

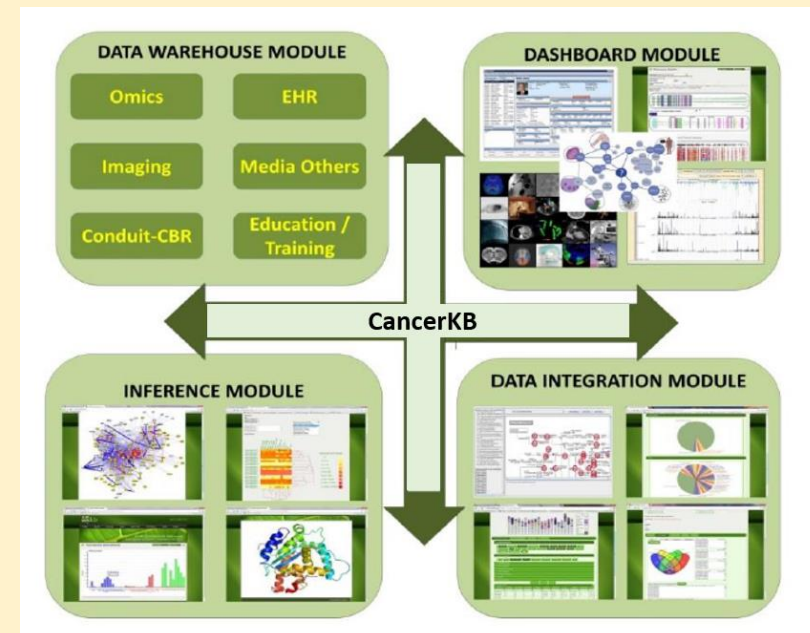


Expansion of KBCommons Informatics Framework for CyNeuro Web-Portal

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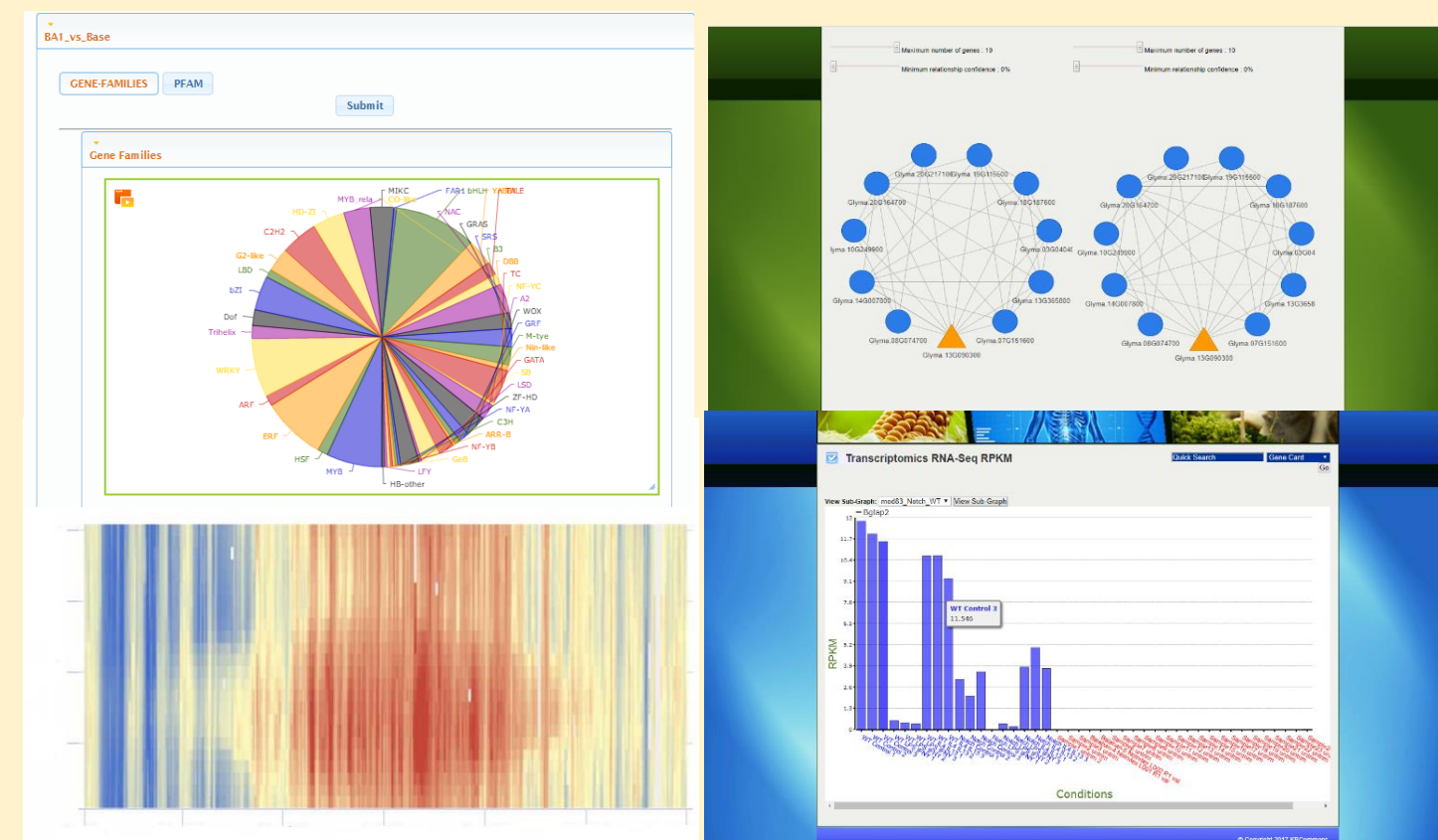
Architecture



