

# Pragmatic Web 4.0

## Towards an active and interactive Semantic Media Web

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**Fachtagung Semantische Technologien  
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# Agenda

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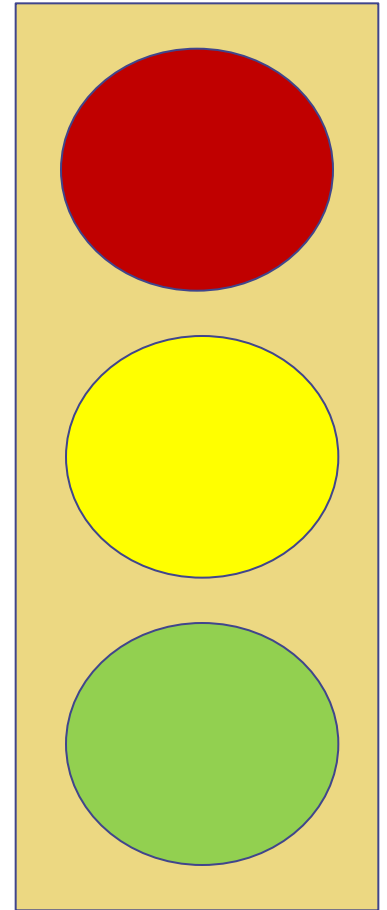
- Syntax, Semantics, Pragmatics
- The Semantic Web
- The Pragmatic Web
- Semantic Multimedia Web
- Pragmatic Multimedia Web
- W3C Open Web Platform
- Open Web Platform for Ubiquitous Pragmatic Web 4.0

# Example: Traffic Light Situation Awareness

## Syntax – Semantics - Pragmatics

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- **Syntax**
  - *green (bottom); yellow; red*
- **Semantics**
  - *green = go; ...; red = stop*
- **Pragmatics**
  - If *red* and *no traffic*  
then *allowed to go*



# Example: Question-Answer Interaction

## Syntax – Semantics - Pragmatics

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### ■ Syntax

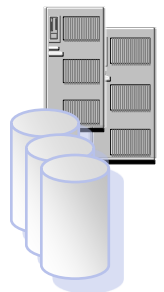
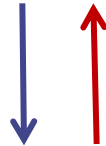
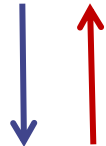
- “*What time is it?*” (*English*)

### ■ Semantics

- Question about *current time* (*Meaning*)

