User forum November 2021

- **Ph. D. Michael M. Belsnes**

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Agenda

09:00-10:20	10 min.	10:30-11:30
Welcome		Roadmaps and release plans
General information		• SHOP and the simulator module
• Annual account 2021 and Budget 2022		• ProdRisk
• Error statistics		• EMPS
• Information from the models		
IT technology advances		Discussion
• Status and further test work		
• How SINTEF work with documentation		
Discussion input regarding strategy		

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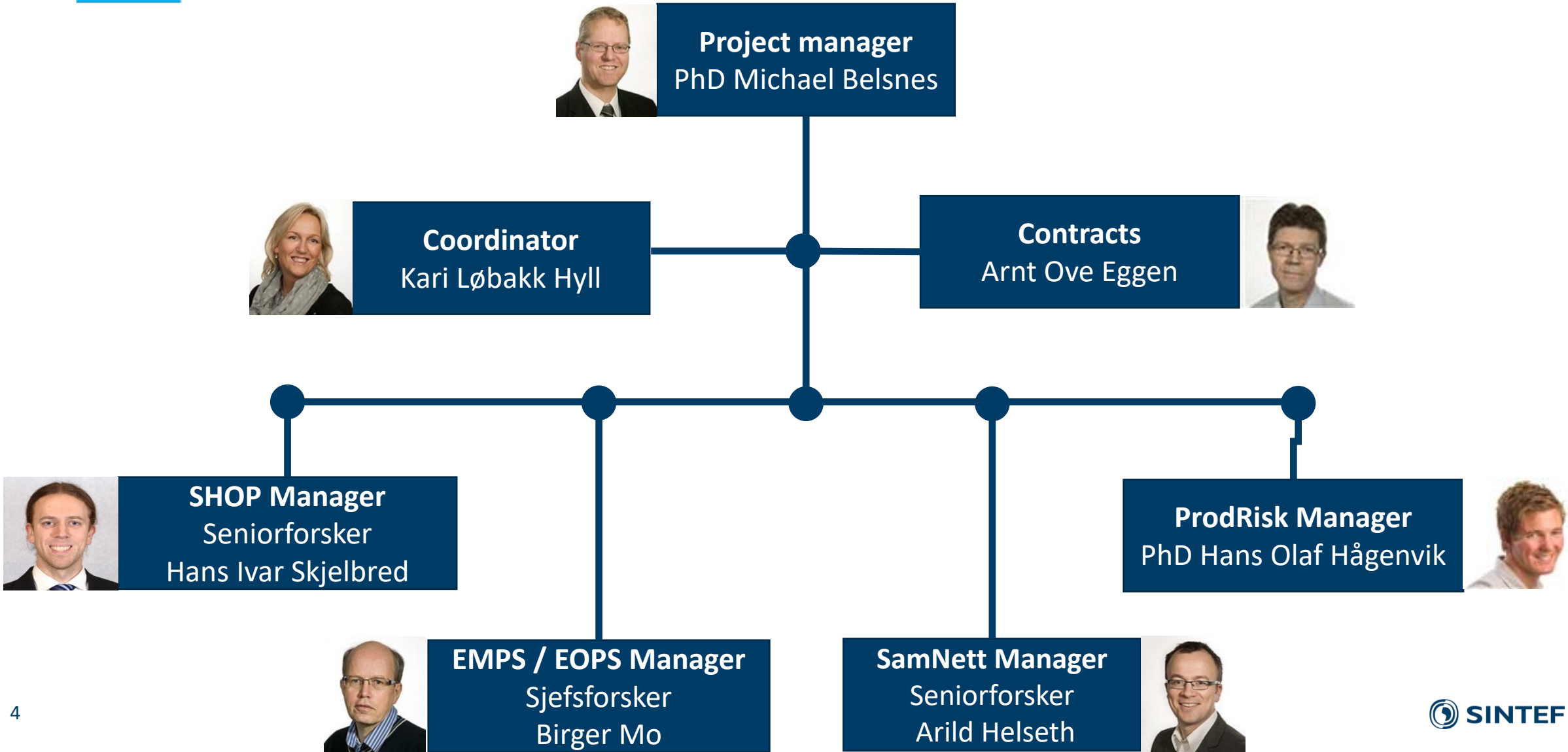# The maintenance project 2019

Hydropower models
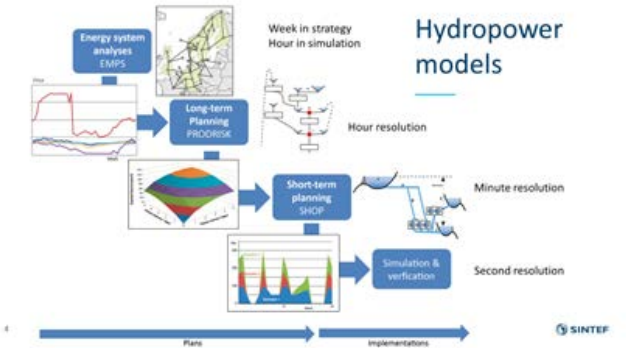
- SINTEF is a Not for-profit organization
  - What we invoice through the maintenance project is used in the model project.

