

04. Lean Innovation Management Center (LINC)

Prof. Dr. Uwe Aßmann

Softwaretechnologie

Fakultät Informatik

Technische Universität Dresden

2019-0.1 10/3/19

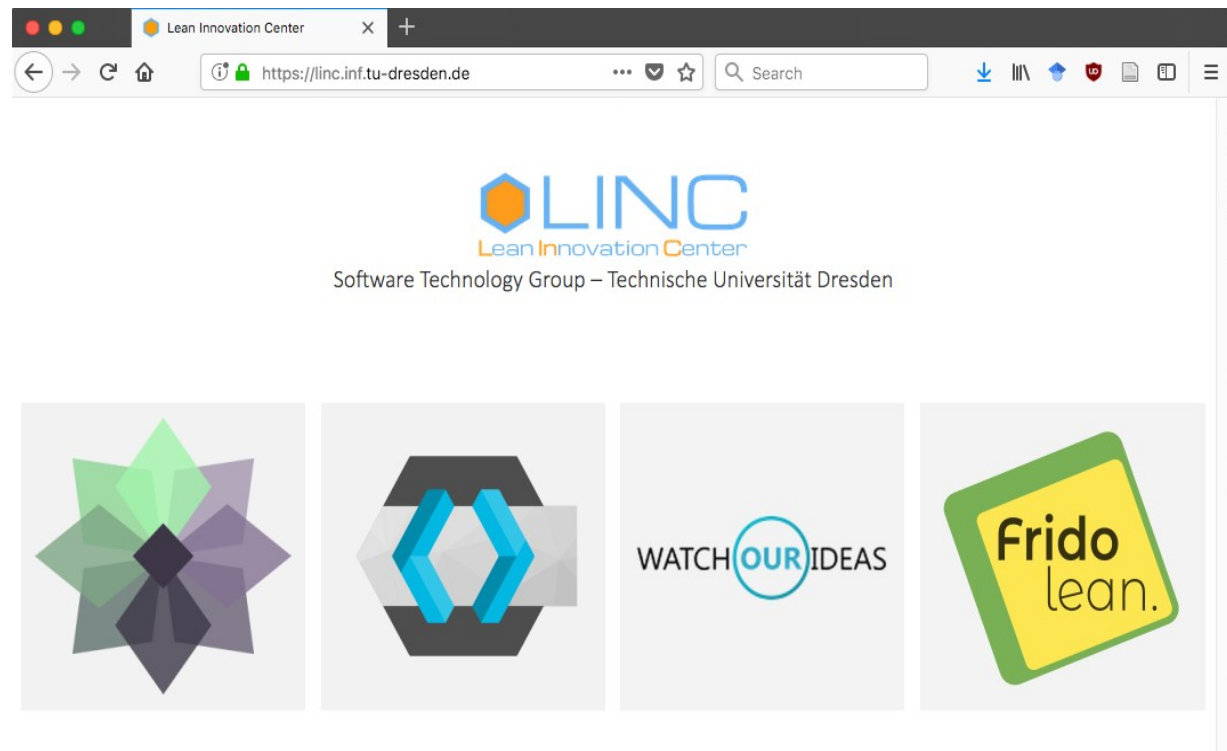
<http://st.inf.tu-dresden.de/teaching/saab>

- 1) What is „Lean Innovation“?
- 2) LINC
- 3) Innovations with Cube-Its

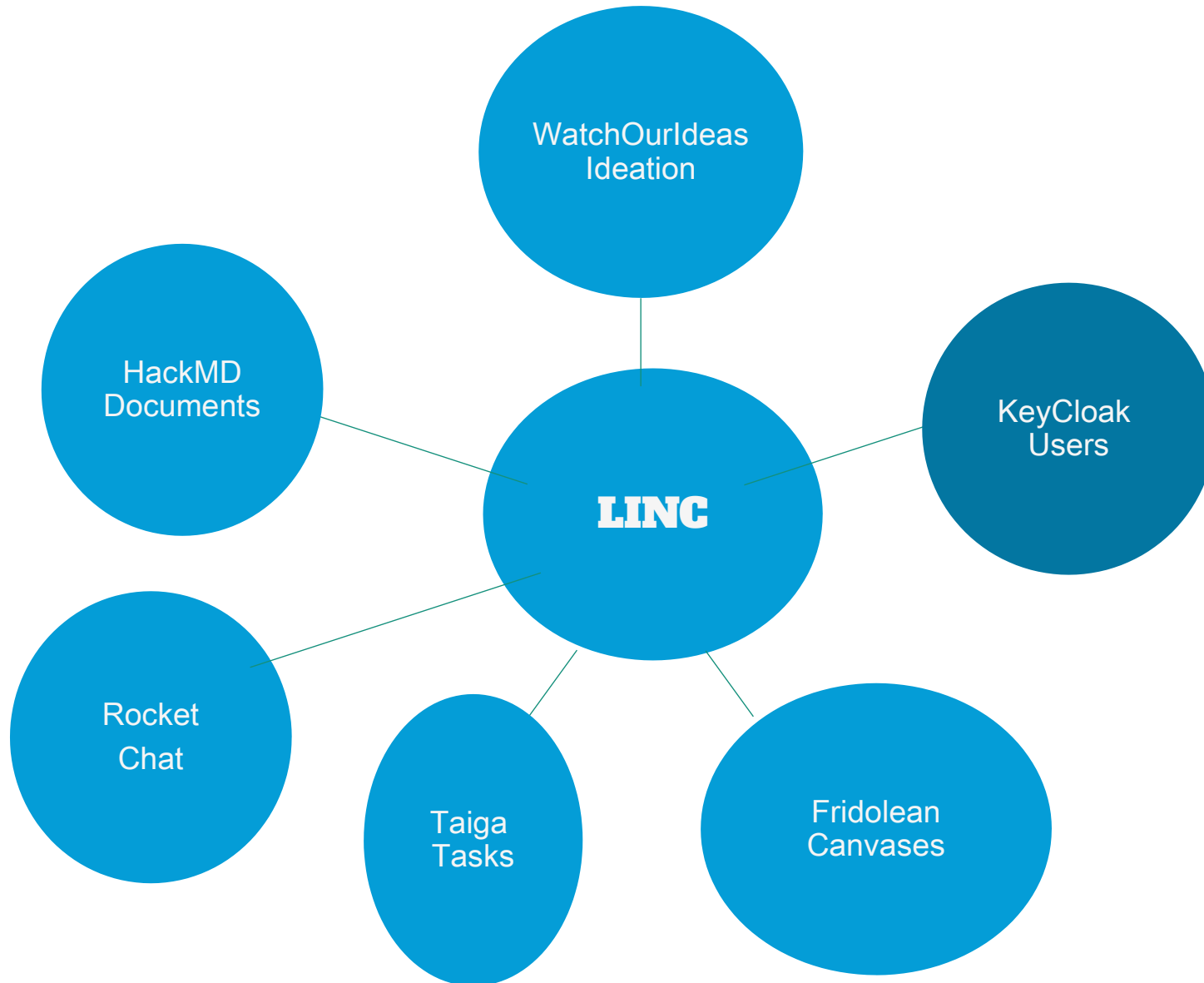
Lean Innovation Management Center

2 Software as a Business

- ▶ Public instance available at <http://linc.inf.tu-dresden.de>
- ▶ Course instance available at <http://linc.saab18.inf.tu-dresden.de>
- ▶ Made in the ECSEL IoSense project www.iosense.eu
- ▶ Innovation Process CLIP for in-house products, but based on Lean Startup
 - Template-based ad-hoc workflows
 - Synchronization of data

