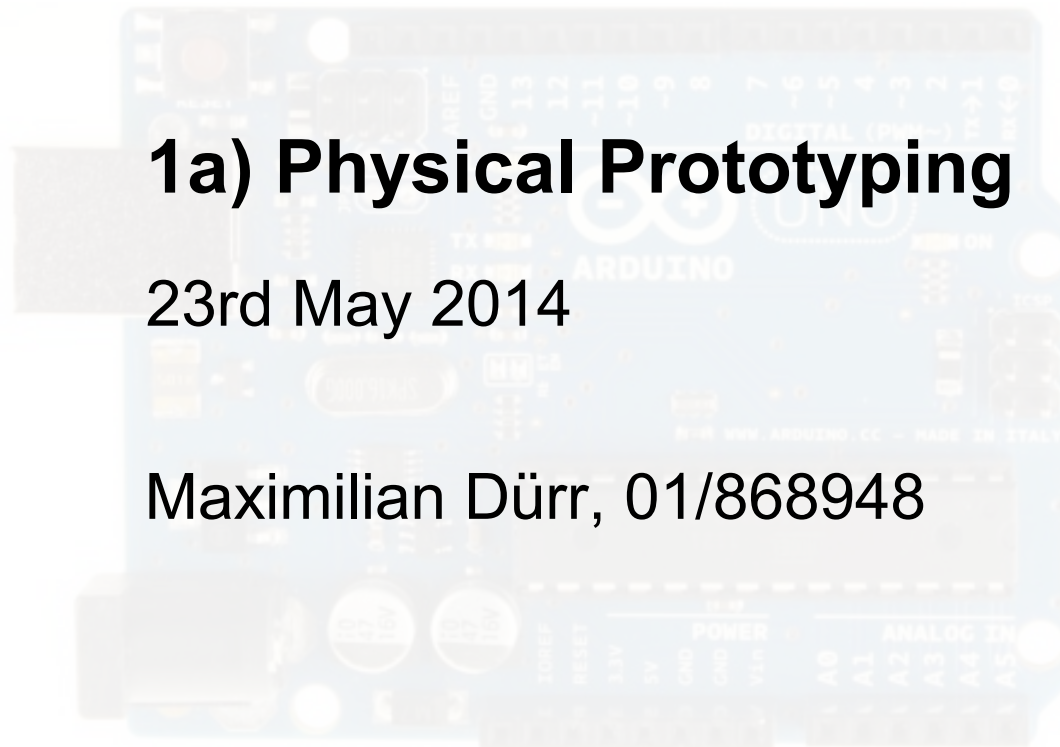


Seminar Physical Computing

1a) Physical Prototyping

23rd May 2014

Maximilian Dürr, 01/868948



Overview

- > Prototype == Sketch?
- > Importance of physical Prototyping
- > Toolkits/Techniques
- > Forms of interactive physical Prototypes
- > Outlook

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Buxton: NOT the same! Different Properties!

<u>SKETCH</u>		<u>PROTOTYPE</u>
EVOCATIVE	————→	DIDACTIC
SUGGEST	————→	DESCRIBE
EXPLORE	————→	REFINE
QUESTION	————→	ANSWER
PROPOSE	————→	TEST
PROVOKE	————→	RESOLVE
TENTATIVE	————→	SPECIFIC
NONCOMMITTAL	————→	DEPICTION

[1] William Buxton, *Sketching user experiences: getting the design right and the right design*

Mousette: (Interactive) Sketch ~ Prototype!

Referring to Buxtons comparison of Sketch/Prototype:

“...while this polarization can be useful to discuss and understand the differences, most design manifestations sit somewhere in the middle...”

