CRII: SaTC: A Language-based Approach to Hybrid Mobile App Security

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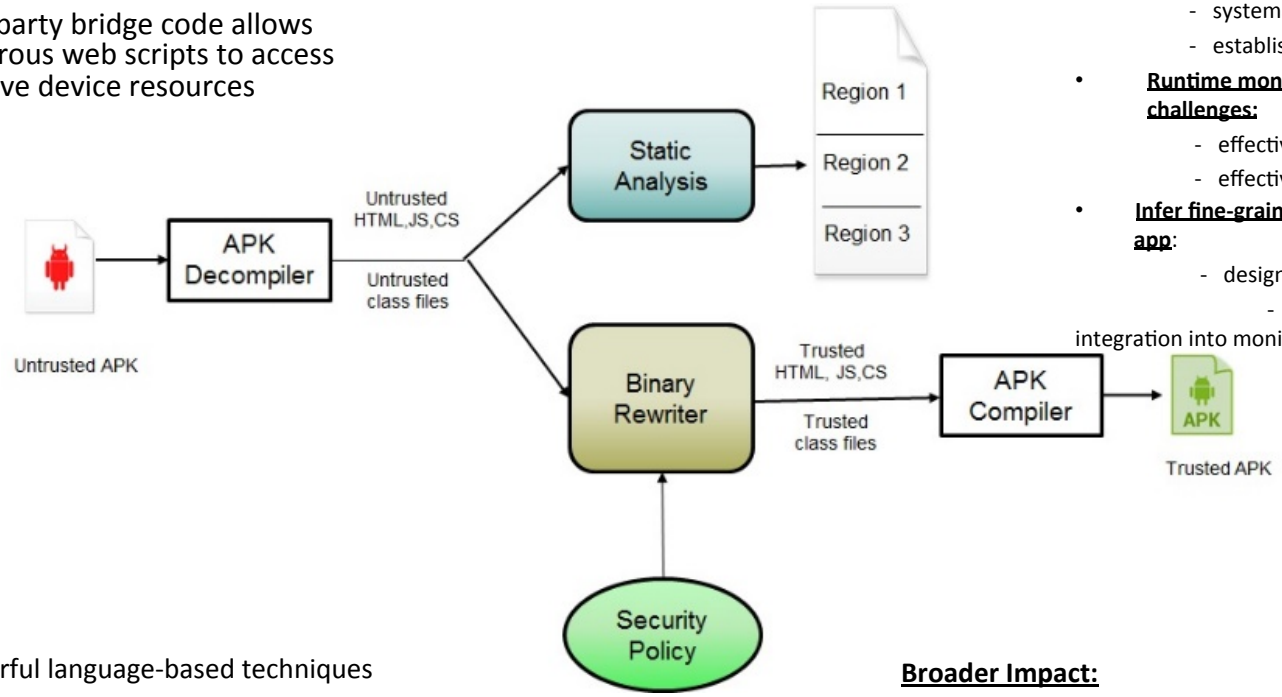
Challenge:

- Complex, cross-platform environment
- Third-party bridge code allows dangerous web scripts to access sensitive device resources



Solution:

- Powerful language-based techniques
  - In-lined Reference Monitoring
    - Retroactive security enforcement
    - Fine-grained, flexible policies
    - Flexible enforcement (developer, app store, consumer)
  - Static analysis

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Scientific Impact:

- **Security policies**:
  - systematic mapping of hybrid attack surface
  - establishing appropriate security policy classes
- **Runtime monitoring design/implementation challenges:**
  - effective complete mediation
  - effective tamper-proofing of monitoring
- **Infer fine-grained permissions-regions for pages in the app**:
  - design a static-analysis algorithm
  - serve as security policy models for integration into monitoring framework

Broader Impact:

- Mobile app security a pressing social responsibility
  - 2 billion smartphone users globally today, including children!
- Case studies, practical examples, research experience:
  - graduate-level courses, MS, Certificates in Cyber-Security at UNCC, WiC
- University-Industry collaborations in mobile security research