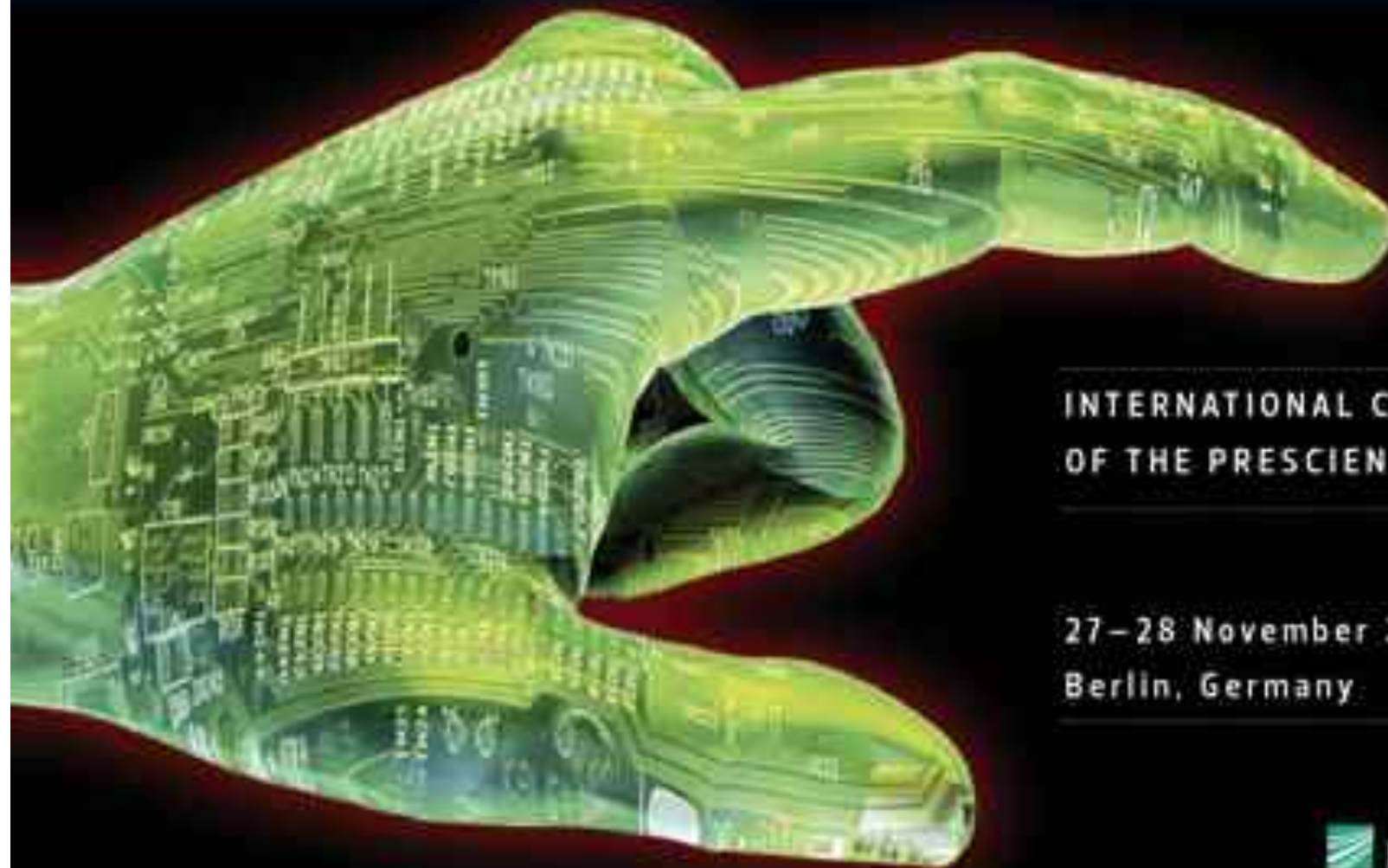




PRIVACY AND EMERGING SCIENCES AND TECHNOLOGIES



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INTERNATIONAL CONFERENCE  
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27–28 November 2012  
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# A NEW WAY OF LOOKING AT PRIVACY

