

simulate

User Manual

Monte-Carlo forecasting for agile teams

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1 What is simulate?

simulate turns your team's historical delivery data into a probabilistic forecast (a Monte-Carlo simulation). It is based purely on throughput - how many items are completed per day. No estimates (story points) are required. It answers three questions:

- How many items will we complete in a given period?
- When will a backlog of N items be done?
- Will we finish the scope by a target date?

Results are always probabilities, not single numbers. 'At least 20 items with 85 % confidence' means: in 85 of 100 simulated futures, 20 or more items were completed.

2 Starting the program

- From the launcher: click the Simulate card in the SituationReport start window.

Directly: without arguments the GUI opens, with arguments the command line runs:

```
python -m simulate ART_A_IssueTimes.xlsx --horizon 84 --backlog 20 --output  
forecast.html
```

3 Input file

simulate needs an IssueTimes.xlsx as produced by the transform_data module. Only the issues' Closed Date matters for the forecast. An optional CFD.xlsx may also be provided.

4 The interface (GUI)

Pick the IssueTimes file at the top and set the parameters below. Clicking Generate report asks for a location and opens the finished report in your browser.

The screenshot shows the 'simulate' GUI interface. At the top, there is a language dropdown set to 'de' and a help icon. Below this is the 'Daten' (Data) section with two file selection fields: 'IssueTimes (.xlsx)' containing 'C:\Daten\ART_A_IssueTimes.xlsx' and 'CFD (.xlsx, optional)' which is empty. Both have 'Durchsuchen ...' (Browse ...) buttons. The 'Parameter' section contains several input fields with their current values: 'History-Fenster (Tage)' is 180, 'History-Ende (JJJJ-MM-TT, leer = heute)' is empty, 'Horizont (Tage)' is 84, 'Zieldatum (JJJJ-MM-TT, überschreibt Horizont)' is empty, 'Backlog (Items, leer = kein Termin-Forecast)' is 125, 'Läufe' (Runs) is 25000, 'Scope-Wachstum (neue Items je erledigtem)' is 0.1, and 'Seed (leer = zufällig)' is 11. At the bottom left is a 'Report erzeugen ...' (Generate report ...) button.

Fig. 1: The simulate interface with file and parameter fields.

Field	Meaning
History window (days)	How far back the historical data is considered (default 180). Deliberately includes zero-throughput days.
History end	End of the window (empty = today).
Horizon (days)	How far into the future for 'how many' (default 84).
Target date	Instead of the horizon: a concrete date ('how many by this date?'). Overrides the horizon.
Backlog	Number of items for the date and scope-confidence forecast (empty = 'how many' only).
Runs	Number of simulation runs (default 25000). More = smoother.
Scope growth	Expected new items per completed item (e.g. 0.1 = +10 % rework/splits).
Seed	Fixed starting value for reproducible results (empty = random).

5 Reading the report

When a backlog is given, the report shows three related views - all from the same simulation runs.

5.1 Scope-confidence gauge

The gauge shows the probability of finishing the backlog by the horizon date. The red line marks the 85 % threshold; the colour zones (red/amber/green) help you judge it at a glance.

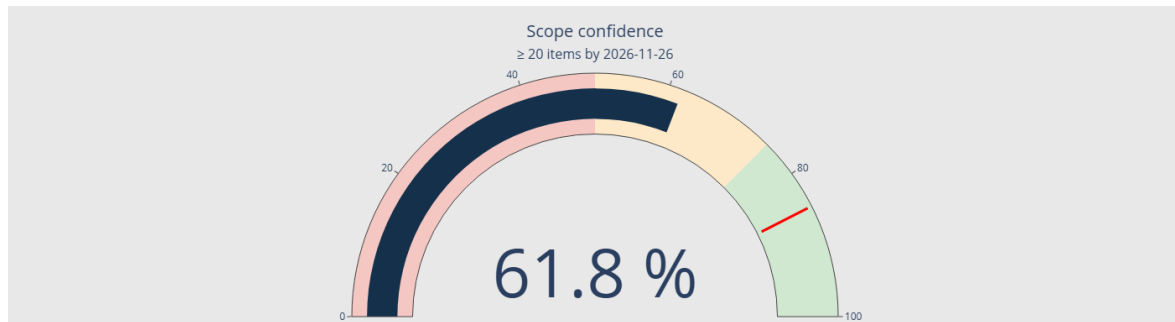


Fig. 2: Scope confidence - how likely are we to finish the scope by the date?

