Maemo/MeeGo

Semantic social desktop
& mobile devices

Ivan Frade
ivan.frade@nokia.com

The big problem

User wants Content (not files!).

Free data from the applications tirany!
Kill the File System (from user POV)!
Mash-up time has arrived!

What do we want?

Share! share?

- Each application store its data in its own format
  - Generic formats perform bad...
  - … but are good for import/export, though
- Not possible to change Email/Browser/IM
- Guess contents considered harmful

Link! link?

- Cross-references between apps
  - IM and Email must share contacts
  - Browsers must share bookmarks
  - Tags across contents/applications
  - Who sent me a file?

The mobile handicap

- Small screen/keyboard

  - Quick access to information 10x more important

  - Show what is needed when needed

- The device is always with the user

The theoretical world
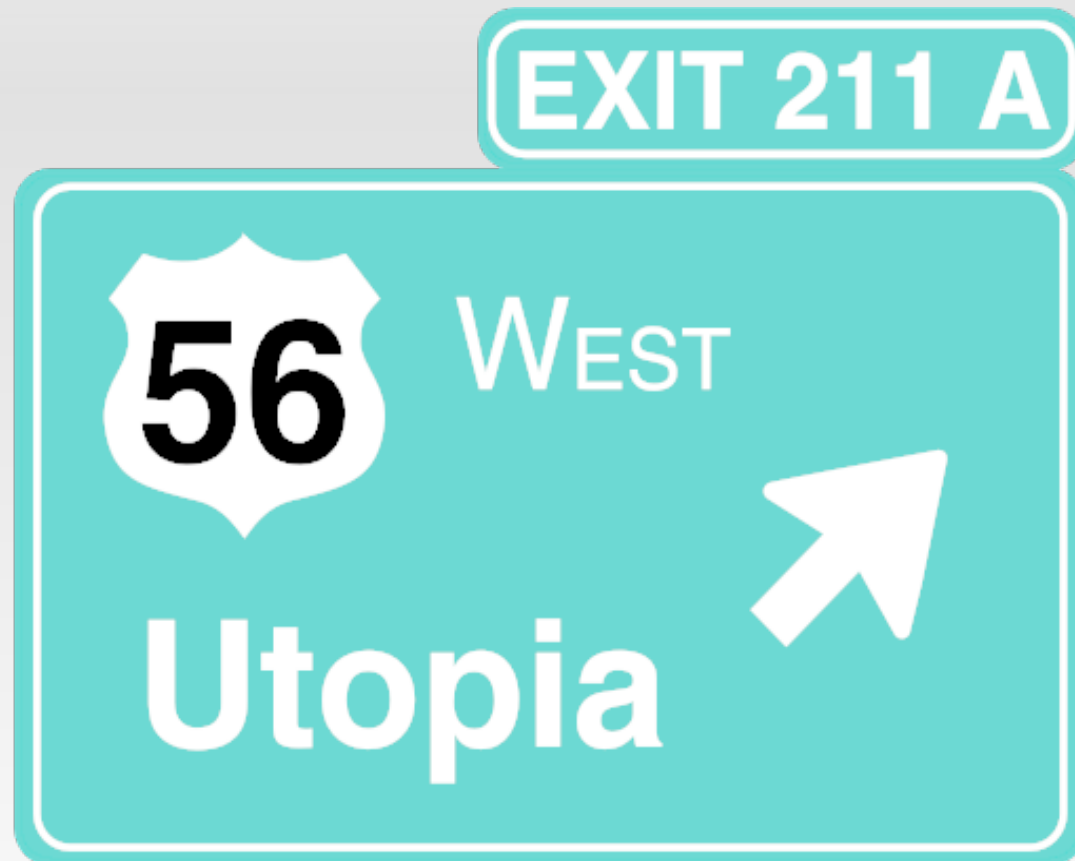
Link & Share: Semantic Web

