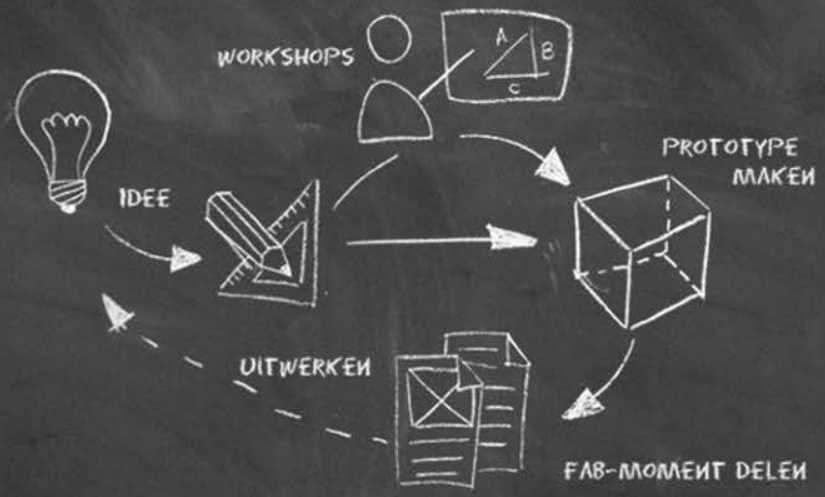
FabLab Enschede

Jan. 16th 2014

Lab on a Chip production using a 3D printer



FabLab Enschede is mede mogelijk gemaakt door:

Gemeente Enschede

SAXION

provincie Overijssel

Outline:

Short introduction FabLab Enschede

Karin van Beurden, Professor Product Design, Saxion

How to make: simple, low cost
low tech lab
suitable for education

Wout Zweers, Technical creative co-ordinator,
FabLab Enschede

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FabLab =

Easily accessible

Digital laboratory

To experiment, exchange knowledge

Realize your own creative ideas

Worldwide concept

Target Groups

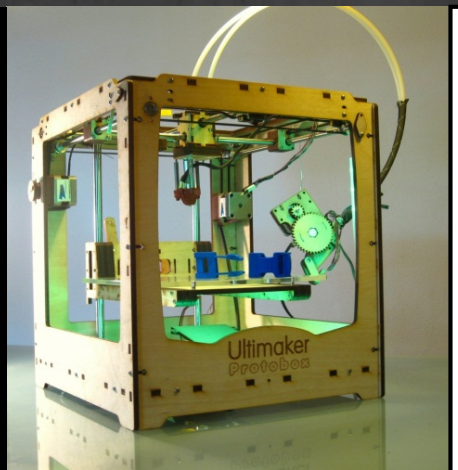
Jan and Janet: private people with ideas

Artists, designers

SME’s, start-ups,

Students (Secondary school – University)

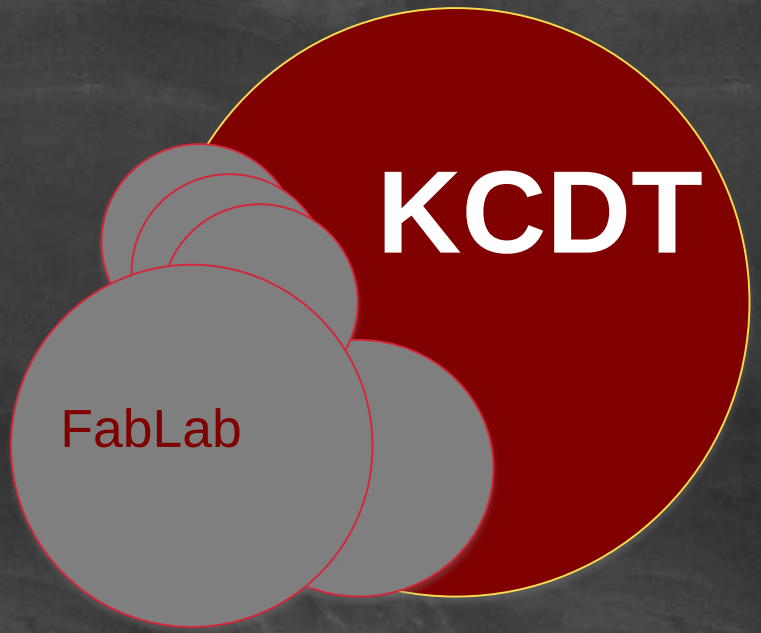
Research – Knowledge center



Research at FabLab

Done by:

- Researchers Knowledge Center Design & Technology
  - Nano group
- Students
- Volunteers



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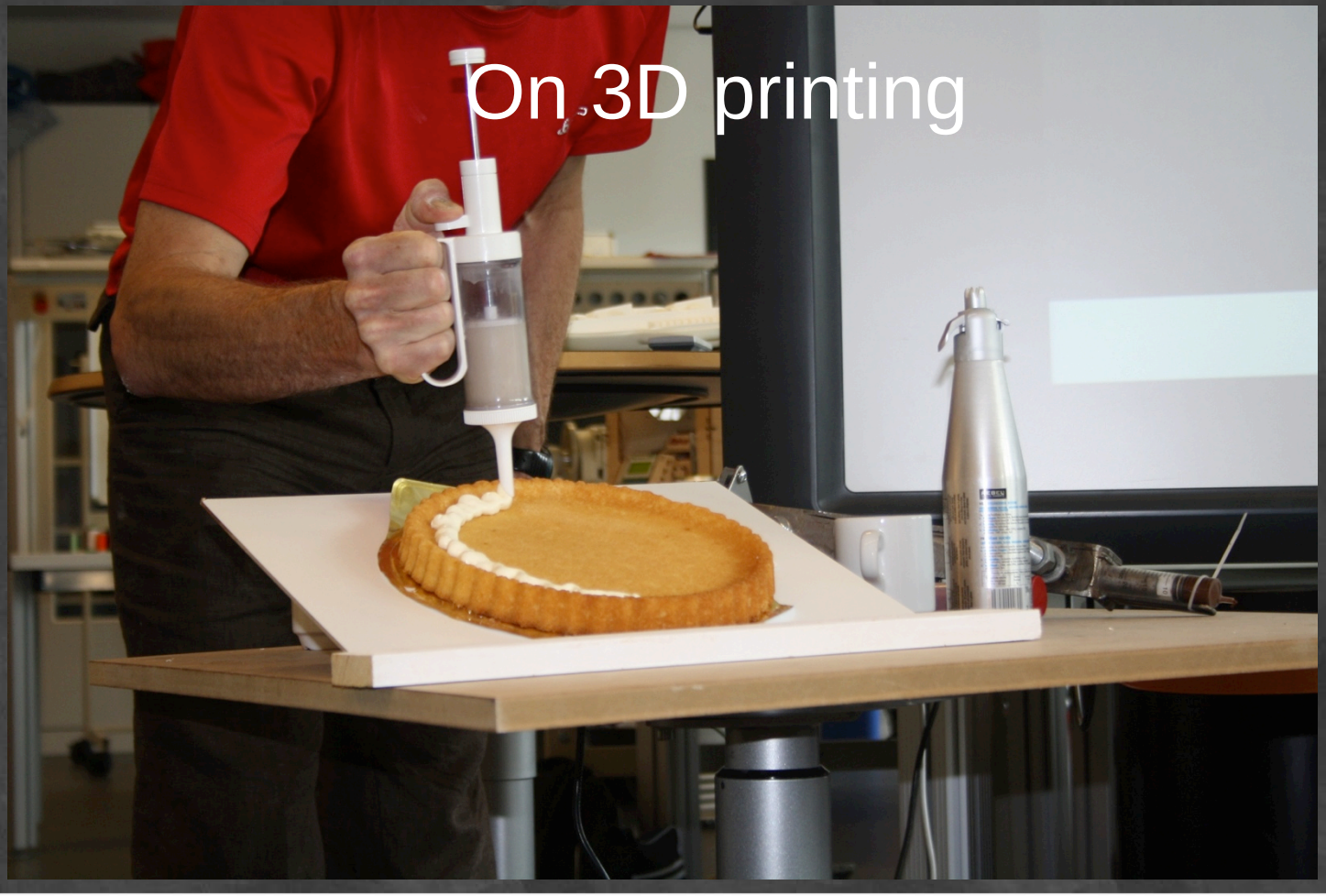
Research at Fablab



