

Semantic Web

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Agenda

1. What is semantic web?

2. Why we need semantic web?

3. Semantic web components

5. Semantic web Technology market forecast

1. What is the Semantic Web?

Tim Berners-Lee has a two-part vision for the future of the Web

- make the Web a more collaborative medium.
- make the Web understandable, and thus processable, by machines.



toward a semantic web

- The current Web represents information using
 - natural language (English, Hungarian, Chinese,...)
 - graphics, multimedia, etc
- Humans can process this easily
 - can deduce facts from partial information
 - can create mental associations
 - are used to various sensory information

- Tasks often require to combine data on the Web
 - hotel and travel information may come from different sites
 - searches in different digital libraries
 - combination of administrative data for e-Government, etc
- Most of these data are accessible from the Web
 - humans combine these information easily
 - even if different terminologies are used!



But can we do this processing through machines???

YES

=

Semantic web

Therefore semantic web is a web of data that can be processed directly or indirectly by machines.-Tim Berners-Lee

2. Why Do We Need the Semantic Web?

- **Information Overload: tedious to do everything (for humans)**
- systems where all the components are hardwired to only work together
- **Poor content aggregation like financial information, portals, comparison shopping, and content mining, etc**
- **Lots of applications require managing several databases**

...And Many



3. Semantic web components

The web is already semantic (sort of) but long way to go

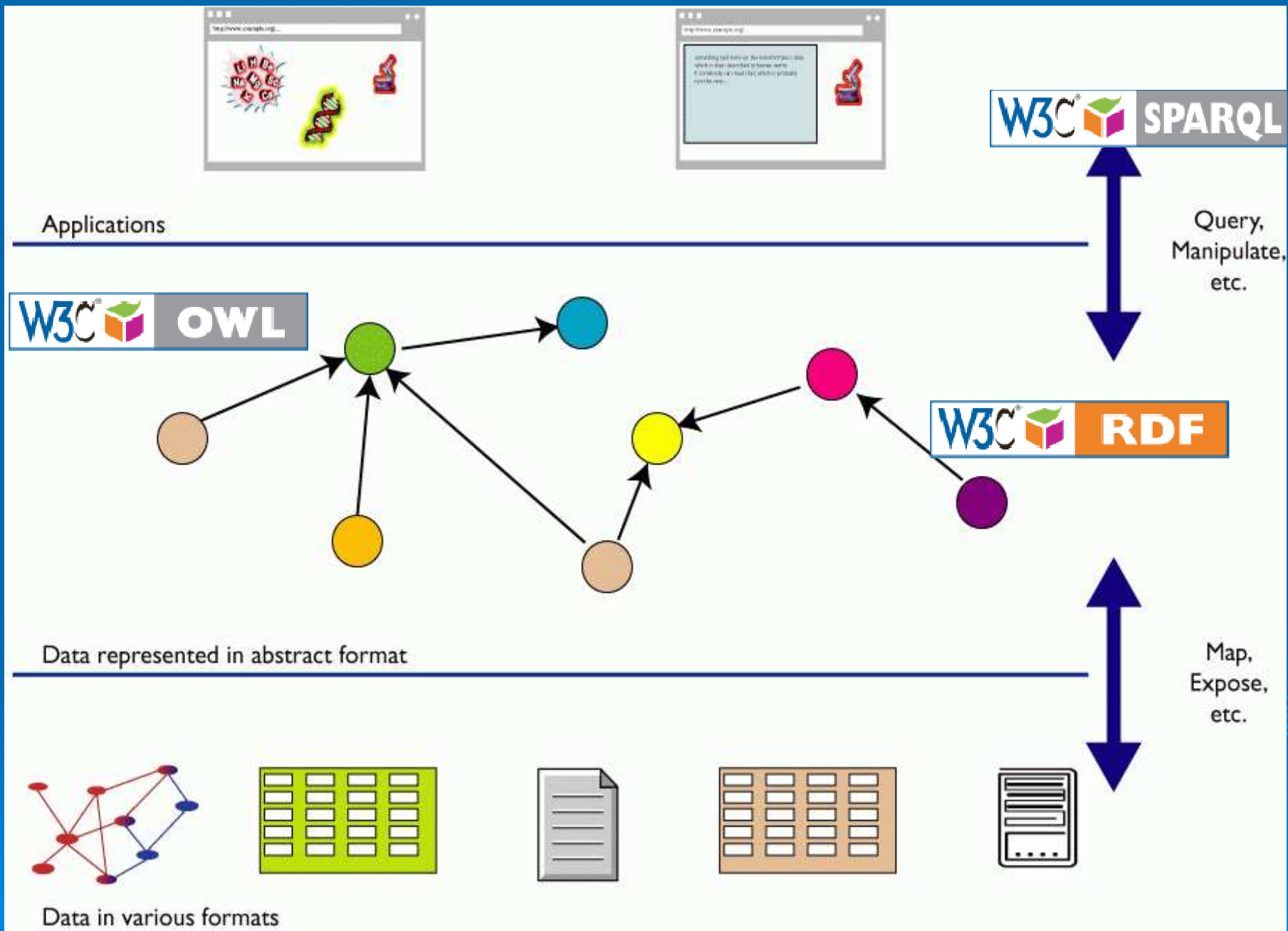
Adapted from Tim Berners Lee's description of the Semantic Web



