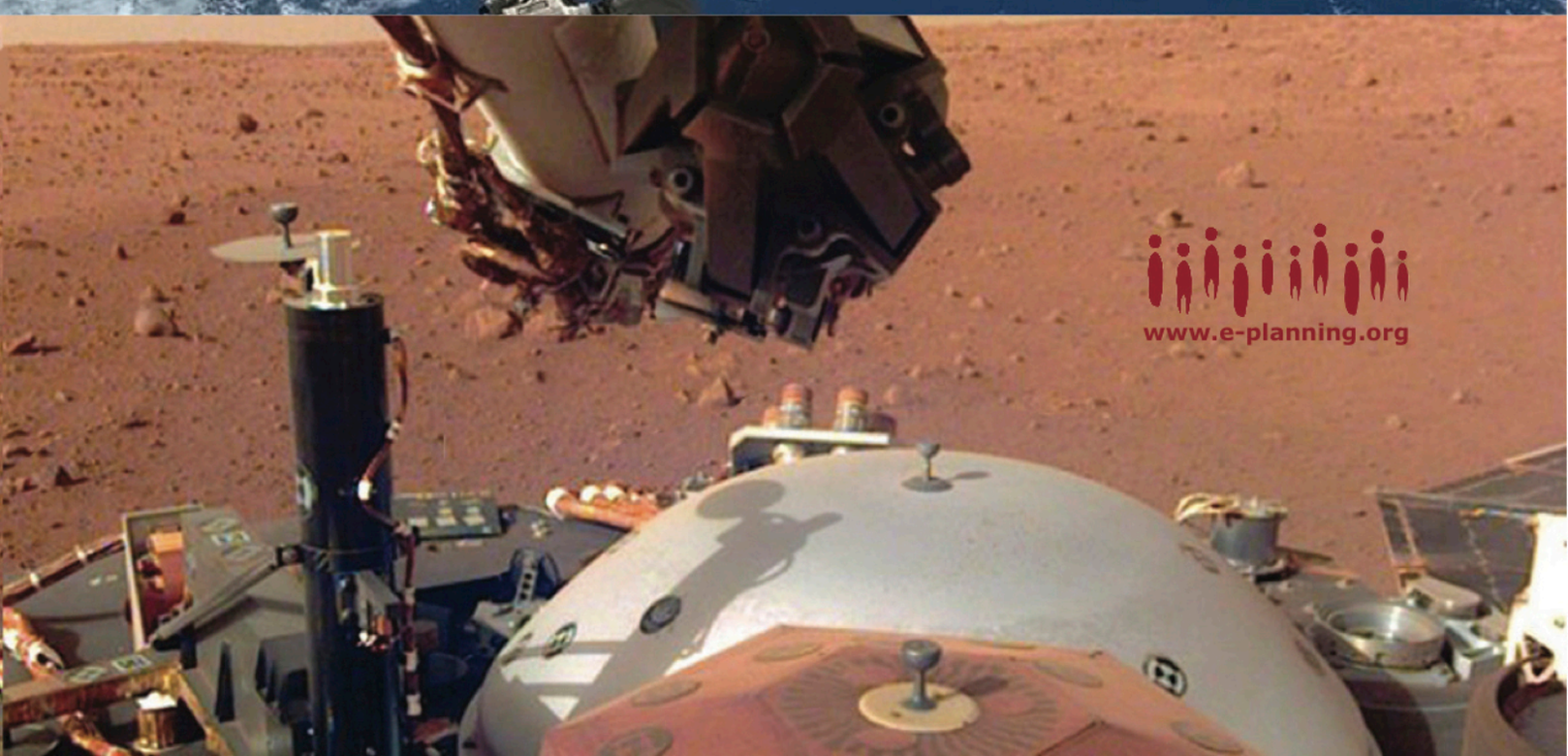
e-Planning & Ubiquity

e-Planeamento & Ubiquidade

Pedro Ferraz de Abreu
et al.

Introduction



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Venus: surface & sky, taken by soviet union probe Venera13, on March 1982
(credits: Soviet Space Agency - credits for the additional process and color.: Dr Don P. Mitchell and Dr Paolo C. Fienga/Lunar Explorer Italia/IPF)
Earth: from-the-International-Space-Station, by canadian astronaut Chris Hadfield, on April, 2013 (source: NASA)
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www.e-planning.org

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FCT FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE NOVA DE LISBOA

Introduction

The ubiquity of new technologies, especially information and communication technologies, is already a common sight, especially for new generations. But what some, especially young people, experience as an integral part of "normal" daily social life, others feel as a challenge to the way of life they had built: with its share of attractive promises, but also with its dose of problems and potential dangers.

