2. Basic Patterns and Tools for Lean Startup and Lean Innovation

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

  - http://nbn-resolving.de/urn:nbn:de:bsz:14-qucosa-160539
2.1 The Lean Innovator's Toolbox
Lean or Agile Innovation or What?

Agile Software Engineering

Agile Software Modeling

Lean Innovation

Lean Business Modeling
The Toolbox

► Every innovator needs a toolbox for his products or services he develops
► Several important artefacts (lean models) are assembled. He/she should know them by heart.
► In the course, we will discuss these artefacts and how to mature them.
► The innovator's toolbox
  ▪ NABC Elevator Pitch
  ▪ Working with Canvases
  ▪ The Business Model Canvas
  ▪ The Value Proposition Canvas
  ▪ The Lean Canvas
  ▪ The Lean BMC
  ▪ The Personal BMC
  ▪ The Requirements Engineering Canvas
Q1: The Lean Innovator's Toolbox

Every innovator should have the following artefacts present and mature them over time:

- **Elevator Pitch**
  Need – Approach – Benefit/Cost – Competition (nABC)

- **Value Proposition Canvas**
  Pains
  Gains
  Pain Removers
  Gain Catalysers

- **Business Model Canvas**
  Business Model Development

- **Pain Sheets / Pain List**
  Clear knowledge about pains, reasons, implications, capabilities

- **Pain Diary**
  Update regularly

- **Pain Classification**
  Pain-Gain-Banana

- **Problem Canvas**

- **SPIN Selling Canvas**
  Questions for turning implicit into explicit needs

- **Lean Canvas**
  Mapping problems to customers
  Thinking about competition

- **Innovator's Toolbox**
Change Patterns the Lean Innovator has to Know and the Opportunities in the SWOT Analysis

External
- Society
  - Finding new governance rules and laws (Sarbanes-Oxley, certifications)
  - Change of government, also in other countries (Wende, Treuhand...)
- Nature
  - Times of the year
- Technology
  - New technology (innovation waves, disruptive technology,...)
- Economics
  - Commodity pattern
  - Economic cycles

Internal
- Supplier changes
- Patents expire

Environmental factors

Diagram:
- Internal attributes
  - Strengths
  - Threats
- External attributes
  - Opportunities
  - Weaknesses
The Stanford Triple Match for Innovations

Technology (feasibility)  Business (viability)  Human Values (usability, desirability)

Innovation

http://dschool.stanford.edu/our-point-of-view/
Bud Caddell's Triple for Innovators

- What we do well
- What we want to do
- What we can be paid to do

Learn to monetize
Learn to say NO
Learn to do this better
2.2 Overview on Lean Startup and Lean Innovation
Lean Innovation Process in this Course

- The \textbf{lean innovation process} prototypes early to get early feedback (feedback-oriented process)
- \textbf{Insight: Business can be modeled and metamodeled}

\begin{itemize}
  \item \textbf{Lean Startup}
  \item \textbf{Lean Innovation}
  \item \textbf{Lean Modeling with Canvases}, e.g., with Business Model Canvas
  \item \textbf{Selling Techniques}
  \item \textbf{Business Models}
  \item \textbf{Lean (Agile) Development}
\end{itemize}
The Lean Innovation (Startup) Spiral Model

- Instance of “Scientific Method” of Bacon and PDCA (Plan-Do-Check-Act)
- Plan - Build – Measure – Learn – cycle [Maurya, Ries]
- Developing “Business Model Canvases” containing “Customer Hypotheses”
- The “Learn” - “Plan” - “Build” - “Measure” Cycle is a variant of the Scientific Method and the PDCA.
Software as a Business

The Business Model Canvas

Key Partners
- Who are our key partners? What do they deliver? What do they demand in addition? What role do they take in the network? What are the key partners of the business model?

Key Activities
- What key activities do we need to perform? How do we differentiate ourselves? How do we create value for our customers? What are the key processes of the business model?

