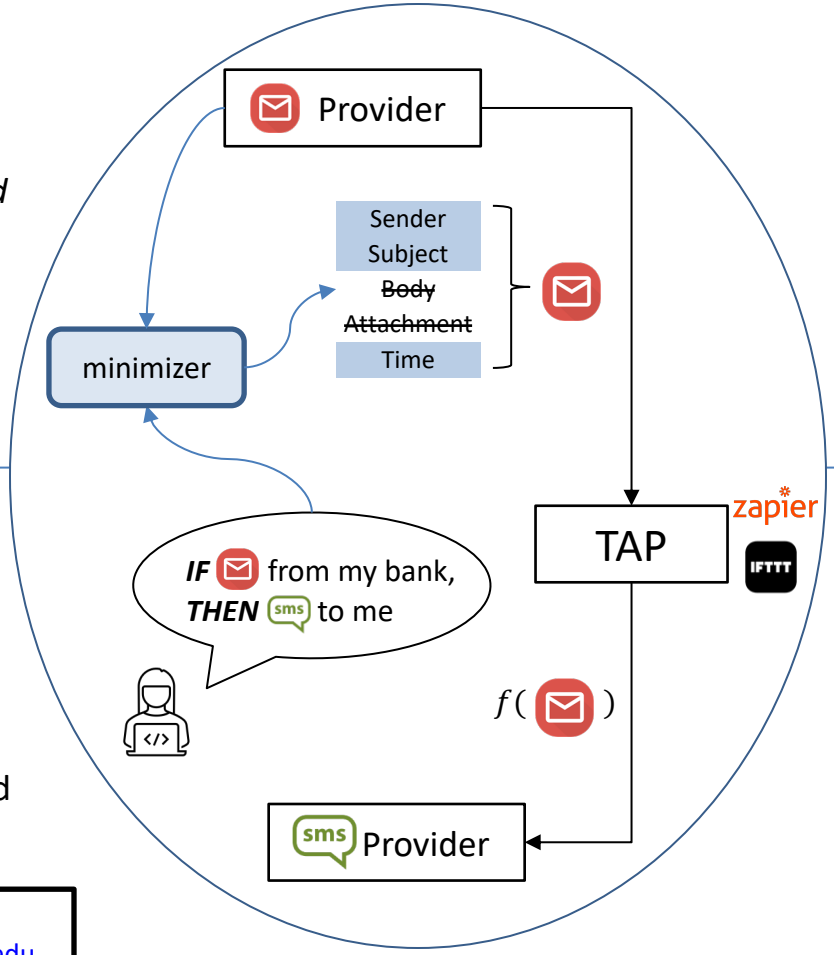
Security and Privacy Foundations of Internet-Scale User-Centered Automation

Challenge:

- Trigger-action platforms (TAPs) requires *unfettered* access to user data from third-parties
- Can we ensure only the *necessary* data are released to TAPs?

Solution:

- Develop a *practical data minimization model* for trigger-action rules
- Apply static and dynamic data-flow analysis to build function minimizers



Scientific Impact:

- Understand different levels of overprivileges caused by current TAP designs
- Automatically ensure data minimization when executing trigger-action rules
- Design of authorization system with dynamic access control

Broader Impact and Broader Participation:

- Prevent unnecessary leakage of user data to TAPs *(estimated 74% reduction)*
- Help service providers build privacy-aware APIs
- Adhere to data minimization principle in GDPR/CPRA

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