SINTEF

Minutes of meeting

User forum Hydro Power scheduling

Teams - virtual
25.09.2020

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DISTRIBUTION

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Agenda User Forum 2020

10:00 General Information
- Welcome and introduction
- Maintenance 2020
  - o Annual account 2019/20 and Budget 2021
  - o Error statistics
  - o Information and discussion
    - ▪ New contract templates
    - ▪ Status and decision: Establishing a reference group

10:30 Strategic projects
- Results from the energy model incubator project
- Next generation market models

11:00 Coffee break

11:10 Roadmaps and release plans
- SHOP and the simulator module
- ProdRisk
- EMPS

11:30 Discussion

12:00 End of meeting

Minutes of meeting
10:00 General Information
- **Welcome and introduction by Michael Belsnes**

Originally planned to have the User Forum at Gardermoen in March, due to Corona, we decided to have a virtual meeting instead. We will inform all users regarding the plans for User Meeting 2021, original planned for the spring, later this year. Michael presented the agenda for the meeting

- **Maintenance 2020**
  - **Annual account 2019/20 and Budget 2021**

Very high success rate on applications to the Research Council with the models as a important element. 5 projects with the models was granted in 2019. There are still some challenges, the council has expressed that development of hydropower optimization models can only be done through IPNs, not KSP.

SHOP-Prodrisk simulator, developed in HydroCen, has been developed and tested for a real case.
A question: Is it a product? Answer: Still a prototype which now has been tested. We wish to make it a product if the research is successful.

SHOP portal has been implemented, and we have the impression it has been received well.

SINTEF has sold several licences in 2019 and 2020, which has been used to fund new projects and to improve the models.

Reference to last user forum, your participation matters. Some of the things we discussed, are now realised as projects. We hope they in due time can provide additional value for the power industry.

Short walkthrough of the maintenance project. The organisation of the project is presented, with the most important contact persons.

Budget and consumption 2017-2021.
In 2017 there was an overshoot of the budget for v.10 with calendar time, which lead to a budget reduction in the model project for 2018-2020. Next year we therefore plan for a budget where income and costs are in balance.

Budget and incurred cost for 2020, shown per model. Some activities are almost at its budget limit. We will have a cost focus for the rest of 2020 to avoid a deficit in the project for 2020.

See incurred cost per delivery type in the model project. There are more slides regarding incurred cost in the power point than the presentation. Se the power point for more details and you are welcome to make contact if you have questions.

  - **Error statistics**

EOPS/EMPS/VanSimtap and ProdRisk by Birger
Increase in errors from February 2019, mainly because v.10 and ProdRisk API are included in the statistics.
Increase in errors are partly because we are maintaining several versions, at once.

SHOP by Hans Ivar
Reported bugs are on the decline, after the v. 13 release. Open bugs are at a more constant level. This is partially linked to our working methods, since some restructuring is done in modules if multiple bugs are found in them. After restructuring, a version is released with fix for the related group of bugs.

  - **Information and discussion**
    - **New contract templates**

Background, not all customers has a licence agreement yet. The license agreement will tell more about the rights to the model, and the partners obligations etc, and is part of a consistent contract framework that all user should have.

SINTEF will send contract proposals as soon as we have the time and resources for this. We aim to finish as many as possible in 2020, but most likely some will have to wait to next year for the license contract.

> ▪ **Status and decision: Establishing a reference group**

SINTEF will establish model forums instead of a high-level reference group. The model forum will fill the role a reference group would have. We therefore will not establish reference group. An example of the work in a model forum is illustrated with an example from SHOP.

10:30 Strategic projects
- **Results from the energy model incubator project by Hans Ivar Skjelbred**

Hans Ivar presented the work done in the Energy System Model Incubator project. The project is an internal initiative for more effective development of models with increased quality in released software. The results are also being used to contribute to long-term strategy for model development. The complete software management process from planning to maintenance has been in focus. Different programming languages and tools supporting the process have been compared. A list of suggestions for best practice and state-of-the-art tools is given in the conclusions and recommendations. The results from the project are summarized in a report.

