Advanced web technology

高级Web技术

Web3.0

Web3.0的概念与应用概述

Web 3.0

- 什么是Web3.0

其实很简单Web3.0将是语义网的天下

----Qiantu.org

“Referred to as Web 3.0, the effort is in its infancy, and the very idea has given rise to skeptics who have called it an unobtainable vision…”

----纽约时报

“Web 3.0 will be 10 megabits of bandwidth all the time, which will be the full video Web, and that will feel like Web 3.0”

— Reed Hastings Netflix founder

Web 3.0

- 什么是Web3.0

从web2.0到web3.0则会通过更加个性化的技术革新使得互联网的表现形式更为丰富。例如3D(三维)、 3G等新技术在互联网的运用

——阿里巴巴软件经理王涛

“web3.0，就是让个人和机构之间建立一种互为中心而转化的机制，也就是说个人在一定程度上可以转化为机构，机构在一定的环境下也可以像个人一样，拟人化的进行他们的商业行为，而进一步拉近和网民的距离……”

------Mezi.Bulunbulei博士

博客会是搜狐web3.0中相当重要的一个元素，也是网民的一个主要入口。而这个全新的“声•色”版博客增加了视频功能，将全面支持视频内容的上传和分享，让用户把视频、音乐、图片、文字随意支配于掌上 .

——搜狐CEO张朝阳

Web 3.0

- **Web3.0相关技术**

  From “Web 3.0: A Vision for Bridging the Gap between Real and Virtual”

  - **Semantic Web**
    - machines can read it and understand it as much as humans can, without ambiguousness.
    - The first challenge is the effort to link existing content to semantic meaning by using some sort of metadata.
    - The second challenge is to develop a set of applications that make use of this newly generated metadata-based knowledge.

Radar Networks

Garlik for personal data management on the Web

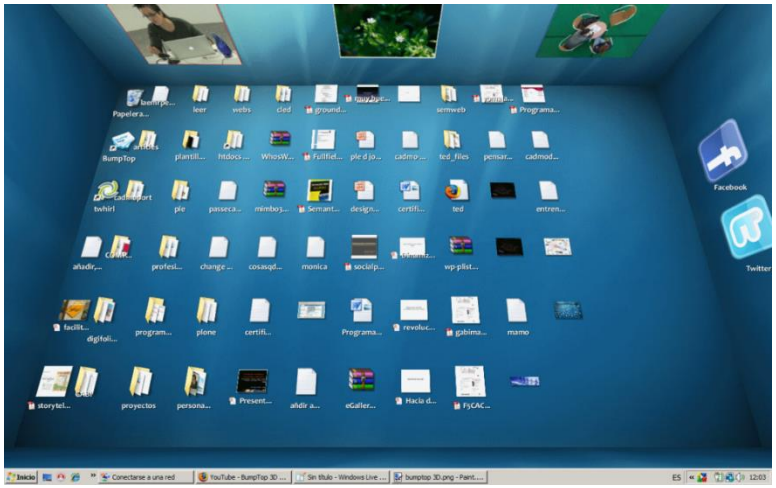
Yahoo Food Site

Joost Internet TV Platform

Web 3.0

- **Web3.0相关技术**

- **The 3D Web or Web 3D**
  - the interactions occurring between avatars are kept in the virtual world
  - A new interaction dimension that can be incorporated with online social virtual worlds is the sense of touch, or haptics



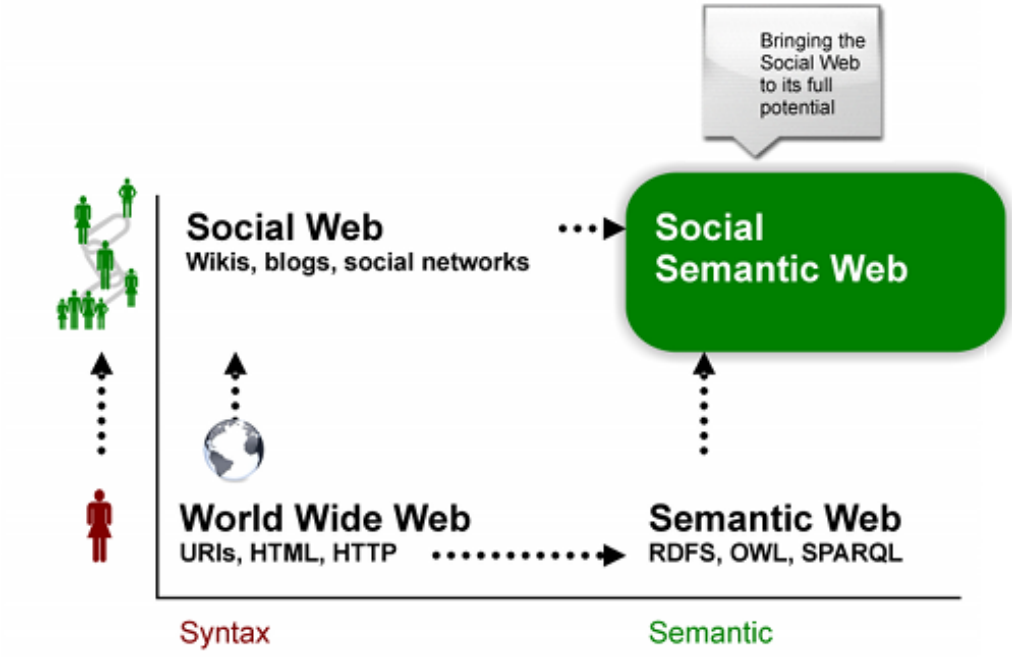
BumpTop

Web 3.0

- **Web3.0相关技术**
  - **The Media Centric Web**
    - Future search engines should take media as input and be able to search for similar media objects based on its features and not only based on textual metadata.(Ojos Riya photo sharing tool or Like.com)
    - Systems should be able to recognize hand gestures, voice, and even people's faces and moods, and respond in a multimodal fashion as well

