Transparently dealing with shifting requirements

The power of continuous task and time tracking and consistent splitting

Thomas Aglassinger, Siisurit   **2024-10-28**

About me
Thomas Aglassinger

- MSc in information processing science

- 20+ IT experience in various sectors

- Founder Siisurit https://siisurit.com/

- Casual freelancer https://aglassinger.at/

- Casual open source developer https://roskakori.at/

The challenge

- Requirements can change during the project, some time even during implementation.

  - New requirements can be added.

  - Existing requirements can be discarded.

- This can impact effort, costs, and schedule.

- How to deal with this?

The challenge

- Requirements can change during the project, some time even during implementation.

  - New requirements can be added.

  - Existing requirements can be discarded.

- This can impact effort, costs, and schedule.

- How to deal with this **in a transparent way**?

Agenda

- Based on an example task

  - User story and UI draft

  - Initial and shifting requirements

- Techniques used to mitigate risk in terms of...

  - ...budget: Estimate tasks and track time

  - ...and content: consistent splitting

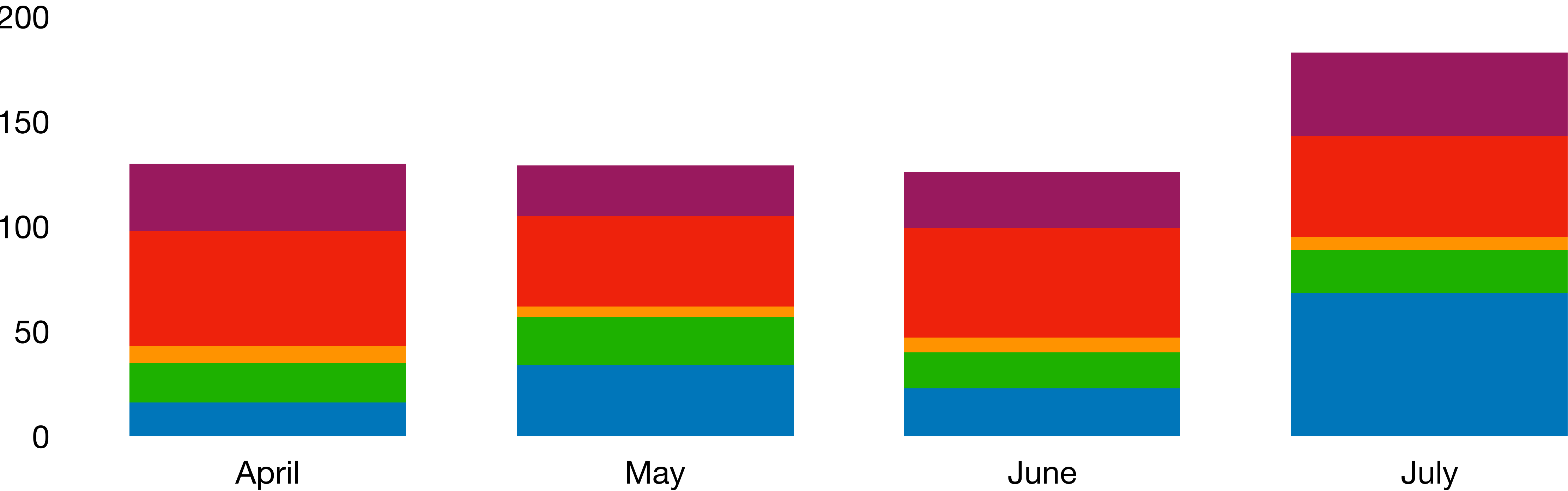# Example task with requirements

#778 Add project risk chart
User story

"As project admin, I want to know how much risk concerning work [in hours] is still left in the project,

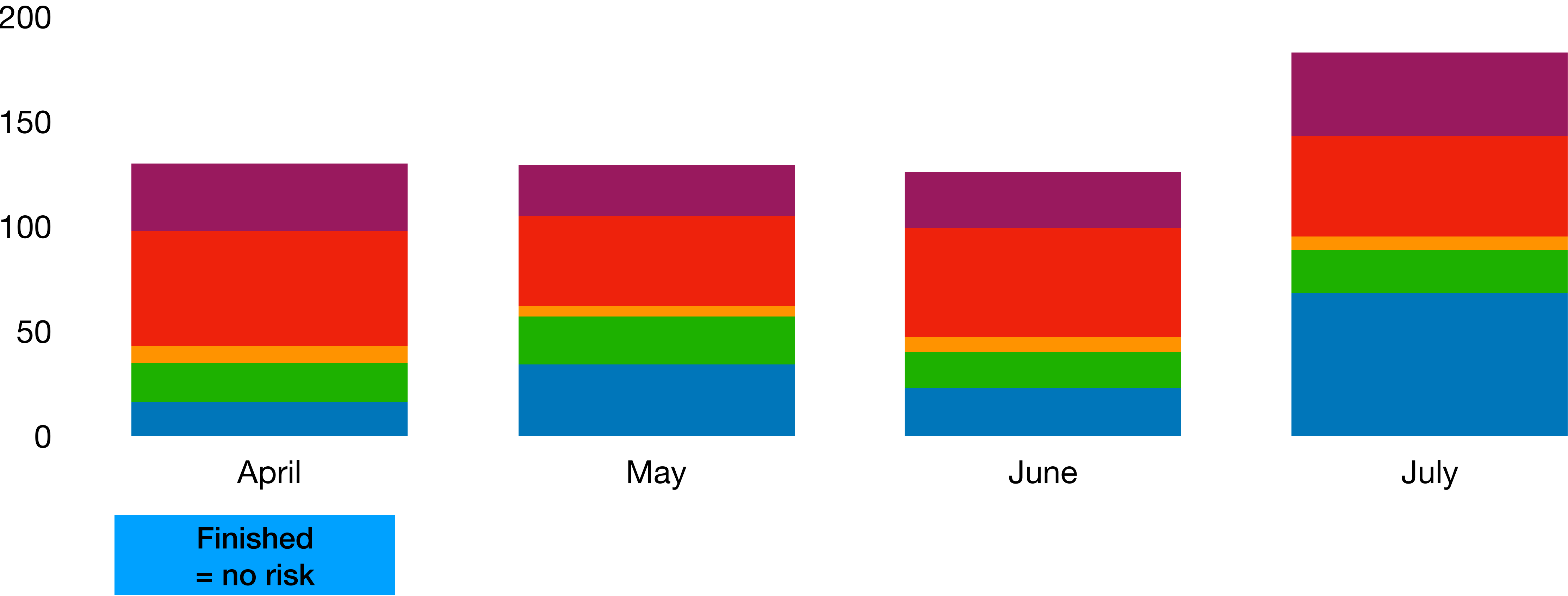so that I can decide if mitigation is needed."

#778 Add project risk chart
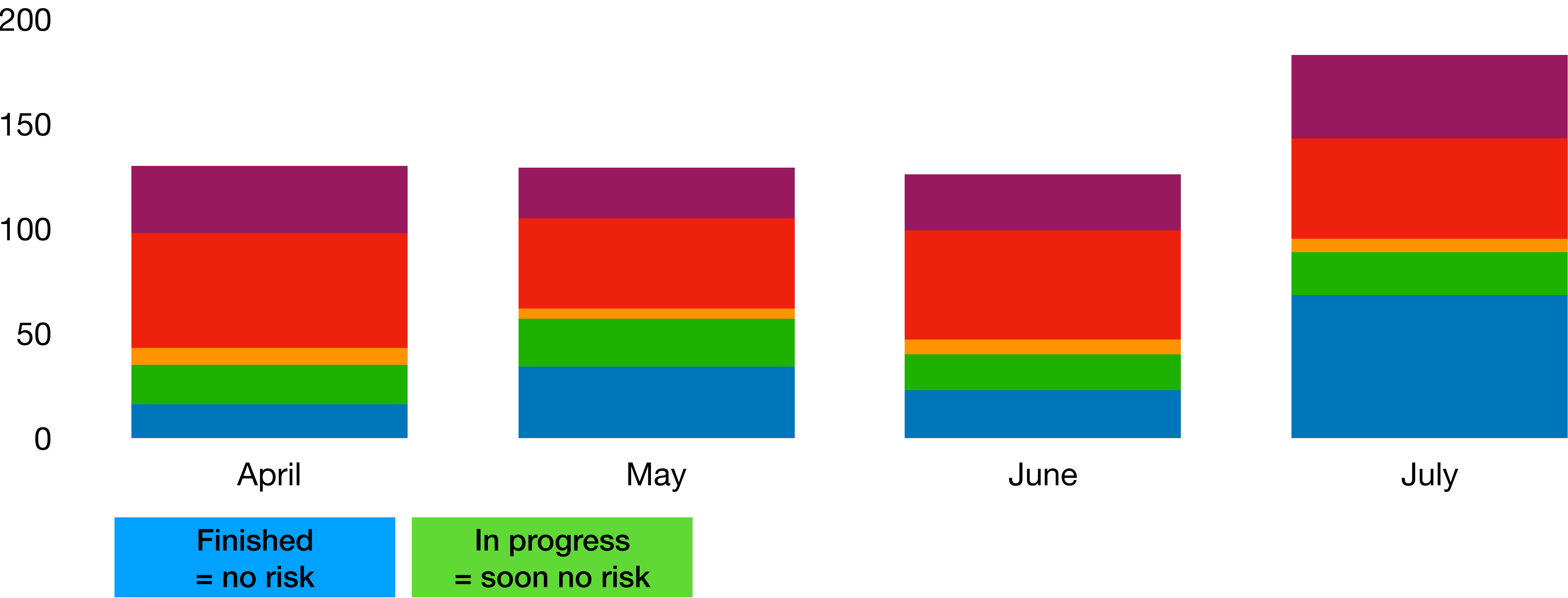## UI draft for project risk development chart

