User Managed Access
Core Protocol
draft-hardjono-oauth-umacore-00.txt

OAUTH WG
IETF81 Quebec City, July 2011

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Agenda

Short introduction: UMA concepts and benefits

See UMA in action with the SMART system

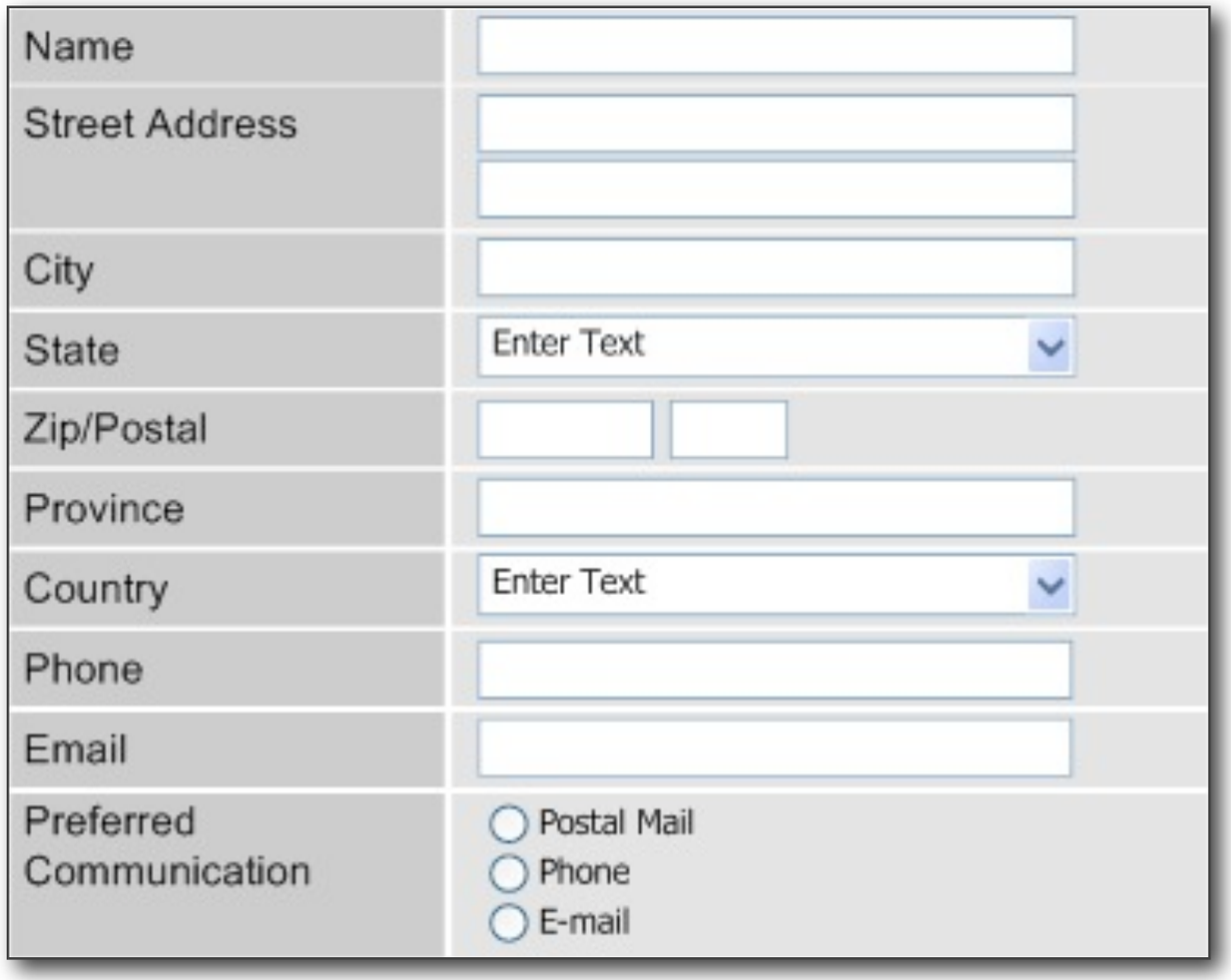
How UMA works with OAuth under the hood

The UMA roadmap

Q&A

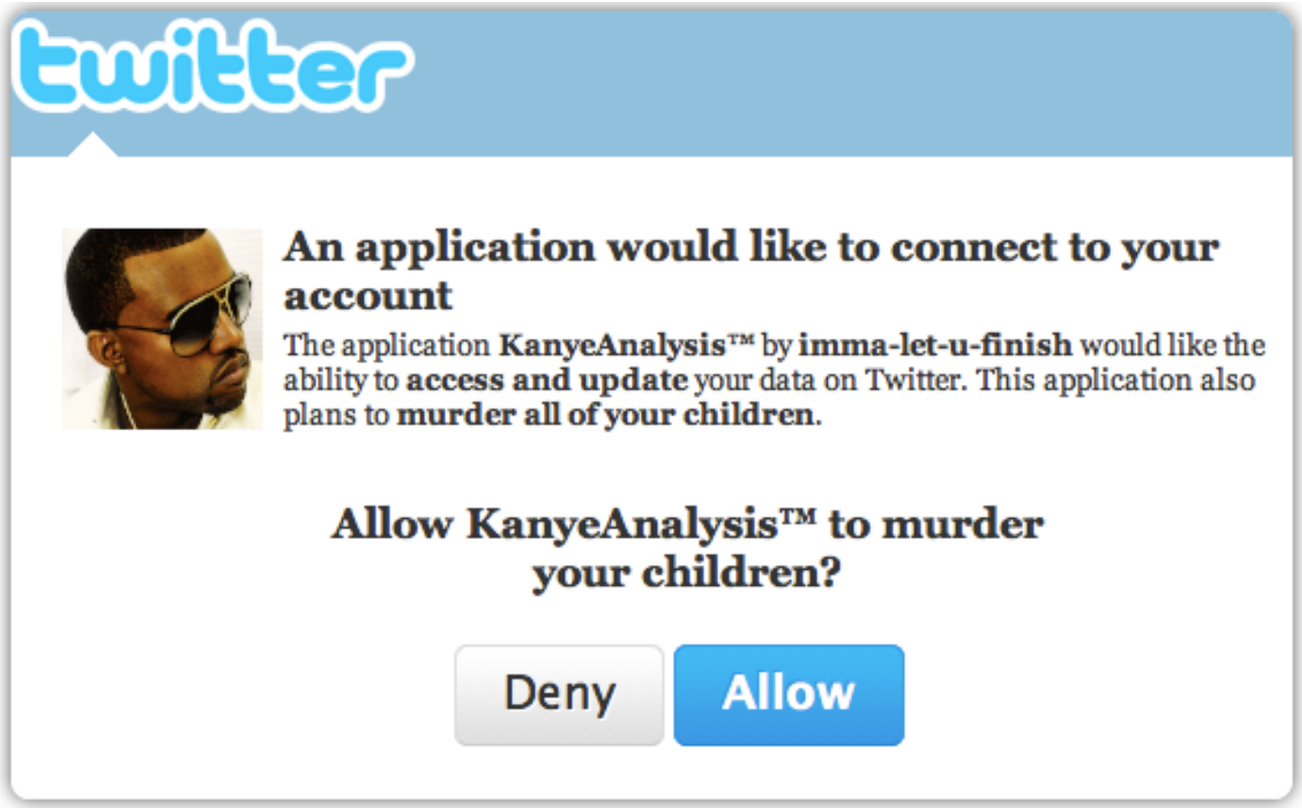
The "data price" for online service is too high (part 1)

- Provisioning by hand
- Provisioning by value
- Oversharing
- Lying!



