

ICDS-GEOProcessing-CYBERLAWS Panel

Privacy Invasion and Protection in Digital Society

February 26, 2011 - Gosier, Guadeloupe, France

International Conference on Digital Society (ICDS 2011)

International Conference on Advanced Geographic Information
Systems, Applications, and Services (GEOProcessing 2011)

International Conference on Technical and Legal Aspects of the
e-Society (CYBERLAWS 2011)



DigitalWorld 2011
February 23–28, 2011 - Gosier, Guadeloupe, France



ICDS-GEOProcessing-CYBERLAWS Panel

Panelists

Moderator:

- *Claus-Peter Rückemann*, Westfälische Wilhelms-Universität Münster / Leibniz Universität Hannover / North-German Supercomputing Alliance, Germany

Panelists:

- *Robert Neumann*, Otto-von-Guericke University Magdeburg, Germany
- *Komminist Weldemariam*, Fondazione Bruno Kessler (FBK-Irst), Italy
- *Luigi Logrippio*, Université du Québec en Outaouais, Canada
- *Vrizlynn Thing*, Institute for Infocomm Research, Singapore
- *Thomas Margoni*, Faculty of Law - Faculty of Science, Canada
- *Lasse Berntzen*, Vestfold University College - Tønsberg, Norway

International ICDS-GEOProcessing-CYBERLAWS Panel 2011
Privacy Invasion and Protection in Digital Society

Securing Privacy for Future Information and Computing Systems

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DigitalWorld 2011, February 26, 2011 - Gosier, Guadeloupe, France



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Securing Privacy for Future Information and Computing Systems

Status

Regarding the overall ICDS, GEO, and legal aspects of Privacy Invasion and Protection in Digital Society:

- Aspects on the present state of privacy.
- What impact on society and individuals can be seen due to the rise of data collection, geo data and geo referencing implementation?
- How can we come up with social and legal consequences?
- Where can we see a focus for transparent (global) verification and certification?
- When will we see techniques like full homomorphic encryption for the cloud?
- What will be the essential items for a future management strategy in order to handle the next generation of complex information-society-systems?

Securing Privacy for Future Information and Computing Systems

Vision on Future Complex Information-Society-Systems

Regarding the overall ICDS, GEO, and Legal aspects of Privacy Invasion and Protection in Digital Society:

- Rising impact on society and individuals with interlinked data collection.
- Reflection with consumer behaviour, scientific development, and acceptance in society.
- A flexible but defined integration with scientific, social, and legal work is needed.
- Verification, certification, encryption, and resources component management can handle important aspects – what about international and public commitment to “policies”?



The Economies of Privacy

Chances and Risks of an Open Digital Society

Robert Neumann

(Otto-von-Guericke University Magdeburg)