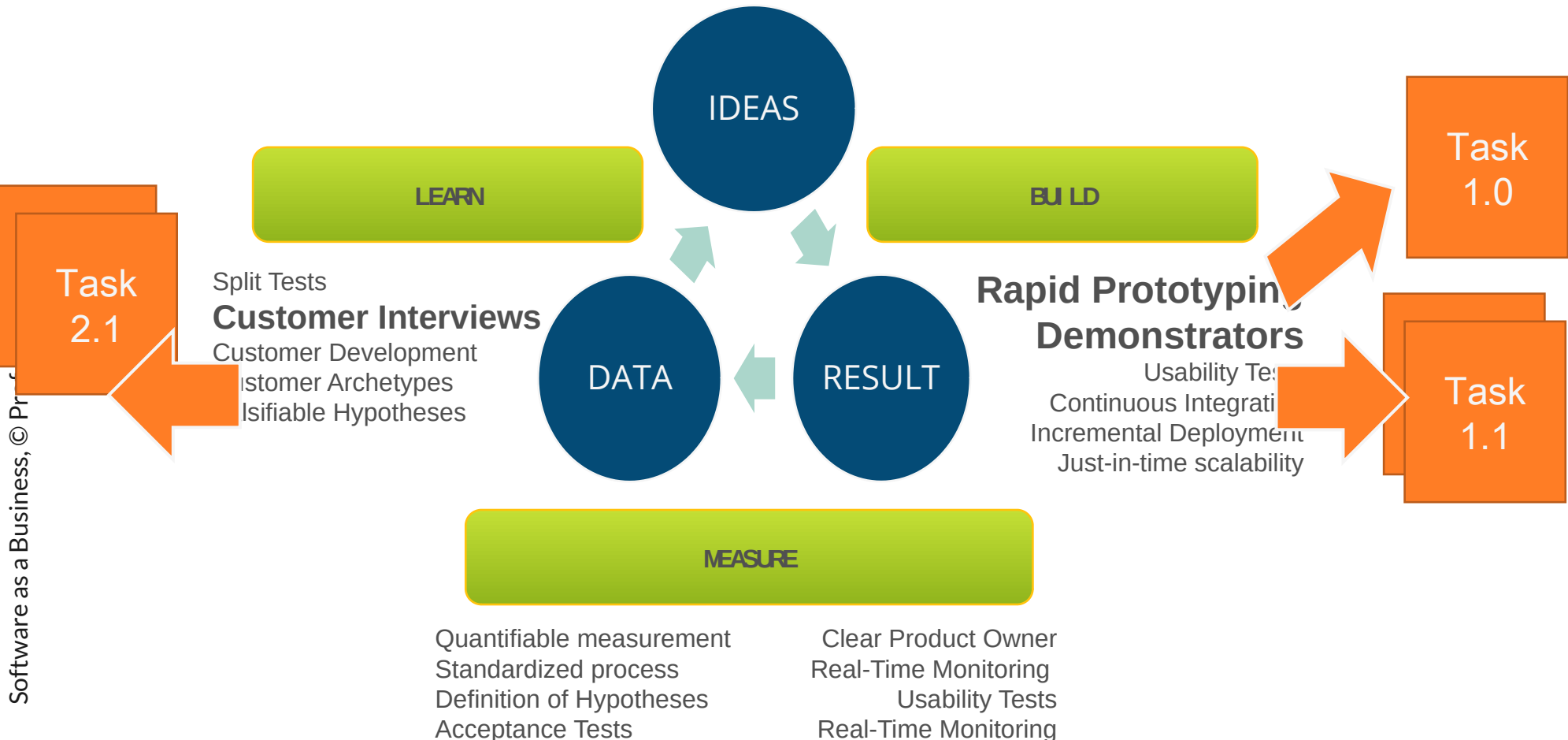


LINC Structure



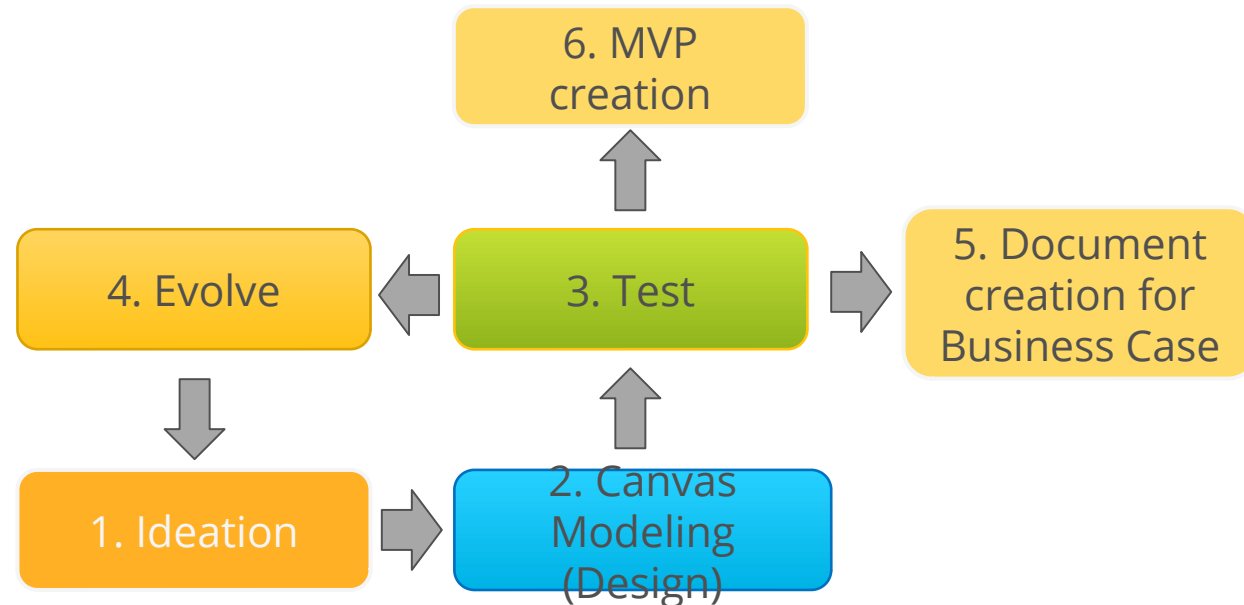
Hypothesis Testing in „Lean Startup“ Process

