Augmenting the Web with Accountability

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PhD Symposium at WWW2012

Agenda

- Motivation
- Proposed Approach
- Methodology & Evaluation
- Challenges

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- But information can leak even though there are strict access control mechanisms
- We need accountability to **supplement** access control on the Web *[Weitzner et al, 2008]*

Unintended Consequences from Private Information Leakages on the Web

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Copyright Infringements

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- Enable reuse of web content in a **progressive policy aware manner**

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HTTPA
(HTTP with Accountability)

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- Extensible Privacy and Reuse Restrictions

HTTPA in a Nutshell

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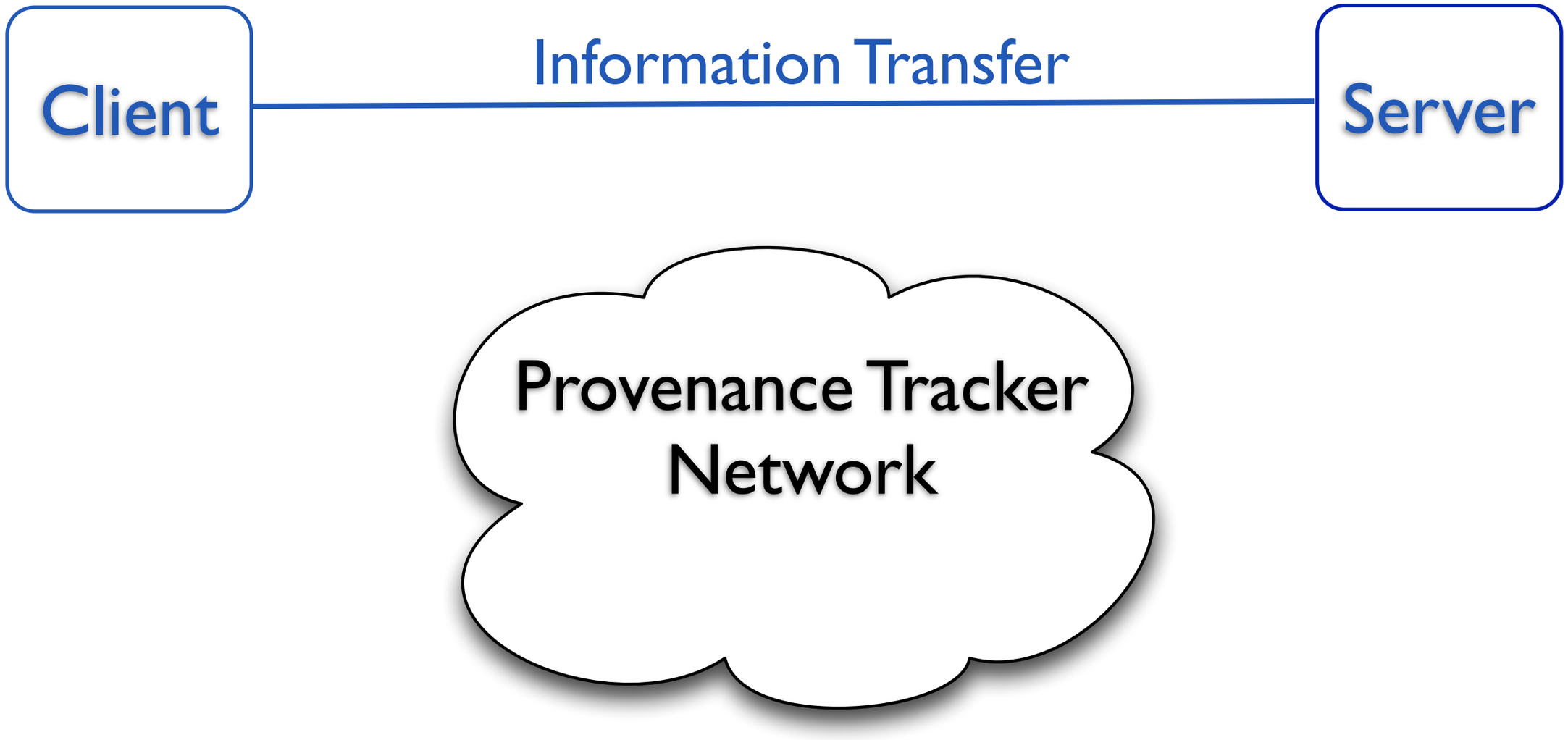

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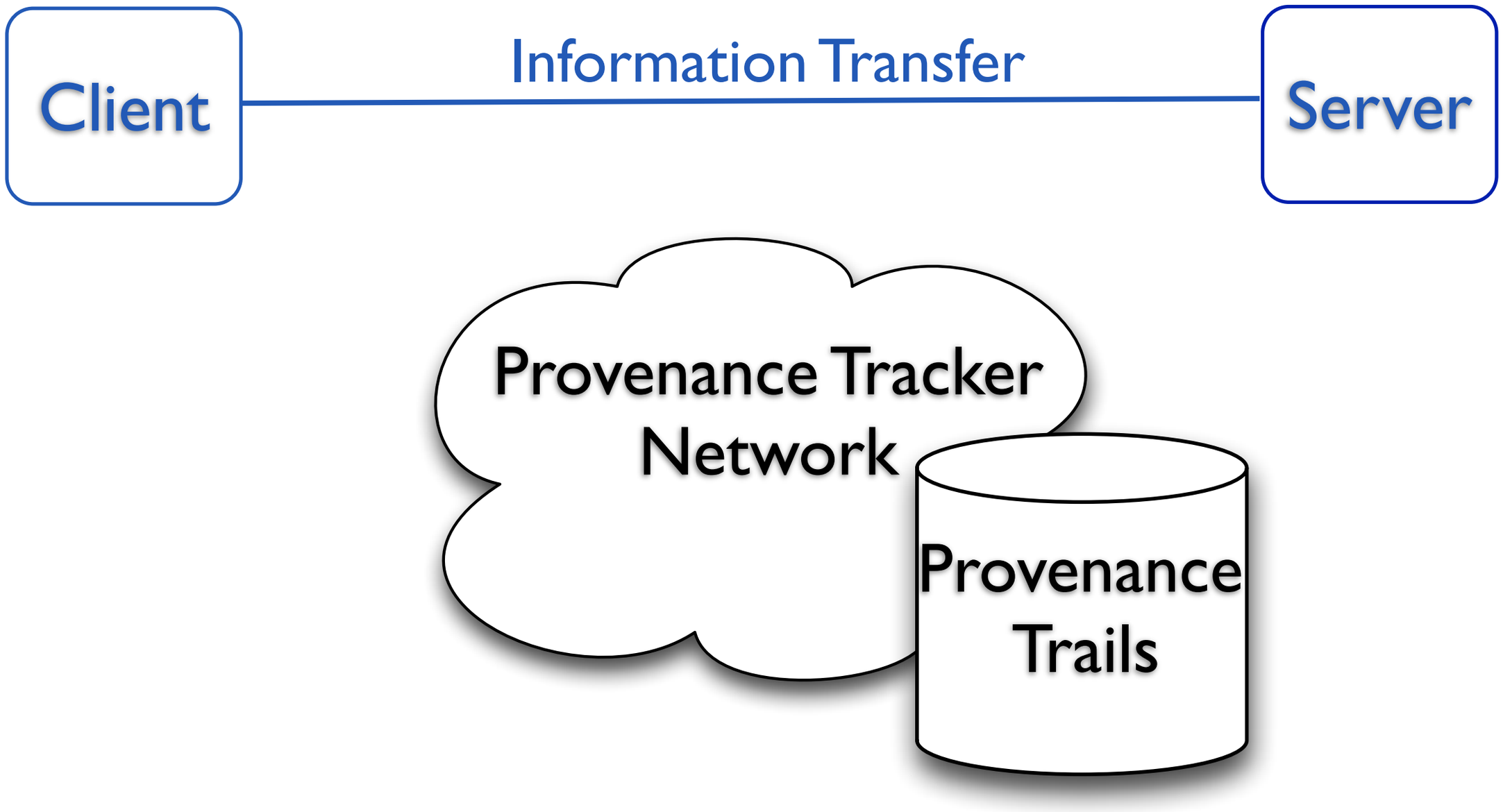