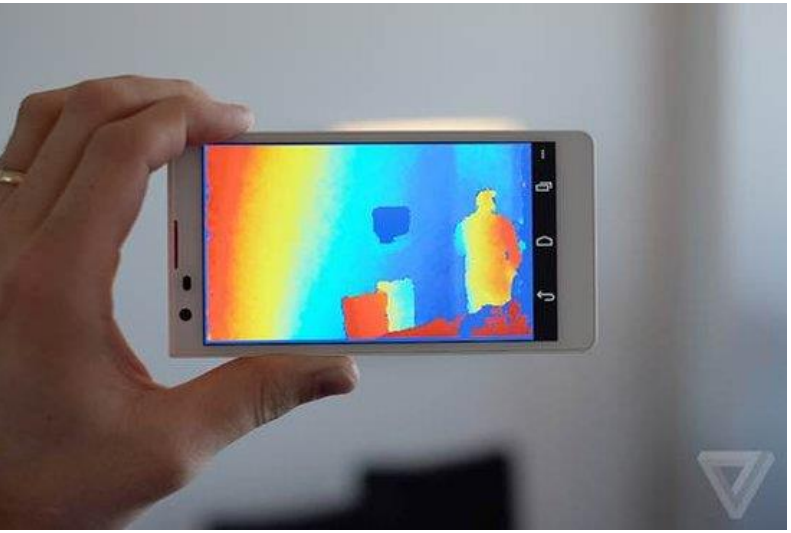
Web 3.0

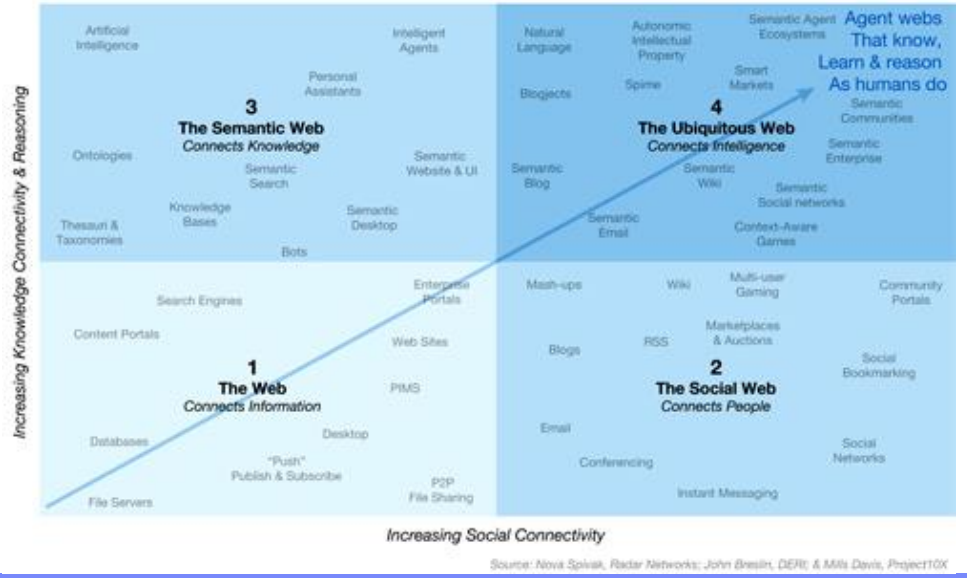
- **Web3.0相关技术**
  - **The Social Web**
    - The social web components have been put in place since web 2.0, this is a field that will evolve along with the Web itself



Web 3.0

- **Web3.0相关技术**
  - **The Pervasive and Ubiquitous Web**
    - we envision the Web3.0 to go beyond the use of the traditional web by including natural ways of interacting with real-life objects that typically have not been considered as computing entities





Web 3.0

- **Web3.0发展趋势**
  - 将互联网结构化
    RDF和OWL语义
  - 逐渐向人工智能
  - 语义网的实现，
  - 向3D进化，将整

Web 3.0

- **Web3.0发展趋势**

Web 3.0

- **Web3.0相关技术**
  - **Microformats(微缩格式）:**将基本的语义学埋置入HTML 页面里
    - XFN:反映互联网上人与人之间的关系
    - hCard 可以注释HTML : 解决了一个个人信息的问题
    - hCalendar，它允许页面作者自己去描述事件

```
<div class="vcard">
   <img class="photo" src="www.example.com/bobsmith.jpg" />
   <strong class="fn">Bob Smith</strong>
   <span class="title">资深编辑</span> at <span class="org">新体
验杂志社</span>
   <span class="adr">
      <span class="street-address">江苏省南京市</span>
      <span class="locality">上海路 200 号</span>, <span
class="region"></span>      邮编: <span class="postal-
code">210000</span>
   </span>
</div>
```

Web 3.0

- **Web3.0相关技术**
  - **微数据：来自HTML5**，用itemscope ， itemtype等进行描述

```
<div itemscope itemtype="http://data-vocabulary.org/Person">
  我的名字是 <span itemprop="name">Bob Smith</span>
  但大家叫我 <span itemprop="nickname">Smithy</span>。
  我的主页是：
  <a href="http://www.example.com"
itemprop="url">www.example.com</a>
  我住在富贵新村（上海市）。我是<span itemprop="title">工程师
</span>
  目前在<span itemprop="affiliation">财富科技公司</span>上班。
</div>
```

Web 3.0

- **Web3.0相关技术**

■RDFa：使用 XHTML 标记（常为 或 ）中的简单属性为实体和属性分配简要的描述性名称

```
<div xmlns:v="http://rdf.data-vocabulary.org/#"
typeof="v:Person">
  我的名字是 <span property="v:name">Bob Smith</span>，
  但大家叫我 <span property="v:nickname">Smithy</span>。
  我的主页是：
  <a href="http://www.example.com"
rel="v:url">www.example.com</a>。
  我住在富贵新村（上海市）。我是<span property="v:title">工程师
</span>，
  目前在<span property="v:affiliation">财富科技公司</span>上班。
</div>
```

Web 3.0

- Web3.0相关技术
  - ■语义Web
    - ■本体论:对存在的描述
      - ■ Friend of a Friend (FOAF):提供描述人的属性: name、homepage、mbox (email)、account、based_near
      - ■ Dublin Core (DC):提供描述发表作品的属性 :abstract、created、dateCopyrighted、publisher
      - ■ Semantically-Interlinked Online Communities (SIOC):提供描述在线社交网络和其他用户的属性:follows、has_reply、last_reply_date、moderator_of、subscriber_of
      - ■ OWL(Web Ontology Languages)

Web 3.0

- **Web3.0相关技术**
  - **■语义Web**
    - ■RDF(Resource Description Framework)：**用Web标识符(URIs)来标识事物，用简单的属性(property)及属性值来描述资源**

有一个人由URIhttp://www.w3.org/People/EM/contact#me 标识，他的名字是Eric Miller，他的电子邮件地址是em@w3.org,他的头衔是Dr.