- Core ideas in Semantic Web (**RDF**)
  - A big graph
    - Node is a resource or a basic type
    - Arcs are "properties"
  - A graph can be decomposed in **triplets**
  - URIs to identify "things"
  - Types and properties defined in **ontologies**

The power of the Graph
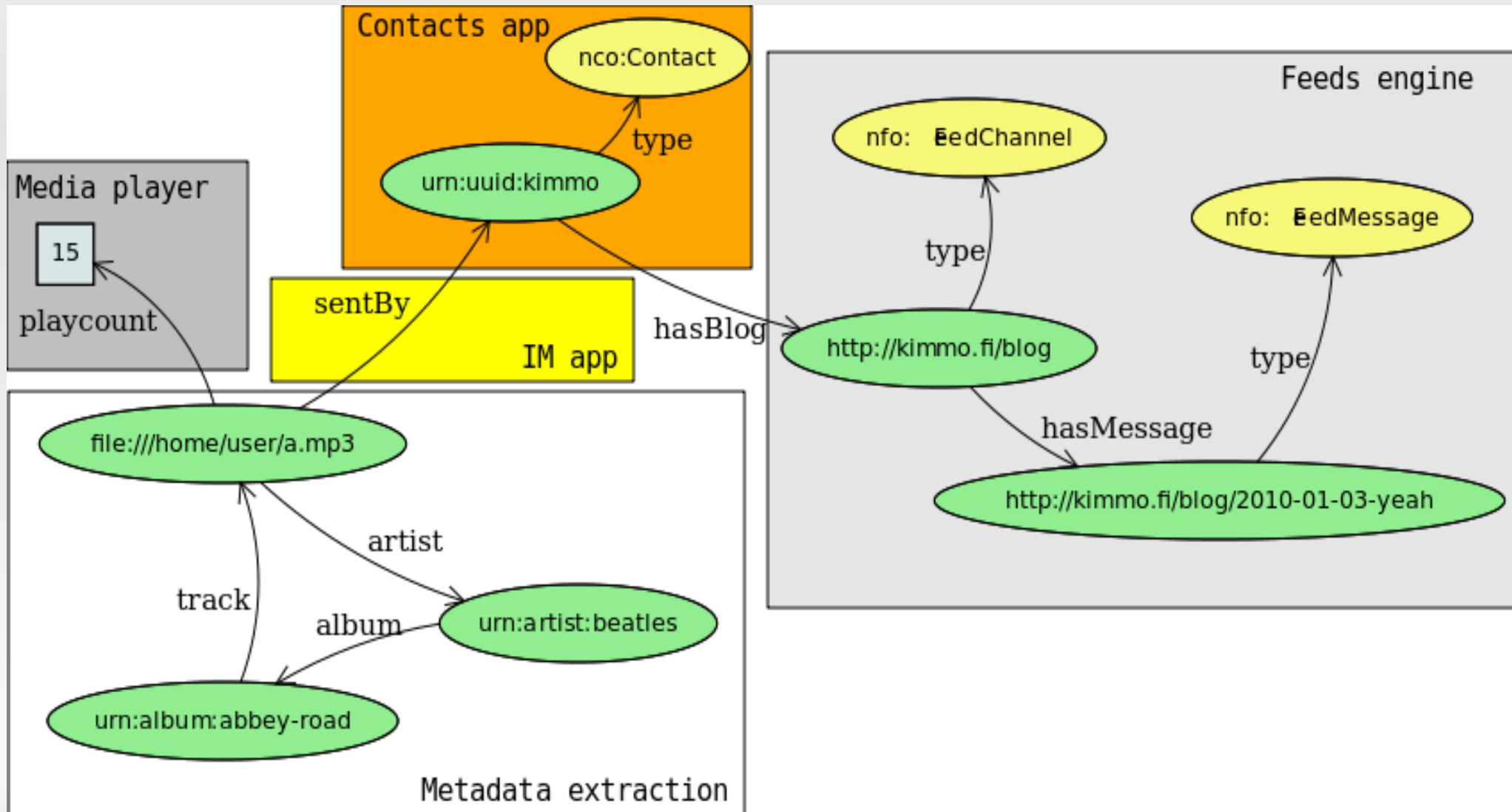
Graphs & triplets
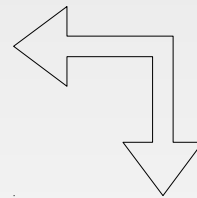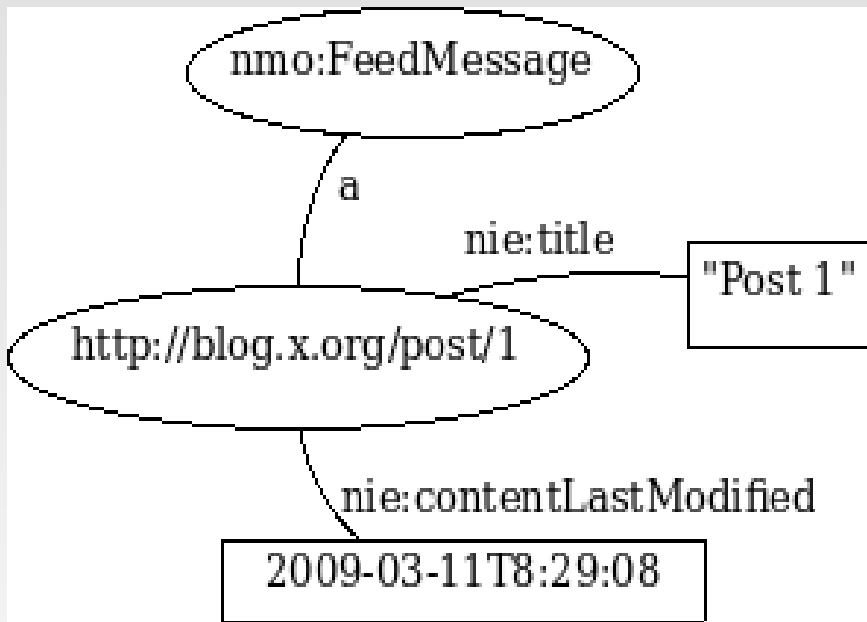
Triplets:
<subject> <property> <object>

