مباحث ویژه پیرامون فضای سایبر

وب استراتژیک
و استراتژی وب

«مروری بر فرآیند تطور وب»

Strategic Web and Strategy of Web
A Review on the Process of Web Evolution
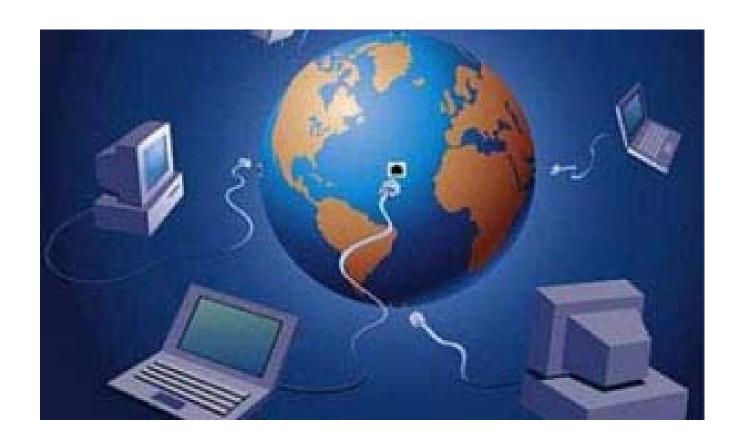
کاظم فولادی

دانشکده مهندسی برق و کامپیوتر

دانشگاه تهران

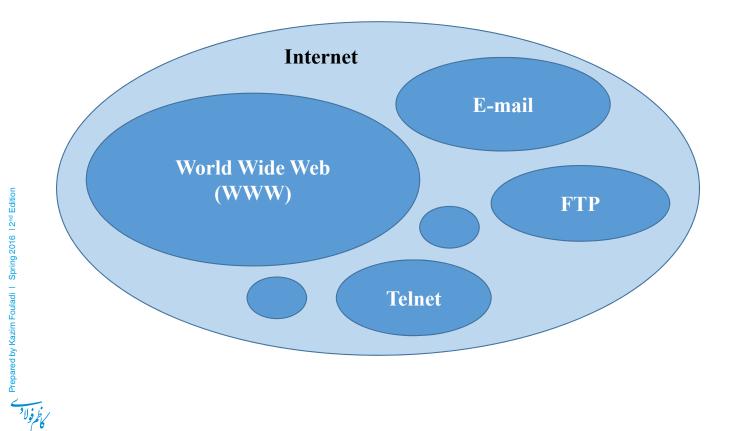http://courses.fouladi.ir/cyber

وب استراتژیک

۱

مقدمه
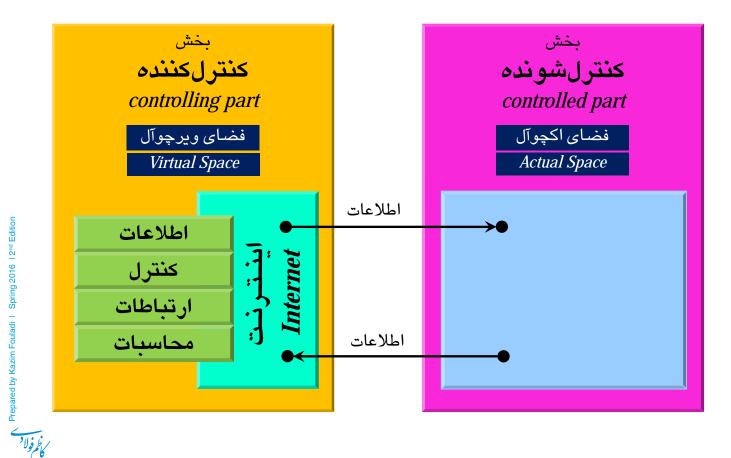
اینترنت و وب

وب پر استفاده‌ترین بخش از اینترنت
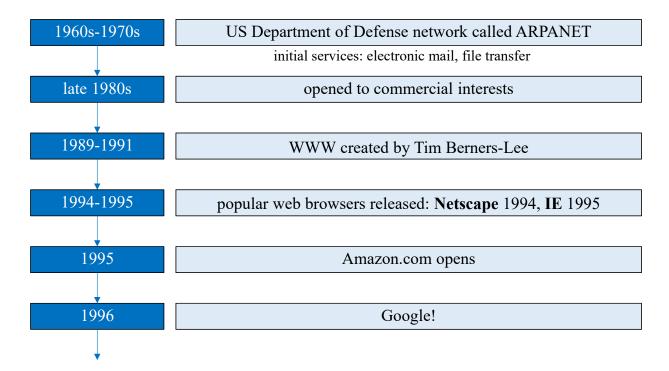
اینترنت به‌عنوان یک کاربرد

تاریخچه‌ی اینترنت

1960s-1970s	US Department of Defense network called ARPANET
	initial services: electronic mail, file transfer
late 1980s	opened to commercial interests
1989-1991	WWW created by Tim Berners-Lee
1994-1995	popular web browsers released: **Netscape** 1994, **IE** 1995
1995	Amazon.com opens
1996	Google!

Left diagram:

#1 IMP UCLA — #1 HOST Sigma 7

THE ARPA NETWORK

SEPT 1969

1 NODE

Right diagram:

940 — #2 SRI — #4 UTAH

#4 UTAH — PDP 10

360 — #3 UCSB

#3 UCSB — #2 SRI

#3 UCSB — #1 UCLA

#2 SRI — #1 UCLA

#1 UCLA — Sigma 7

THE ARPA NETWORK

DEC 1969

4 NODES

ARPANET GEOGRAPHIC MAP, JUNE 1977

Legend:
- ⌁ SATELLITE CIRCUIT
- ○ IMP
- □ TIP
- ▲ PLURIBUS IMP

(NOTE: THIS MAP DOES NOT SHOW ARPA'S EXPERIMENTAL SATELLITE CONNECTIONS)

