CRM
Customer Relationship Management

Mestrado em Marketing

Aula 8

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LISBON
**SCHOOL OF
ECONOMICS &
MANAGEMENT**
UNIVERSIDADE DE LISBOA

Cronograma

Aula	Dia	Agenda	Artigo	Caso
1	19 Fev	Conceitos introdutórios.		1
2	26 Fev	Estratégia. Valor. Integração multicanal. Fidelização.	1	2
3	5 Mar	Gestão de informação. Tecnologias.	2	3
4	12 Mar	Tecnologias. Implementação. ERP.	3	4
5	19 Mar	Web 2.0. CRM Social.	4	5
6	9 Abr	Apresentação de soluções de software de CRM da Oracle [Aula às 13h00]		
7	16 Abr	Apresentação de soluções de software de CRM da Zoho e da Vtiger		6
8	23 Abr	Customer Experience. Cloud. Social Media. Mobile. Analytics. Big Data.	5	7
9	30 Abr	CRM para PMEs.	6	
10	7 Mai	Apresentação de soluções de software de CRM da Salesforce [Aula às 13h00]		
11	14 Mai	Apresentação de trabalhos.	7	
12	21 Mai	Apresentação de trabalhos.	8	

Artigos académicos

#	Artigo
1	Chen, I. J., & Popovich, K. (2003). Understanding customer relationship management (CRM) People, process and technology. *Business Process Management Journal*, *9*(5), 672-688.
2	Frow, P., Payne, A., Wilkinson, I. F., & Young, L. (2011). Customer management and CRM: Addressing the dark side. *Journal of Services Marketing*, *25*(2), 79-89.
3	Nguyen, B., & Mutum, D. S. (2012). A review of customer relationship management: successes, advances, pitfalls and futures. *Business Process Management Journal*, *18*(3), 400-419.
4	Shokohyar, S., Tavallaee, R., & Karamatnia, K. (2016). Identifying Effective Indicators in the Assessment of Organizational Readiness for Accepting Social CRM. *International Journal of Management, Accounting and Economics*, 3(2), 85 -104.
5	Orenga-Roglá, S., & Chalmeta, R. (2016). Social customer relationship management: Taking advantage of Web 2.0 and Big Data technologies. *SpringerPlus*, 5(1), 1462.
6	Paliouras, K., & Siakas, K. V. (2017). Social Customer Relationship Management: A Case Study. *International Journal of Entrepreneurial Knowledge*, 5(1), 20-34.
7	Valacherry, A. K., & Pakkeerappa, P. (2018). Customer Knowledge Management via Social Media: A Case Study of an Indian Retailer. *Journal of Human Values*, 24(1), 39-55.
8	Clark, M., & Melancon, J. (2013). The influence of social media investment on relational outcomes: A relationship marketing perspective. International Journal of Marketing Studies, 5(4), 132.
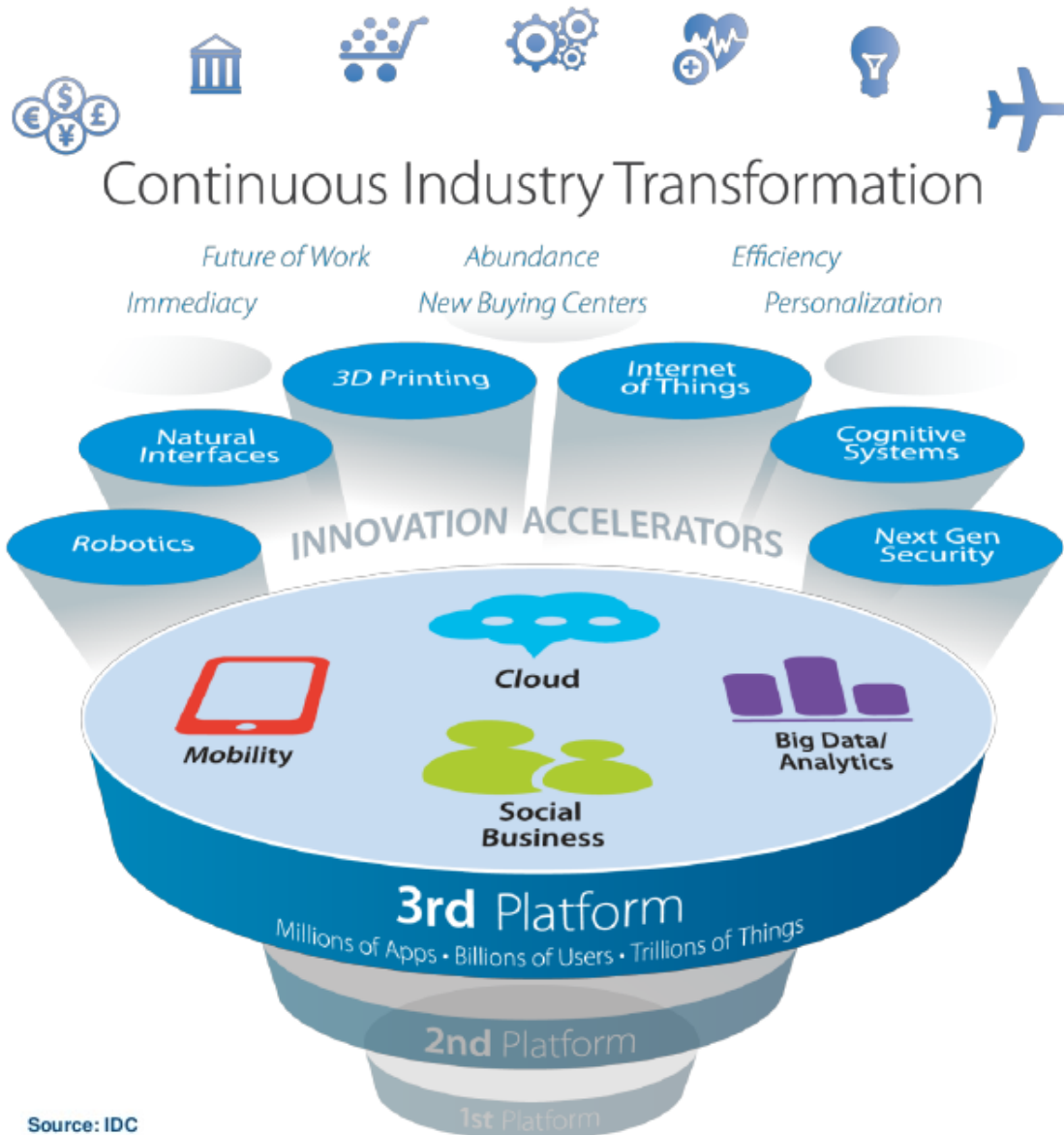
Agenda

