Smart Tourism
destination ecosystems
disruption and reengineering
agility & competitiveness

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Who is SMART?
And why?
Smartness takes advantage of interconnectivity and interoperability of integrated technologies to reengineer processes and data in order to produce innovative services, products and procedures towards maximising value for all stakeholders.

This reengineering enables shaping products, actions, processes and services in real-time, by engaging different stakeholders simultaneously to optimise the collective performance and competitiveness and generate agile solutions and value for all involved in the value system.

Smartness is the glue of interoperable, interconnected and mutually beneficial systems and stakeholders and provides the infostructure for the value creation for all.
SMART NESS

≠
Automation and Information Technology
Digitatization
Evolution
Social media
Reservations

GLUE of
Interoperable and interconnected networks
mutually beneficial systems
Real time, dynamic and adaptive
Customised, individualised, contextualised
Collective competitiveness and coordination
value creation for all stakeholders
Technologies to Watch for the Next-Generation Enterprise in 2016 & 2017

**Incremental**
- will drive significant improvement in existing infrastructure and processes
  - digital learning, MOOCs, global solutions networks
  - microservices, architectures
  - public cloud
  - digital customer experience management
  - team collaboration
  - hybrid cloud

**Disruptive**
- will create new markets and/or upend existing markets
  - collaborative economy
  - machine learning & AI
  - blockchain
  - social business (internal & external)
  - big data & data science
  - open APIs
  - Internet of Things (#IoT)

**Horizon**
- must track technology likely to enter enterprise watch list in 18-36 months
  - mind/machine interfaces
  - cryptocurrencies
  - prescriptive analytics
  - emergent artificial intelligence
  - seamless multi-cloud operations
  - office robotics
  - business drones
  - intelligent vehicles
  - smart advisors
  - DNA computing
  - quantum computing
  - shared digital perception
  - universal digital identities
  - embeddables
  - nanodevices
  - bioprinting
  - affective computing
  - holographic projection

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= in or entering mainstream
= still emerging

From http://zdnet.com/blog/hinchcliffe on ZDNet by Dion Hinchcliffe
Old Model of IT

centralized hierarchical
automation of business

New Model of IT
decentralized network enablement
of digital transformation

1. IT Management
   - CIO
   - CTO
   - Governance
   - Enterprise Architecture
   - Program Management

2. IT Staff
   - Analysts
   - Proiect Managers
   - Team Leaders
   - Operations
   - Developers

- Business Users
- Sponsors
- Support Units (Legal, HR, Compliance)
- Contractors
- Service Providers
- Vendors

- Applies technology to what the business does today
- Good at maintaining status quo
- Focus on efficiency, economy of scale, continuity
- Well-defined processes designed for monolithic IT

[Diagram]

- Change Managers
- Analysts
- Developers
- Networks
- Operations
- Business Users
- Sponsors
- Governance
- Enterprise Architecture
- Program Management
- Change Agents
- Vendors
- Service Providers
- Support Units (Legal, HR, Compliance)
- Contractors

- Explores how technology re-imagine the business
- Good at managing constant technology change
- Focus on responding to opportunities at scale
- Dynamic self-organizing processes for small IT in volume

creative commons
Some Rights Reserved. 2015
adjuvi by Dion Hinchcliffe
YOU AIN'T SEEN NOTHIN' YET!
Data and Technology: the backbone

**Internet of Things**
- Inter-networking & communication
- Sensing information intelligently
- Dynamic & heterogenous

**Open Data**
- Freely used, re-used and re-distributed
- Accessible in convenient forms
- Inter-operable with other datasets

**Big Data**
- Useful in predictive & user-behaviour analytics
- High volume & variety
- Real-time
- Relies on Machine Learning & cloud computing
- Internet of Things
THINKING SMART
Digital intelligence is the key to making life safer and more efficient. At Intel Labs, engineers create ingenious ways to build high-tech, connected devices into everyday items to help you make smarter decisions.

SMART HOMES
The Near Future
Living a seamlessly connected lifestyle isn’t as far off as you would think. Intel chips can be placed virtually anywhere, from human skin to a running shoe.

1. Intelligent dishes and silverware that determine dietary needs.
2. Connected with wireless displays at home.
3. Connected with wireless mobile displays.

SAFER DRIVING
Intelligent street lighting in Helsinki, Finland, uses automatic sensors to dim or brighten depending on environmental conditions.

1. Predictive mapping to calculate road safety.
2. Vehicle sensors that transfer inter-car data about position and velocity.

