

Privacy in e-Health

Observing Disclosure of X-Ray Images to Third Parties by Using Digital Watermarking

**ISSI 2009
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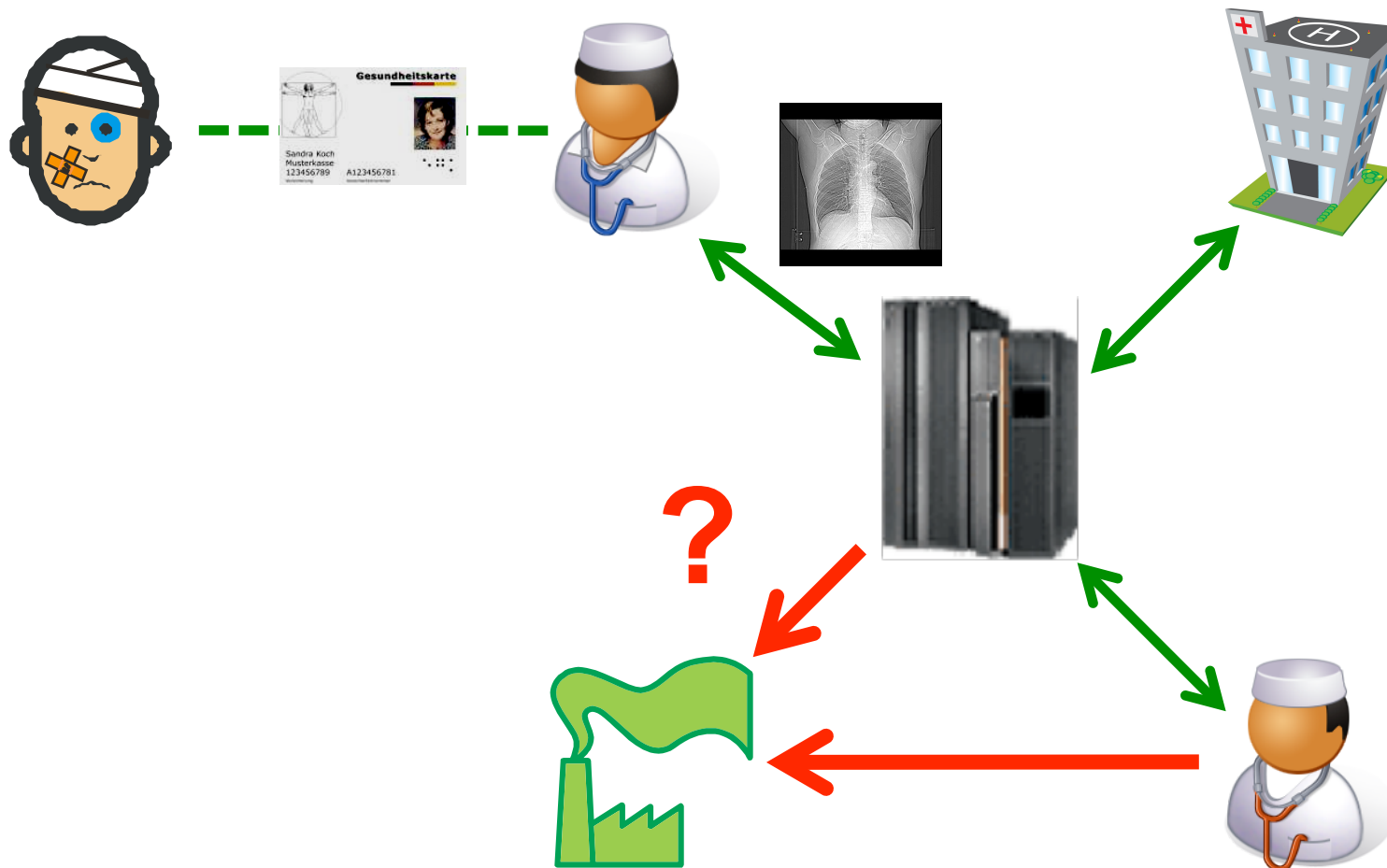
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Scenario: Telemedicine

Privacy promise:

All personal data will be handled according to legislation and agreed privacy policy between users and services.