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Participants

- Wout Zweers: co-ordinator Fablab Enschede
- Anika Embrechts: lecturer Saxion
- Jens Hinke, Niels ten Thije: students Nano technology

- Thanks to Beta steunpunt Oost

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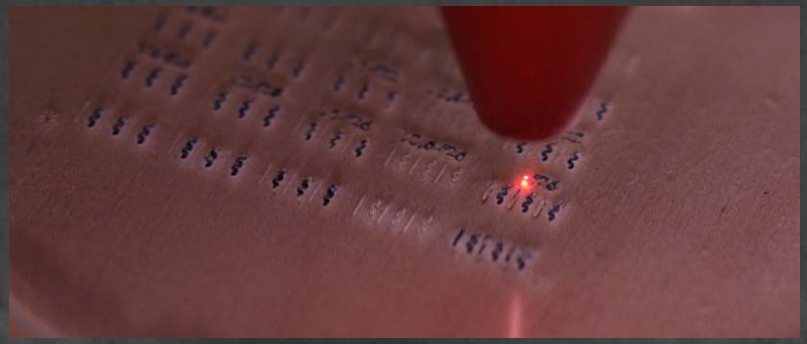
First trials: informative, but not suitable

- Direct shaping in material: cutting residue, problems with pmma reactivity, binder blocks channels



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First trials:

- Low resolution 3d printing:
  surface hooks, too large, airbubbles

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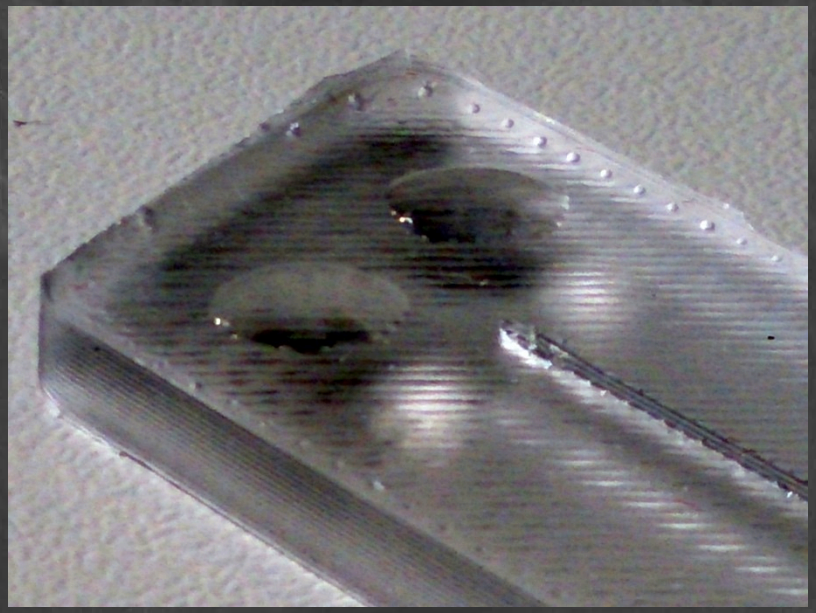
Students trials: 3D printing



Surface roughness (lines) mould is transferred to chip (FDM printing)