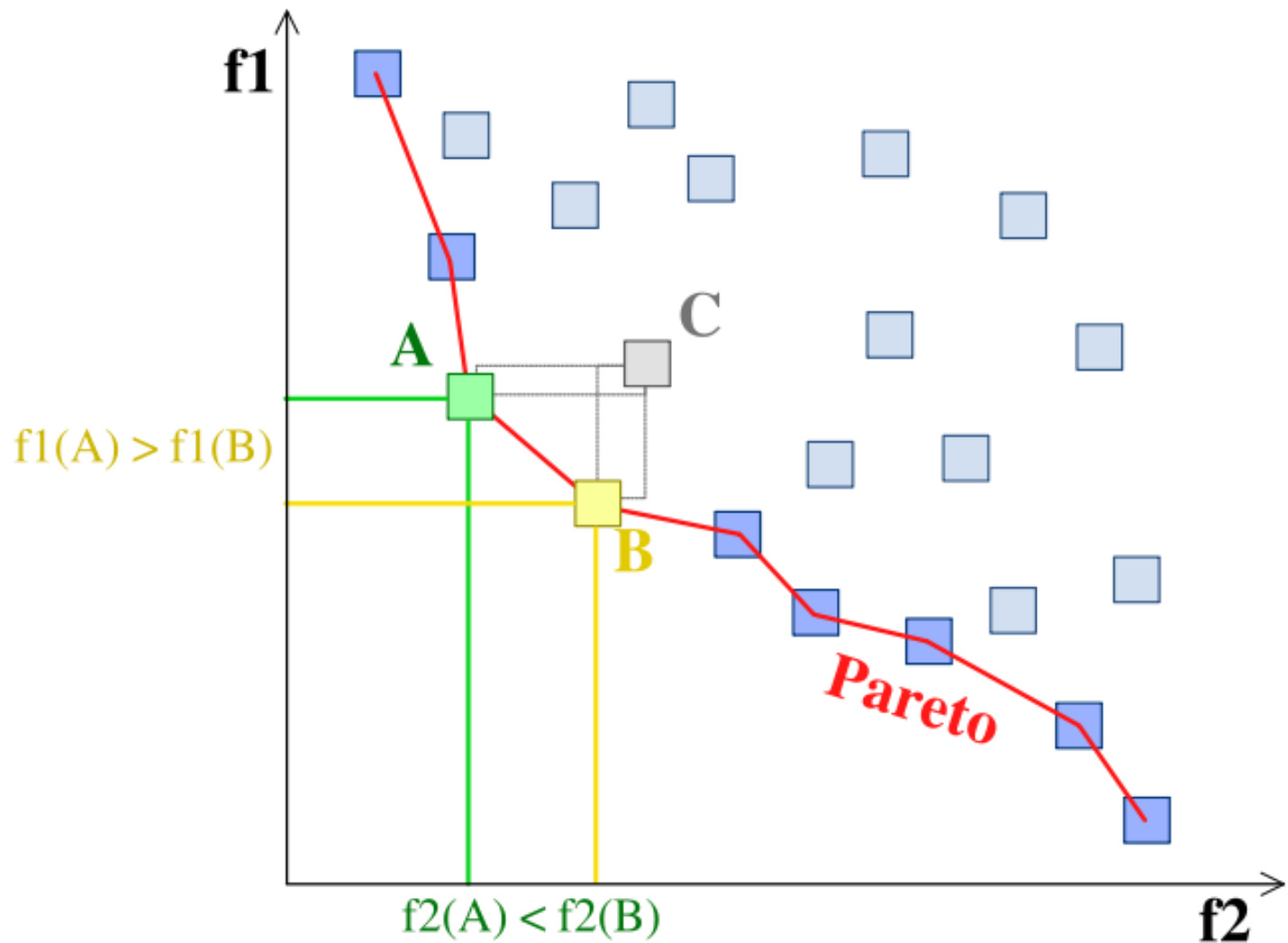
Pareto Improvement

- Given an initial allocation of goods among a set of individuals, a change to a different allocation that makes at least one individual better off without making any other individual worse off is called a **Pareto improvement**.

Pareto Efficiency

- An allocation is defined as "**Pareto efficient**" or "**Pareto optimal**" when no further Pareto improvements can be made.

Pareto Frontier



Privacy – Risks & Chances

- Revealing the wrong information provides others with an advantage over you!
- Revealing the right information provides you with an advantage and maybe even others !

