GEANT 4-2 JRA3 T3 “TrustTech”: OpenID Connect Identity Federations

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Outline

- Introduction to the OpenID Connect Federation –draft
  - “OIDCfed” – by Roland Hedberg et al
  - (Roland will attend TechEx on Wednesday and Thursday)
- OIDC OP role implementation for Shibboleth IdP
- Next Steps / Schedule

OIDCfed – Motivation

- Relying Parties (RP) first need to discover OpenID Providers (OP)
  - *OpenID Connect Discovery* –spec
    - OPs publish **self-asserted** information about themselves
- RPs can register to OPs in two ways
  - *Static*: first developer registers to the provider, then he can register his RP (For instance social media providers)
  - *Dynamic*: from the OP's perspective, the RPs are anonymous, as the information is **self-asserted**
    - *OpenID Connect Dynamic Client Registration* –spec
- The OIDCfed spec only deals with **OP discovery and RP registration**

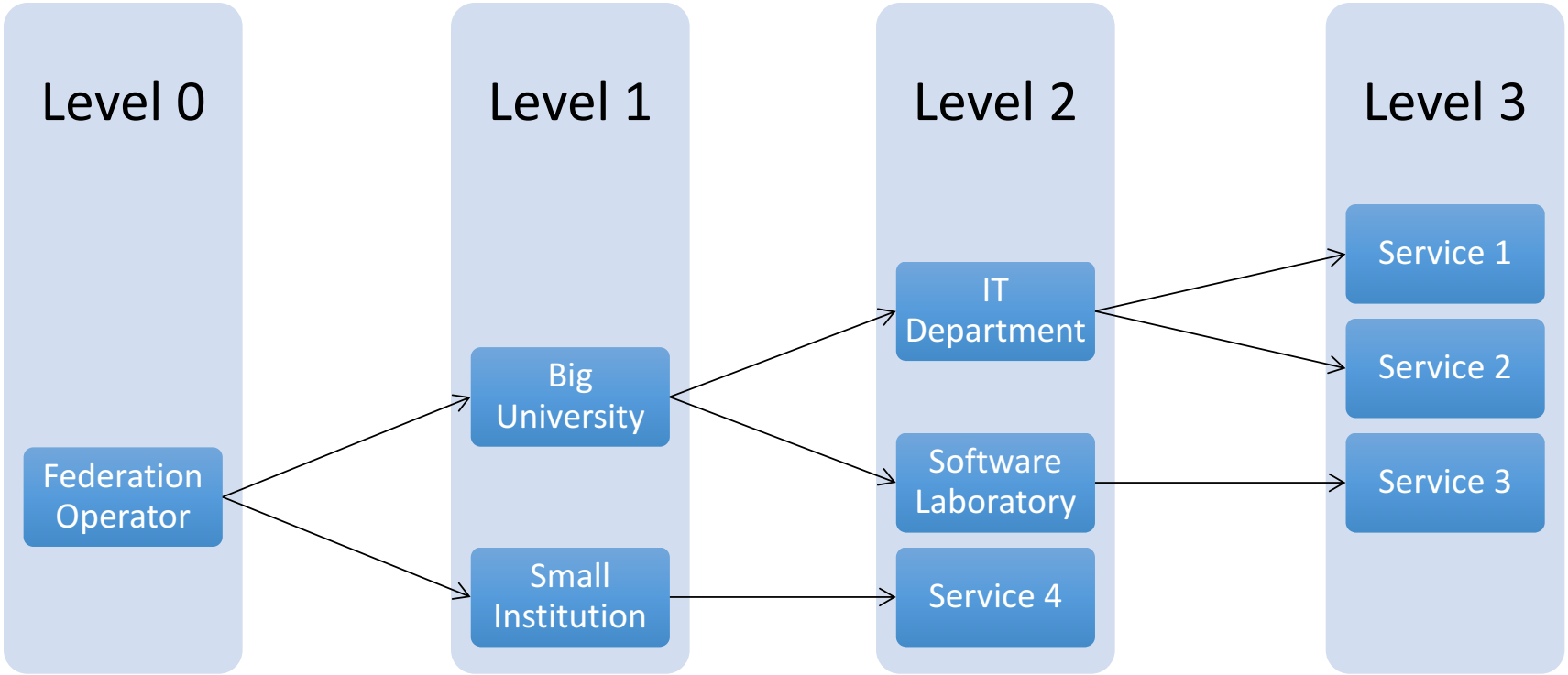
OIDCfed – Design principles

- Allow dynamic discovery and registration without losing trust
  - Mutual identification of OPs and RPs during the process
- Enforcement of federation and organization policies
  - Every entity and organization needs to behave in a certain way
- Allow delegation of entity registration
  - Not everything needs to go through operator: trusted organizations should be able to register their own entities by themselves
- Metadata transport and origin independent
- Self-contained metadata