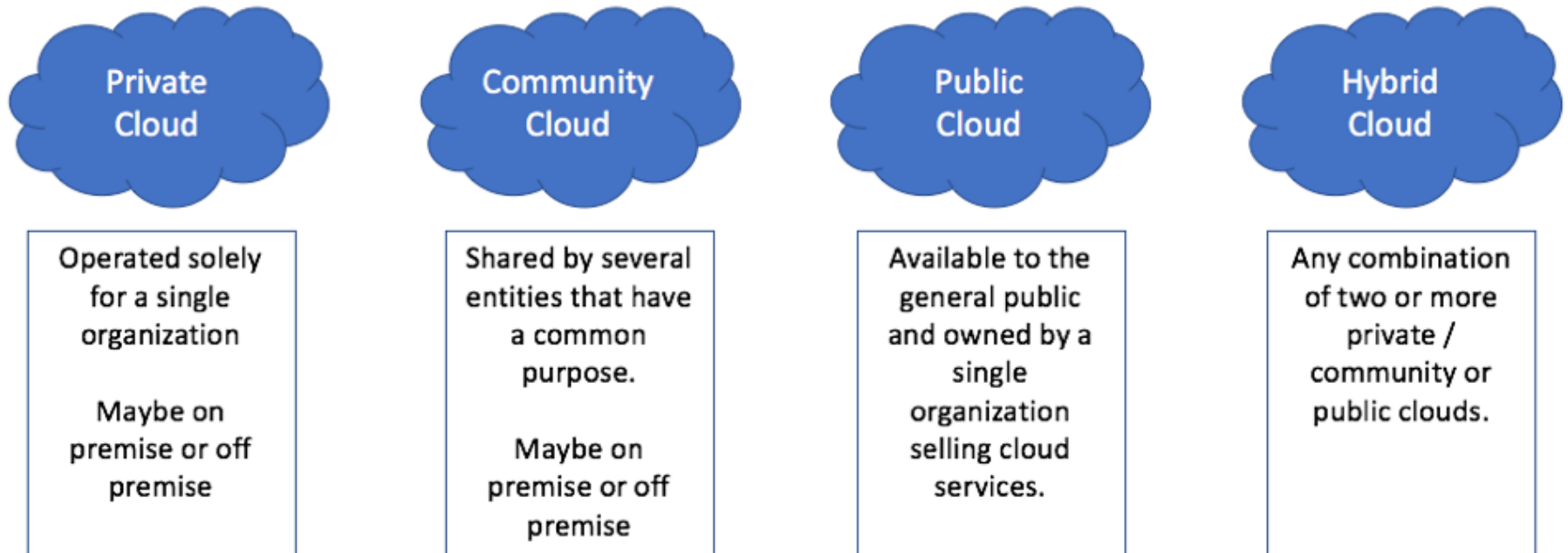- **Cloud**

- Social media

- Mobile

- Analytics

- Big Data

- IoT

- Disponibilização de recursos de computação – desde aplicações a *data centers*, numa base de *pay-per-use*
  - On-demand self-service
  - Broad network access
  - Resource pooling
  - Rapid elasticity
  - Measured service
- Sem necessidade de investimentos iniciais, implementação, nem provisionamento de capacidades

Cloud Computing Deployment Models

Private Cloud

Operated solely for a single organization

Maybe on premise or off premise

Community Cloud

Shared by several entities that have a common purpose.

Maybe on premise or off premise

Public Cloud

Available to the general public and owned by a single organization selling cloud services.

Hybrid Cloud

Any combination of two or more private / community or public clouds.
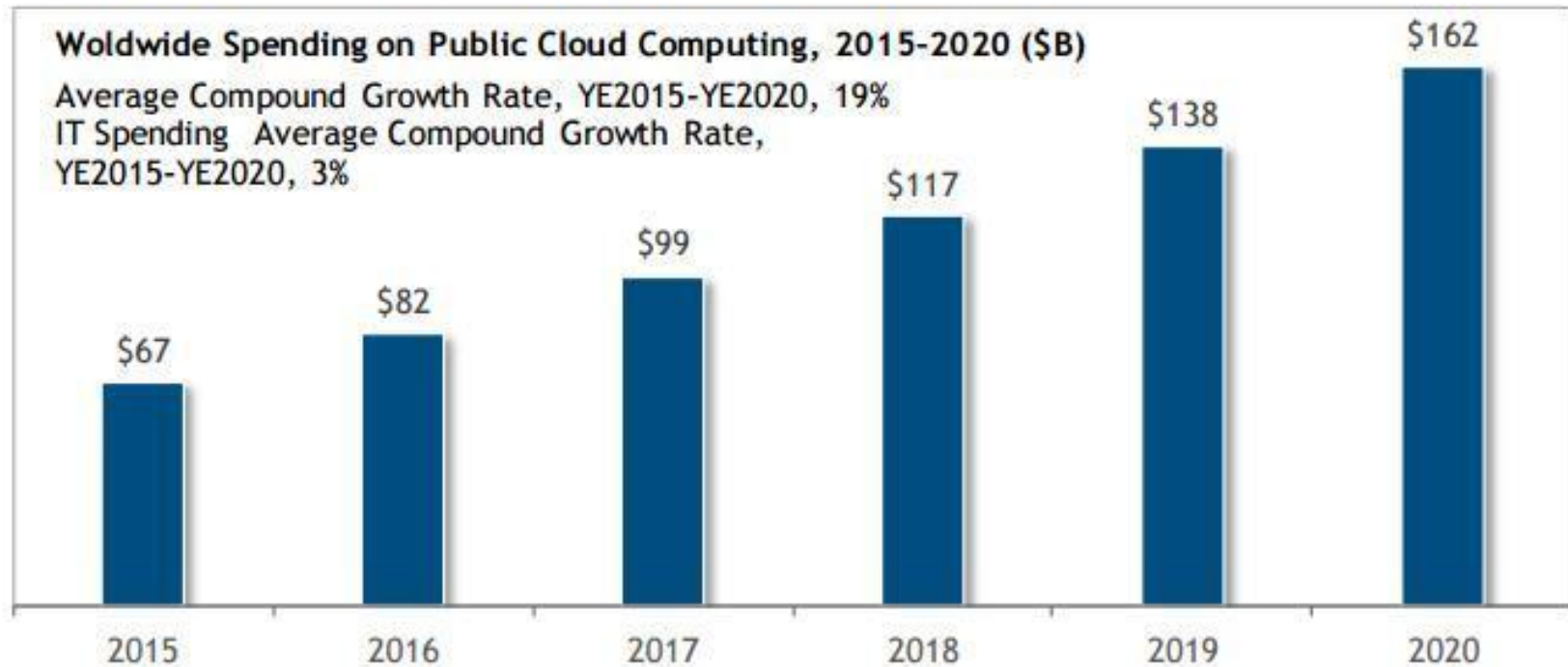
Source: chrislazari.com

The top ways businesses are using cloud to drive business transformation in 2014

- Drive cost efficiencies
- Better enable mobile workforce
- Improve alignment with customers/partners
- Better leverage data to provide insight
- New product development/innovation
- Develop new business models
- Shift to a global shared services model
- Faster time to market

