

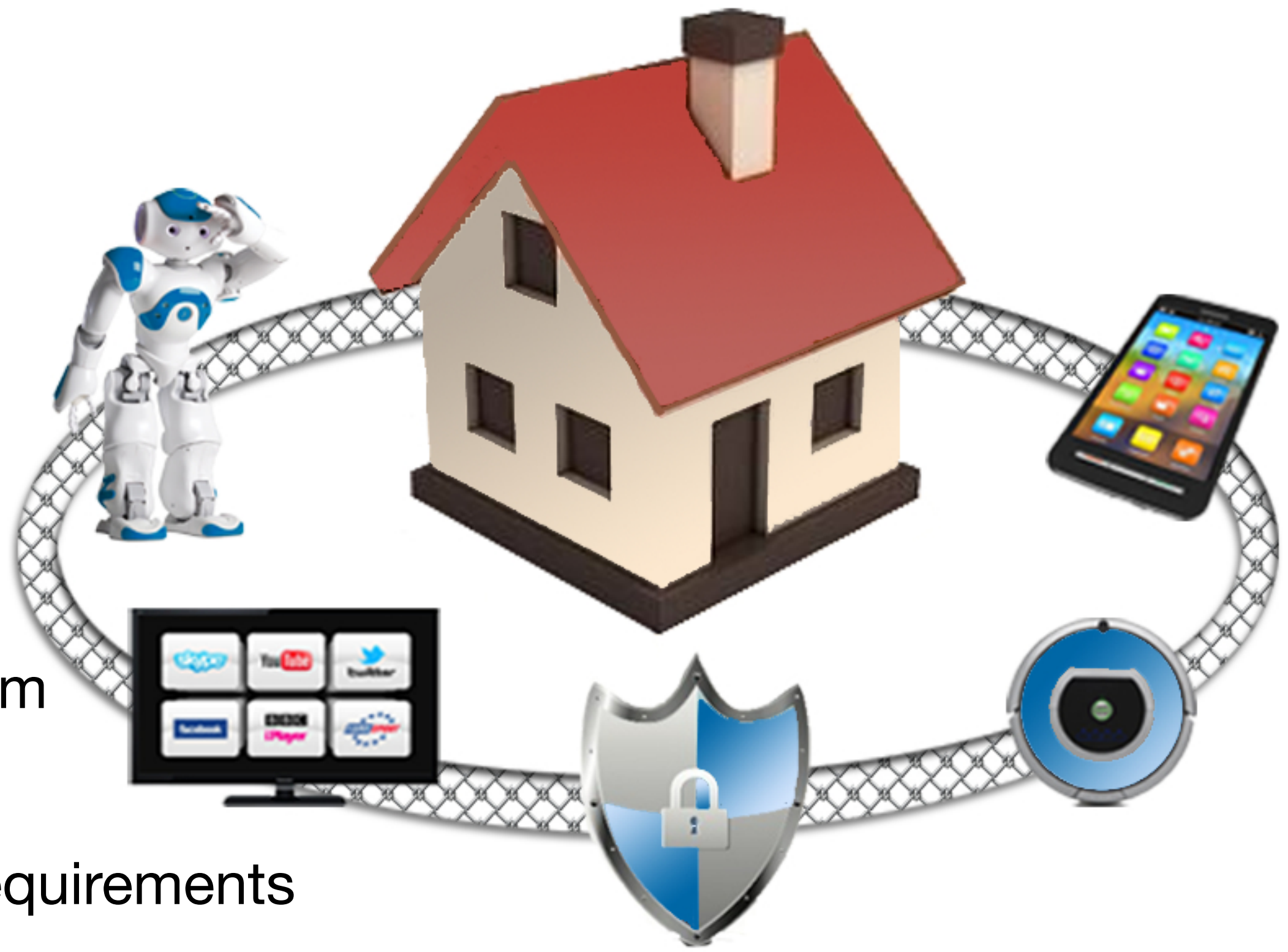
Collaborative Security

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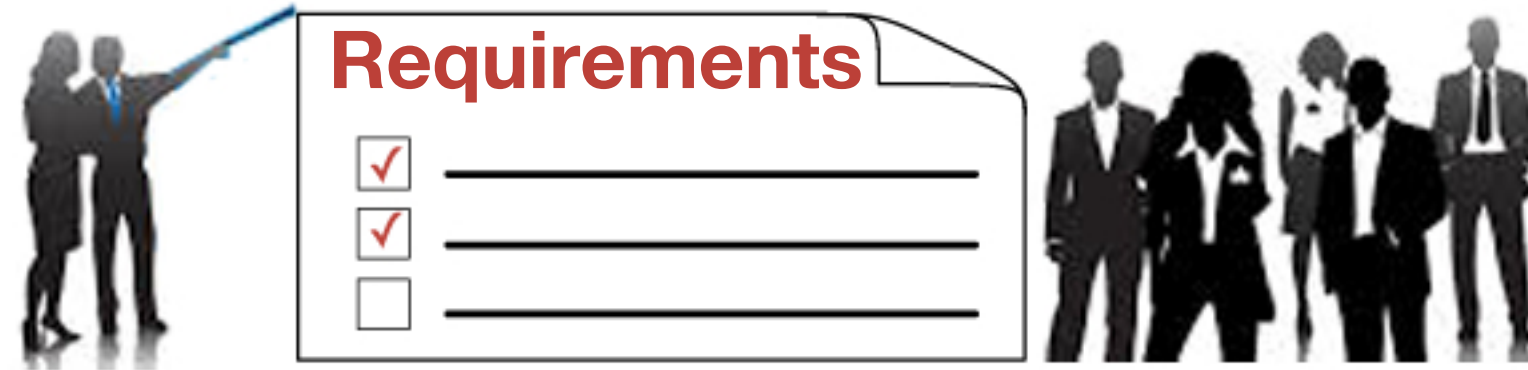
Motivation

Can everyday technology help us protect our homes? Make our streets safer and our cities more secure?

