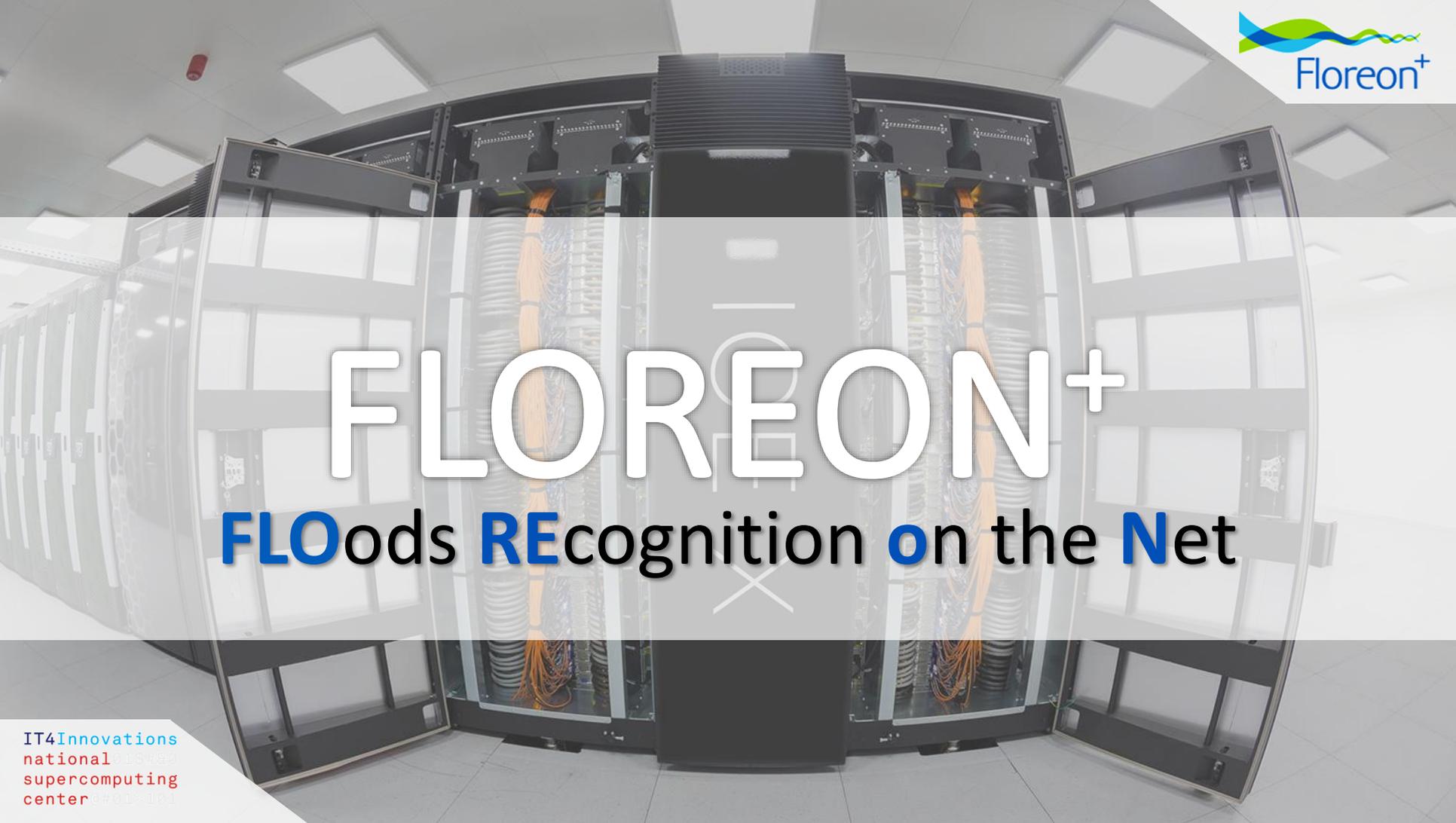


Floreon⁺

What-If Analysis

Patrik Veteška



FLOREON⁺

FLOods **RE**cognition **on** the **Net**

FLOREON⁺ - FLOods REcognition on the Net



Decision support system for disaster management