NAMES SHOWN ARE IMP NAMES, NOT (NECESSARILY) HOST NAMES

Map labels: MOFFETT, LBL, AMES15, AMES16, LLL, SRI2, SRI51, XEROX, STANFORD, TYMSHARE, SUMEX, FNWC, HAWAII, ACCAT, SCRL, UCLA, NOSC, RAND, ISI52, USC, ISI22, AFWL, UTAH, DOCB, GWC, ANL, ILLINOIS, SCOTT, WPAFB, AFWL, TEXAS, GUNTER, EGLIN, MITRE, ARPA, PENTAGON, NRL, SDAC, DCEC, NSA, NBS, NORSAR, LONDON, BELVOIR, ABERDEEN, CMU, RUTGERS, NYU, RADC, LINCOLN, MIT44, MIT6, CCA, RCC5, RCC49, DEC, BBN40, BBN30, HARVARD

نهادهای حاکم بر اینترنت

1986

نیروی ضربت مهندسی اینترنت
The Internet Engineering Task Force

http://www.ietf.org/

1998

بنگاه اینترنت برای نام‌ها و شماره‌های منتسب
Internet Corporation for Assigned Names and Numbers
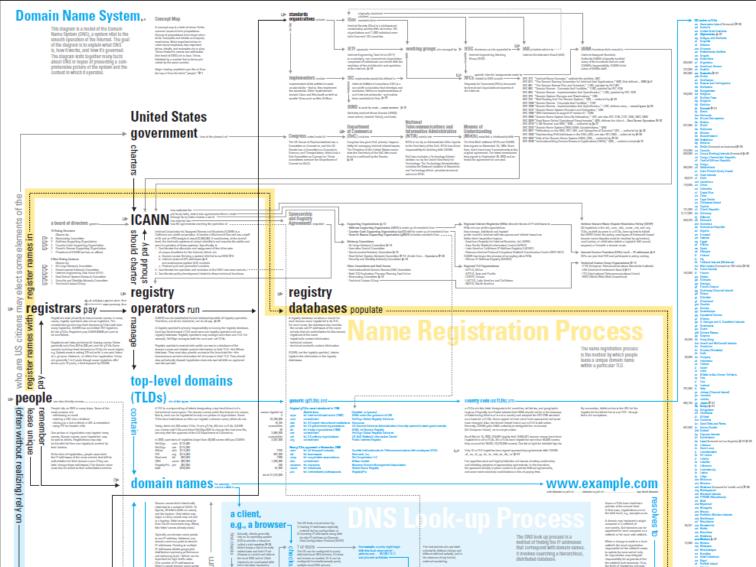
http://www.icann.org/

1998

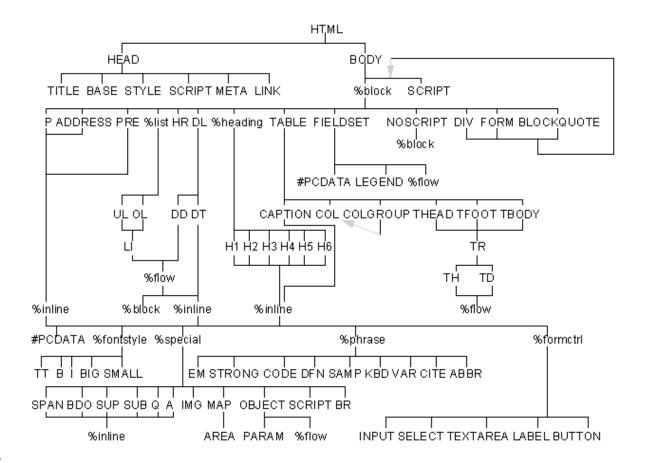**کنسرسیوم وب جهان گستر**
World Wide Web Consortium

http://www.w3c.org/

Domain Name System

This diagram is a model of the Domain Name System (DNS), a system vital to the smooth operation of the Internet. The goal of the diagram is to explain what DNS is, how it works, and how it's governed.

The diagram knits together many facts about DNS in hopes of presenting a comprehensive picture of the system and the context in which it operates.

Concept Map

A concept map is a kind of inter-linked list, with boxes containing propositions. Groups of propositions form larger structures. Examples and details accompany many boxes. More important boxes are center visual emphasis; less important terms, details, and examples are in gray. Terms (shown in boxes) connect via labeled links.

standards organizations

ISOC

IETF

IESG decisions can be appealed to

IAB

IANA

implementors

BIND is used by most ... name servers

United States government

Congress

Department of Commerce (DoC)

National Telecommunications and Information Administration (NTIA)

Memos of Understanding (MoUs)

ICANN — should charter

a board of directors

Sponsorship and Registry Agreements

Supporting Organizations

Advisory Committees

Regional Internet Registries (RIRs)

Uniform Domain-Name Dispute-Resolution Policy (UDRP)

registry operators — run
registrars — pay
registry databases — populate

Name Registration Process

The name registration process is the method by which people lease a unique domain name within a particular TLD.

top-level domains (TLDs) — contain

generic (gTLDs) and

country code (ccTLDs)

people

domain names — for example, can be subset in

www.example.com

DNS Look-up Process

a client, e.g., a browser — checks

The DNS look-up process is a method of finding the IP addresses that correspond with domain names. It involves searching a hierarchical, distributed database.

who are US citizens may elect some elements of the
register names with — pay
(often without realizing) rely on — lease unique
resolves to

زبان HTML

پروتکل HTTP

HTTP
Request Message

HTTP
Response Message

HTTP Clients
(Web Browser)

HTTP over TCP/IP

HTTP Server (Web Server)

HTTP Methods

GET ············► Request for a web page or an object from server

PUT ············► For sending a document to the server

POST ············► For sending data or information about client to the server

DELETE ············►Request to Delete an object on the server

HEAD ············► Request for information about a web page or a document

TRACE ············►Used to trace the proxies and tunnels in the path from
client to server

OPTION ············►Used to determine server's capabilities

وب استراتژیک

۲

تطور وب

The Evolution of the Web

تطور وب

انتقال از وب یک به وب دو

تطور وب

کاربردهای وب دو

Social Media Landscape

FredCavazza.net

تطور وب

مقایسه‌ی وب یک با وب دو
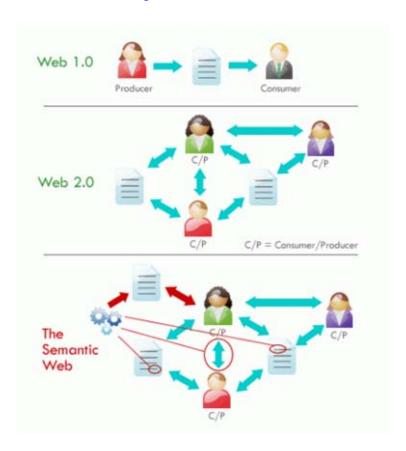
Web 1.0	Web 2.0
Reading	Reading/Writing
Companies	Communities
Client-Server	Peer to Peer
HTML, Portals	XML, RSS
Taxonomy	Tags
Owning	Sharing
IPOs	Trade sales
Netscape	Google
Web forms	Web applications
Screen scraping	APIs
Dialup	Broadband
Hardware costs	Bandwidth costs
Lectures	Conversation
Advertising	Word of mouth
Services sold over the web	Web services
Information portals	Platforms