Some Challenges: Interoperability between Layers; Security and Privacy cut across all layers; Integration of Services; Composability

Layered Architecture for Dependable semantic Web

What is the job?

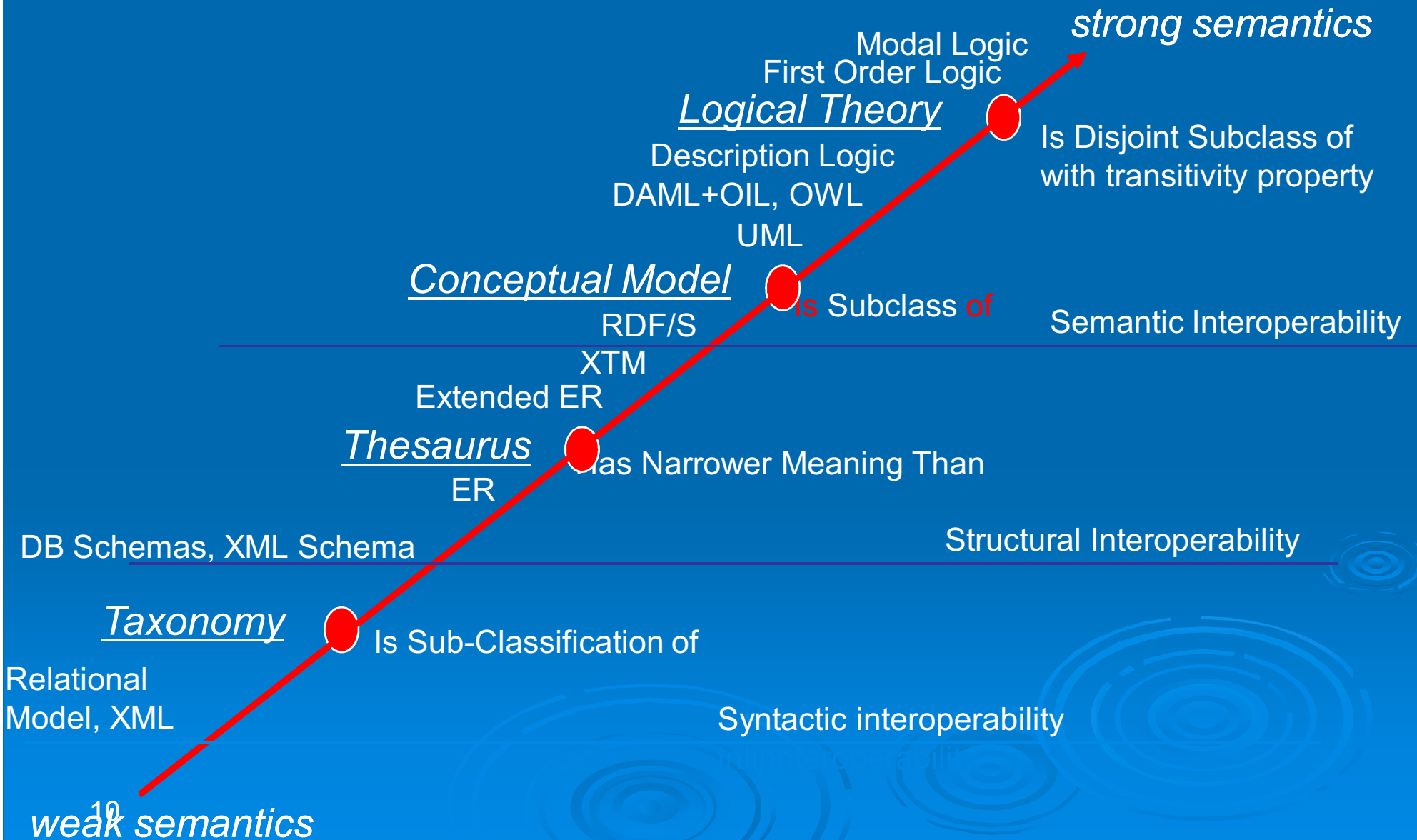


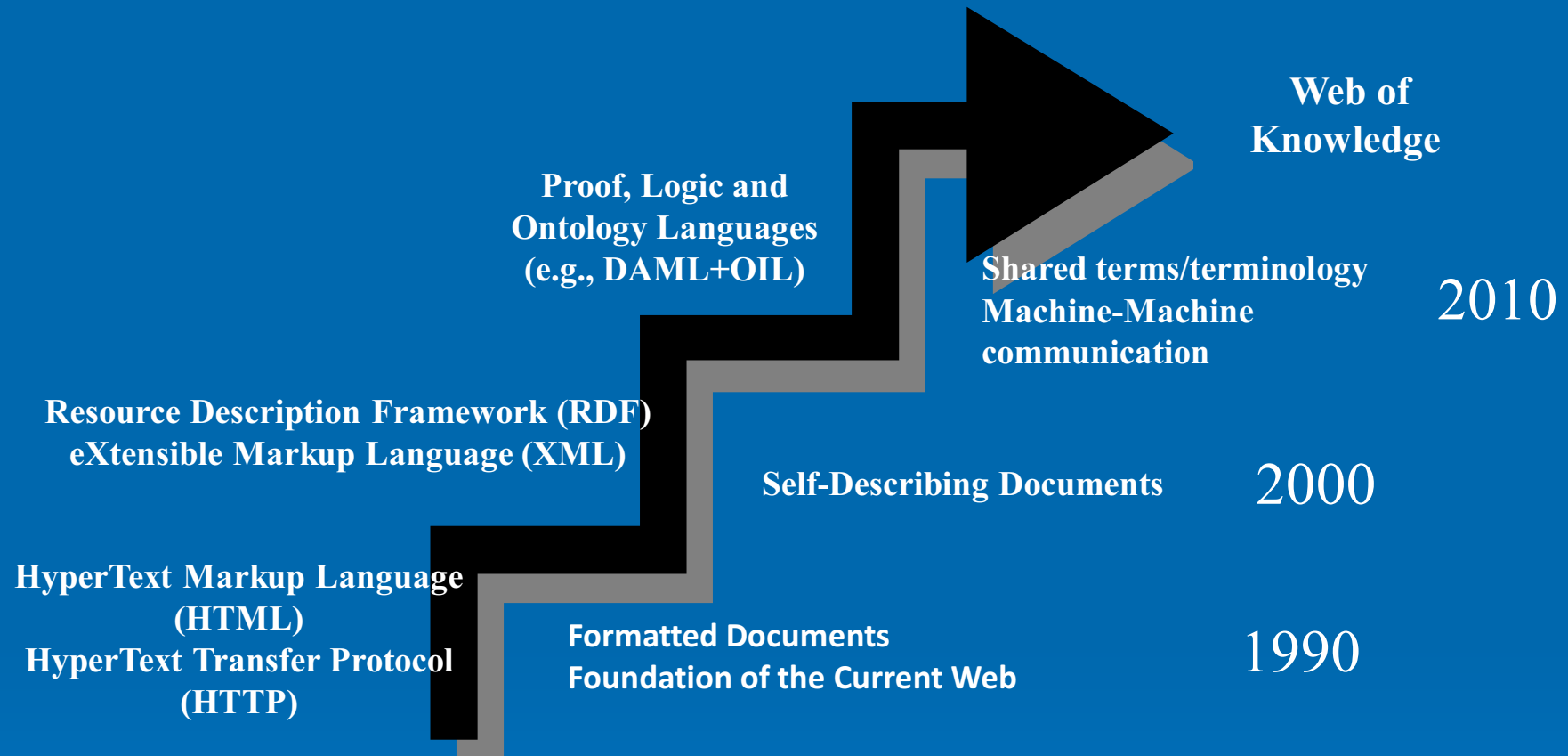
- The Semantic Web technologies provides mechanisms to make such integration possible!
- **RDF(resource description framework)**
- **SPARQL(query language for RDF data)**
- **OWL(Web ontology language)**
- Rough structure of data integration
 1. Map the various data onto an abstract data representation make the data independent of its internal representation...
 2. Merge the resulting representations
 3. Start making queries on the whole!

