

Maemo/MeeGo

Semantic social desktop & mobile devices

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The big problem

User wants Content (not files!).

Free data from the applications tyranny!

Kill the File System (from user POV)!

Mash-up time has arrived!

What do we want?

The screenshot displays a Java IDE window titled "backend-addressbook.cs" with the following code:

```
return new Match (Name, html, clue.GetHashCode(), 0);
}
public void SendNewClues (ArrayList matches, CluePacketManager cpm)
{
    if (matches.Count == 0)
        return;
    Console.WriteLine ("REWRITING IS COMMENCING");
    foreach (string xml in matches) {
        XmlDocument card = new XmlDocument ();
        card.LoadXml (xml);
    }
}
```

Overlaid on the IDE is a chat window titled "EojWahs" with the following conversation:

(05:47:24) **Nat:** dude
(05:47:25) **Nat:** good news
(05:47:30) **Nat:** looks like we got cluepacket rewriting to work
(05:52:59) **EojWahs:** we are so metal

Below the chat window is a toolbar with icons for Warn, Block, Remove, Info, and Send.

On the right side of the IDE is a "Dashboard" window with the following content:

EojWahs, dude good ne Query

Joe Shaw
Email: joew@assbarn.com
AIM: EojWahs
Phone: 617-375-3800
URL: <http://joeshaw.org/>

Bookmarks
[Joe Shaw's Web Page](http://www.joeshaw.org/)
<http://www.joeshaw.org/>

Related Files
[Joe Shaw Tuxedo](#)
/home/nat/Docum Shaw Tuxedo.jpg

joe shaw (blog)

- [2 July 2003 - Get there](#)
- [30 June 2003 - Stop use and ask a doctor if condition gets worse](#)
- [23 June 2003](#)
- [20 June 2003 - Prevent foot and mouth disease: walk on this sanitary mat](#)

Conversations with eojwahs

Sun Jul 6 05:46:36 2003
Sat Jul 5 22:46:29 2003
Sat Jul 5 09:04:44 2003

The taskbar at the bottom shows the following windows: backend-addressbook.cs, [Personal Mail (17) - Ximi], Dashboard, Buddy List, EojWahs, and a system tray with icons for volume, network, and battery.

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

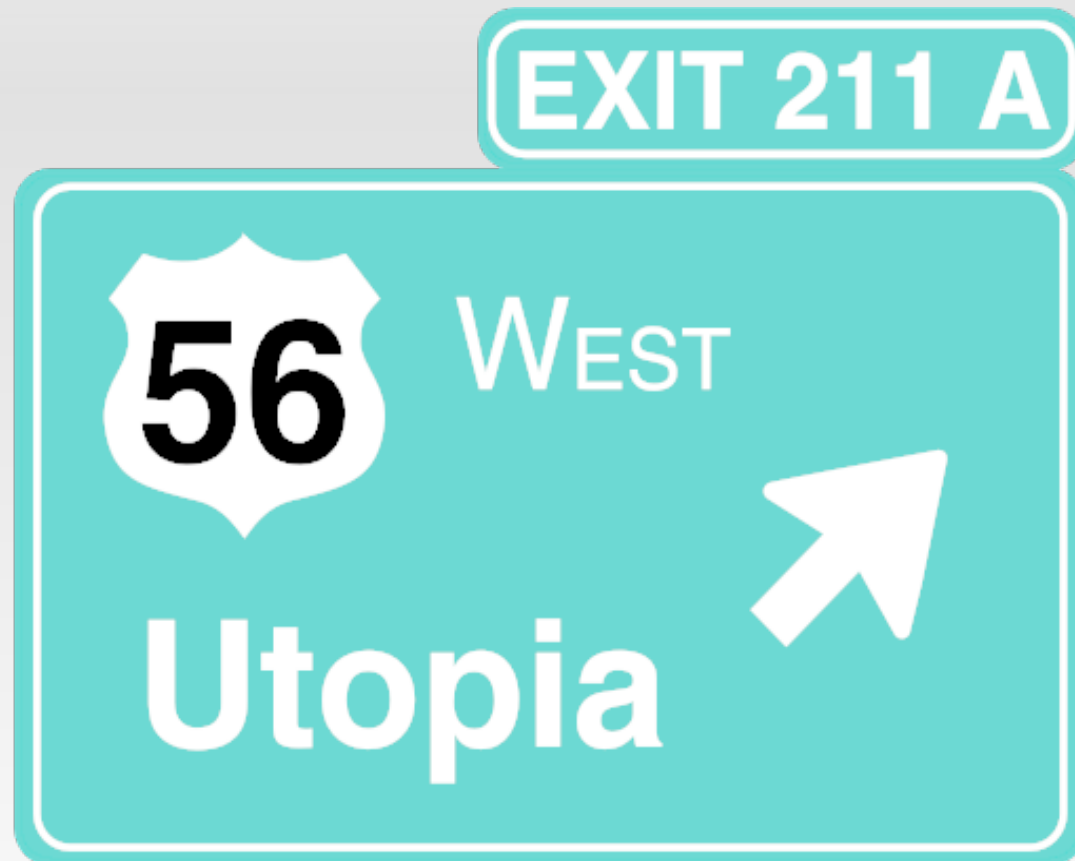
Link! link?