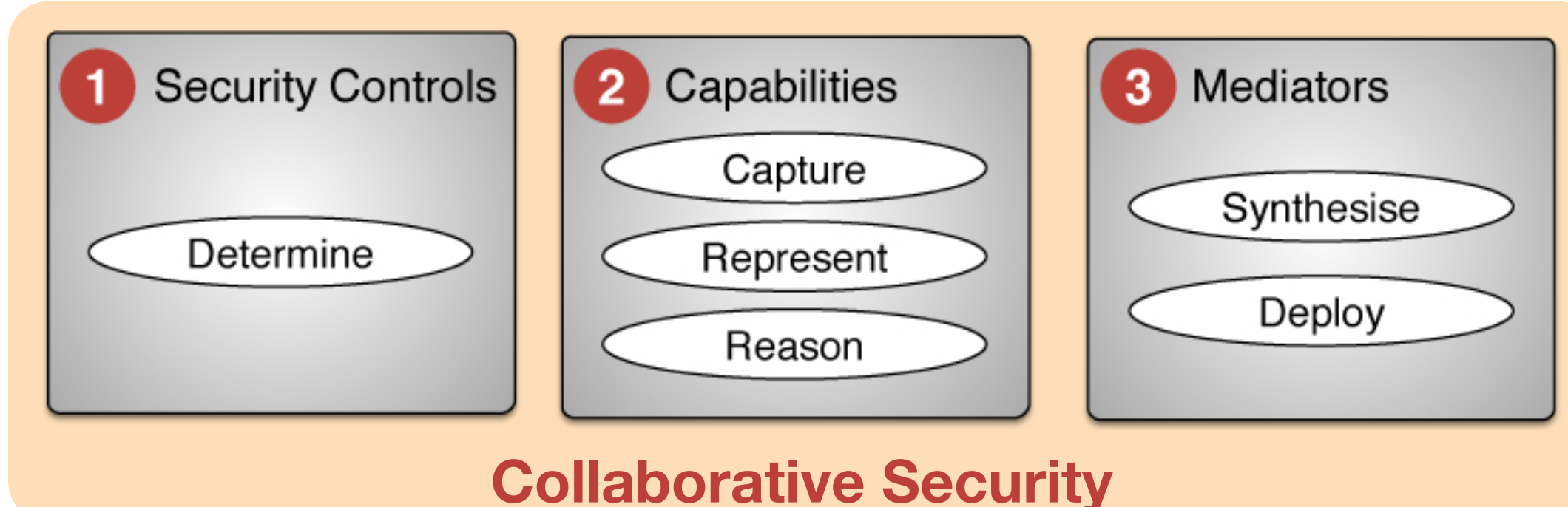
- Typical home could contain more than 500 smart devices by 2022
- Collaborative security enables users to exploit everyday technology to protect assets from harm
- Dynamically select and compose multiple heterogeneous components to meet security requirements



Framework

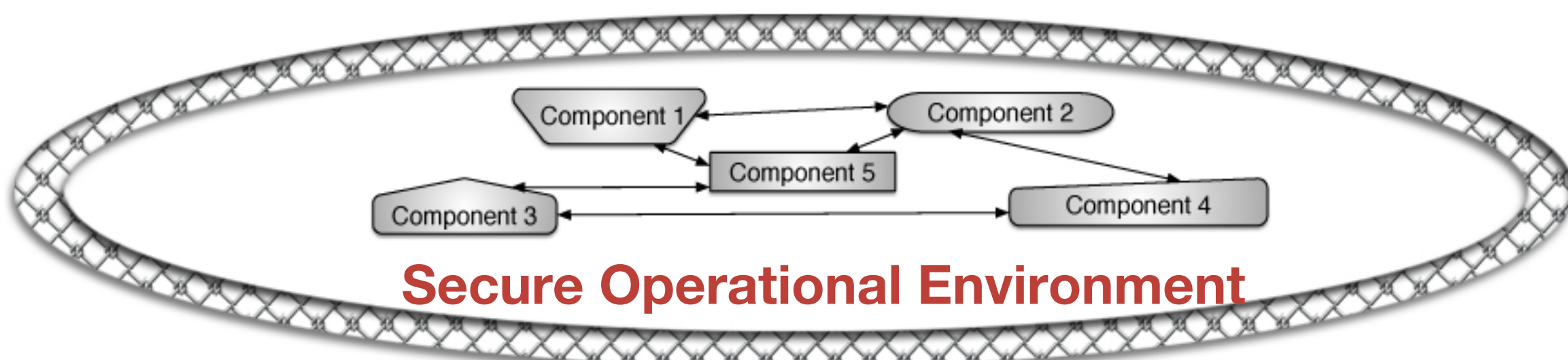


*Find capabilities C and mediator M to satisfy the requirements R in environment $\mathcal{E}$
 $C, M, \mathcal{E} \vdash R$*



Collaborative Security

- Security controls specify the mechanisms to enforce security requirements
- Capabilities model what the components can do and how they can do it
- Mediators enable heterogeneous components to interoperate



Secure Operational Environment

Implementation and Results

Implementing the optimal security controls given the capabilities available in the operating environment.

- Prototype: FICS (Features-driven Mediation for Collaborative Security) <http://sead1.open.ac.uk/fics/>
- Experimentation: validated with a collaborative robots case study. larger-scale cases in the future
- Publication: Requirements-driven mediation for collaborative security, SEAMS 2014