Michael Friedewald, Fraunhofer ISI

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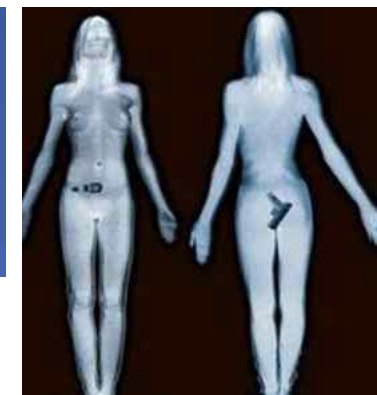
# Why privacy is important – at least in Western countries

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- **Philosophically,**
  - Part of human dignity and integrity
  - Basis for individual autonomy and self-determination
- **Psychologically,**
  - Human beings need a secure private space
- **Sociologically**
  - Citizens need freedom to behave and associate with others independently
- **Politically**
  - People need privacy to be free to think, and argue, and act
  - Surveillance chills behaviour and speech, and undermines democracy.
- **Economically**
  - People need to be free to innovate under global competition. Secrecy (patents!) gives advantage to those who take the risks to innovate
  - But: Secrecy also seen as a disturbance of perfect markets with complete information

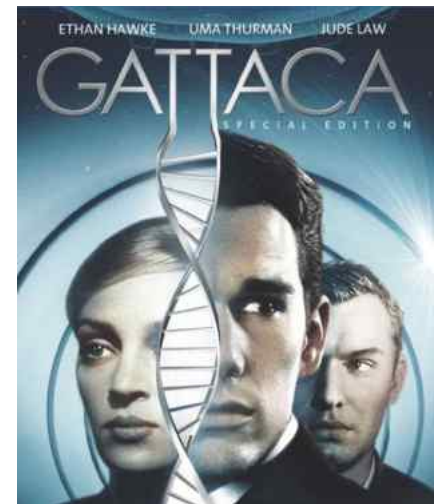
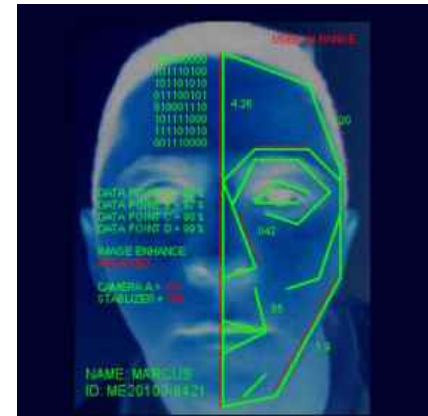
# Some new and future technologies impacting privacy (1/3)

- Contactless identification technologies
  - RFID, NFC, etc.
  - Introduction and uptake phase
  - Tickets and identification documents as new carriers of personal data
  - Mass market, pervasive infrastructure
  
- New surveillance technologies
  - Drones/UAS, Terahertz Scanners
  - New quality of visual surveillance (clandestine, intrusive)
  - Invade former sanctuaries (garden, home, body)



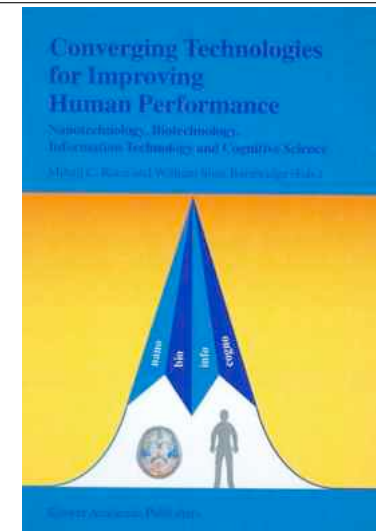
# Some new and future technologies impacting privacy (2/3)

