

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

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2015-0.5, 15.07.15  
<http://st.inf.tu-dresden.de/asics>

- 1) Technology Dossiers of the group
- 2) Demo Booths
- 3) Demonstration and Technology Transfer
- 4) Demonstration at Transfer Workshops



# Literature

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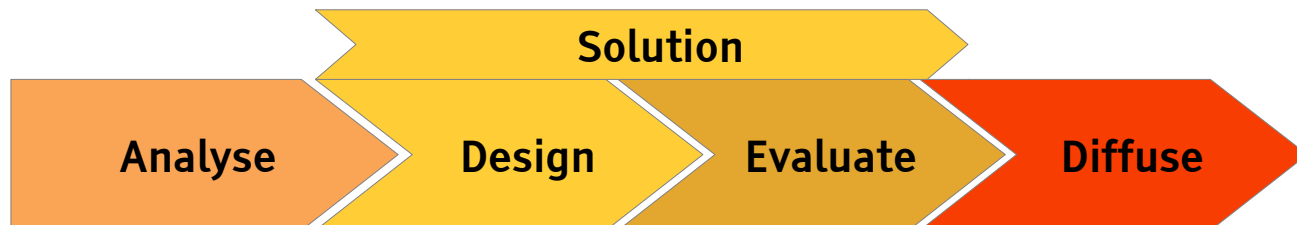
- ▶ [Carlson-Wilmot] Curtis R. Carlson, William W. Wilmot. Innovation. The Five Disciplines for Creating what Customers Want SRI International. Crown Business, US, 2006 !Excellent!
- ▶ [Maurya] Ash Maurya. Running Lean. Iterate from Plan A to a Plan That Works. O'Reilly. Excellent for Startup Founding.

## Remember:

# Standard Research Process ADED [Österle/Otto]

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- ▶ [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/](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?

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## Satisfaction

Nothing is more rewarding than people who are interested

## Maturity

Maturity of software  
Maturity of concept and idea  
Clarification 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

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

# How Relevant is a Research Problem?

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- ▶ 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
- ▶ For startup founders:
  - How *viral* (sticky) is the idea?
- ▶ How well-studied is the research area?
  - Age of problem
  - Maturity of field: how long it has been investigated?

# Value Proposition Analysis (VPA)

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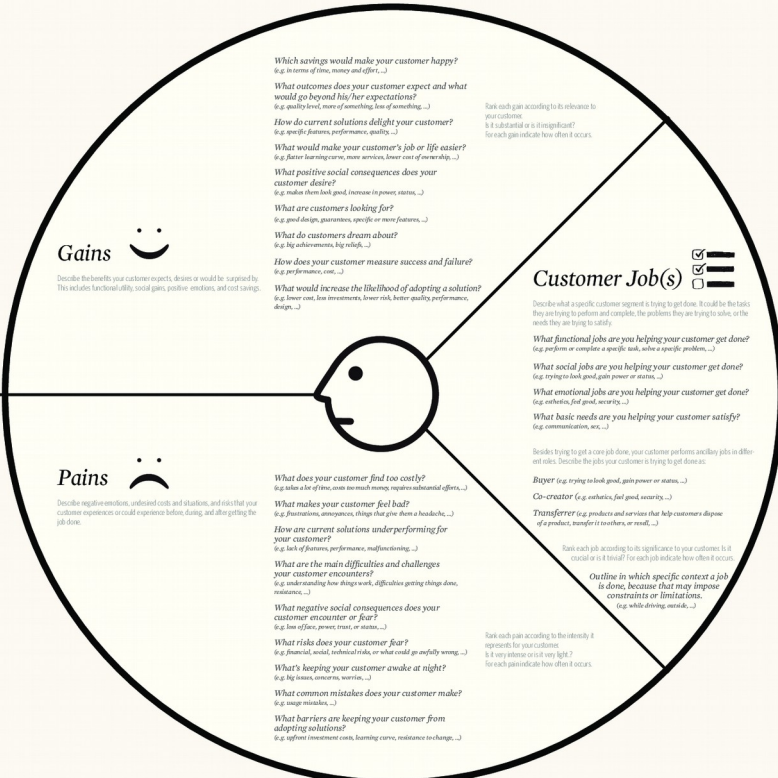
- ▶ VPA is a specific Problem/Goal Analysis for the users, customers and clients of your technology
- ▶ It thinks about the **pains** and the **gains** of the customer or target group.
  - Pains are problems that hurt the customer
- ▶ Usually, the goal is to reduce pain and improve gain.
- ▶ A VPA is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

## The Value Proposition Canvas

Designed for:

Designed by:

On: Day Month Year  
Iteration: No.