Lean Startup Cycle:

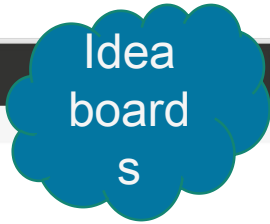


CLIP is “Lean Startup” for Co-Innovations with Customers

- ▶ CLIP Phases (Customer-centric Lean Innovation Process)
 - 1. Ideation with Watch Our Ideas – Idea management platform
 - 2. Canvas modeling with Fridolean platform
 - 3. Hypothesis testing With stakeholders on RocketChat
 - 4. Evolve: Iteration / Refine
 - 5. Document creation
 - 6. MVP creation



Ideation with LINC Component WatchOurIdeas – Web Idea Management Platform



WATCH OUR IDEAS BETA

IDEEN IDEE BOARDS

Hilfe: [User Icon]

Kategorie auswählen - Typ auswählen -

Alle Ideen:

Zuschreibung von Identität

es wurde noch kein Bild hochgeladen

Identität und Identifizierbarkeit
Subjektivierung (als inhaltlicher Aspekt) Identität (en) als Fremdzuschreibung und Selbstzuschreibung Grenzen der Subjektivität durch [...]

Katrin Etzrodt 07.02.2014
Kunst & Kultur [Details]

Beispiel Potsdam I-Science Tag

es wurde noch kein Bild hochgeladen

In Potsdam finden unter dem Motto „Digital Humanities meets Information Science“ regelmäßig sog. „I-Science-Tage“ statt, bei denen formationswissenschaftler / Informatiker mit [...]

Steffen Albrecht 16.02.2014
Bildung & Erziehung [Details]

Nanoscale characterization of Raman nanoscale spectroscopy carbon properties characterization nanotubes

Carbon nanotubes (CNTs) were discovered in 1991 [1] and since then they found their way into various applications such field effect transistors (FET) [2]. From very early on, it [...]

Jana Kalbáková 06.06.2014
Werkstoffe & Materialien [Details]

Uni Graz

es wurde noch kein Bild hochgeladen

Centre for Information Modelling - Austrian Centre for Digital Humanities (Uni Graz)

Christina A. Anders 12.02.2014
Kunst & Kultur [Details]

Overview Science Dresden

Science & Innovation
Top-Class Research in Dresden

A flourishing research landscape with a standard of excellence Dresden: a city of science Nowhere else in Germany can so many scientists and research institutions be found in [...]

Sabine Lettau-Tischel 07.05.2014
Wirtschaft [Details]

Overview Nanotechnology Dresden

-Dresden is one of most important locations in Germany - Some 100 companies and 40 research institutions in the Dresden region - Dresden is of international significance in the [...]

Sabine Lettau-Tischel 07.05.2014
Werkstoffe & Materialien [Details]

Facet-Dependent Conductivity of PbS

Lead sulfide (PbS) is a well-known semiconductor for its relatively small band gap and now suggested as a possible topological insulator material. It is also used frequently in [...]

Hsian-Sheng 25.06.2014
Werkstoffe & Materialien [Details]

Scale up production of metal-oxide ...

SERISOR's candidate chemical based biosensors technique printing grown sensor cost nanowires high low-cost nanowire applications due excellent gas using properties mass flow production area growth selective substrates

Biological and chemical sensors based on nanowire devices offer many advantages, such as excellent sensitivity, specificity and response rate, during detection. For example, Zinc [...]

Kar-Seng (Vincent) Teng 20.06.2014
Werkstoffe & Materialien [Details]

Zielgruppen / Adressaten?

Autorenattribution

für Wissenschaftler: Normen für die Forschung, Plagiate, Urheberrecht für individuelle Internetnutzer; Autorenattribution, Grenzen der Autonomie, Subjektivität für BKA: Profile, [...]

Christina A. Anders 12.02.2014
Kunst & Kultur [Details]

Nanostructured amorphous solids ...

indicates fact material varying and/or structure glasses etc.) due available novel solids due from (e.g. atomic discovery chemical structures open metals nanoglasses way scale feature gives materials can age new properties rapidly controlled compositions

Modern technology is based on the fact that the properties of crystalline solids can be controlled by modifying their atomic structure (e.g. by structural phase transformations or [...]

Herbert Gleiter 06.06.2014
Werkstoffe & Materialien [Details]

IDEEN IDEE BOARDS

Facet-Dependent Conductivity of PbS

Autor: Hsian-Sheng (erstellt am: Mittwoch, 25. Juni 2014 19:56) Idee folgen

Kategorie: Werkstoffe & Materialien

Externe Ressourcen:

Erstellt auf folgendem Board: Nanofair 2014

Bild 1/1: probe scheme

Idee hierhin ziehen

Idee zuletzt angesehen

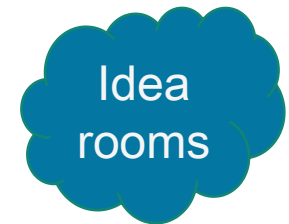
- Am Rin (Mittwoch, 7. Januar)
- Christian Schultz (Dienstag, 9. Septen)
- Christian Schultz (Dienstag, 9. Septen)
- Stephan Walter (Dienstag, 29. Juli 2014)

Lead sulfide (PbS) is a well-known semiconductor for its relatively small band gap and now suggested as a possible topological insulator material. It is also used frequently in lateral structure design of solar cell considering its great photosensitivity in near-infrared region, along with fact that designing electrical component layer by layer using NC film or QDs has become convention, which has raised accuracy in manufacturing and improved convergence rate and efficiencies significantly. From these perspectives, well-defined PbS NPs and NC films play exceedingly important roles in designing electrical devices, such as solar cells and transistors. In order to overcome current bottleneck in lifting the efficiencies of these devices to the next level, we need to have a deeper understanding of the electron transmission mechanism at the surface, especially on a well-defined facet of such materials, electrical conductivity measurement on specific facet is a fundamental investigation. We have previously demonstrated various surprising facet-dependent properties in the case of both metals and metal oxides, including the underlying property of facet-dependent photo-degradation capability and facet-dependent electrical conductivity of Cu₂O, which is closely related to this work. These experiments are designed to demonstrate the notable and widely existing facet-dependent electron transfer barrier in semiconductors regardless of the magnitude of the materials band gap. (The band gap of Cu₂O is roughly 2.4 eV while the band gap of PbS is only 0.41 eV) In this study, we came up with a relatively simple measurement using PbS NPs as our probing target. Formerly, there were many reports on the synthesis of well-defined PbS NPs. However, the size were not large enough for tungsten probes to manipulate under electron microscope which makes single particle conductivity measurement impractical, not to mention the detection on specific facet. To solve this problem, we have successfully synthesized large-sized PbS NPs (around 200-300 nm) with uniformly well-defined facets making the investigation of electrical conductivity by tungsten probes feasible. Moreover, the measured behavior of particles should be considered as properties existing in bulk materials rather than a quantum-scale property, since the particle size is out of the realm of quantum physics.