تطور وب

از وب یک تا وب معنایی

تطور وب

مقایسه‌ی وب دو با وب سه

Web 2.0	Web 3.0
Read/Write Web	Portable Personal Web
Communities	Individuals
Sharing Content	Consolidating Dynamic Content
Blogs	Lifestream
AJAX	RDF
Wikipedia, google	Dbpedia, igoogle
Tagging	User engagement
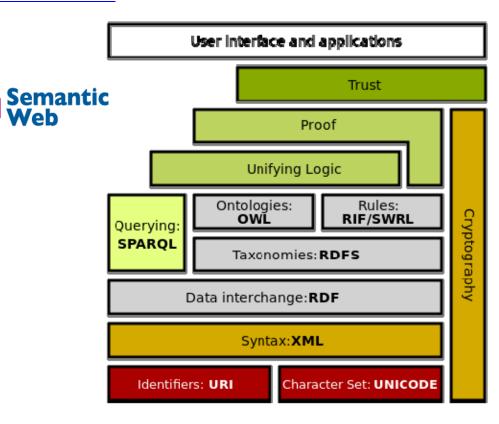
تطور وب

ساختار پشته‌ی وب معنایی

SEMANTIC WEB STACK

WTF IS THE SEMANTIC WEB
AND WHY SHOULD WE CARE?

WTF IS SEMANTICS?

Semantics is related to syntax in most languages. Syntax is how you say something, where semantics is the meaning behind what you have said. When substituting one part of the sentence with another word or symbol, the syntax of the sentence changes, while the semantics may remain the same.

I LOVE THE INTERNET

Syntax   Semantics

I ♥ THE INTERNET

While the syntax has changed, the semantics of the sentence has remained the same.

WTF IS THE SEMANTIC WEB?

The **WEB** is a system of interlinked hypertext documents accessed through the internet. Sir Timothy John Berner-Lee is credited with inventing the World Wide Web.

HTML

The **SEMANTIC WEB** is a group of methods and technologies that allows machines to understand the semantics of information on the World Wide Web.

XML

WTF, WEB 2.0 vs WEB 3.0?

WEB 2.0

WEB 2.0 focused on communities, social networks, RSS feeds, Google and the immergence of user content.

WEB 3.0

WEB 3.0 focuses on the individual, user behavior, the portable personal web, consolidating dynamic content and the semantic web.

WTF DOES THIS HAVE TO DO WITH COMPUTERS?

The internet created a standard way for computers to talk to one another in order to exchange information and data.

WEB 2.0: HTML

However computers merely mimic information to one another creating a quick and easy way to view information.

When you type a web address into your browser your computer connects with the website and **retrieves** the data on that website.

This document is written in a language called **HTML**. The HTML language defines a syntax that computers understand but not one that provides meaning.

RETRIEVING <PANCAKE BUNNY.JPG>

HTML merely describes the document and the link between other documents, while the components of the Semantic Web can describe what the document is.

WEB 3.0: XHTML

By rewriting the original **HTML** code with **Extensible HTML**, interspersed with **XML**, the website data has now become machine-readable. This enables content managers to add meaning to internet content.

WHY ARE YOU LOOKING AT A BUNNY WITH A PANCAKE ON ITS HEAD?

COMPONENTS OF THE SEMANTIC WEB

The semantic web uses these tools to construct a giant global graph.

RDF
Is a simple language for expressing data models, which refer to objects and their relationships. An RDF-based model can be represented in XML syntax.

RDF SCHEMA
are vocabulary for generalized hierarchies of such properties and classes.

OWL
adds more vocabulary for describing properties and classes among others, relations between classes, cardinality, equality, characteristics of properties, and enumerated classes.

XML
provides an elemental syntax for content structure within documents, it associates no semantics with the meaning of the content.

XML SCHEMA
is a language for providing and restricting the structure and content of elements contained within XML documents.

SPRAQL
is a protocol and query language for semantic web data sources.

WHY DO WE NEEDS THIS?

The intent of the semantic web is to enhance the usability and usefulness of the internet and its interconnected resources.

TRULY PERSONALIZED SEARCH RESULTS

Where can I get a burrito?

With an ever growing dependency on search engines the semantic web would enable faster and more comprehensive results tailored to your previous searches and personal interests.

24-HR CONNECTIVITY

Where is Sam right now?

The semantic web would allow for complete connectivity with people, places and things. The integration of data from all corners of the web would turn your computer from a simple tool to an automated think tank.

PROJECTS BASED ON THE SEMANTIC WEB

DBpedia
An effort to publish structured data extracted from Wikipedia. the data is published in RDF and made available on the web for use under the GNU Free Documentation License.

GoodRelations
A popular vocabulary for describing product information, prices, payment options, etc. It also clearly delineates the trends in supply and demand. It is currently being used by Best Buy, Yahoo and O'Reilly Media.

Friend of a Friend
A machine readable ontology describing persons, their usual activities and their relations to other people and events. FOAF allows groups of people to connect without the need for a centralized database.

SIOC
It provides a vocabulary of terms and relationships that model web data spaces. Examples of such data spaces are: discussion forums, weblogs, blogrolls, feed subscriptions, mailing lists, shared bookmarks, and image galleries.