Perhaps one of the notorious expressions of this landscape of ubiquity of new technologies is the "addiction" (or addiction without quotation marks) of attachment to portable phones, or "smart phones". With scenarios that never cease to amaze those who knew a world where people didn't walk the streets appearing to talk to themselves, groups of young people or even couples who, standing in front of each other, seem oblivious, with their gaze fixed on the small "screen " and the fingers hovering incessantly over its surface.

With the global SARS-CoV-2/covid-19 crisis, the social impact of the ubiquity of new communication technologies has become evident for all generations, particularly by enabling large-scale use of tele-working and tele-teaching; without which, the scale of the catastrophe would be much more serious.

But the truth is that the ubiquity of technology had already taken hold, before these more visible expressions. Not just the presence of the Internet, which drastically changed global connectivity and access to information; not even one of the growing paradigms, the "internet of things" (iot); much earlier, it also spread, for example, in the form of programmable electronic "boards" (OEM boards), in almost all machines. In factory machinery, in cars, in power networks, in alarms, in clocks, in elevators, a little everywhere.

So what is the secret of this dizzying spread, leading to a ubiquitous computing presence never before known to Humanity? The science of e-Planning was born, in part, to understand this phenomenon; and the research carried out, of which we present some essential components in this work, was able to present a solid answer to this and other associated questions.

Let us consider the following attributes, associated with the current technological generation: programmability, derived from the electronic computer; the portability of this programming, derived from the emergence of the microprocessor; and the ubiquity of high-speed and high-capacity communication, derived from satellite and fiber optic networks, associated with the computational capacity and portability of the digital microprocessor.

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With programmability imbued in any technology or human product comes the power of versatility, adaptability: to perform multiple functions, assume other parameters, a kind of "Swiss army knife", to use an analogy that the more mature will understand. And with this attribute comes greater efficiency, greater effectiveness, lower costs for the same (or greater) potential to generate wealth (in the economic sense of the term: something of value to satisfy a real need).

Programmability allows us to overcome not only the limits of artisanal production; but even the limits of the most powerful mass production, in the style of Taylor, of Mr. Ford. A Mr Ford who, when criticized for not providing freedom of choice and options in the parameters of his cars, it is said he responded: "*My customers have complete freedom. They can choose any model, as long as they choose the Ford T model; They can choose any color, as long as they choose black.*"

Because these limits were the "Taylorist" way of producing cheaper. Now, the programmability of machines, thanks to the widespread incorporation of CPUs (central processing units, the "brain" of a computer), has made it feasible to change the shape of sheets, on the same machine, without having to first manufacture another machine for another sheet format. . It made it possible to change which color ink cartridge paints the plates, without having to change machines.

In other words, programmability is such a competitive advantage that it imposes itself, and as such, it becomes ubiquitous. Just as the steam engine replaced windmills (and steam battleships won wars against romantic sailing ships), and the electric engine replaced the steam engine. Except for the Vale do Vouga train, in my youth, to my delight – but that one also fell to the "automotora" (electric train).

Therefore, e-Planning science was able to predict early on, based on the simple laws of thermodynamics, entropy (Boltzman) and negentropy (Shannon), that the computer would become ubiquitous. This is why since the 1980s, our research has already pointed to that future; and in the early 1990s, e-Planning research advanced this prediction. Ubiquitous computing was unstoppable, and would profoundly affect the entire society. For better – and for worse.

However, if we appreciate the intrinsic nature of the components of the current generation of information and communication technologies (ICT) – microprocessor, satellite network and optical fiber, we see that it is symmetrical and tends to be easy to access and disseminate. Unlike the dominant technology of the "broadcast" era (radio, television), the microprocessor serves equally well as a transmitter and receiver; as support for consumption or as support for productive activity. In optical fiber, light obviously has the same speed to support “downloading” as it does for “uploading”; Given the positional "high ground" of a satellite, it equally serves the surface points within its reach.

This means that the current generation of ICT therefore favors a balanced dynamic, of broad access and symmetrical use, which tends to promote equality, not inequalities. Therefore, the paradox of witnessing a spiral of inequality in the world does not derive from technology per se; unless it is artificially (and deliberately) distorted, to favor some, to the detriment of others.

