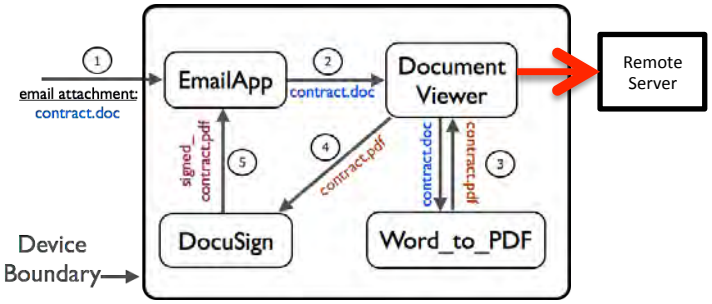
CAREER: Secure OS Views for Modern Computing Platforms

NC STATE UNIVERSITY

Challenge:

- Traditional "access" based security mechanisms do not sufficiently address the diversity and composition of security principals that access user information in modern computing platforms (e.g., Android).

How do we enable data sharing among third-party applications, and also prevent unauthorized disclosure?



Our results demonstrate how to practically and securely incorporate information flow control guarantees into modern computing platforms such as Android

Solution:

- Our work has identified novel abstractions for incorporating "flow-based" access control semantics in modern computing platforms
- Key innovations include novel methods to express (Aquifer) and enforce (Weir) Decentralized Information Flow Control (DIFC) in Android that is both practical and secure.

Scientific Impact:

- We have proposed primitives (e.g., lazy polyinstantiation) that address known security and practical concerns with prior approaches.
- The project results demonstrate the ability for future client platforms to practically incorporate information flow control as a primitive for protecting user and application information.

Broader Impact:

- The results impact the future design of computing platforms such as Android, iOS, and Windows.
- Project artifacts such as source code have been made publically available.
- One patent application has been filed in the US.
- PI Enck has engaged extensively with the Raleigh Chapter of ISSA, an industry security society that reaches practitioners ranging from community college students to enterprise executives.

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