Adhesion between mold and chip (*Aureus from VDM, DLP Printing)*

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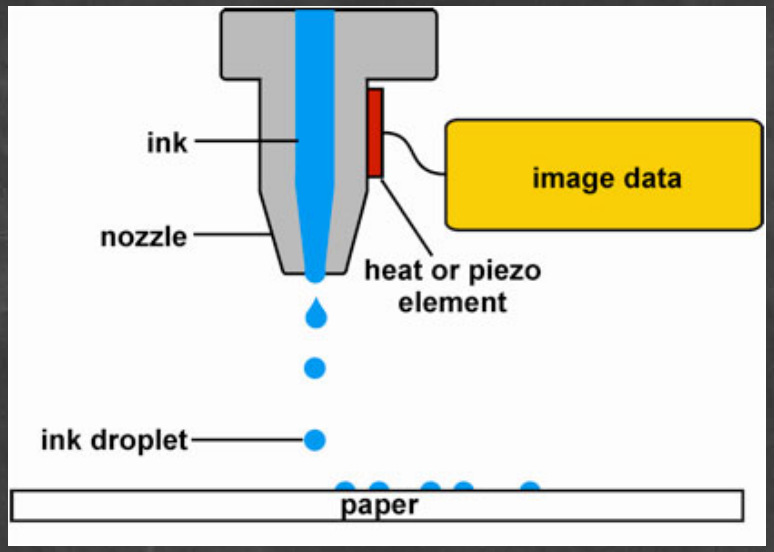
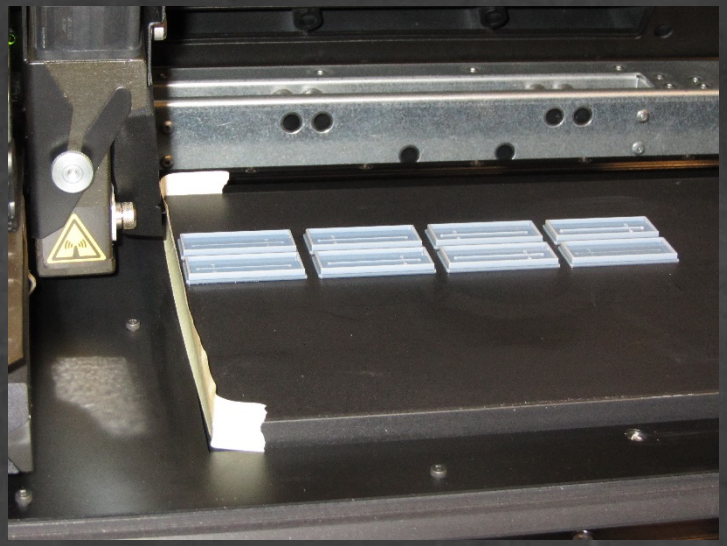
Succesfull:

Moldmaking by Material Jet Printing on Objet





Material jetting advantages:

- Smooth, closed, clean surface
- Better resolution of details
- Proper unmolding
- Material: Objet photoreactive acrylic

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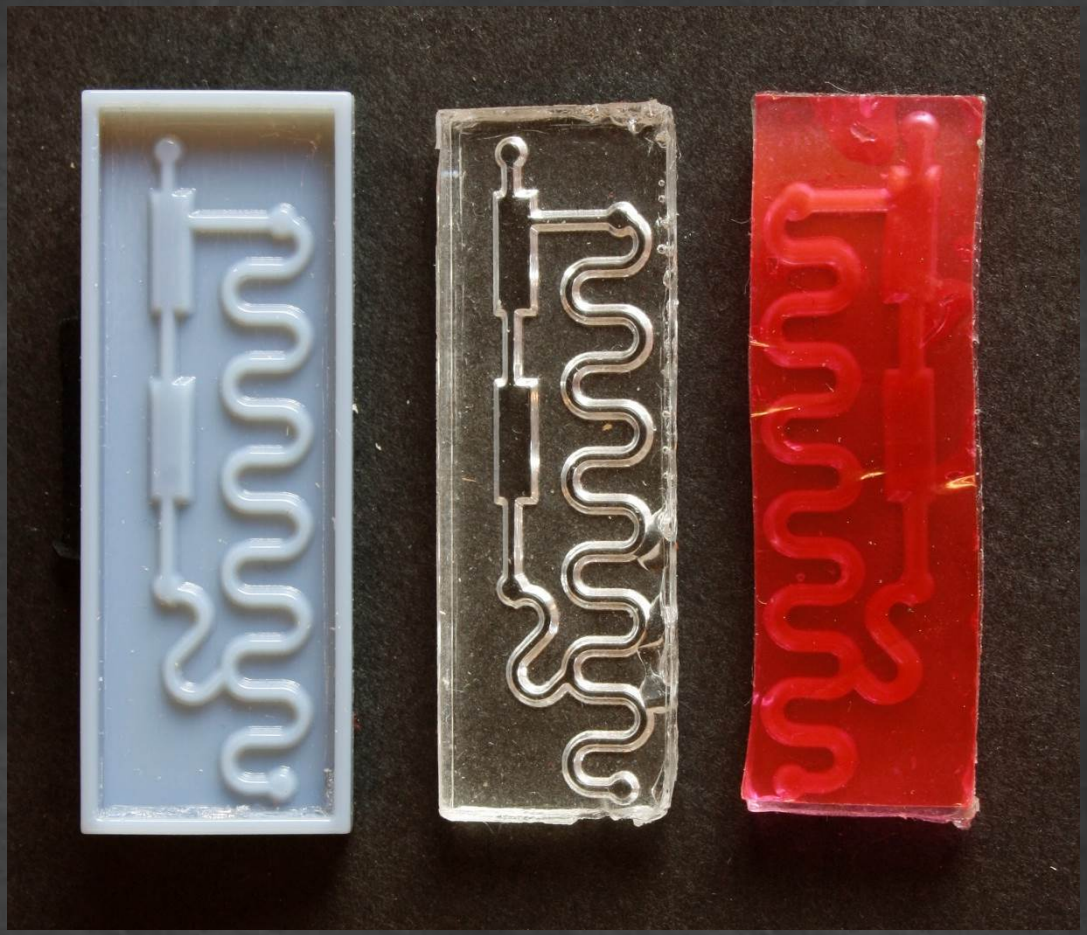
Casting PDMS