Knowledge Base Commons (KBCommons) is an informatics platform that automates the storage, management, sharing, analysis, integration and visualization of genomics and multi-omics data for various organisms. It establishing the backend database and access to informatics tools for browsing and visualizing data via a dedicated web resource. KBCommons provides a suite of tools such as the gene/metabolite pathway viewer, Protein Bio-Viewer, 3D protein structure viewer, differential expression analysis suite including Venn diagrams, volcano plots, function enrichment and gene modules. The KBCommons framework architecture which uses Laravel-PHP framework, Javascript libraries for event handling and mySQL and MongoDB databases, is being expanded, adopted and customized to support similar capabilities for Neuroscience research via the **CyNeuro web portal**.

KBCommons Functionalities

Visualization



KBCommons provides a visualization tools such as pie charts, gene networks, expression barchart etc.

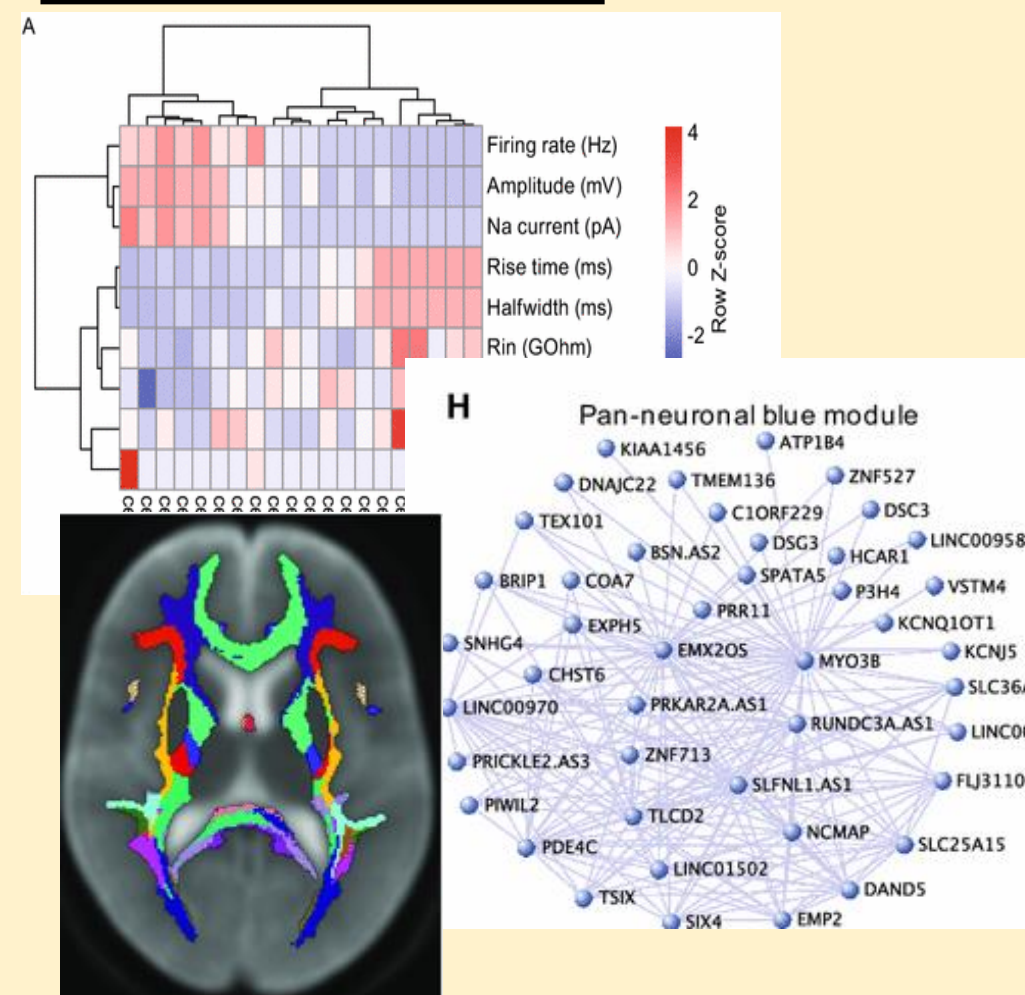
Integration



KBCommons has a suite of tools such as multiple gene / metabolite pathway viewer, Venn diagram, WGCNA gene module and hierarchical clustering.

