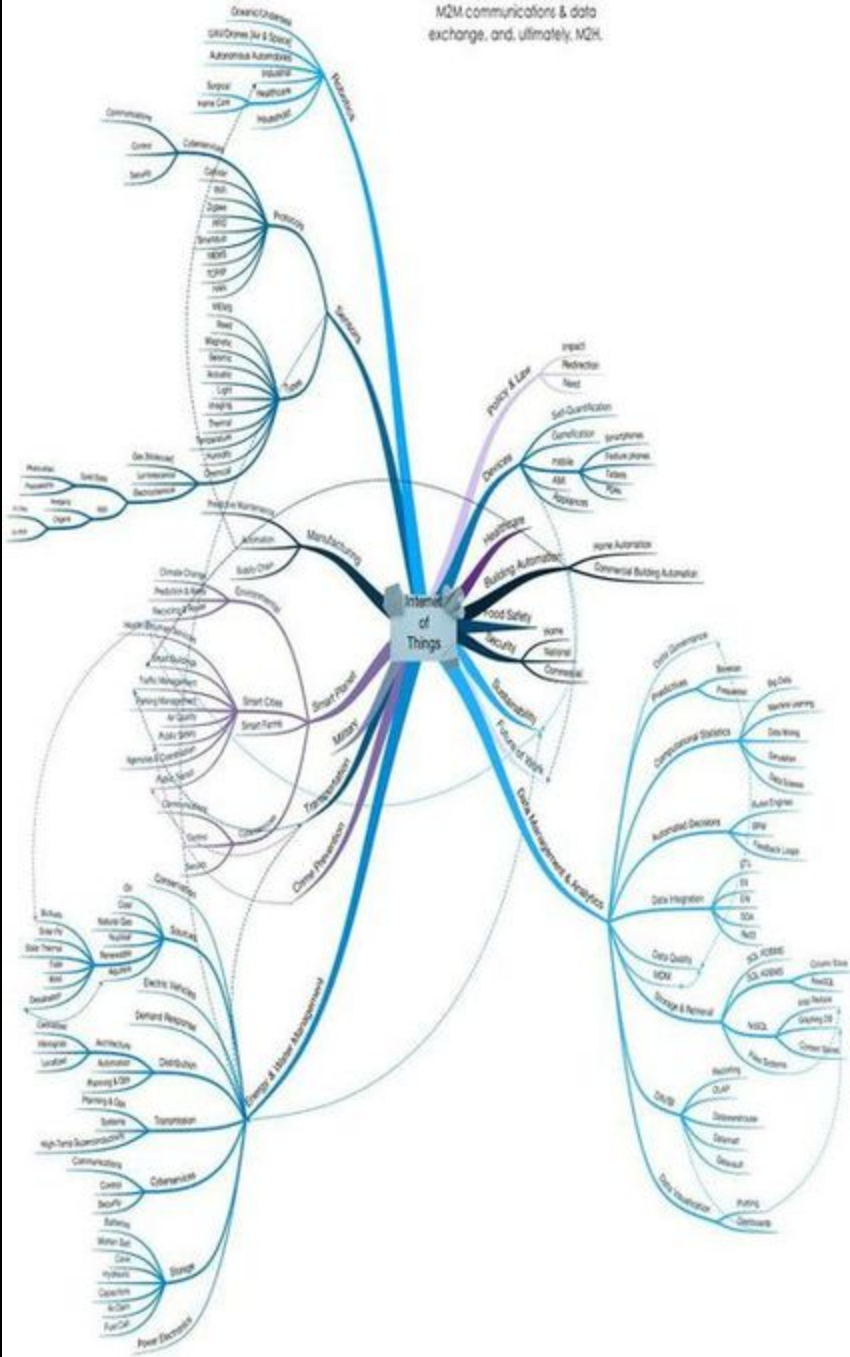


The Internet of Things relates to all M2M communications & data exchange, and, ultimately, M2H.