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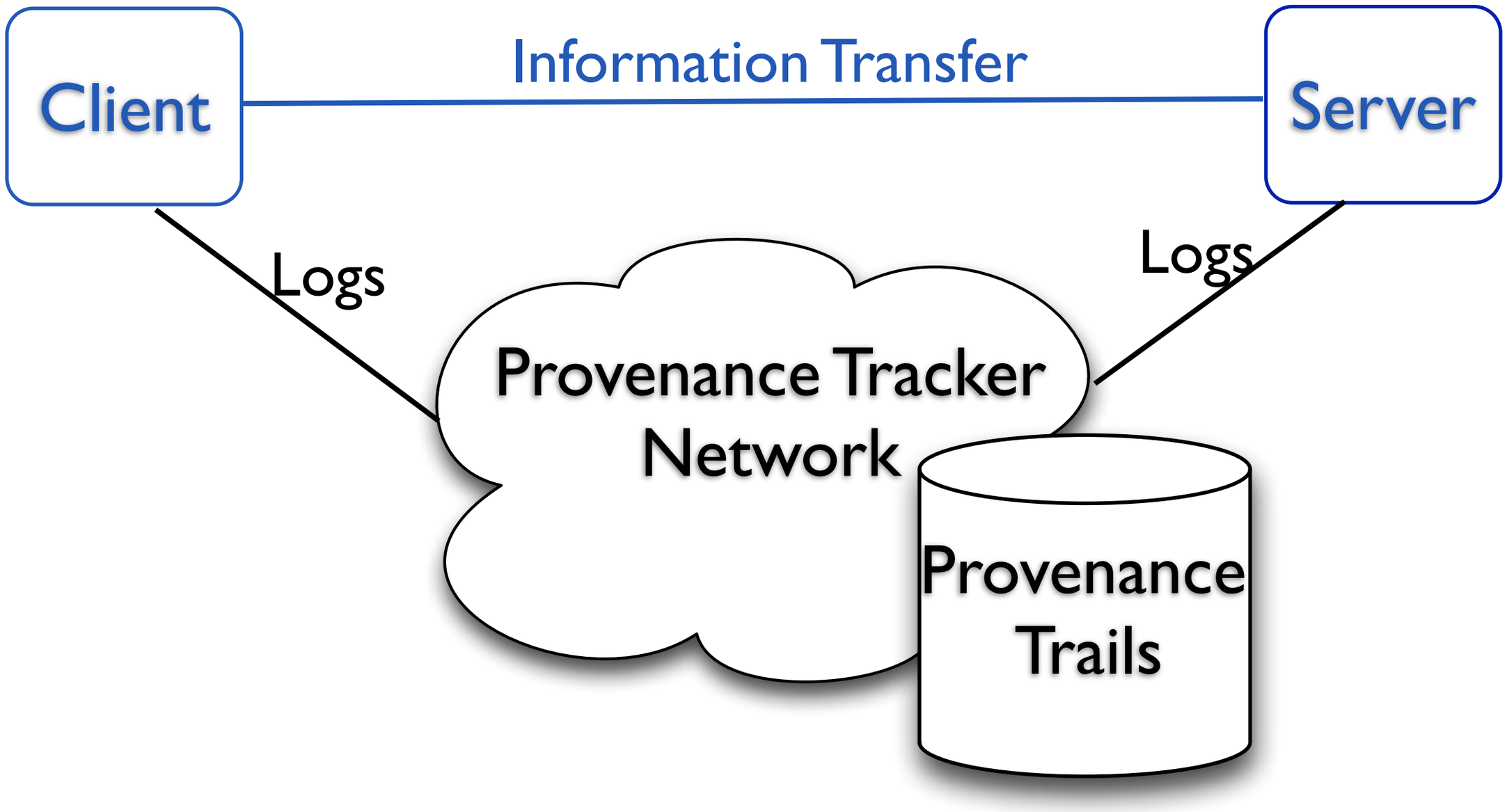

HTTPA Method Sequence

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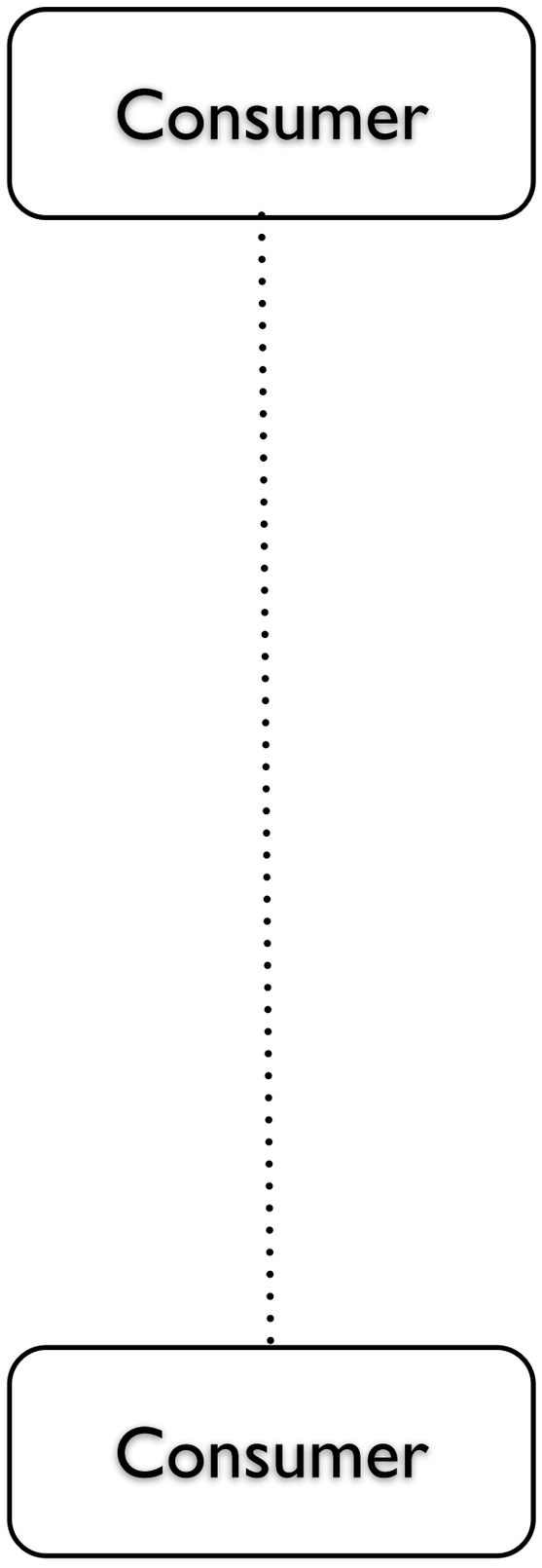

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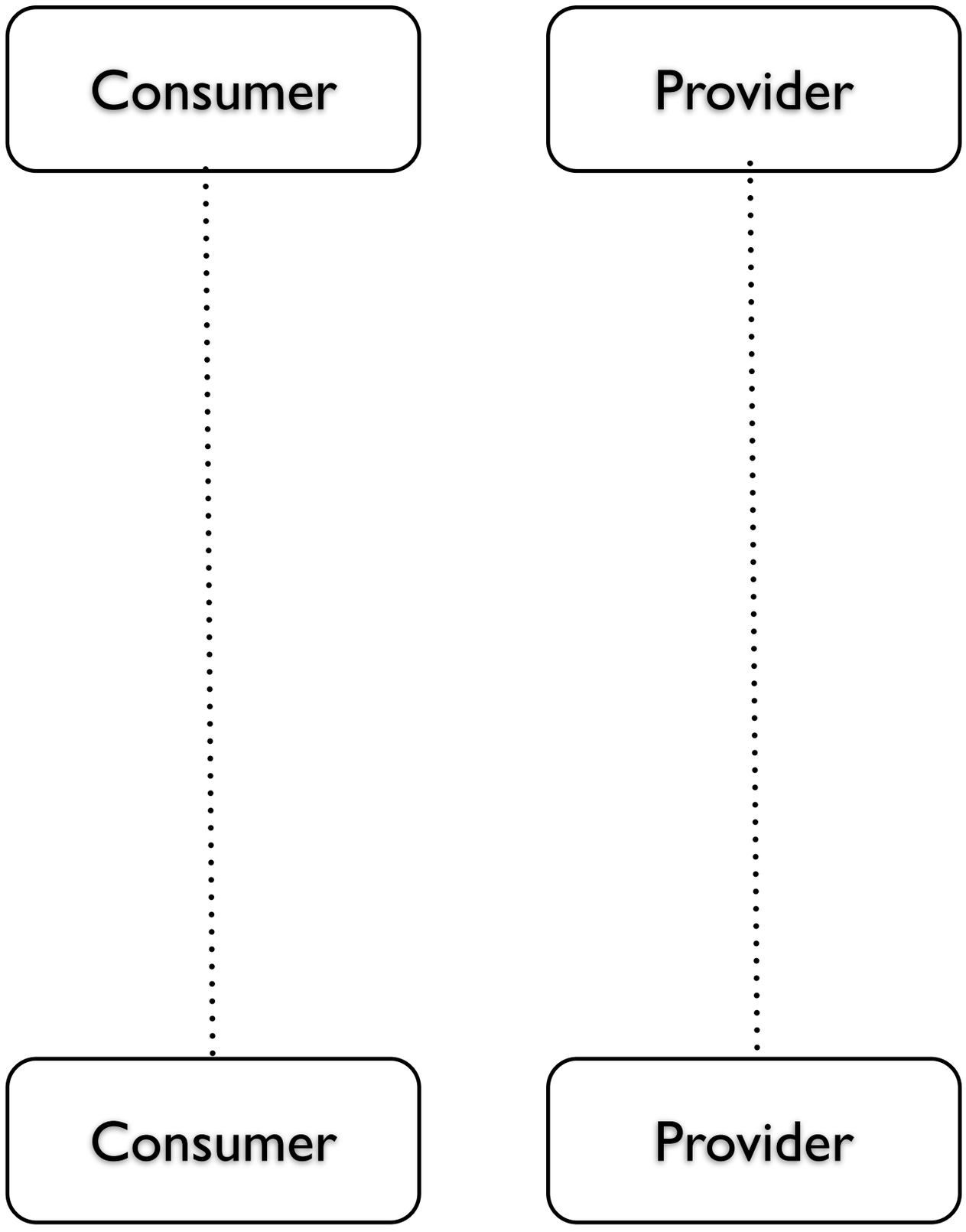