#778 Add project risk chart
UI draft for project risk development chart

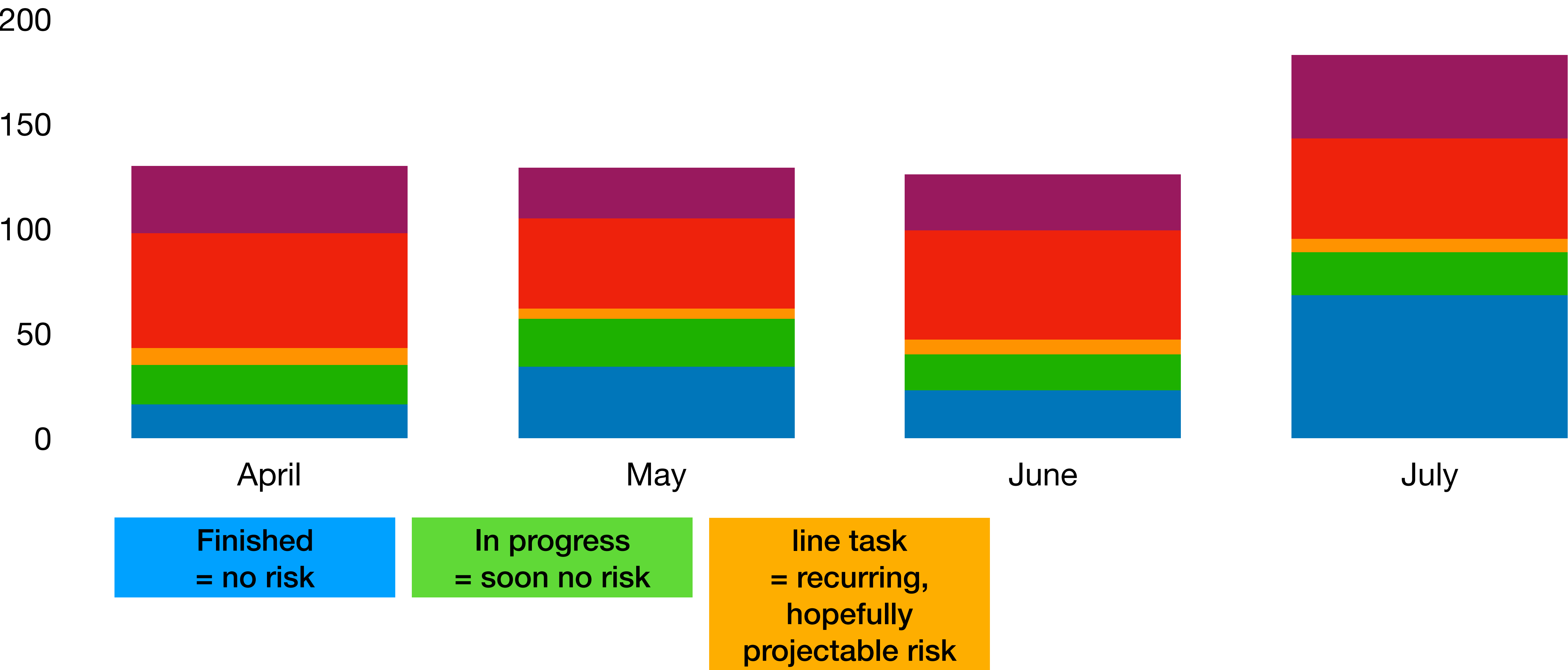# #778 Add project risk chart
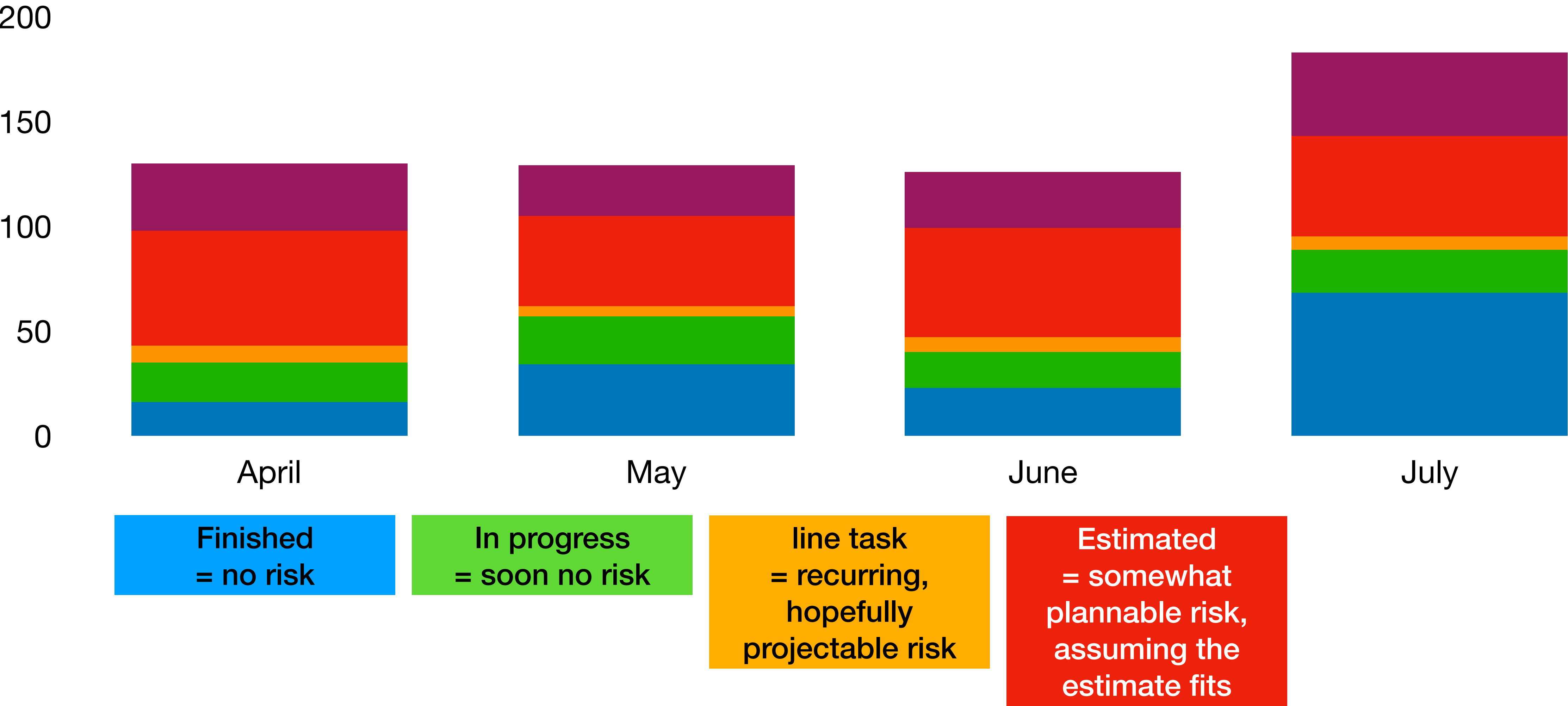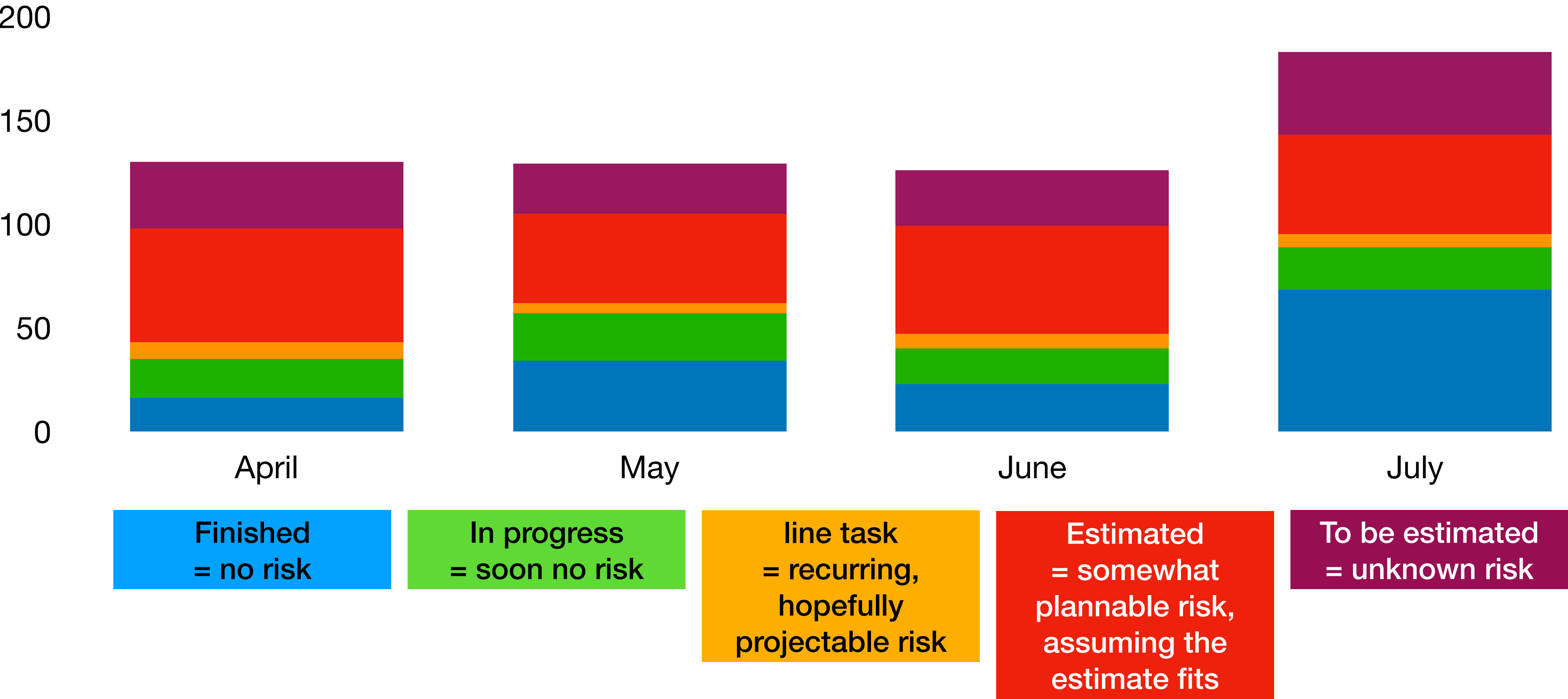## UI draft for project risk development chart

