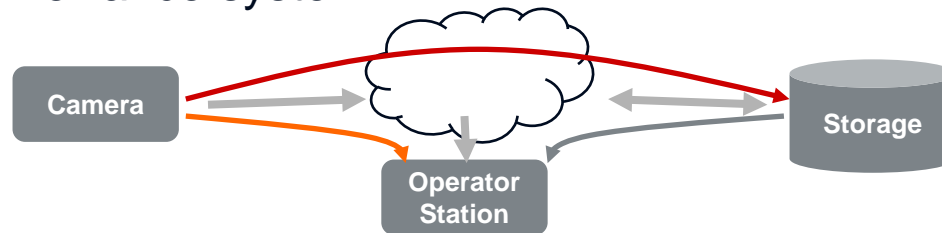


# Towards a Multidisciplinary Framework to Include Privacy in the Design of Video Surveillance Systems

**Zhendong Ma**, Denis Butin, Francisco Jaime, Fanny Coudert, Antonio Kung, Claire Gayrel, Antonio Mana, Christophe Jouvray, Nathalie Trussart, Nathalie Grandjean, Victor Manuel Hidalgo, Mathias Bossuet, Fernando Casado and M. Carmen Hidalgo

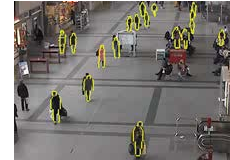
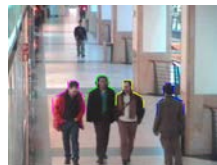
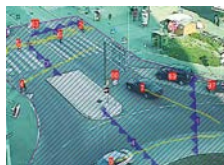
# Video Surveillance System

- Video surveillance system



- Smarter/ More intelligent

- Analysis capability & archive search (e.g. motion/behavior/object detection, intrusion detection, face recognition ... )



- Multi-model, interconnection (e.g. other video surveillance systems, biometrics, transaction, access control ... )
- Video Surveillance as a Service

# Privacy Challenges

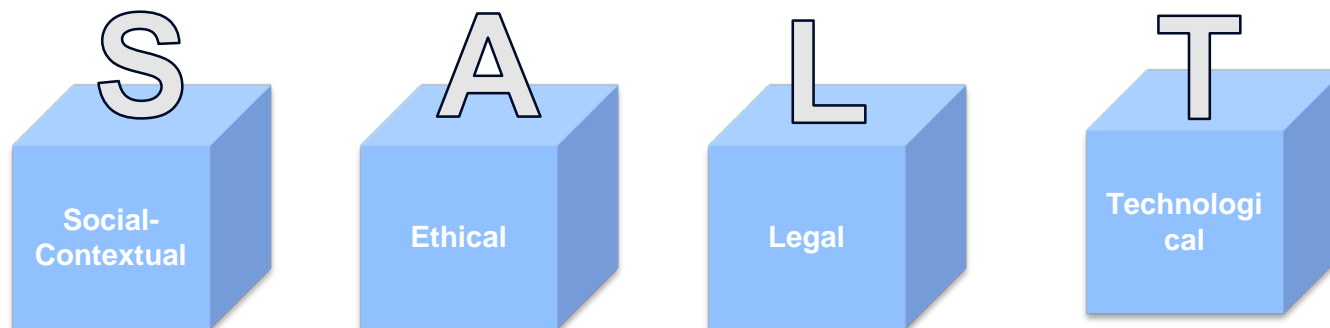
- Surveillance functionality  $\Leftrightarrow$  privacy
- Power of citizens  $\Leftrightarrow$  power of surveillance system owners
- Economics of privacy  $\Rightarrow$  cost
- Legal compliance  $\Rightarrow$  accountability principles and tools
- Legal, ethical obligations  $\Rightarrow$  technical compliance
- Multifaceted, subjective, evolving