Source: 2014 KPMG Cloud Survey Report

The Rapid Growth of Cloud Computing, 2015-2020

Woldwide Spending on Public Cloud Computing, 2015-2020 ($B)

Average Compound Growth Rate, YE2015-YE2020, 19%
IT Spending Average Compound Growth Rate,
YE2015-YE2020, 3%

2015	2016	2017	2018	2019	2020
$67	$82	$99	$117	$138	$162

Source: IDC, 2016

- Legislação
  - Localização geográfica dos dados
- Dependência do fornecedor
  - SLA, backup/ recovery
- Fornecedor lock in
  - Como mudar de fornecedor
  - Capacidade de importar/ exportar dados
- Gestão
  - Shadow IT: Compra de serviços cloud pelo negócio sem o conhecimento do IT
- GDPR (25 Maio 2018)

- Diminui as barreiras para a rápida utilização de software

- Foco essencial nas necessidades do negócio e não no IT

- Redução de custo de infraestruturas

- Recursos escaláveis em função das necessidades

- Driver de negócio

- Continuação da **migração das companhias para a Cloud,** pequenas e grandes (parcialmente, originando o aumento das *Clouds* híbridas, por já terem Clouds privadas e não expondo assim dados críticos)

- Continuação das iniciativas visando o reforço da **segurança** (Security Information and Event Management (SIEM) e sistemas de malware detection) como mecanismos fundamentais de defesa na cyber segurança

- **Aumento da utilização de *containers*,** como garantia da portabilidade entre serviços cloud e flexibilidade, associadas a baixos custos

Agenda

- Cloud

- **Social media**

- Mobile

- Analytics

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"You can use social media to turn strangers into friends, friends into customers and customers into salespeople".

(Seth Godin)

Participação das empresas em iniciativas de social media

- Existe uma **falta de compreensão** sobre o que é social media e as diversas formas que pode tomar (Kaplan & Haenlein, 2010)

- Muitas **empresas ignoram, ou gerem mal**, as oportunidades e ameaças apresentadas pelos seus consumidores mais criativos (Berthon et al., 2007)

- Embora seja claro que - para melhor ou para pior - social media é um meio muito poderoso, **muitos executivos são relutantes ou incapazes de desenvolver estratégias** e de alocar recursos para envolver efetivamente as suas empresas (Kietzmann et al., 2011)
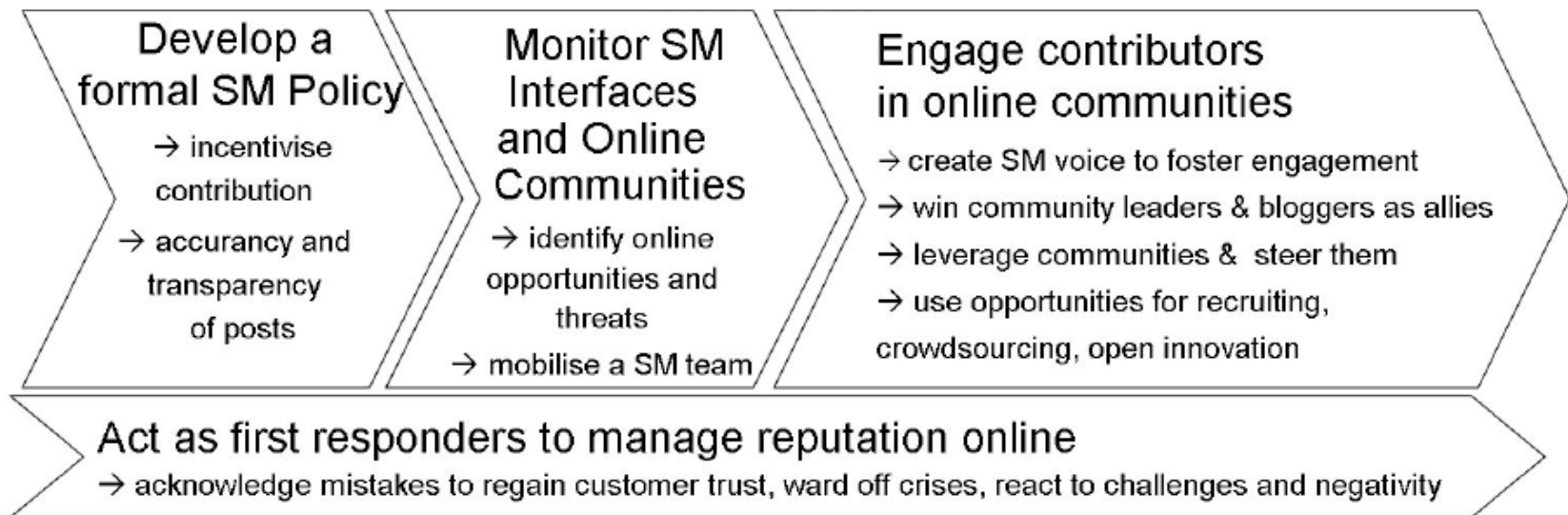
Customer engagement em social media

- **Engagement** é uma qualidade da experiência do utilizador com a tecnologia que se caracteriza por desafio, estética e apelo sensorial, feedback, novidade, interactividade, percepção e controle de tempo, consciência, motivação, interesse e afecto. (O'Brien and Toms, 2008)

- **Engaging em social media** ajuda a **fortalecer a experiência de marca** que irá apoiar a construção da marca;

- Social media ajuda a **construir uma boa reputação** para uma organização;

- Através de social media, a empresa pode **reforçar a marca duma forma continuada;**

- O social media funciona como uma **poderosa forma de comunicar o valor e os atributos da marca**, pois facilita formas de comunicação abertas.

(Edosomwan et al., 2011)

Estratégia de implementação de social media

Equipa dedicada de Social Media

As empresas precisam de uma **equipa dedicada** de social media, que deve desenvolver **políticas e estratégias** para a gestão das comunidades online, tanto na defesa contra ameaças, como para encontrar formas construtivas para fomentar o engagement.

Develop a formal SM Policy
→ incentivise contribution
→ accurancy and transparency of posts

Monitor SM Interfaces and Online Communities
→ identify online opportunities and threats
→ mobilise a SM team

Engage contributors in online communities
→ create SM voice to foster engagement
→ win community leaders & bloggers as allies
→ leverage communities & steer them
→ use opportunities for recruiting, crowdsourcing, open innovation

Act as first responders to manage reputation online
→ acknowledge mistakes to regain customer trust, ward off crises, react to challenges and negativity

(Kane *et al.*, 2009)

Social Media Policies and Guidelines

http://socialmediagovernance.com/policies.php

Social media

- "Today's digital landscape - saturated, splintered, algorithmic - is not kind to anything other than brilliantly executed marketing."

Will Francis, Founder & Creative Director, VANDAL

- "The power of social media continues to **drive value** for a majority of brands […].