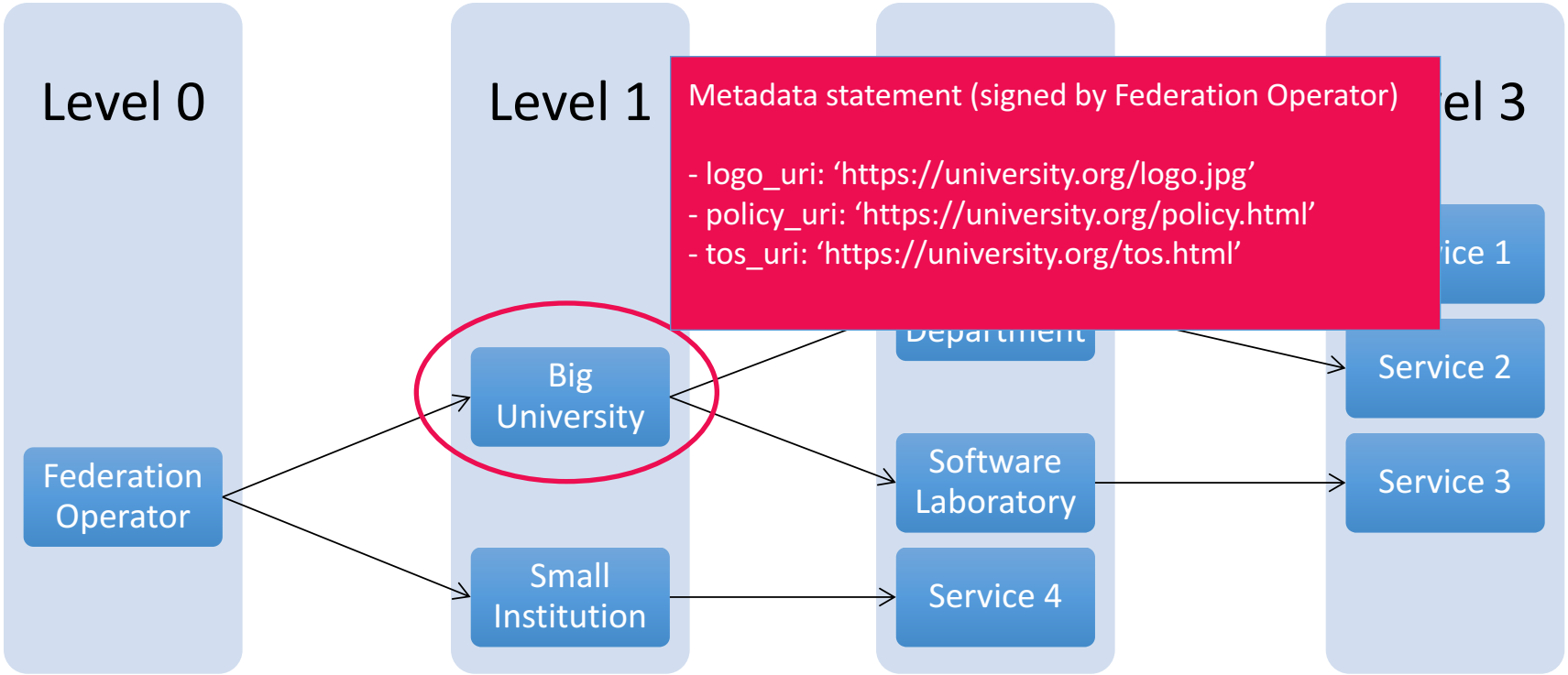
OIDCfed – Building blocks

- Trusted 3rd party
  - I.e. Federation operator (NREN, any small/big community)
- Chain of verifiable claims (metadata statements)
  - Federation operator provides and signs the root of the chain
  - Verification is done via JWT signatures
- Compounded metadata
  - Entity's metadata consists of the whole chain until the metadata statement signed by the federation operator
  - All the public keys except FO's exists in the chain

