Changing the Game: Defining, Preserving, Enhancing Trust

May 19 2010

Claire Vishik

How Can We Change the Rules of the Game?

Look at the big picture

- Not islands of new technologies
- Not only well studied and popular areas of research

Look beyond the emergence of new ideas

- To their adoption and deployment

Look at complex, composite problems

- Introducing broadly applicable technology approaches

Look beyond technology

- Business models, economic incentives, users' attitudes, participation, and awareness, availability of infrastructure

Security environment makes it increasingly difficult to address threats based on improvements to existing approaches

WHY ACTION IS NECESSARY

Complex Attacks, Organized Attackers

New threats from:

- Social networking
- Web mash-ups
- Drive-by downloads
- Mobile devices
- Hardware and firmware attacks
- Virtualization attacks
- Even power management tools

Tools to perform security attacks are readily available and increasingly more efficient
The tools are increasingly adapted to the intended environments

Cybercrime is Funding Organized Crime
Cybercrime has been so profitable for organized crime that the mob is using it to fund its other underground exploits. And U.S. law enforcement is reaching around the world to reel it in.[2]

"We see many signs that criminals are mimicking the practices embraced by successful, legitimate businesses to reap revenue and grow their enterprises."[3]
—Tom Gillis, Vice President and General Manager, Cisco Security Products

Threats are more sophisticated and professional

Security Environment: Layers

Traditional
Attack Targets/
Risk Area

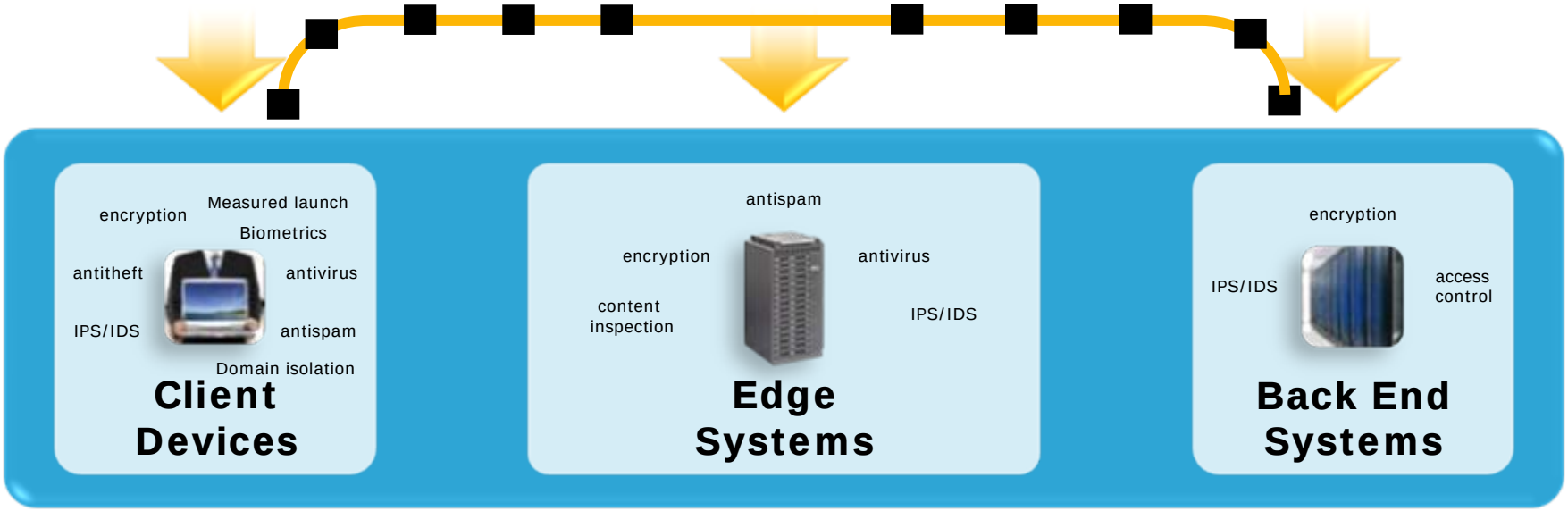
Limited physical protections and more human interaction

