



The Standards People

IoT Conference 2023

IoT is eHEALTH

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The logo for C3L features the letters 'C3L' in a bold, blue, sans-serif font. A light blue, curved line or swoosh is positioned beneath the 'C' and the first '3', extending from the left side of the 'C' towards the right.

July 6th 2023



Agenda



- What is eHealth and how is it related to IoT?
- What is ETSI's TC eHEALTH doing?
- What is the long term plan?

What is eHEALTH?

WHO: the cost-effective and secure use of information and communications technologies in support of health and health-related fields

European Society of Cardiology: the use of information and communication technology to support health and healthcare.

National Institutes of Health (USA): an emerging field in the intersection of medical informatics, public health and business, referring to health services and information

... and many more variants on this theme that are synthesised at ETSI into the role of TC eHEALTH

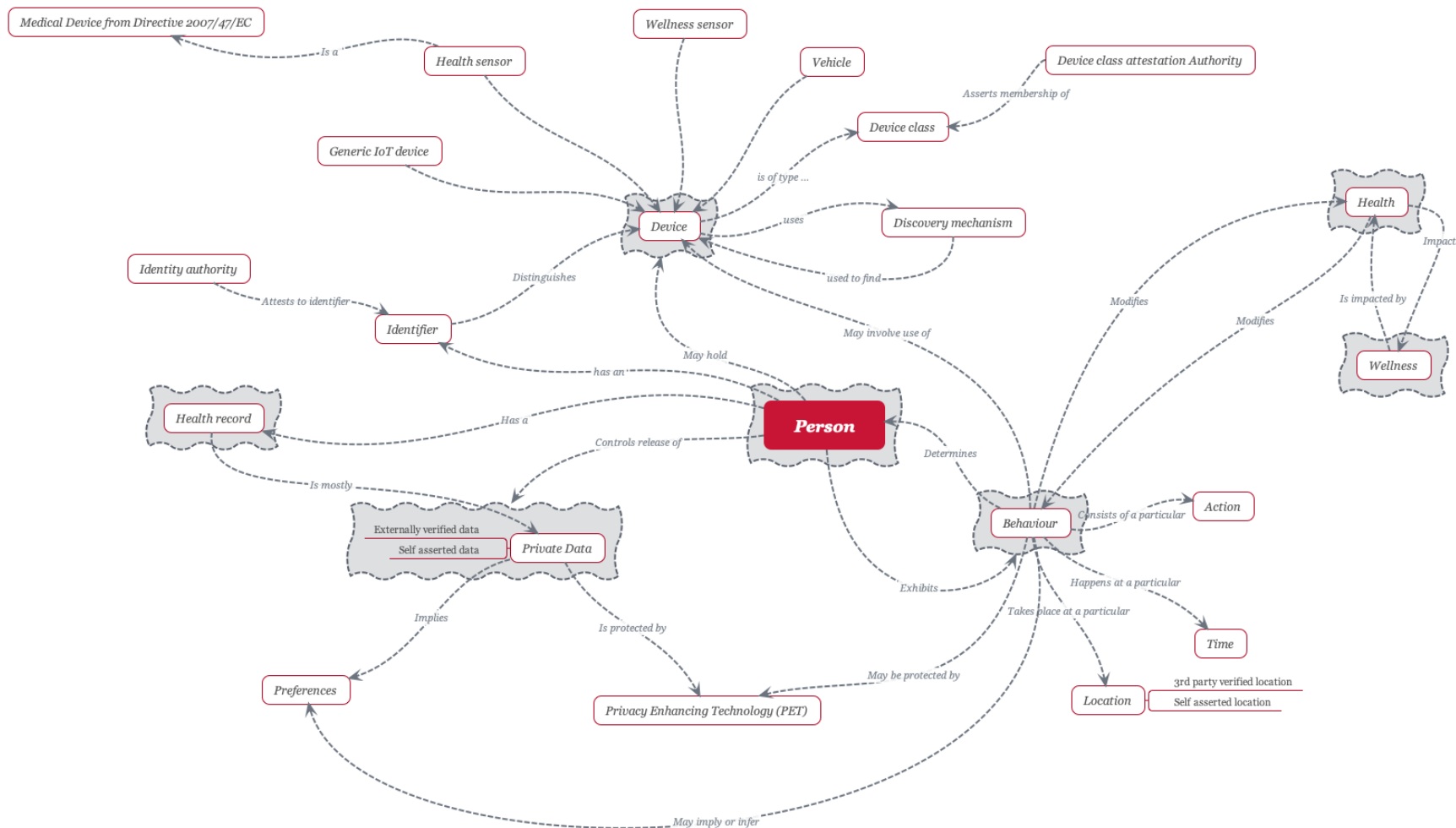
ETSI's TC eHEALTH: the secure use of information and communications technologies (ICT) in support of patient centric health and wellbeing