#778 Add project risk chart
UI draft for project risk development chart

#778 Add project risk chart
UI draft for project risk development chart

200

150

100

50

0

April   May   June   July

| Finished = no risk | In progress = soon no risk | line task = recurring, hopefully projectable risk | Estimated = somewhat plannable risk, assuming the estimate fits | To be estimated = unknown risk |

Risk in terms of budget

#NoEstimate #Yolo

- Create single task for entire chart

- Implement

- Move on to next task

v1.0

Estimate to get a rough idea of budget need

- Create single task for entire chart

- **Estimate how long it will take to, for example: 8h**

- Implement

- Move on to next task

- **Controlling only for sum project budget**

v2.0

Estimate and check

- Create single task for entire chart

- Estimate how long it will take to, for example: 8h

- Implement

- **Check how long it actually took**, for example 16h (exceed budget by 100%)

- **Be surprised**

- Move on to next task

- Controlling only for sum project budget **or in case of severe mis-estimate**

v2.1

Continuous task and time tracking

Continuous task and time tracking
Use a task tracker to have unique key for each task

Add finished rod to project risk chart **#780**

✓ Closed   ◯ 1 task done   ⊙ **Add project risk chart** #778

roskakori opened this issue 5 days ago · 0 comments · Fixed by **#786**

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roskakori commented 5 days ago · edited ▾   · · ·

Story

See

Goals

☑ The 'finished' rod in the project risk chart shows the work invested over the period in tasks that got done during this period.

Estimate: 2h

Continuous task and time tracking

Add estimate of expected effort

Add finished rod to project risk chart #780

⊘ Closed   ○ 1 task done   ⊙ Add project risk chart #778

roskakori opened this issue 5 days ago · 0 comments · Fixed by #786

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roskakori commented 5 days ago · edited ⌄   ···

Story

See

Goals

☑ The 'finished' rod in the project risk chart shows the work invested over the period in tasks that got done during this period.

Estimate: 2h

Continuous task and time tracking
Use time tracker to keep track of actual effort

Add finished rod to project risk chart #780

✓ Closed   ○ 1 task done   ⊙ Add project risk chart #778

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roskakori commented 5 days ago · edited ▾   ...

Story

See

Goals

☑ The 'finished' rod in the project risk chart shows the work invested over the period in tasks that got done during this period.

Estimate: 2h

Day

24. Oct 2024

Duration

00:23:23

Start

07:09:46

End

07:33:09

Customer / project

Siisurit / Siisurit v0.x   >

Service

Development   >   €

Description

#780 Add done rod to project risk char

Continuous task and time tracking

Assign each time entry to a task

Continuous task and time tracking
These data can be matched...