Growing
Attack Targets/
Risk Area

Changing perimeters and increased access

Emerging
Attack Area

Strongest physical isolation and lowest accessibility

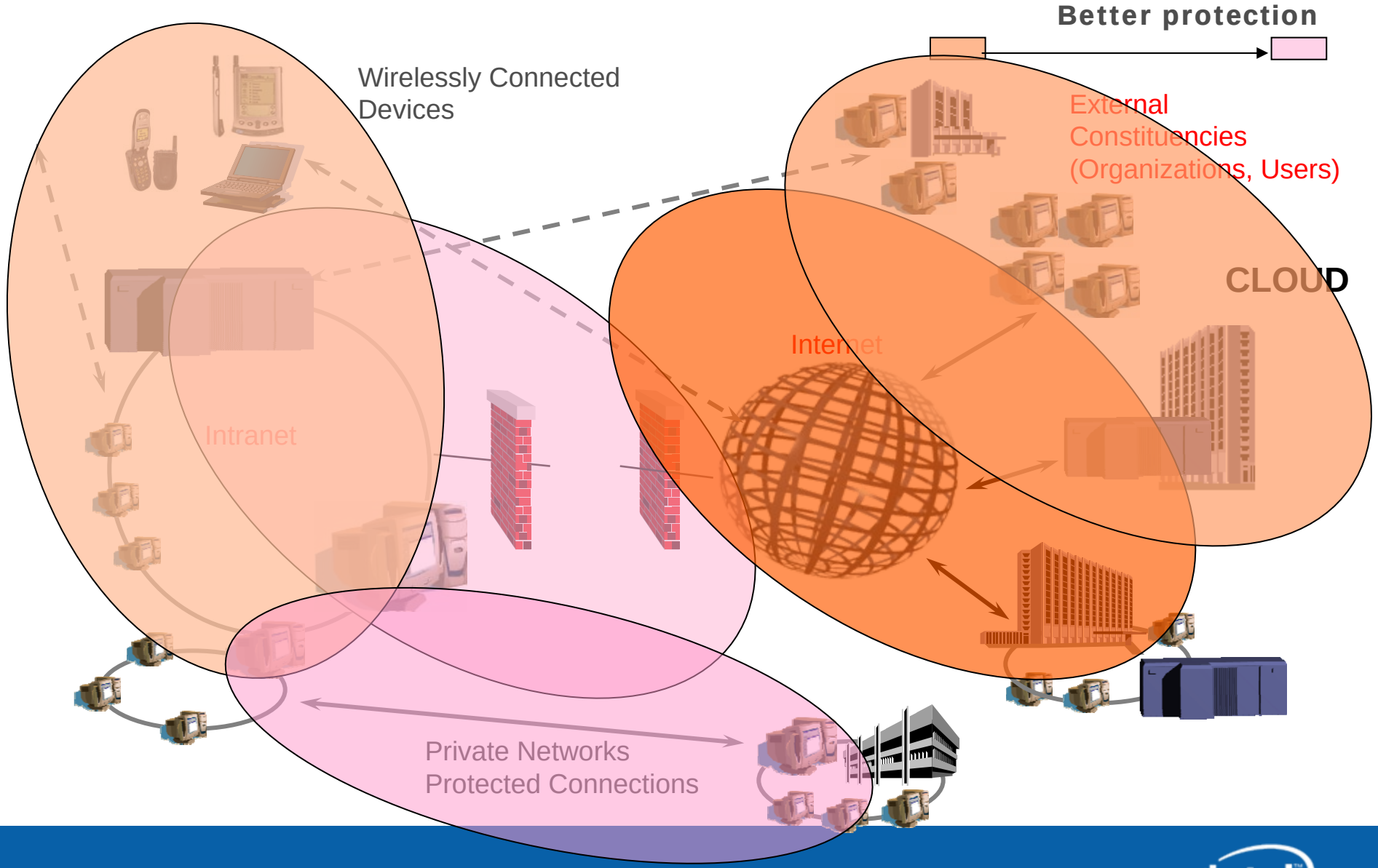


New security threats accompany the emergence of new technologies; protecting one component is not enough