Easy detachment of cast

Channels can be closed with PDMS tape without using solvent, binder or plasma

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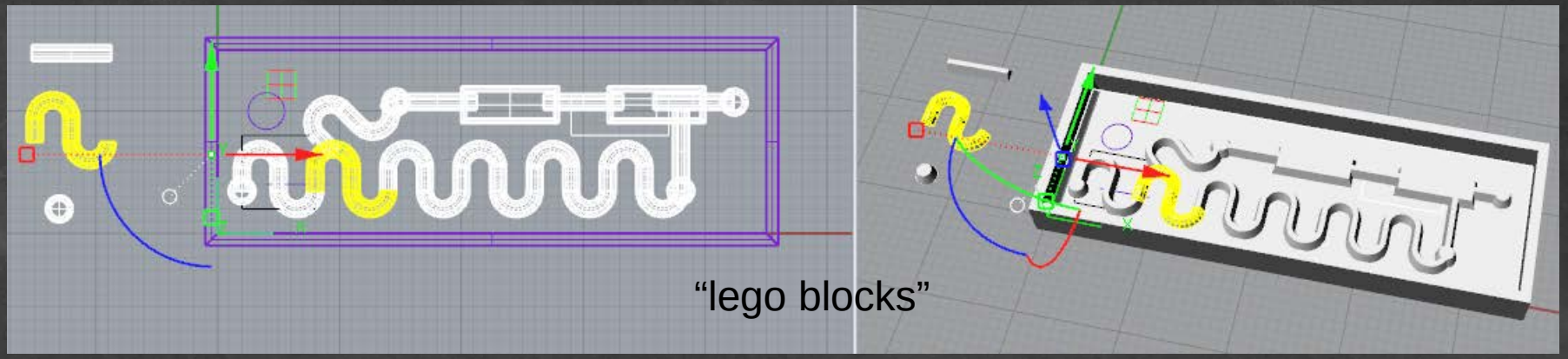
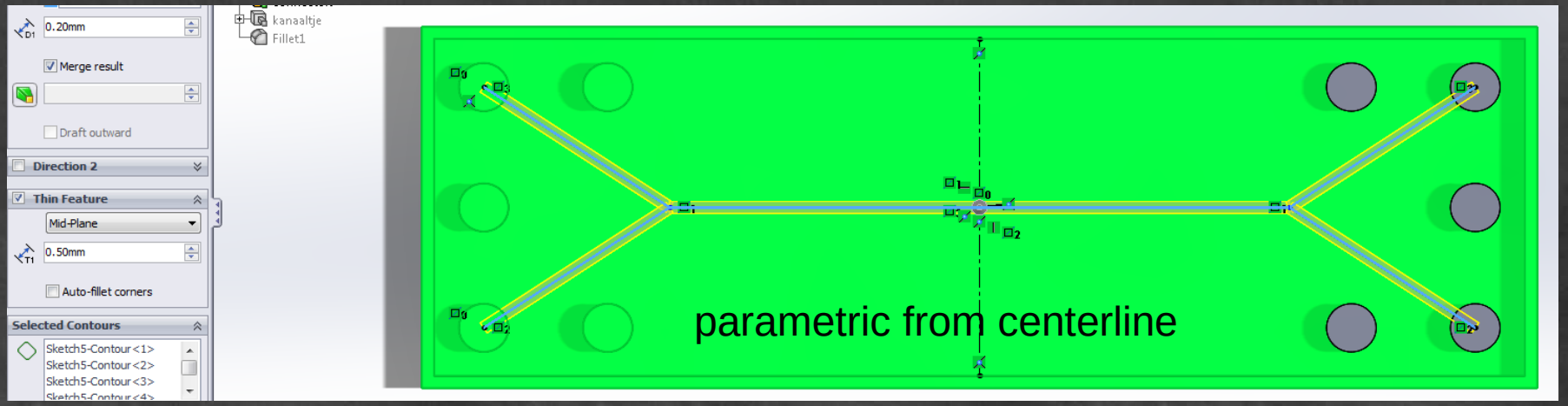
Mold design: predefined or parametrically





