Interorganizational Geo-Synchronization *using OGC Technologies* to share and harmonize data in Catalonia

Krakow, June 2010.

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Content

Objectives

Processes preparation

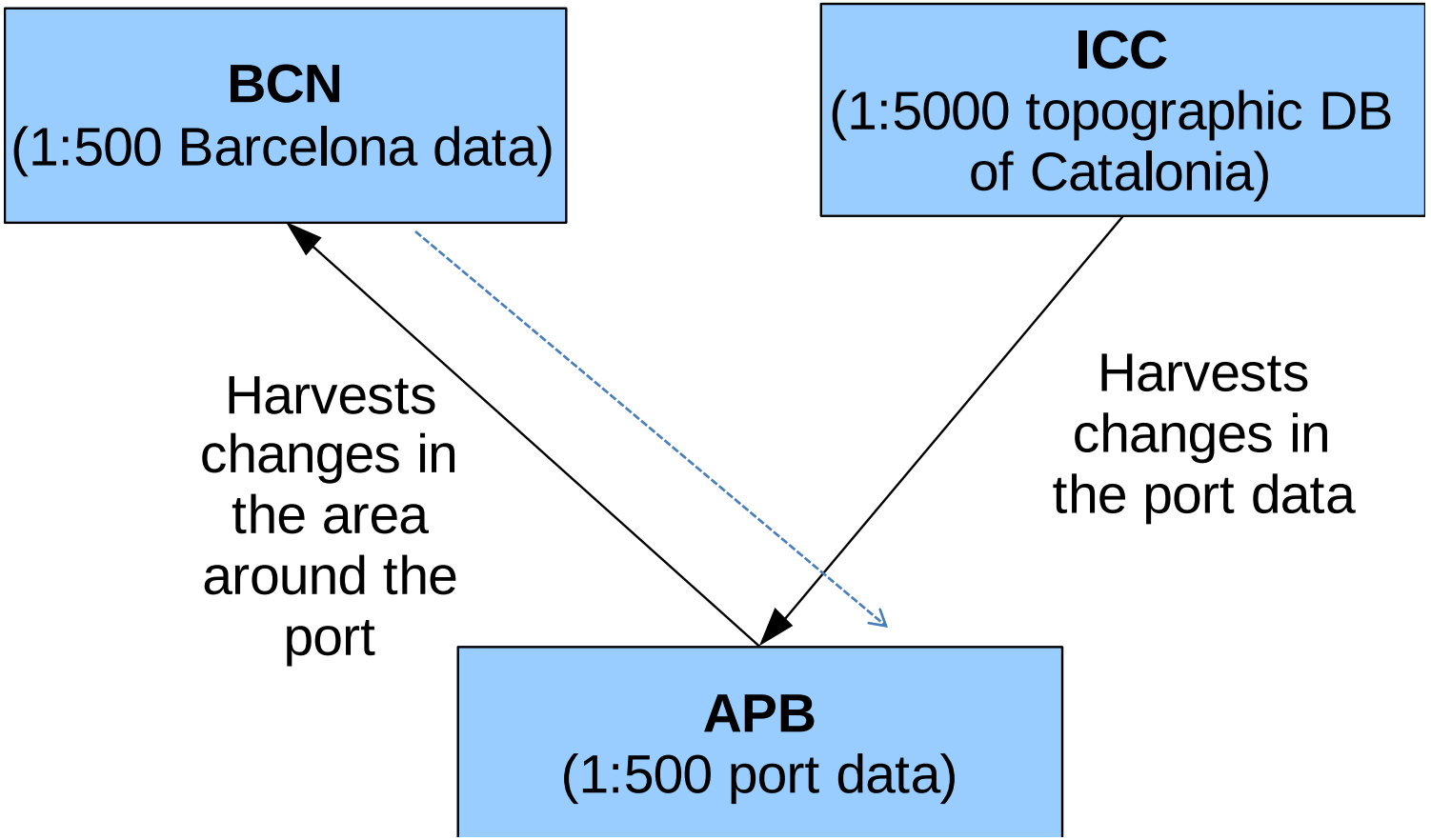
- **mapping data models**
- **changes as GML features**
- **feature versioning**

Publishing data changes for WFS access

Harvesting data

Results, uses, conclusions

Objectives: Context for Data Transfer



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Objectives

- Automation of the data transfer from data producer to data consumer
  - » No more ftp, dvd....
- Use of OGC standards as a means to avoid vendor lock-in
- Test and promote interoperability
  - » Taking advantage of the SDI...
- Harvest data changes whenever the data consumer desires so

SDI's: more than combining layers!