<http://blog.x.org/post/1> a nmo:FeedMessage .

<http://blog.x.org/post/1> nie:title "Post 1" .

<http://blog.x.org/post/1> nie:contentLastModified "2009..."

Ontology: the magic word

- A conceptual model...

    - … or a common vocabulary

    - … or a fancy DB-Schema

    - Technology independient

    - Machines and humans can understand it

Ontology:

- Classes & properties
  - Different from static typed languages
- Hierarchy

Query language: SparQL

- Find a graph that matches the restrictions

```
<http://blog.x.org/post/1>  a  nmo:FeedMessage .
<http://blog.x.org/post/1> nie:title "Post 1" .
<http://blog.x.org/post/1> nie:contentLastModified "2009...
```
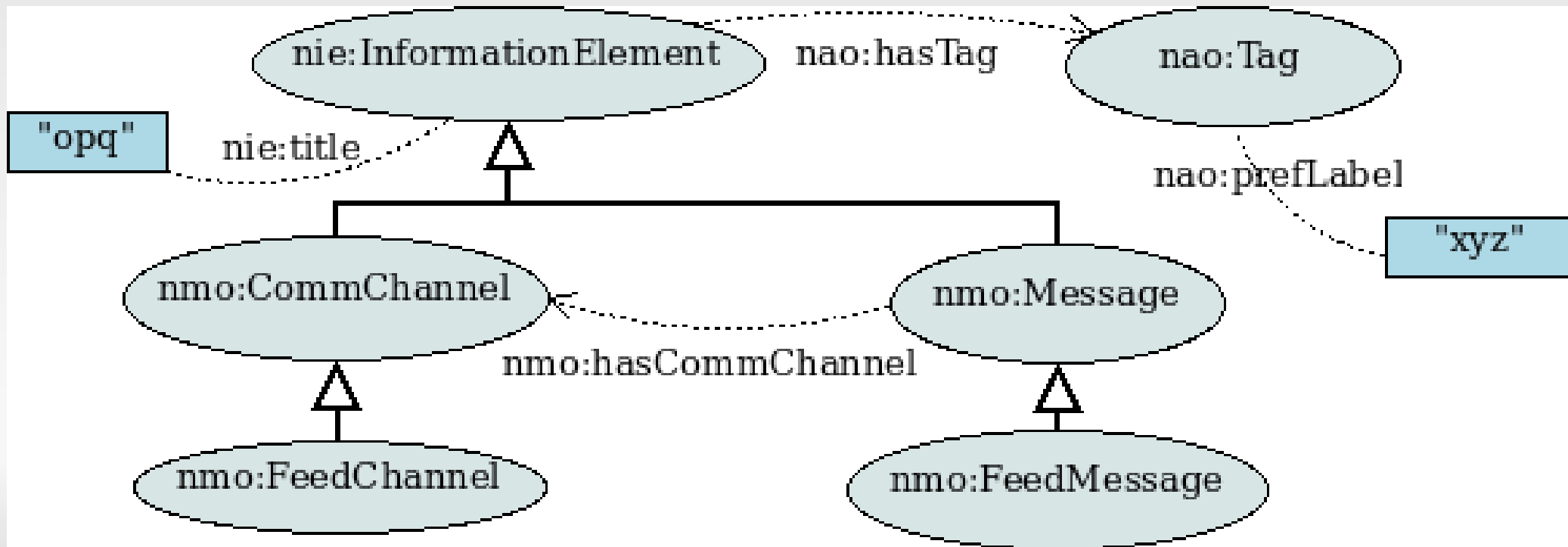
```
SELECT ?u WHERE {
   ?u a nmo:FeedMessage .
}
```
→
Match:
 1) ?u == <http://blog.x.org/post/1>

```
SELECT ?u ?title WHERE {
   ?u a nmo:FeedMessage .
   ?u nie:title ?title .
}
```
→
Match:
 1) ?u == <http://...> AND ?title == "Post 1"
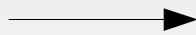
```
SELECT ?u ?title WHERE {
   ?u a nmo:FeedMessage ;
      nie:title ?title .
}
```
→
Match:
 1) ?u == <http://...> AND ?title == "Post 1"
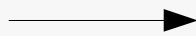
The dirty & ugly reality

Nobody told you...

- Semantic Web started as Read-only

- There is no efficient native triple store

- The source of the information matters

- IO is a problem (in flash devices)

Assumptions in Content FW

- Only USER metadata
  - No configuration or application specific data
- Only PUBLIC data
  - No restrictions in the store
- Local cache of information
  - Queries over a local data set
- Set of fixed ontologies
  - Minor changes supported