At best, social media, in particular Facebook, can **target audiences at scale and reach them with content that resonates**, whilst allowing us to **measure the impact** of this effectively.

 At worst, brands can target audiences at scale with poorly crafted content that **interrupts and weakens a user's experience**, whilst **potentially damaging their reputation**."

Greg Allum, Head of Social, Jellyfish

Social commerce

- Social commerce can be defined as the ability to make a product purchase from a third-party company within the native social media experience.
  - You can browse and compare products on Facebook and then make the purchase on Facebook itself.
- There are three social media sites that are owning the social commerce space: Facebook, Twitter and Pinterest.
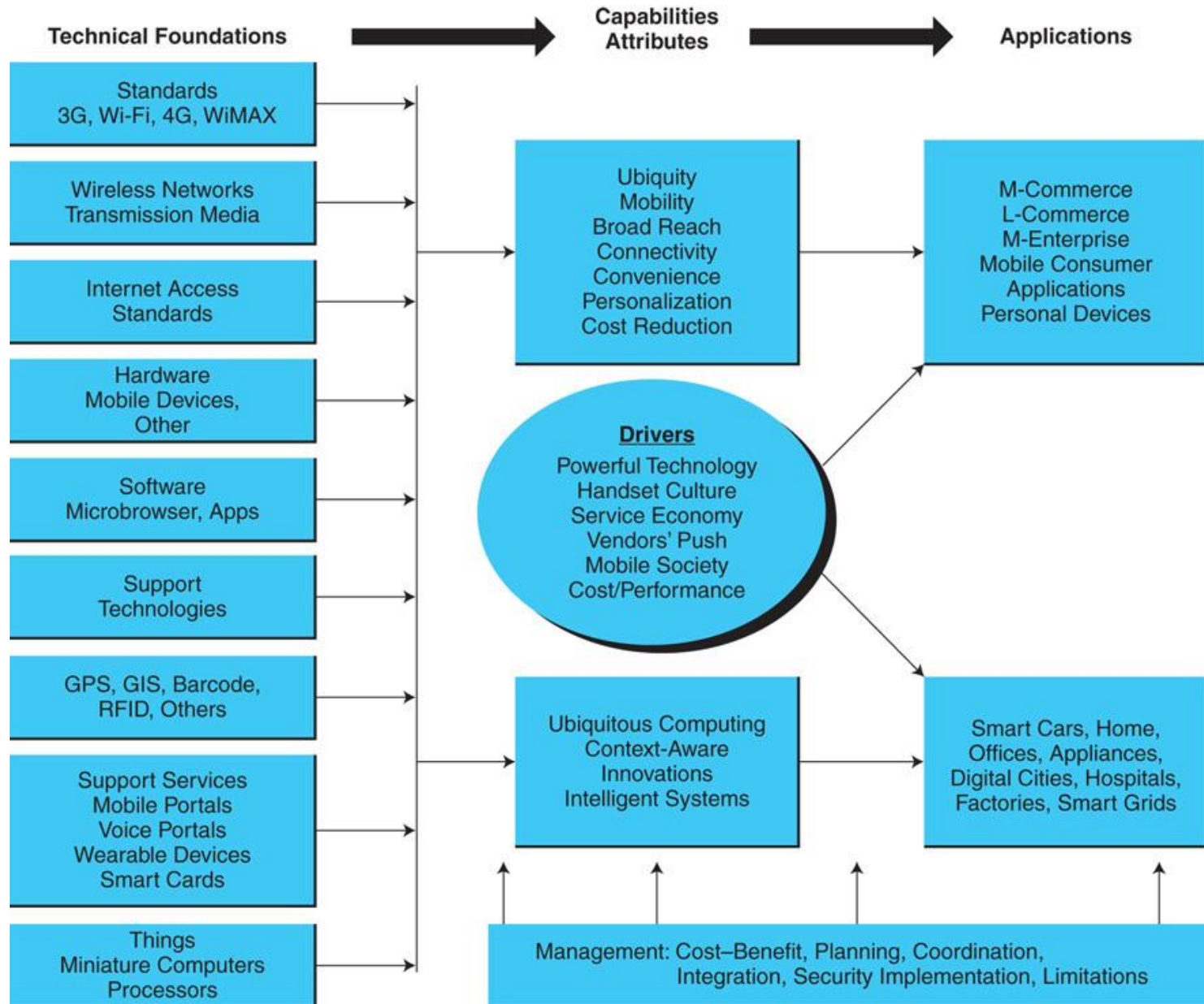
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- **Mobile**

- Analytics

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Mobile market key drivers

- Ubiquity

- Reachability

- Security

- Convenience

- Localization of service and applications

- Instant Internet connectivity from a mobile phone

- Personalization

(Ranjan and Bhatnagar, 2009)

The Landscape of Mobile Computing and M-Commerce

Technical Foundations → **Capabilities Attributes** → **Applications**

Technical Foundations:
- Standards 3G, Wi-Fi, 4G, WiMAX
- Wireless Networks Transmission Media
- Internet Access Standards
- Hardware Mobile Devices, Other
- Software Microbrowser, Apps
- Support Technologies
- GPS, GIS, Barcode, RFID, Others
- Support Services Mobile Portals Voice Portals Wearable Devices Smart Cards
- Things Miniature Computers Processors

Capabilities Attributes:
- Ubiquity
- Mobility
- Broad Reach
- Connectivity
- Convenience
- Personalization
- Cost Reduction

Drivers
- Powerful Technology
- Handset Culture
- Service Economy
- Vendors' Push
- Mobile Society
- Cost/Performance

- Ubiquitous Computing
- Context-Aware
- Innovations
- Intelligent Systems

Applications:
- M-Commerce
- L-Commerce
- M-Enterprise
- Mobile Consumer
- Applications
- Personal Devices

- Smart Cars, Home, Offices, Appliances, Digital Cities, Hospitals, Factories, Smart Grids

Management: Cost–Benefit, Planning, Coordination, Integration, Security Implementation, Limitations

Location-Based Mobile Commerce and Mobile Social Networks

- *Location-based m-commerce (l-commerce)
- Basic Concepts in L–Commerce
  - Location
  - Navigation
  - Tracking
  - Mapping
  - Timing
  - *Real-time location systems (RTLS)

Mobile is changing our lives

Mobile phone lane for pedestrians in Chongqing, China

Agenda

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"If you can't measure it, you can't manage it"

Peter Drucker

Métricas de CRM

Marketing metrics

- Number of campaigns
- New customer retention rates
- Number of responses by campaign
- Number of purchases by campaign
- Revenue generated by campaign
- Cost per interaction by campaign
- Number of new customers acquired by campaign
- Customer retention rate
- Number of new leads by product
- Number of customer referrals

Sales metrics

- Number of prospects
- Number of new customers
- Number of retained customers
- Number of open opportunities
- Close rate
- Renewal rate
- Number of sales calls
- Number of sales call per opportunity
- Amount of new revenue
- Amount of recurring revenue
- Time-to-close by channel
- Margin
- Sales stage duration
- Sales cycle duration
- Number of sales calls made
- Number of proposals given
- Competitive knockouts