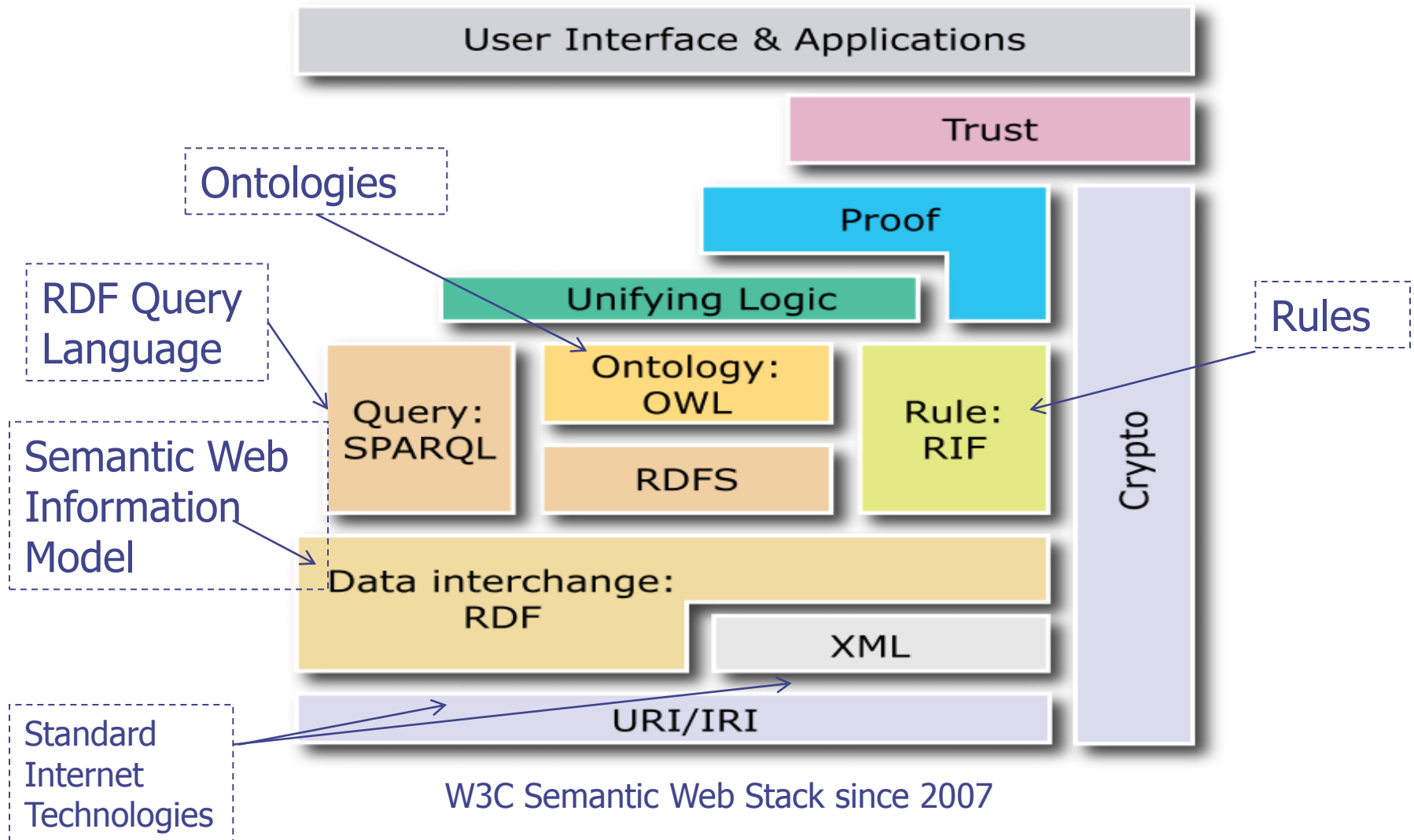
### ■ Pragmatics

- An *answer* to the question is obligatory (even if time is unknown) (*Understanding and Commitment*)