Key Resources
- What key resources do we need to deliver our business model? What are the key assets of the business model? How do we allocate resources to the business model?

Value Propositions
- What value do we deliver to the customer? What are the key benefits customers get from using our product? How do we differentiate ourselves from competitors?

Customer Relationships
- What type of relationship do we need to maintain with our customers? How do we interact with our customers? How do we forge and maintain relationships with our customers?

Customer Segments
- For whom are we creating value? Who are our most important customers? How do we identify our customer segments?

Channels
- Through which channels do our customer segments want to be reached? How do we reach our target customers? How do we reach our competitors? What are the most effective channels for reaching our customers?

Revenue Streams
- What are the key revenue streams? What do our customers pay for? How much do they pay? How do we generate income from our business model?

Cost Structure
- What are the key cost drivers of our business model? What do we need to cost? How do we allocate costs to the business model?
Business Model Analysis with the Business Model Canvas

► Business model development creates business models
  ▪ For start up and placement of new products
  ▪ [Osterwalder/Pigneur] suggest to split the business model in 9 parts, divided by input, output, and in between

► Input (Resource) Side
  ▪ Cost vs Profit
    ◆ Estimate costs! Cost leadership?
    ◆ Estimate break-even point!
    ◆ Distinguish cash flow and profit

► Middle: Value Proposition and Pain Killing

► Output Side (Customer Side)
  ▪ Target customer group
    ◆ Companies? End customers? [champagne]
    ◆ Selling directly or via distributor?
  ▪ Channels
    ◆ Market entry strategy
    ◆ Segmentation of the market
Bridging Two Worlds in BMC


The Business Model Canvas

Key Partners
- Who are we key partners?
- Who are our key competitors?
- Which key resources are we acquiring from our partners?
- Which key activities do our partners perform?

Key Activities
- What key activities do our value propositions require?
- What are our key processes?
- What are our key value drivers?
- What are our key ratio?

Value Propositions
- What does the customer get?
- What service do we provide?
- How are our value propositions unique?
- What do we claim to do?

Customer Relationships
- What does the customer get?
- What is our key customer relationship?
- What is our key customer contact point?
- What are our key customer relationships?

Customer Segments
- Who are our most important customers?
- Which are our key customer segments?
- What is our target market?
- Who are our key customer segments?

Key Resources
- What are the key resources we require for our value propositions?
- What are our key resources?
- What are our key resources that need to be acquired?
- What are our key resources that need to be developed?

Channels
- How do we reach our customer segments?
- What channels are most effective?
- What channels do our customers use?
- What channels do we use to reach our customers?

Revenue Streams
- How much does our customer pay?
- What is our key revenue stream?
- What is our key revenue stream?
- What is our key revenue stream?

Cost Structure
- What are the most important costs for our business model?
- What are our key cost drivers?
- What are our key cost drivers?
- What are our key cost drivers?

www.businessmodelgeneration.com
Business Model Canvas Process

- Basically from right to left

Osterwalder-BMC
The Business Model Canvas Cactus (BMC Cactus)

- Growing a model tree with side edges (dag cactus) out of a first version
- Assess with red-yellow-green; choose a current “champion”
- Follows the Generate-Assess-Test problem-solution process
- Not too many canvases are kept active (small dashboard)
Customer Analysis (Customer Modeling) is a variant of business model development that creates a trustworthy, realistic model of the customer of the product, his pains, his gains, his desires, her stakeholders, ...

During customer modeling, **customer hypotheses** are proposed in form of BMC and validated (BMC Cactus).

The “Ask” - “Measure” - “Learning” Cycle is a variant of the Scientific Method and the PDCA.
The Model Aspect of Business Model Canvas

- BMC is based on a simple metamodel of business models
- Its instances are business models

[Diagram showing the Business Model Canvas with sections for Key Partners, Key Activities, Value Proposition, Customer Relations, Customer Segments, Key Resources, Channels, Costs, and Revenues.

