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ELFIE -

(Environmental Linked Data Interoperability Experiment)

AN INTERNATIONAL FRESHWATER DATA EXPERIMENT AND A NEW ZEALAND TWIST

ELFIE - Genesis

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"What does a document that links these distributed data together look like?"

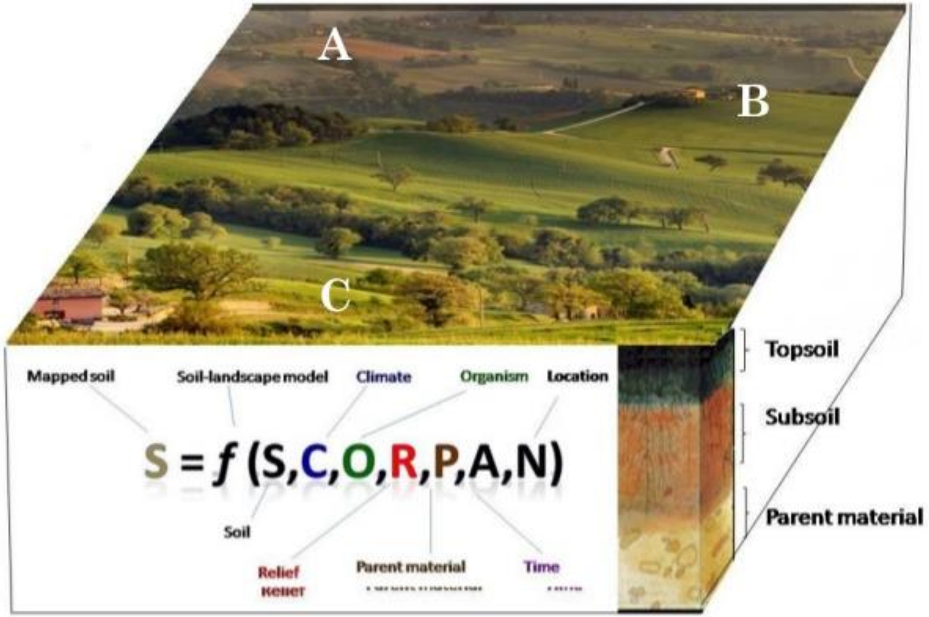
David Blodgett USGS, Dublin OGC TC, June 2016

- Inspired in part by work done in
  - the Hydrology domain working group,
  - the Soils Interoperability experiment
  - Various OGC Test Bed activities

Environmental Features

The problem

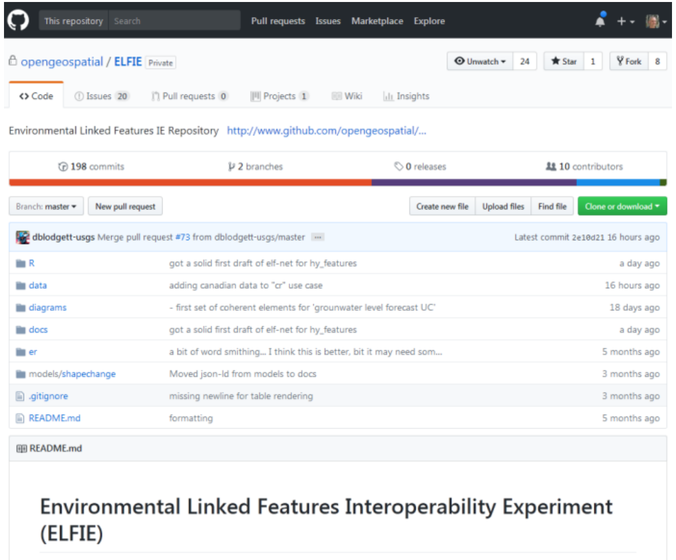
- To understand, manage and use the environment we must understand it as a whole, not just the parts



ELFIE

‘Demonstrate the use of existing and pending OGC standards for the encoding of environmental observation data in an integrated dataset of features linked according to ReSTful and Linked Data principles. ’https://github.com/opengeospatial/ELFIE’

- Initiators:
  - U.S. Geological Survey (US)
  - Land Information New Zealand (NZ)
  - BRGM (FR)
- Participants
  - Tumbling Walls and Dewberry (US)
  - Meta-linkage (AU)
  - INSPIRE (EU)
  - Natural Resources Canada (CA)
  - Manaaki Whenua and Horizons Regional Council (NZ)



What is an OGC Interoperability Experiment?

