European Economic and Social Committee

OPINION

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Impact of the digital healthcare revolution on health insurance
(own-initiative opinion)

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Legal basis	Rule 29(2) of the Rules of Procedure
	Own-initiative opinion
Section responsible	Single Market, Production and Consumption
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Outcome of vote	
(for/against/abstentions)	174/0/1

1.   **Conclusions**

1.1   In the view of the EESC, given the digital revolution in the field of health, it is vital to maintain and promote a health insurance system which serves the needs of everyone, and is solidarity-based, inclusive and non-discriminatory. Inclusion and fair access for all to good quality health services (digital or otherwise) and commitment to these are in fact prerequisites for universal health coverage.

1.2   In line with previous opinions[1], the EESC believes that equal access to healthcare, one of the main objectives of health policies, can benefit from digital support provided certain conditions are met:

- equal geographical coverage taking into account areas with poor coverage by digital operators (access, broadband);
- bridging the digital divide in terms of use by the public, health professionals and stakeholders in health insurance schemes;
- interoperability among the various components of the digital architecture (databases, medical devices) to promote continuity of care within and between these facilities;
- protection of health data which must under no circumstances be used to the detriment of patients.

1.3   The rapid expansion of telemedicine, connected devices and nanotechnology, biotechnology, information technology and the cognitive sciences (NBIC) must not result in patients being seen as mere connected bodies which can be analysed, monitored and overseen remotely by an all-powerful IT programme. The technical development of health in fact encourages the opposite: it places interpersonal relationships and social ties back at the centre of medical practice and care.

1.4   The EESC flags up the challenge of hyper-empowerment, with people being encouraged to manage their own health status, along with hyper-individualisation. With predictive medicine on the one hand and connected devices on the other, knowledge of individual health risks and follow-up is moving forward, promoting policies more closely tailored to people's needs. The knowledge that has emerged of these risks and of the differences between individuals raises important ethical questions as regards maintaining a solidarity-based approach to insurance coverage.

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[1]   OJ C 458, 19.12. 2014, p. 54; OJ C 242, 23.7.2015, p. 48; OJ C 13, 15.1.2016, p. 14; OJ C 13, 15.1.2016, p. 40; OJ C 288, 31.8.2017, p. 1

2.   **Recommendations**

2.1   The EESC would observe that if they want to successfully exploit the digital revolution, efficient health insurance systems must:

   a) ensure that digitisation helps us to gain awareness of and exercise our fundamental rights with regard to health, rather than weakening them. Digitisation must reinforce individual and collective capacity, and be a powerful lever for ensuring that rights are implemented and for developing new forms of health organisation and governance;
   b) confirm that the values of solidarity and universality underpin our health system, the preservation of which is in all of our hands.

2.2   The roll-out of digitisation must never jeopardise the principles of redistribution and pooling of health and social risks, the real cornerstones of collective solidarity.

2.3   The EESC highlights the need to:

   − develop and facilitate people's digital health literacy to encourage a critical approach to health information;
   − guarantee good quality information in the field of health, particularly by encouraging labelling/accreditation procedures for health applications;
   − bolster the relationship of trust between patients, health professionals and stakeholders in health insurance schemes;
   − introduce a training system suited to health service users and health professionals alike in order to ensure that digital technologies are used efficiently, safely and protectively and to support changes in the health system;
   − strengthen social dialogue as a crucial way of building consensus around the coming changes;
   − introduce devices to guarantee secure processing of personal data so as to prevent insurance data (such as access and reimbursement) being used for commercial purposes that have no relation to public health objectives;
   − promote a dynamic regulatory framework which takes account of the entire ecosystem ("multi-stakeholders") and the role played by health insurance organisations as trusted third parties in their relationship with the people insured/members;
   − support the development of a nomenclature of reimbursable treatments and wellbeing services by taking account of technical innovations made possible by digitisation;
   − support the shift towards "4P" medicine[2] by setting up solidarity-based services provided by health insurance companies in response to people's needs.

3.   **Background**

3.1   The rapid expansion of digitisation is driving change in the health sector which is unprecedented in both scale and pace. With the proliferation of connected devices and mobile health

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[2]   See point 4.2.

applications, the exploitation of big data, the arrival of NBIC and the abundant supply of new health services, digitisation is completely transforming our health system.