- Cost/Resources for Company
- Cost-Value-Bridge
- Value for Customer

[Osterwalder-BMC]
One of the central insights of BMC is that a canvas is a *model* following a *metamodel* [Osterwalder PhD].
Instruments for Filling Canvases

- Paper and Notes
- App
  - http://www.businessmodelgeneration.com/canvas
  - https://strategyzer.com/app
- Google docs
  - http://scrumology.com/how-to-create-a-business-model-canvas-in-google-docs/
- Fridolean platform (LINC)
  - Nested canvases
  - Live editing of canvases
  - Linked with RocketChat do discuss online
  - Linked with codiMD to life-edit documents

A canvas is a form to collaboratively brainstorm a model.
Simple Process to Work with Canvases

- Finding answers to the fields of a canvas is easier, if you have defined questions before
  - Some canvases, like the BMC, state pre-defined questions. You can use
  - the “Honest Serving Men” of Kipling
  - The SWOT analysis (strengths, weaknesses, opportunities, trends)
  - The CoTIQQ analysis (cost, time, quality, quantity)
  - The BeNiSiLo analysis (better, Nicer, Simpler, Longer-lasting)

- Answers can be quite unrealistic and immature
  - Evaluate maturity of fields by
    - Asking experts
    - Check cross-constraints
    - Evaluation of metrics
Different Purposes of Canvases

- A canvas has different purposes. It is a model with a metamodel, so it inherits the benefits of the language of its metamodel.

**Bridging Worlds**
- Partner – Customer (BMC)
- Problem – Customer (LC)
- Pain – Pain killer (VPC)

**Brainstorm Canvas**
- Structured process for excellent elicitation
- Finding answers to the questions

**Question Canvas**
- To generate questions for interviews with customers and stakeholders

**Structured Process**
- Use the experiences of metamodels others have collected for you
Every canvas is linked to a **backlog of agenda (to do) items**
- Empty fields to be filled (Initial filling of the backlog, in filling order)
- New questions to be answered
- New answers to be discussed

Backlogs are burned down in **canvas sprints** (**question sprint, answer sprint, valuation sprint**)
- BMC sprint
- LC sprint
2.3 Value Proposition Analysis
Value Proposition for the Customer

- **Value proposition analysis** finds a real problem of the customer. It is a subprocess of Business model development.

> Make sure your innovation is a *pain killer* and not just a *vitamin*.

David Ladd, venture partner at Mayfield Fund [Carlson/Wilmot]

> *Pain killers* are too dangerous, you only get them on prescription – but we have a large set of *vitamins*.

[Swedish pharmacist, when Aßmann asked for Korodin Kreislauftröpfen]

[Ein Unternehmer] hat einen Spürsinn für das, was die Leute brauchen oder zu brauchen glauben.
Urs Wältlin. Weit weg im Outback.
Value Proposition Cycle (Hughes-Chafin)

- Does the customer care?
  - Pain
  - Gain

- Do we care?
  - Approach

- Can we beat the competition?
  - Market analysis
  - Benefit for cost

- Can we do it?
  - Cost and project planning

Arbeitspapier Nr. 6.
“Pain-Gain” Value Proposition Canvas [Osterwalder]

- Gains
- Pains
- Customer Jobs

- Gain Creators
- Pain Relievers
- Products and services

Download for personal use

Background:
http://geschaeftsmodellcoach.de/assets/Bilder/_resampled/resizedimage501353-valuepropositiondesignergif.gif
VP Canvas Process

- [Osterwalder-OPC] VPA uses a canvas to map the customer pains and gains to products and services
- The VPC defines the field “value proposition” of the BMC
BMC-VPC Innovation Workflow on LINC

1. Chat on RocketChat
2. Define a problem on WatchOurIdeas (WOI)
3. Define a BMC On Fridolean
4. Fill a VPC for value proposition in Fridolean
5. Use Timeline of WOI to create Canvas Cactus
6. Define the solution idea (value proposition) on WOI
2.3.2 Value Proposition Analysis with nABC

- NABC is a fantastic 4-step scheme for summarizing your idea for a new product or service.
- Learn it by heart, it will change your life.
NABC Analysis [Carlson-Wilmot]

- What does the customer really need?
- What is of value for her?
- What is a *pain* for the customer?