(Camille Mousette and Fabricio Dore) [2]

“In my opinion the terms *Prototyping* and *Sketching* are very similar”

(Camille Mousette) [3]

[2] Camille Moussette and Fabricio Dore, *Sketching in Hardware and Building Interaction Design: tools, toolkits and an attitude for Interaction Designers*

[3] Jan Barth et al, *Prototyping Interfaces - Interaktives Skizzieren mit vvvv*

Mousette: Criteria & Goals

	Sketch	Prototype
Target-Group	designer or author	environment (e.g. employees, stakeholders, ...)
Realization	design different variants and ideas in small iterations → use different materials (e.g. pen & paper, code , electronics ,...)	create a package of different ideas
Goals	> develop new ideas > find solutions for problems	> make ideas experienceable > intelligible for persons outside the field

[2] Camille Moussette, *Sketching in Hardware and Building Interaction Design: tools, toolkits and an attitude for Interaction Designers*

[3] Jan Barth et al, *Prototyping Interfaces - Interaktives Skizzieren mit vvvv*

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Why is Prototyping important?

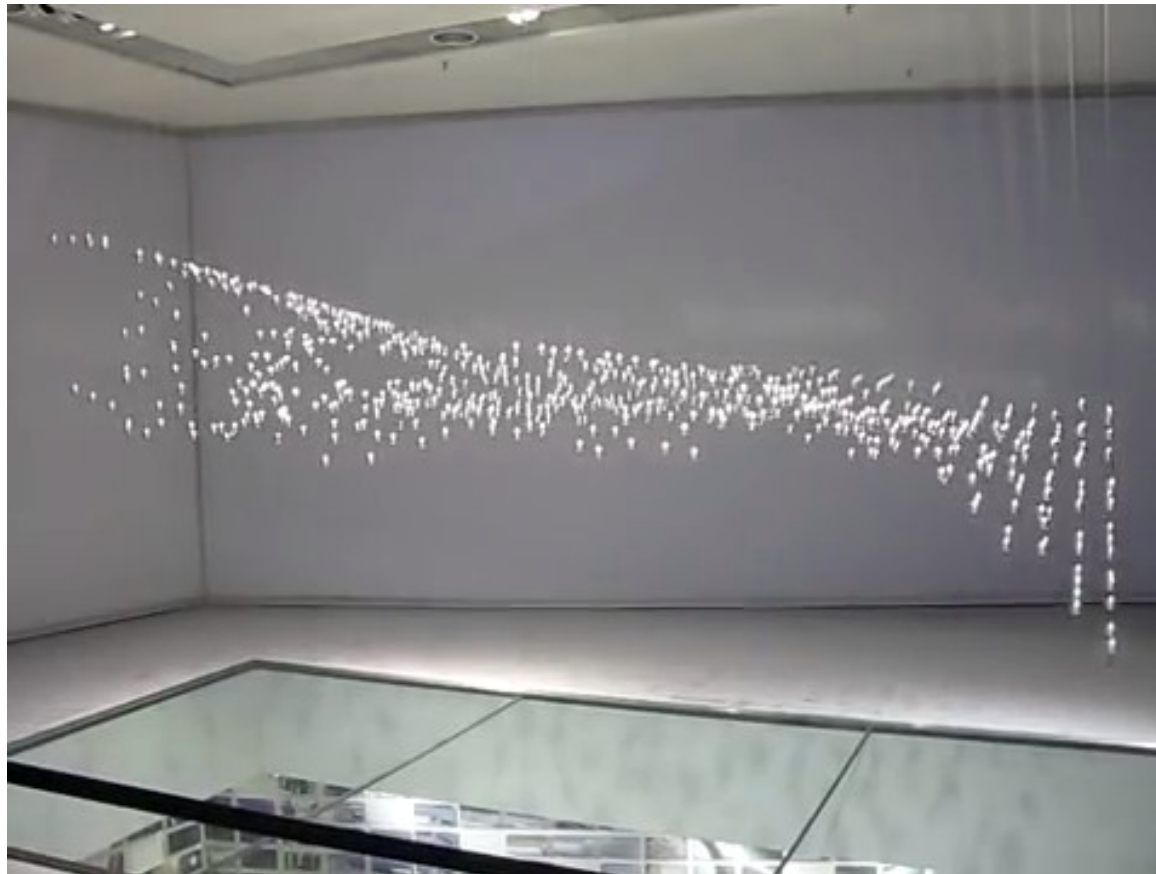
“Never go to a meeting without a prototype at whatever stage of development, one week, one month, six months”

