IoT in CoviD-19

24/3/2021

Blockchain in health services to record medical data and treat diseases and pandemics.

A Possible solution using the Proof of disease algorithm and the Internet of Medical Things

Cloud

- I Cloud
- Samsung Cloud
- Ιδιωτικό και Δημόσιο
- Computer Cloud
- **G Cloud**
- (One Drive)
- Azure
- DropBox
- Amazon
- Mega.NZ
- Hybrid Cloud

- Netflix
- Google Drive, Forms
- Amazon (AWS)
- **N. 4727/2020 (23-9-2020)**
- **H-cloud**
- **RE-cloud**

What makes up a smart city?

Energy
Renewable energy generated by a solar panel is transmitted along a smart grid to smart homes.

Transport
V2X (vehicle to everything) will ease congestion and improve road safety in cities, allowing driverless electric cars to communicate with infrastructure such as traffic lights and car parks.

Homes
Smart home energy management systems control the distribution of the energy throughout the household.

Public Service
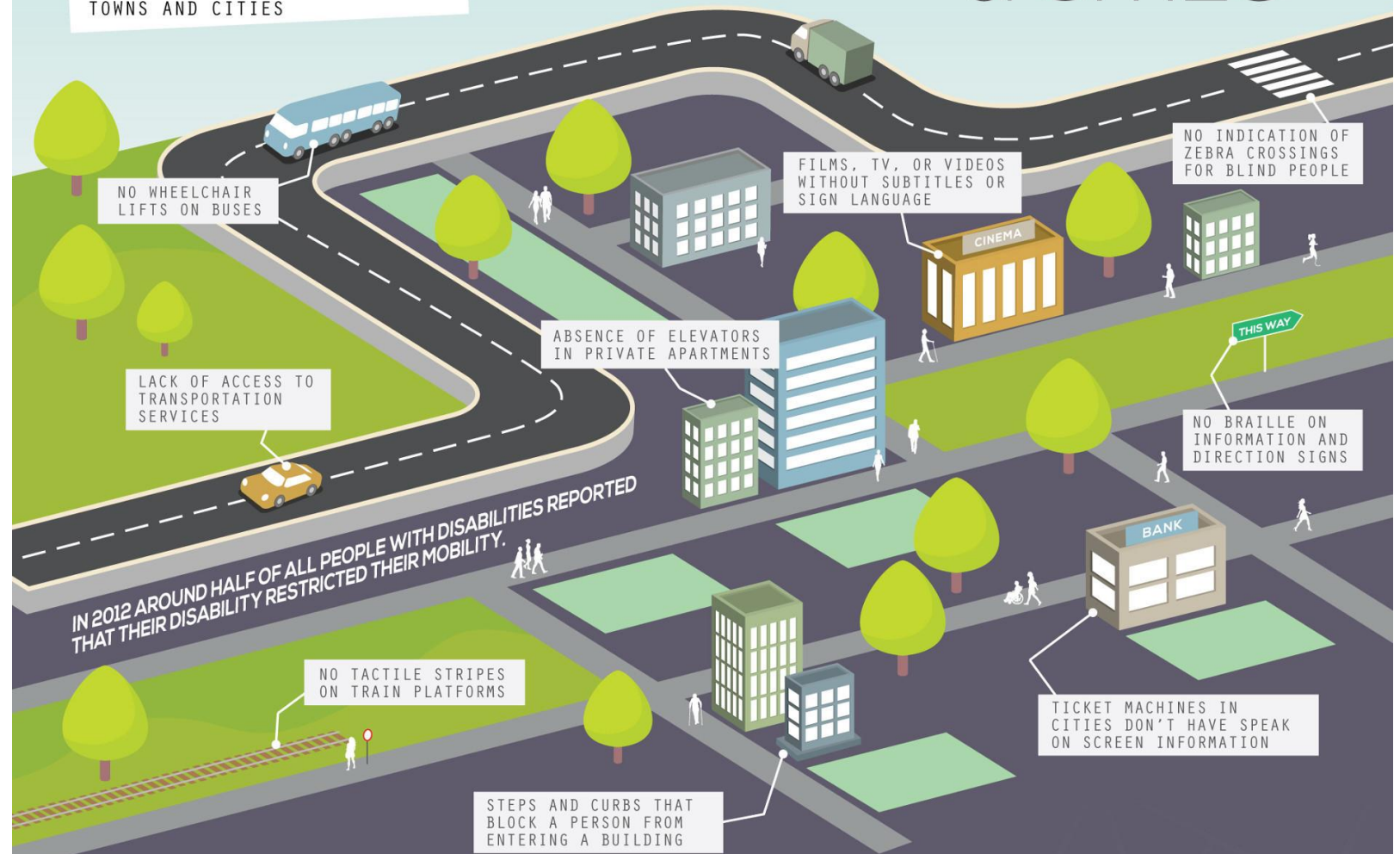Police prevent crime by using the power of data to analyse where it is most likely to take place.

