

ITI8740: Software Development Team Project. 2026

01. Course Introduction

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After the course you ...

1. ... have an understanding of methods, tools and approaches that can be used when initiating a new startup or in-house project in established organization.
2. ... formulated a problem statement and validated it on a real target audience.
3. ... built a Minimal Viable (Lovable) Product that solves said problem.

The course enables you to:

- Gain experience in selecting a project and setting objectives;
- Apply scientific literature and professional knowledge to solving a practical problem;
- Organize software development teamwork;
- Use agile development methods;
- Communicate with potential customers and users and validate the solution;
- Select and apply technologies suitable for the project;
- Implement, deploy, and document a working software solution;
- Present the completed solution and find real users or customers.

Course Overview

Same course, different study groups.

ITI8740

- Tarkvaraarenduse meeskonnaprojekt
- Software Development Team project

ITX8522

- Software Development Team project
- Software Entrepreneurship Project



Overall

12 ECT: 312 hours total = ~19 hours per week.

Team: 4 .. 6 persons

Per week:

- 1 lecture, 1 seminar
- 1 team meeting with supervisor
- Individual and teamwork

Additionally

- Optional mini-assignments.
- Participation at a hackathon



Grading

Team deliverables, hackathon.

- **Stage 1:** 20p team, 10p individual = 30p
- **Stage 3:** 20p team, 10p individual = 30p
- **Stage 3:** 20p team, 10p individual = 30p
- Hackathon : 10p or 0p

Total: 100p

ACHIEVEMENT

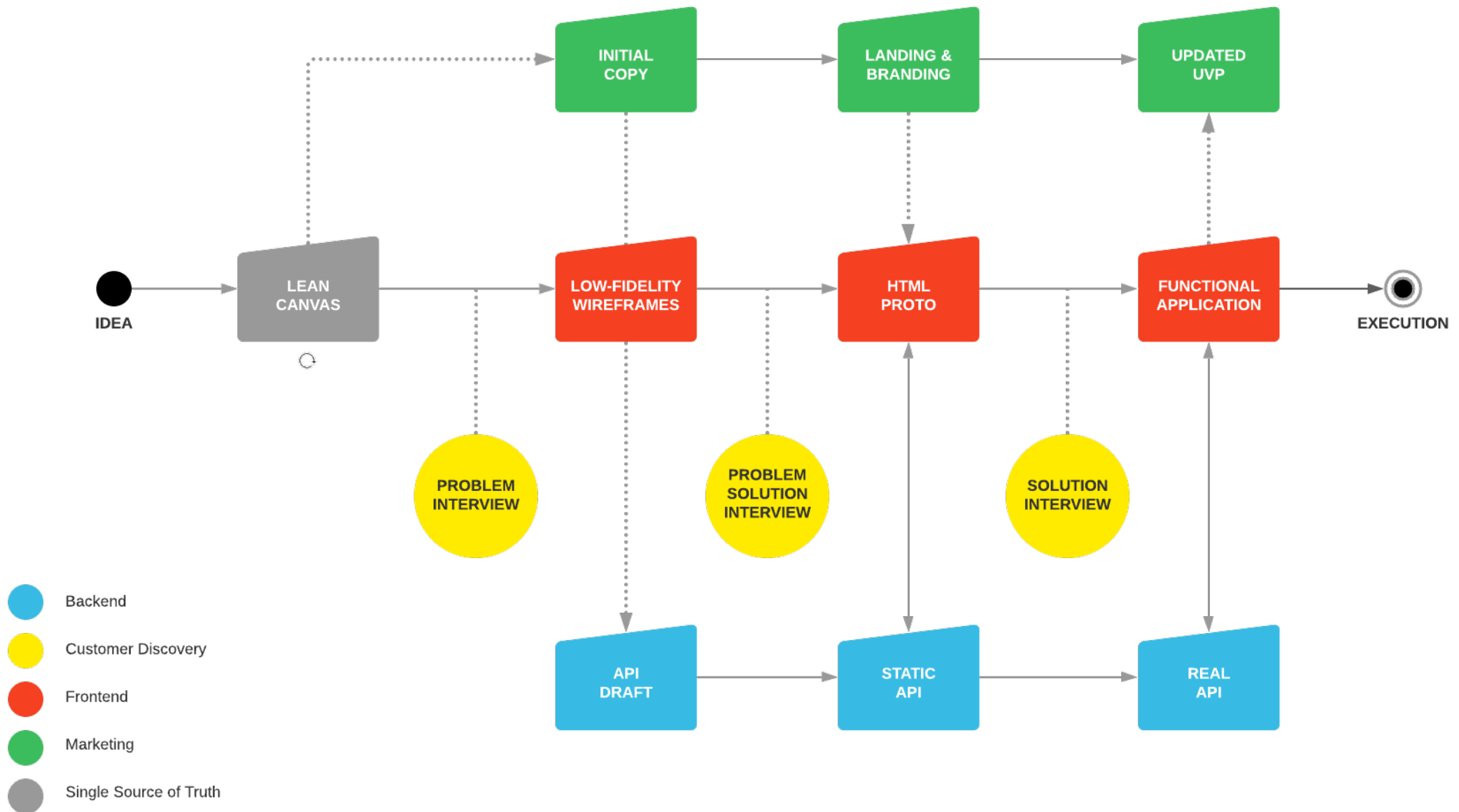
	NOV.	FEB.	APRIL	JUNE
Reading	B	A	A	A
Mathematics	B	B	B ⁺	A
Language Arts	B ⁺	A	A	A
Applied Spelling	B	B	A	A
Science	A	A	A	A
Social Studies	B	B	B ⁺	A
Handwriting		A	B	A
Art	A	A	A	A
Physical Education		B	B	A
Music – Vocal	B	A	A	A
Instrumental				

