Development management – process-oriented approach

5.3.-6.3.2025, Helsinki, Finland

Lasse Latva
Development manager, M.Sc. (tech)
FMI / Observation services

Lecturer's background

- M.Sc. (tech), radio tech & data communication technology
- Various roles at FMI since 2006, incl. Head of group and Deputy head of unit. Being involved in ISO9001 implementation at FMI.
- Development manager at FMI since 2018
- I've been developing project management and project portfolio management now for ~7 years (our main topic today).
- Also working as ICT architect and information security is also part of my current work. I've been implementing ISO27k ISMS at FMI 2024- and I'm also an internal auditor for ISO27k (tech).

Agenda; day 1 (3h including breaks)

Background: Projects and processes

Background: ISO9001 QMS

Development planning as a process

Long-term and short-term development planning

Measurement / feedback

Summary of day 1

Agenda; day 1 (3h including breaks)

Background: Projects and processes

Background: ISO9001 QMS

Development planning as a process

Long-term and short-term development planning

Measurement / feedback

Summary of day 1

Project & process

- "A ***project*** consists of a **concrete and organized effort** motivated by a perceived opportunity when facing a problem / need / desire. It seeks the realization of **a unique and innovative deliverable**, such as a product, a service, a process, or in some cases, a scientific research. **Each project has a beginning and an end"**
  - https://en.wikipedia.org/wiki/Project
- "A ***process*** is **a series or set of activities that interact to produce a result**; it may occur once-only or be recurrent or periodic."
  - But it's typical to analyze / model processes that will be recurring and thus there's motivation to develop them further (e.g. optimize cost or speed).
  - https://en.wikipedia.org/wiki/Process

Is it a project? / Could it be a project?

- *"I'm going to be an astronaut."*
- *"I'm going to construct the house of my dreams."*
- *"I'm working as a support engineer in IT Helpdesk."*
- *"I'm chairing weekly development meetings, every Monday."*
- *"We're planning a new system (but not yet build it)."*
- *"We're developing our project development."*
- *"We're developing our project lifespan model into version 2.0."*
- *"Me and my team are keeping IT systems up and running."*

Is it a process? / Could it be a process?

- Car routine maintenance
- Constructing a house
- Instrument calibration
- Manufacturing something in a factory
- Receiving and handling a customer complaint
- Preparing food
- *"We're planning a new system (but not yet build it)."*
- *"We're improving our company policies day-by-day"*

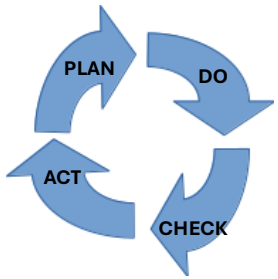
Agenda; day 1 (3h including breaks)

Background: Projects and processes
Background: ISO9001 QMS
Development planning as a process
Long-term and short-term development planning
Measurement / feedback
Summary of day 1

ISO 9001 standard

- "ISO 9001 is a globally recognized **standard for quality management**. It helps organizations of all sizes and sectors to **improve their performance**, **meet customer expectations** and **demonstrate their commitment to quality**. Its requirements define how to establish, implement, maintain, and continually improve a quality management system (QMS)."
- "Implementing ISO 9001 means your organization has put in place **effective processes and trained staff to deliver flawless products or services time after time**."
- "[With..] more than one million certificates issued to organizations in 189 countries, ISO 9001 is the most widely used quality management standard in the world"

- Source: https://www.iso.org/standard/62085.html
- For more reading https://en.wikipedia.org/wiki/ISO_9000_family



Idea of continuous improvement

Agenda; day 1 (3h including breaks)

Background: Projects and processes

Background: ISO9001 QMS

Development planning as a process

Long-term and short-term development planning

Measurement / feedback

Summary of day 1

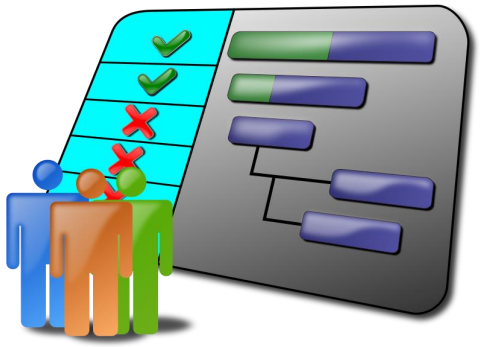
Nature of development

- The intention is typically to create something innovative, new, fresh
- Does innovations "just happen" or can we facilitate that somehow?
- How about project practicalities, could we learn from the past?

