The Federal Government

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Shaping Digitalization

Implementation strategy of the Federal Government

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Implementation strategy of the Federal Government for shaping the digital transformation

The digital transformation is fundamentally changing our way of life, the way we work and learn – at a very rapid pace. As the Federal Government, we intend to shape this transformation and to prepare our country for the future as best as possible. The central question is: how does the individual benefit from digitalization? And: how do we preserve and strengthen the values of our free democratic constitutional principles in the digital age? For this purpose, the Federal Government has developed important measures, which are summarized in this implementation strategy. The objective is to continue improving the quality of life for everyone in Germany, while also leveraging economic and ecological opportunities and protecting the societal fabric.

Why an implementation strategy?

In recent years, we have laid the cornerstone for many digital policy decisions: The Federal Government implemented the Digital Agenda 2014-2017 as an ambitious program by developing an initial outline for managing the digitial transformation. Together with the reports from the Enquete commission „Internet and Digital Society“ from the German Bundestag (2010-2013), it is an outstanding baseline for the Federal Government‘s future digital policy.

The present legislative session places the focus on the joint strategic implementation of digital policy measures. We intend to leverage the opportunities presented by digitalization for our prosperity, while also managing the associated risks. In addition, we also wish to give people access to the benefits of the digital transformation. Every challenge we identify in the implementation strategy is mapped into a specific actionable solution. And every actionable solution is accompanied by an implementation plan.

For the purpose of this implementation strategy, we place the focus on key projects identified by the ministries. Moreover, each department will implement other digital policy measures in its area. This involves tapping into synergy effects, both in collaboration between the ministries and also in cooperation with business and science.

A number of measures for shaping the digital transformation are already being implemented, with their financial impact already reflected in the current financial plan. The household policy stipulations of the coalition agreement control the financing of further strategy implementation measures.

Is the strategy final in nature?

In times of digital transformation, an implementation strategy is by its nature adaptable. Strategic planning in this case means regularly questioning and adjusting objectives. We cannot rely on long-term plans that are completely outdated by the time they are implemented. A joint, dynamic, and agile approach is the key.

We will therefore continuously update the strategy. The implementation status will be communicated under www.digital-made-in.de.

We will measure and publish the attainment of our objectives, thus ensuring that the implementation strategy is effectively verified.

About the layout

The strategy consists of five actionable pillars. These are derived from the coalition agreement. Each actionable pillar is based on a common set of policy statements. The actionable pillars are:

- *Digital Competence*
- *Infrastructure and Equipment*
- *Innovation and Digital Transformation*
- *Societal Shift toward Digitalization*
- *Modern State*

Security as global topic

We intentionally omitted „Security“ as a dedicated and isolated actionable pillar. Security is a fundamental prerequisite for sustainable and successful digitalization. Security must therefore be taken into account under all actionable pillars and measures. The departments responsible for internal and external security play a central and coordinating role in this respect.

The policy statements for each actionable pillar are followed the key initiatives by the departments. We placed a special focus on identifying the target groups and the specific benefit.

Those who wish to learn more can also find the specifications together with specific objectives and supporting measures for each initiative.

How did this strategy come about?

We chose a new approach for developing the implementation strategy. All Federal Ministries and the Bundeskanzler office developed it together in several workshops by relying on a cooperative strategy methodology. The common objective was and is to more than before orient the measures toward potential users – for example by addressing various citizens with their individual living environments, companies of varying sizes, science and research institutes, or clubs and professional associations.

Digital competence

Our common guiding principles

We want that all people can take advantage of the opportunities presented by digitalization. They must be given the opportunity to participate in the transformation under their own will and to manage the risks responsibly. We must therefore invest into the digital competence of people. To this end, we will provide more programs in all areas and will orient our educational system even more toward the digitally shaped life, the digital working and business world, and the digital knowledge society.

DigitalPact School

Our aim is to invest into the competencies and skills of each individual. This promotes Germany's and Europe's ability to innovate and tackle the future. One of our central tasks is to reshape the process of living and learning in the digital world. The following applies in this respect: skills have no value without equipment – and equipment has no value without skills.

The DigitalPAct School recognizes this guiding principle. It allows the Federal Government and the Länder to jointly strengthen the digital skills at roughly 43,000 schools in Germany. The Federal Government in this case allows all schools to gain high-speed internet connections and a highly-capable digital learning infrastructure. Conversely, the Länder ensure that educational concepts are developed and that teachers are properly qualified. For example, all schools must be enabled to implement digital education on the basis of a technical-educational deployment concept.

Training and continuing education

Education does not end with school. We therefore also support universities, businesses, and educational facilities in their efforts to convey digital skills.

We must rigorously take advantage of the opportunities presented by digital media and applications, specifically as part of vocational training. Today's sophisticated professional profiles are the key. The following applies here as well: skills and infrastructure belong together; for example, by us subsidizing the digital infrastructure of vocational educational facilities and competence centers, while also qualifying trainers and teachers at vocational schools, and testing staff.

Digital education must also play a key role in continuing education. We will support this with a national continuing education strategy.

Competent society

Digital competence must also be conveyed outside of educational facilities. For example, for families with questions concerning the media education of their children. We want all children and youths to have a good opportunity to grow up with digital media. This also includes age-appropriate media environments and contemporary youth media protection. In particular, women and girls must be protected against digital violence, while also fostering their digital competence in Germany and worldwide.

Our society is home to many people who convey digital competence to others. A large number of dedicated volunteers and civilian society organizations are active in this manner. We also wish to support these.

Naturally, children and youths are not the only relevant target groups. We also need to look at those who are developing digital competence as adults. These in particular frequently still have reservations about digital advances and their consequences. We intend to specifically target the digital competence of seniors and to support them in their efforts to keep pace with digital progress.

How we intend to achieve our objectives

Initiative: BMBF	**Target Group:**
DigitalPact School	Pupils; Teachers; Society; Schools; Municipalities; Länder

Benefits:

- We will give all schools in Germany an opportunity to install broadband school building cabling and a high-performance digital learning environment. Conversely, the Länder ensure that educational concepts are developed and that teachers are properly qualified.

Initiative: BMBF	**Target Group:**
Vocational training 4.0	Businesses; Vocational educational facilities (non-business); Trainees; Teachers; Trainers; Examiners;

Benefits:

- We intend to develop future-proof, attractive, and competitive vocational training by keeping our vocational profiles current, by investing into our educational facilities, by supporting small and mid-sized businesses in their transformation process toward Business 4.0, and by appropriately qualifying trainers, educators at vocational schools, and also examiners.

Initiative: BMG	**Target Group:**
Promote digital competence in health professions	People in health professions

Benefits:

- We will give health professionals access to training for working with various digital patient care applications (e.g. video consultations, monitoring, or digital remote monitoring for chronic illnesses).

Initiative: BMAS, BMBF	**Target Group:**
National continuing education strategy	Employees; Businesses

Benefits:

- We will facilitate professional advancement for large parts of the populations, strengthen the pool of qualified workers and sustainably promote employability in a changing working world.

Initiative: BMFSFJ	**Target Group:**
Growing up properly with media	Children and youths Parents; Professionals

Benefits:

- We will strengthen the media competence of children, youths, educators, and professionals who support parents and children so that all children and youths can properly grow with digital media in a carefree manner.

Initiative: BMFSFJ	**Target Group:**
Protect women and girls from digital violence	Women; Girls;

Benefits:

- We intend to improve the protection of women and girls from digital violence, to qualify the support system, and to sensitize the public.

Initiative: BMZ	**Target Group:**
Promote digital competence, #eSkills4Girls	Women and girls in developing and threshold countries

Benefits:

- #eSkills4Girls will give women and girls access to digital knowledge and to digital competence, resulting in greater social and economic opportunities (job, housing, education, health) and an improved employment outlook worldwide, in particular in developing countries.

Initiative: BMFSFJ	**Target Group:**
Service agency "Digitalization and education for seniors"	Persons interested in education; Education providers; Seniors

Benefits:

- We promote participation through involvement and self-determination by conveying digital competence.

Initiative: BMFSFJ	**Target Group:**
Digital angel – safe, practical, helpful	Seniors Persons interested in education;

Benefits:

- We supply practical information about how daily processes and habits can be enriched and simplified with digital applications, and how competent everyday digital habits can be reflected and trained in personal and trust-based interaction.

Initiative: BMJV	**Target Group:**
Promote digital competence of consumers	Consumers

Benefits:

- We strengthen consumer competence and self-help opportunities of users, giving them the foundational knowledge about user rights and functionalities, allowing them to better assess risks, and to safely navigate the net.

Initiative: BMEL	**Target Group:**
Expand nutritional competence – digitally and on the road –	Children and youths

Benefits:

- We will expand the nutritional competence of children and youths through digital and target-group-specific knowledge transfer.

DigitalPact School

Departmental ownership: BMBF

Objectives:

- **Install digital learning infrastructure at all roughly 43,000 general education and vocational schools in Germany.**
- **Secure Germany's future viability and innovative capabilities in international competition.**
- **Establish the pact character as central impulse: Contributions from the Länder and municipalities (teacher qualification, development of educational concepts, operation and upkeep) are indispensable complementary measures of the Federal program.**

The DigitalPact School is intended to shape the digital transformation in schools on the basis of Art. 104c GG (revised version). The Federation supports the Länder and municipalities with investments into the digital municipal educational infrastructure. The Länder at the same are committing themselves to implement digital education through educational concepts, by adapting curricula, and by updating teacher training and continuing education. Together with municipalities, they are committing themselves to ensure the operation and maintenance of the technical infrastructure.

The DigitalPact School allows the key future task „Learning in the Digital World" to be implemented as a nationwide structural initiative. The teaching-learning infrastructure for general education and vocational schools are in this case designed to be inter-operable and scalable (in particular broadband school building cabling, WLAN illumination, digital interaction and display equipment and other working equipment for educational uses). Significant nationwide investments will be subsidized that take into account regional approaches, while also requiring an innovation impulse coordinated throughout Germany.

The term is 5 years (tentatively from 2019 until end of 2023). During the 19th legislative session, the financed volume is EUR 3.5 billion, with a total of up to EUR 5 billion in 5 years.

Implementation steps:

- **Prerequisite: Revision of Art. 104c GG.**
- **Conclusion of an administrative agreement between Federation and Länder.**
- **By end of Q2/2019: Publish subsidy guidelines of the Länder for implementing the DigitalPact School.**
- **By end of Q2/2019: Establish a consultation structure in the Länder for processing applications from municipalities and other sources of funding for equipment.**
- **2019: Start of subsidies (funding allocations).**

Vocational training 4.0

Departmental ownership: BMBF

Objectives:

- **Early identifications of changing qualification requirements for vocational workers.**
- **Promote and speed up the use and distribution of digital media for vocational training and continuing education, including support for businesses with the required structural changes.**
- **Build regional support structures for small and mid-sizedbusinesses.**

The umbrella initiative „Vocational Education 4.0“ has since 2016 bundled the various activities of the BMBF for the structural and content orientation of the dual (work-study) education to the needs of an increasingly digitalized and networked economy.

We intend to expand the „Vocational Training Initiative 4.0“ by strengthening the continuing education of trainers, in particular by enhancing the special-purpose program for digitalizing pan-business vocational educational facilities (ÜBS).

Implementation steps:

- **Autumn/Winter 2018: Publish a 2nd subsidy declaration “Economy 4.0” under the scope of the JOBSTARTER plus program. This involves developing regional support structures for small and mid-sized businesses (KMUs) in order to proactively address the staffing requirements due to automation and digitalization.**
- **Summer 2019: Publish a subsidy declaration for expanding the special-purpose ÜBS program. Current subsidies are granted for digital equipment in order to upgrade the training of vocational workers, in particular for KMUs. Subsidies are also extended for pilot projects that develop, test, and distribute innovative training concepts.**
- **Start of 2019: Pilot phase for qualification initiative / digital transformation “Q4.0”: Conceptual design and initial implementation of qualification programs for trainers and examiners (joint pilot initiative with Federal Institute for Vocational Training (Bundesinstitut für Berufsbildung)).**
- **Start of 2020: Start of qualification initiative / digital transformation “Q4.0”: The objective is to support and qualify trainers, teachers in vocational schools and examiners for the changes associated with digitalization by relying on innovative training and/or continuing education.**

Promoting digital competence in health professions

Departmental ownership: BMG

Objectives:

- **Include digital content in training programs for academic and non-academic health professions.**

The increasing digitalization of the health system must also be reflected in the training for academic and non-academic health professions. This necessitates conveying digital skills but also the sensible use of digital teaching and learning technology.

Implementation steps:

- **Prioritize available measures by the Federation.**
- **Implement measures under the domain of the Federation.**

National continuing education strategy

Departmental ownership: BMAS, BMBF

Objectives:

- **Give large parts of the population an opportunity forprofessional advancement.**
- **Strengthen the pool of trained workers.**
- **Promote sustainable employability in a changing working world.**

Develop a national continuing education strategy together with social partners and in close cooperation with the Länder. This includes bundling the continuing education programs of the Federation and Länder, bringing these in alignment with the needs of workers and businesses, and establishing a new continuing education culture.

