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

1

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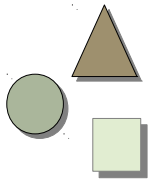
1) Technology Dossiers of the group
2) Demonstration and Technology Transfer
3) Demonstration at Transfer Workshops



Literature

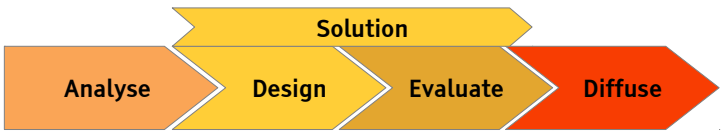
2

- [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]

3

- [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?

4

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

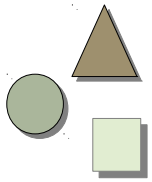
Collaborative Research
• Demonstrating the ability to collaborate in integrated projects

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?"



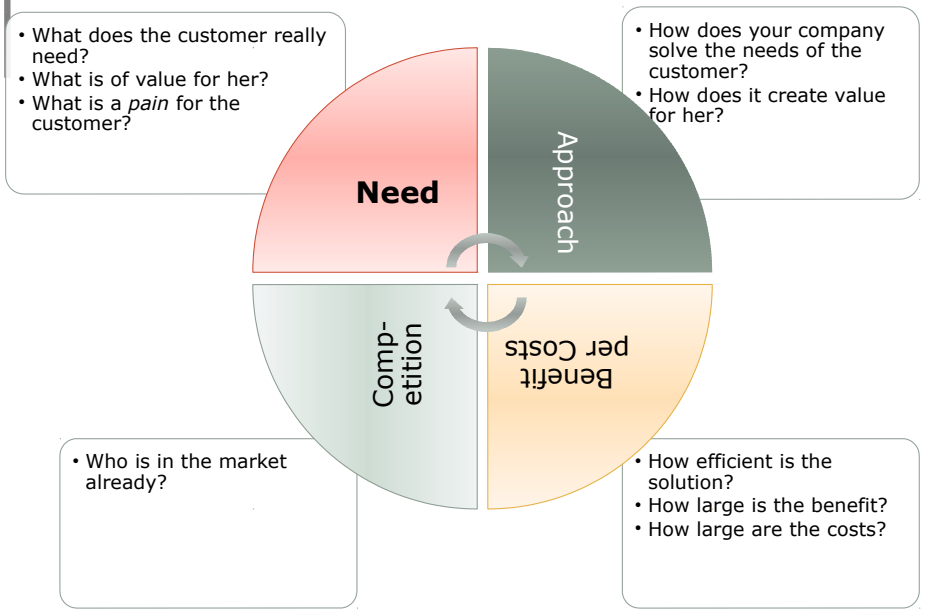
How Relevant is a Research Problem?

- 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]



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

Exercise: Application

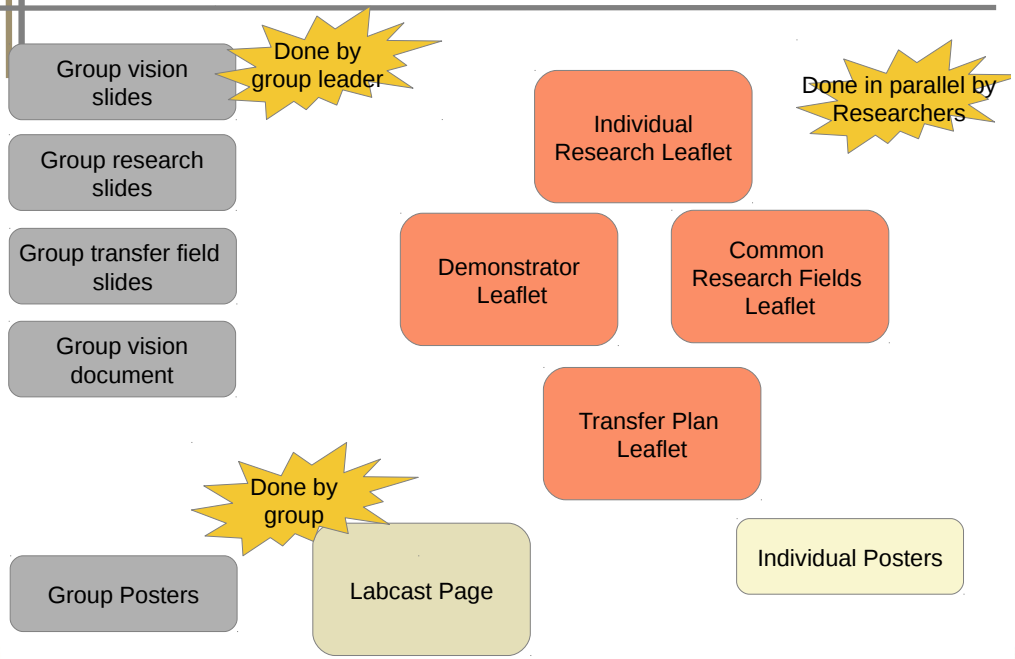
- For preparing your next application for a job,
- Analyze the future employer with NABC
  - What are his needs?
  - What is your approach?
  - What is his benefits?
  - Who are your competitors?
- Learn the answers for these questions by heart, to be able to present them in the interview!

