Exercise 1: Product planning

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Exercise 1 - Goals

- Hands-on work: plan what your robot will offer the market
  - business planning
  - feature-level requirements engineering

- Output for projects: list of your robot's key features
  - aligned with business and product goals

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Exercise 1 - Agenda

- Introduction
  - Market-driven requirements engineering
  - Features and feature scoping
  - Product roadmap in context
  - One page business plan: “Lean canvas”
- Work in groups (60 min)
  - Based on your preparations, discuss your market analysis
  - Fill in the blanks in the canvas
  - Specify the key features of your robot
- Reconvene and report
  - Share your findings with the group
    … but not the trade secrets!

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Market-driven vs. bespoke RE

- Market-driven development - a product for an open market
  - Market-driven requirements elicitation is based on market analysis
- Bespoke development - customized development for specific customer
  - Requirements elicitation done with the customer
- In the projects, there will be a mix:
  - First, market-driven RE until you have a customer
  - Second, requirements evolve through negotiations with the bespoke customer
  - Also successful procurement of another group's robot requires RE, i.e., reviewing of requirements specified by other groups

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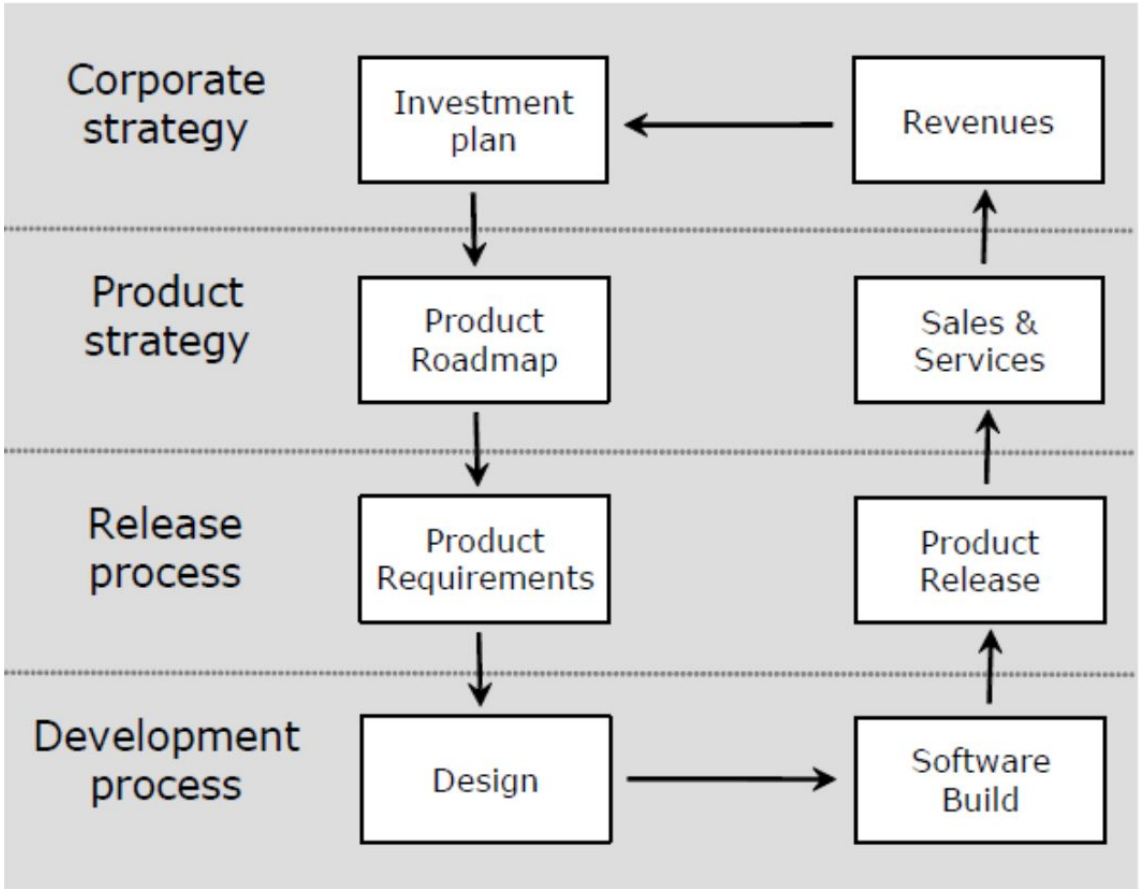
Features and feature scoping