Implementation steps:

- **Mid-2019: Develop a national continuing education strategz.**

Growing up properly with media

Departmental ownership: BMFSFJ

Objectives:

- **Give all children and youths an opportunity to grow up properly and uninhibited with digital media in safe and secure interactive environments.**
- **Continue and upgrade the direct information programs to parents.**
- **Local support for parents and children and youth aid professionals with the assistance of local networks backed by a central service agency.**
- **Promote age-appropriate and safe programs.**

The initiative „Growing up properly with media“ supports and bundles the activities of the BMFSFJ in the area of children and youth protection to strengthen media competence of children, youths, parents, and professionals. The initiative is supported by an initiative agency.

Implementation steps:

- **The initiative agency was formed in 2015. Since then, the educational media measures have been continuously networked, coordinated, and upgraded.**

Protect women and girls from digital violence

Departmental ownership: BMFSFJ

Objectives:

- **Sensitize the public.**
- **Improve protection for affected women and girls.**
- **Qualify the support system.**

Digital attacks occur in a variety of ways. The project focuses its measures on qualifying the women support system and primarily on protecting women and girls as victims.

The current project phase ends on 12/31/2018; a follow-up project is scheduled for 2019. The project sponsor „Federal Association of Womens Support Centers and Womens Emergency Calls“ (Bundesverband der Frauenberatungsstellen und Frauennotrufe (bff)) is planning related measures in the following areas:

1. Information regarding harassment, coercion, stalking in the immediate digital social space.
2. Information regarding harassment, coercion, discrimination in the public digital space.
3. Qualify the support system.
4. Strengthen legal certainty.
5. Strengthen networking, qualification of the professional public, enhanced communication about digital violence.

Implementation steps:

- **Prepare an online platform with information for victims (www.aktiv-gegen-digitale-gewalt.de) and expert knowledge related to the range of topics (already completed).**
- **2019: Follow-up projects.**

#eSkills4Girls initiative

Promote digital competence of women and girls in developing countries.

Departmental ownership: BMZ

Objectives:

- **Women and girls will be given better access to digital skills and knowledge,**
- **resulting in greater social and economic opportunities (information, education, participation) and a better educational and employment outlook for girls and women.**

Since the German G20 presidency in 2017, the #eSkills4Girls focus initiative of the BMZ has been committed to digital equal opportunity and inclusion for women and girls in developing and threshold countries.

Implementation steps:

- **BMZ investments of EUR 8 million into building digital skills for girls and women in South-Africa, Mozambique, Cameroon.**
- **Support for the first programming academy in Rwanda for women.**
- **Expand cooperation with the private sector as part of the Africa Code Week.**
- **Build the multi-actor partnership EQUALS (The Global Partnership for Gender Equality in the Digital Age): together with UNESCO, the BMZ has assumed a leadership role for the working committee for digital skills. Political decision-makers are sensitized to gender-specific issues in digital educational strategies and learning content.**
- **Local initiatives that promote digital skills of women and girls in Africa are sponsored by the "EQUALS Digital Skills Grassroots Innovation Fund".**
- **Book project "Ladies in Tech": An illustrated book written in German and English with portraits of female role models from the technology sector.**

Service agency “Digitalization and education for seniors”

Departmental ownership: BMFSFJ

Objectives:

- **Increase sensitivity for the significance of education and digitalization for seniors, educational programs, in society.**
- **Continuing education of seniors.**
- **Promote participation and self-determination of seniors.**

The Federal Working Committee of Senior Organizations (Bundesarbeitsgemeinschaft der Senioren-Organisationen e. V.) installed the nationwide service agency „Digitalization and education for seniors“.

The service agency acts as a nationwide network node with an initiative, consultation, and information platform in the form of an online portal (wissensdurstig.de).

It also provides informational brochures (e. g. „Wegweiser“) for seniors with basic information about the two focus topics by offering qualification programs for multipliers regarding the topic „(Digital) education for seniors“.

In addition, the service agency sponsors nationwide lighthouse projects related to the topics „Digitalization for seniors“ (educational programs for older (n)onliners or newcomers to the internet and for topics of interest to seniors) and „Education for seniors“, including for difficult to reach target groups and rural areas.

Implementation steps:

- **Start the online portal www.wissensdurstig.de and expansion regarding the digitalization topic, including development of teaching and learning materials (already completed).**
- **2019: Distribute information, upgrade the online portal, training for multipliers, start of lighthouse projects.**

Digital angel – safe, practical, helpful

Departmental ownership: BMFSFJ

Objectives:

- **Convey digital everyday skills for seniors in their direct living environment and in areas relevant for their daily lives.**
- **Brief multipliers to extend the messaging range.**

The project gives people above age 60 practical information about how digital applications can enrich and simplify daily activities and habits. This is accomplished by exploring and training digital skills for daily life (for example: How do I use online banking? How do I make an appointment with the citizens office? How do I interact with my grandkids?) in a personal setting.

A dedicated mobile infomobile is used together with a team of advisors – the digital angel – that will act in conjunction with locally organized partners to reach out to these partners. The program will therefore also, and primarily so, be active in rural areas.

Multipliers are also specifically addressed and strengthened.

Implementation steps:

- **Starting 1st quarter 2019: Preparation phase.**
- **March 2019: kickoff.**

Promote digital skills of consumers

Departmental ownership: BMJV

Objectives:

- **Strengthen the digital skills of consumers.**
- **Advise consumers about their rights and obligations in the digital world.**
- **Develop informational programs.**

This measure will subsidize various projects that strengthen the digital skills of consumers, will advise them about their rights and obligations in the digital world, and will develop informational programs.

While many consumers make use of a wide range of digital tools, ranging from search engines to online shops, and application software for mobile devices (apps), they do not always have the foundational digital skills. In the future, a growing number of day-to-day objects will be networked and services will be transferred to the digital space without offline alternatives. In many cases, consumers are unable to identify the benefits, opportunities, and risks of these developments.

Target-group-appropriate programs are developed while taking into account the socio-economic status and available research results, e.g. from senior education, psychology, and migration research.

In order to improve the digital skills of seniors, the subsidized project intends to rely on internet counselors to strengthen the confident use of digital resources by this age group. The project measures specifically address residents in rural areas and in economically underdeveloped regions and are intended to improve the quality of life, self-determination, and participation for seniors. Yet another project that addresses consumers in rural areas will rely on volunteering and on the Länder responsible for consumer education, with the intent of promoting the digital skills of all consumers.

Other projects specifically address certain consumer groups such as people with a migration background and youths.

Implementation steps:

- **Project “Digital-Kompass plus”: Expand existing and build new locations; install digital consultation hours.**

Expand nutritional competence

-digitally and on the road-

Departmental ownership: BMEL

Objectives:

- **Digital knowledge transfer in this area is to be strengthened and more readily adapted to the target audience.**
- **Expand nutritional competence of children and youths under the scope of the "Schul-Cloud" project.**

In times when cooking instruction videos recorded with time-lapse are viewed millions of time worldwide within only a few days, room also needs to be made for information about healthy living habits based on balanced nutrition. The BMBF project „Schul-Cloud" intends to provide participating schools with a module for the topic „Healthy Nutrition".

The Federal Center for Nutrition (Bundeszentrum für Ernährung) will develop activities to help expand „digital skills" – nutrition will form a reference field in this case.

Implementation steps:

- **Fall 2018: Strategic forum for expanding digital programs.**
- **Survey at participating schools by HPI during implementation.**

Infrastructure and equipment

Our common guiding principles

A highly-capable infrastructure is the lifeblood of our society. This in particular includes digital networks. They are the prerequisite that gives citizens, businesses, and public administrations the ability to take advantage of the opportunities presented by the digital transformation – in cities and in rural areas. Our objective is to connect everyone – anytime and anywhere. The special significance and vulnerability of digital infrastructure requires security and special protection.

Our objective: The gigabit society

Our objective is that all of Germany is supplied by gigabit-capable networks by the end of 2025. This also includes sparsely populated rural areas where private business is not expected to expand in the foreseeable future.

Our subsidies are therefore directed toward expanding fiber-optic networks. The initial focus will be on regions where high-speed internet is not available. We will also initiate the expansion of fiber-optics in regions that are supplied with high-speed internet but do not yet have gigatbit-capable access. Industrial zones, schools, and hospitals will be connected to the fiber-optic network during the current legislative session.

Planning certainty is a key ingredient for private investments in the gigabit expansion. We will therefore create a regulatory framework that gives incentives for investments into fiber-optic networks and sponsors cooperative expansion models.

Mobile radio and 5G

5G will become a key technology for the digital transformation. The Federal Government therefore subsidizes research and development for tapping into new applications such as Industry 4.0, telemedicine, and autonomous driving. Our objective: Germany shall become a leading market for 5G applications. At the same time, we intend to increase coverage and availability of 4G networks.

We will do so by negotiating clear arrangements with mobile network operators about improved 4G coverage. Enhanced supply covenants will be imposed for the upcoming 2019 frequency auction. Our priority in this case is to focus on future-proof access for the road and rail network and to target specific areas for expanding 5G technology. Other frequency allocations will follow in the coming years as the assignments for the relevant frequency expire. As a first, industry will also have the ability to tap into regionally limited frequency resources so that it can develop its own innovative applications on the basis of 5G technology.

This accomplishes two objectives: it closes the remaining mobile radio blind spots, and creates the conditions for the dynamic expansion of the new 5G standard, also with respect to coverage.

For all initiatives associated with expanding radio technology, we will also keep our sights on protecting the population‘s health.

For health: the Telematik infrastructure

Sophisticated and secure exchange of important medical health data calls for a dedicated digital data infrastructure – the so-called Telematik infrastructure. Its installation has been started. Our objective is to successively connect all doctors, dentists, pharmacies, and hospitals to the Telematik infrastructure by the end of 2019. Starting in 2021, all those with statutory policies will then have the ability to receive from their health insurance carrier an electronic patient file that can be used nationwide, independently from membership in a specifichealth insurance fund.

IT security for critical infrastructure

Almost all infrastructure is now heavily reliant on IT systems. This dependency exposes this infrastructure and therefore our society to vulnerabilities. Infrastructure that serves the livelihood is therefore of special significance. In addition to voice and data transmission, this also includes utility networks, the water supply, but also the finance and insurance sectors, as well as transportation and traffic, nutrition and health. Protecting this infrastructure is at the center of the joint activities for the IT security of the State and the economy.

The security of large hospitals is mentioned here as an example: By June 30, 2019, they are required to implement organizational and technical safeguards to bring their IT systems in compliance with the state of the art. Due to the overwhelming significance of protecting their IT systems, we will support affected hospitals in their efforts to meet these statutory obligations.

How we intend to achieve our objectives

Initiative: BMVI	**Target Group:**
Fiber-optic expansion and continuing expansion of State subsidies	Citizens; Telecommunications enterprises; Businesses; Public agencies; Social services;

Benefits:

- We will subsidize the expansion of fiber-optic networks in regions without access and will initiate gigabit access in regions that have high-speed internet access but are not yet served by gigabit capabilities.
- Industrial zones, schools, and hospitals will be connected to the fiber-optic network during the current legislative session.

Initiative: BMF	**Target Group:**
Special fund "Digital Infrastructure"	Länder; Municipalities; Schools; Telecommunications enterprises;

Benefits:

- We will subsidize investments into the expansion of gigabit networks and into digitalizing schools. This our contribution toward giving access to rural areas. The special fund is financed by awarding 5G frequencies. An additional EUR 2.4 billion are made available as startup funding in 2018.

Initiative: BMWi, BMVI	**Target Group:**
Continuing development of telecommunications regulations	Telecommunications enterprises; Businesses

Benefits:

- We will create stronger investment incentives for private business investments into expanding giga networks, in particular to also promote expansion cooperations.

Initiative: BMVI	**Target Group:**
Frequency awards and 5G mobile radio standard	Citizens; Businesses; Public agencies; Social services; Mobile radio network operators;

Benefits:

- We will improve the nationwide coverage with LTE and will make Germany the leading market for 5G with innovative applications for society and business.

Initiative: BMG	**Target Group:**
Build and operate the Telematik infrastructure – introduce medical applications and improve the infrastructure for the in-patient hospital and elderly care sector, in the out-patient sector, and across sectors.	Statutory policy holders

Benefits:

- We will create the foundation for electronic patient files and therefore the conditions for even better care to the benefit of patients in cities and rural areas.
- We will network the facilities in the health system for exchanging treatment data at a high security standard.

Initiative: BMG	**Target Group:**
Subsidize investments into IT security for hospitals identified as critical infrastructure.	Health service businesses (hospitals, out-patient service providers)

Benefits:

- We will improve the IT security of hospitals classified as critical infrastructure.

Initiative: BMG	**Target Group:**
Measures for improving IT security for service providers not captured by the BSI critical directive.	Healthcare providers (hospitals, out-patient service providers)

Benefits:

- We will strengthen the security and the confidence of patients in the data security of hospitals and medical practices.
- We will strengthen the security against cyber attacks in the health system.