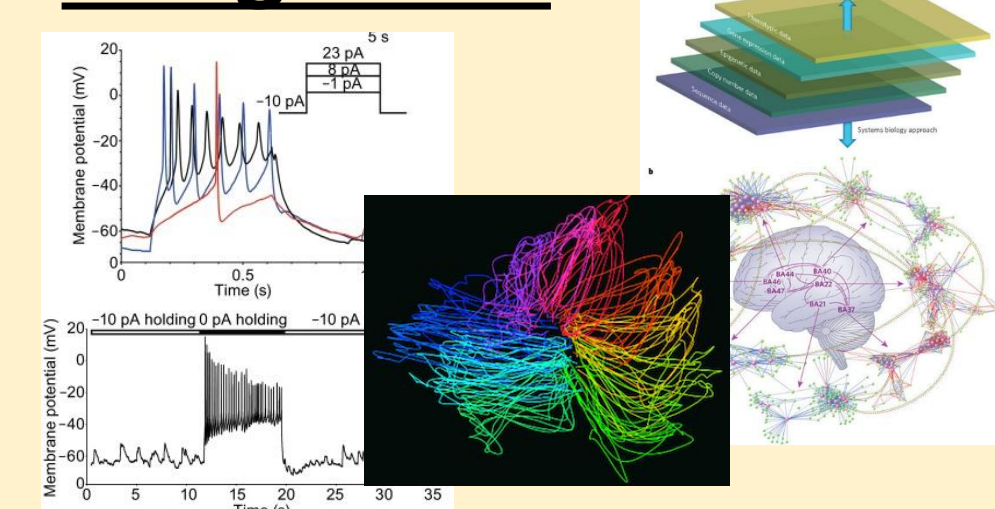
CyNeuro Web-Portal

Visualization



Heatmaps, hierarchical clustering, networks and graphs, parcellation, imaging etc.

Integration



fMRI, EEG data, genomics and multi-omics data integration with topology and functional areas of brain etc.

Analytics

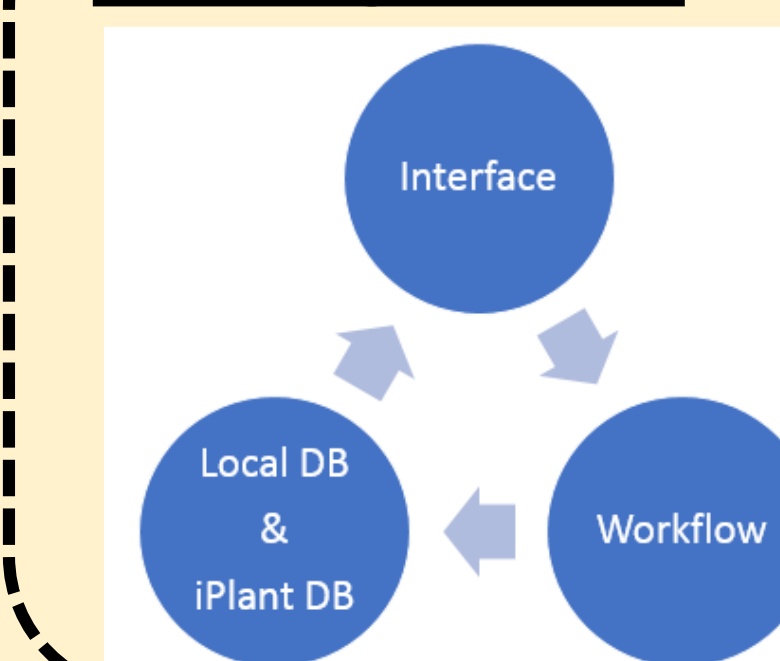
aws TACC
NEURON, GENESIS3, MOOSE, NEST, PyNN, Freesurfer, EEGLab, Python, R, Matlab, Jupiter Notebooks Software

