

SIBIRCON 2019
Ekaterinburg 25-27 Oct 2019

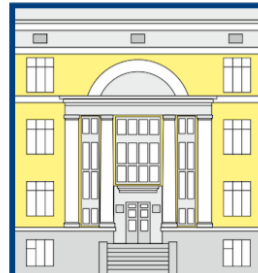
Virtual reality as an instrument of computer visualization

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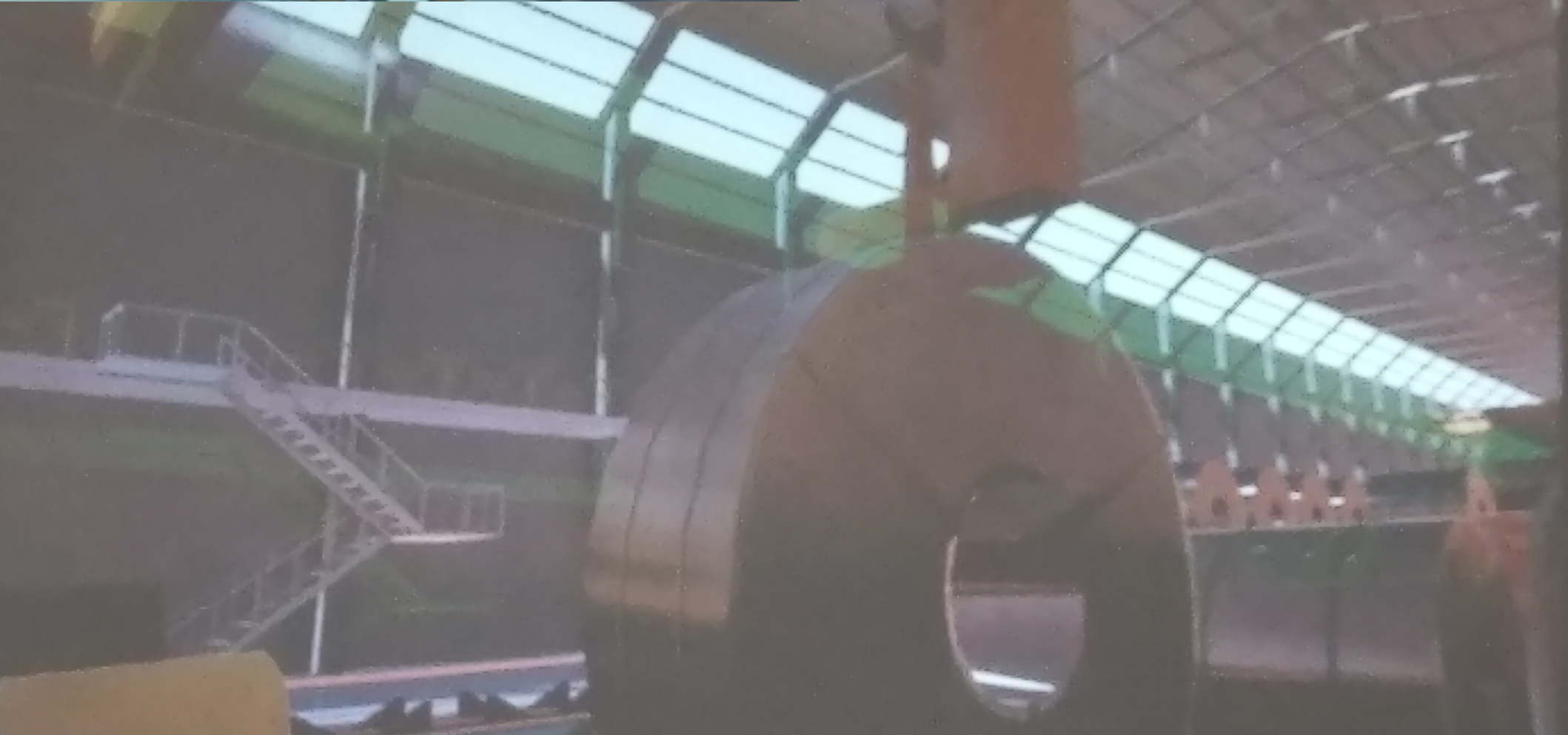
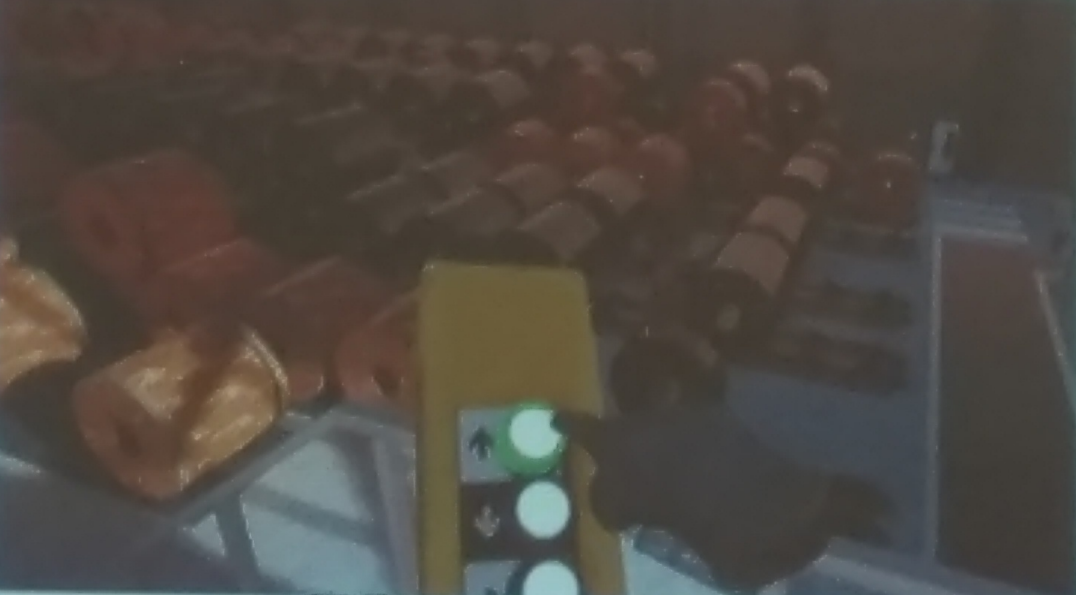
**Ural Federal
University**

