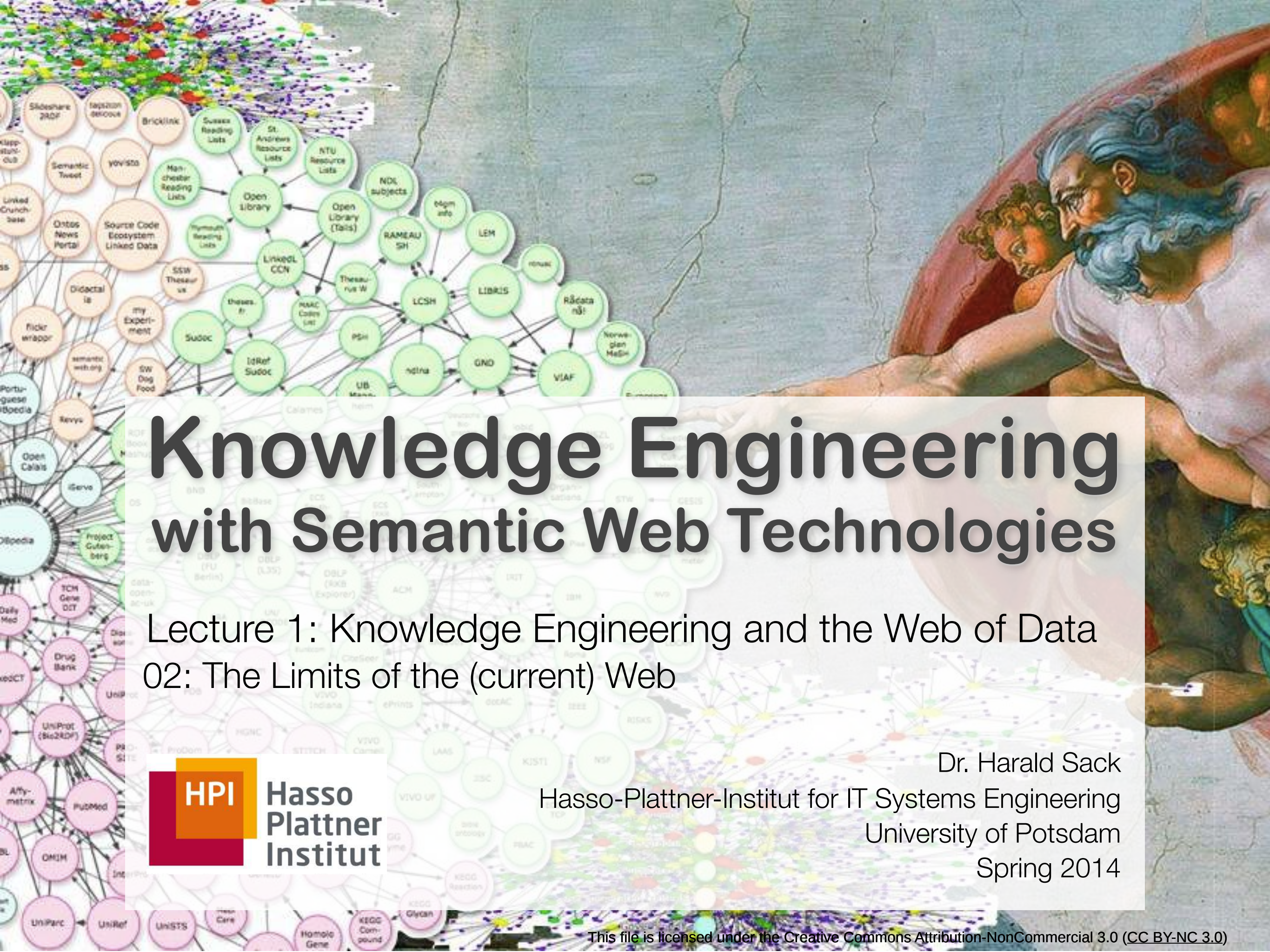




Knowledge Engineering with Semantic Web Technologies

Lecture 1: Knowledge Engineering and the Web of Data
02: The Limits of the (current) Web



Dr. Harald Sack
Hasso-Plattner-Institut for IT Systems Engineering
University of Potsdam
Spring 2014