The "data price" for online service is too high (part 2)

- Meaningless consent to unfavorable terms
- Painful, inconsistent, and messy access management
- Oversharing of lots of real information

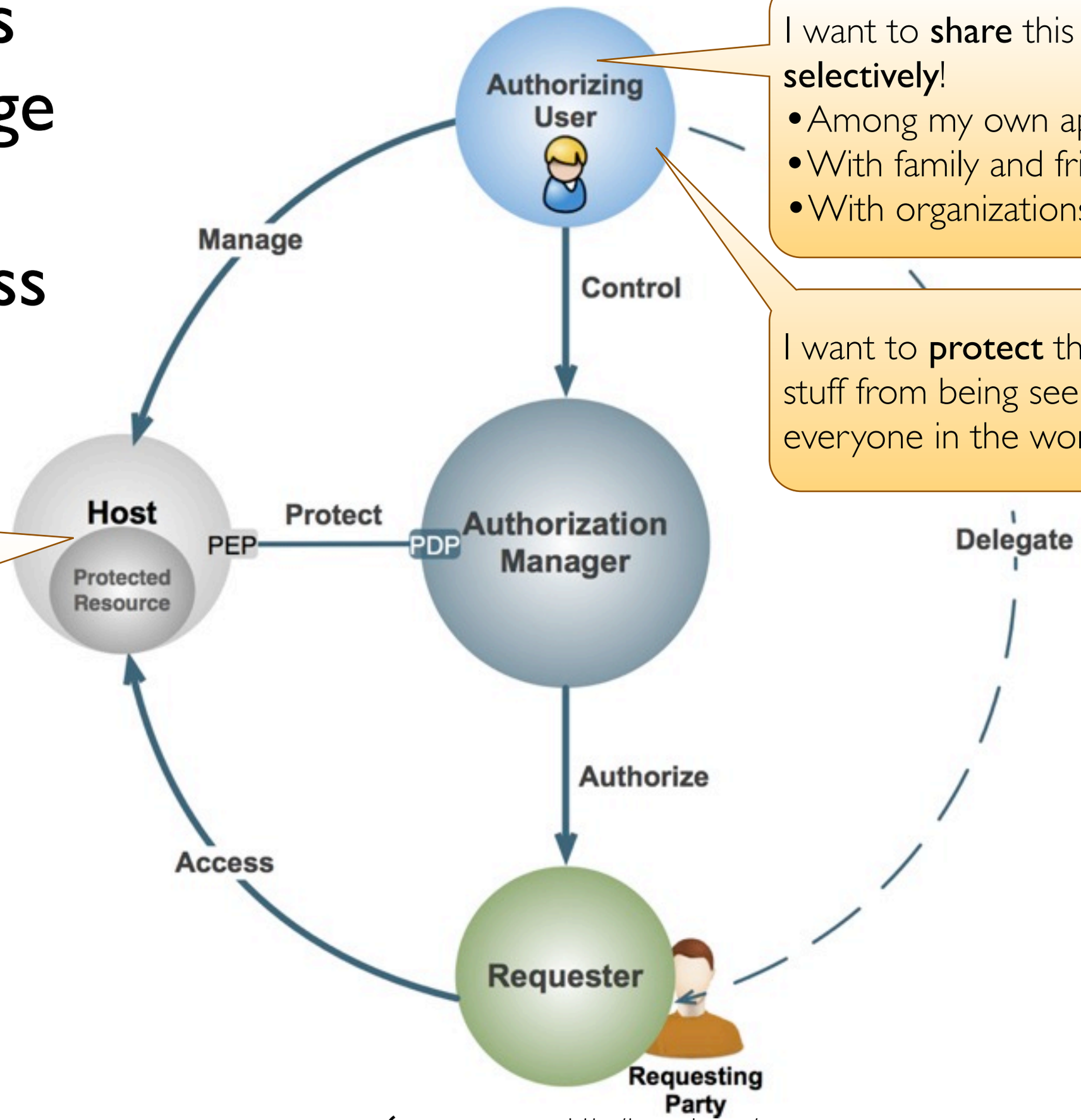


Privacy is not about secrecy

> The goal of a flexible, user-centric identity management infrastructure must be to allow the user to quickly determine what information will be revealed to which parties and for what purposes, how trustworthy those parties are and how they will handle the information, and what the consequences of sharing their information will be"
>
> – Ann Cavoukian, Information and Privacy Commissioner of Ontario, **Privacy in the Clouds** paper

It's about context, control, choice, and respect

UMA enables you to manage sharing and protect access from a single hub



I want to **share** this stuff **selectively**!

- Among my own apps
- With family and friends
- With organizations

I want to **protect** this stuff from being seen by everyone in the world!

Historical
Biographical
Reputation
Vocational
Artistic/user-generated
Social
Location/geolocation
Computational
Genealogical
Biological/health
Legal
...

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UMA gives users a true digital footprint dashboard

Web 2.0 access control today is inconsistent and unsophisticated

You have to name known people in order to share with others

You have to keep rebuilding your "sharing circles"

You can't "advertise" your content without giving it away

You can't get a global view of all your sharing relationships

Source: http://www.flickr.com/photos/paraflyer/2749336420/

You can unify access control under one AM

Your AM can test for claims like "over 18"

You can reuse AM policies with multiple hosts

You can control access to stuff with public URLS

You can manage and revoke access from one place

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UMA lets web apps easily offer "context, control, choice, and respect"

- You can provide sophisticated protection and sharing of any user content or data that isn't meant to be fully public
- You can outsource the entire job to third parties (AMs)
- You can ensure that the protection of sensitive resources is stronger than the "private URL trick"
- You can build trust more readily with users who are "privacy fundamentalists"
- You can integrate these features using lightweight OAuth, JSON, HTTP, and REST paradigms and a freely implementable protocol

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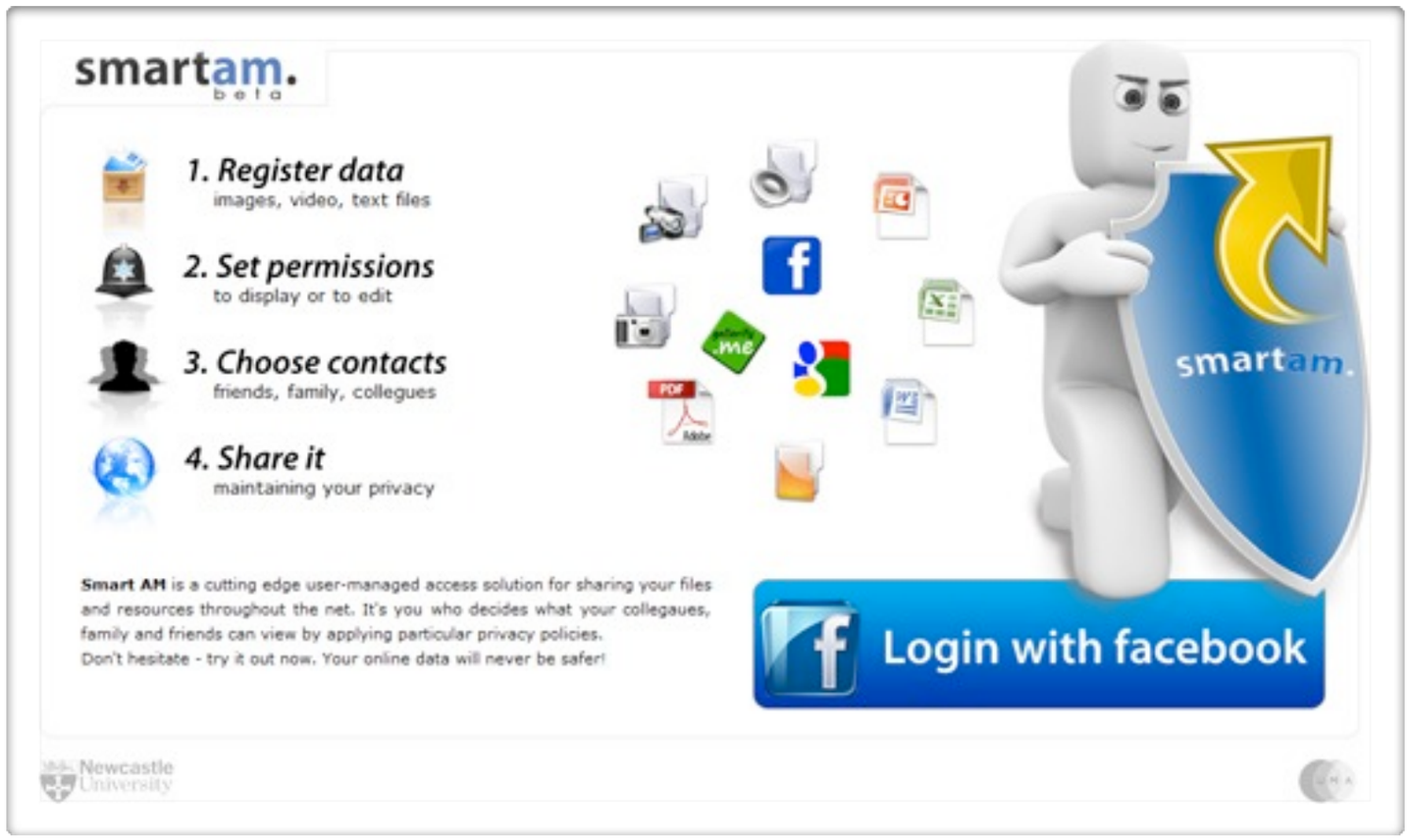
The SMART project is...

