Functional Security Requirements

Building Predictable Systems using Behavioral Security Modeling

TRANSVASIVE

Transparent and Pervasive Security

BROPHEY CONSULTING

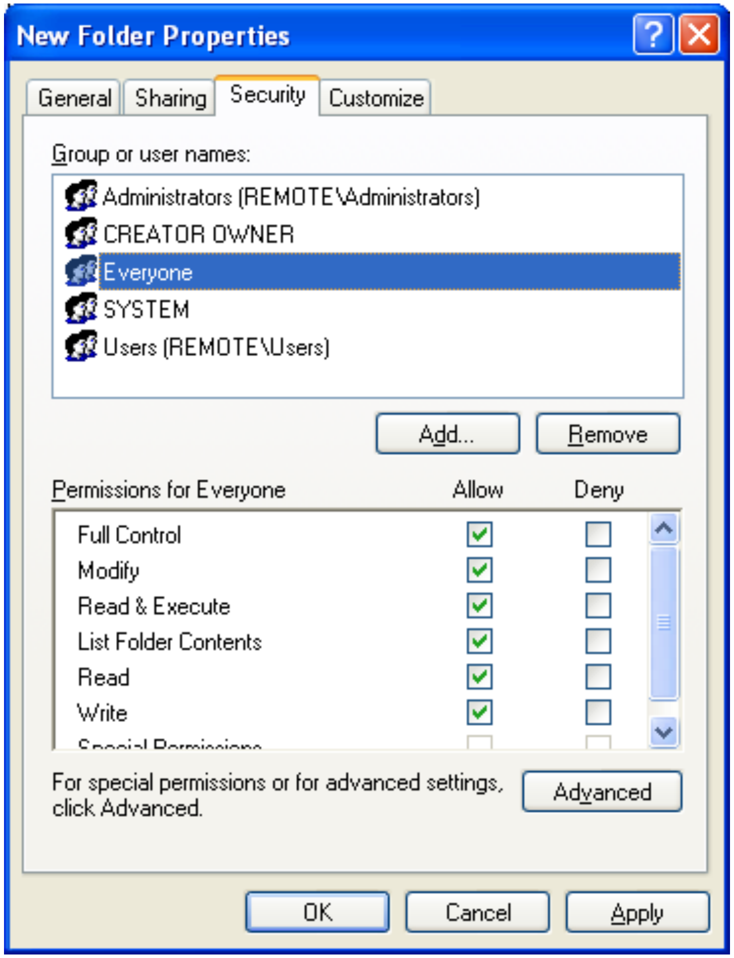
Bridging Technology and Business Strategy

“[T]here are known knowns; there are things we know that we know. There are known unknowns; that is to say there are things that, we now know we don't know. But there are also unknown unknowns – there are things we do not know we don't know.” – United States Secretary of Defense, Donald Rumsfeld

KNOWNS AND UNKNOWNS

“I don’t care about security.”

Everyone



Group or user names:

- Administrators (REMOTE\Administrators)
- CREATOR OWNER
- Everyone
- SYSTEM
- Users (REMOTE\Users)

Permissions for Everyone	Allow	Deny
Full Control	☑	☐
Modify	☑	☐
Read & Execute	☑	☐
List Folder Contents	☑	☐
Read	☑	☐
Write	☑	☐
Special Permissions	☐	☐

For special permissions or for advanced settings, click Advanced.

"I just set up this new folder, and want to give everyone access"

Everyone…

- on my team?
- in IT?
- in the company?
- who is able to access this directory, even anonymously?

Security Requirements Gap

Traditional Requirements

- Security Architecture
- Non-Functional
- Threats
- Exploits
- Defense in Depth
- Misuse Cases
- Known Unknowns

Well-covered in current literature

“Keep the bad guys from messing with our stuff.”

Functional Requirements

- Business Controls
- Functional
- Least-Privilege
- Abuse
- Quality
- Constraints
- Unknown Unknowns

Missing from current literature

“What are the good guys allowed to do?”

Behavioral Security Modeling

a method for describing and organizing security requirements

Functional requirements for robust and secure information systems must define all human/ information interactions permitted by the system.