- Second generation biometrics
  - Soft biometrics, behavioural biometrics
  - Recognition can take place covertly and from distance
  - High degree of sensitive (and surplus) data → medical conditions and emotional states
  - Additionally: discussion about legitimacy of „measuring the body“ as a tool for identification
- Next generation DNA sequencing
  - On the spot analysis of (whole) genome at reasonable price seems feasible in next 10 years
  - Richest personal information possible, but still unclear what it can reveal (sex, race, predisposition for diseases. ...)
  - Information not only about individual but also about relatives and descendants



# Some new and future technologies impacting privacy (3/3)

- Technologies for Human Enhancement
  - Improving human capabilities (seeing, hearing, mental, physical) → medical and military origin
  - Interfacing Humans and Technology (Brain-Computer-Interface)
  - Experimental development stage
  - Shifting boundaries: body/technology
  - Shifting boundaries: Normality
  - Shifting boundaries: External control



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# Seven types of privacy – an extension of Roger Clarke's typology (1/2)

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- **Privacy of the person**
  - Right to keep body functions and body characteristics private
- Privacy of thought and feeling
  - Right to keep mental processes to oneself (against “mind reading”)
- **Privacy of behaviour** and action
  - Not only political/religious beliefs and sexual orientation but also habits and daily routines
- Privacy of location and space
  - Not only home as a sanctuary but also the right to privacy in public spaces.

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# Seven types of privacy – an extension of Roger Clarke's typology (2/2)

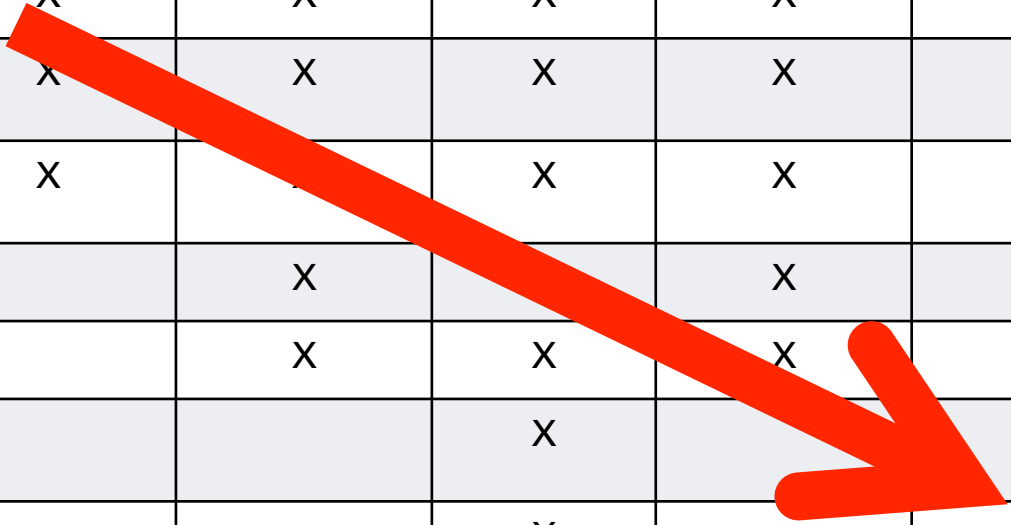
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- **Privacy of personal communication**
  - Not only “classical” privacy of letters and telecommunications but also right to ephemeral communication
- **Privacy of personal data and image**
  - Extension of classical “information privacy”
- Privacy of association including group privacy
  - Right to associate with whomever one wants without being monitored



# Privacy impacts of selected future technologies

Technology \ Dimension	RFID enabled travel documents	Smart surveillance technologies	Second generation biometrics	Next generation DNA sequencing	Human enhancement technologies
	Short term	Short to medium term	Medium term	Medium to long term	Long term
Privacy of data and image	X	X	X	X	X
Privacy of behaviour and action	X	X	X	X	X
Privacy of location and space	X		X	X	
Privacy of association		X		X	
Privacy of the person		X	X	X	X
Privacy of thought and feelings			X		X
Privacy of communication			X		X



