parallel by Researchers

Demonstrator Leaflet

Common Research Fields Leaflet

Transfer Plan Leaflet

Done by group

Group Posters

Labcast Page

Individual Posters

Requirements for Researchers

- Every group needs to produce some **technology dossiers (Leaflets):**
  - **Individual Research Summary Leaflet (research summaries)** with 1-page research summary per PhD student and Masters student
  - **Demonstrator Leaflet** with 1-page description per demonstrator
  - **Transfer Plan Leaflet** with 1-page transfer plan per PhD student (internal and for industry; to be done in year 3)
- Every PhD and Master's student needs to produce in-lets for technology dossiers of the group (1-page research descriptions)
- These are produced in parallel with the same outline and assembled automatically into a dossier (by LaTex compilation)
- Others:
  - **Poster** set for exhibitions, poster sessions, and the hallway
- This dossier is done by subgroups, i.e., by people who team up for a project in the group:
  - **Project Research Fields Leaflet:** 1-page description of common research field between people in the group, usually in a research project.
    - This can also be arranged together with collaborating partners

Pattern for 1-page Description of Research Summary

- Name
- Comprehensible Figure or Image of the Problem or Technology
- Problem description
- Objective
- Solution (approach)
- Showcase summary (Story)
- Economic Value
-
- Contact Information: email, telephone, web, QR code, ...

- ST group template available as LaTex
- Example: ResUbic Lab Research Summary Dossier

Pattern for 1-page Description of Technology Demonstrator

- Name
- Comprehensible Figure or Image of the Problem or Technology
- Showcase summary (Story)
- Economic Value
- Contact Information

Pattern for 1-page Poster

- Name, Project, Foto of Author
- Comprehensible Figure or Image of the Problem or Technology
- Showcase summary (Story)
- Economic Value

- HAEC template available as LaTex
- Example: HAEC posters, cfAED posters
- Poster guideline of EPFL
- http://attend.it.uts.edu.au/re10/wordpress/wp-content/uploads/2010/01/poster_guideline.pdf

Screencasts

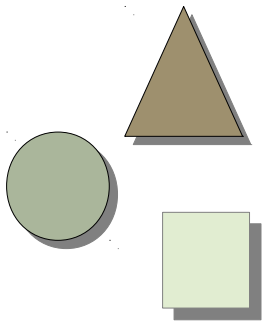
- Screencasts are good ways how to show running tools, case studies, experiments.
- They can be set up on the web and disseminate your research results.
- Screencasts
  - stay valid for several years, longer than a software prototype
  - can be collected easily on the web site of your project or your group, to show the activity of the group

Labcasts

- Some groups manage to create “labcasts”, lab videos.
- http://labcasts.media.mit.edu has a wonderful collection
- http://resubic.inf.tu-dresden.de/?page_id=465 is the current state of the labcast page of the ResUbic Lab

