



Source: Gottfried Salzmann
Stadtlandschaft New York

Big Data and Open Data

Introduction and Definition

Open Data and Big Data The Impact on Digital Society and Smart Cities"

NETTIES 2015 13th International Conference on Networking Entities

La Casona, Tacoronte, Tenerife
March 5 - 8, 2015

Prof. Dr. Johann Günther

Visiting Professor at: Danube University Krems, Austria,
Professor State University of Telecommunications, Russia,
Research Professorship Jiangnan University, Wuhan, China
Johann@johannguenther.at

**2012:
16 years old girl in Netherlands
posted birthday party invitation
mistakenly public
on Facebook
3000 people came**



Picture: VMworld Gatherings, Parties and Activities

Data Worldwide

- Beginning recorded history till 2003:
5 billion Gigabytes
- 2011: 5 billion Gigabytes **every 2 days**
- 2013: 5 billion Gigabytes **every 10 minutes**
- 2015: 5 billion Gigabytes **every 10 seconds**

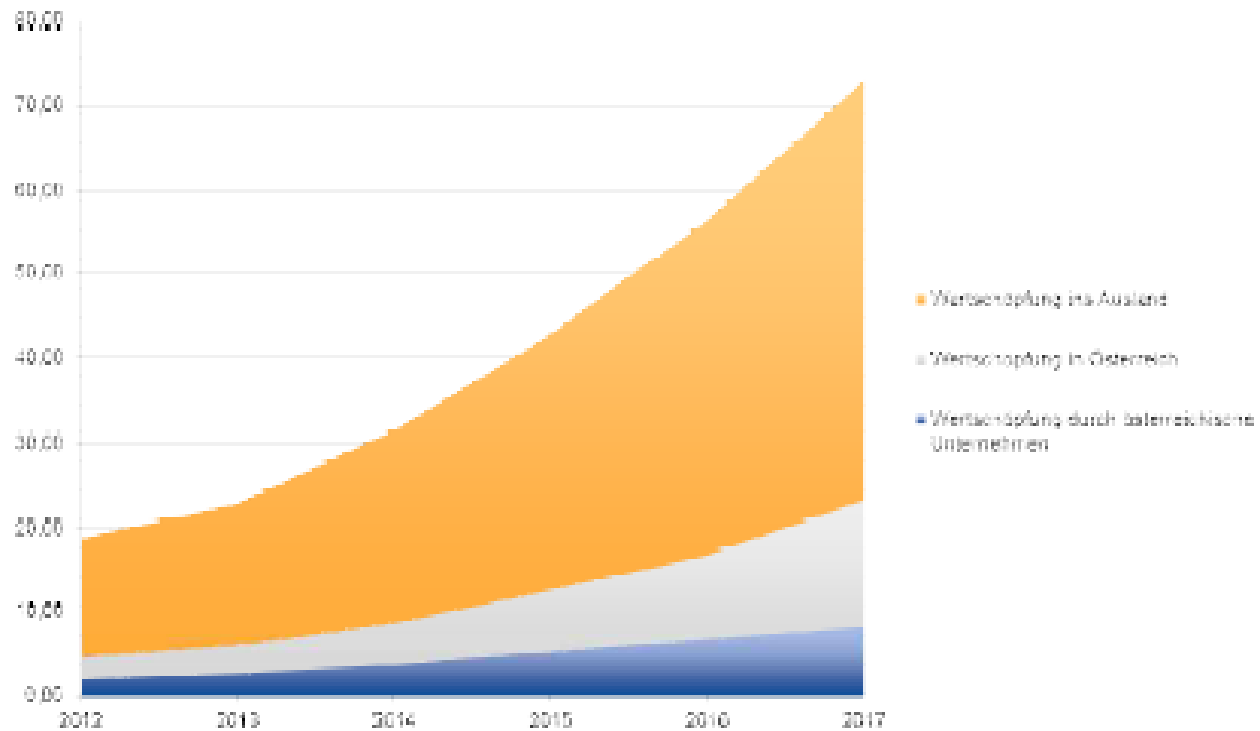
Source: Smolan & Er Witt 2012)