- 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

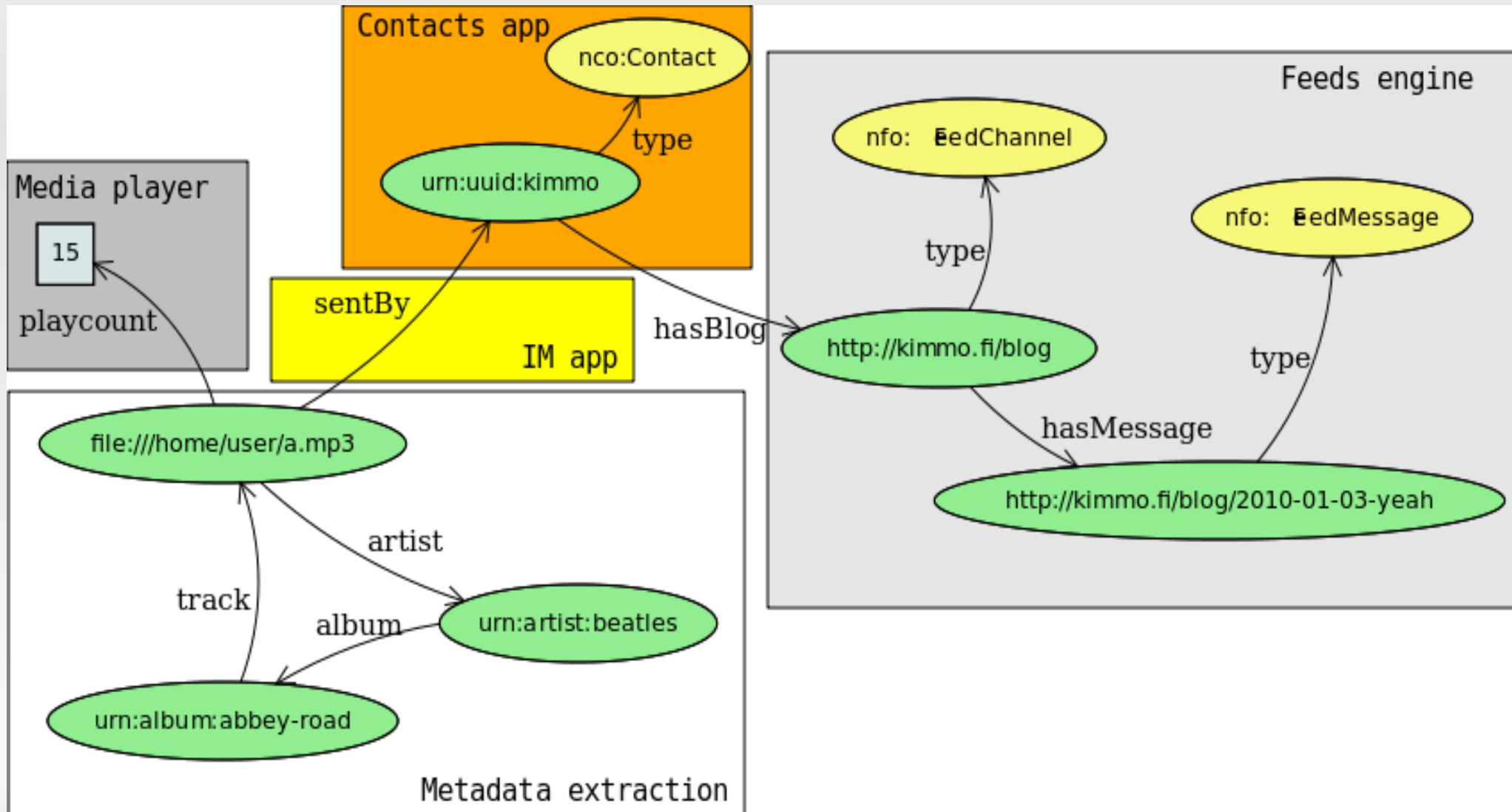
The theoretical world



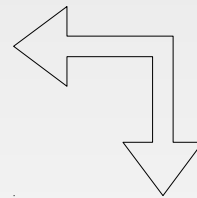
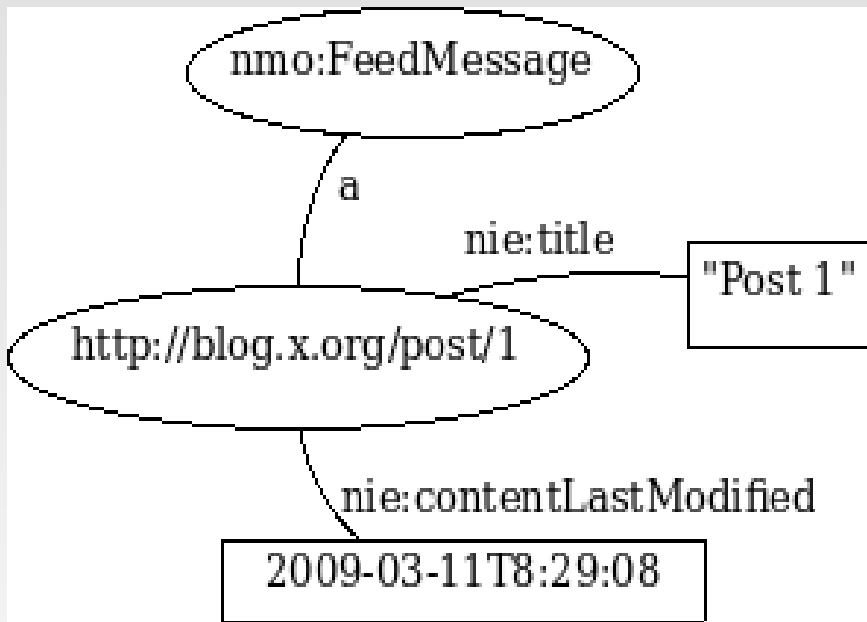
Link & Share: Semantic Web