Initiative: AA	**Target Group:**
Foreign IT for all facilities operated directly by the Federal Administration	Administration; Citizens;

Benefits:

- We will ensure secure communication worldwide, backed by a crisis-resistant, high-performance, and globally secure infrastructure directly operated by the Federal Administration and therefore indirectly to safeguard the worldwide services for German nationals.

Initiative: BMU	**Target Group:**
Protection against electro-magnetic fields in relation to digitalization, in particular for mobile radio	Citizens; Businesses; Administration

Benefits:

- We will ensure health protection and will therefore also improve buy-in.

Fiber-optic expansion and continuing expansion of State subsidies

Departmental ownership: BMVI

The high-level objective is the nationwide availability of gigabit-capable infrastructure. The focus in this case is placed on expanding fiber-optics by the private sector. Federal funding is made available in demand-based amounts for supplemental investments in regions where fiber-optics expansion is not driven by the private sector.

Objectives:

- **Nationwide gigabit-capable infrastructure by 2025.**
- **Priority for connecting socio-economic drivers and simplified application procedures.**

The priority is placed on private sector expansion in a competitive environment, for which additional incentives will be created. On the one hand, regulatory priority should be given to cooperations between network providers as stipulated by the European code for electronic communication. On the other hand, this effort is addressed by the DigiNetwork Act that already went into effect in 2016 as the legal framework to improve the leverage of synergistic opportunities for shared use and installation of fiber-optic cables. Other measures will be reviewed in due time.

For the nationwide gigabit expansion, including closing blind spots and prioritizing service for socio-economic drivers (schools, hospitals, and industrial zones), the Federal Government is making significant subsidized funding available for private sector network expansions in economically under-developed expansion regions.

The Federal subsidy program will be continued in the current legislative session and will be exclusively focused on initially closing the remaining blind spots (service below 30 Mbit/s). A new subsidy program will be additionally developed and approved by the EU Commission, so that gray zones (service above 30 Mbit/s but not gigabit-capable) can get access to subsidized funding for gigabit-speed service.

Implementation steps:

- **2018: Continue the Federal subsidy program for broadband expansion for the purpose of closing remaining blind spots with priority on service for socio-economic drivers.**
- **2108–start of 2019: (EU) approval for framework regulations and development of a subsidy guideline for purposes of subsidizing gigabit connections in gray zones.**
- **2019/2020: Investment and expansion-friendly project implementation of the European code for electronic communication.**

Special fund “Digital Infrastructure”

Departmental ownership: BMF

As part of the priority measures, the coalition agreement stipulates the installation of a fund for subsidizing broadband expansion and for implementing the DigitalPact School.

Objectives:

- **Install the special fund for financing the gigabit network expansion and for digital infrastructure in schools.**

The draft bill to set up the special fund „Digital Infrastructure“ installs the „Digital Infrastructure“ fund as a special fund of the Federal Government. The special fund is used to subsidize investments into digital infrastructure and to grant financial aid to the Länder. The investment subsidies support the expansion of fiber-optic gigabit networks specifically in rural regions; the subsidies in the form of financial aid to the Länder supports the expansion and improvement of digital infrastructure for schools.

The draft bill for setting up the „Digital Infrastructure“ special fund is limited to creating the financial framework for subsidizing new investments into gigabit network expansions and the DigitalPact School. The specific subsidy framework conditions are still pending based on a yet to be completed administrative agreement between the Federation and Länder regarding the DigitalPact School – the Federal Ministry for Education and Research (Bundesministerium für Bildung und Forschung) has functional ownership – and based on the guideline „Subsidies for supporting broadband expansion in the Federal Republic of Germany“ (1st amendment dated 07/03/2018) – the Federal Ministry for Traffic and Digital Infrastructure (Bundesministerium für Verkehr und digitale Infrastruktur) has functional ownership.

Implementation steps:

- **The draft bill is currently in parliamentary proceedings. A conclusion is expected by the end of 2018.**

Continuing development of telecommunications regulations

Stronger investment incentives for private sector fiber-optic expansion under the scope of the pending TKG amendment for implementing the European code for electronic communication (EU code).

Departmental ownership: BMWi, BMVI

Objectives:

- **Support the nationwide expansion of gigabit networks by 2025.**
- **Planning and legal certainty: Speedy implementation of the EU code for electronic communication in national law.**

Expanding the gigabit networks as much as possible on a nationwide basis requires considerable investments, primarily from the private sector. One thing is evident in this case: the present regulatory incentives are not sufficient for making these investments.

A higher level of new investments into fiber-optic access networks (FttB/H) in Germany calls for an innovative and investment-friendly regulatory framework that at the same time protects competition, while also taking into account the structural differences between the installation of gigabit-capable infrastructure and the already available copper network.

By waiving strictly cost-based remuneration regulations and/or by allowing sufficiently high returns, incentives can be created to invest into new gigabit networks. Fiber-optic operations should strive toward fair and discrimination-free access for third parties (open access). The coalition agreement stipulates that this approach must be used in particular for cooperations.

The new EU code for electronic communication creates a better investment climate for expanding high-performance broadband networks. For this purpose, the EU code in particular creates leeway for investment-friendly regulatory incentive mechanisms for cooperative fiber-optic expansions that must be promptly leveraged with respect to the pending TKG amendment and regulatory practices.

Implementation steps:

- **End of 2018: The new EU code goes into effect (functional leadership: BMWi and BMVI); followed by implementation into national law (implementation deadline: two years); cabinet version expected in 2019.**

Frequency awards and 5G mobile radio standard

Departmental ownership: BMVI

Objectives:

- **Close radio dead spots.**
- **Dynamic expansion of 5G.**
- **Implement 5x5G strategy.**

Germany needs nationwide, high-performance mobile radio service so that all regions, households, and businesses can equitably take advantage of the benefits afforded by digitalization. This not only applies for large metropolitan areas but equally so for rural regions. Seamless mobile voice and data service is long overdue. Radio dead spots should therefore become a thing of the past as quickly as possible. In order to preserve the level of prosperity and sustainable growth, we are also pursuing the clear objective of making Germany the lead market for 5G. Our country must remain at the leading edge of innovations – 5G is a key technology for this.

We must lay the cornerstone for the future in 2019. The frequency award and implementation of the mobile radio summit are the central pillars in this case. At the mobile radio summit 2018, the mobile network operators committed themselves to noticeable improvements of service in populated regions. Service gaps along traffic routes will be counteracted with expansion mandates. Service along railway lines and along Federal and Länder highways is therefore an important milestone on the way to nationwide coverage. An outlook for expanding service to other secondary traffic routes will then be be required by the frequency auction 2022/23. Meaningful impulses for expanding 5G networks are equally indispensable so that the dynamic user demand for 5G can follow. We therefore intend that 5G-specific performance attributes are also implemented in logical steps into the networks. The initial focus for this is on Autobahn highways and secondary highways.

In addition, we will also become active on the user side to generate sustainable demand and to allow 5G to steadily grow. Based on the 5x5G strategy, we will until 2021 support testing of 5G applications in real-world environments to initiate lighthouse projects that will drive dynamic demand growth by way of their model character.

Implementation steps:

- **Frequency provisioning (2019 and 2022/23): Improve the service quality in populated regions and along traffic routes and specify implementation requirements for 5G-specific performance attributes.**
- **Conduct mobile radio summit (2019): Conclude expansion commitments with network operators for 99% coverage of the population and install new mobile radio facilities in blind spots.**
- **5x5G strategy (2019-2021): Finalize conceptual design, publish subsidy conditions, and implement 5x5G strategy.**

Install and operate Telematik infrastructure

Introduce medical applications and improve the infrastructure for the in-patient hospital and elderly care sector, in the out-patient sector, and across sectors.

Departmental ownership: BMG

Objectives:

- **All policy holders shall have the ability to use their electronic health card to give their treatment providers emergency data, an electronic medication plan, and data from an electronic patient file.**

Secure digital data infrastructure – the Telematik infrastructure (TI) – is required for sophisticated communication and usability of important health data across facilities and sectors. The TI installation was started mid-December 2017. Currently, about 30,000 doctor and dentist practices are connected to the Telematik infrastructure (as per October 2018). Pharmacies and hospital will also be connected promptly.

In parallel, industry is introducing electronic emergency data, the electronic medication plan, and the secure communication methods between service providers. The objective is to introduce these applications by mid-2019. In addition, the Gesellschaft für Telematikanwendungen der elektronischen Gesundheitskarte mbH (gematik) is required to develop the specifications for introducing electronic patient files.

The subsequent installation of TI together with specific planning by gematik regarding the electronic patient file (ePA) will be backed by statutory language.

Implementation steps:

- **By end of 2019/2020: Connectivity for all doctors, dentists, pharmacies, and hospitals.**
- **By end of 2019/2020: Review of connectivity options for home health care and elderly care.**
- **By 12/31/2018: Publish specifications for electronic patient file.**
- **By 2021, all statutory policy holders shall have the ability to receive from their health insurance carrier an electronic patient file that can be used anywhere.**

Subsidize investments into IT security for hospitals identified as critical infrastructure.

Departmental ownership: BMG

Objectives:

- **Improve the IT security of hospitals classified as critical infrastructure.**

Hospitals with at least 30,000 in-patient cases per year are required by the BSI act to implement organizational and technical safeguards by June 30 2019 to bring their IT systems into compliance with the state of the art. The specific safeguards associated therewith are currently being developed by subject-matter committees and are being approved in collaboration with the Federal Agency for Information Technology Security (Bundesamt für Sicherheit in der Informationstechnik). The resulting adjustments with regard to investments into IT facilities and with regard to building requirements can be subsidized with funds from the hospital structure fund. Due to the overwhelming significance of IT security for critical infrastructure, affected hospitals will be supported in their efforts to meet these statutory obligations. A subsidy condition is that the measures are directly mandated by technical IT security requirements.

Implementation steps:

- **Legislative action.**

Measures for improving IT security for service providers not captured by the BSI critical directive.

Departmental ownership: BMG

Objectives:

- **Improve IT security in the out-patient sector.**
- **The Federal Health Insurance Fund Association (Kassenärztliche Bundesvereinigung) will be empowered to mandate binding IT security specifications for doctor's practices.**

The regulations for improving IT security in the IT security act and/or the BSI critical directive did not capture all healthcare sectors. For example, medical care in the out-patient healthcare sector was omitted because these services are predominantly provided by small and mid-sized businesses. However, regulations for improving IT security will also be adopted for this area.

Implementation steps:

- **Legislative action.**

Foreign IT for all facilities operated directly by the Federal Administration

Departmental ownership: AA

Objectives:

- **Ensure secure communication worldwide, backed by a globally crisis-resistant, high-performance, and secure infrastructure directly operated by the Federal Administration and therefore indirectly to safeguard the worldwide services for German nationals.**

On May 20, 2015, the Federal Cabinet adopted the draft concept for IT Consolidation – Federation. Among other items, the resolution contains instructions to the AA to expand its existing IT services abroad for all facilities operated directly by the Federal Administration (excluding BMVg and intelligence services). The AA will therefore become the central foreign IT provider in the compact of IT service providers of the Federal Government.

Implementation steps:

- **Epgrade the worldwide IT network operated by foreign IT.**
- **Install an "IT situation center – international" for the purpose of expanding and professionalizing the monitoring of all IT platforms and applications operated by international IT with respect to today's security requirements.**

Protection against electro-magnetic fields in relation to digitalization, in particular for mobile radio

Departmental ownership: BMU

Objectives:

- **Appropriate protection against electro-magnetic fields.**
- **Substantiated health assessment and meaningful review of exposure.**
- **Sensitize the public.**

Digitalization goes hand-in-hand with an increase in wireless communication. The project objective in this case is to ensure that the effects of electro-magnetic fields due to the growing number of radio transmitters and equipment do not impair the safety of the population. As stipulated in the coalition agreement, steps must be taken to specifically ensure that existing thresholds and safety standards are also maintained for the pending fundamental restructuring of the mobile radio networks by the spread so-called micro-cells and the expansion of 5G mobile radio networks. The associated rigorous preventive health protection will promote acceptance of digitalization. At the same, applications must be designed such that the electro-magnetic fields are minimized as much as is technically possible; this will facilitate other innovative technical solutions associated with other electro-magnetic fields.

Implementation steps:

- **Negotiate with mobile network operators to expand the existing self-imposed commitment for ensuring the safety standard in place for base stations for limiting electro-magnetic fields also to micro-cells.**
- **Where required, adapt directives and work toward adjusting EU law.**

Innovation and digital transformation

Our common guiding principles

The power to shape change and to innovate is a condition for ensuring longterm prosperity and for protecting the social fabric in Germany, Europe, and the world. We have the will, the ability, and the instruments to innovate. We intend to ensure that technologies and innovations comply with the legal framework conditions and the values in Germany and Europe. We want to become better at turning outstanding technological research into outstanding technological products brought to market under the "made in Germany and "made in Europe" labels. This involves working together with all global regions. We want to set international standards and better tackle global challenges with digital innovations.