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# Conclusions

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- Personal data is becoming richer
  - Directly through new sensors collecting more personal data
  - Indirectly through intelligent combination of personal data
    - Location, space and behaviour become crucial
    - Associations between individuals and groups become more important
- Recommendation:
  - Systematic assessment of privacy and data protection impacts need to broaden the scope
  - Focus on *personal* data no longer sufficient

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# Conclusions (cont'd)

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- Classical notion of personal data is losing some of its relevance

Increasingly technologies raise ethical issues such as human dignity, equality and rule of law (discrimination, consent, self-determination, protection from harm)

- Recommendation:
  - Right to privacy better suited to challenges posed by future and emerging technologies as it is broader and operational no matter the technology used.

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# Conclusions (cont'd)

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- As technologies shift the border between technology and human
  - Not only *bodily integrity* are impacted but also *mental states*  
→ Rather an ethical than a data protection issue
- Recommendation:
  - Integration of different impact assessment approaches (Ethics Impact Assessment, Security Impact Assessment, Risk Analysis and Management)

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# Thank you

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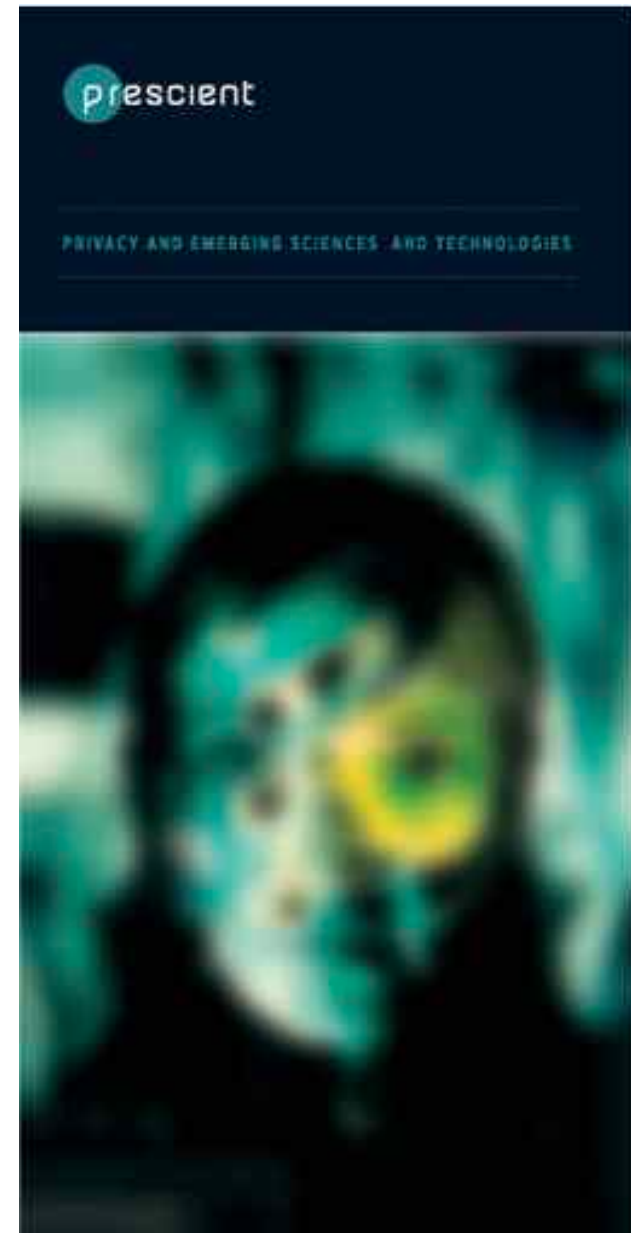
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## The PRESCIENT Project