nAbc Nabc

73.2 The Technology Dossiers of the Researcher's Group

- For Master's and PhD students

Technology Dossiers of Your Research Group



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

17

- 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

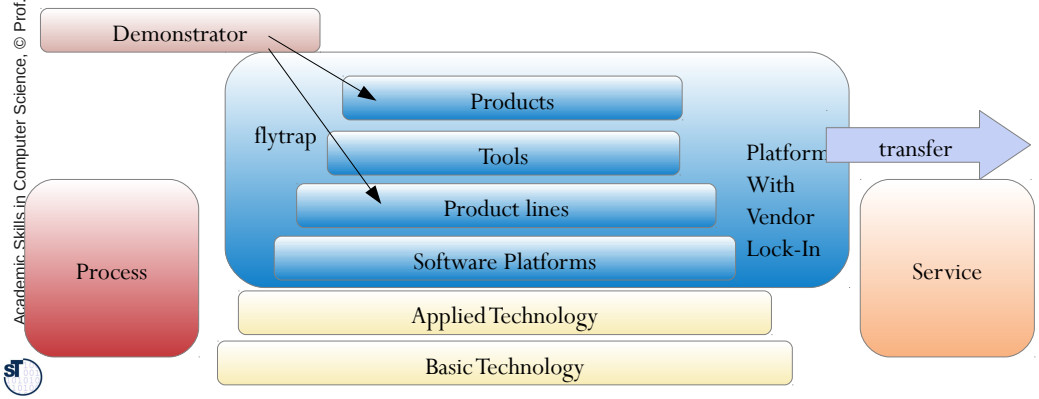
18

- 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

19

- 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)

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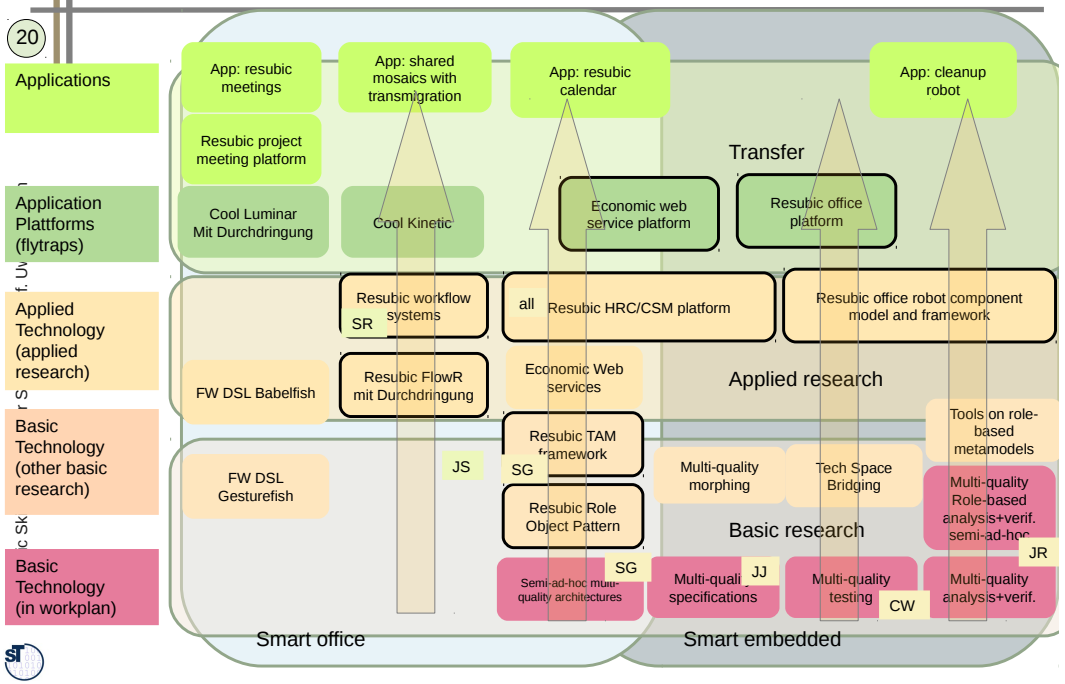
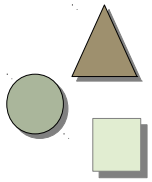


73.4. Demonstration and Transfer Workshops with Industrial Partners



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

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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!

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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....

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The End