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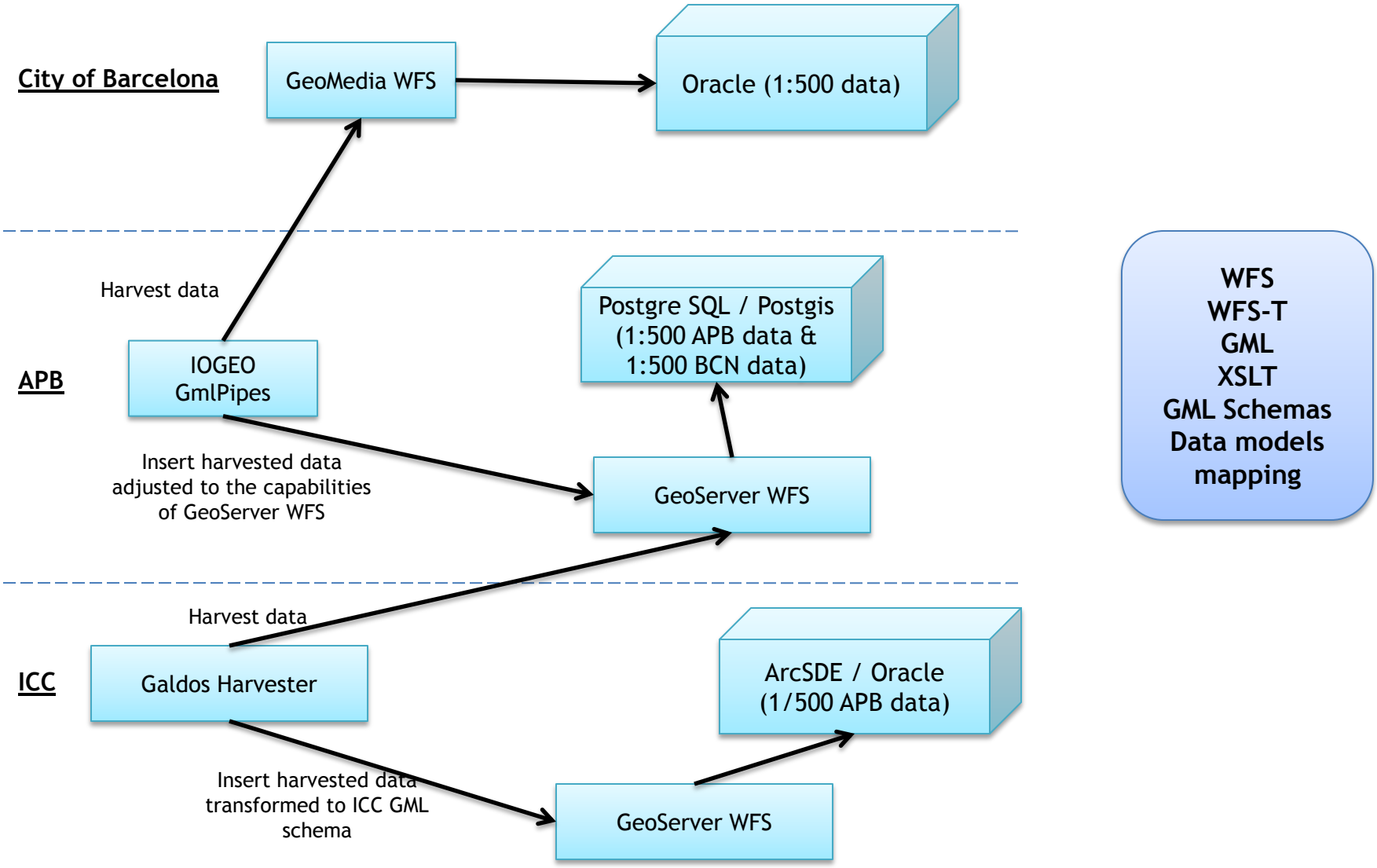
Exploring Technology: interoperability for data geo synchronization



