

Overview

- Use Case
- Decentralized Provenance Management Architecture
- UMA + Provenance Management

Use Case

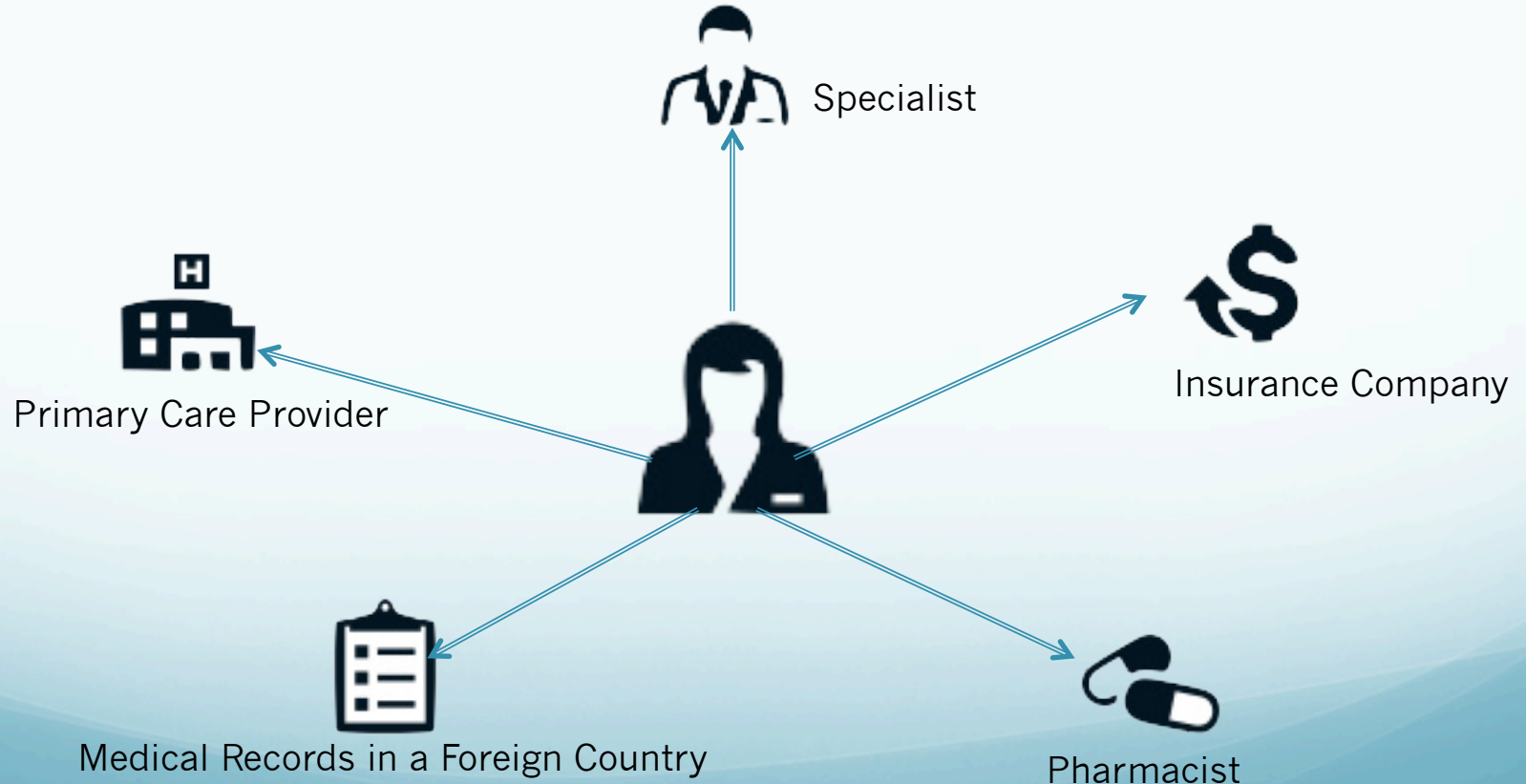
Transparent Health

<http://www.transparent-health.us>

Transparent Health

<http://www.transparent-health.us>

- 'Accounting of Disclosures' in EHR systems



Motivations for Transparent Health

- No reliable means of transparency and accountability in health care systems
 - How was my health data transferred between one clinic to another?
 - Who looked at my health data? And for what purposes?
 - Can I report misuses or seek clarifications on my medical data?

Empower patients through Transparent Medical Record Systems!

Transparent Health Interface

Transparent Health [Create Health Profile](#) [Account Settings](#)

Peter Patient's Medical Details

URI:

Country: [Audit](#)

Date Joined: [Audit](#)

Birthdate: [Audit](#)

Blood Type: [Audit](#)

Emergency Contact: [Audit](#)

Primary Care Provider: [Audit](#)

Medical Conditions

Medical Condition: [Audit](#)

Medical Condition: [Audit](#)

Medical Condition: [Audit](#)

Auditing Health Info

Audit Logs for conditions X

Date: 12 Sep 2013
Agent: Doctor Dee
Role: Physician
Purpose: Preparation for a follow up visit

[Questions?](#)

