

RFID & The Internet of Things The Security, Privacy and Society Dimension

The changing Security Paradigm

From Central Command & Control to Distributed Dependability & Empowerment

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.. because the alternative is not an option

http://www.priway.com

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Priway emerging solutions

ZeroleakTM (Device in context)
 Slave & P2P Devices & Sensors
 Master communication Devices
 Identity Devices



Citizen Id

- PrivacyIdTM (Identity & channels in context)
 Privacy-enabled PKI
 User-centric ID & Channel management.
- PrivacyTrustTM (Transaction in context)
 Service resolving security assertions in context

You can trust it, when you dont have to trust it



Plenty security challenges

- Criminals can do anything a trusted party can do
 - Ask the Greek Prime Minister on wiretapping!
- Server perimeter security is an illusion
 - How many examples do you want ?
- Digital Crime is turning into an industry
 - Professionalised and very innovative
- Much "security" will do more damage than good
 - What happens when someone fake your biometrics?
- Why is technology mostly deployed with bad security?
 - WLAN, Credit Cards, SMTP, PKI, mobile .. and now RFID ?



What is Trust?

Trust :: the amount of Risk willingly accepted in a context

Technical Term
Accepted
Dependability

The Perception of Risk can in context both be overestimated (fear) and underestimated (naïve) but

Over time learning will align perception to reality

Except in rare cases, risks are avoided and minimised, i.e. risk involve trade-offs and compensations.

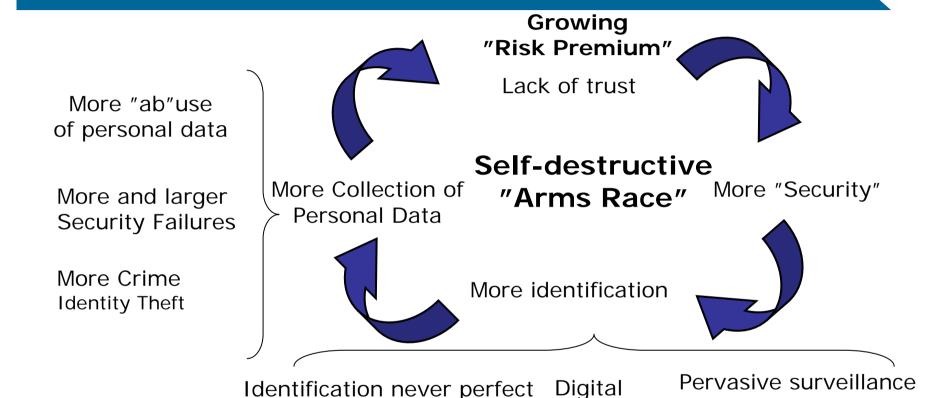
Lack of Control create resistance



The security distrust circle

Identity Theft and

Reverse burden of proof



Without changing our pattern of thought, we will not be able to solve the problems we created with our current patterns of thought.

Albert Finstein

Feudalism

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And abuse of surveillance



Security without Privacy? - An illusion

Reasons for Privacy – Stakeholder security

• SECURITY Risk reduction, crime prevention

• DAMAGE CONTROL Dependability, Context separation

ECONOMY Demand-Pull, Take-up

• CONVENIENCE Adaption to context

USABILTY Context-awareness

• QUALITY Customer-orientation

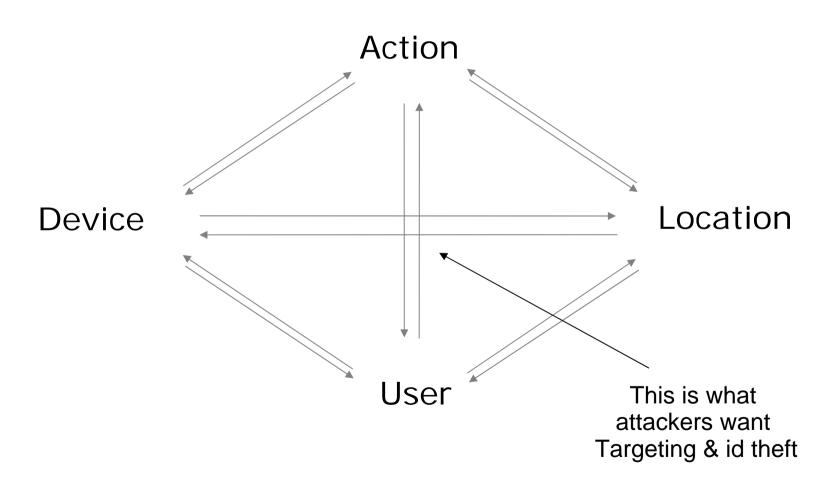
EFFICIENCY Aligning Digital Value Chains