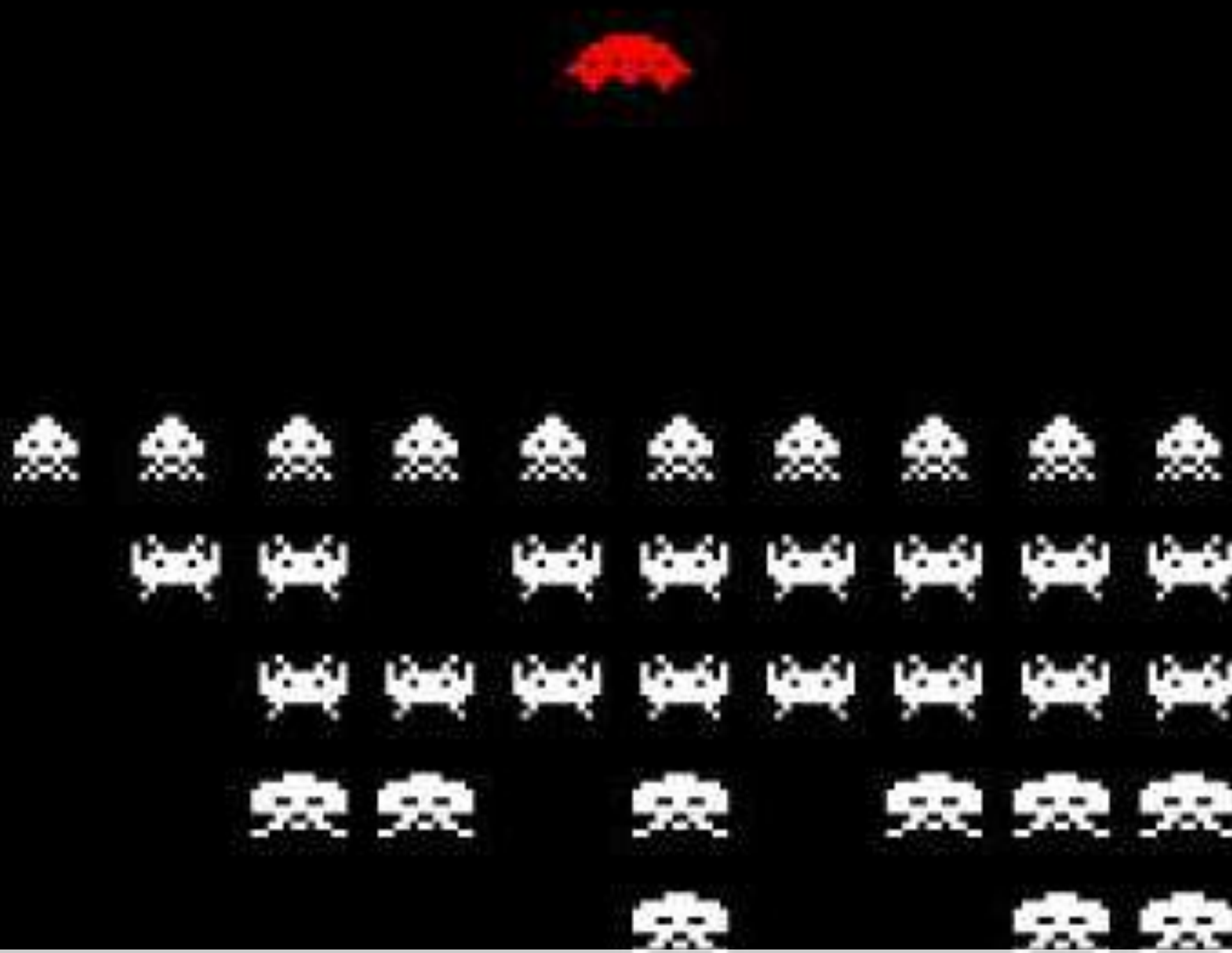


Lecture 1: Knowledge Engineering and the Web of Data

Open HPI - Course: Knowledge Engineering with Semantic Web Technologies

SCORE 7040

LIVES



02: The Limits of the (current) Web ...

OpenHPI - Course Knowledge Engineering with Semantic Web Technologies

Lecture 1: Knowledge Engineering and the Web of Data

How can we find information in the Web?



current solution:

5

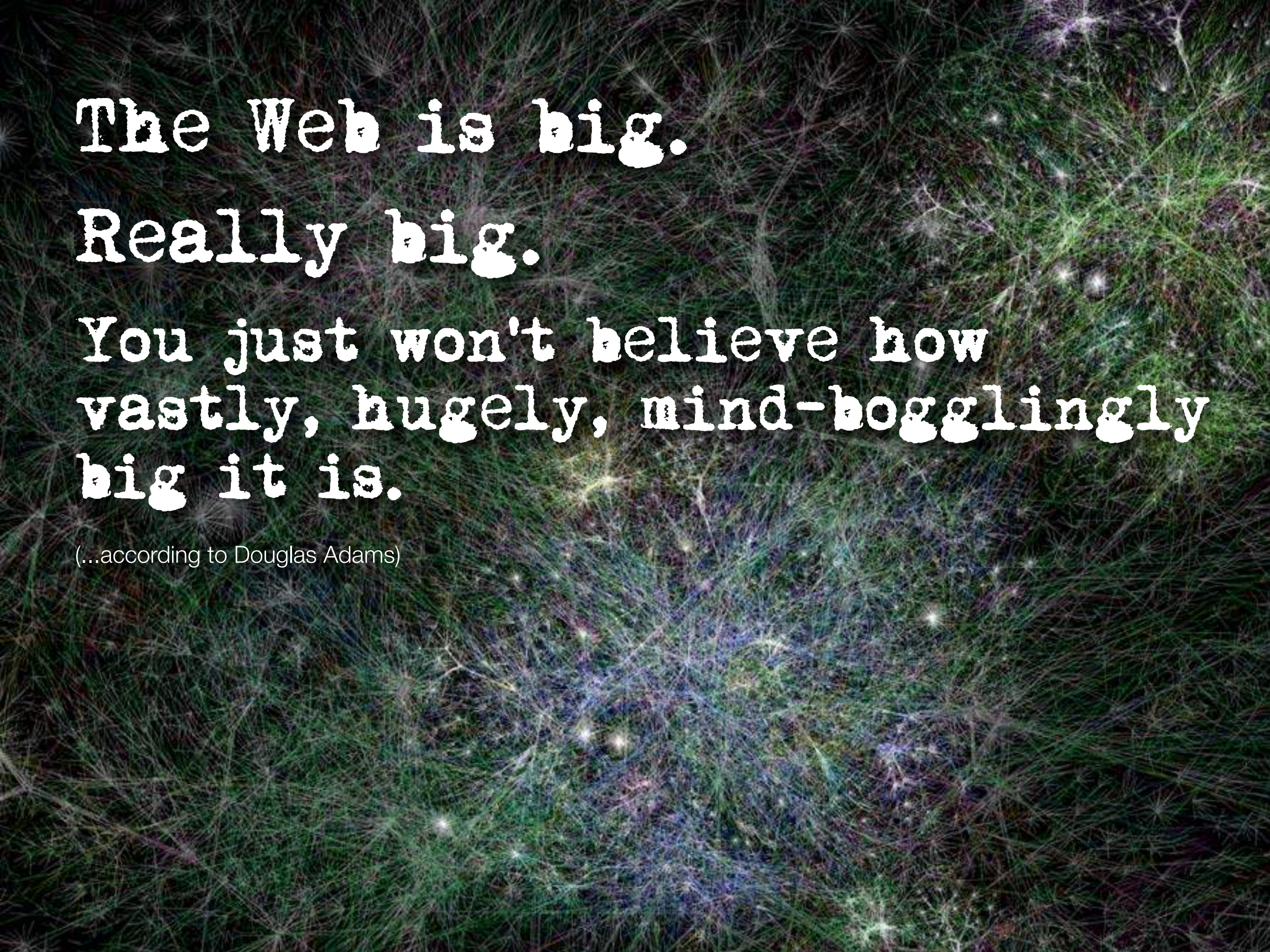


Google

Google Search

I'm Feeling Lucky



The background of the image is a complex, colorful web of fine, intersecting lines in shades of green, blue, and purple, set against a dark, starry space. These lines represent the cosmic web, a large-scale structure of the universe. Scattered throughout are numerous bright, multi-colored stars and nebulae, adding to the cosmic theme.

The Web is big.

Really big.

You just won't believe how
vastly, hugely, mind-bogglingly
big it is.

(...according to Douglas Adams)

The Web is really big...

- ca. 25×10^9 indexed documents in search engines
(TNL Blog: Google has 24 billion items index, considers MSN search nearest competitor, September 2005)
- Web Crawler: $> 10^{12}$ (1 trillion) documents
(The Official Google Blog: We knew the Web was Big....., Juli 25, 2008
<http://googleblog.blogspot.de/2008/07/we-knew-web-was-big.html>)
- Google Search Index Caffeine comprises ca. 100 Million Gigabytes i.e. 10^{17} Byte
(SMX Video: Google's Matt Cutts On Caffeine Launch, June 9, 2010,
<http://searchengineland.com/smx-video-googles-matt-cutts-on-caffeine-launch-43933>)
- DeepWeb (Darkweb) estimated to be about 550 times bigger than Surface Web