- New sold licenses are used on the models

- Included in the project are:
  - SHOP and SHOP-SIM, ProdRisk, EOPS, EMPS and SamNett

- Related prototypes
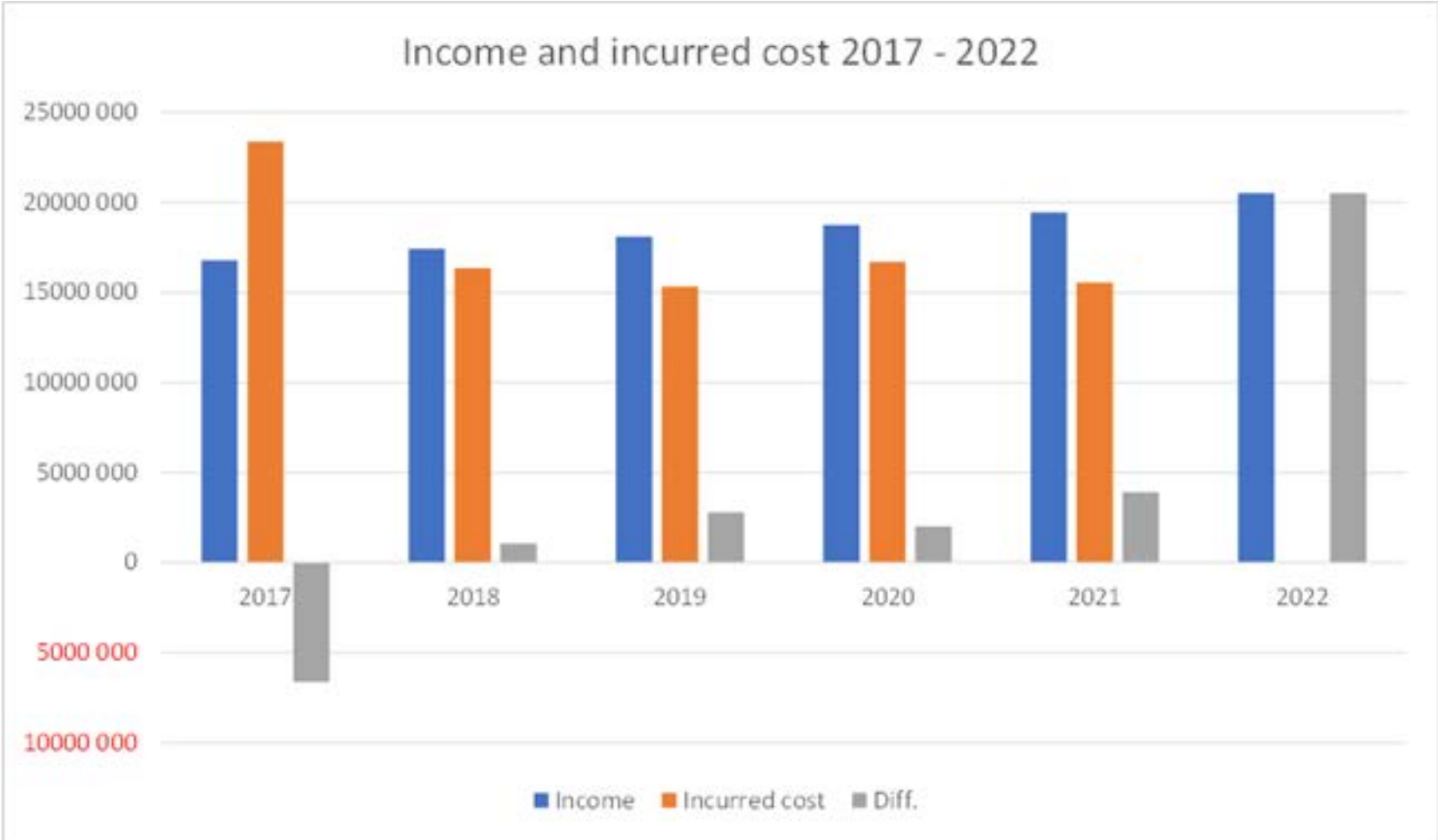 - SHARM, FANSI, EMPSW, ReOpt
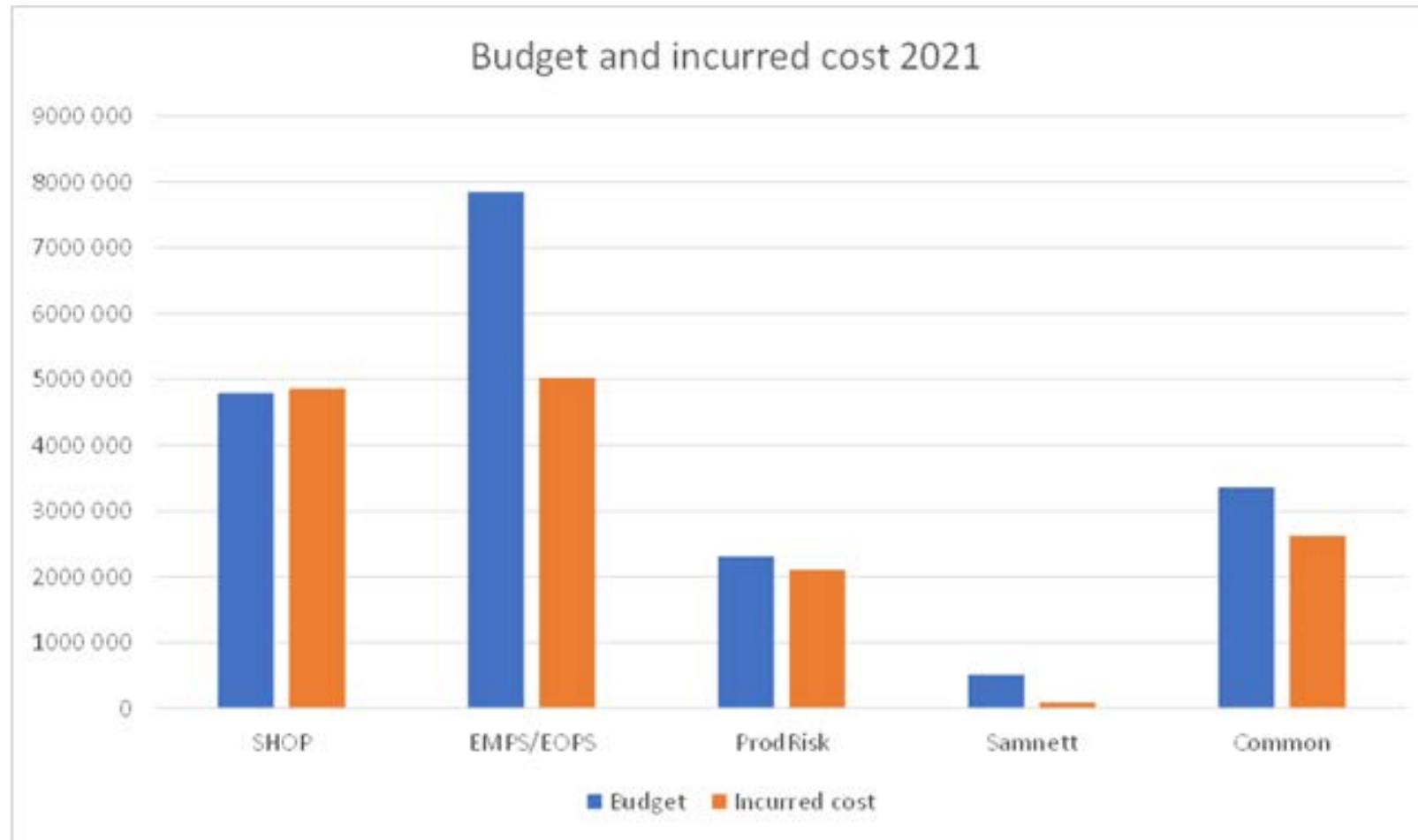
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Project organization