Nature of development

- Although development is typically about **projects,** development planning and even project running itself are **processes**.
- Processes can be made better and better.
- But it requires effort.

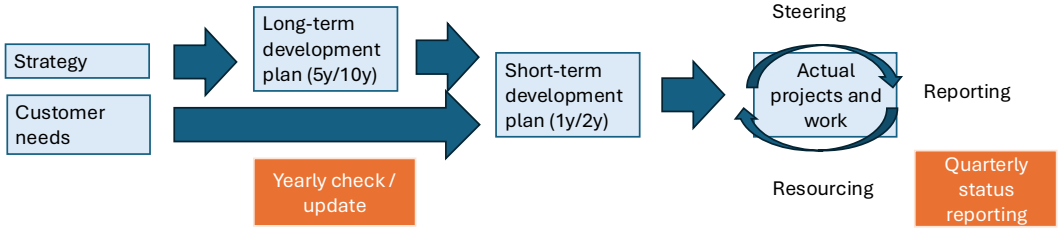
Development planning



- At FMI/Observations, described as a ISO9001 QMS process "Observation services development process"
- From top to bottom and vice versa:
  - **Company's / institute's strategy**
  - **Long-term development plan**
  - **Short-term development plan**
  - **Project portfolio**
  - **Day-to-day work**

Development management process

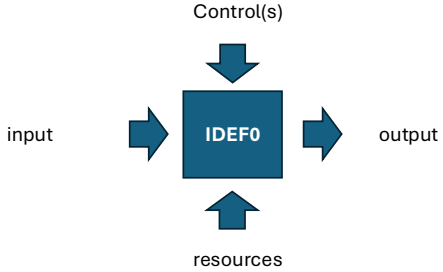
Resource management is a key success factor!



- Development process aims to develop new methods, systems and aims to provide us with better services for the users
  - It might be about developing a new measurement system or develop the production environment to serve better and/or comply with new customer needs

Btw. IDEF0

- I happened to draw the "Actual projects and work" box on the previous slide as an IDEF0 element:



- IDEF0 is simple but powerful notation for systems modeling.
- See e.g. https://en.wikipedia.org/wiki/IDEF0 for more info.

Agenda; day 1 (3h including breaks)

Background: Projects and processes

Background: ISO9001 QMS

Development planning as a process

Long-term and short-term development planning

Measurement / feedback

Summary of day 1

Long-term planning

- **Strategic thinking**: what are the goals we'd like to reach and ways to reach them. What less important we neglect while targeting to the goal.
- At FMI/Observations, we maintain 5..10-year plan with this format:

Functional need / customer need	Benefit for the institute/company	Actions/steps on 5-year-period	Vision after 10 years	References and notes
E.g. "Roll-out the new measurement system platform"	-several -concretic -items	-steps one can follow to happen	-description of the target, e.g. coverage of the new platform	Could be e.g. ticketing system links etc.

Our current plan (2028/2033) has **16 rows** and **59 actions/steps towards their visions**.
Idea is to review the plan once per year and update it if needed.

Multiple portfolios / categories

- To optimize balance between lifespan upgrades and development of new technology and solutions, we divide our planned (and active) development work into four (4) portfolios or categories:
  - **Stakeholder projects**
  - **New (observation) methods and algorithms**
  - **Production system development**
  - **Lifecycle management**
- (an example of division, you may think your application of this method)
- Technically we've labeled our issues in Jira according to this

(Example) Overview table to look after the balance

Development portfolios

Portfolio	Projects in progress	Other tasks in progress	Planned
Stakeholder projects	0 issues	1 issue	8 issues
New methods and algorithms	4 issues	6 issues	13 issues
Production system development	3 issues	12 issues	79 issues
Lifecycle management • Tasks for stations in TEHA .	4 issues	8 issues	5 issues

Automagically updating table, it lists aggregated numbers (issue counts) from Jira ticketing system.

Related: competence development

- Long-term development is always related to long-term competence development
  - What will be the new competence needs in say 2…3 years?
  - Some changes are rapid, e.g. AI transformation
- Competence development may also be a dependency to an actual project:
  - We have to learn this skillset before it's wise to start working with the actual project ***or***
  - We plan to do learning-by-doing during the project or in the beginning of the project and we book resources for that into the project plan.