- 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>

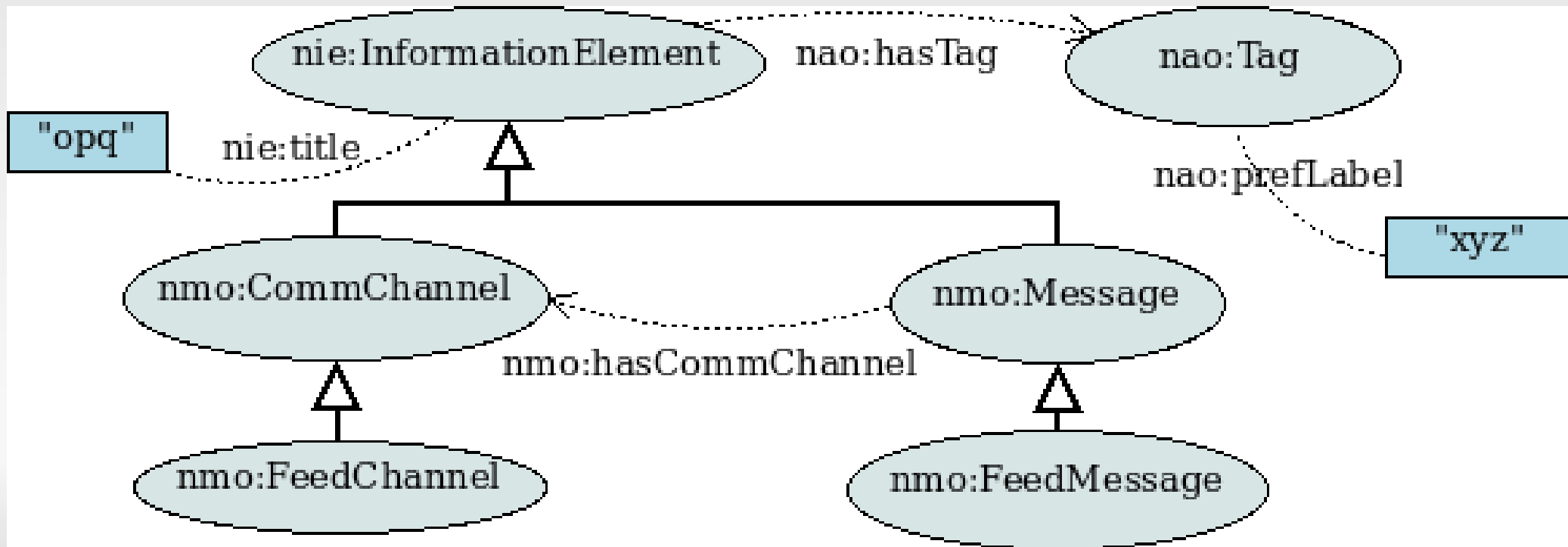
```
<http://blog.x.org/post/1> a nmo:FeedMessage .  
<http://blog.x.org/post/1> nie:title "Post 1" .  
<http://blog.x.org/post/1> nie:contentLastModified "2009..."
```