- How does your company solve the needs of the customer?
- How does it create value for her?

- Who is in the market already?
- How does our solution improve the competitor's?

- How efficient is the solution?
- How large is the benefit?
- How large are the costs?

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

- An elevator pitch is a 2-minute speech about the value proposition (problem-solution analysis) of your PhD thesis project
  - You should be able to tell it an important investor in an elevator (2 min)
- It combines a problem solving pattern such as NABC with a hook, a gripping introductory remark
  - You may use any other pattern, too

Carlson-Wilmot NABC

- Hook
- Need
- Approach
- Benefit for Cost
- Competition
- Conclusion

Carlson-Wilmot Elevator Pitch
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!
2.4 Lean Canvas

- An important variant of the BMC for problem-solution analysis
- Combining BMC and VPC
Lean Canvas [Maurya]

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
<th>Unique Value Proposition</th>
<th>Unfair Advantage</th>
<th>Customer Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Key Metrics</td>
<td>Channels</td>
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</table>

Cost Structure

Revenue Streams

Lean Canvas is adapted from The Business Model Canvas (http://www.businessmodelgeneration.com) and is licensed under the Creative Commons Attribution-Share Alike 3.0 Unported License.
Lean Canvas [Maurya] [http://leancanvas.com/]

- The Lean Canvas substitutes the Cost Subcanvas by the Problem-Solution-Key-Metrics Subcanvas
- The Lean Canvas supports Problem-Objective-Solution-analysis (POA)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
<th>Value Proposition</th>
<th>Unfair Advantage (hard to copy, redo, or follow)</th>
<th>Customer Segments</th>
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<th>Cost Structure</th>
<th>Revenue Streams</th>
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<tbody>
<tr>
<td></td>
<td>Value for Customer</td>
</tr>
</tbody>
</table>
The Lean Canvas supports Problem-Objective-Solution-analysis (POA)

The fill order is top-down outside-in
The Lean Canvas and the BMC can be unified by adding the subcanvases.

The LBMC supports Problem-Objective-Solution-analysis (POA), Competition analysis, Customer analysis.
Lean Canvas Innovation Workflow on LINC

- Define a problem on WatchOurIdeas (WOI)
- Define a solution idea (value proposition) on WOI
- Define a LeanCanvas On Fridolean
- Use Timeline of WOI to create Canvas Cactus
- Chat on RocketChat
- Fill a BMC for resources On Fridolean

Software as a Business

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2.5 Other Canvases
Change Patterns and the Opportunities in the SWOT Analysis

External

- **Society**
  - Finding new governance rules and laws (Sarbanes-Oxley, certifications)
  - Change of government, also in other countries (Wende, Treuhand...)

- **Nature**
  - Times of the year

- **Technology**
  - New technology (innovation waves, disruptive technology,...)

- **Economics**
  - Commodity pattern
  - Economic cycles

Internal

- **Supplier changes**
- **Patents expire**
SWOT Change Canvas

- Derived from SWOT

The wind of change

State

Change

Strengthes
Weaknesses
Competitive Advantage
Opportunities
Threats

Invariants

Changes

Visions

Expectations

internal

external

Derived from SWOT
Lean Change Canvas

- http://agileconsulting.blogspot.de/2012/08/lean-change-part-1-combining-kotter-and.html?m=1
- https://canvanizer.com/new/lean-change-canvas