A – Excellent B – Good C – Satisfactory
D – Poor F – Failure

PERSONAL GROWTH AND DEVELOPMENT

	NOV.	FEB.	APRIL	JUNE
Effort	S	S	S	S
Conduct	S	S	S	S
Preparedness	S	S	S	S
Courtesy	S	S	S	S
Health Habits	S	S	S	S

S – Satisfactory U – Unsatisfactory



Tools and Environments

- Main course website: <https://courses.cs.taltech.ee/pages/ITI8740>
- Supporting: <https://moodle.taltech.ee/course/view.php?id=37860>
- Ongoing communications: Teams
- Main work environment: <https://gitlab.cs.ttu.ee/>

Rules for using AI

AI tools may be used in project work for generating ideas, researching technical solutions, programming and obtaining code suggestions, finding errors, language editing, and creating visual materials.

AI-generated code or other solutions must be checked, tested, and, where necessary, explained by the student. The student is fully responsible for the correctness of the submitted result.

AI cannot be used to generate final project documentation.

A startup is a human institution designed to deliver a new product or service under conditions of extreme uncertainty.

Eric Ries, The Lean Startup

Fail fast and cheap.

Fail often. Fail in a way

that doesn't kill you.

SOLUTIONS OÜ • 01.02.24, 06:00

aja läinud idufirma taja peidus pool. Ilus tõi ja viis investori- kümneid miljoneid

olnud tavaline *startup*'iga kaasnev risk. Ja tema ei olnud
e iduettevõtja.

Kristel Härma

▶ Jaga  Salvesta  Vihja 

DUTNIK LIGHTING OÜ • 21.08.24, 16:56

lekate investoritega miljon sanud idufirma läheb pank

investoritelt ja finantsplatvormide kaudu raha kaasanud filmi-
use valguslahenduste tootja Digital Sputnik läheb pankrotti.

