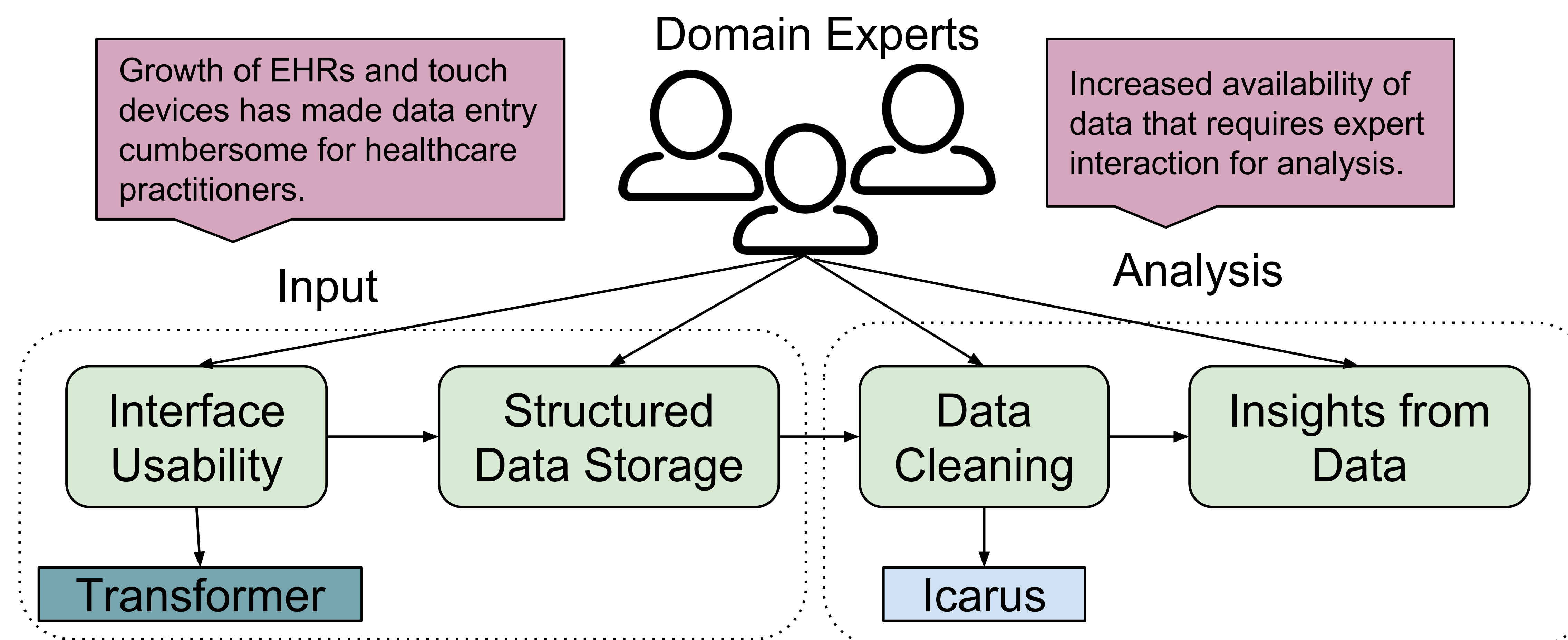


Enabling Effective Data Interaction for Domain Experts

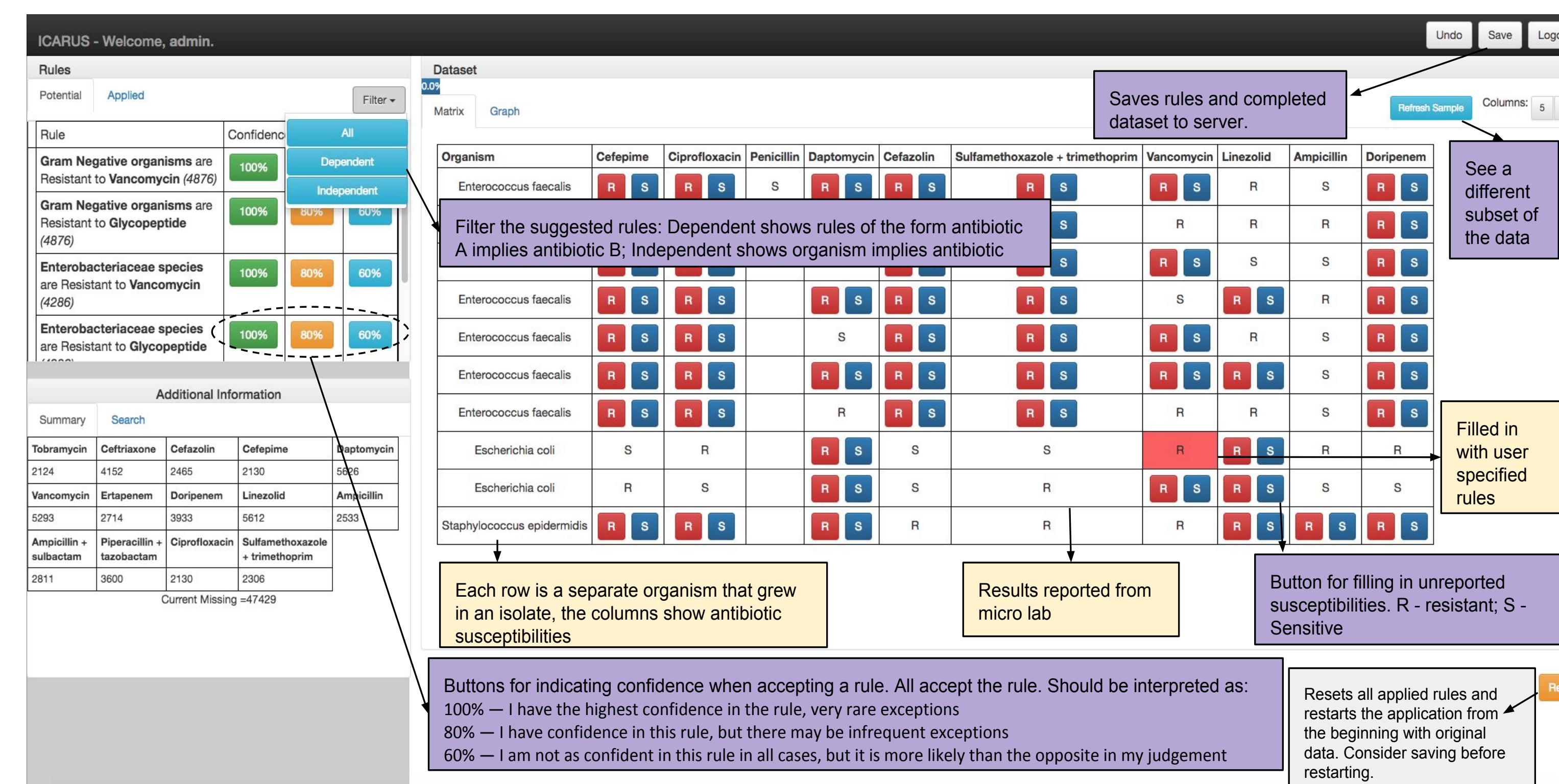
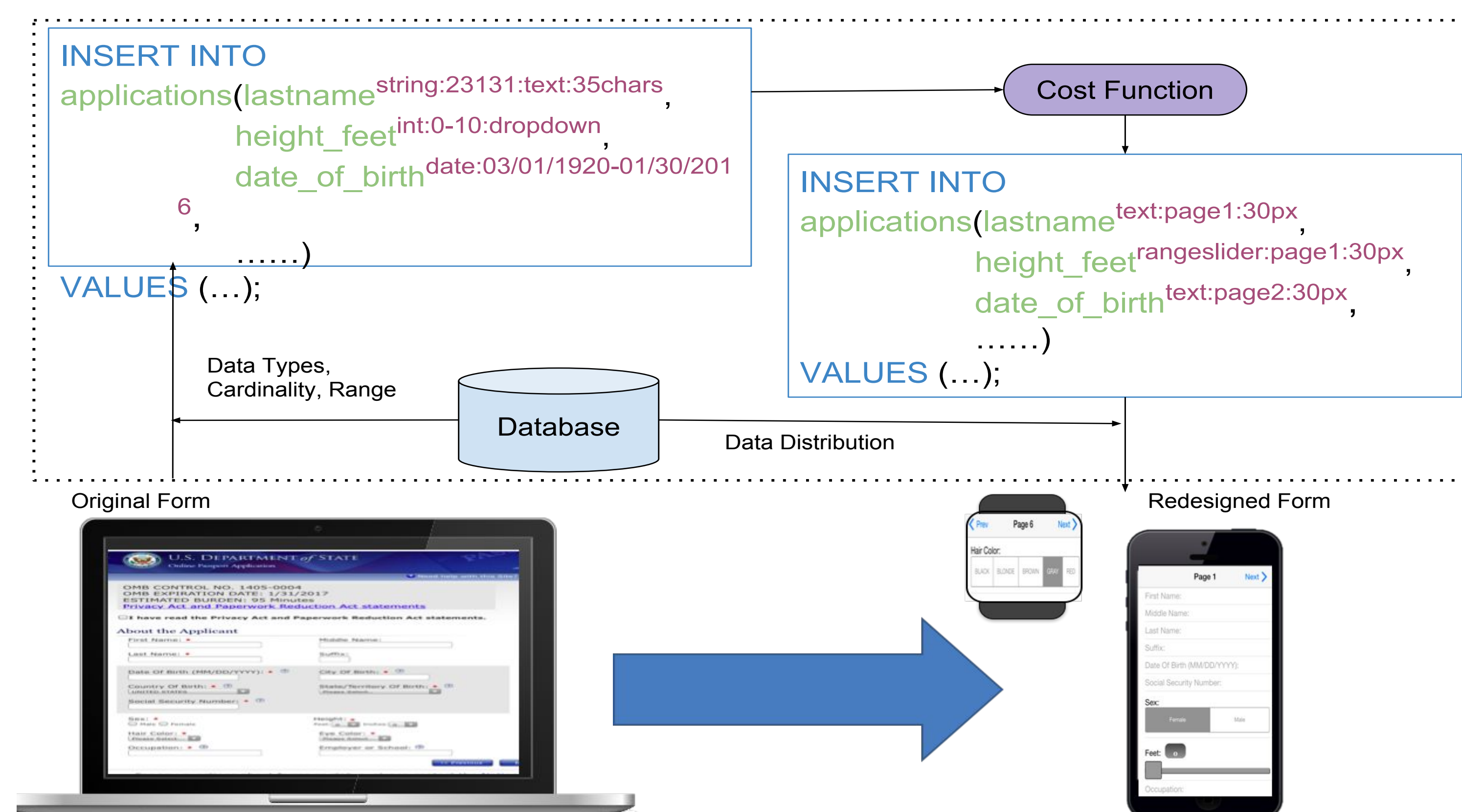
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Increase in EHRs has led to an increase in availability of data which require interaction from domain experts. This introduces two key challenges: reducing expert burden during input and allowing effective expert interaction during analysis.



Transformer – A system that finds the ideal form layout for the specified screen size by modeling the human input cost using features of the database including data distribution, data type and cardinality

Icarus – Data completion system that allows users to quickly fill in large datasets iteratively editing digestible subsets. Each edit is generalized to a rule applicable to multiple cells using the database schema.



Results: On average there is 27.5% reduction in form completion time between the original and automatically redesigned forms.

Results: Domain experts are on average able to fill in 56,000 cells in just 148 edits, within an hour, while the manual process took weeks.

Future Work

Structured Data Storage

- Annotations outside form fields are stored as unstructured text and not available for querying
- Opportunities for automatically structuring annotations using statistics and database schema.
- These signals could also be used to update database and form design.

Guiding experts to Insights

- Raw data is difficult to digest.
- Exploratory visualizations are iterative and tedious.
- Small changes are not necessarily perceivable on visualizations.
- Optimal visualization for a given dataset
- Provide cues to expert on possible insights