



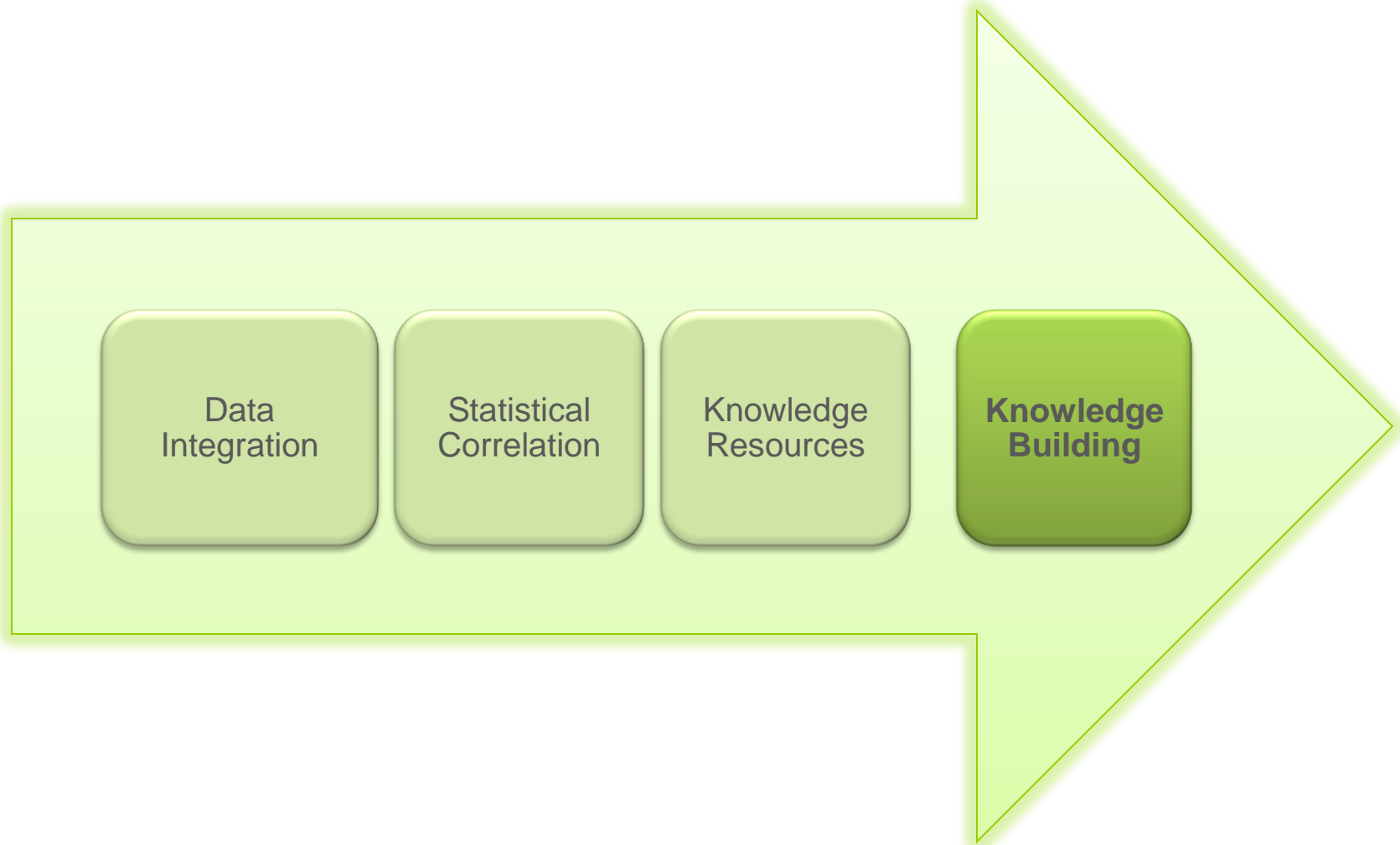
Knowledge Building Environments

Creating Practical Knowledge for Personalized Medicine

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Overview

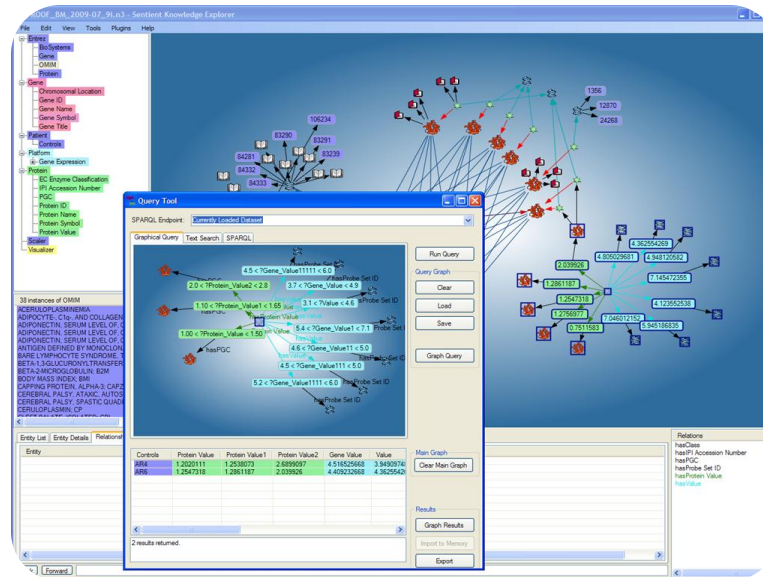


Goals

- What is unique and relevant about this disease, target, cohort, patient, treatment?
- What are the adequately-explanatory, sensitive and specific patterns for decision-making?