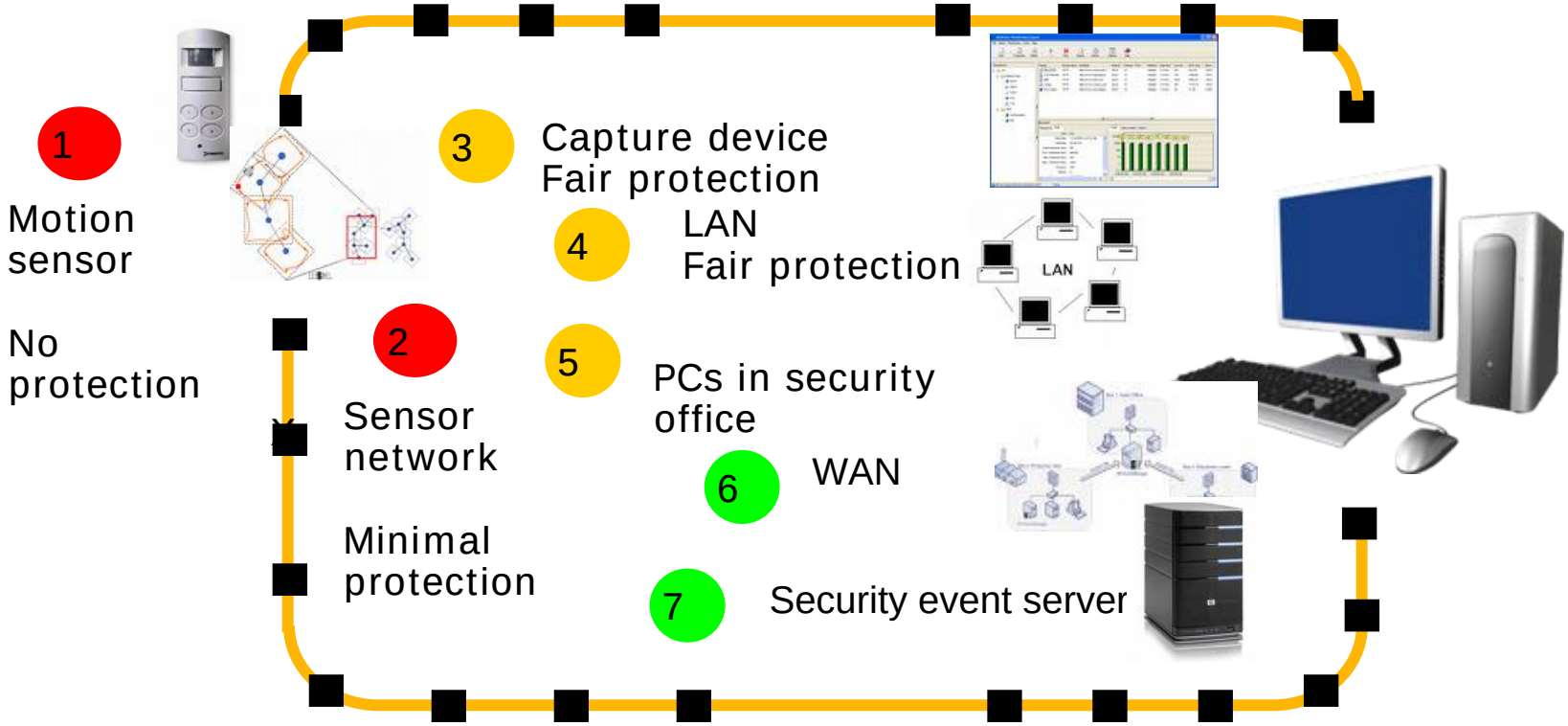
Environments, processes, and business models are very complex and diverse

