

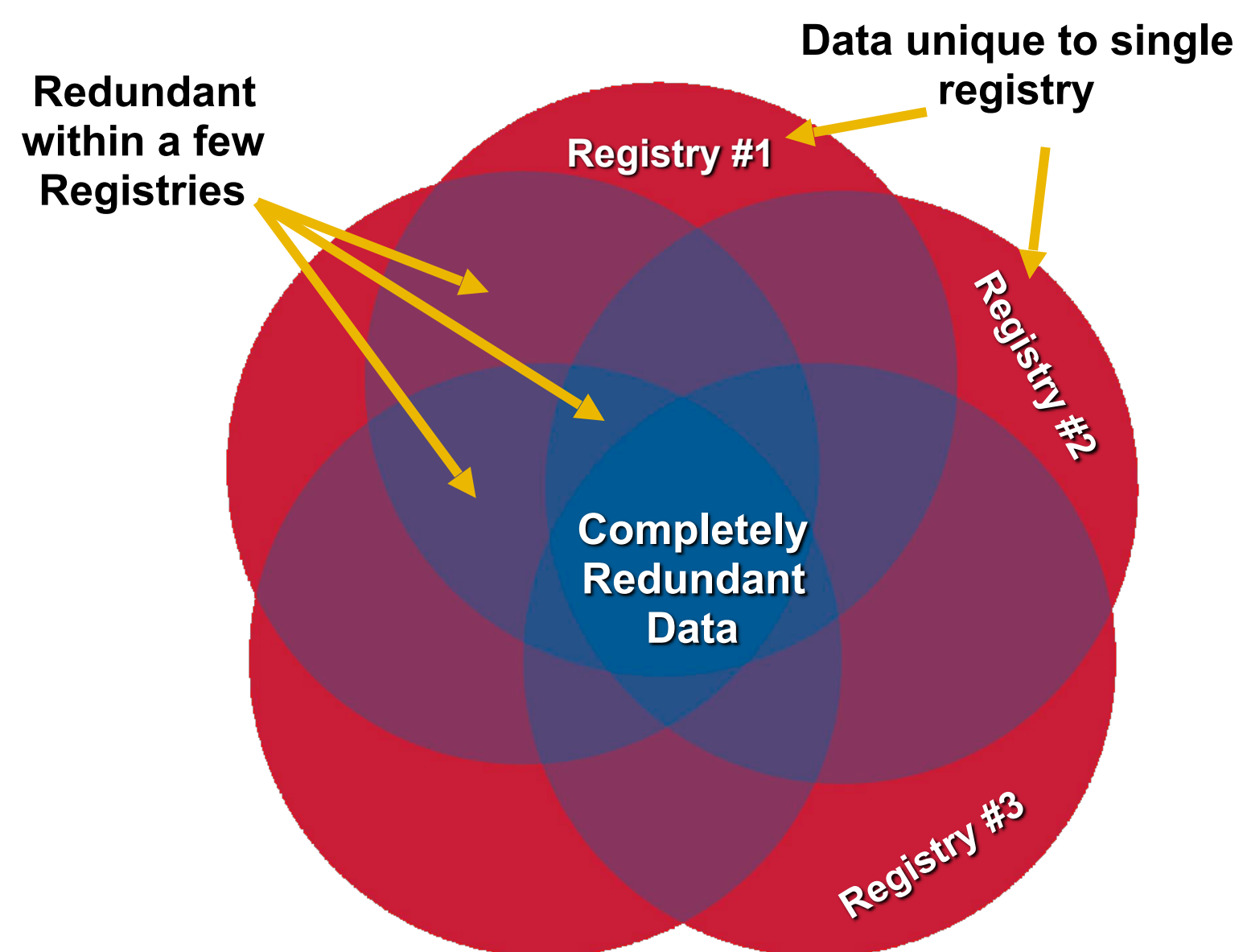
Semantic Integration of Clinical Data for Outcomes Research and Reporting

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Problems

Current Data Management Challenges:

- **Fragmented & Redundant Data Collection and Storage**
 - Due to poor database extensibility
 - High data collection and integration costs
- **Inexpensive Modeling Languages**
 - Data structures contain implicit knowledge
 - Inadequate for modeling medicine
 - No native support for inference & intelligent agents
- **Ambiguous & Idiosyncratic Terms**
 - Meanings often poorly documented
 - Semantic conflicts abound

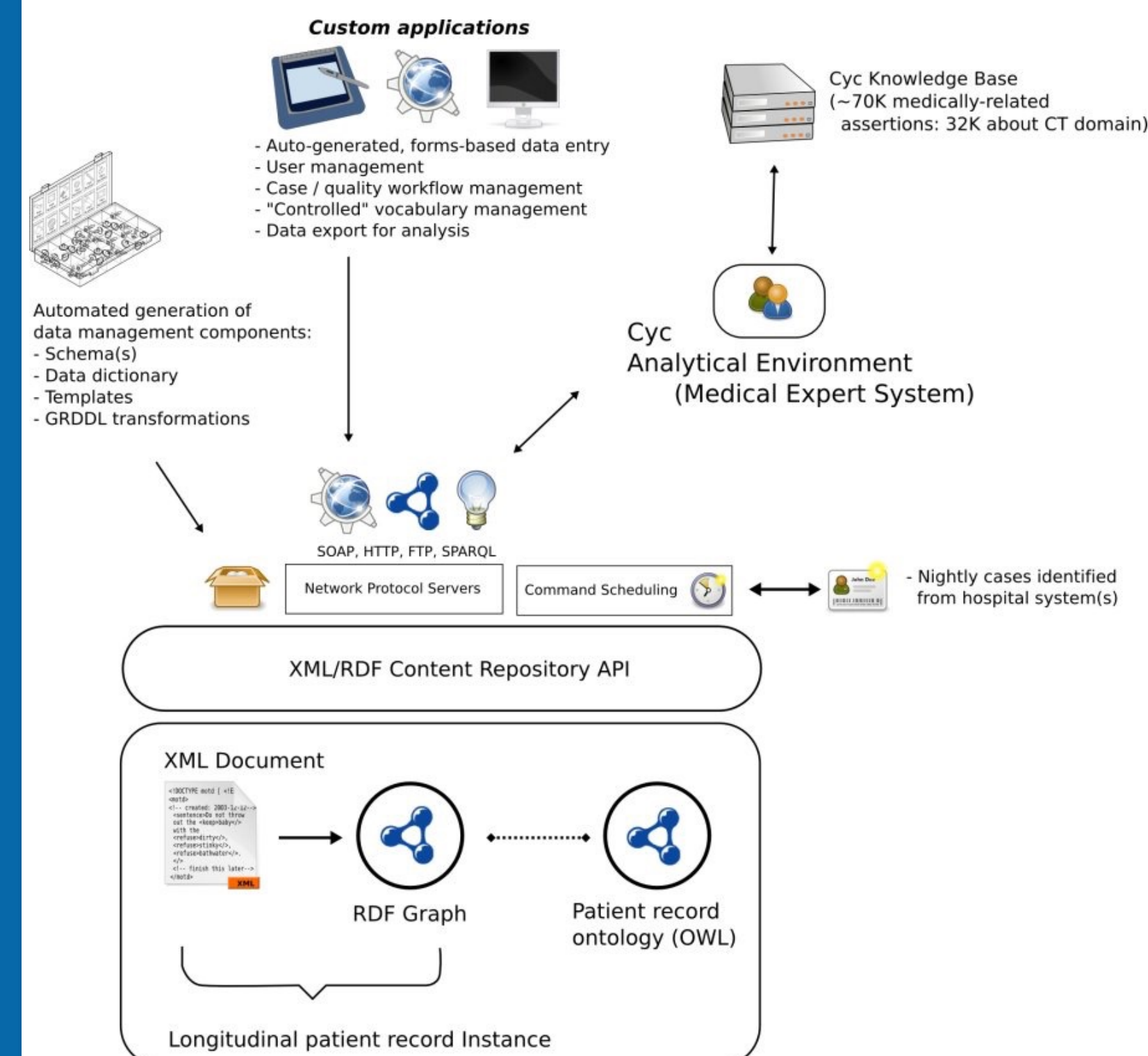


Solutions

Semantic Data Management Vision:

- **Extensible** – accept any kind of data without refactoring of data store
- **Automated** – model and metadata-driven
- **Expressive** – formal knowledge representation with transforms between KR dialects
- **Accessible** – highly distributable
- **Scalable** – handles enterprise-scale data management needs
- **Standard** – based on emerging W3C standards (XML, RDF, OWL, GRDDL, etc.)

