Main Points of the Government's Decision Regarding Digital Health as a Means for Improving Health and as an Engine for Growth

General Background:

Many countries in the world face significant health challenges, mainly due to population aging, the increase in chronic disease and unhealthy lifestyles (poor nutrition and lack of physical activity). These challenges are creating a growing demand for health services, thereby, increasing the burden on medical staff and making it difficult for health organizations to provide quality treatment within reasonable timeframes, and according to the specific needs of each patient.

At the same time, the extensive use of PC's and Smartphones, along with technological advances in areas such as Big-Data collection and analysis, artificial intelligence, image processing and natural language processing, create opportunities to develop medical products and services based on these technologies, and significantly improve medical treatment as a result.

The challenges of the global health systems on the one hand, and these technological trends on the other, have led to rapid growth in the field of Digital Health in recent years. Digital Health changes the way in which medical care is provided and leads to the development of several trends in the medical world:

Preventive and predictive medicine – the identification of people at risk of developing disease, based on existing information about them, so that it is possible to identify and treat the disease in its early stages and even prevent the outbreak of the disease. For example, in Israel there are more than 1,000 deaths a year from colorectal cancer due to late detection. An Israeli solution enables routine blood tests to identify the risk of this particular cancer in very early stages, which the treating physician would not otherwise be able to detect.

Personalized medicine – uniquely adapting the treatment to the patient based on existing information about them. The use of smart, computerized systems enables the treating physician to apply the knowledge learned from the results of treatments to a large number of patients, as a tool for decision-making and personalization of the treatment, according to the exact needs of the patient.

For example: Assisting with x-Ray interpretations of cancer diagnosis tests, using image processing tools; systems that advise the physician on choosing the most appropriate drug based on the patient's personal data and on the latest research findings in the particular field.

For example, an Israeli solution that is based on genetic information and other data, allows for immediate adjustments of antidepressants to patients, with 70%-80% accuracy, in contrast with the accepted 30%-40% accuracy levels in existing methods, which in many cases require long months of experimentation with different drugs until the appropriate one for the patient is found. Other companies have developed a technology that assists in matching cancer medications to the exact stage and type of tumor the patient is suffering from and to

the specific treatment that would yield the highest chances of recovery from the disease in that particular patient.

Monitoring and initiating medicine – using devices to monitor and immediately detect cases of distress and events requiring rapid medical response and active intervention. An example of this is an Israeli solution that warns of life-threatening situations using a sensor located under the mattress monitoring the patient's pulse, breathing rates and movement during sleep. This sensor, for instance, can help save the lives of babies suffering from sudden sleep apnea during sleep.

Patient-centered care – increasing patients' involvement in their health situation and in making medical decisions. For example, different solutions allow diabetics to monitor the results of blood sugar tests they perform daily and recommend their own drug dosage accordingly. Various digital methods allow hospitals and HMOs to centralize existing medical information about a patient and present it on the patient's personal computer or application in a friendly way, so that patients can become more involved and active in the medical care provided to them, and in improving their health.

Telemedicine - applications and means of communication that enable the patient to receive remote medical treatment when patient and doctor are not physically present in the same location. Thus, for example, in recent years, services have developed in Israel that enable patients to undergo a rehabilitation process from home, through various devices and remote monitoring of their performance by their caregiver.

Improving therapeutic and administrative effectiveness in health organizations - through the use of data-based information systems and decision-making. These solutions help resource-constrained medical institutions to more effectively utilize existing resources and thereby improve medical care.

Israel is in an excellent starting position to become one of the world's leading nations in the field of digital health, for two main reasons:

A. Its uniqueness as the Start-up Nation, characterized by an entrepreneurial environment, high quality human capital and leading academic research.

B. An advanced health system, and the scope and depth of computerized medical information available in the health system.