Applications (Verticals)

Personal Devices	Lifestyle	Connected Home	Industries	Industrial Internet
Wearable Computing pebble cookoo nicon im iWear GLASS RING LY striv APX MOTA M	Sports Brain Sentry MINESPIRE so biometrics ZEPP iFit Motion SwingByte HAMMERHEAD	Automation Quirky Radiator Labs netatmo LEVITON SmartThings Ubi nest LIFX gecko smartHome LUTRON ecoBee Advantech vivint.SAVANT Peta INSTED CHAMBERLAN PRODIGE WITTY eSimplify	Retail iStock by Getty Images SHVILLI maAuto GIBRAL Boni PassKit PERCH	Robotics Double Robotics ALBERKIN ROBOBOX EMPIRE iRobot KUKA ABB
Fitness GARMIN amigo iFIT JAWBONE BASIS fitbit TOMTOM LIVBEAM WHOOP	Cooking Smart Car Scale ANOVA drop blossom iDevices THE ORANGE CHEF CO. ponyry	Monitoring lapka sense birdi BlueMaestro SUPERMECHANICAL leeo knut CUBESENSORS tado ambient	Payment/Loyalty Square shopify PayPal AS VerFore LevelUp Dolly paycom	Drones/Aerospace Parrot Skybotix SKYWATCH spire DJI
Health LUMO HAPIfork soundhaus SPIRE Withings QUANTUS Lively remeo	Pets Whistle PetPace pin2feed PetHub atogg BISTRO haytag iTrack PetChute Petcube iWrite PetNet gibi PetBeis	Security canary ring dropcam YUGUST SCHLAGE Locktron glabesense genie KEY OP BAR goji scout SmartAlarm	Healthcare VSI Sensorics STANLEY VITALITY Medifinder CENTRAK	Green-tech BigBelly enlightened Smart Genevo compology AMPY
Family FILIP Sprouting ovuline greatcall Secure manbaby mimo	Toys KAROYZ UBOOBY MAKIES atoms seeeo	Hub Homey Control LOWE'S zanoff STUPES NEXIA muzzley wink	Automotive Zbie nady DELPHI dash WAZZO OpenXC	3D Scan/Print MakerBot FUEL3D AIB occipital DAVID FSLT
Music/Art/Video ROLI CACH plantink BITPONICS racho EDYN Greenbox Koubachi	Music/Art/Video ROLI CACH plantink BITPONICS racho EDYN Greenbox Koubachi	Infra-structure Chipob Linquet locca! TrackR wavelink iBeam KISI Trimble Robin Schneider	Agri-culture adapt-N	Smart Grid GRIDNET e-on SMART CLUSTER Itron Trilliant
Asset Tracking GEP & VILM Itrion Trilliant				

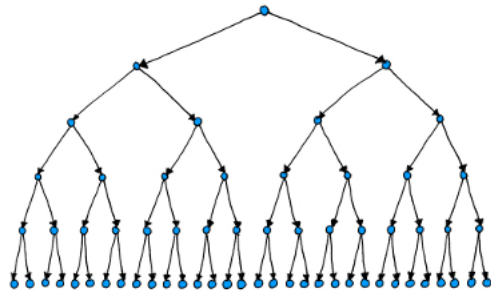
Platforms & Enablement (Horizontal)

Connectivity/Dev Platforms spark kynetx pinoccio ioBridge RESIN.IO Sympy TRISSEL bluecity	Software/Data Platforms icontrol thingsquare carriers Yalor.net RacoWireless wot.io ZAJAH bugswarm Tempo evercam.io covisint Jasper	Open Source Platforms webinos AllJoyn openHAB ThingSpeak GRIDHOME	Sensor Networks SAFECAST placemeter Motionloft	Personal Interfaces wit.ai LEAP gear.igon speech EMOTIV Matala Reemo Oculus	Security inside SafeNet utimaco escrypt gemalto BASTILLE NETWORKS MOCANA	Corporates amazon LG intel htc PHILIPS IBM SAMSUNG Google WIND RIVER MOTOROLA belkin DELL BOSCH ARM Logitech Microsoft Honeywell SONY Atmel SIEMENS QUALCOMM CISCO TOSHIBA SHARP
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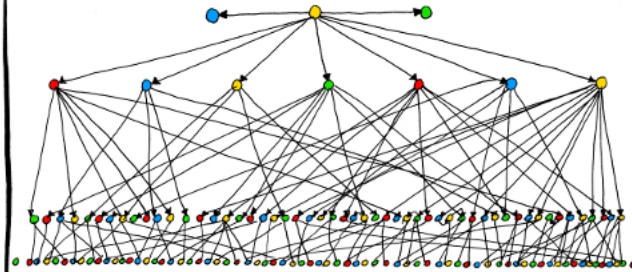
Building Blocks