**Value Proposition**  
Create one for each Customer Segment in your Business Model

**Pain**

Customer Segment

**Gain**

www.businessmodelgeneration.com

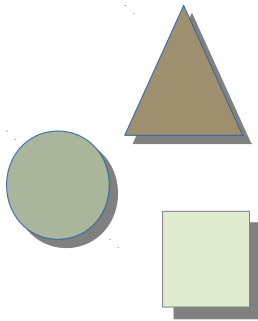
Use in Conjunction with the Business Model Canvas

Prof. U. Abmann, TU Dresden



# 73.2 How to Organize a Demonstration (Demo) at a Demo Booth

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## Demos at Reviews

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- ▶ Many research projects conduct *reviews*, regular investigations about the status of the project
  - EU: usually every year
  - BMBF: as a final reviews
  - DFG: most often written
    - Sonderforschungsbereiche: every 4 years
- ▶ At these reviews, the research results of the project have to be demonstrated at demo booths
  - together with a A0 poster

# Storyboards

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- ▶ A good demo is carefully planned because it has a firm deadline to fit into the pressed agenda of the review day
- ▶ It does not have to waste a minute and must be carefully
  - exercised
  - pedagogically elaborated
- ▶ A **storyboard** is a linear outline of what to show when in the demo (with minutes)
  - Min. 0-2: explain slide 1
  - Min 2-5: rund shell script run.bat and explain the window 1 which appears
  - Min 6-8: edit file dat.out, color it with emacs and show pattern
  - Min 8-9: execute modified dat.out with tool
  - Min 10: show image generated by tool
- ▶ Training phase 1: run demo
- ▶ Training phase 2: run demo with watch to measure time and train wording to meet the time

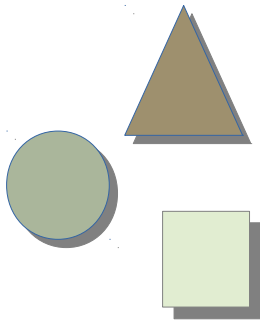
# Example of Demo Storyboard in Markdown [René Schöne]

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- ▶ `###` The actual demo (format: Markdown .md)
- ▶ a) Explain the SLAM example -- takes 4 to 6 min
  - a.1 Show hardware setup (CB+Switch+USB\_charging\_hub) at `**?**`
  - a.2 Show what is happening at `**slam-vis**` and what can be seen in visualization at `**slam-vis**`
- ▶ b) Using `mquat-vis/qBench` -- takes 7 min
  - b.1 Explain kinds of models used (structure, variant, behaviour) at `**BackupSlides**`
  - b.2 Show SW structure model at `**qBench` or maybe `mquat-vis**`
  - b.3 Show HW variant model at `**mquat-vis: Available Resources**`
  - b.4 Show impl at `**mquat-vis: Code**`
  - b.5 Show contract template at `**mquat-vis: Contract Template**`
  - b.6 Show benchmark at `**mquat-vis: Benchmark**`
  - b.7 Show contract (after benchmark) at `**mquat-vis: Contract**`
- ▶ c) Using THEATRE (console) -- takes 2 min
  - c.1 Show architecture/parts of THEATRE (as of the poster) at `**poster**`
  - c.2 Show console, and what is happening upon a request at `**console**` and `**poster**`

# 73.4 Poster

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# Posters

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- ▶ [http://en.wikipedia.org/wiki/Poster\\_session](http://en.wikipedia.org/wiki/Poster_session)
- ▶ [G. Regev, A. Oberlin, G. Pécoud, A. Wegmann. EPFL Poster Guidelines. Dec. 2005.]
  - Source: [http://www.upc.edu/gessi/re08/DOCUMENTS/poster\\_guideline.pdf](http://www.upc.edu/gessi/re08/DOCUMENTS/poster_guideline.pdf)
- ▶ 4-step
  - Message and its audience
  - Comprehensible
    - 7 wise servants in a 7 step
    - 4 step nABC
    - 5 step ZOPP
  - Visualizing the text
  - Testing the poster

# 73.5 The Technology Dossiers of the Researcher's Group

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- For Master's and PhD students