تطور وب

حرکت به سوی وب چهار

Internet Evolution

Source: Nova Spivak, Radar Networks & Mills Davis, Project10x
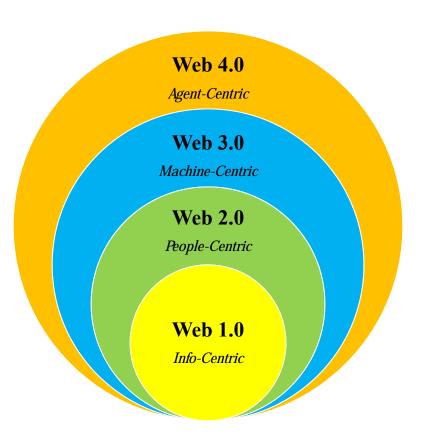
تطور وب

مرکزیت در نسخه‌های متوالی وب

وب استراتژیک

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آینده‌شناسی وب
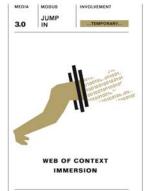
آینده‌شناسی وب

بر مبنای روی‌کرد رسانه‌ای به وب

trendne | MEDIA EVOLUTION

MEDIA 1.0	MODUS LEAN BACK	INVOLVEMENT
MEDIA 2.0	MODUS MOVE FORWARD	INVOLVEMENT
MEDIA 3.0	MODUS JUMP IN	INVOLVEMENT ...TEMPORARY...
MEDIA 4.0	MODUS ALWAYS ON	INVOLVEMENT ...PERMANENT...
MEDIA 5.0	MODUS PLUG IN	INVOLVEMENT ...IMPLANTED...

WEB OF CONTENT
ATTENTION

WEB OF COMMUNICATION
EMPOWERMENT

WEB OF CONTEXT
IMMERSION

WEB OF THINGS
CONNECTIVITY

WEB OF THOUGHTS
EXTENSION

trendne
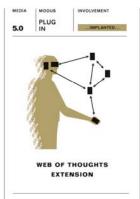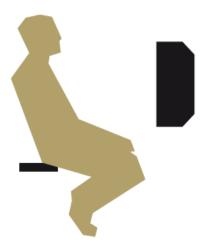
آینده‌شناسی وب

وب توجه به محتوا

MEDIA	MODUS	INVOLVEMENT
1.0	LEAN BACK	

INTERNET

TV

PRINT

OUTDOOR

E-MAIL

SEARCH

RADIO

WEB OF CONTENT

ATTENTION

trendone

آینده‌شناسی وب

وب توانمندی ارتباطات

MEDIA	MODUS	INVOLVEMENT
2.0	MOVE FORWARD	

WEB OF COMMUNICATION EMPOWERMENT

WEB 2.0

UGC/VIDEOS

WEBLOG

INTERACTIVE OOH

INSTANT MESSAGING

CROWDSOURCING

PODCAST

SOCIAL NETWORKS

WIKI

VIRALS

SOCIAL COMMERCE

AUCTIONS

WIDGETS

آینده‌شناسی وب

وب غوطه‌وری در زمینه

MEDIA	MODUS	INVOLVEMENT
3.0	JUMP IN	...TEMPORARY...

WEB OF CONTEXT
IMMERSION

WEB 3D

CINEMATIC GAMES

SEMANTIC WEB

HOLO ENTERTAINMENT

3D CHAT

SMART SEARCH

HOLO TV & GAMING

VIRTUAL WORLDS

SMART AV EXPLORATION

MMORPG

VIRTUAL SHOPPING

SMART ADVERTISING

CONSOLE

GAMING

GESTURE CONTROL

trendone
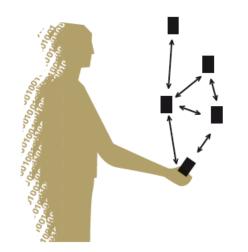
آینده‌شناسی وب

وب اتصال اشیا

MEDIA	MODUS	INVOLVEMENT
4.0	**ALWAYS ON**	...PERMANENT...

WEB OF THINGS CONNECTIVITY

OUTERNET

AUGMENTED REALITY

PRINT PLUS

OUTDOOR INWORLD

HYPERLOCALITY

GEOSPATIAL WEB

CONNECTED SPACE

AUGMENTED GOOGLES

AI AGENTS

ULTRA LOCAL NETWORKS

CLOUD COMPUTING

VOICE PROCESSING

WEARABLE TECHNOLOGY

MOBILE COMMUNITY

TACTILE INTERFACE

FACE RECOGNITION

OBJECT RECOGNITION

SHY TECH
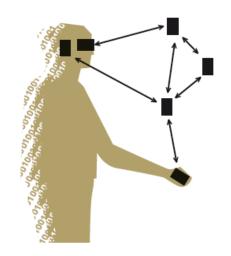
trendone

آینده‌شناسی وب

وب گسترش افکار

MEDIA	MODUS	INVOLVEMENT
5.0	PLUG IN	...IMPLANTED...

**WEB OF THOUGHTS
EXTENSION**

BRAIN COMPUTER INTERFACE

TOTAL IMMERSION

ACTIVE CONTACT LENSE

AUGMENTED VISION

TELEPATHY

NEURO WEB INTERFACES

5 SENSE IMMERSION

CLAYTRONICS

ARTIFICIAL BRAIN

REAL WORLD AVATARS

NEUROBOTS

NATURAL LANGUAGE PROCESSING

NEURO ENHANCEMENT

EYECHIP

IMPLANTS

HUMAN TECHNOLOGY CONVERGENCE

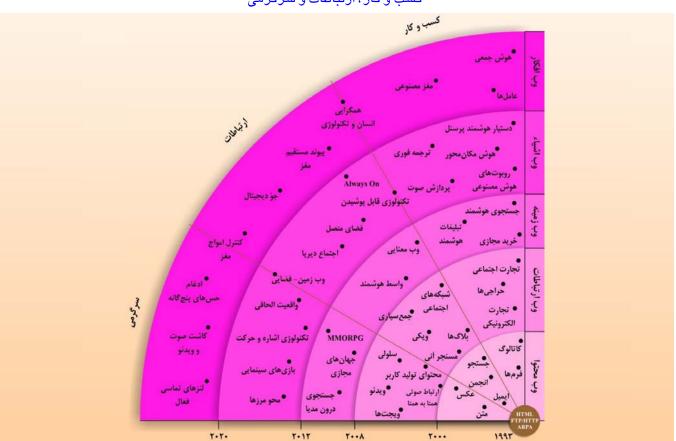FULLBODY PROSTHESIS

VOICELESS COMMUNICATION

BRAINWAVE CONTROL

HUMAN 2.0

trendone

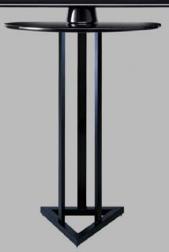# بسط وب

کسب و کار، ارتباطات و سرگرمی

The internet explodes into the real world ...
starting to leave our PCs...