<table>
<thead>
<tr>
<th>Urgency</th>
<th>Target State</th>
<th>Vision</th>
<th>Communication</th>
<th>Change Recipients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 3 drivers, and what needs to change</td>
<td>Strategic pillars, common enablers, etc</td>
<td>Single compelling statement that describes what the &quot;destination&quot; looks like</td>
<td>2 way path of communication</td>
<td>Who is impacted by the change</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Success Criteria</th>
<th>Key Behaviours</th>
<th>Action</th>
<th>Guiding Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change will stick when:</td>
<td>Key Behaviours:</td>
<td>Key methods used to implement change</td>
<td></td>
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</table>

| Required Investments | Wins | |
|----------------------|------||
| Constraints around time, cost, and effort | Moral Performance Capability | |

| Capability of Org to Execute | |
|-----------------------------| |
| 1                           | 5 |

<table>
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<th>3</th>
<th>4</th>
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<table>
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<tr>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>VISION: What is the vision for this change?</td>
</tr>
<tr>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Success measurements: How will we measure success?</td>
</tr>
<tr>
<td>Who and what is affected?: What people, departments and processes need to change in order to realize our vision?</td>
</tr>
<tr>
<td>How will we support people?: What actions will we (the change sponsors and change team) do to support people through the change?</td>
</tr>
</tbody>
</table>

**What is our plan?**
- Options: A list of possible experiments
- -1 month: Experiments likely to be introduced in about a month
- Next: The next most important changes to introduce
- Prepare: Experiments being planned and validated
- Introduce: Experiments in progress
- Review: Experiments being reviewed
Requirements Engineering Canvas (ReqEC)

- [Oddoy] suggested a canvas to engineer requirements

Diagram:
- Use Cases
- Key Functions
  - Stakeholders
  - Crosscutting
- Scope and Context
- Components
  - Business Rules
- Domain Model
  - Customer World
  - Scenarios
Business Model You Canvas (BMYC)

- The BMYC is a canvas for your personal life and career development, inspired by the BMC. http://businessmodelyou.com/
The BMYC is for the development of your career and yourself

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<th></th>
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</thead>
<tbody>
<tr>
<td>Key Resources What you are and have</td>
<td></td>
<td></td>
<td>Channels How do they know you? How do you deliver?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost Structure What do you give?</th>
<th></th>
<th></th>
<th></th>
<th>Revenue Streams What do you get?</th>
</tr>
</thead>
</table>
Customer Journey Canvas for Services

The Customer Journey Canvas

**PRE-SERVICE PERIOD**

- **ADVERTISEMENT / PUBLIC RELATIONS**
  - How is the service proposition communicated by the service provider?

**INFORMATION MANIPULABILITY**

- **SOCIAL MEDIA**
  - Which pre-service information can people access through social media?

- **WORD-OF-MOUTH**
  - What do friends, colleagues and family actually communicate about the service and/or service provider?

- **PAST EXPERIENCES**
  - Which experiences do people have with (similar) services and/or service providers?

**SERVICE JOURNEY**

- **SERVICE PERIOD**
  - Which touchpoints do customers experience during the service journey?
  - Are there any critical incidents, i.e. touchpoints customers experience as especially good or bad?

**CUSTOMER RELATIONSHIP MANAGEMENT**

- **SATISFACTION / DISSATISFACTION**
  - Customers individually assess the service by comparing service expectations with their personal service experiences.

- **SOCIAL MEDIA**
  - What do customers communicate about the service and/or service provider through social media?

- **WORD-OF-MOUTH**
  - What do customers tell their friends, colleagues and family about the service and/or service provider?

**POST-SERVICE PERIOD**

- **EXPECTATIONS**
  - What are (potential) expectations towards the service and/or service provider?