Date: 23 Sep 2013
Agent: Steven Special
Role: Physician
Purpose: Referral Visit

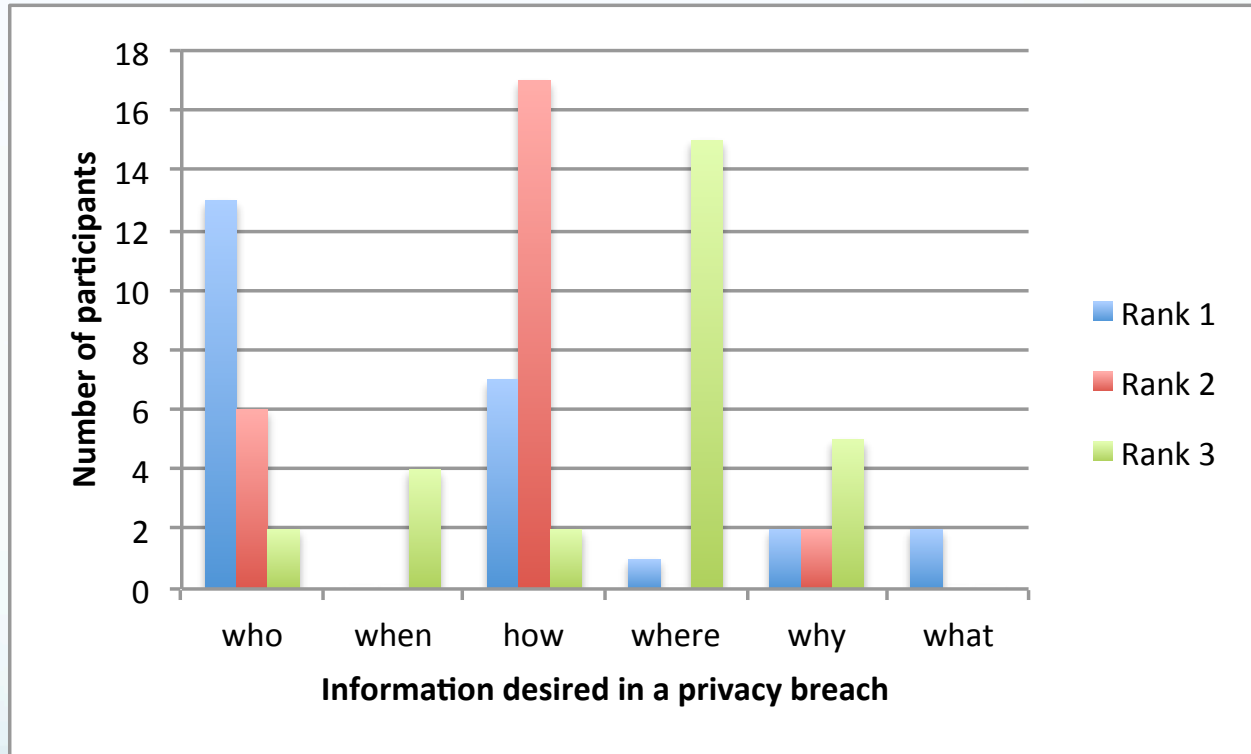
[Questions?](#)

Date: 23 Sep 2013
Agent: Precilla Philip
Role: Pharmacist
Purpose: Check Prescription History

[Questions?](#)

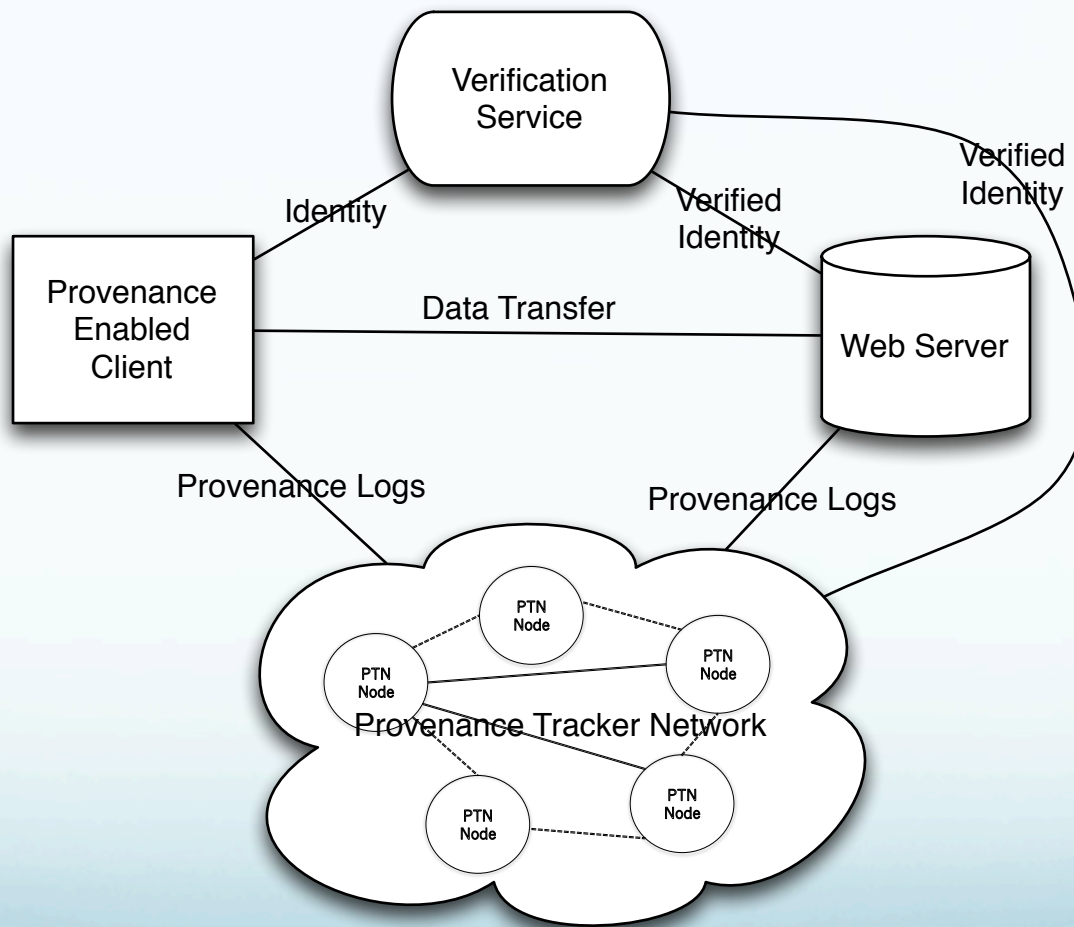
[OK](#)