Project manager
PhD Michael Belsnes

Coordinator
Kari Løbakk Hyll

Contracts
Arnt Ove Eggen

SHOP Manager
Seniorforsker
Hans Ivar Skjelbred

ProdRisk Manager
PhD Hans Olaf Hågenvik

EMPS / EOPS Manager
Sjefsforsker
Birger Mo

SamNett Manager
Seniorforsker
Arild Helseth

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Established a project board

Research manager
Market
Stefan Jaehnert

Research manager
Operation
Ellen Krohn Aasgård

Research manager
Analysis
Christian Andresen

Project manager
Michael Belsnes

….. strengthening the connection with the management line in SINTEF Energy

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Budget and consumption 2017-2022

Income and incurred cost 2017 - 2022

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Budget and incurred so far in 2021

Incurred cost per delivery group

Error corrections	30%
Restructuring	30%
Sys. adaptation	20%
New functions	20%

Annual incurred cost per activity

Legend: 2017, 2018, 2019, 2020, 2021

Categories: Error correction, Functionality improvement, System adaptation, Restructuring, Administration and other cost, Direct

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General information

Contracts

Release management
High Performance Option 2022-24

Contract status for 2021

- Contract framework
  - Purchase agreement defining the license
  - Maintenance agreement defining the content of the project.

- Contract work in 2021
  - All customers should have a purchase agreement – we are nearly there
  - Updating maintenance agreement (to the 2018 template) when fit, with larger changes when the list of changes is growing long
  - Worked with the SHOP add-on autumn 2021
  - Investigating how to comply with the data management requirements from GDPR

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Release Management process

Typical issues to be determined and documented during development planning (Arbeidsplan) are:

- Overall goals of the development activity

- Organization

- Time schedule of releases, x pr year

- Resources

- Budget

- Reporting

- Process and quality criteria, including change handling routines

- Risk analyses

DG (Decision Gate) Plan approved
The development plan is approved by Model project steering committee

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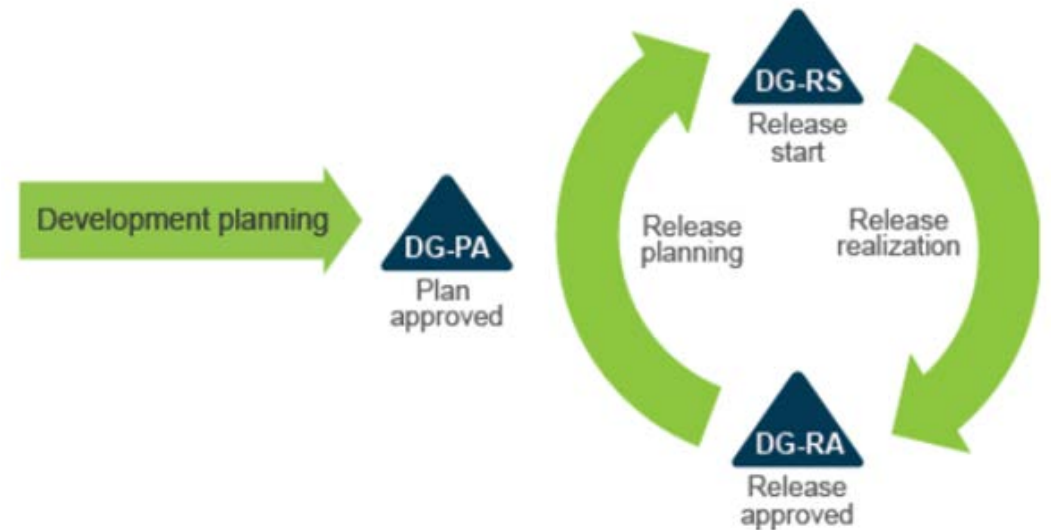
Release Planning process

Typical issues to be determined during release planning are:

- Analyse pr model input/backlog from research projects, sales, problems and lifecycle management.

- Estimate or make a probabilistic forecast of the effort needed to complete each task.