Web 3.0

- **Web3.0相关技术**
  - **■语义Web**
    - ■RDF(Resource Description Framework) 的XML表示

```
<?xml version="1.0"?>
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns"
         xmlns:contact="http://www.w3.org/2000/10/swap/pim/contact">
     <contact:Person rdf:about="http://www.w3.org/People/EM/contact#me">
         <contact:fullName>Eric Miller</contact:fullName>
         <contact:mailbox rdf:resource="mailto:em@w3.org"/>
         <contact:personalTitle>Dr.</contact:personalTitle>
     </contact:Person>
</rdf:RDF>
```

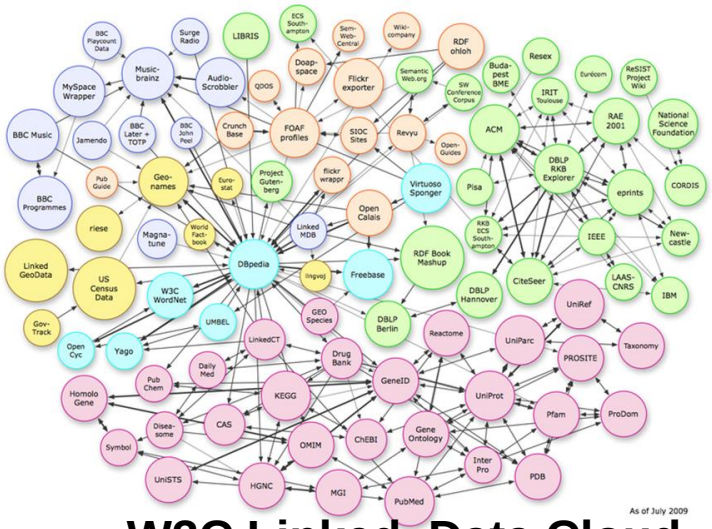
Web 3.0

■Linked data

■最早是在 2007 年 提出，目的是构建一张计算机能理解的语义数据网络，以便于在此之上构建更智能的应用。

■Linked data 即为一系列利用 Web 在不同数据源之间创建语义关联的最佳实践方法。

■W3C有一个关联开放数据（LOD）项目



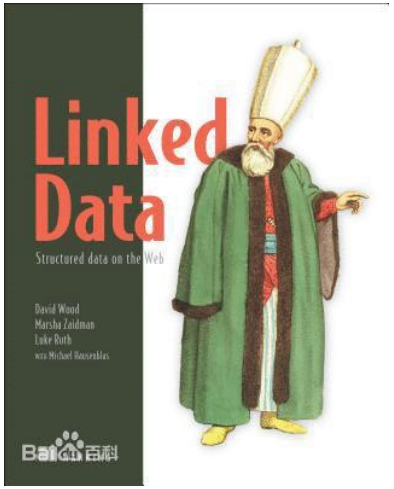
W3C Linked Data Cloud

维基百科中的定义：关联数据是一种推荐的最佳实践，用来在语义网中使用URI和RDF发布、分享、连接各类数据、信息和知识。

（“A term used to describe a recommended best practice for exposing ,sharing ,and connecting pieces of data ,information ,and knowledge on the Semantic Web using URI and RDF.”）

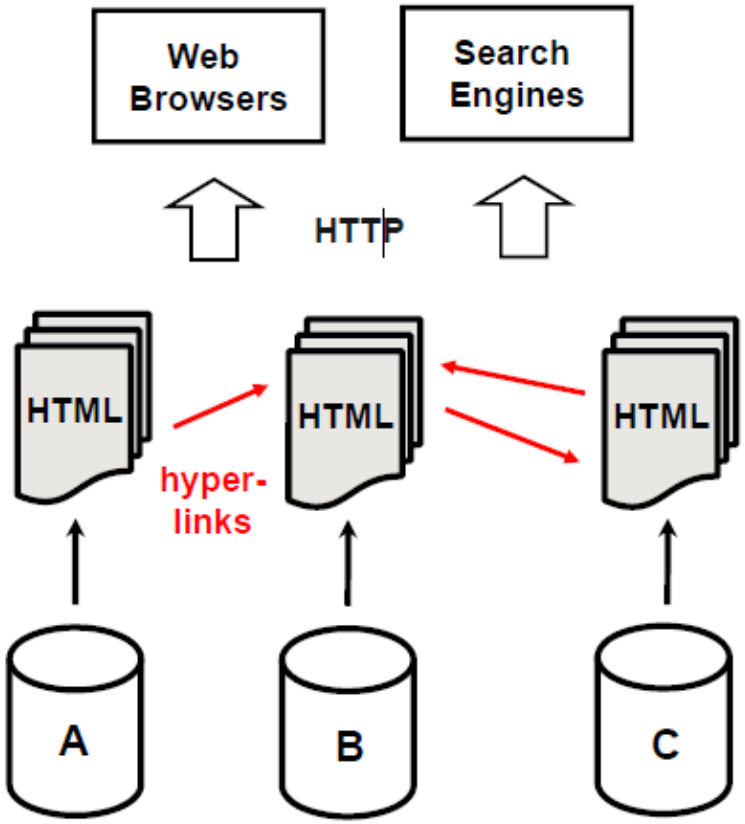
Web 3.0

- **Linked data 的4个基本原则：**
  （Tim Berners-Lee, http://www.w3.org/DesignIssues/LinkedData.html, 2006）
  - 使用URI作为对象的名称。
  - 通过使用Http URI，可以定位到具体的对象。
  - 通过查询对象的URI，可以提供有意义的信息（采用RDF，SPARQL标准）。
  - 提供相关的URI链接，以便可以发现更多的对象。