Service metrics

- Cases closed same day
- Number of cases handled by agent
- Number of service calls
- Average number of service requests by type
- Average time-to-resolution
- Average number of service calls per day
- Percentage compliance with service-level agreement (SLA)
- Percentage of service renewals
- Customer satisfaction level
- Complaint time-to-resolution
- Propensity for customer defection

Social media analytics

- Social media analytics refere-se ao **desenvolvimento e avaliação de ferramentas e estruturas** para **colectar, monitorizar, analisar, resumir e visualizar dados de social media**

- A investigação em social media analytics serve diferentes objectivos:
  - Facilitar conversas e interacção entre comunidades online
  - Extrair padrões significativos e a inteligência associada

- Análise de um conjunto enriquecido de dados ou metadados:
  - Tags (anotações ou labels com texto livre) /opiniões subjectivas, avaliações e comentários / classificações /perfis de utilizador

- Os dados de social media são fluxos **dinâmicos**, com o seu volume a aumentar rapidamente e o seu tratamento coloca desafios significativos

(Zeng et al., 2010)

Métricas de monitorização

| Metric	Description
Conversation buzz	The amount of discussion around certain topics, generally determined by the number of responses to blog posts or online discussions. A widely read news site may post a story, but if there are no comments and no readers discussing the topic, then it shows little consumer interest.
Conversation value	The revenue contribution of a conversation about a particular product or brand. Proposed by Chat Threads, this metric comes from understanding how conversations spread through different channels and the incremental value each conversation adds to the brand's bottom line.
Conversation volume	The number of social media entities (blog posts, forum discussions, tweets, etc.) discussing a topic. Volume is a stronger metric when measured over time — marketers use conversation volume to set baselines for future campaigns.
Demographic metrics	The collection of metrics making up the background details of online consumers. Listening platforms can collect data on consumer location, gender, and age. Marketers use demographic data to determine whether their campaigns reach targeted consumers.
Level of influence	The authority of an online consumer, measured by his or her overall reach online. A consumer with a highly read blog and thousands of Twitter followers is assigned a high influence score, while a commenter on a small forum has low influence.

Métricas de monitorização

Metric	Description
Message reach	The number of eventual impressions of an online discussion. Measured by the number of different sources covering a topic and each source's potential page views. Many discussions start small, but once picked up by a larger source, will reach a large number of consumers.
Sentiment type	The positive or negative attitudes consumers express, scored positive, negative, or neutral. Although many online brand mentions are neutral, containing no sentiment, listening platforms track adjectives around keywords to determine consumers' tonality about a topic.
Share of voice	The ratio of discussion volume between multiple brands — often represented as a percentage pie chart. Many marketers track their brands against competitors' to determine which company has a larger share of voice.
Topic frequency	The most common themes for consumer discussion around a brand. Marketers use topic frequency data to collect insight into how consumers view their brands and how they discuss them online.
Virality	The amount and speed at which a discussion spreads, measured by the number of different entries around the same topic within a certain time period. Around a highly viral event, such as the Motrin Moms saga, hundreds of bloggers write posts in the following days.

Source: Forrester Research, Inc.

Predictive Analyses

Attempts to develop models of organizational systems that can be used to predict future outcomes and understand the consequences of hypothetical changes in organizations.
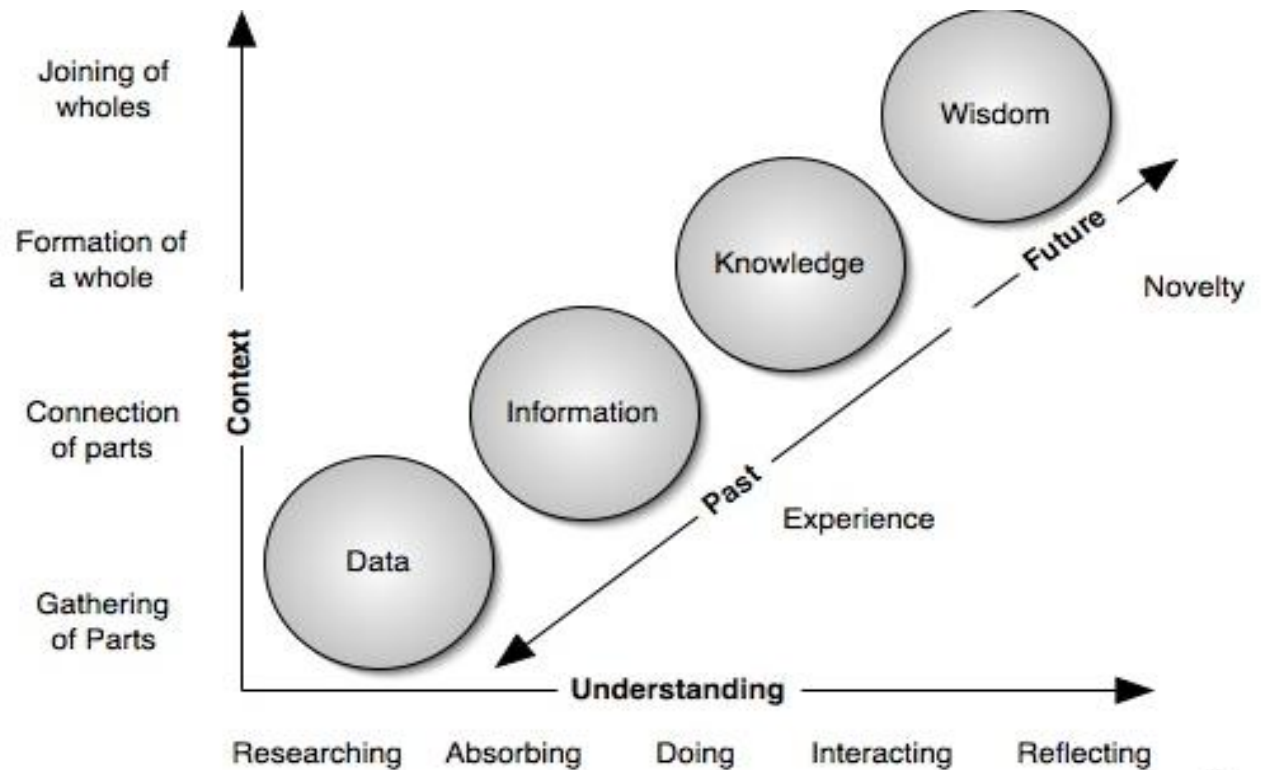
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Big Data: 3 Vs

World Economic Forum (2012) opined that **big data represents a new form of economic asset.**

- **Volume**
  - Todos os dados que são recolhidos
- **Velocidade**
  - Criação, transmissão e recepção de dados em tempo real
- **Variedade**
  - Multi-estruturados
  - Com origem em múltiplas interacções de clientes
    - clickstream (website visits)
    - comentários
    - Email
    - SMS
    - pesquisas
    - sensor data
    - georeferenciação
    - social posts
    - Tweets