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Mapping data

APB (1:500) → ICC (1:5000)

fme:gis_bascula_perimetre_base,
fme:gis_escala_perimetre_base,
fme:gis_element_decoratiu_perimetre_base,
fme:gis_monument_perimetre_base,
fme:gis_topall_via_ferrocarrils_perimetre_base,
fme:gis_linia_escullera_linia_escullera,
fme:gis_linia_moll_no_operatiu_linia_moll_no_operatiu,
fme:gis_linia_moll_operatiu_linia_moll_operatiu,
fme:gis_limit_vorada_linia_vorada,
fme:gis_linia_detall_monument_linia_detall,
fme:gis_illeta_perimetre_base,
fme:gis_moll_pivotat_limit_terra,
fme:gis_moll_pivotat_limit_aigua,
fme:gis_zona_escullera_limit_escullera_terra,
fme:gis_camp_esport_perimetre_base
→ HARVERBT5M.BT5MV20_P1L

fme:gis_cable_teleferic_cable_teleferic,
fme:gis_eix_via_ferrocarril_eix_base,
fme:gis_tram_vial_eix_base.
→ HARVERBT5M.BT5MV20_C1L

fme:gis_cobert_perimetre_superior,
fme:gis_edificacio_perimetre_superior,
fme:gis_voladis_perimetre_superior,
fme:gis_garita_perimetre_base,
fme:gis_torre_electrica_perimetre_base,
fme:gis_torre_teleferic_perimetre_base,
fme:gis_zona_verda_perimetre_base.
→ HARVERBT5M.BT5MV20_P1PY

fme:gis_diposit_perimetre_base,

fme:gis_canonada_eix_base,
fme:gis_heliport_perimetre_base,
fme:gis_limit_canvi_paviment_linia_canvi_paviment,
fme:gis_linia_accessori_linia_accessori,
fme:gis_mur_contencio_cap_escarpat,
fme:gis_muret_eix_base,
fme:gis_passarel_la_perimetre_base,
fme:gis_pintura_significativa_eix_base,
fme:gis_pont_vianants_perimetre_base,
fme:gis_porta_eix_base ,
fme:gis_tanca_eix_base,
gis_mur_contencio_peu_escarpat
→ HARVERBT5M.BT5MV20_P2L

fme:gis_piscina_perimetre_base ==> HARVERBT5M.BT5MV20_H2PY

fme:gis_linia_terra_platja_linia_terra platja ==> HARVERBT5M.BT5MV20_H2L

fme:gis_punts_cota_punt_cota ==> HARVERBT5M.BT5MV20_A1PT

fme:gis_rotulacio_toponim_anotacio ==> HARVERBT5M.BT5MV20_T1TX_5M

Feature versioning

Date: 2008-01-01. Insertion of a new Building feature

1. A Building feature with business ID 1 is inserted in the data repository. The business ID uniquely identifies the feature instance. All version of this feature share the same business ID. Note that the database ID can be and usually is different than the business ID. There can be an arbitrary number of additional feature properties but for simplicity

Build
Oper
Versi

Date: 2008-02-20. Modification of the Building feature

2. A modification in the Building feature leads to the creation of a new feature ve
feature version is assigned the current date as its end date. The new feature vers
previous one in the role of the current feature version for Building feature with b
is indicated via a null end date.

Building (business ID = 1)

Operation: INSERT

Version start date: 2008-01-01 Version end date: 2008-02-20

Building (business ID = 1)

Operation: UPDATE

Version start date: 2008-02-20

Date: 2008-05-25. The Building feature is modified again

3. The same approach is taken as in the previous step 2. This leads to three feature versions being available for this feature instance, two historic and one current.

Building (business ID = 1)

Operation: INSERT

Version start date: 2008-01-01 Version end date: 2008-02-20

Building (business ID = 1)

25

Date: 2008-07-31. The building is torn down and this change needs to be reflected in the data.

4. The same approach is taken as in the previous steps 2 and 3 except that the Operation field is set to DELETE. Deleting the feature instance would not make sense because it would delete all records of its existence. Therefore, a feature deletion is similar to a data update.