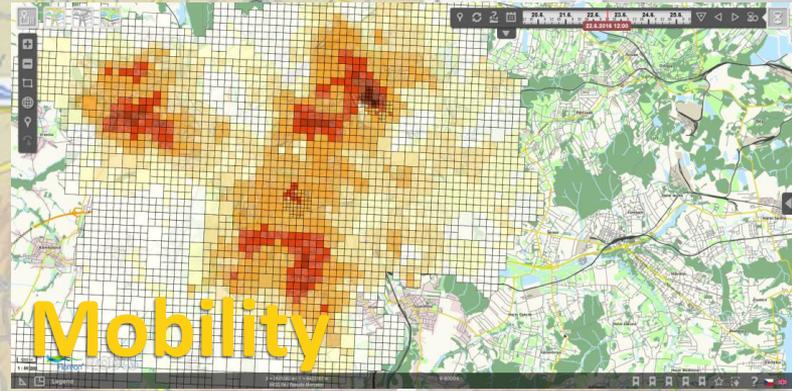
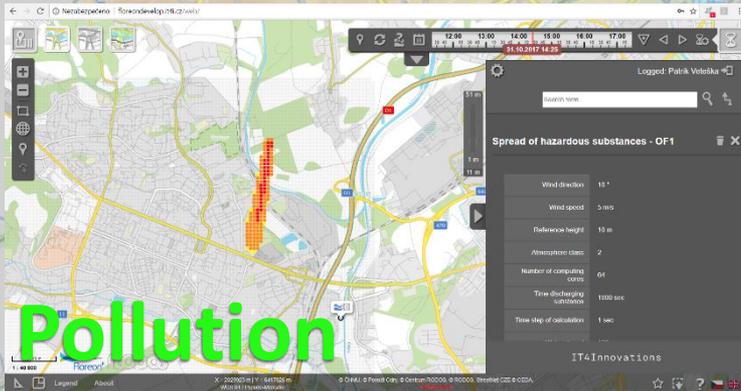
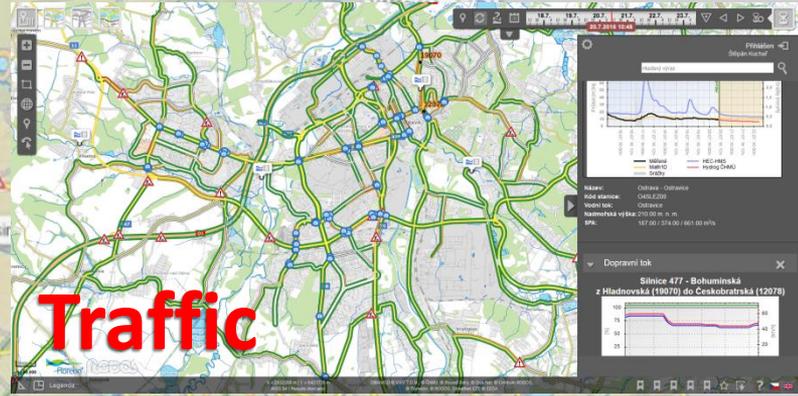
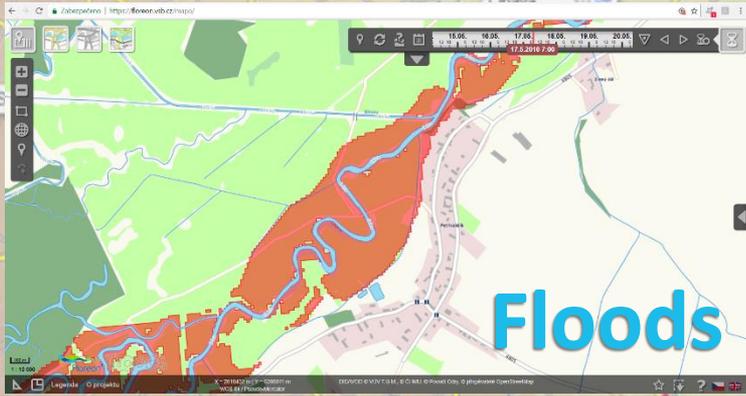
Solutions for monitoring, modelling, prediction and crisis management support