Big Data Landscape 2016

Infrastructure

Hadoop On-Premise
cloudera, Hortonworks, MAPR, Pivotal, IBM InfoSphere, splice MACHINE, bluedata, jethro

Hadoop in the Cloud
amazon webservices, Microsoft Azure, Google Cloud Platform, IBM InfoSphere, CAZENA, TREASURE DATA, altiscale, Qubole, xplenty

Spark
databricks, GridGain, TACHYON NEXUS

Cluster Services
amazon webservices, kubernetes, HPCC SYSTEMS, docker, MESOSPHERE, CoreOS, pepperdata, StackIQ

NoSQL Databases
amazon DynamoDB, Google Cloud Platform, ORACLE, Microsoft Azure, MarkLogic, mongoDB, DATASTAX, AEROSPIKE, Couchbase, SequoiaDB, redislabs, influxdata

NewSQL Databases
SAP HANA, Clustrix, Pivotal, paradigm4, data-driven discovery, nuoDB, memsql, MariaDB, VOLTDB, citusdata, deepdb, Trafodion, Cockroach LABS

BI Platforms
Power BI, amazon webservices, salesforce, Wave Analytics, DOMO, GoodData, birst, kyvos insights, platfora, looker, atscale, ARCADIA, SISENSE

Statistical Computing
SAS, SPSS, MATLAB

Log Analytics
splunk, sumologic, kibana, CLOUD PHYSICS, loggly

Social Analytics
NETBASE, DATASIFT, tracx, bitly, synthesio, bottlenose, simplereach

Graph Databases
neo4j, GIRAPH, OrientDB, InfiniteGraph

MPP Databases
TERADATA, VERTICA An HP Company, NETEZZA An IBM Company, kognitio, dremio

Cloud EDW
amazon webservices, Google Cloud Platform, Microsoft Azure, Pivotal, snowflake, WATERLINE DATA, Infoworks

Data Transformation
alteryx, TRIFACTA, tamr, Paxata, StreamSets, Alation

Data Integration
informatica, MuleSoft, snapLogic, BedrockData

Real-Time
amazon webservices, METAMARKETS, confluent, rapidminer, DATATORRENT, dataArtisans

Machine Learning
Azure Machine Learning, amazon webservices, H2O.ai, Dato, SKYTREE, rapidminer, DATARPM, deepsense.io, ViSENZE, PredictionIO, glowf.ish

Speech & NLP
NarrativeScience, api.ai, NUANCE, Gridspace, semanticmachines, cortical.io, maluuba, MindMeld, IDIBON, yseop

Horizontal AI
IBM Watson, Cortana, VIV, sentient technologies, nervana SYSTEMS, nara, vicarious, Numenta, SI SCALED INFERENCE, HyperScience, MetaMind, clarifai, DEXTRO, Geometric Intelligence

Search
HP, Autonomy, ORACLE, ENDECA, EXALEAD, Lucidworks, elastic, ThoughtSpot, MAANA, swiftype, Algolia, SINEQUA

Data Services
uO, Mu Sigma DO THE MATH, DATASCIENCE, SILICON VALLEY DATA SCIENCE, kaggle datascope, DataKind

For Business Analysts
OrigamiLogic, ClearStory, CIRRO, import io

SMB / Commerce
Google Analytics, AMPLITUDE, RJMetrics, BLUECORE, sumall, granify, Airtable, retention SCIENCE, custora

Management / Monitoring
New Relic, APPDYNAMICS, amazon webservices, actifio, Numerify, splunk, DATADOG, rocana, Anodot

Security
TANIUM, illumio, CODE42, DataGravity, CipherCloud, VECTRA, sqrrl, BlueTalon

Storage
amazon webservices, Google Cloud Platform, Microsoft Azure, panasas, nimblestorage, Qumulo

App Dev
apigee, CASK, Keen IO, Typesafe, CONCURRENT

Crowd-sourcing
amazon mechanicalturk, CrowdFlower, WorkFusion

Analytics

Analyst Platforms
Palantir, AYASDI, Quid, enigma, Digital Reasoning, ORBITAL INSIGHT

Analytics Platforms
Microsoft, guavus, Datameer, inter|ana

Data Science Platforms
context relevant, CONTINUUM ANALYTICS, DataRobot, Alpine, ADATAO, MODE, plotly, dataiku, notonian, DOMINO, sense, yhat, ALGORITHMIA

Visualization
tableau, Google Cloud Platform, Roambi, GOMDATA, Qlik, CHARTIO

Applications

Sales & Marketing
RADIUS, Gainsight, bloomreach, Zeta, blue yonder, livefyre, Lattice, kahuna, SAILTHRU, persado, infer, 6sense, NGDATA, Preact, Wise.io, appuri, AVISO, ACTIONIQ, QUANTIFIND, ENGAGIO, DigitalGenius, fusemachines

Customer Service
MEDALLIA, ATTENSITY, CLARABRIDGE, STELLAService, textio, entelo, hiQ

Human Capital
gild, Connectifier

Legal
RAVEL, JUDICATA, Everlaw, Brevia, PREMONITION

Ad Optimization
MediaMath, Integral Ad Science, rocketfuel, OpenX, theTradeDesk, Adgorithms, LiveIntent, dstillery, DataXu, Appier, TAPAD

Security
CYLANCE, CounterTack, cybereason, ThreatMetrix, AREA 1 SECURITY, SentinelOne, Recorded Future, Guardian Analytics, FORTSCALE, sift science, Keybase, feedzai, SICNIFYD

Vertical AI Applications
facebook, X., Clara, KASIST.a, lumiata

Publisher Tools
outbrain, mixpanel, Chartbeat, yieldbot, Yieldmo

Govt/ Regulation
Socrata, OPENGOV, FiscalNote, enigma, PREDPOL, mark43, OpenDataSoft

Finance
Affirm, LendingClub, OnDeck, Kreditech, zest finance, LendUp, Kabbage, tidemark, Payoff, INSIKT, zuora, Dataminr, Lenddo, KENSHO, AIDYIA, iSENTIUM, Quantopian, sentient technologies

Education/ Learning
KNEWTON, Clever, declara, PANORAMA, knowre

Life Sciences
23andMe, Counsyl, PATHWAY GENOMICS, Recombine, deep genomics, KYRUUS, zymergen, FLATIRON, HealthTap, METABIOTA, ZEPHYR HEALTH, ovia, Ginger.io, transcriptic, Glow, enlitic, AiCure, Atomwise

Industries
OPOWER, eHarmony, RetailNext, duetto, STITCH FIX, WorkFusion, BLUE RIVER, TACHYUS, SwiftKey, SEEQ, FarmLogs, HowGood, celect, SIGHT MACHINE, statmuse, BOXEVER