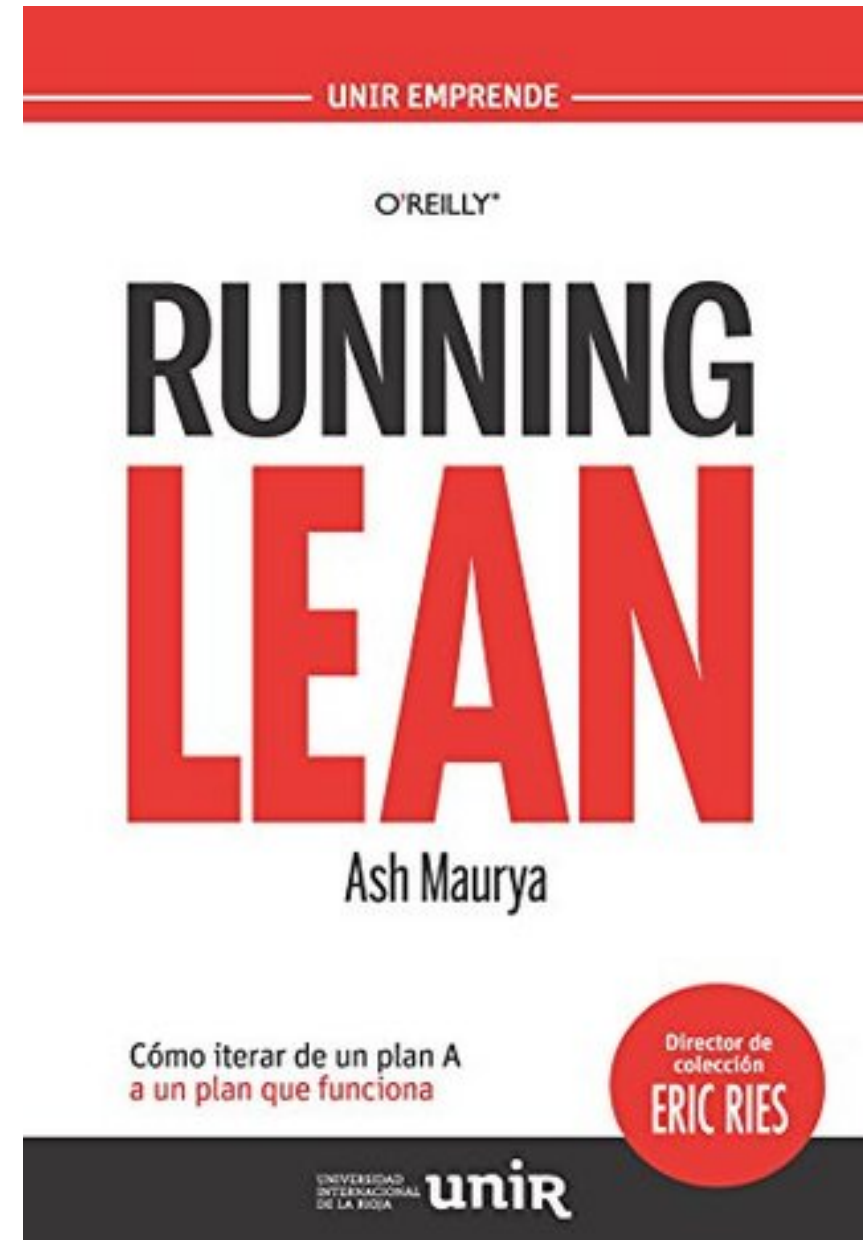
istel Härma

▶ Jaga  Salvesta  Vihja 

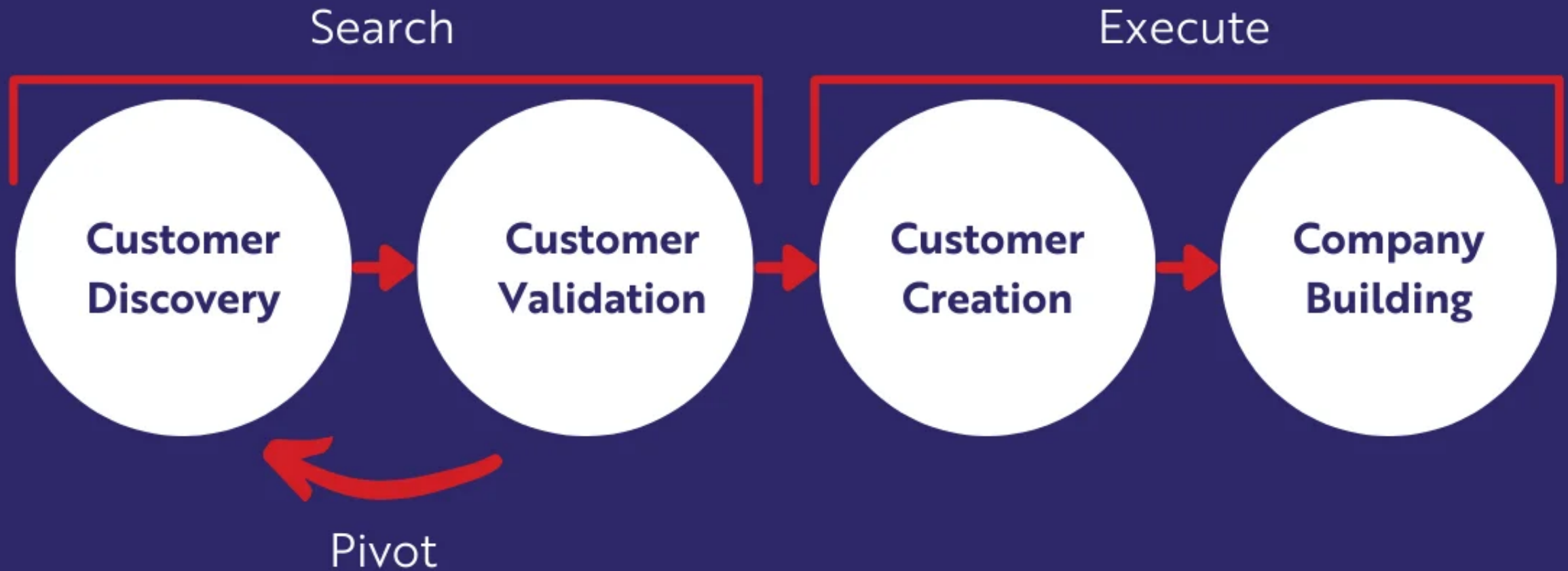


Running Lean: Iterate from Plan A to a Plan That Works

Ash Maruya.



Customer Development Process





Successful problem solving requires finding the right solution to the right problem. We fail more often because we solve the wrong problem than because we get the wrong solution to the right problem.

— *Russell L. Ackoff* —

AZ QUOTES

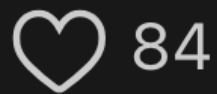
Coming up with the idea



sun.yi  10/04/25

Your problem isn't lack of ideas.

It's having too many ideas to choose from.



84



13



4



1

- If you want to do something and are good at it, but can't be paid to do it, *learn to monetize*.
- If you're good at something and can be paid to do it, but don't like doing it, *learn to say no*.
- If you like to do something and can be paid to do it, but aren't very good at it, *learn to do it well*.

<https://whatconsumesme.com/2009/06/03/ive-been-working-at-start-ups-and-small/>



Questions to Ask:

1. What are the things I like to work on?
2. Am I good at it?
3. What can I get (later) for doing it?

Coming up with a good idea

Think about your research and studies

- Ideas that have not been implemented for wider audiences
- Possible implementation/monetization of research topics.
- Experimentation and finding value experimenting with novel technologies.
- Constructing useful use-case based on what you have learned.
- Validating some cool new tech (LLMs are not "*cool*" any more)

Coming up with a good idea

