

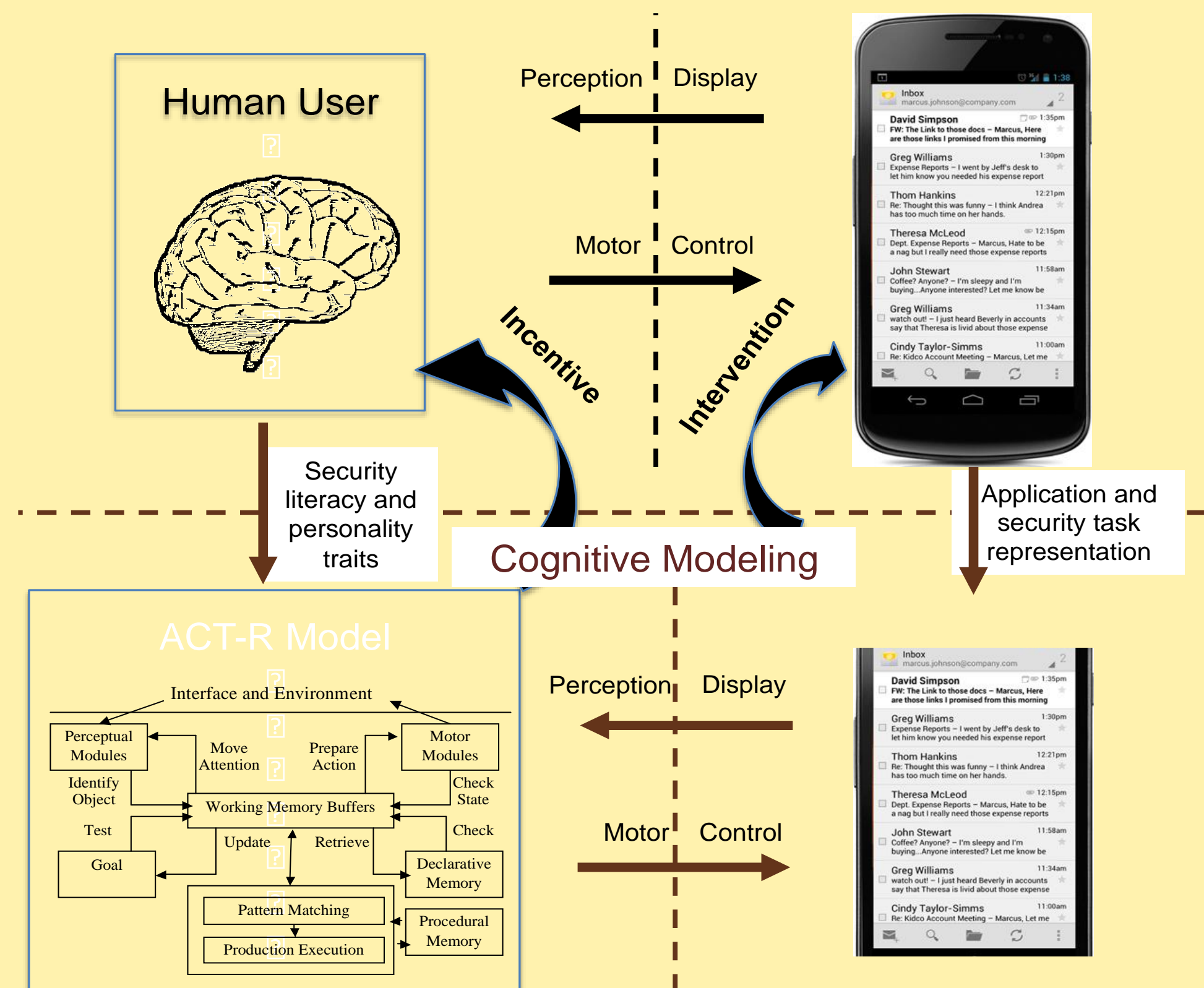
Modeling Security/Incentive Behaviors

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Empirical and Computational Human Security Dynamics

- In contrast to other design disciplines, we have not fully explored computational models.
- Predictive and analytic models offer more faceted descriptions of a problem.
- Analytical Cognitive Modeling (CogM) architectures can effectively capture user security behaviors, as well as mechanism of incentives and interventions
- In so doing, they promote designs tuned to human's sometimes sub-optimal or irrational preferences and tendencies.



- CogM models can characterize differential security performances across user types, e.g., common user vs. advanced user
- CogM models can provide accurate insights of varying computing environments, e.g., PC vs. mobile.