Continuous task and time tracking
...and then be used to compute progress

Continuous task and time tracking
...and then be used to compute progress

Continuous task and time tracking

Computing progress

Continuous task and time tracking
Computing progress

Integrated time and task tracker

📋 Add finished rod to project risk chart
#780

84%

🕐 1h 41m / 2h
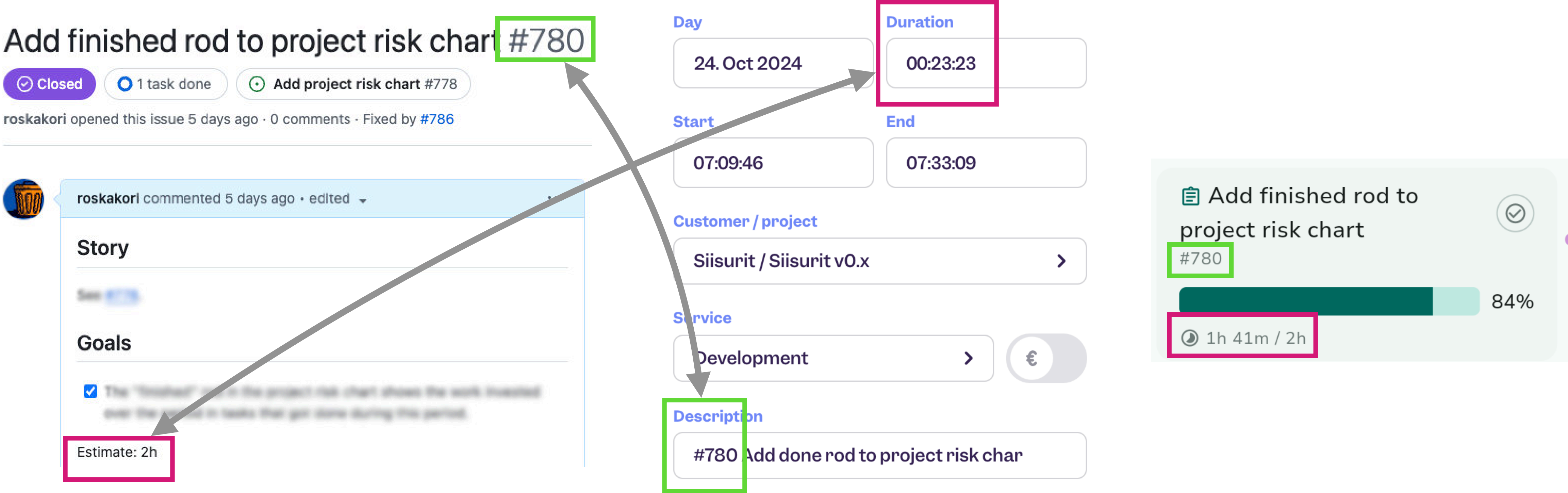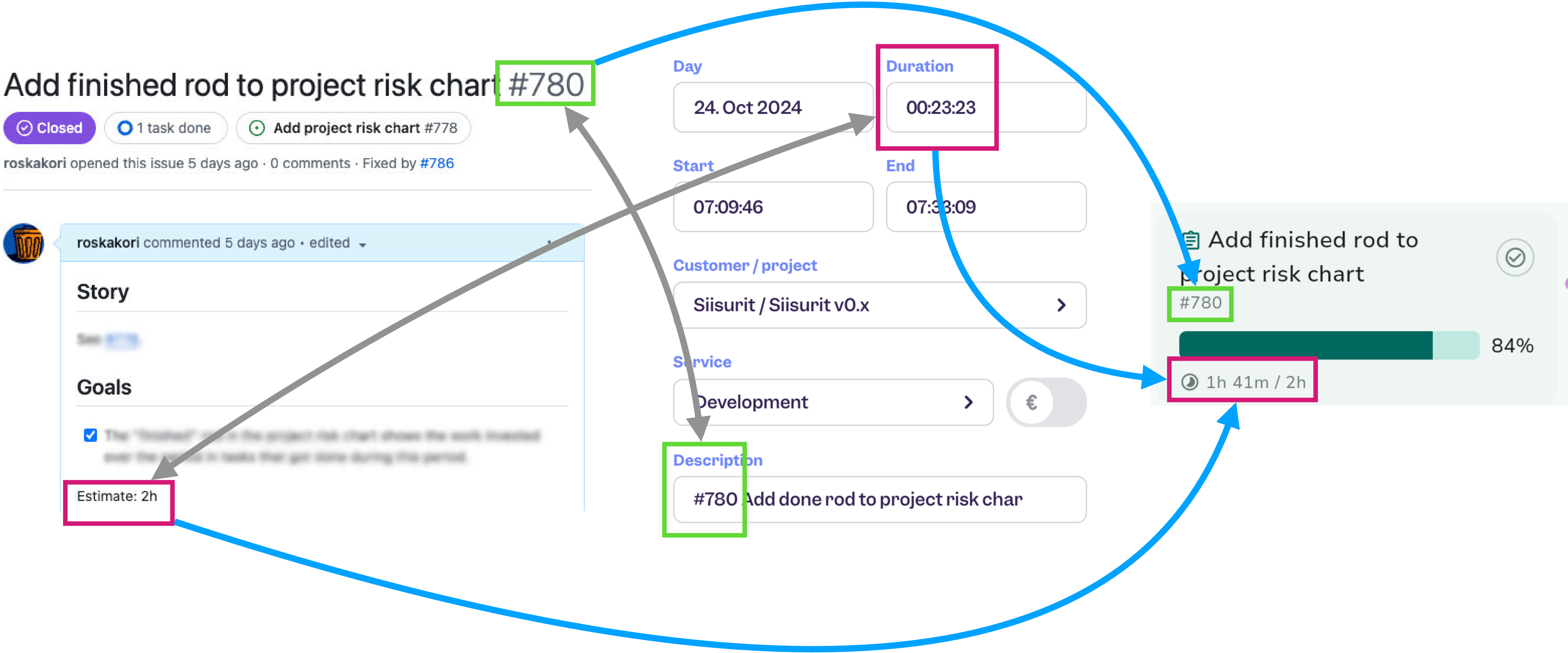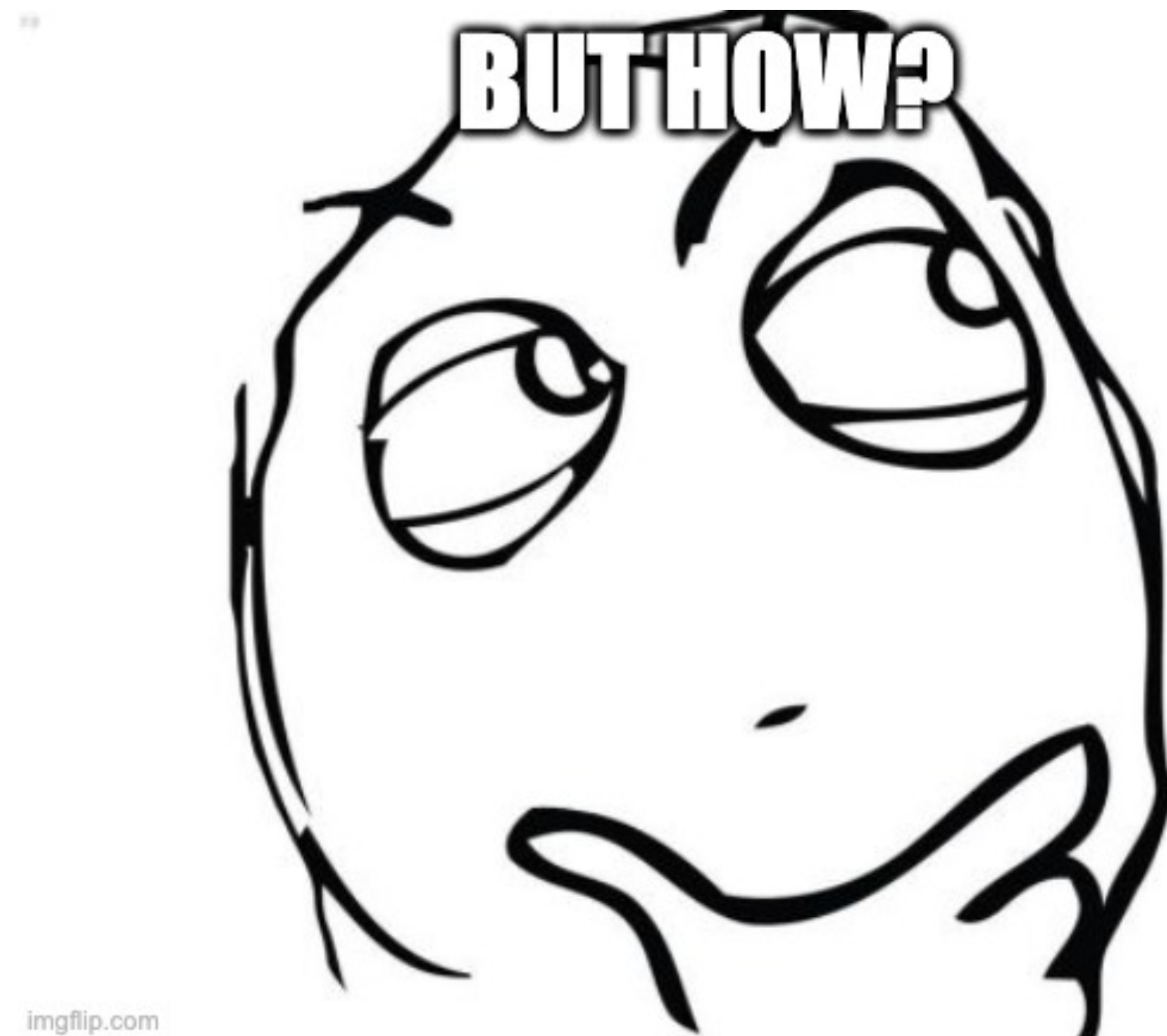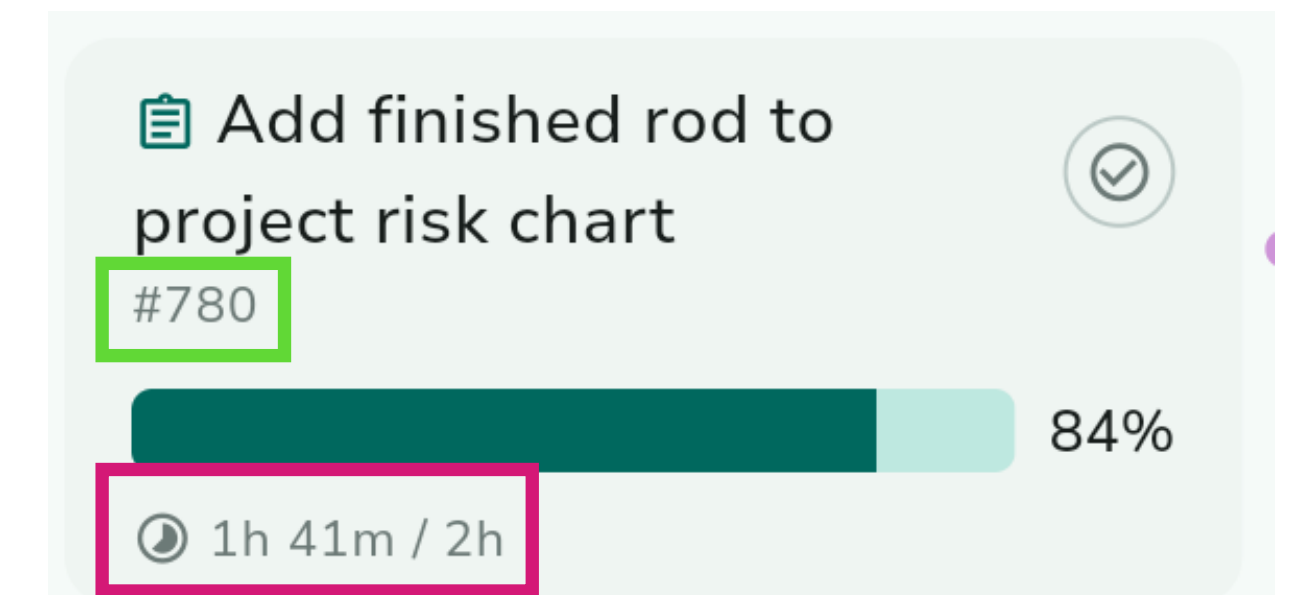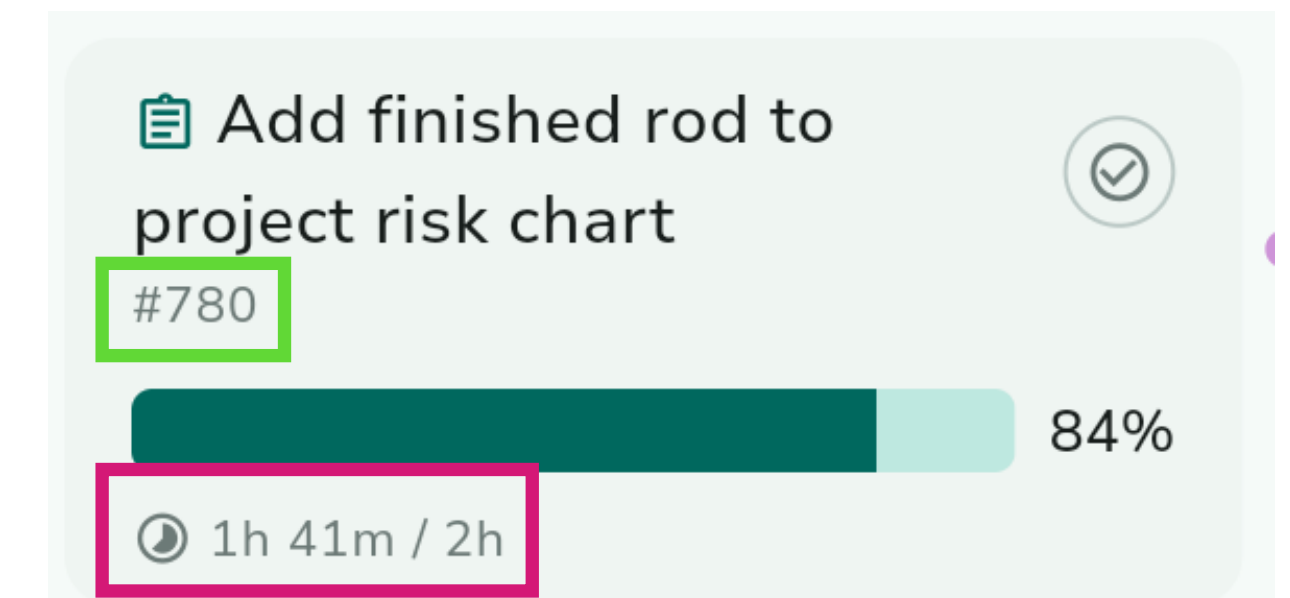
Continuous task and time tracking
Computing progress