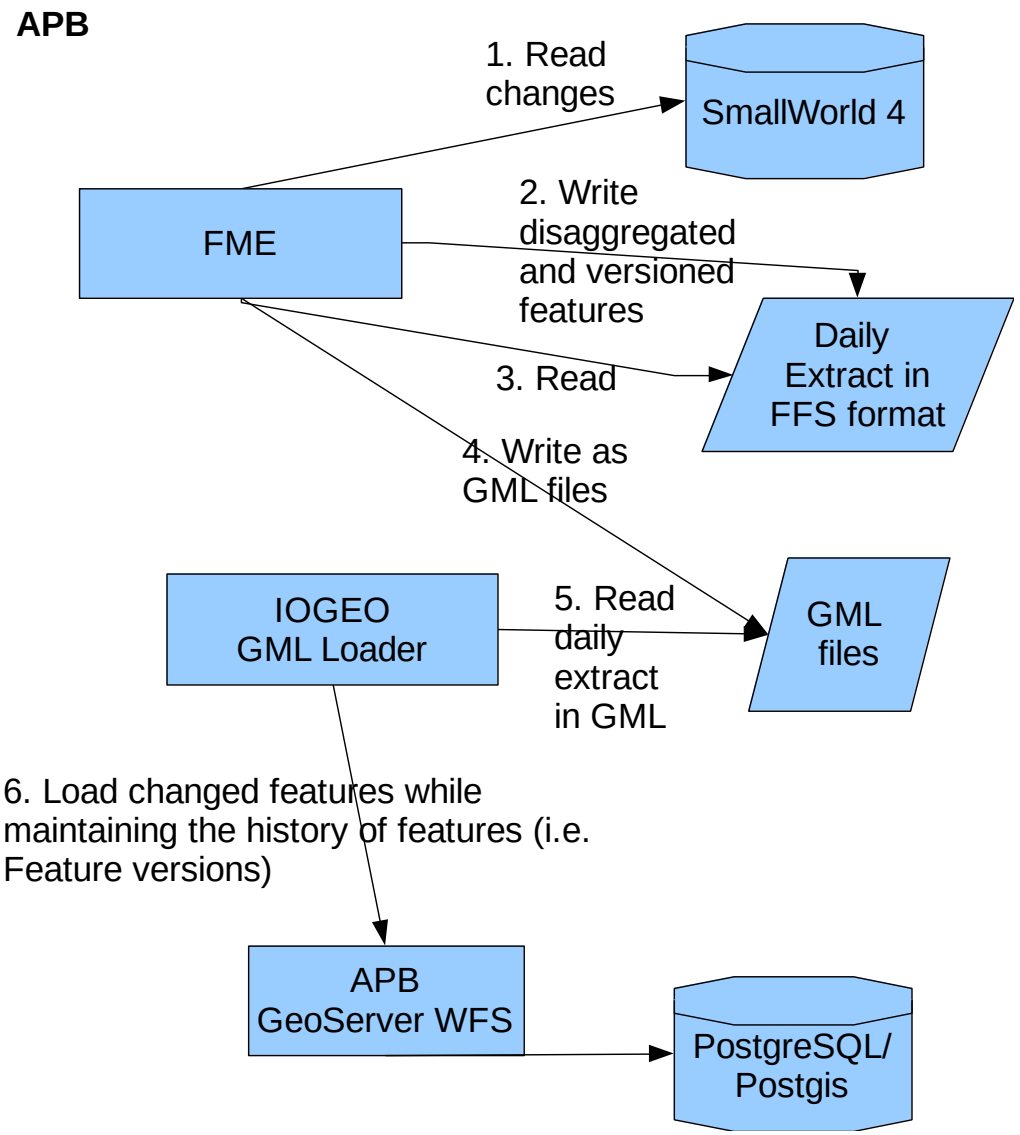
Building (business ID = 1)
Operation: INSERT
Version start date: 2008-01-01 Version end date: 2008-02-20

Building (business ID = 1)
Operation: UPDATE
Version start date: 2008-02-20 Version end date: 2008-05-25

Building (business ID = 1)
Operation: UPDATE
Version start date: 2008-05-25 Version end date: 2008-07-31

Building (business ID = 1)
Operation: DELETE
Version start date: 2008-07-31 Version end date: null

