A Policy-Based Security Mechanism for Distributed Health Networks

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Outline

- Motivation
- Background
- Policy-Based Security Mechanism
- A Scenario
- Future work
Motivation

- Knowledge valuable asset of organizations
- Trend towards Distributed/Integrated Health Information
- Sensitive patient information has to be protected
- Facilitate secured information exchange
  - Flexible and adaptable approach
  - Regulations and individual consents
  - Patient care should still be paramount
Background

- Research into middleware solution for integrated medical information systems
- Based on domain and technological standards
  - HL7 Standards e.g. RIM and CDA
- Policy-Based Systems
  - Offer adaptability and easier system modification
- Encryption
  - Public Key Infrastructure (PKI)
Policies

- Provide the rules for information handling and exchange
- Types
  - Patient
  - Organizational
  - Document Type
- Encoding
  - eXtensible Access Control Markup Language (XACML)²
    - OASIS standard
    - Provides languages for defining policies and requests
Policy-Based Mechanism (cont’d)

- Policy Evaluation Approach
  - Match policies to document
  - Evaluate the rule(s) of policies
  - Apply effects (deny or permit) of rules
    - Rule combination
    - Conflict resolution
      - Precedence by specificity

Policy-Based Mechanism (cont’d)

- Encryption
  - Applied after policy evaluation and before transmission
  - Non-authorized sections are not transmitted
  - Document will be encrypted with a symmetric key
  - Encrypted document and symmetric key will be encrypted with recipients public key
A Scenario

[Diagram showing the flow of clinical data through an adapter to secured CDA document, involving audit trail data, network, policy evaluation, unauthorized sections, and encryption.]
Future Work

- Currently at initial stage of development
- Integration of a Role-based access mechanism
- Further refinement of conflict resolution of policies
Resources

1. [www.netlab.uvic.ca](http://www.netlab.uvic.ca)