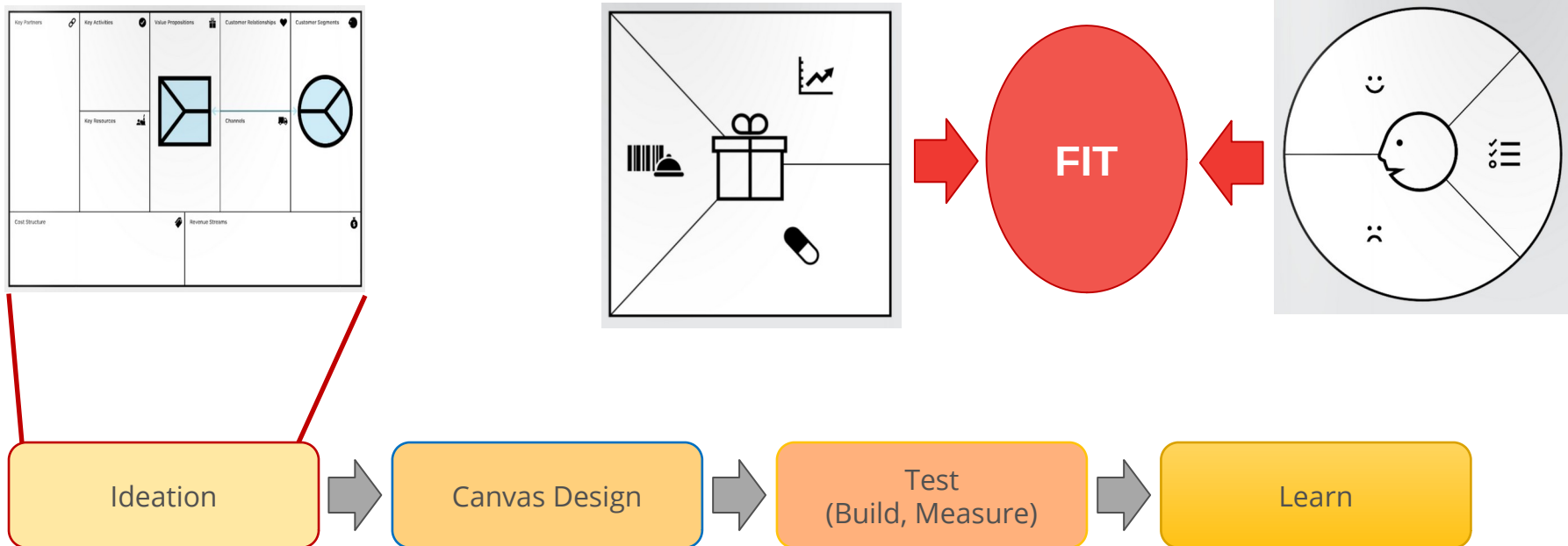


WatchOurIdeas – Web Idea Management Platform

- ▶ Platform for communicating developing, sharing and combining ideas
 - Developed by TU Dresden, can be used within the course
 - Otherwise licensing required from TU Dresden
- ▶ Sharing ideas in idea rooms grouped by idea boards
 - Public, group-private, or private
- ▶ Gathering feedback, suggestions and improvement for ideas
 - Remote customer interviews
- ▶ Create canvases for developing ideas to business
 - Going over to Fridolean, the Canvas management tool



Canvas Modeling with LINC (component "Fridolean")



Web-Based Development of Business Model Canvas with LINC (Component „Fridolean“)

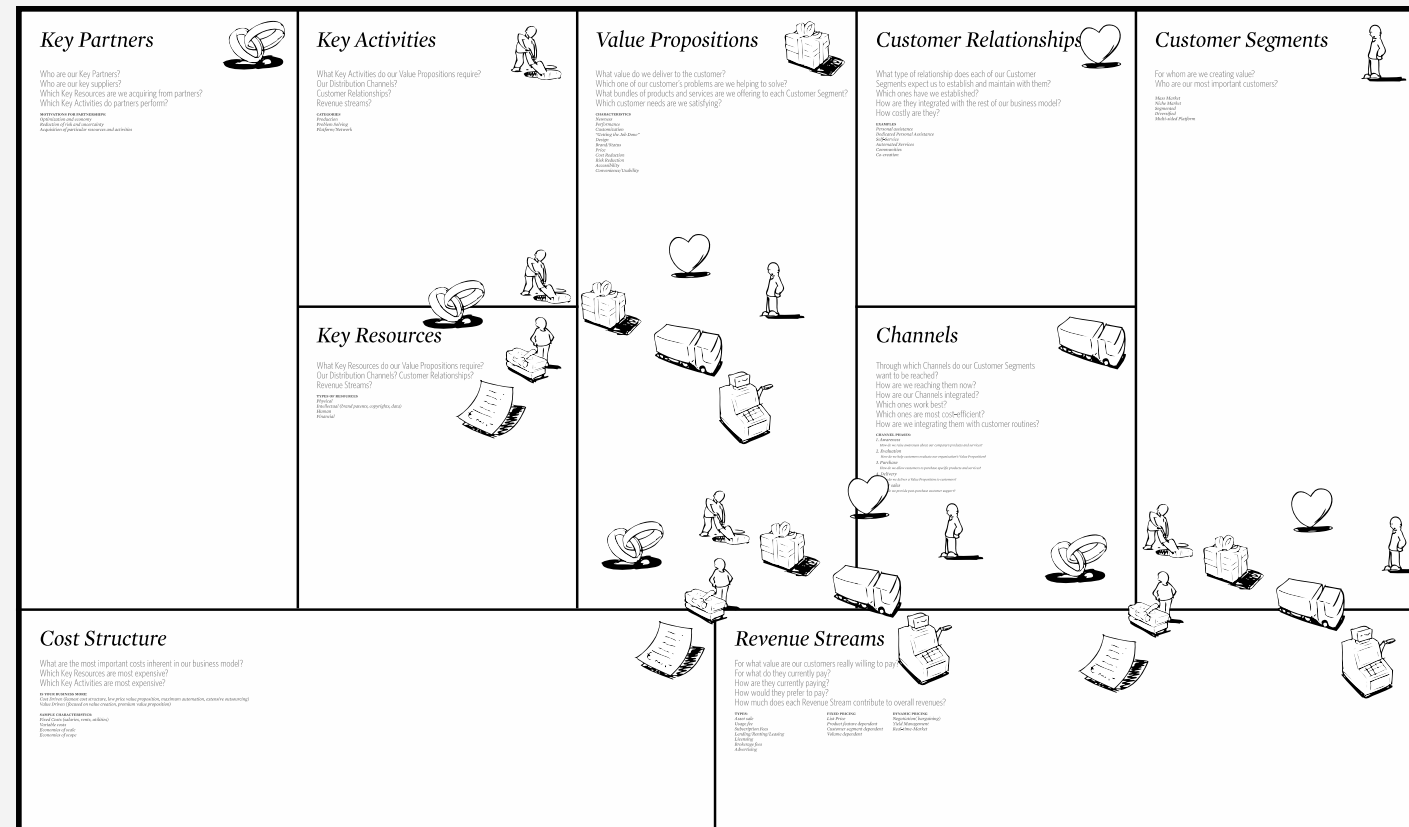
- ▶ From book “Business Model Generation” [Osterwalder/Pigneur]
 - Developing new or capturing existing business models
 - Different aspects of business model generation
- ▶ Fridolean: Online Canvas Editor, developed at TU-Dresden
 - Nested canvases
 - Life editing while chatting with Rocket Chat