- An authorized Open Geospatial Consortium (OGC) activity managed and operated mostly by OGC member organizations under these Interoperability Experiment Policies and Procedures. The process is facilitated - not led - by an OGC staff person.
- The IE must be focused on an interoperability issue related to the OGC Technical Baseline that is current at the time of the initiation of the IE. The IE Activity Plan must identify one or more existing OGC Technical Baseline documents as a basis for the IE. An IE may not propose to establish a new topic in the OGC Technical Baseline. IE proposals that do not adhere to

The building blocks exist

- IETF/W3C
  - JSON
  - schema.org
  - Linked Data and the Semantic Web
- OGC Environmental Domain Standards
  - O&M; WaterML (parts 1 to ∞); GeoSciML; GroundwaterML
- W3C/OGC Spatial Data on the Web Best Practices
  - And other SDW products (SOSA; OWL Time)

W3C Best Practices

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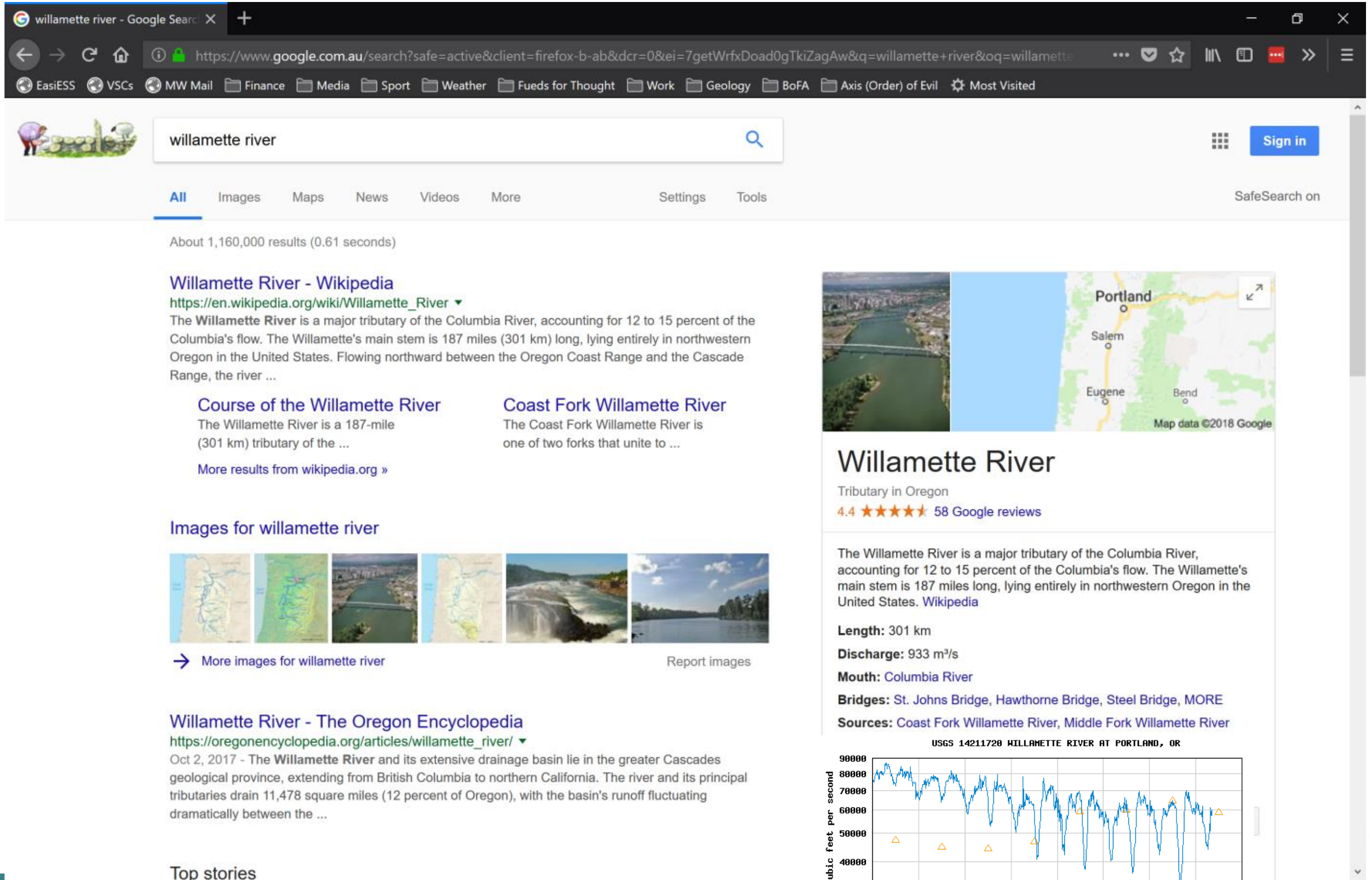
- Spatial Data on the Web Best Practices [SDW-BP]
  - And other SDW products (SOSA; OWL Time)
- Data on the Web Best Practices [DWBP]
- Best Practices for Publishing Linked Data [LD-BP]
- Dataset Exchange Working Group [DXWG] *(ongoing)*