50 billion
Expected number of connected devices by 2020. That’s an average of six devices per person!

70%
Mobile traffic growth in 2012.

36 million
The number of connected tablets in 2012.

SUSTAINABLE LIVING
How does data fusion work for cities? The combination of fixed, mobile and voluntary sensors allows to get larger impactful insights and services, such as traffic management.

1. Voluntary mobile sensing
Participants volunteer to sense the environment with external devices like phones.

2. Fixed sensing sensors
Are used to collect data on environmental elements.

3. Opportunistic mobile sensing
The system uses an external device to collect information.

200% increase
The expected growth in five years for the smart home market.

Source: Urban population growth (World Health Observatory); Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update 2012-17; Intel data
Your wearable technology map

Where can we wear technology and what can it do?

Opportunities for the travel industry

Wearable technologies open up the opportunity for travel businesses to expand and redefine their propositions. From developing bespoke wearable technologies themselves, to developing applications or services based on those that already exist. Explore the technologies below and think about how wearables could change your future.

Understand

Wearable technology offers the chance for travel businesses to understand their customers in new, more powerful ways.

Alert

Wearable technology can disappear into the background, only nudging or guiding travellers in the appropriate situation, time or place.

Head including eyes/ears

Body including chest/neck

Engage and entertain

Whether it objects from the barrier of travel or immerses people in the experience of new places, wearable technology can make travel a more interesting and fulfilling experience.

Legs including footstretches

Protect

Those who feel in constant risk of falling or with their families, the more likely they are to head off the beaten track. Here’s some of the technologies that are leading the trend today.

Let’s shape the future of travel
shapeethefutureoftravel.com
Social Media Monitoring

• Social Media Statistics:
  http://www.socialbakers.com
Father, I have sinned...

I already know...
Thinking smart for life - BEACONS

Hello Paul,
Your flight is now

BOARDING 10:10

Go to GATE 15
2 mins walk from your current location
The Answer: Multichannel Marketing to reach the right traveller at the right place at the right time
Tourism Needs Planning And Management
Sustainability of Tourism and Transport

- Congestion in motorways
- Access congestion in small historic towns and WHS
- Parking congestion in small historic towns and WHS
- Congestion at airports

Planning Tourism and Transport together:

- Seasonality
- Incentives
- Railway Travel
- Awareness
- Ecolabels
- Indicators
Tourist & Mobility Congestion
“Capping tourists is a drastic measure, and surely not something destinations would like to do. It is often seen as a last resort, and the fact that more and more tourist destinations see no other way to remain sustainable and competitive is telling of the apparent failure of other initiatives”

“While surveys show that individuals feel increasingly responsible about their impact on the environment, this does not necessarily translate into action, a phenomenon that has in the past been referred to as the 30:3 syndrome. While 30% of respondents to a survey claimed to be ethical consumers, only 3% actually bought ethical products”
Too much of a good thing ...
Yourism
(accessible, personalized experiences)
Roger Pride, 2016

- **Individual Experiences** — “one size” most definitely does not fit all
- **Reject Authority** — honesty of social media and bypassing of institutions
- **Time Factors** — living in an impatient world, our 8 second attention span, and Netflix
- **Creators not Consumers** — opinions, images and uploads
- **Access to Information** — and overload of information (dual-screen generation)
- **Social Capital** — impact on destination choice and sense of belonging
- **Security** — where is the new “quiet and calm”? 
- **Belonging** — emotional attachment to products and places and sense of belonging in a “virtual world” (place attachment)
- **Tailored Authenticity**
Smart Tourism Ecosystem

Interoperability of systems in real-time

Technology is the means to an end, not the solution
Enabled by Big Data, IoT and Open Data

Enhancing positive experiences, removing negative factors through co-creation

Deriving value through marketing

All elements are pushed through with an agile mindset

Destination > Individual businesses
SoCoMo enabled Co-creation

Social Media

Connected Mobile Devices

Context

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<tr>
<th>Internal Context</th>
<th>External Context</th>
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<tr>
<td>Tasks and purpose</td>
<td>Location</td>
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<tr>
<td>Company</td>
<td>Traffic</td>
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<td>Familiarity with area</td>
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<td>Topics of Interest</td>
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</tbody>
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Opportunities in and benefits of social media content mining.

Thomaz, Biz, Bettonic, Mendes-Filho, Buhalis, 2017, Content mining framework in social media: A FIFA world cup 2014 case analysis
Information & Management Volume 54, Issue 6, Pages 786-801 https://doi.org/10.1016/j.im.2016.11.005
The Current Status

Companies use only 12% of the data they gather! (Gov.UK 2017)
So what does Big Data mean for Tourism?