- Prioritize release content based on task severity and criticality, business value, estimates and resources available

- Release planning facilitated by release manager

DG (Decision Gate) Release start
**The release plan is approved by Product manager**

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HPO High performance option 2022-2024

- We have agreed with IBM to continue the collaboration regarding – all-you-can-eat use of runtime license of CPLEX in our models and associated prototypes

- The price increase will be comparable with 2 times the standard index regulation for the last 3 years.

- IBM has changed the framework around the agreement so we are using effort to adapt to the new regime. The content is similar to the current agreement as far as we can tell by now.
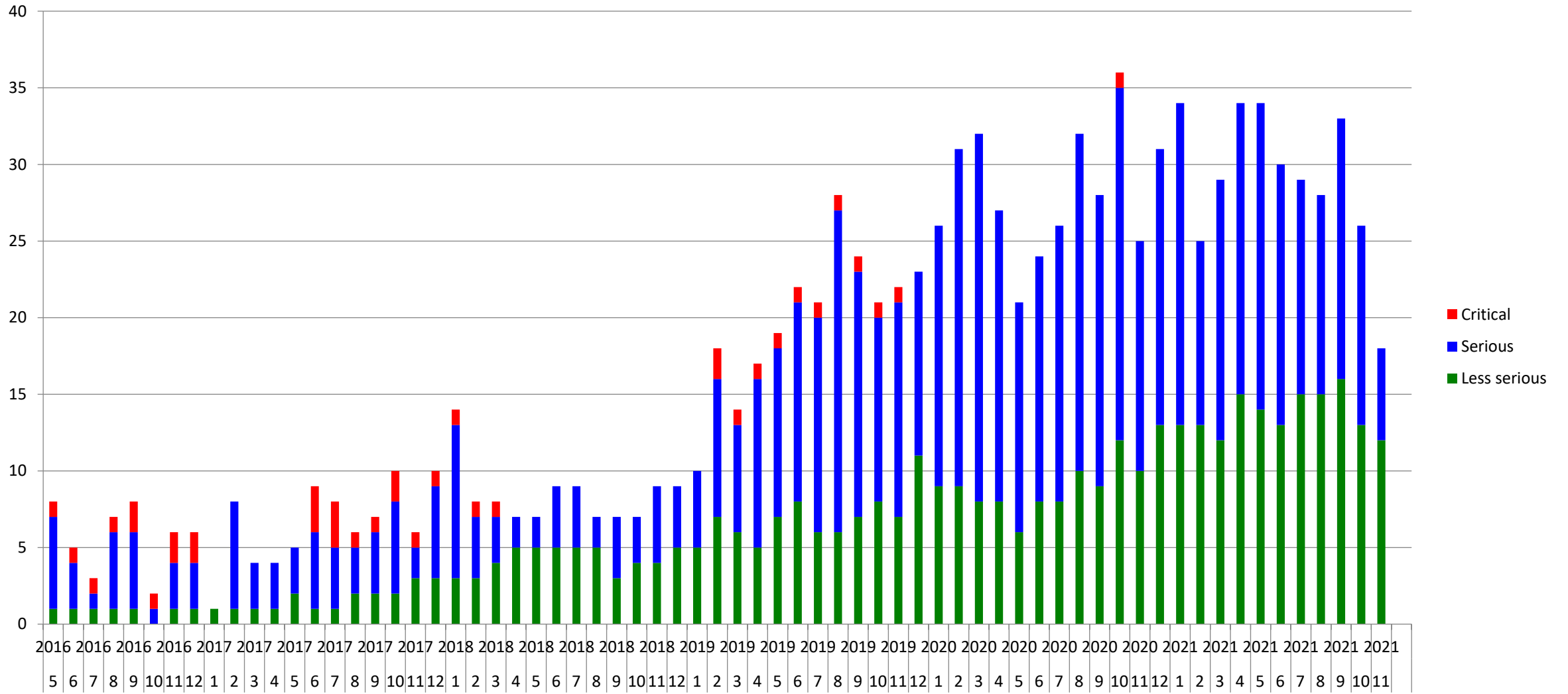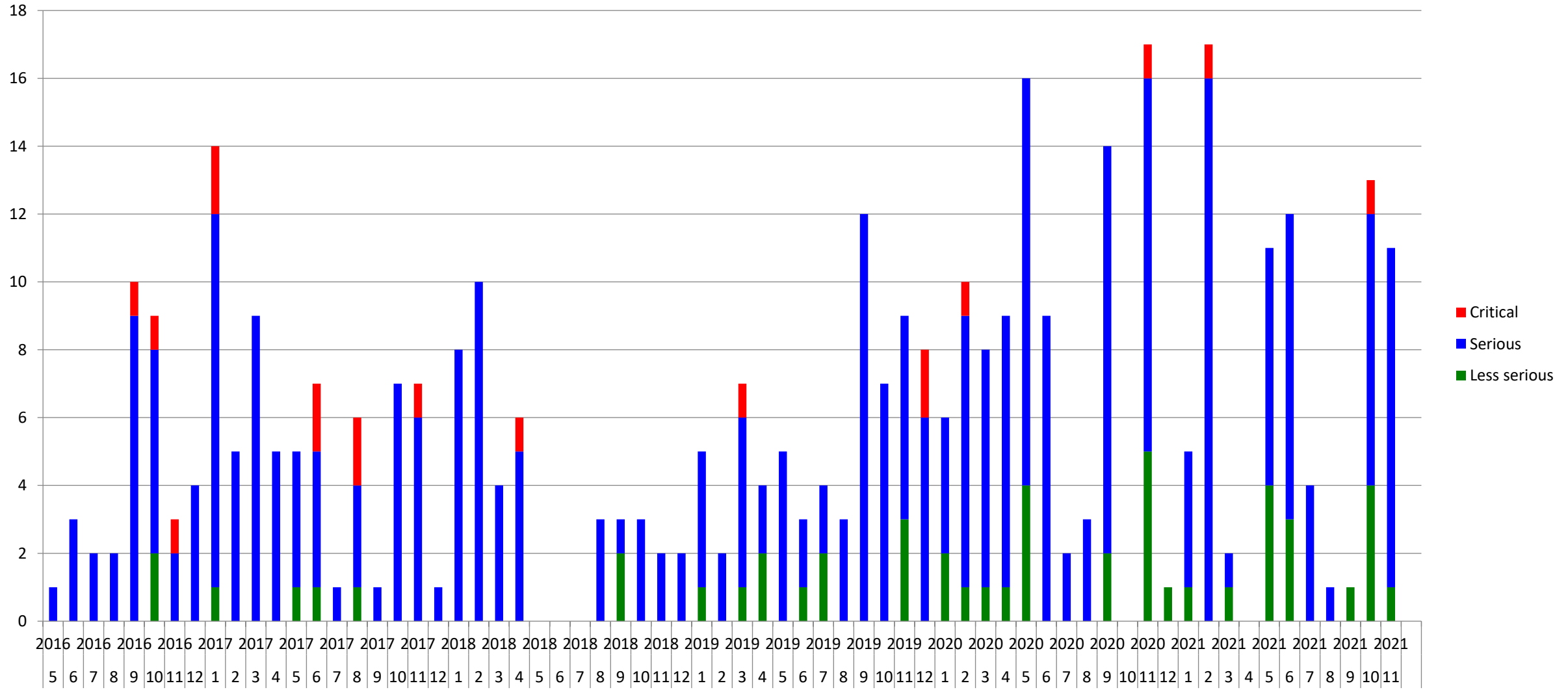
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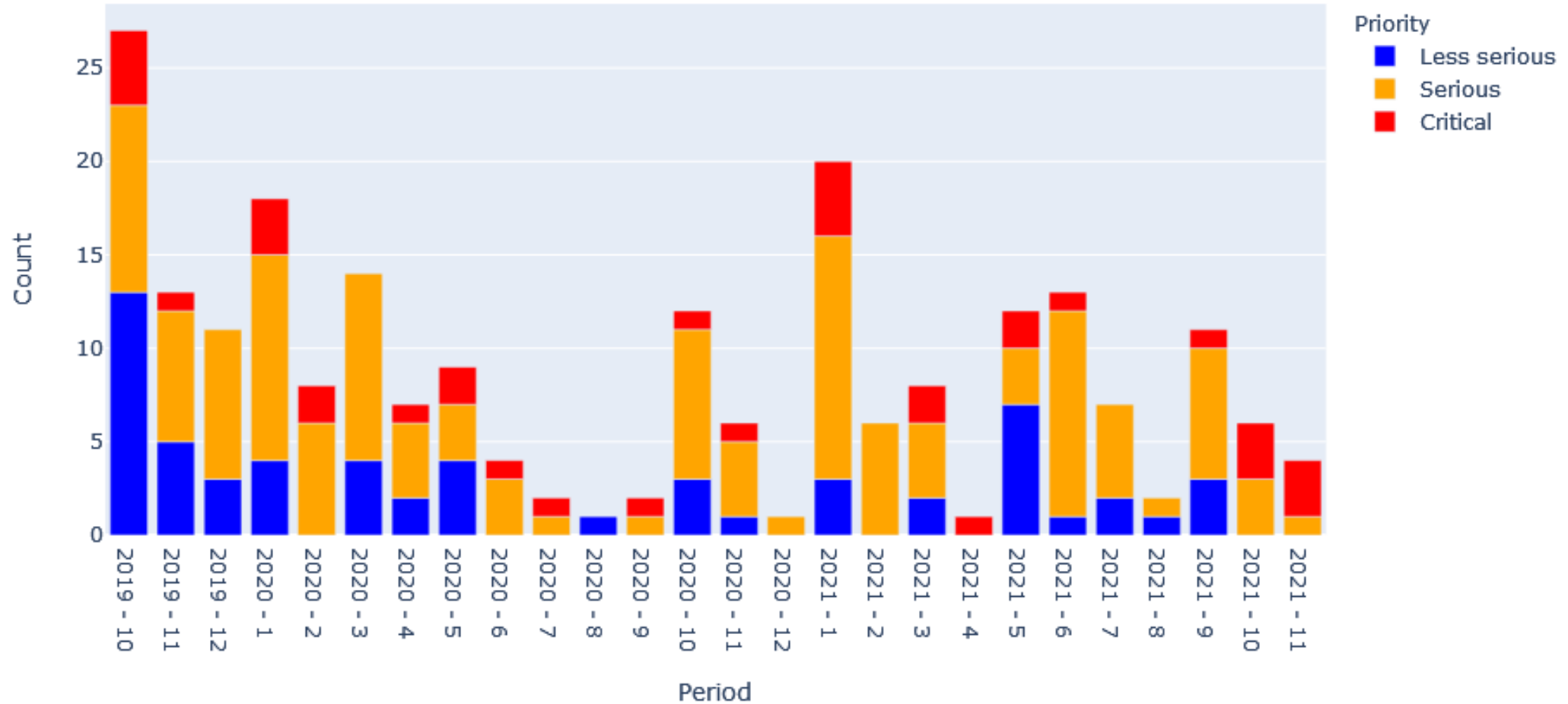# Error statistics

