The way from sharing data to sharing intelligence

Creating a new services infrastructure for the European Library

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Overview

- Background
- Vision
- Demonstration
- Legal issues

Background

- First ideas were born 2 years ago
- Actual work started end 2007 as part of Econtentplus framework
  - TELplus project
    - Workpackage 4 Integration of new services in TEL portal
      1. **Create a services infrastructure and a schema for service descriptions**
      2. Identify new services and create a services registry
      3. Integrate services in European Library portal
      4. Create new services to be integrated in TEL portal

Vision for a new services infrastructure

- There is so much functionality and content available on the web. Individual institutions cannot build all of that themselves and harvest all that content. **We have to lower the barrier for using external functionality and content (services).**
- Users see functionality and content elsewhere: we should enable users to select that functionality in combination with local content, **without having to write software and** even for functionality that is not under local control**.**
- We need to **describe that functionality** and index those descriptions and make that information available to users and other web applications.

Some definitions of intelligence

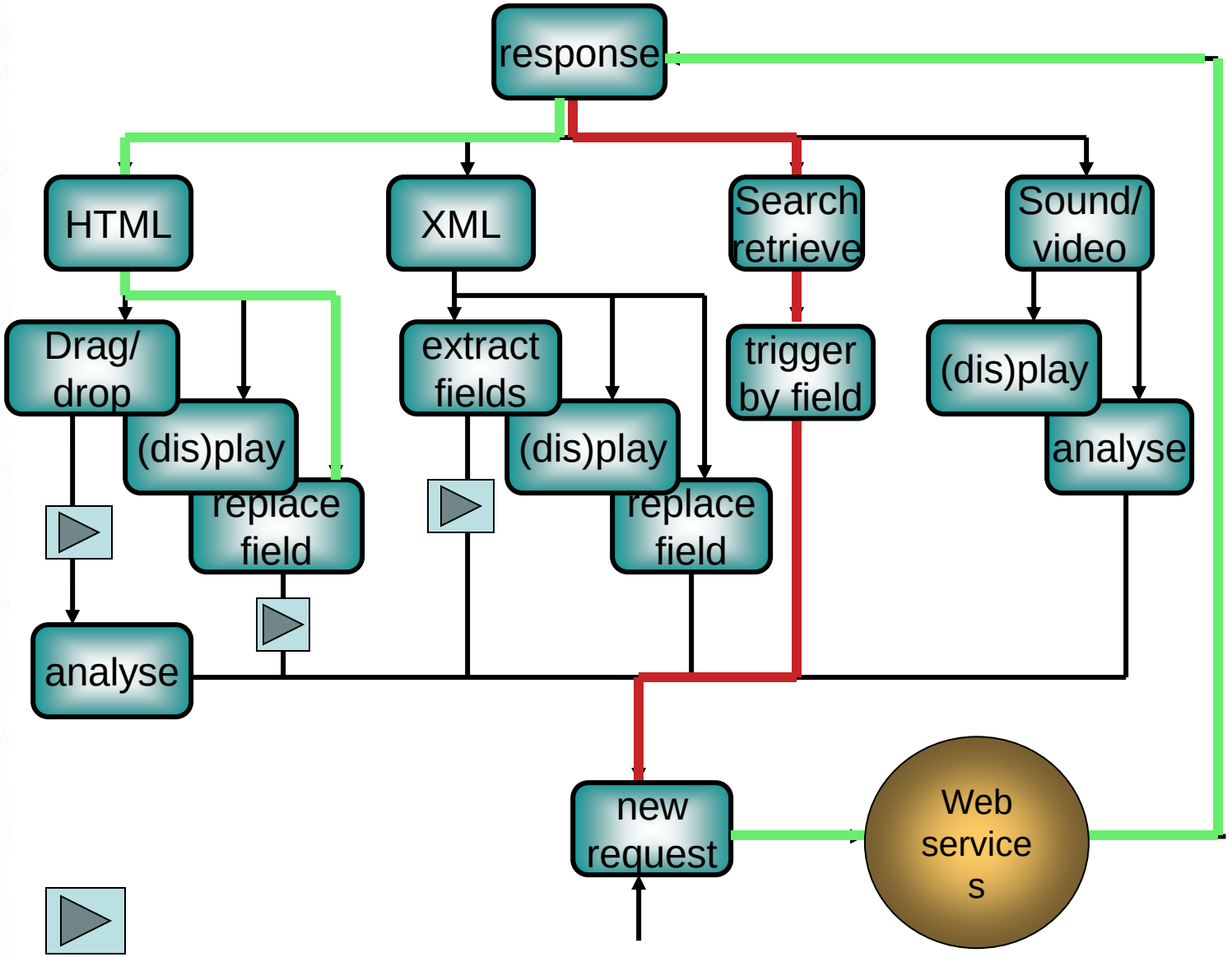
(see define:intelligence in Google)

