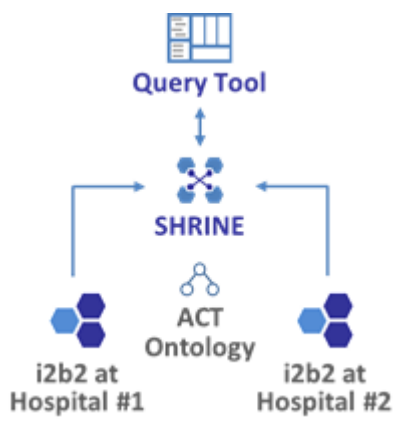
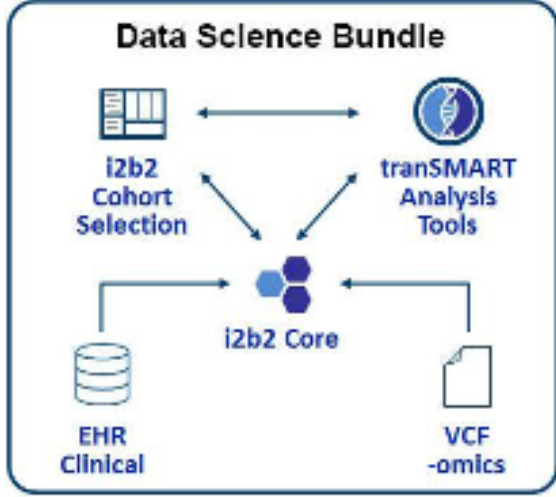


Bundles

Population-Wide Analysis Bundle	Data Science Bundle (draft version)
 <p>The diagram shows a central 'SHRINE' node (represented by a network of blue hexagons) connected to a 'Query Tool' (represented by a grid icon) above it. Below SHRINE are two 'i2b2 at Hospital #1' and 'i2b2 at Hospital #2' nodes (represented by blue hexagons). In the center, below SHRINE, is the 'ACT Ontology' (represented by a network of blue hexagons). Arrows indicate data flow from the hospitals to SHRINE, and from SHRINE to the Query Tool.</p>	 <p>The diagram is titled 'Data Science Bundle' and is enclosed in a rounded rectangle. It features a central 'i2b2 Core' node (represented by blue hexagons). Above it are 'i2b2 Cohort Selection' (represented by a grid icon) and 'tranSMART Analysis Tools' (represented by a DNA helix icon). Below the core are 'EHR Clinical' (represented by a database cylinder icon) and 'VCF -omics' (represented by a document icon). Arrows show bidirectional connections between i2b2 Cohort Selection and tranSMART Analysis Tools, and between EHR Clinical and VCF -omics. Arrows also point from both EHR Clinical and VCF -omics to the i2b2 Core, and from the i2b2 Core to both i2b2 Cohort Selection and tranSMART Analysis Tools.</p>
<p>This population-wide analysis bundle provides researchers with real-time access to data on large patient populations at multiple healthcare organizations. It includes i2b2, which enables query and analysis of data within an institution, and SHRINE (Shared Health Research Information Network), which is a federated query tool that connects different sites' i2b2 systems. In this bundle, patient-level data never leaves an institution. The patient data are stored locally within each site's i2b2 database, and only aggregate counts and statistics are shared with others in the network through SHRINE. The bundle also includes a common ontology called ACT (Accrual for Clinical Trials), which has been implemented in a SHRINE network with more than 50 institutions and 125 million patients.</p>	<p>This data science bundle supports complex analyses of real-world clinical and genomic data. It includes i2b2, which enables query and cohort identification, and tranSMART, which adds a suite of tools for data exploration, R-based advanced analytics (e.g., correlation analysis, heat maps, PCA, etc.), and genomic modules for Genome Wide Association Studies (GWAS) and high dimensional data analysis such as RNAseq.</p>