



Online final workshop of VESTEC - Interactive supercomputing for urgent decisions in crisis situation

February 23 and 24, 2022

Keynote on Feb 23, by Marta Pieńkowska, Post-doctoral researcher, ETH Zurich:

Urgent Computing Integrated Services for Earthquakes

ABSTRACT

Deadly earthquakes are unpredictable and relatively rare, but have a high socio-economic impact. Estimating this impact is crucial for hazard assessment, yet doing so from historic events alone remains difficult - with large earthquakes being rare we often lack sufficient data to precisely extrapolate this information to new events. Physics-based simulations are a powerful tool that can provide detailed information that complements recorded data and contributes to a rapid characterization of the ground shaking. Near real-time earthquake simulations, however, are very challenging and computationally prohibitive in a realistic setting, especially given the strict time constraints. Within the ChEESE project we have developed a prototype of a workflow that validates the feasibility of a Seismic Urgent Computing (UC) service, connecting many tools that together perform end-to-end simulations with minimal or no human intervention. We thus demonstrate that deterministic modelling of ground motions can indeed in the future contribute to the short-term assessment of seismic hazard in the aftermath of an earthquake, helping to assess losses or to direct relief. In this talk I am going to walk you through the main challenges of seismic UC and demonstrate our workflow prototype, The Urgent Computing Integrated Services for Earthquakes (UCIS4EQ)