• BASIC NEEDs Self-determination, control, etc.

• COMPLIENCE To law and "principles

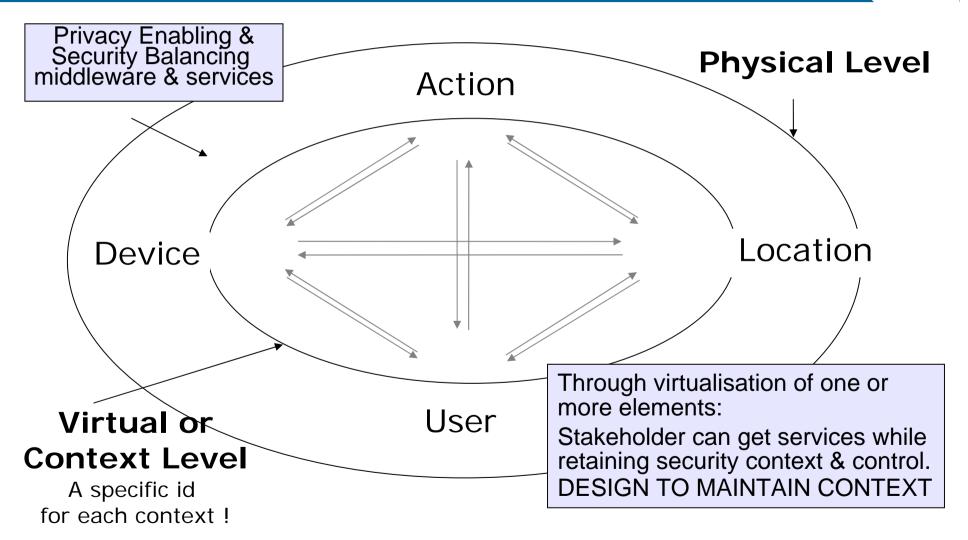


Fribourg Privacy Diamond



PRIWAY Security in Context

Priway Security Diamond



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Empower the citizen

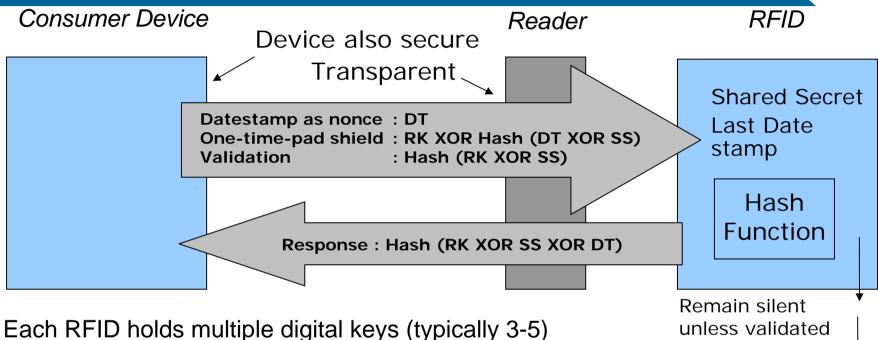
Control should be distributed to those that will suffer from failure

Liability should be distributed to where design is controlled

The usability barrier needs to be pushed by design etc. - we will never have better security than citizens can manage.

Building security into RFID





- Each RFID holds multiple digital keys (typically 3-5)
- RFID have multiple modes determining response type to a request

Some aspects

Consumer control new OWNER key (used for Privacy Mode)



- Manufacturer keep Authenticity Key for verifying originality etc.
- Using group keys to narrow in on context dynamically customised
- Each key can be verified transparently without leaking identifiers



What is achieved?