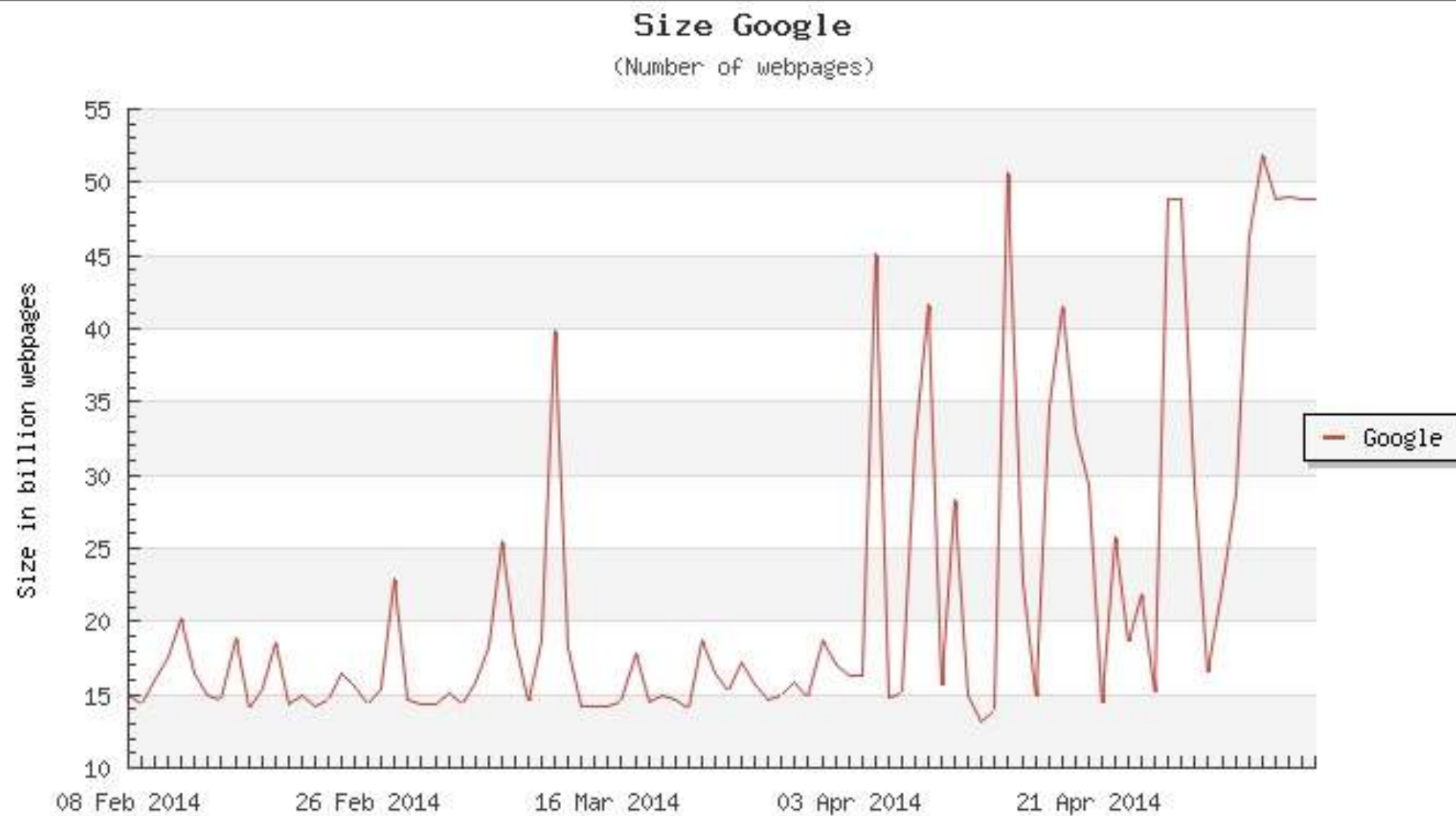
The size of the World Wide Web: Estimated size of Google's index

Last Month

Last Three Months

Last Year

Last Two Years



... and it's getting bigger
by the minute!

PINTEREST
USERS PIN

3,472
images.

VINE
USERS

SHARE

8,333
VIDEOS.

SKYPE
USERS

CONNECT FOR
23,300 HOURS.

YELP USERS POST

26,380
REVIEWS.

APPLE USERS
DOWNLOAD

YOUTUBE
USERS UPLOAD
72 HRS.
OF NEW
VIDEO.

EMAIL
USERS SEND
204,000,000
MESSAGES.

Google
RECEIVES OVER
4,000,000
SEARCH
QUERIES.

FACEBOOK
USERS SHARE

2,460,000
PIECES OF CONTENT.

TINDER
USERS SWIPE

416,667
TIMES.

WHATSAPP
— USERS SHARE —

347,222
PHOTOS.

TWITTER USERS

· EVERY ·
MINUTE
OF THE
DAY



**SKYPE
USERS**

CONNECT FOR
23,300 HOURS.



MINUTE

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DAY

**TINDER
USERS SWIPE**

416,667
TIMES.



YELP USERS POST
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WHATSAPP
— USERS SHARE —
347,222
PHOTOS.