- Intelligence is a property of mind that encompasses many related mental abilities, such as the capacities to reason, plan, solve problems, think abstractly, comprehend ideas and language, and learn
- Intelligence is the system's level of performance in reaching its objectives
- Intelligence is effectively **perceiving**, **interpreting** and **responding** to the environment

Perceive, interpret and respond

- Perceive:
  - receive data, understand the data format
  - know how to present the data to the user
  - offer choices to the user to navigate based on predefined rules
- Interpret:
  - know what the results is and offer choices based on context (user preferences, available data or metadata)
  - Use context to determine presentation and potential new user action
- Respond:
  - Trigger new actions (semi-)automatically with the (meta)data as input for a new action: translate, summarize, new search, pronounce, find relations, analyze etc.
- Learn

Receive, interpret and generate new request



Schema for service descriptions

- To:
  - enable users to **search** and **select** services
  - enable the TEL portal to **select** and **invoke** services depending on context
  - enable the portal to **use the output** in an appropriate way

We need service descriptions

- Service descriptions can be used to exchange information about services between users and integrators and service providers
- Services may be described from different perspective for users, integrators and providers as long as they use the **same datamodel** (link)

Service types (taken from IESR)

- Alert
- Annotate
- Archive
- Ask
- Authenticate
- Authorise
- Contribute
- Find
- Harvest
- Lend
- Locate
- Map
- Monitor
- Pay
- Personalise
- Rate
- Register
- Request
- Reserve
- Resolve
- Save
- Supply
- Translate
- Validate

Example of service description

(not yet based on latest schema)