Cross-Infrastructure/Analytics
amazon webservices, Google, Microsoft, IBM, SAP, SAS, HP, Autonomy, vmware, talend, TIBCO, TERADATA, ORACLE, NetApp

Open Source

Framework
hadoop HDFS, hadoop MapReduce, YARN, MESOS, Spark, TEZ, Apache Kylin, Flink, CDAP

Query / Data Flow
SLAMDATA, HIVE, APACHE DRILL, Google Cloud Dataflow

Data Access
APACHE HBASE, accumulo, mongoDB, cassandra, kafka, SciDB, nifi, CouchDB, riak, OPENTSDB

Coordination
talend, Apache Zookeeper, Apache Ambari

Real-Time
STORM, Spark, APEX, Flink, TACHYON, druid

Stat Tools
R, Scala, NumPy, SciPy

Machine Learning
mllib, Apache SINGA, mahout, Aerosolve, MADlib, learn, Caffe, torch, CNTK, TensorFlow, VELES, WEKA, FeatureFu, jupyter, DL4J, DIMSUM

Search
elasticsearch, Solr, Lucene

Security
Apache Ranger

Visualization
Zeppelin

Data Sources & APIs

Health
Apple, JAWBONE, GARMIN, practicefusion, fitbit, Withings, VALIDIC, netatmo, kinsa, Human API

IOT
UPTAKE, ThingWorx, helium, samsara, AUGURY, estimote

Financial & Economic Data
Bloomberg, DOW JONES, YODLEE, PREMISE, S&P CAPITAL IQ, quandl, xignite, CB INSIGHTS, mattermark, estimize, PLAID

Air / Space / Sea
PLANET LABS, spire, WINDWARD, CRUISE, SKYCATCH, Airware, DroneDeploy

Location/People/Entities
GARMIN, foursquare, InsideView, esri, STREETLINE, CARTODB, factual, PlaceIQ, Crimson Hexagon, placemeter, BASIS TECHNOLOGY, Sense 360, qualtrics

Other
panjiva, DATA.GOV

Incubators & Schools
GA, DataCamp, INSIGHT, DataElite, METIS, The Data Incubator

FIRSTMARK

Big Data in Banking

Agenda

- Cloud

- Social media

- Mobile

- Analytics

- Big Data

- **IoT**

IoT

- The Internet of Things (IoT) is a novel paradigm that is rapidly gaining ground in the scenario of modern wireless telecommunications;

- The basic idea of this concept is the pervasive presence around us of a variety of things or objects – such as Radio-Frequency IDentification (RFID) tags, sensors, actuators, mobile phones, etc. – which, through unique addressing schemes, are able to interact with each other and cooperate with their neighbors to reach common goals;

- The US National Intelligence Council (NIC) foresees that ''by 2025 Internet nodes may reside in everyday things – food packages, furniture, paper documents, and more''.

(Atzori et al., 2010)

- Cisco estimates that by 2020 over 50 billion objects will be connected to the Internet:

- HP estimates that by 2015 over 1 trillion objects will be connected.

IoT

Smart Cities
- Smart surveillance, automated transportation, smart energy management systems, water distribution, urban security and environmental monitoring

Smart Vending Machines
- Monitoring inventory and communication
- Visual recognition to offer past choices, and collecting demographic data on customers

Smart Homes
- Command air conditioning, lights and appliances. Lock doors

Wearables
- Fitness, health and entertainment

Connected Cars
- Vehicles able to optimize their own operation, maintenance as well as comfort of passengers using onboard sensors and Internet connectivity

Smart Retail
- Remain connected with consumers even out of store through smartphones and using Beacon technology

Healthcare
- Connected healthcare system and smart medical devices

Industrial IoT
- Tracking goods, real time information exchange about inventory among suppliers and retailers and automated delivery