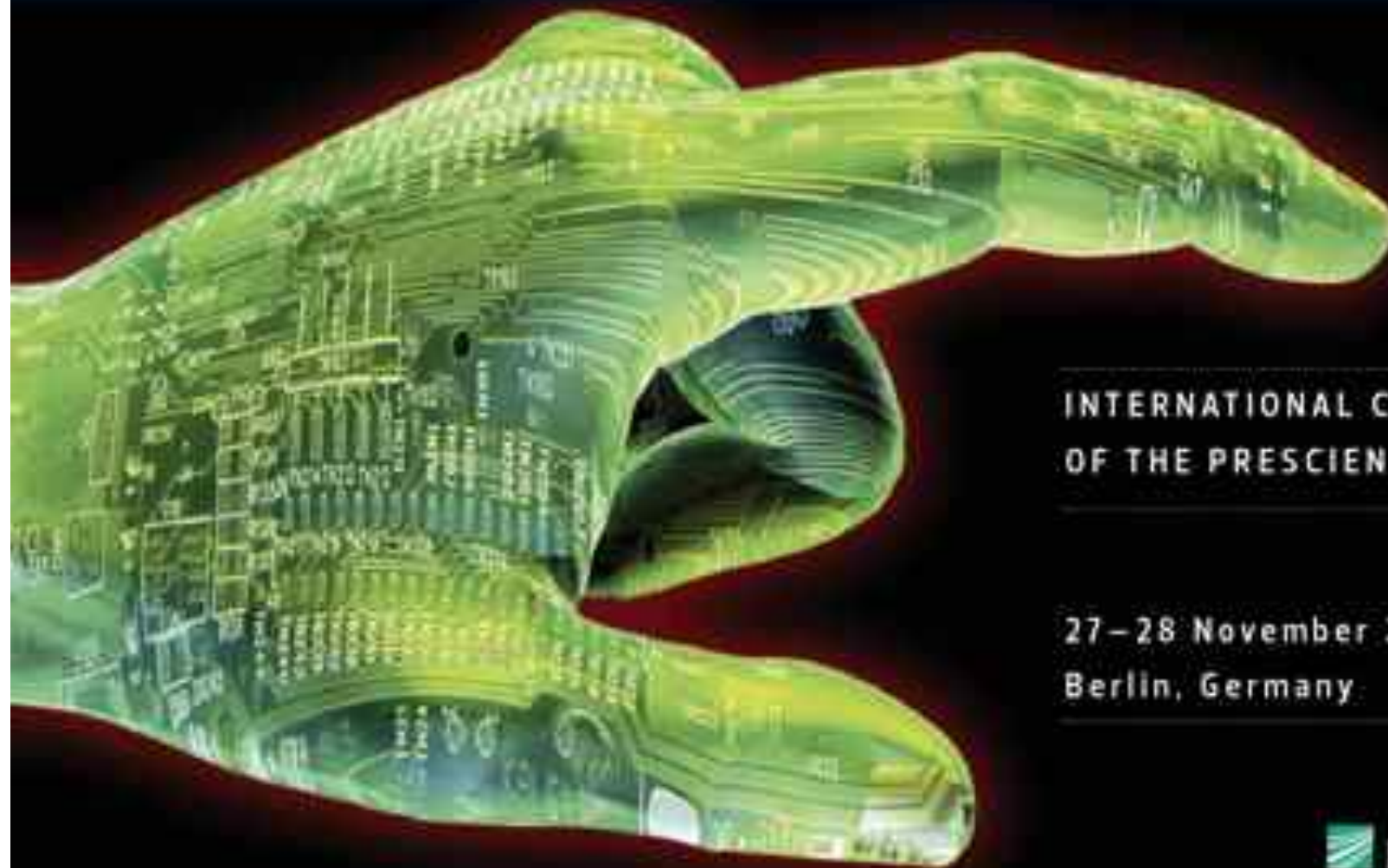
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