Protocols Bluetooth Weaved MQTE WI FI ZigBee oMA waves erModus HART MIWV M.BUS 2G 3G 4G LTE CoAP 6LoWPAN LWM2M BITXmI	M2M Net works KORE aeris RACHEN	Portable WIFI GOODSPEED BACK	Telecom at&t boost mobile verizon T-Mobile Sprint US Cellular vodafone airtel	M2M arkesa ecnois Telit
Cloud Google Cloud Platform amazon redhat ORACLE Microsoft Azure	Mobile iOS Windows Phone BlackBerry	Processors/Sensors SAM littleBits WUNDER	Services drogon makeXYZ sculpteo	Funding KICKSTARTER indiegogo MedStartr
			Incubators Highway 1 WEARABLE WORLD RGA Accelerator TechSil	Distribution angel.com

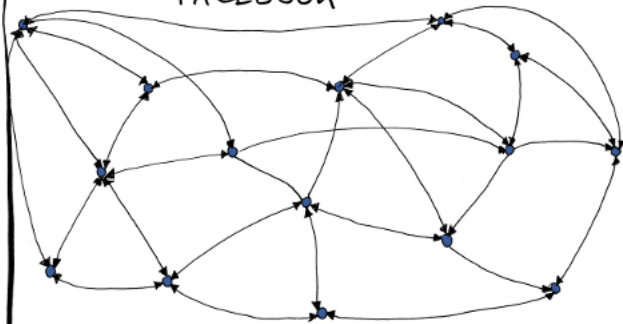
AMAZON



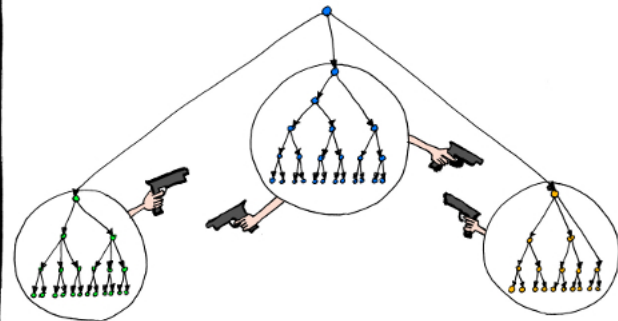
GOOGLE



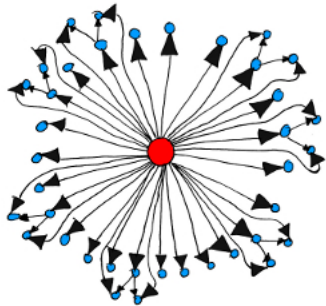
FACEBOOK



MICROSOFT



APPLE



ORACLE

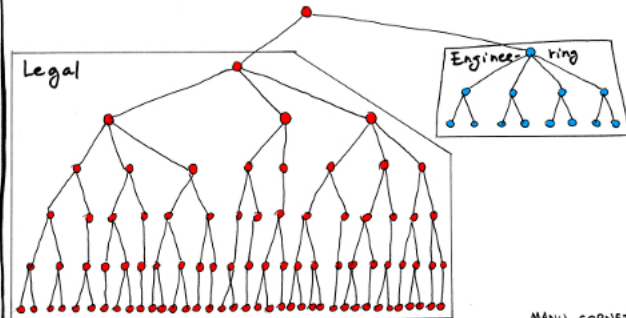
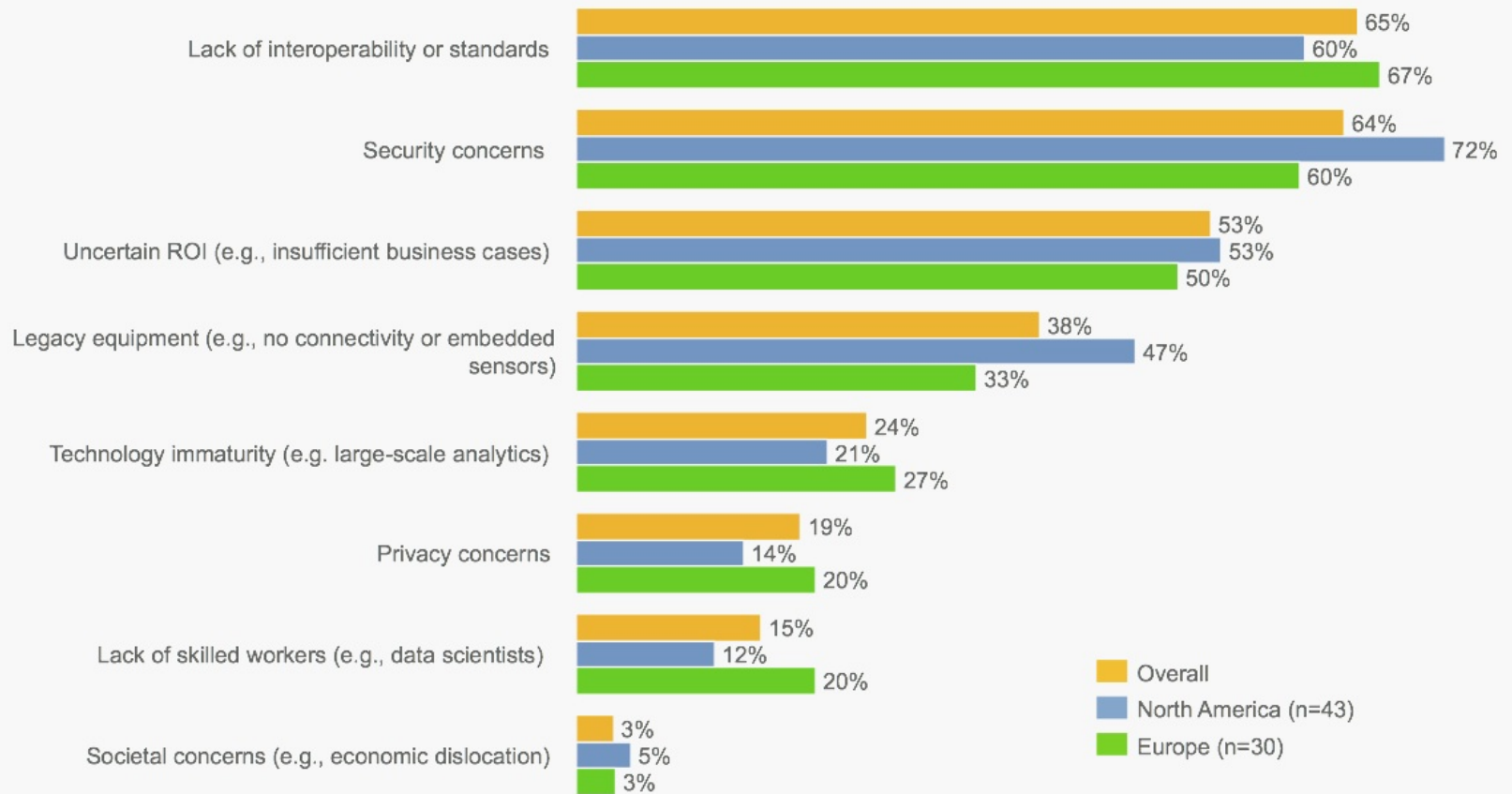


Figure 3: Key barriers in adopting the Industrial Internet

Q: What are the greatest barriers inhibiting business from adopting the industrial Internet?