Web 3.0

- **Linked data**
  - **经典的Web架构是满足linked data原则的**



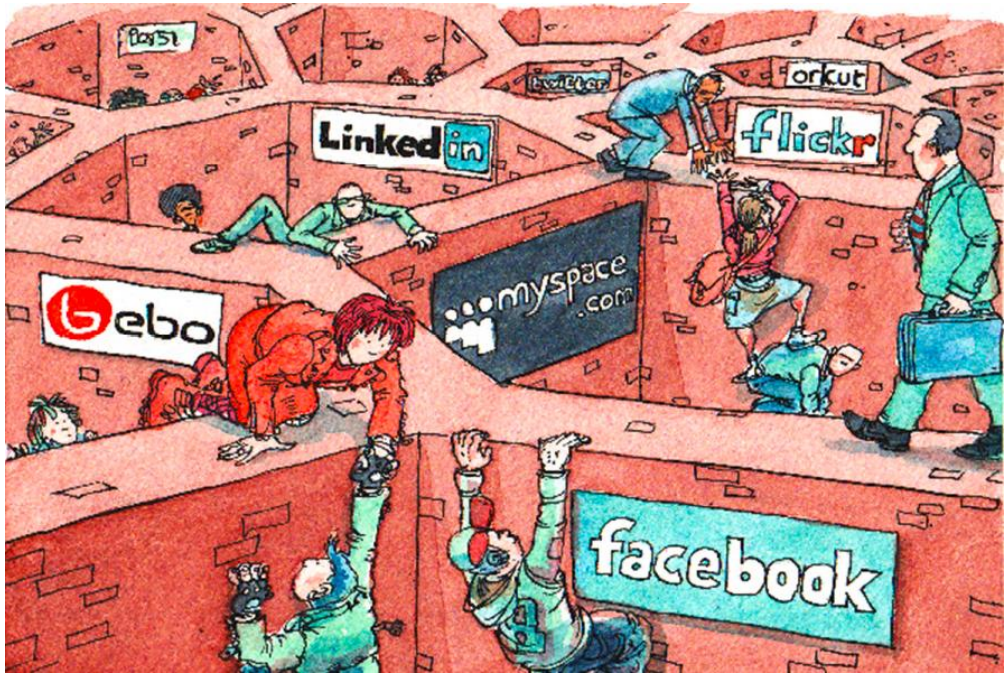
Single global information space

Small set of simple standards

1. **HTML as document format**
2. **HTTP URLs as**
   - globally unique IDs
   - retrieval mechanism
3. **Hyperlinks to connect everything**

Web 3.0

- Linked data
  - Tim Berners-Lee对web2.0的批评



No single global dataspace

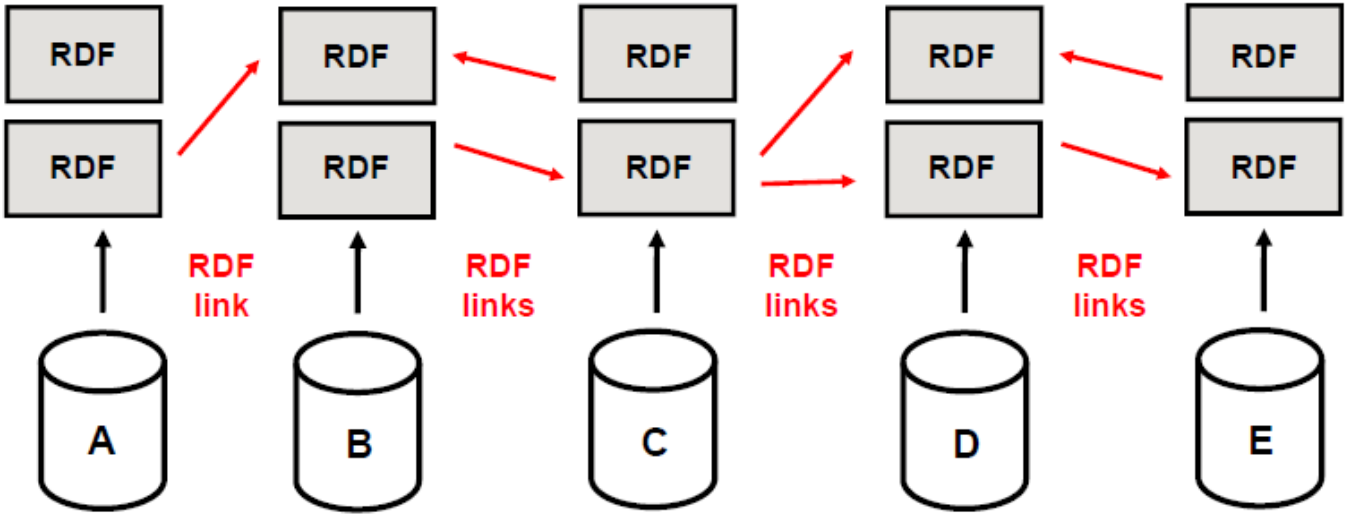
Shortcomings

1. APIs have proprietary interfaces
2. Mashups are based on a fixed set of data sources
3. No hyperlinks between data items within different APIs

Web 3.0

- **Linked data**
  - **Linked data如何将web构建成一个统一的全球数据空间**

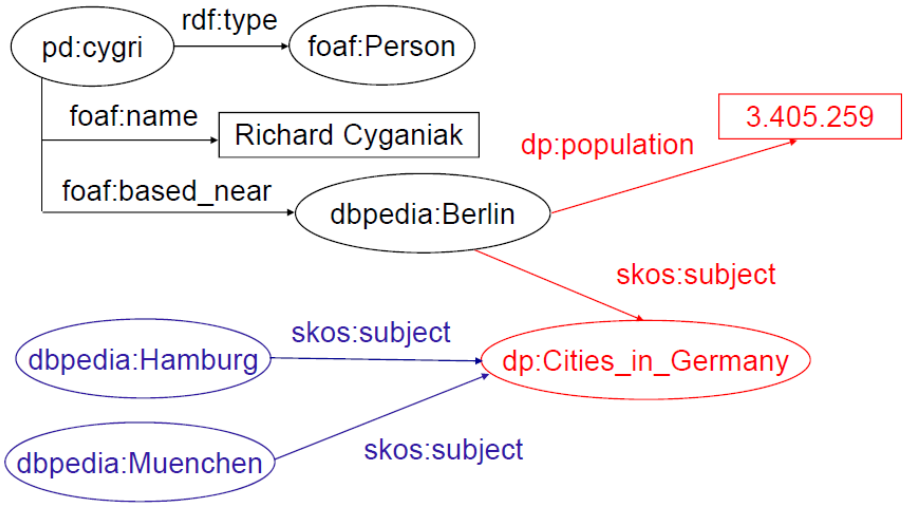
1. by using RDF to publish structured data on the Web
2. by setting links between data items within different data sources.