Smart Tourism

Where are they from?  How did they get there?  What are they spending?

Barcelona
Proof of Concept

http://slideplayer.com/slide/10976205/
Bringing it home... UK footfall, hour by hour.
Dock-less bicycle-sharing system
Dock-less bicycle-sharing system
Dock-less bicycle-sharing system
Dock-less bicycle-sharing system
Dock-less bicycle-sharing system

- Shimano internal 3 speed gearing
- Adjustable handlebars
- 60 degree inclination
- Aluminum basket
- APP upgrade
- Solar-powered generator
- Enhanced smart lock
- Anti-rust chain
- Stainless steel frame
- Tubeless tires
- Improved braking system
- Double chainring
- Lighter aluminum fork
- Enhanced connectivity with Google Maps
- Bike location: detect bike locations on google maps
- Account top-up: users can choose to top up the following amounts: $3, $10, $20, $40
- Rental fees: $1 per hour, capped at $2
- Report function: user-friendly interface for easy report of malfunction and massage of bicycles

The mechanical lock integrated with intelligent features such as GPS and geolocation guarantees a 100% success rate of operating the smart lock.

The smart lock is connected to a cloud platform for data storage and stays updated through the cloud. Through a high-secure encryption algorithm, the cloud platform can then issue a random code to unlock the lock.

The alloy outer case is resistant to corrosion, rust, UV rays, and is durable even in the harshest conditions. The lock is coated with a protective layer to prevent damage, while the smart lock is made with high-quality materials and designed to be theft-proof.

The fast and accurate Bluetooth connectivity takes less than 3 seconds.

The new locks are equipped with 3G/4G network access.
Dock-less bicycle-sharing system
Safety and Security
Safety and Security
Motors: Drive four pairs of carbon-fibre blades on a square light-weight frame.

Central drum: Contains battery, black box recorder, autopilot and homing device if drone loses signal.

Camera: Colour CCTV surveillance camera for use in daylight or thermal imaging camera for use at night.

Remote control: Drone operated by officer wearing goggles that display exactly what is being filmed.

FACTFILE
- Width: 3ft
- Weight: 2lb 2oz
- Max Speed: 30mph
- Range: up to 1,500ft
- Operating height: 400ft

1. At 4.30pm on Jan 26 officers alerted to reports of a stolen Renault Clio in Bootle.

2. After a pursuit two suspects abandon vehicle and make off on foot. One is arrested but the other escaped into the fog and darkness.

3. Using thermal imaging, drone locates suspect in bushes and relays pictures to police van nearby. Suspect is arrested.
Crisis management
Car Pooling

Love getting there
Carpool in good company:
Leaving from: Bournemouth
Going to: London
Date: 15/09/2017
Find a ride

Driving somewhere soon?
Carpooling with BlaBlaCar means you save and others can travel.
Offer a ride
Autonomous Vehicles
Autonomous Vehicles

- Adaptive Cruise Control
- Emergency Braking
- Pedestrian Detection
- Collision Avoidance
- Lane Departure Warning
- Traffic Sign Recognition
- Cross Traffic Alert
- Park Assist
- Surround View
- Digital Side Mirror
- Environment Mapping
- Blind Spot Detection
- Rear Collision Warning
- Rear View Mirror
- Park Assistance

Colors:
- Long-Range Radar: Dark Blue
- LIDAR: Red
- Camera: Gray
- Short-/Medium-Range Radar: Light Blue
A world of driverless cars

Fully autonomous vehicles are developing faster than anyone would have thought even a few years ago, with many experts predicting that they will become widely available in the next 20-30 years. Many questions remain, but it is already possible to imagine how the new world of driverless cars will work.

**PERCEPTION**
Vehicles use sensors to detect obstacles, a laser ranging system to map the surrounding area, and cameras to identify objects such as traffic lights, construction signs, pedestrians, and other vehicles.

**COMMUNICATION**
Vehicle-to-vehicle (V2V) signals send to other cars, trucks, and infrastructure items such as traffic lights.

**ROUTE PLANNING**
An on-board computer can use sensors that detect a route that gets the car where it needs to go, while avoiding people, animals, and other vehicles.

**LOCATION**
Mapping software uses Global Positioning System data to tell the car where it is, in relation to roads, traffic signals, and other landmarks.