BSM Approach

- **Constraints**
- Checklist of Questions
- Requirement Patterns
- Go-Path and No-Go Path

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- Social
- Information
- Location
- Temporal
- Input

BSM Approach

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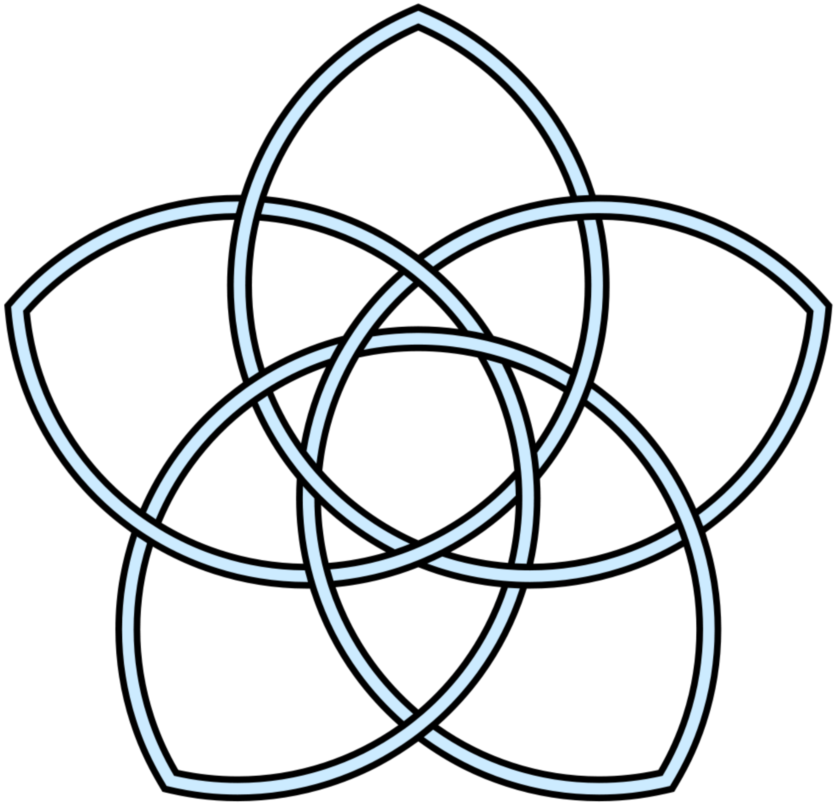
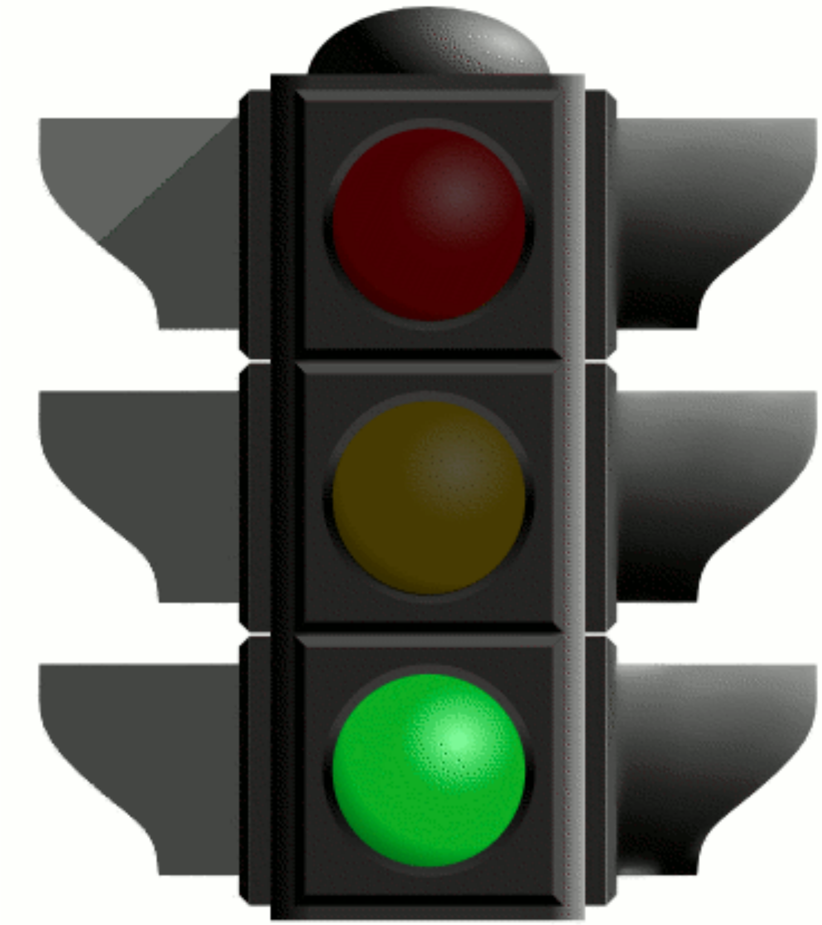
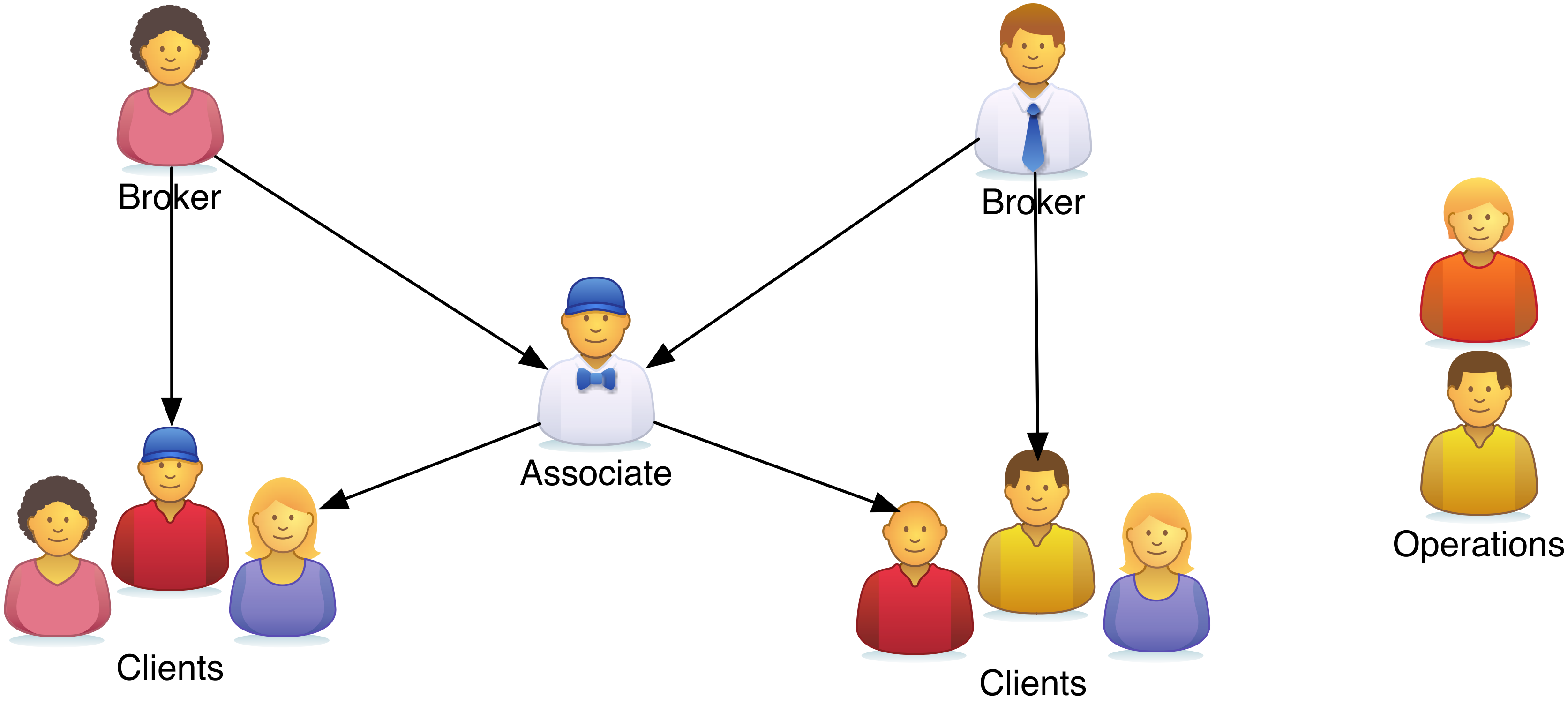


