

APDSI

ASSOCIAÇÃO

PARA A PROMOÇÃO E DESENVOLVIMENTO
DA SOCIEDADE DA INFORMAÇÃO



Conferência Tecnologias Emergentes: a Saúde do Futuro?

10 de dezembro de 2020 | Zoom

AI and the New
Medical Paradigm.

What does it mean
for Portugal?

PAINEL 1:

“TRANSFORMAÇÃO DIGITAL NA SAÚDE: BENEFÍCIOS E IMPACTOS”

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Digital Health Systems

Vision...

Preventive, paperless, empowering, personalised, and accountable. Digital healthcare strengths lay not in technology but rather that digital technology will be present in processes, professionals and people, in ways such that **everyone can be a healthcare creator.**

He/she can be a prevention specialist; care for him/herself and family with the best scientific support; access digital therapeutics by default. Moving to any form of needed physical care, drug therapy, surgery, hospital admission, or ventilation support, etc, as last resource

Basis of DHS...

- First, healthcare transformation – **of processes, professionals and patients**, alternatively, of the care philosophy, interprofessional collaboration and of **health-aware citizens**.
- Second, significant investment in **rethinking any need for physical interaction** – even before COVID-19 crisis we should protect frail citizens from nosocomial infections, unnecessary travel, cost and suffering – **Tele-health is the new health**.
- Third, **security of data, privacy and interoperability** – The basis of trust, necessary for the new social contract required for using advanced population-based digital tools or for **Robotic professionals to step-in where humans are at risk, not enough, or where human-robot hybrids outperform both**.
- Fourth, motivation – **Rethinking healthcare systems worldwide was already needed, 2020 gave us the extra motivation**. Especially if we now better understand why a digital-based healthcare system is desperately needed.

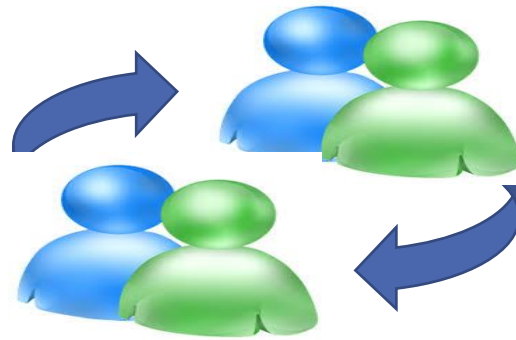


Digital Patients

- Digital patient is a double sided concept.
-
- On one hand digital patients are those **who will progressively be connected, sometimes for life** (see examples of brain electrodes implants) to digital technologies, or wear them so close to heart and skin that they feel ultimately connected.
 - **Digital patients are us, as we increasingly measure our health, wellness, and now with track apps, the health of others around our physical proximity spaces.** Bluetooth zone around our phone is likely to become our new digital skin.
 - Digital patients are also humans suffering from, what I call as a physician Internist, a new category of systemic diseases - Digital Sickness.

Health Index (HI)

No one is 100% healthy nor 100% sick in any day of their life,



the fundamentally important question is: what is the % of our healthy and unhealthy self every day of our life and how to we manage that?