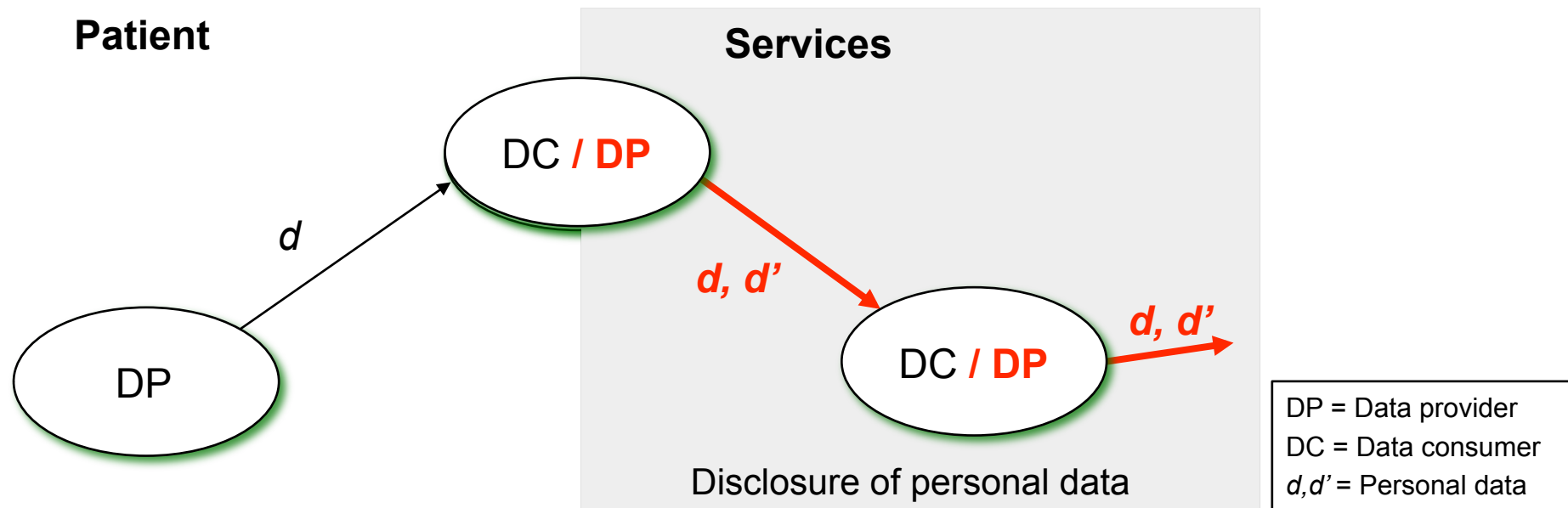


Privacy and Business Processes

Privacy legislation:

„Privacy is the claim of individuals, groups and institutions to determine for themselves, when, how and to what extent information about them is communicated to others.“