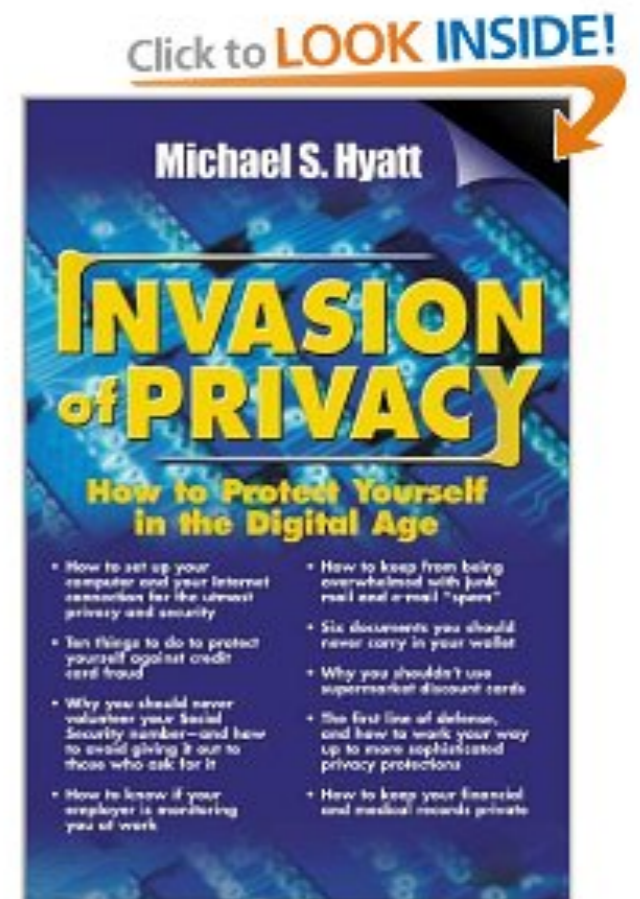
Conclusion

- **Private information disclosure**
 - Governments to base their initiatives/laws upon Pareto-efficiency !