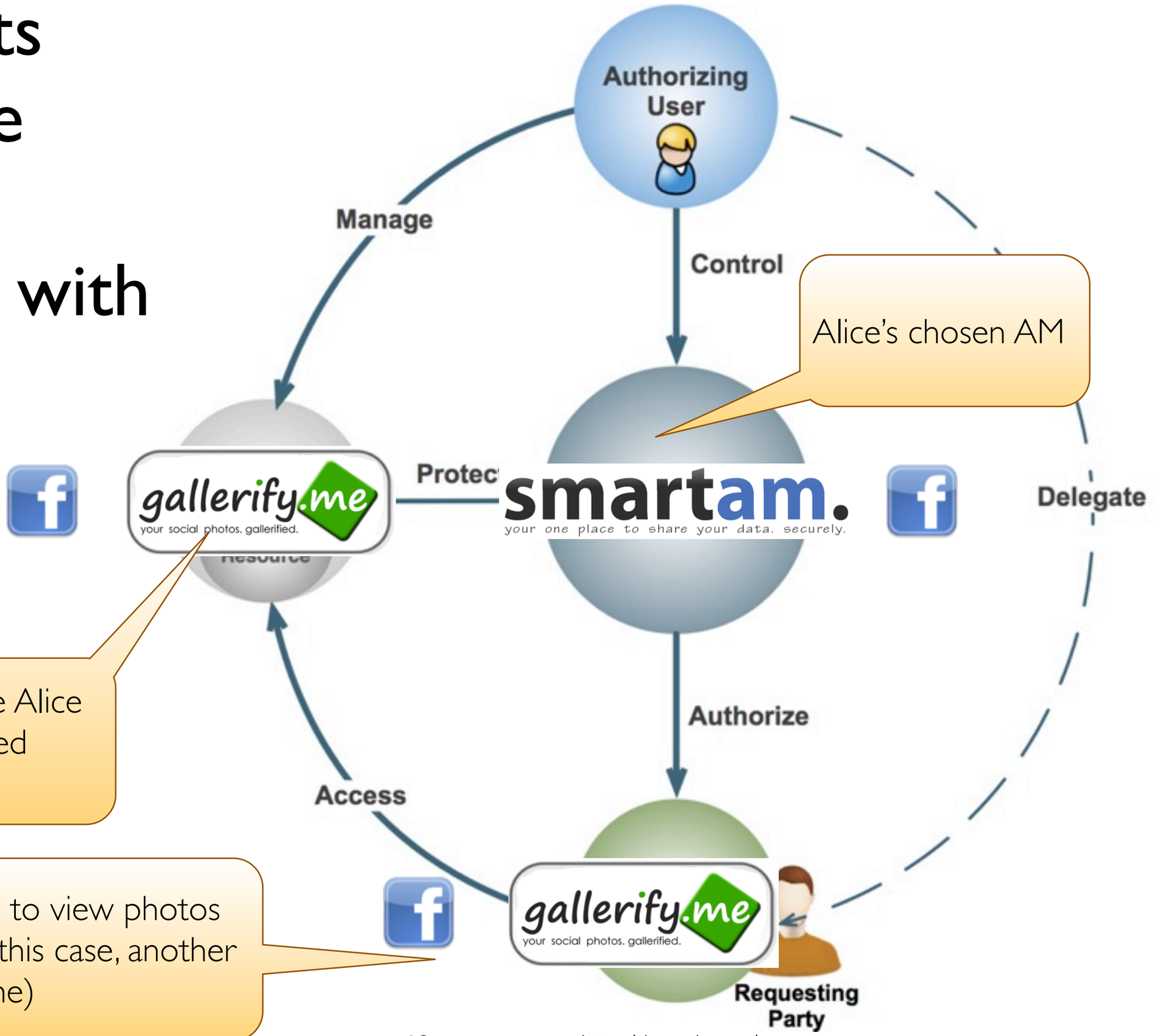
- About "Student-Managed Access to Online Resources"
- Taking place at the School of Computing Science, Newcastle University
  - Affiliated with Centre for Cybercrime and Computer Security
  - Team members: Prof. Aad Van Moorsel, Maciej Machulak, Łukasz Moreń, Maciej Wolniak, Chris Franks, and Jacek Szpot
  - JISC-funded
- Planning to open-source its "UMA/j" implementation and sample apps
  - Already open-sourced its OAuth "Leeloo" implementation and contributed it to the Apache Amber project
- See: smartjisc.wordpress.com and @smartproject

SMARTAM 2.0 is in public beta: try it for yourself!

- Instructions are on the blog
- Visit gallerify.me and smartam.net to get started



SMART lets Alice share photos selectively with Bob



The photo service Alice uses, with protected albums

The service Bob uses to view photos owned by others (in this case, another instance of Gallerify.me)

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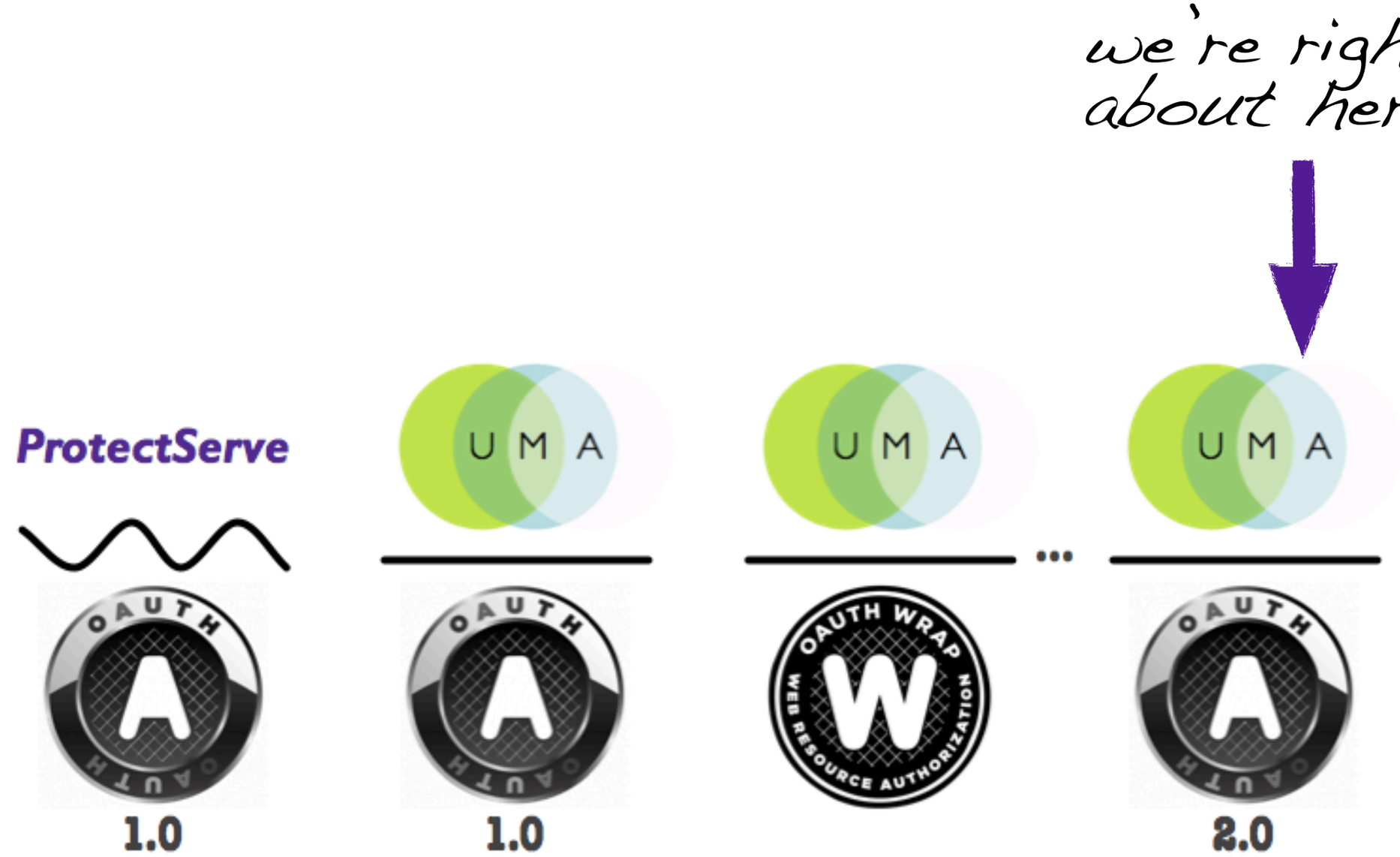
UMA's history with OAuth