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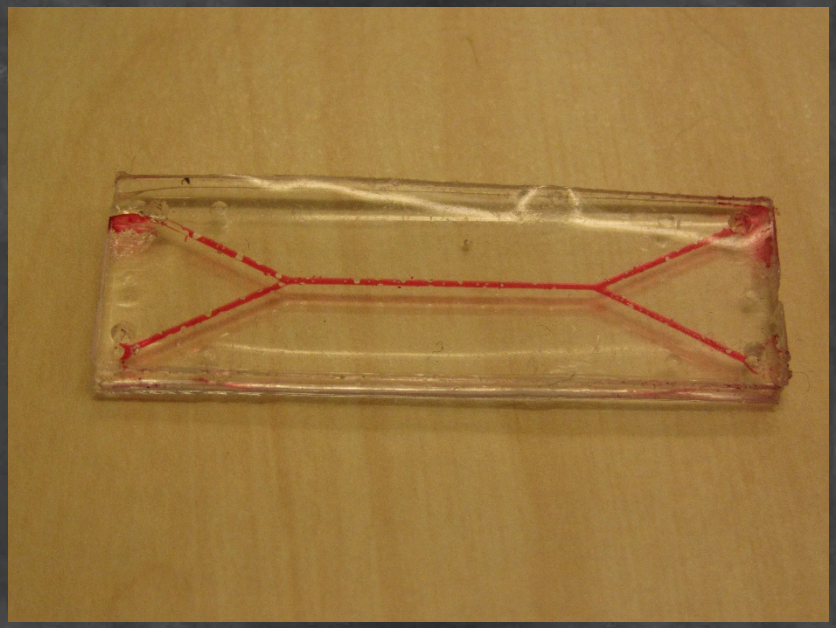
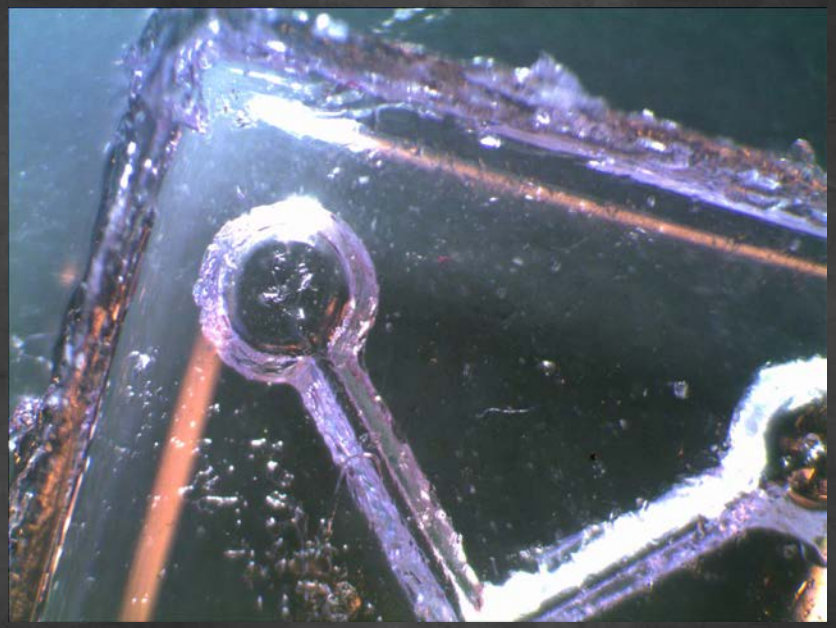
Working chips