named after the first President
of Russia B.N.Yeltsin

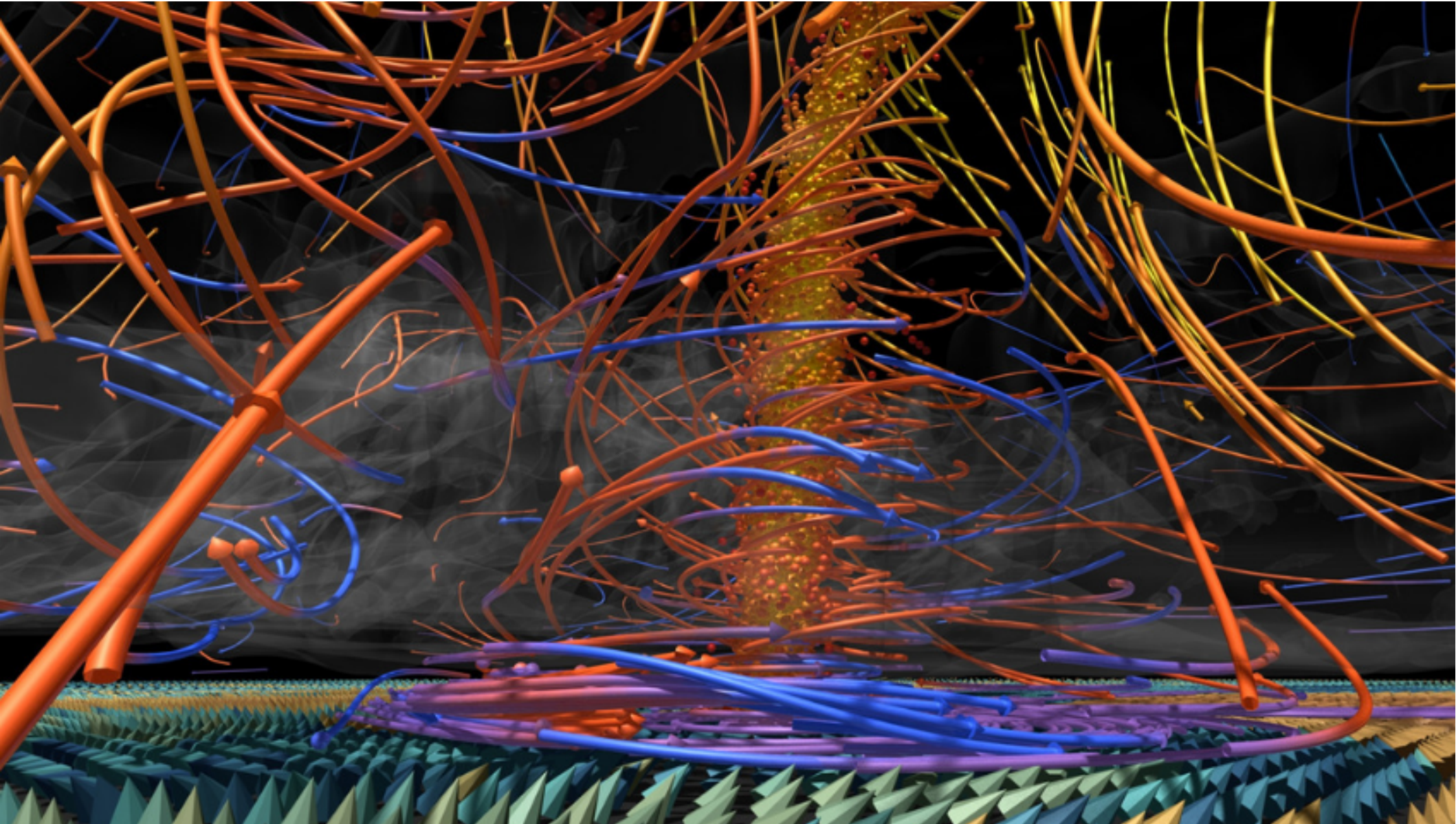


**Институт математики
и механики
им. Н.Н. Красовского**

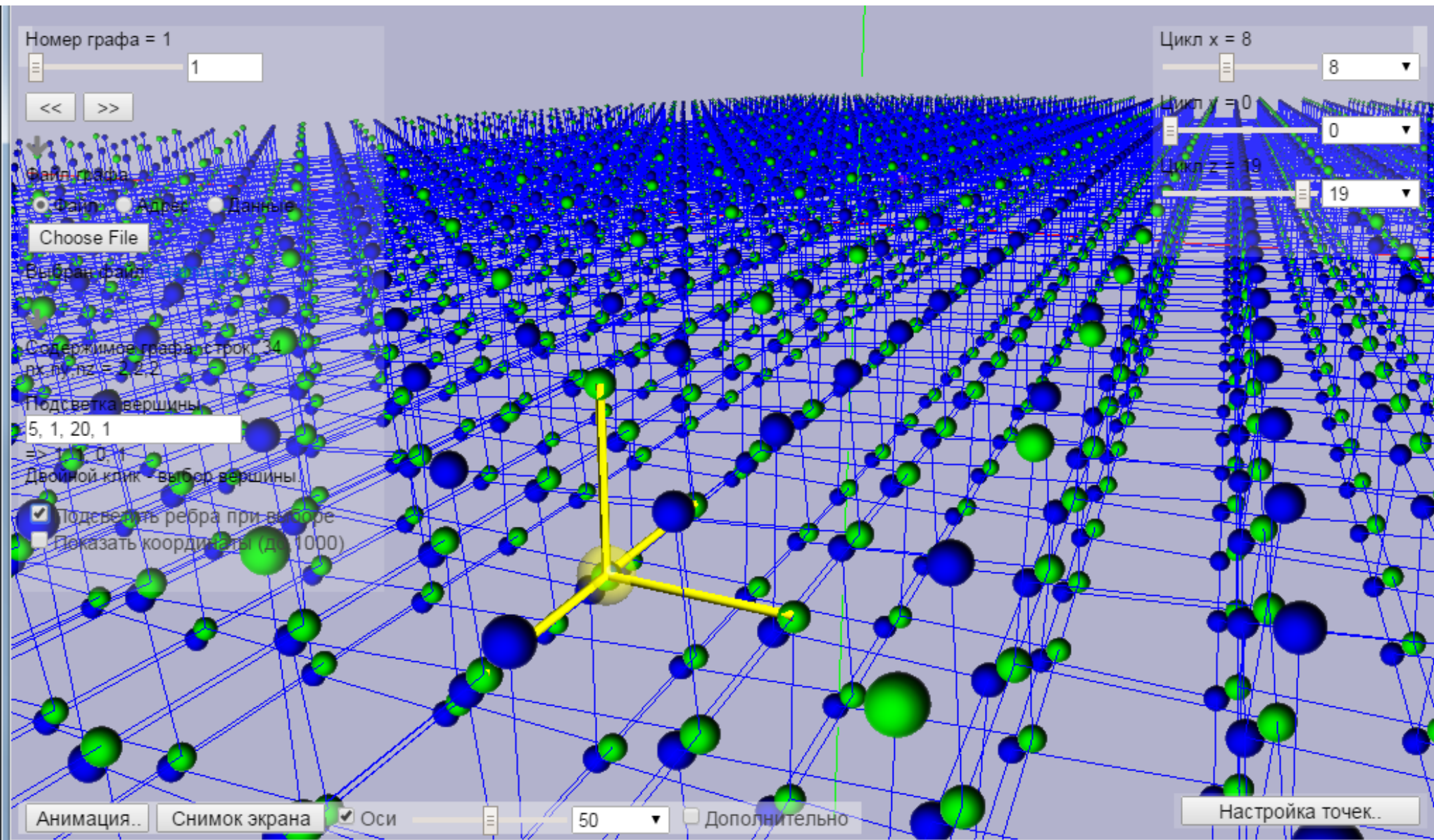
VR matters!