- Full virtualisation of both verifier and RFID
 - RFID can operate without leaking information
 - NO IEEE MAC or other persistent identifier
- Consumer get control at purchase
- Strong anti-counterfeit even post-purchase
- Can maintain business confidentiality
- Critical for
 - Home medication (pharmaceuticals in general)
 - Products with counterfitting problems
 - Digitally enhanced products & services
 - Industrial products
 - Solving "RFID as trigger"-problems military, wearables
- In low-cost implementation compatible with EPC!
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RFID wider issues

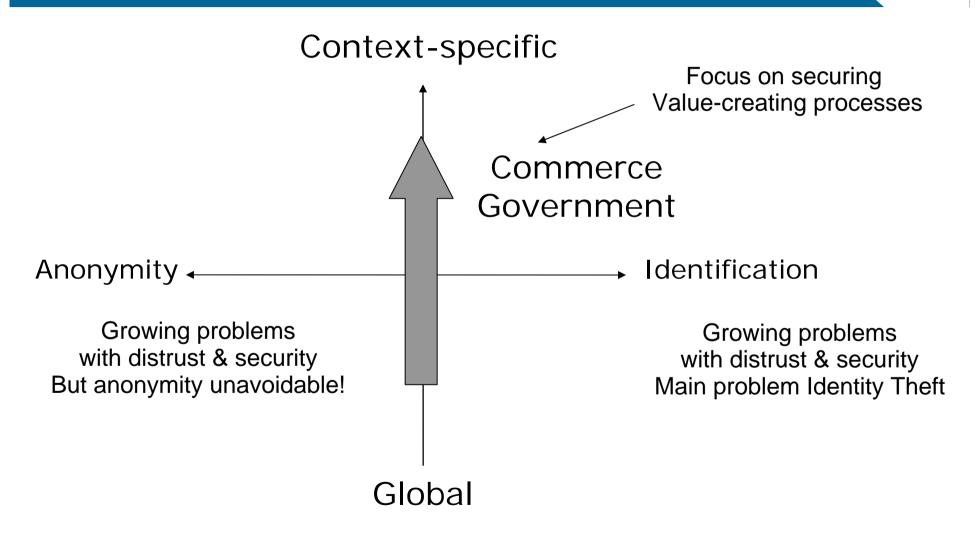
- RFID will be a heterogeneous space maybe always
 - Many frequencies, different models
 - EPC mainly for retail logistics
- Why ONS? DNS can deliver the same cheaper!
- Most value application require much better security
 - E.g. Pharmaceutical, Branded Goods, Military, Industrial
- Europe is lagging behind
 - Special European needs & opportunities?

OBS

- RFID unusable for Person Id (payment, access etc.)
 - Open risks of Identity Theft (e.g. Mafia Fraud Attack)
 - Privacy problems create all sort of risks
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Think more dimensions



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Citizen Id is context-specific

- Priway User-centric & anti-identity theft Devices
- Java-card that
 - Detect context BEFORE it assume or create an identity
 - Integrate with Channel management
 - Adapt to security requirements in context
 - Is instantly revocable by Owner
 - ONLY on-card Biometrics readers for self-protection
- Controlling a secure Master Communication device such as a mobile phone extended with Privacy Authentication
 - With anonymous payments incl. anti-laundering & credit
- Many additional aspects

PR!WAY Security in Context

Summary

- Ambient require new Security Models
 - Growing data needs require stronger security models
 - Prevent criminal targeting & identity theft
- Identity Theft will align Security & Privacy !!
 - Self-protection is critical to trust & system security
 - Key issues are Usability & key management
- Context Security has missing answers
 - Empower the Citizen to secure & build trust
 - Focus on risk reduction not identification & surveillance
- Research needs? try asking
 - Which present standards & ICT are sustainable?
 - Why is focus on surveillance instead of security?
 - What does it take to change this?RFID & The Internet of Things