queries that could not have been done on the individual data sets

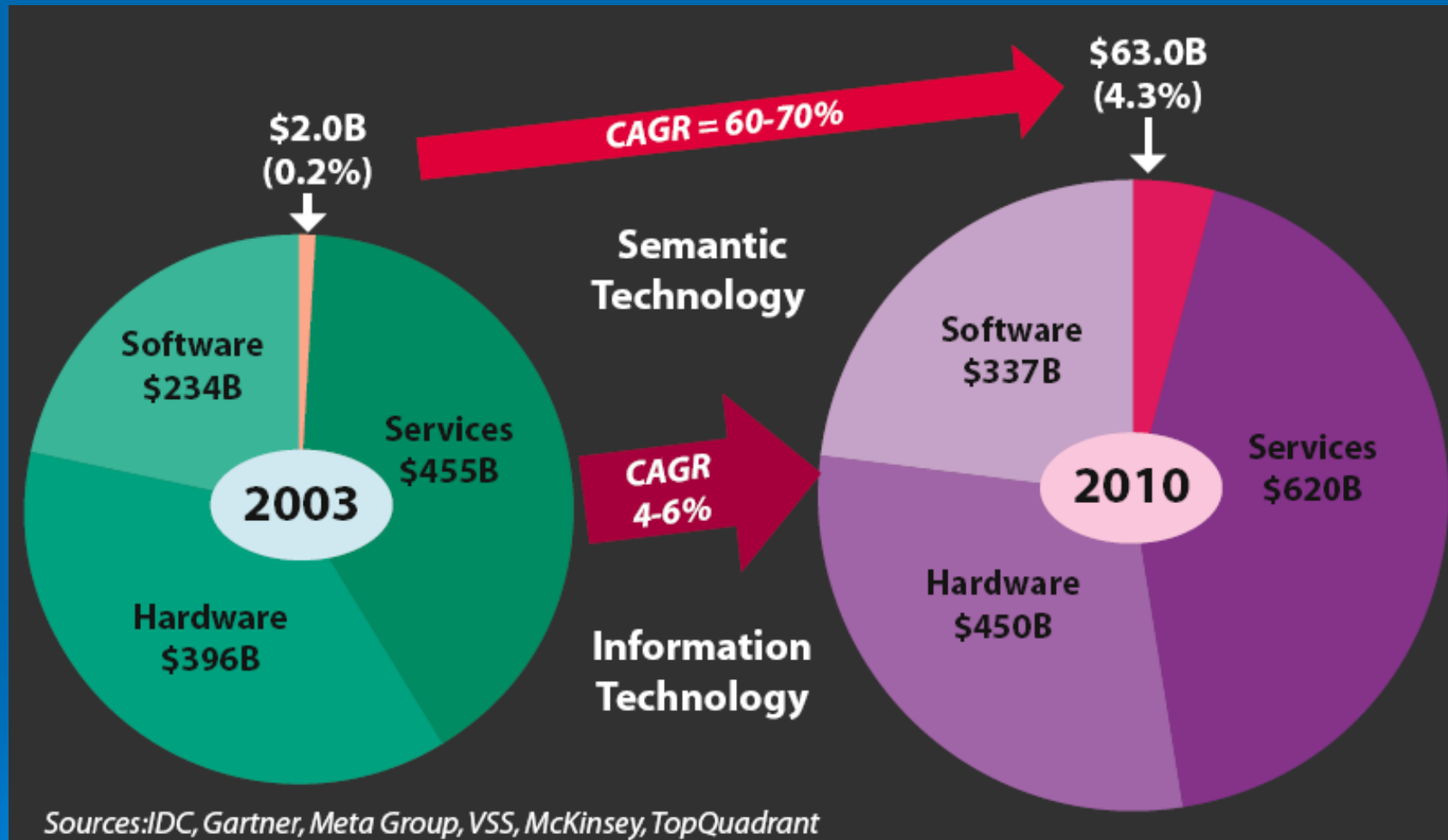
- Most of the data on the Web are stored in relational databases
- “RDFying” them is not possible
- relational databases are here to stay...
- “Bridges” are being defined:
- RDB tables are “mapped” to RDF graphs, possibly on the fly
- different mapping approaches are being used







4.Semantic technology Market forecast



<http://www.w3.org/2001/sw/sweo/public/UseCases/BBC/>

Thanks for attention!!