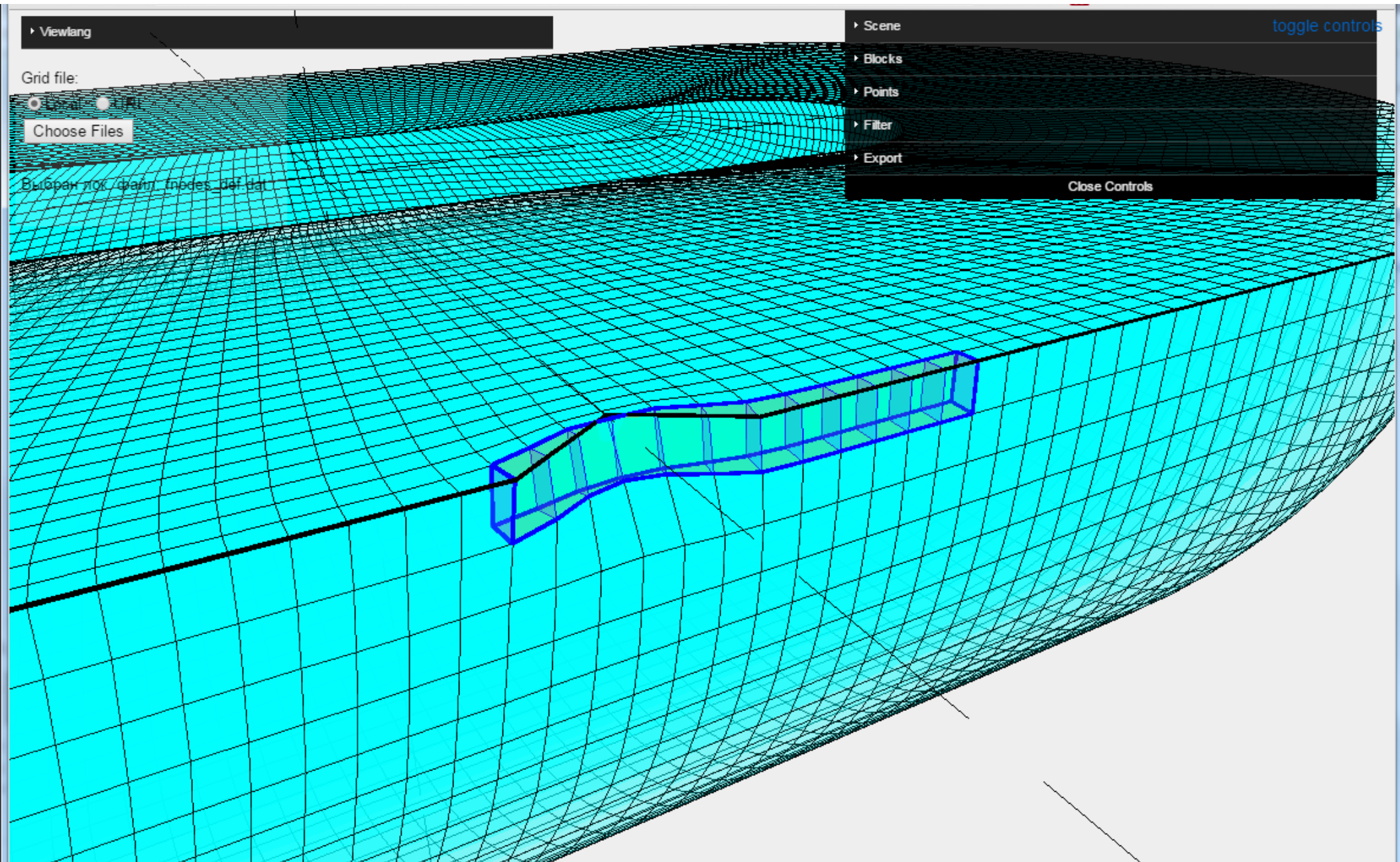
VR in scientific visualization



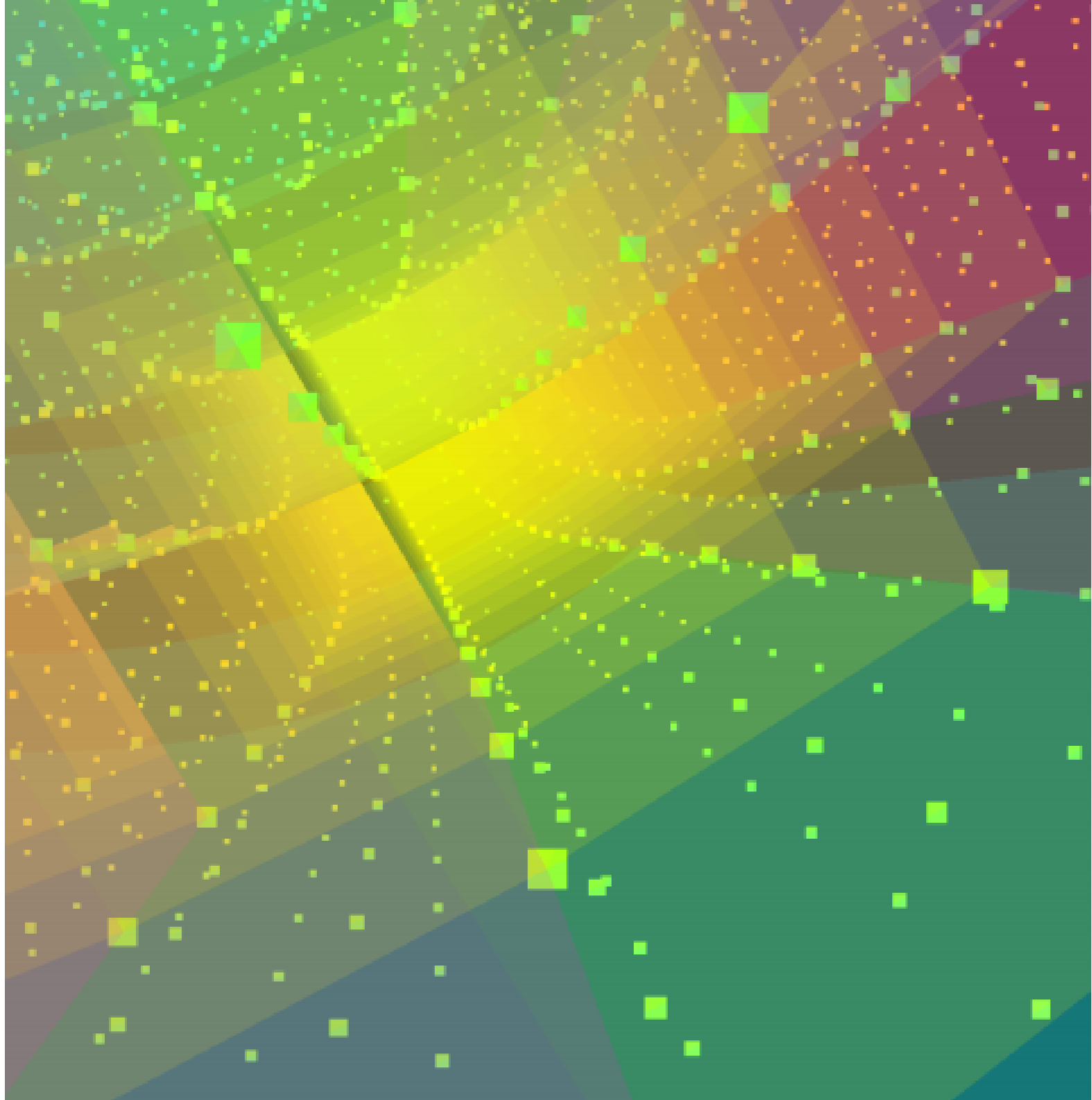
Cyclic graphs



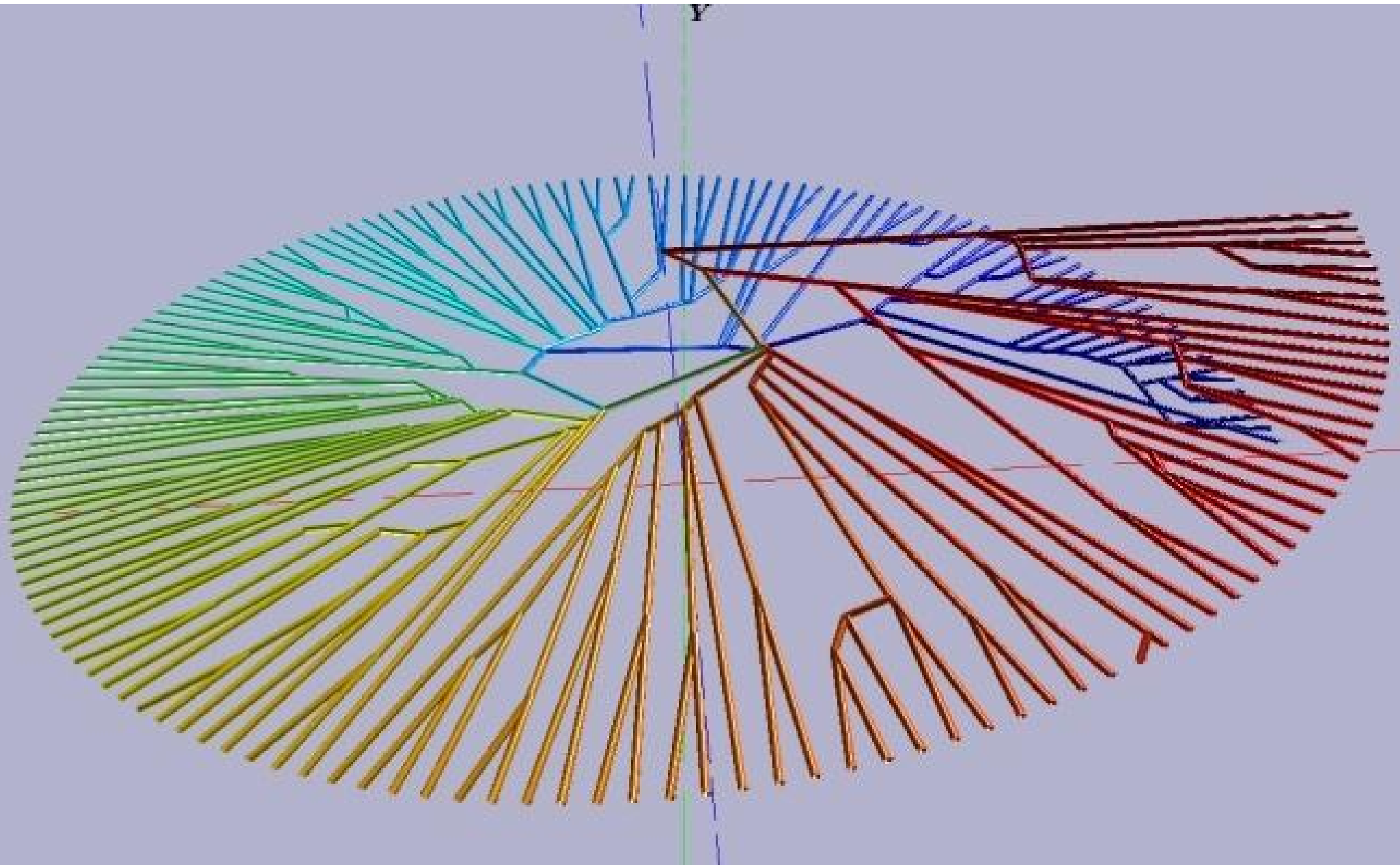
Computational grids



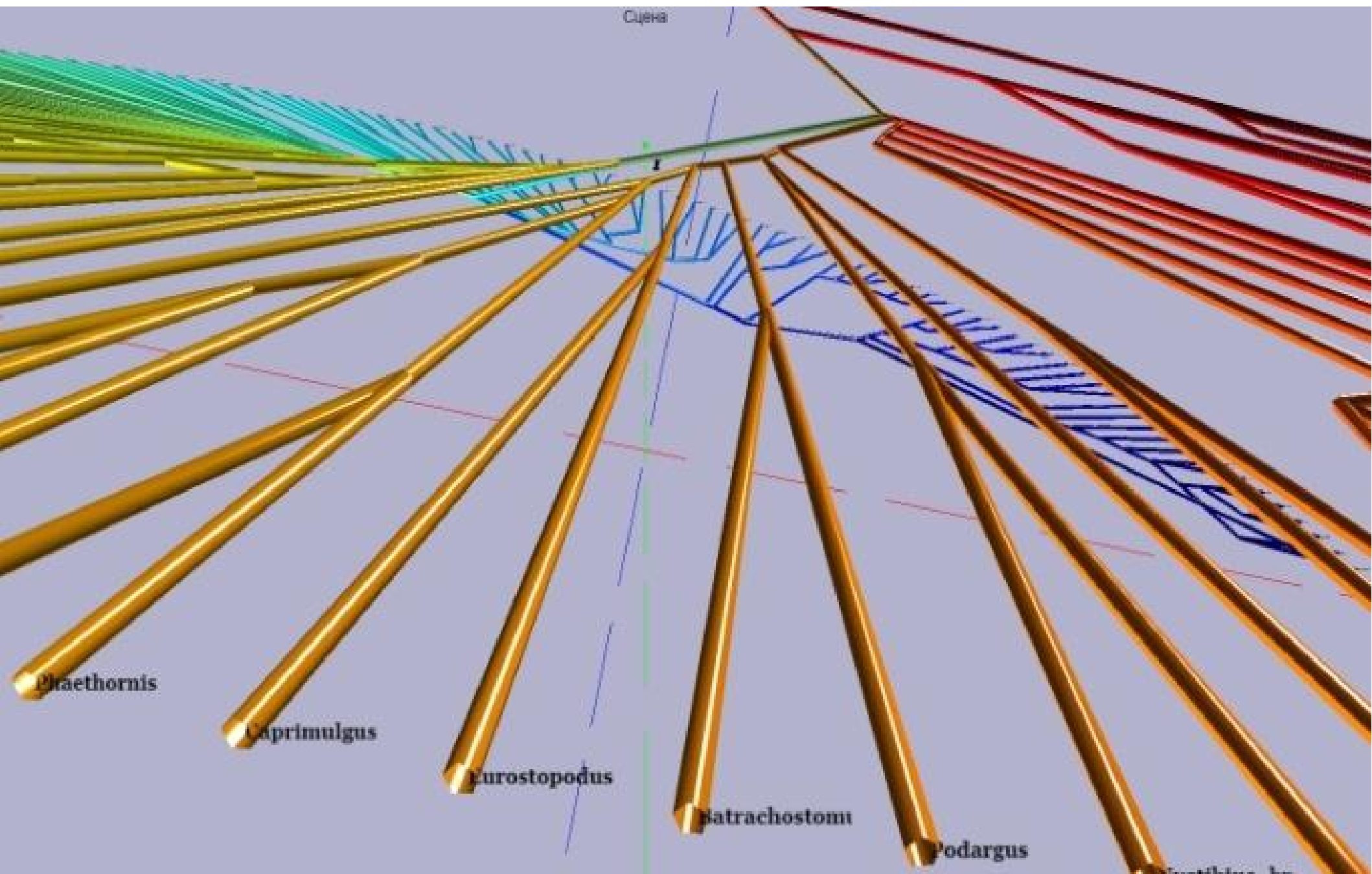
Inside
the grid