At the same time, there are barriers in Israel and around the world, that hinder the development of this field, including infrastructure, budgetary and organizational challenges that make it difficult for health organizations to cooperate with entrepreneurs, companies and researchers, and implement innovative medical products and services. These barriers are not unique to Israel, and exist in many countries. The development of responses to these barriers and challenges, combined with the relative advantages described above, are expected to provide Israel with a significant competitive advantage in the field of Digital Health.

For this purpose, a plan was formulated to promote the field of Digital Health as a growth engine by an inter-ministerial team with the participation of the following entities: The Digital Israel Bureau in the Ministry for Social Equality, the Ministry of Health, the Prime Minister's Office, the Budget Division of the Ministry of Finance, the Innovation Authority, the *Malag* (CHE[1]) / PBC[2], and the Ministry of Economy and Industry.

As part of the plan, following the conclusions of the Committee for Secondary Uses of Health Information published by the Ministry of Health, advanced regulation regarding secondary uses of data collected in the Israeli health system will be implemented. The regulation is intended to enable the realization of the potential inherent in the data, while at the same time, ensuring the protection of patients' rights – primarily the right to privacy and medical confidentiality. The regulation will ensure that the use is authorized and performed under strict medical, research and professional ethics.

In addition, in order to promote the activity in the field of personalized medicine in Israel, the Ministry of Health will act to streamline the process required for the approval of research in the field of genetic information, while maintaining the principles of medical and research ethics, and safeguarding patients' rights.

The program is designed to address the many challenges in the development and implementation stages of the Digital Health Solution life cycle. It includes, among others: appropriate regulation, the promotion of human capital development required to advance the field, increased access to qualitative data for research and development purposes, promoting academic research and research infrastructure, supporting R&D processes in cooperation with health organizations, the business sector and academia, and encouraging marketing and assimilation activities of digital health solutions developed in Israel, both in Israel and worldwide.

The program is derived from the Digital Health Strategy published by the Ministry of Health, which aims to provide a comprehensive and systemic solution for the Israeli health system, so that it will be among the world's leaders based on Digital Health solutions. The program aims to create a growth engine for the Israeli economy and an international innovation center in Israel in this field, as well as to promote clinical and academic research in the field of Digital Health in Israel.

In view of all of the above, it is proposed to approve the main points of the plan and to instruct the participating governmental ministries to implement the necessary projects to carry out the plan. It is also proposed to allocate NIS 898 million for the implementation of the plan, as well as to establish that the inter-ministerial team designated for this program will accompany the implementation of the plan.

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[1] The Council for Higher Education
[2] The Planning and Budgeting Committee

Program Goals and Objectives:

1. The health system in Israel will become one of the world's leading providers of digital health solutions:

   A. Creating a quality and standard medical information infrastructure in the Israeli health system.
   B. Promoting the penetration of innovation and rapid testing processes of research and development into the Israeli health system.
   C. Extensive implementation of digital solutions in Israel's healthcare system.

2. The digital health industry in Israel will become a national growth engine and a global innovation hub:

   A. Accelerating the growth of Israeli companies in the field of Digital Health and increasing export in the field.
   B. Increasing cooperation between the Digital Health industry, the health system and the Israeli academia, while leveraging the capabilities of the Israeli health system and promoting it.
   C. Increasing the cooperation between the Israeli digital healthcare industry and the health systems, leading corporations and international investment bodies, while strengthening the ecosystem in Israel.
   D. Promoting and developing human capital and other supporting infrastructure for the digital healthcare industry.

3. Promoting academic and clinical research in Israel in the field of Digital Health.

Regulatory Infrastructure for the Program:

1. The Minister of Health will act to implement the recommendations of the Committee for Secondary Uses of Medical Information.

2. The Minister of Health will act to shorten and streamline the process required for approving research in genetic information, while maintaining the principles of medical and research ethics and safeguarding the patients' rights.