Privacy Invasion and Protection in Digital Society



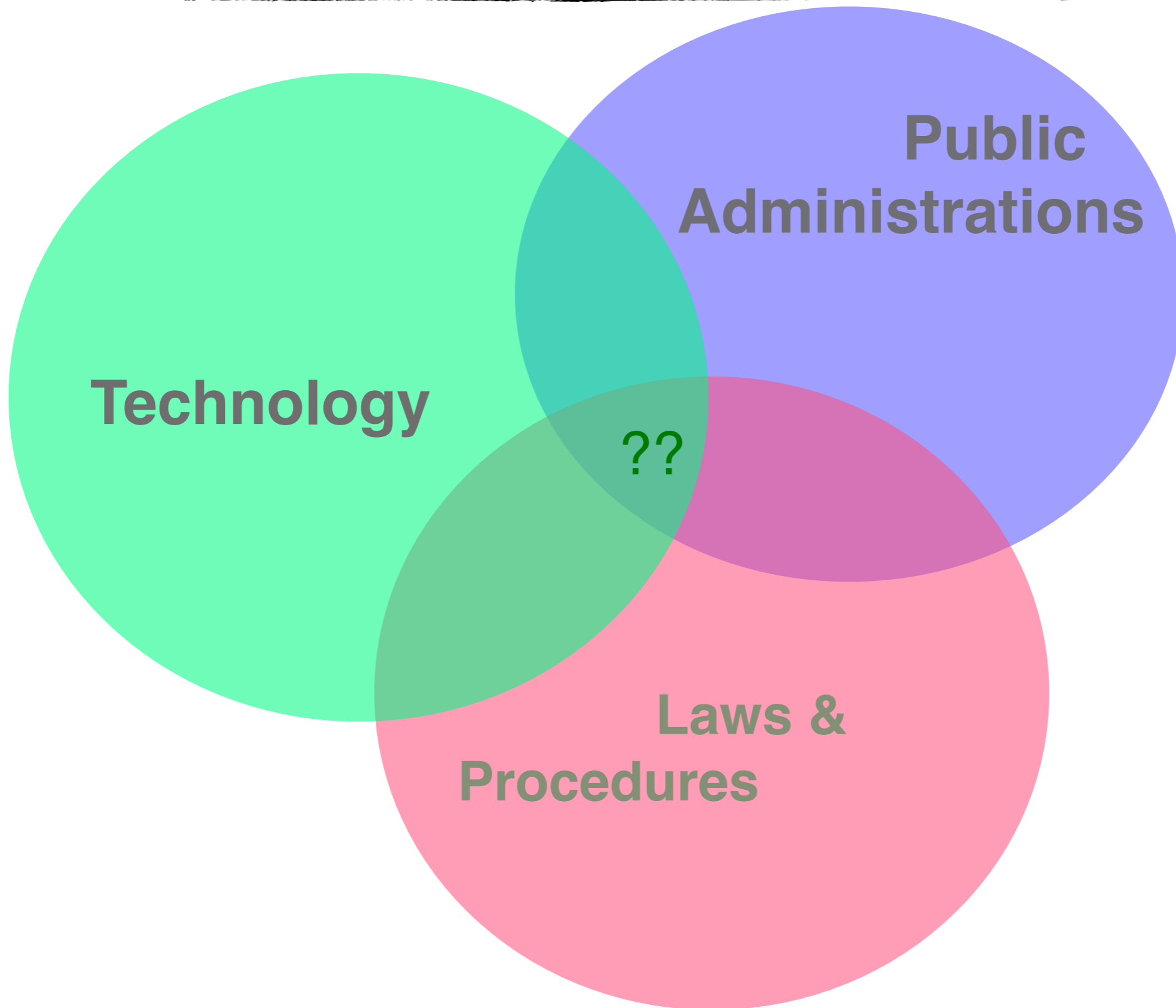
Komminist Weldemariam
Birhanu Eshete, Adolfo Villafiorita