The type of information desired after a privacy breach

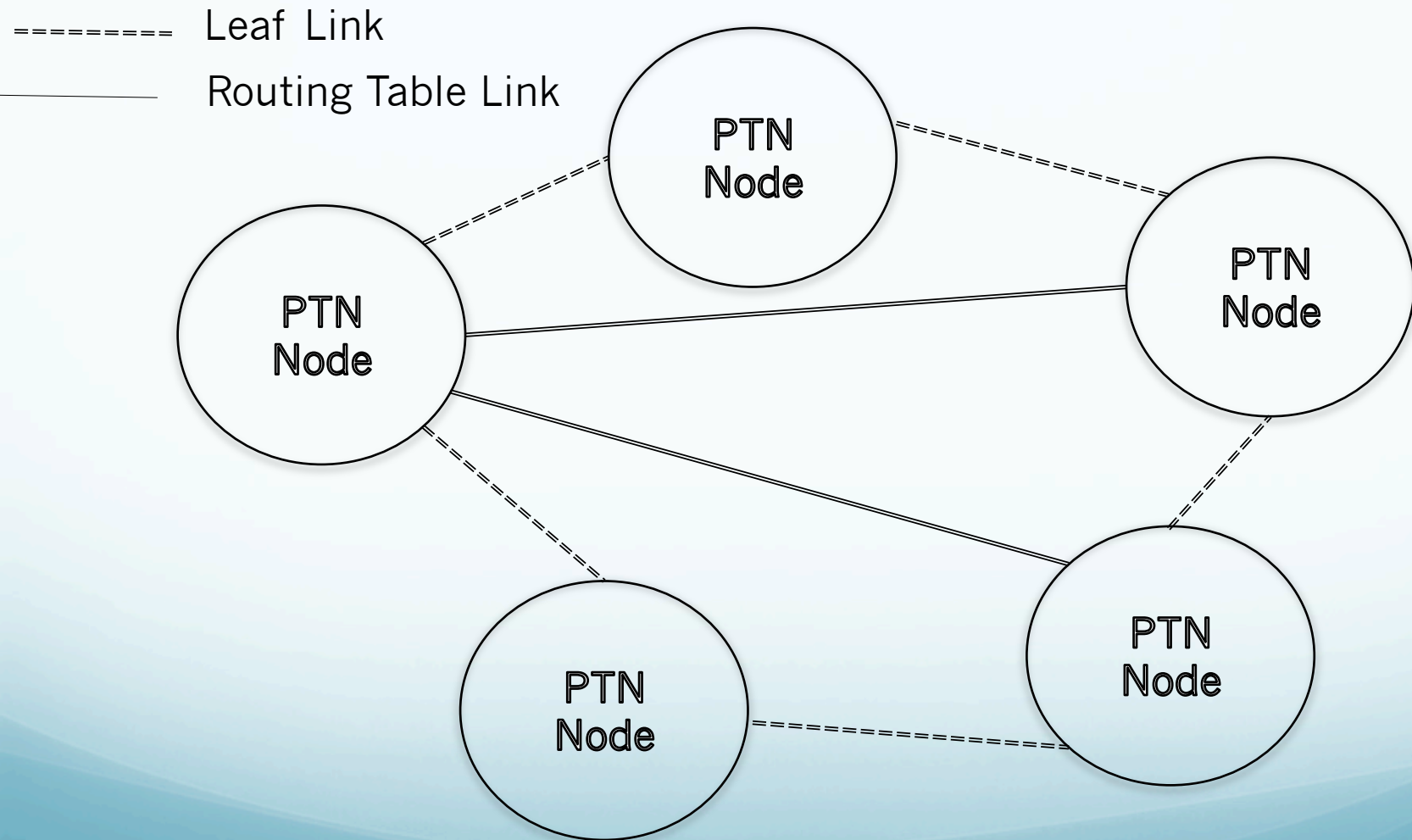


Provenance Management

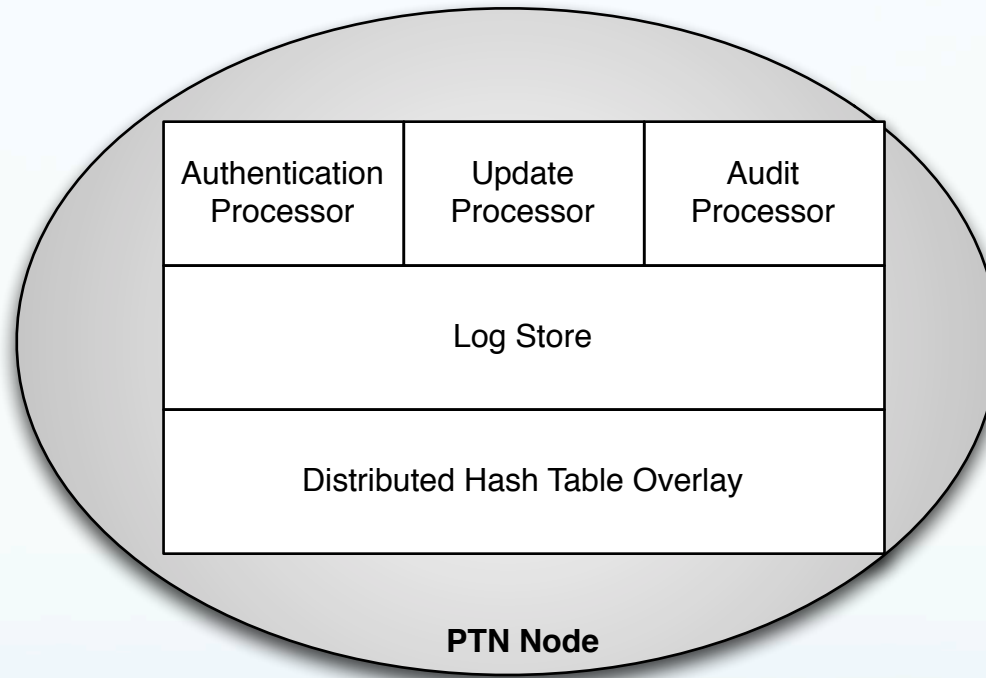
Enabling a Transparent Infrastructure