Big Data Worldwide

2012: 9,8 billion \$

2017: 32,4 billion \$



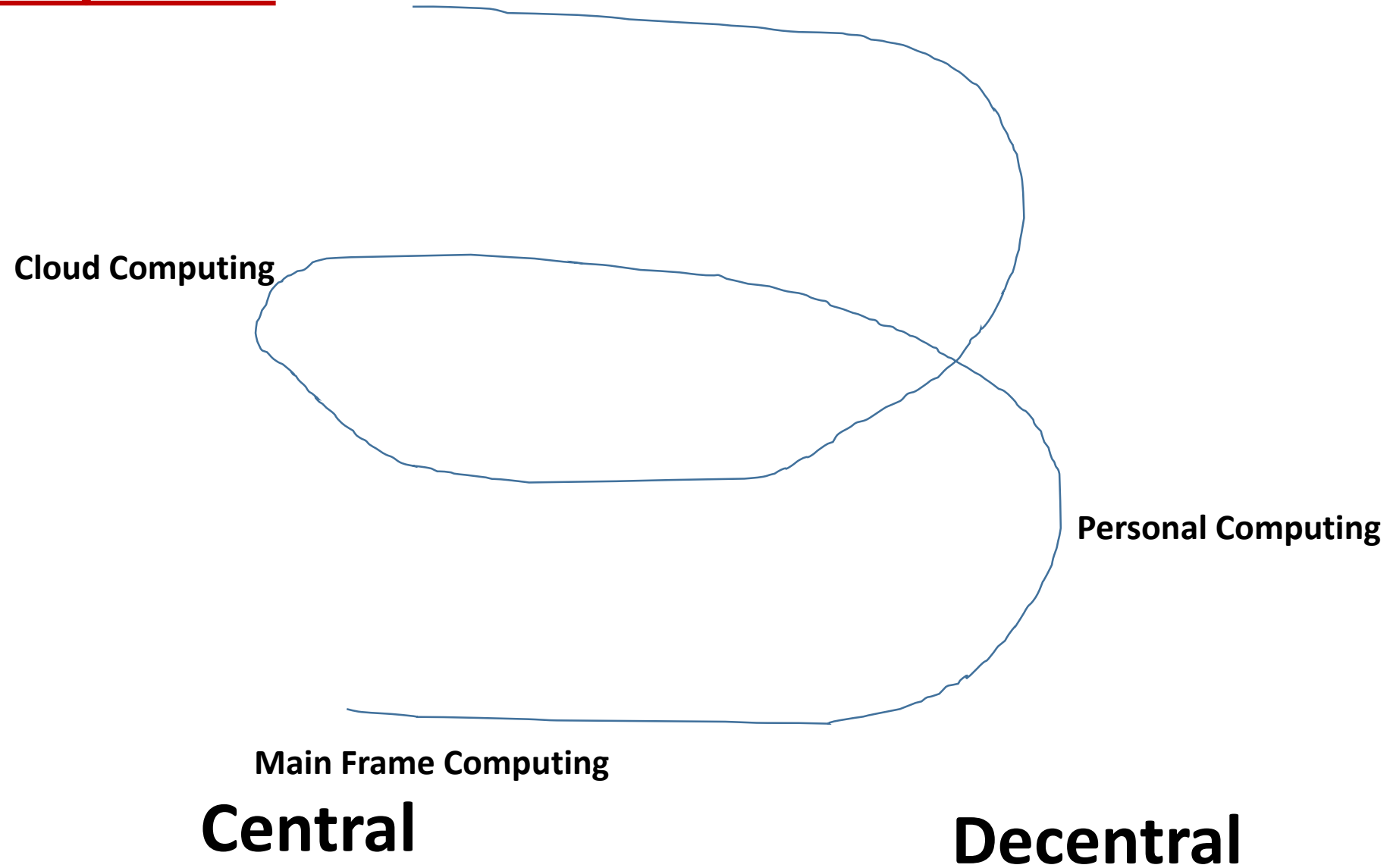
Source: IDC

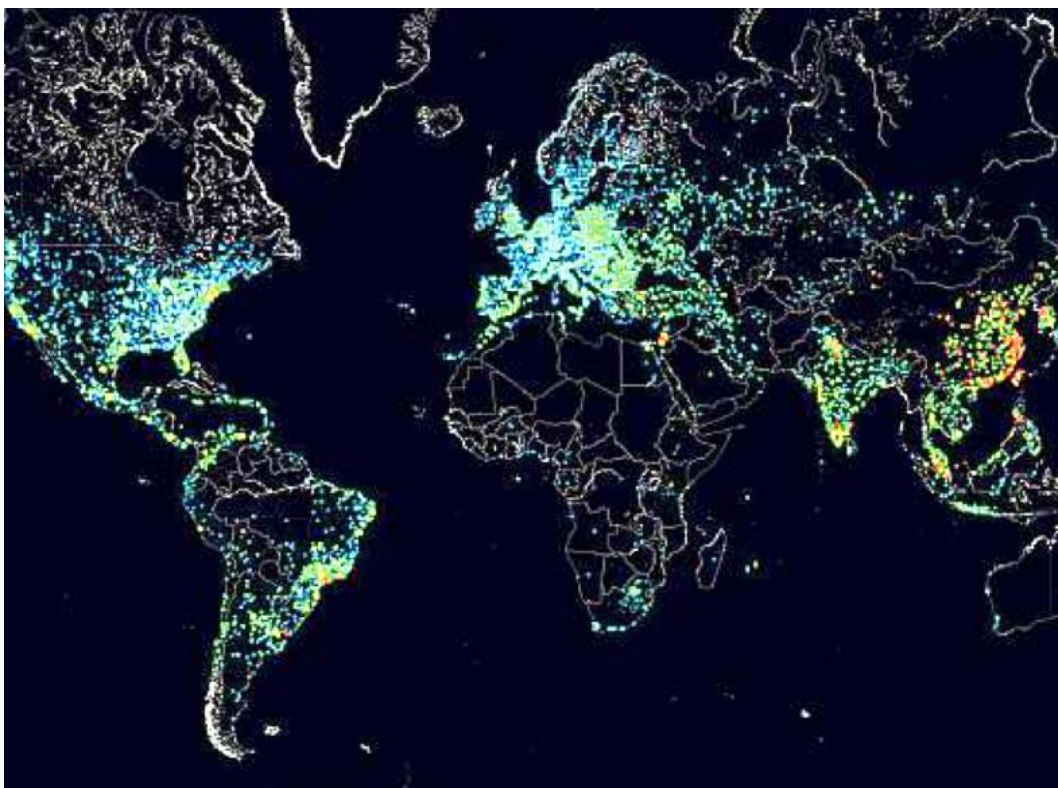
Big Data = large collections of data

Data Sets = old term from Main Frame Computing

**Today Data Sets can not be handled
with traditional applications**

Development





Very Important !!!

BIG DATA = GLOBAL

IAFeS



**Our Organisation IAFES uses eScience,
which is based on Big Data**

E-Science = computationally intensive science

- **highly distributed network environments**
- **uses immense data sets**

Characteristics of Big data

- * **Volume – Quantity of data**
- * **Variety**
- * **Velocity – due to the volume of data;
high speed of preprocessing is needed**
- * **Veracity - Quality of the data = problem.**
- * **Complexity - Data management with**
 - **large volumes of data**
 - **from multiple sources**