The Business Model Canvas

Designed for:

Designed by:

On:
Iteration:



Fridolean.io x

Sicher | <https://fridolean.inf.tu-dresden.de/projects/497aa912-2cd4-451e-aa00-70e1bd2e7a37/editor/bu...>

Apps ST-VL-WS ST-VL-SS Day ST Acq Wshop Projects Search News AnMit Talk Keep It! Review » Andere Lesezeichen

Fridolean.io Projects Explore Hello, User Sign out

Hospital Cube-It

Key Partners

- Hospital
- Health insurance
- Doctors
- Nurses

Key Activities

- program an app for recording wishes on the cube-It

Value Propositions

- Record patient wish by turning around
- Ring alarm when shaking

Customer Relationships

- Abonnement
- News on Cube-It

Customer Segments

- hospitals
- home care companies

Cost Structure

- pay-per-service is enabled by precise automated bookkeeping

Revenue Streams

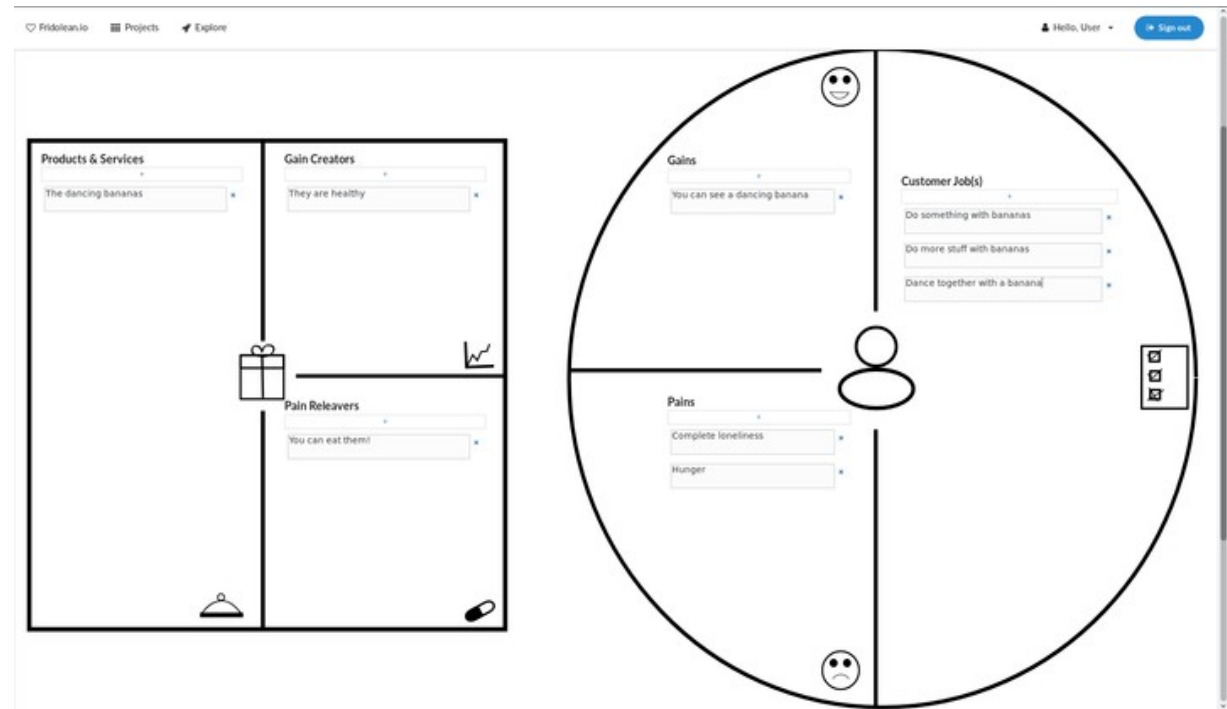
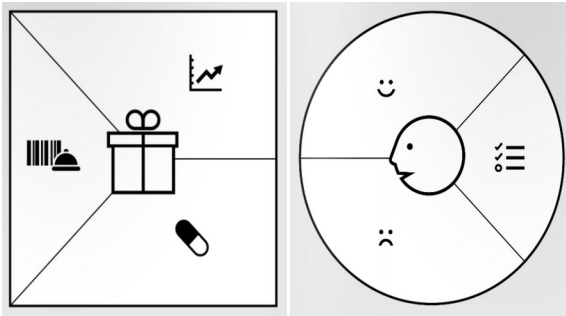
- pay-per-service billing
- special flatrates for certain insurances

Software as a Business, © Prof. Uwe Alßmann



Example: Web-Based Validation of Business Model Canvas with LINC (Component „Fridolean“)

- Value Proposition Canvas
 - Finding Pains and Gains



Value Proposition (Record patient wish by turning around)

Value Proposition

- Products & Services**
 - cube-it app records wishes by turning the cube it
 - add a button for another set of wishes (2nd meaning)
 - pay per service
- Gain Creators**
 - immediate transfer of patient state to nurse
 - clear recording of patient utterings for log book
- Pain Relievers**
 - patient gets services earlier
 - patient leaves hospital earlier