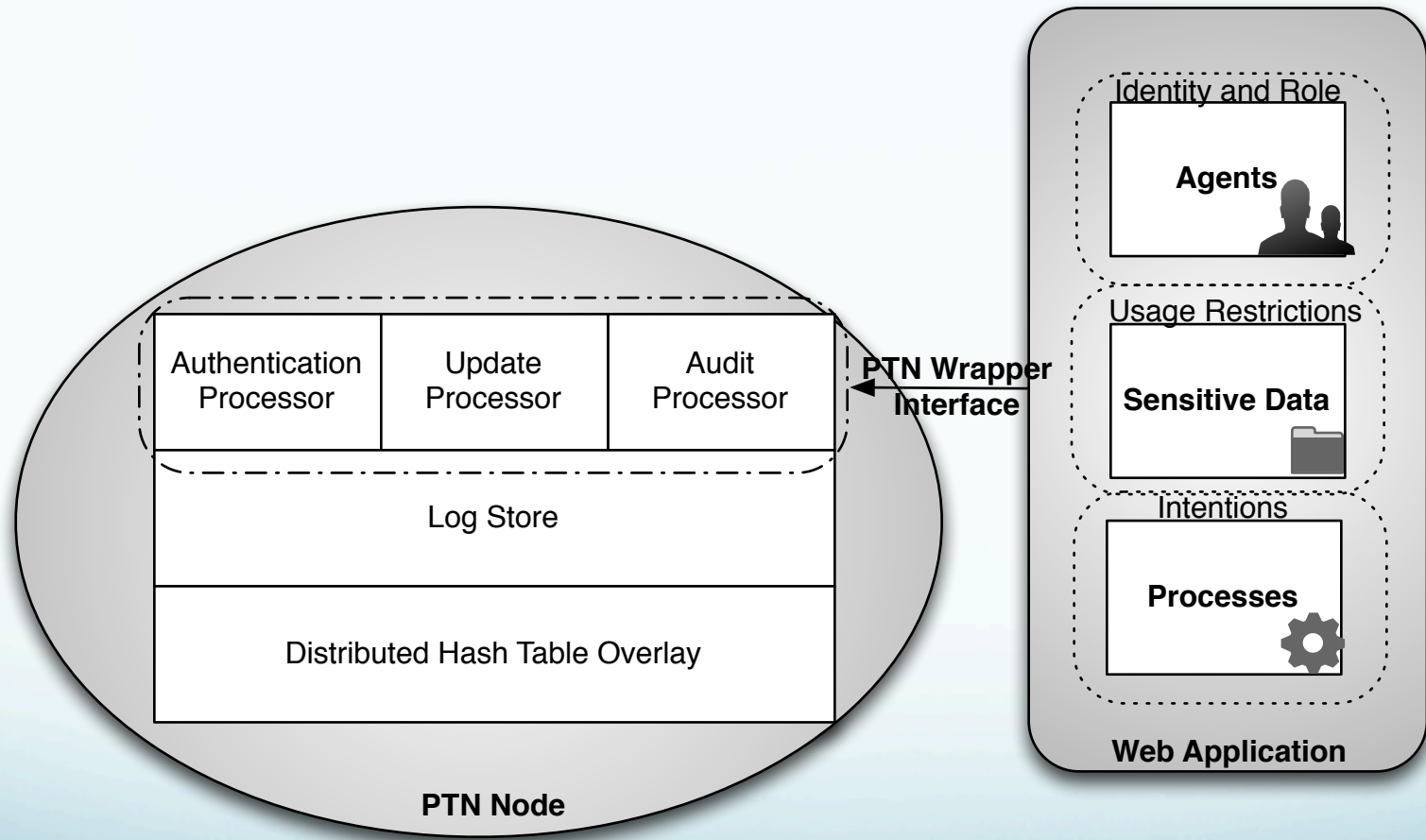
PTN Architecture



PTN Node Architecture



PTN Wrapper Interface

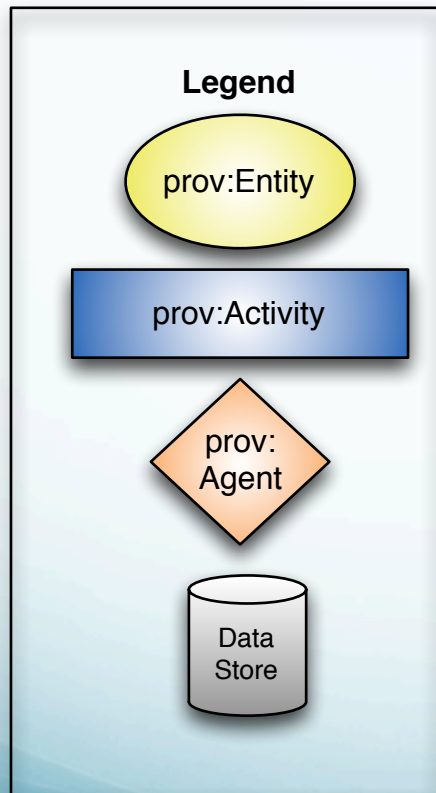
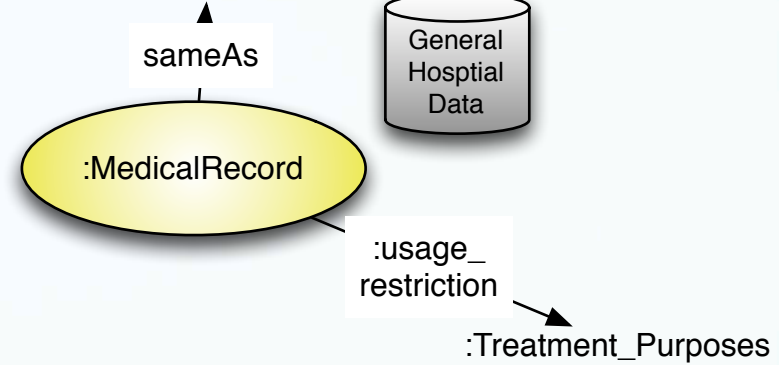