BP 1: Use globally unique Persistent Identifiers

- https://opengeospatial.github.io/ELFIE/.../{id}
- Persistence ~~resistance~~ is Futile
- But, *Persistence ~~resistance~~ is Useful*

BP 2: Make your spatial data indexible by search engines



BP 3: Link resources together to create a Web of data

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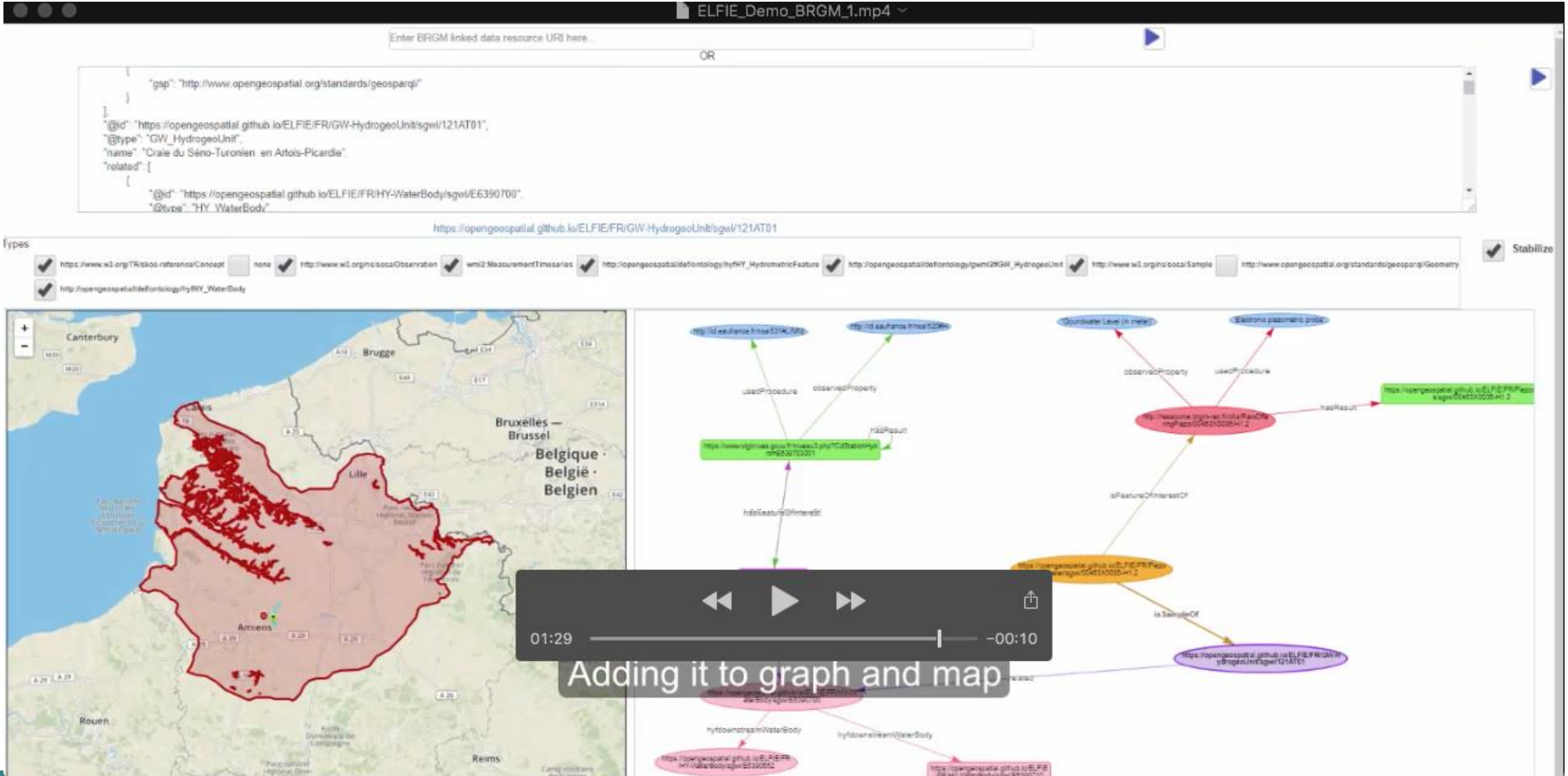