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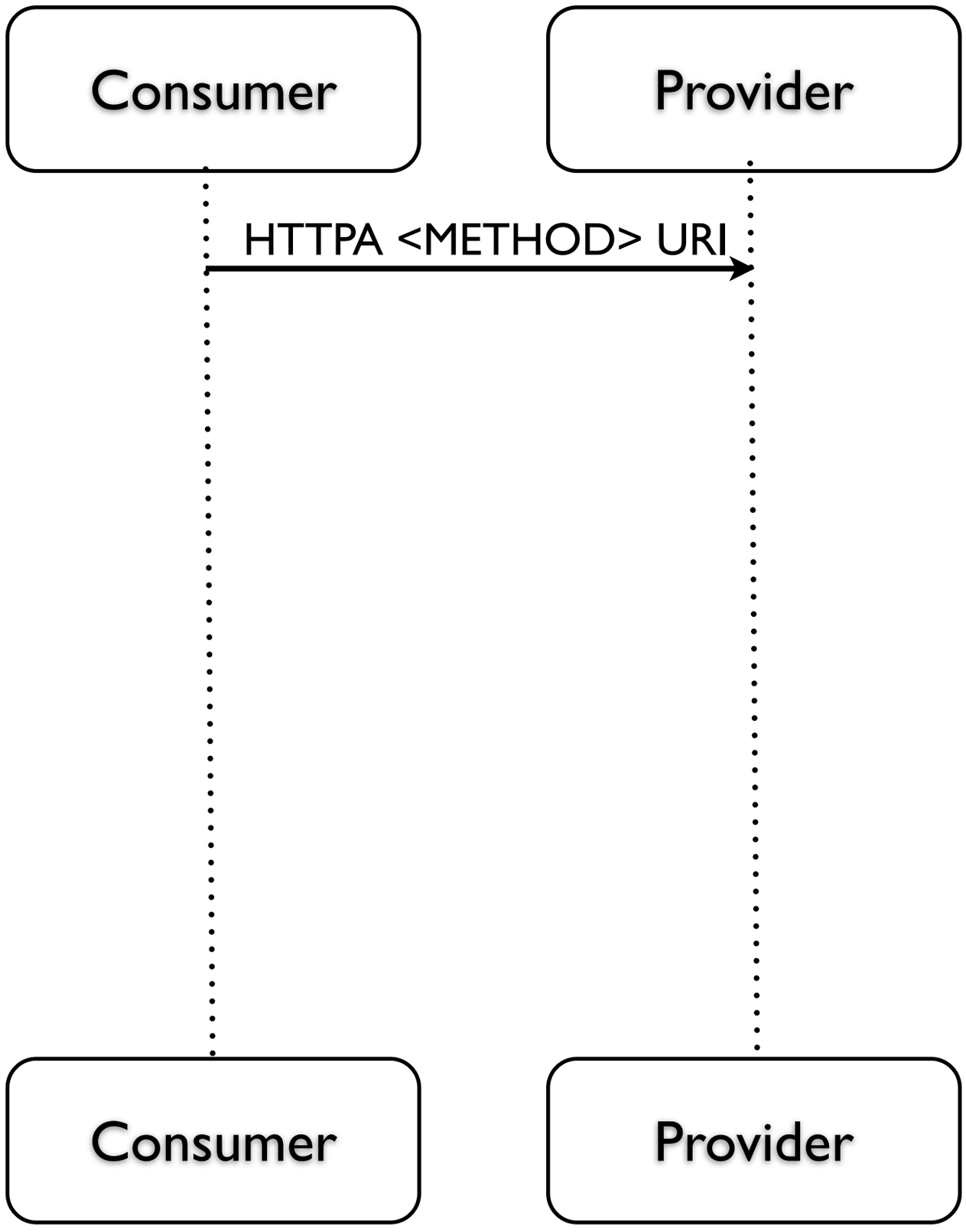

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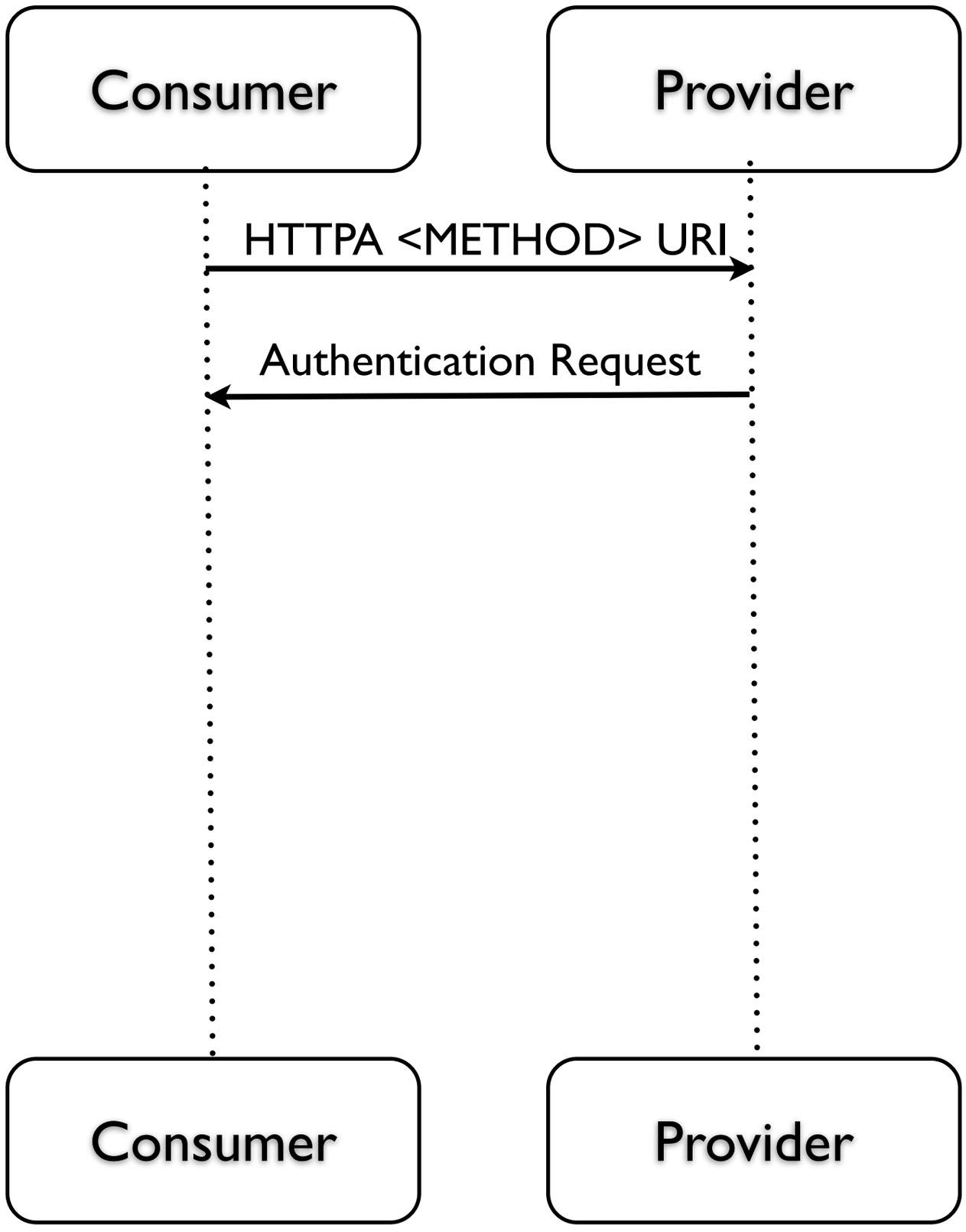

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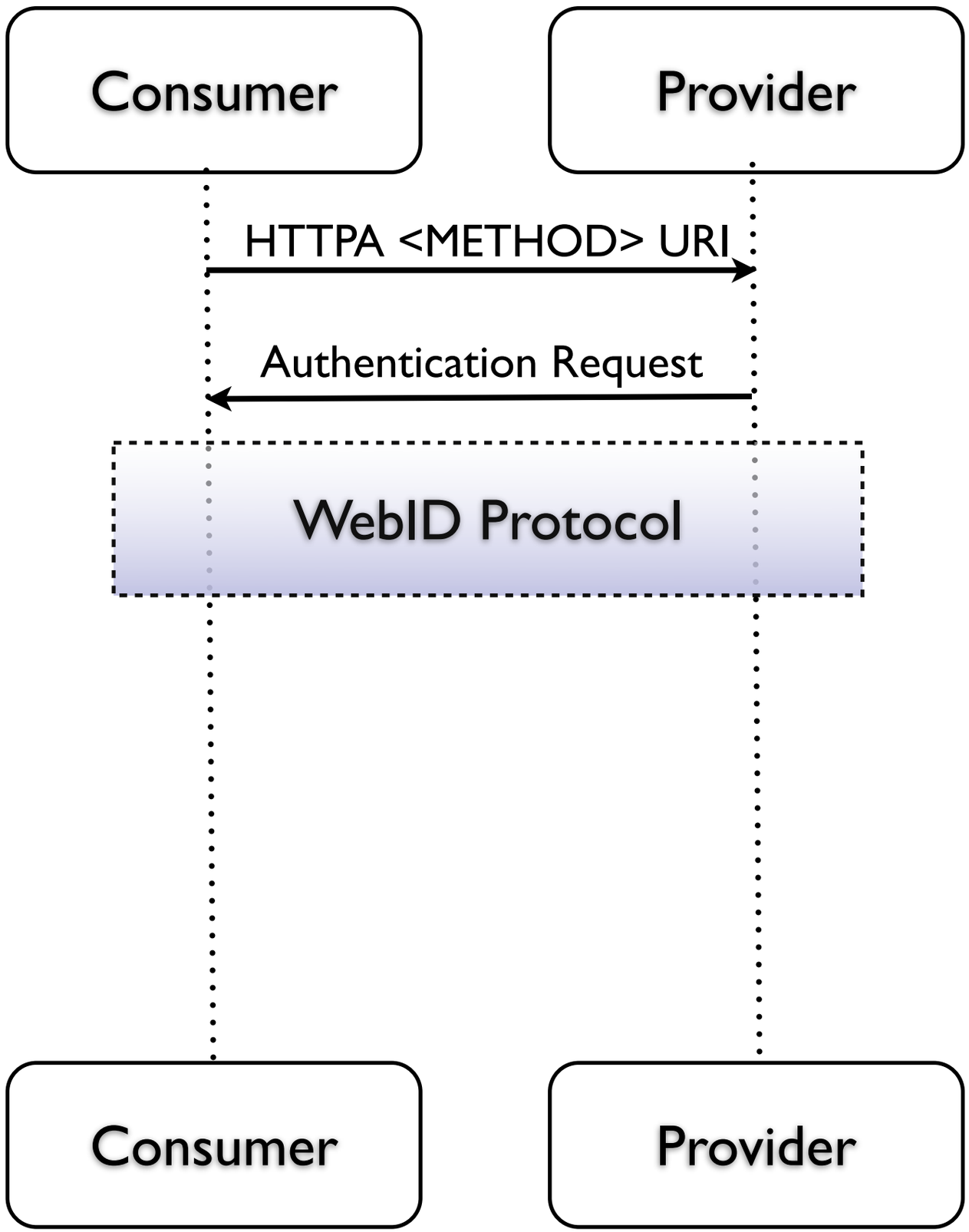

