

Sharing Expertise and Artifacts for Reuse through Cybersecurity Community Hub (SEARCCH)

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<https://search.cyberexperimentation.org/>

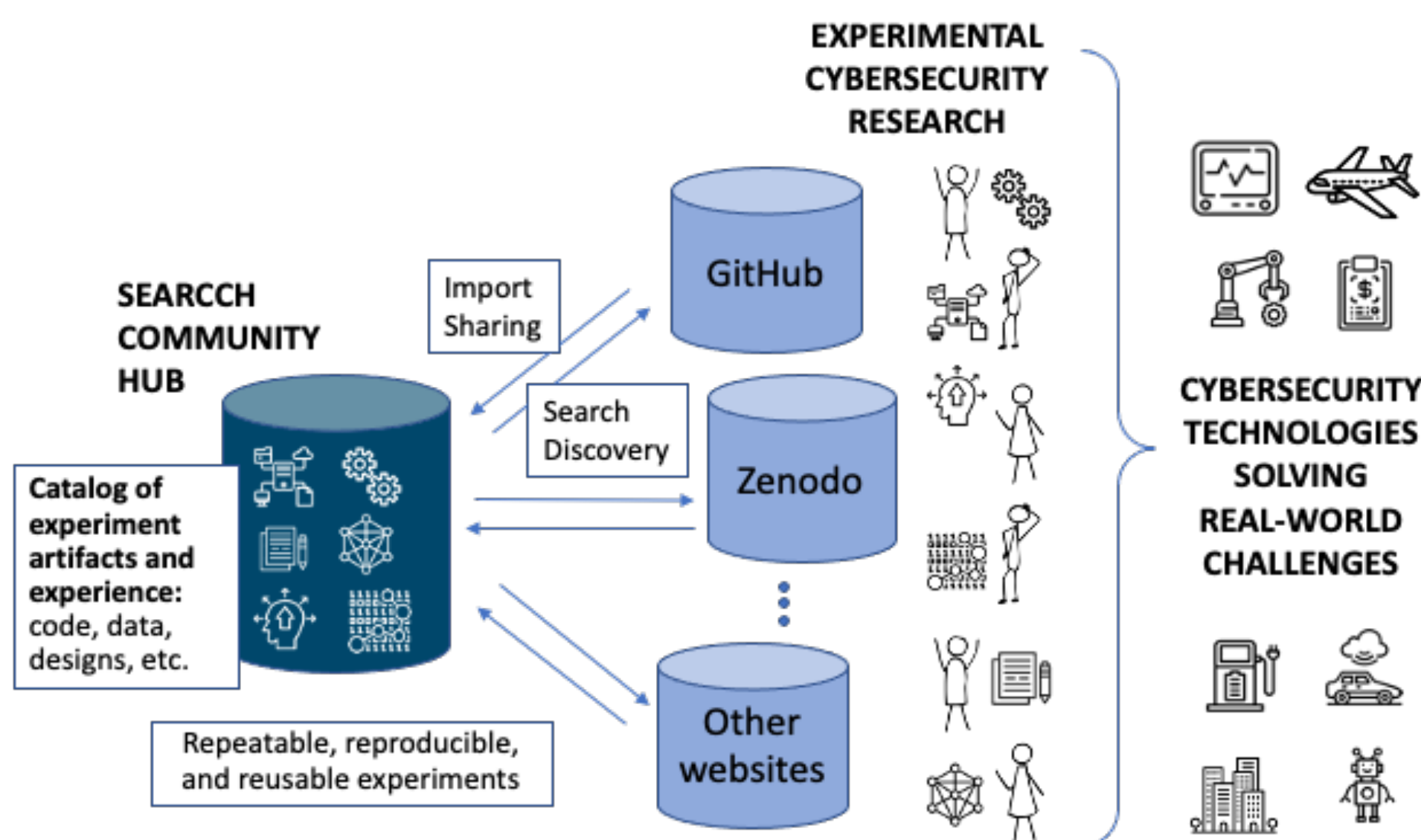
Challenge

Ad hoc cybersecurity experimentation severely retards scientific progress
 Use of one-off, painstaking, and error-prone processes; not shared for reuse and validation
 Lack of repeatable, reproducible, and reusable processes and other artifacts