Obama and Big Data

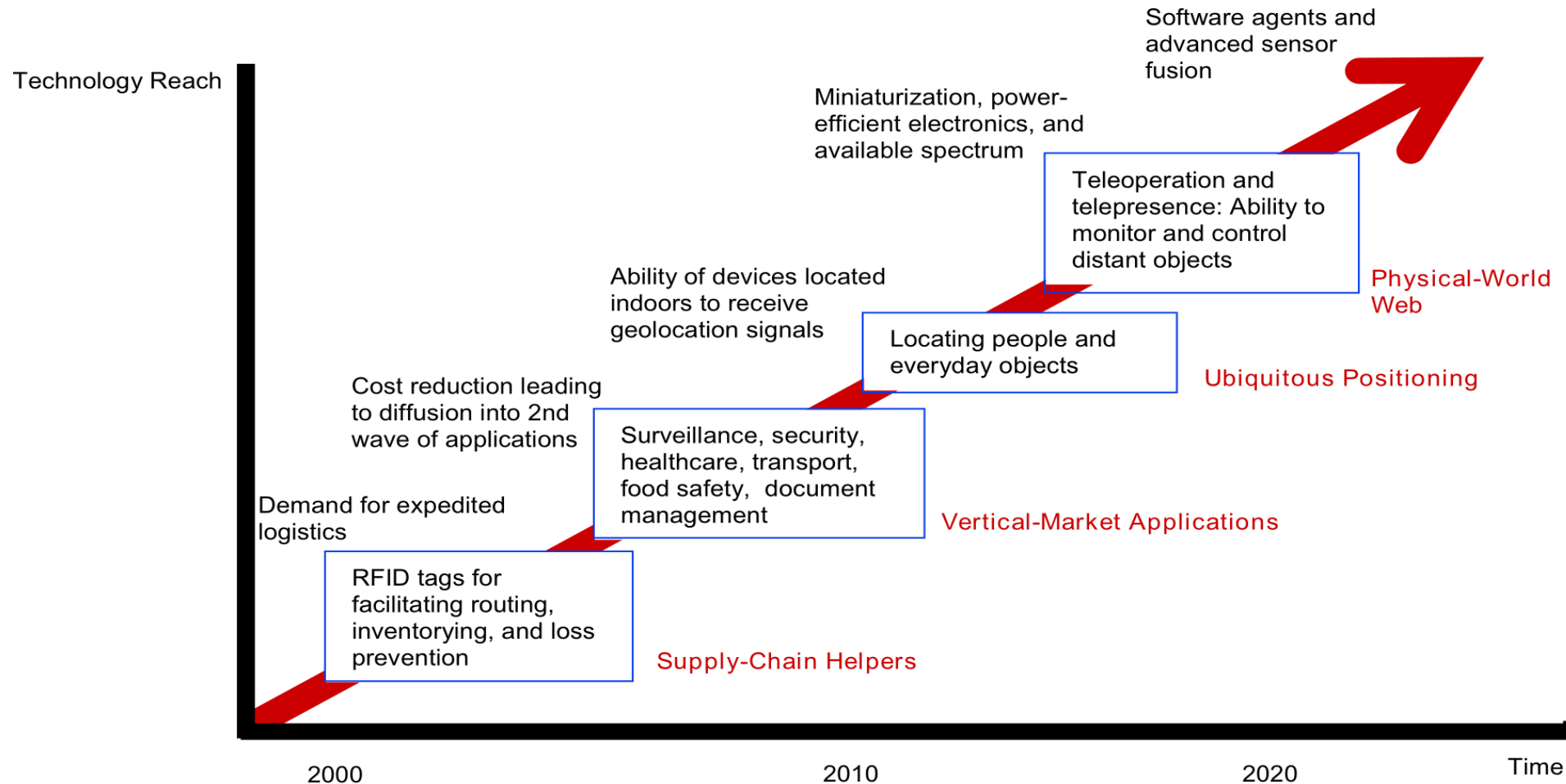


- **2012 Obama administration announced Big Data Research and Development Initiative**
- **Big data analysis = important for Obama's re-election 2012**
- **US Federal Government owns six of the ten most powerful supercomputers in the world**
- **„Utah Data Center“ under construction by „United States National Security Agency“
Handle large amount of information collected by the NSA**

Picture: <http://blogs.reuters.com/great-debate/2013/07/25/obamas-plan-one-nation-under-government/>

Internet in Things will create more data

TECHNOLOGY ROADMAP: THE INTERNET OF THINGS



Source: SRI Consulting Business Intelligence

2020: 25 Billion Devices online

Source: Gartner

**Since 2008: 200 billion Apps downloaded
50% in 2013 (100 billion)**

2014: 2 billion smartphones

2020: 8 out of 10 will have smartphone

Source: Gartner, IDC

Smart Phone Market:

- * **Samsung**
- * **Apple**
- * **Lenovo with Motorola**
- * **Huawei**
- * **LG Electronics**
- * **Xiaomi (Chinese “Apple”)**

Source: Gartner, IDC

Big Data in a dual, interconnected manner:

- **Targeting of consumers**
- **Data-capture**



Big Data = modern form of communication
= Social Media
= leads to a hyper-networked society
= individual acts spread via the network

Source: Andre Zwitter, „Network Ethics and Big Data: Changing Power in a Networked Society“, in BIFFL, Gudrun & RÖSSL, Lydia: „Migration & Integration 5“, 2014



**Closing the profil on Facebook
= „Virtual Identity Suicide“**

Facebook: 1,228 billion user (end 02/2014)
282 million in Europe
27,38 million in Germany
3,24 million in Austria



Instagram: 200 million user

Twitter; 232 million active user

Google+ 300 million

Xing: 12,65 million

Social Networks:

- * Facebook
- * Instagram
- * Twitter
- * Google
- * Xing
- * Flickr
- * Foursquare
- * Last.fm
- * Delicious
- * Scribd
- * Slideshare
- * Covestor
- * Pinterest
- * tumblr
- * Goodreads
- * WhatsApp