Web 3.0

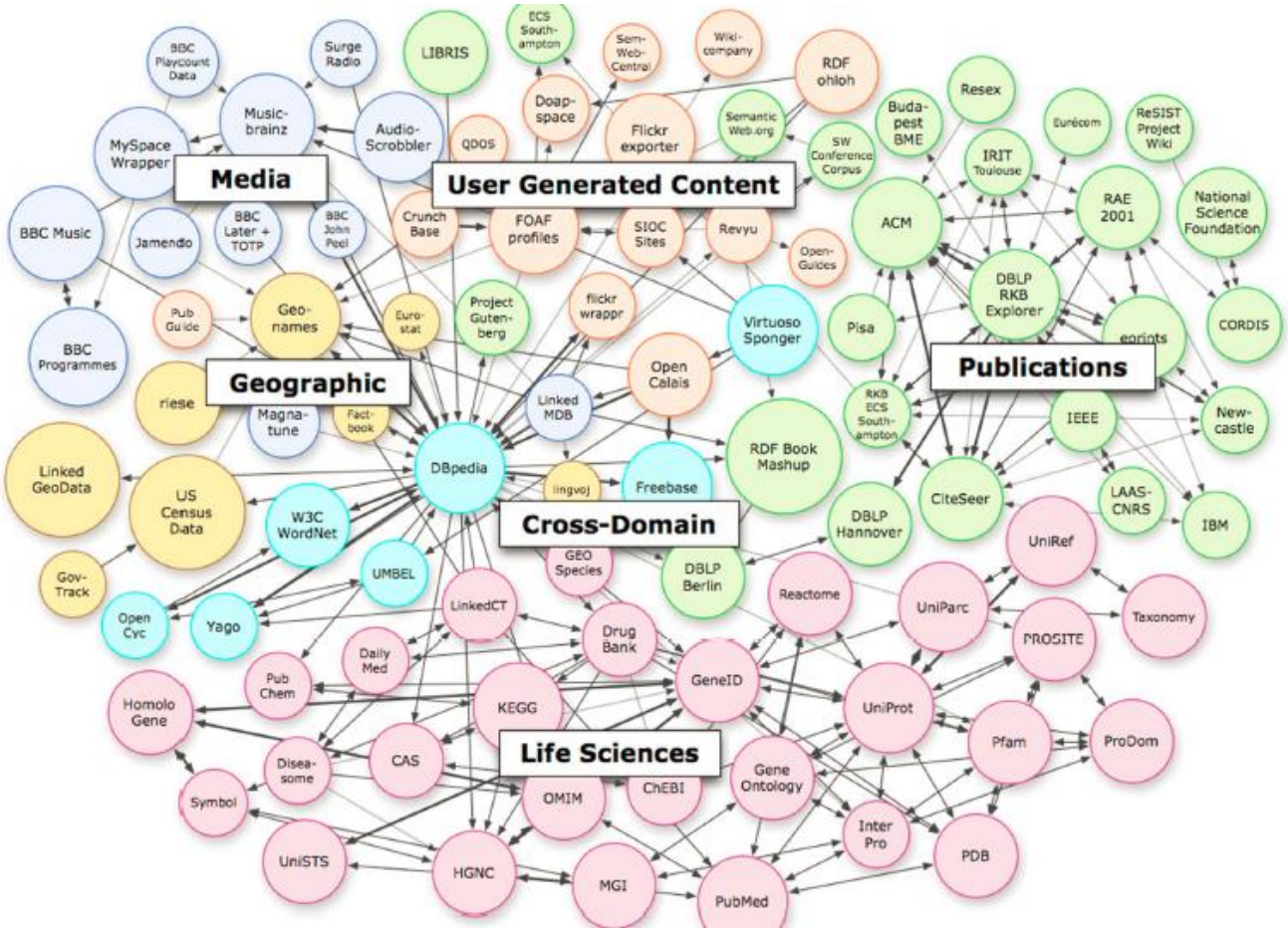
- 发布linked data的步骤

1. Make data available as RDF via HTTP
2. Set RDF links pointing at other data sources
3. Make your data self-descriptive