Health
The IoT era enables people to use apps to contact their doctors.

ABOUT 80,000,000 EU CITIZENS
HAVE SOME FORM OF DISABILITY

DISABLED PEOPLE REPRESENT
ONE-SIXTH OF THE EU'S OVERALL
WORKING-AGE POPULATION, BUT
THEIR EMPLOYMENT RATE IS
COMPARATIVELY LOW

EUROPE IS NOW AN ESSENTIALLY
URBAN SOCIETY, WITH FOUR OUT
OF FIVE EU CITIZENS LIVING IN
TOWNS AND CITIES

DISABILITIES
& CITIES

Debating Europe

NO INDICATION OF
ZEBRA CROSSINGS
FOR BLIND PEOPLE

FILMS, TV, OR VIDEOS
WITHOUT SUBTITLES OR
SIGN LANGUAGE

CINEMA

NO WHEELCHAIR
LIFTS ON BUSES

ABSENCE OF ELEVATORS
IN PRIVATE APARTMENTS

THIS WAY

NO BRAILLE ON
INFORMATION AND
DIRECTION SIGNS

LACK OF ACCESS TO
TRANSPORTATION
SERVICES

BANK

IN 2012 AROUND HALF OF ALL PEOPLE WITH DISABILITIES REPORTED
THAT THEIR DISABILITY RESTRICTED THEIR MOBILITY.

NO TACTILE STRIPES
ON TRAIN PLATFORMS

TICKET MACHINES IN
CITIES DON'T HAVE SPEAK
ON SCREEN INFORMATION

STEPS AND CURBS THAT
BLOCK A PERSON FROM
ENTERING A BUILDING

THE EUROPEAN
ACCESS CITY AWARD

SUPPORTS ACCESSIBILITY MEASURES IN EVERYDAY LIFE

ENCOURAGES CITIES TO ACTIVELY INVOLVE PEOPLE WITH DISABILITIES

OPEN TO EU CITIES OF AT LEAST 50,000 HABITANTS

THE INITIATIVE WAS LAUNCHED IN 2010. SINCE THEN, OVER 200 CITIES PARTICIPATED

2011
-
AVILA
SPAIN

2012
-
SALZBURG
AUSTRIA

2013
-
BERLIN
GERMANY

2014
-
GOTHENBURG
SWEDEN

2015
-
BORÅS
SWEDEN

2016
-
MILAN
ITALY

URBAN
DISABILITY PROJECTS

WHEELMAP
CROWDSOURCE-BASED ONLINE PLATFORM WITH MAPS WHERE WHEELCHAIR-ACCESSIBLE PLACES ARE INDICATED. 35.000 USERS PER MONTH

BLINDSQUARE
GPS-APP DESIGNED TO HELP BLIND PEOPLE NAVIGATE THROUGH CITIES USING AUDIO. AVAILABLE IN 22 LANGUAGES

WAYFINDR
AN AUDIO-BASED APP TO HELP BLIND PEOPLE TRAVEL INDEPENDENTLY, FOR INSTANCE IN TRAIN STATIONS AND AIRPORTS

CAP4ACCESS
A PILOT-PROJECT TO MAKE EUROPEAN CITIES MORE ACCESSIBLE FOR ANYONE WITH LIMITED WALKING ABILITIES

EUROPEAN INITIATIVES TO PROMOTE THE RIGHTS
OF PEOPLE WITH DISABILITIES

EUROPEAN ACCESSIBILITY ACT
PROPOSED LEGISLATION TO OBLIGE COUNTRIES TO MAKE ALL PRODUCTS, SERVICES, AND PUBLIC BUILDINGS ACCESSIBLE