last.fm



goodreads

FOURSQUARE

Google

Pinterest

flickr



Open Data

Data free available

Use for everyone

Republishing

No copyright



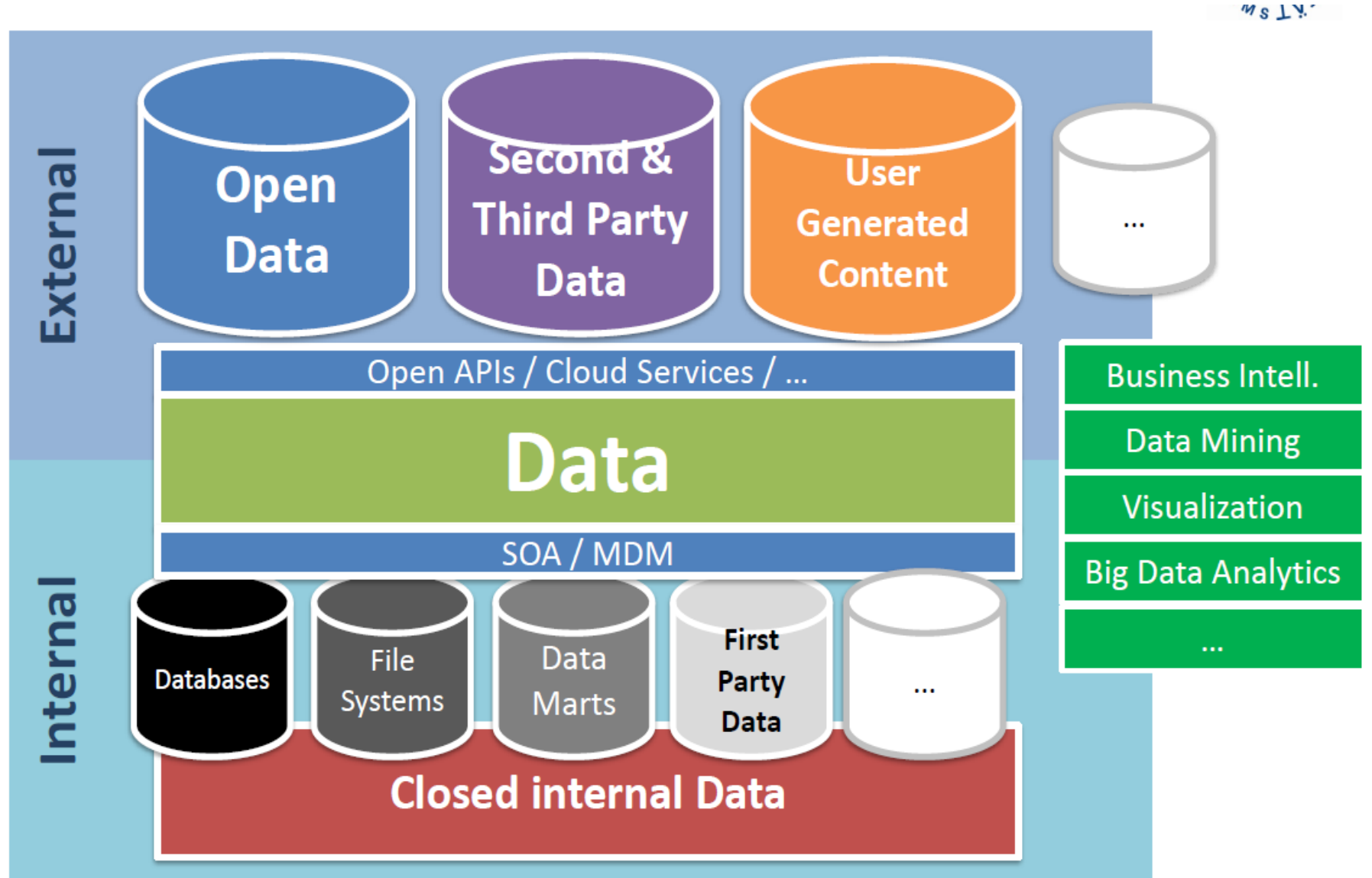
Open Data versus Closed Data

Source: Donau-University, Peter Parvcek

| | Open | Closed |
|--------|--------------|---|
| Access | Everyone | Restricted Access Person or Organisation |
| Cost | No costs | Eventually fees for accessing |
| Legal | Open Licence | Eventually usage rights |

Open Data versus Closed Data

Source: Donau-University, Peter Parycek



Our world is observable and configurable infrastructure:

- Social Web**
- Smart Phone**
- Smart Home**
- Smart City**

The objective is efficiency.

e.g .: traffic control and traffic lights

Users of Big Data



eBay.com:

- 2 data warehouses at 7.5 petabytes and 40PB
- + 40PB Hadoop cluster for search, consumer recommendations and merchandising
- Inside eBay's 90PB data warehouse

Users of Big Data



Amazon.com:

- handles millions of back-end operations every day
- more than half a million third-party sellers
- Linux-based –
- in 2005 the world's three largest Linux databases
- 7.8 TB, 18.5 TB, and 24.7 TB

Users of Big Data

Facebook

* handles 50 billion photos



Users of Big Data

- **More Applications and Examples
= this conference**

**„Google will know
the answer to your question
before you ask it“**



**„Computer will understand us
better than
we understand ourselves.“**

(Roy Kurzweil, 2014)



- **The future is open, but the past is past.**
- **Technology is neutral - they can both good and bad**
- **Back to "Digital Biedermeier"?**