## Motivation

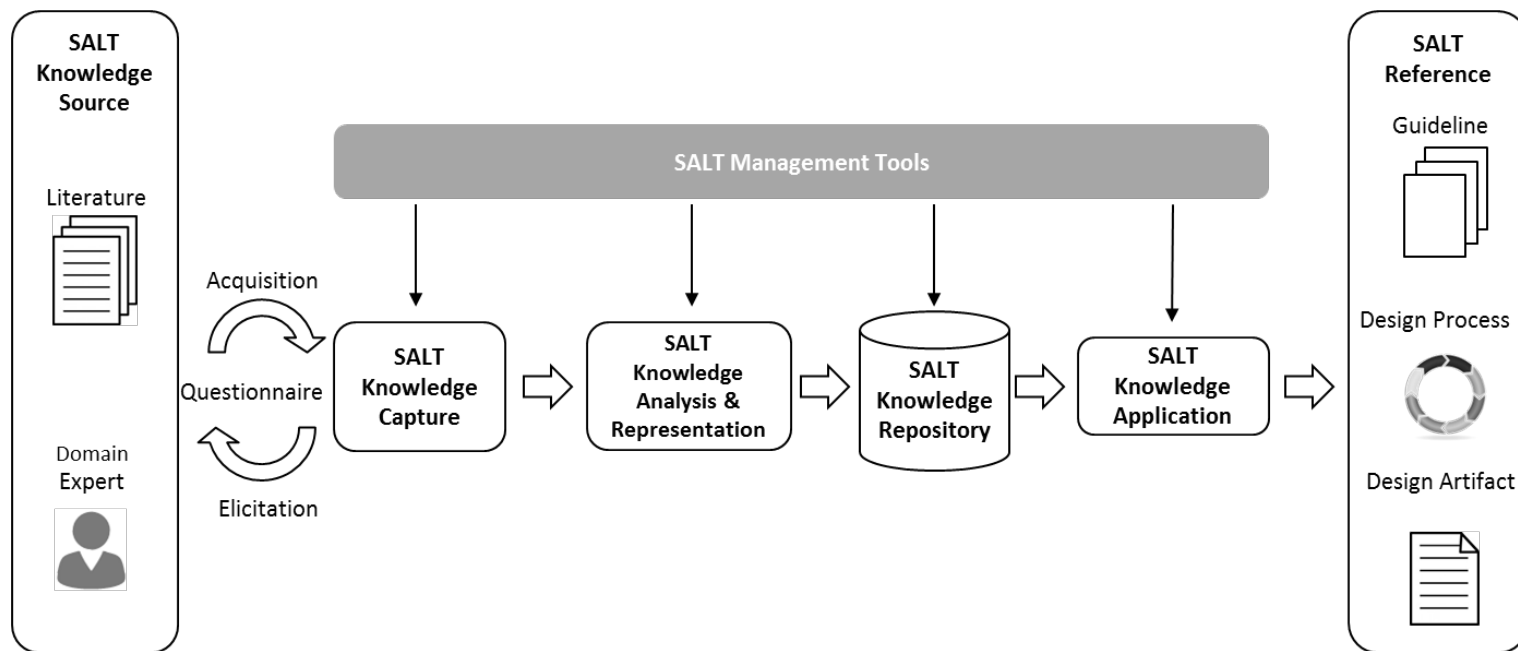
- Existing work address privacy from social science and political science to technological perspective
  - Impact of surveillance on basic rights and social and economic influences (IRISS project)
  - Privacy Impact Assessment for surveillance (SAPIENT project)
  - Influences factors on acceptance of surveillance (SurPRISE project)
  - Privacy-preserving video analytics (VideoSense project)
- Need for a multidisciplinary framework
  - Consistent basis for describing the context, perception, and balance of privacy and surveillance
  - Bridge gap between social, political, legal, and cultural influences and complex technical concerns
  - Knowledge support for including PbD, and AbD from beginning of video surveillance project

# The Multidisciplinary Approach

- SALT framework: knowledge base as decision support to assist understanding of common concerns in complex and evolving environment
- SALT processes: knowledge inclusion, knowledge usage



# SALT Framework



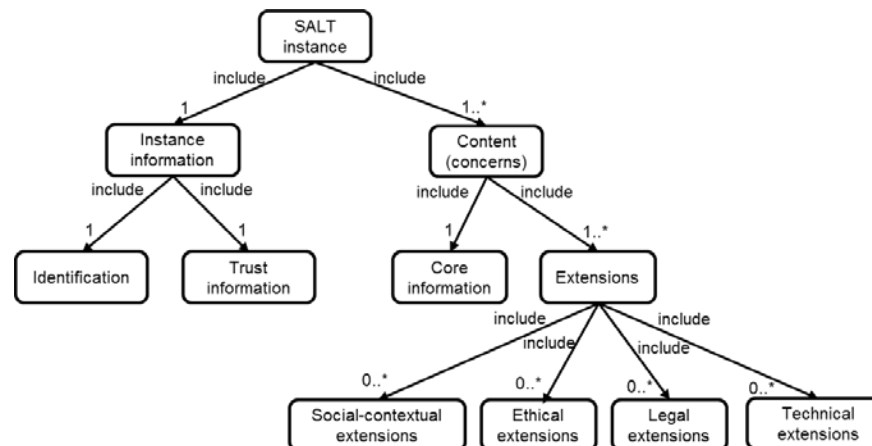
# SALT Knowledge Management

- Knowledge capture
  - Literature review
  - Elicitation by questionnaires

Questions in three stages:

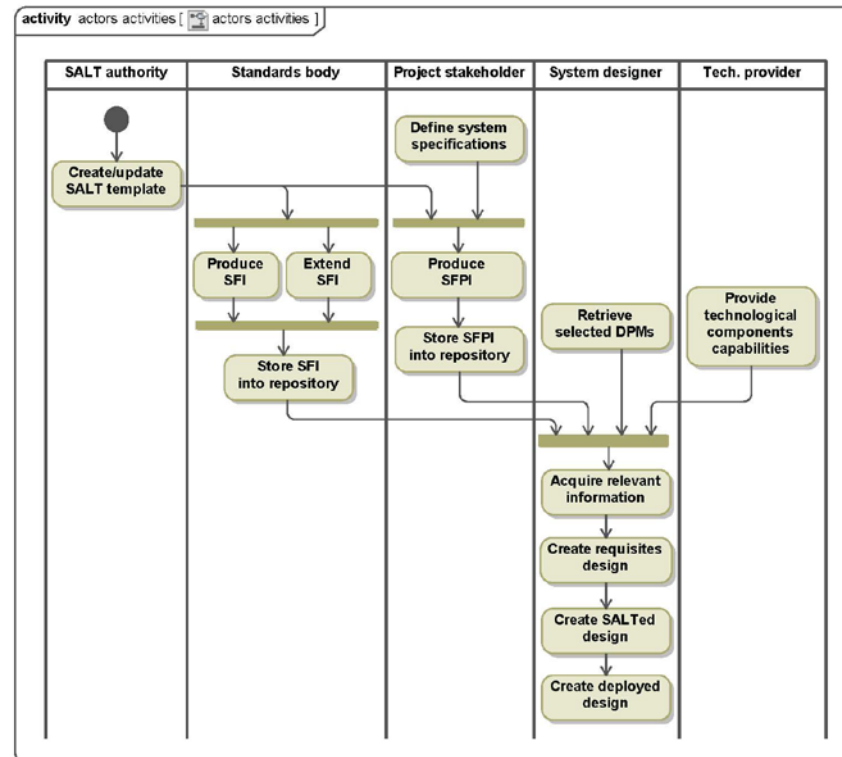
- (1) Preliminary assessment of legitimacy and proportionality in relation to the stated purpose
- (2) Assessment of surveillance following Article 29 guidance and Directive 95/46
- (3) Assessment of balancing *stricto sensu*.

- Knowledge representation



# SLAT Process

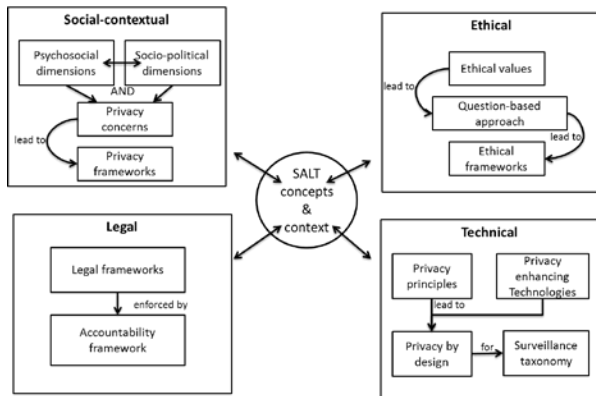
- Knowledge acquisition process
- Knowledge representation process
- SALT design process





# Early Results

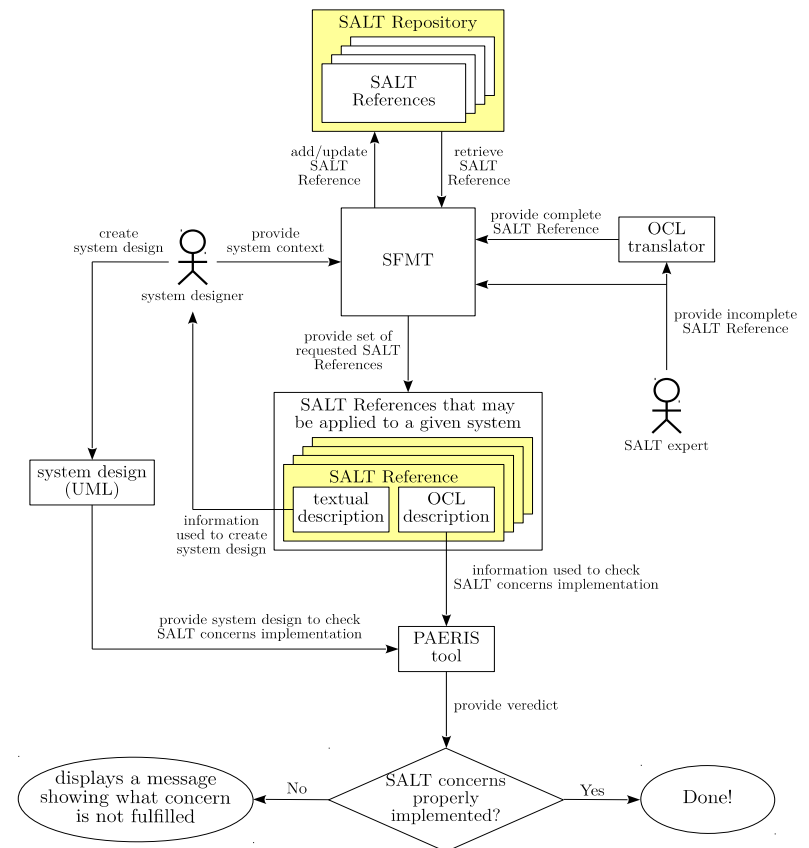
## ■ Preliminary SALT knowledge



## ■ SALT Management tools



## ■ SALT Process



## Conclusion

- SALT framework: concepts, principles, knowledge related to social-contextual, ethical, legal, and technological concerns of surveillance
- SALT processes: associated processes for knowledge acquisition, representation, and usage
- Decision support for design of PbD and AbD surveillance systems
- Better understanding of cross-disciplinary concerns

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