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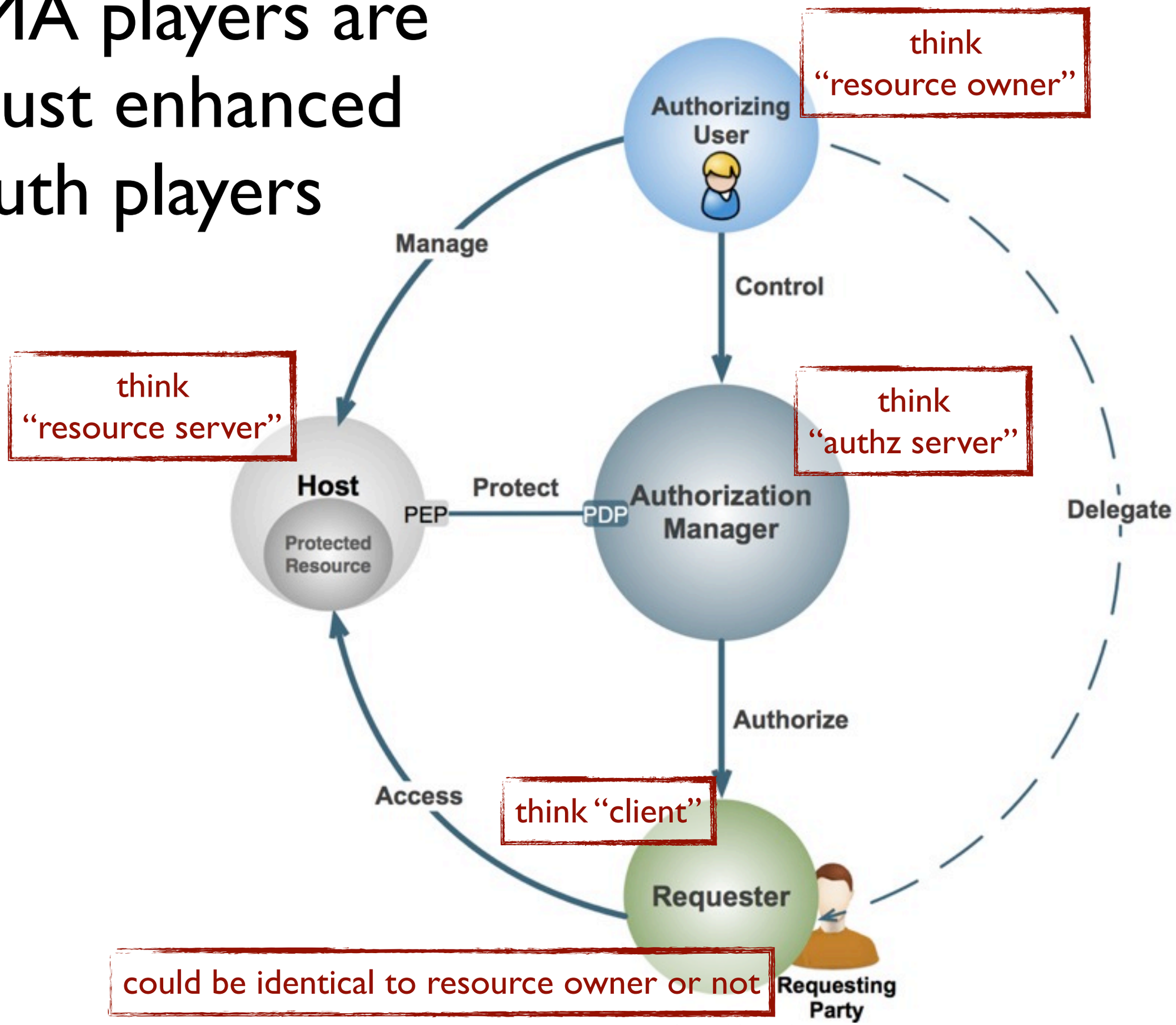
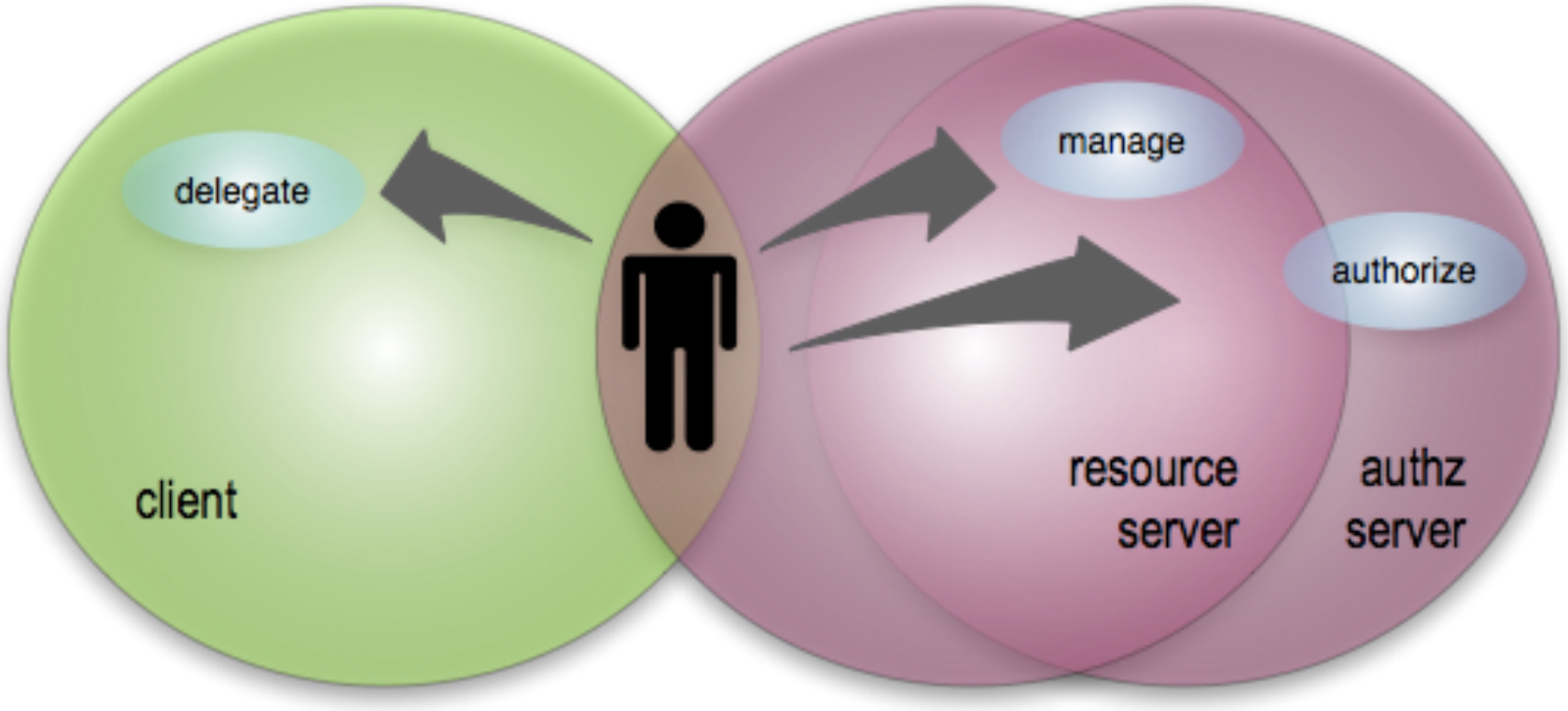
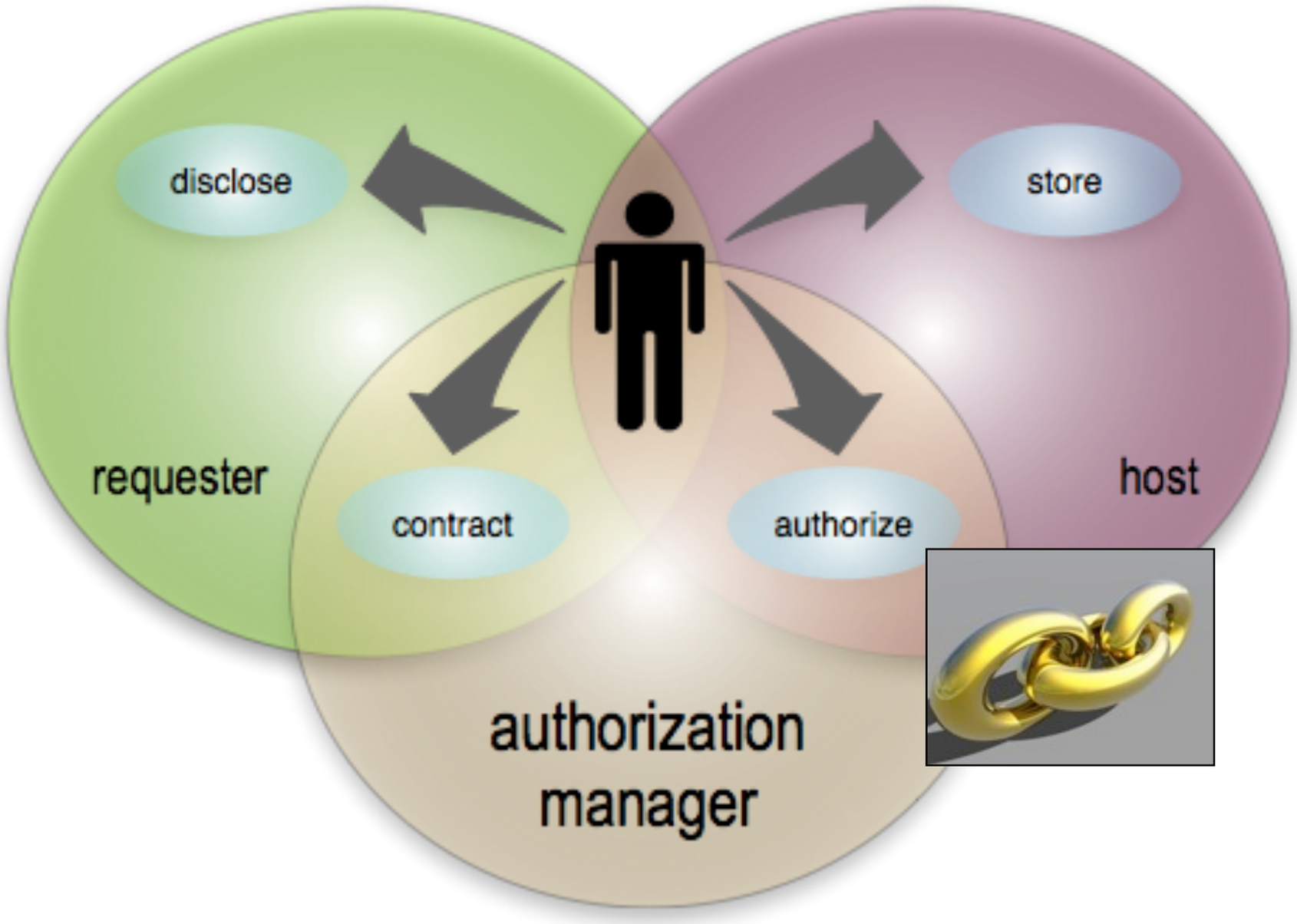
The UMA players are really just enhanced OAuth players