H.Martins, 9 July 2020

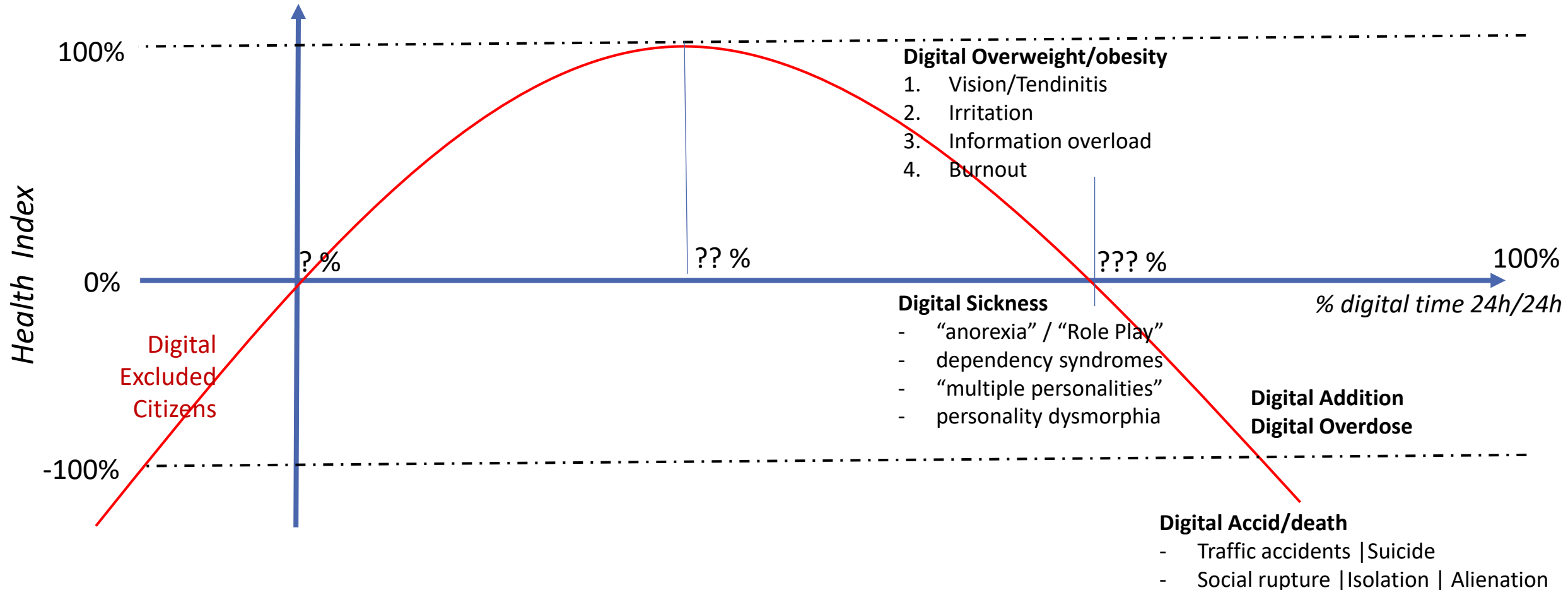
Health Index (HI)

Digital illness

“Too Little” - Dig Segregation

? %

“Too much” - Dig. Overweight – Dig Sickness – Dig. Addition/Overdose – Dig Accidents/death



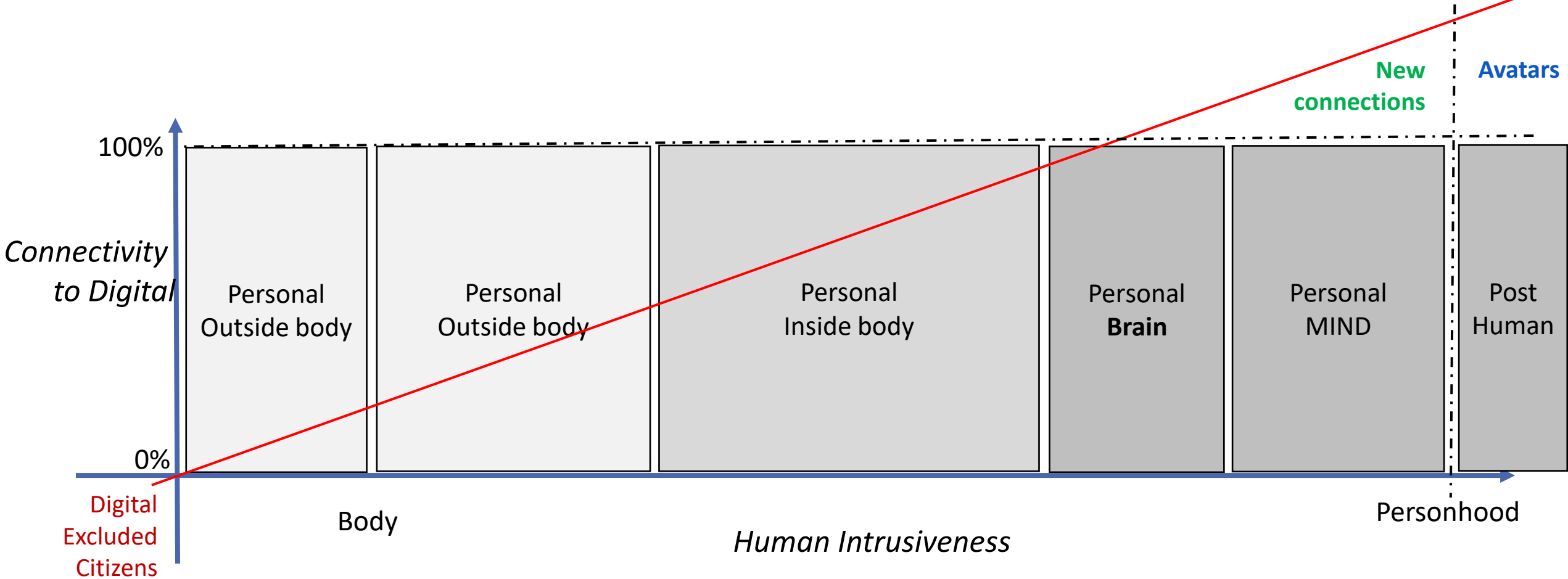
Digital illness (evidence)