Related: resource planning

- Own organization's human resources
  - Project organization allows resource usage across boundaries shaped by the line organization (like groups or departments)
  - Project organization is temporary but resourcing **is agreed for the project**
  - Timesheets and steering group work during the project let stakeholders maintain control over their resources (i.e. project is not overspending working hours compared to the agreed level)
- Purchase budget resources
- Consultancy purchases
  - Wider perspective / skills the own organization is lacking
  - Performance boost for a small period of time

Short-term planning

- **How to transform 5-year targets into actual projects or work.**
- At FMI/Observations, we maintain 1..2-year plan ("annual development plan"), which contains actual projects.
- Format:

Project or task	Priority (1-3)	Form (Project or a ticketed task)	Responsible person(s)	Notes
E.g. **Project X**	1-3, 1 highest	Project	Project lead N.N. Chair of steering group: M.M.	Project name is link to further information.

Regular project portfolio meetings

- **How ensure projects are progressing and we have control on them?**
- At FMI/Observations, we have once per month a project portfolio meeting
  - Used Jira ticketing system to create automated list embedded to wiki.

Project or task	Priority (1-3)	Form (Project or a ticketed task)	Responsible person(s)	Notes
E.g. **Project X**	1-3, 1 highest	Project	Project lead N.N. Chair of steering group: M.M.	Project name is link to further information.

Agenda; day 1 (3h including breaks)

Background: Projects and processes

Background: ISO9001 QMS

Development planning as a process

Long-term and short-term development planning

Measurement / feedback

Summary of day 1

Measurement: How do we progress?

- **Regular portfolio meetings are good**
  - Going through the project portfolio, overview of all projects
  - Responsible persons report the overview
  - Details are discussed in each project's steering group, not here
  - Resource adjustments possible across projects
- **Active communication towards projects essential**
  - Project is not an entity that is set running and then forgot
  - Active project manager is also keeping constant discussion open towards stakeholders like responsible steering person and others
- Timesheet statistics: how are working hours spent, are they?
  - Do progress in the project correlate with the work budget spent
  - During the project, **early enough to have time to react**!

Measurement: Formal quality indicators

- In QMS one can establish quality indicators, like how projects get finished on time each year or something like that.
- Good indicators are giving new information, indicator hasn't have to be the same forever, you can create some indicators that serve the need for recognized development needs, e.g.
  - If we'd like to develop projects to be better ready on-time, we can measure that
  - If we'd like to develop project planning to be better, we can measure e.g. the effort done before the actual project starts and compare that to projects' end results and analyze correlation
- It's important to remember that if you'd like to follow trends over long periods, you need to keep that indicator itself unchanged

Measurement: practical benefits

- Typically project benefits are concrete, tangible: something new is developed -- and hopefully taken into use, too.
  - Here is the important part: We need to **make sure** that the project outcome is really ending up into use.
    - Possible ways to ensure:
      - Define already in the project plan the steps to be taken after the project to obtain all the benefits
      - Define a person responsible for this practical work
      - Define a need to give a brief report on impact e.g. after 3 months since the project is finished.
      - If output is not yet concretical, but an intermediate product, plan continuation so that the older work doesn't expire or get forgotten
      - If the exploitation phase is a separate project, ensure that there is enough overlap in personnel or other way to transfer the information from the first project to the second one.

Measurement: practical benefits (2)

- It may be a good idea to somehow follow what kind of practical benefits project-form development activities give
  - What we've gained this year? Is there a logical way of reporting yearly achievements?
    - E.g. we've had annual reporting events in the end of year for the whole department and summarized all the good things from the past year and had some coffee and tea served after that. Good feeling for everyone, memorizing the achievements from that year before heading for the holiday season to recharge for the next year.
    - Paper-form summaries are also good, projects tend to forget and if you summarize the development top-level year-by-year, it's easier to see the big picture and the steps taken towards to goal.

Agenda; day 1 (3h including breaks)

Background: Projects and processes
Background: ISO9001 QMS
Development planning as a process
Long-term and short-term development planning
Measurement / feedback
Summary of day 1

Summary, day 1

- Project and process, even project tends to follow process
- Development planning and management can be developed systematically in process form
- Long-term and short-term development planning serve their specific purposes towards the goal of better managed development with less risk
- It's important to follow the progress (and resource use) both on project and on portfolio level and maintain the ability to steer the development
- Tomorrow we'll focus on project-level matters and talk about risks

Agenda; day 2 (~3h including breaks)

Project lifecycle
Project management
Project portfolio management
Risk management, incl. cyber risks
Summary of day 2
Discussion, questions