Customer Segment

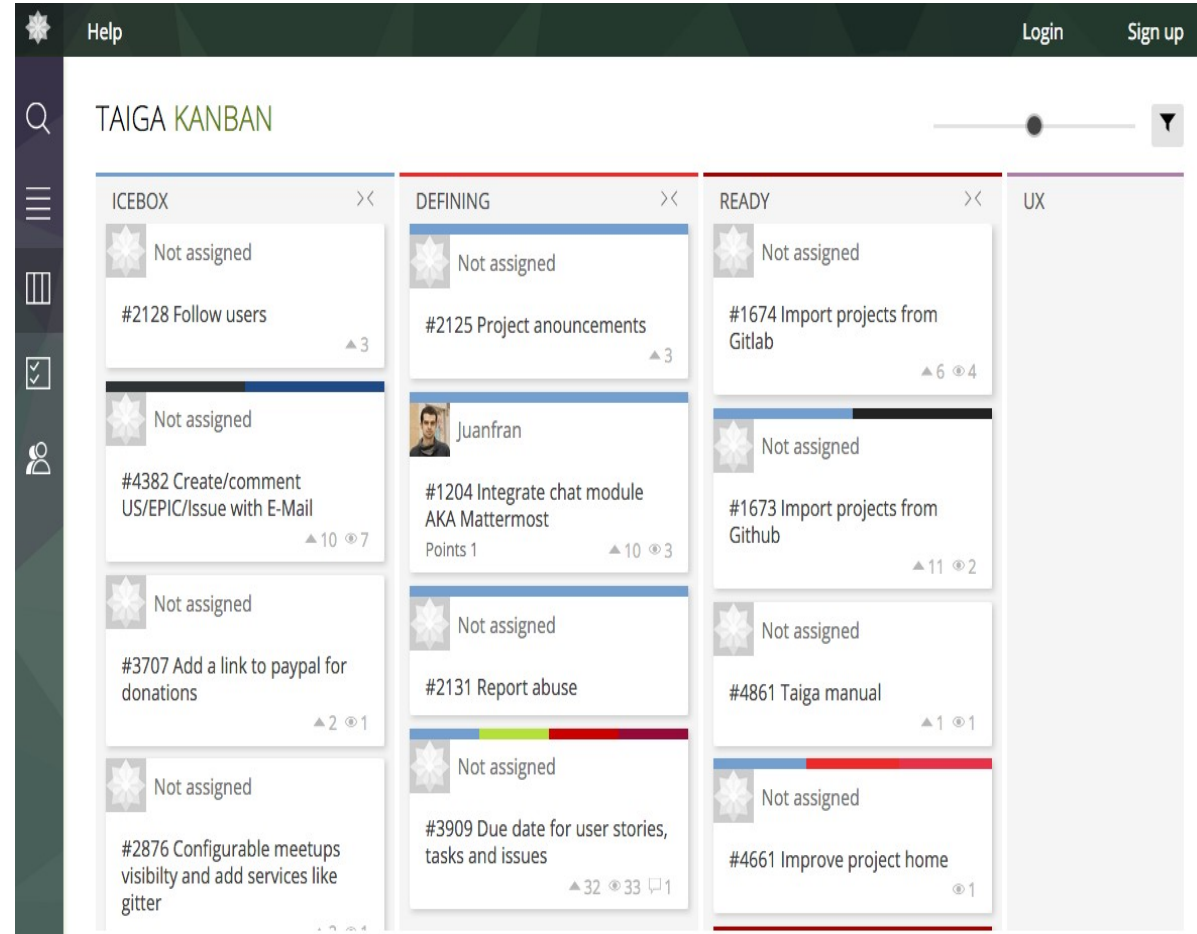
- Gains**
 - less dangerous situations for visiting toilets
 - patient satisfied
 - patient non-depressed
- Pains**
 - patient thirsty
 - patient depressed
 - patient has accident while visiting toilet without help
- Customer Job(s)**
 - patient needs to go to the toilet
 - patient needs water
 - patient needs talking



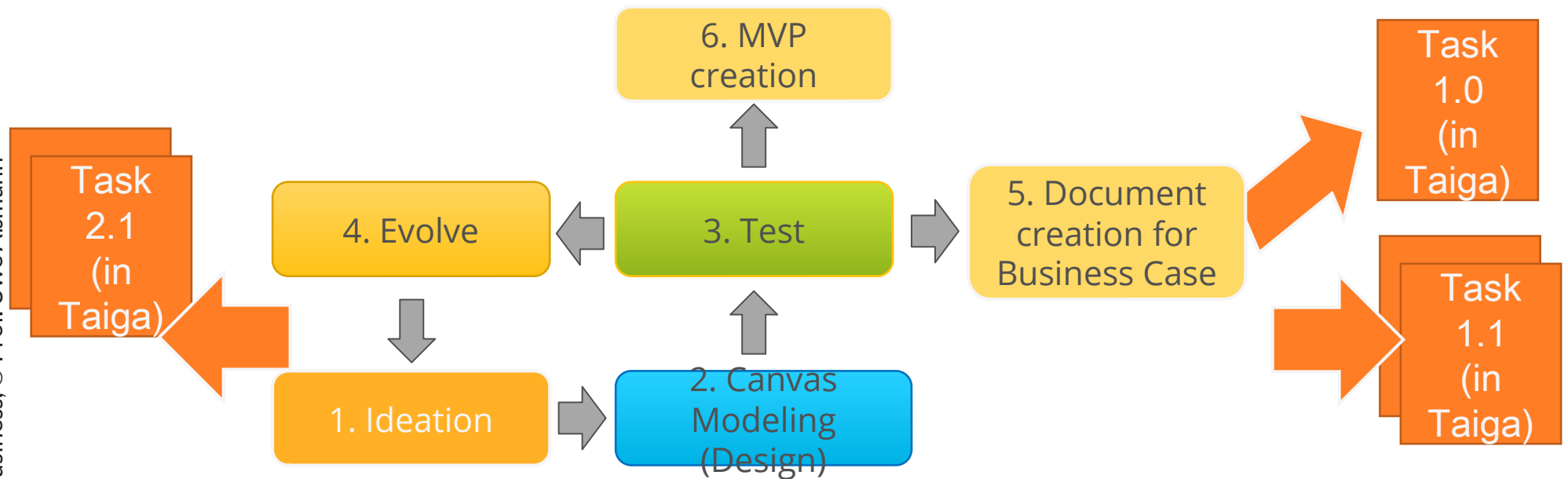
Task Management (Iterations) with LINC Component „Taiga Kanban Board“

13 Software as a Business

- ▶ Taiga Task Management: Similar to
 - Wekan, Jira, Trello, Eteo-Board
- ▶ User identity management with KeyCloak (OSS)