Author	Year	Main Messages	Topic
Martin Mihajlov, Lucija Vejmelka	2017	The difficulty in finding a precise definition of Internet Addiction makes it harder to classify, measure, diagnose, treat and prevent this Addiction. There are many different types of Internet Addictions that should be faced differently.	Digital Addition
Christiane Eichenberg, Markus Schott, Oliver Decker, Brigitte Sindelar	2017	There is a positive relation between Insecure attachment style (<i>teoria do apego</i>). Users with IA report different motives for Internet use when compared with users without IA.	Digital Addition
Kagan Kircaburun, Mark D. Griffiths	2018	Relationship between personality and social networking site addiction (instagram)	Digital Addition
Daria J. Kuss, Mark D. Griffiths	2017	Social Networking Sites and Addiction: Ten Lessons Learned:	Digital Addition
Irma Klerings, Alexandra S Weinhandl, Kylie J Thaler	2015	"It results in a richer range of resources to support practice and learning, but also creates conflicting evidence" "Filtering the information overload for better decisions"	Digital Obesity (Info Overload)
Farooq Azam Rathore, Fareeha Farooq	2020	COVID-19. "infodemic" in which false news, conspiracy theories, magical cures and racist news are being shared at an alarming rate, with the potential to increase anxiety and stress and even lead to loss of life.	Digital Obesity Digital Accid/death
Lee, K., Roehrer, E., & Cummings, E.	2017	"we operationally define information overload as either a perceived or actual occurrence whereby the volume or complexity of information accessed by an individual exceeds their capacity to process the information within a given timeframe"	Digital Obesity
Jeanette Milne	2019	<i>Clinicians should not feel threatened or frustrated by informed patients; instead, we should see this as an opportunity to challenge our own perceptions and address misinformation.</i>	Digital Obesity
Richard L. Byyny	2016	"average workers spend 28% of their time managing e-mail"; "we check our phones on average 221 times a day, or about every 4.3 minutes"; "nearly one in eight Americans exhibit problematic Internet use" "average young adult moves between media platforms 27 times per hour, which can lower IQ by as much as 15 points" Disorder (IAD), Problematic Internet Use (PIU), and Addiction Deficit Disorder (ADD).	Digital Obesity
Ric G. Steele, Jeffrey A. Hall, Jennifer L. Christoferson	2019	"social media use specifically can be associated with diminished psychological functioning in adolescents and young adults" related with "digital stress: including availability stress, approval anxiety, fear of missing out, and communication overload"	Digital Sickness
Internet addiction Terminology [(cybersexual addiction, cyberrelationship addiction, net compulsions, information overload, computer addiction) Young et al 1999; (GPIU-Generalized Problematic Internet Use, SPIU-Specific Problematic Internet Use)Davis 2001]			
Acknowledgement to Antonio Bandeira Rodrigues (4th year - FMUP)			