(Tim Brown, president IDEO) [3]

[3] Jan Barth et al, *Prototyping Interfaces - Interaktives Skizzieren mit vvvv*

Convince Bosses or Stakeholders

Prototype = Embodiment of an idea [4]



[4] David Kelly and Tom Kelly, *Why Designers Should Never Go to a Meeting Without a Prototype* (Excerpt: David Kelly and Tom Kelly, *Creative Confidence*)

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[4] David Kelly and Tom Kelly, *Why Designers Should Never Go to a Meeting Without a Prototype* (Excerpt: David Kelly and Tom Kelly, *Creative Confidence*)

Try/Communicate different Approaches

Prototype = Low-cost experiment [4]



[4] David Kelly and Tom Kelly, *Why Designers Should Never Go to a Meeting Without a Prototype* (Excerpt: David Kelly and Tom Kelly, *Creative Confidence*)

Speed up Development & Implementation

Prototype = *simplified, faster, cheaper* progress [5]



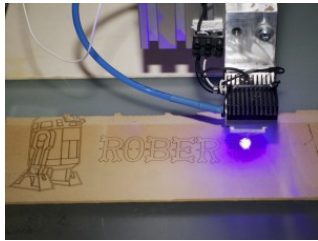
[5] Fred Nickols, *Prototyping: Systems Development in Record Time*

Overview

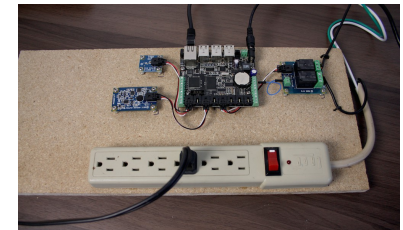
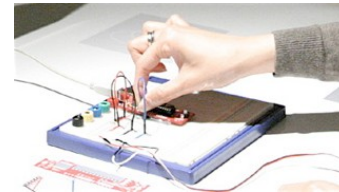
- > Prototype == Sketch?
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Lots of Toolkits and Techniques!