OIDCfed – Structure



OIDCfed – Structure



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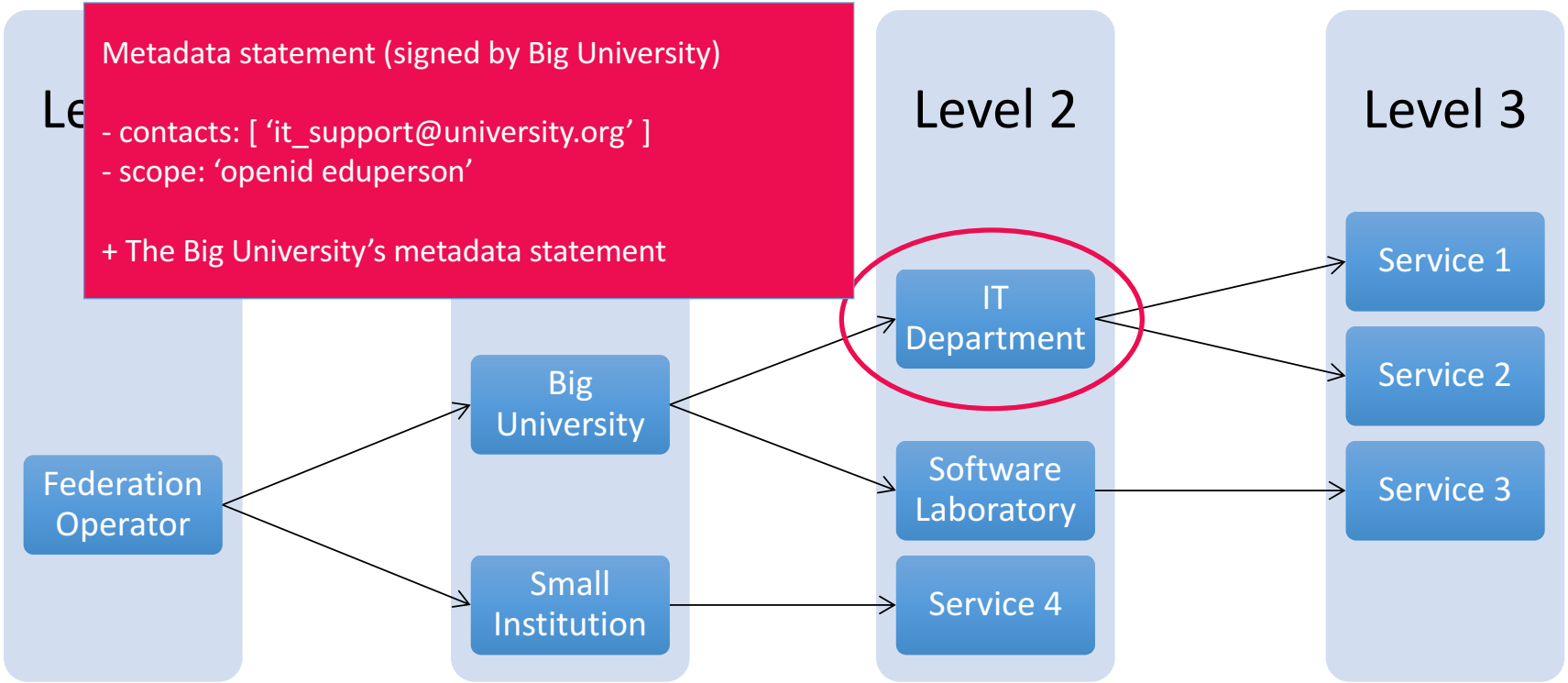
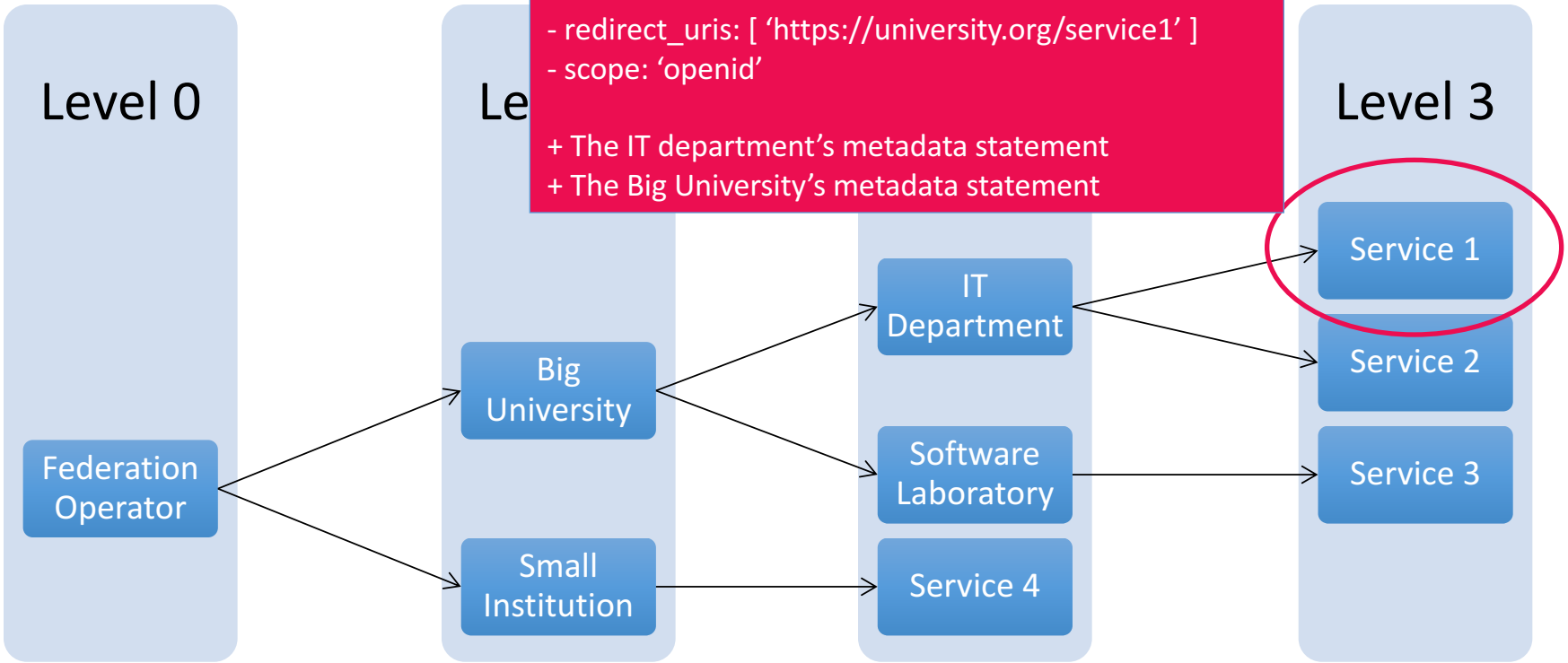