2005   2010   2015   2020

...and becomes increasingly mobile, ubiquitous and intuitive.

TECHNOLOGY. The internet will become more mobile, augmented and eventually completely immersive.
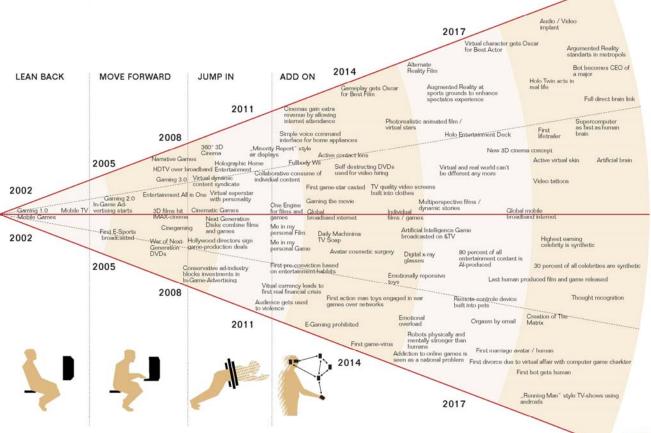
MARKETING. Marketing will turn from persuasion-marketing, to transparency marketing and will one day be more of a perfect information source, than just an advertising tool.

DAILY LIFE. Information nowadays is controlled by the active self-management of the user. As devices and content become more intelligent, input and output will become increasingly intuitive.

trendONE
NILS MÜLLER COMMUNICATIONS

FUTURE ENTERTAINMENT
THE CONVERGENCE OF FILM AND GAMING

BEST CASE

BASE CASE

WORST CASE

2020 · **2017** · **2014** · **2011** · **2008** · **2005** · **2002**

LEAN BACK · MOVE FORWARD · JUMP IN · ADD ON

Best case / upper band:

- Virtual character gets Oscar for Best Actor
- Audio / Video implant
- Argumented Reality standarts in metropols
- Bot becomes CEO of a major
- Holo Twin acts in real life
- Full direct brain link
- Alternate Reality Film
- Augmented Reality at sports grounds to enhance spectatos experience
- Supercomputer as fast as human brain
- First lifetrailer
- Gameplay gets Oscar for Best Film
- Photorealistic animated film / virtual stars
- Holo Entertainment Deck
- New 3D cinema concept
- Active virtual skin
- Artificial brain
- Cinemas gain extra revenue by allowing internet attendance
- Simple voice command interface for home appliances
- „Minority Report" style air displays
- Active contact lens
- Virtual and real world can't be different any more
- Video tattoos
- 360° 3D Cinema
- Fullbody Wii
- Self destructing DVDs used for video hiring
- Narrative Games
- Holographic Home Entertainment
- HDTV over broadband
- Collaborative consume of individual content
- First game-star casted
- TV quality video screens built into clothes
- Multiperspective films / dynamic stories
- Gaming 3.0
- Virtual dynamic content syndicate
- Entertainment All in One
- Virtual superstar with personality
- Gaming the movie
- Gaming 2.0 In-Game Advertising starts
- Mobile TV
- 3D films hit
- Cinematic Games
- One Engine for films and games
- Global broadband internet
- Individual films / games
- Global mobile broadband internet
- Gaming 1.0
- Mobile Games
- IMAX cinema
- Next Generation Disks combine films and games
- Me in my personal Film
- Daily Machinima TV Soap
- Artificial Intelligence Game broadcasted on &TV
- First E-Sports broadcasted
- Cinegaming
- War of Next Generation DVDs
- Hollywood directors sign game-production deals
- Me in my personal Game
- Avatar cosmetic surgery
- Digital x-ray glasses
- 80 percent of all entertainment contant is AI-produced
- Highest earning celebrity is synthetic
- Conservative ad-industry blocks investments in In-Game-Advertising
- First pre-conviction based on entertainment-habbits
- Emotionally reponsive toys
- 30 percent of all celebrities are synthetic
- Last human produced film and game released
- Virtual currency leads to first real financial crisis
- First action man toys engaged in war games over networks
- Remote-controle device built into pets
- Thought recognition
- Audience gets used to violence
- E-Gaming prohibited
- Emotional overload
- Orgasm by email
- Creation of The Matrix
- First game-virus
- Robots physically and mentally stronger than humans
- First marriage avatar / human
- Addiction to online games is seen as a national problem
- First divorce due to virtual affair with computer game charkter
- First bot gets human
- „Running Man" style TV-shows using androids

وب استراتژیک

۴

اینترنت
اشیا

INTERNET OF THINGS

The Internet of Things is a combination of:

Sensors

Connectivity

IoT

People and Processes

Application layer

IoT Applications

Service support and Application support layer

Generic Support Capabilities

Specific Support Capabilities

Network layer

Networking Capabilities

Transport Capabilities

Device layer

Device Capabilities

Gateway Capabilities

Levels

7 Collaboration & Processes
(Involving People & Business Processes)

6 Application
(Reporting, Analytics, Control)

5 Data Abstraction
(Aggregation & Access)

4 Data Accumulation
(Storage)

3 Edge Computing
(Data Element Analysis & Transformation)

2 Connectivity
(Communication & Processing Units)

1 Physical Devices & Controllers
(The "Things" in IoT)

Center

Edge
Sensors, Devices, Machines,
Intelligent Edge Nodes of all types

What exactly is the

"INTERNET?
of THINGS"?
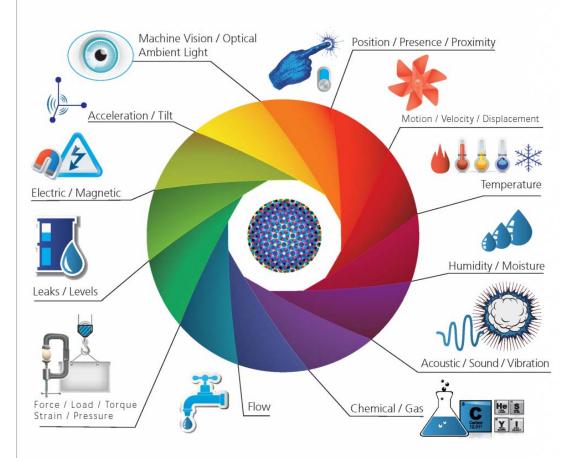
Smart Systems and the Internet of Things are driven by a combination of:

1 **SENSORS** & ACTUATORS

2 *CONNECTIVITY*

3 *PEOPLE & PROCESSES*
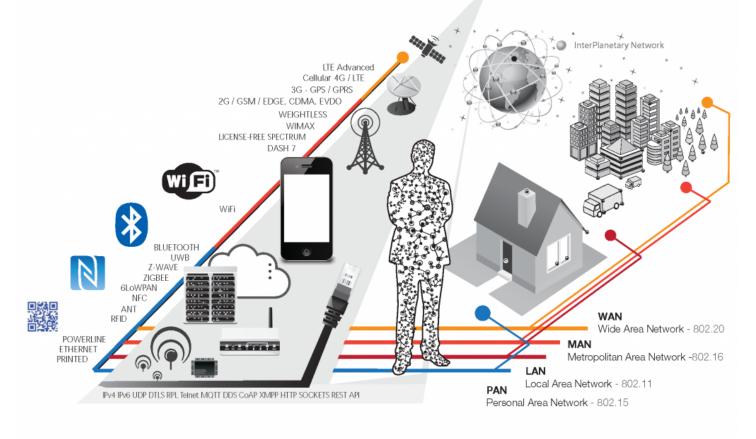
① SENSORS *& ACTUATORS*

We are giving our world a digital nervous system. Location data using GPS sensors. Eyes and ears using cameras and microphones, along with sensory organs that can measure everything from temperature to pressure changes.
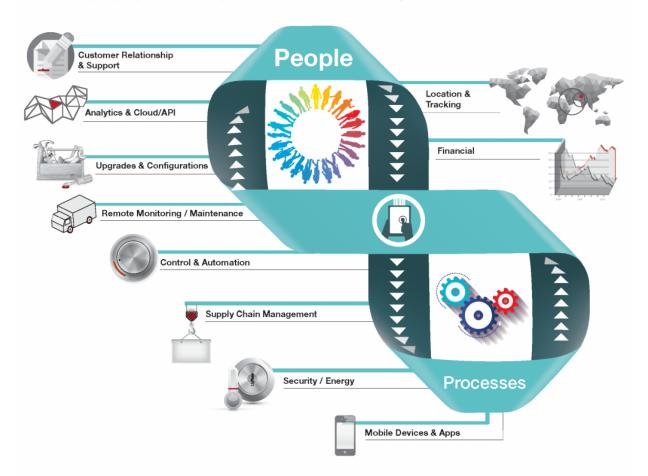

Machine Vision / Optical Ambient Light

Position / Presence / Proximity

Acceleration / Tilt

Motion / Velocity / Displacement

Electric / Magnetic

Temperature

Leaks / Levels

Humidity / Moisture

Acoustic / Sound / Vibration

Force / Load / Torque Strain / Pressure

Flow

Chemical / Gas

2 CONNECTIVITY

These inputs are digitized and placed onto networks.

InterPlanetary Network

LTE Advanced
Cellular 4G / LTE
3G - GPS / GPRS
2G / GSM / EDGE, CDMA, EVDO
WEIGHTLESS
WIMAX
LICENSE-FREE SPECTRUM
DASH 7

WiFi

WiFi

BLUETOOTH
UWB
Z-WAVE
ZIGBEE
6LoWPAN
NFC
ANT
RFID

POWERLINE
ETHERNET
PRINTED

IPv4 IPv6 UDP DTLS RPL Telnet MQTT DDS CoAP XMPP HTTP SOCKETS REST API

WAN
Wide Area Network - 802.20

MAN
Metropolitan Area Network -802.16

LAN
Local Area Network - 802.11

PAN
Personal Area Network - 802.15

3 PEOPLE & *PROCESSES*

These networked inputs can then be combined into bi-directional systems that integrate data, people, processes and systems for better decision making.

Customer Relationship & Support

Analytics & Cloud/API

Upgrades & Configurations

Remote Monitoring / Maintenance

Control & Automation

Supply Chain Management

Security / Energy

People

Location & Tracking

Financial

Processes

Mobile Devices & Apps

The interactions between these

entities are creating new types of smart applications and services.
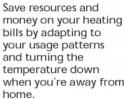
Starting with popular connected devices already on the market

SMART THERMOSTATS

nest

Save resources and money on your heating bills by adapting to your usage patterns and turning the temperature down when you're away from home.

CONNECTED CARS

CAR 2GO

Tracked and rented using a smartphone. Car2Go also handles billing, parking and insurance automatically.

ACTIVITY TRACKERS

BASIS

Continuously capture heart rate patterns, activity levels, calorie expenditure and skin temperature on your wrist 24/7.

SMART OUTLETS

belkin

Remotely turn any device or appliance on or off. Track a device's energy usage and receive personalized notifications from your smartphone.

PARKING SENSORS

STREETLINE
CONNECTING THE REAL WORLD

Using embedded street sensors, users can identify real-time availability of parking spaces on their phone. City officials can manage and price their resources based on actual use.

And quickly advancing
TO ➡ DIVERSE APPLICATIONS

HOME
CONSUMER

TRANSPORT
MOBILITY

HEALTH
BODY

BUILDINGS
INFRASTRUCTURE

CITIES
INDUSTRY

Light bulbs	Traffic routing	Patient Care	HVAC	Electrical Distribution
Security	Telematics	Elderly Monitoring	Security	Maintenance
Pet Feeding	Package Monitoring	Remote Diagnostic	Lighting	Surveillance
Irrigation Controller	Smart Parking	Equipment Monitoring	Electrical	Signage
Smoke Alarm	Insurance Adjustments	Hospital Hygiene	Transit	Utilities / Smart Grid
Refrigerator	Supply Chain	Bio Wearables	Emergency Alerts	Emergency Services
Infotainment	Shipping	Food sensors	Structural Integrity	Waste Management
Washer / Dryer	Public Transport		Occupancy	
Stove	Airlines		Energy Credits	
Energy Monitoring	Trains			

Things get interesting when these connected devices and services start creating

COMPOUND APPLICATIONS

within their own verticals and across industries:

FOR EXAMPLE

TRANSPORTATION + SMART CITIES

Sofia and her son Luis are on their way Downtown for an appointment.