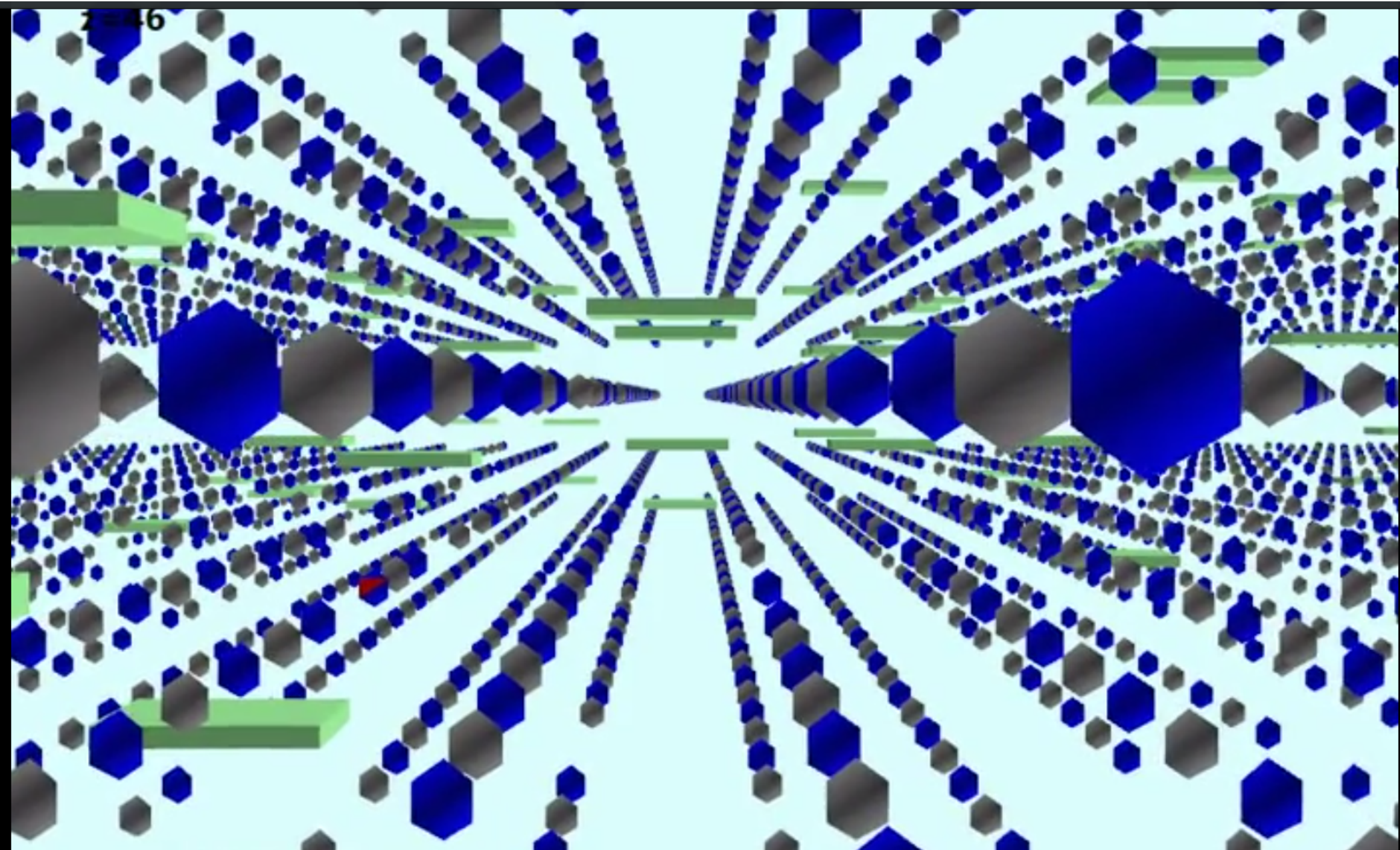
Phylogenetic tree of influenza virus



Walking the tree



Tinatinum monoxide



Software visualization

Is an assembly of computer graphics and human-computer interaction employed for better explanation of notions and efficient software maintenance.