EUROPEAN DISABILITY CARD
PILOT PROJECT THAT ALLOWS DISCOUNTS FOR CULTURE, LEISURE, SPORT ANT TRANSPORT ACROSS THE EU

UN CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES
ADOPTED IN 2006 AND RATIFIED BY 25 EU COUNTRIES (NOT BY IRELAND, FINLAND AND THE NETHERLANDS)

EUROPEAN DISABILITY STRATEGY 2010-2020
EUROPEAN STRATEGY TO ENSURE EQUAL OPPORTUNITIES FOR PEOPLE WITH DISABILITIES IN ALL ASPECTS OF LIFE

- COVID-19 has impacted countries, communities and individuals in countless ways, from business and school closures to job losses not to undermined loss of lives. As governments scramble to address these problems, different solutions based on technologies like IoT have sprung up to help in dealing with this worldwide health crisis. As a result, COVID-19 may well have been the ultimate catalyst of the Internet of Things (IoT). [3]

- Internet of Things (IoT) platforms revenue will reach $66 billion in 2020, a 20% increase over last year's figure. The increase in revenue will be generated, for example, by businesses seeking greater resilience in areas including supply chain and asset management, against external factors such as the disruption caused by the global COVID-19 pandemic. That will enable the IoT market to overcome the anticipated widespread economic disruption over 2020 and beyond. Meanwhile connected solutions are proving their worth in today's crisis, making them a critical part of many organizations near-term technology roadmap. [1]

SOME OF THE AREAS WHERE IOT WILL FLOURISH BECAUSE OF COVID-19 IMPACT:

IoT & WFH

IoT & Blockchain

IoT & COVID-19

IoT & E-Commerce

IoT & Telemedicine

Τηλε-ιατρική

- Επιλογή οικογενειακού γιατρού
- Ηλεκτρονική συνταγογράφηση
- Εφαρμογή των φαρμακείων
- Τηλε-διάγνωση και τηλε-επισκόπηση (Πληρωμή)
- Ρομποτική Χειρουργική
- **Preventive (**proactive από Reactive)
- **Personalized**
- Τηλε-συνεδρία
- …..112
- Χρήση Youtube στην εφαρμογή ….«δύσκολων επιθεμάτων» ή πρόσθετων

e-commerce

- e-shops
- Τηλεμετρία
- Προσωπικά δεδομένα (**GDPR**)
- **Teleportation με το 5G**
- **Coins** και **Bitcoin**
- **Κάρτα αποδείξεων**
- **Τράπεζες (+κόστη υπηρεσιών…)** (Σύγχρονες ….ηλεκτρονικές τράπεζες)
- **Gsis** και οι λοιπές εφαρμογές
- Ack λήψης του μηνύματος
- (10/60 παραδίδονται εις χείρας) **(ΕΦΟΡΙΑ)**

SWOT analysis

- SWOT Analysis
- Cost benefit analysis
- ΗΓΕΤΗΣ

IOT & TELEMEDICINE

- COVID-19 pandemic will kick start IoT adoption in many sectors but especially in the healthcare sector, keeping in mind the strain on healthcare systems caused by the crisis has brought into focus the potential efficiency *benefits that can be gained from remote monitoring in healthcare*.

- The sector has been historically slow to integrate IoT technologies into its ecosystem, however, current researches anticipates that the continuing pandemic will drive the adoption of remote monitoring **to minimize public interactions**. [1]
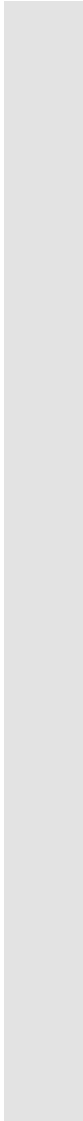
IOT & E-COMMERCE

- With the disruption of supply chain networks because of COVID-19, inventory control was one of the biggest challenges retailers and wholesalers had to face during lockdown – and this difficulty may continue until the end of the year. But indisputably, companies that were already **using NFC labels** for example to control inventory in and out of warehouses have had this task made easier. On the other hand, the **track & trace systems** used by some carrier companies have proved essential to keep the e-commerce in full operation and to manage the delays in deliveries in real-time.