APPLE USERS
DOWNLOAD

48,000

PANDORA
USERS LISTEN TO



AMAZON

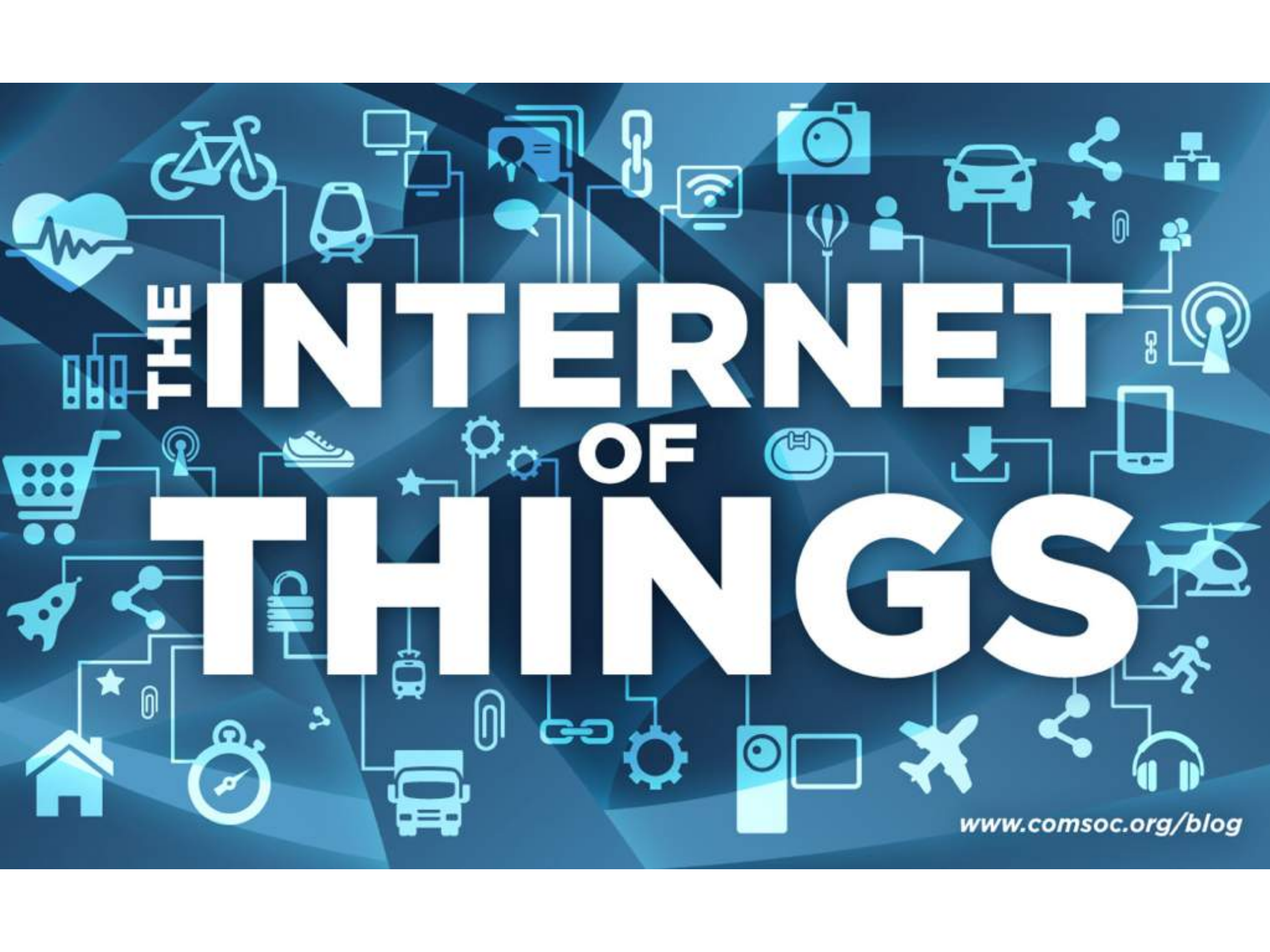


**INSTAGRAM
USERS »**

TWITTER USERS
TWEET

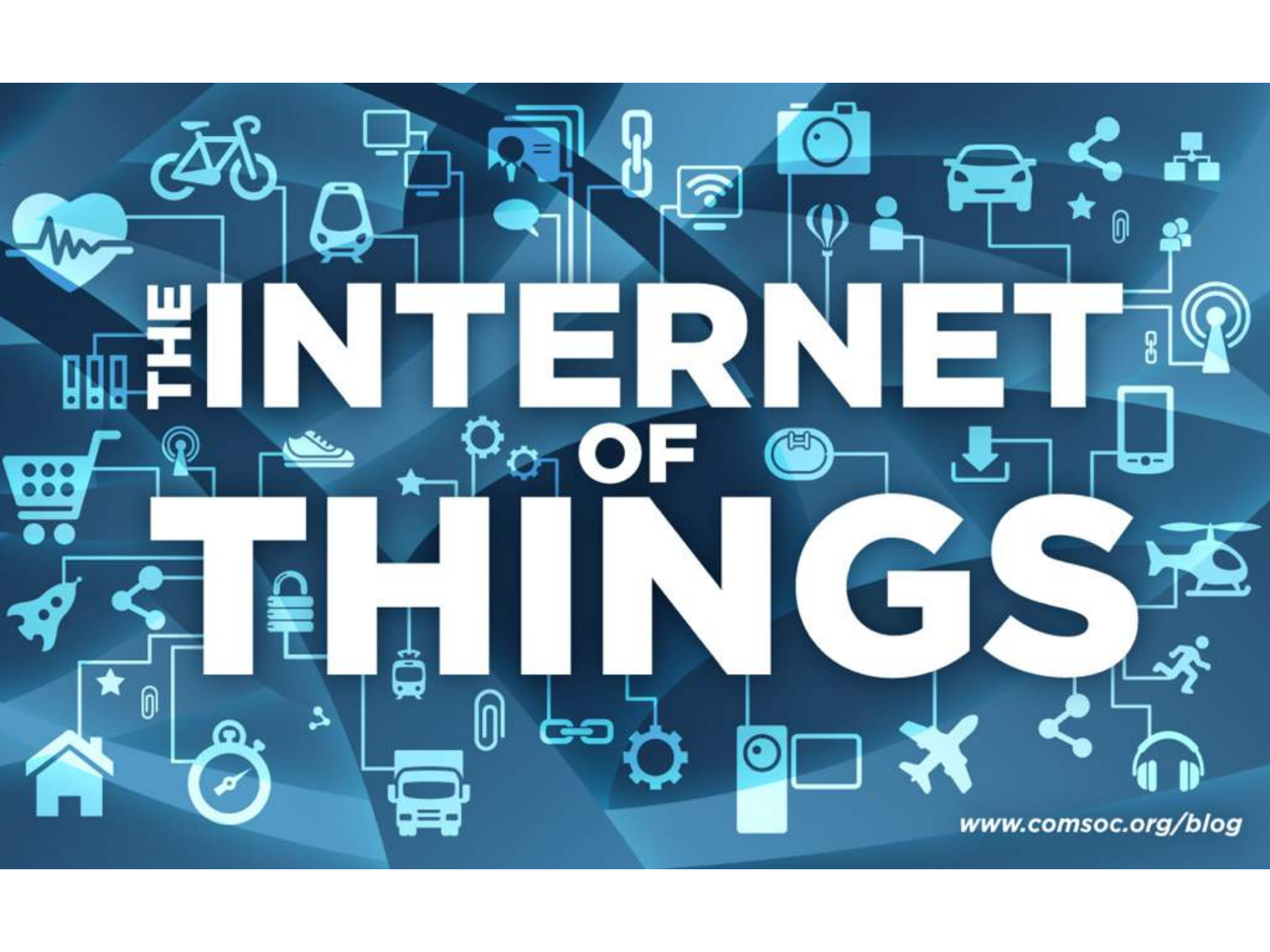
277,000





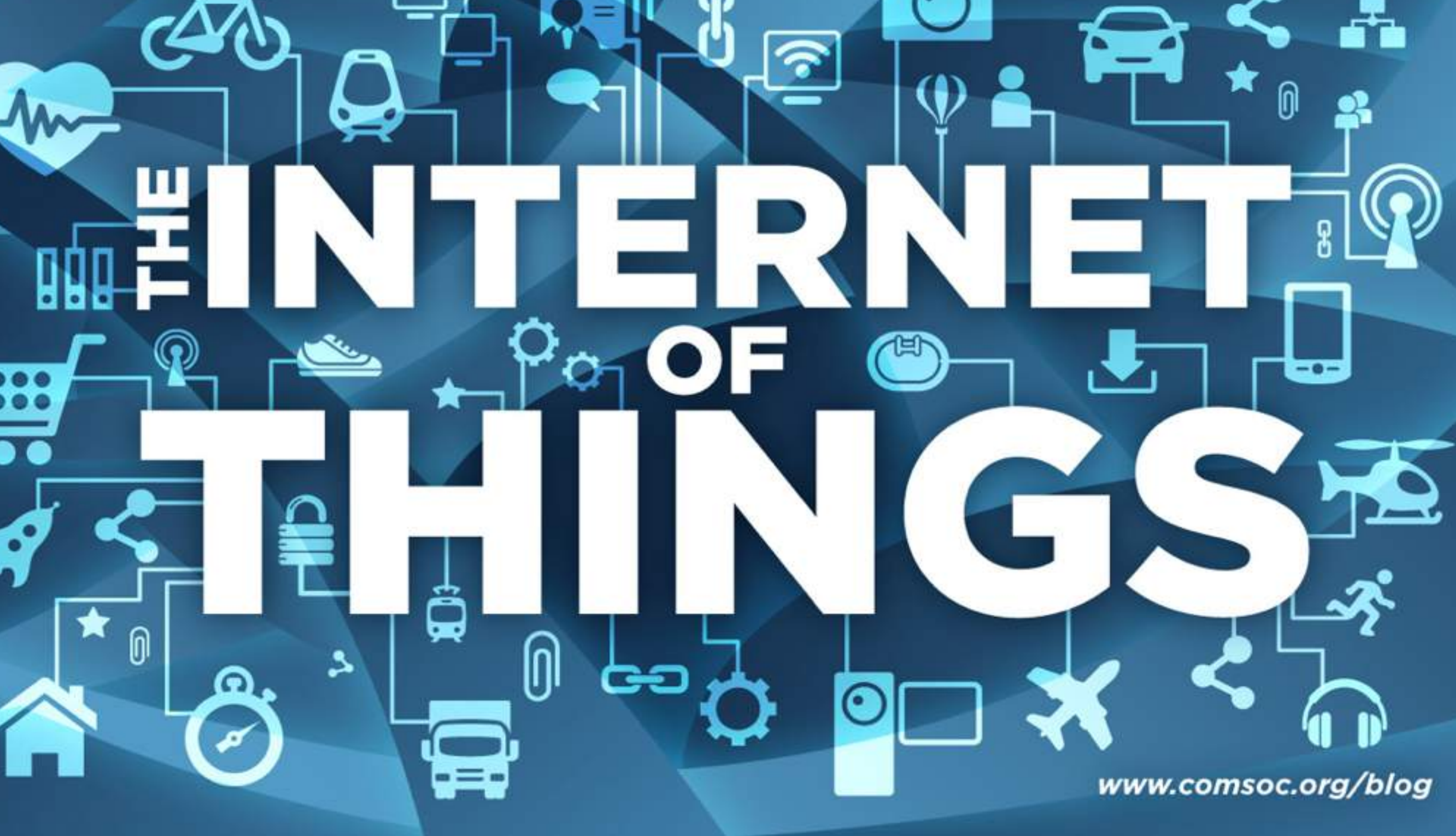
THE INTERNET OF THINGS

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From Data to Information in the WWW

From The New York Times

Monday, April 28, 2014

Today's Paper

Personalize Your Weather



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AT THE
SPEED
OF LIFE.



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All Sections

One Therapist, \$4 Million in Medicare Bills in One Year

By JULIE CRESWELL and ROBERT GEBELOFF