Q: Does SINTEF want to use the same IT consultants over longer periods?
A: Not necessarily, it is important for IT consultants to receive technology updates as well. Some rotation or part-time employment could be a trade-off.

- **A new market model by Stefan Jaehnert**

The ongoing transformation into a renewable and integrated European power system challenges existing LTM models. It is a common understanding that the existing models are pushed to their limits and it is necessary to evaluate a new generation of power market models. There is an ongoing pre-project with a collaboration between NVE, Statnett, Statkraft and SINTEF assessing requirements, challenges, and possibilities to development a next generation of power market models. The aim of the project is to prepare a decision basis for the development of the next generation of the market models.

Status and preliminary results:
1. established a forum for continuous discussion.
2. Memo – status quo and future needs and requirements.
3. Memo – processes, tools, infrastructure, language
4. Memo – WP3 under preparation

The pre-project is part of a larger initiative, on how we are going to form the next generation of market models.

11:00 Coffee break
11:10 Roadmaps and release plans
- **SHOP and the simulator module by Hans Ivar**

The main changes in the v13 SHOP platform were briefly repeated. The way generator schedules are modelled has been changed, so they are now always fixed. This increases numerical stability and decreases the calculation time. Adjustments to the head loss module has also been implemented in the full mode.

Of planned activities in 2020 the first 3 of a total list of 5 has been completed.
1. Robustness check of varying time resolution
2. Ability to start SHOP at any minute within the hour
3. Restructuring of the best profit module
4. Consistent use of end water values
5. Restructuring of the pelton model

Roadmap 2020/2021
The SHOP forum will decide and prioritize some of the activities for 2021. The following major updates are planned in the current roadmap for 2020/2021 for SHOP.
1. YAML file format, more general format than ASCII. v13.5, November 2020 v13.4, October 2020
2. Tunnel module, a result of the gate/junction gate optimization work. v13.5, November 2020

3. New naming system, restructuring of input and output data. v14.0, February 2021

- **ProdRisk by Ellen Krohn Aasgård**
1. Plans, API for version 10, testing, and updating the documentation.
2. ProdRisk Forum and portal, for better communication for the users.
3. Smaller developments, extended cut format, user requests and other minor developments.
4. Bug fixes and support.
5. Reduce number of versions through transition to version 10, by supporting users in the upgrading process.
6. Improved testing of input via API.
7. Administration

Planned releases, new release of version 10 API in end of March.

- **EMPS by Birger Mo**

Version 9.9 new releases only if serious errors are reported.
Input_version release by agreement

Version 10 release schedule releases every second month approx. Hotfixes on severity of user need/problem. Improved on what we provide. Better information about the new releases.

Version 10, moving in the right direction, a bit slower improvement than we hoped. We expect an operative version by the end of this year. Version 10 will still need improvement in 2021.

Plans for v10, improve the automatic testing, the documentation needs upgrading. Removal of obsolete features. Obsolete features will be provided in the release notes.

Later, we wish to develop a complete API.

11:30 Discussion

When will version 10 no longer be a BETA version? And what are the steps?
The more testing and correcting are done, the closer we get. When we have more than 1 or 2 users operational, then we are official.

We will still support older versions in a transitional period.

Is there an official error list for the version 10?
Yes, it will be in the release notes. You will receive this every time we release a new version.

Best practices? Obsolete features SINTEF can be more proactive and say what should being used?
It varies a lot. So, it is very hard to give a general recommendation. We try to help the user with their cases.
Many users still use features which is not optimal or are missing documentation. Model forums could be used for helping with this.

User forums could be replaced by the model forums. Some of the information should come more frequent and more specialised to the participants. Maybe the user forum could change the content.

12:00 End of meeting

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TASKS

TASK NO	TASK	RESPONSIBLE	DUE DATE