

## INCOME 2019 Abstract

**Title:** Reusing provenance information captured in WebProv for automatic generation of experiment specifications

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### Abstract:

The provenance of a simulation model provides important context about its generation in a structured and computer-accessible form which facilitates interpreting and thus reusing the simulation model. It includes information about (i) simulation experiments that have been executed, (ii) data that has been used as input for calibration or validation of the simulation model, or (iii) other simulation models it has been based upon or cross-validated with [1]. In [2] we have presented the web-based provenance tool *WebProv* to access, store, and display the provenance information of simulation studies using the PROV ontology.

In combination with *WebProv*, we will show how our template-based simulation experiment generation approach [3] can facilitate the automatic generation and execution of simulation experiments across simulation studies, thus supporting the development of valid simulation models. As an example, we have captured provenance information of different models of canonical Wnt signaling and discuss which information is needed for automatically generating various types of experiments such as sensitivity analyses or cross-validation experiments.

### References

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[2] Budde, K., Smith, J., Ruscheinski, A., and Uhrmacher, A. M. (2019). WebProv: A Web-based Tool to Access, Store, and Display Provenance Information of Simulation Models. In: 10th Computational Modeling in Biology Network (COMBINE) Meeting, 15-19 Jul 2019, Heidelberg, Germany.

[3] Ruscheinski, A., Budde, K., Warnke, T., Wilsdorf, P., Hiller, B. C., Dombrowsky, M., and Uhrmacher, A. M. (2018). Generating Simulation Experiments Based on Model Documentations and Templates. In: Winter Simulation Conference (WSC 2018), 09-12 Dec 2018, Gothenburg, Sweden. Proceedings, published by IEEE, pp. 715-726.