3.2   The advantages of digital innovation in health go far beyond the technical or scientific realm to offer a whole host of innovative uses. These new forms of usage go hand in hand with wide-scale social innovation, paving the way for new responses to health and social needs.

3.3   This has a direct bearing, in what is a complex ecosystem, on relationships between:

a. individual patients, and their knowledge of their health status;
b. health professionals and paramedics, and how they relate to their patients;
c. the health insurance system, and the various permutations in terms of how it is organised, managed and financed.

3.4   In relation to people's attitude towards their own health, everybody will become more aware of the importance of their health and of how to take responsibility for it. In the past, because of the difficulty in gaining access to health information and the resulting state of ignorance, health risks created great uncertainty for everyone. Now, people will have a whole range of devices (connected devices, for example) that can assess their health status, enabling them to make the necessary lifestyle changes.

3.5   Easy access to sources of information will mean that everyone becomes an agent of their own health able to identify, compare and choose the health service that best suits their needs. "E-patients" are contributing to predictive medicine, producing health data and playing an active role in their own health and that of others. Informed consent is the centrepiece in this respect, combined with data protection, integrated governance and data usage.

3.6   These new technologies encourage a focus on prevention rather than treatment of disease. They will also make it possible to introduce more effective treatments which are less intrusive and more tailored to the genetic and biological characteristics of each individual patient. They will also make information available in real time, something that improves treatment.

3.7   Health professionals will be encouraged to develop new skills and new areas of specialisation, which will bear fruit in a number of ways: a way of interacting with patients that is based more on reciprocal trust; gradual mastery of digital tools as a result of training courses; a new way of using technology in providing care; and a new collaborative, shared approach thanks to interoperable systems.

3.8   Social dialogue must keep pace with these changes and ensure that additional training is available for health professionals.

3.9   As regards health insurance schemes, access to top of the range, high quality health services, both public and private, is something to which every person aspires. This will have a marked impact on health insurance, as the challenge for the future will be to devise personalised responses and pathways before risks arise, based on the principles of risk-pooling, while still

maintaining the traditional purpose of health insurance, which is to ensure that people who fall ill have access to healthcare services.

3.10 Digitally-generated medical innovation has the potential to bring about profound changes in health insurance. This new dynamic is producing tailored medicine and treatment, drawing on two sources of information:

d. genome mapping:

The predictive aspect of this mapping process can add an entirely new dimension to prevention (when the genome is mapped, the probability of a health risk is "known" and prevention makes more sense), posing major challenges for health insurance;

e. e-health mechanisms:

These include connected devices which fall under the heading of "quantified self" (self measuring) and enable people to be aware of and improve their health status.
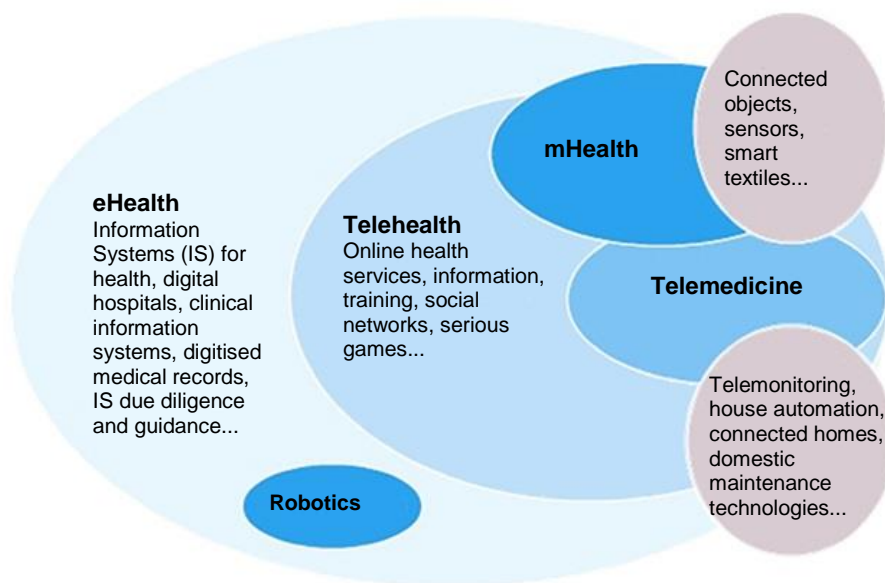
A number of questions and observations therefore need to be addressed.