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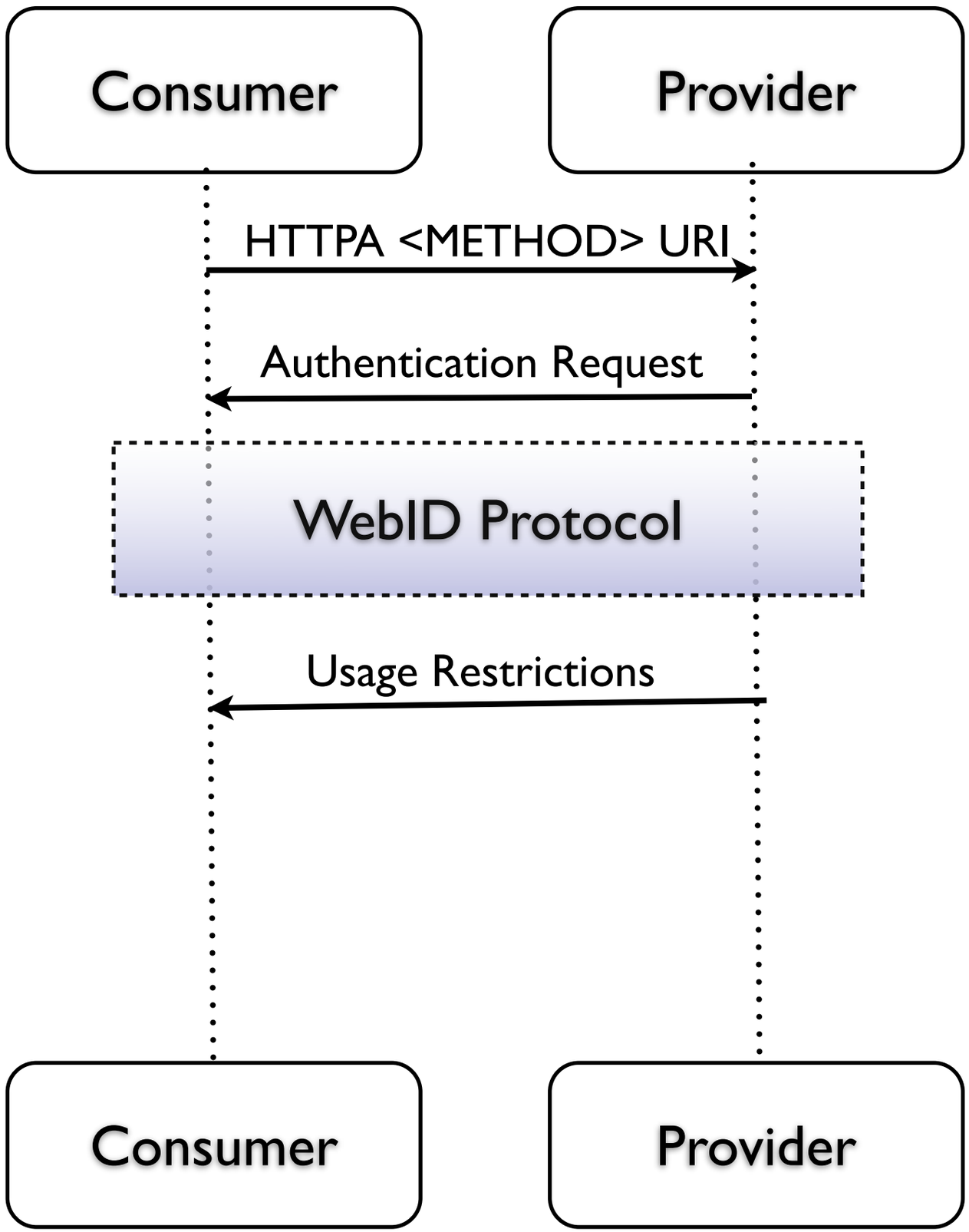

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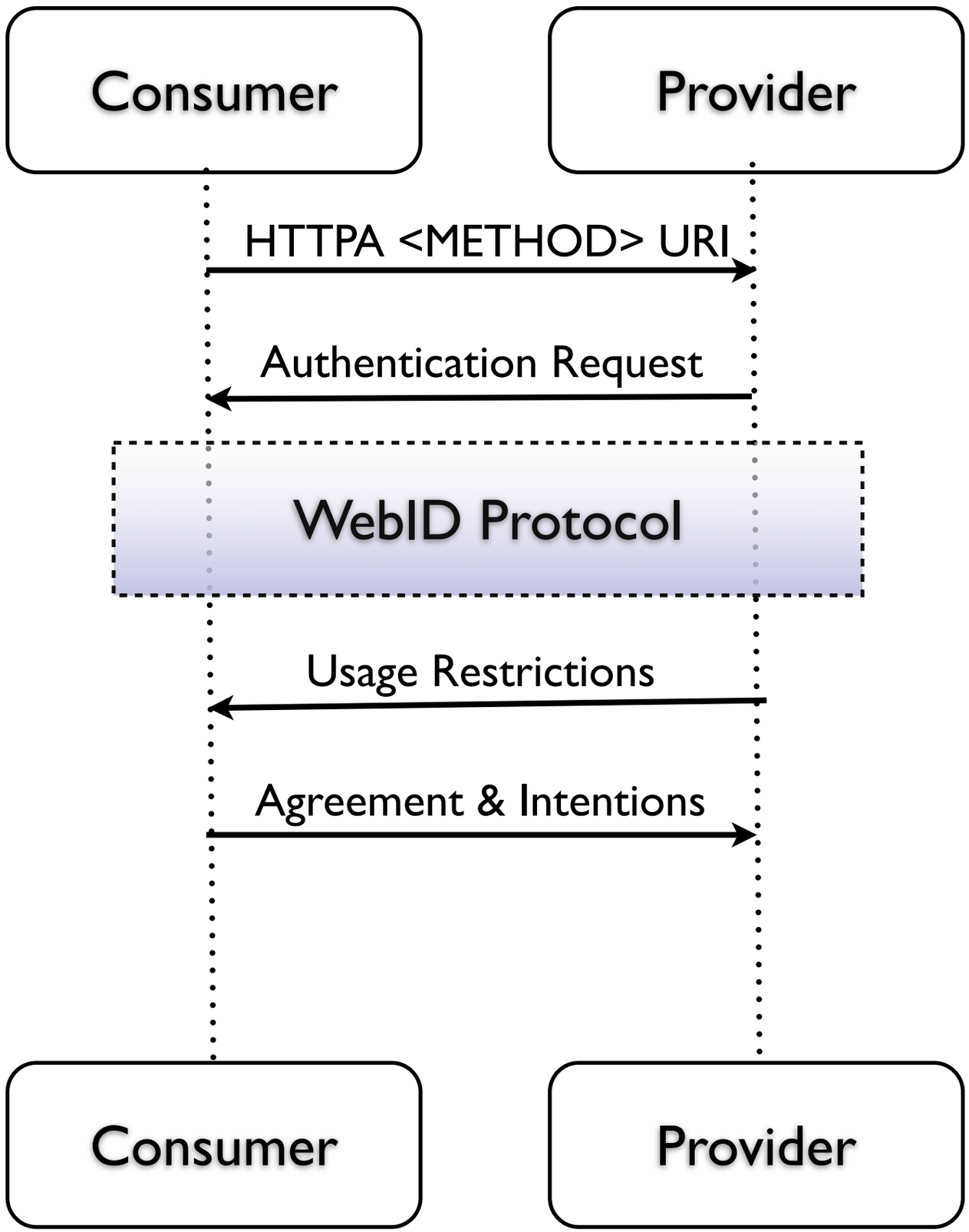