Providing and integration of different crisis management domains

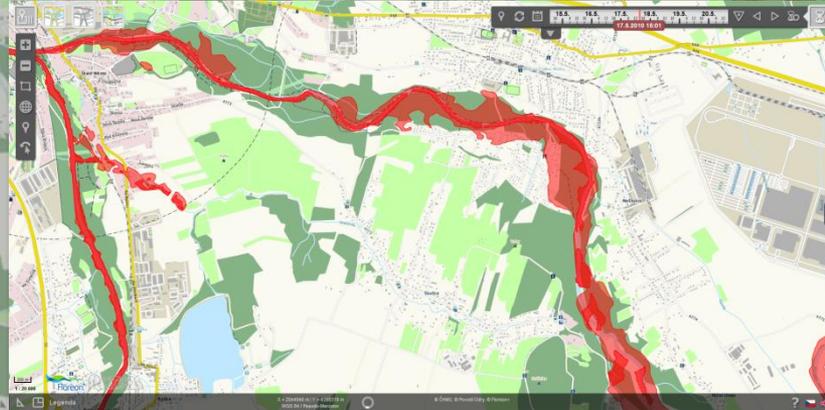


Developed for hydrological modelling in Moravian Silesian region

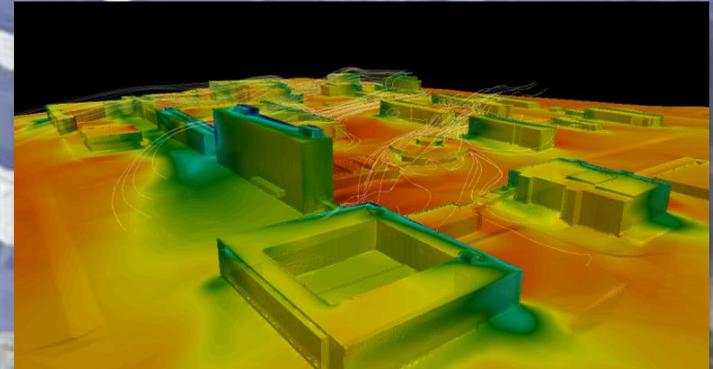
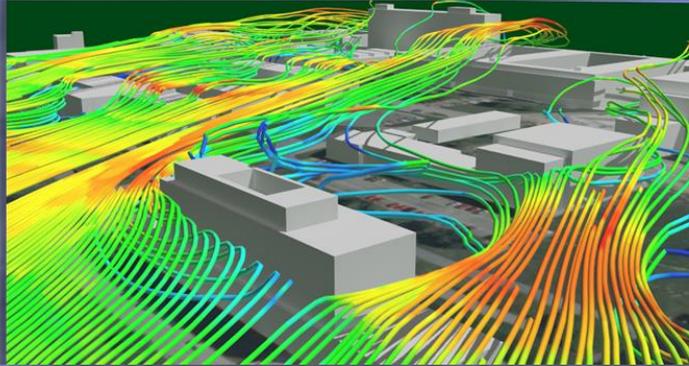