Wireless sensors embedded in the parking lot help direct the car to an open spot in the city while also initiating the parking fee.

Using the cars's parking details the vehicle schedules a mobile mechanic to change the oil while the two are away for the afternoon.

In Downtown San Francisco 20-30% of all traffic congestion is caused by people hunting for a parking spot.

- San Francisco Municipal Transportation Agency (SFMTA)

HEALTHCARE + SMART HOME

Aging uncle Earl is still living isolated at his home and you are concerned about his safety.

Wireless sensors throughout his house help measure healthy activity levels, sleeping patterns and medication schedule.

Alerts are automatically sent to health care services and authorized family members if any abnormal activity is detected.

40 million adults age 65 and over will be living alone in the U.S, Canada and Europe.

- U.S. Department of Health and Human Services: Administration for Community Living (ACL)

Anna was being pressured to reduce her company's expenses for their new corporate office.

After speaking with experts she decided to install sensors to automate energy usage according to building occupancy, people flow, temperature, and other ambient conditions -- Improving the buildings overall efficiency.

Energy used by commercial and industrial buildings in the US creates nearly 50% of our national emissions of greenhouse gases.
- United States Environmental Protection Agency

Inevitably these integrations become more tightly coupled across time, location & services.

REAL-TIME SERVICE NETWORKS

- Appliance Monitoring
- Predictive Maintenance
- Service Technician / CRM
- Waste Management / Recycling

R Hotel Denver,
Industrial Washer #GHS40-2608

Location: *ID: FC-RM #00243*
Manufacturer: *Appliance Park*
Louisville, KY ID: #45205343

Materials: *FC / SUS*
Sensor: *Vibration*
Connectivity: *Wireless LAN*

Connor, the Lead Maintenance Manager at the R Hotel in Denver receives a sensor notification that the pump body O-ring #6 on washing machine #230243 is starting to fail in the housekeeping laundry room.
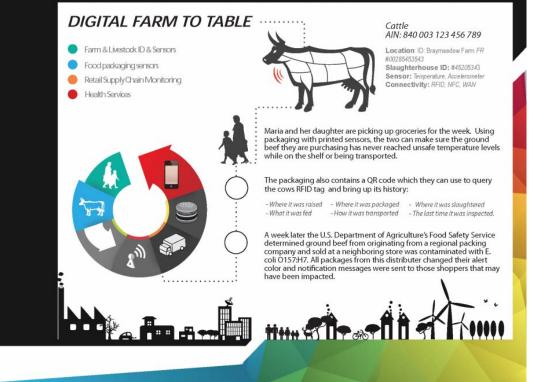
On his mobile, Connor prompts the machine to order a new part. This action triggers a bidding opportunity for local service technicians within the product's authorized maintenance network.

The request lays out:
- *Pricing parameters*
- *Timing requirements*
- *Machine history*
- *Part specs*
- *Predictive sensor measurements & alerts*

Tom from IA Appliances bids on the service request and receives a notification a few moments later that his bid was accepted.
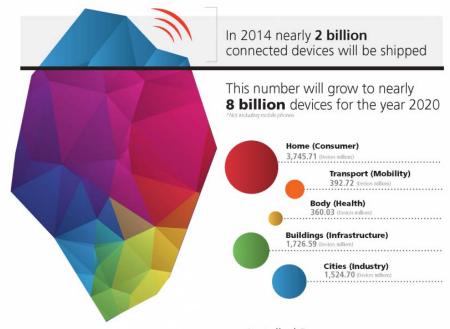
Within 1.5 hours, a service technician from IA Appliances is on site (Using a temporary facility access code for the wireless door lock) to replace the water pump. Connor sends a brief note on the service quality and IA Appliances releases a bid request for the part's raw materials to local recycling centers.

DIGITAL FARM TO TABLE

- Farm & Livestock ID & Sensors
- Food packaging sensors
- Retail Supply Chain Monitoring
- Health Services

Cattle
AIN: 840 003 123 456 789

Location: ID: Braymeadow Farm *FR* #00285453543
Slaughterhouse ID: #45205343
Sensor: *Temperature, Accelerometer*
Connectivity: *RFID, NFC, WAN*

Maria and her daughter are picking up groceries for the week. Using packaging with printed sensors, the two can make sure the ground beef they are purchasing has never reached unsafe temperature levels while on the shelf or being transported.

The packaging also contains a QR code which they can use to query the cows RFID tag and bring up its history:

- Where it was raised   - Where it was packaged   - Where it was slaughtered
- What it was fed   - How it was transported   - The last time it was inspected.

A week later the U.S. Department of Agriculture's Food Safety Service determined ground beef from originating from a regional packing company and sold at a neighboring store was contaminated with E. coli O157:H7. All packages from this distributer changed their alert color and notification messages were sent to those shoppers that may have been impacted.

How large is the IoT Market?

In the not-too-distant future, hundreds of millions, then billions, of individuals and businesses with billions, then trillions, of smart, communicating devices will stretch the boundaries of current systems. Creating the potential to change the way we work, learn, entertain and innovate.
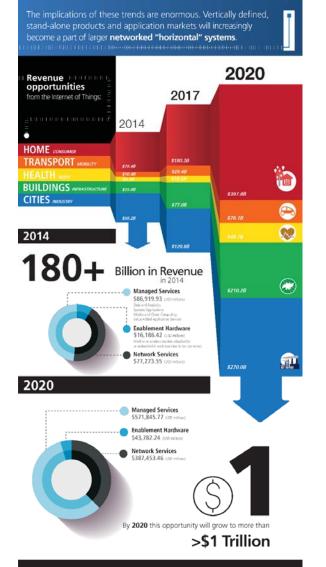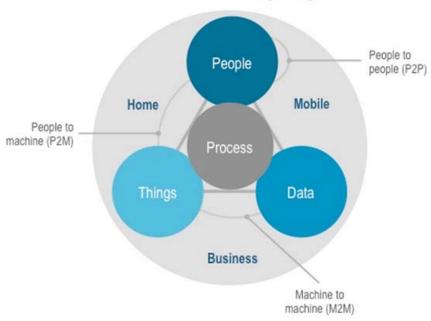
Connected Devices

This number will grow to nearly **8 billion** devices for the year 2020
*Not including mobile phones

Home (Consumer)
3,745.71 (Devices millions)

Transport (Mobility)
392.72 (Devices millions)

Body (Health)
360.03 (Devices millions)

Buildings (Infrastructure)
1,726.59 (Devices millions)

Cities (Industry)
1,524.70 (Devices millions)

Business Impact

Installed Base
(Devices in millions)

27,858.35

13,142.30

6,033.63

2014 2015 2016 2017 2018 2019 2020

The implications of these trends are enormous. Vertically defined, stand-alone products and application markets will increasingly become a part of larger networked "horizontal" systems.