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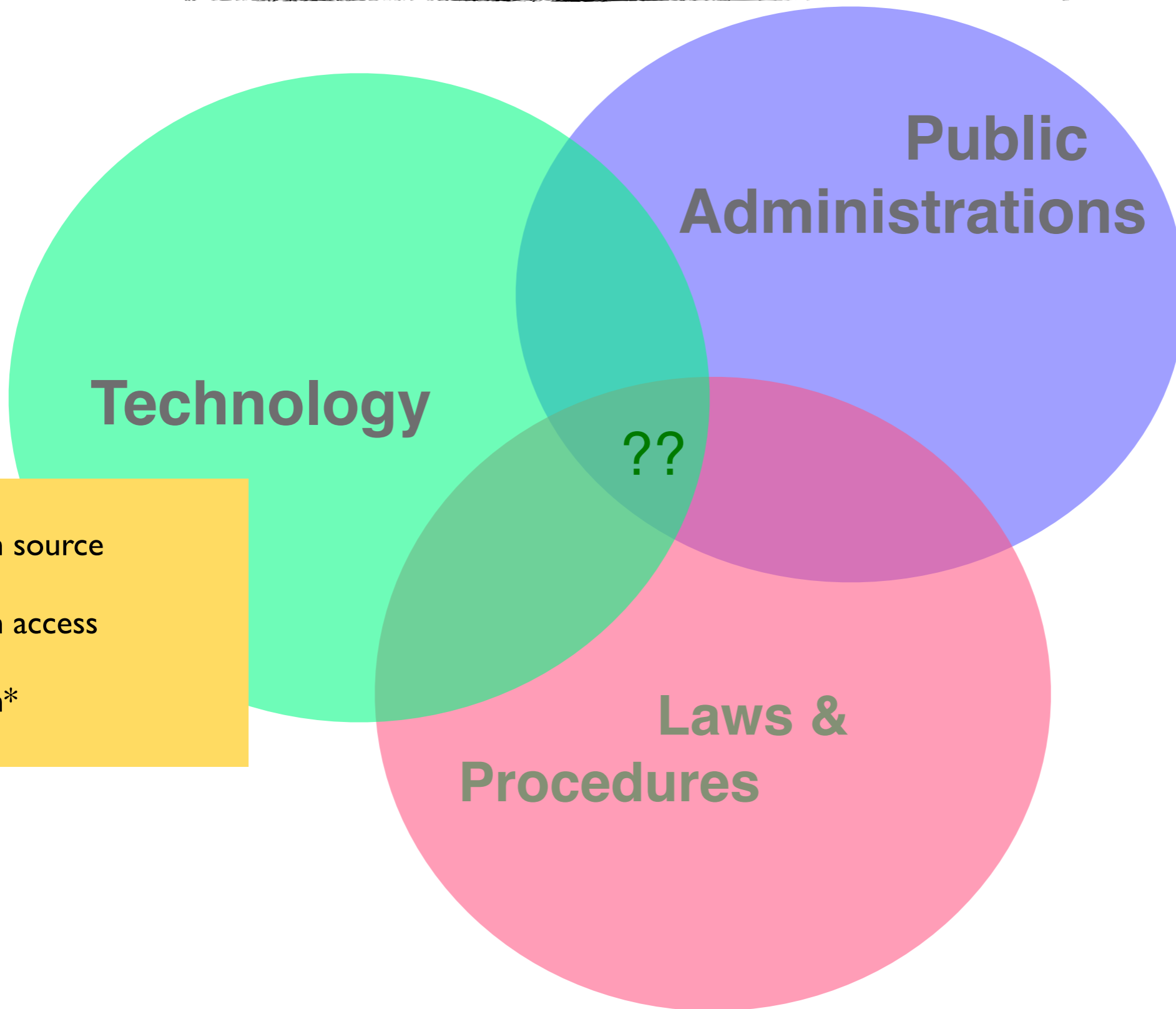
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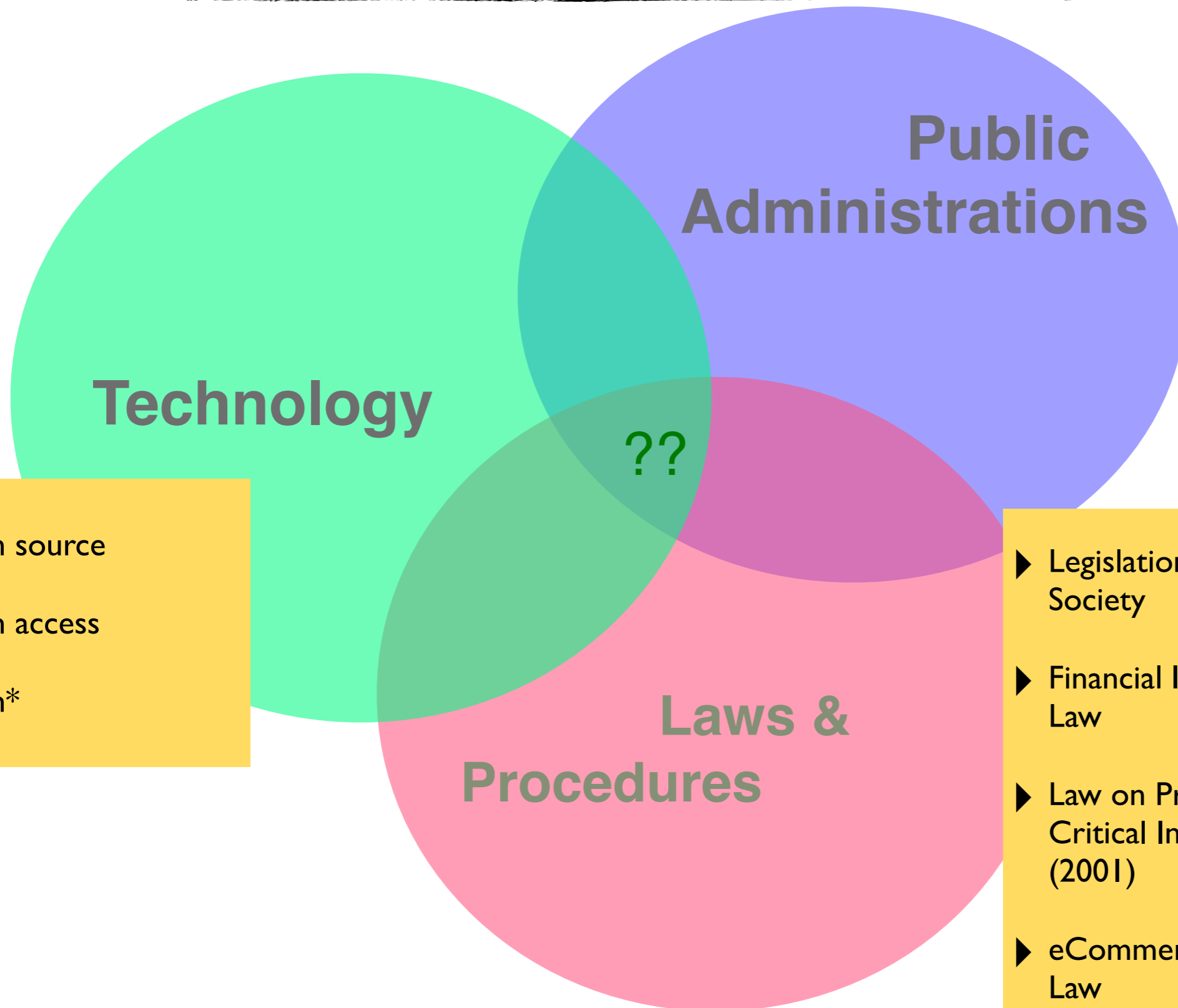