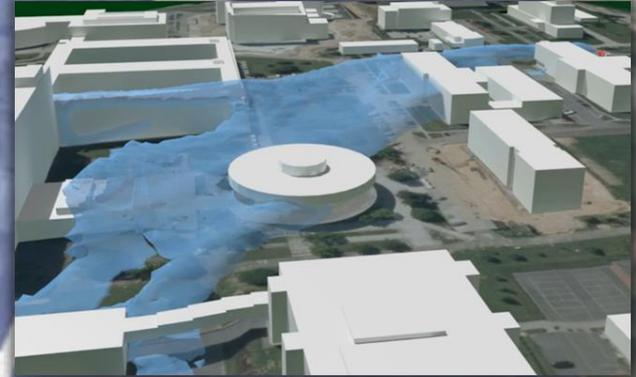
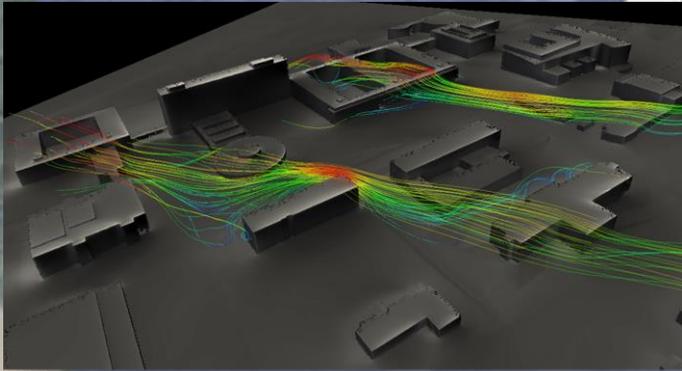
Under development since 2006



Flood Modelling

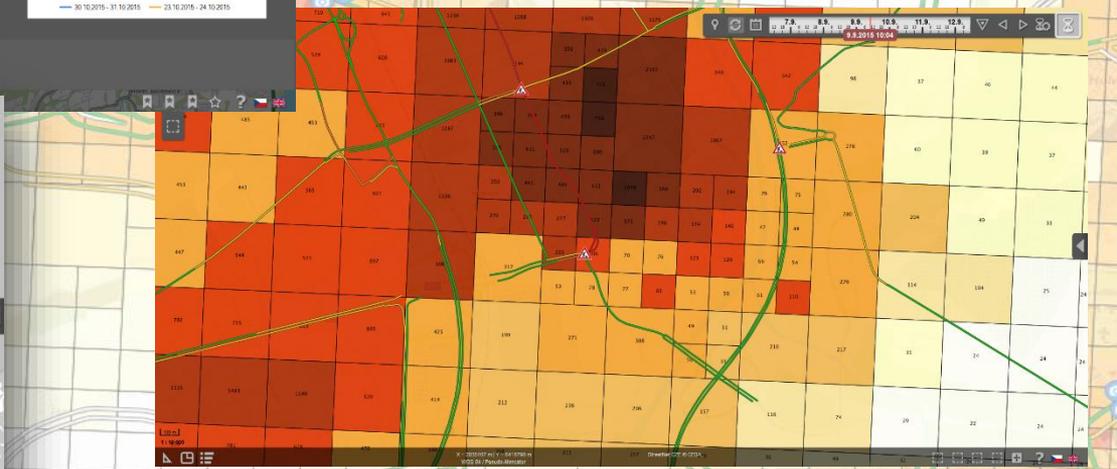
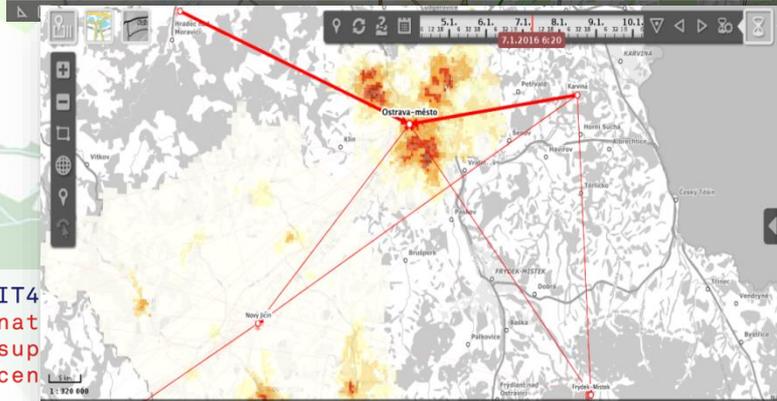
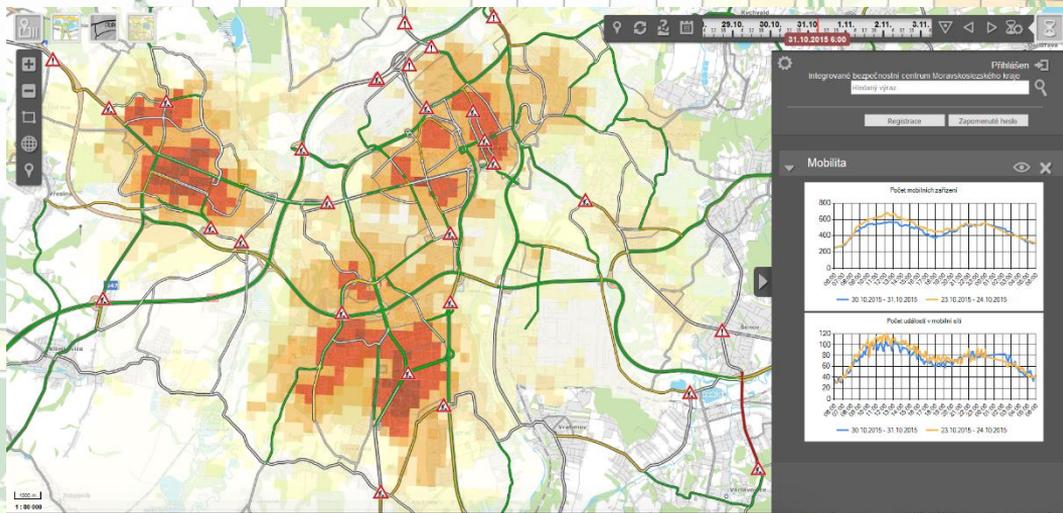