Artificial intelligence: Basic science and technology innovations

Our strategy intends to bring artificial intelligence (AI) research, development, and AI applications in Germany to a leading level worldwide. The topic affects us all: businesses, consumers, science, civilian society, and workers. The advancement and use of AI must be moved forward responsibly – under the premises that the constitutional rights of those impacted are upheld – to the benefit of society, business, and the environment, and new value-added opportunities must be leveraged. The strategy forms a common umbrella and offers guidance for the actions of the entire Federal Government as it relates to AI.

We can therefore not rest: We will also look at the opportunities presented by other innovations, for example distributed ledger technologies and will develop a common blockchain strategy.

Applied artificial intelligence: Health as an example:

The discussion about AI is frequently abstract and can only be followed by experts. It is therefore important that we more clearly identify the opportunities presented by innovative technologies. A good example is the healthcare system: AI can facilitate new applications for persons with serious and/or chronic illnesses – for example by detecting patterns and linkages from a variety of past applications. Digital applications can also assist healthcare workers to customize therapies even more to the needs of patients. AI can assist with determining diagnostic and treatment options or provide support for identifying illnesses earlier. In order to achieve this, we intend to direct health research toward continuing to strengthen AI as one of the key technologies for digitalization and a basis for digital medicine.

Innovation and Start-ups

In order to grow the innovation capabilities of our country, we will continue to improve the framework conditions for incorporating and growing young digital and creative businesses in cities but also in rural regions. The increased mobilization of venture capital and networking with mainstream business are of essential significance in this case. We will therefore continue and expand the successful and established subsidy instruments for startup financing and the Digital Hub initiative.

Digitally innovative universities drive innovations. Innovative spin-offs and businesses frequently originate directly from these. We therefore intend to strengthen these together with the Länder by creating better framework conditions and by breaking down existing barriers.

But we will subsidze the development of startups not only in Germany but also see these as a development policy instrument. Startups in developing countries create innovations and jobs, thus unlocking opportunities locally. Better access to technologies and shaping the digital transformation is also the objective of building digital centers in Africa.

Digital transformation in the economy

But innovations not only play a role in startups. It is of central strategic importance for Germany as an industrial base that in particular small and mid-sized businesses (KMUs) leverage the opportunities presented by the digital transformation and skillfully manage the associated risks.

We will therefore specifically assist KMUs in their efforts to develop their digital skills in a user-oriented manner. Based on this, we will maintain and expand the competitive position of German mid-sized businesses. This also includes support for a broad-based implementation of Industry 4.0 across industrial sectors.

However, businesses will only successfully navigate the digital transformation when information technology and cyberspace security is ensured. By subsidizing research and development, we want to make Germany a leading base for trustworthy IT security solutions.

Societal innovations and the changing work environment

Technical innovations are resulting in changes for all aspects of societal life. We will therefore not only address the technical side, but will also study the societal impact of innovations, in particular for the work environment.

The work environment is undergoing profound changes as part of the digital transformation. Many businesses are not satisfied by passively observing these changes but instead intend to actively shape it. Innovations need room for ideas, and the leeway to attempt something that can also end in failure. We intend to create this space with environments for learning and experimenting. We want to unlock impulses for shaping the digital transformation at the company level.

Digital innovation for the environment, climate, and resources

Digitalization offers great potential for the environment, climate, and resources. We will therefore strengthen the use of innovative technologies and sophisticated, data-driven methods. We will do so in many areas: for example, in the area of agriculture and food processing, for monitoring bio-diversity, for resource and climate protection, or in the area of subsidizing digital data-based innovations in the mobility sector. We are equally compelled to sustainably shape the digital transformation directly. In addition to the significant opportunities, the economic, ecological, and social risks associated with digitalization – for example the growing consumption of resources – must be examined.

Digital innovation in the security area

In August 2018, we resolved to install an „Agency for innovation in cyber security". This also secures our technological innovation leadership in the security area.

We rely on innovations for early detection and analysis of crises developing abroad. By using innovative key technologies, we create improved coherence in order to adequately tackle future challenges as these relate to the protection of German nationals abroad.

How we intend to achieve our objectives

Initiative: *BMBF, BMWi, BMAS*	**Target Group:**
Strategy – artificial intelligence (AI)	Businesses; Science; Civil Society; Employees;

Benefits:

- We will bring artificial intelligence research, development, and applications in Germany to a leading level worldwide.

Initiative: *BMWi, BMF*	**Target Group:**
Blockchain strategy	Businesses; Industry; Researchers; Administration; Investors;

Benefits:

- The blockchain strategy of the Federal Government will create the framework conditions for blockchain and crypto asset innovations in order to tap into the technological opportunities and to prevent potential misuses.

Initiative: *BMG*	**Target Group:**
Investigate and render usable the opportunities of big data, AI, and other new technologies (e.g. blockchain) for healthcare.	Citizens; Researchers; Doctors;

Benefits:

- We will strengthen the ability for developing new, digitally supported applications for healthcare.
- We want that therapies are better customized to patient needs.
- We want to ensure that illnesses can be detected earlier.

Initiative: BMBF	**Target Group:**
Research for digital medicine and care	Citizens; Researchers; Doctors; Caregivers (family caregivers and professional caregivers)

Benefits:

- We support the improvement of health research and patient care by linking and using research and care data across facilities. This also includes research-compatible electronic patient files.
- We will drive research and testing of innovative ehealth solutions.
- We will drive the development of innovative care assistance systems by bringing together science, business, operators, and users in a care innovation center and four care practice centers.

Initiative: BMZ	**Target Group:**
Install digital centers in Africa – digital lighthouses for Africa	Governments in developing countries, Africa in particular

Benefits:

- We will ensure faster access to new technologies, sustainable growth for tech businesses (innovation & jobs), human-rights-oriented digital policies and a better local economic outlook.

Initiative: BMZ	**Target Group:**
Leverage digital innovations for development, in particular by using key technologies such as blockchain, internet of things, and artificial intelligence in developing countries.	Developing countries, Africa in particular

Benefits:

- We will implement the objectives of the global "Agenda 2030 for sustainable development" by employing key technologies such as blockchain for more transparent administrative processes, internet of things for improved agriculture, open-source solutions for local innovations and artificial intelligence.

Initiative: BMZ	**Target Group:**
"Make IT" – tech startup subsidies in developing countries	Digitale Start-ups und Digitalwirtschaft in Entwicklungsländern

Benefits:

- We will subsidize establishing a good business ecosystem for young digital businesses (tech startups) with innovative business ideas. This involves forging partnerships between German, African, and Asian businesses and industry associations (tech entrepreneurship initiative "Make IT").
- As a result, we will support local growth and jobs, faster innovation, and better access to investments for young entrepreneurs.

Initiative:BMVI	**Target Group:**
Computer game subsidies by the Federal Government	Businesses; Research and development for computer games and/or gaming technology; Citizens; Children and youths

Benefits:

- We will provide targeted subsidies for innovations and will strengthen the innovation capabilities of the sector
- We will facilitate the technology and know-how transfer to other economic sectors.

Initiative: BMWi	**Target Group:**
Support for young and innovative businesses	Digital startups; Innovative small and mid-sized businesses;

Nutzen:

- Based on a series of measures, we will improve the startup ecosystem in Germany.

Initiative: BMWi	**Target Group:**
Subsidies for digital technologies and innovations	KMUs; Research; Small to mid-sized businesses;

Benefits:

- We will intensify our research efforts with subsidy focus on "digital technologies" e.g. for "smart data economy" applications.
- We will subsidize research and development projects with pilot and lighthouse character, with the objective of accelerating forward-looking digital technologies (e.g. AI, robotics, blockchain, virtual reality) into various sectors of the economy.

Initiative: BMJV	**Target Group:**
Develop general compliance standards for telemedia.	Consumers

Benefits:

- We will strengthen user rights in social networks.
- We will strengthen data portability and interoperability between social networks and messenger services.

Initiative: BMWi	**Target Group:**
Assistance for small and mid-sized businesses for the digital transformation	KMUs

Benefits:

- We lend support for the digital transformation of value-added processes of KMUs and vocational trade businesses and provide application-based illustration and testing options for digital applications oriented toward small and mid-sized businesses.
- Depending on the digital maturity level, we will ensure buildup of skills, networking, and model-based implementation of all operationally relevant topics, from the first digitalization step to the new business model and AI application.
- We will strengthen the “IT security for business” initiative in order to support KMUs with the challenging topic of IT security.
- We will start a supplemental investment program for KMUs directed toward strategically motivated investments into digitalization.

Initiative: BMWi	**Target Group:**
Support for Industry 4.0 implementation	KMUs; Startups; Industrial conglomerates;

Benefits:

- We will support the broad-based implementation of Industry 4.0 across industrial sectors by businesses in Germany, in particular by KMUs by developing actionable recommendations, user guidelines and best practices, in addition to internationjal collaboration and dialog for best practices and the exchange for global framework conditions for Industry 4.0, including in relation to standards and IT security.

Initiative: BMBF	**Target Group:**
Digitalize the university system – research for digital university education, competition for digitally innovative universities or university alliances	Universities; University lecturers; Researchers; Students;

Benefits:

- We will strengthen the German university system by supporting digitalization at universities.
- We will enable universities in their grassroots effort to develop and implement digital, comprehensive strategies in all service areas.
- We will generate scientifically substantiated actionable knowledge for digitalizing university education, its frame conditions and success factors, along with potential barriers to innovation.

Initiative: BMBF	**Target Group::**
Digitalize the science system – national research data infrastructure (NFDI) _	Researchers; Universities; Research facilities; Academies; Other publicly subsidized information infrastructure facilities

Benefits:

- We will strengthen the German science and innovation system and will subsidize the development of a sustainable interoperable research data management capability.
- We will ensure the establishment of processes and methods accepted by scientific disciplines for standardized handling of research data.

Initiative: BMBF	**Target Group:**
Research and development regarding "Jobs of the future"	Businesses; Management; Employees; Social services partners

Benefits::

- We will link the digital transformation of products and services with technical and social innovations in the work environment and for skills development.
- We will install regional centers of competence for work research to more tightly mesh work research, operational practices, along with training and continuing education.

Initiative: BMAS	**Target Group:**
Subsidize the installation of experimental resources for businesses	Social service partners; Businesses; Administration; Employees;

Benefits:

- We will set impulses for change processes into the digital future at the business level through the platform "experimentierräume.de" and project subsidies.

Initiative: BMEL	**Target Group:**
"Intelligent packaging and refrigerators"	Citizens; Industry;

Benefits:

- We will subsidize the development of "intelligent packaging" that displays information about the current and actual quality of a food item.

Initiative: BMEL	**Target Group:**
Digital map "Rescue Point – Forest"	Citizens; Administration;

Benefits:

- We will optimize the rescue chains and logistical issues in agriculture and forestry. In addition to forestry workers, this also benefits citizens who spend their recreational time in the woods and who could experience an emergency.

Initiative: BMEL	**Target Group:**
Digital experimentation fields in agriculture	Citizens; Farmers;

Benefits:

- Based on digital test fields in agricultural businesses, we will examine how the use digital methods can be optimized for the protection of the environment, to the benefit of animals, biodiversity, and to simplify work.

Initiative: BMU	**Target Group:**
Opportunities for digitalizing climate protection	Administration; Industry;

Benefits:

- We will support the attainment of the climate protection objectives binding for Germany.

Initiative: BMU	**Target Group:**
Opportunities for digitalizing environmentally compatible urban and rural living	Nature conservation facilities; Science; Economic Actors; Decision-makers at various political level; pupils, teachers; stakeholders in biodiversity and citizen science

Benefits:

- We will rely on digital methods and citizen science to support targeted nature conservation.
- We will identify the digitalization opportunities for environmentally and climate-compatible mobility to create the required framework condition on the basis thereof in order to tap into these opportunities and to avoid contrarian effects.

Initiative: BMU	**Target Group:**
Sustainable consumption in the context of digitalization	Businesses; Research; Politics and Civilian Society; Consumers;

Benefits:

- We will develop actionable approaches and will provide for pilot-based implementation of specific measures for promoting sustainable consumption under the scope of digitalization.

Initiative: BMU	**Target Group:**
Digitalization opportunities for resource efficiency (German Resource Efficiency Program – ProgRess III)	Industry; Civilian Society

Benefits:

- We will develop actionable approaches for protecting, sustainably using, and the closed-loop management of natural resources.

Initiative: BMVI	**Target Group:**
Impulses and subsidies for digital innovation technologies in the mobility sector (focus on data innovations and artificial intelligence in vehicles, infrastructure, systems)	Business, Startups; Science; Administration; Civilian Society Organizations

Benefits:

- We will support innovations and business ideas for Mobility 4.0 by taking into account the open data principle.