Technology embodied and embrained

Wellness → Prevention → Diagnosis → Treatment *and Digital Therapeutics*

Portals/www -> mAPPs -> Wearables -> Devices -> Implantables -> MicroRobots -> Cognitive NanoBots -> Artif.Life



AI Robotics and Medical Paradigm

- *A NEW CONCEPTION OF PERSONALIZED MEDICINE*
Explicit Personalized Medicine
Implicit Personalized Medicine: BlackBox Medicine

W. Nicholson Price II - BLACK-BOX MEDICINE
Harvard Journal of Law & Technology Volume 28, Number 2 Spring 2015

Medical Paradigms:

Mystical

Traditional Medicine (Hippocrates)

Scientific Medicine (EBM – clinical trials)

Explicit Personalized Medicine (Clinical pathways and explainable/visualizable Algorithms)

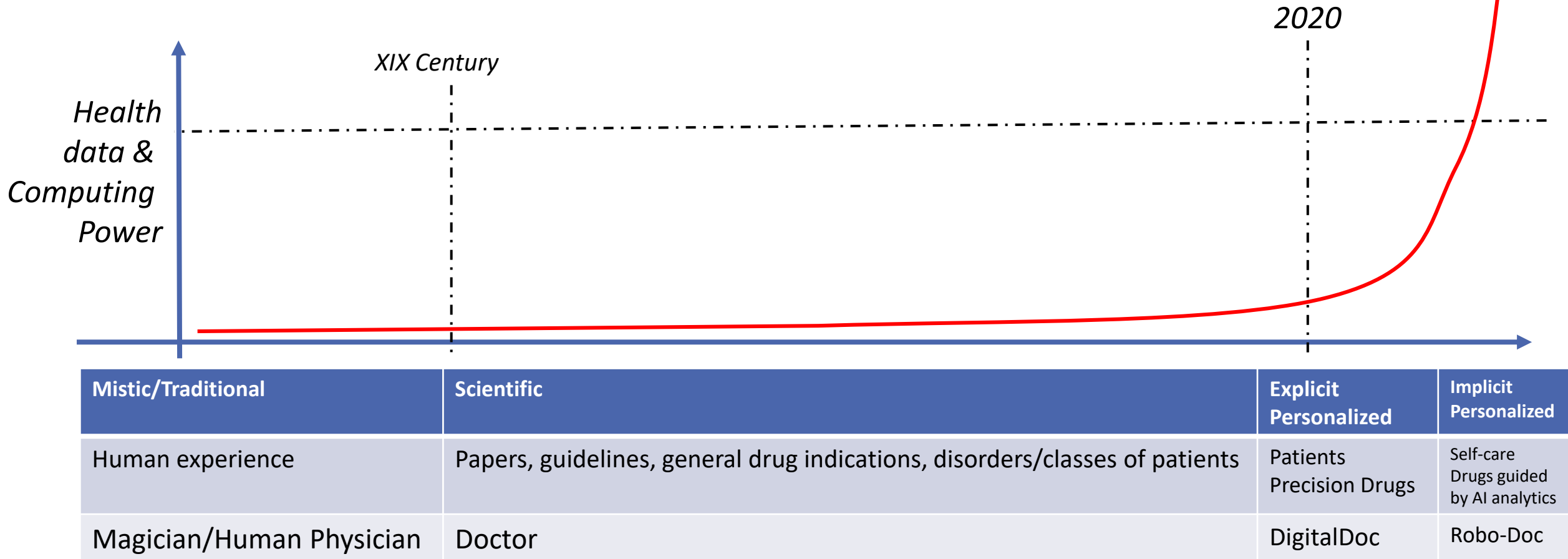
Implicit Personalized Medicine (AI-based; Black-box medicine)

