CYsyphus – The Cyber Security Policy Recommendation Tool

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CYsyphus (pronounced "SIGH-si-fis") is a **decision-support tool**, that mines the wisdom from past cyber reports and presents them in an easy-to-search online database. With the long-term vision to **capture and code every cybersecurity recommendation made in the English language**, the tool aims **to reduce, by an order of magnitude, the amount of time it takes to ideate and create policy-relevant recommendations.**

The Problem – Ignoring Past Recommendations

For decades, the Federal government, private sector, universities, and think tanks have issued thousands of recommendations to improve cybersecurity. Despite their abundance, these reports are often overlooked or forgotten. Like the Greek mythological figure Sisyphus, who has to roll a boulder up a hill for eternity, new task forces are created, that ignore prior work and propose similar recommendations.

The Solution – Mining the Past to Enhance the Future

The cybersecurity community must develop longer memories. CYsyphus will make lessons of the past more searchable for faster, more effective cyber policy decisions.

1. The primary product of CYsyphus is an interactive, publicly accessible decision support tool that allows front-end users to search and filter for existing cyber policy recommendations.
2. As secondary product, CYsyphus will give researchers access to the full database as well as collected metrics from the collective use of the decision support tool.

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Future Users

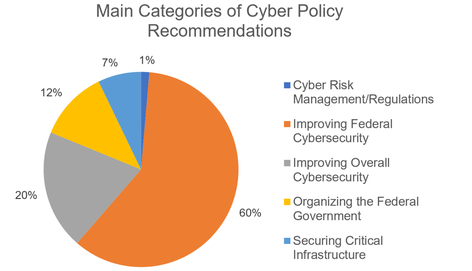
1. **Executive-branch decision makers and their staffs** can create new cybersecurity policies, by accessing relevant recommendations and draft policy memos to help guide new policies.
2. **Legislators and their staffs** can easily reference past recommendations, gauge progress or source ideas for new legislation to position members on emerging issues.
3. **Cyber Security Researchers** gain access to a rich history of public policy on a critical issue underpinning national security, as well as the digital economy and society.
4. **Industry** may access information about recommendations pertaining to supply chain, third-party risk, and other systemic issues for setting internal policies and cyber security standards.
5. **Others**, including journalists, students and presidential campaigns

Methods and Analytical Approach

We have developed a data set of ~1,200 recommendations from 130 reports, that contains the recommendations, categorization and available meta-data from the reports. The project will employ an NLP-driven categorization of existing data (re-classification) as well as an identification of new recommendations from manually and web-crawled reports.

#	Task	Level	Decision
1	Identify recommendation	Sentence / Paragraph	Binary (is recommendation)
2	Tag/Categorize recommendations	Sentence / Paragraph	Classification (multiple categories)
3	Tag/Categorize summary/whole document	Executive summary / Document	Classification (multiple categories)
4	Find similarity between recommendations	Sentence / Paragraph	Comparison (similarity)

Figure 1. Cases for NLP application



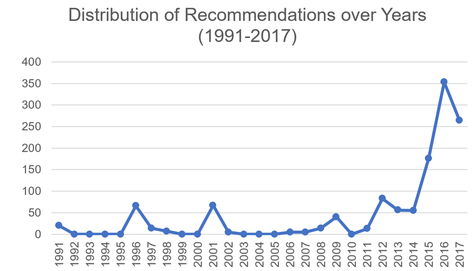


Figure 2 & 3. Descriptive Statistics from Existing Recommendation Database

Next steps – Expanding the Database and Designing the Tool

CYsyphus is a joint venture between the Saving Cyberspace Initiative at SIPA and the Atlantic Council's Brent Scowcroft Center for Strategy and Security. In the next two years, the team will expand the database with a focus on recommendations of the past four years and set up the user-friendly front-end. With CYsyphus, researchers and policy staffers will be able to easily mine the combined wisdom of the past, increase the speed and quality at which policy is created and assess cyber policy effectiveness.

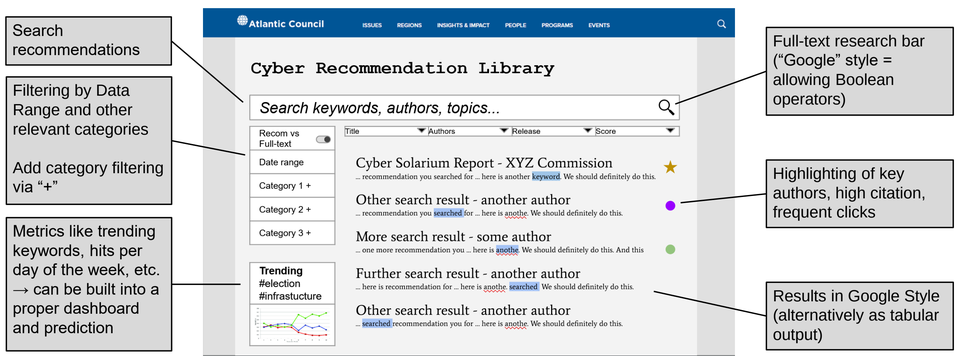


Figure 4. Mock up for potential CYsyphus front-end

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