Toxic Gas Leak and Pollution Modelling



Mobility

Ice Hockey World Championship 2015: Tested by IBC



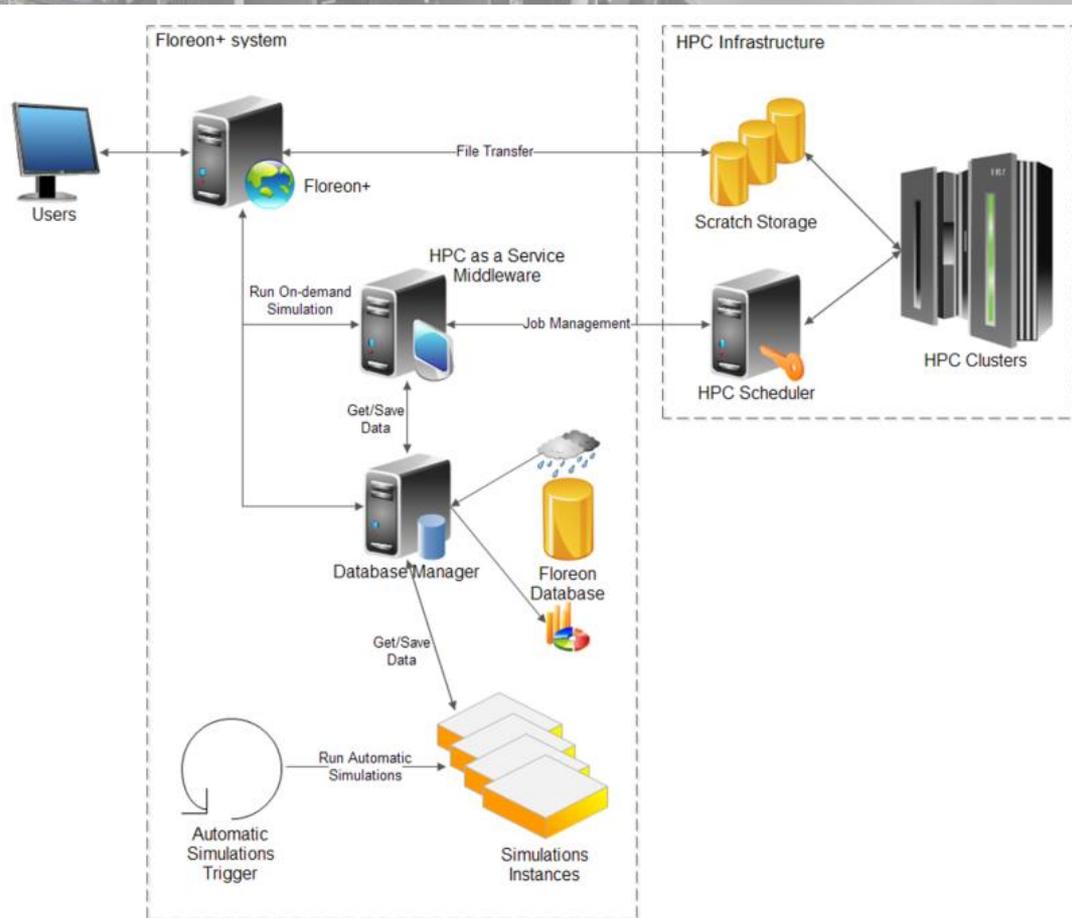
Why use supercomputers

- Executing multiple simulations in parallel
- Running extensive simulations
- Decreases time required to get the simulation's results during critical events
- Useful for model calibration
- Uncertainty modelling for input parameters of the models
- Occurrence of multiple critical events at the same time