Initiative: BMVI	**Target Group:**
Legally certain implementation of innovative digital business models for regional public transportation (ÖPNV) with focus on mobility platforms	Mobility Service Providers; Citizens;

Benefits:

- We will adapt the legal framework to the changing mobility needs of people and new technical developments.
- We will ensure a fair balance between mobility systems (taxi and rental car sector and new digital mobility services).
- We will make sure that new regulations contribute towards reducing motorized personal traffic in cities with the intent of reducing harm to the environment.
- We will support the availability of mobility services in rural areas.

Initiative: AA	**Target Group:**
Use of big data for early detection and analysis of developing crises– data-supported early crisis detection and analysis support tool PREVIEW	Administration;

Benefits:

- We will develop improved early detection of developing crises.

Initiative: BMVg	**Target Group:**
Product lifecycle management	Administration;

Benefits:

- We intend to reduce the planning and development times for new complex military goods, achieve faster deployment status of new systems, significantly increase the level of deployment readiness – in particular for primary weapons systems -, and improve the planning reliability and limit the expenses required for materiel maintenance.

Initiative: BMVg	**Target Group:**
Cyber Innovation Hub	Administration; Startups; Entrepreneurs; Digital Economy Talent

Benefits:

- We will specifically identify businesses, in particular from the startup ecosystem suited for satisfying the demand of the Bundeswehr in relation to cyber and information technology, and will act as an interface to the Bundeswehr for these.

Initiative: BMBF	**Target Group:**
Research framework program of the Federal Government for IT security "Secure in the digital world with self-determination"	Citizens; Science and Business (incl. KMUs)

Benefits:

- We will secure the core competencies and competitiveness of Germany as a business base and will maintain digital superiority.

Initiative:BMVg, BMI	**Target Group:**
"Agency for cyber-security innovation"	Demand drivers for preventive total State security; idea drivers from administration, science, and business

Benefits:

- We will subsidize research in ambitious cyber-security technologies and related key technologies for internal and external security in order to preserve technology superiority in the cyber and information space.

Strategic artificial intelligence (AI)

Departmental ownership: BMBF, BMWi, BMAS

Objectives:

- **Bring and maintain artificial intelligence research, development, and applications in Germany to a leading level worldwide.**

The artificial intelligence strategy of the Federal Government shall bring artificial intelligence research, development, and applications in Germany to leading level worldwide. The development and use of AI must in this case be driven forward responsibly and to the benefit of society, while also unlocking new value-added opportunities. The strategy shall in this case form a common umbrella and offer guidance for the actions of the entire Federal Government as it relates to AI. We think of the strategy as a living document that is constantly updated in order to flexibly respond to new technological developments.

The objectives of the future strategy are based on the 133 objectives adopted by the cabinet on July 18, 2018 as central issues for an Artificial Intelligence Strategy of the Federal Government. These are backed by 12 actionable pillars that formulate specific measures by the Federal Government. The strategy will be evaluated and updated in two years.

Implementation steps:

- **By end of September 2018: Online consultation proceedings and expert statements.**
- **14th/15th November 2018: Cabinet adoption of AI strategy.**
- **Continuing work at G7 and G20 level with German participation.**
- **Close cooperation with EU Commission and European member states..**

Blockchain strategy

Departmental ownership: BMWi, BMF

Objectives:

- **Develop a blockchain strategy for the Federal Government.**
- **Create an appropriate regulatory framework for crypto assets at international and European level.**

The Federal Government will develop a comprehensive blockchain strategy and will commit itself at the European and international level for the creation of an appropriate regulatory framework for crypto currencies and tokens (together called crypto assets). This will create the necessary framework for innovation. Potential risks will be reduced, while the opportunities presented by this technology can develop fully.

Implementation steps:

- **Spring 2019: Public consultation regarding blockchain strategy.**
- **Summer 2019: Presentation of the blockchain strategy.**
- **Continuing work at G7 and G20 level regarding crypto assets with German participation. Germany will actively contribute to the work at EU level regarding crypto assets.**

Investigate and render usable the opportunities of big data, AI, and other new technologies (e. g. blockchain) for healthcare.

Departmental ownership: BMG

Execute and complete the projects „Data Box – Patient-centered Health Management with Digital Intelligence“ by the German Cancer Research Center and „Using Data for Better Care – Feasibility Study Virtual Network Health Data“ by the European School of Management and Technology GmbH, and other model initiatives related to big data to tap into a wider indication spectrum.

Objectives:

- **Use of technology opportunities for improved healthcare.**

This involves developing clinical value-added for care by bringing together data and completing big data analyses as the basis for developing and spreading big data applications for healthcare.

The planning also calls for an idea competition „Blockchain“ with calls for submissions of innovative application concepts for blockchain technologies related to healthcare.

Implementation steps:

- **Complete the project and subsequently derive legal regulatory measures, among others.**

Research for digital medicine and care

Departmental ownership: BMBF

Objectives:

- **Improve development and implementation of digital health innovations.**
- **Continue developing health research and care by linking research and care data.**
- **Build interoperable and secure structures for exchanging data between the research and care communities.**
- **Strengthen medical computer science at universities and develop junior talent.**
- **Simplify day-to-day care in Germany with digital innovations.**
- **Link medical technology and IT sector for digital innovations.**

So that patients benefit more rapidly from ehealth innivations, Germany shall become a frontrunner for introducing digital innovations into the health system. For this purpose, the BMBF, the BMG and the BMWi will submit the „Digital Health Innovations" roadmap as a cross-departmental strategy.

The medical IT initiative of the BMBF has the objective of improving health research and patient care by linking research and care data across facilities. This will be accomplished by building data integration centers, by testing the utility for patients, medical professionals, and researchers in practical applications, and by strengthening scientific junior talent in the medical IT field. The cornerstone for research-compatible electronic patient files will also be laid here.

Under the scope of the medical technology program, the BMBF will subsidize technology developments and medical technology innovations for digital healthcare, as the digital transformation is one of the central innovation drivers in healthcare.

Implementation steps:

- **Publish a "Digital Health Innovations" roadmap.**
- **Build data integration centers at university clinics.**
- **Establish junior talent groups for medical IT.**
- **First audit of the medical IT initiative of the BMBF.**
- **Promote the collaboration between research, business, and users on new products, processes, and methods in the "The Future of Care" cluster.**
- **Strategic dialog regarding the topic "Integrating Digital Medical Devices into the Care Environment".**
- **Funding guideline "Medical Technology Solutions for Digital Healthcare".**

Install digital centers in Africa – digital lighthouses for Africa

Departmental ownership: BMZ

Digital centers must be physical and virtual nodes in Africa that promote digital solutions for sustainable development.

Objectives:

- **Fund at least 50 local digital innovations.**
- **Employment promotion in five countries.**
- **Create remain outlook for local population and returning individuals.**
- **Strengthen the local civilian society and institutional transparency.**

They are forums that bring together dynamic actors from the private sector, civilian society, the government, research and teaching to shape the digital transformation in African societies successfully and inclusively. They bundle innovation, technical know-how, IT knowledge, research, and entrepreneurship under one roof. At the same time, the five digital centers must support African governments in their efforts to establish structures and capacity for developing, implementing, and spreading digital strategies and solutions.

A connected regional think tank will support African tech initiatives such as Smart Africa with the implementation efforts to initiate the dialog regarding regulations, human rights, and ethics of technologies and to link the centers for increased interaction in Africa.

Implementation steps:

- **Build the first digital center in Rwanda, build other centers.**
- **Strengthen the centers and target groups with training and consulting.**
- **Create and strengthen contact point structures for German, international, and African businesses and investments in the digital space.**
- **Build partnerships with local hubs, with maker spaces (meeting points for digital tinkerers) and networks for digital centers, such as Jokko labs, impact hubs, startup house, etc.**
- **Establish partner projects between European and African institutions, e. g. such as those of the civilian society.**

Use digital innovations for sustainable development

Use key technologies such as blockchain, internet of things, and artificial intelligence in developing countries.

Departmental ownership: BMZ

Objectives:

- **Government and society in developing countries rely on digital innovations to create better services for and with citizens.**
- **Digital innovators in developing countries inject growth momentum into the local economy.**

Digital key technologies such as blockchain, the internet of things, digital data (big/open data), 3D printing, broadcast technologies and artificial intelligence must be used locally to trigger development impulses and to create a new outlook for innovative, collaborative development. The mandate in the coalition agreement for „rapid technology development" will be implemented in this manner. The objectives of the „Agenda 2030 for Sustainable Development" will be more readily achieved by using key technologies.

Implementation steps:

- **The first innovation forum of the BMZ will present new digital solution approaches for collaborative development, announce model approaches, and discuss specific steps for further implementation steps with the private sector, science, and civilian society.**
- **The BMZ will bring the conference for digital society "re:publica" to Africa with the intent of creating a new interactive format for societal digital innovation.**
- **Blockchain: Deliberations for the required statutory framework (e. g. digital land registers in Georgia) and funding practical uses of blockchain, for example with a think tank to review the blockchain technology in the EZ area and at least two pilot projects in the blockchain area, such as TruBudget.**
- **Internet of things: Together with two digital enterprises, a platform for data exchange and for supply chain support in the agricultural sector is getting built in East-Africa. The data in part originate from sensor systems that generate and process highly-localized weather data with internet of things technology.**
- **Wireless technologies: Innovative solutions for internet access in rural regions are analyzed together with Fraunhofer Institute ("Connecting the Unconnected"). A pilot project is under review.**
- **Artificial intelligence: The BMZ contributes the development policy view regarding artificial intelligence as input for national strategies such as the German AI strategy, for international initiatives of the United Nations such as "UN Global Pulse", and for initial pilot projects.**
- **A fund for open digital innovations of the BMZ is under review to test new instruments for funding local innovations.**
- **The use of open source software for the referenced key technologies is promoted in order to make cost-effective, adaptable, and up-to-date digital technologies available in developing countries.**

“Make-IT”: Tech startup funding in developing countries

Departmental ownership: BMZ

Objectives:

- **Growth, faster innovation, and employment growth in the digital sector in five partner countries by establishing a fertile entrepreneurial environment for young companies.**

Make-IT“ is an initiative of the BMZ with the objective of unlocking growth and employment opportunities for entrepreneurs in the digital sector in partner countries of the German development collaborative by working together with German and European companies, industry associations and social service providers. The initiative promotes building a fertile environment (ecosystem) for young companies with innovative business ideas in IT and the internet (so-called tech startups).

Implementation steps:

- **BMZ will expand the Make-IT startup program to three additional developing countries in Africa and the MENA region.**
- **Start Make-IT in Indonesia for tech startups in the energy and environment sector.**
- **The BMZ Startup Congress 2019 brings together African and German startups and sponsors.**
- **A new EU-German-French initiative will be founded to promote the African startup scene in lockstep with Europe.**
- **Two iterations of the Make-IT accelerator for tech startups in Africa; other German/European digital conglomerates to join the Make-IT alliance, and regular networking sessions of the “Make-IT Alliance”.**
- **Digital conglomerates will support tech startups by building capacity and market access in two to five countries, investment guides for Kenya and Nigeria, investor pitches for tech startups.**
- **Measures for market and ecosystem access: Build capacity and training for tech hubs, delegation travel and exhibitions, competitions, meetings regarding regulatory topics.**

Computer game subsidies by the Federal Government

Departmental ownership: BMVI

Objectives:

- **Strengthen innovation capabilities in the computer game sector and technology and know-how transfer to other economic sectors.**
- **Strengthen and make Germany internationally competitive as a base for computer game development.**

The computer game sector is experiencing significant growth worldwide with annual growth expected between 6% and 12%. In spite of growing total sector revenues, the local market share of German companies has been shrinking. In 2017, only 5.4% of games sold in Germany were developed here. Employment in the sector has been declining in parallel to revenues. The high production costs for computer games is seen as a main reason for this. These can be up to 30% higher than in countries with strong subsidies (e.g. Canada, France, UK). In view of comparable European State subsidies and in the interest of a level playing field, funding for games will be introduced to develop high-quality digital games in order to strengthen and make Germany internationally competitive as a development base.

As a purely creative sector, the computer game sector is a major innovation driver. Other sectors (including the movie, architecture, construction, education, healthcare, elderly care sectors) also benefit from the technical innovations and the know-how of the gaming sector. The sector will be strengthened with targeted development and innovation funding, while also supporting the technology and know-how transfer to other economic sectors.

Implementation steps:

- **Start of 2019: Prepare and approve appropriate funding guidelines, dialog with participating stakeholders.**
- **2019: Start of funding.**

Support for young and innovative businesses

Departmental ownership: BMWi

Objectives:

- **Improve the framework conditions for incorporating and growing young digital companies.**
- **In particular: further mobilize venture capital.**
- **Network and internationalize startups.**

The initiative includes a series of measures to improve the startup ecosystem in Germany with focus on **Financing** (INVEST – subsidies for venture capital, high-tech entrepreneur fund, ERP/EIF umbrella fund, European Angel Fund Germany, ERP/EIF growth facility, ERP Venture Capital Fund Investments, coparion, facility Tech Growth Fund (KoaV)), Incorporation (entrepreneur platform, EXIST, German Accelerator, entrepreneur competition – Digital Innovations, online incorporations), **Networking and internationalization** (Digital Hub Initiative, German Israeli Startup Exchange Program (GISEP), German Indian Startup Exchange Program (GINSEP), Startup Nights, Online company succession board www.nexxt-change.org).