Ontology: the magic word

- A conceptual model...
 - ... or a common vocabulary
 - ... or a fancy DB-Schema
 - Technology independent
 - 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

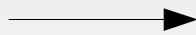
```
<http://blog.x.org/post/1> a nmo:FeedMessage .  
<http://blog.x.org/post/1> nie:title "Post 1" .  
<http://blog.x.org/post/1> nie:contentLastModified "2009..."
```

```
SELECT ?u WHERE {  
  ?u a nmo:FeedMessage .  
}
```



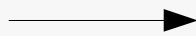
Match:
1) ?u == <http://blog.x.org/post/1>

```
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



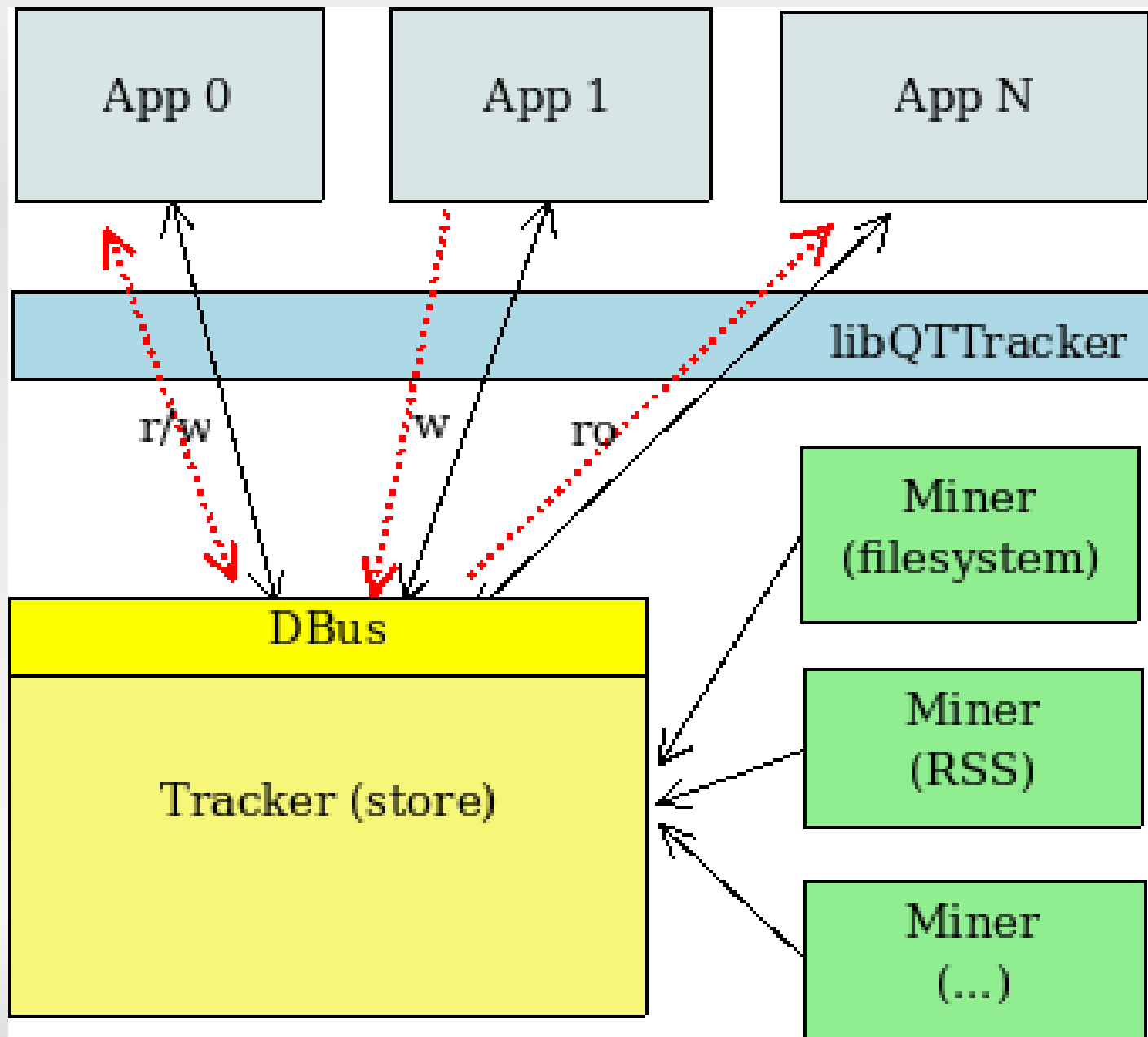
Nobody told you...

- 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"

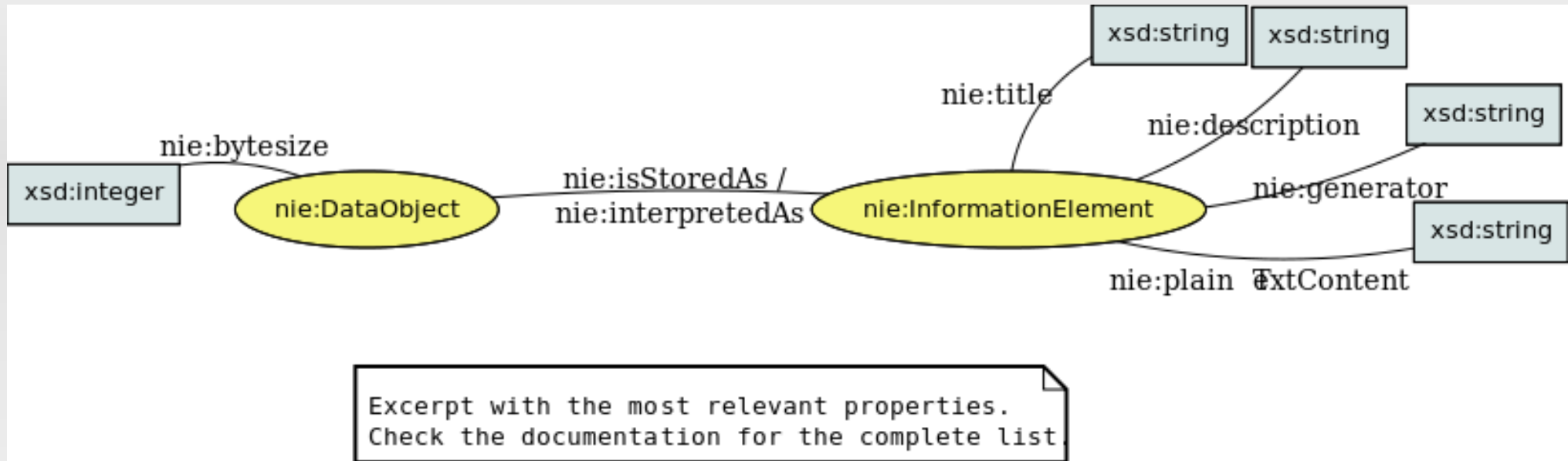
Nepomuk ontologies

- 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/cgiit/tracker>

Thanks

Q&A

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