Static

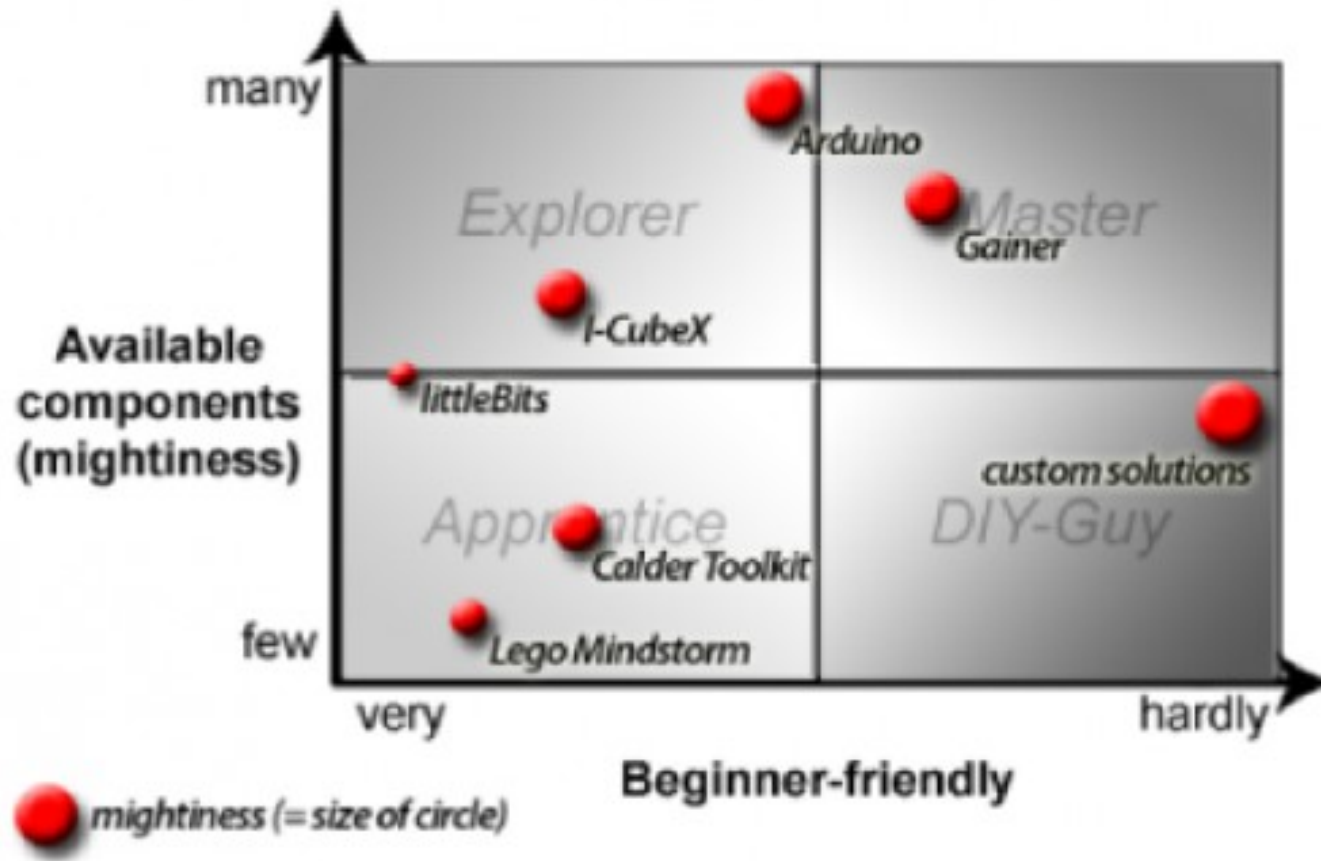


Interactive



Which one? (interactive only)