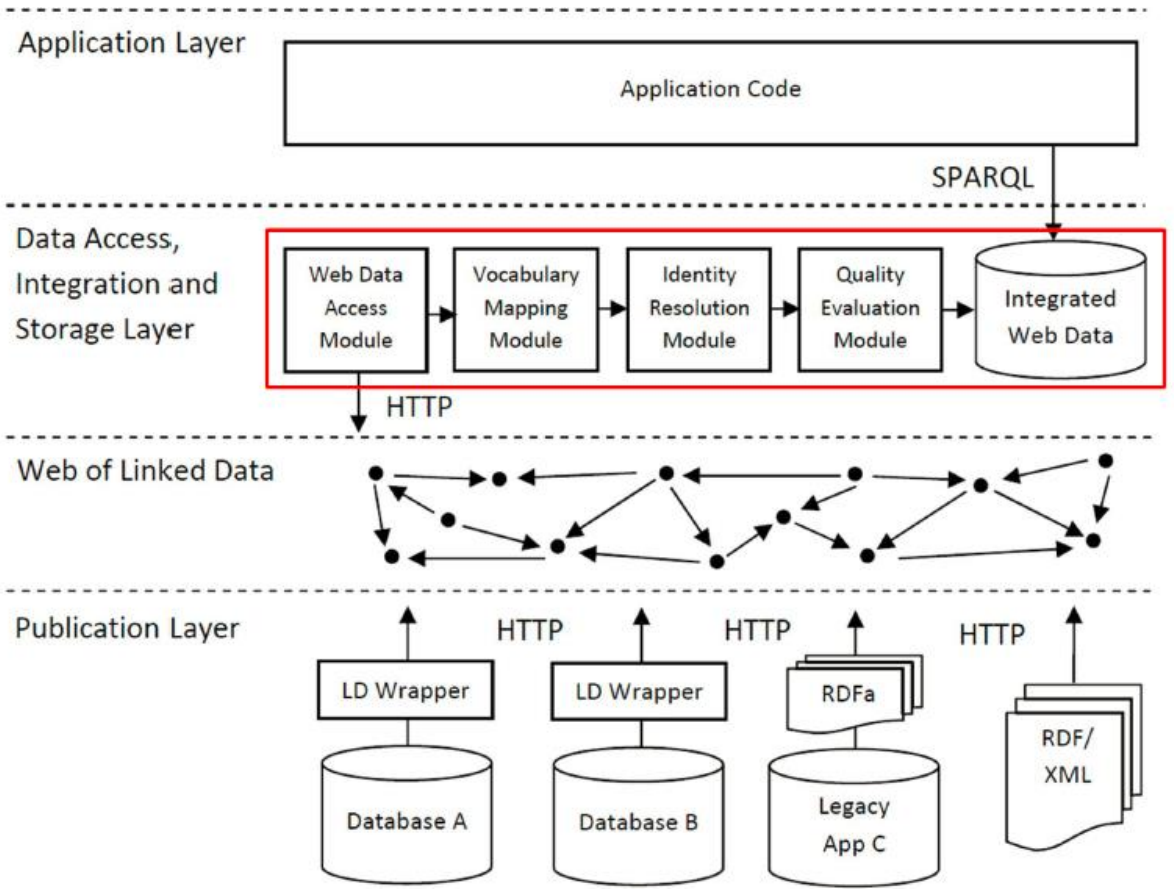
Web 3.0

- **linked data**
  - 最终构建跨领域的全球语义数据互联



Web 3.0

- **linked data分层架构**

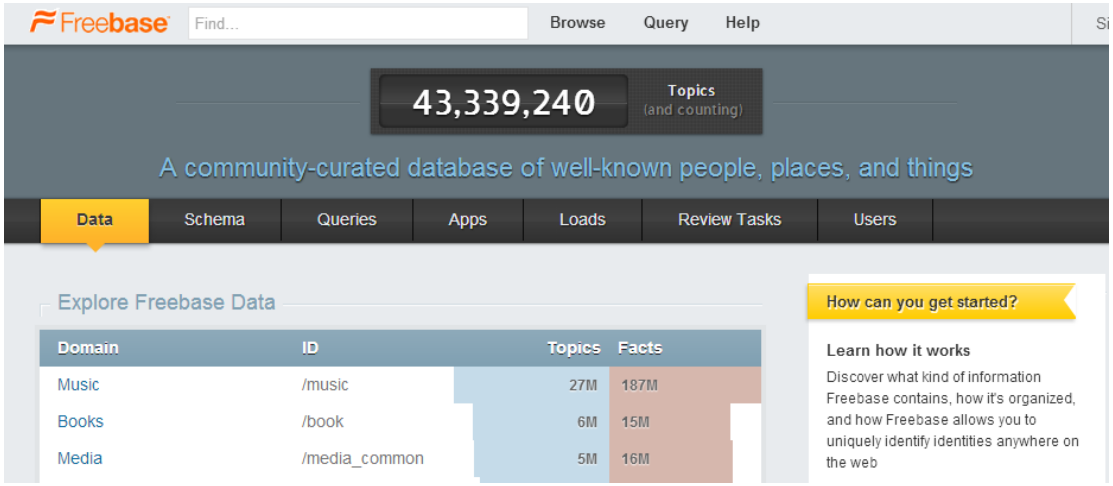


Web 3.0

- **典型Web3.0应用**
  - Dbpedia
    - 世界上最大的多领域知识本体之一， Linked Data 的一部分
    - 从维基百科(Wikipedia)的词条里撷取出结构化的资料
    - 支持基于维基百科构建许多创新而有趣的应用，例如手机版本、地图集成、多面向搜寻、关系查询、文件分类与标注等等