Why DHTs?

- Incremental scalability
- High availability
- Low latency

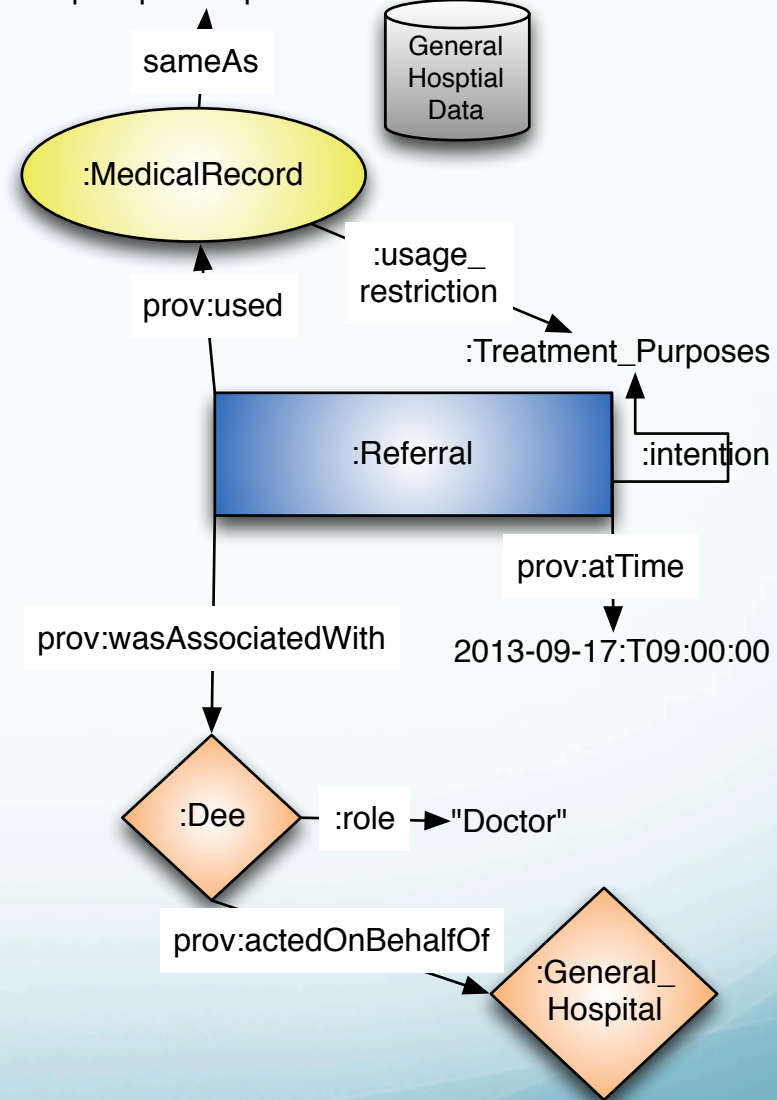
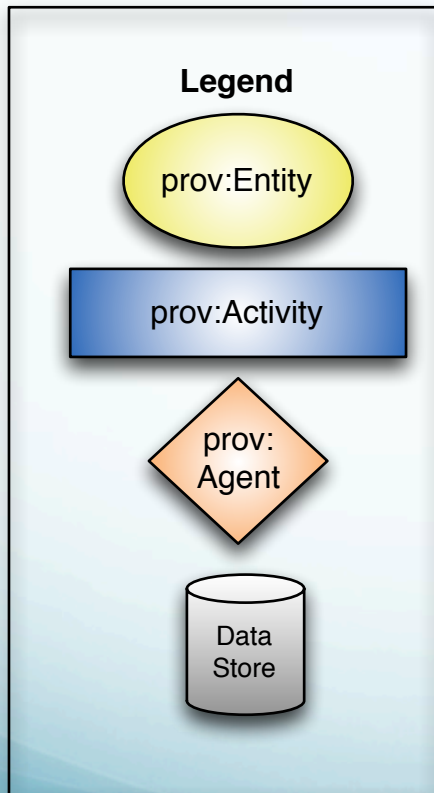
Provenance Data Flow