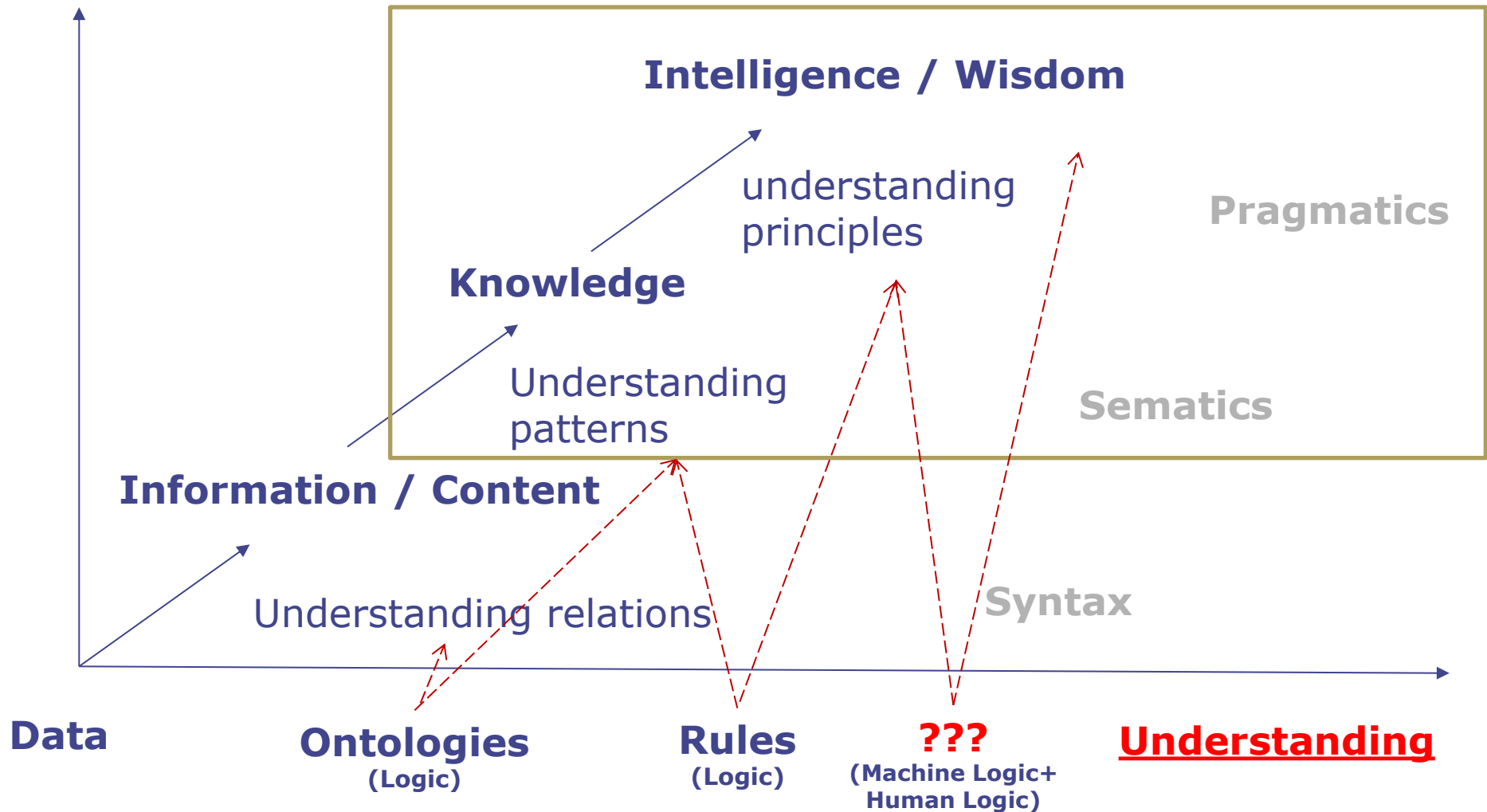
# The Semantic Web

**„Make the Web understandable for machines“**



# Challenges for the Semantic Web

## Connectedness



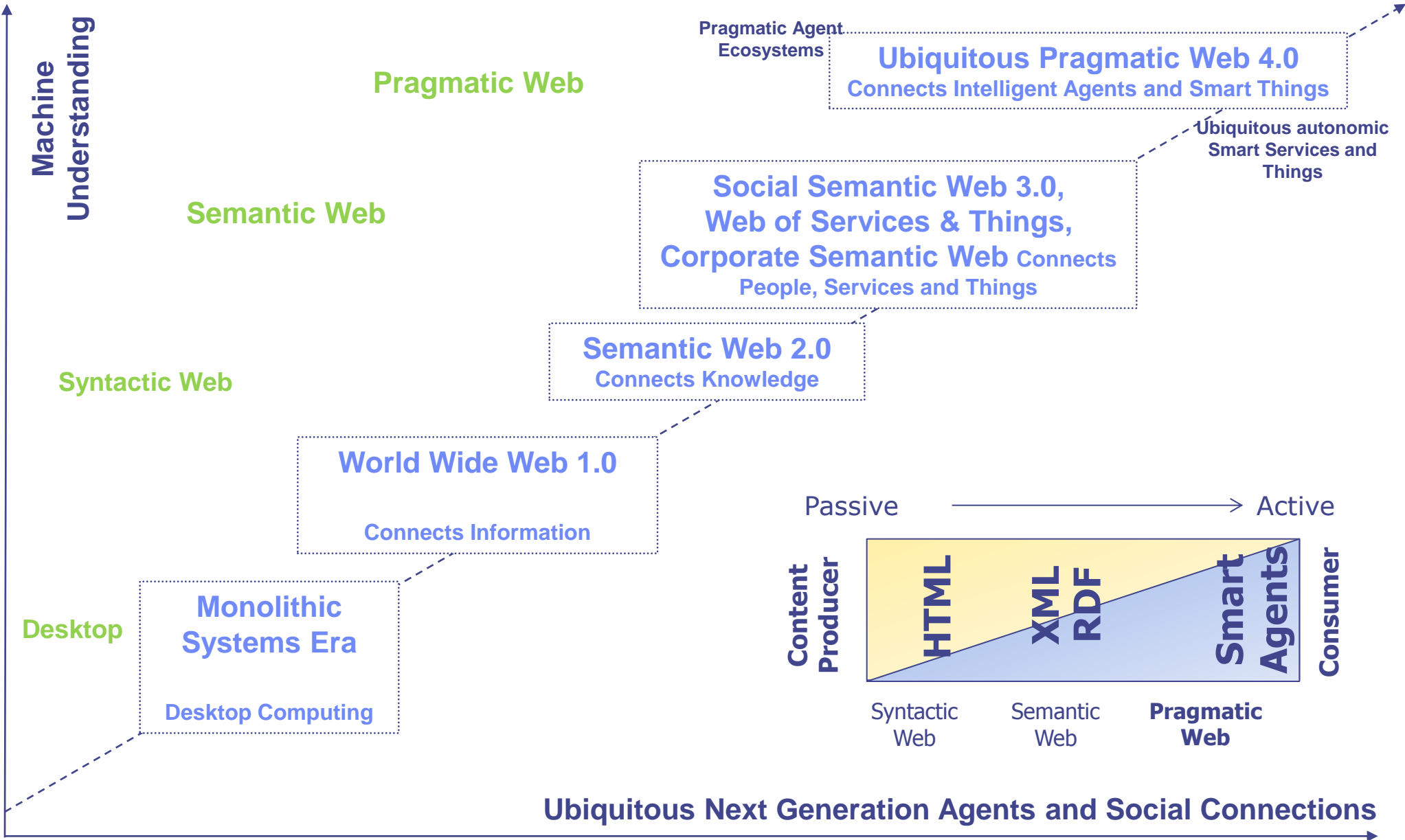
# Pragmatic Web

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**The Pragmatic Web** consists of the tools, practices and theories describing **why** and **how** people use information. In contrast to the Syntactic Web and Semantic Web the Pragmatic Web is not only about form or meaning of information, but about **interaction** which brings about e.g. **understanding** or **commitments**.

[www.pragmaticweb.info](http://www.pragmaticweb.info)

# Vision: Ubiquitous Pragmatic Web 4.0





# Semantic Multimedia Web (Knowledge and Meaning)

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- Semantic Analysis of Multimedia, e.g.,
  - Knowledge assisted multimedia analysis
  - Content-based multimedia analysis linked with natural language/speech processing
- Semantic Retrieval of Multimedia, e.g.,
  - Semantic-driven multimedia indexing and retrieval
  - Semantic retrieval of 3D objects
  - Machine Learning and relevance feedback for finding semantics
  - Semantic-driven multimedia content adaptation and summarization
- Semantic Metadata Management of Multimedia, e.g.,
  - Metadata management for multimedia
  - Multimedia ontologies and infrastructures
  - Semantic bridging multimedia and knowledge domains

**Data**




**Information  
Content**



**Knowledge**

# Pragmatic Multimedia Web (Understanding and Interaction)

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- Inference and machine learning for semi-automatic annotation, e.g., **Semantic Knowledge**
    - Assisted browsing in multimedia archives
    - Device-specific access to and adaptation of multimedia
  - Semantic User Interfaces for Multimedia, e.g.,
    - Interfaces and personalization for interaction with large multimedia repositories
    - Semantic media annotation (manual, semi-automated, fully-automated)
  - Semantics in Visualization and Computer Graphics, e.g.,
    - illustrative depiction and rendering
    - mapping meaning to presentation content
    - smart virtual environments
    - supporting knowledge discovery and interaction
  - Pragmatic Web Applications of Semantic Multimedia, e.g.,
    - Social multimedia tagging and semantic annotation
    - Context, user, network and semantics-aware media engineering
    - Dynamic multimedia mash-ups
    - Smart multimedia (adaptive, situation-aware, reactive, proactive push)
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- Pragmatic Interaction and Understanding**