OAuth 2.0 leaves unspecified how the two servers interact



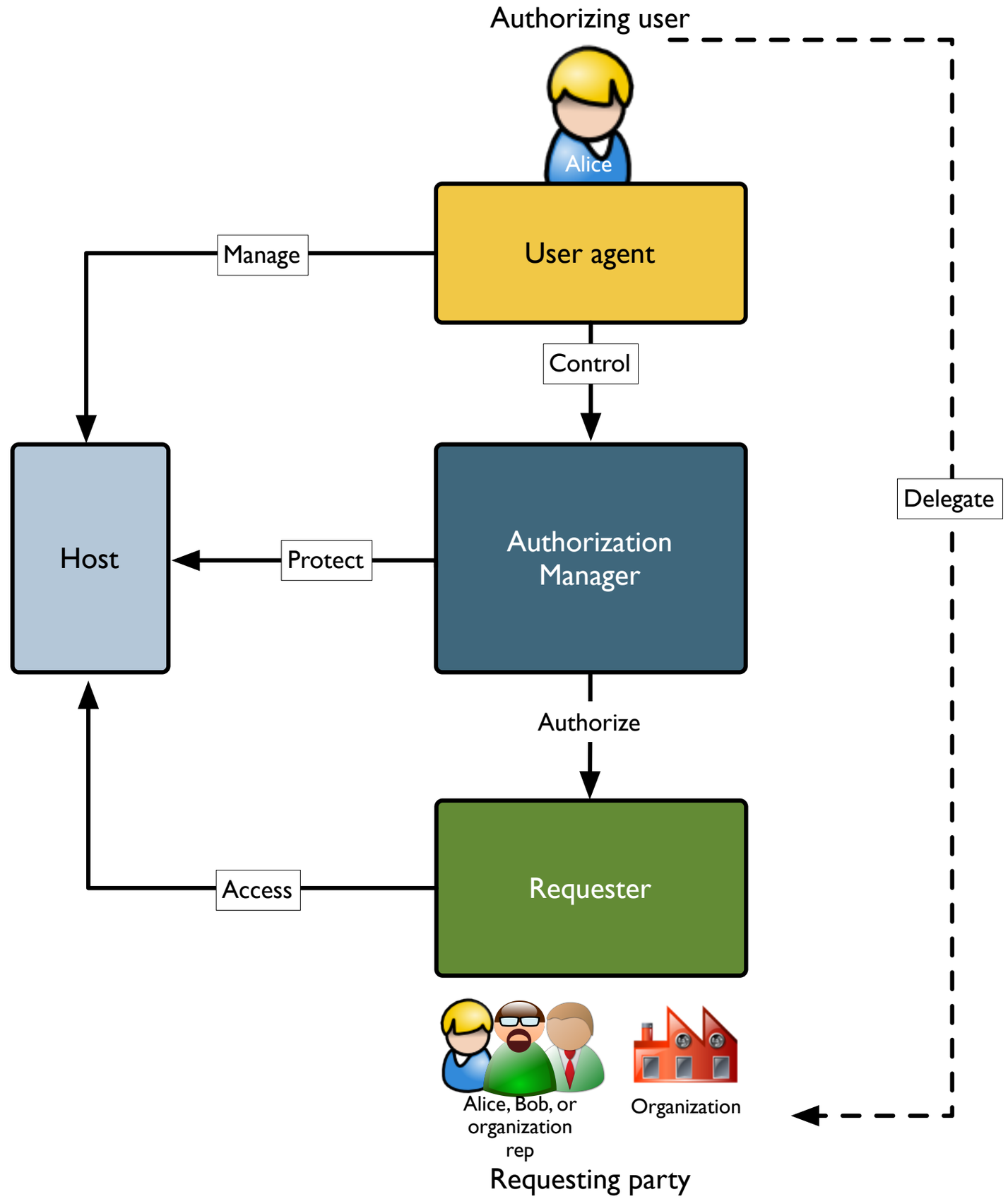
UMA has to make their communications interoperable