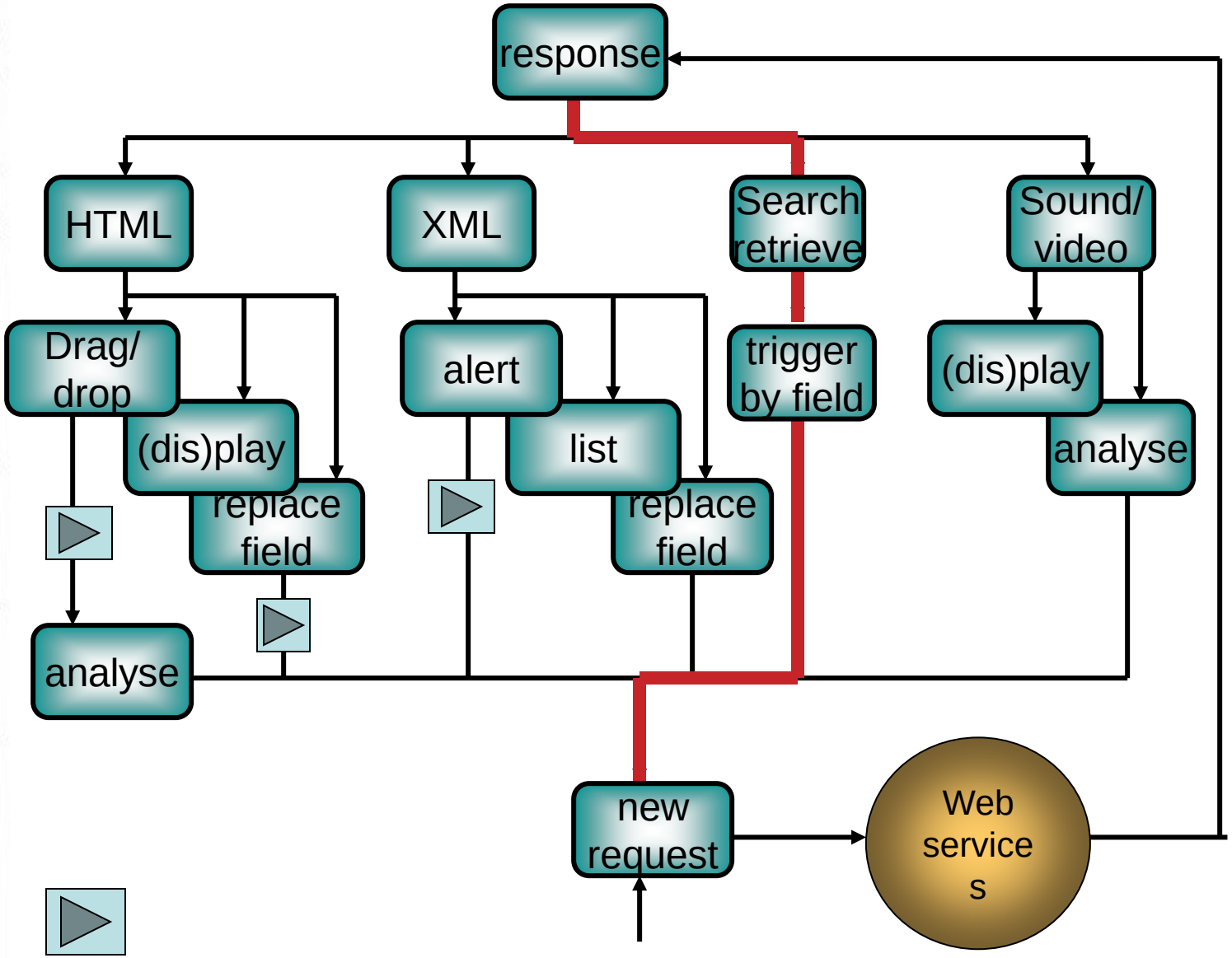
```
<record>
    <dc:title>Bablefish</dc:title>
    <dc:identifier
    xsi:type="URI">http://babelfish.altavista.com/babelfish/tr?</dc:identifier>
    <dc:type>service</dc:type>
    <serviceType>Translate</serviceType>
    <serviceLabel>Translate to prefered language by Bablefish</serviceLabel>
    trigger>title</trigger>
    <trigger>abstract</trigger>
    <trigger>description</trigger>
    <inputParameter>urltext</inputParameter>
    <dc:format>HTML</dc:format>
    <accessType>POST</accessType>
    <nextService>http://demos.cepstral.com/cepstral/demos/demo.cgi/cepstral.wav?voice=David;rate=170;pitch=1;effect=none;submit=Synthesize+the+Text;</nextService>
    <invocation>option</invocation>
    <typeOfUse>replaceField</typeOfUse>
    <directionParameter>lp</directionParameter>
    <languagePairs
    split="_">en_nl,en_fr,en_de,en_el,en_it,en_pt,en_ru,en_es,nl_en,nl_fr,fr_en,
    fr_de,fr_el,fr_it,fr_pt,fr_nl,fr_es,de_en,de_fr,el_en,el_fr,it_en,it_fr,pt_en,pt_fr,r
    u_en,es_en,es_fr</languagePairs>
</record>
```

Example of service description

(not yet based on latest schema)

```
<record>
    <dc:title>Image annotation</dc:title>
    <dc:identifier xsi:type="URI">http://metis.researchstudio.at/ylvi-telplus/AnnotationController?action=getAll&amp;amp;</dc:identifier>
    <dc:type>service</dc:type>
    <trigger>identifier</trigger>
    <trigger>identifier:URI</trigger>
    <trigger>identifier:mpeg21</trigger>
    <inputParameter>id</inputParameter>
    <extraCondition>type=image</extraCondition>
    <accessType>GET</accessType>
    <serviceType>Alert</serviceType>
    <serviceLabel>Check for annotations for this object</serviceLabel>
    <invocation>automatic</invocation>
    <xPath>/annotations/annotation</xPath>
    <typeOfUse>alertOccurrences http://metis.researchstudio.at/ylvi-telplus/annotations/annotationservice.html?user=Theo&amp;amp;</typeOfUse>
    <dc:format>XML</dc:format>
</record>
```