Physical therapy is a big recipient of national Medicare dollars — and physical therapists in Brooklyn are among the biggest billers of all, government data indicates.

33 Comments

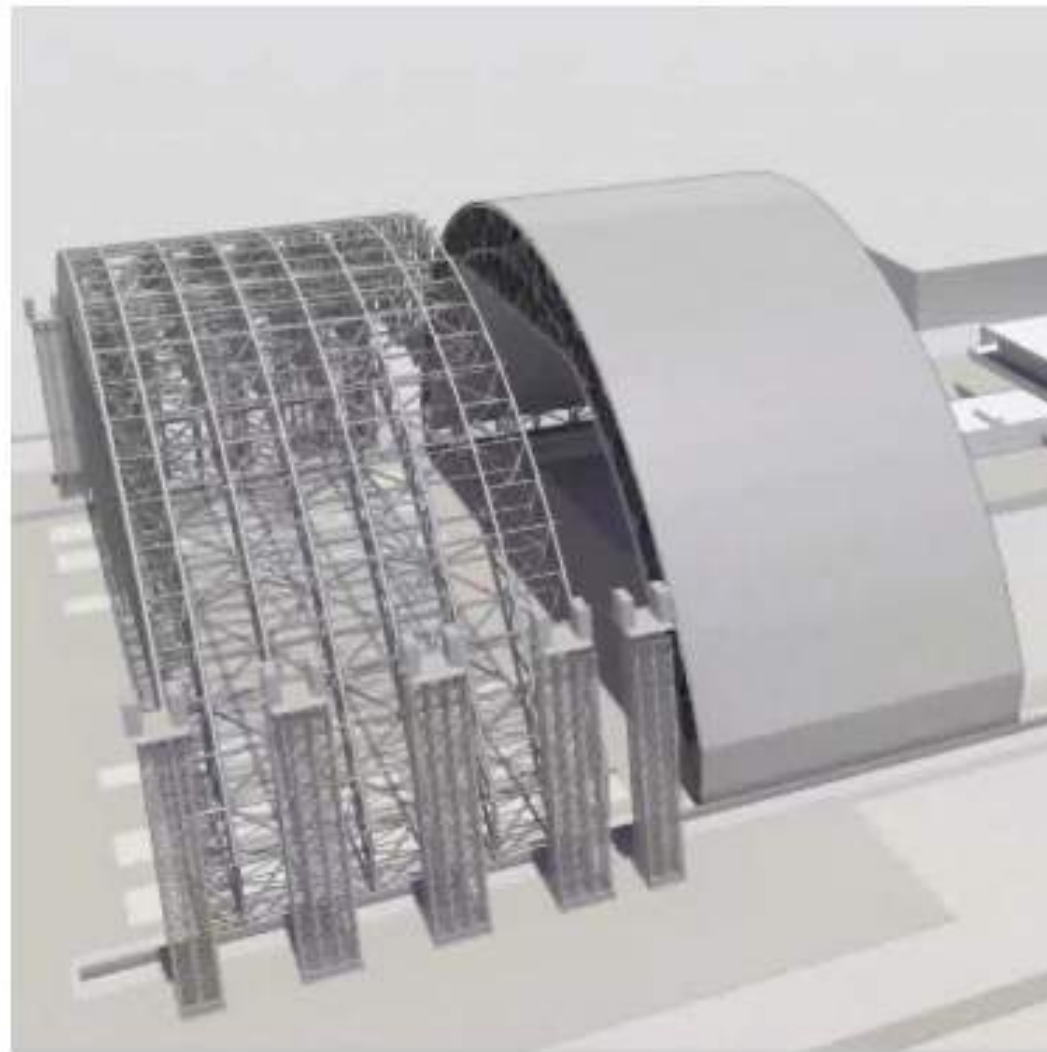
Obama Says More Sanctions Against Russia Are Coming

By MARK LANDLER and PETER BAKER 7 minutes ago

On the last stop of his Asian trip, President Obama said the United States would impose additional sanctions on Russia and freeze some exports of military technology.



Mayor of Ukraine's Second-Largest City Is Shot



Putting a 32,000-Ton Cap on Chernobyl

By HENRY FOUNTAIN

Chernobyl, Ukraine, is building a \$1.5 billion arch to all but eliminate the risk of further contamination at the site of the 1986 nuclear reactor explosion.