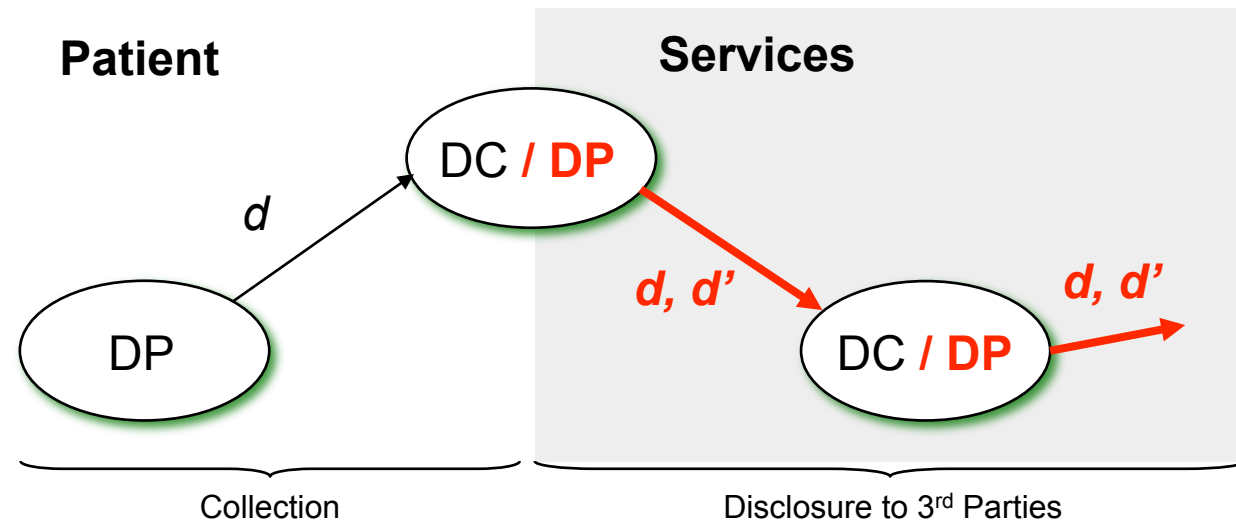
(Westin 1967, EU/Germany, Japan, HIPAA)



Pretschner, A., Hilty, M., and Basin, D. 2006.