Think about everyday problems in your company ...

- Repeating everyday activities
- Annoying activities
- Tasks requiring a lot of manual work, or prone to error
- Unreasonably slow processes
- Unreasonably expensive solutions or processes
- Ugly or outdated applications

Coming up with a good idea

Think about your life and hobbies ...

- Forming good habits and getting rid of bad ones
- Measurement and tracking
- Fun activities, things you are interested in

Coming up with a good idea

YCombinator Requests for Startups

- <https://www.ycombinator.com/rfs>
- Check also requests from previous years
- Narrow down the scope to be solvable during the course.

Coming up with a good idea

Think about everyday problems in your field ...

- Generalize - think **wider on life** and try to **have a more general** view on things.
What can be changed or fixed?
- Raise the **level of ambition** - expand the solution for a wider group in a society.
- Use the unfair advantage of your education - try to apply the problem statement of your thesis to a real world scenario.

Strong-link vs Weak-link Problems

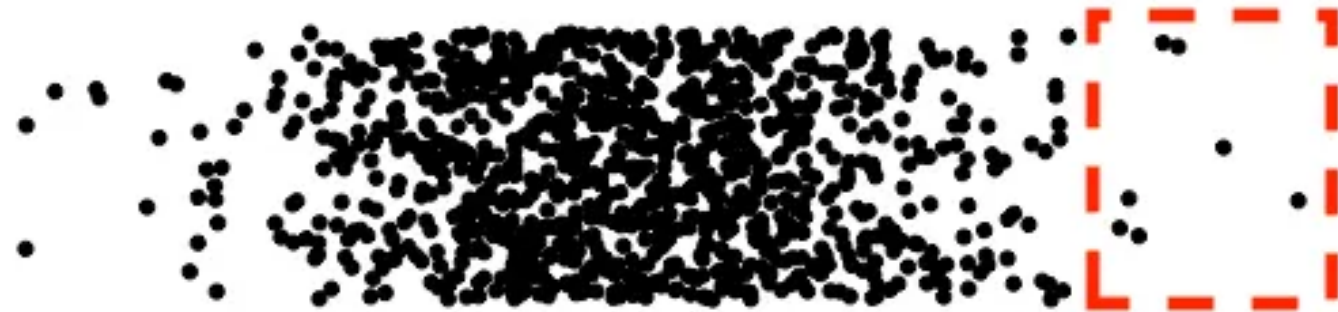
- **Strong-link problems** are solved by looking for excellence in a single dimension. When building a startup or doing drug discovery, it doesn't matter how many times you are wrong, you just have to be right once.
- **Weak-link problems** are solved by eliminating failure in all dimensions. They are problems where the overall quality depends on how good the worst stuff is. You fix weak-link problems by making the weakest links stronger, or by eliminating them entirely.