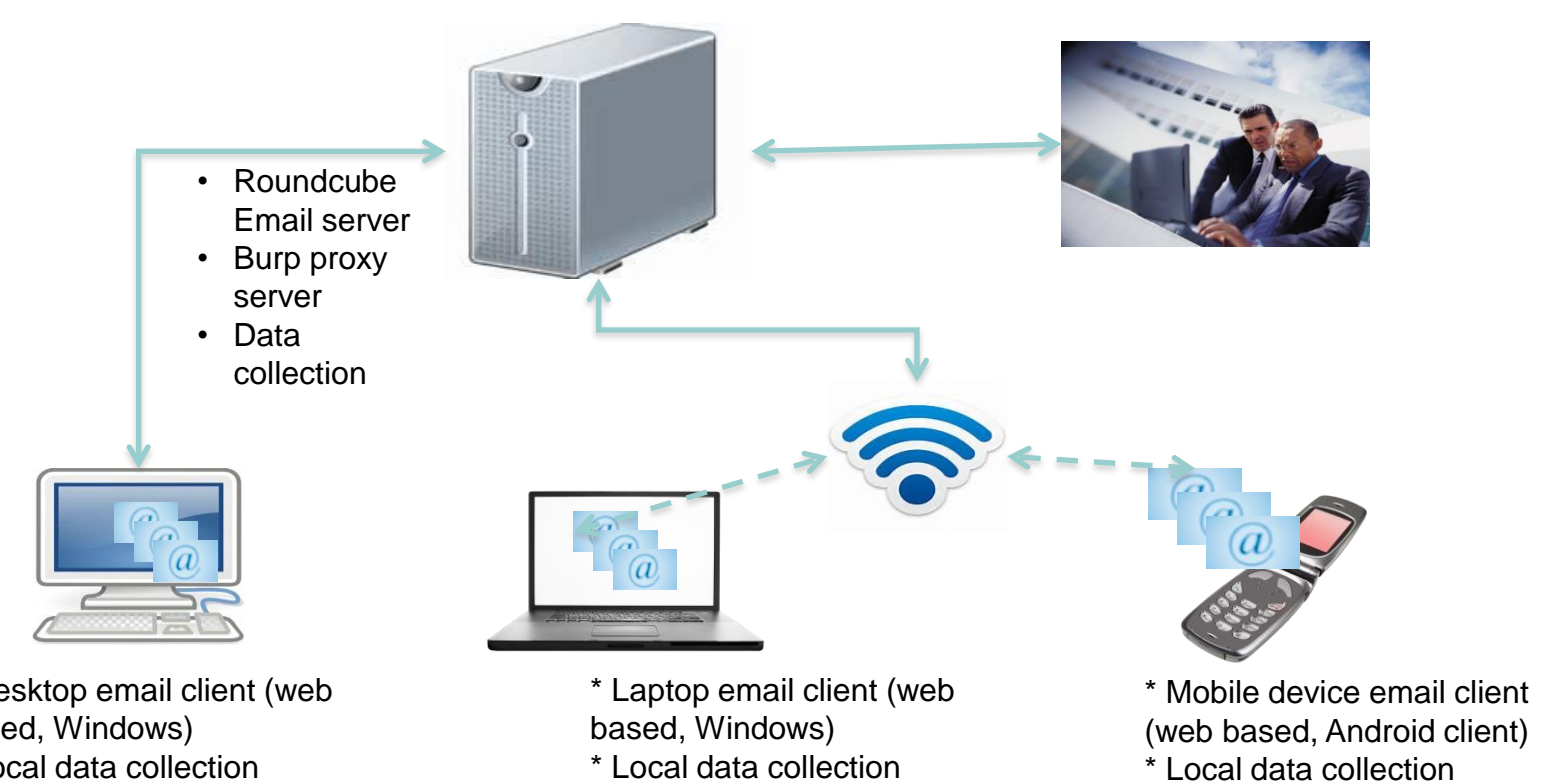
Approach

- **Benchmark Cognitive Modeling Architectures for Security Behavioral Modeling**
- **Augment Security and Incentive Modeling Capabilities**
- **Model Users in Single Task and Multi-Tasking Security Applications**
- **Calibrate and Validate Cognitive Security Modeling with Human Subject Testing Studies**

Modeling Methodology Study

- A higher-level model, which takes advantage of existing CogM constructs, is determined to be critical to the success through a literature review.
- Incentives and interventions are modifications to realities of production rules, knowledge chunks, and their associated semi-symbolic values.

Empirical Study Set-up



A Pilot User Study

- 10 participants went through 40 emails through think aloud method.
- PC and mobile clients were used.
- Data collection was tested for classification effectiveness and platform difference.

An User Study on Intervention and Incentive

- Participants classify emails of three phishing tells.
- Targeted training based on performance is given.
- Financial reward is introduced in treatment group.
- Data collection is in process.

Interested in meeting the PIs? Attach post-it note below!