OIDCfed – Structure

Metadata statement (signed by IT Department)

- redirect_uris: ['https://university.org/service1']
- scope: 'openid'

+ The IT department's metadata statement
+ The Big University's metadata statement



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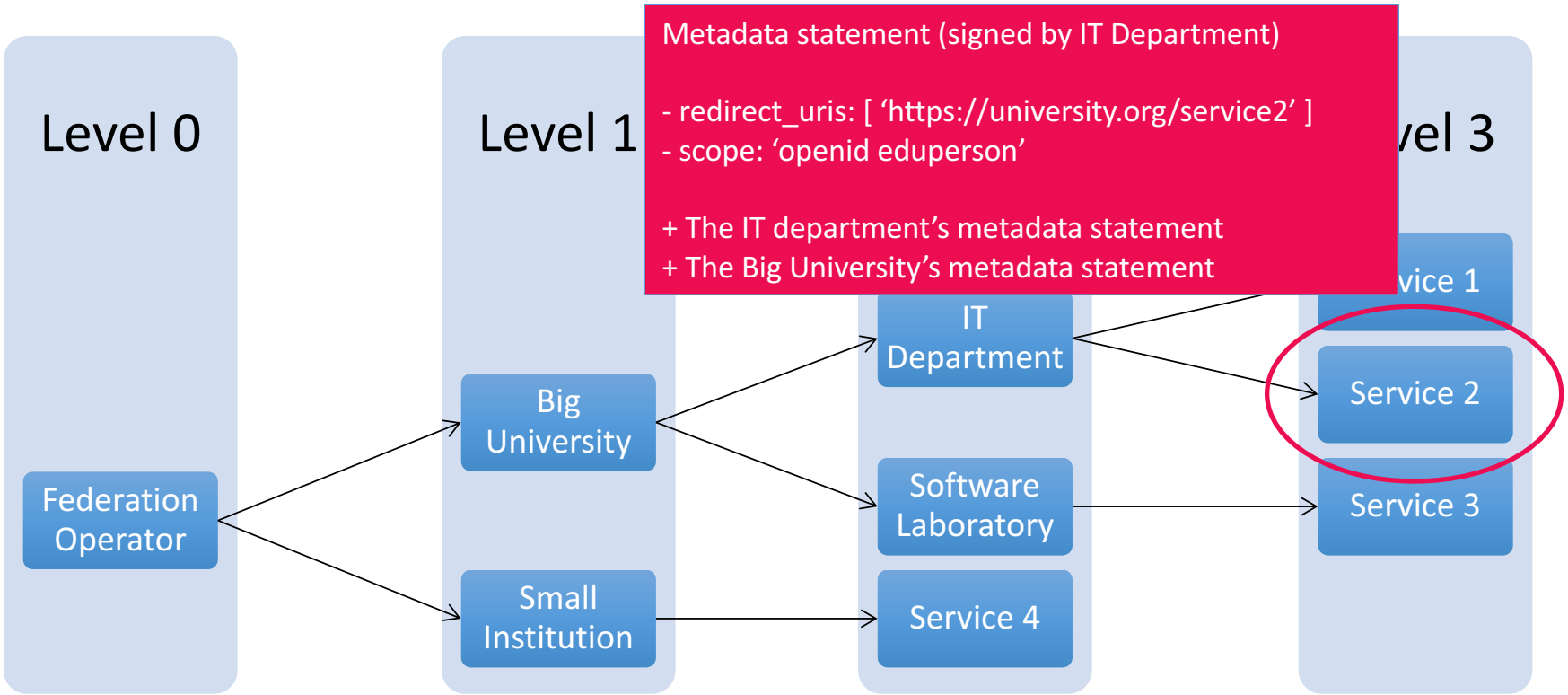