Problem: No control for disclosure of personal data

Privacy-Enhancing Technologies: State of the Art

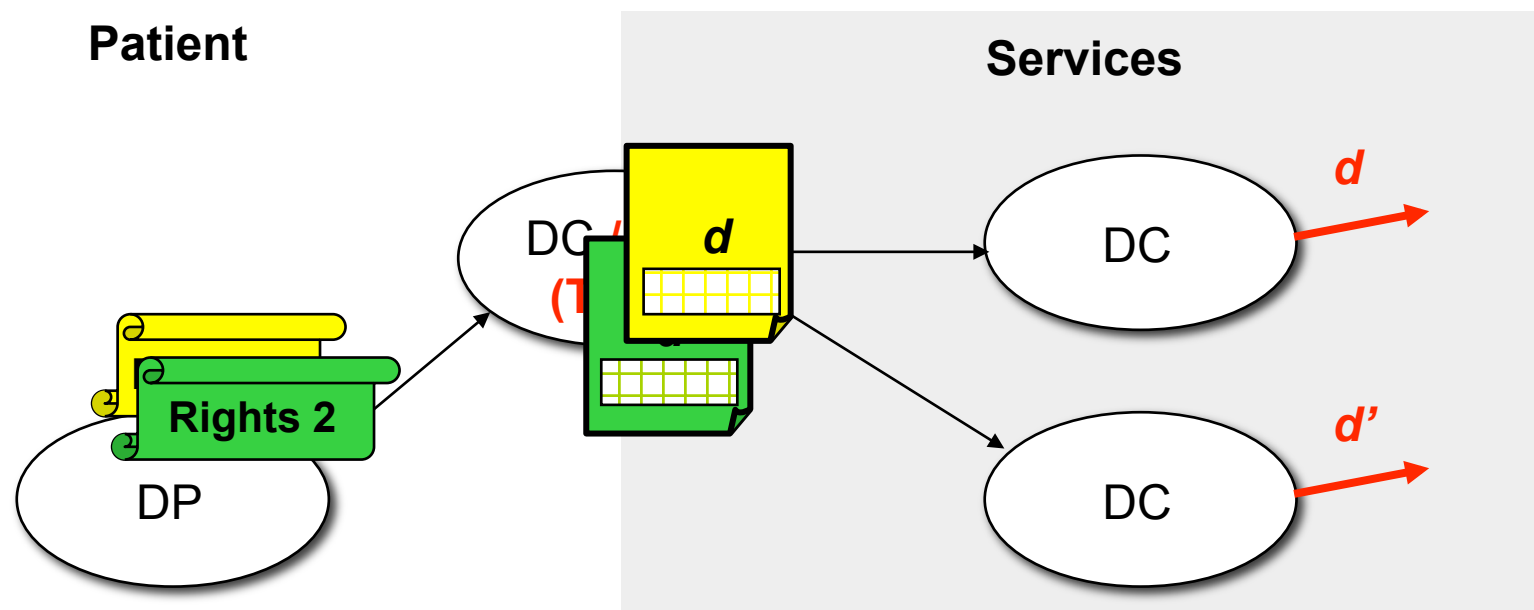


- Anonymity (*Anonymizer, Mix network*)
 - Identity Management (*Liberty Alliance, Shibboleth, iManager, IBM idemix*)
 - Policy language for provisions (*P3P*)
 - Digital Rights Management (*Digital Privacy Management*)
- Policy languages for obligations (*IBM EPAL, NAPS*)
 - Sticky policies (*HP Adaptive Privacy Management System*)
 - Delegation of rights (**DREISAM**)
+ Audit trail by digital watermarking (**DETECTIVE**)

DETECTIVE: Disclosure with Control

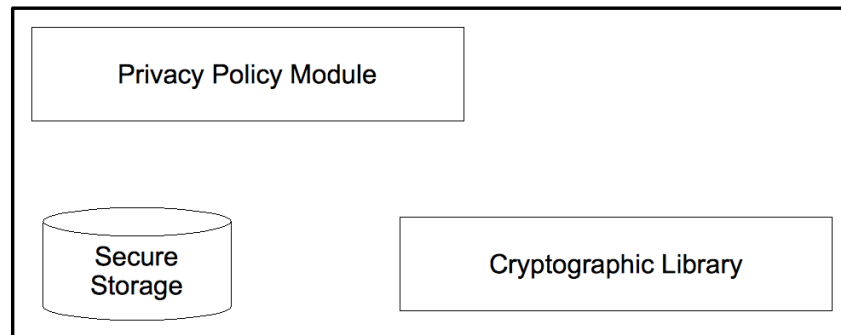
Controllable Disclosure: Authorization + enforcement by the user

- (a) Authorization: Non-linkable delegation of rights (*DREISAM*)
- (b) Enforcement: Audit trail by digital watermarking (*DETECTIVE*)