# Technology Dossiers of Your Research Group

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Group vision slides

Done by group leader

Group research slides

Individual Research Leaflet

Done in parallel by Researchers

Group transfer field slides

Demonstrator Leaflet

Common Research Fields Leaflet

Group vision document

Transfer Plan Leaflet

Done by group

Group Posters

Screen Cast/  
Labcast Page

Individual Posters



# Requirements for Researchers

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- ▶ 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

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- ▶ 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

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



# Pattern for 1-page Poster

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- ▶ 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](http://attend.it.uts.edu.au/re10/wordpress/wp-content/uploads/2010/01/poster_guideline.pdf)



# Screencasts for Demoining Tools

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- ▶ 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
- ▶ [http://en.wikipedia.org/wiki/Comparison\\_of\\_screencasting\\_software](http://en.wikipedia.org/wiki/Comparison_of_screencasting_software)

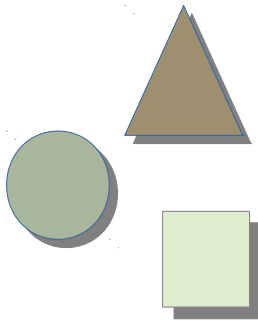
## Labcasts

- ▶ 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](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

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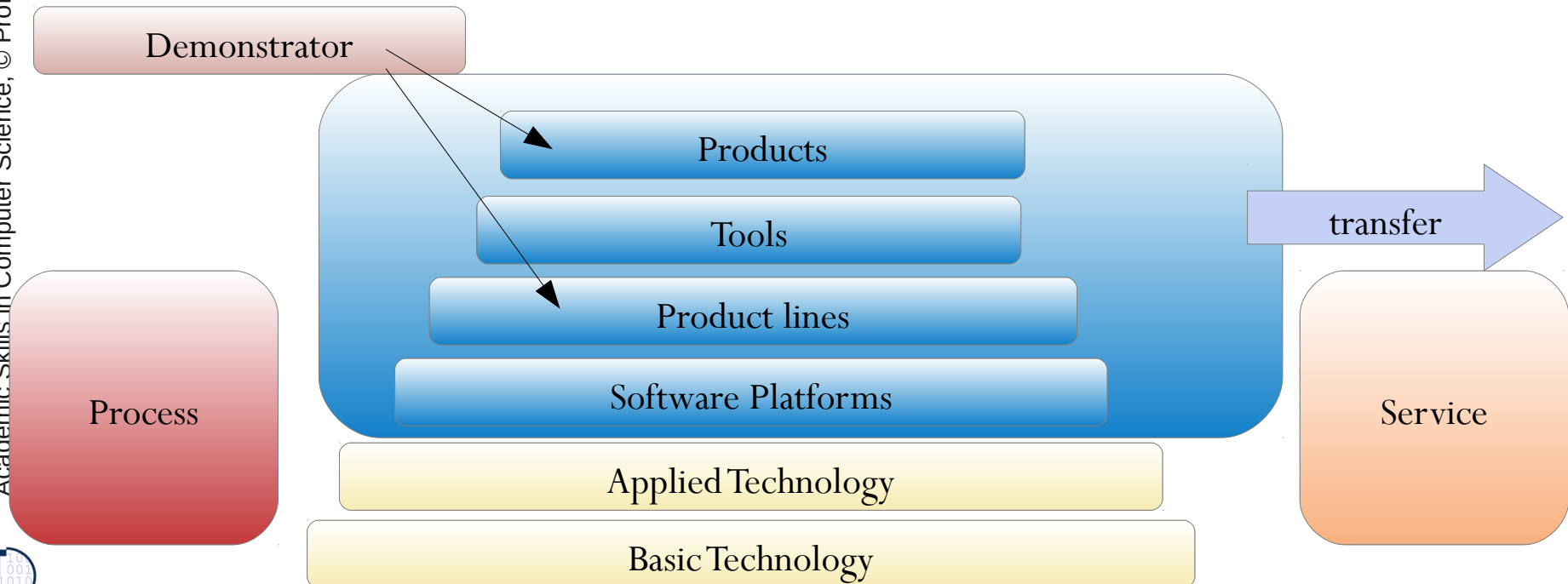
- For a defense, you must demonstrate your technology, your research results
- You should prepare this carefully during the entire thesis process