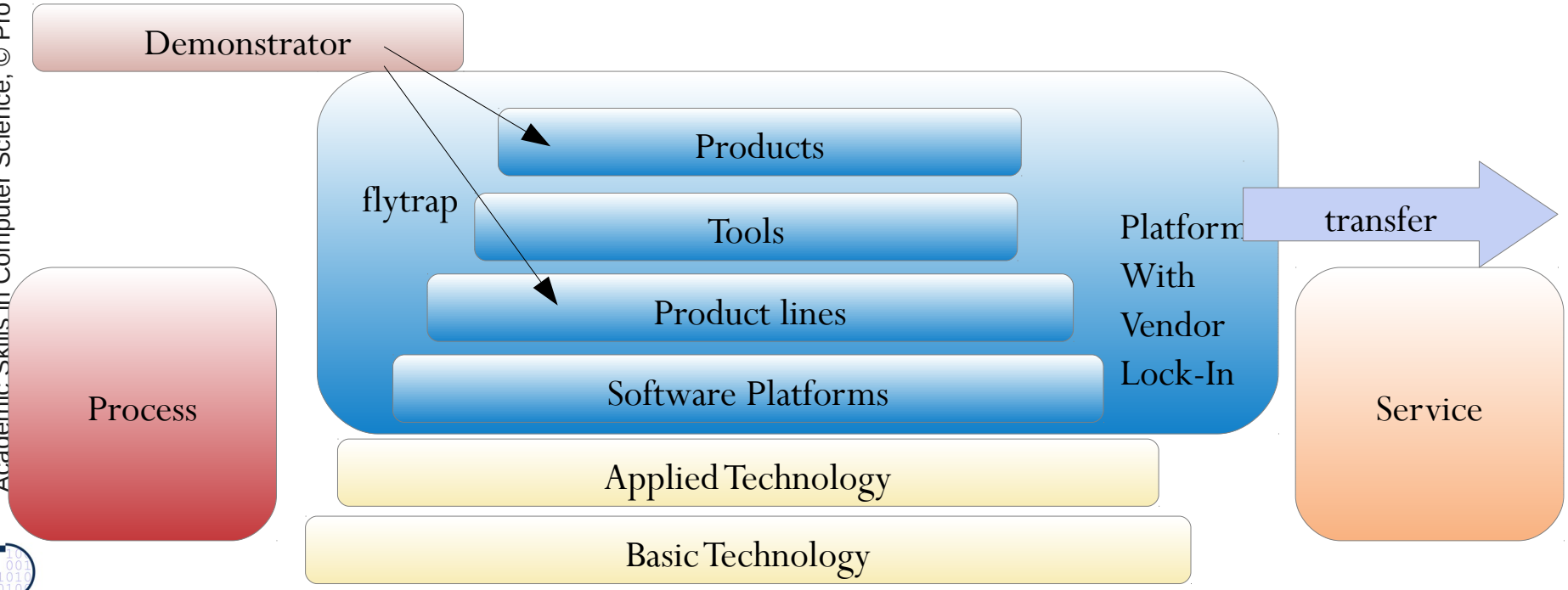
73.3. Demonstration and Technology Transfer

- For a defense, you must demonstrate your technology, your research results
- You should prepare this carefully during the entire thesis process