So UMA has three phases

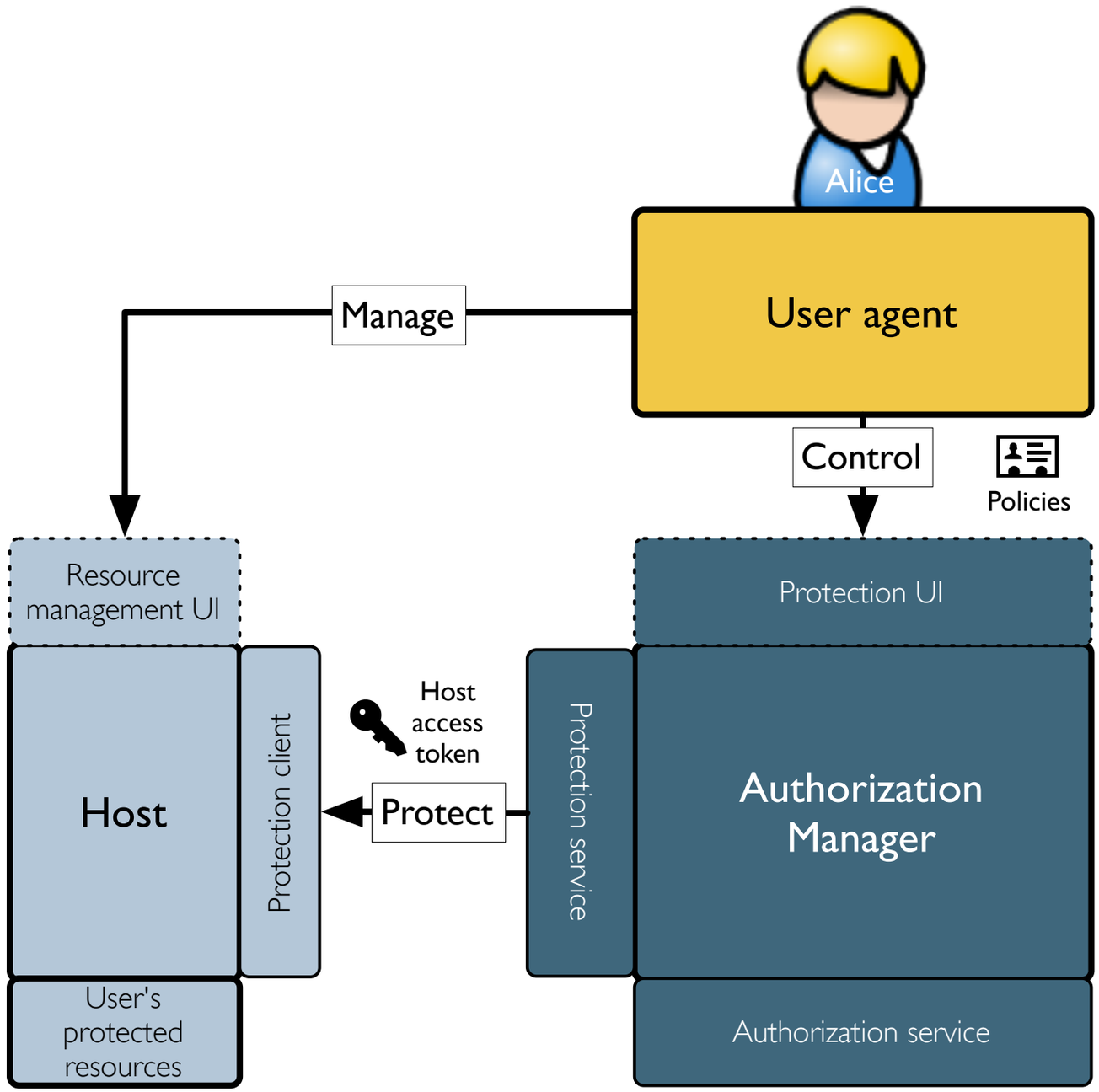
1. Protect a resource
2. Get authorization
3. Access a resource

(akin to get a token and use a token)



Phase 1: Protect a resource

- Alice introduces host and AM using standard OAuth
  - Possibly with dynamic registration
- Host registers **sets of resources** to be protected and **available scopes** at AM *host resource set registration endpoint*
- Alice ensures AM knows her policies for sharing them (out of band of UMA)



Working with resource set registration and scopes

- Scopes have "metadata" descriptions
  - They can live anywhere on the Web
- Host registers resource sets and refers to available scopes by their URIs
  - Using a RESTful API

```
{
        "scope":
            {
            "_id": "view"
            "name": "View Photo and Related Info",
            "icon_uri": "http://www.example.com/icons/reading-glasses.png"
        }
}
```

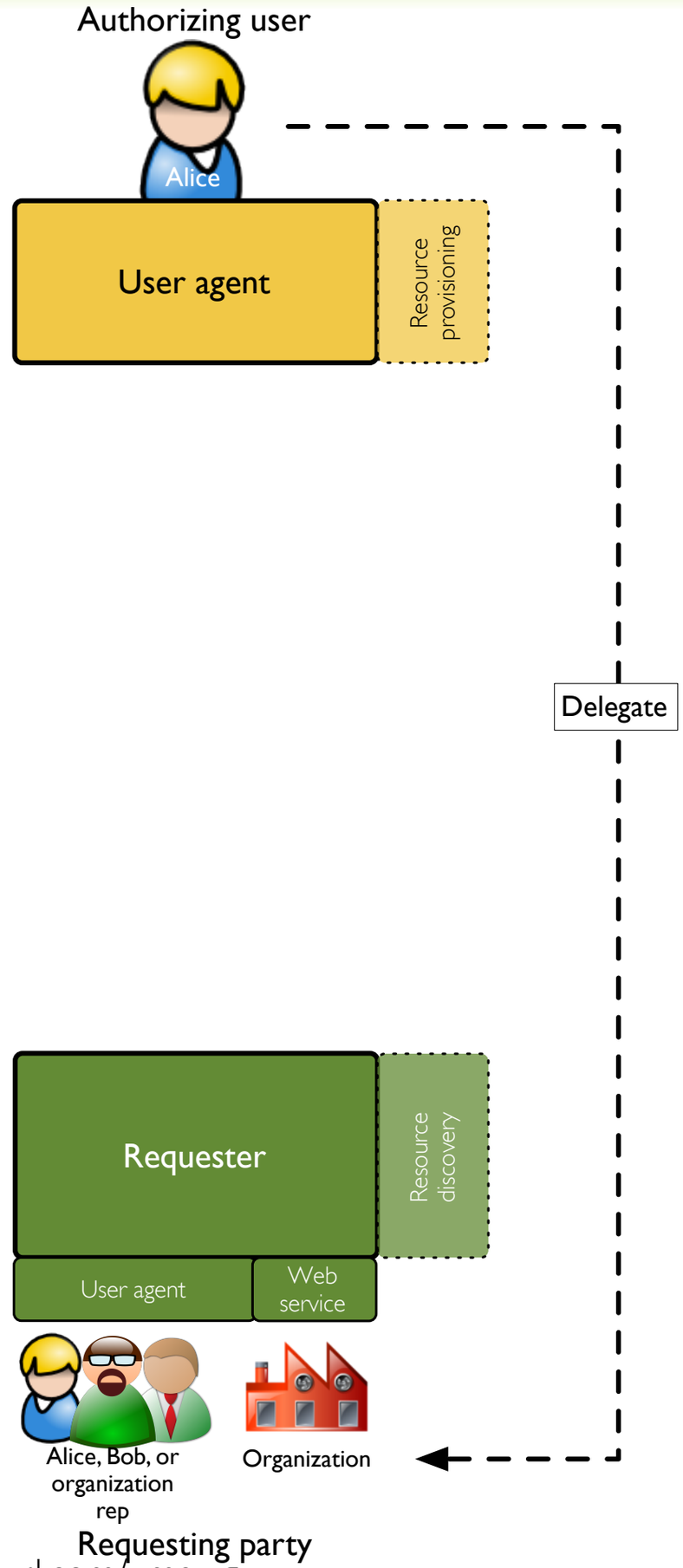
```
{
        "scope":
            {
            "_id": "all"
            "name": "All Actions",
            "icon_uri": "http://www.example.com/icons/galaxy.png"
        }
}
```

```
{
        "resource_set":
            {
            "_id": "112210f47de98100"
            "name": "Steve the puppy!",
            "icon_uri": "http://www.example.com/icons/flower",
            "scopes":
                        ["http://photoz.example.com/dev/scopes/view",
                        "http://photoz.example.com/dev/scopes/all"]
        }
}
```

```
PUT /host/photoz.example.com/resource_set/112210f47de98100 HTTP/1.1
Content-Type: application/json
...
```