Internet of Things (IoT) – possibilities

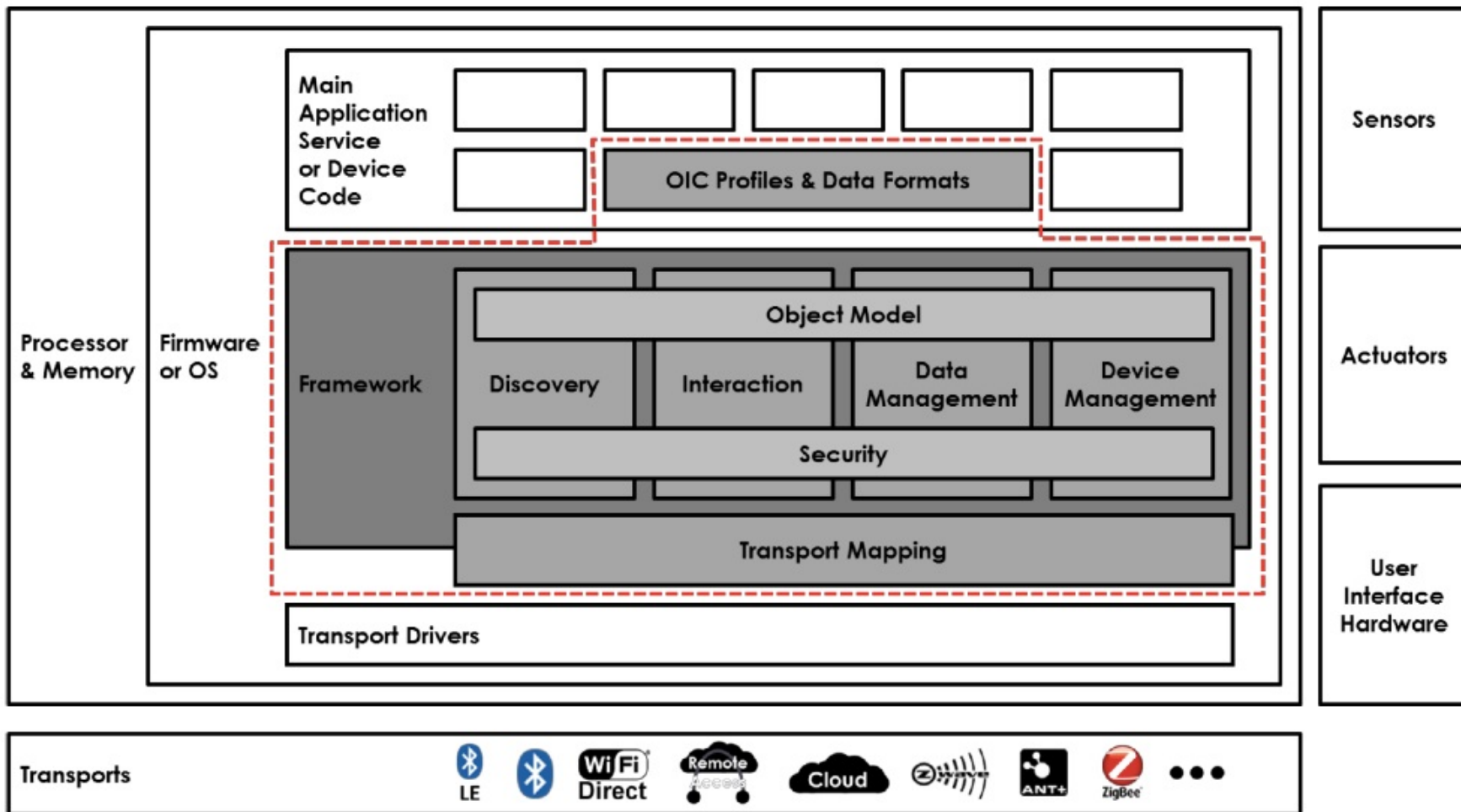
 ZigBee	• Zigbee	 Bluetooth	• BLE		• Clean-Slate
 6LoWPAN <small>IPv6-based Low-power Wireless Personal Area Networks</small>	• 6LoWPAN	 oneM2M	• oneM2M	 GPRS <small>General Packet Radio Service</small>	• 2G
 Z-WAVE	• Z-Wave	 ETSI World Class Standards	• LTN	 3G	• 3G
 SIGFOX	• Sigfox	 THREAD	• Thread	 Lte	• 4G
 WEIGHTLESS	• Weightless	 802.11ah IEEE	• 802.11ah		• 5G?

Non-exhaustive list

Communication Technologies

Communication Technologies

	NFC	RFID	Blue-tooth®	Blue-tooth® LE	ANT	Proprietary (Sub-GHz & 2.4 GHz)	Wi-Fi®	ZigBee®	Z-wave	KNX	Wireless HART	6LoWPAN	WiMAX	2.5-3.5 G
Network	PAN	PAN	PAN	PAN	PAN	LAN	LAN	LAN	LAN	LAN	LAN	LAN	MAN	WAN
Topology	P2P	P2P	Star	Star	P2P, Star, Tree, Mesh	Star, Mesh	Star	Mesh, Star, Tree	Mesh	Mesh, Star, Tree	Mesh, Star	Mesh, Star	Mesh	Mesh
Power	Very Low	Very Low	Low	Very Low	Very Low	Very Low to Low	Low-High	Very Low	Very Low	Very Low	Very Low	Very Low	High	High
Speed	400 Kbs	400 Kbs	700 kbs	1 Mbs	1 Mbs	250 kbs	11-100 Mbs	250 kbs	40 Kbs	1.2 Kbps	250 kbs	250 Kbs	11-100 Mbs	1.8-7.2 Mbs
Range	<10 cm	<3 m	<30 m	5-10 m	1-30 m	10-70 m	4-20 m	10-300 m	30 m	800 m	200 m	800 m (Sub-GHz)	50 km	Cellular network
Application	Pay, get access, share, initiate service, easy setup	Item tracking	Network for data exchange, headset	Health and fitness	Sports and fitness	Point to point connectivity	Internet, multimedia	Sensor networks, building and industrial automation	Residential lighting and automation	Building automation	Industrial sensing networks	Senor networks, building and industrial automation	Metro area broadband internet connectivity	Cellular phones and telemetry
Cost Adder	Low	Low	Low	Low	Low	Medium	Medium	Medium	Low	Medium	Medium	Medium	High	High