WHY CHANGE IS DIFFICULT

Diverse Ecosystem: All Components Need to Be Considered

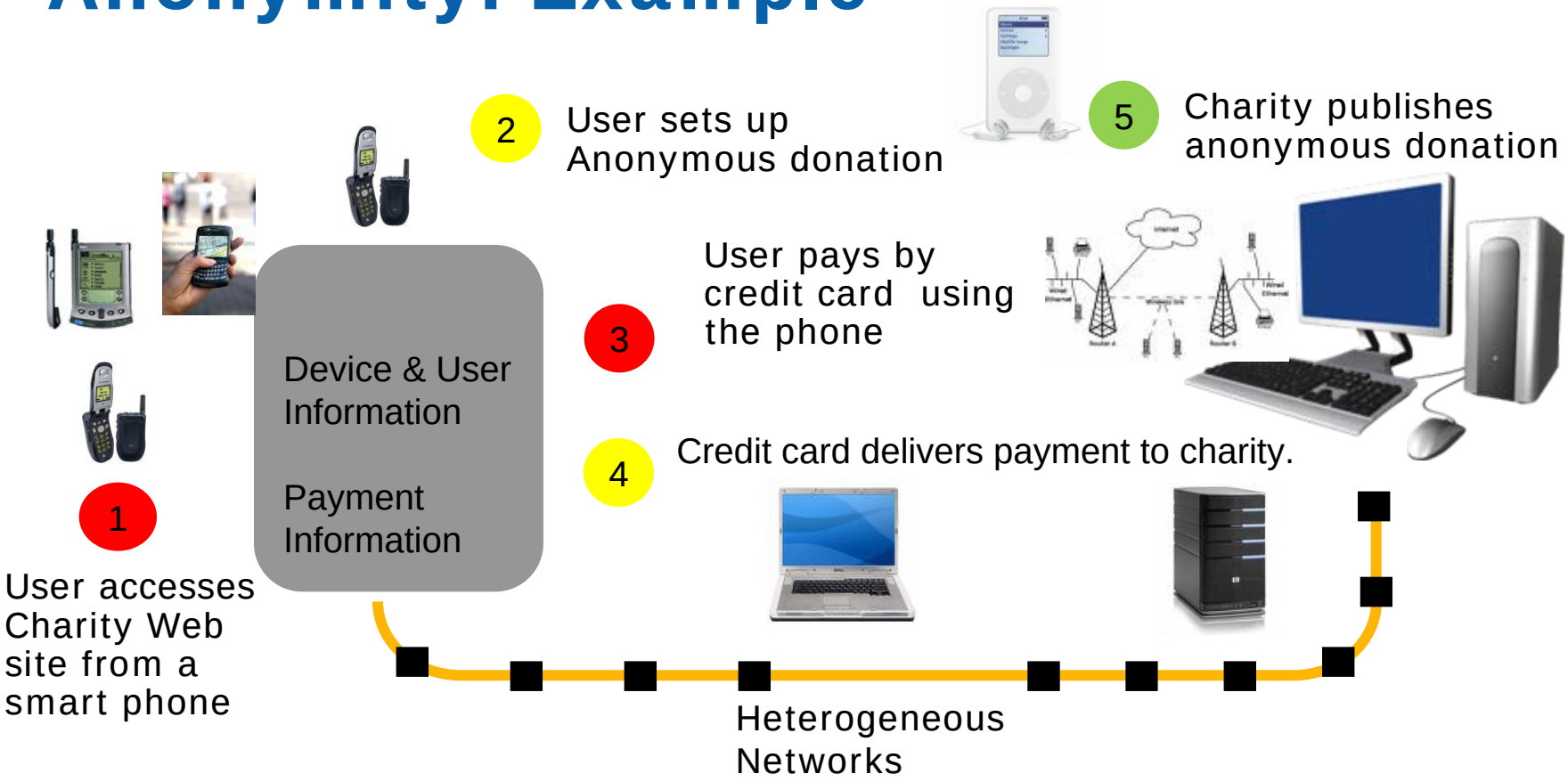


Varying Levels of Protection in Components of Complex Processes



We need to evaluate the technology space as a whole to change the game

Varying Levels of Privacy and Anonymity: Example



We need to evaluate many areas beyond technology to design acceptable solutions

Example Situations Requiring Trust

1. Access to mission critical systems
2. Social networking
3. Online banking and e-commerce
4. Using an ATM in a foreign country
5. Using medical services and accessing medical records
6. Updating/synchronising your devices via your computer
7. Accessing premium content in a mobile setting
8. Setting up and updating PCs for enterprise employees

Research Challenges

1. The research "subject" is very complex
   - Requires skills and input from diverse groups of stakeholders
   - We don't have good models to work together in this fashion yet
2. We don't yet know the rules of the game
   - A broader analysis is necessary to consider game change
   - New approaches to analysis are required
3. Defining operative trust parameters, trust information, and trust tools, from system and device architecture to behaviors and economic incentives is the type of a scientific problem we need to learn to solve
4. Societal and economic components are crucial parts of the "game"
   - We need to learn to study these together with technology
5. Significant infrastructure investment is likely to be required

We have greater ability to look at technology spaces in an integrated fashion, growing interest to search for new approaches

WHY IT IS POSSIBLE

It Is A Good Time to Start Working On Core Issues

1. We understand the issues – and what we do not know -- better
2. We have a technology foundation, access to growing computing power
3. We have a growing experience of collaboration among diverse technology community
4. Lessons learned from the earlier generation of trust technologies can improve direction and focus
5. We have a better ability to address technology issues in a larger context

What We Need

1. New game changing ideas
2. Multidisciplinary innovative approaches
3. Early concern about adoption and deployment
4. Broadly applicable standards
5. Economic incentives and business models to support deployment of new technologies
6. Efficient use of diverse expertise of all stakeholders
7. Focus on hard problems