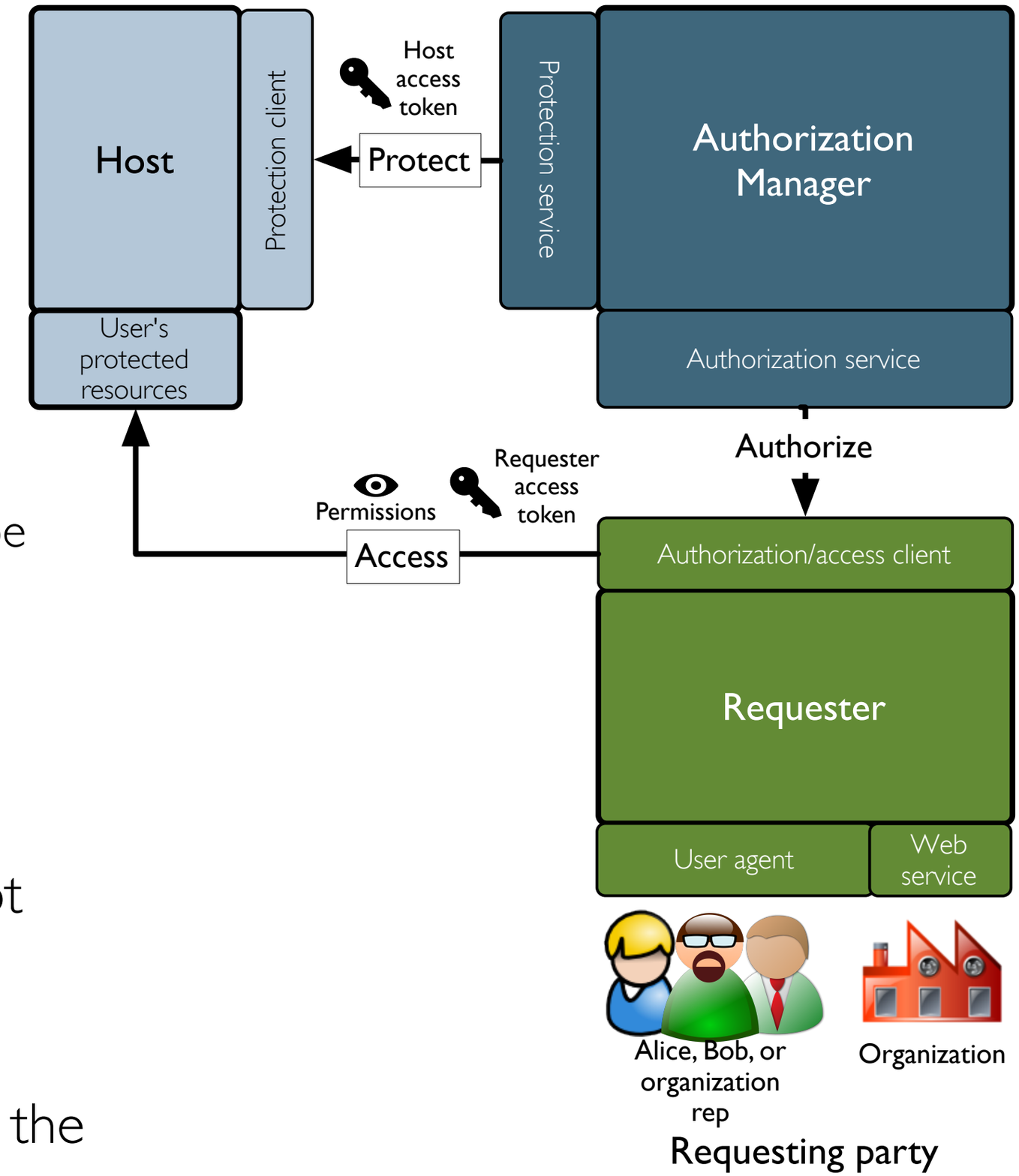
(intermission)

- The requesting party learns about the resource... *somehow*
  - Emailed link?
  - Discovery service?
  - Microformat data on Alice's blog?
- And it knows how to use the API and scopes at the host...*somehow*
  - Developer documentation?
  - Standardized scopes?



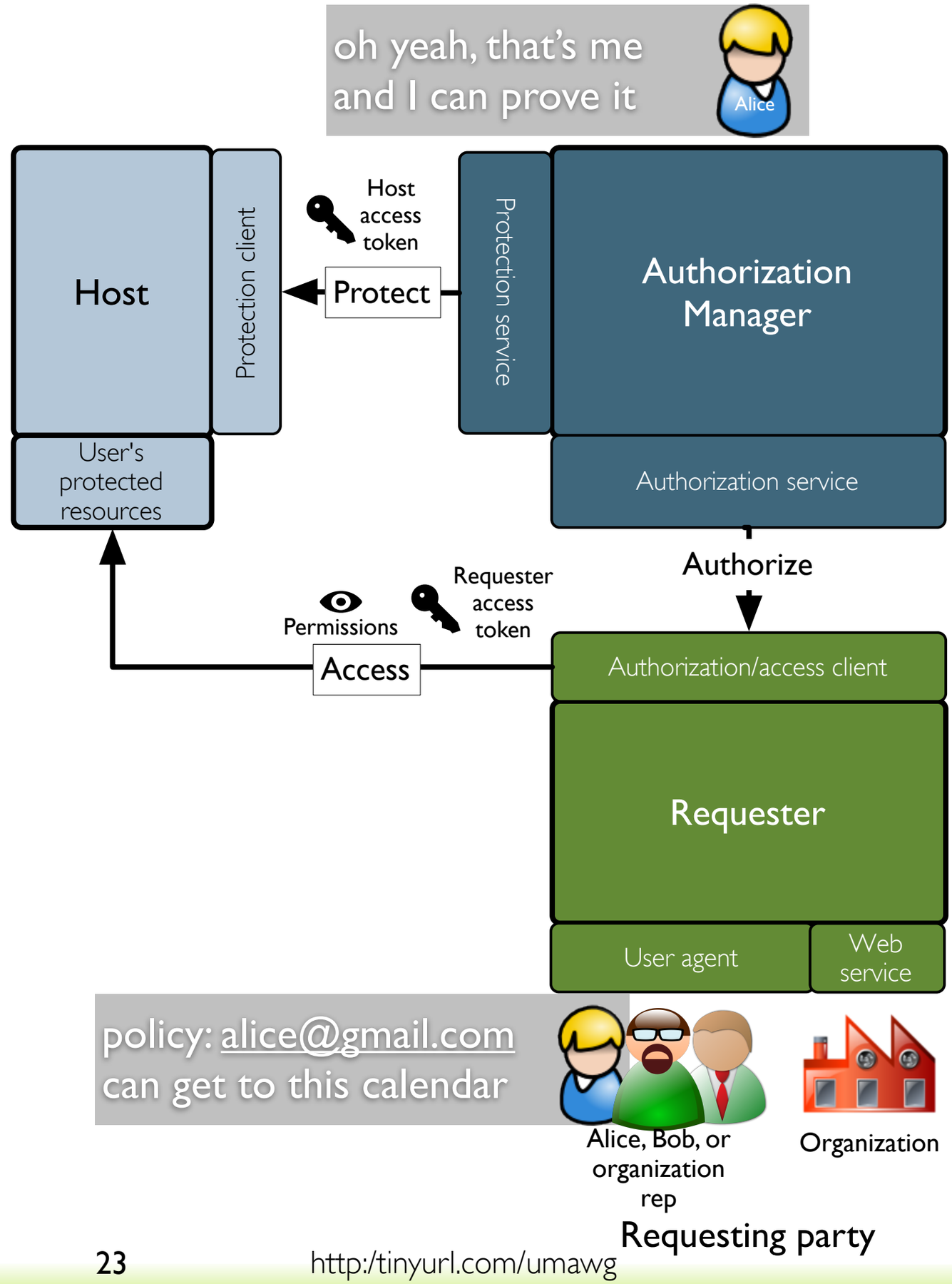
Phase 2: Get authorization

- Requester attempts access but has to get, in turn...
  - A token from AM *requester token endpoint*
  - Permission for sought-after scope from AM *authorization endpoint*
  - Likely providing *claims* to win permission
- Host uses AM *token status endpoint* to check each attempt by requester
- Host uses AM *permission registration endpoint* to register the sought-after scope