Publishing data changes



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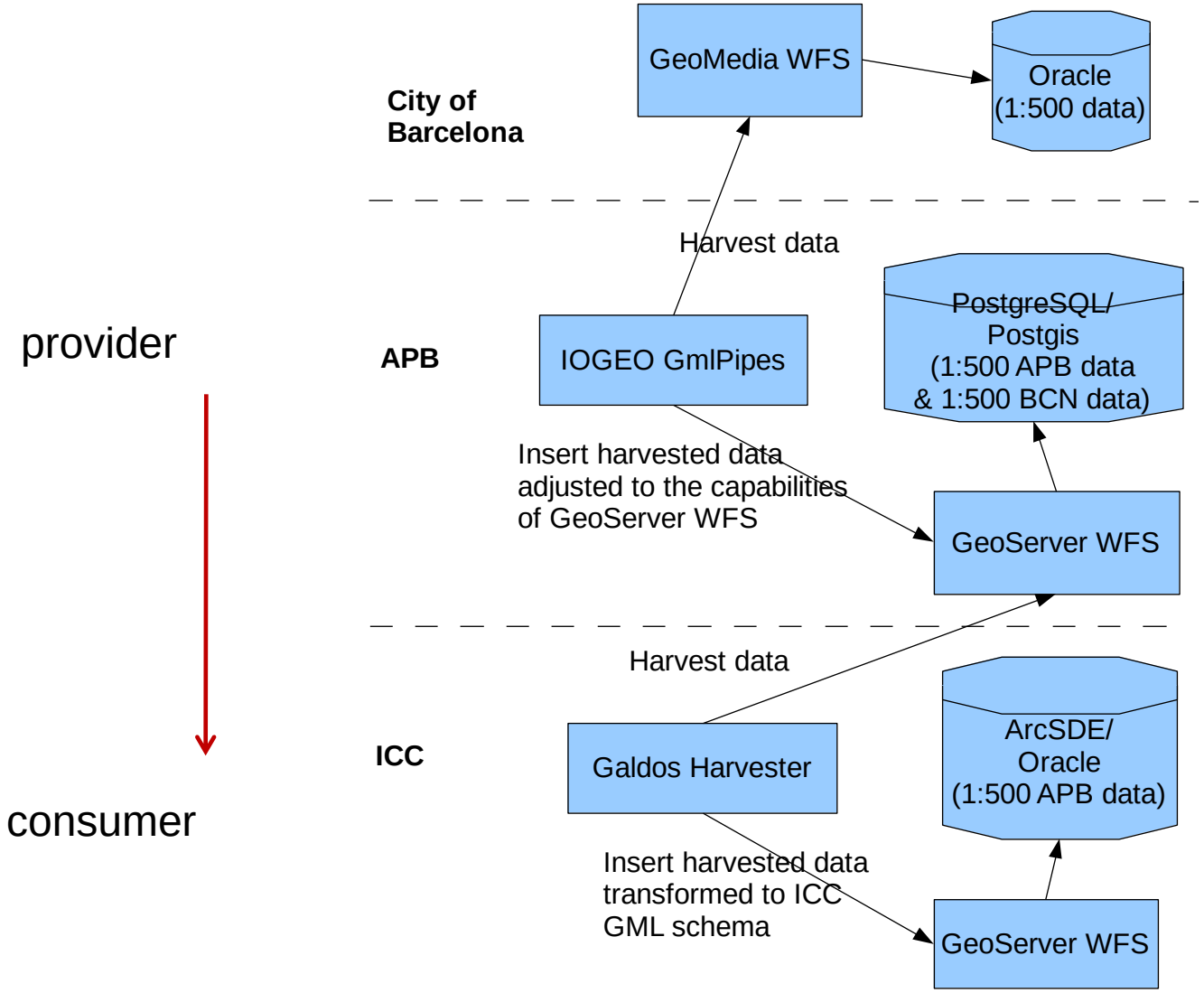
Harvesting data



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results

current topographic map 1/5000

Overlay of topographic map and data from APB: new objects to be updated

Approx. 57,000 objects harvested in the initial harvest from the APB WFS

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Conclusions

OGC GML and WFS specifications and implementing software applications can be used to **share and harmonize** geographic data between organizations

Geo-synchronization may require **considerable resources** to define the mapping between data models, devise a process for publishing the data changes, overcome deficiencies of the available software applications, and incorporate the harvested data in the data maintenance processes.

Capability to maintain the history of data as an indirect benefit

Thanks

http://www.geoportal-idec.cat/geoportal/eng/