- This includes a whole world of technologies including the role of AI, the role of body mounted sensors, the role of data collection and storage, the role and purpose of data processing.

Our world view of eHealth

Places the person at the heart of health

Identifies devices (IoT things) as influencing and being influenced by the person



Some figures for thought

There are approximately 8 billion people living on our planet

- Those people will collectively live for some 588 billion years, and will classify themselves as unwell for a not insignificant percentage of that time (this rises year on year, both the population and the incidence of illness).

Even a few days of illness, or feeling poorly, means that the health networks need to be ready to treat several hundred million years of illness every calendar year.

- The Covid pandemic hit about 8% of the population, killing about 7 million, but resulted in a spike in healthcare across the planet of hundreds of millions of days (more than doubling the load across a year but spiking at up to 100 times the normal load)

If there are only 15 million doctors in the world it would be reasonable to suggest that there are not enough health professionals to go around.

- This figure is disappointingly static and the global trend is that the number of health professionals as a percentage of the population is declining

Appropriate technology, when used with appropriate controls, can augment the availability of health professionals and the combinational name given to this technology is **eHealth**.

Spending on health is not insignificant - about 5k€/person globally (about 40 trillion euros)

- If eHealth can result in lower demand on health professionals it is an economic goldmine

A word (or many) on medical devices

A medical device is one that is classified as such and marked, in the EU, by an appropriate CE mark.

A Medical Device (from Directive 2007/47/EC) means any instrument, apparatus, appliance, software, material or other article, whether used alone or in combination, including the software intended by its manufacturer to be used specifically for diagnostic and/or therapeutic purposes and necessary for its proper application, intended by the manufacturer to be used for human beings for the purpose of:

- diagnosis, prevention, monitoring, treatment or alleviation of disease;
- diagnosis, monitoring, treatment, alleviation of or compensation for an injury or handicap;
- investigation, replacement or modification of the anatomy or of a physiological process;
- control of conception.

A medical device does not achieve its principal intended action in or on the human body by pharmacological, immunological or metabolic means, but which may be assisted by such means (i.e. it's not a drug).

In contrast any other device, such as a fitness oriented Heart Rate Monitor (HRM), can only be used for indicative information and has to be specifically excluded from use in any form of diagnosis, monitoring, treatment or alleviation.

Formalising the device into standards text

For diagnostic eHealth:

- A <<Diagnostic sensor>> delivers a <<Measurement>> taken at <<time t>> in <<Context>> relating to <<Patient>> to <<Health professional>>