Integrated time and
task tracker

Scripts and
Excel macros

Continuous task and time tracking
Computing progress

Integrated time and task tracker

Scripts and Excel macros

Siisurit via API connectors

📋 Add finished rod to project risk chart
#780

84%

🕐 1h 41m / 2h
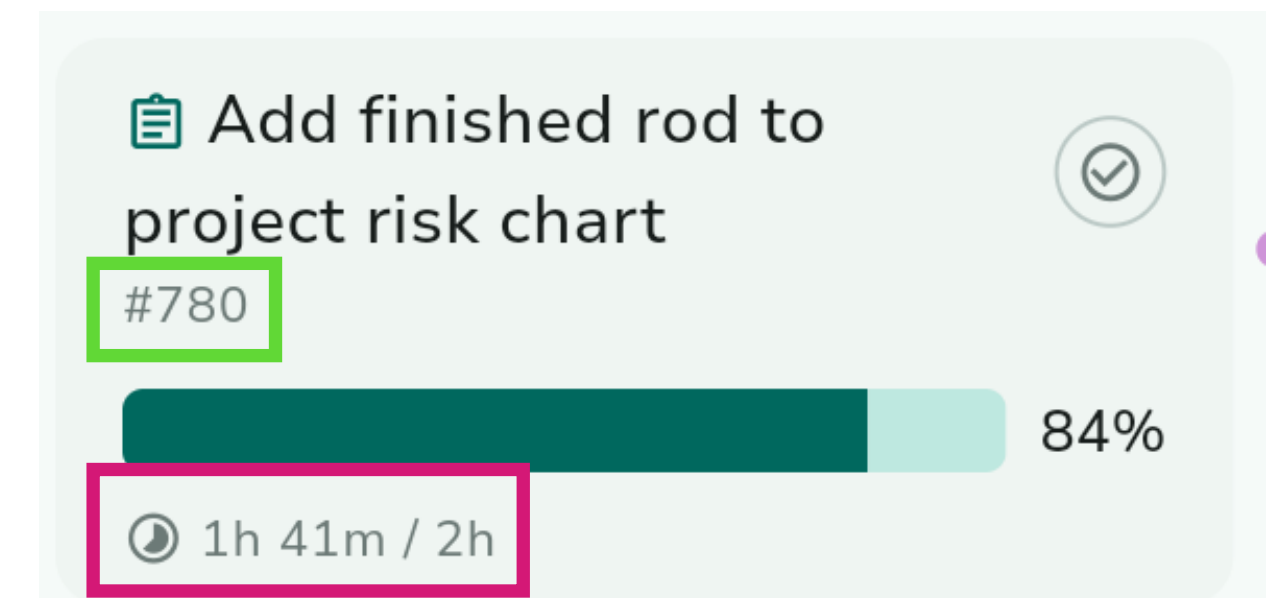
Risk in terms of content

Recap: Estimate and check

v2.1

- Create single task for entire chart

- Estimate how long it will take to, for example: 8h

- Implement

- **Check how long it actually took**, for example 16h (exceed budget by 100%)

- **Be surprised**

- Move on to next task

- Controlling only for sum project budget **or in case of severe mis-estimate**

Enter splitting

- Split a single task into multiple ones

- Common reason: When tasks gets to big, for example Fibonacci-limits

- Suggestion: If a task seems risky, identify the risky parts and split them into separate tasks

Recap: #778 Add project risk chart
UI draft for project risk development chart

200

150

100

50

0

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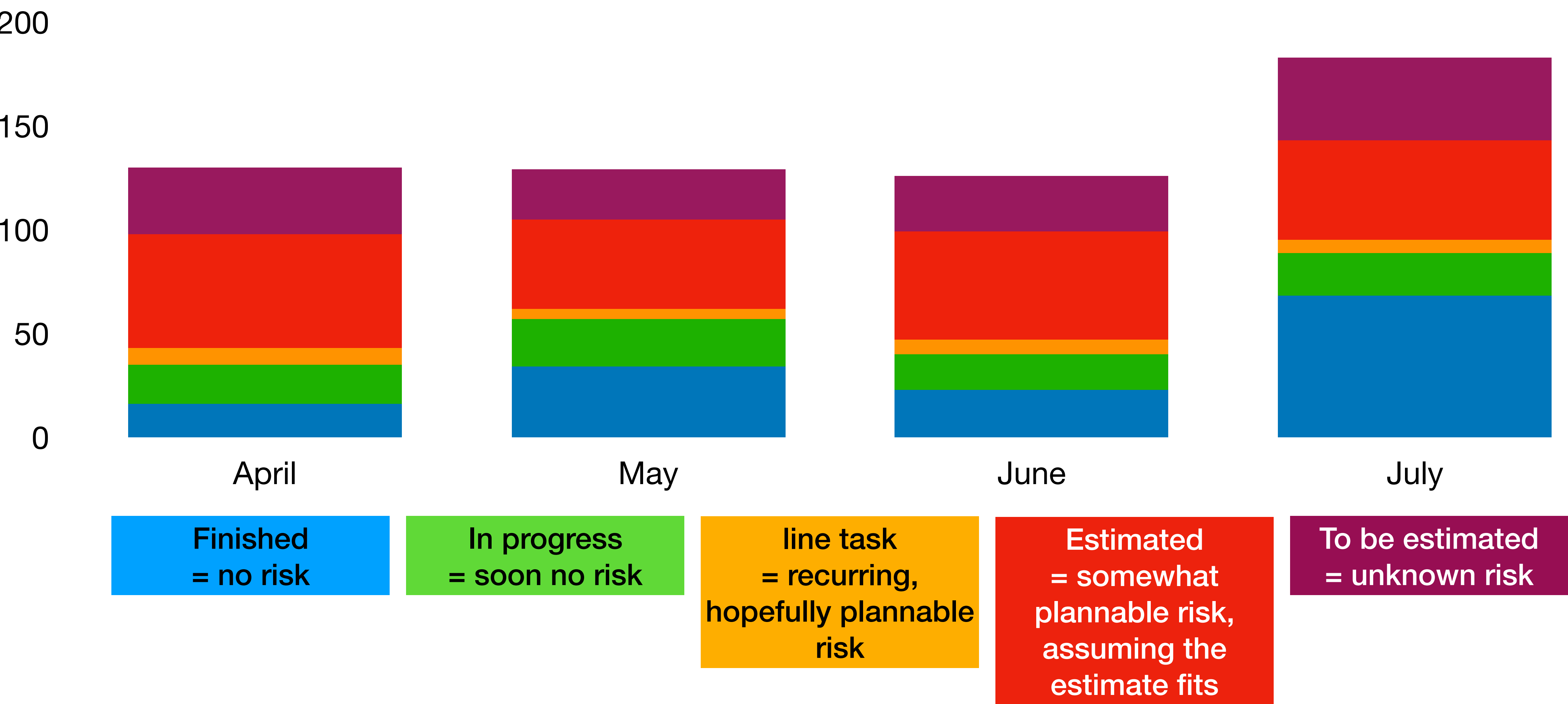
Identify risky parts and split them into tasks

Part	What needs to be done?	Risks	Estimate / Action
Finished rod	Database query for chart data		2h
In progress rod	Database query for chart data		2h
Line task rod	How to detect line task?	No clear requirements	Omit for now, need to specify
Estimated rod	Database query for estimate - progress; needs some logic	Database query possible, or loop needed?	5h / Expect to fiddle
To be estimated rod	Compute with heuristics. Which? Use median for now.	Median is not standard SQL. How to compute in ORM?	5h / Research median
Add chart to UI	Common frontend things, data model for chart	How to represent fixed ID not from database?	4h / Explore ID options

Resulting tasks and requirements
Epic for customer communication and progress tracking

Story

As project admin, I want to know how much risk concerning work is in the project, so that I can decide if mitigation is needed.

