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# IRIS

International Research Institute of Stavanger

## **Virtual Arena for Drilling and Well Operations**

Virtual Arena will be an independent and open facility for research and innovation within drilling and well operations. The physical parts of Virtual Arena will be located at IRIS but vital parts of the infrastructure will be accessible for remote users through a web portal. Virtual Arena will build on two existing infrastructures: Ullrigg, a full scale drilling rig in Stavanger, Norway, and the IRIS Virtual Rig. IRIS Virtual Rig is an advanced drilling simulator with focus on downhole effects during drilling operations. When combining these two facilities into one research infrastructure, a unique research laboratory will be available both nationally and internationally to the academia and to the industry.

IRIS Virtual Rig has been developed by the Drilling and Well Modeling group at IRIS and has been used mainly by Norwegian research communities but also by small innovation companies working with automated drilling. The Virtual Rig is a drilling simulator based on advanced modeling of well flow and drill string dynamics, and a visualization of the rig floor. A real-time center complementary to the Virtual Rig, is also established at IRIS. Recently, the Virtual Rig has been made available through remote access. As the first user, The Federal University of Rio de Janeiro in Brazil, UFRJ, has access to the Virtual Rig through a web service solution. In this presentation we will give an overview of the status and plans for Virtual Arena. In particular, we will focus on the development of a web client for students, lecturers and scientists. The web client will enable remote access to the downhole simulator of Virtual Arena and will serve as an education, development and testing platform for students and researches within the drilling community.

### **Biography:**

Jan Einar Gravdal is a senior research scientist at the International Research Institute of Stavanger (IRIS), Norway. He holds an MSc in Mathematics from the University of Bergen and a PhD in Petroleum Technology at the University of Stavanger. His PhD thesis was on detection and evaluation of gas kicks in Managed Pressure Drilling (MPD). Jan Einar started working at IRIS in 2002 and has been involved in many projects related to development and commercialization of innovative drilling technologies for monitoring and control of the drilling process. Among these are the DrillTronics and DrillScene products, which have been pioneer technologies within model based drilling automation. Jan Einar is now leading the development of Virtual Arena, a large research infrastructure for drilling operations.

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