<http://genhospital/patient/peter/medicalrecord>

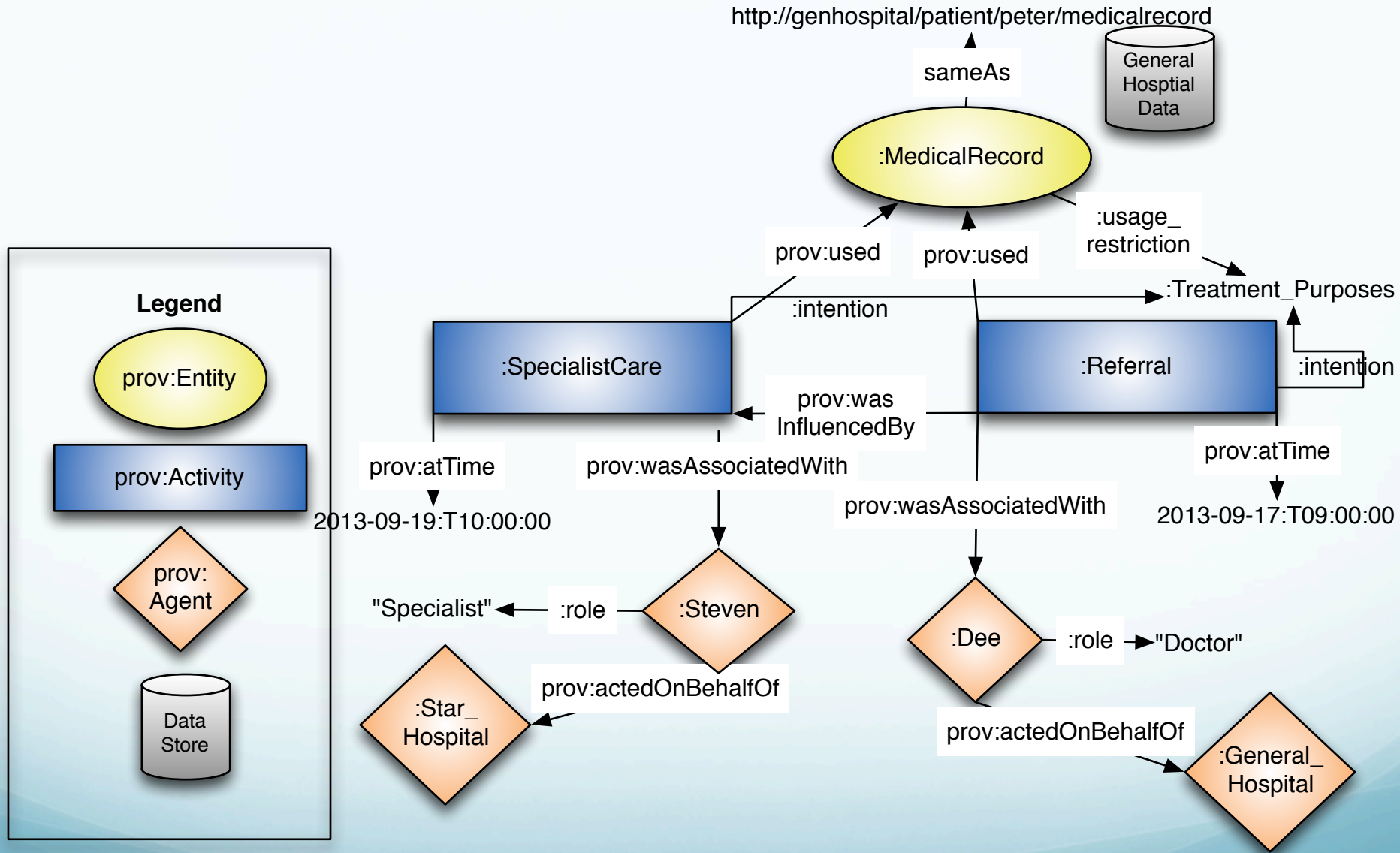


Provenance Data Flow

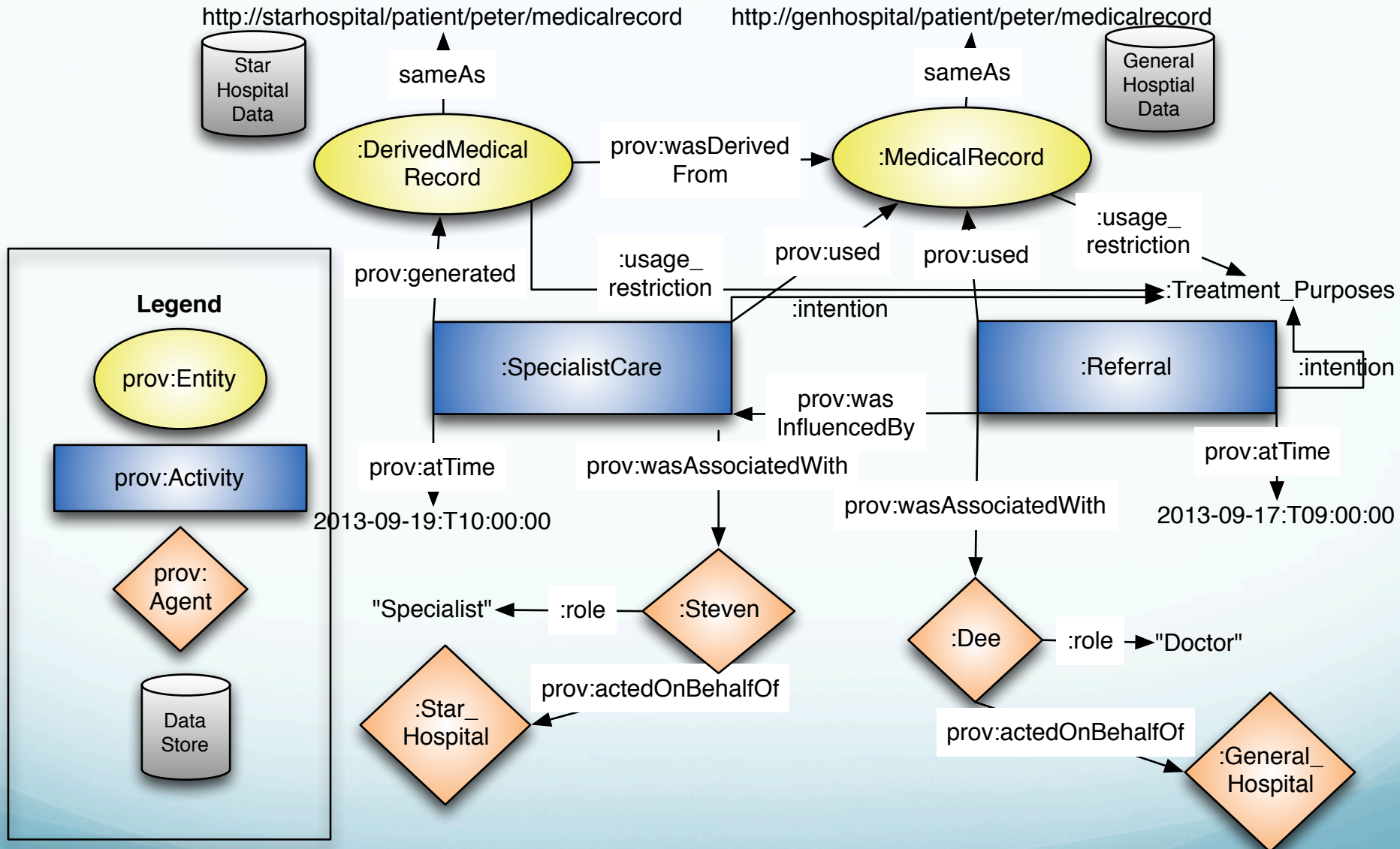