a. Could these new sources of knowledge open up fresh opportunities and new, tailored services which are better adapted for use by the people insured?

b. In the immediate future, will we have health coverage linked to the disease probabilities discovered when we map our genome?

c. Is the shift from a curative to a preventive approach definite? What are the consequences for health insurance management and financing against the backdrop of economic difficulties? Should personalised medical prevention programmes be eligible for reimbursement through digital platforms?

d. Is wellbeing[3] now taking the place of health? Is this transformation of the healthcare system prompting us to design an approach that is more holistic and less cure-based?

e. With all these transformations, is the concept of patient/doctor or insured person/insurer on course for a radical change, shifting from a "vertical" model to a "horizontal" one, with the patient asking questions and building up a "layman's" knowledge?

f. Faced with the economic power of the digital giants, isn't it time to revitalise investment in research and development led by the public authorities?

4. **Impact of digitisation on people/patients**

4.1 The digital transformation gives people the option to take action on their health status, despite being aware that there are still some barriers to access. The vastly increased access to knowledge, infrastructure and innovative, personalised healthcare services could enable everyone to become an agent of their own health but also – in their capacity of helper, producer of information and data provider – to help improve the health of others.

4.2 This tailored approach comprises what is known as "**4P** medicine":

participatory: medical data are produced and followed up on by the patients themselves, assisted by a growing number of connected devices. The relationship between patients and doctors (who are no longer the only source of medical knowledge) is changing. The patient is becoming a "patient-actor";

preventive: patients who systematically collect information on their health are increasingly aware of the need to stay healthy, which opens the door to healthcare with a stronger focus on prevention;

personalised: the constant flood of increasingly specific and varied personal data also lays the groundwork for more personalised healthcare;

predictive: lastly technological progress, making it possible, for example, to digitise people's complete genome, is opening the door to healthcare which aims to be increasingly predictive.

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[3] "The spheres of wellbeing, health and care are part of a continuum between the normal and the pathological, and this continuum is useful for medicine".

4.3   Literacy and the danger of a new - digital - healthcare divide

4.3.1   Health literacy refers to people's ability to gain access to, understand and use information in ways which promote and maintain good health. This implies achieving a level of personal knowledge, skills and confidence enabling people to take action to improve individual and community health by changing lifestyles and living conditions.

4.3.2   Digitisation tends to heighten social health inequalities by strengthening the relationship of cause and effect between people's health status and their cognitive abilities (for instance, the ability to locate and understand reliable information on health issues) and financial capacity (such as being able to afford the best equipment). These inequalities are accentuated in older people, the most vulnerable people and people living in areas with poor coverage by digital operators.

4.3.3   To use healthcare applications, people must have a level of skills enabling them to access, understand, assess and use health information in order to make decisions on a day to day basis with regard to healthcare, disease prevention and health promotion. However, inadequate literacy exposes people to considerable risks in the area of health, with consequences for healthy life expectancy, premature death, quality of life and costs for both individuals and society.

4.3.4   It is important, however, not to overlook the digital divide that is emerging between health and paramedical professionals. This could be resolved by strengthening the education system by means of a programme providing training on the new interaction between healthcare providers and patients brought about by digitisation.

4.4   Hyper-responsibility, another key danger arising from digitisation

4.4.1   Quantification in the field of health encourages individual micromanagement of health and hyper-responsibility, to the detriment of a more collective understanding. It makes individuals responsible for their own good or bad behaviour with regard to health, and can deflect attention from the environmental or social and economic causes of public health problems.

4.4.2   Failure to anticipate the impact of digitisation on personalisation, growing social health inequalities and increased health commercialisation can all jeopardise our solidarity-based, universal health insurance models.

5.   **Impact of digitisation for and among health professionals**

5.1   Electronic medical records, the cornerstone of healthcare organisation

5.1.1   Digitisation provides the tools to break down the barriers in the healthcare system by making it easier for hospitals, independent surgeries, health networks and home care services to pool information. Swift and reliable mechanisms for transmitting the information gathered by various parties are a prerequisite for coordinating the treatment and overall care of the patient. They make it much easier to organise continuity of treatment and multidisciplinary care. Availability, ready access, exchange and pooling of data facilitates decisions on medical matters. The

digitised sharing of data between healthcare professionals provides direct added value in terms of quality of care.