I. Data Integration

- -OMICs (i.e. Genomics, Proteomics)
- Demographic
- Clinical



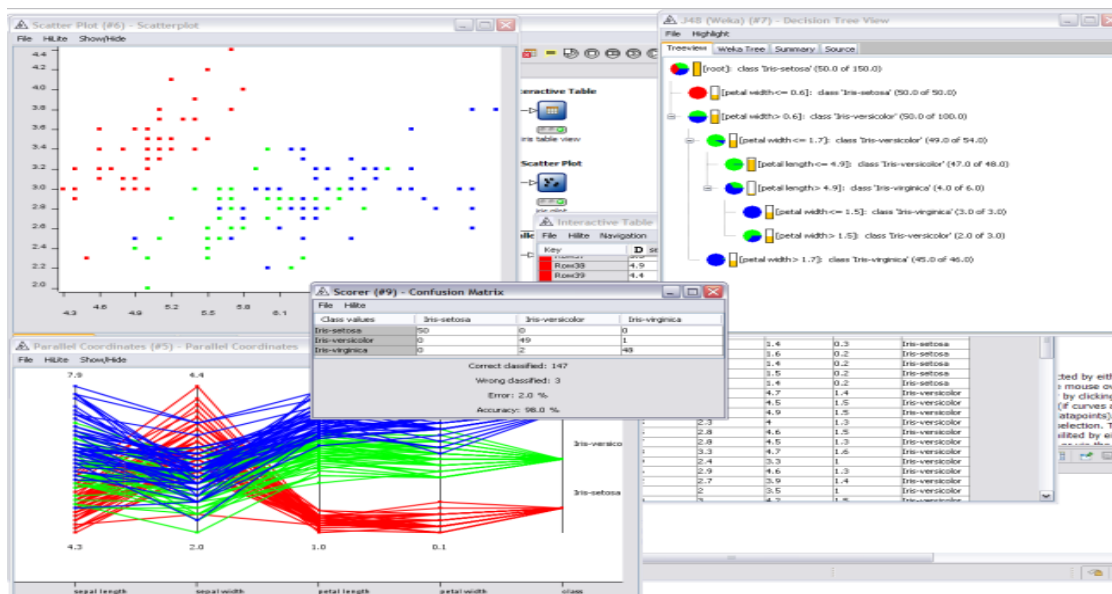


I. Integration Challenges

- Access
- Integration/ Federation
- Validation
- Precision
- Reproducibility

II. Statistical Correlation

- Modeling, normalization, clustering, validation
 - R, SAS / JMP, KNIME, Pipeline Pilot