The BMWi is in this case supported by the advisory council „Young Digital Economy".

Implementation steps:

- **October 15, 2018: New KfW holding company has started its activity. Over the coming ten years, it is expected to make roughly EUR 2 billion available for growth-oriented, innovative companies.**
- **Continuation of the successful and established funding instruments for startup financing. In total, the referenced financing instruments still have reserves that can be employed over the coming years for financing commitments in the order of magnitude of EUR four billion.**
- **Start a "Tech Growth Fund" (in the implementation phase) to be made available for so-called venture debt financing (loans with quasi-equity elements of fast-growing startups.**
- **2019: New round of subsidies to strengthen the entrepreneur culture and the entrepreneurial structures at universities ("EXIST Potential"). Volume: roughly EUR 100 million over 5 year; more than 50 universities to be engaged.**
- **Expand the digital hub initiative, continue the startup exchange programs.**
- **Expand the competence center culture and creative economy and startup competition culture and creative pilots.**
- **Online incorporating: Going forward, incorporation processes and procedures can be completed digitally; processes and procedures will be optimized to avoid unnecessary red tape.**

Subsidies for digital technologies and innovations

Departmental ownership: BMWi

Objectives:

- **Maintain and expand core segments of the German economy to peak level to create jobs.**
- **Build and expand patents and specific know-how, for example in the AI, data analysis, and semantics fields.**
- **Impulses for using newly created technologies by small and mid-sized businesses.**
- **Strengthen tests for digital innovations in real-world labs to gain knowledge for creating an open framework for innovations.**

Expand measures with funding focus on „digital technologies“ e.g. for „smart data economy“ applications. This involves funding lighthouse projects for research and development that invigorate the formation of intelligent data products and that develop systems for industry and use machine learning methods and artificial intelligence (AI) to become more efficient, thus allowing entirely new business fields to be unlocked.

The funding initiative „IKT for Electromobility: Intelligent Applications for Mobility, Logistics, and Energy“ is intended to support the necessary changes toward an environmentally friendly, networked mobility.

The BMWi is also starting a pilot initiative in 2019 to fund non-technical innovation projects and innovation networks. These in particular include new business models and other pioneer solutions. One of the tender rounds will explicitly address digital and data-driven innovations.

All measures place the focus on transferring the results to the private sector.

In addition to these funding instruments, testing of digital technologies and business models will be permitted in term-limited, geographically contained and legally adapted (experimentation clauses, special-purpose permits, etc.) in regulated experimentation spaces (realworld labs). Experience can as a result be gained with regulated (partially disruptive) digital innovations even under realworld conditions.

Implementation steps:

- **August 09, 2018: Declaration “Smart Data Economy”.**
- **4th quarter 2018: Declaration “IKT for Electromobility: Intelligent Applications for Mobility, Logistics, and Energy”.**
- **2019: Create an agile funding framework with individual, targeted calls for funding.**
- **2019: Start a pilot project to fund non-technical innovations.**
- **2019: Publish “Realworld Lab Manual”, create wide network structures, pilot project for realword labs and initiate realworld labs.**

Develop general compliance standards for telemedia.

Departmental ownership: BMJV

Objectives:

- **Strengthen user rights for social networks against unauthorized deletions and blocks.**
- **Strengthen data portability and interoperability between social networks and messenger services.**

User rights in social networks for unauthorized deletions and blocks must be strengthened.

Data portability and interoperability in social networks and messenger services must equally be strengthened to give users more self-determination and freedom of choice for selecting providers – stronger data portability and stronger interoperability simplify switching to another provider and can have a positive impact on market choice, in particular for messenger services and social networks (reduced market entrance barriers for new providers, reduced network effects, reduction of de-facto monopolies).

Implementation steps:

- **Dialog with consumer organizations, data protection authorities, providers/industry associations, network community, and other relevant stakeholders with theme-specific discussion under the scope of the format "Discussing the Future of Social Networks".**
- **Review technical and legal detail issues.**
- **Develop concept/whitepapers for actionable options with regard to incentives for the provider side, possibly also for self-regulation, or for identified needs for additional regulations (possibly also at EU level).**

Assistance for small and mid-sized businesses for the digital transformation

Departmental ownership: BMWi

Objectives:

- **Maintain and expand competitive position of German small and midsized businesses.**
- **Sustainable support for the innovation capacity of small and midsized businesses.**

Mittelstand-Digital (www.mittelstand-digital.de) supports the digital transformation of value-added processes for small and midsized businesses (KMUs) and vocational trade businesses.

The „Mittelstand 4.0" (small and midsized business) competence centers are the central element of the funding focus. The competence center will make a scientifically based, free-of-charge program available that is tailored to the needs of KMUs and vocational trade businesses. These will support KMUs with networking and introducing Industry 4.0 applications. The specific needs of small and midsized businesses are taken into account through information, demonstration, qualification, conceptual designs, and implementation, while existing knowledge – specifically for digital technologies – is compiled in KMU-adequate form.

In parallel, the initiative „IT Security for Business" will inform KMUs about cyberspace risks and will provide specific assistance and actionable guidelines that give businesses the opportunity to sustainably improve their IT security. Starting in 2019, the initiative will be strengthened, in particular by intensifying the target-group-specific spread of its programs (e.g. by setting up a transfer facility „IT Security for Business").

A new funding program „Investment Subsidy „Digitalization for small and midsized business" is also in the planning stages. KMUs will be given targeted incentives to improve digital business processes and to generate new business models. For this purpose, investments made by KMUs into digital technologies will be supported with an innovation subsidy. Special focus is placed on investments into IT security.

The subsidy program „go-digital" aims to support small and midsized businesses up to 100 employees in the areas of „Digitalized Business Processes", „Digital Market Access", and „IT Security" based on consulting and implementation services.

Implementation steps:

- **Step-by-step installation of "Mittelstand 4.0" competence centers (completed by 1st quarter 2019, followed by additional qualitative expansion of the network).**
- **Strengthen the initiative "IT Security for Business" starting in 2019.**
- **End of 2019 (tentatively): Start new subsidy program "Investment Subsidy – Digitalization by Small and Midsized Businesses".**
- **The guideline for the current subsidy program "go-digital" expires by the end of 2021.**

Support for Industry 4.0 implementation

Departmental ownership: BMWi

Objectives:

- **Support for user-oriented implementation of Industry 4.0 across sectors for businesses in Germany, in particular for KMUs.**
- **Develop actionable recommendations, hands-on guidelines, solutions, and best practices.**
- **International collaboration and dialog regarding best practices and discussions regarding framework conditions for Industry 4.0, including in regards to standards and IT security. Associated implementation of international cooperation agreements.**

Industry 4.0 is one of the major economic policy challenges. In this regard, the Industry 4.0 platform is one of the largest Industry 4.0 networks worldwide with approximately 350 experts from the private sector, industry associations, science, unions, and politics. The work of the platform will continue to be expanded in the current legislative session, while the networking of national, regional, and industry specific stakeholders will be strengthened through a transfer network. The focus in this case will be on the user-oriented implementation ofIndustry 4.0 across sectors. As a cooperation partner with an international following, the platform is committed to developing and implementing global solutions and framework conditions for Industry 4.0, including for standards and IT security

Implementation steps:

- **Develop specific actionable recommendations, practitioner guidelines, and solutions for businesses and politics in the area of standards, IT security, legal framework conditions, labor, training and continuing education, and digital business models for Industry 4.0.**
- **Publish Industry 4.0 real-world examples, test centers, and information programs in an online format.**
- **Prepare support programs, in particular for KMUs, as part of an Industry 4.0 compass in order to support broad-based digital transformation by industry.**
- **Establish a "Transfer Network Industry 4.0" for the relevant national, regional, and industry-specific initiatives with the intent of developing and approving objective-driven support measures for businesses, in particular KMUs, in their efforts to implement Industry 4.0 in Germany.**
- **Support the relevant pilot projects with the intent of testing and validating identified actionable recommendations and solutions (including for standardization, IT security, and legal framework conditions).**
- **Implement international cooperation agreements (including with China, Japan, USA, France, Italy, EU) in order to jointly develop global solutions and framework conditions for implementing Industry 4.0. The focus of this case is placed on the topics standardization, IT security, and best practices. In addition to the associated bilateral discussion, this also includes multilateral G7/G20 dialog.**

Digitalize the university system

Research for digital university education, competition for digitally innovative universities or university associations

Departmental ownership: BMBF

Objectives:

- **New knowledge about the impact and effectiveness of digital educational formats in university educations will be developed, and the process of digitalizing university education will be given broad-based support.**

As part of the total of 4 subsidy declarations, the research focus „Digital University Education" started by BMBF addresses innovative digital teaching-learning formats and their structural design and success factors.

As stipulated in the coalition agreement, the competition for digitally innovative universities or university alliances intends to support universities in the process of digitalizing their entire service spectrum. This implies the conclusion of an agreement between the Federation and Länder.

The competition is designed to give universities broad-based support for developing and implementing comprehensive digital strategies for the entire service spectrum of universities, while facilitating the objective-driven inception of synergies between the various service areas.

Implementation steps:

- **End of 2018: Subsidy declaration for digital subject-matter concepts.**
- **Digitalization competition: Federation-Länder negotiations under the scope of the joint science conference.**

Digitalize the science system – national research data infrastructure (NFDI)

Departmental ownership: BMBF

Objectives:

- **Build a network infrastructure and establish a governance structure.**
- **Successively select and subsidize up to 30 consortiums.**
- **Develop high-level services, common standards, and methods**

Consolidate and systematize today's frequently decentralized and temporary data pools by building a federal and networked knowledge base to sustainably secure and utilize research data with the intent of strengthening the German science and innovation system – also for international competition. Develop a sustainable interoperable research data management capability; establish processes and methods accepted by scientific disciplines for standardized handling of research data.

Implementation steps:

- **November 2018 (tentatively): Conclude a Federation-Länder agreement.**
- **Tender for the first consortiums starting in 2019; build a governance structure; two additional tender rounds in the following years.**

Research and development regarding “Jobs of the future”

Departmental ownership: BMBF

Work is increasingly shaped by digital information and a technical work environment. It is already foreseeable today that essentially all future jobs will make use of digital technology. Job descriptions, tasks, and job profiles are changing at the same time. These developments present many opportunities. New forms of work can lead to better work-life balance and can more readily adapt the work environment to the needs of the individual. However, it also presents substantial challenges for employers, in particular for small and midsized businesses.

Innovations, qualifications, and skills development are the key to raise the economic opportunities presented by digitalization and to unlock opportunities for accessing the labor market of the future.

Objectives:

- **Develop new concepts for workflow design and organization between research and business partners and transition to operational practice.**
- **Design the digital working world of the future based on health-preserving, safety, ecological, cost efficiency, and sustainability principles**

Our research funding for the work of the future intends to find answers to questions about how the working world can be designed based on health-preserving, safety, ecological, cost efficiency, and sustainability principles. We do so by driving the development of technical and social innovations. We intend to accelerate the skills development for the work of thefuture by researching, developing, and testing new forms of work design and work organization and by raising new value-added opportunities at the interfaces between sectors and industries. We also intend to support the development of companies of the future with innovative forms of human-technology interaction. Our related measures in this case specifically target support for small and midsized businesses..

Implementation steps:

- **Install regional competence centers for work research to more closely mesh work research, operational practices, and university educations and to create points of contact, in particular for workers and for small and midsized businesses.**
- **Research the impact of artificial intelligence on the working world and install related competence centers.**
- **Develop transferable tools and business models for humane work design in hybrid value-added systems.**
- **Subsidize innovative concepts for human resource development and competence management.**
- **Measures for comprehensive health protection and for the prevention of work-induced physical and psychological stress.**

Subsidize the installation of experimentation spaces for businesses

Departmental ownership: BMAS

Objectives:

- **Create more jobs**
- **Impulses for designing change processes at the operational level.**

The coalition agreement stipulates the mandate to subsidize and continue developing the initiative „New Quality of Work“. This also includes the experimentation space already mentioned in the „Work 4.0“ whitebook. The „experimentierräume.de“ platform was developed for this purpose, giving businesses a vehicle for presenting their results. The subsidy guideline „Future-Proof Businesses and Administrations in Light of the Digital Transformation“ was additionally published.

Implementation steps:

- **November 2018: Start project funding on the basis of the aforementioned guideline.**

“Intelligent packaging and refrigerators”

Departmental ownership: BMEL

Objectives:

- **Conserve resources,**
- **implement food safety,**
- **promote healthier nutrition.**

The blockchain technology giving us unambiguous traceability of foods down to the field or stall level, the refrigerator sending a message to the smart phone that the milk empty: all of these are popular examples for how digitalization has penetrated the food chain. The BMEL will subsidize the development of „intelligent packaging“ that displays information about the current and actual quality of a food item. For example, if the refrigeration chain is interrupted, the packaging will show that a product can only be consumed with restrictions. Conversely, the packaging can also detect when a product continues to offer good quality after the minimum shelf life has expired.