Receive, interpret and generate new request

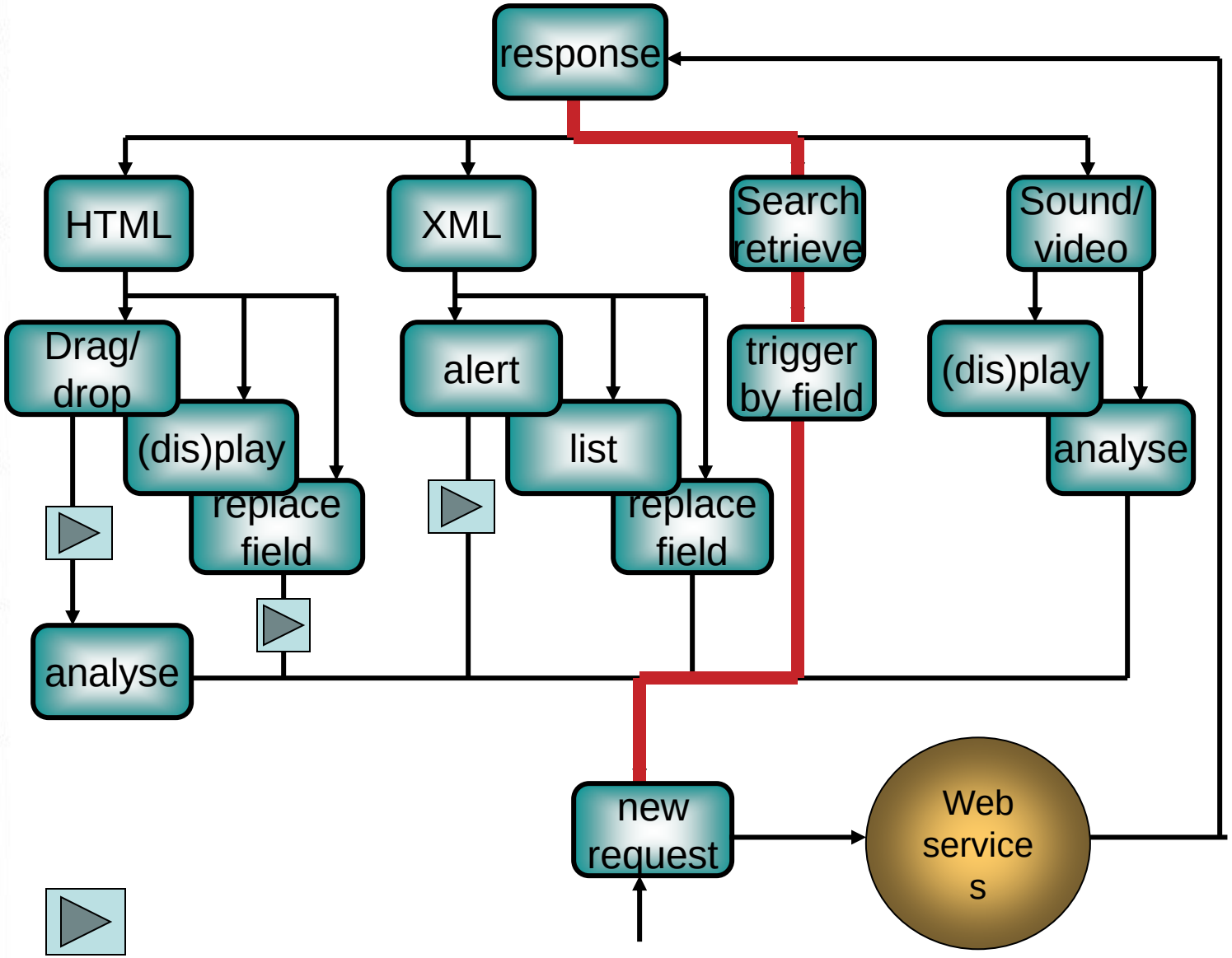


Example of service description

(not yet based on latest schema)

```
<record>
    <dc:title>Geonames</dc:title>
    <dc:identifier>http://ws.geonames.org/cities?</dc:identifier>
    <dc:type>service</dc:type>
    <serviceType>Geospatial</serviceType>
    <serviceLabel>Find nearby places</serviceLabel>
    <trigger>spatial:Point</trigger>
    <inputParameter>_area</inputParameter>
    <northParameter>north</northParameter>
    <southParameter>south</southParameter>
    <westParameter>west</westParameter>
    <eastParameter>east</eastParameter>
    <dc:format>XML</dc:format>
    <xPath>/geonames/geoname/name</xPath>
    <typeOfUse>createSearchList</typeOfUse>
    <accessType>GET</accessType>
    <invocation>option</invocation>
</record>
```