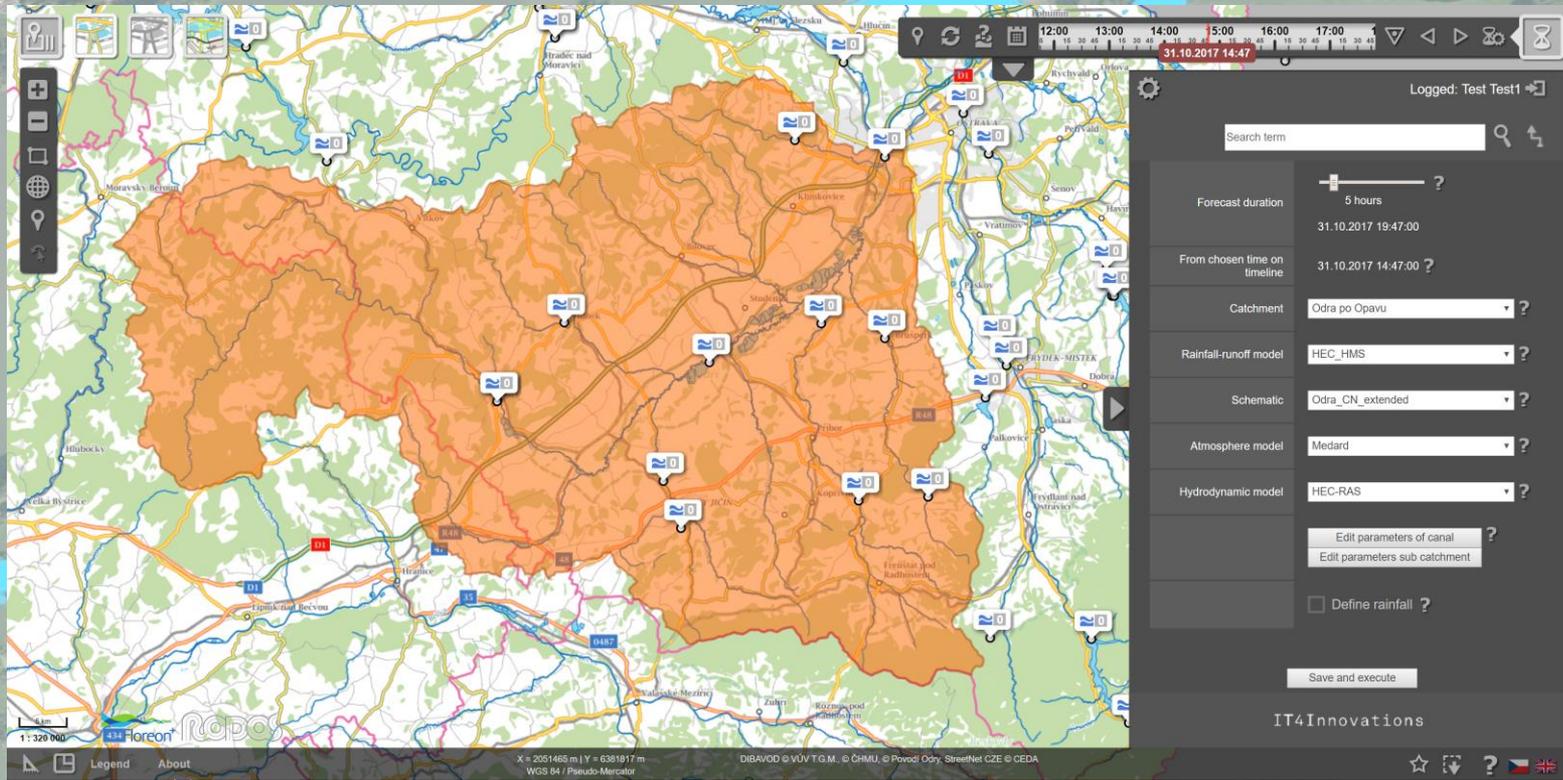


Dynamic data processing in Floreon+ system

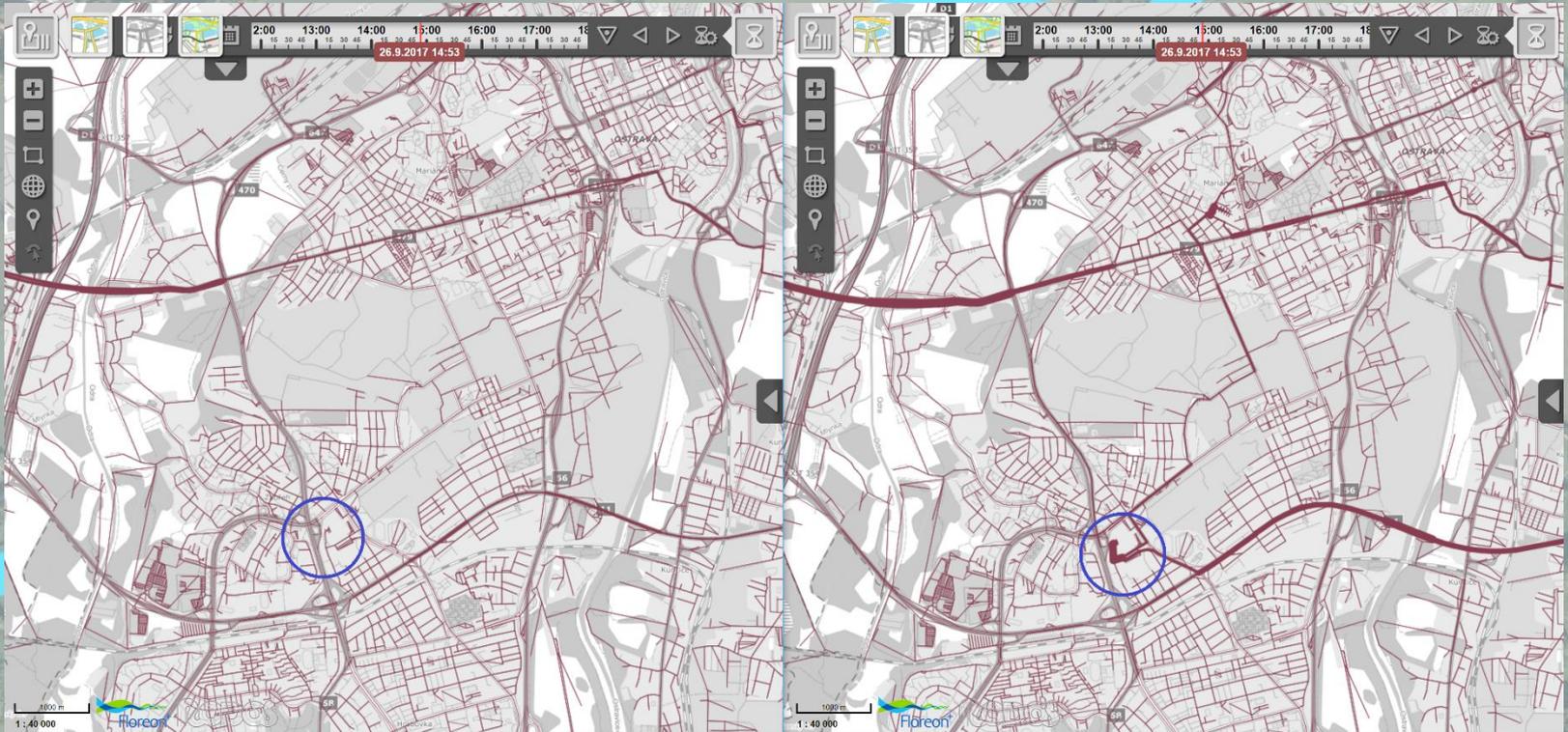
- Automatic simulations
 - Hydrologic simulations
 - Rainfall-Runoff models
 - Hydrodynamic models
- What-If (on-demand) simulations
 - Hydrologic simulations
 - Traffic macro-modelling (BC)
 - Spread of hazardous substances
- Floreon+ system integrates HPC as a Service Middleware for remote execution



