

## Business or Research Project? A case study of the evolving business model of HUBzero

*Thursday, 11 October 2018 11:30 (15 minutes)*

Sustainability is a state that many science gateway efforts strive toward; however, this is still elusive. The HUBzero® platform has seen several phases of evolution on its sustainability path since it was first founded in 2007, and earlier existed as the infrastructure running the nanoHUB.org science gateway since 2002. A key learning is that there are several turning points that gradually take an effort from a project more toward operating as a business as it becomes self sustainable.

The science gateway nanoHUB.org was created under the vision of Professor Mark Lundstrom at Purdue University in 1998 as a focused functionality site for submitting simulation jobs to high performance computing resources and downloading results. In 2002, nanoHUB.org became the online delivery vehicle for the newly funded Network for Computational Nanotechnology. As users desired more functionality, a larger software team was built with expertise in middleware, web front end, database, and operations. All of these functions one would begin to recognize as development and operations within a commercial software enterprise. Coupled with the growth of the software team, Professor Lundstrom added Professor Gerhard Klimeck to the team as technical director, and later as director. Professor Klimeck took nanoHUB.org beyond the visionary founding, and worked within the nano communities to scale up the user base.

As the nanoHUB.org team grew, an annual National Science Foundation review panel suggested that the infrastructure could be used to run many science gateways, not just nanoHUB.org. At the same time, the software team was large enough that a career path beyond one project was desirable. In 2007, the team was therefore relocated from the research project to the Research Computing group in Information Technology, under the leadership of Dr. Michael McLennan and became the HUBzero group. The unit became responsible for its own revenue and began scaling out across many communities. Additional personnel were added to develop and run a reliable infrastructure with high uptime, to provide front line customer service, and to handle additional development tasks. The Purdue University model for operating such a group is a, “recharge center,” where the group is allowed to run in a non-profit manner.

In 2015, Dr. McLennan left, and Dr. Michael Zentner became director. By this time, the HUBzero group had operated more than 30 science gateways, and many others were using the open source HUBzero platform to run gateways. A key learning was that the recharge center model hindered platform innovation. The original costs of operation did not include several essential functions: internal research and development to continue innovating the platform and to replace aging functionality, sales and marketing to continue to grow the community, and helping HUBzero clients sustain their science gateways beyond their initial funding period. Today the HUBzero team is comprised of 25 full time professionals, has operated cash flow positive for 3 consecutive years, and is addressing these needs by altering the team composition and adapting its platform and business offerings, including OneSciencePlace.org to sustain gateways.

### Type of abstract

Presentation

### Summary

The HUBzero® platform has seen several phases of evolution since it was first founded in 2007, and earlier existed as the infrastructure running the nanoHUB.org science gateway since 2002. A key learning is that there are several turning points that gradually take an effort from a project more toward operating as a business as it becomes self sustainable. This presentation discusses these turning points as HUBzero went from inception through scale-up, scale-out, and sustainability, how these turning points changed the offering and team, culminating with the gateway sustainability solution OneSciencePlace.org offered by the HUBzero Foundation.

**Primary author:** Dr ZENTNER, Michael (Purdue University, HUBzero)

**Co-authors:** Dr GESING, Sandra (University of Notre Dame); OLABARRIAGA, Silvia (University of Amsterdam)

**Presenters:** Dr ZENTNER, Michael (Purdue University, HUBzero); Dr GESING, Sandra (University of Notre Dame); OLABARRIAGA, Silvia (University of Amsterdam)

**Session Classification:** Innovation for Open Science with SMEs

**Track Classification:** Area 6. Business models, sustainability and policies