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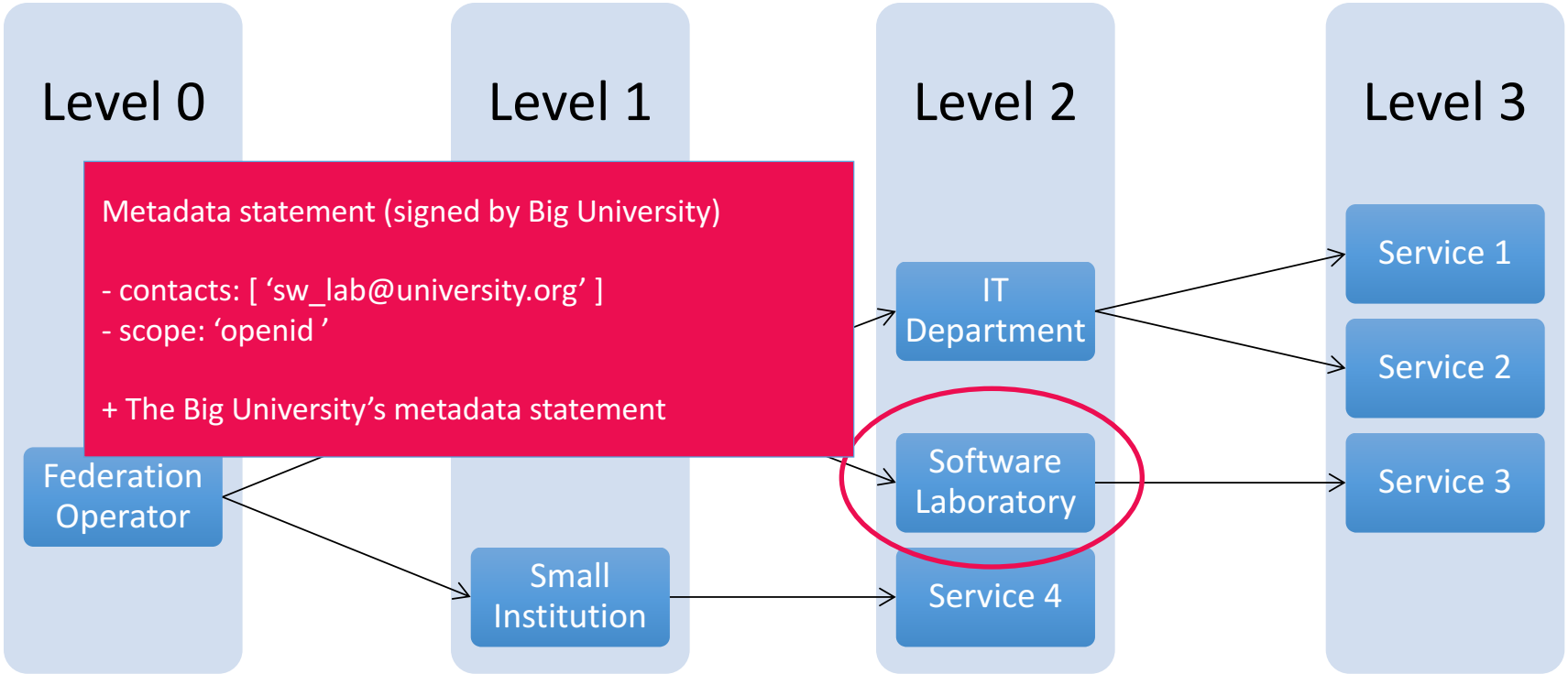