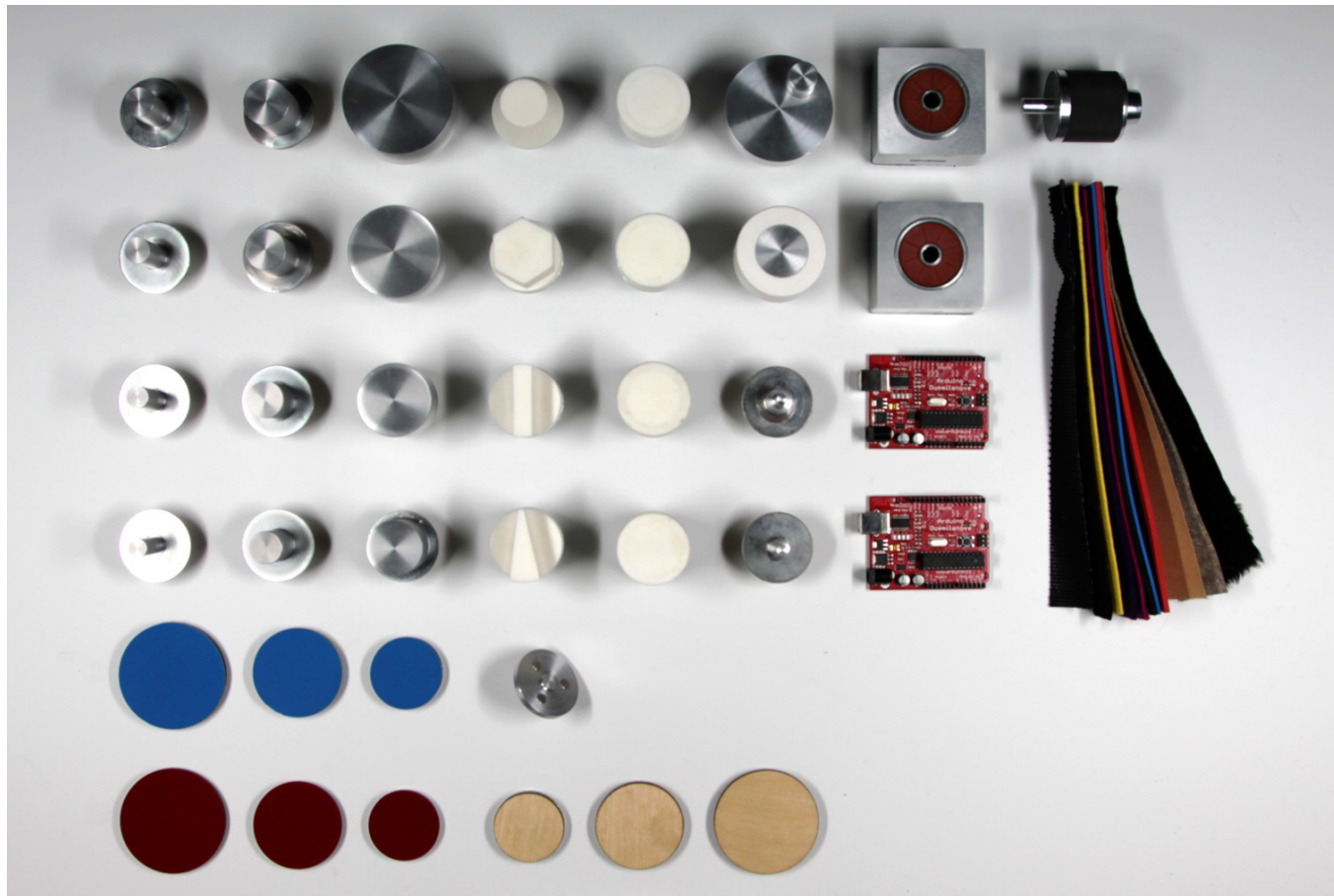
Toolkit-Advisor-Framework



[6] Robert Kowalski, *Prototyping in Physical Computing – Sketching in Hardware*

Prototype haptic Perceptions

Toolkit for Rotary-Knob-Interfaces



[3] Jan Barth et al, *Prototyping Interfaces - Interaktives Skizzieren mit vvvv*

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Engineering-Prototype

- Technical operability given?!
- Experience for later development process

e.g.



(Face-Substitution)

[3] Jan Barth et al, *Prototyping Interfaces - Interaktives Skizzieren mit vvvv*

Design-Prototype

- Present ideas visual & interactive
- Do it fast and low-cost (e.g. use existing code)

e.g.



(Particle System)

[3] Jan Barth et al, *Prototyping Interfaces - Interaktives Skizzieren mit vvvv*

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“Magic and Storytelling“ with Marco Tempset



[3] Jan Barth et al, *Prototyping Interfaces - Interaktives Skizzieren mit vvvv*

“Magic and Storytelling“ with Marco Tempset



[3] Jan Barth et al, *Prototyping Interfaces - Interaktives Skizzieren mit vvvv*

Conferences

- > Sketching in Hardware



- > RAPID



- > Advanced Research in Virtual and Rapid Prototyping



Listing of sources

- [1] William Buxton, *Sketching user experiences: getting the design right and the right design*, Morgan Kaufmann, ISBN: 0123740371
- [2] Camille Moussette and Fabricio Dore, *Sketching in Hardware and Building Interaction Design: tools, toolkits and an attitude for Interaction Designers*, <http://www.drs2010.umontreal.ca/data/PDF/090.pdf>
- [3] Jan Barth et al, *Prototyping Interfaces - Interaktives Skizzieren mit vvvv*, Schmidt (Hermann), ISBN:3874398439
- [4] David Kelly and Tom Kelly, *Why Designers Should Never Go to a Meeting Without a Prototype*, http://www.slate.com/blogs/the_eye/2013/10/23/the_importance_of_prototyping_creative_confidence_by_tom_and_david_kelley.html,
(Excerpt: David Kelly and Tom Kelly, *Creative Confidence: Unleashing the Creative Potential Within Us All*, Crown Business, ISBN: 038534936X)
- [5] Fred Nickols, *Prototyping: Systems Development in Record Time*, <http://www.nickols.us/prototyping.pdf>
- [6] Robert Kowalski, *Prototyping in Physical Computing – Sketching in Hardware*, http://www.robertkowalski.org/_files/hs_robert_kowalski.pdf

Thank you! Questions?