THE INTERNET OF THINGS IN COMMERCIAL BUILDINGS

#BIOT

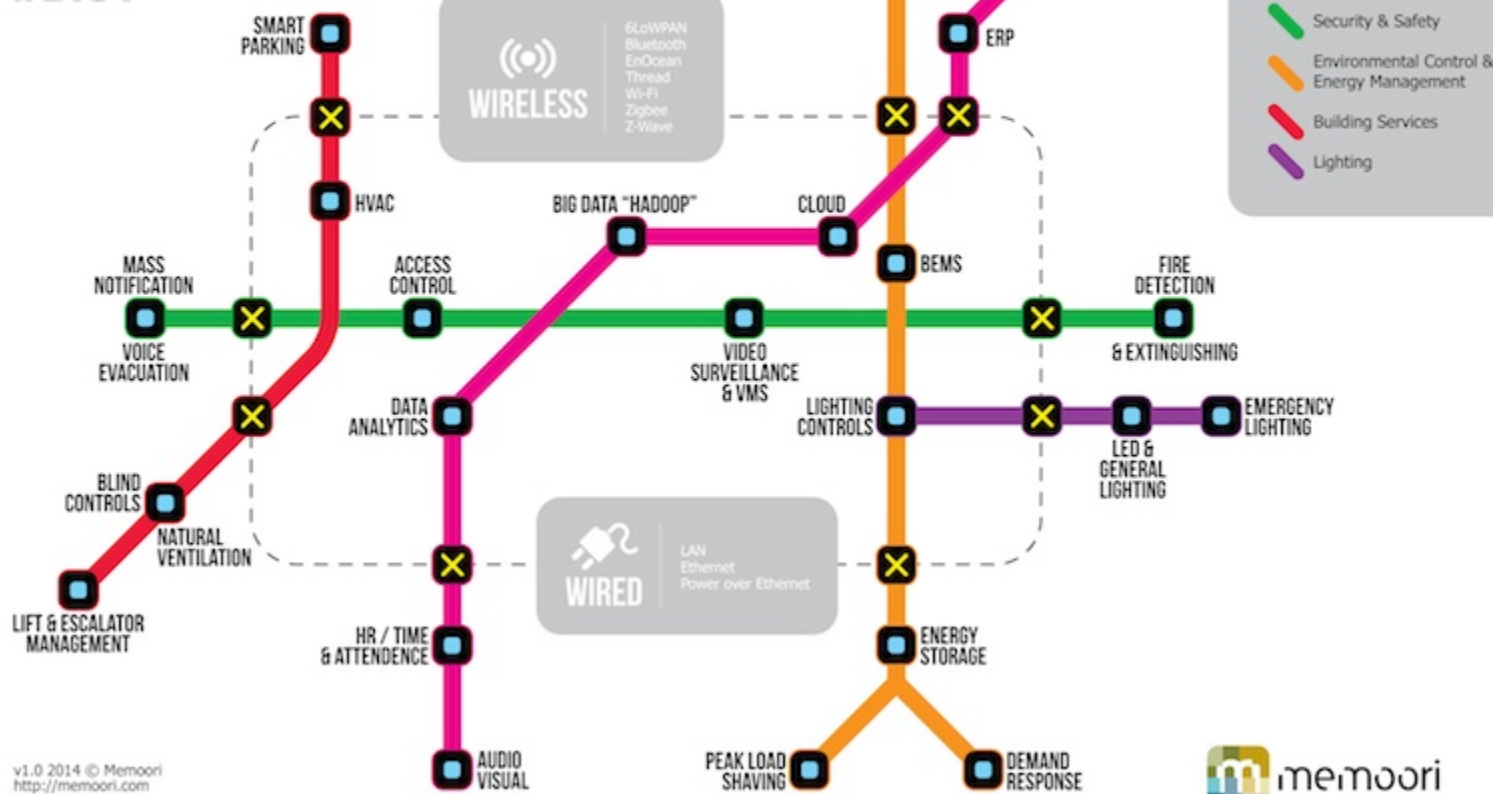
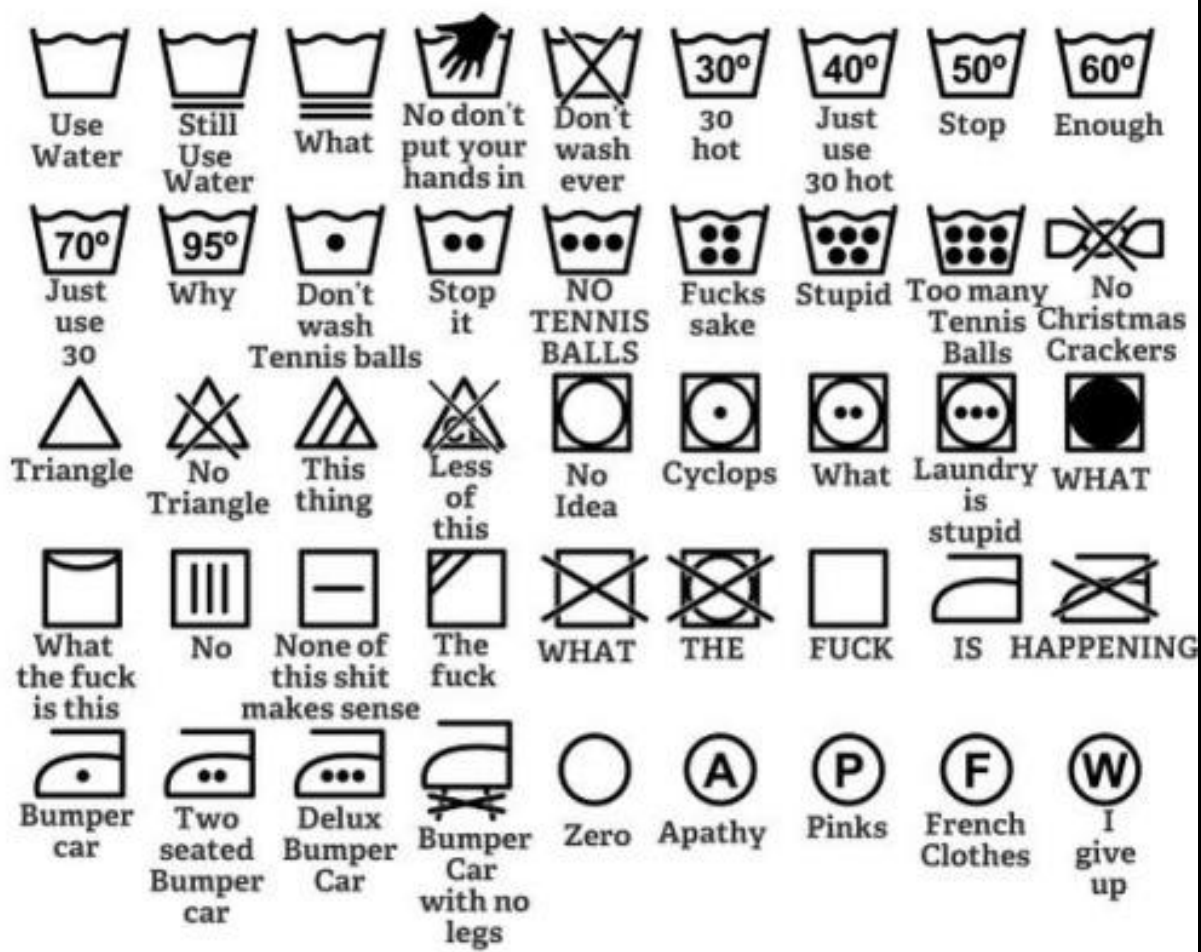


Table 1. Connected Things Installed Base Within Smart Cities (in Millions)

Smart City Subcategory	2015	2016	2017
Healthcare	9.7	15.0	23.4
Public Services	97.8	126.4	159.5
Smart Commercial Buildings	206.2	354.6	648.1
Smart Homes	294.2	586.1	1,067.0
Transport	237.2	298.9	371.0
Utilities	252.0	304.9	371.1
Others	10.2	18.4	33.9
Total	1,107.3	1,704.2	2,674.0

