Motivation

Required Characteristics of Electronic Patient Consent

State of Affairs

Too Generic

- Single generic approach to cover multitude of complex scenarios
- Patient consent is violated more often than it is honoured
- System is not patient consent centric

Lacking

- Semantic understanding of patient consent
- Proof of correctness for the decisions made
- Flexibility to accommodate dynamic roles

Patients need to be able to control & define:

- **Who** can access their information
  - generic inclusions to specific exclusions
- **When** their information can be accessed
  - Privacy & confidentiality a function of need
- **What** can be accessed
  - complete medical history OR partial medical records

**Consen Tir**

1. **Attach meaning to information**

   - All information is represented in RDF (N3) notation
   - Provides meaning to data for machine processing
   - Consent and policies are
     - Translated into logical rules
     - Represented by RDF (N3) logic

2. **Access based on provable dynamic authorization**

   - A semantic reasoner to compute access request based on:
     - Patient consent
     - Multi-level policies
     - User attributes

3. **Verifiable proof for each access decision**

   - Third party validation

**Supported Policies**

- **Hospital policies**
  - Members only
  - By shift
  - Must be treating doctor/nurse (except in emergencies)

- **Patient consent policies**
  - Opt in
  - Opt in except for sensitive documents
  - Opt in except for certain people
  - Opt out
  - Opt out with emergency override

**Example Rules**

- **a has possible access to p's records**
  - a member of o & o has a by shift policy & o is on shift & p is treated in o

- **a is authenticated to access p's records**
  - a has possible access to p's records & a treats p

- **a can access d**
  - a is authenticated to access p's records & d belongs to p & p has an opt in policy

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<th>Information/data</th>
<th>RDF representation</th>
<th>Semantic Reasoner</th>
<th>Proof</th>
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<td>Institution Policies</td>
<td>Patient Consent</td>
<td>User access query</td>
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**Set up**

**Scenarios**

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