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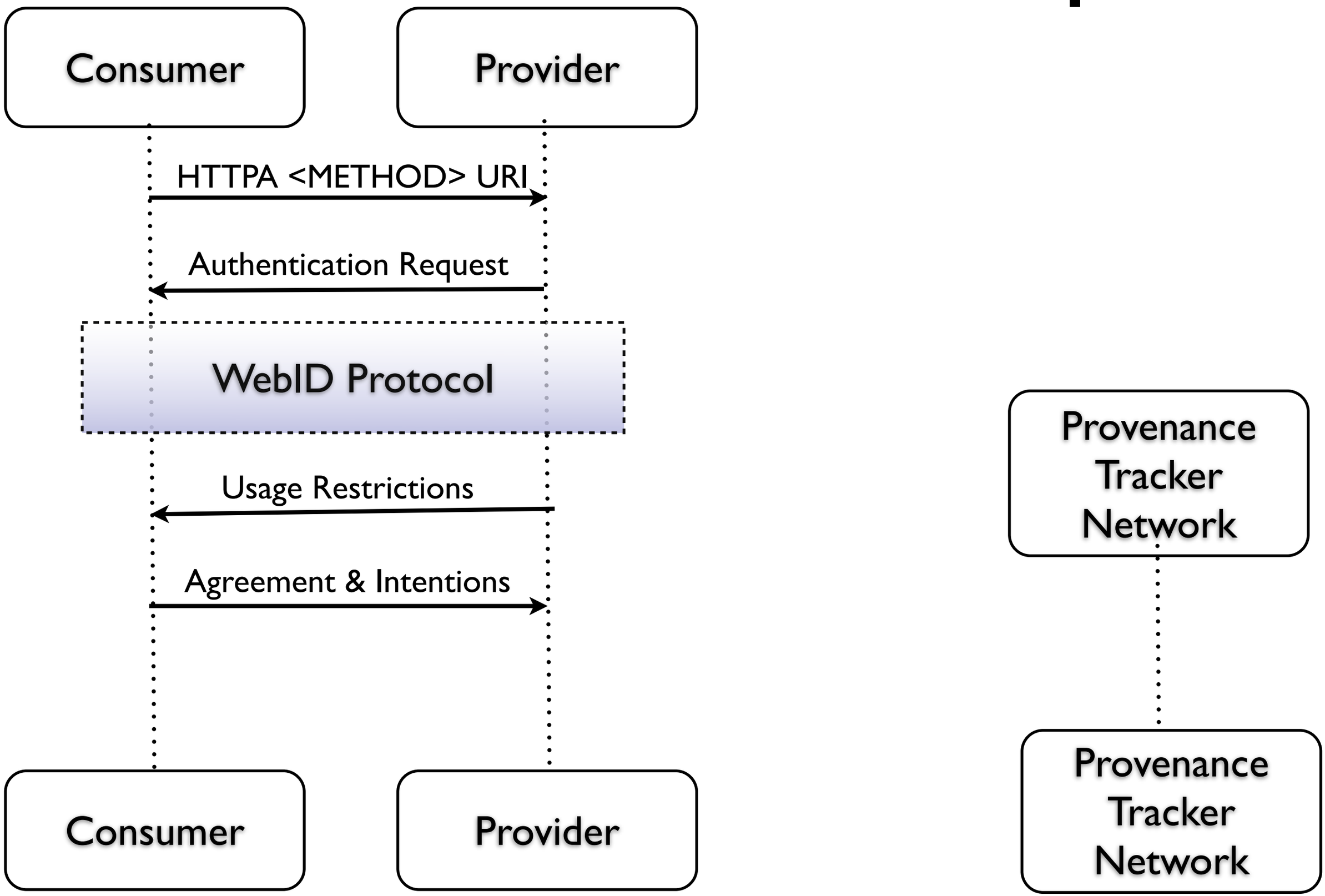

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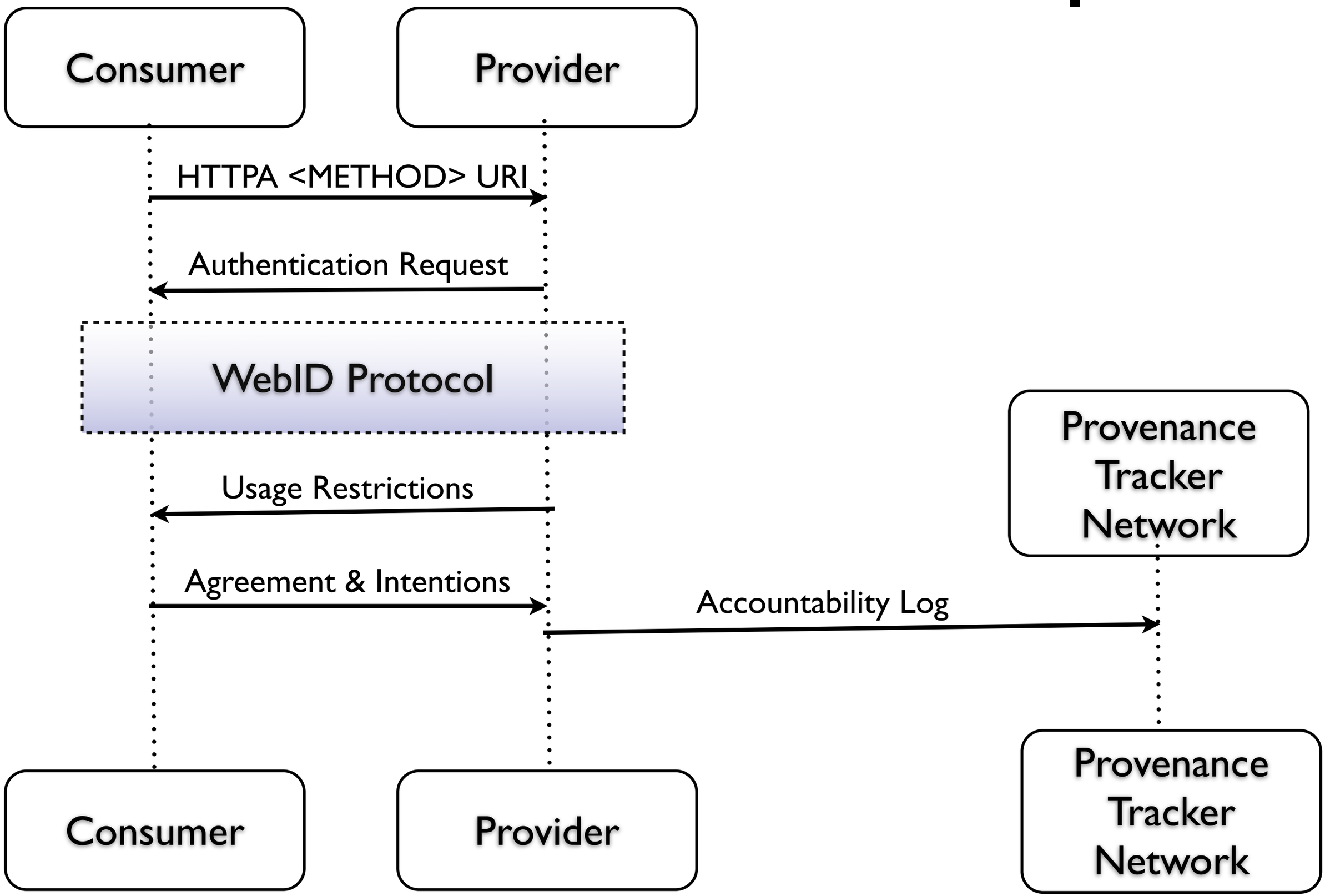

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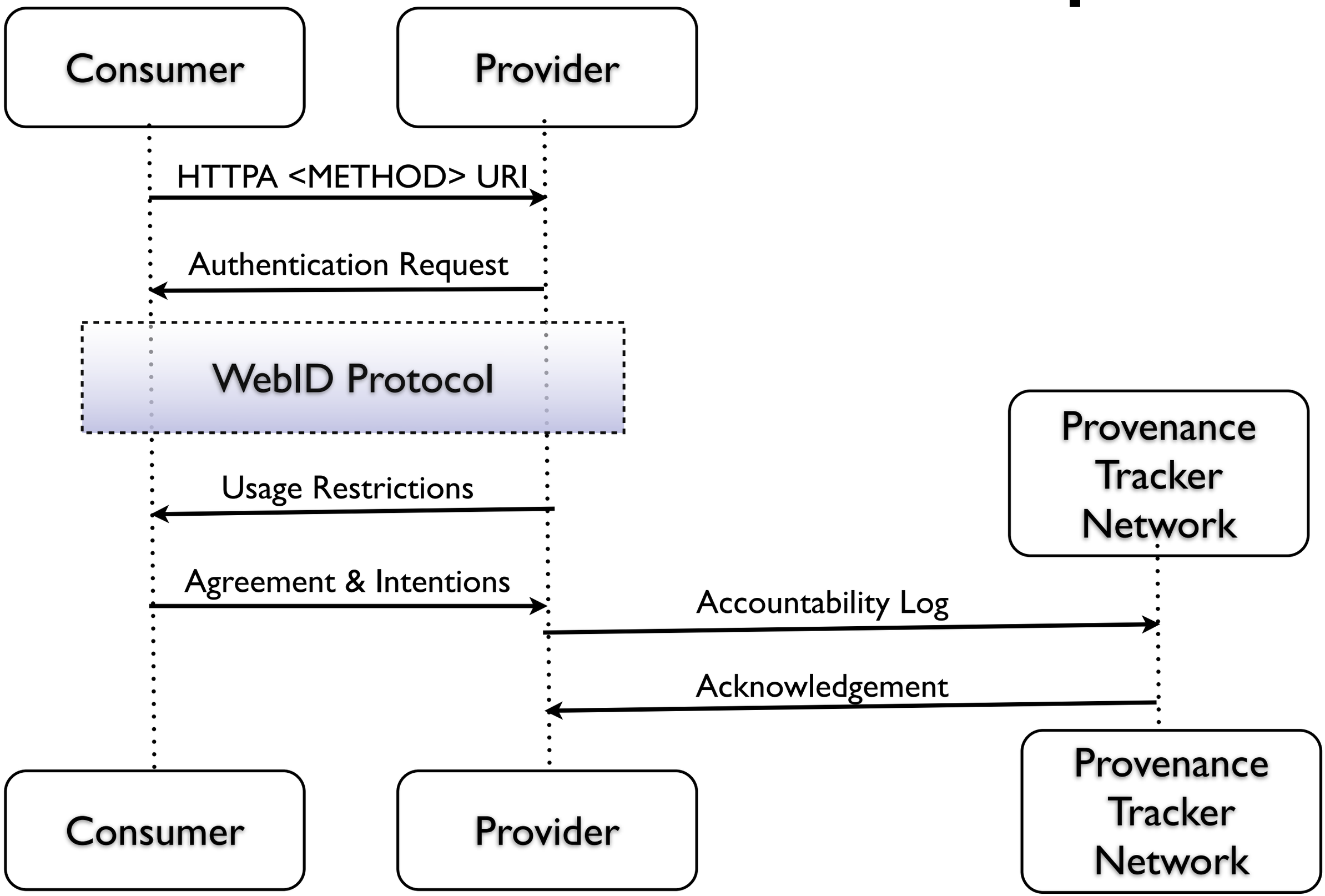