Data Sharing & Storage



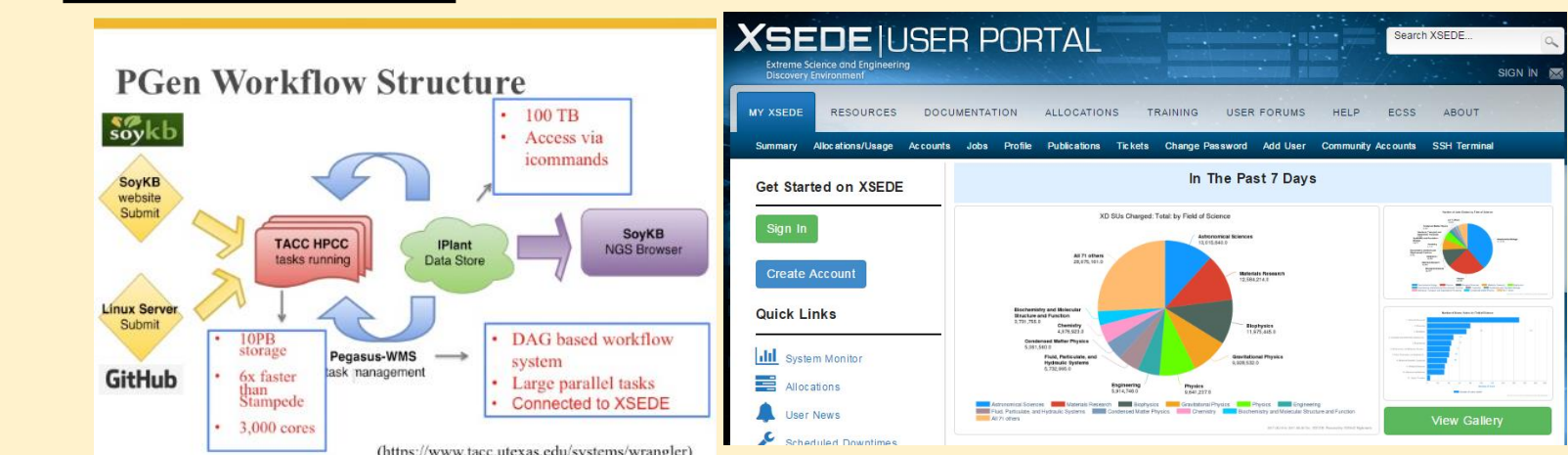
fMRI, Imaging, EEG, Neural Simulation, Genomics

Management



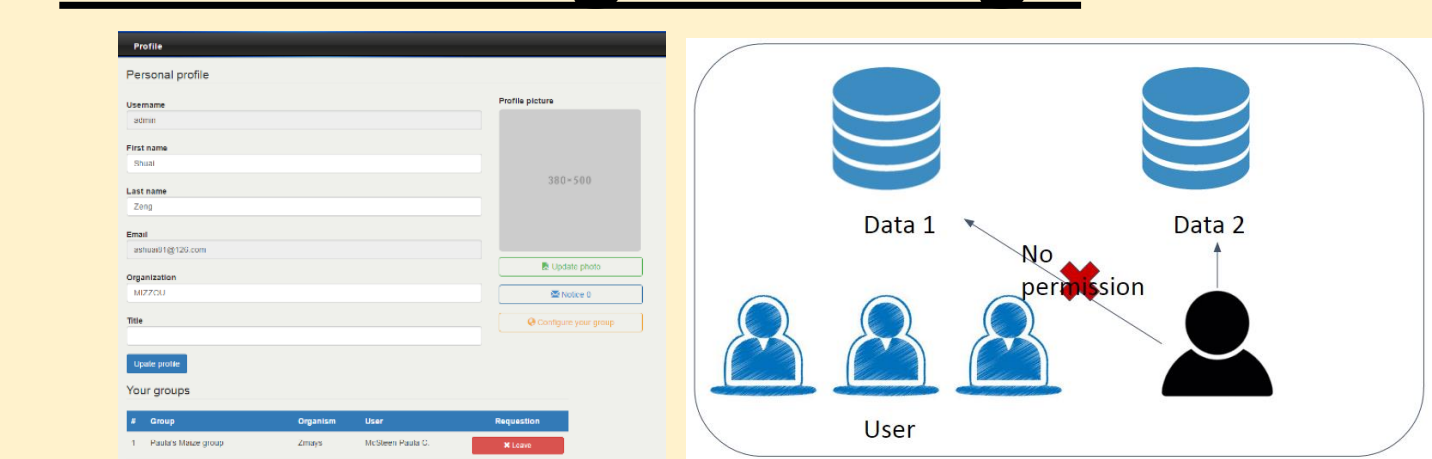
KBCommons Functionalities

Analytics



KBCommons provides access to PGen Pegasus analytics workflows developed for genomics variations analysis. The workflows uses Cyverse and XSEDE resources to make data sharing and analysis more efficient and scalable.

Data Sharing & Storage



KBCommons provides login based access, user control panel to support group creation and data sharing and access control with group members or other collaborators.

Management



KBCommons uses Laravel management framework with MySQL, MongoDB databases support using Python code.