5.1.2 Electronic medical records benefit patients by contributing to the coordination and quality of care thanks to data sharing by authorised parties, provided that the patients have given prior approval, with the exception of emergencies and cases of *force majeure*. The rules for digitised electronic medical records cover all the specific guarantees given to patients with regard to digital data, in terms of protection of privacy and access to these data. Confidentiality of medical and administrative records must be guaranteed completely.

5.1.3 Electronic medical records avoid errors arising from illegible documents (prescriptions, referrals for medical examinations), facilitate access to medicinal databases and make prescriptions safer because they are based on the patient's characteristics. Digitising medical practice helps limit the risk of error and reduce iatrogenic risk.

5.1.4 The reminder and alarm functions provided by the digitisation of medical records help improve prevention measures (such as vaccination and screening), monitoring of knowledge of medicines and of people suffering from chronic diseases as well as improve the level of care given to patients and make the healthcare provider more effective when it comes to making a diagnosis and prescribing treatment.

5.1.5 What is more, with the digitisation of information on a patient helping improve the process of making decisions on medical matters, in the coming years we will see a drastic change in medical practice. Every single medical diagnostic will require expert systems or tools involving artificial intelligence. This revolution is the fruit of the parallel development of genomics, neuroscience and connected devices (NBIC), meaning that from now on only machines will be able to process the influx of data.

5.2 Putting people at the centre of the development of new medical practices

5.2.1 Technological progress is permitting and strengthening the growth of telemedicine, which is ushering in new medical and paramedical practices. Telemedicine has the following advantages: better health coverage for remote areas and fewer trips for people in a fragile state of health, remote monitoring of patients to avoid hospitalisation, remote sharing of expertise, educational benefits in the form of telemonitoring and multidisciplinary case discussions thanks to remote consultations and remote medical expertise.

5.2.2 Telemedicine, digitised professional communication, paperless documents, pooling skills that are geographically scattered and sharing intellectual or medical and technical resources must save time for healthcare professionals which can then be spent with patients talking to them one on one, and considerably improve the relationship with them.

6. **Impact of digitisation on the management of health insurance**

6.1 Big data

6.1.1 The gradual digitisation of our health systems has certainly helped improve both the administrative and financial management of each person's insurability (more room, more time, more consumables, increased productivity, easier, safer archiving, advantages for the environment) and has made for speedier reimbursement of healthcare providers and hospitals, while stepping up checks and reducing the risk of error when invoicing the services provided.

6.1.2 Although they do not directly lead to improvements in the quality of care, paperless administrative forms have reduced the time needed to send forms and have streamlined administrative procedures. A paperless circuit removes barriers to the practice of medicine, enabling doctors to focus more on the art of healing and less on the inevitable red tape.

6.1.2.1 These days, big data are generated when all the data of all patients/insured persons are compiled, including data generated by health applications. Big data relies on the capacity to analyse all the data from a multitude of sources. This presupposes the use of tools to establish links between data and extract useful information from unstructured data in an automatic and cost-efficient way.

6.1.3 Through applications, data are no longer stored at doctors' surgeries, hospitals or health insurance companies, but rather on devices or cloud-based platforms, with a parent company which may no longer necessarily be located in the country in which a person is registered for health insurance, or even in Europe.

6.1.4 Interoperability is a cornerstone at European level (with the digital single market) and national level alike. An "interoperability framework for health information systems" has to be designed and implemented. A repository of interoperability of this kind compiles the principles and standards that must be complied with so as to exchange health data in a completely secure environment and link all the e-health stakeholders.

6.2 Data protection

6.2.1 The ownership and protection of data are key for individuals/patients and represent a fundamental right to be upheld. The individual/patient is entitled to use his data as he wishes. This depends on free, informed and permanent consent by individuals to the collecting and use of their data. In addition, recognition must be granted to an effective right to portability and the development of Blue Button[4]-type solutions to provide access to people's medical history.