Bernt Garten Galtrud

Reported bugs LTM
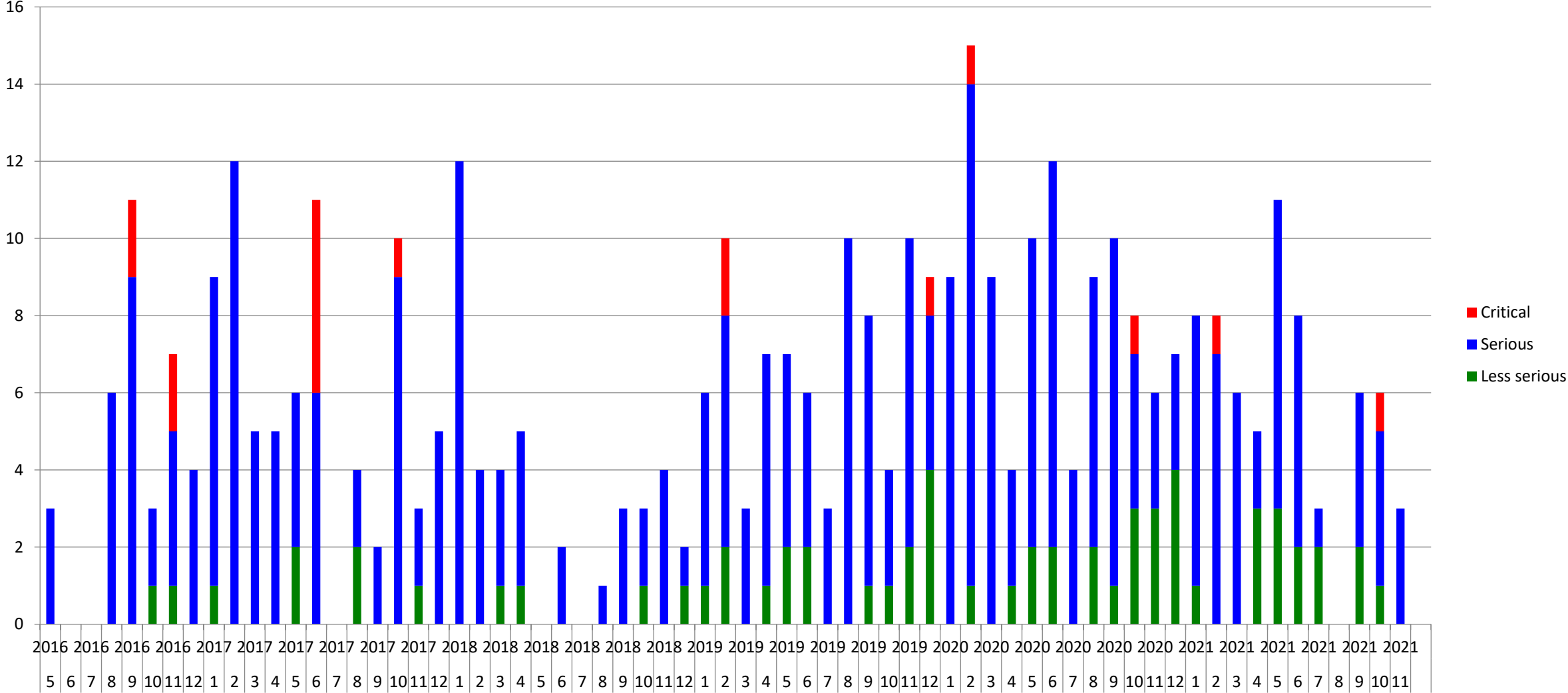
Open bugs LTM

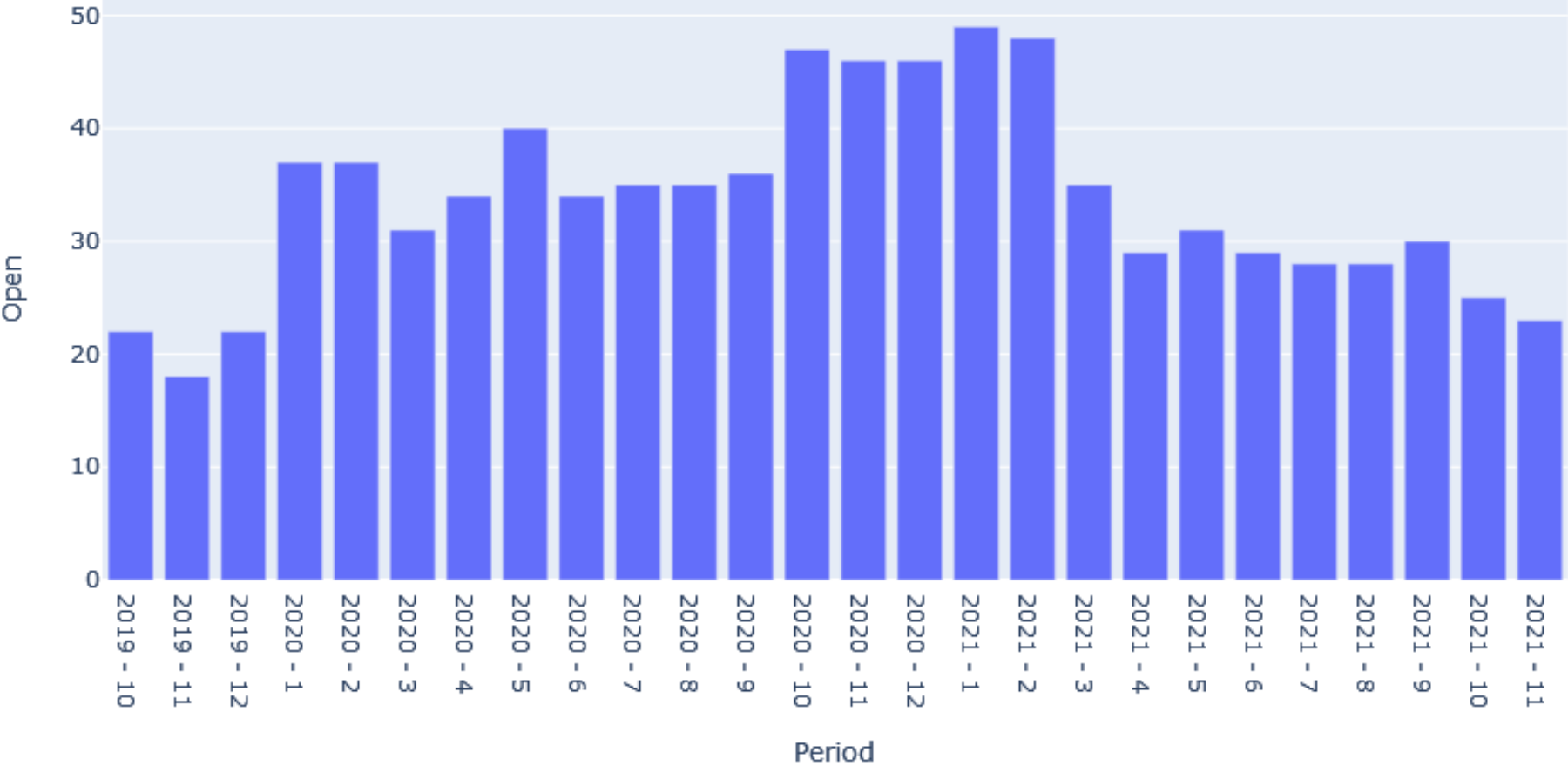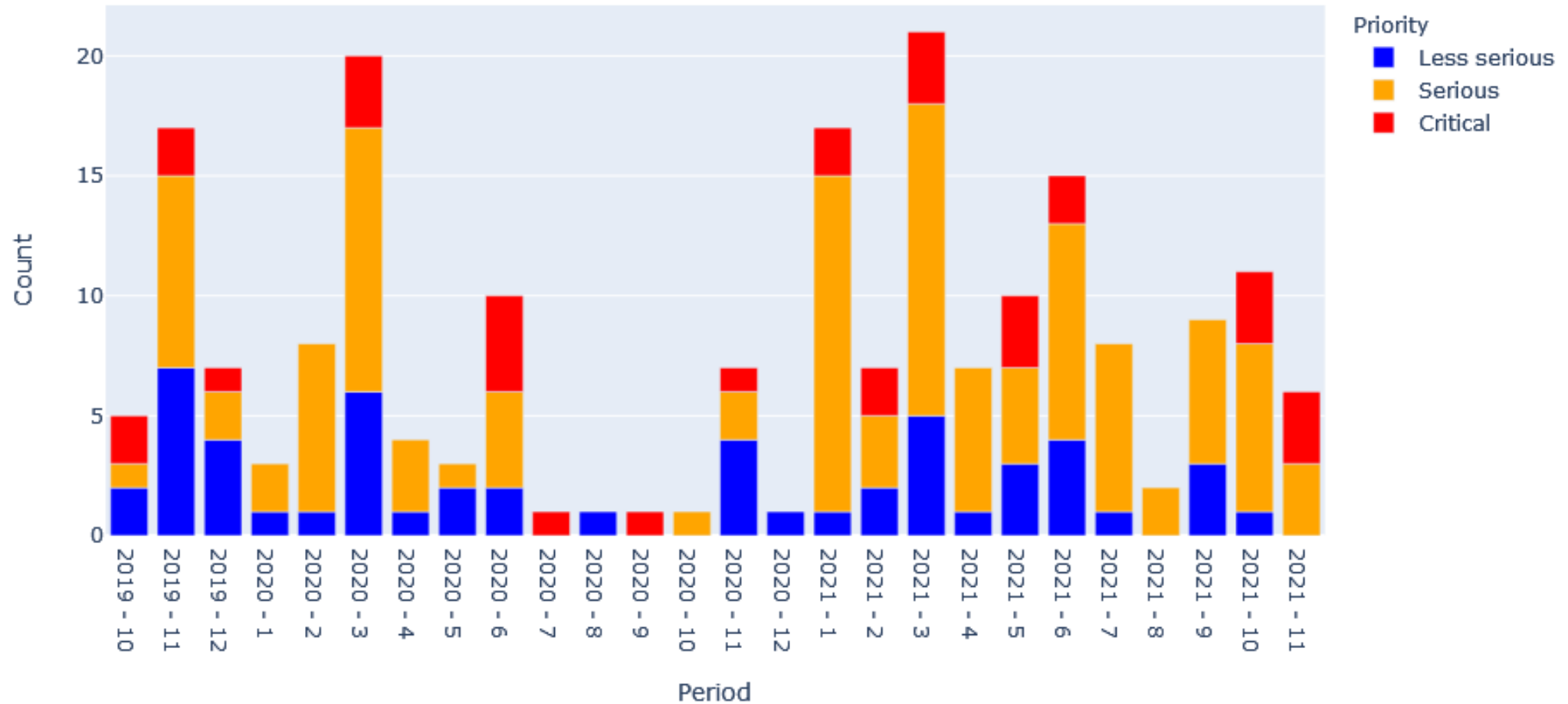Closed bugs LTM

Reported bugs SHOP

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Open bugs SHOP

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Closed bugs SHOP

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Information about model forums

Forum meetings in 2021

- SHOP-forum, 2 meetings
  - 2021: May 5th, November 4th
  - Next meeting: May 5th 2022

- ProdRisk-forum, 2: meetings
  - 2021: January
  - Next meting: (Februar) 2022

- LTM-meetings
  - v10 Workshop - August 2020
  - User Forum – September 2020
  - v10 Workshop - December 2020
  - User Forum – November 2021

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License funded projects

- ModSync
  - Is it possible or to what extent is it possible to synchronise communication and structures across technologies as: Fortran, C++, Python
  - Case used in the project is ProdRisk and has shown that direct sharing of memory between the API and the model is possible.