BP 4: Use spatial encodings that match your target audience
BP 5: Provide geometries on the Web in a usable way

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- Target Audience - Spatial Professionals, Web Developers
- not GeoJSON but JSON-LD with WKT
  - Nested geoJSON coordinates incompatible with RDF (and thus JSON-LD)
- schema.org has a particular target audience that may differ from ours
- Multiple representations / content negotiation by schema/Profile
- Image - some code snippet from Blodgett

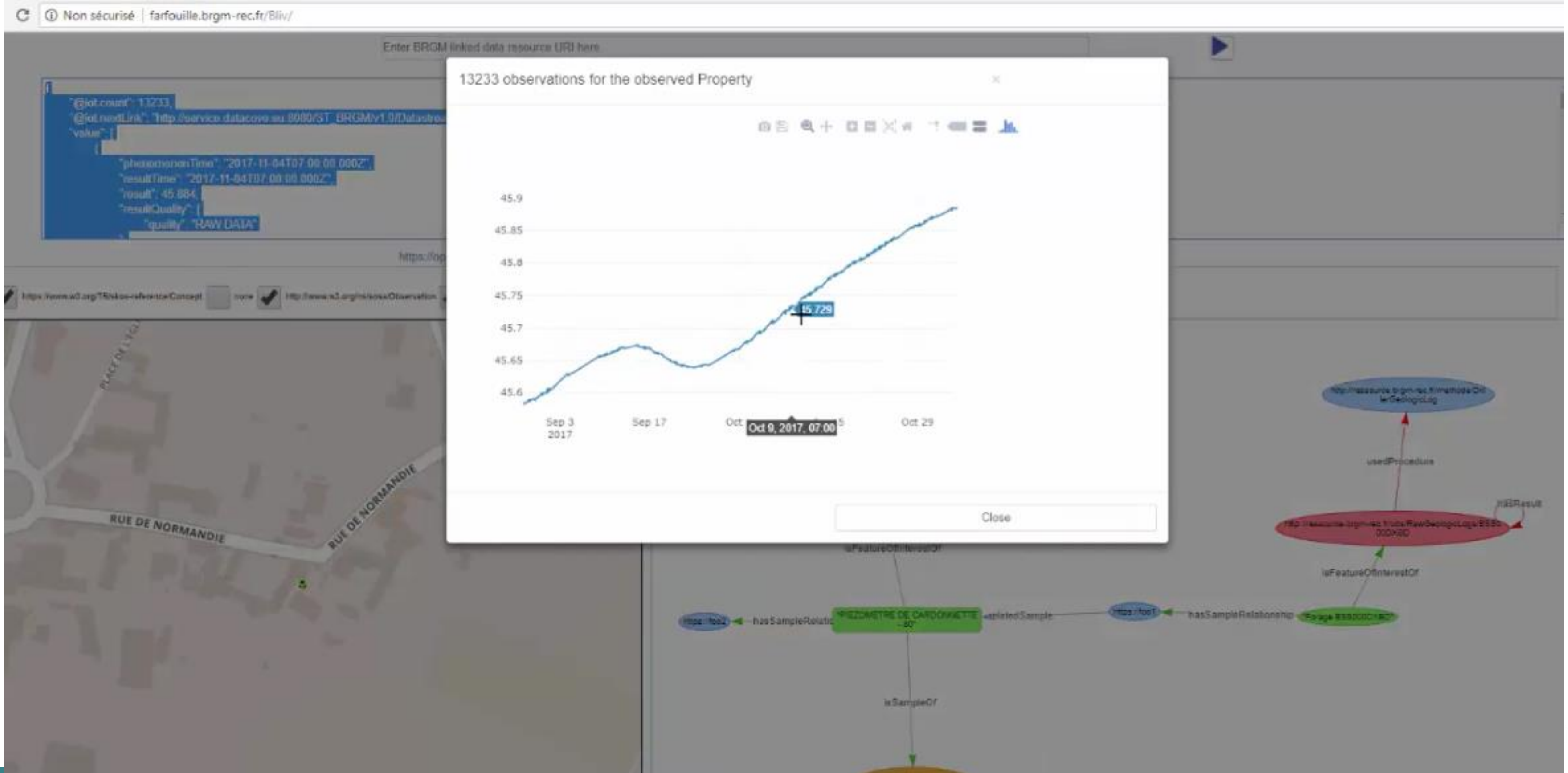
Profile Definition (W3C DXWG)

- "A named set of constraints on one or more identified base specifications, including the identification of any implementing subclasses of datatypes, semantic interpretations, vocabularies, options and parameters of those base specifications necessary to accomplish a particular function."