6.2.2 The General Data Protection Regulation (GDPR) to enter into force on 25 May 2018 governs this subject at European level. The World Medical Association's declaration on ethical

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[4] Presentation of the Blue Button initiative: Blue Button was launched in 2010 by the US administration to set up a platform for American veterans to monitor, check and download their personal health records. They are thus able to access and download their health records and information relating to their health insurance and medical history (such as allergies and medical analyses). Source: http://www.va.gov/bluebutton/.

considerations with regard to health databases and biobanks (Declaration of Taipei) must also be taken into account.

6.3   Sweeping changes in the health insurance sector

6.3.1 Digitisation is moving forward in the insurance sector. Initially restricted to value propositions for information and comparison (such as tools for comparison or online subscription) or linked to paperless medical and administrative forms, it will go far beyond these transaction-based links in the chain. The new methods for quantification, popularly known as "big data", will transform the insurance sector's economic model, and new products will be rolled out.

6.3.2 This turning point inevitably has a strong impact on:

- professions which are linked to the production, storage, supply, processing and transformation of data through algorithms, and those which have strong added value in terms of information;
- the status of patients, who are becoming active agents of their own health and less dependent on healthcare professionals.

6.3.3 As technology and health applications advance, everyone will be able to "objectify" their physical activity, diet, interaction with other people, and even their set of health determinants.

6.3.4 Using big data in respect of individuals could imply the shift from a model of coverage and pooling of risks to a model of coverage of behaviour and individualisation of insurance services, leading to hyper-individualisation. While profit-based private insurance companies seem able to find their place fairly easily, the change could be more difficult for mutual companies and public health insurance stakeholders, whose fundamental purpose would come under strain.

6.3.5 Health insurance managers in turn are entering a phase of vulnerability caused by these changes as they are at the crossroads of an entire multidimensional ecosystem made up of industrialists, doctors, governments, regulators, investors and patients.

6.3.6 Health insurance managers have to cope with a highly static environment due to very strict regulation of sensitive health data, the complex management and financing of the medical and hospital sector, a fairly rigid and unresponsive value chain (membership, collection of contributions, settlement of services provided), increasingly stringent regulation of insurance products and sometimes even corporatism on the part of the medical professions.

6.3.7 However, health insurance managers do not all have or no longer all have the same financial capacity and the capital needed for this is increasingly seen as a barrier to their development. The digital giants' economic power is opening doors for them, enabling them to invest directly in what they see as a market.

6.3.8 Despite improved knowledge of individual health risks, it is essential that we continue to base our healthcare systems on collective and solidarity-based insurance. Our health insurance

systems have been most effective in establishing a link between individual membership and collective protection against all health risks.

6.4   Adaptation of reimbursement mechanisms

6.4.1   Currently, there are few examples of funding the costs (reimbursement) for the use of mobile applications in a person's care pathway. One of the major obstacles at present is in fact the lack of appropriate reimbursement models integrating technological advances.

6.4.2   There is the standard model of state intervention where reimbursement is in the hands of the national institutions and authorities which lay down rules as to which mobile health services are eligible for reimbursement[5]. However, there are also initiatives taken by stakeholders in the health insurance systems, including mutual insurance companies[6].

6.4.3   There are also innovative reimbursement systems such as incentive and prevention programmes with a focus on prevention more than medication.

6.5   New challenges for health insurance organisations

6.5.1   Future challenges will have a major impact on public and private organisations in the field of compulsory health insurance (such as mutual insurance companies). These will be to:

   − develop mechanisms for prevention, diagnosis and follow-up of adapted and tailored treatment, and devise personalised responses and pathways before risks arise, based on the principles of risk-pooling, while still maintaining the traditional purpose of health insurance, which is to ensure that people who fall ill have access to treatment;
   − match the health services available to the changing needs of patients;
   − support patients while avoiding the risk of stigmatisation and blame: mutual insurance companies already play an important role in prevention and follow-up of both care and patients; this role should be extended to public health insurance bodies;
   − combat social health inequalities – which can be caused by the digital divide – by boosting literacy (particularly by improving people's skills);
   − reduce risky behaviour and check that people follow the advice given by health professionals. It is crucial to identify effective tools which meet needs;
   − give priority to their members' quality of life. This ties in with economic and risk management objectives and thus with objectives relating to the control of health expenditure;

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[5]   France has made progress by adopting "Diabeo" in the wake of a report published by the National Commission for the Evaluation of Medical Devices and Health Technologies. Diabeo is a software system combined with remote medical monitoring and a technical facility for learning how to use the software. It is designed to help patients to calculate the daily amounts of slow-acting or fast-acting insulin they need on the basis of predefined objectives set by the prescribing doctor. It is available in the form of an application on a mobile terminal (smartphone or tablet) for patients, or via a web portal.