II. Statistical Challenges

- Diversity of analytical methods
- False discoveries
- Correlation / causation
- Context
- Normalization



III. Resource Challenges

- Relevance
- Provenance
- Harmonization
- Integration
- Causality



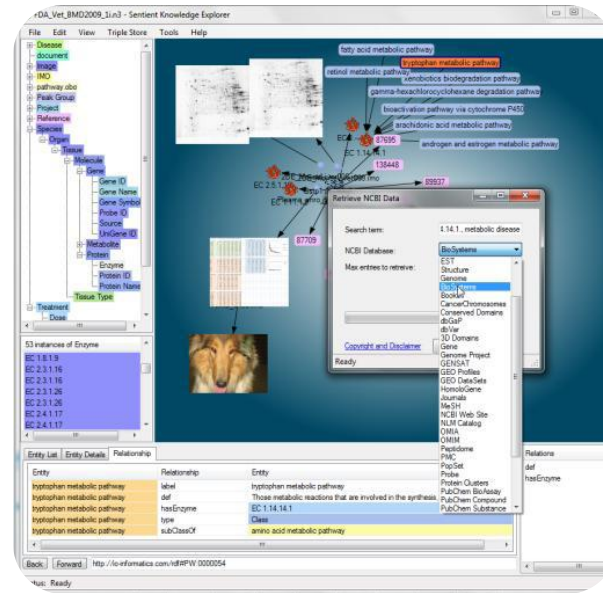
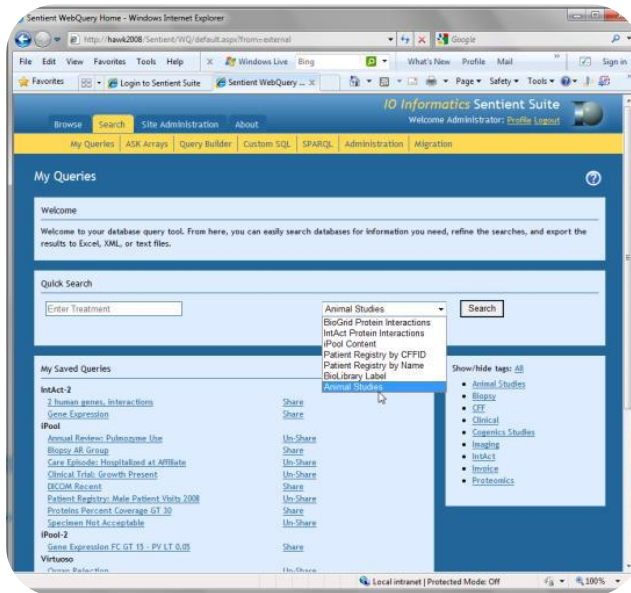
Knowledge Building

- “Connecting the dots”
- Hypothesis generation – discovering and explaining connections
- Testing, refining, and applying useful patterns



EXAMPLE USE CASES

Species-independent Disease Markers



- Genomic, proteomic, and imaging endpoints have been analyzed across different animal species for biomarker discovery of species-independent disease markers applicable to human diseases to minimize animal experiments



Applied Knowledge for Personalized Medicine

- Relevant Data
- Statistical Correlation
- Knowledge Resources

- Tools for integration, visualization and testing to understand and apply personalized medicine

- Health is a social network; connecting communities of experts, patient data, and reference resources is key

- The personalized medicine puzzle is coming together and it is happening now!



THANK YOU!

QUESTIONS

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