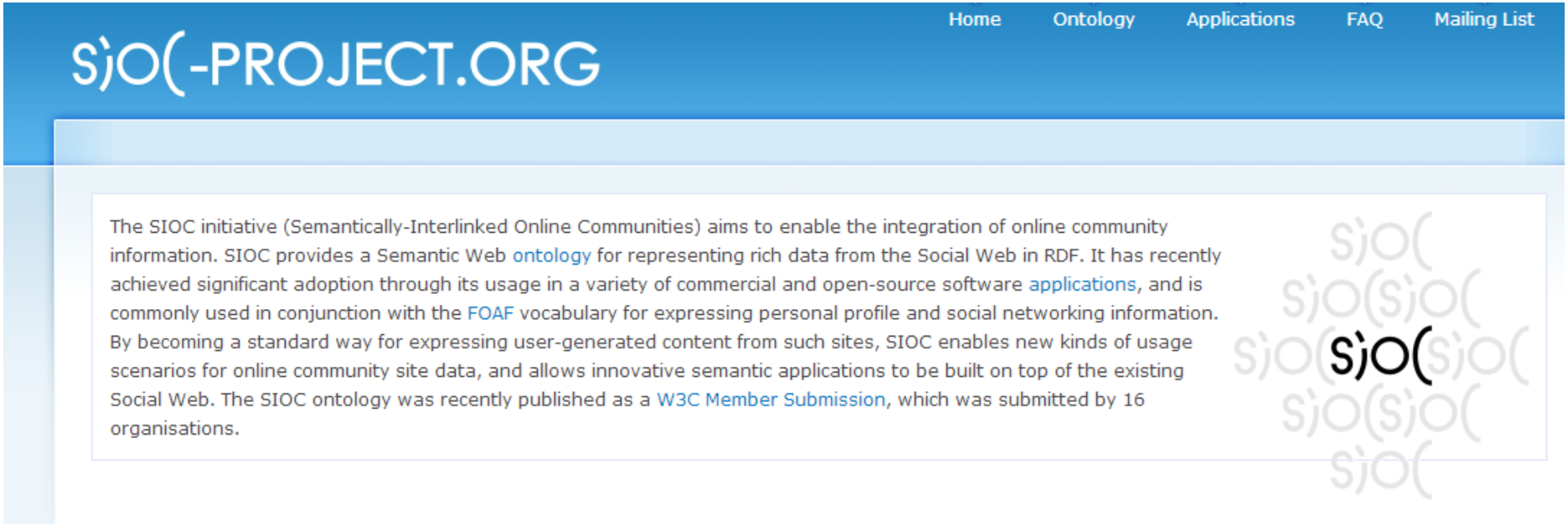
Web 3.0

- **典型Web3.0应用**
  - FreeBase
    - 是一个由元数据组成的大型合作知识库
    - 专注于结构化数据及其使用



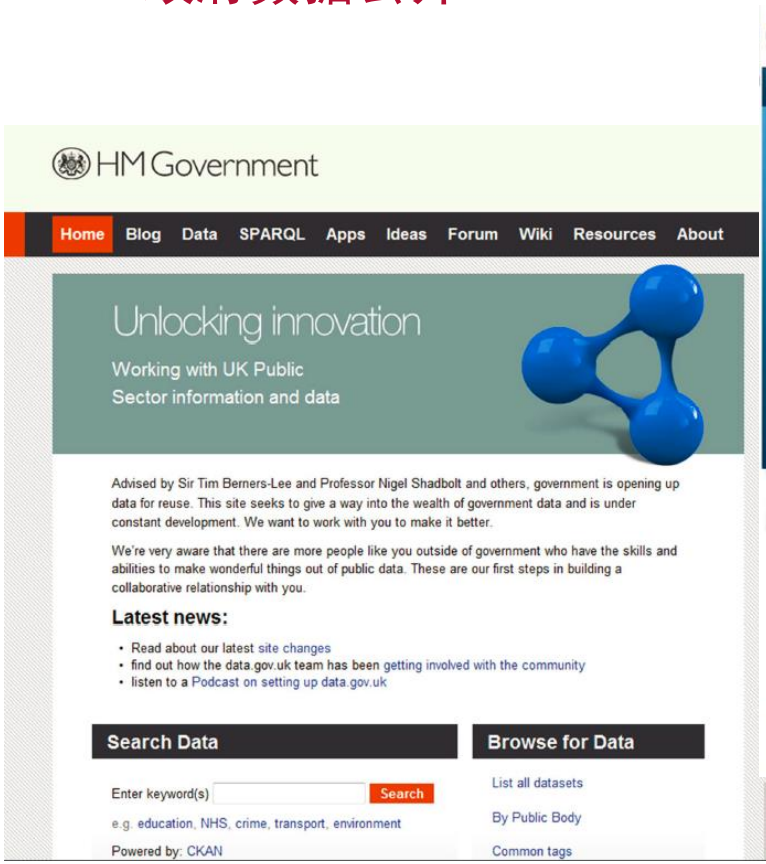
Web 3.0

- **典型Web3.0应用**
  - SIOC-PROJECT
    - SIOC表示Semantically-Interlinked Online Communities。
    - 使用FOAF本体词汇表达个人和关系语义，SIOC表示用户产生内容语义
    - 实现社交网络的语义化，以及多社交网络的可移植性和互联



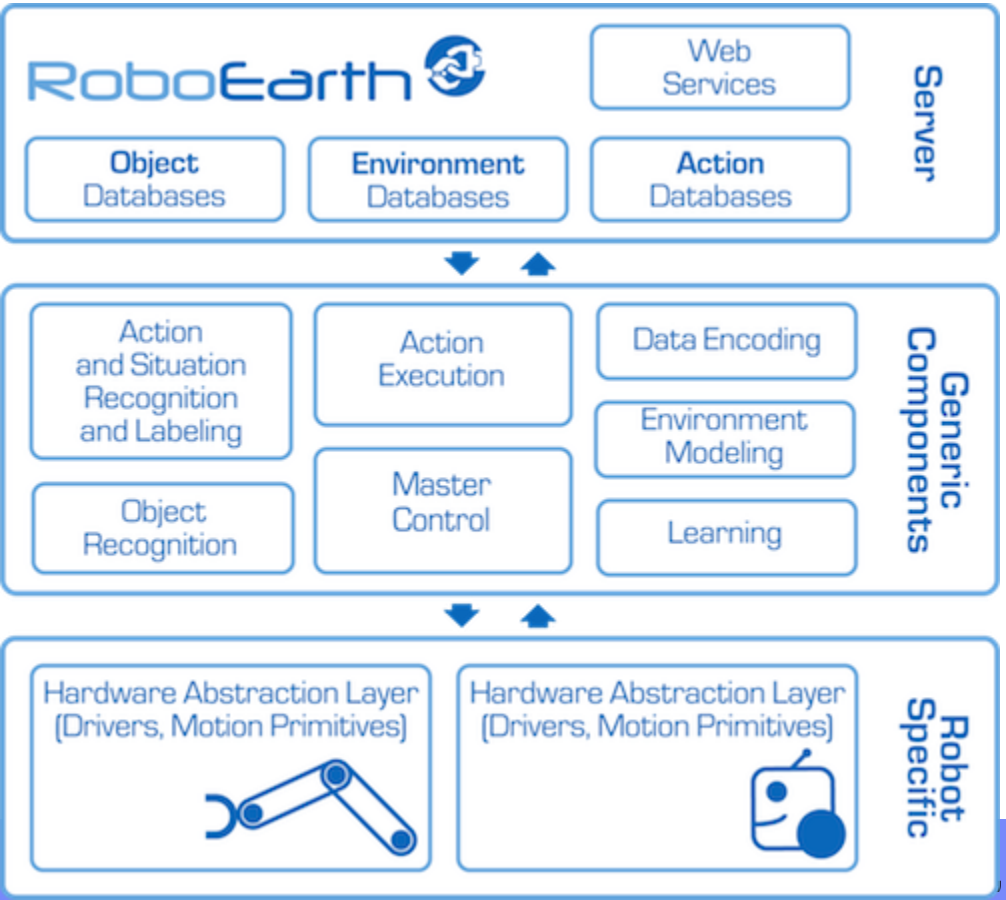
Web 3.0

- **典型Web3.0应用**
  - 政府数据公开



Web 3.0

- **云机器人的平台：RoboEarth（www.roboearth.org）**
  - 专门为机器人服务的一个网站，是一个巨大的网络数据库系统，机器人在这里可以分享信息、互相学习彼此的行为与环境。



Web 3.0

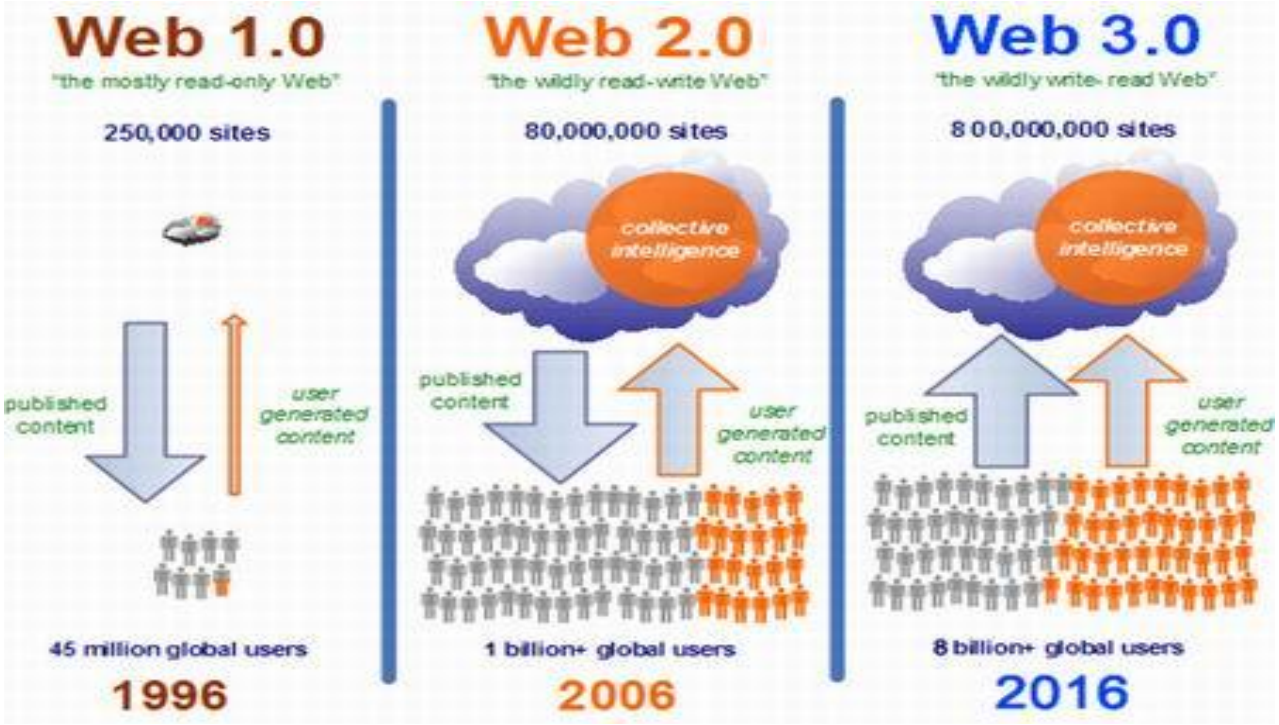
Web 1.0: Centralized Them.