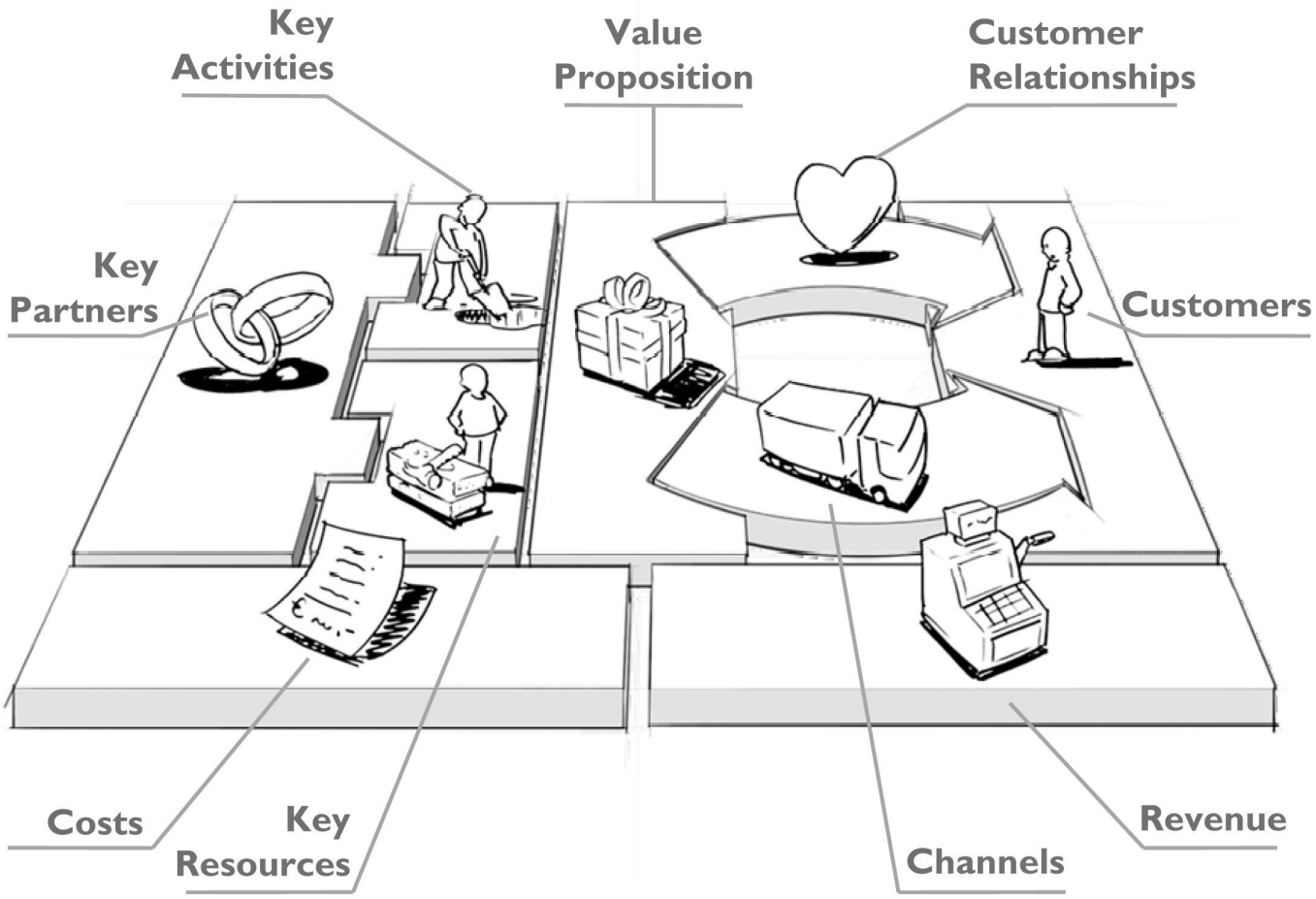
- "Feature" has many definitions, e.g.,
  - "*a product characteristic from user or customer views, which essentially consists of a cohesive set of individual requirements*" (Chen et al., 2005)
- Possible approaches to support feature elicitation
  - Literature studies (incl. the Web)
  - Competitor analysis
  - Interviews/workshops with potential future customers
  - Purchase reports from analyst companies
- Not enough time to implement all possible features
  - Need to prioritize and select a subset → feature scoping
  - Product roadmap maps features to product releases

Product roadmap in context



(Regnell and Brinkkemper, 2005)

Business model canvas



(Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers, Osterwalder and Pigneur, Wiley, 2010)