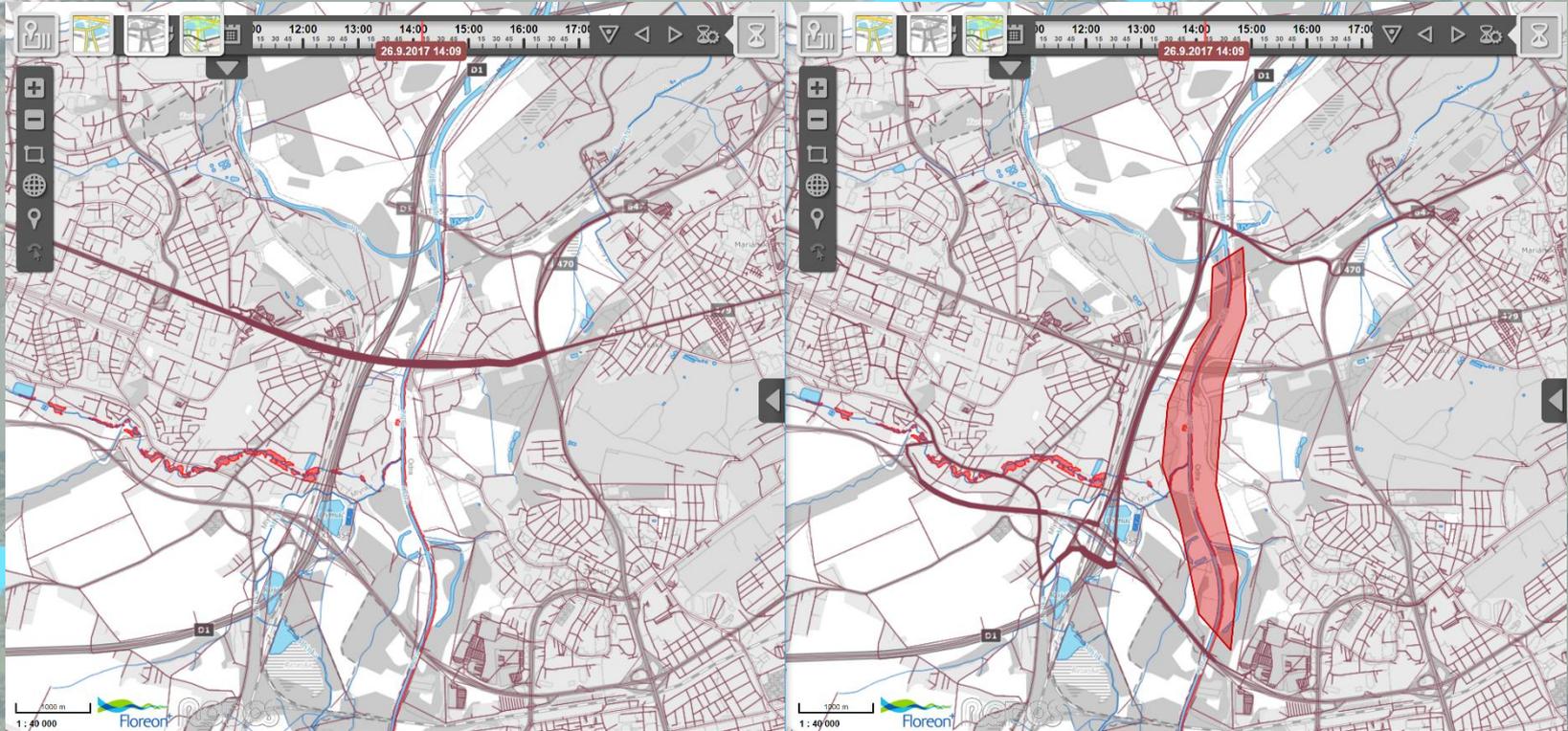
WIA – Hydrological simulation



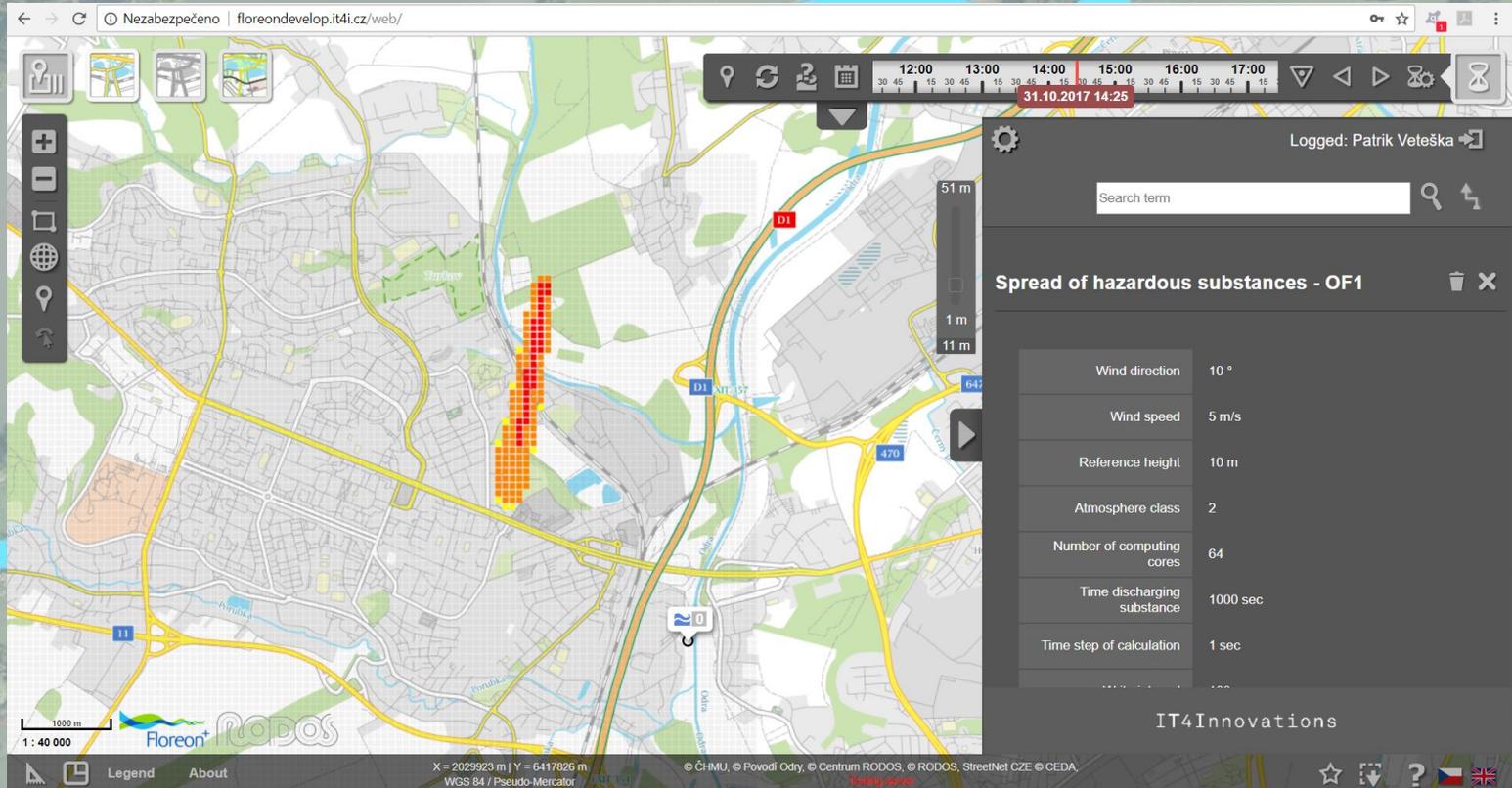
WIA – Traffic macro-modelling (BC)