Receive, interpret and generate new request



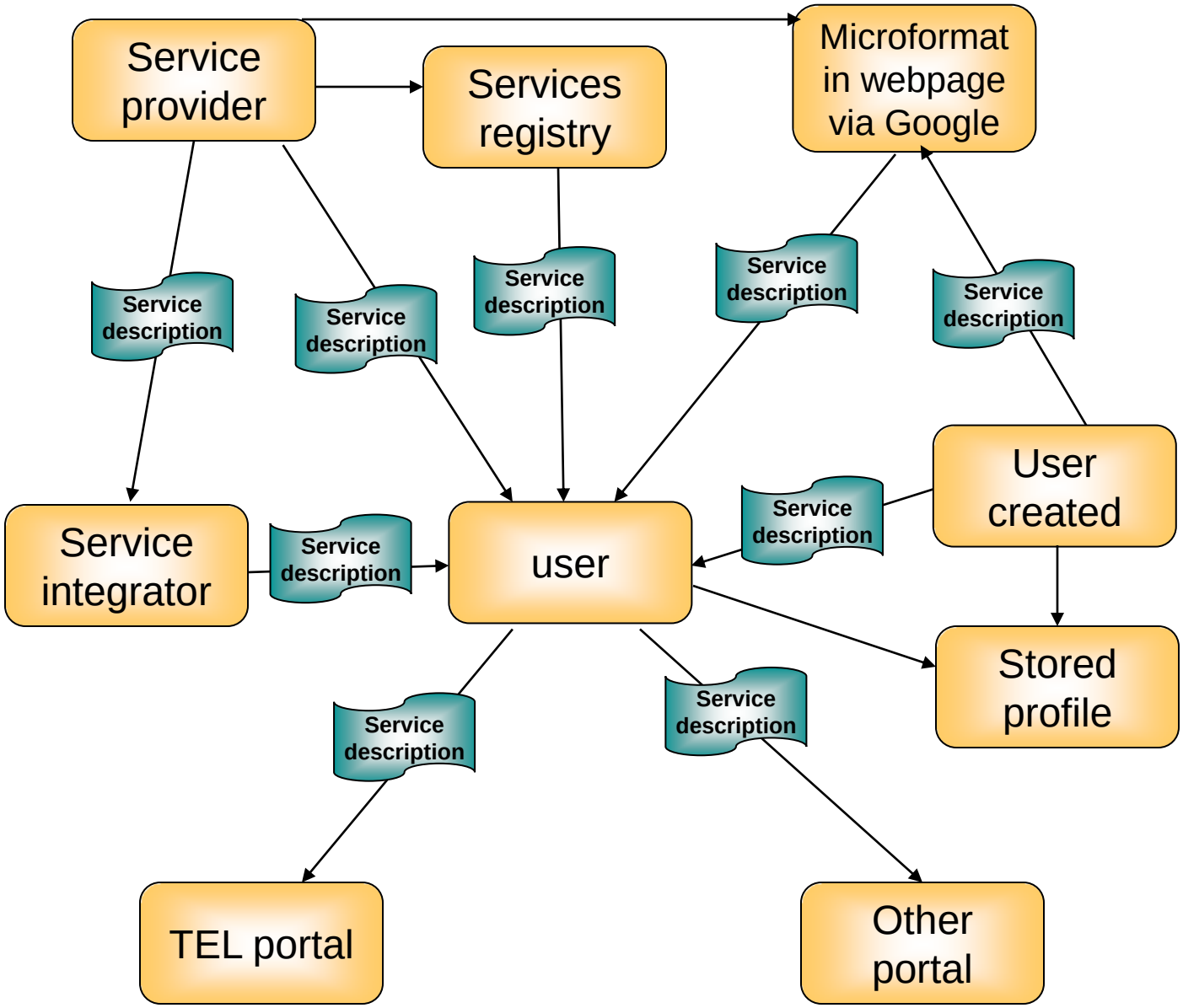
Learn

- When the user is satisfied with the results of a user initiated action the user might want to have these actions performed next time (semi-) automatically
- The user defines the context and criteria for that action: trigger, conditions and type of action
- A mechanism is needed to detect, analyze, describe and store the above information
- A mechanism is needed to share and exchange that stored information with others so that in can be used the next times automatically by different web applications

New paradigm

- Service providers might publish service descriptions via services registries or micro-formats in webpages
- Users will select and modify service descriptions and store and exchange these services descriptions
- Users supply their service description to web applications/portals and these applications act accordingly
- New business models are required when data of providers are used outside the providers context (no branching)

Share, exchange and use services descriptions



Legal issues:

- TEL can not take legal responsibility for users integrati… …rvices
- TEL can … trusted parties and prov… …for service integrati…
- When TE… …s centrally, browsers… …access
- Commer… …t not agree with not… …provider's context: … indicate provider… …e readable way
- We cann… …rvices out of their orig… Greasem… …provide descripti…