Projects in the Program:

1. Establishing the "*Psefas*" (Mosaic) Initiative – a national information infrastructure of health research in the field of genetics and medical information for developing solutions for personalized medicine using in-depth analysis of Big-Data. The initiative will include a community of volunteers, information infrastructure and tools for research. Five-year budget: NIS 239 million.

2. Projects to be implemented by the Ministry of Health:

A. Developing the supporting technological tools and carrying out the actions necessary to implement the regulation on Secondary Uses of Health Data. Five-year budget: NIS 50 million.

B. Motivating health organizations to encourage cooperation with academia and industry in the field of Digital Health. Five-year budget: NIS 78 million.

C. Deployment of a computerized clinical file in health organizations in which there is a subject matter gap. Five-year budget: NIS 109 million.

D. Making the transition into documenting health data in the Israeli health system in a modern and uniform coding language (medical terminology). Five-year budget: NIS 89 million.

E. Establishing one or more banks of samples for treatment and research (Bio-Repository). Five-year budget: NIS 50 million.

F. Developing technological capabilities for implementing innovative solutions in the health organizations, based on the "*Eitan*" system infrastructure. Five-year budget: NIS 30 million.

G. Promoting and expanding the "*Timna*" system – a Big-Data research infrastructure. Five-year budget: within the framework of an existing program.

H. Promoting joint projects between the Israeli health system and health systems in various countries in the field of Digital Health. Five-year budget: NIS 2 million.

I. Examination of the establishment of a national center for genetic sequencing.

3. Projects to be implemented by the Israel Innovation Authority:

A. Encouraging research and development, and pilot trials, by companies and entrepreneurs in the field of Digital Health, carried out in cooperation with the Israeli health organizations. Five-year budget: NIS 65 million.

B. Using the "Technology Innovation Labs" track (which aims to promote innovation and strengthen cooperation between multinational corporations and Israeli start-ups) in the field of Digital Health. Five-year budget: NIS 32 million.

C. Promoting cooperation agreements with international entities for supporting research and development of Israeli companies in the field of Digital Health and pilot testing. Five-year budget: NIS 20 million.

D. Supporting the establishment of a user association (an association of companies with a common interest in advanced technologies) in the field of Digital Health. Five-year budget: NIS 10 million.

E. Creating a plan for converting personnel into the field of data science, with reference to the field of Digital Health. Five-year budget: NIS 5 million.

4. Projects to be performed by the Ministry of Economy and Industry:

    A. Increasing the activity in marketing and export of Digital Health Solutions abroad, and accompanying foreign companies in the field of Digital Health in order to invest in Israel. Five-year budget: NIS 10 million.

    B. Israel's participation in projects of international financial institutions in the field of Digital Health. Five-year budget: NIS 14 million.

    C. Promoting activity within the community of innovation in the field of Digital Health. Five-year budget: NIS 2 million.

    D. Developing a specialization program for the integration of students in the Digital Healthcare industry. Five-year budget: NIS 8 million.

5. Projects to be performed by the *Malag* (CHE) / PBC:

    A. A program for research grants in the field of personalized medicine. Five-year budget: NIS 70 million.

    B. Support for the development of digital academic courses in the fields of high-tech and data science. Five-year budget: within the framework of an existing program.

6. Projects to be performed by the Ministry for Social Equality:

    A. Developing a program to encourage multi-sectoral cooperation (public sector, private sector and third sector[3]) among senior officials in the field of Digital Health. Five-year budget: NIS 9 million.

    B. Promoting marketing and exposure to the field of Digital Health. Five-year budget: NIS 2.5 million.

    C. Measurement and evaluation of the program. Five-year budget: NIS 3.5 million.

7. The Head of the National Cyber Directorate will examine the establishment of a technology and simulation infrastructure, which will be used to promote industrial initiatives and development in the field of cyber protection related to Digital Health.

Presented by the Prime Minister and the Minister of Health, the Minister for Social Equality and the Minister of Finance

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[3] NGO's