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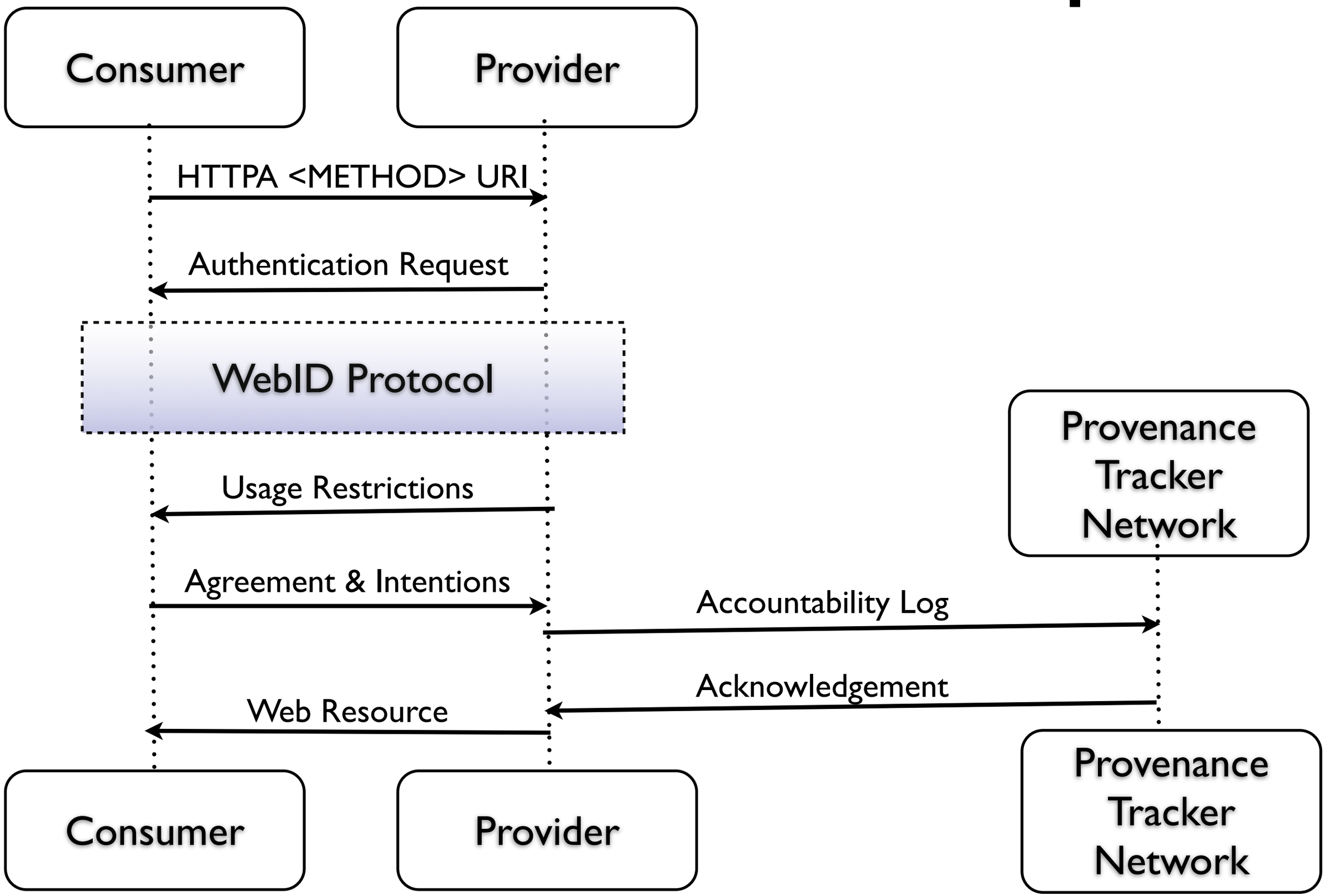
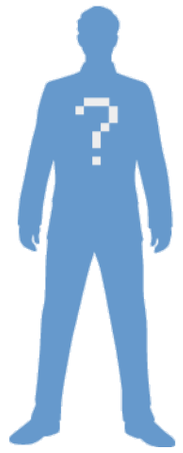


Protocol Components

- Authentication
- Usage Restriction Specification
- Provenance Tracker Network
- Smart Clients
- Accountability Checking

Authentication



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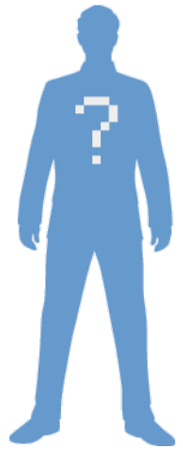

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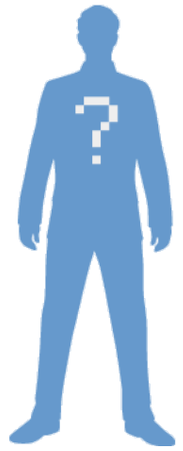

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  - Read
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- The current implementation handles the Respect My Privacy (RMP) ontology

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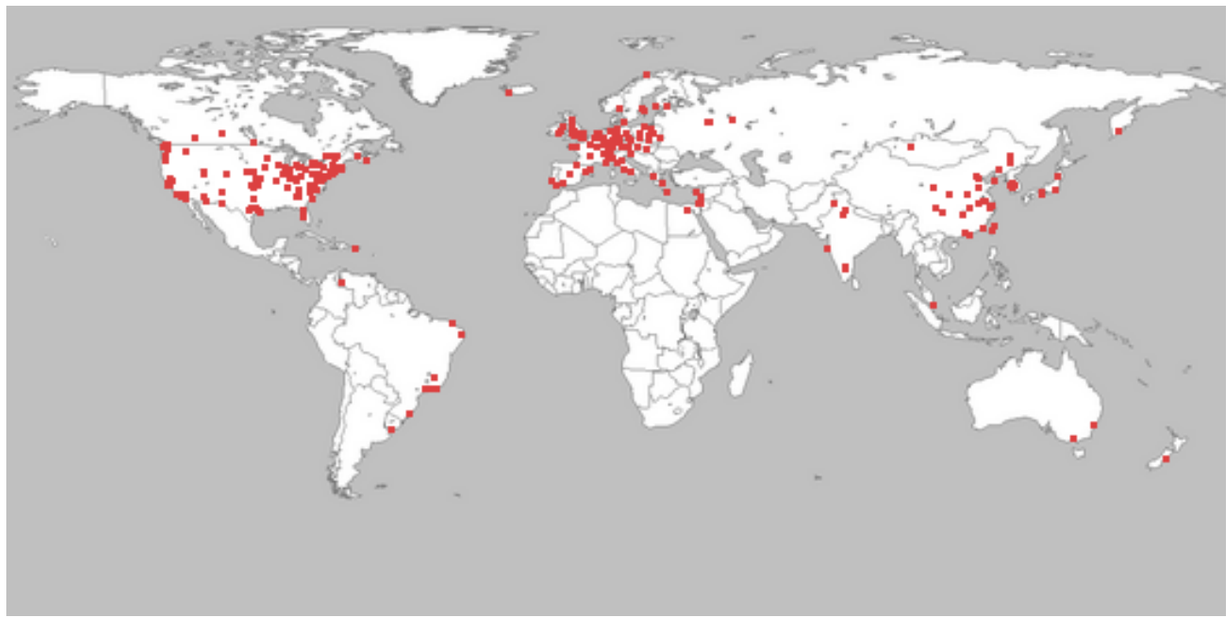

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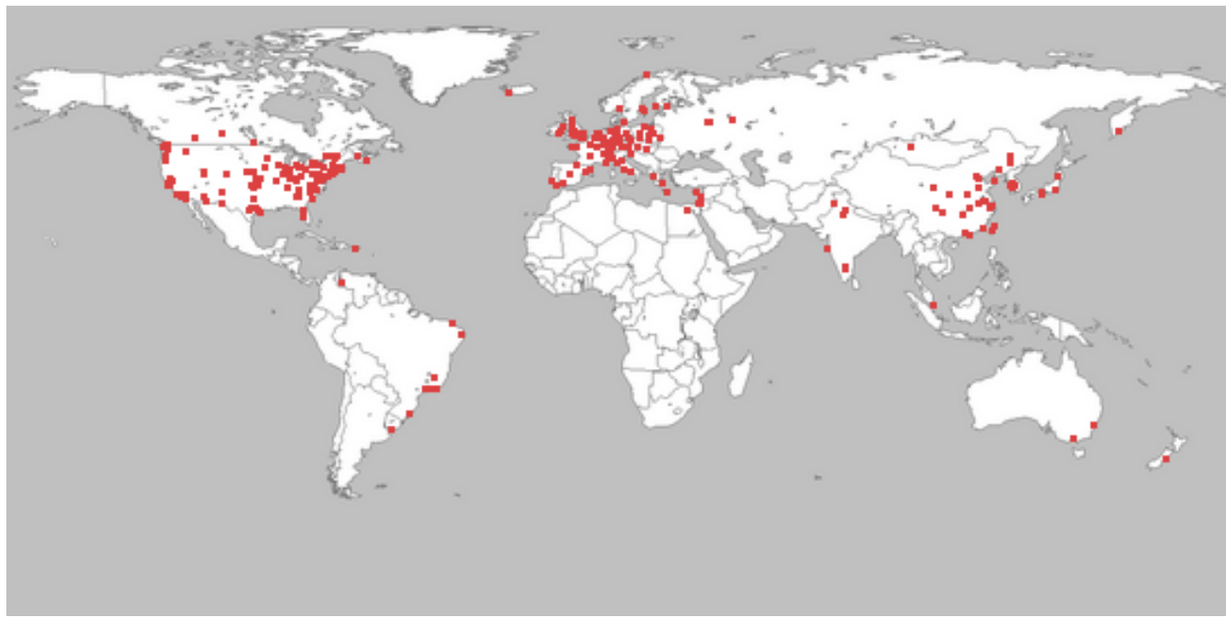