??



- ▶ Open source
- ▶ Open access
- ▶ Open*

??



- ▶ Open source
- ▶ Open access
- ▶ Open*

- ▶ Legislations for Regulating Digital Society
- ▶ Financial Information Protection Law
- ▶ Law on Protection of National Critical Information Infrastructure (2001)
- ▶ eCommerce Consumer Protection Law

Trust, Technology and Privacy

- There is an interesting paradox here: putting it simply,
 - (digital) government needs to increase public trust and confidence
 - it turns to IT to improve the delivery of services and information
 - But, (digital) government may be relying increasingly on information systems that themselves require a high level of **trust**
 - Remember: we are in a time when public confidence in scientific and technological expertise is far from certain!

What we are doing ?

- A choice in the software world may have effects on the physical world, and viceversa
 - New laws trying to regulate this new reality
 - New effects of old laws

What we are doing ?

But still our privacy is continuously invading (I would rather prefer to say it is destroyed) by the introduction of new technologies!!

- New effects of old laws

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New effects of old laws

The Big Questions is:

Do we have tools to let normal users understand what actually privacy mean?

What we are doing ?

But still our privacy is continuously invading (I would rather prefer to say it is destroyed) by the introduction of new technologies!!

New effects of old laws

The Big Questions is:

Do we have tools to let normal users understand what actually privacy mean?

Let's forget about the prevention mechanisms, at the moment!

Privacy Protection in Digital Society

A technical security viewpoint
'on Cloud Computing'

by Luigi Logrippo
Université du Québec en Outaouais

Cyberlaws 2011 Panel
Gosier, Guadeloupe
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Cloud Computing

- A new generation of computing that utilizes remote servers for data storage, management and processing
- So all my data and programs are ‘somewhere else’, who knows where
 - Well-known examples: Facebook, Google Docs, but also enterprise services of all kinds

Cloud computing advantages

- Think if we had to generate our electricity needs in our own house ...
- Cloud computing frees the enterprise or the individual from the need of
 - Owning and maintaining powerful computers
 - Owning and maintaining software
 - Thin clients, fat servers

Security and privacy concerns

- It would seem that this would generate new technical concerns for data protection and privacy
- Does it?

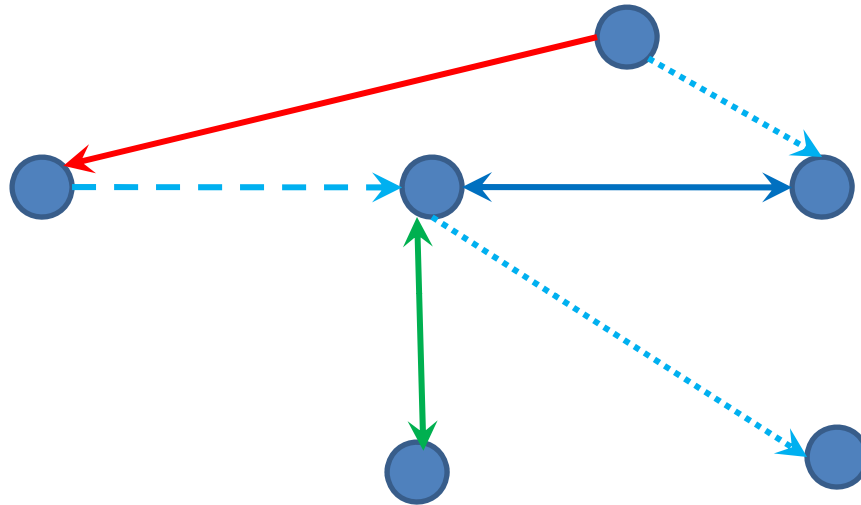
Practice and theory

- In practice, yes:
 - What is the server doing with my data?
 - New types of software and software interactions we must worry about
- In theory, **not**:
 - No new security *principles* need to be invented for cloud computing
 - Cloud computing does not need to develop a new branch of security theory

The privacy stack

- Layer 1: Encryption
- Layer 2: Identity control
- Layer 3: Access control
- Layer 4: Data flow control
- Layer 5: Privacy control