Goals

- ☑ ⊘ **Add dummy project risk chart** #779
- ☑ ⊘ **Add finished rod to project risk chart** #780
- ☑ ⊘ **Add in-progress rod to project risk chart** #781
- ☑ ⊘ **Add estimated rod to project risk chart** #782
- ☑ ⊘ **Add to-estimate rod to project risk chart** #783

Estimate: 1h

User interface

Wireframe:

The colors have the following meaning:

- blue = done
- green = in progress
- yellow = line task (see "Design decisions")
- red = estimated
- purple = to estimate

Resulting tasks and requirements
Epic for customer communication and progress tracking

#778 Add project risk chart

Story

As project admin, I want to know how much risk concerning work is in the project, so that I can decide if mitigation is needed.

Goals

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Estimate: 1h

User interface

Wireframe:

The colors have the following meaning:

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Design decision

For the time being, line tasks are part of "in progress" until we have a proper definition an means of detection. Generally speaking, the respective rod would show the work invested in tasks over the period, which are not intended to ever be finished.

Explain why we skip "line tasks" for now

Resulting tasks and requirements
Detailed tasks for gradual implementation

#778 Add project risk chart

Story

As project admin, I want to know how much risk concerning work is in the project, so that I can decide if mitigation is needed.
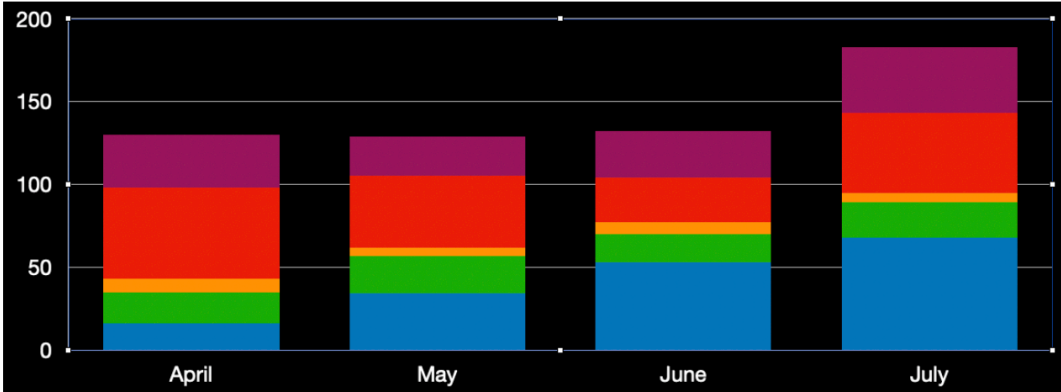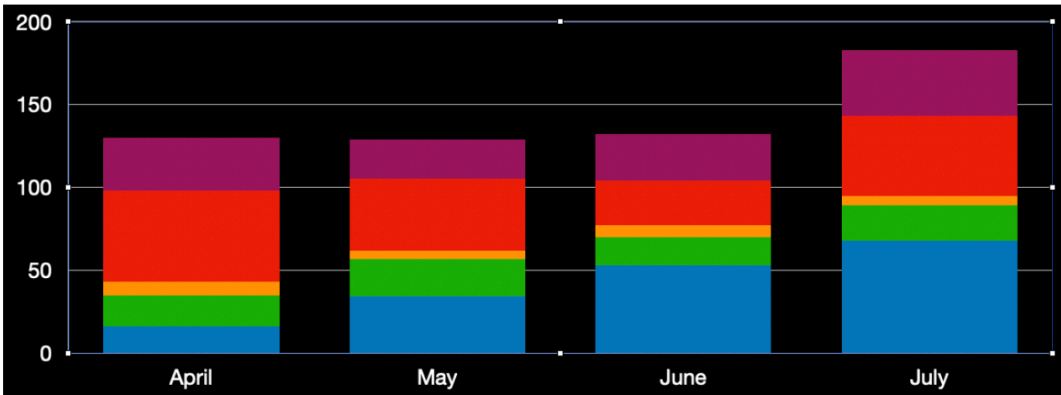
Goals

- ☑ ⊘ **Add dummy project risk chart** #779
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- ☑ ⊘ **Add estimated rod to project risk chart** #782
- ☑ ⊘ **Add to-estimate rod to project risk chart** #783

Estimate: 1h

#782 Add estimated rod to project risk chart

Story

See #778.

Goals

- ☑ The project risk chart shows the remaining estimated work, which is computed like this:
  - ☑ For each task that has not been done at the end of the period and that has at least one estimate, the estimate valid at the end of the period is taken into account.
  - ☑ The final value is the estimate minus the sum total work performed until the end of the period.
  - ☑ The rod collects the sum of all values that are greater than 0. This means, overdue tasks are not show as open estimate risk.

Estimate: 5h

#779 Add dummy project risk chart

Story

See #778.

Goals

- ☑ When a project admin navigates to the project details screen, the project risk chart shows.
- ☑ The charts covers the time from the first to the last work entry of this project.
- ☑ The bar for each period has rods for all values defined in ⊘ **Add project risk chart** #778, except for line tasks. Each rod is a fixed 3h.
  ℹ️ Apparently, for now these are dummy data. The real data are added with the follow up issues of ⊘ **Add project risk chart** #778.

Estimate: 4h

Implementation notes

Because the items shown in the chart are not derived from database IDs, we need to generate fixed IDs that are guaranteed to not clash with database IDs.

After some research, this seems to be exactly what UUID v5 was made for. In Python, we can build it out of the box. in Dart, the uuid package supports it, which is already part of the project.

#781 Add in-progress rod to project risk chart

Story

See #778.

Goals

- ☑ The "in progress" rod of the project risk chart shows the work invested over the period in tasks that still were not done at the end of the period.

Estimate: 2h

#780 Add finished rod to project risk chart

Story

See #778.

Goals

- ☑ The "finished" rod in the project risk chart shows the work invested over the period in tasks that got done during this period.

Estimate: 2h

### #783 Add to-estimate rod to project risk chart

Story

See #778.

Goals

- ☑ The project risk chart show the work to expect from tasks yet to estimate, which is computes as follows:
  - ☑ Count the number task that by the end of the period where not done, did not have an estimate and had no work contributed over the period.
  - ☑ Compute the median work for all tasks finished by the end of the end of the period (including tasks finished in previous periods).
    - ☑ If no tasks have been finished at all until the end of the period, assume a hardcoded heuristic value of 4h. ℹ️ This value is an educated guess and might change in the future.
  - ☑ The final size of the rod is the count of the above tasks where the work invested until the end of the period is less than the median work, multiplied by the median work.