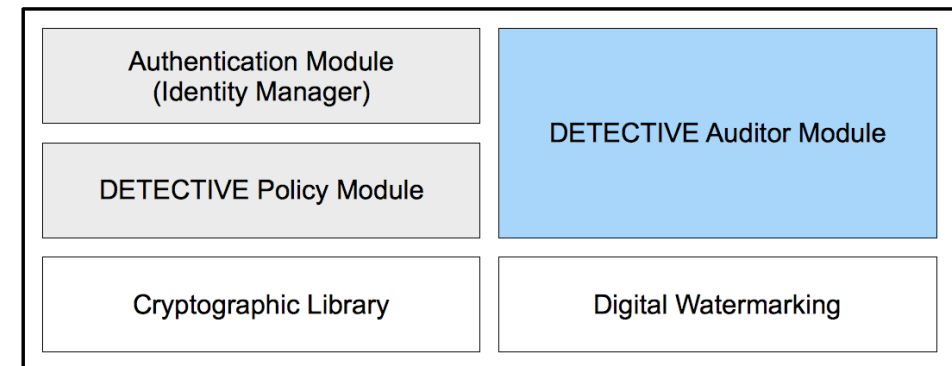


DETECTIVE: Proof-of-Concept Implementation

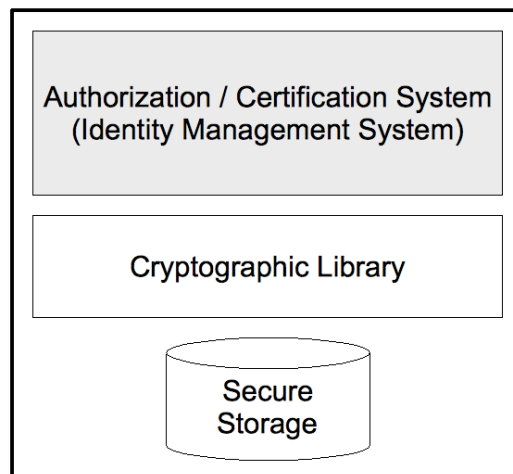
Health Card



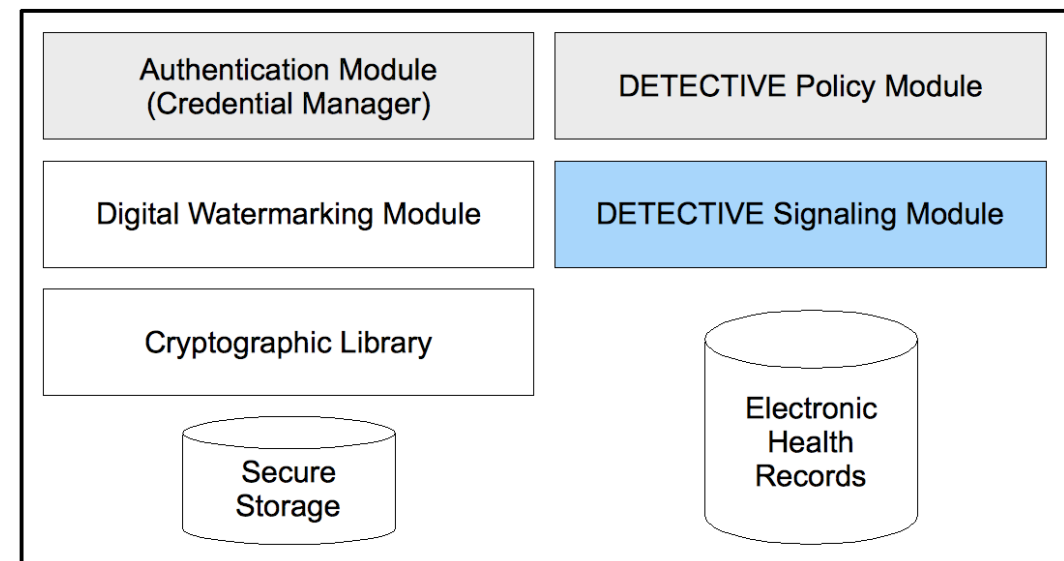
Terminal for Health Card



Certification Authority



Service Provider



 Basic modules  Use of existing modules  Realizing DETECTIVE protocols

Dr. Sven Wohlgemuth

- 2009 Postdoc scholar at NII funded by DAAD (German Academic Exchange Service)
Project: Enforcement of Privacy-Compliant Disclosure of Personal Data
Member of ISSI 2009 organizing committee
- 2008 Doctoral graduation at University of Freiburg, Germany (Prof. Dr. Günter Müller)
Thesis: Privacy with Delegation of Rights
- 2000 Diploma graduation at University of Saarbrücken, Germany (Prof. Dr. Birgit Pfitzmann, Tom Beiler)
Thesis: Key Management – Object-Oriented Design and Implementation
- 2006/08 Member of SICHERHEIT 2008 and ETRICS 2006 conferences' organizing committee
- 2006-08 Founding Coordinator of working group "Privacy in Business Processes" of European Network of Excellence "Future of Identity in the Information Society (FIDIS)"
- 2001-06 Coordinator of German research priority programme "Security in Information and Communication Technology (SPP 1079)" funded by the German Research Foundation (DFG)
- 2003 doIT Software-Award 2003 by German Federal State "Baden-Württemberg" for "Usability and Security by Identity Management"

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