Used for:

- Investigation
- Debugging
- Visual programming

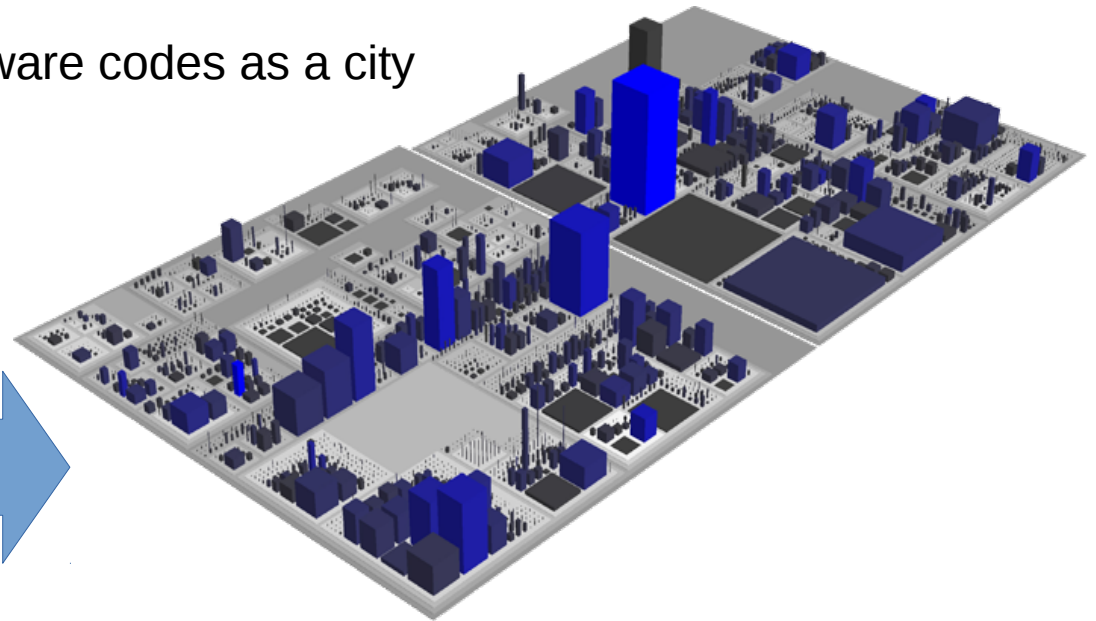
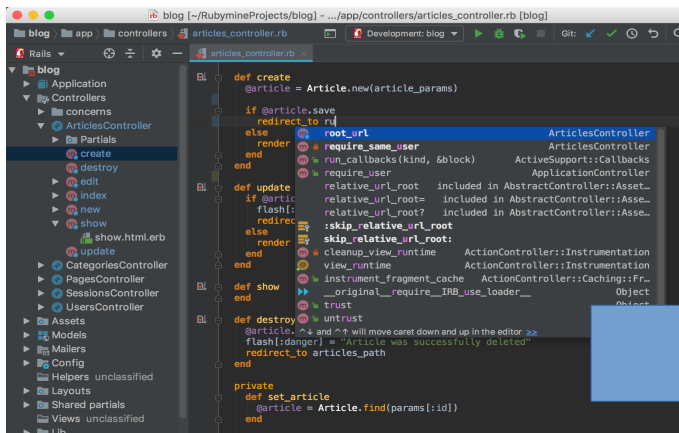


It is a time when software code becomes a materia for research.

Visualization metaphor

- A mapping from concepts and objects of the simulated application domain to a system of similarities and analogies, and generating a set of views and a set of techniques for interaction with visual objects.

Example: software codes as a city



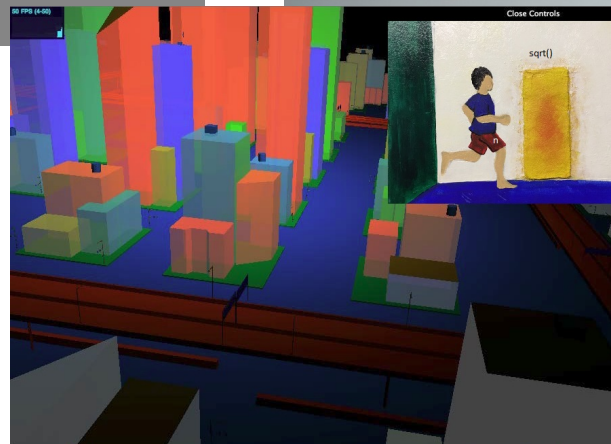
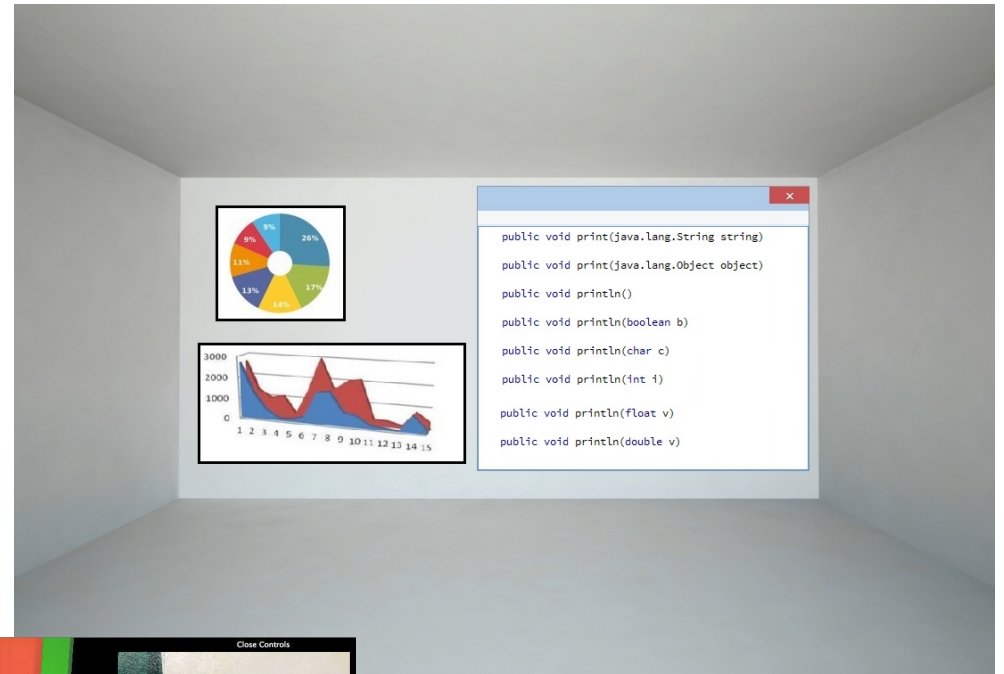
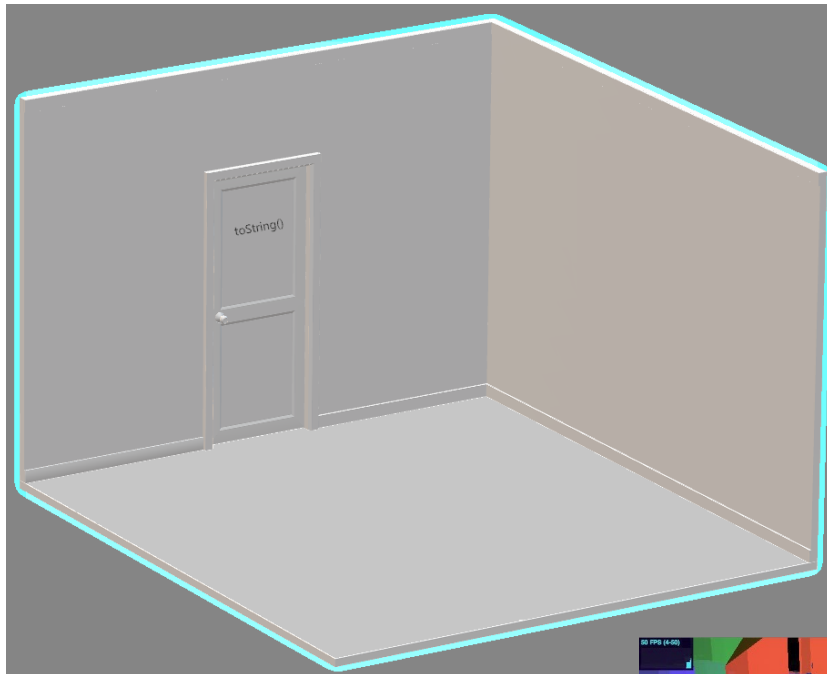
Why metaphors are important? Because we see scientific properties in them.

Software project as a city in virtual reality and the inner part of the structure of the code with the figure of the active agent.