Maemo/Meego Content FW
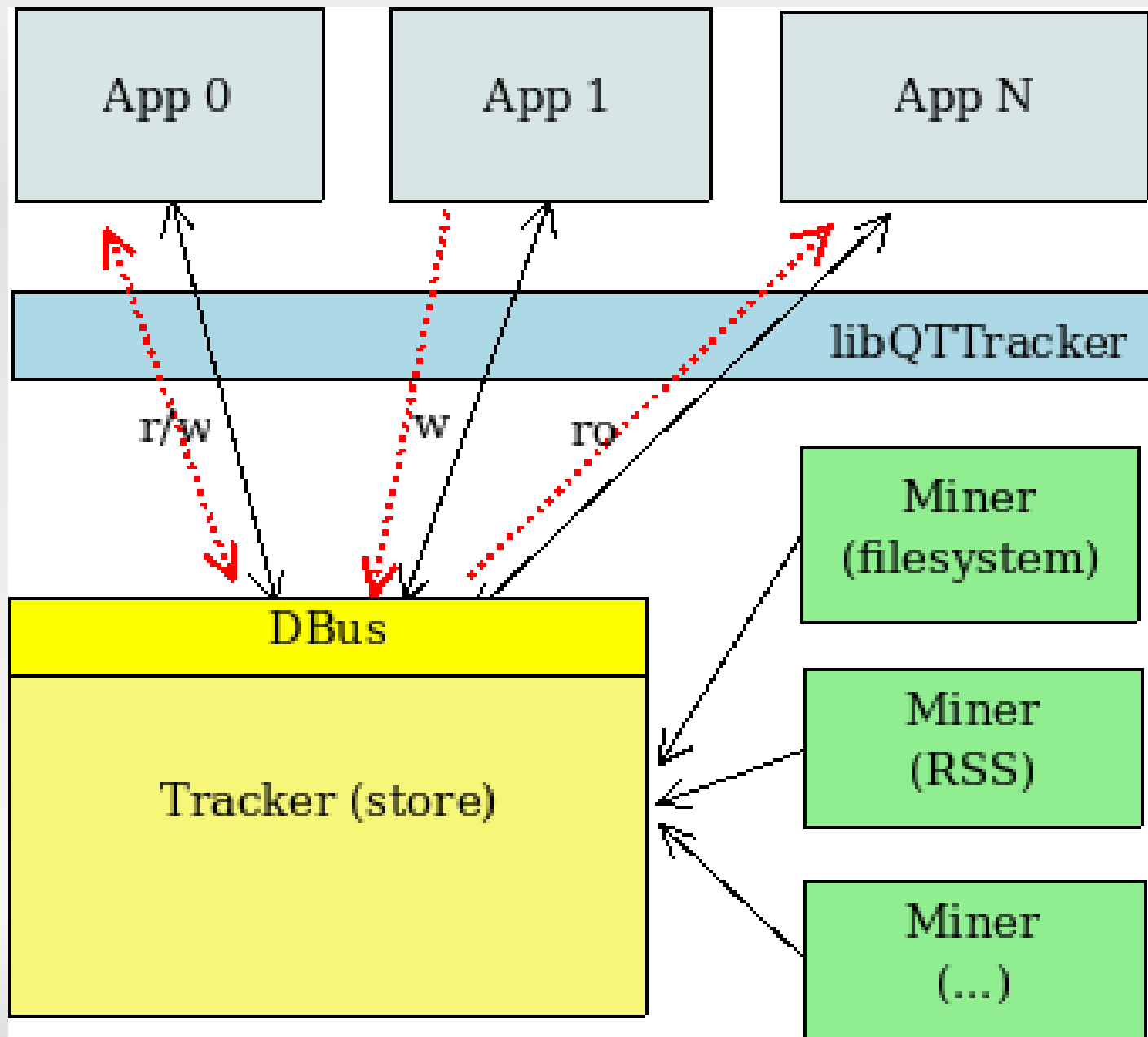
Tracker DB: The Knack

- Efficient RDF -> SQL translation
  - Class → Table
  - Property with cardinality = 1 → column
  - Property with cardinality > 1 → Table

```
nco:PersonContact a rdfs:Class.

nco:name a rdf:Property ;
    rdfs:range nco:PersonContact ;
    rdfs:domain xsd:string ;
    nrl:maxCardinality 1 .

nco:nickname a rdf:Property ;
    rdfs:range nco:PersonContact ;
    rdfs:domain xsd:string .

# An instance:
urn:uuid:098123 a nco:PersonContact ;
    nco:name "ivan" ;
    nco:nickname "frade" ;
    nco:nickname "ifrade" .
```

Resources	
ID	URI
1	urn:uuid:098123

PersonContact		
ID	Name	<other props>
1	"Ivan"	....

| PersonContact _nickname	
ID	nickname
1	"frade"
1	"ifrade"

Nepomuk ontologies

- Nepomuk EU research project

- Set of ontologies describing Desktop

- Covered a lot of domains

- "Research-ish":

  - Incomplete

  - Never used in real world implementations

Tracker-Nepomuk

- Nepomuk with tons of fixes and improvements

  - Trying to merge back to upstream

- Covering more domains

  - ~230 classes, ~580 properties

- "Reality checked"

- Ready to store:

  - Contacts, Email, IM, SMS, Location, Feeds, Audio/Video, ...