Photos: Years After Disaster, Building Progress

String of Deadly Storms Hits Midwest and South

By ALAN BLINDER and ASHLEY SOUTHALL 24 minutes ago

A violent weather system lashed the Midwest and



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By THE EDITORIAL BOARD

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MARKETS »

At 9:09 AM ET

BUSINESS DAY »

Britain	Germany	France
FTSE 100	DAX	CAC 40
6,690.63	9,422.85	4,446.23
+4.94	+21.30	+2.60
+0.07%	+0.23%	+0.06%

Data delayed at least 15 minutes

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Why the Housing Market Is Still Stalling the Economy

Millions are living with parents or friends and just not setting up households.



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From The New York Times

Monday, April 28, 2014

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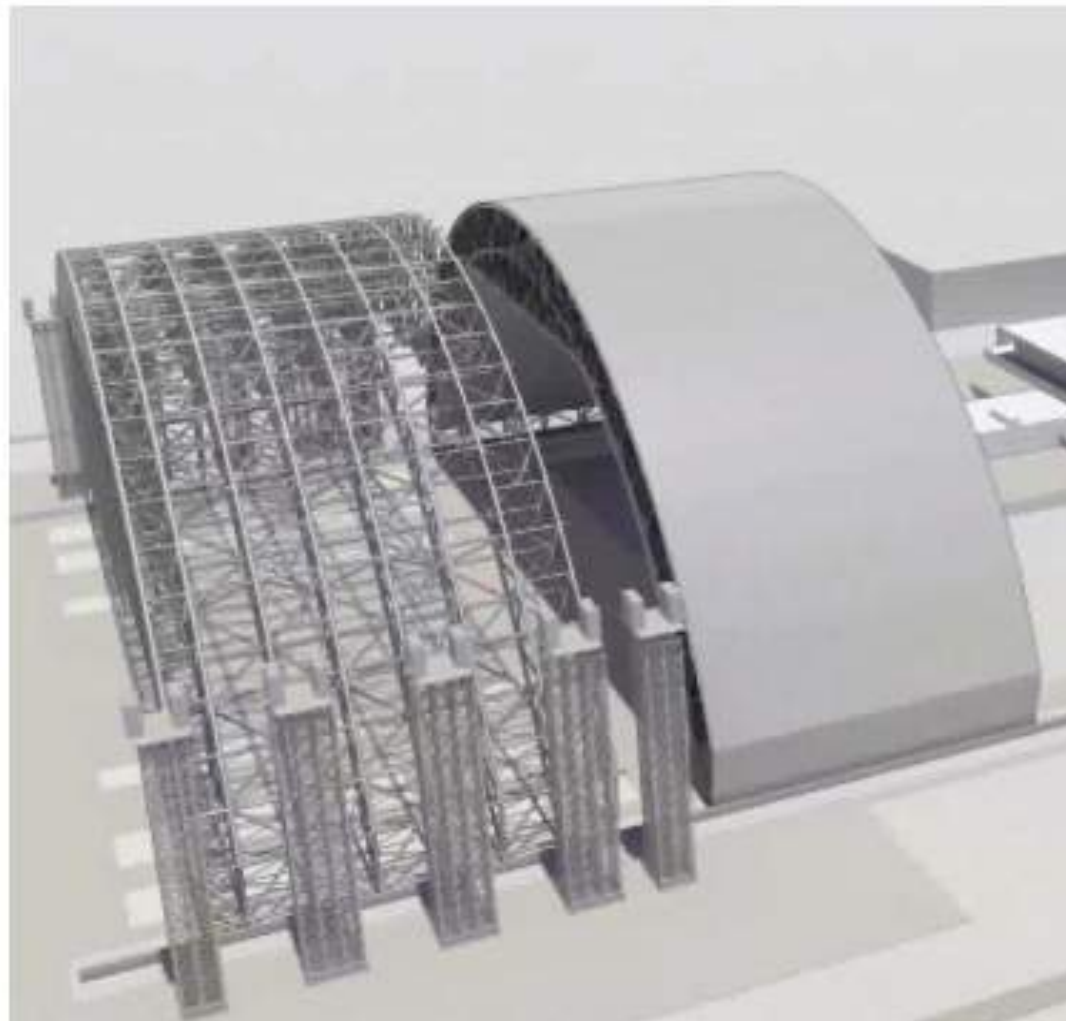
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What is important and how do you know?

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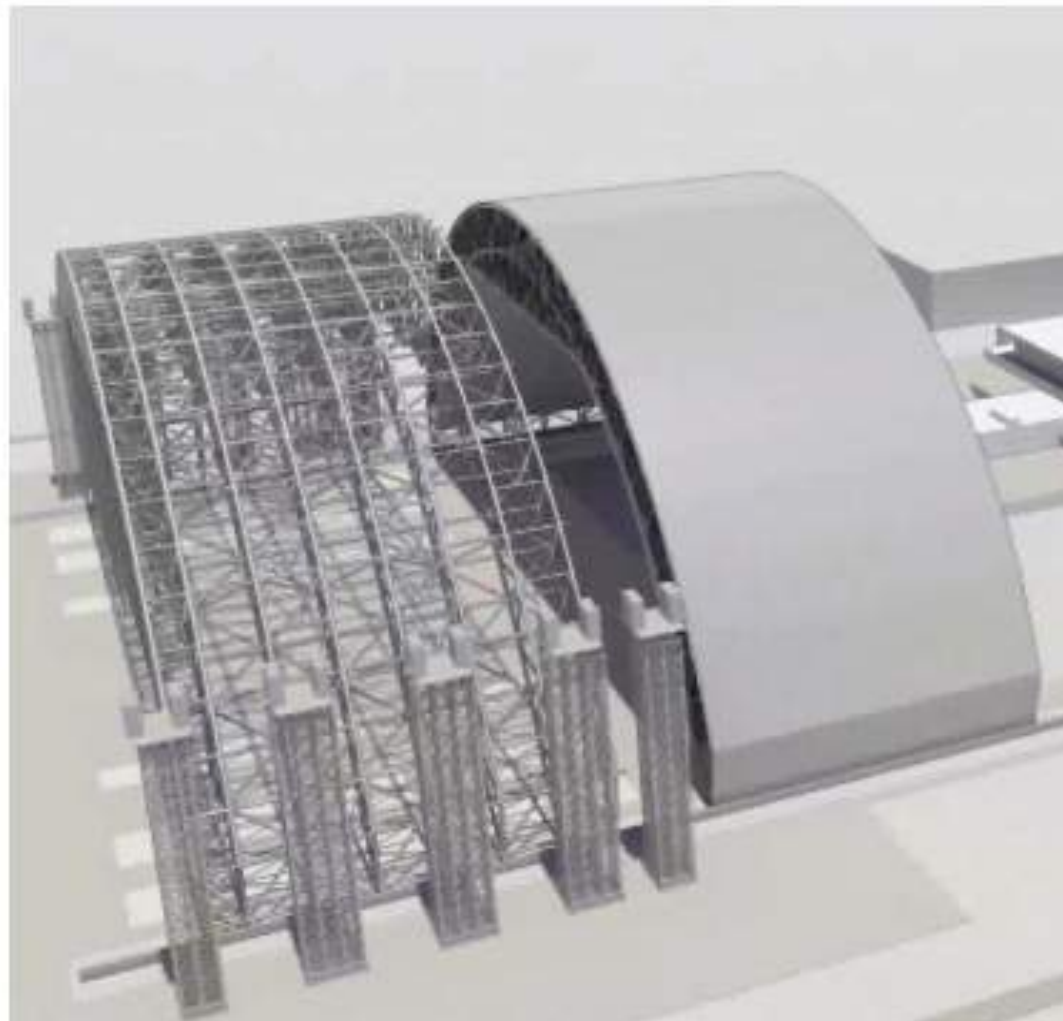
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What is news and what is advertisement?