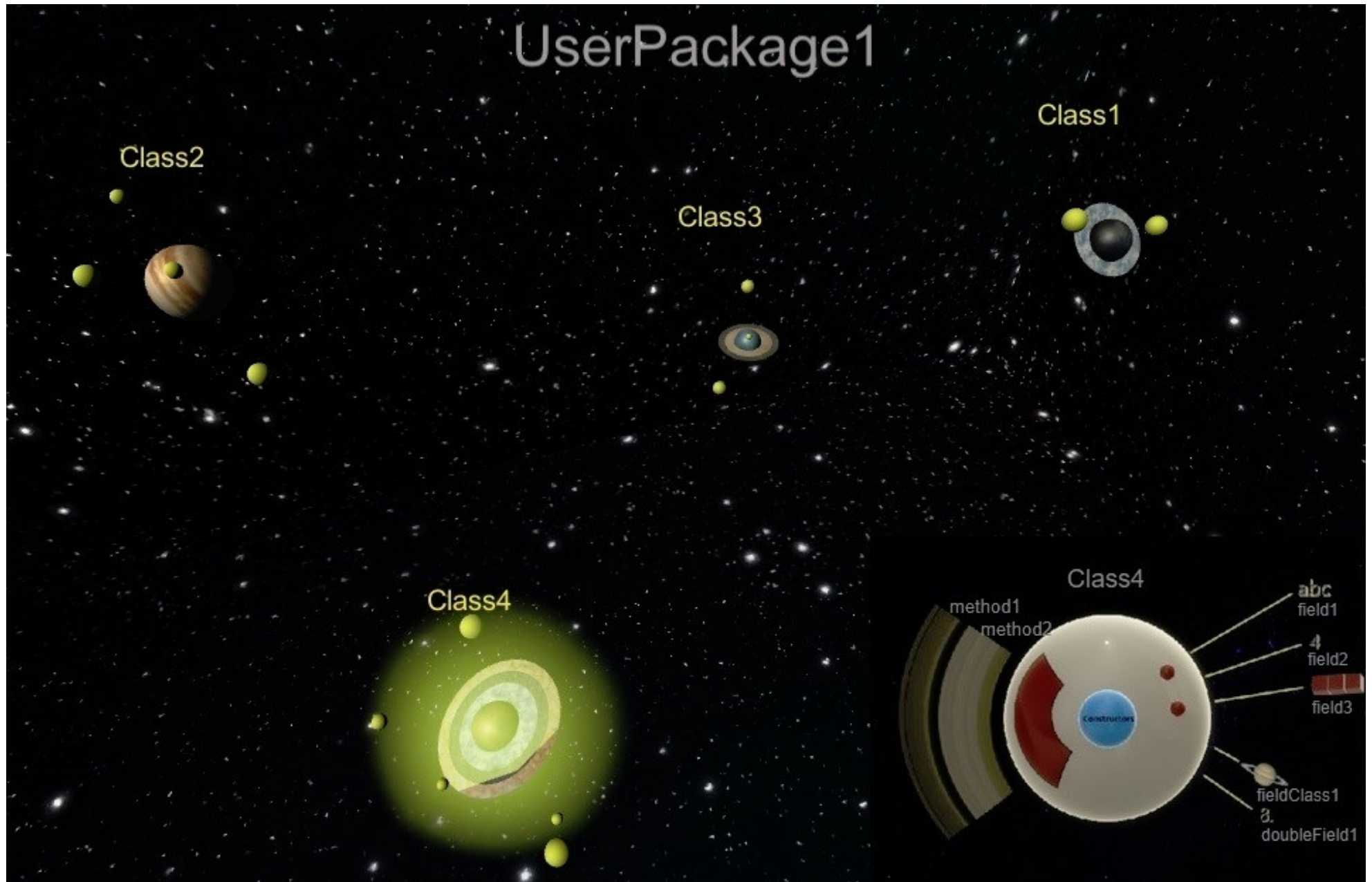


Extended city metaphor,
with the addition of
active agents

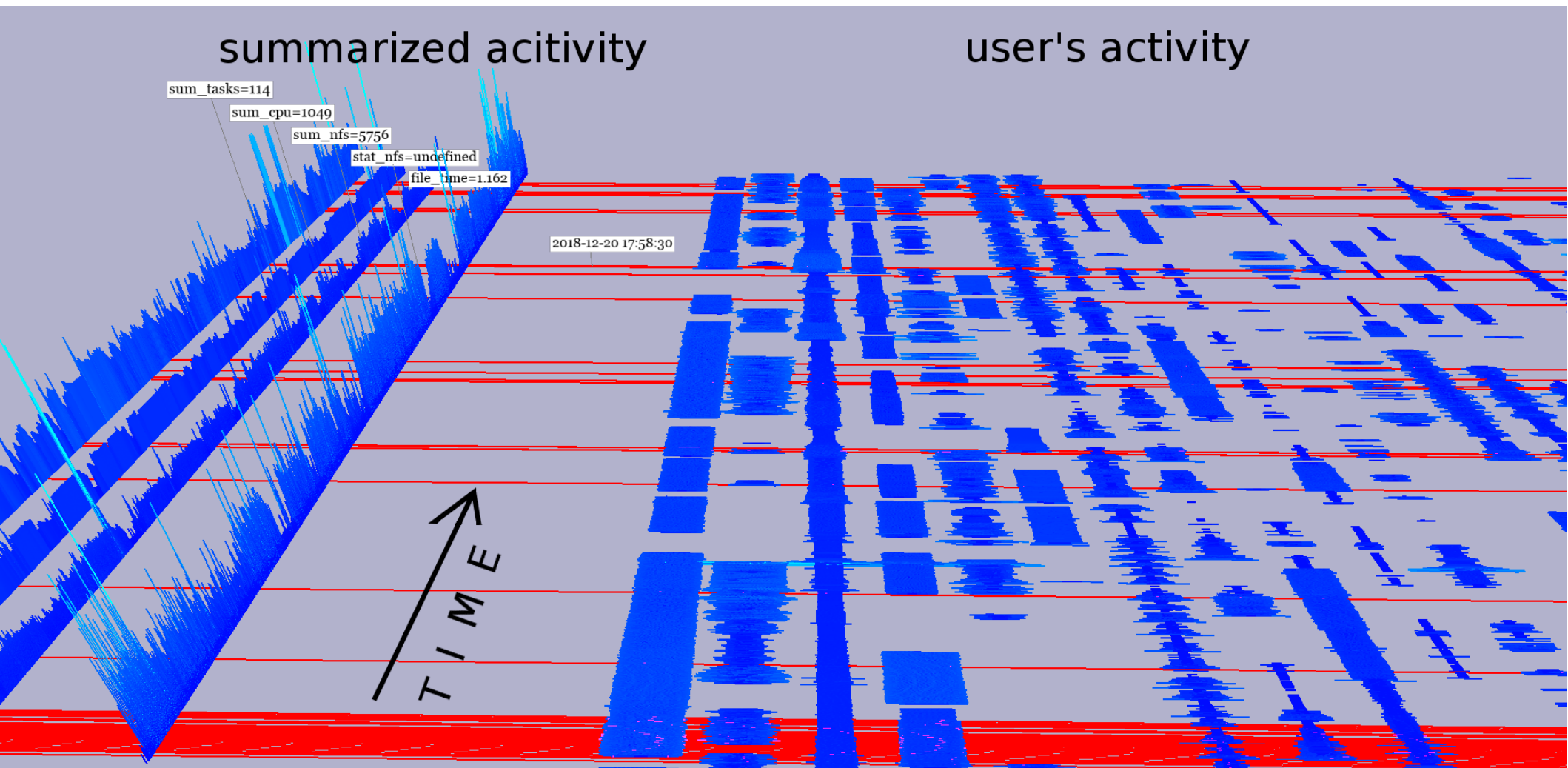
Software project as a city in virtual reality and the inner part of the structure of the code with the figure of the active agent.