5.2 Exceedance curve (how many)

For each item count the curve shows the probability of completing at least that many. The dashed 85/75/50 % lines are reading aids: higher confidence = smaller guaranteed amount. The vertical line marks your backlog.

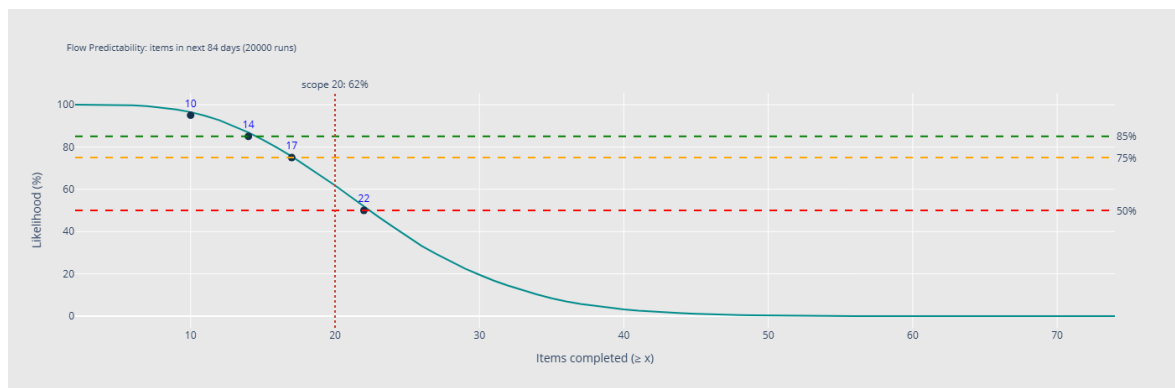


Fig. 3: Exceedance curve - probability of completing at least X items.

5.3 Completion distribution (when done)

The bar chart shows on which day the backlog was finished across the simulations. The confidence lines give the day and date per confidence level. Confidence levels that are not reachable within the cap are reported as 'not within cap' - never as an over-optimistic date.

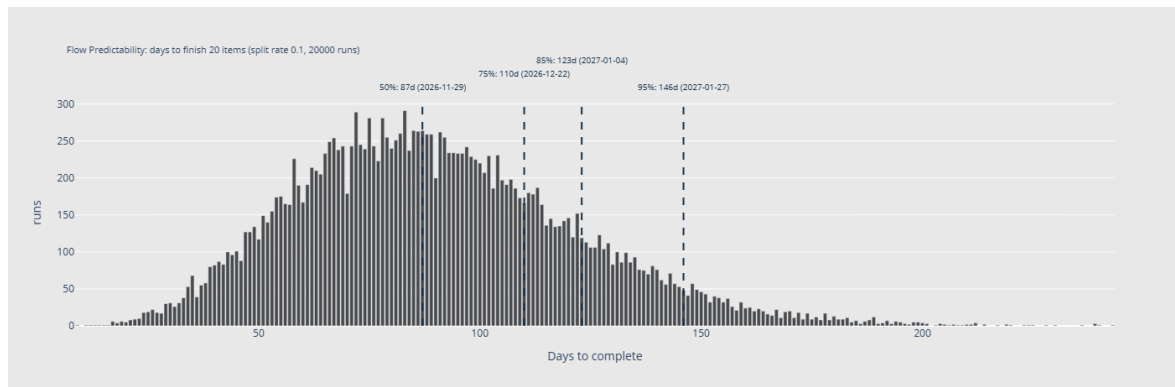


Fig. 4: Completion distribution - days to finish with confidence lines.

6 Tips

- Set a seed if you want to reproduce exactly the same report.
- Zero days are intentional: a recently quiet period correctly lowers the forecast - don't shorten the window to hide it.
- Don't over-interpret: a 60 % confidence is not a failure, it is an honest statement about uncertainty.
- Choose scope growth realistically: with epics one item often spawns more - that pushes the finish date out.

7 Language and templates

Like the other modules, simulate offers a flag button at the top right that switches the interface language between German, English, Romanian, Portuguese and French. The choice is saved and shared across all modules.

- Templates - Save: stores all current inputs (files and parameters) together with the language in a shared project-template file.
- Templates - Load: restores those inputs and the language from a template file. The same file can also be used by the other modules.