BSM Approach

- Constraints
- Checklist of Questions
- Requirement Patterns
- **Go-Path and No-Go Path**

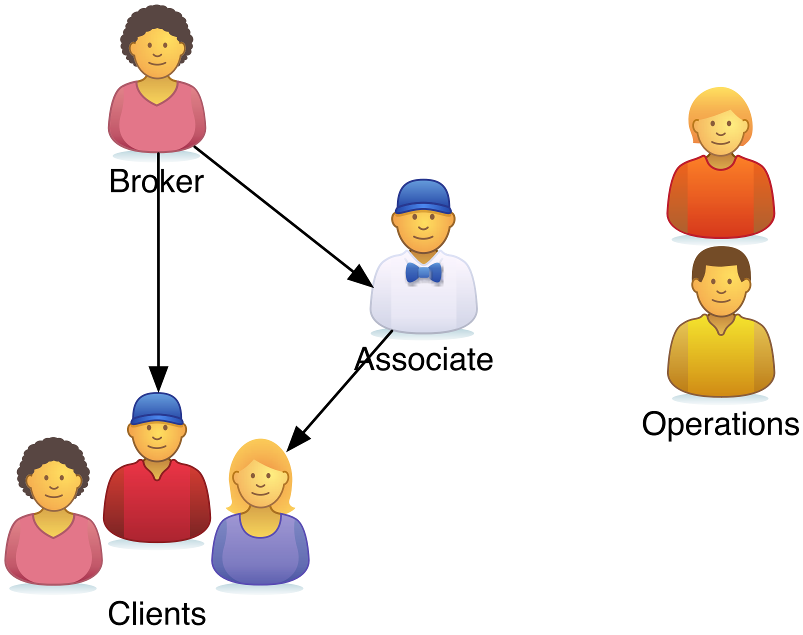


Example: Broker Financial



Example: Broker Financial

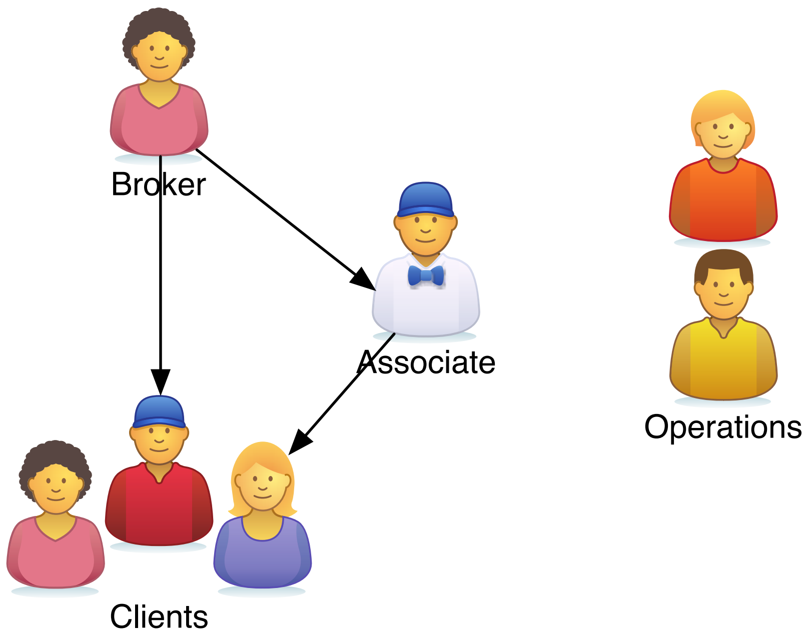
- New Financial Services Firm
- Web-based books & records system
- Broker, Associate, Operations
- Two Offices
- Alternate Universe



Example: Broker Financial

Social Constraints

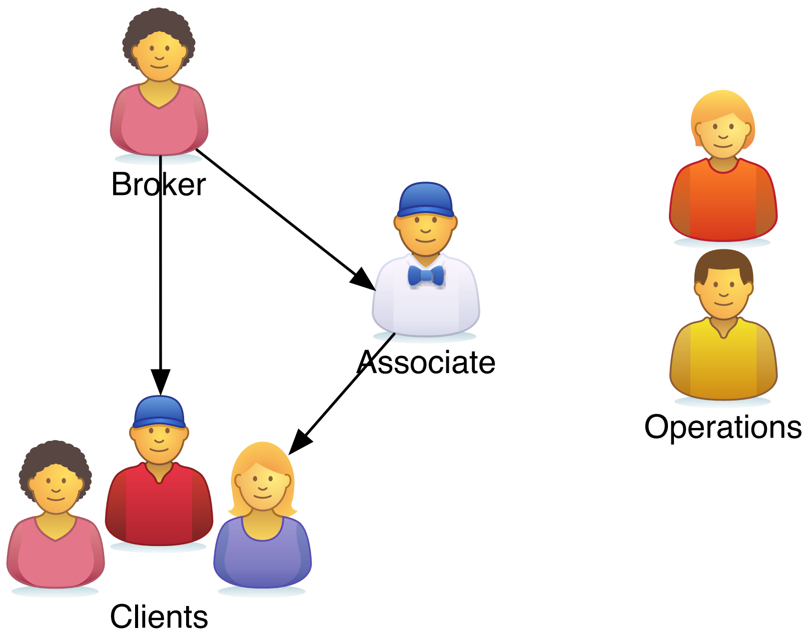
- Role-Based Access: Broker, Associate, Operations
- Attribute-Based Access: Licensing (Trading Functions for Associates, Brokers)
- No-Go Path: Trading