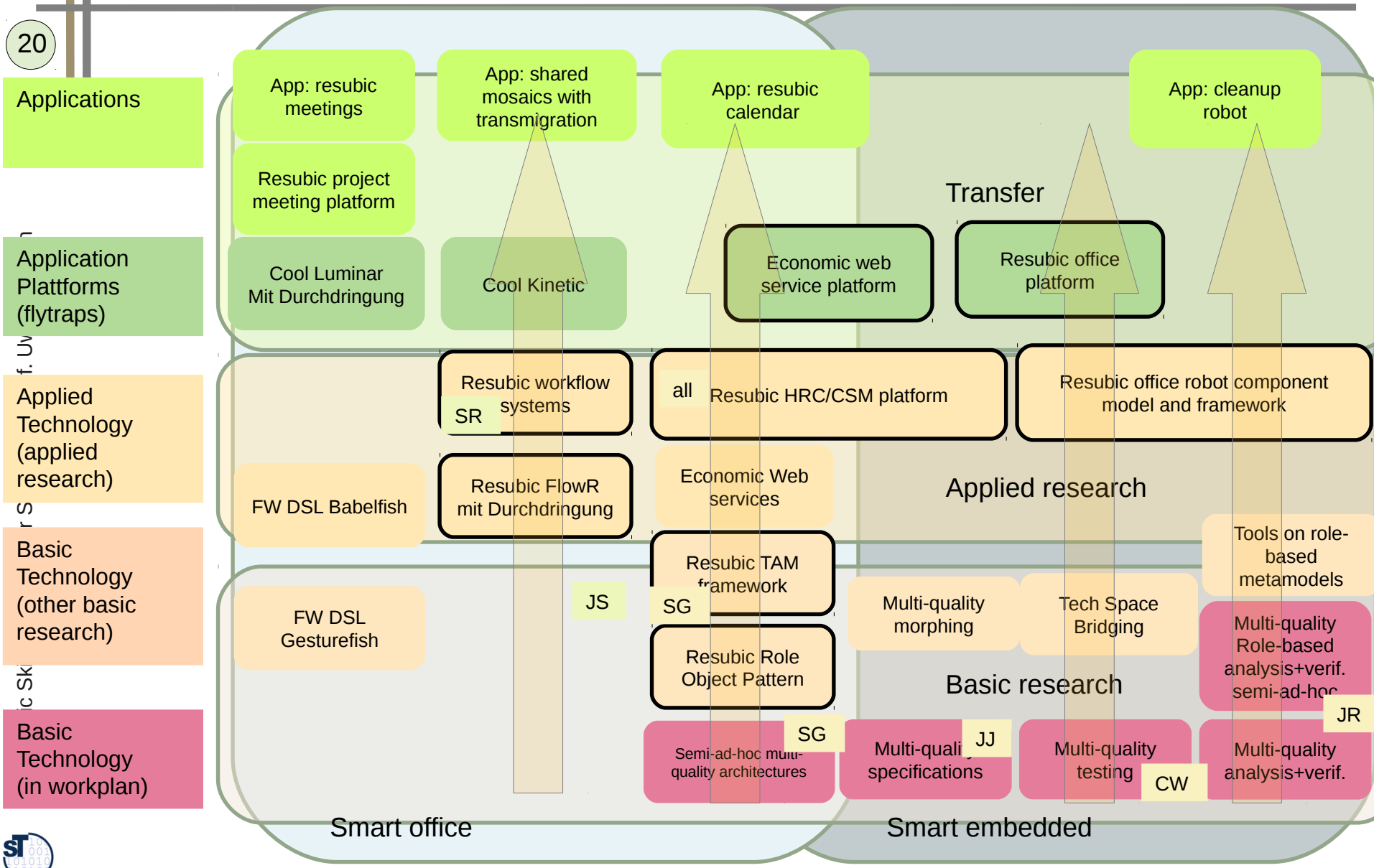
Demonstrator and Transfer Planning

- A research group, like the Chair of Software Engineering, develops technology on several levels of abstraction
- Demonstrators of technologies can hook in into several different levels – not everything is a technology for software platforms or basic technology
  - Farms, cows, milk, yourt, yourt service
- Only some technologies have a chance to be transferred to industry

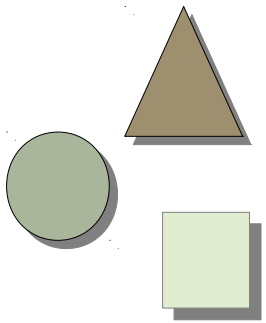


Ex.: Strategic, Mid-Term Planning of Transfer in Group ZESSY-ST

(framed topics may become a vendor lock-in)



73.4. Demonstration and Transfer Workshops with Industrial Partners



Objectives of Transfer Workshops

- University presents all the process blueprints for
  - Research
  - Transfer
  - Innovation
- University Lab demonstrates technologies
  - Demonstration for creating vision
  - Presentation of demonstrators
  - Collect new ideas for demonstrators
  - Collect interesting videos and web sites on an inspiration site
- Presentation of possible transfer processes
  - Presentation of business advantage strategy
  - Detect industrial needs („pull“)
  - Presentation of concrete transfer instruments
  - Presentation of VIP process
- Analyzing Value Propositions e.g., with NABC
  - Finding out Needs and Pains of companies
  - Finding out Needs and Pains of their customers

Diffusion at OUTPUT Day

- The yearly demonstration day of the department
- Every PhD student of technical science should exhibit and demonstrate her technology to the industry, pupils, politicians, and the public
- A successful presentation of a research software prototype is very encouraging!

The Story of the DSL-o-MAT

- Mirko Seifert, Jendrik Johannes, Florian Heidenreich, Christian Wende
- Demo of tool EMFText at OUTPUT 2010
- Applications of EMFText (emftext.org)
- Resulted in the EMFText Zoo of more than 100 parsers for domain-specific languages
- Ended up in company DevBoost in 2012
- Founder stipend "BMBF exist" in 2012
- www.devboost.org
- That was a long way....

The End