S&T Forum on "Innovative collaboration for better Healthcare"
Hitachi Group's Healthcare White Paper

The 14th EU Hitachi Science and Technology (S&T) Forum on "Innovative collaboration for better Healthcare" was held in Paris on 17 October 2014. The objective of this event was to contribute to the public policy debate in Europe by providing a platform for discussing societal issues related to science and technology in the daily life of European citizens. The following are the main messages and recommendations for the improvement of Healthcare in Europe that Hitachi Ltd. would like to convey:

I.   Social Innovation & Collaboration

The Ageing process, the rise in chronic diseases and higher costs of innovation are causing financial pressure to worldwide healthcare systems. To successfully address these issues, innovative technologies in the healthcare sector need to be fostered. However, new care models should focus not only on such products and technology, but on social innovation. For instance, the structures of society on how to **manage health data for treatment purposes, prevention and purposes subsequent to treatment** need to be reviewed accordingly. Healthcare systems must ultimately achieve better **clinical outcomes and quality of life, less mortality and morbidity.**

Technological and organizational innovations (e.g., remote telemedicine services and outpatient surgery) have the potential to provide better access to more effective and safer healthcare, to **improve patient care, reduce hospitalization and deliver better value for money**. **Noninvasive technologies, proximity care and home care will also become the norm**. In order to bring such innovations to healthcare, a broad overarching **cooperation** between stakeholders is vital: hospitals, proximity care and home care, industry (e.g., medical devices, pharmaceutical, diagnostics), academia and regulatory agencies must find new ways of engaging to ensure the best patient-centric and cost-effective system. This should ultimately allow creating the right ecosystems, such as national and/or European public-private partnerships which support innovation, enable cross fertilisation between public and private sectors and promote co-operation between researchers and clinicians. One of the main results of such collaboration would be the anticipation of innovation and creation of framework conditions, such as the development of sound Health Technology Assessment methodologies at EU and national level, **enabling new disruptive technologies to be applied and paid for more rapidly by Healthcare systems, while coexisting with older and/or obsolete technologies**. HTA should therefore be designed to contribute to the transformation of healthcare processes, as well as to the integration and interoperability of Medical and IT ecosystems. As a result, the scalability of innovative technologies and processes would be improved.

II. Big Data & Personalized Medicine

Even though we see impressive advancements in biomedicine, genetics, molecular medicine and medical imaging technology, without the appropriate understanding of treating data, society will not be able to fully grasp the benefits of such innovations. It is also in the context of increasing health data available from different sources (e.g., genomics, patient records, medical journals), that **Big Data** can be identified as a tool which provides benefits to society by bringing innovation to healthcare and medical research. Through the use of analytics, healthcare providers can monitor and compare the efficacy of treatments, medicines and medical devices' adverse events. They can also compare safety and effectiveness of treatments, efficiency of different pathways, and as a result adapt relevant care protocols.

Data analytics can facilitate the identification of target patients for clinical trials, based on data included in Electronic Patient Records and can enable the tracking of the progress of trial participants. In medical research, analysing the growing amount of health data can enable scientists to understand the causes of diseases and to tailor the right therapeutic strategy for the right person at the right time, and to deliver timely and targeted prevention. **Personalized Medicine** and the use of health data can therefore not only **improve prevention**, but also increase treatment efficiency and patients' quality of life. As a consequence, analysis of data has the potential to achieve more effective and cost-efficient healthcare, better patient outcomes and to drive the move towards **evidence-based medicine**. In this sense, ensuring a still lacking regulatory environment allowing the usage of health data and early patient access to personalised medicine and improving the education and training of healthcare professionals is crucial. Finally, to address existing challenges and to define new evidence-based systems which would also address privacy and the better usage of health data, the trials and Proof of Concept would be effective. Such approach could also contribute to the establishment of the appropriate healthcare systems' resources distribution for the future.