Example: Broker Financial

Information Constraints

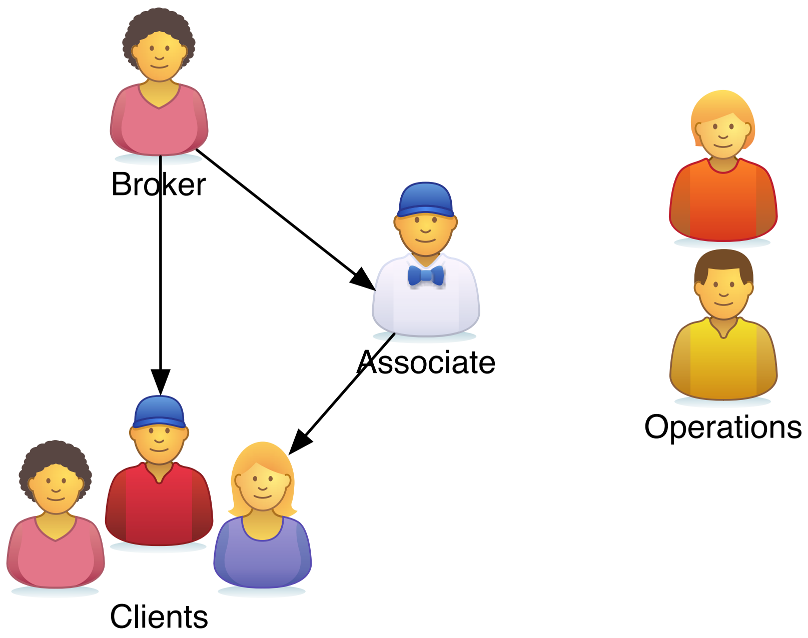
- Role Based Data Access (Clients)
- Dual Controls (Checks)
- “My Data” (Clients)
- No-Go Path: Clients



Example: Broker Financial

Location and Temporal Constraints

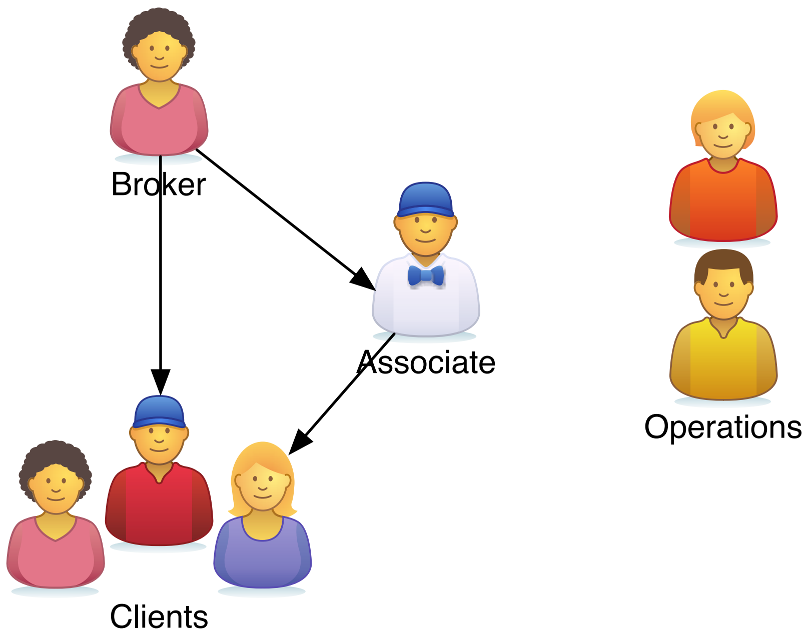
- On-Premise Only (Operations)
- During Business Hours (Trading Functions)
- No-Go Path: Trading



Example: Broker Financial

Input Constraints

- Role-Based Transaction Limits (Trading Limits)
- Input Validation (many)
- No-Go Path: Trading



Behavioral Security Modeling – What’s Next?

- White Paper on http://transvasive.com/
- Field testing: If you’re interested, please let us know!
- *Question Checklist (summary, one-page)*
- *Patterns Website (Wiki)*
- *Training, Tools, Extend approach later into the development lifecycle*

Thank You!

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