Estimate: 5h

The resulting chart
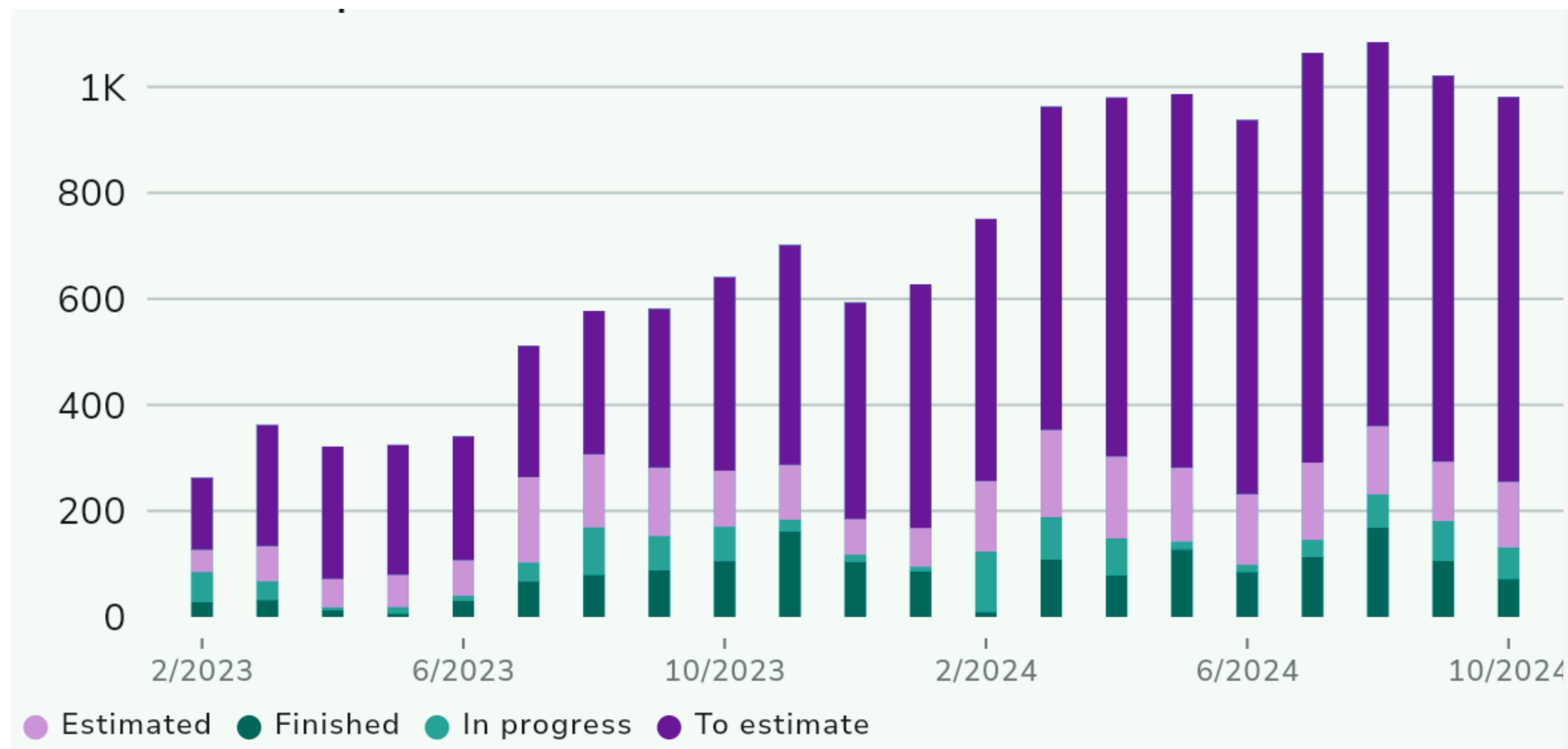
- **Observation**: The "to estimate" rod drowns the other rods.

- **Reason**: In a project with a sizable backlog, this will always be the case.

- **Conclusion**: The "to estimate" rod is not really useful in this diagram.

Change of requirements

Add 2 new tasks

<div style="background: orange">Quickly remove confusing chart rod → only minor impact on budget and content</div>

#792 Hide "to estimate" rod

Story

See #778.

Background: The "to estimate" tends to drown the other rods in the chart, making hard to extract information from it. For now, this rod will not show up in the chart. An improved implementation is to the implemented with #793.

Goals

☐ The to-estimate rods in the project risk development chart is gone.

☐ 👷 All parts of the code that are needed to reactive the rod are commented out and marked with `TODO#793`.

Estimate: 0.5h

<div style="background: orange">Rethink alternative approach at a later point in time with a new budget.</div>

#793 Add "to estimate" chart

Story

See #778. This is a follow up to #792.

Goals

> ⓘ Note
>
> **Brainstorming**: Possible ideas for a better chart:
>
> - Use a line chart showing the data initially computed with ⊙ **Hide to-estimate rod in risk development chart** #792.
> - Show the change of the median as separate line?
>   - Use only the past 3 months to make it easier to see how external influences or process improvements might change the median.
>   - Also show other percentiles then the media to give a better feel how far off past estimates were?
> - Show the standard deviation of estimates to give a general feel how wildly different tasks and estimates are?

☐ ❓ TBD

☐ 👷 All `TODO#793` comments are addressed.

Estimate: ❓ h

<div style="background: orange">Computational code from #792 can be reused here.</div>

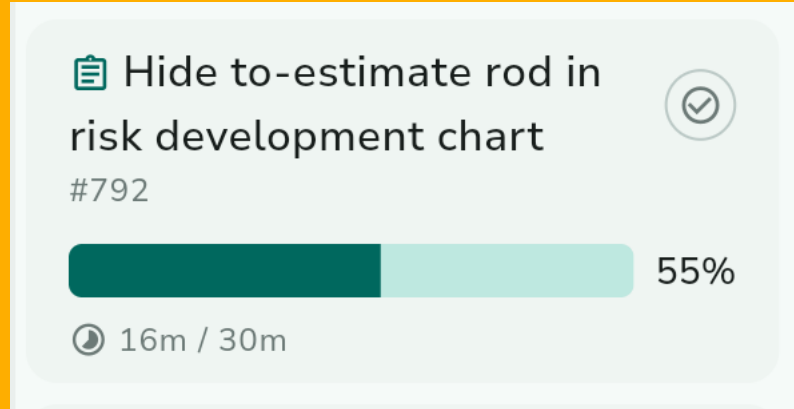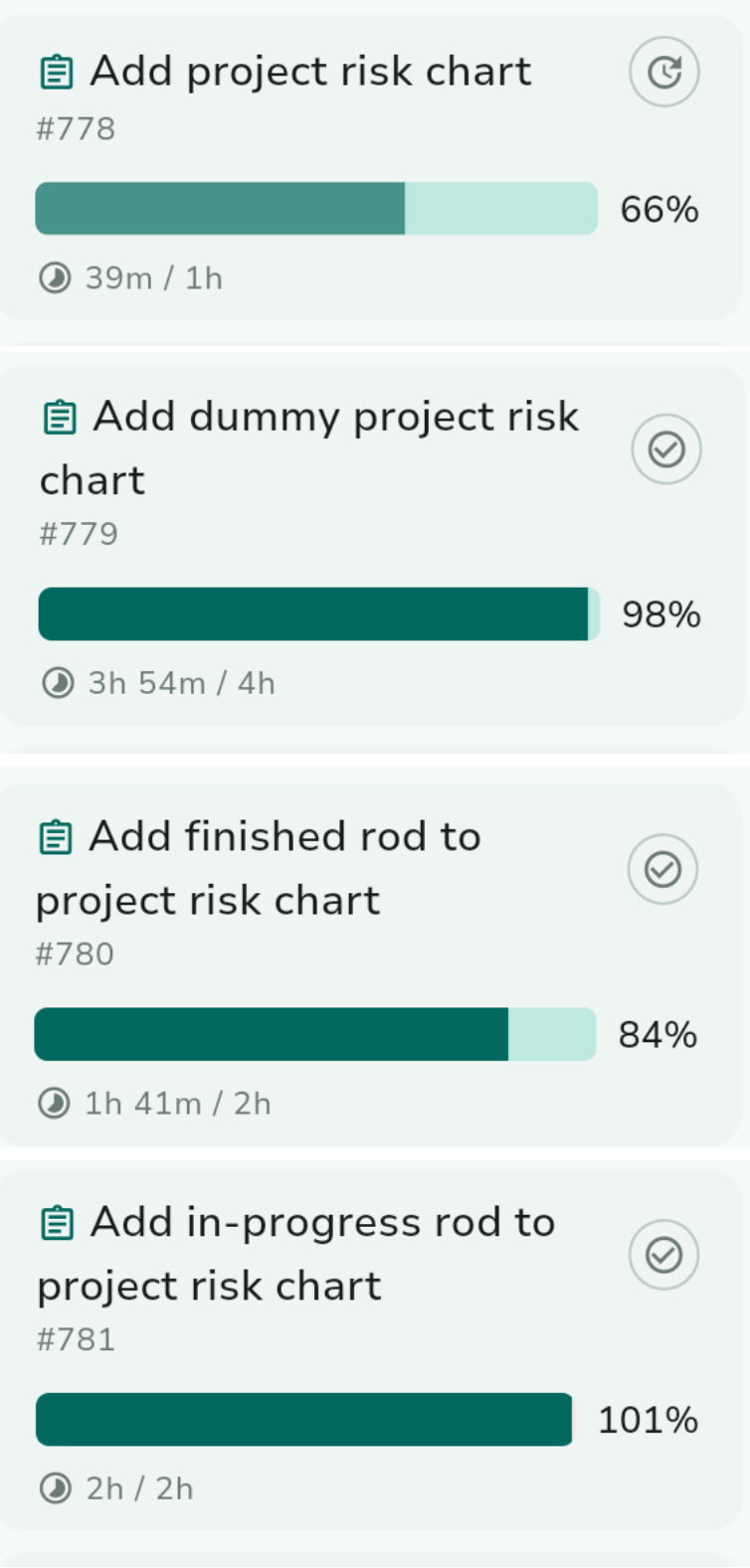# The final result