WIA – Traffic macro-modelling (BC)



WIA – Spread of hazardous substances

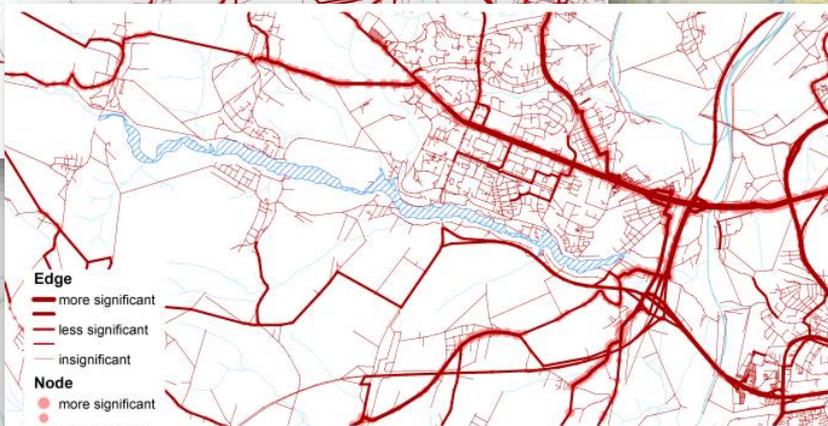


Future work: Different domains interaction



Edge
— more significant
— less significant
— insignificant

Node
● more significant
● less significant
● insignificant



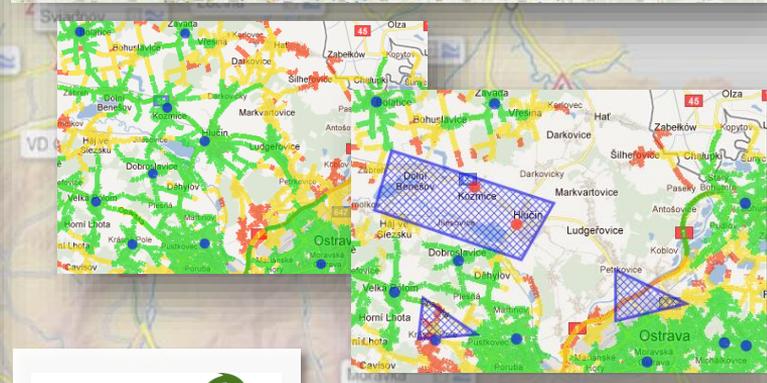
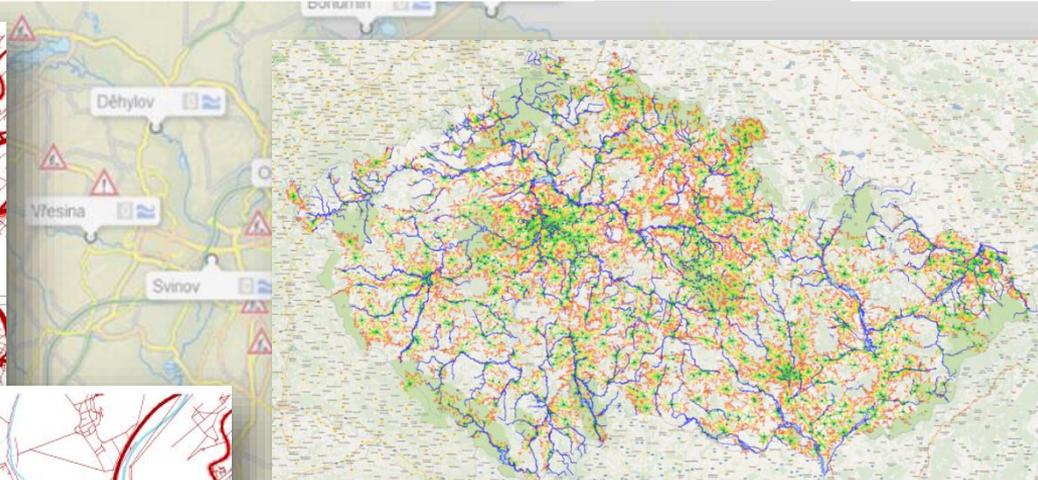
Edge
— more significant
— less significant
— insignificant

Node
● more significant
● less significant
● insignificant

Inundation area



IT4Innovations
national supercomputing
center
IT4I © 2016





A topographic map of the Ostrava region in the Czech Republic, showing a network of Floreon+ nodes. The nodes are represented by small blue and white icons with the letters 'R' and 'F' inside, scattered across the map. Many nodes are accompanied by red triangular warning symbols. The map includes labels for various towns and villages such as Opava, Ostrava, and Český Těšín. A large, semi-transparent grey banner is overlaid across the center of the map, containing the text 'FLOREON+' in large, white, bold, sans-serif capital letters.

FLOREON+