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Experience with students

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Added value FabLab

- Inspired multidisciplinary exchange
- Quick and cheap
- Hands on
- Rapid prototyping

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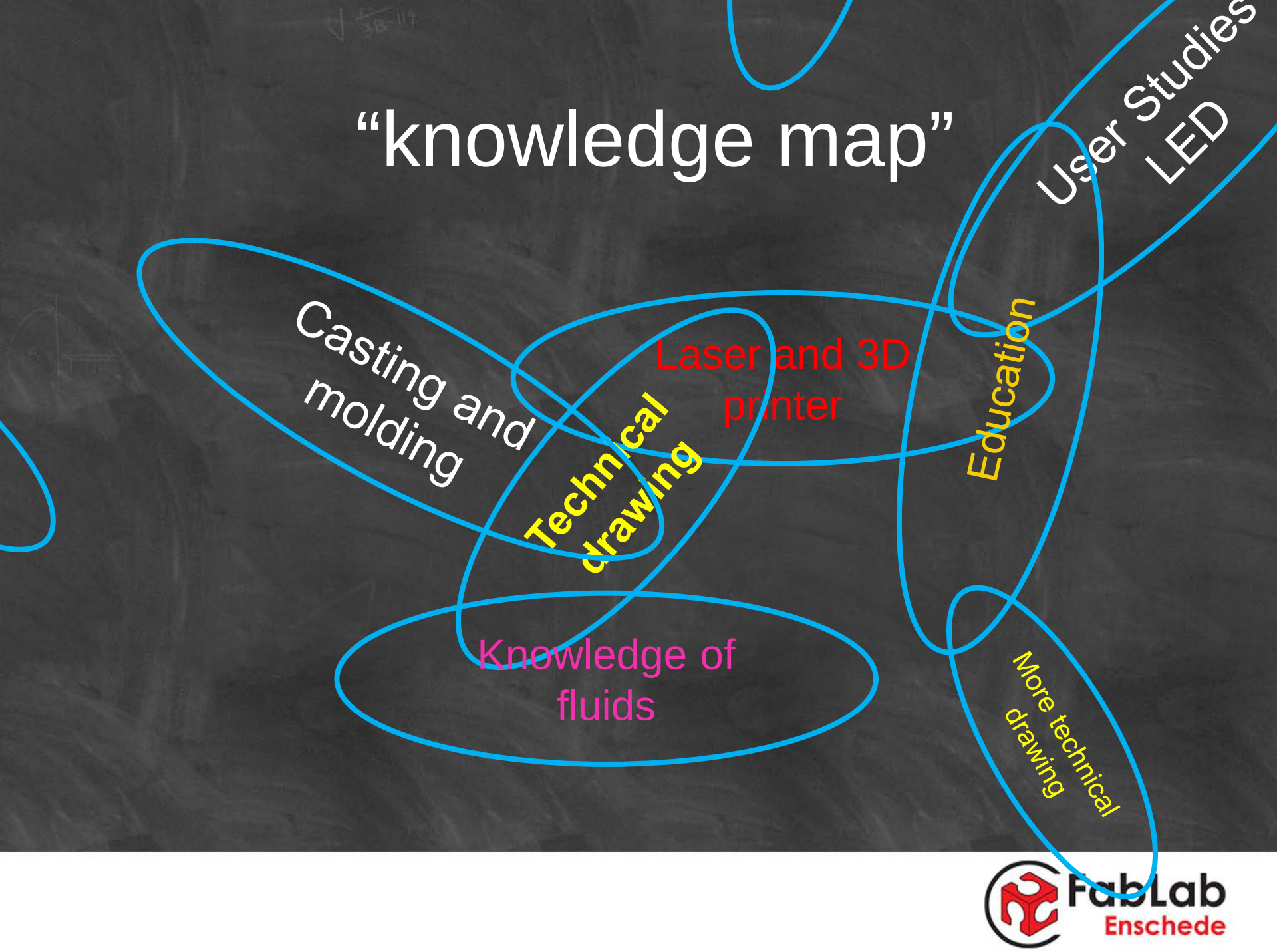
“knowledge map”



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Next step

- Application development
- Still higher resolution, flatter surface
- Sensor incorporation
- Packaging, tooling and handling

Want to join? Interested?

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- Fablab: info@fablabenschede.nl

Thank You

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