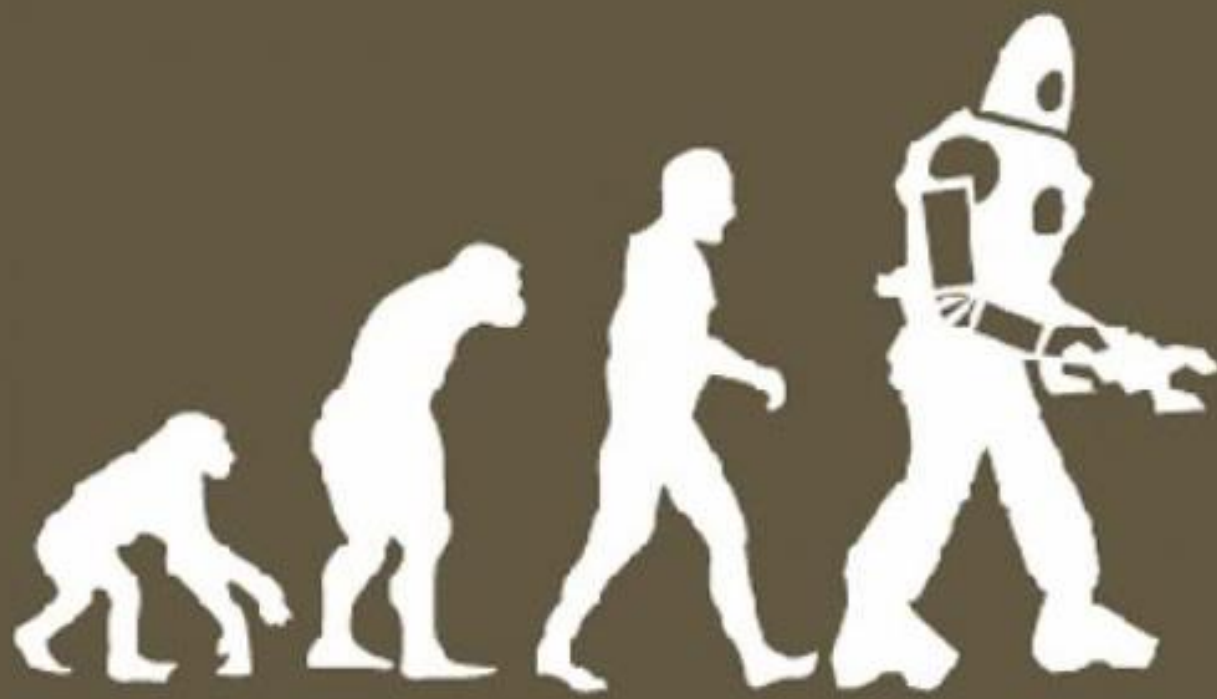


AI Robotics and Medical Paradigms

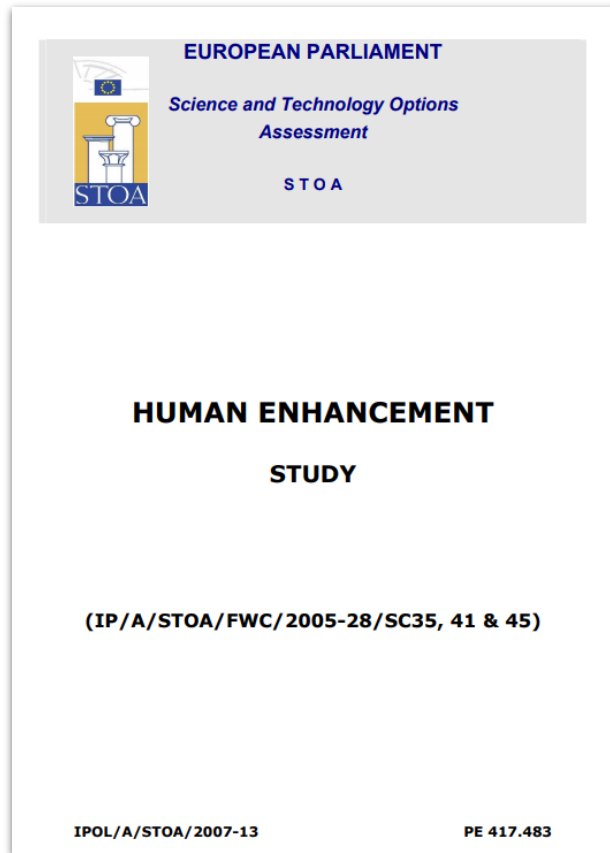
*Human
Intrusiveness*

- *Traditional Medicine (Hippocrates)*
- *Scientific Medicine (EBM – clinical trials)*
- *Explicit Personalized Medicine (Clinical pathways and explainable/visualizable Algorithms)*
- *Implicit Personalized Medicine (AI-based; Black-box medicine)*