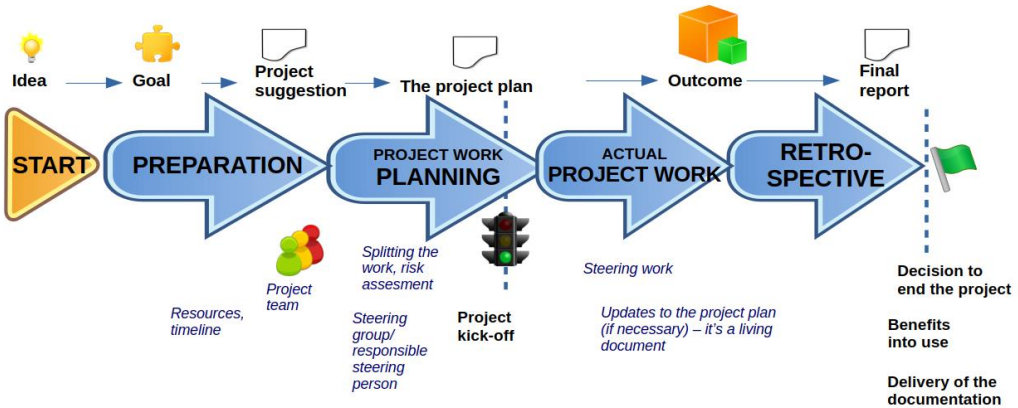
Agenda; day 2 (~3h including breaks)

Project lifecycle
Project management
Project portfolio management
Risk management, incl. cyber risks
Summary of day 2
Discussion, questions

Project is almost always a process

- How to make the next iteration even better?
- By doing the preparations well, the actual project phase can be easier
- Project has its lifespan, let's look at the FMI Observation services' project lifespan model next, as a reference

Project's lifespan



LL 03/2022

Agenda; day 2 (~3h including breaks)

Project lifecycle
Project management
Project portfolio management
Risk management, incl. cyber risks
Summary of day 2
Discussion, questions

Project management (single project)

- Lot's of generic project [management] literature available worldwide.
- May be good idea to form a set of recommended guidelines for your institute (if you don't already have such) to facilitate project work, e.g.
  - **Guideline on how to plan a new project** (plan template, some tips)
  - **Guidelines for a project manager on how to run project**
  - **Some pro tips on how to succesfully participate as a project team member (expert)**
    - e.g. tell the project manager if you have something that blocks your work, so that you cannot proceed
- Establishing and educating the guidance is part of building and shaping organization's *project culture*

Scary, scary projects

- Sometimes I hear people arguing that projects are:
  - New and scary, don't know how to [this and that..]
  - So bureaucratic that better avoid
  - Something exterior to actual work
- Basically they're not. They're just a recipe to do work efficiently.
  - At amusement parks there are ghosts, yes, for sure, I know...
  - I.e. you can of course fail doing projects as you can fail doing anything else.
- How to avoid this mental / psychological bias
  - Practical material, tuned into your specific project needs
  - **Simplified project planning and reporting templates**
  - Do not do just big projects, scale the model down for the small and agile, too.

Agenda; day 2 (~3h including breaks)

Project lifecycle

Project management (continued)