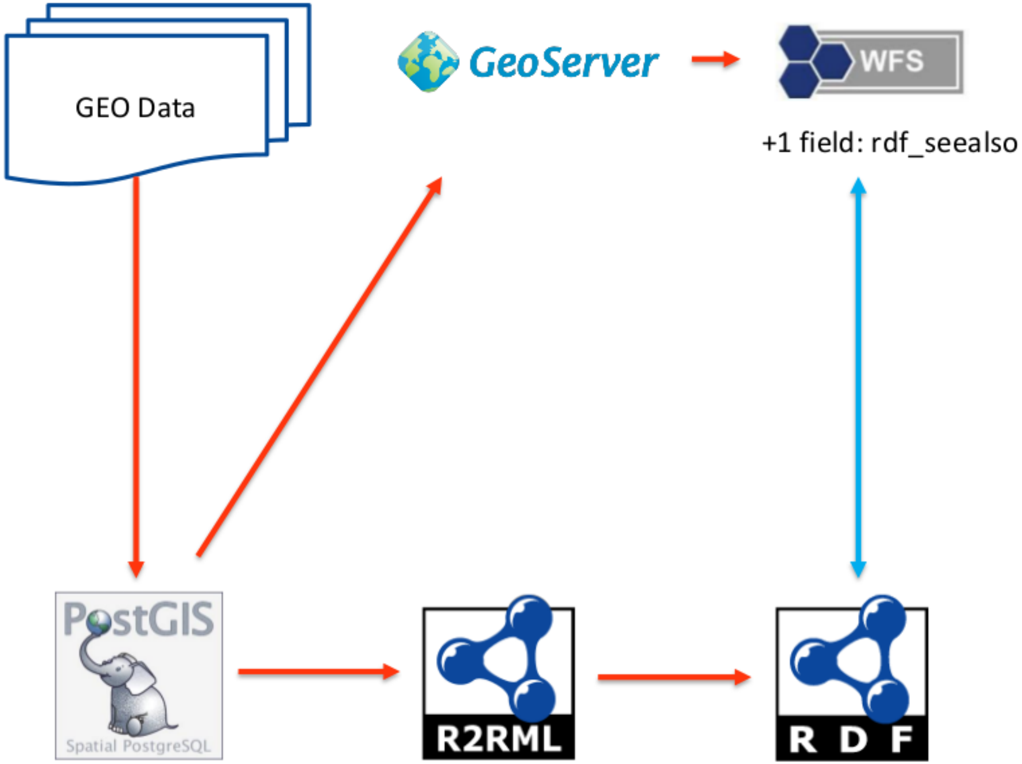
BP 9: Describe relative positioning
BP 10: Use appropriate relation types to link spatial things

- Relative positioning - upstream downstream and near
- Capture the relation of a sensor to the platform to the feature being measured

BP 11: Provide information on the changing nature of things



BP 12: Expose spatial data through 'convenience APIs'



Discipline And Precision of Language

- ReST with Discipline
- What we name things is important
  - Namespace everything
- Support for multiple schemas and profiles

Protocols over Platforms

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- Loose coupling of resources on the web
  - Cross organisations vs Enterprise solutions
  - Protocols for governance and technology
- *Use, extend, or create open technologies, in that order:
  - Use existing open material if it exists;
  - Otherwise extend and give back;
  - As a last resort, create your own system.
- *Arm decision makers with accessible, evidence based research into what works, so they can trust, select and defend collaborative strategies which are often counter-intuitive within traditional hierarchically managed organisations.

* *Open Letter to Government - C Shorter et al April 2018*

Data Commons Framework

- http://datacommons.org.nz
  - High Trust
  - High Value
  - Participant Controlled
  - Inclusive


Version 1.3

Data Commons Blueprint

A high-trust, lower-cost alternative to enabling data integration and reuse

Data Futures Partnership - Principles

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Value		
New Zealand should use data to drive economic and social value and create a competitive advantage		
Trust	**Inclusion**	**Control**
Data management in New Zealand should build trust and confidence in our institutions	All parts of New Zealand society should have the opportunity to benefit from data use	Individuals should have greater control over the use of their personal data

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QUESTIONS?