- **EXPERIENCES**
  - What are the individual experiences customers have with the service and/or service provider during the service period?
Customer Journey Canvas for Services (CJC)

- Service design is very important for young companies (→ chapter “Business models”)
  - A lightweight way to create business and customer relations
- CJC allows for brainstorming about all customer touchpoints, contact points with the customer during the service
  - [http://thisisservicedesignthinking.com/](http://thisisservicedesignthinking.com/)
- On this website, you may edit several canvases, also the CJCS
  - [https://canvanizer.com/choose-canvas](https://canvanizer.com/choose-canvas)
The Dependency Structure of Canvases

- Some canvases are subcanvases of others.
- Here is a metamodel excerpt
- How would you maintain a cactus for all these canvases?

Diagram:

- Lean Canvas
- BMC
- VPC
- CJC
- ReqEC
2.7 Innovation Processes

- Innovation processes are systematic ways to generate innovations in a company or in a startup.
The Steps to Innovations (Bosch Thermotechnik)

- [Fit für innovation, Arbeitskreis 1. http://www.fitfuerinnovation.de/]
- Innovations need several conditions:

```
<table>
<thead>
<tr>
<th>Novelty</th>
<th>New</th>
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</thead>
<tbody>
<tr>
<td>Invention</td>
<td>Unique</td>
</tr>
<tr>
<td>BMC VPC</td>
<td>Potential Innovation</td>
</tr>
<tr>
<td>Innovation</td>
<td>Established In Market</td>
</tr>
<tr>
<td>Relevant Customer Value Proposition</td>
<td>Unique</td>
</tr>
<tr>
<td>Unique</td>
<td>New</td>
</tr>
</tbody>
</table>
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Relevant Customer Value Proposition
Innovation Process acc. to [Scholtissek]

- Idea generation with idea generation techniques
  - Idea management mit Idea Management Systems (IMS)
  - Idea labs and workshops
  - House-of-Quality – Idea matrix crossing requirements and ideas
- Innovation planning
  - Marketing concept
  - Market analysis
  - Idea Detailed Analyse with Questions acc. to Scholtissek
- Prototyping (realizability)
- Piloting
  - Market research about customer acceptance
  - Test phase
- Commercialization
  - Introduction to market

Software as a Business
Success Factors of Innovations acc. to [Scholtissek]

**Stakeholder**
- Satisfying the real need of the customer (realistic value proposition)
- Networks and alliances

**Planning**
- Sufficient Allocation of Resources
- Well-defined Innovation process
- Short Time-to-Innovation

**Project Management**
- Innovator established as organizational unit
- Innovation-friendly context and environment
- Explicit Management of Business Cases (Innovation management)

**Controlling**
- Manage blocking factors and obstacles

**Stakeholder**

**Planning**

**Project Management**

**Controlling**

Software as a Business
Statistical Innovation Metrics (-KPI) acc. To [Scholtissek]

- Metrics for Idea Generation
  - Number of Innovation Ideas of employees
  - **Number of filled or matured canvases**
  - Number of ideas per process step
- Metrics for efficiency of innovation (utility, investments vs cost per innovation)
  - Turnaround of the new products in the last years
  - Rise in market share due to the new products
  - Cost reduction by process innovation
  - Cost for research and development in relation to turnaround
- Time of Innovation Process (Time-to-Innovation)
- Distribution on innovation types
  - Product, process, business model innovation, etc.
  - Evolutionary, revolutionary, disruptive
Innovation Process of Project Open4Innovation

The End

► How are BMC and VPC related? Describe how to do a BMC-VPC innovation workflow on LINC.
► What is the difference of a canvas and a metamodel?
► Explain the three phases of canvas filling.
► How do you create questions for a canvas? Explain one of the instruments to get ideas.
► Why is pain important in the VPC?
► Why is change important for business?
► Explain the LeanCanvas. What is different to BMC?
► Describe how to do a Lean Canvas innovation workflow on LINC.
► Why is the Lean Startup process a specific innovation process?
► Why are canvases models?
► Which canvas you would recommend for Volkswagen in its 2015 crisis?