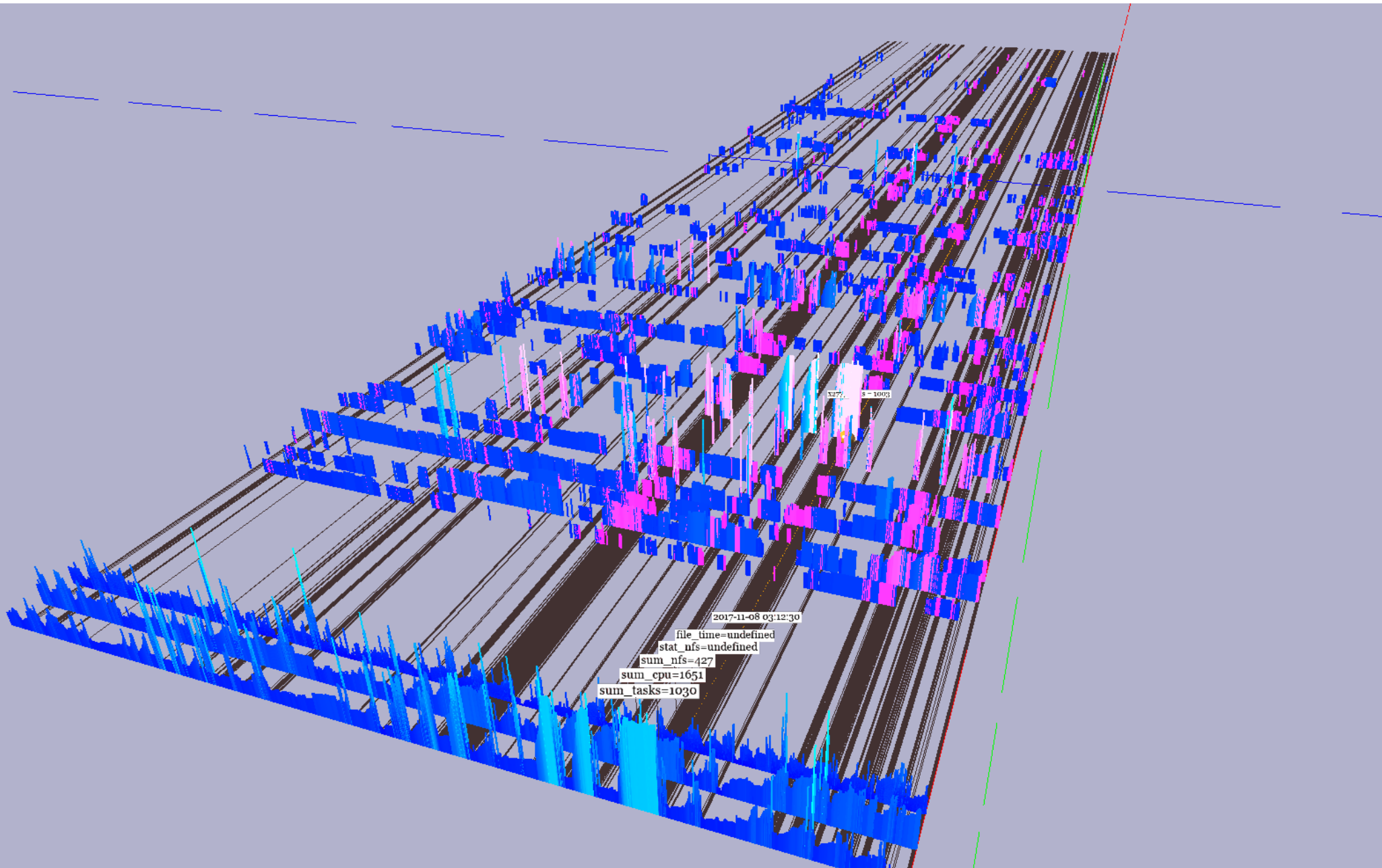
Project N2. Planetary visual programming environment



Look over the Uran supercomputer



Changing an angle..



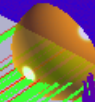
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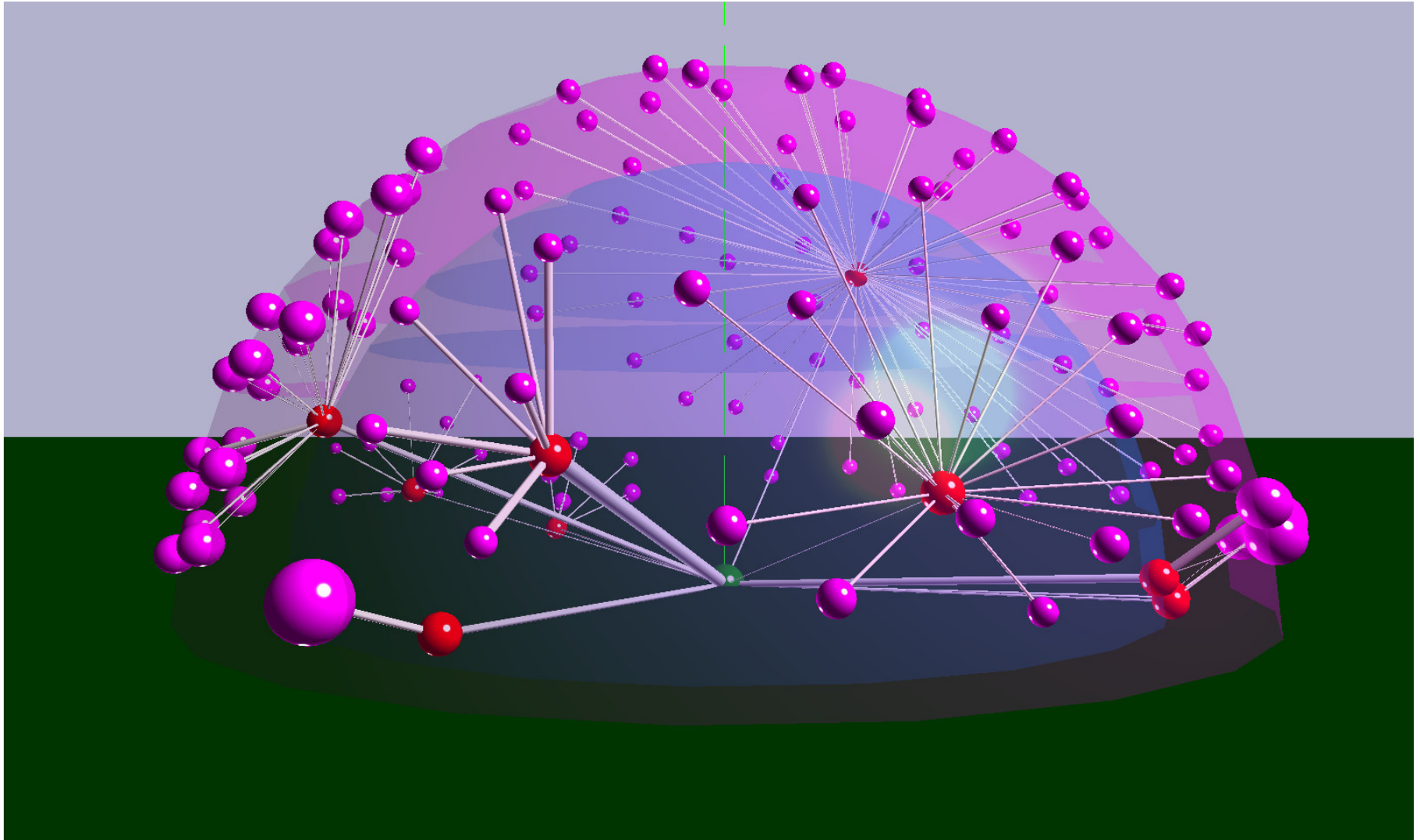
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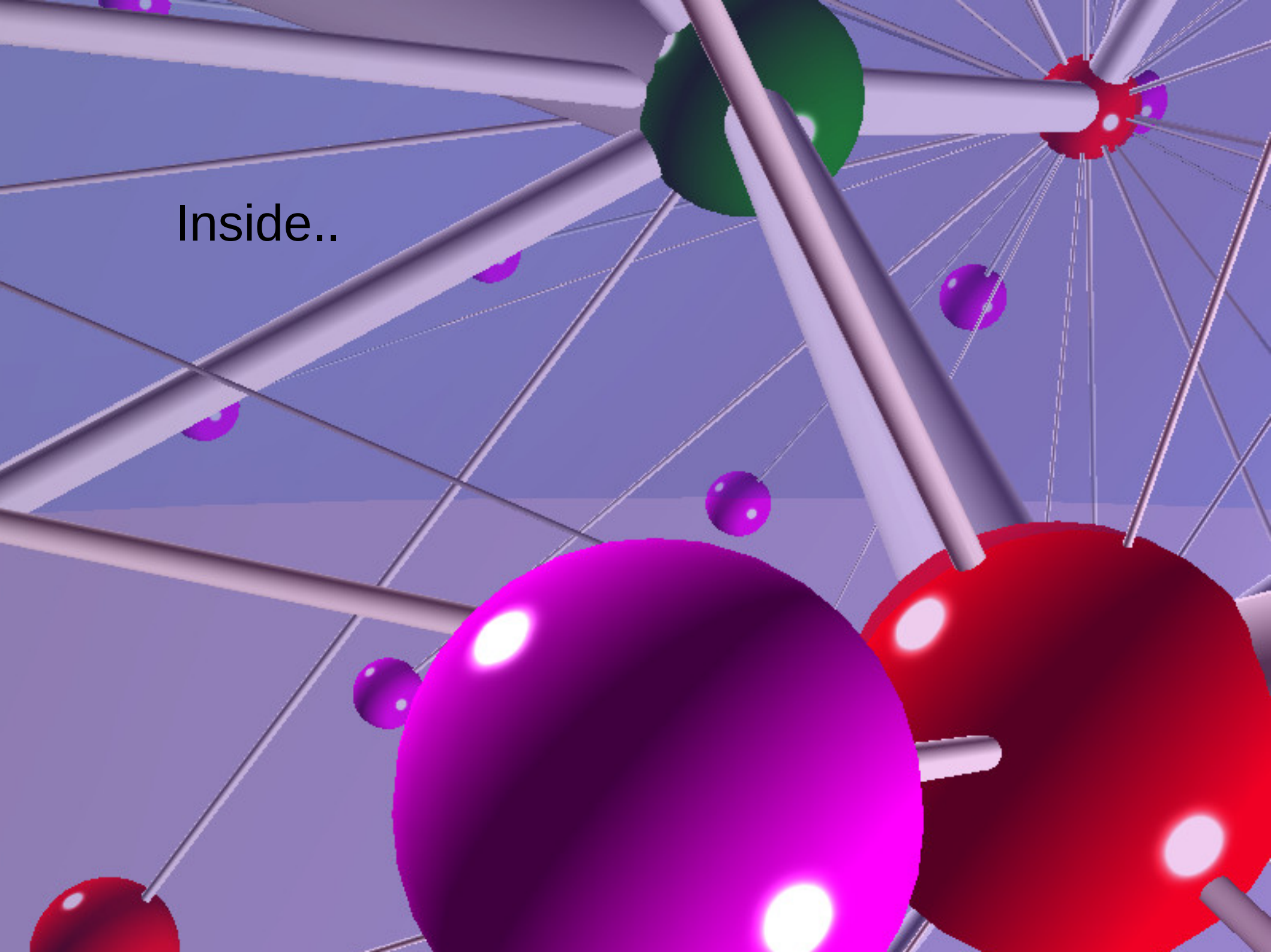