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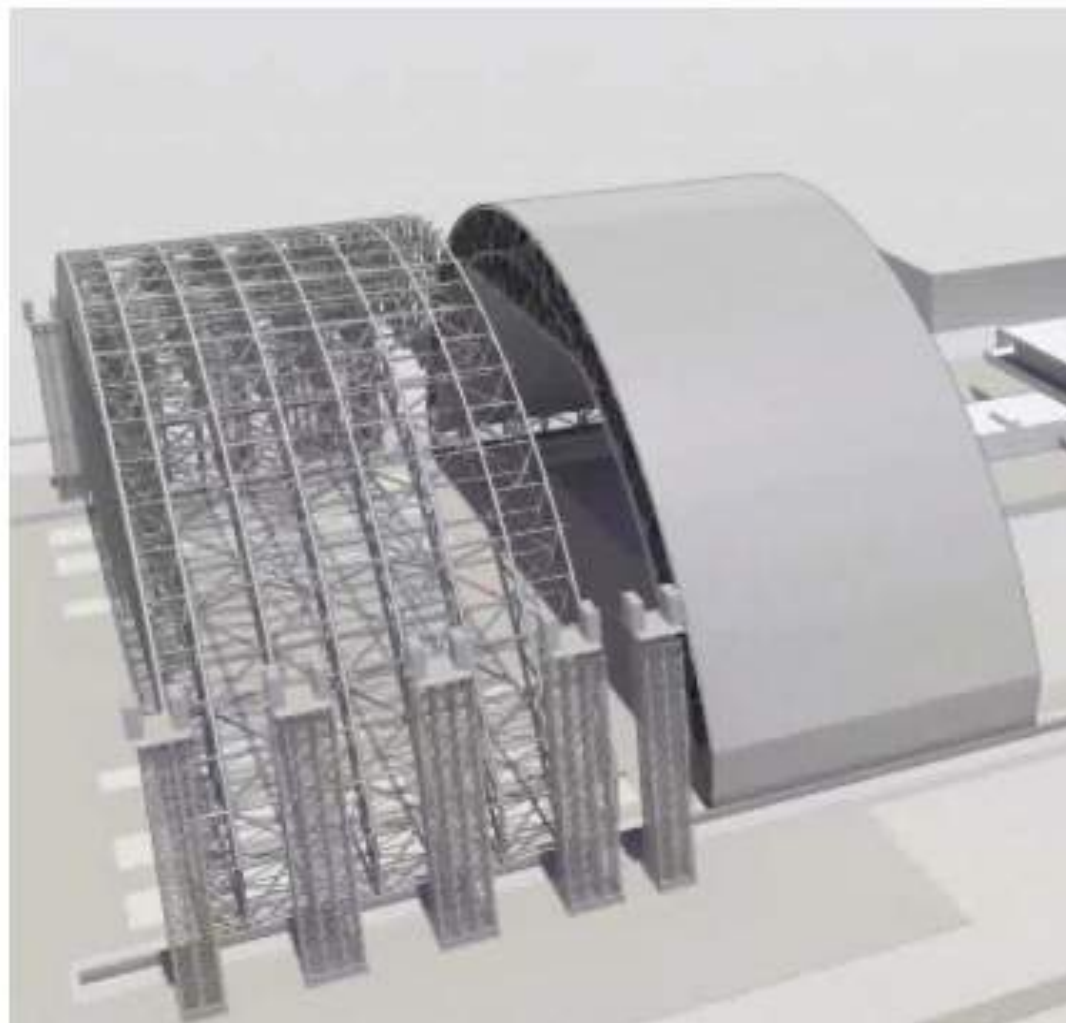
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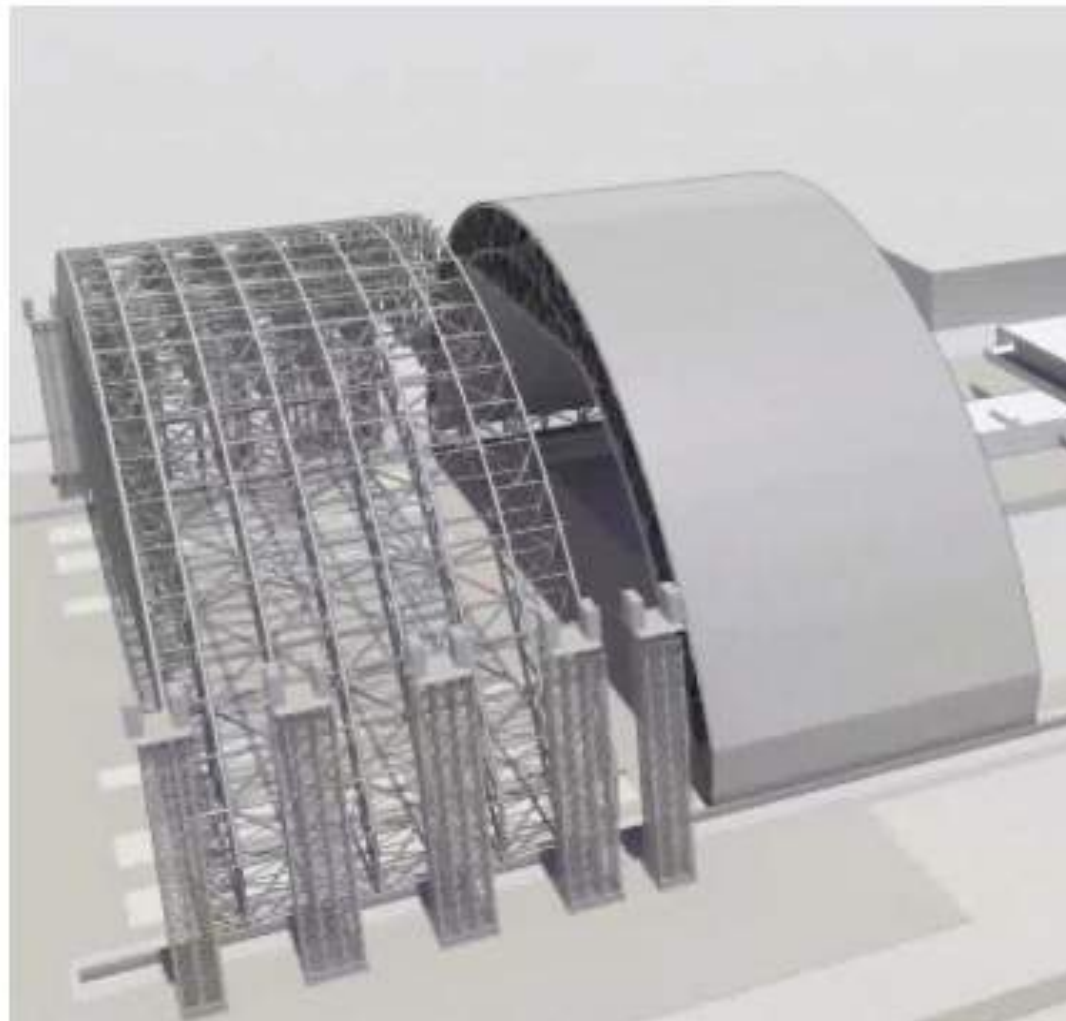
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What does the information mean?