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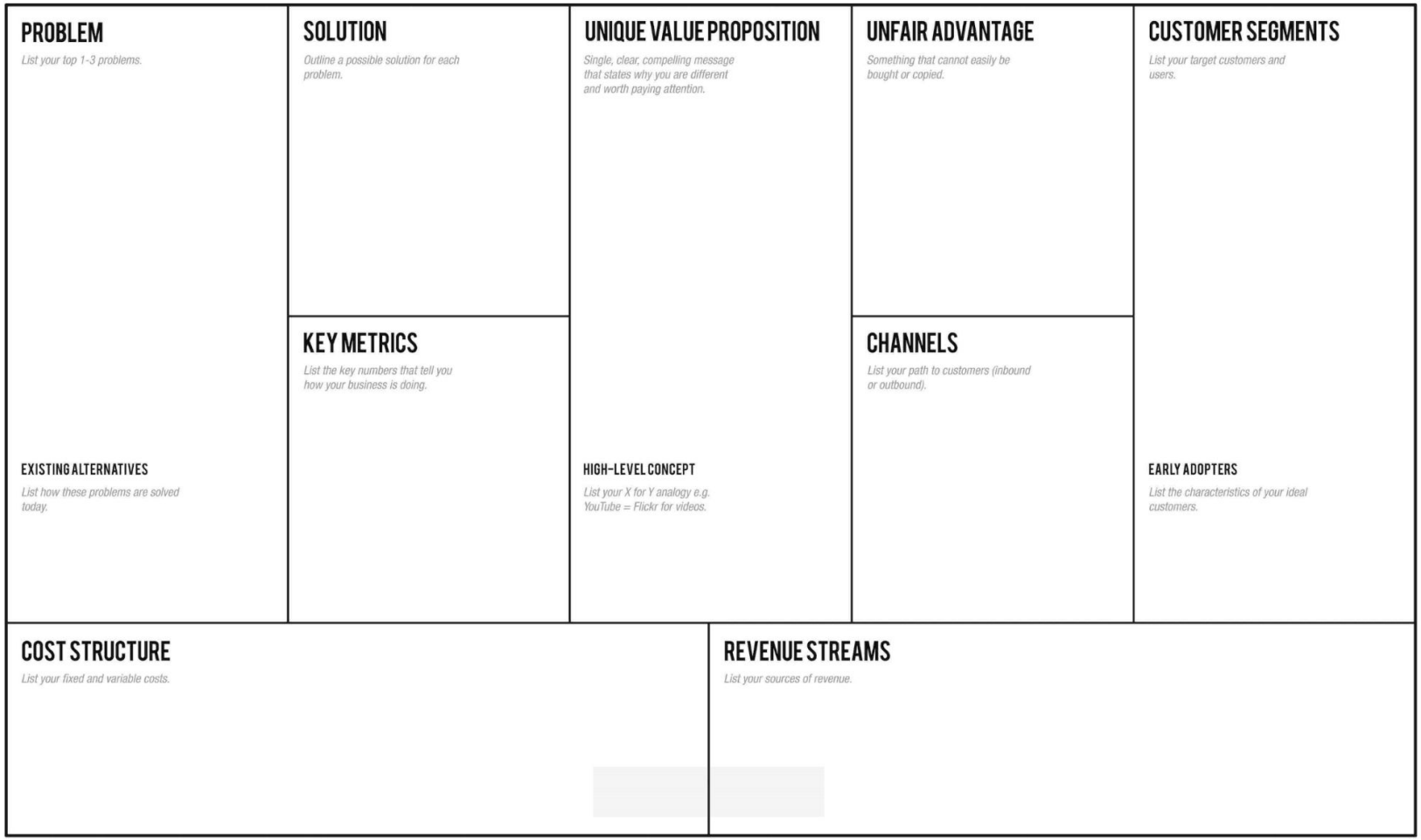
Lean canvas - customized for startups



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Lean canvas - Recommended order

1. Problem: What problem is your robot going to solve for your customer?
   - e.g., Defeat wall crawlers? Track down mobile leaders?
2. Customer segments: Groups of people you aim to reach?
   - e.g., All groups? Droid-heavy teams? Teams with quick melee bots?
3. Unique value proposition: What is your marketing promise?
   - e.g., “droid with adaptive bullet strength” or “leader very hard to hit”
4. Solution: How is your robot going to solve the problem? [Sprint 2: MVP, Sprint 3, final release]
5. Channels: How to communicate with customers? [pitch at Robot fair, Robot Market]
6. Revenue streams: How will you generate cash? [bespoke customer, Robot Market sales]
7. Cost structure: What costs incur when operating your business model? [time only, deducted from project budget]
8. Key metrics: How will you measure that your business is successful?
9. Unfair advantage: Why can’t competitors copy your ideas?

Specify a handful of features

- Feature 1
- Feature 2
- Feature 3
- Feature 4
- Feature 5

- Are the features aligned with your lean canvas?

References

- Chen, K., Zhang, W., Zhao, H., Mei, H. An approach to constructing feature models based on requirements clustering. In: Proceedings of the 13th IEEE International Conference on Requirements Engineering (RE'05). (2005) 31–40.
- Muraya, A. Lean Canvas. https://leanstack.com/leancanvas
- Osterwalder, A. and Pigneur, Y. Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers, Wiley, 2010.
- Regnell, B. and Brinkkemper, S. Market-driven Requirements Engineering for Software Products, In Engineering and Managing Software Requirements, Aurum, A. and Wohlin, C. (Eds.), Springer, 2005.

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