CLIP Hypothesis Testing for Lean Product Development



Document Creation for Business Cases with LINC Component „CodiMD“

15 Software as a Business

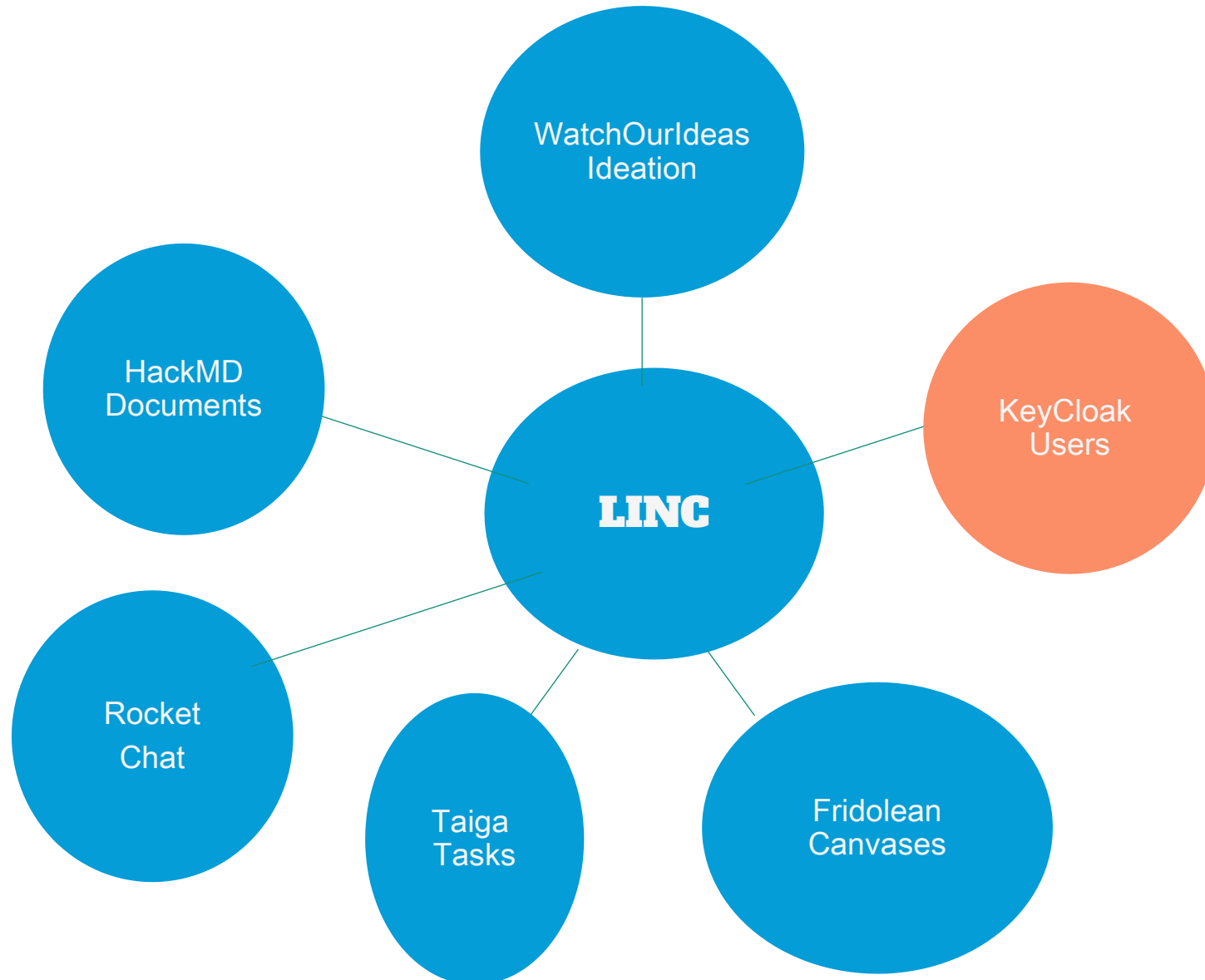
- ▶ Like Google docs, but private to an idea room or idea board
- ▶ Collaborative editing of
 - Idea cases
 - Business Case documents
 - Internal documents
- ▶ User identity management with KeyCloak (OSS)

The screenshot displays the CodiMD web interface. The top navigation bar includes options like '+ Neu', 'Veröffentlichen', and 'Menü'. The main content area is split into two panes: a dark-themed code editor on the left and a rendered preview on the right. The code editor shows the following markdown content:

```
1 Features
2 ===
3 **[English version](/features)**
4 **[中文版](/TKNuhom7S620V6bDyBgLXA)**
5 **[日本語版](/b_l4reLiTdWOSn9SiCmbJQ)**
6
7 **Do not modify this note.** Thank you very much
8 :smile:
9 **If you want to say hello or play with something,
10 please go to [Playground](/SA8inq7VTm08jIWC5QsMcw)**
11
12 Introduction
13 ===
14 <i class="fa fa-file-text"></i> **HackMD** is a
15 realtime, multi-platform collaborative markdown note
16 editor.
17 This means that you can write notes with other people
18 on your **desktop**, **tablet** or even on the
19 **phone**.
20 You can sign-in via multiple auth providers like
21 **Facebook**, **Twitter**, **GitHub** and many more
22 on the [homepage]().
23
24 Please report new issues in [GitHub]
25 (https://github.com/hackmdio/hackmd-io-issues/issues/new).
26 If you need instant help, please send us a [Facebook message]
27 (https://www.messenger.com/t/hackmdio).
28 **Thank you very much!**
29
30 Workspace
31 ===
32 ## Modes
33 **Desktop & Tablet**
34
35 <i class="fa fa-edit fa-fw"></i> Edit: See only the
36 editor.
37 <i class="fa fa-eye fa-fw"></i> View: See only the
```

The rendered preview on the right shows the formatted document with sections for 'Features', 'Introduction', 'Workspace', and 'Modes'. It includes links for 'English version', '中文版', '日本語版', 'Playground', 'GitHub', and 'Facebook message'. The status bar at the bottom indicates 'Line 1, Column 1 - 559 Lines', 'Spaces: 4', 'SUBLIME', and 'Length 14988'.