Implementation steps:

- **The collaborative initiative FRESH is developing intelligent packaging with integrated, color-change-based sensor functions to indicate the microbiological quality of food items. Objective: Improve product safety and reduce food waste at the end of the value-added chain (ongoing).**
- **The research initiative “IntelliDate” uses ESL milk as an example to develop a forecasting algorithm for the entire value-added chain (ongoing).**
- **The research initiative “IntelliPack” is developing intelligent packaging solutions for improving resource efficiency in supply chains for foods with refrigeration requirements (ongoing).**

Digital map “Rescue Point – Forest”

Departmental ownership: BMEL

On orders by the Federation and Länder, the Board of Trustees for Forestry Management and Forestry Technology (Kuratorium für Waldarbeit und Forsttechnik e. V.) is compiling the information and geodata for forest-based rescue locations available in forest lands and will make these available in a nationwide database.

Objectives:

- **Generate a digital map with rescue locations to optimize the rescue chains and logistical issues related to agriculture and forestry.**

The nationwide database will then be available online at no charge to the public and to authorities and organizations charged with safety tasks, and can be visualized with zoom functionality in user interfaces.

The data pool will continue to be enhanced and in particular needs to be updated with municipal and private forest land data. By linking the data with an already available database for navigable forest routes (NavLog), rescue leadtimes can be significantly shortened while optimizing logistical processes.

Over the midterm, the system of rescue points will be expanded beyond forestlands to the entire rural land area.

Implementation steps:

- **Develop a nationwide standard for expanding rescue points.**
- **Create a nationwide database structure for digital representation.**
- **Build a quality assurance system for the recorded data.**
- **Nationwide recording and compilation of available rescue points into a complete national database.**
- **Complete the rescue point network.**
- **Web-based platform for visualizing and forwarding the data.**

Digital experimentation fields in agriculture

Departmental ownership: BMEL

Objectives:

- **Set up several experimentation fields in various Länder.**

Digital experimentation fields are digital test fields in agricultural businesses that examine how the use of digital methods can be optimized for the protection of the environment, to the benefit of animals, biodiversity, and to simplify work. This will be accomplished by setting up and operating agricultural experimentation fields that will be operated by coordinating and networking these. The mission for these experimentation fields also includes technology and knowledge transfer, both for agricultural practices and also in upstream and downstream functions, and to the general public.

As stipulated in the coalition agreement, the intent is to leverage the opportunities presented by digitalization and to leverage the opportunities presented by digitalization for agricultural production.

Implementation steps:

- **Set up several experimentation fields in various Länder.**

Opportunities for digitalizing climate protection

Departmental ownership: BMU

Germany is a contract state of the Framework Convention on Climate Change and has ratified the Paris Convention. Germany's long-term strategy – the Climate Protection Plan 2050 – stipulates that Germany must become greenhouse-gas-neutral by 2050.

Objectives:

- **Forward-looking: Greenhouse-gas-neutral design of the digital policy activities of the Federal Government.**
- **Raise the decarbonization opportunities in industrial processes associated with digitalization.**

Module 1:

An ongoing initiative accompanies the cross-departmental implementation strategy of the Federal Government. Tools and knowledge will be made available to the departments allowing them to make (or contract) ex ante and ex post assessments about the impact their activities have on reducing greenhouse gas emissions. The „Climate Protection" science platform will be integrated appropriately.

Module 2:

In order to largely achieve greenhouse-gas neutrality by midcentury, industry must also contribute as the driver for investments, innovation, and employment. With respect to climate compatibility, primarily the sectors iron and steel, nonferrous metallurgy, cement and lime, and the chemical industry are confronted with special challenges Several of the (primary) industries important for Germany can only realize the required climate protection contributions – which are also generated with digitalization – with technological leapfrog innovations. However, certain industries are unable to finance the required innovations from income. This is where the „Decarbonization" subsidy program stipulated in the coalition agreement kicks in.

Implementation steps:

- **Regular reporting to the Cabinet committee "Digitalization" about the climate impact of adopted implementation measures.**
- **Module 2 continues to be subject to budgetary review; guideline development expected in 2019, start of funding in 2020.**

Opportunities for digitalizing environmentally compatible urban and rural living

Departmental ownership: BMU

Objectives:

- **Improve nature conservation and increase use of digital methods.**
- **Operational monitoring center for biodiversity.**
- **Implement opportunities for environmentally-friendly and climate-compatible mobility.**

Module 1: Smart Nature

Use innovative digital methods (including pattern recognition, data management, artificial intelligence, also in conjunction with DNA analysis and remote exploration) to identify species, and to record and assess the status of populations and habitats. The monitoring center stipulated in the coalition agreement will play a related central role based on its networking function with research and transparent external communication. The results will be used to optimize objective-driven nature conservation, to supply information about the effects of interventions in nature and about the effects of conservation measures, which can then also be put to long-term use for commercial biodiversity management and permitting. Participation processes and citizen science approaches can also benefit from this.

An example for the citizen science approach is the „Naturblick“ app subsidized by the BMU, an instrument for identifying species in urban areas.

Module 2: Environmentally compatible mobility

Opportunities will be identified for digitalizing traffic/logistics, etc. for environmentally-compatible mobility in urban and rural areas. The framework conditions required to put these opportunities into practice and to avoid negative effects will also be determined.

Implementation steps:

- **By end of 2020/2021: Set up the monitoring center.**
- **Dialog on opportunities for digitalizing mobility; ecological assessment of opportunities and identification of suitable framework conditions**
- **Develop a set of instruments for capturing opportunities.**

Sustainable consumption in the context of digitalization

Departmental ownership: BMU

Objectives:

- **Develop a "Policy outlook for sustainable consumption in the digital age" and implement specific measures on a pilot basis.**
- **Build foundational subject-matter knowledge for ongoing NPNK development.**

The structural, technological, and cultural changes associated with digitalization have a significant impact on our consumer society and the opportunities to shape it in terms of sustainability. Profound transformations are becoming evident: Whereas for example brick-and-mortar retail is largely stagnant, online commerce is booming. But a much more profound development has long since been under the way under the „Consumerism 4.0" heading: Consumerism 4.0 refers to new types of consumer processes by which digitalization has a significant influence on how offers, search processes, and purchasing decisions are made, and how preferences are formed, and how these are reflected in the market and in people's daily lives.

With regard to subsidies and the societal realization of sustainable consumption, the previously established design and influence options are coming up against new limits. A guide for the digitalization-induced new actionable rationalities and shaping approaches continues to be absent.

In the context of implementing the national program for sustainable consumption (NPNK), there are then currently three major challenges that the project will address:

- ecologicalization of digital markets and product offers, including the associated environmentally oriented communication, information, and marketing strategies.
- Sustainability of digital lifestyles.
- Policy for sustainable consumption in the digital age.

Implementation steps:

- **Form an innovation alliance for "Digitalization for sustainable consumption".**
- **Pilot implementation of concrete formats.**
- **Analysis of overall process, where appropriate with references to potential enhancements of the NPNK.**
- **Expert conference "Ecologicalization of e-commerce" in the planning stages.**

Opportunities for digitalizing resource efficiency

German resource efficiency program – ProgRess III

Departmental ownership: BMU

The German resource efficiency program (ProgRess) is a significant instrument of the national, European, and international resource efficiency policy. Since 2016, the program's objective is to secure a sustainable raw material supply, to increase production resource efficiency, to design products and influence consumption toward better resource efficiency, and to expand the resource efficiency of the closed-loop economy. The term of ProgRess II will end in 2020. The coalition agreement stipulates that ProgRess will continue to be developed based on the principle „Volunteering before Commandeering".

Objectives:

- **Update ProgRess with special focus on the effects of digitalization.**

ProgRess III will take an in-depth look at the interactions of digitalization and resource efficiency. In setting up ProgRess III, the digitalization topic will continue to be developed in various places, primarily in the spirit of Industry 4.0.

The required technical innovations provide an opportunity for strengthening the German leadership role in regards to environmental protection and technology. However, the high-level expansion of the required infrastructure, networks, and nodes (data centers) is associated with a massive use of resources and environmental effects.

Implementation steps:

- **By spring of 2020: Set up ProgRess III; this involves: Inter-Ministerial collaboration; stakeholder involvement; Bundestag deliberations, where appropriate**

Impulses and subsidies for digital innovation technologies in the mobility sector (focus on data innovations and artificial intelligence in vehicles, infrastructure, systems)

Departmental ownership: BMVI

Objectives:

- **Significant impulses for digital innovations in the mobility area.**

The research initiative mFUND of the BMVI creates a data-based subsidy program for supporting innovations and business ideas for Mobility 4.0, which will continue to be funded and developed. A rigorous open data approach will be pursued in this case.

Across all mobility modes, mFUND covers a broad spectrum of data innovations, the results of which will generate increased safety and convenience, improved efficiency, and cost reductions for vehicles, infrastructure, and overall systems.

Subsidies will be granted to the private sector, science, and administration, as well as civilian society organizations. The subsidies will in particular also benefit small and midsized businesses (KMUs) and startups. This will strengthen entrepreneurship in Germany, while new stakeholders will be supported in their efforts to develop innovative business ideas.

Implementation steps:

- **A total of EUR 150 million are available until the end of 2020.**
- **Since the program started, already about 150 projects have received subsidies and total funding of more than EUR 125 million has been awarded.**
- **Startups or KMUs are involved in more than 100 mFUND projects.**

Legally certain implementation of innovative digital business models for regional public transportation (ÖPNV) with focus on mobility platforms

Departmental ownership: BMVI

The core initiative is to create a secure legal framework for innovative digitally based mobility services for shared use (ridesharing/ride pooling), with the underlying changes of the passenger transportation laws (here in particular the „Passenger Transportation Act“) as the key lever.

As stipulated in the coalition agreement, the passenger transportation law will be modernized in order to adapt it to the changing mobility needs of people and new technical developments.

Objectives:

- **Legal protections and regulations for mobility concepts based on digital intermediaries with particular focus on flexible, demand-driven transportation services in rural areas and sustainably shared mobility with high utilization rates for metropolitan areas.**

This involves ensuring a fair balance between the various transportation modes. In this spirit, the taxi and rental car sector must benefit from regulatory relief. However, municipalities must at the same time be given the necessary control options to maintain the functionality and attractiveness of regional public transportation (ÖPNV). New digital mobility services must supplement and not displace regional public transportation and taxis.

Given this background, in particular on-demand transportation services (such as innovative pooling models) must be granted legal certainty.

Based on mobility services more closely oriented to user needs, motorized personal mobility in cities must be reduced, and a better supply of affordable mobility services must be ensured in rural areas.

Implementation steps:

- **Develop consensus-ready proposals for changing the passenger transportation laws.**
- **Draft a corresponding bill for changing the passenger transportation laws.**

Use big data for early warning and analysis of developing crises

Data-supported crisis early warning and analysis support tool PREVIEW

Departmental ownership: AA

Objectives:

- **PREVIEW is designed to improve the Federal Government's forecasting and analysis ability for crisis early warning.**

The Foreign Office – having functional leadership for crisis early warning based on the Federal Government's guiding principle „Crisis Prevention, Conflict Management, Peace Building" – is relying on this project to pursue the Federal Government's stipulated objective of sharpening its analysis instruments and to more rigorously pool the intelligence gathered by the departments. This is accomplished by linking, aggregating, and harmonizing data from publicly available databases and news sources. The prepared data sets are then made available on the PREVIEW platform and can be analyzed by data scientists on an application-specific basis or analyzed by users directly with self-service solutions. Illustrative documentation for evidence-based or data-driven decision support can then be prepared with support from various visualization tools.

Implementation steps:

- **Continue to develop and expand the PREVIEW platform.**
- **Building on PREVIEW, a preview and evidence platform will subsequently be created as part of the Federal Government's IT consolidation. This will give the Federal Government consolidated and structured access to information and (research) results.**

Product lifecycle management

Departmental ownership: BMVg

Objectives:

- **Compress the planning and development leadtimes for new and complex military goods.**
- **New systems must more rapidly achieve deployment maturity.**
- **Increase the level of materiel deployment readiness, in particular for primary weapons systems.**
- **Improve plannability for appropriating the required expenses for materiel upkeep.**

PLM is a concept that ensures preparing, managing, analyzing, and provisioning of product and use data across the entire product lifecycle. The components include PLM processes and functionality, rigorous IT support, and comprehensive PLM governance. These are linked based on mutual dependency and are therefore essential for a successful implementation.