Project portfolio management

Risk management, incl. cyber risks

Summary of day 2

Discussion, questions

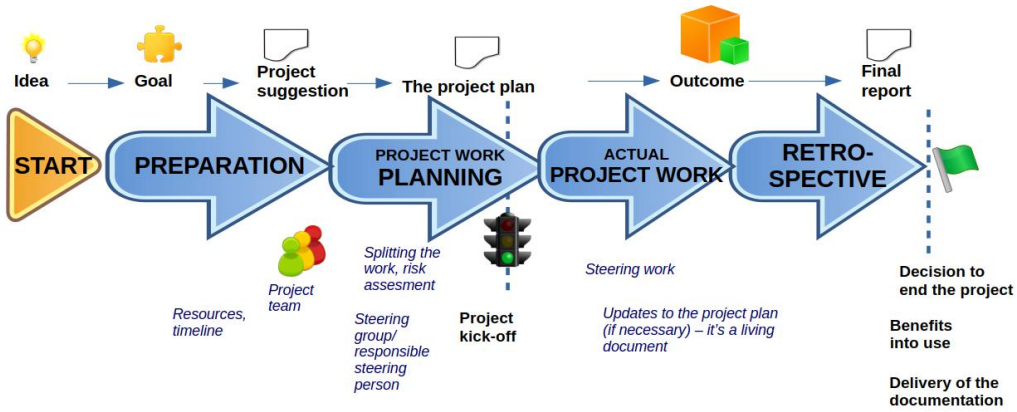
Project planning

- **Template for a project plan** is a must
- Project team involved as early as possible.
  - Collecting the actual plans into the project plan.
  - Maintaining the reasonable abstraction level (not too high, not too detailed)
- Scope!
- Splitting the work into work packages
  - Idea is to split the work into that small parts that resource needs can be estimated
- Risk assessment (important!)
- Resources vs. Calendar time, when they'll be available
  - No one mandates project to be started immediately after plan is "ready": If it's better to start it e.g. at fall, then it might be better to wait and start it then.

Project planning

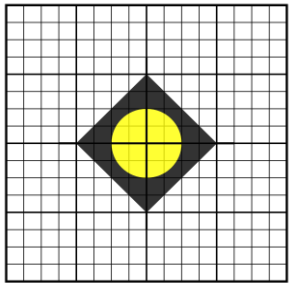
- Our template (we use **wiki** to make editing quick and convenient) has the following sections:
  - **Summary table** (name, stakeholders, start time end time, total sum of purchase budget, total sum of work hours etc)
  -)**Description** (target/goal, scope, people participating, final output and a way to verify the success and impact)
  - **Stages, tasks and schedules**
    - **May include Gantt diagram**
  - **Communication**
  - **Documents and permits**
  - **Staffing and budget**
  - **Risks**
  - (possible attachments)

Project's lifespan



Scoping

- Clearly outline **project objectives**
- Specify **deliverables** and **outcomes**
- Manageable piece of work:
  - Identify **what is included** in the project.
  - Define **what is explicitly excluded**.
- Know your other projects, avoid unwanted overlap



Splitting the work

- *(Define Project Scope & Objectives – previous slide)*
- Break down the project into major phases
  - Chronological approach typically good, what steps are needed to achieve the goal
- Identify Work Packages (WPs)
- Define WP deliverables & responsibilities
- Estimate time & resources for each WP
  - If WP is well-defined, you'll be able to make a rough estimate for resources. If it feels challenging, you may still need to refine the WP structure a bit.
- Sequence work packages
  - What is the best order, what can be done in parallel etc.

EXERCISE: Splitting an example project into work packages

- This exercise can be done on A4 paper or using computer.
- Imagine a realistic project, **write down its name to top of the document or paper.**
- **Use the paper sheet or document to divide project's work into logical work packages.**
  - You may at first think the chronological phasing (main phases) and then derive work packages.
- EXTRA (if you have time): Which work package is most critical for the whole project's success? Please mark it and think why it's so critical and how could you ensure the success.

Agenda; day 2 (~3h including breaks)

Project lifecycle
Project management (continued, still :)
Project portfolio management
Risk management, incl. cyber risks
Summary of day 2
Discussion, questions

Kanban method

- Origins in Japanese car manufacturing (Toyota, already in 1940s)
  - In Japanese, *kanban* literally translates to "signboard."
- **Lean, visual method to control amount of work being under progress** (work in progress WIP)
- Work **items** are pulled from backlog/TODO when capacity permits
- Team needs to agree on criteria, e.g. definition of done (how to item is removed from board)
- Nowadays popular in e.g. software development and supported in many tools
  - But it doesn't require specific tool, we will do an exercise using Post-it note stickers
- https://en.wikipedia.org/wiki/Kanban_(development, Kanban guide: https://kanbanguides.org/english/

BACKLOG / TODO	IN PROGRESS	ON HOLD	DONE	CLOSED
Next item	Give the lecture	Less critical item	Prepare the slides	

EXERCISE: Kanban on wall

TO-DO	IN PROGRESS	ON HOLD	DONE	CLOSED

- Take your earlier imaginary project and create **3-8 Post-it note stickers** with work items related to the project.
  - Work item could be e.g. "install the server"
- Ideally the work items are from *different phases* of the project.

Project management summarized

Success factors for project leadership:

- **Clear vision & goals** – Define and communicate project objectives effectively.
- **Strong communication** – Ensure transparency and active collaboration.
- **Effective decision-making** – Make timely and informed choices.
- **Team motivation & engagement** – Inspire and empower team members.
- **Adaptability & problem solving** – Handle changes and challenges proactively.
- **Time & resource management** – Optimize schedules, budgets, and resources.
- **Risk management** – Identify and mitigate potential risks early.
- **Stakeholder management** – Align expectations and maintain relationships.
- **Accountability & responsibility** – Foster ownership and commitment.
- **Continuous Improvement** – Learn from feedback and refine processes.