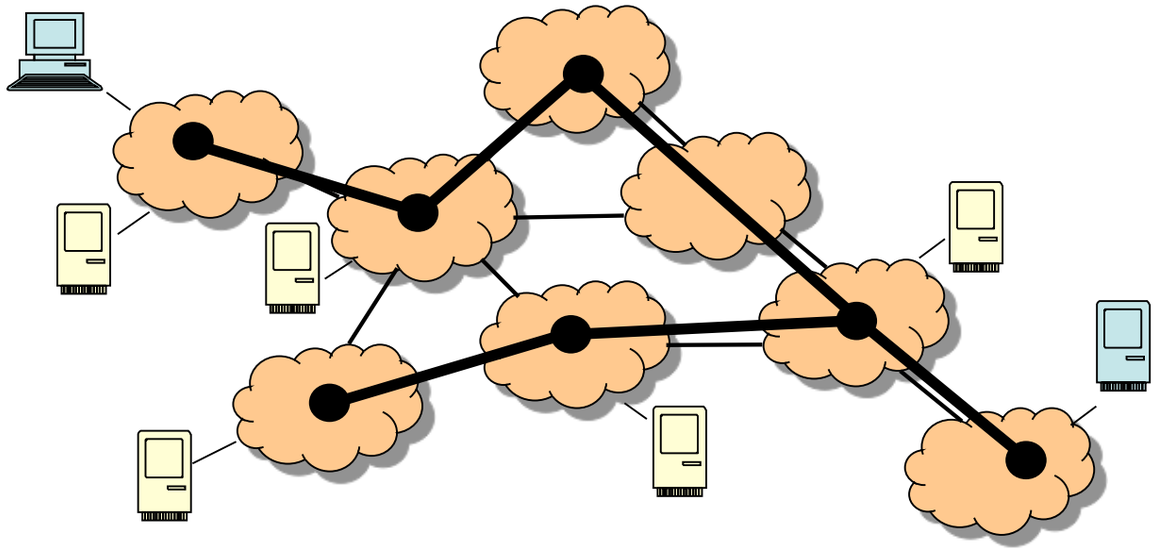

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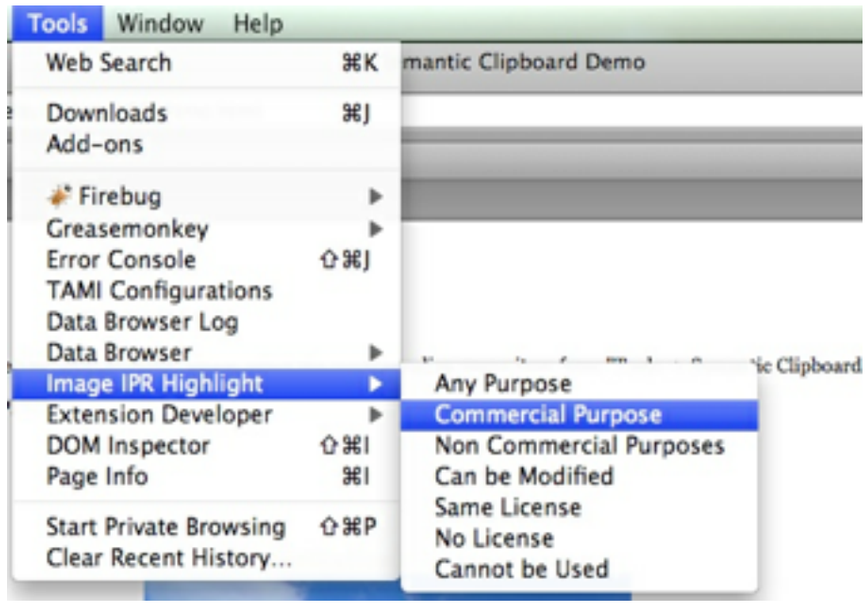

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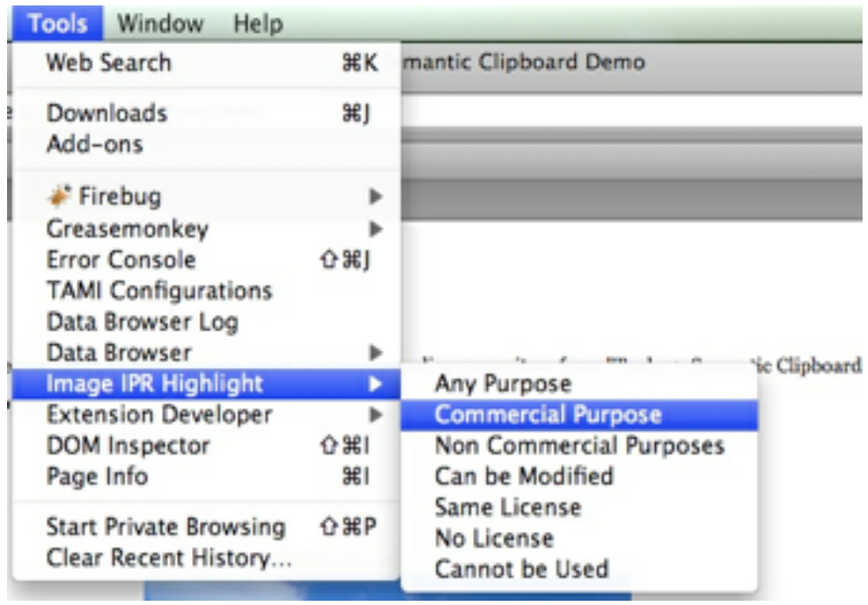

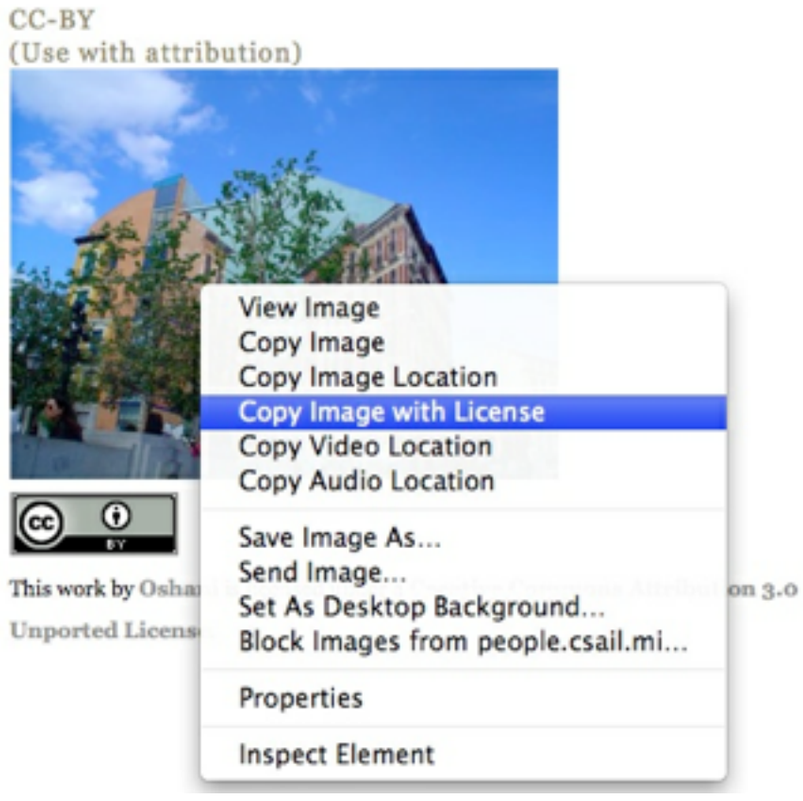

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- PTNs provide an ‘audit trail’ with:
  - URIs of original resources
  - The identity of the violator

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- Flickr study revealed CC license violations ranging from 78% - 94% on Flickr Images *[Seneviratne, Kagal and Berners-Lee ISWC 2009]*