Science is a strong-link problem

BAD

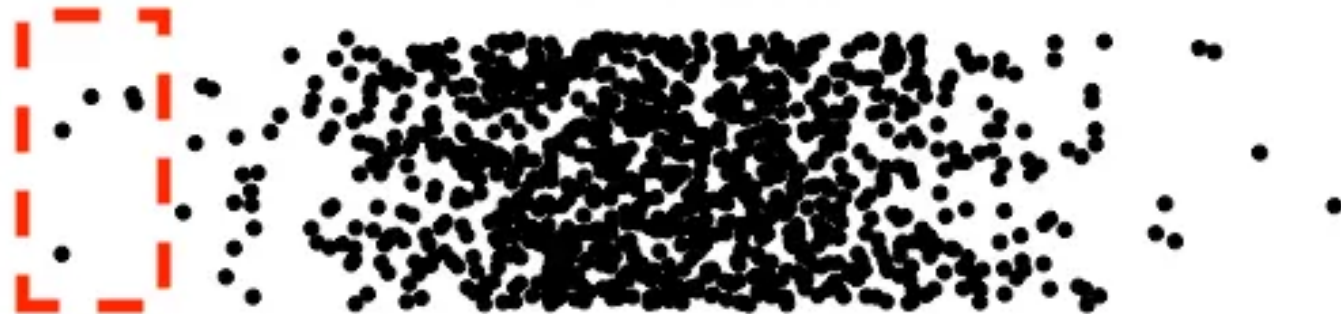
GOOD

Strong Link



These outliers matter a lot, I want more!

Weak Link



These outliers matter a lot, get rid of them!

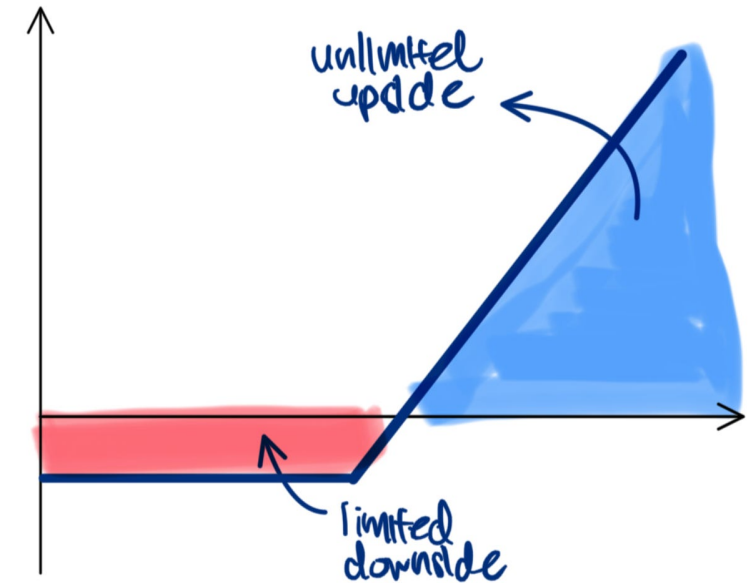
When you have a STRONG-LINK problem:	When you have a WEAK-LINK problem:
Increase outliers/variance/weirdness because you'll benefit from having more very good things	Decrease outliers/variance/weirdness because you'll be harmed by having more very bad things
Don't gatekeep because you might accidentally keep the best out	Gatekeep because it keeps the worst out
Ignore the worst	Improve the worst
Improve the best	Ignore the best
Accept risk , because the downside doesn't matter	Avoid risk , because the downside is all that matters

When you have a **strong-link problem**, you increase variance because you benefit from outliers. You focus on **upsides**.

When you have a **weak-link problem**, you decrease variance because outliers will destroy you. You focus on **downsides**.