Agenda; day 2 (~3h including breaks)

Project lifecycle

Project management

Project portfolio management

Risk management, incl. cyber risks

Summary of day 2

Discussion, questions

Managing/leading the project portfolio

- **Active projects need attention**
  - Project portfolio meetings (status overview)
  - Steering
- **The composition of the portfolio also requires attention**
  - Do we concentrate on the right things, is the portfolio in balance?
  - Should we concentrate more on lifecycle upgrades than we currently do?
  - Do we renew our technology at rapid enough pace?
- **The number of active projects in portfolio**
  - Needs to be realistic (relational to resources available)
    - Steering resources also important, do not start too many projects at a time.
- **How about other projects within your company/institute, does our project portfolio sync with the other development?**
  - At FMI, we have a cross-division coordination meeting, quarterly

Agenda; day 2 (~3h including breaks)

Project lifecycle

Project management

Project portfolio management

Risk management, incl. cyber risks

Summary of day 2

Discussion, questions

Project risk management

- For organizations running ISO9001 QMS, risk management is mandatory.
- Other good reasons to do risk management:
  - **Prevent cost overruns** – Avoid unexpected expenses by identifying risks early.
  - **Meet deadlines** – Reduce delays by planning for potential obstacles.
  - **Improve decision making** – Make informed choices based on risk analysis.
  - **Enhance resource allocation** – Optimize use of time, budget, and personnel.
  - **Increase stakeholder confidence** – Show professionalism and preparedness.
  - **Minimize surprises** – Reduce the impact of unforeseen issues.
  - **Ensure compliance** – Adhere to legal, regulatory, or contractual requirements.
  - **Protect reputation** – Avoid project failures that could damage credibility.
  - **Improve team efficiency** – Help the team stay proactive rather than reactive.
  - **Ensure project success** – Increase the likelihood of achieving project goals.

Project risk management

- **Process could be e.g.**
  - **Identify and analyze risks**
  - **Prioritize risks** (probability*impact score typical)
  - **Take mitigative actions when needed** (score-based typically)
  - **Monitor & review**
    - **Keep the risk analysis up-to-date until the project is over**
- **Document used for risk management could be e.g. project plan** (at FMI we use that and update it during the project if risk situation changes)
- **Organizations running ISO27001 ISMS are required to analyze and mitigate cyber risks also related to projects**
  - **Again, it may be a good idea to think about this anyway, e.g.**
    - **Do we handle classified (e.g. privacy sensitive data) material in the project, should we take extra care of it?**
    - **Do we need security agreements with our external partners participating into project?**
    - **Do we need to protect our IPR (intellectual property rights) developed in the project?**
    - **Do we need some practical conventions for cyber security, e.g. USB stick policy**

Agenda; day 2 (~3h including breaks)

Project lifecycle

Project management

Project portfolio management

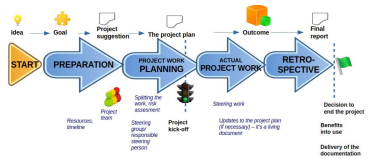
Risk management, incl. cyber risks

Summary of day 2

Discussion, questions

Summary of day 2

- **Project is a process** at the same time
  - process to plan it
  - process to run it
  - process to finish it
  - process to learn from it…
- There are **various ways to run a project** and manage the work, one way to visualize the work to lead it is ***Kanban***
- **Risk management** is important also for projects
- **Project portfolio management** may give tools to balance between different development goals and optimize resource usage



Summary and takeaways

- **Process is the keyword to take with you.**
- **Create a process that helps you to manage development, i.e. systematic way to**
  - **..create and update long-term plans**
  - **..set up new projects**
  - **..follow their progress and**
  - **measure your success & impact.**
- **Create tools that make running projects easy -- and thanks to retrospectives, better and better every time (hint: process)**
  - **Tools include e.g. simple project plan template and report template**
  - **Systematically flowing projects will save everyone's time to the actual work.**
- **Start managing your project portfolio**
- **Start an evolution, small everyday changes that are making it better and better every day: Development is risky and unknown by its nature, but through proper processes we can get control it. At least to some extent ;-)**

Discussion, questions

- ?