[6]   Vivoptim is a pioneering e-health programme developed by a French mutual insurance company, MGEN, and relayed in Belgium via a Belgian one (Solidaris). It is designed to prevent and deal with cardiovascular risk through a set of individually tailored services, using digital tools and connected devices. It consists of three monitoring programmes and thirteen preventive programmes adapted to the circumstances, expectations and needs of each user, ranging from preventive programmes for people in good health to management of chronic disease.

– make electronic management of patient records and communication with care providers standard practice, including through digitisation of treatment reports, patient records and health cards;

– adapt reimbursements to the new forms of care and follow-up of patients by health professionals;

– become a trusted third party with regard to the use and management of health data flows and the collection of data, having in view a risk that such data may be used in an unauthorised way for commercial purposes.

6.5.2 Mutual health insurance companies, the forerunners of health insurance, can now aim to guarantee permanent, personalised support for each of their members. Whether in the products/services they offer or the personalised support they provide as their members seek to achieve wellbeing or continue along their care pathway, mutual health insurance companies must be able to be present, regardless of the channel of communication, in their members' lives and provide a response which meets their members' needs.

7. Impact of digital disruptors on health insurance and society

7.1 Nonetheless, all the above-mentioned aspects, which bear witness to the complexity of digital health challenges, and the arrival of the new internet players will result in overwhelming economic competition for our health insurance systems.

7.2 This disruption has been made possible partly by the emergence of sensors, which are now affordable and technically reliable, but also and chiefly by the capacity to centralise and analyse data through a smartphone or web interface. A mobile application ecosystem has therefore emerged, centred around the principle of objectives, community and "gamification". It now enables mobile environment builders to set standards for the management of health data via their dedicated service[7].

7.3 There is reason to fear that the GAFAMA (Google, Apple, Facebook, Amazon, Microsoft, Alibaba)[8] and others yet to emerge will in the future take control of this new form of medicine, which is increasingly reliant on information technologies and mapping. Such technologies are after all the bread and butter of digital economy leaders, which use them to take over ecosystems in all sectors.

7.4 The strength of these platforms is that they base their development model on the mass supply of products or services connected to the public, giving them access to plentiful data which are monetised. The monetisation of data enables them to offer a host of free services guaranteeing high user flows and fuelling a virtuous circle where everyone tries to keep the consumer locked into an ecosystem which is as closed as possible. With virtually zero marginal costs for

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[7]   The market structure of appstores is largely shared between the five biggest appstores [90% of downloads: Play (Android), App Store (Apple), Windows Phone Store (Microsoft), App World (BlackBerry) and Ovi (Nokia)].

[8]   The market giants, known as the "GAFAMA" (Google, Apple, Facebook, Amazon, Microsoft and Alibaba) are set to acquire a monopoly in e-health monitoring. The public health sector is completely dominated by these multinationals, which see it as an area of potential economic growth.

providing services, the internet's economic model naturally favours the biggest players which seize the lion's share of the value created and thus have vast investment capacity.

7.5   The worry is that only the GAFAMA are in a position to capitalise on these data which are distributed free of charge, by cross-referencing them with all the data that they also collect on individual behaviour. Faced with the digital giants – present-day and future – it is essential from a legal and ethical point of view for European citizens, governments and institutions (particularly social protection institutions) alike to retain their sovereignty in the identification, collection and use of health data.

7.6   The added value of this information, particularly in the area of health, is thus captured and controlled by these platforms and no longer by health system producers. The information will then be made available to applicants who will be able to use it.

7.7   The protection of data through the "5 Vs" (Volume, Velocity, Variety, Veracity, Values) has an economic value requiring an ongoing regulatory framework that is linked to the ecosystem as a whole ("multi-stakeholders") in order to prevent exploitation for purely commercial ends.

Brussels, 20 September 2017

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President of the European Economic and Social Committee

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