Nepomuk – basic concept
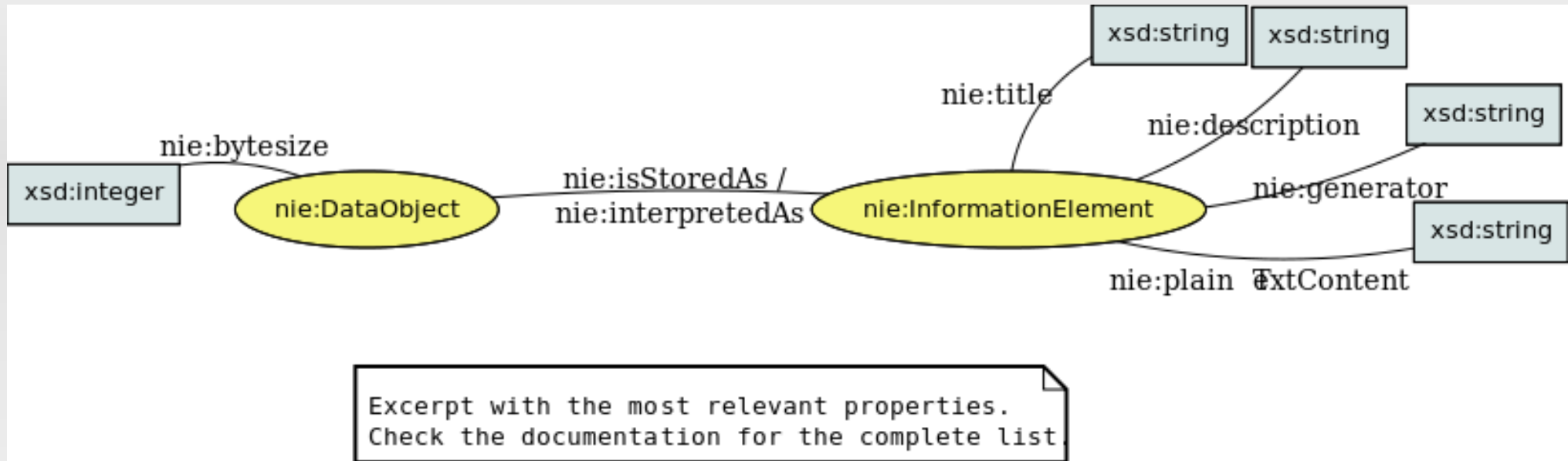
- Extended in
  - NFO (files)
  - NMM (multimedia)
  - NMO (Email/Im/SMS/...)
  - MFO, NAO, ...

State of the union

- A triplet-store ready to use

  - 0.7 for developers, soon 0.8 for humans

- Unofficial packages until 0.8

- Tracker is part of GNOME3, Maemo6/MeeGo

- LibQtTracker available in repositories

How to change the world

- Writing a native triplet store

  - And once you are on it... try a quad store

- Solving the synchronization problem

- Handling ontology upgrades

- Writing apps/miners using this brilliant idea

  - Port existing applications also helps

- Security on graphs

Join to the party

- Public mailing list

- IRC (#tracker GIMPNet)

- Libqttracker public repo: http://gitorious.org/maemo-af/libqttracker

- GNOME git: http://git.gnome.org/cgit/tracker

Thanks

Q&A

Ivan Frade
ivan.frade@nokia.com
ifrade@gnome.org