Source: Gartner (March 2015)





Connected Home



blink(1)



Bttn



Garageio



Harmony



Homeboy



Honeywell
evohome



Honeywell Single-
zone Thermostat



HP Print



iSmartAlarm



LFX



littleBits



Lutron Caséta
Wireless



Anything



Myfox



Nest Protect



Nest Thermostat



Netatmo Weather
Station



ORBneXt



Parrot Flower
Power



Philips hue



Rachio Iro



Revolv



Scout Alarm



Sighthound Video

IOT DESIGN MANIFESTO

The world is becoming increasingly connected. This offers opportunities for designers, engineers and entrepreneurs to create unprecedented products and services. Yet, a connected world also brings new questions and challenges to the table.

This manifesto serves as a code of conduct for everyone involved in developing the Internet of Things, outlining in principles to help create balanced and honest products in a burgeoning field with many unknowns.

First drafted by a number of design professionals, this manifesto is intended to be a living document that the larger community of peers working within the IoT field can contribute to and improve upon.

This manifesto is a living document, we seek your input to help it grow. Please discuss, contribute, remix, and test the boundaries of these principles.

www.iotmanifesto.org

WE DON'T BELIEVE THE HYPE

We pledge to be skeptical of the cult of the new – just slapping the Internet onto a product isn't the answer. Monetizing only through connectivity rarely guarantees sustainable commercial success.

WE DESIGN USEFUL THINGS

Value comes from products that are purposeful. Our commitment is to design products that have a meaningful impact on people's lives; IoT technologies are merely tools to enable that.

WE AIM FOR THE WIN-WIN-WIN

A complex web of stakeholders is forming around IoT products: from users, to businesses, and everyone in between. We design so that there is a win for everybody in this elaborate exchange.

WE KEEP EVERYONE AND EVERYTHING SECURE

With connectivity comes the potential for external security threats executed through the product itself, which comes with serious consequences. We are committed to protecting our users from these dangers, whatever they may be.

WE BUILD AND PROMOTE A CULTURE OF PRIVACY

Equally severe threats can also come from within. Trust is violated when personal information gathered by the product is handled carelessly. We build and promote a culture of integrity where the norm is to handle data with care.

WE ARE DELIBERATE ABOUT WHAT DATA WE COLLECT

This is not the business of hoarding data; we only collect data that serves the utility of the product and service. Therefore, identifying what those data points are must be conscientious and deliberate.

WE MAKE THE PARTIES ASSOCIATED WITH AN IOT PRODUCT EXPLICIT

IoT products are uniquely connected, making the flow of information among stakeholders open and fluid. This results in a complex, ambiguous, and invisible network. Our responsibility is to make the dynamics among those parties more visible and understandable to everyone.

WE EMPOWER USERS TO BE THE MASTERS OF THEIR OWN DOMAIN

Users often do not have control over their role within the network of stakeholders surrounding an IoT product. We believe that users should be empowered to set the boundaries of how their data is accessed and how they are engaged with via the product.

WE DESIGN THINGS FOR THEIR LIFETIME

Currently physical products and digital services tend to be built to have different lifespans. In an IoT product features are codependent, so lifespans need to be aligned. We design products and their services to be bound as a single, durable entity.

IN THE END, WE ARE HUMAN BEINGS

Design is an impactful act. With our work, we have the power to effect relationships between people and technology, as well as among people. We don't use this influence to only make profits or create robot overlords; instead, it is our responsibility to use design to help people, communities, and societies thrive.

L'ORRIBILE RISCHIO DELLE CASE INTELLIGENTI.

NEL PAESE DELLE MERAVIGLIE, IL PROGRESSO AVEVA MIGLIORATO LE VITE DELLE MASSE, MA A CHE PREZZO? LE AVEVA RESE TOTALMENTE DIPENDENTI DALLA TECNOLOGIA, E PER QUESTO VULNERABILI A NUOVE E OSCURE MINACCE...



PER FORTUNA QUESTO FOSCO SCENARIO DIFFICILMENTE RIGUARDERÀ LE NOSTRE VITE. O ALMENO LA MIA. SONO ABBASTANZA SICURO CHE IL MIO NIDO RIMARRÀ INVOLATO.



CAPITO PERCHÉ IN ITALIA NON SI INVESTE NELLA BANDA LARGA? È TUTTO CALCOLATO. SAREMO LA FORTEZZA DEL FUTURO. CHE CULO.