

Visual Exploration and Sampling Toolkit for Extreme Computing Combining real-time data, HPC, and in-situ visualisation techniques to enable urgent decision making for disaster response

The VESTEC project: What are we about?

Author: ndi

Driven by our three use-cases, the VESTEC project is exploring the fusion of real-time data, HPC, and in-situ visualisation to enable urgent decision making in response to disasters. Led by DLR, this H2020 funded project involves nine partners from across numerous disciplines of computing, and aims to further develop the technologies required to achieve this goal and ultimately demonstrate the role that future HPC systems an play in this field. Whilst the challenges are significant, so are the potential benefits to society as a whole and our HPC community if supercomputers can be proven as important tools for real-time disaster response in the future.

Project partners Technosylva, Kitware and DLR are providing their visualisation technologies to support the urgent decision making for our three use-cases.

EPCC and **DLR** are concerned with how to drive simulations running on HPC machines. The VESTEC system federates over multiple supercomputers and when an urgent workload must be run it matches against the machine most suited for it at that time.



Fighting wild fires

Project partner Technosylva are world leading providers of wildfire simulation. In this project they aim to integrate real – time data and weather with their simulations automatically.





Partner FBK are experts in modelling disease spread via mosquitos. Their aim is to leverage real-time data from the field in combination with simulation to provide response advice.

Real-time data streams into the VESTEC system, e.g. satellite data or weather data. The VESTEC system then determines which data is relevant for what on-going incidents and processes this as appropriate via a workflow approach.

Simulation outputs are fed into in-situ visualisation technologies e.g. Intel's University's Sorbonne topological extraction library TTK, and Kitware's ParaView/Catalyst which also connects simulations and visualisations.

underway

Tracking the spread of Mosquito Borne diseases







Project started: 1st September 2018



Project ends: 31st August 2021

Responding to extreme space weather

Extreme space weather can have serious consequences for satellites and other space craft. KTH aim to fuse real-time sensor data and simulation, supporting the mitigations of extreme space weather and reducing the economic impact.