»
Using
All Stalling
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From Data to Information in the WWW

Web 東奥

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東奥日報電子版
長期割引あり

新聞ご購読申し込み

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new
ケータイ・スマホ情報

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イベント
展覧会
求人

青年海外協力隊
シニア海外ボランティア

秋募集
受付期間
10月1日～11月5日まで



青森県の天気予報
各地の気象(22時)
気温(°C) 風向/風速
青森 17.2 南南西/3m
弘前 14.8 南/2m

天地人 | 社説 | 訃報 | お悔やみ | 青森
プロ野球 | MLB | Jリーグ | 大相撲 | 高校野球

エンタメ | コラム | 新刊本 | 新作映画 | 音楽CD | 格闘技

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住まいナビ
青森県の
物件情報

速報 19:46 床下から2体目の遺体

>>速報ニュース一覧

保育所対抗チャンバラ交流大会



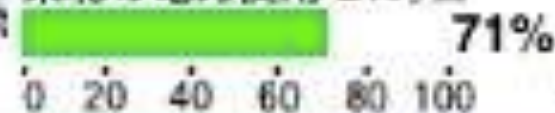
TNT 東奥NET
テレビ

- ・ 風間浦で「同志社フェア」
- ・ 園児らチャンバラ交流/板柳
- ・ 染工場など全焼、2人死亡
- ・ 津軽の食と産業まつり開幕

>> 過去の動画ニュース

投稿動画 受け付けます

東北の電力使用 21時台



青森のニュース

2012年10月14日 22:37

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第10回 弘前・白神アップルマラソン写真特集



「滝めぐり」DVD発売

福島原発事故

東日本大震災

22:01 弘高、決勝へ/東北高校軟式野球

21:30 「生活」小沢代表が講演/十和田



不動産情報
中古車ネットガーデン
ネット住宅展示場
イメール申し込み
Miniガイド

ロレックス
正規品取扱店

マエバラ

人材派遣なら
東奥日報人材センター アウル

青森のセーフティネット

サンワアリーナ 青森

風家

あかちゃん・初宮参り

クレバーホーム

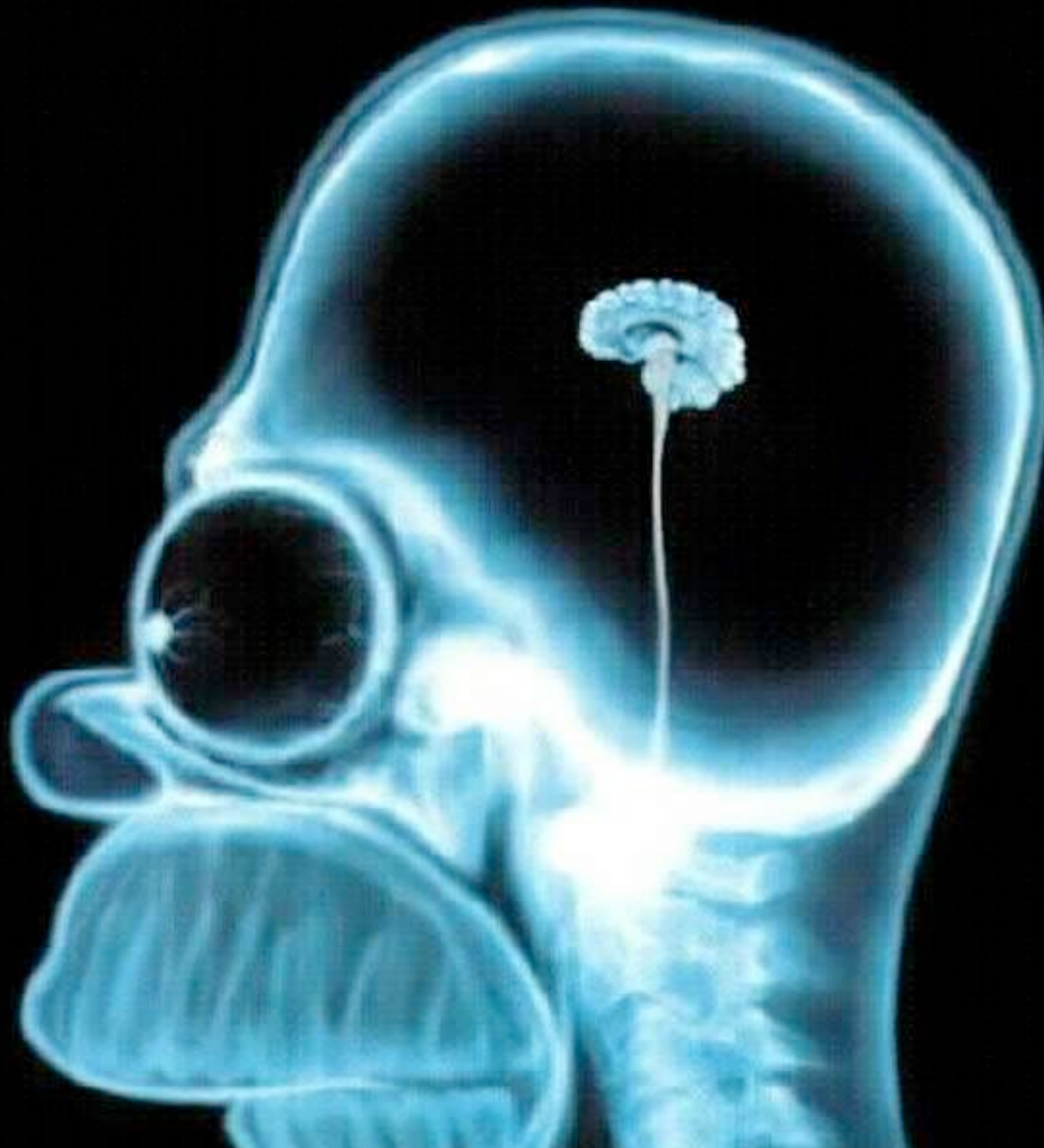
Cubic Four
建築工房 キュービック・フォー

弘前初登場

お得な情報はここから

NEW モデルハウス
オープン!!

日本直営



Humans have **contextual knowledge**, **world knowledge** and **experience** to solve the problem

The Web is Supposed to be Used by Humans

- The Web is based on the **markup language HTML**
- HTML describes
 - how information is **presented**
 - how information is **linked**
 - but **not**, what the information means

WHAT IS THE MEANING G

Next section

LIVES



GAME OVER



03: The Importance of Meaning

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