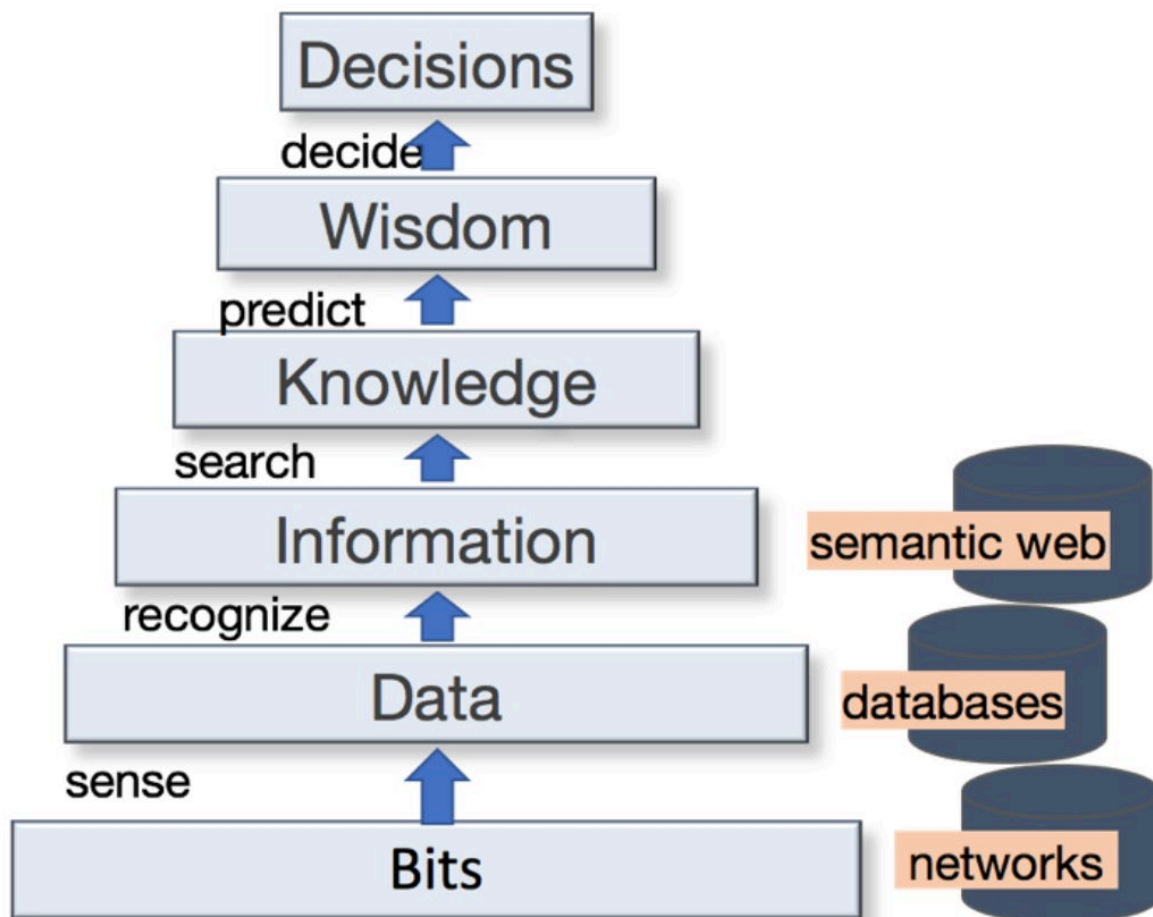
The diagnostic sensor is the IoT device. Examples include HRMs, Blood oxygenation sensors, Blood pressure sensors, blood sugar monitors. Standards address the measurement, the context and the end-points.

For therapeutic eHealth:

- A <<medical actuator>> delivers a <<stimulus>> at <<time t>> in <<Context>> relating to <<Patient>>

The medical actuator is the IoT device. Examples include heart rate stimulators, insulin pumps.

The wisdom and decision tree



Much of healthcare is about making the right diagnostic and therapeutic decisions.

IoT devices give bits, data and information to feed the decision tree.

AI processing will help convert this into knowledge to feed the Wisdom and Decision processes (maybe AI will augment these too)

More knowledge, more wisdom (from experience?) leads to better decisions

Knowledge requires raw data. IoT feeds this with patient data, contextual data, and population data

What is ETSI doing in the eHealth space?

As a “hub for health” its initial role is to encourage eHealth awareness across all technologies

Developing work items:

- Use cases → [ETSI TR 103 477 V1.3.1 \(2023-01\)](#)
- Data model requirements → [DES/eHEALTH-008 \(ES 203 668\)](#)
- COVID → [ETSI SR 003 809 V1.1.2 \(2021-12\)](#)
- Guide to use of AI in eHealth → [DEG/eHEALTH-0016 \(EG 203 922\)](#)
- Proximity tracking role in health environments → [DTR/eHEALTH-0015 \(TR 103 817\)](#)

Interaction with other bodies:

- CYBER → For security and privacy advice and specification
- SAI and OCG AI → For AI and ML advice and specification
- SmartBAN and smartM2M → For help in what IoT devices can do and report
- All others → help where needed

The long term plan ...

Keep pushing for eHealth as a dominant ICT domain



In summary

- eHealth is not an emerging field but an active one
- Standardisation in eHealth is deep and wide - all ICT device and service technologies contribute to eHealth
- eHealth is a societal enabler for health, wealth and happiness
- The Market size of eHealth is massive (bigger than telecoms, bigger than transport, 8-10% of global GDP)