Technology

Community-driven platform lowers barrier to sharing and reusing research artifacts

- Sharing artifacts through web interface and “importer”
- Discovering artifacts with smart search capability enabled by rich metadata representation
- Exchanging experiences via reviews/ratings

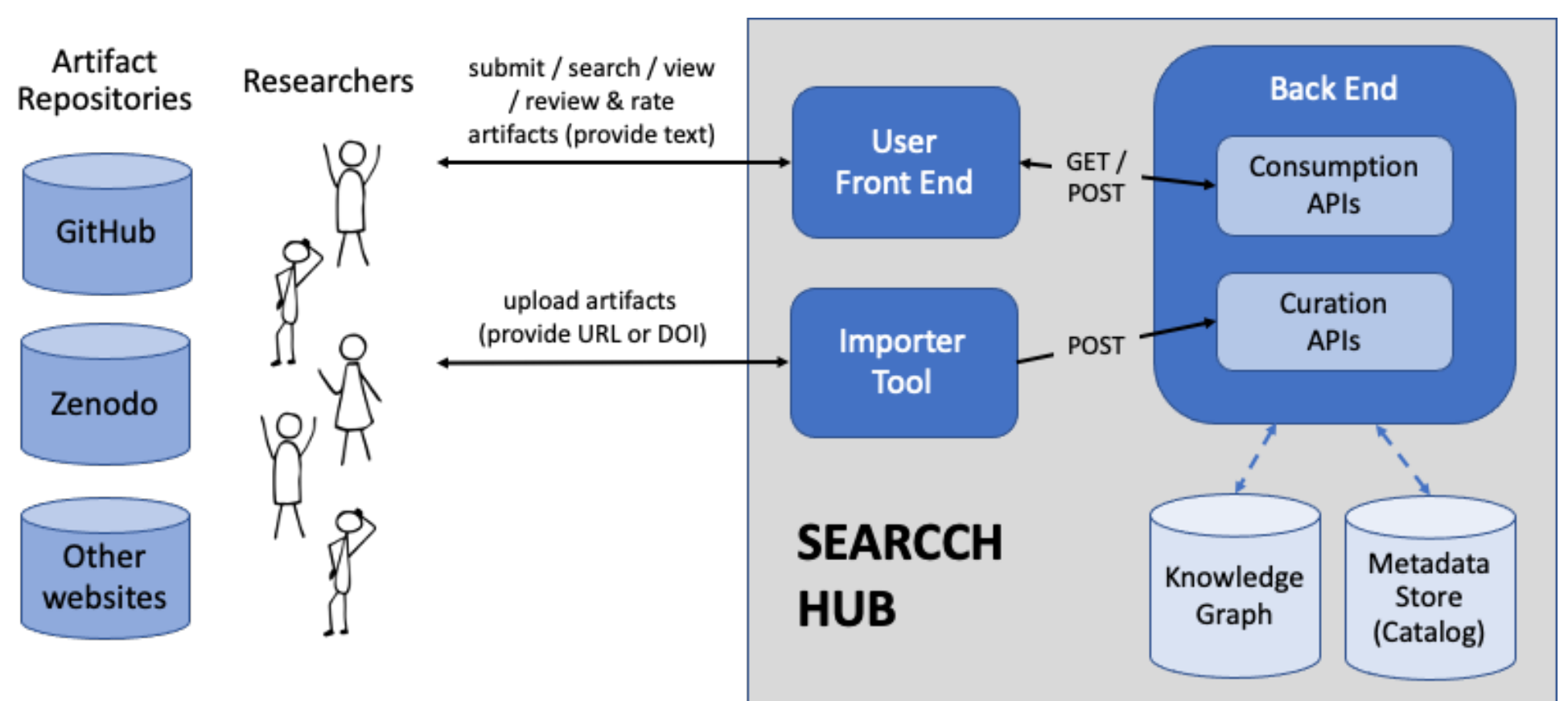


Scientific Impact

Enable the community to build upon the work of others or to compare solutions
 Transform the way cybersecurity experimental research is conducted
 Advance the knowledge, understanding, rigor, and practice across CISE disciplines