Single-Sign-On with User Federation Server Keycloak



Cube-It Applications

17 Software as a Business

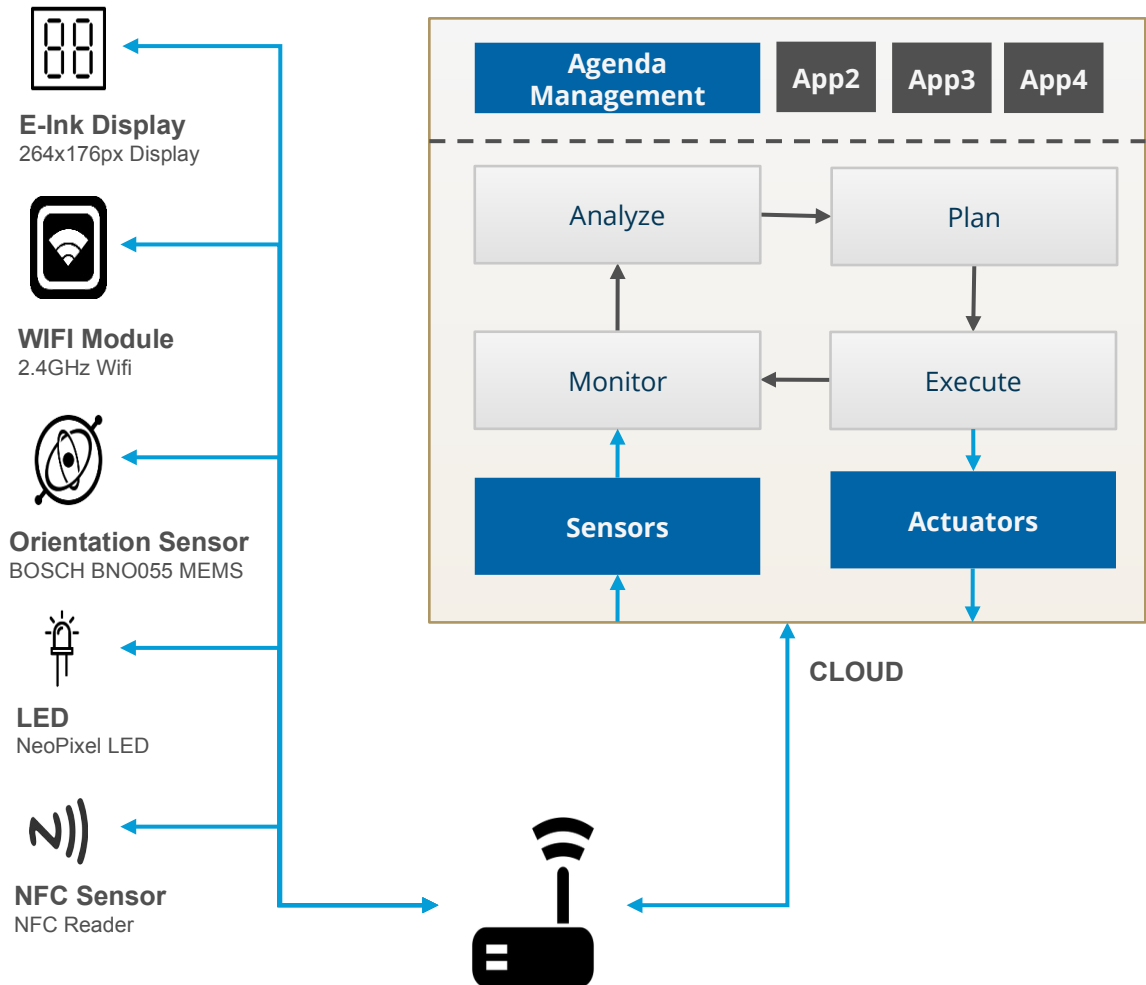
1st IoSense Innovation Challenge

- „Road Sign To Go“ – Lisa Schönbach



1st Innovation Competition on LINC with Cube-Its (“cube intelligent thing”) – A Modular IoT Platform with Cloud Backend

- ▶ <https://woi.inf.tu-dresden.de/ideadetail/cube-its---issue-tracking>



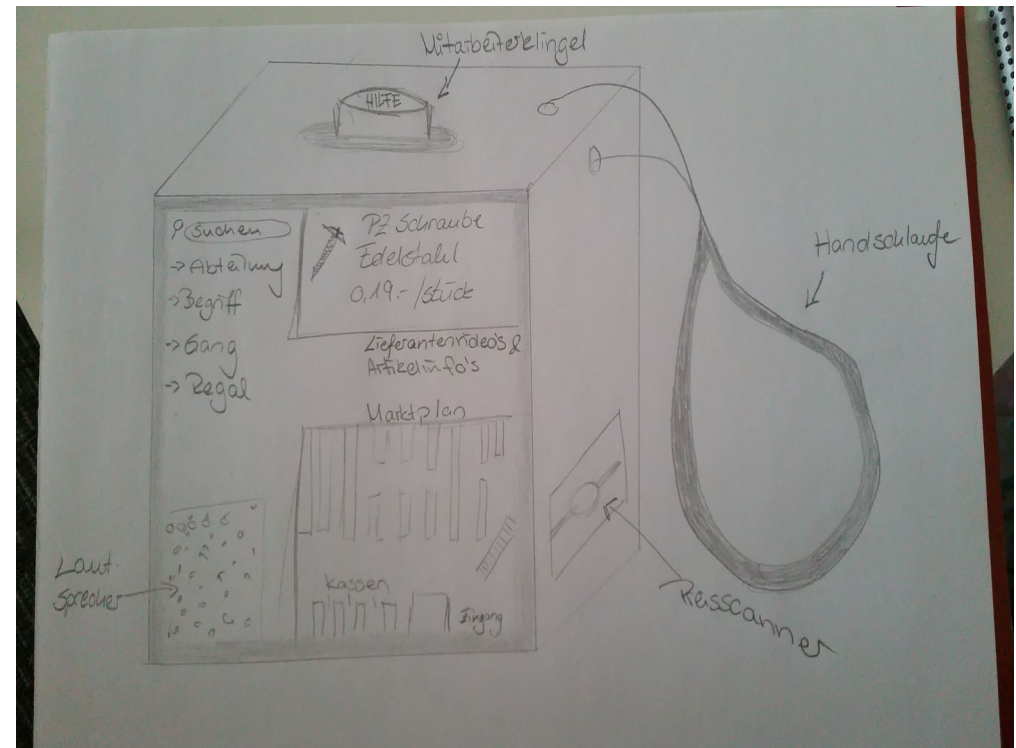
Results: Top List of Ideas

- ▶ Road Sign Cube-It ToGo
- ▶ Restaurant Cube-It
- ▶ Mood Cube-It

- ▶ Cube-It for Robot Control

Navigation Cube-It [Lisa Schönbach]

- ▶ <https://woi.inf.tu-dresden.de/ideadetail/wegweiser-togo>
- ▶ Use Cube-It as Road Sign in a supermarket
- ▶ Navigation of Customers
- ▶ Information on Products



Restaurant Cube-It [Ronny Seiger]

- ▶ <https://woi.inf.tu-dresden.de/ideadetail/cube-its-in-a-restaurant>
- ▶ „Cube-Its can be used as personal devices for guests in restaurants/bars:
 - as a personal tab;
 - to signal the waiter when ready to order or to pay;
 - to see updates regarding meal preparation;
 - to see the current amount due;
 - and also to inform waiters about new guests or guests switching tables.“

Mood Cube-It [Mandy Korzetz]

- ▶ <https://woi.inf.tu-dresden.de/ideadetail/moodcube-its>
- ▶ „MoodCube-Its store personal preferences for home configurations;
- ▶ lighting, music and heating are adjusted depending on the current mood –
- ▶ set by the MoodCube-It's orientation.“



Cube-It for Robot Control

- ▶ Utilizing a Cube-It to control a robotic arm
 - Gyroscopic sensor translates into movement
 - Integrated into the IoSense Sensor Tool-Kit (STK)



Results SAAB 2018

- ▶ <https://md.saab18.inf.tu-dresden.de/SAAB-homepage>

Group InPen

- ▶ Presenting a smart-order catalogue system for elderly and handicapped people
- ▶ Smoke Video <https://drive.google.com/file/d/1KWkrJUq2i8srJzCAIf96khp2Y-yWFZTV/view?usp=sharing>
- ▶ Landing page (Website) <https://marifroe.bitbucket.io/#>

Group SmartShirt: Presenting a smart shirt for communication

- ▶ Smoke Video <https://www.youtube.com/watch?v=mbPikcSZqTk>
- ▶ Landing page (Website) <https://d3js-tutorial.de/core/tu-dresden/saab/main.php>

Group ToyIt: Presenting a toy-IT box for kids, replacing smartphone gaming

- ▶ Smoke Video <https://zuzadr.github.io/Smoke.mp4>
- ▶ Landing page (Website) <https://zuzadr.github.io/>

The End