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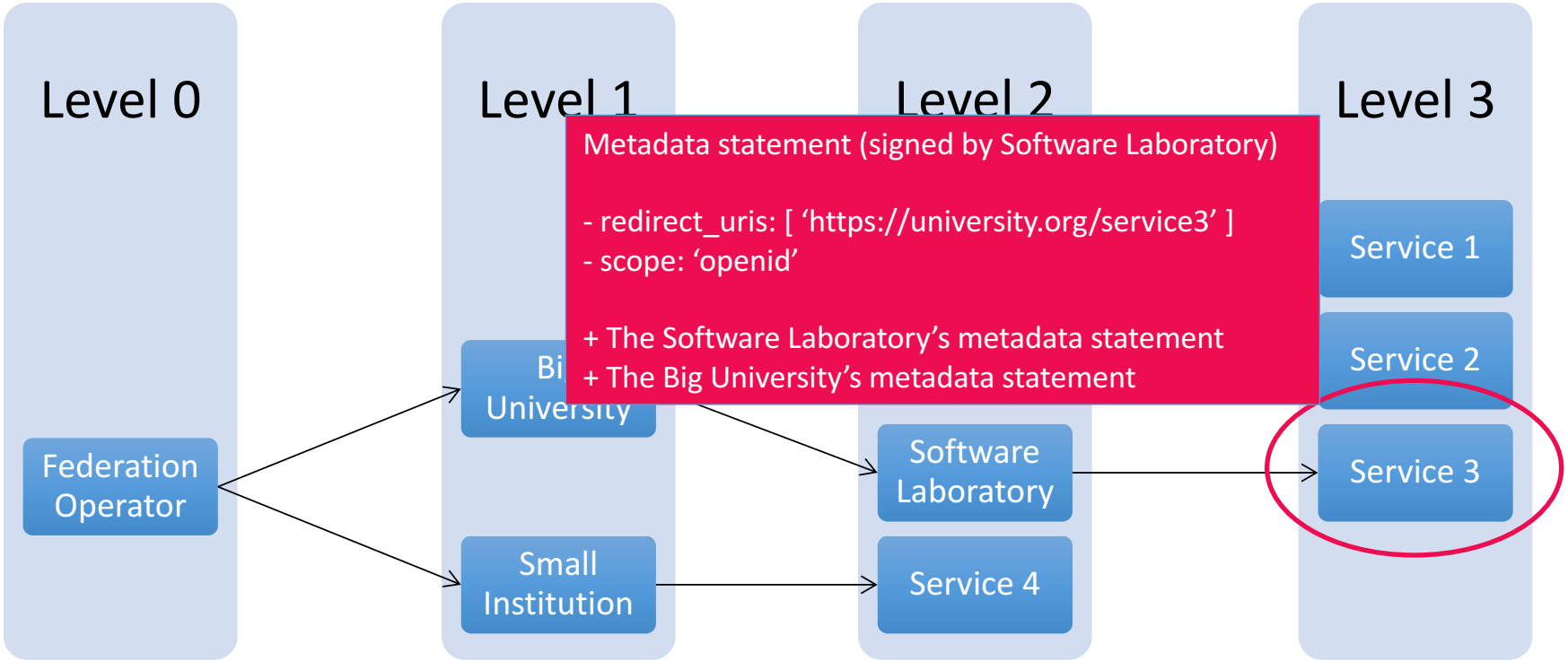