Web 2.0: Distributed Us.

Web 3.0: Decentralized Me

http://www.readwriteweb.com/archives/web_30_is_it_about_personalization.php

Web 3.0

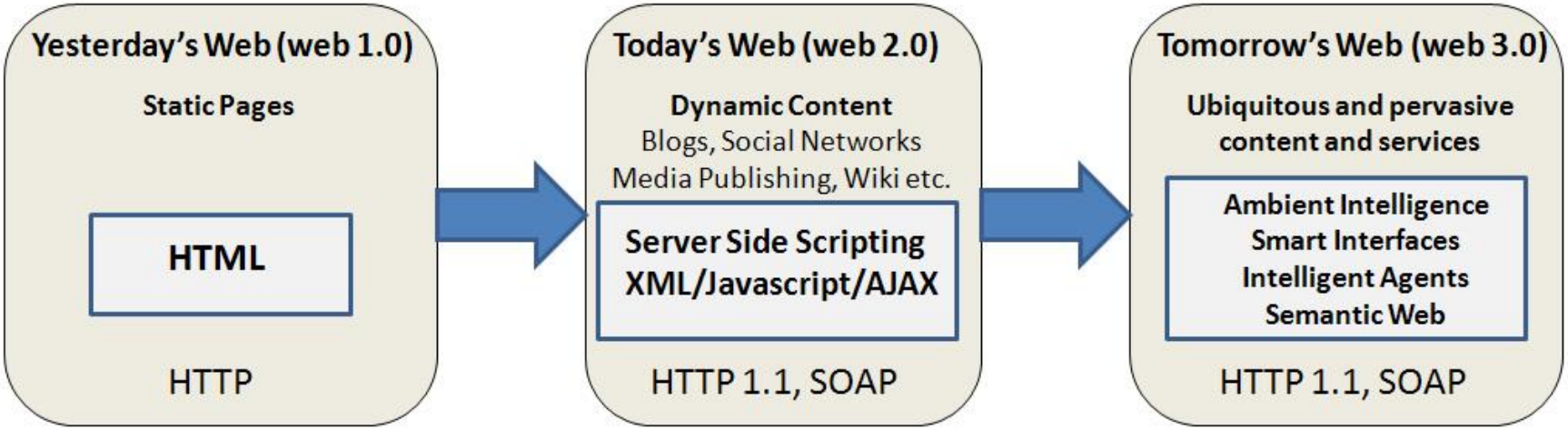


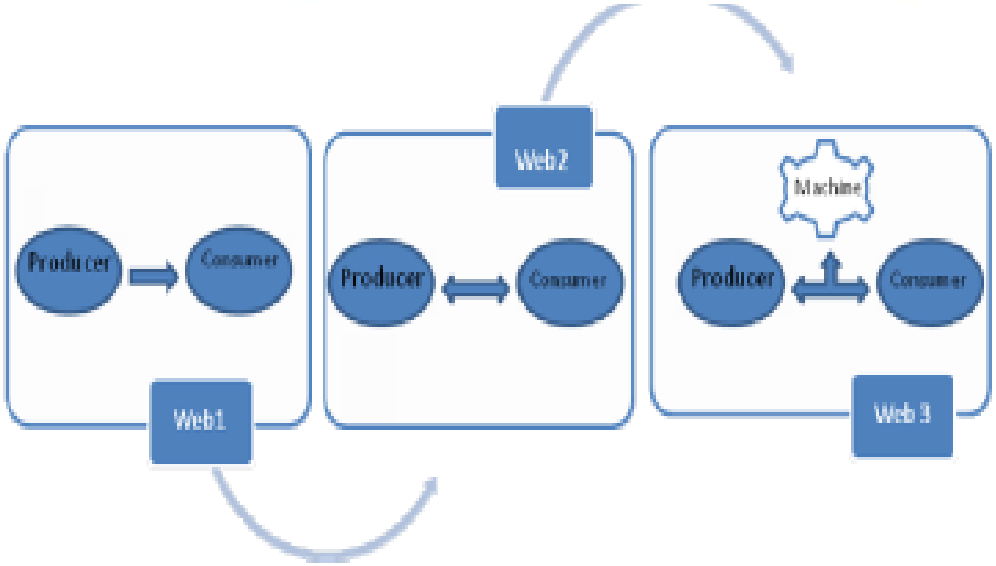
- 服务提供者提供information（以page/doc形式存在）
- 有page+page的mashup
- web是read only的

- 服务提供者以开放API的形式共享data
- 有基于API的mashup
- web是read/write的

- 服务提供者以open data的形式共享data
- 有基于open data的mashup
- web是personalized(个性化)的

Web 3.0


Yesterday's Web (web 1.0)
Static Pages
HTML
HTTP
Today's Web (web 2.0)
Dynamic Content
Blogs, Social Networks
Media Publishing, Wiki etc.
Server Side Scripting
XML/Javascript/AJAX
HTTP 1.1, SOAP
Tomorrow's Web (web 3.0)
Ubiquitous and pervasive content and services
Ambient Intelligence
Smart Interfaces
Intelligent Agents
Semantic Web
HTTP 1.1, SOAP


Producer
Consumer
Web1
Web2
Producer
Consumer
Machine
Producer
Consumer
Web 3

Web 3.0

Web 1.0	Web 2.0	We b3.0
FrontPage	MySpace	SIOC-project.org
Encarta	Wikipedia	Dbpedia
Streetmap/MapQuest	Google earth	3-D Street View
PC games	Online games	Online 3D-games
Home video	YouTube	Yet to come
Mp3.com	iTunes	Yet to come
Microsoft Office	Google Docs	Yet to come

From semantic Web (3.0) to the WebOS (4.0)