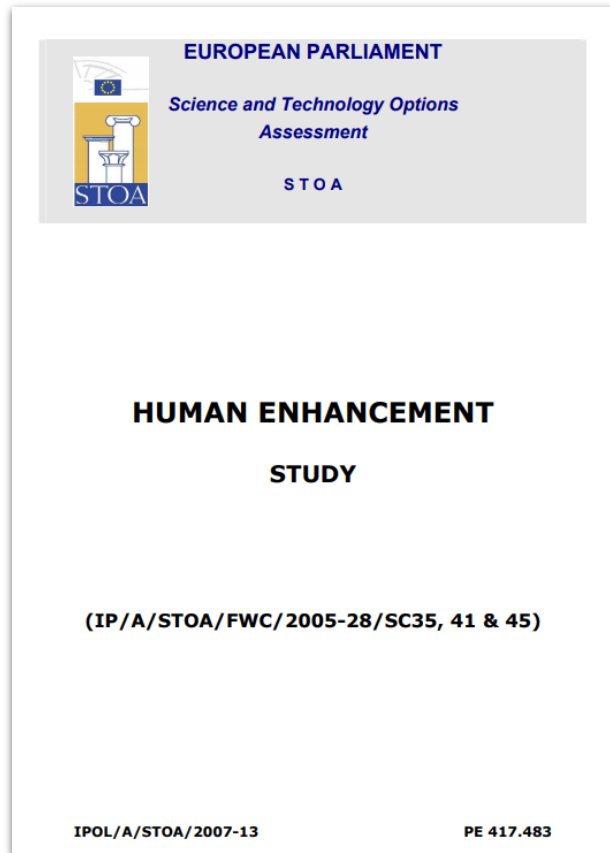




TRANSHUMANISM



The umbrella term “human enhancement” refers to a wide range of existing, emerging and visionary technologies, including pharmaceutical products: neuroimplants that provide replacement sight or other artificial senses, drugs that boost brain power, human germline engineering and existing reproductive technologies, nutritional supplements, new brain stimulation technologies to alleviate suffering and control mood, gene doping in sports, cosmetic surgery, growth hormones for children of short stature, anti-ageing medication, and highly sophisticated prosthetic applications that may provide specialised sensory input or mechanical output. All these technologies signal the blurring of boundaries between restorative therapy and interventions that aim to bring about improvements extending beyond such therapy. As most of them stem from the medical realm, they can boost societal tendencies of medicalisation when increasingly used to treat non-pathological conditions.