# Demonstrator and Transfer Planning

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- ▶ 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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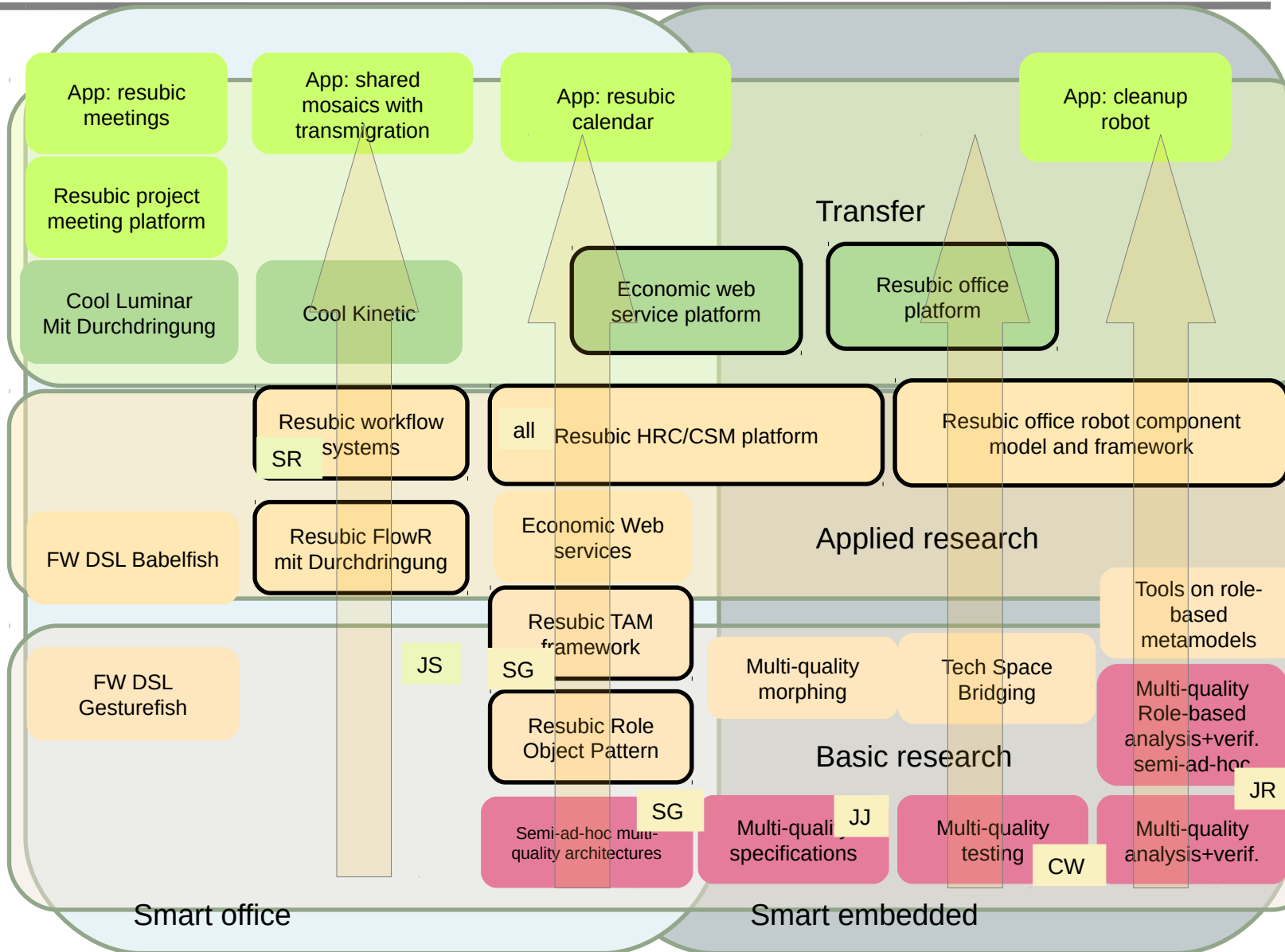
Applications

Application Platforms (flytraps)

Applied Technology (applied research)

Basic Technology (other basic research)

Basic Technology (in workplan)



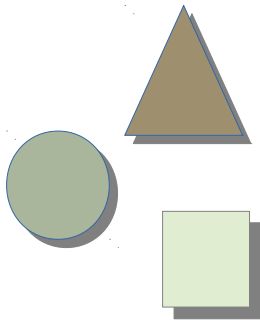
Smart office

Smart embedded



# 73.4. Demonstration and Transfer Workshops with Industrial Partners

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# Objectives of Transfer Workshops

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- ▶ 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

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- ▶ 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
  - Use demo booths to show your stuff
- ▶ A successful presentation of a research software prototype is very encouraging!





# The Story of the DSL-o-MAT

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- ▶ 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](http://www.devboost.org)
- ▶ That was a long way....



# The End



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