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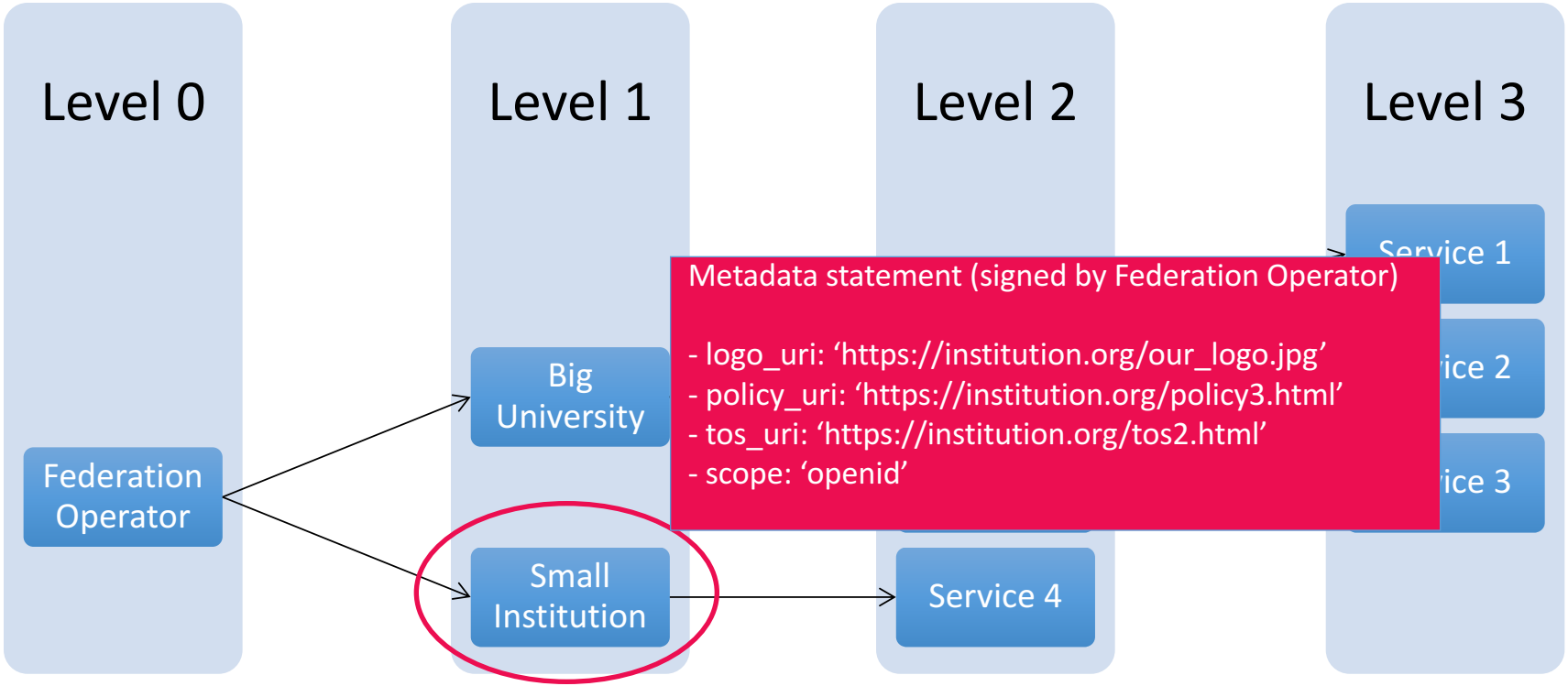