Upsides: High variance, high reward. Provide novelty and unique utility.

Downsides: focus on risk, reliability, performance, security. It provides stability - e.g system uptime, audit logs, cost, access controls etc.





Candy



Vitamin



Painkiller

Three types of Problems

- **Candy** idea provides immediate pleasure or curiosity, but no lasting or essential value. It is enjoyable, interesting, or cool, but people can live perfectly well without it.
- **Vitamin** idea provides long-term benefit, but users don't feel an immediate need. They recognize it is good for them, yet it is easy to postpone or ignore.
- **Painkiller** idea addresses a critical, urgent problem that users must solve. If they don't, they experience real pain — financial, operational, emotional, or physical.

	Painkiller	Vitamin	Candy
Tagline	"Must have."	"Need to have."	"Fun to have."
Type	Must haves, and the are easiest to sell.	Can improve your life, but they are only nice-to-have.	A nice treat, but you can live without it.
Categories	Backups, medication reminders, security	Meditation, productivity, time management	Games, arts, fun science
Examples	Google Maps. Amazon Echo. Uber	Grammarly. Fitness trackers.	Pleasure, desire and luxury products.

See: <https://medium.com/strategy-dynamics/painkillers-vs-vitamins-d3bdc76ddd31>

Pick something that genuinely interests you, then figure out what knowledge and skills you have. Finally verify if what you plan to build is feasible - so it can realistically be finished in in time.

It Should not be a chore

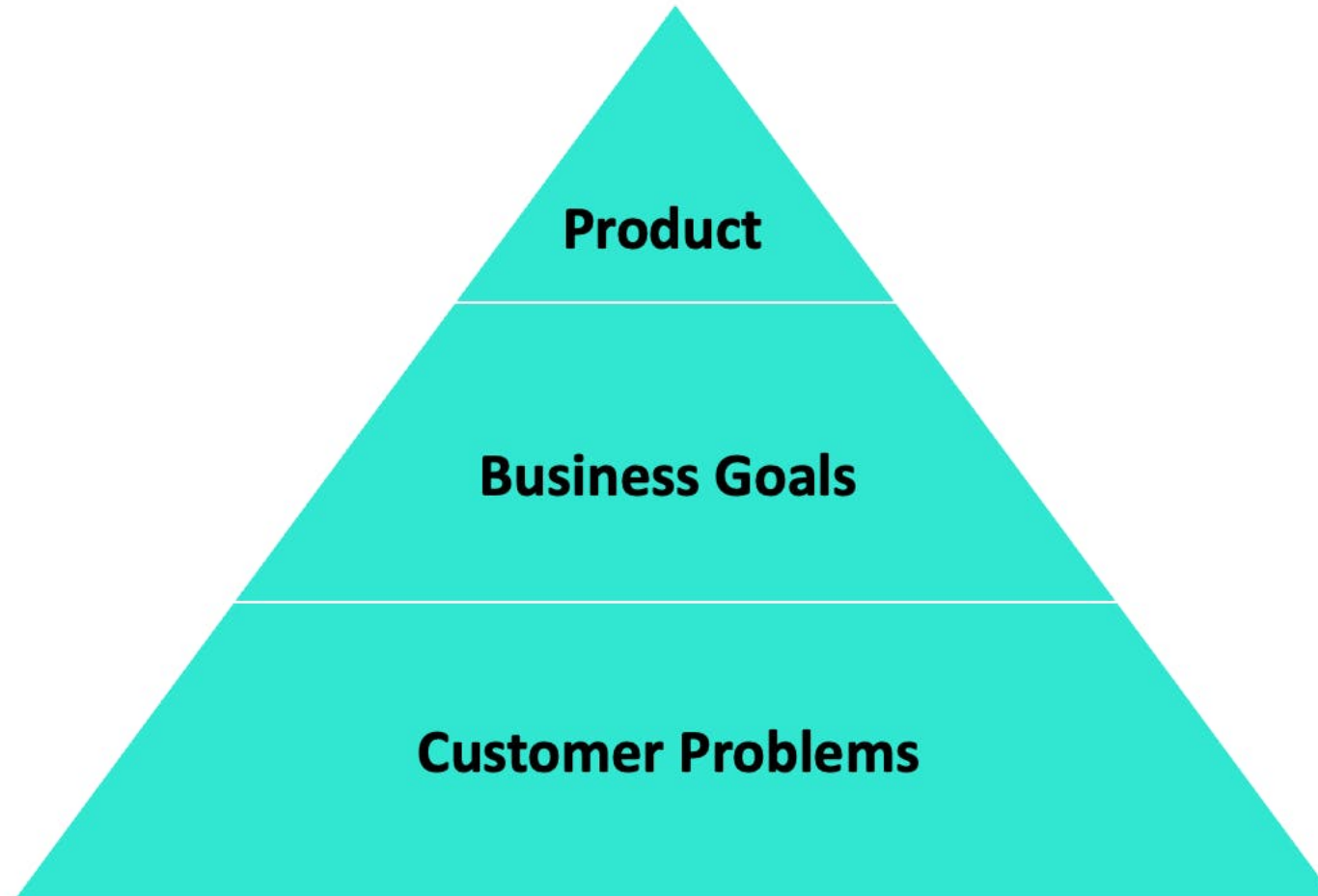
Your passion or lack of it will shine through.