**DECISION AND ACTION**
To make the correct responses to rare events—such as a ball bouncing in from a play area or a plastic bag blowing down the roadside—the cars rely on algorithms refined through millions of scenarios of test data.

**ADAPTIVE TRAFFIC FLOW**
Smart software integrates V2V signals from the moving cars to optimize speed limits, route guidance, and lane assignment to help ensure safety in each direction and the actual traffic load. The result is a smoother flow, shorter travel times, and less energy wasted on traffic lights or in traffic jams.

**CITIES TRANSFORMED**
Mass Transport. People increasingly give up owning cars in favor of calling a car to pick them up wherever they are and drop them off wherever they need to go—a driverless version of a ride-sharing service.

**LAND USE**
Urban centers begin to scale the many accommodating they have needed for personal vehicles—starting with the vast quantities of real estate devoted to parking, which could be adapted to more productive uses.

**2020s**
The decade when driverless cars are predicted to become widespread.

**20%**
Fuel savings for cars that travel in formation.

**800 million**
One estimate of the number of US parking spaces. Many could be used for other purposes if people ride-share more.
Autonomous Vehicles
Autonomous Vehicles Ecosystem

The Building Blocks of Autonomy

Copyright 2016 – Vision Systems Intelligence, LLC.
Autonomous Vehicles
Autonomous Vehicles
Advancement of technology enabled cars to be equipped with connectivity and has created new ecosystem in automotive industry.
As car ownership evolves to a subscription service with intelligent fleets, there will be less need for parking. Garages are transformed into other uses such as office, residential and hotels.

In 2035, the need for parking should decline by more than 5.7 billion square meters in the United States. (This equates to half the size of Connecticut) Source: McKinsey & Co.
YOUR VEHICLE IS JUST AROUND THE CORNER

Hourly car and van hire available 24/7

Join Now
Join
Once approved, you will receive an access card or app.

Reserve
Login and select any location, start/end times. You can reserve in advance or at the last minute.

Unlock & Go
Use the Enterprise CarClub app. Alternatively, place your access card over the windscreen reader. The doors will lock and your reservation will end. If you find you need a little extra time you can extend the reservation from the vehicle itself, via the app, website or by calling us.

Return
Return the vehicle to the drop-off point, use the Enterprise CarClub app to lock the vehicle. You can place your access card over the windscreen reader. The doors will lock and your reservation will end. If you find you need a little extra time you can extend the reservation from the vehicle itself, via the app, website or by calling us.

CarClub ECC
Create Reservation
Location: Current Location
Start: Mar 08, 10:30
End: Mar 08, 14:30
Filters: All Vehicles
Search

60 Great Queen Street W...
#2940055

Mileage
Destination
Booking Reference

COLLECT
11:30
23 JAN
DROP OFF
15:30
23 JAN

SUBMIT RESERVATION

ESTIMATED COST
£12.18
Shared cars
Shared cars
Car becomes the guide and concierge?
Smart Tourism Framework

Technology

Travel sector specific data

Tourism Supply

Open Data Platform

Consumers of Value

Working with other stakeholders

Creating the storm of value

Working with value aggregator
The Benefits

**Consumer**
- Co-created, personalised experience
- Engaged in all stages of travel
- Derive value in an unfamiliar place conveniently

**Supplier**
- Analyse meta trends for better predictability
- Control operational costs
- Influence customer behaviour in real time

**Destination**
- Enhance and manage brand reputation
- Reduce community – tourist conflict
- Foster cross-sector innovation & growth
Tourism ecosystem is changing rapidly
Based on Smart Cities research and methodologies, a Smart Tourism Destination successfully implements smartness at destination to enhance tourism value.

Smartness is fostered by open innovation, supported by investments in human and social capital, and sustained by participatory governance, in order to develop the collective competitiveness of tourism destinations to enhance social, economic and environmental prosperity for all stakeholders and generate value for visitors.

Interoperability and ubiquitous computing ensure that everybody is interconnected and processes are integrated towards generating value, through dynamic co-creation, sustainable resources and dynamic personalisation and adaptation to context.

All suppliers and intermediaries, the public sector, as well as consumers and various interested parties are networked, dynamically co-producing value for everybody interconnected in the ecosystem.
SMART TOURISM
is NOT about technology
It is about agility in value cocreation
Dear Mr/Ms Professor Buhails

Welcome to Hangzhou Blossom Water Museum Hotel!

That you want to speak tomorrow, in order to better protect your throat is specially prepared for you a candy.

Room Attendant
THANK YOU

谢谢
Stay in touch with Dimitrios

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