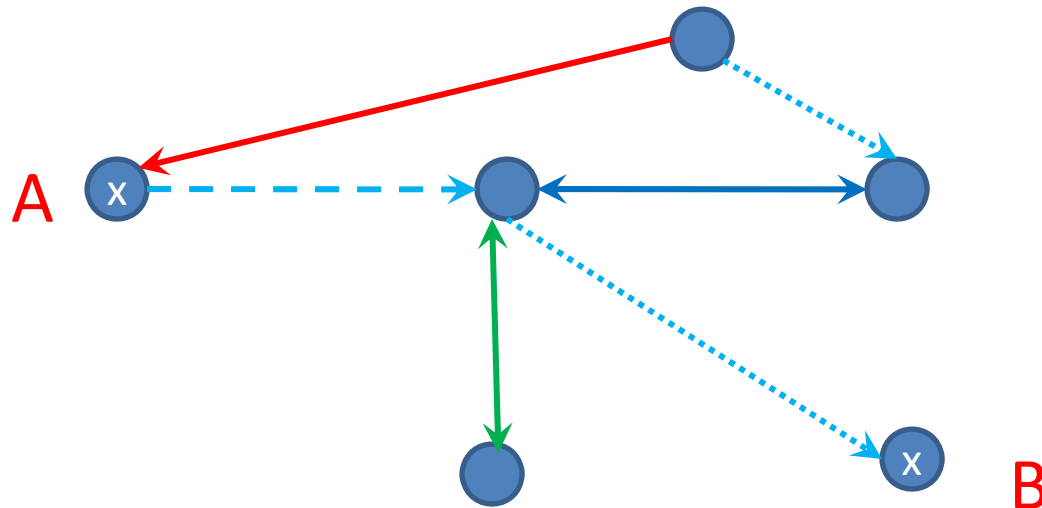
Information flow control



● Subjects, groups, roles ...

- > Different shapes and colors of arrows may indicate:
- type of information flow,
 - actual or potential information flows etc.

If A knows x, is it possible to conclude that B can also know it?

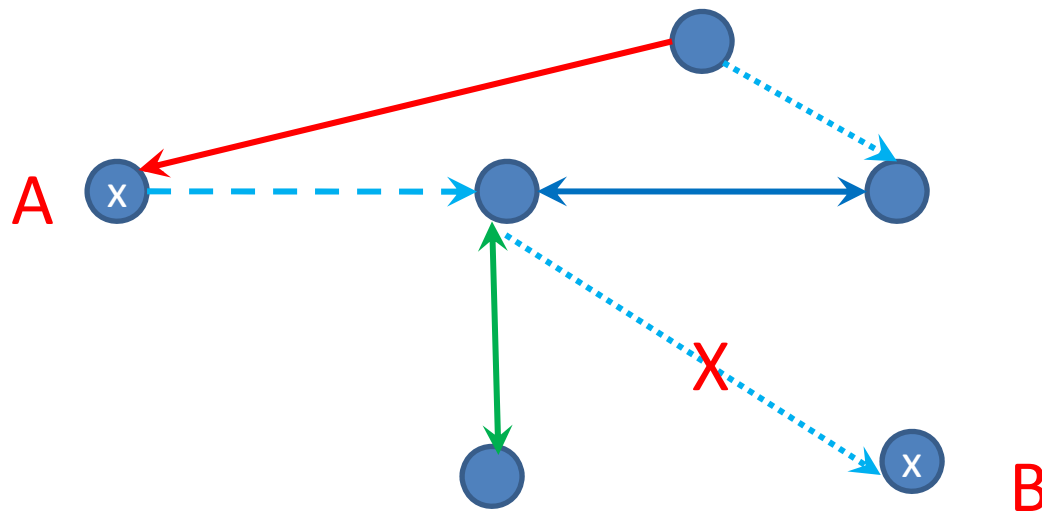


● Subjects, groups, roles ...

---> Different shapes and colors of arrows may indicate:

- type of information flow,
- actual or potential information flows etc.

If A knows x and B shouldn't know it,
what is the minimal set of information paths to be blocked?
How can this blocking be implemented?