Revenue opportunities
from the Internet of Things:

2014
2017
2020

	2014	2017	2020
HOME CONSUMER			
TRANSPORT MOBILITY	$79.4B	$180.3B	$397.8B
HEALTH BODY	$10.4B	$29.4B	$76.1B
BUILDINGS INFRASTRUCTURE	$6.0B	$18.5B	$48.7B
CITIES INDUSTRY	$25.0B	$77.0B	$210.2B
	$59.2B	$129.8B	$270.0B

2014

180+
Billion in Revenue
in 2014

Managed Services
$86,919.93 (USD millions)
Data and Analytics
Systems Applications
Mobile and Cloud Computing
Value-Added Application Services

Enablement Hardware
$16,186.42 (USD millions)
Wireline or wireless module attached to
or embedded in each machine to be connected.

Network Services
$77,273.55 (USD millions)

2020

Managed Services
$571,845.77 (USD millions)

Enablement Hardware
$43,782.24 (USD millions)

Network Services
$387,453.46 (USD millions)

$ **1**

By **2020** this opportunity will grow to more than

>$1 Trillion

اینترنت همه‌چیز

INTERNET OF EVERYTHINGS

Internet of Everything

People
Connecting People in More Relevant, Valuable Ways

Process
Delivering the Right Information to the Right Person (or Machine) at the Right Time

IoE

010101
11001
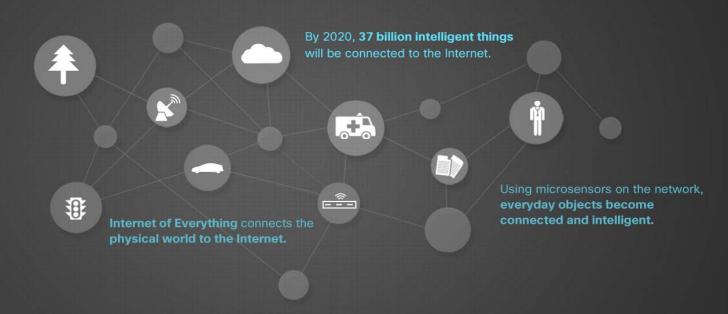001

Data
Leveraging Data into More Useful Information for Decision Making

Things
Physical Devices and Objects Connected to the Internet and Each Other for Intelligent Decision Making

Today, more than **99% of things** in the physical world **are still not connected to the Internet.**

But a phenomenon called "The Internet of Everything" will wake up **everything you can imagine.**

By 2020, **37 billion intelligent things** will be connected to the Internet.

Internet of Everything connects the **physical world to the Internet.**

Using microsensors on the network, **everyday objects become connected and intelligent.**

The Internet of EVERYTHING

وب استراتژیک

۵

وب
استراتژیک

وب استراتژیک

بخشی از وب که بر بقاء و بسط تمدن مؤثر است.
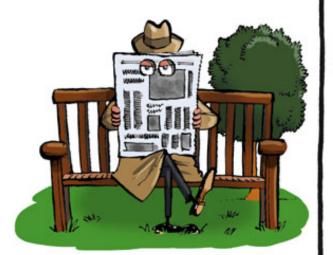
وب استراتژیک

تلفیق ایدئولوژی‌های: لیبرالیسم ارتباطی ـ سوسیالیسم اطلاعاتی

چپ	راست
سوسیالیسم	لیبرالیسم
در اطلاعات	در ارتباطات
مشارکت ـ اعتماد ـ برابری	آزادی و رهایی

جمع‌گرایی *Collectivism*	تفردگرایی *Individualism*

وب استراتژیک

۶

استراتژی
اقدام
در
وب

زمین اقدام

زمین اقـدام	
اقـدام در زمین دشمن	اقـدام در زمین خـود
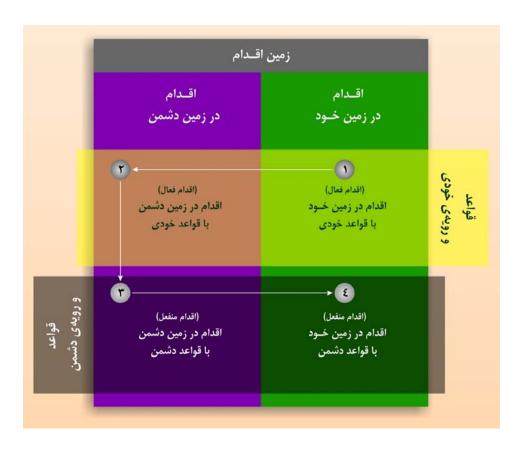
اقدام متقارن و اقدام نامتقارن

از دید «خودی»

استراتژی اقدام در وب

اقدام‌های متقارن و نامتقارن

تــقـارن اقـدام		
اقدام متقارن	**اقدام نامتقارن**	
اقدام متقارن استراتژیکی	اقدام نامتقارن استراتژیکی	**استراتژیکی**
اقدام متقارن عـمـلـیـاتی	اقدام نامتقارن عـمـلـیـاتی	**عـمـلـیـاتی**
اقدام متقارن تاکـتـیـکی	اقدام نامتقارن تاکـتـیـکی	**تاکـتـیـکی**
اقدام متقارن تکـنـیـکی	اقدام نامتقارن تکـنـیـکی	**تکـنـیـکی**

سطح اقدام

استراتژی اقدام در وب

اقدام‌های متقارن و نامتقارن، مثبت و منفی

	تـقـارن اقـدام				
	اقدام متقارن		اقدام نامتقارن		
	منفی –	مثبت +	منفی –	مثبت +	
سطح اقدام	۴	۳	۲	۱	استراتژیکی
	۸	۷	۶	۵	عـملـیاتی
	۱۲	۱۱	۱۰	۹	تاکتیکی
	۱۶	۱۵	۱۴	۱۳	تکنیکی