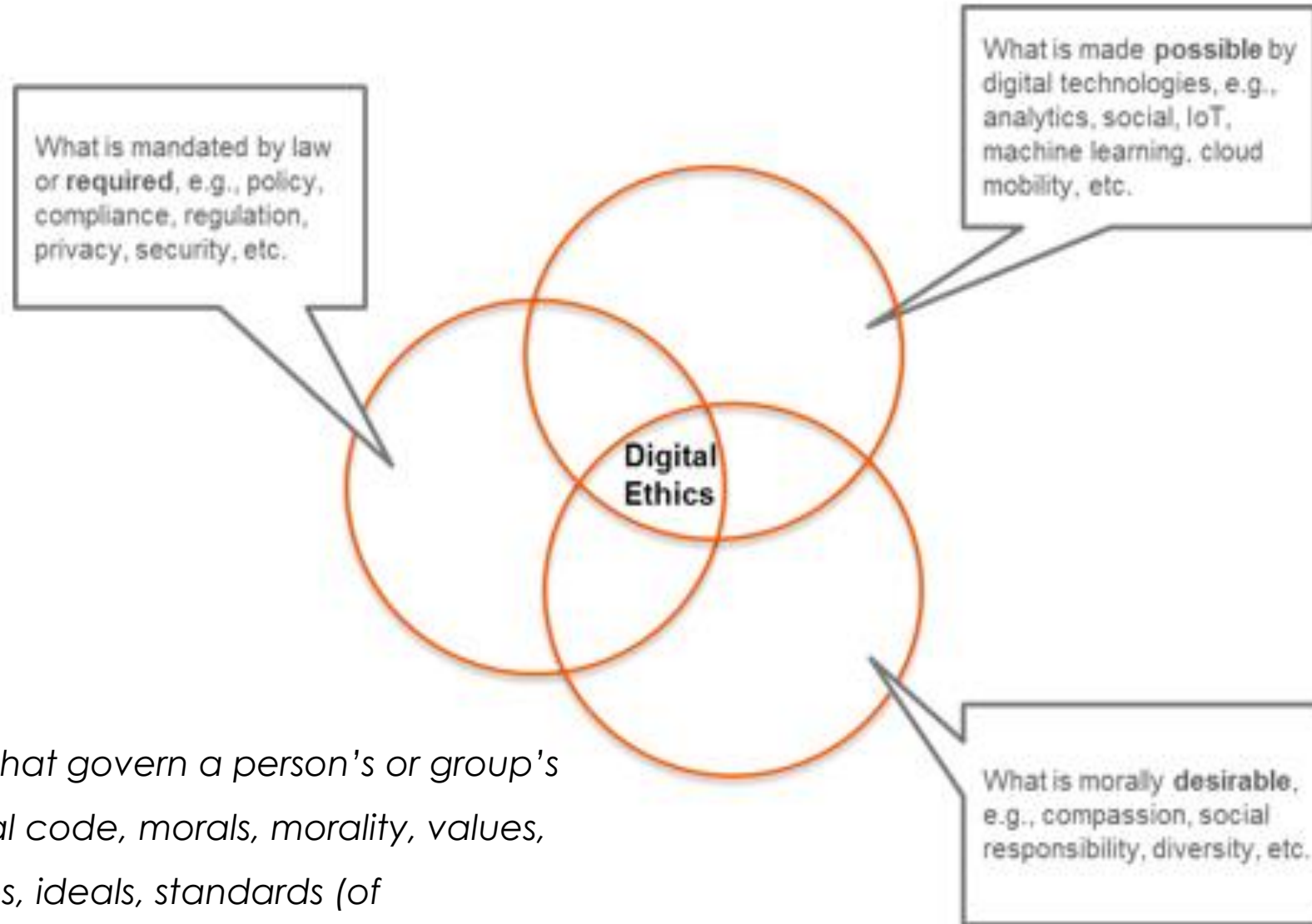


The essence of our proposal is to set up a European body for the development of a normative framework for human enhancement that guides the formulation of EU policies in this field. For the establishment of such a body, we see two institutional options, both of which have been chosen in the past for human genetics and genetic testing.

The European Parliament could decide to set up a temporary committee. Alternatively the European Commission could decide to install a working group in which members of the European Parliament participate. In any case, the involvement of the European Parliament in such a body would be highly desirable in order to strengthen the body's intermediate and public role.

It would be the task of such a body to further explore the topic and lay the ground for possible further regulation of human enhancement issues that affect such political domains as health, research and economy in the EU. As pointed out in the present study, a wealth of resources would be available for the work of such a body, some of them generated in EUfunded projects.

DIGITAL ETHICS



Ethics are moral principles that govern a person's or group's behaviour. Synonyms: moral code, morals, morality, values, rights and wrongs, principles, ideals, standards (of behaviour), value systems, virtues, dictates of conscience"

Citizen's engagement in Digital Health

1. Fundamental
2. Difficult
3. Fun





THANK YOU!

Questions?
(now or via email/website)

Henrique Martins'
**Digital Healthcare
Systems**

In this site I share my vision, my passion and my experience in creating Digital Health solutions and building Leadership and Management capacity in Healthcare. I believe change is needed in Healthcare worldwide, through the use of IT and healthcare transformation. I want to help all those who also believe in new Digital Health and Care



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