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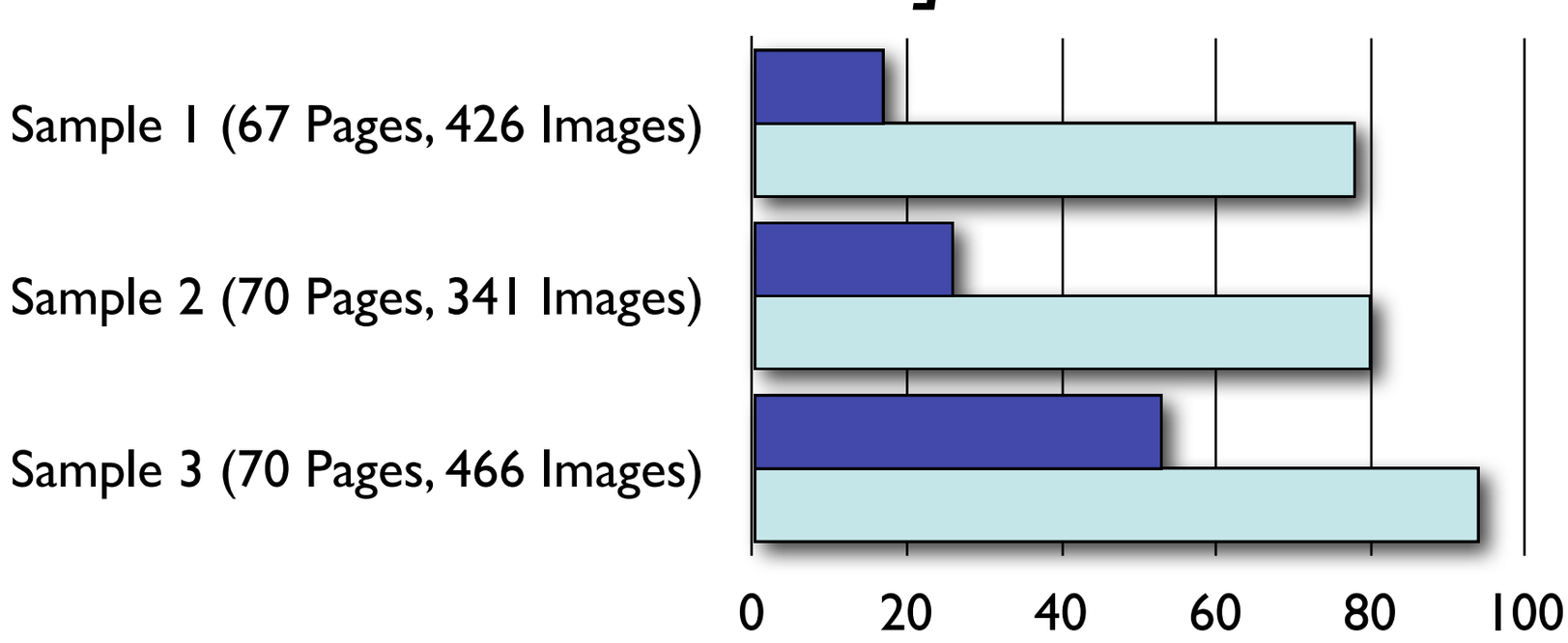

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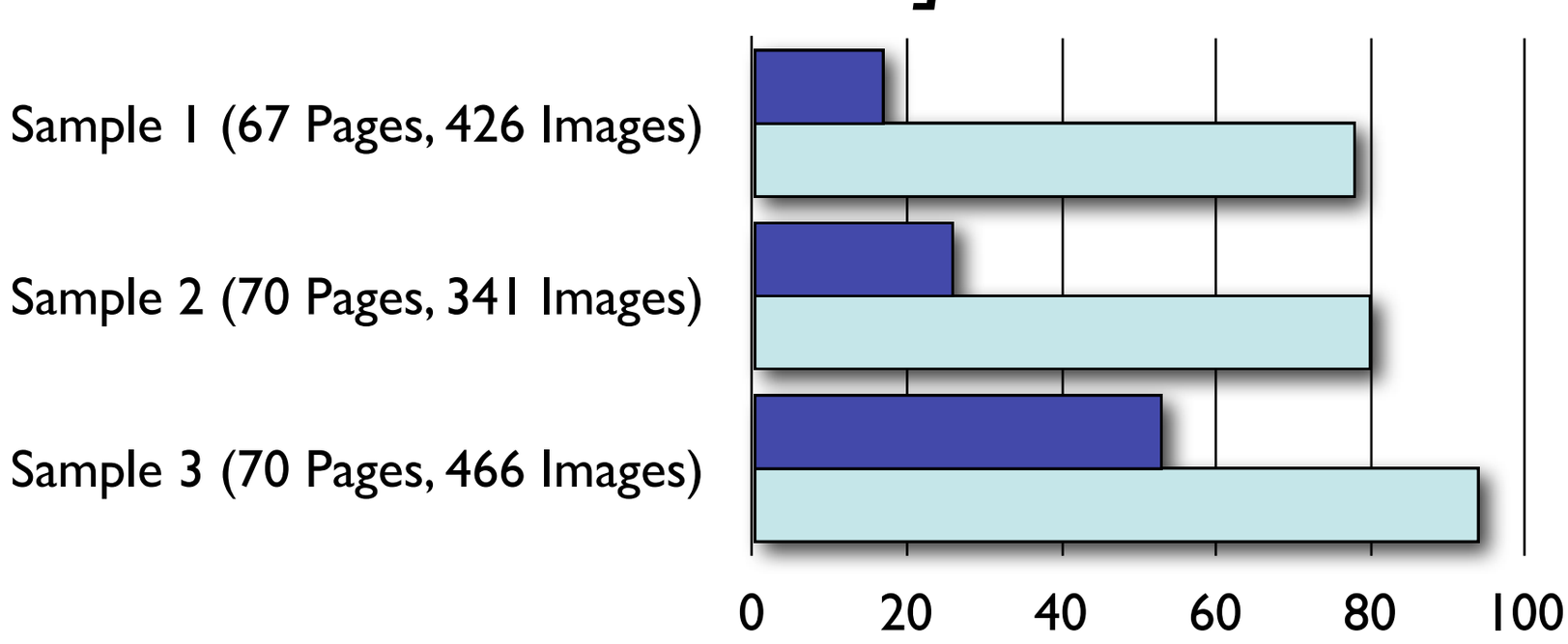

- Survey study on user generated content websites *[Seneviratne, Monroy-Hernandez WebSci 2010]*

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- Usage Restriction Management on Web Resources *[Seneviratne, Kagal IEEE Policy 2011]*
- Initial PTN deployment on PlanetLab
- Ongoing protocol implementation work *(see http://dig.csail.mit.edu/hg/httpa)*

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- Prototype Social Networking Site

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  - **Anonymizing Agents** will preserve the identity of the user
- Tracking provenance: Is this the end of privacy?
  - Accountability will ensure the preservation of privacy in the long run

Scaling Up

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- Hierarchical PTN Infrastructure

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- Organizations can run their own PTN, much like mail servers, certificate authorities, etc

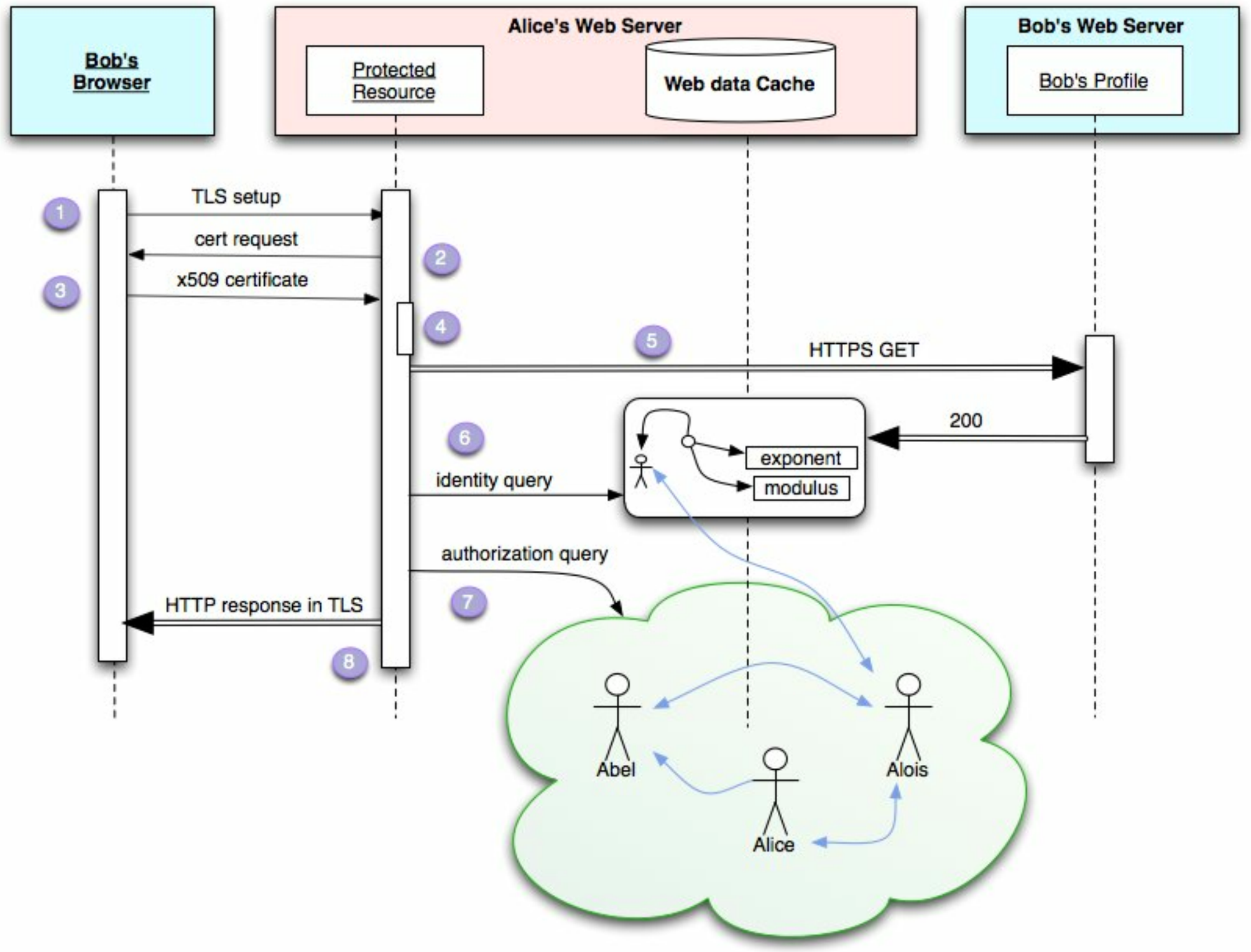
Thank You!

Please send your comments to:

oshani@mit.edu

Appendix

WebID Protocol



Related Work

- P3P [Cranor-2002]
- Distributed Usage Control [Kumari-2010]
- Project DReaM [Sun-2009]