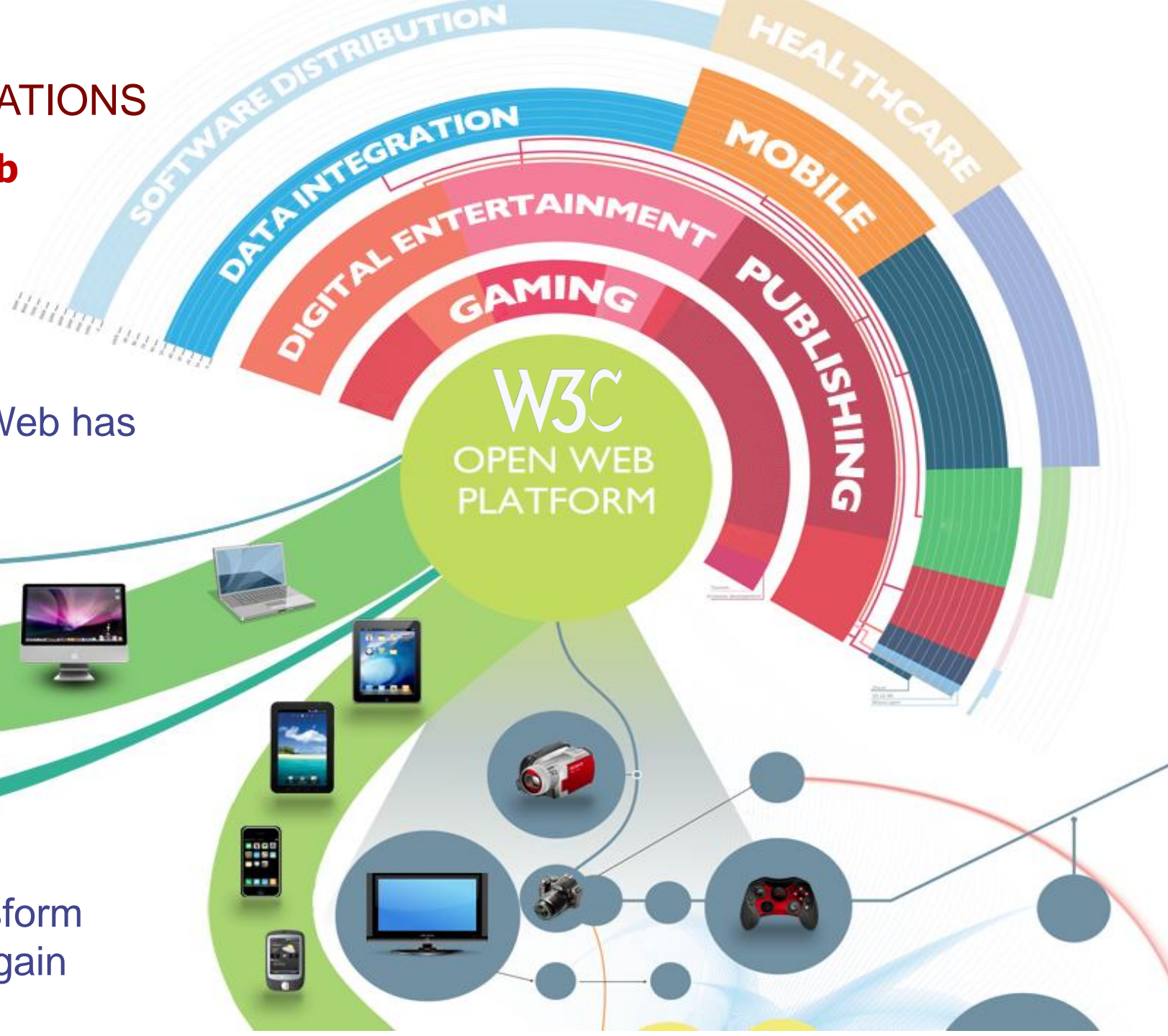
# A NEW WAVE *of* TRANSFORMATIONS

## W3C Open Web Platform

(Source: Jeff Jaffe)

Just as the Web has transformed everything...