- InGrid
  - Build and add-on on top of SHOP that combines operation of the grid with operation of the generation assets. The starting point is the PhD-work of Per Aaslid

- FANSI upgraded to V10
  - Not started

- Creating a test system for LTM
  - One step linking is ready, implementation of atest system framework is in progress, testcase for LTM available from a summer job 2021.

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ET6204 Short-term hydropower scheduling

- Goes through the planning hieraki, the information flow between different planning levels, the water value concept, short-term hydro scheduling and touches lightly on methodology. Info

- The Cource is free of cost and is financed by "Energi Norge" and "Kompetanse Norge"

- The Cource gives 2.5 ECTS credits

- Information and reservation:

- https://www.ntnu.no/videre/gen/-/courses/nv20393

- Deadline for signing on: 3. January 2022

- Maximum 30 participants

- Arranged in the peiriod 17th January -15th March 2022

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ET6003 Scheduling in hydropower based power systems

- This course will give a solid competence for generation scheduling in systems dominated by hydropower

- Includes planning hierarchy, long-term, seasonal, and short-term hydropower planning

- Target group: Individuals working with generation scheduling in hydropower companies and other persons with interest within this field.

- Larger more extensive courses giving: 7.5 ECTS credits

- To be arranged in the period February – May 2022

- Based on web tutorials, workshops and training supervision

- Admission requirements: 3-årig engineer degree within a relevant field and some experience from practical scheduling

- Signing up through NTNU, announcement can be expected around 10th of December 2021.

- Interested? Contact the course responsible professor on email: olav.fosso@ntnu.no

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SHOP Interface architecture
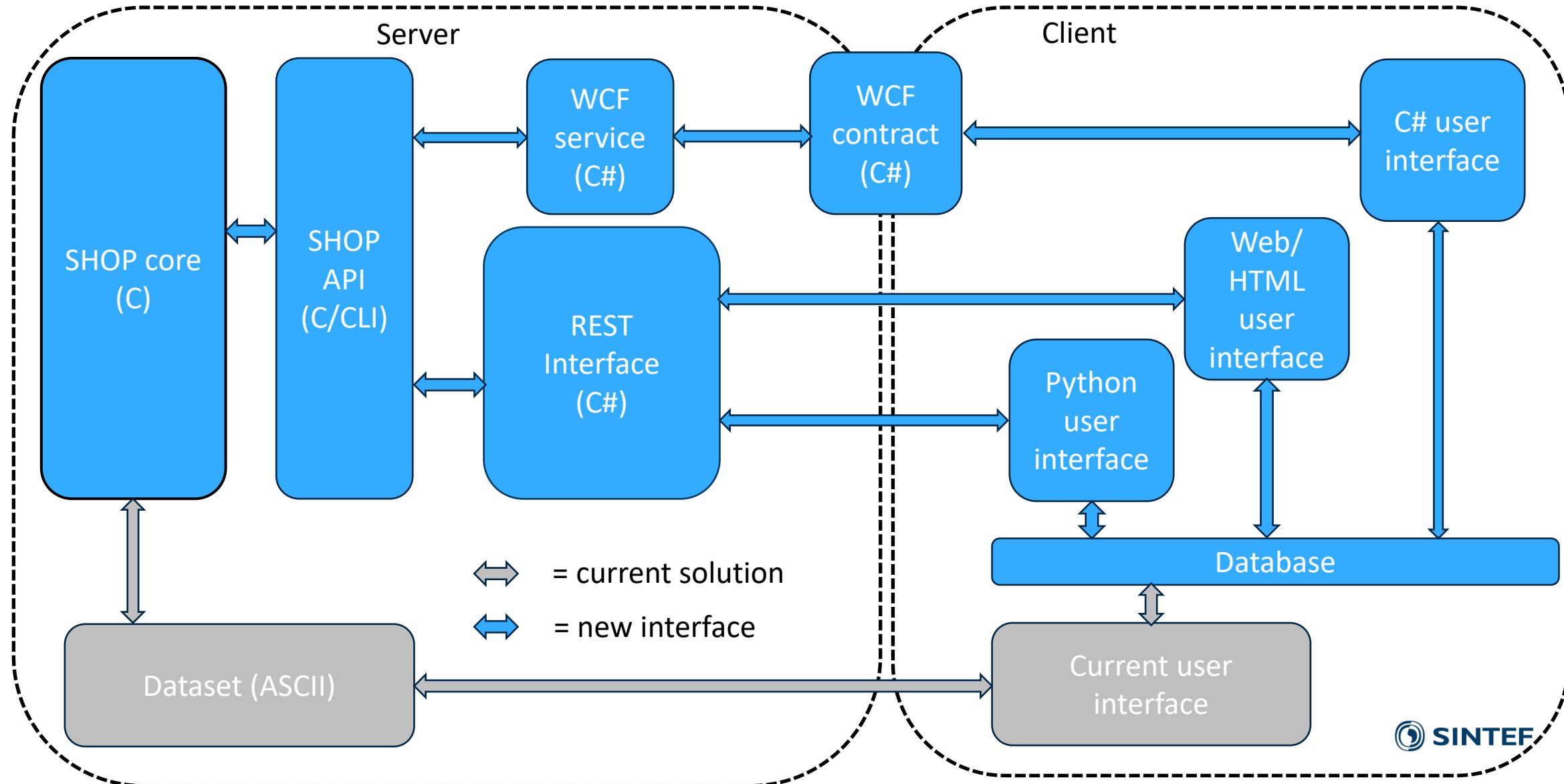
Technology for a better society