Privacy-Awareness in Clinical Workflows

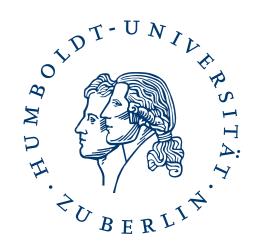




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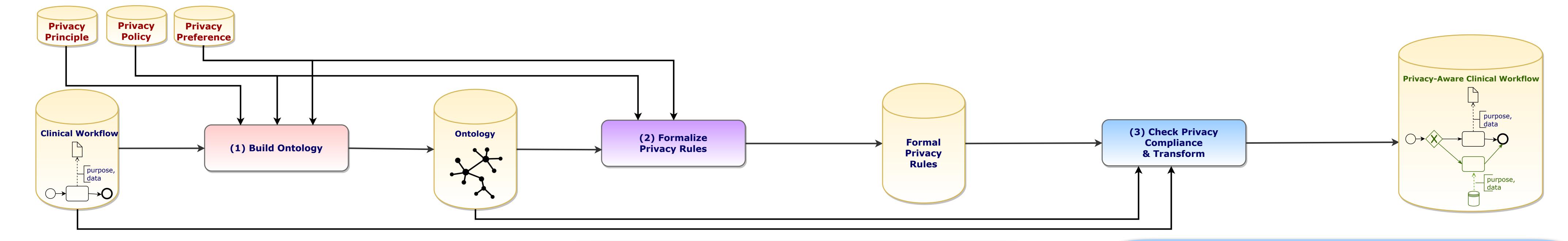
Problem

A clinical workflow might have privacy issues due to involving sensitive patient data and multiple healthcare providers. Privacy-aware Workflows are compliant with:

- privacy principles based on the EU General Data Protection Regulation,
- privacy policies provided by healthcare providers, and
- privacy preferences of data subjects (patients).

Solution

We aim to transform existing non-privacy-aware workflows into privacy-aware ones.



(I) Build Ontology Ontology for main components of privacy rules: **PrivacyRule** User **Data** + user: User + userRole: String + data: Data + dataCategory: String + purpose: String + retention: String **PrivacyPolicy PrivacyPreference** + consentStatus: bool + condition: bool Mapping between privacy concepts and BPMN elements:

(2) Formalize Privacy Rules

Example of Privacy Rule:

Informally:

Alice gives consent that only pediatrician Bob can perform hearing screening for 6 months on March 21, 2019.

• Formally:

(Alice, only Bob, hearing-screening, any, 6months, 2019-03-21)

Genaral Schema:

(dataSubject, user, purpose, data, duration, entryDate)

(3) Check Privacy Compliance & Transform

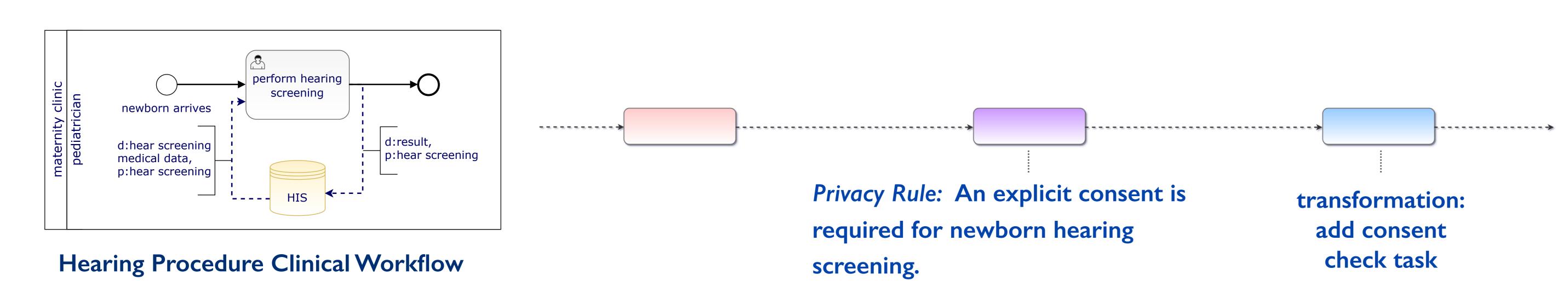
foreach data operation tasks with annotation [Data, purpose] do

foreach privacy rules with purpose do

if privacy violation then

apply predefined transformation action

Use Case: Newborn Screening in Germany



d:consent, p:hear screening medical data, p:hear screening newborn arrives

d:consent d:result, p:hear screening medical data, p:hear screening newborn arrives

Hearing Procedure Privacy-Aware Clinical Workflow