...It will transform everything again



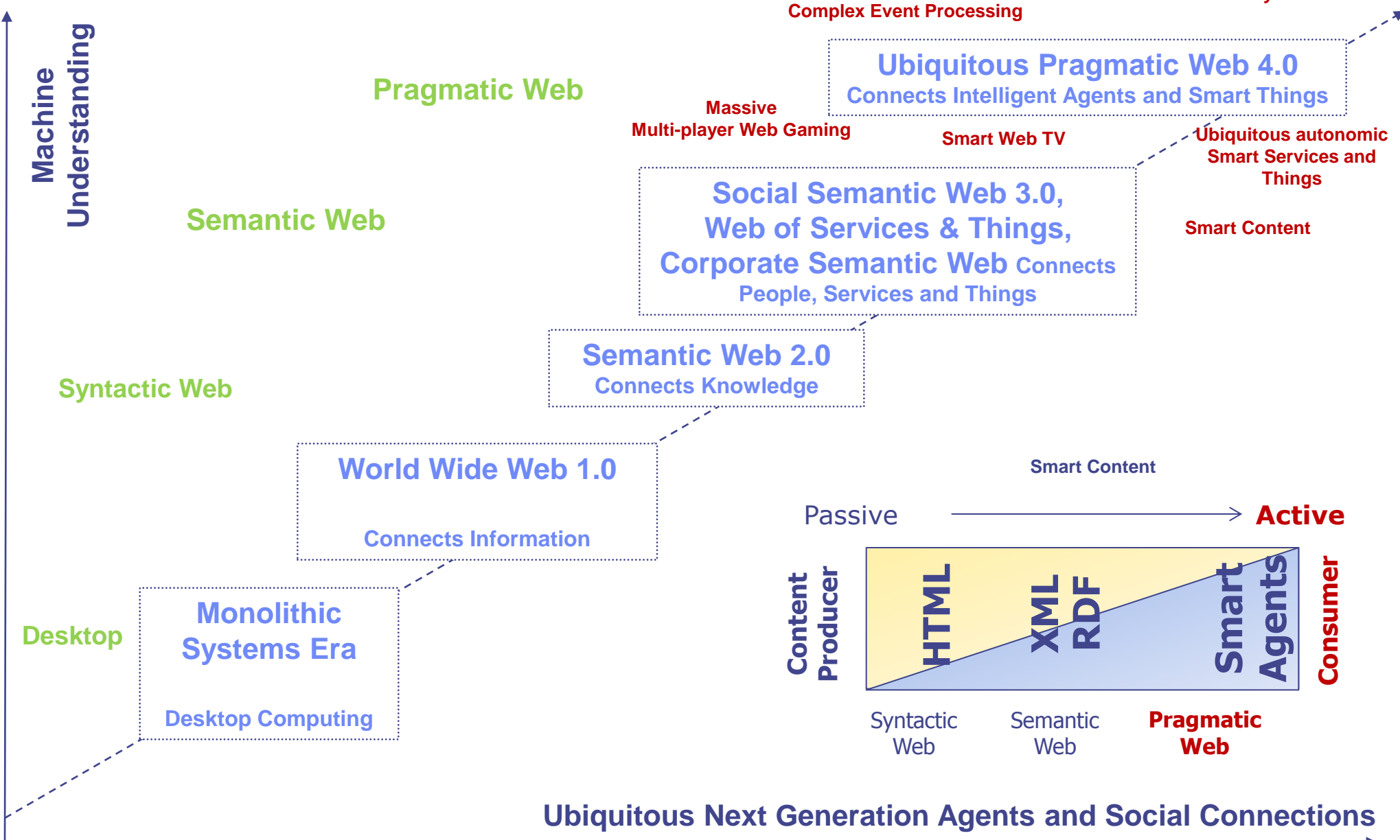
# Vision: W3C Open Web Plattform

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(Jeff Jaffe)

- **Smart Content:** Web pages and Web content are more interactive, intelligent
  - HTML5 APIs, Semantic Web, Web data integration, ...
- **Smart TV:** Multi-platform multi-media delivery and interaction.
  - Video a first-class citizen, adaptive streaming, multi-device delivery and interaction
- **Smart Devices** and **Smart Things:** new mobile operating system and numerous devices and things
  - (handheld) intelligent devices are ubiquitous
  - Real-time communications and reaction, multi-modal, multi-context interaction
- **Smart Ecosystems:** Web is a full-featured ecosystem
  - Automated tools for social networking (privacy, security, identity), massive multiplayer mobile gaming, ..
  - Multimedia publishing ecosystems (smart content partially actively produced by consumers)
  - End-user programmable intelligent Pragmatic Web agents

# Ubiquitous Open Web Platform for the Pragmatic Web 4.0



*Thank you ...*



Questions?

<http://www.pragmaticweb.info>

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<http://www.inf.fu-berlin/groups/ag-csw/>  
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