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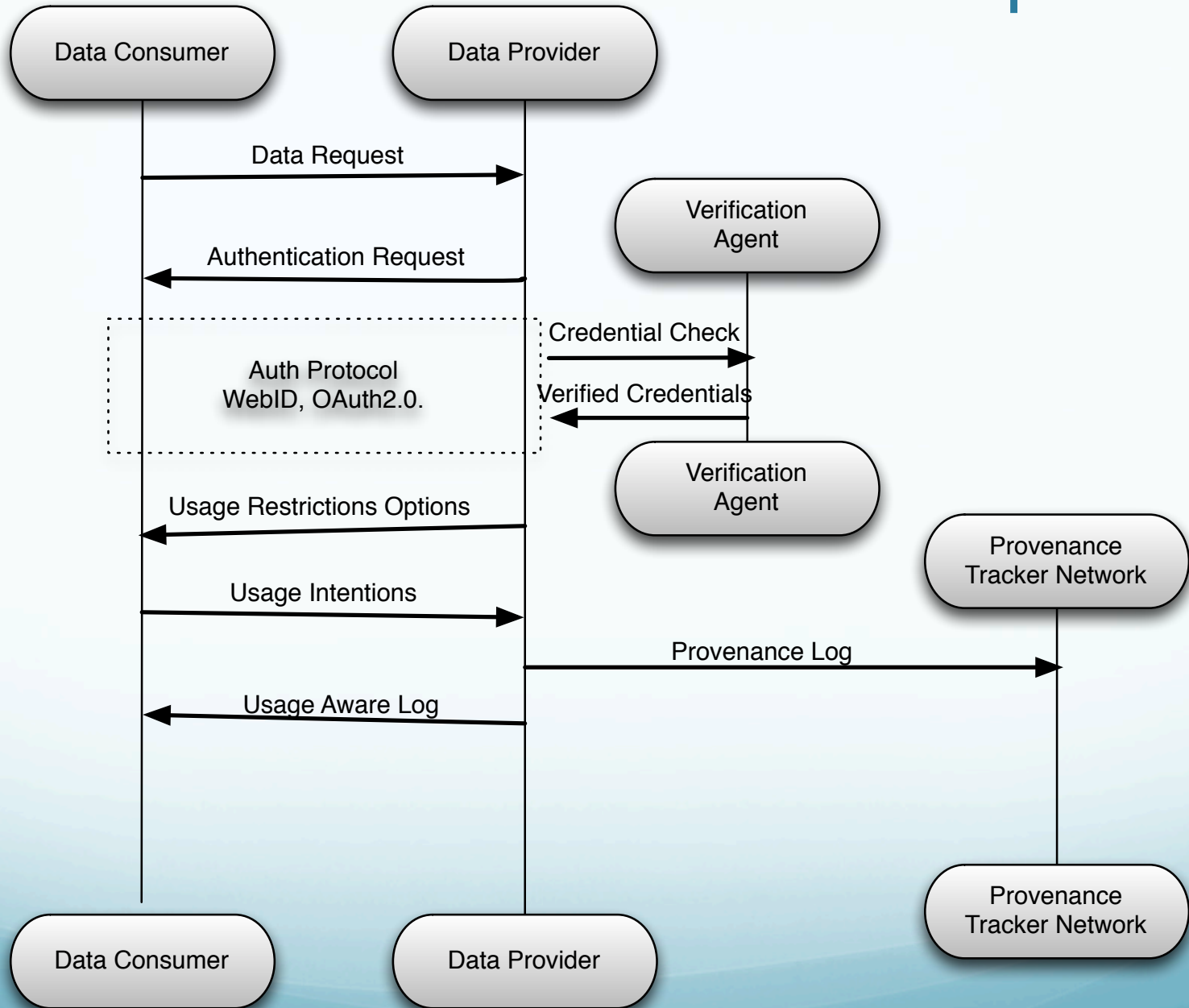
Provenance Data Flow