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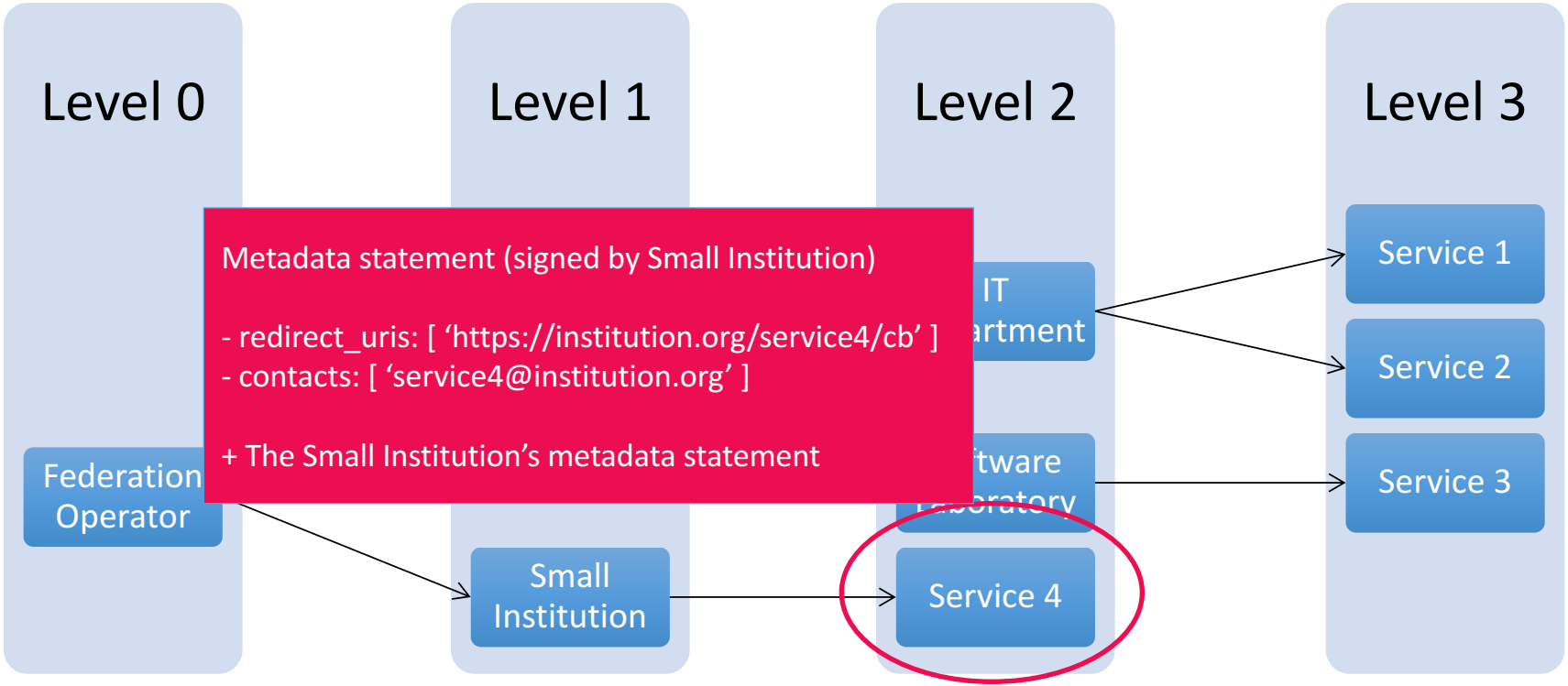

OIDCfed – Big changes to existing feds

- New entity registration is outsourced to the members
  - Federation Operator doesn’t necessarily know the exact amount of entities in the federation
- Existing business models may not work
  - For instance, if registration costs money
- However, both styles (and protocols) need to be supported for (quite) some time

OIDC(fed) and Shibboleth IdP?

- Shibboleth IdP is widely used by federations worldwide
  - In some countries nearly all IdPs use Shibboleth (Finland, Switzerland, ..)
- Organizations are not keen to run multiple services for “one” purpose
  - The existing deployments are quite complex
    - Not just IdM/LDAP integration: 2FA, clustering, etc
    - Lots of overhead to configure same logic for two pieces of software
  - Admins are familiar with the Shibboleth configuration logic
- Shibboleth IdP v3 has very modular architecture
  - CAS is natively supported – why not OIDC, too?

OIDC + Shibboleth IdP implementation

- GÉANT task implements OIDC support as plugins
  - Already started with the standard OIDC profiles/flows/features
    - Implicit flow first (many similarities with saml2int) + dynamic registration
    - Continue with authorization code & hybrid flows + OIDCfed
- Aim at being as orthodox IdP plugin as possible
  - Exploit the protocol-independent features
    - Authn (incl. MFA), Attribute resolution, Session mgmt, RP config, Consents, etc
- Collaborate actively with the Shibboleth team
  - Some VCs already taken place and has been very valuable

Not just Shibboleth

- OIDCfed reference Python implementation exists
  - OP + RP
- GÉANT task implements OIDCfed-aware RP libraries
  - PHP
  - Android (using AppAuth)
  - iOS (using AppAuth)
- Test tool for compliance of the fed-aware RP libraries and OPs

Next Steps

- Q4 2017
  - Call for pilots
  - Standalone fed-aware Python implementation
  - Finish and document RP libraries
- Q1 2018
  - Limited fed-aware Shibboleth IdP –based OP
- Q1-Q3 2018
  - Pilots with interested parties
- Q4 2018
  - Finalization of the draft and road to standardization

Further reading

- The OIDCfed specification
  - https://openid.net/specs/openid-connect-federation-1_0.html
- Reference OIDCfed implementation (Python)
  - https://github.com/OpenIDC/fedoidc
- Shibboleth IdP + OIDC work (code + wiki)
  - https://github.com/CSCfi/shibboleth-idp-oidc-extension
- The GEANT 4-2 JRA3T3 wiki
  - https://wiki.geant.org/display/gn42jra3/T3.1A+OpenID+Connect+Federation

Thank you

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