IoT – Application domains
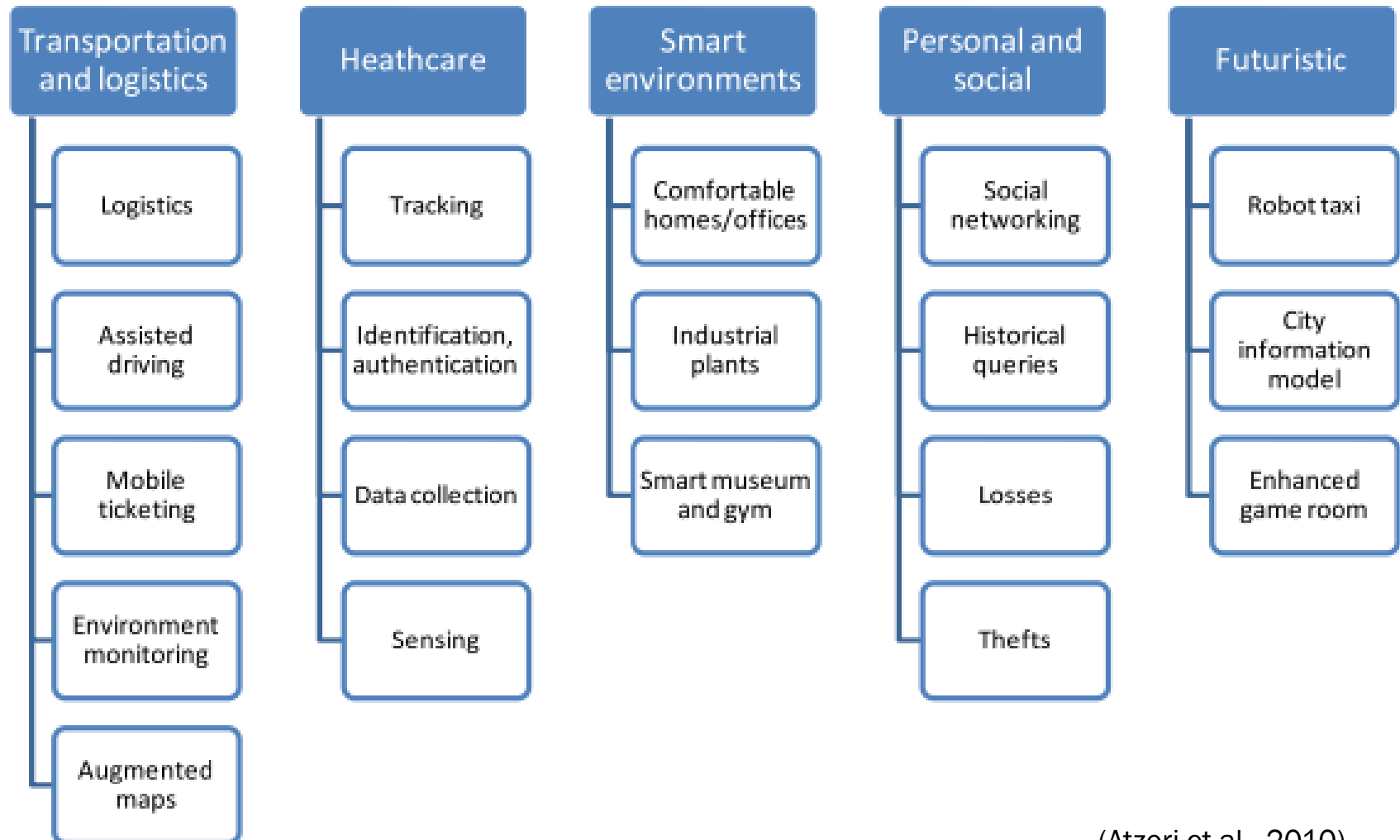
(Atzori et al., 2010)
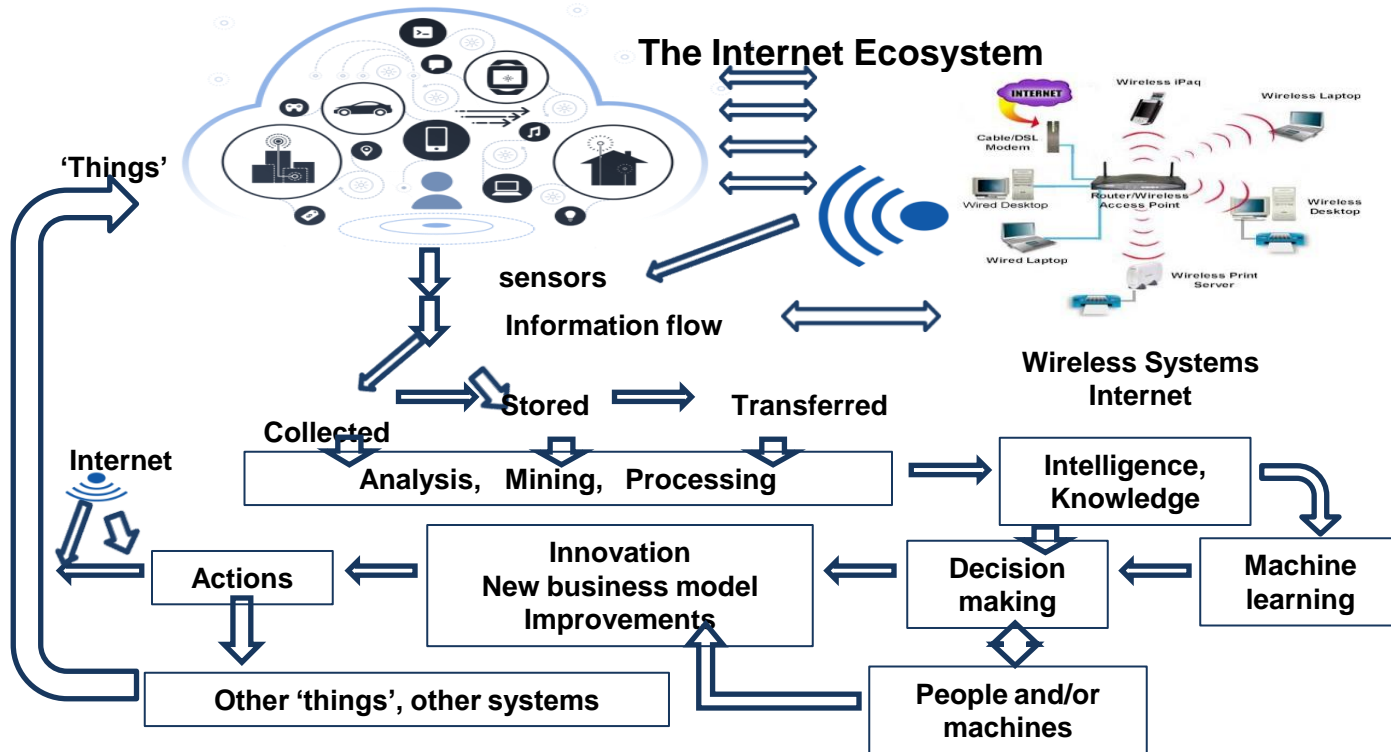
Figure 7.6   The process of the IoT

THE INTERNET OF THINGS AND E-COMMERCE

- **The Essentials of IoT**
- **The Structure of IoT Applications**
- **The Major Benefits of IoT**
  - Creates new revenue stream
  - Optimizes asset utilization
  - Improves sustainability
  - Improves workers' productivity
  - The Internet of Things is changing and improving everything (McCafferty 2015)
  - Systems will anticipate our needs
  - People will make smarter decisions/purchases
  - Greater accuracy
  - Identify problems quickly (even before they occur)
  - Reduces cost by automating processes
  - Instant information availability
  - Quick and inexpensive tracking
  - Expedites problem resolution and recovery
  - Supports facility integration

THE INTERNET OF THINGS AND E-COMMERCE

- **The Drivers of IoT**
  - 50 to75 billion 'things'- may be connected (by 2020 - 2025)
  - Connected autonomous 'things'/systems (e.g., cars) are all over the IoT
  - Broadband Internet is more widely available an increasing with time
  - Cost of connecting devices is decreasing
  - More devices are created (via innovation) and they are inter-connected (e.g., see Fenwick 2016)
  - More sensors are built into devices
  - Smartphones' penetration is sky-rocketing
  - Wearable devices are all over
  - Speed of moving data is increasing; to 60HTz
  - Protocols are developing for IoT (e.g., WiGig)
  - Customer expectations are on the rise

INTELLIGENT PERSONAL ASSISTANTS AND ROBOT ADVISERS

- **Amazon's Alexa**
  - *Alexa Skills*
  - *Voice Interface and Speakers in Alexa*
  - *Amazon Echo*
  - *Amazon Echo Dot*
  - *Amazon Echo Tap*
- **Apple's Siri**
- **Microsoft Cortana**
- *IBM Watson*
- **Alfie**
- **Personal Robots**
- *Robo Advisers*

Experiência do consumidor

- A experiência do consumidor **engloba todos os aspectos da oferta** de uma empresa;

- É a **resposta interna e subjectiva do consumidor face a qualquer contacto direto ou indirecto com uma empresa:**
  - O contacto directo geralmente ocorre no decurso de uma compra, utilização, ou serviço e é normalmente iniciado pelo cliente;
  - Contato indirecto na maioria das vezes envolve encontros não planeados com representações de uma empresa, serviço ou marca e assume a forma de wom ou críticas, publicidade, notícias, revistas, etc.

- A satisfação do consumidor é, essencialmente, **o culminar de uma série de experiências do cliente** ou o **resultado líquido das boas experiências menos as más.**

- Devido ao poder dos consumidores, quando existe **insatisfação do cliente**, a sua **disseminação é cada vez mais perigosa;**

(Meyer and Schwager, 2007)

The future today

The world's largest taxi company owns no vehicles
Uber

The largest accommodation provider owns no real estate
Airbnb

The most popular media provider creates no content
Facebook

The most valuable photo company sells no cameras
Instagram

The fastest growing television network lays no cables
Netflix

The most valuable retailer has no inventory
Alibaba

The future today

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