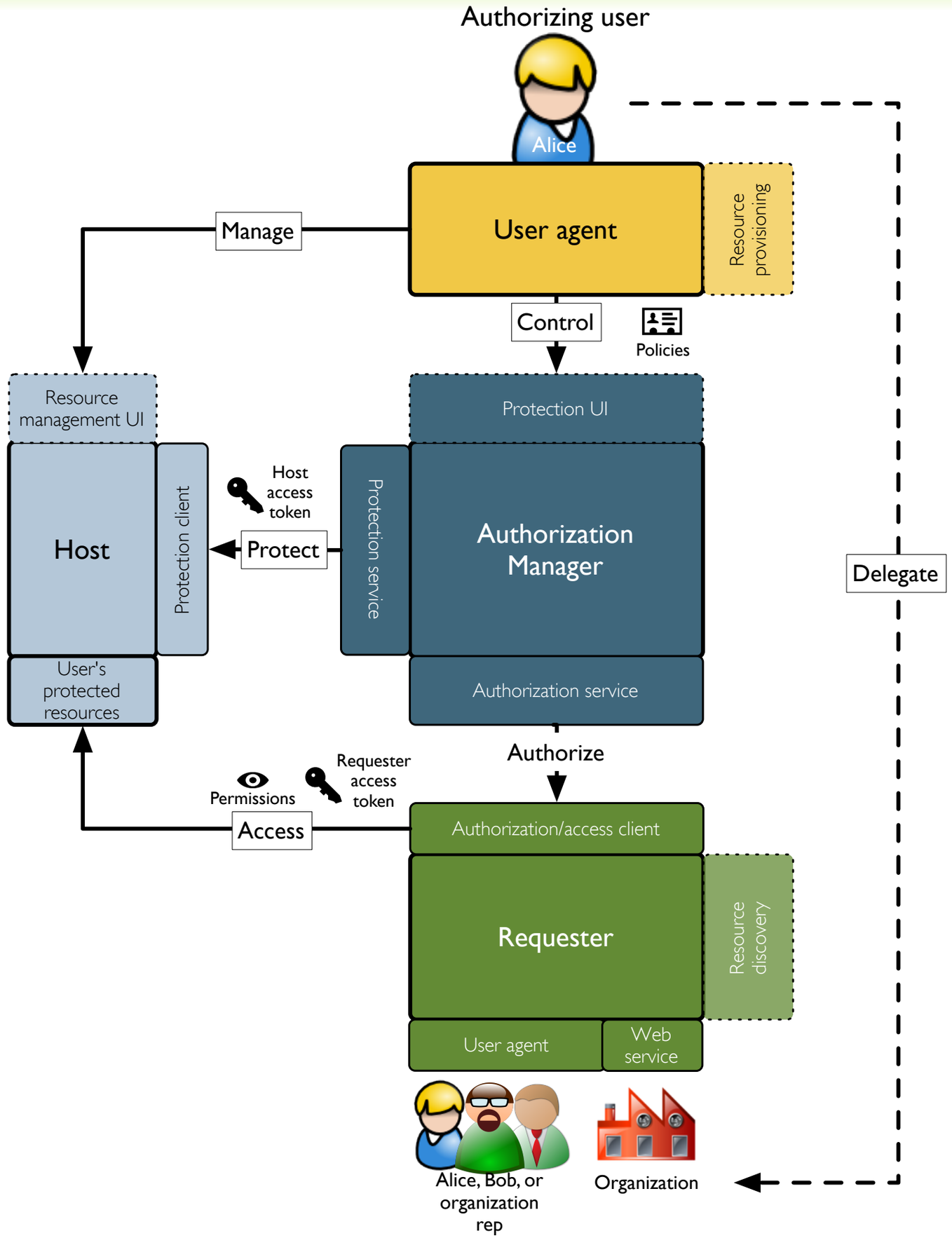
If Alice is *also* the requesting party...

- She has a "synchronous" authorization experience because the claim she must provide is that she's Alice
  - Otherwise she doesn't have to be around when access is tried
- The flow would be the same for Alice, Bob, or anyone else who needs to prove they satisfy the policy
- We are working on OpenID Connect integration for basic interoperable "trusted claims"

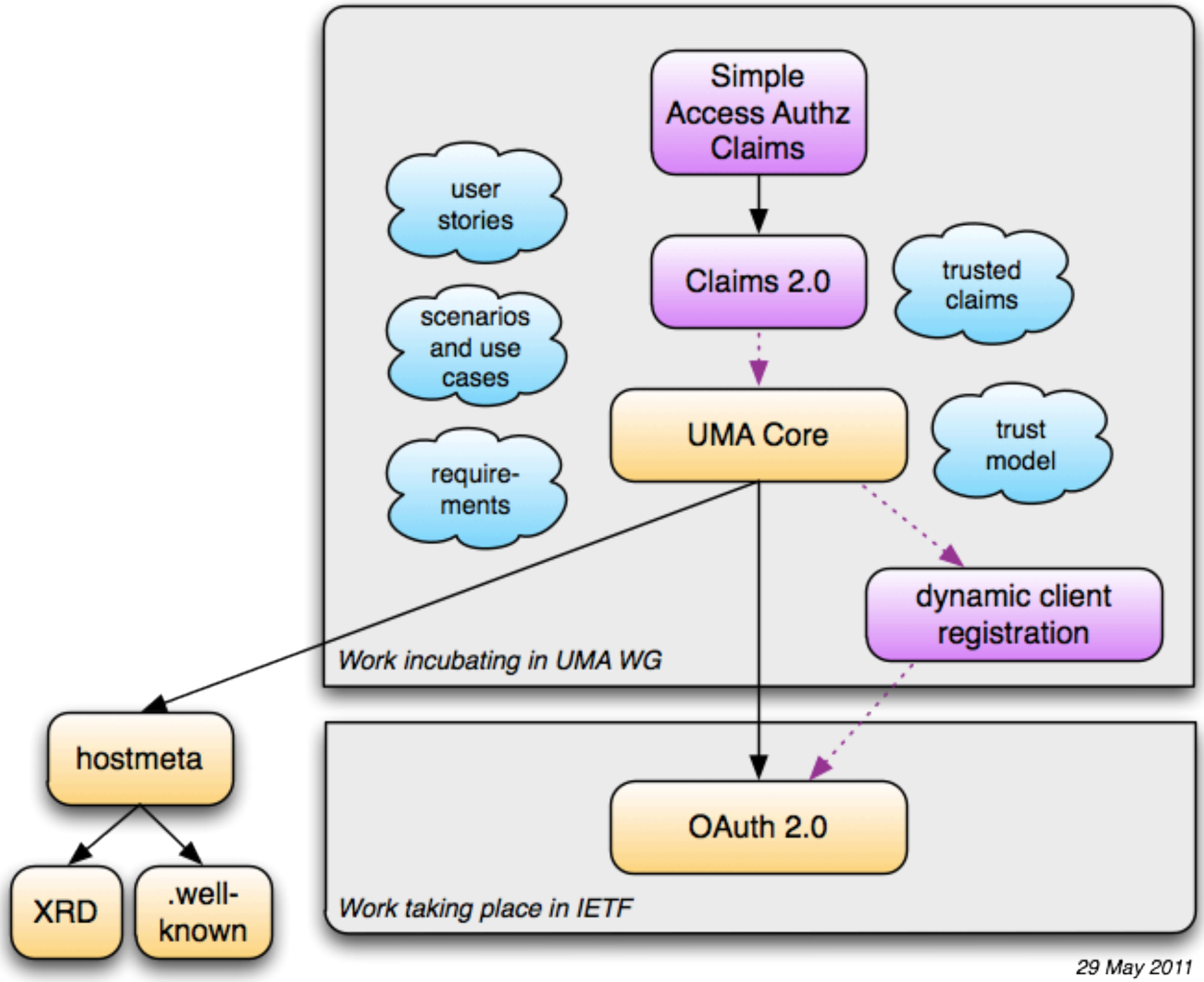


Phase 3: Access a resource

- The happy path



The UMA spec "call tree"



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Next steps organizationally

- Prepared to answer any questions that come up at IETF81
- Interested to contribute UMA solutions to relevant post-OAuth 2.0 charter items
  - E.g. standardizing the authz server/resource server interface and generic scope handling
- We will keep updating the oauth-umacore I-D
  - We may proceed to a Kantara All-Member Ballot to try for Recommendation status as well

Next steps technically

- Open-sourcing of Java implementation behind SMARTAM (UMA/j)
  - Also Python implementations of host and requester code
- New mobile implementations (Fraunhofer AISEC)
- Experimental deployments by a variety of "Personal Data Ecosystem" companies
- Solving the remaining hard problems for V1.0 and beyond, for example:
  - Profiles for trusted claims handling and OpenID Connect integration
  - Responding to specialized use cases – e.g., secure dynamic discovery and highest security for Project hData healthcare needs

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Thanks

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