



LACE

learning analytics
community exchange

Privacy Requirements for Learning Analytics – from Policies to Technical Solutions

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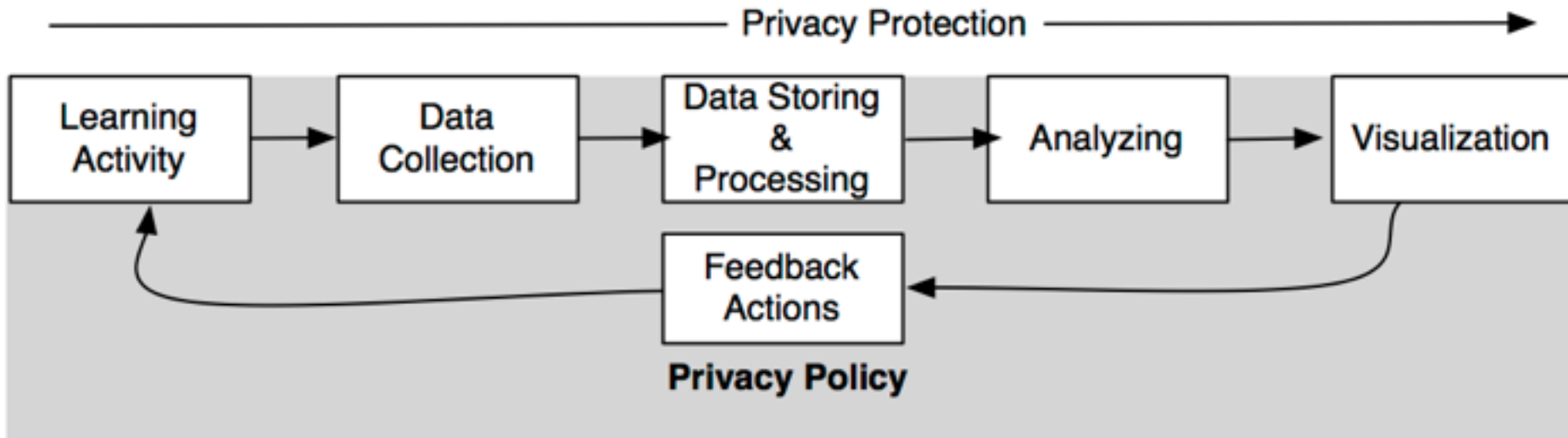
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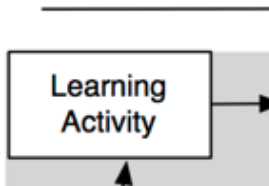
The LA Process Model

(draft ISO/IEC technical report)



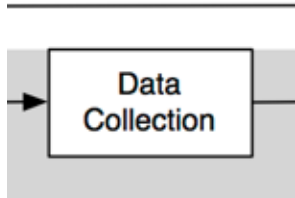
What system requirements could be derived from reviewing literature on ethics & privacy?

Learning Activity



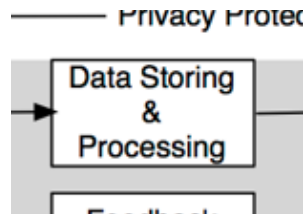
- Learner Agency & Vulnerability
- Formal vs Informal Learning
- Physical Situatedness of learning
- Contextual Integrity: No simple solution regarding release of personal activity data – negotiations!

Data Collection



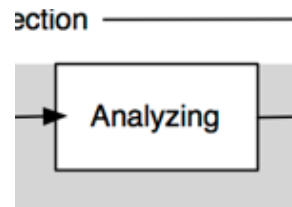
- User control and ownership
- Digital Identity Management putting the learners in control of their data
- Balanced view on legitimate interests regarding access to data
- Mechanisms for demonstration of consent to access data
- Protection of Personal Identifiable Information (PII)
- Sound data release of data - equilibrium between
 - law and technology,
 - data treatment and data control,
 - privacy and utility

Data Storing & Processing



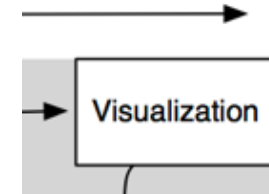
- Fragility of storage process is not reflected in current architectures
- Personal Data Storage - Personalized Learning Record Store
- SafeAnswers – an alternative approach to sharing raw data

Analyzing



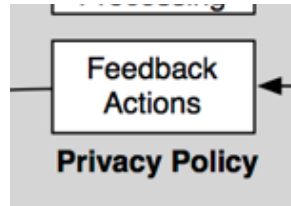
- Need to move out of the «black box»
- Give individuals insights into decisional criteria
- Algorithms derive their social power from their complexity, and the complexity might be too much for the individual to break
- The «secret sauce» should be smeared in a layer as thin as possible
- Openness of technology so that the academic community can exercise some sort of quality control

Visualization



- Privacy policy model based on properties like Visibility, Granularity, Retention and Constraints
- Adaptive visualization based on knowledge about the sensitivity of the data

Feedback Actions



- Implications of knowing, not knowing, and knowing more
- Chilling effect on learning if privacy and data protection fail

Privacy requirements per process and interoperability level (1)

<i>Type of Process</i>	<i>Policy requirements</i>	<i>Organizational requirements</i>	<i>Technical requirements</i>
Learning Activity	LA Process Ownership Policy	Context Management	Consent to share Activity Data Service
	Data Release Policy	Data Release Management	Exchange Monitor
Data Collection	Data Governance Policy	Metrics Management	Contextualizing LA Service
		Identity Management (incl. de-identification)	Identity Management & Privacy Protection Service
Data Storing & Processing	Data Governance Policy	Cloud Storage Policies and Solutions	Personal Learning Record Store

Privacy requirements per process and interoperability level (2)

<i>Type of Process</i>	<i>Policy requirements</i>	<i>Organizational requirements</i>	<i>Technical requirements</i>
Analyzing	Algorithms & Predictive Models Stewardship Policy	Participation in LA development networks (Open LA Architectures)	Decision criteria browser
Visualization	LA Visualization and Feedback Policy	Code of Practice regarding access to Visualization from LA	Privacy enhanced visualizations
Feedback Actions	LA Visualization and Feedback Policy	Code of Practice regarding Feedback from LA	Accountability systems for feedback from LA systems

Technical requirements

- **Consent to share Activity Data Service (Learning Activity)**
- **Exchange Monitor (Learning Activity)**
- **Identity Management & Privacy Protection Service (Data Collection)**
- **Personal Learning Record Store (Data Storing & Processing)**
- **Decision criteria browser (Analyzing)**
- **Privacy enhanced visualizations (Visualization)**
- **Accountability systems for feedback from LA systems (Feedback Actions)**



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