Risk development
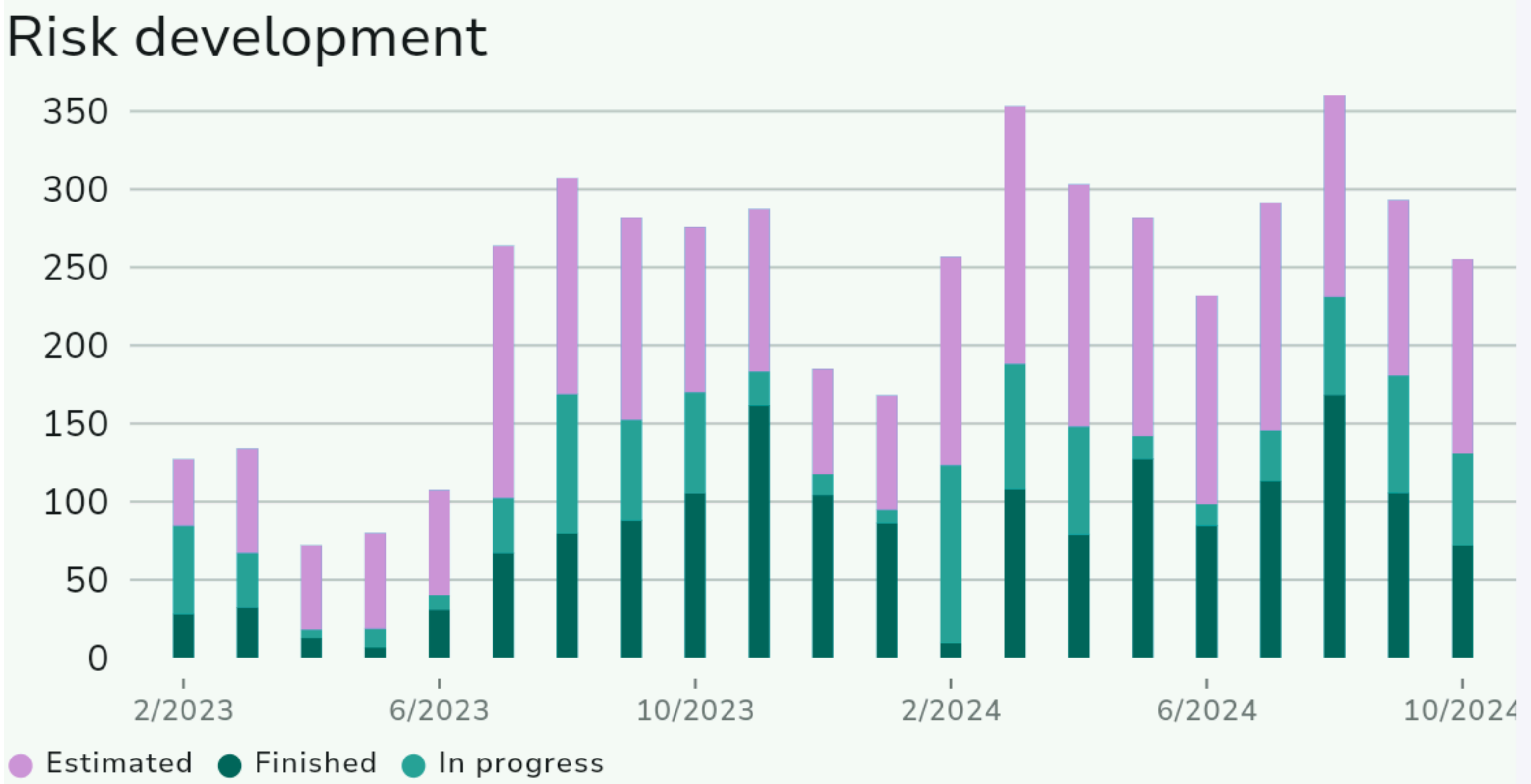
Design uncertain requirements for "intelligent failure"

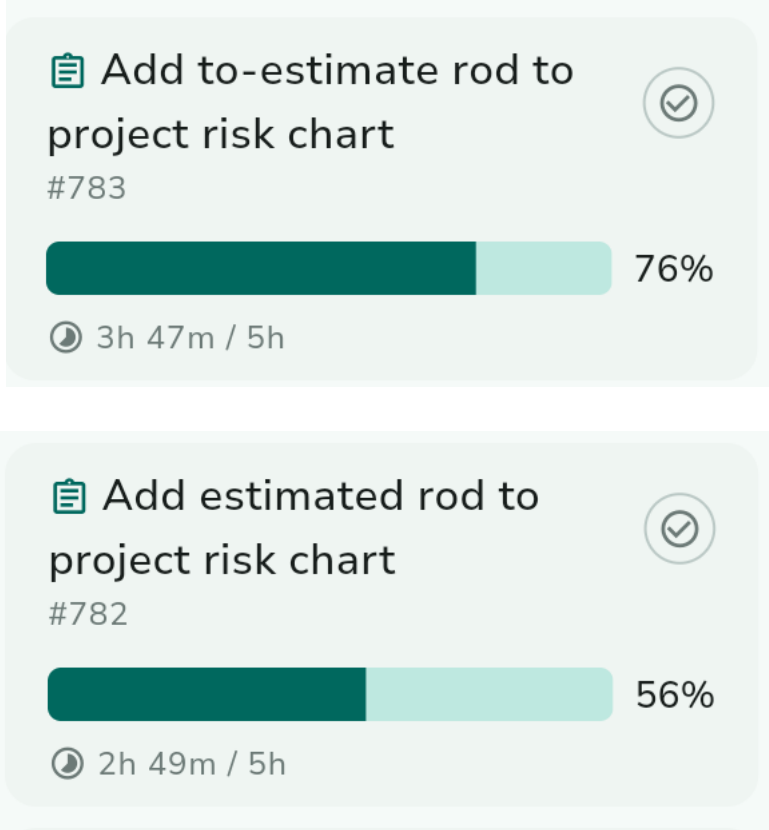**Example: to-estimate rod in project risk chart**

- Requirement was deliberately vague but did produce data that could be examined.

- Data turned out to be of little immediate use (#783).

- But kicked off thoughts on how to make them more useful (#793).

- Bad rod could be undone with little effort (#792).

- Either succeed or gain findings that allow to learn and iteratively derive a better requirement.

- See: "Right Kind of Wrong: The Science of Failing Well" (A. Edmundson, 2023)
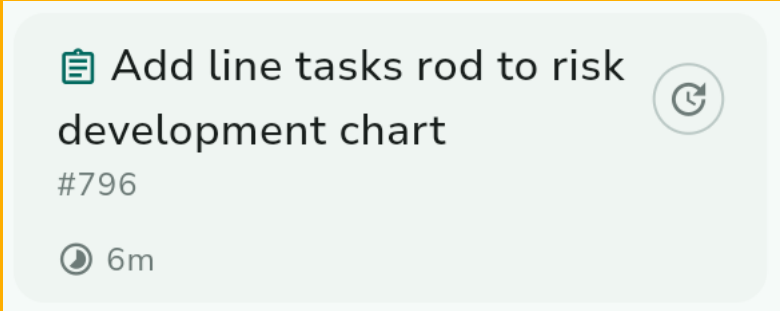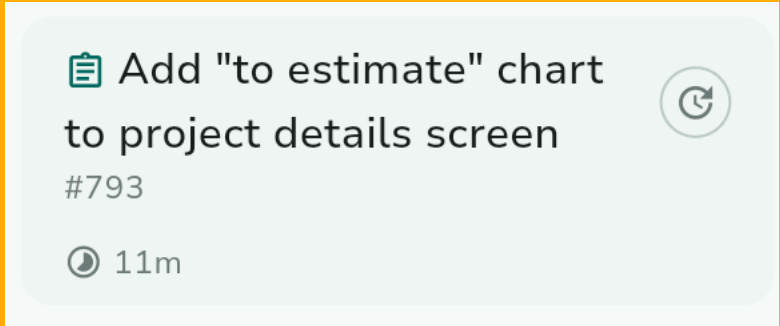
How did the estimates turn out?

low risk

Add project risk chart
#778
66%
39m / 1h

Add dummy project risk chart
#779
98%
3h 54m / 4h

Add finished rod to project risk chart
#780
84%
1h 41m / 2h

Add in-progress rod to project risk chart
#781
101%
2h / 2h

Hide to-estimate rod in risk development chart
#792
55%
16m / 30m

medium risk

Add to-estimate rod to project risk chart
#783
76%
3h 47m / 5h

Add estimated rod to project risk chart
#782
56%
2h 49m / 5h

high risk

Add "to estimate" chart to project details screen
#793
11m

Add line tasks rod to risk development chart
#796
6m

Added tasks

Summary

Summary

- Good practices:

  - Estimate effort and check per task to control risk to budget.

  - Split out uncertain parts to separate task to control risk to content.

- Design uncertain requirements for intelligent failure.

- Gives transparency about current state of things and facilitates fact based discussions.

Summary

- Good practices:

    - Estimate effort and check per task to control risk to budget.

    - Split out uncertain parts to separate task to control risk to content.

- Design uncertain requirements for intelligent failure.

- Gives transparency about current state of things and facilitates fact based discussions.

Ask for early access: hello@siisurit.com

https://siisurit.com/