III. Global Standards:

In order to realize the potential of "Big Data" and certain innovative solutions in the domain of eHealth/mHealth, **the secure and smooth flow of information** is of utmost importance and a supportive regulatory environment is necessary for the development of the tools required to efficiently analyse data to provide new insights. However, there are major global challenges of how to build and manage big data to improve healthcare systems and patient outcomes. To address the underuse of health data there is a need for global, market-driven and technology-neutral standards of data processing and data management systems to ensure interoperability, which would enable the cross-border flow of data across national authorities, providers and practitioners and by doing so enhancing collaboration in health data management and better managing of care services. From the outset, EU governments and the European Commission have an important role to play in setting the necessary framework conditions and guidelines to allow the safe and secure uptake of innovative data solutions, also allowing the creation of future health databases.

IV.   Data Protection & Security Of Health Data:

Protecting **privacy** and ensuring the **security** of data is a prerequisite for the seamless use of health data and a critical requirement to improve healthcare services whilst enabling the flow of information. To achieve a high level of security, appropriate levels of **pseudonymization** and **anonymization** based on use-case requirements (whether the outcome of data processing needs to be traced back to the patient for intervention) need to be applied. Such an approach would enable the best use of the data to ultimately improve the quality of life of the citizens, and the quality of care provided to the citizens.

However, a factor slowing the development of personalized healthcare, health analytics and the use of eHealth/mHealth solutions is the **reluctance of stakeholders to share data** due to potential risks. To address this, the relevant European and national stakeholders should actively promote sharing and adopt a risk-based approach, while still ensuring that all legal and ethical requirements are respected and associated risks and benefits for healthcare actors, citizens and society are clearly explained. In particular, effectively communicating **data protection measures** to citizens is key to encourage a more pro-active attitude towards healthcare.

V.   Use Of Digital Technology

Today, two ecosystems are merging with positive effects: the medical eco-system (suppliers, hospital staff and pharmaceuticals) and the IT ecosystem. Existing devices are now collecting with citizens' consent **wellbeing data**, which, despite of non-medical nature still raises ethical issues. However, **digital technology, with its enhanced connectivity and mobility, has a role to help practitioners and patients**. Such technologies can support placing patients in the center of virtual care landscapes, where isolated elderly people who have to be reachable and need a link with the social-medical-human environment around them. Industry is pulling together to find solutions to **improve patient care**, **reduce hospitalisation** and **deliver better value for money**. Technology plays an important role and the use of data for **personalisation of healthcare** is at the forefront of current discussions, for instance regarding the support to new approaches to reimbursement and HTA assessment also need to be considered.

Although not necessarily medical devices, **electronic data collection devices** would help citizens in need of assistance to establish contact where help is located without wasting resources. ICT technologies*,* in particular **mobile and cloud technologies** can help to support these collaborations and to build links between care at hospitals and at home. BYOD (bring your own device) approaches could also be further explored and tested, while ensuring that all security and privacy policies are properly implemented.

VI.   Patient Empowerment

The advent of new IT players has enabled citizens to obtain process and share with third parties their own health and life style data gathered through their phones, tablets or wearable technology. That is why the patients' consent in the collection and processing of health data plays a central role and which has the potential to truly enable **equal access** to the healthcare system and bring benefits to the society as a whole. Likewise, the "**Quantified Self" movement and consumerization of healthcare trends** may allow citizens to have more access to their data and better control their care. To achieve this, **more flexibility and coordination between health professionals is needed**, putting patients at the center and allowing them to receive more information and become more involved in the selection and provision of their treatment. This in turns requires **more education** of patients and health professionals which could result in a more positive attitude allowing the **exchange of data**. Educating and informing the general public about innovative solutions – communicating their advantages and disadvantages – is instrumental to improve the required early adoption of new ideas and to empower patients, leaving to them the choice of using/not using and participating/not participating in such solutions.

About Hitachi Corporate Office, Europe (HiBRU): HIBRU is the representational office of Hitachi, Ltd. in Brussels, and was founded in 1988 as response to the ever increasing importance of the developments of the European institutions. The overall mission of HIBRU is to contribute to Hitachi Corporate Activities in the European Union and other European countries.

About Hitachi, Ltd: Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges with our talented team and proven experience in global markets. The company's consolidated revenues for fiscal 2013 (ended March 31, 2014) totaled 9,616 billion yen ($93.4 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes infrastructure systems, information & telecommunication systems, power systems, construction machinery, high functional materials & components, automotive systems, healthcare and others. For more information on Hitachi, please visit the company's website at http://www.hitachi.com

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JM – 10.04.2015
V.1.3.