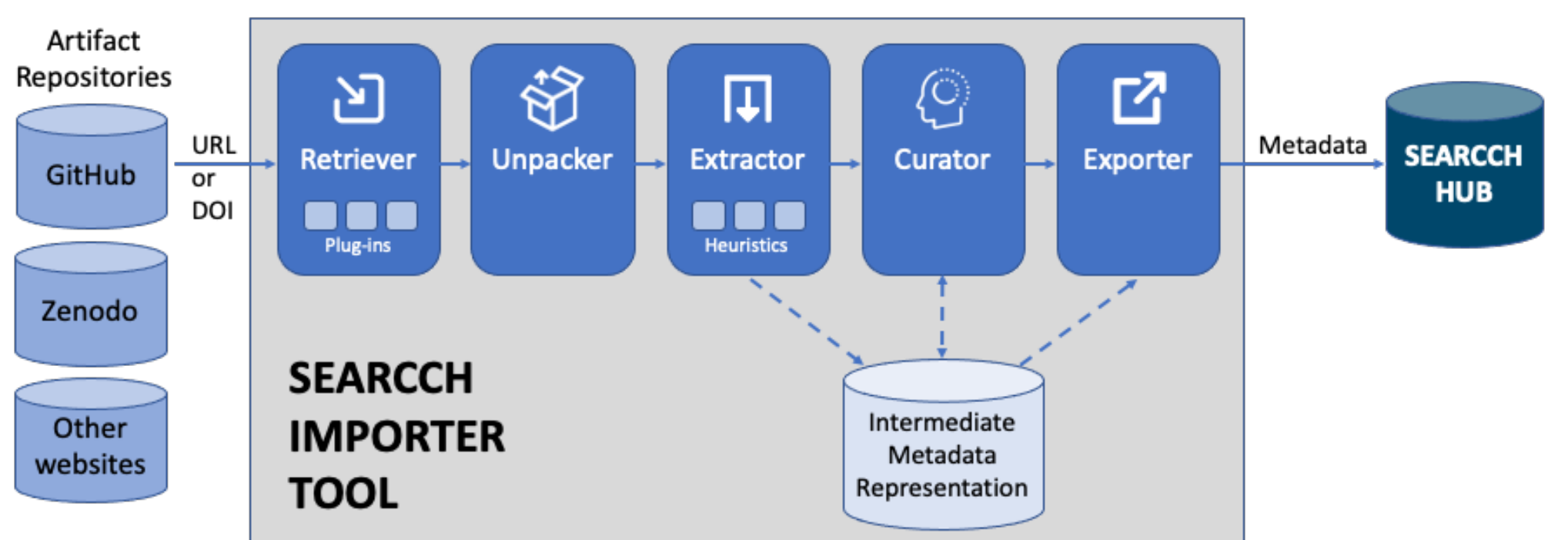
High-level Architecture

SEARCCH is comprised of a front end and an importer tool which enable users to interact with a back end that supports consumption and curation of artifacts via a knowledge graph and the metadata store



Importer Tool

Python application partially automates task of creating metadata that describes an artifact
 Allows manual editing of metadata prior to export



Community

Outreach and engagement activities to build active, diverse, online community around hub
 Enable direct sharing of expertise and crowd-sourcing research ideas and experiment design
 Grow hub to include collections of artifacts covering range of cybersecurity challenges

Broader Impact – Society

Greater scientific quality of cybersecurity research through validation, sharing/reuse, and community building
 Enhanced research leads to new effective solutions to real-world cybersecurity challenges

Broader Impact – Education

Lower barrier to researchers and students from underrepresented schools – enable them to quickly become active participants in cybersecurity research through shared access to resources

Broader Impact - Metrics

Measuring contributions, unique contributors, unique visits, unique visitors who adopt, visitors who engage, publications who used hub