Supercomputer bottlenecks evaluation

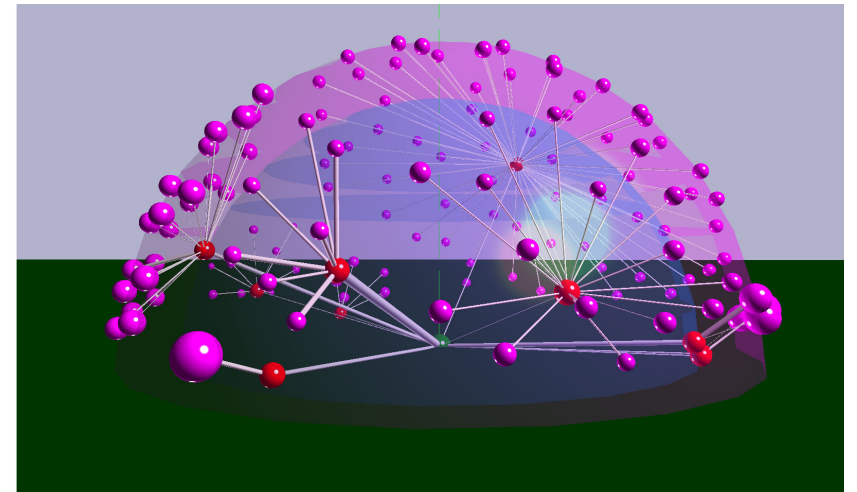
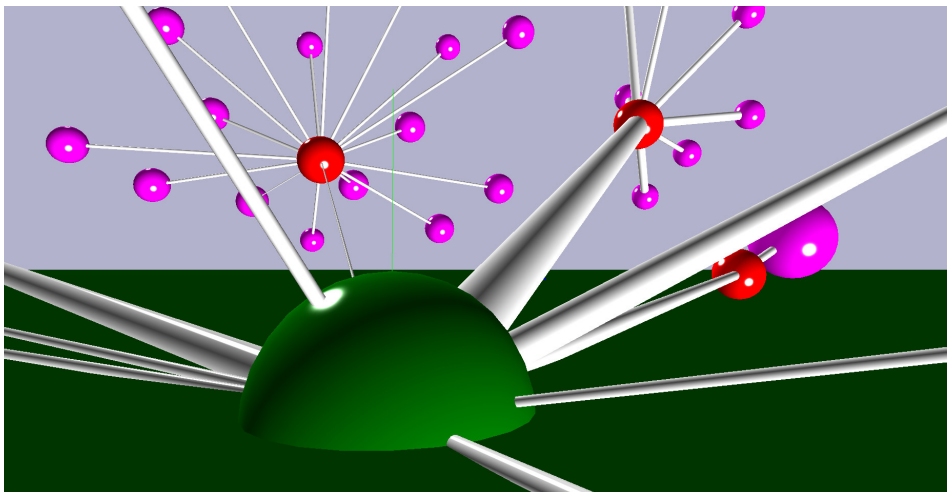
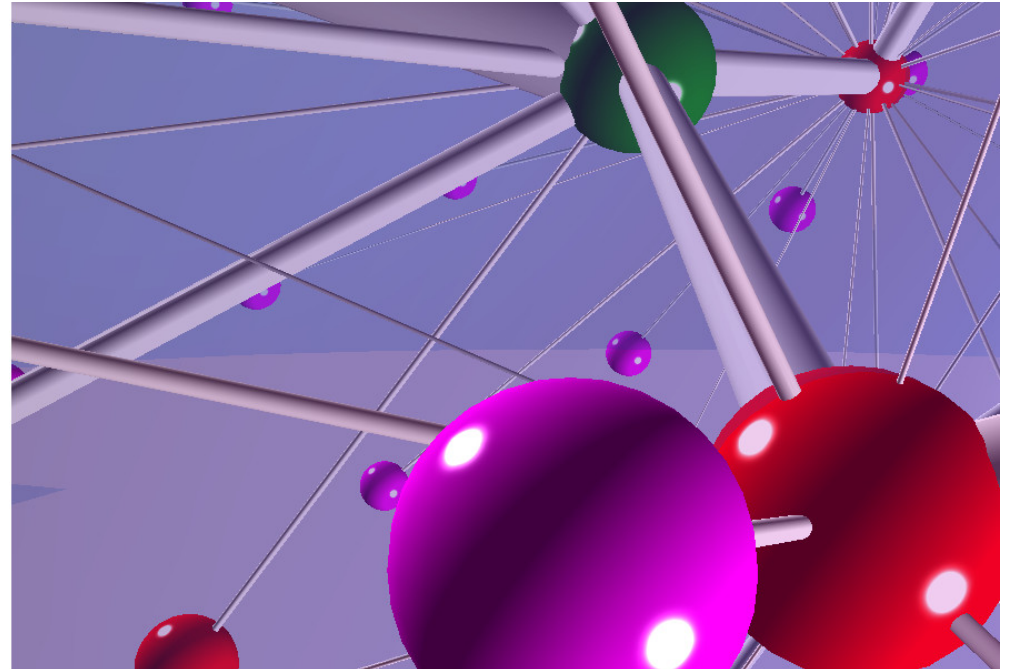
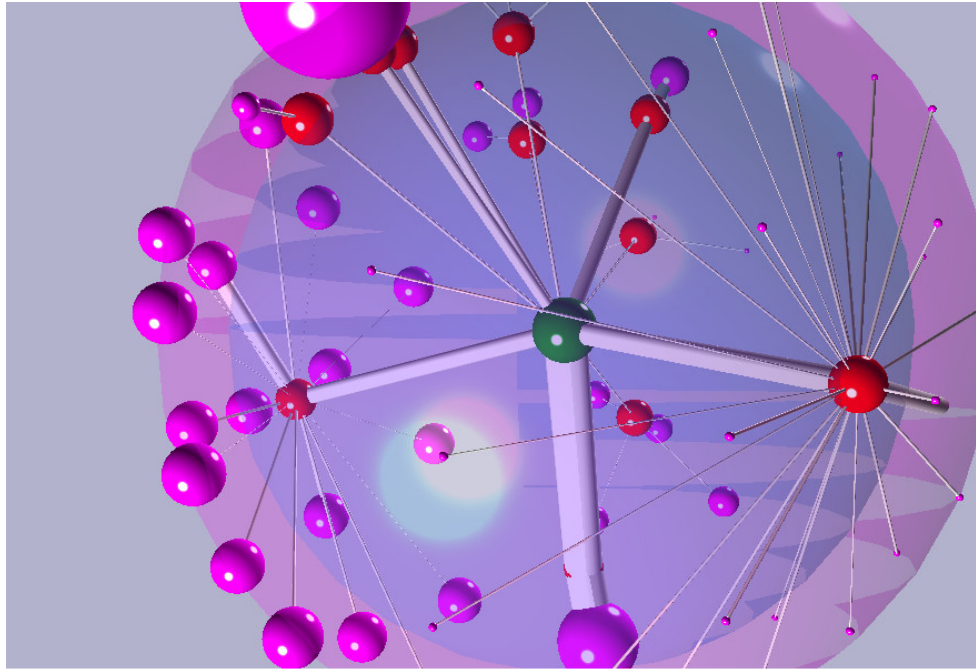


Geo-centric metaphor + flat ground in 3d

Inside..



With and without ground..



VR Science

- When it triggers?
- How to move? Maybe gestures?
- What are the Presence factors?
- Sickness! When and why?
- Sickness v2: comfort!
- Aspects of use in telemedicine.

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- Natalya V. Averbukh
- Pavel Vasev
- Ilya Gvozdev
- Georgy Levchuk
- Ilya Starodubtsev
- Majid Forghani

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Thank you!