The less your app is a chore to build, the better it will be. Keep it small and manageable so you can actually enjoy the process. If your app doesn't excite you, something's wrong. If you're only working on it in order to cash out, it will show. Likewise, if you feel passionately about your app, it will come through in the final product. People can read between the lines.

From: Getting Real, *Chapter 9*_

<https://basecamp.com/gettingreal/02.6-it-shouldnt-be-a-chore>

CUSTOMER PROBLEMS ARE THE BEDROCK OF ANY GREAT PRODUCT



Humans understand stories. Most used narrative by startups is the problem - solution statement.

Describing an idea

1. **What's the problem you are solving?** Write the problem down with one sentence
2. **Who's the customer** - the profile of the person you are solving the problem for?
3. **What's the solution** for this problem? Write it down with 1-2 sentences.
4. **Why is the solution special?** Different of competitors? Sentence or two.
5. **How will it earn money?** Does it have any business potential? Describe the revenue source with a sentence.

During next class we will present the ideas to each other and start building teams. You will have 90 seconds to present your idea.

You already have the structure

1. Say Hello, say your name.
2. What's the problem?
3. What's the solution?
4. The special sauce.
5. Is there money to be made?
6. Say thank you and smile while listening for the applause :)

Just practice a bit - easy!

To Get Started

- Creative thinking - how to get out of the box and generate ideas: Giovanni Corazza at TEDxRoma. <https://www.youtube.com/watch?v=bEusrD8g-dM>
- Think Small to Solve Big Problems, with Stephen Dubner. <https://www.youtube.com/watch?v=fypkPgeQxBQ>
- The art of innovation. Guy Kawasaki, TEDxBerkeley. <https://www.youtube.com/watch?v=Mtjatz9r-Vc>
- Generating ideas. Shimpei Takahashi, TEDxTokyo. <https://www.youtube.com/watch?v=ZdJOhgSQJ1Q>
- Adam Neumann: How to Find a Problem Worth Solving | Inc. Magazine <https://www.youtube.com/watch?v=8NooqQKrdGE>

Links

- Decoding the 'Candy, Vitamin, Painkiller' Framework in Product Marketing. <https://www.linkedin.com/pulse/decoding-candy-vitamin-painkiller-framework-product-anna-borbotko-1zj4e/>
- And Ideas, Or Ideas. <https://www.alexcrompton.com/blog/and-ideas-or-ideas>
- A never-ending list of business ideas and problems to solve. <https://medium.com/@paulegraves/a-never-ending-list-of-creative-jazzy-business-ideas-6c9782d2d470>
- Startup Lesson 1: Vitamin vs. Painkiller. <https://www.linkedin.com/pulse/startup-lesson-1-vitamin-vs-painkiller-vitaly-pecherskiy/>

Links

- About strong-weak link problems. Upsides and Downsides. <https://calv.info/upsides-and-downsides>
- Candy Vitamin Painkiller. <https://www.dalziel-pow.com/news/is-your-brand-a-painkiller-vitamin-or-candy>
- Upside vs Downside Focus. <https://joi.ito.com/weblog/2009/09/04/upside-vs-downs.html>.
- Is AI a Painkiller, a Vitamin, or a Candy? Unveiling the Multifaceted Nature of Artificial Intelligence. <https://aimresearch.co/council-posts/is-ai-a-painkiller-a-vitamin-or-a-candy-unveiling-the-multifaceted-nature-of-artificial-intelligence>

Thank you!