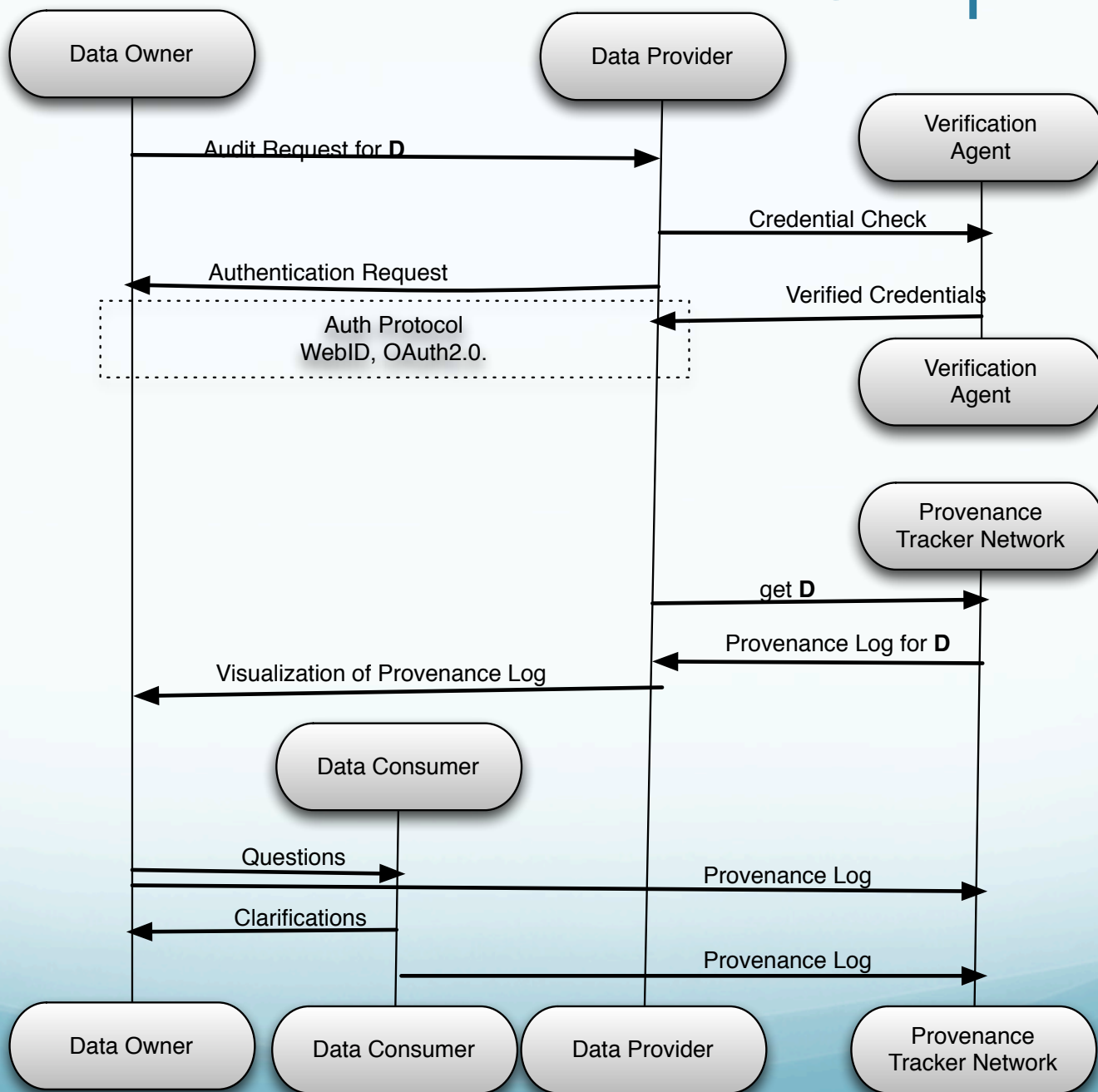
Provenance Data Flow



Provenance Creation Sequence



Provenance Retrieval Sequence



PTNs won't solve all your problems...

- Data Owner
 - Mis-reporting of usage resulting in denial of service attacks
- Data Consumer
 - In fraudulent or illegal use of data, the data consumers won't label the use as such

UMA + Provenance Management

Discussion