- In other words, IoT has become a way to offer a faster and more transparent service to the final consumer. If the containment really changes our consumption habits, this could be one of the new demands.

IOT & BLOCKCHAIN

- With Blockchain we can share any transaction/information, real time, between relevant parties present as nodes in the chain in a secure and immutable fashion. In this case, had there been a blockchain network where WHO, Health Ministry of each country and may be even relevant nodal hospitals of each country, were connected, sharing real time information, about any new communicable disease, then the world might have woken up much earlier. We might have seen travel restrictions given sooner, quarantining policies set sooner and social distancing implemented faster. And may be fewer countries would have got impacted.

- What every country is doing now fighting this pandemic, would have been restricted to fewer countries and in a much smaller scale. The usage of a Blockchain to share the information early on, might have saved the world a lot of pain and deaths. This is an area where IoT and Blockchain converged, with all the info. coming from the sensors/nodes and traveling over available networks to be process in the cloud and presented via applications in the hands of health workers and authorities, blockchain will secure the data all the way. [3]

IOT & WORK FROM HOME (WFH)

- IoT consists of 4 components: Sensors, Networks, Cloud, and Applications (**SNCA**), and COVID-19 pushed their adoption and implementation to the max with the sudden pivot of many companies to Work From Home (WFH) option. Even before the pandemic, the IoT technologies that were of most interest to companies were sensors (84%), data processing (77%), and cloud platforms (76%).[2]

- Remote working has been the standard for many companies for the last few months and will continue to be so wherever possible. It offers more flexibility, **less time wasted on home-work trips**, it allows companies to save on physical spaces, and to have teams working in different locations, IoT connected devices will make it more appealing and easy option for many organizations. [2]

- Preventive Medicine, Integrated Care and ICT - A Prospective Overview

The Main Benefits of Using ICT in the Health Care Field (2016)

- **New ICT**, **applied games** such as the **Serious Games** or the **wearables** offer a number of possibilities when **improving the efficiency** of the **health care sector**. The advantages of these **new technologies** can be summarized in the following main areas:

- **Increasing quality in the patient assistance.** One of the most important flaws of this sector is the **fragmentation of the health care** and the difficulties for efficiently transmitting the information. ICT can help **improve patient safety** through the **direct access to the medical case story, checking the treatments online**, keeping track of the patients' progress and anticipating possible medical errors. In general terms, they are regarded as generally positive **tools** among **professionals and users.** Since they provide a way to **increase the patient safety**, their use is being promoted in many countries.

The Main Benefits of Using ICT in the Health Care Field

- **Cutting down the medical spending.** Using **ICT and Serious Games** for **Health** help **reduce these costs** by reducing the time required to process data and manage paperwork. The system for image transmission and storage is essential to promote the development of the **electronic medical case story and telemedicine** since it speeds up the tests and the gathering of results.

- **Reducing administrative cost. Invoicing** brings about many possibilities of **saving due to the use of ICT and the new remote devices**. Although the evidence of these data, electronic invoicing is not widely used in most of the countries yet.

The Main Benefits of Using ICT in the Health Care Field

- **Possibility to carry on brand new health models.** ICT have been defined as technology with a **high transformative potential**, since it introduces **new ways to carry out medicine and develop health care**. They are definitely essential to **renew primary health care** since they contribute to a personalized following of **chronic diseases**; they improve the **access** to **health care** in **rural populations**; and they contribute to the **optimizing** data **measuring** and **supervision**.

- **References**
- [1] https://futureiot.tech/analysts-say-covid-19-pandemic-will-spur-iot-adoption/
- [2] https://blog.infraspeak.com/iot-covid-19/
- [3] https://www.bbvaopenmind.com/en/technology/digital-world/blockchain-technology-and-covid-19/

- [Digital World | OpenMind (bbvaopenmind.com)](#)

- [https://www.bbvaopenmind.com/en/technology/digital-world/](#)

- [https://www.bbvaopenmind.com/en/books/](#)

- [https://www.debatingeurope.eu/2016/04/05/how-can-cities-be-made-more-accessible-for-disabled-people/#.YFtrj9JxdPZ](#)

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