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There are other factors that go in the same direction. And thus one of the first theoretical bodies of e-Planning was born: the thesis of the Qualitative Leap represented by the latest generation of Information and Communication Technologies – and its intrinsic nature.

The covid-19 crisis is in fact the greatest demonstration of the profound and structuring impact, on our lives and our society, of information and communication technologies (ICT). In a way, the world was transformed into an authentic Living Laboratory, for an "experiment" that not even the craziest scientist would dare to imagine: a planetary-scale confinement of mobility, which was only viable... due to the pervasive ubiquity of new technologies (ICT).

But also for this reason, we have a responsibility to not allow to be swept under the carpet, the magnifying lens that this crisis was, exposing the unsustainable absurdity of the inequalities installed, endemically, in our social, economic and cultural models. And the degree of obscurantism, anti-science, that permeates the most populous and most powerful nations... including in what concerns the dominance and appropriation of technology.

Even in expressions of the benefit of technological ubiquity, such as the example we gave of the spread of "smart phones", we find an illustration of inequality, as many of those who were forced to resort to tele-working and/or tele-teaching were able to see. The functionality of a "smart phone" for productive activity is not the same as that of a work computer; the same can be said between “top-of-the-range” and other cheaper “smart phones”; as well as between the cheapest access services and the most expensive. Even among families with access to a computer, many had to deal with the dilemma of it not being able to be used simultaneously by parents and children, for tele-working and tele-teaching...

Furthermore, other factors show that the issue cannot be resolved simply by distributing computers. Examples of this are the blatant inequality in the territory regarding access to the internet and WiFi network, which illustrates failures of market logic; and inequality in training and digital literacy, both a consequence of, and an amplification of, other prevailing conditions of social inequality.

There is therefore no shortage of challenges, both in terms of harnessing/releasing all the positive potential of the ubiquity of ICT, and in dealing with the pervasive abuse that it allows. Orwell's "Big Brother" seems like a naive simpleton, compared to the degree of ubiquity of the violation of individual privacy, and collective alienation (of the "masses"), in today's society.

Those who think that we can study and develop technology, separating it from the sciences of society, human beings and nature, are mistaken. Every day we take a leap of technological innovation. But who appropriates the "lion's share" of the added value of this innovation? Why? How? Here are examples of questions that require knowledge of the Science of Technology and the Science of Society.

That's why we developed e-Planning.

We chose, in this Book on e-Planning & Ubiquity and on its cover, the imagery of the ubiquitous presence of these technologies, and of computing in particular, outside our planet: on Venus and Mars, framing our permanent space station, in Earth's orbit . Not only because

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satellite and probe technology is in itself one of the key components of this qualitative leap towards today's ubiquity. But above all because it reminds us that Humanity is not condemned to remain closed in its navel; you can look further and get a closer look at – and one day visit – other planets, other stars.

And because technology allows us to be aware of how beautiful ... (the Universe) is.

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e-Planning Agenda
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e-Planning scientific domains	**Summary of key objectives**
e-Planning knowledge infrastructure **(e- infrastructure)**	*Mapping of the knowledge society.* *Mapping of the planning knowledge.* *Develop the new ICT infrastructures and strategic frameworks*
e-Planning for the government of the future **(e-government)**	*More efficient and responsive government, closer to citizens; better enabling role; better services; better adjustment to the challenge and new potential of digital implementation of administrative procedures, beyond raw automation; two-way G2G, G2C, G2B.*
e-Planning for a new governance **(e-governance)**	*Foster institutional culture towards the common good, more equity and less exclusion; build strategic institutional capacity within globalized world; better institutions; better regulation framework and handling of market failures; better balance of security & efficiency vs. freedoms, liberty and accountability.*
e-Planning for the city of the future **(e-city) and territory**	*Build the cities of the future, as sustainable environments with new functionality that breed innovation; foster cities with better quality of life, more attractive and competitive; better spatial planning, promoting social and territorial cohesion / inclusion, incorporating new structural impacts of ICTs.*
e-Planning for a new citizenship **(e-citizenship)**	*Enable a better informed and educated citizen, more participative, more critical, more responsible; promote social capital and citizen empowerment through digital social true networks; better balance of technology challenges with ethics & individual freedoms & privacy.*