SemanticDB™ Architecture



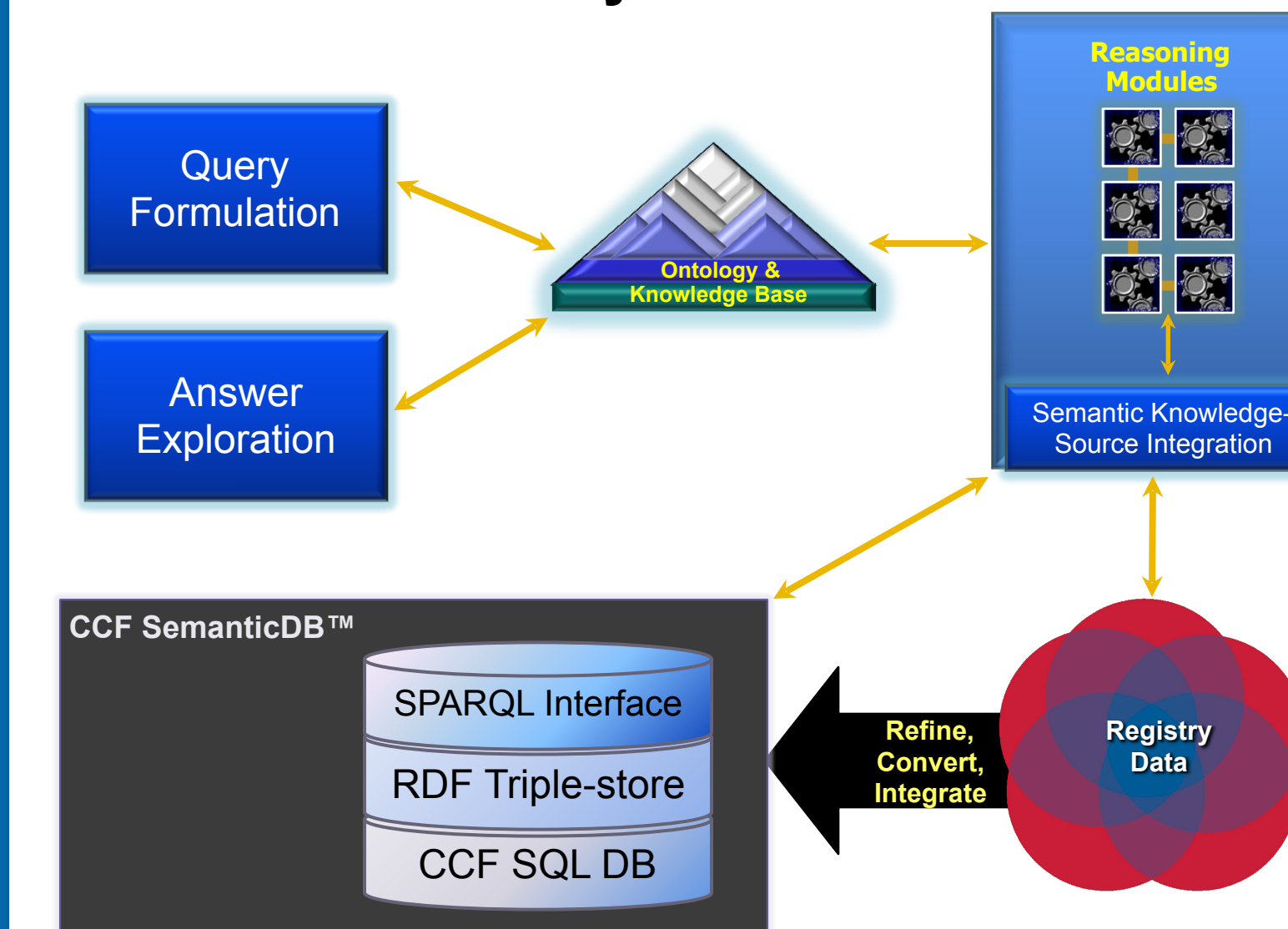
Data Collection

SemanticDB Supports Three Modes of Data Collection:

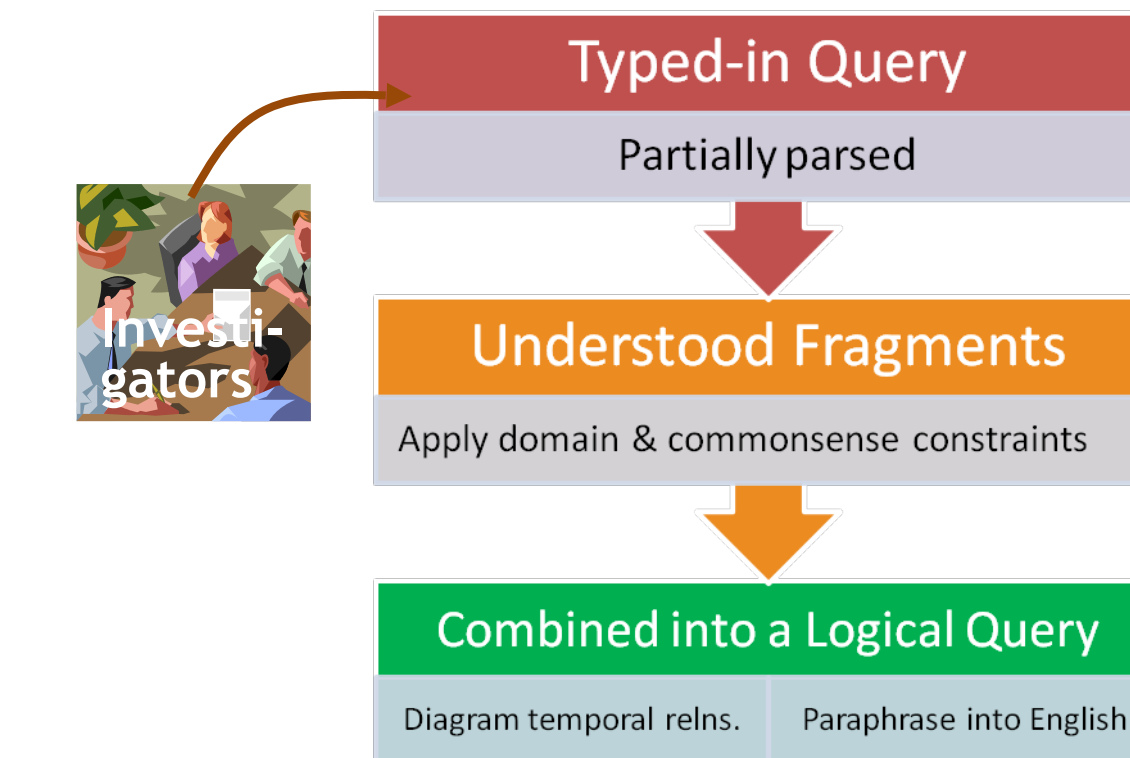
- **Slurping** – programmatic import of legacy data
- **Feeds** – push and pull data feeds from other systems
- **Abstraction** – auto-generated forms for manual data entry

Querying and Reporting

SemanticDB Query Infrastructure:



Natural Language Querying:

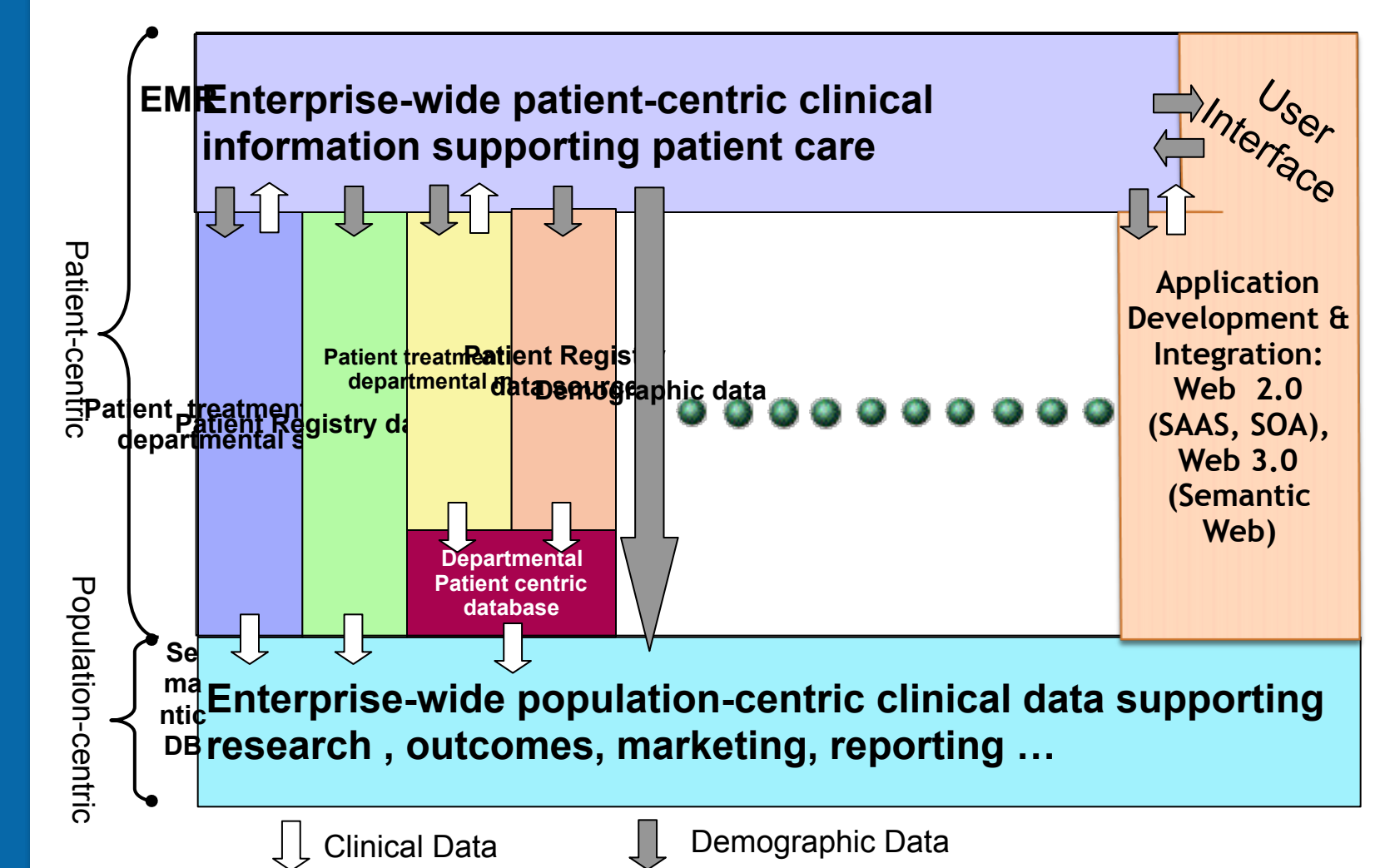


Data Export & Reporting:

- API access to RDF data elements
- Programmatic generation of standard export modules and reports

Applications and Benefits

SemanticDB as an Enterprise-Wide Population-Centric Clinical Data Repository:



Benefits of SemanticDB:

- **Supports Growth of Medical Knowledge**
 - Easy extensibility to new domains
 - Facilitates outcomes research
- **Reduced Data Redundancy**
 - Lower data collection costs and error rates
- **Improved Data Accessibility**
 - Single point of access
 - Natural language query
- **Improved Data Maintenance**
 - Expressive knowledge representation supports automated maintenance