● Subjects, groups, roles ...

- > Different shapes and colors of arrows may indicate:
- type of information flow,
 - actual or potential information flows etc.

A research question

- If access control is the method to enforce the information flow requirements we have mentioned:
 - Given a set of global information flow requirements, how to configure the policies of local access control points so that the requirements are satisfied
 - Some results are known, but we do not have a complete picture



Privacy and Anti-Forensics

By: Vrizzlynn Thing

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Privacy and It's Impact on Digital Forensics

Privacy Protection

- Protection by law

Example: 4th Amendment to U.S. Constitution

- Warrants must be supported by “probable cause”
- Guard against unreasonable searches and seizures when the searched party has a “reasonable expectation of privacy”

- Protection by self

- Security

- Digital Data Protection
- Digital Data Destruction
- Digital Data Hiding

Anti-Forensics

- Security and Privacy = Anti-Forensics?
- Counter Anti-Forensics = Anti-Security and Anti-Privacy?
- Legal to use Anti-Forensics Technologies?
 - On January 3, 2011, in *The People v. Gregory Diaz*, the Supreme Court of California ruled for allowing warrantless search by the police of suspects' cell phones at the time of the arrest, on the grounds of preventing destruction of evidence such as text messages.¹
 - While the search incident to arrest exception gives police free rein to search and seize mobile phones found on arrestees' persons, police generally cannot lawfully compel suspects to disclose or enter their mobile phone passwords.²

Source of Note 1,2 – Wikipedia



Anti-Forensics

- 5th Amendment to U.S. Constitution
 - Protects witnesses from being forced to incriminate themselves.³
 - To "plead the Fifth" is to refuse to answer a question because the response could provide self-incriminating evidence of an illegal conduct punished by fines, penalties or forfeiture.⁴
- Protection by self -> Protection by law
- If yes, then what can forensics researchers do to help?

Future Directions in Digital Forensics Research

- Evidence Knowledge Based Processing
- Automation in Relevant Evidence Identification and Retrieval
 - Provide Privacy Protection from Human Investigator
- Research on Effective and Efficient (Faster) Counter Anti-Forensics Technologies



Thank you!

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Faculty of Law
The University of Western Ontario

Thomas Margoni

Mark Perry

IP/DPI/Privacy/SocialNetworkedWorlds Access/Freedoms/Creativity/...

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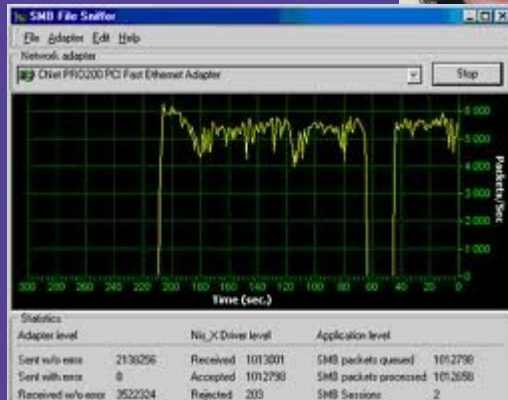


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The screenshot shows a web-based legal research interface. At the top, there is a search bar and navigation icons. Below is a table of search results. The table has several columns, including 'Case Name', 'Date', 'Court', and 'Text'. The text column contains snippets of legal text. Several rows are highlighted in different colors: yellow, red, and green. The yellow highlights are in the 'Text' column, the red highlights are in the 'Case Name' column, and the green highlights are in the 'Text' column. The interface also includes a search bar at the bottom and a list of search results.



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QoS

Of whom?





IP v. Privacy

Are users informed?

Do ISP contracts mention DPI?

What they do with the info?

How anonymized is the collected info?



What good is a fast and non congested Internet

If you don't have anything to (legally)
Communicate?



CYBERLAWS
2011



Lasse Berntzen

Vestfold University College
Norway

Privacy issues 1

Personal data is not what it used to be

Location, picture

Legislation is not keeping up

EU data retention directive

Data retention is already done by operators

Court order

Centralized or decentralized?

Privacy issues (2)

Privacy and private companies

What does Amazon.com know?

What does Google know?

Face recognition