A New Visual Analytics toolkit for ATLAS Computing

**Motivation:**
The volumes of data and metadata in many domains (including ATLAS Computing) is constantly growing, and the data/metadata processing workflows become more and more complicated. **Interactive visualization** can help to understand how the software/hardware is performing and decrease the operational workload.

**Use-cases:**
- Analysis of jobs execution process (search for non-trivial jobs execution process parameters)
- Analysis of computing sites performance and robustness
- Analysis of network performance

**The main project objectives:**
- Facilitating of computing performance analysis
  - Development of interactive visual tools to support the sense-making process of the analysis
  - Increasing the domain-experts involvement in the analysis process
  - Enhancing statistics, Machine Learning methods with the use of visual interaction with the initial data and with the underlying algorithms as well

**Visual Analytics** is the science of analytical reasoning facilitated by visual interactive interfaces

**Supervised Clusterization**
- Choose clustering algorithm
  - K-means
  - DBSCAN
- and tune its configuration
- spheres are coloured based on their clusters

**Interactive Visualization**
- rotation, moving
- change camera position
- change the scale
- change spheres size
- select visualization theme (black/white)
- select the visualization quality
- click the sphere to observe its feature values
- select multiple spheres = self-clusterization
- move the sphere on 3D scene and observe changes of its feature values
- change the sphere features values (using sliders) and recalculating of its cluster

**Near-term plans of InVEx development:**
- Saving operations history
- Dynamic 3D visualization
- Level-of-Detail Generator
- Integration with metadata sources
- Integration with ATLAS BigPanDA monitor

**Control Panel**

**Visualization Settings**
- Sphere Radius
- Activate Single Sphere Selection
- Activate Multiple Sphere Selection
- Activate DSSP Sphere Control

**Select Theme:**
- Black
- Select quality:
- Medium
- Select Quality:
- Default Camera
- Change Camera

**Data Sample in Tabular Form**

**Correlation Matrix**

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