A Declaration of Data Independence

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Some Semantic Web History

The Semantic Web: A Guide to the Future of XML, Web Services, and Knowledge Management

Michael C. Daconta
Leo J. Obrst
Kevin T. Smith

Foreword by Dieter Fensel
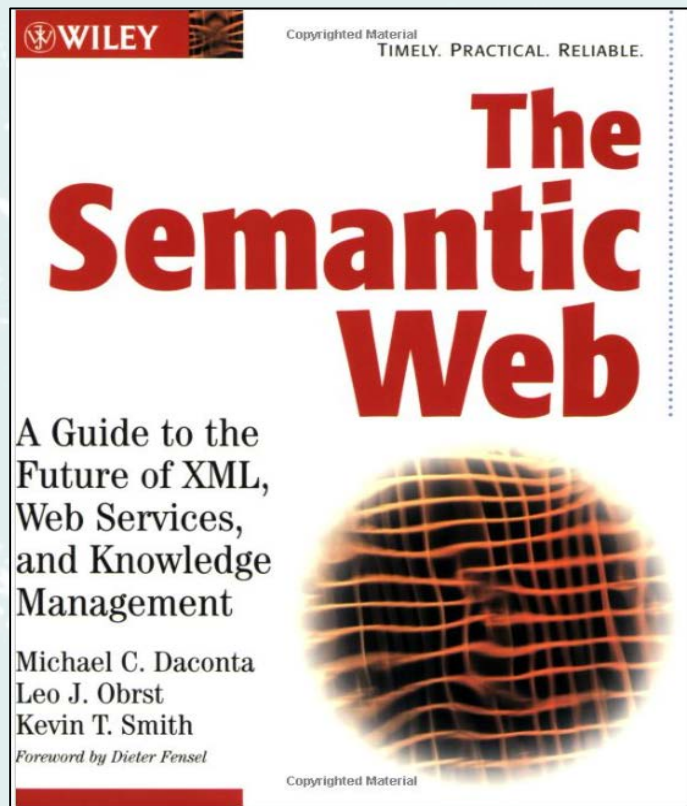
- Original Semantic Web Vision – Tim Berners-Lee, James Hendler, Ora Lassila – *Scientific American*, May 2001

- My co-authors & I published this book 2 years later, expanding on the vision, applying it to the technologies available.

- Spent much time focusing on secure semantic interoperability within the US government over the next decade.

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Data Tightly Coupled to Applications

How do you

- <u>Move</u> data between systems?

- <u>Make data understandable</u> between systems?

- <u>Share data</u> within systems, groups & communities of interest?

- <u>Analyze Data</u> stored in different formats from various applications?

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Open Standards & Semantics Drive Value

- Data becomes <u>identifiable</u>,
- Data becomes <u>actionable</u> and more <u>useable.</u>
- Relationships and patterns become <u>apparent.</u>
- Data becomes <u>interoperable.</u>
- Data becomes <u>independent.</u>

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A Declaration of Data Independence

i. **Data is more important than applications.**

ii. **Data value increases with the number of connections it shares.**

iii. **Data about data can expand to as many layers as there are meanings.**

iv. **Data modeling harmony is the alignment of syntax, semantics, and pragmatics.**

v. **Data and logic are the yin and yang of information processing.**

vi. **Data modeling makes the implicit explicit and the transparent apparent.**

vii. **Data standardization is not amenable to competition.**

viii. **Data modeling must be decentralized.**

ix. **Data relations must not be based on probability or luck.**

x. **Data is truly independent when the next generation need not reinvent it.**

From Daconta, "Data Independence & Semantic Web Roadmap", White House Conference Center, 2003.
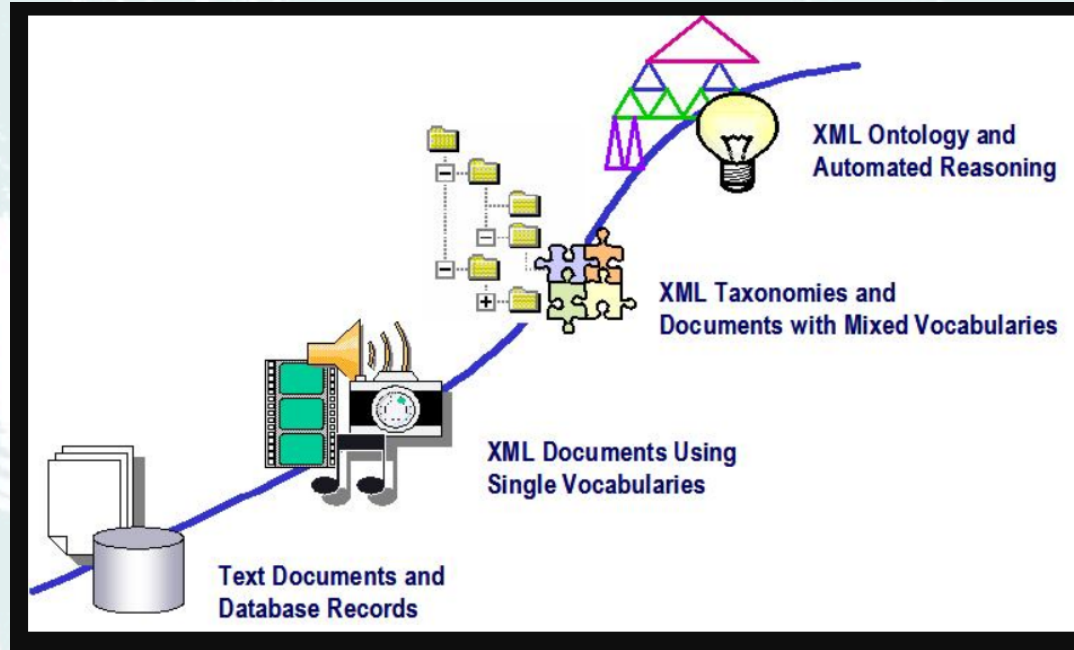
Lessons Learned in the 2000s

1. Modeling from DNA on up doesn't work
2. Don't try to solve every use case at the beginning
3. If you try to model everything, you effectively model nothing
4. Don't try to model data that you don't understand
5. Abstract concepts rarely translate into actionable data
6. A standard is only useful if other people use it
7. Make sure that technology actually supports the vision

Start Small.. Crawl, Walk, Run.

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The Smart Data Continuum (2003)

From Daconta, Smith, Obrst, "The Semantic Web", Wiley, 2003.

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