Implementation steps:

- **March 2018: Prepare "Objective Profile PLM@Bw" (completed).**
- **August 2018: Conduct three feasibility studies and prepare a draft for an implementation concept (completed),**
- **followed by the expected completion of further validation projects and preparation of implementation phase.**
- **Followed by multi-year timeline: Incremental implementation and subsequent operational transfer.**

Cyber Innovation Hub

Departmental ownership: BMVg

Objectives:

- **Identify innovative technologies from the international startup ecosystem related to cyber and information technology with application potential for the Bundeswehr and validate these technologies in regards to their suitability for the needs of the Bundeswehr.**
- **Understand best practices of disruptive innovators, shape the exchange of experiences as thought leader and set impulses for increasing the innovation capacity of, and establish an innovation culture for, the Bundeswehr.**
- **Actively contribute toward a positive perception of the Bundeswehr as an innovative organization and attractive employer.**
- **Involve inventors, innovators, entrepreneurs, and other talent from the digital economy, and attract these for collaborations with the Bundeswehr.**

The Cyber Innovation Hub must:

- Intensify the interface to the entrepreneur ecosystem, e. g. between the IT startup ecosystem and the Bundeswehr in Europe.
- Drive digital innovations for the Bundeswehr.
- Identify innovative technologies in the international startup ecosystem and develop and validate these for the Bundeswehr; special focus in this case is on disruptive technologies from the areas cyber/IT and digital products and services.
- Leverage the interface functions for building a new network for research, businesses, and the military.
- Act as interface to innovation stakeholders; the focus in this case is on monitoring information technologies related to cyber-security and digitalization and to penetrate the startup ecosystem.
- Operate an interaction, knowledge, and information platform for startups and entrepreneurs.

Implementation steps:

- **2017: Start pilot project implementation.**
- **2018: Evaluate the pilot project and concept for sustainable deployment.**
- **2019: Detailed planning of an organizational structure and process organization.**

Research framework program of the Federal Government for IT security "Secure in the digital world with self-determination"

Departmental ownership: BMBF

Secure information and communication systems are a necessary prerequisite for business and societal life and for the ability of the State to operate in a networked world. The Federal Government's research master program addresses one of the pressing challenges of our networked, digitalized society: protection from cyber attacks and strengthening the privacy of citizens.

Objectives:

- **Protect citizens, businesses, and the State against illegal access to data and attacks on digital systems and the associated loss of trust in their ability to function.**
- **Research and continue to develop innovative technological foundations for IT security as indispensable core competence for Germany.**
- **Create a platform for a future interception-proof quantum communication and new post-quantum cryptography methods.**

Germany must confront this challenge to continue strengthening the competitiveness in regards to IT security and to honor its State mission to protect the well-being even in the digital world. Citizens must in this case be supported in their efforts to better exercise their right for informational self-determination and privacy.

This will be accomplished by consolidating, focusing, and jointly representing the relevant research activities of the departments to the outside, even at the European and international level.

Implementation steps:

- **Strengthen the three competence centers for IT security research: KASTEL in Karlsruhe, CISPA in Saarbrücken (as per 01/01/2019 will be the new Helmholtz Center for Information Security) and CRISP in Darmstadt (will become the National Research Center for Applied Cyber-Security).**
- **An innovative policy focus will be placed on new IT security concepts for Industry 4.0. The national reference project for IT security in Industry 4.0 "IUNO" has developed a wide range of reference solutions for small and midsized businesses that will now be enhanced to deployment maturity.**
- **The inter-disciplinary "Privacy Forum" has established itself as a substantiated voice in legal, ethical, and sociological and technical aspects related to privacy and self-determination in the digital world.**
- **Subsidy focus points have now been started under the headings "Privacy and informational self-determination in the digital working world", "Security for autonomous mobility", "Application scenarios for quantum communication" and "Post-quantum cryptography".**

“Agency for cyber-security innovation”

Install an agency for cyber-security information for internal and external security applications

Departmental ownership: BMVg, BMI

Objectives:

- **Demand-oriented, objective-driven research funding of ambitious cyber-security technologies and related key technologies**
- **Maintain technological superiority in the cyber and information space**

Under the functional leadership of the BMVg and the BMI, an „Agency for Cyber-Security Innovation“ will be created to ensure technological innovation leadership. The agency‘s purpose is to target subsidies toward research initiatives with high innovation potential related to cyber-security and associated key technologies to address the internal and external security demands of the State. The agency will in particular subsidize those innovative initiatives characterized by radical technological innovation with associated market-changing impact.

Implementation steps:

- **August 29, 2018: Federal cabinet to resolve formation.**

Societal shift toward digitalization

Our common guiding principles

Digitalization calls for values: The individual must be at the center of all considerations and initiatives of the Federal Government – even in the digital age. Regardless of whether the individual has an open mind toward digitalization, is fearful or has concerns, or is indifferent to the digital world: The digital transformation must improve the lives of citizens. We want to keep our country togetherand move forward securely.

We firmly believe: positive progress can only unfold when the digital transformation is firmly anchored at the center of society, when it is accepted by all societal groups, and when all groups can equally share in its opportunities. We want to establish the framework conditions to make this happen: nationally, across Europe, and globally.

Ethics for a society in digital transformation

New, data-based technologies are already shaping our daily lives. As a society we need to answer the question of what role we want to assign to these going forward.

We will therefore develop ethics guidelines for responsible digital transformation – to protect the individual, to preserve our societal fabric, and to protect our quality of life. We will gather scientific and technical expertise for this purpose. But this also calls for a digitally competent civilian society that actively engages in this discussion. Throughout all of these activities, we will ensure that citizens who do not communicate digitally have access to analog structures.

The review of data-related ethical issues will inject new speed into the digital development and also define a path that resolves societal conflicts related to data policy and that allows modern data laws to develop.

One thing is clear: „Focus on the individual" also means that the individual must never only be a random factor in an algorithm. Protection of constitutional rights, in particular the protection of personality rights and of informational self-determination must always remain the essential standard. We will therefore make the use of algorithm-based forecasting and decision-making systems traceable and transparent. The protection of constitutional rights and ethical values must be taken in account from the very start when developing applications.

We want to create the framework conditions that allow society to properly manage the digital transformation – with a tempered approach and for new opportunities.

City and country

The digital transformation must improve people's lives where they live. Digitalization must be moved forward locally with, and to the benefit of, people and together with the regional economy. We want to preserve leeway and to prevent a digital rift. Our country has municipalities worth living in – this must

continue to be the case during the digital transformation. Major opportunities are created, particularly in rural areas. We want to take advantage of these together.

Culture and media

Digitalization is also having a profound impact on the arts and culture, and media. Cultural facilities must be positioned such that they can continue to fulfill their mission even in an environment increasingly shaped by digital developments.

Environment

In addition to people, our attention must also be toward nature. Digitalization must proceed in an environmentally compatible way and we must leverage digital capabilities to protect nature.

Mobility

Mobility is a fundamental personal freedom and essential for participating in societal life. The digital transformation must make mobility simpler, cleaner, and safer for everyone.

There are already highly-specific concepts and developments for self-driving cars and other autonomous transportation systems. This will change the relationship between people and machinery. We intend to accompany this transformation with a societal dialog to ensure that we jointly succeed in taking full advantage of the opportunities presented by digitalization for the mobility of tomorrow.

Working life

Today, the transformation can already be felt in the work environment in a variety of ways. The digital transformation can result in more jobs. But it can also replace human activities with automation. It can create new options for flexible work schedule models. But it can also give rise to new work schedule models, for example for so-called platform work, which may present new issues for an appropriate social safety net. Both must be given due consideration.

Europe

The digital transformation does not stop at the national border. The framework conditions can therefore also not end at the national border. This is particularly true for economic policy issues. We can only successfully compete on a worldwide basis together as the European Union. We therefore want to – and must – take a European approach. The key step for this is to finalize a standardized digital single market. We can only prevail economically and jointly shape the digital transformation as a European society if we have common rules.

Worldwide

Europe is also embedded into larger, worldwide relationships. And just like the analog world does not end at the external borders, the digital world equally does not end at these. Given the development objectives of the United Nations, the mandate is to leverage technical and scientific progress worldwide to tackle economic, ecological, and social challenges. The UN Agenda 2030 for sustainable development provides the required policy framework with its comprehensive list of objectives. We want to promote democracy, the rule of law, and sustainable development worldwide, and also to leverage the new digital opportunities in this respect. We intend to specifically and responsibly promote the digital transformation in developing countries based on a partnership approach, to create a new outlook, and to thus lay the local foundation for a desirable future. We also want to learn from the experiences in other countries and to jointly shape the global digital society.

International security policy

The digital world of course also brings new threats. It is therefore important that we continue to actively contribute to the European and international cyber-security policy. International cooperations and compliance with common standards promotes mutual trust, also as it relates to matters of cyber and

information security. This protects our country, our partners, and our allies. The strategic foundations for the new tasks in the security and cyber and information space were presented together with the whitebook of the Federal Government and the cyber security strategy of the Federal Government 2016. At the same time, digitalization offers new opportunities for security policy communication. Citizens can therefore quickly and competently interact on security policy topics as the need arises.

How we intend to achieve our objectives

Initiative: BMI, BMJV	**Target Group:**
Data ethics commission and forward-looking data policy	Administration; Federal Government; Lawmakers; Governments of other EU member states and third-party states; Businesses; Citizens

Benefits:

- We provide ethical guidelines and actionable recommendations for access to, for handling and trading with, and for rights related to, data.

Initiative: BMF, BMWi	**Target Group:**
Shaping the data economy	Businesses; Workers; Citizens; Administration; Public Authorities

Benefits:

- We engage in discussions about legal, institutional, regulatory, and cultural adjustment requirements under the conditions of big data and data-rich markets.

Initiative: BMJV, BMWi	**Target Group:**
Make algorithm-based decisions verifiable	Consumers

Benefits:

- We will ensure that inadmissible unequal treatment is identified and prevented based on transparency and verifiability of algorithm-based forecasts and decisions.

Initiative: BMI	**Target Group:**
End-to-end, situationally appropriate level of cyber and information security related to digitalization	Citizens; Businesses; Administration

Benefits:

- We will create and/or ensure end-to-end, situationally appropriate level of cyber and information security related to digitalization.

Initiative: BKM	**Target Group:**
Expand the German Digital Library (Deutsche Digitale Bibliothek (DDB))	Citizens; Children and youths Students; Clubs/Industry Associations; Researchers;

Benefits:

- We will continue to expand the central national Internet portal for public cultural and knowledge facilities in all sectors (archives, libraries, museums, media libraries).

Initiative: BKM	**Target Group:**
Digitalization strategy of the Federal Government for the cultural space	Citizens; Cultural Facilities; Clubs/Industry Associations; Students;

Benefits:

- We will support the digital transformation of cultural facilities in all sectors.

Initiative: BKM	**Target Group:**
Digitalize inventories by the Federal Archives, the German National Library, and the International Search Service	Citizens; Children and youths Clubs/Industry Associations; Students

Benefits:

- We will digitalize archive, film, and library assets.

Initiative: BKM	**Target Group:**
Digitalize the national film heritage	Citizens; Film Makers and Commercializers; Cinemas and Festivals; Film Heritage Facilities and Archives

Benefits:

- We will secure the national analog cinema heritage in order to make it available for future generations.
- We provide the option to continue cost-effectively commercializing films, to digitalize films based on curated, historical film standards, and to rescue those films at risk of decay.

Initiative: BKM	**Target Group:**
Museum 4.0 – Digital strategies for the museum of the future	Citizens; Children and youths Clubs/Industry Associations; Students;

Benefits:

- We will give museum visitors the ability to better engage with museums by using modern digital technology.
- We will develop customized knowledge transfer tools to invoke the curiosity of museum visitors for the museum as a space for learning and experiencing and to address additional target groups.

Initiative: BKM	**Target Group:**
German Film Subsidy Fund (Deutscher Filmförderfonds) II	Businesses; Citizens; Administration; Industry;

Benefits:

- Improved utilization and expansion of German production service providers (VFX enterprises); innovative synergies for other sectors.

VInitiative: BKM	**Target Group:**
Set up a research database for provenance research	Researchers; Citizens; Administration; Students; Researchers;

Benefits:

- We will create a research database for compiling, documenting, opening, and linking relevant information inventories for provenance research..

Initiative: BMFSFJ	**Target Group:**
Build digital fitness of structures of civilian society: Digitalize the umbrella associations of the non-statutory welfare sector (Freie Wohlfahrtspflege)	Associations active in the non-statutory welfare sector Clubs; Citizens;

Benefits:

- We will empower central organizations of civilian society to tackle and jointly shape the digital transformation in the welfare sector.

Initiative: BMI	**Target Group:**
Digital urban development and promoting Smart Cities	Municipalities of various sizes and structures; municipal enterprises; Citizens; Science

Benefits:

- We will shape digitalization in cities, counties, and municipalities in the spirit of sustainable and integrated urban development for communities worth living in.

Initiative: BMEL	**Target Group:**
Model initiative "Smart Rural Regions" under the scope of the Federal "Rural Development" program.	Citizens in rural regions; County Administrations

Benefits:

- We will develop digital solutions to improve the quality of life in selected rural regions. On the basis of regional digitalization strategies, the model regions shall optimize their use of the opportunities presented by digitalization for local actors.

Initiative: BMEL	**Target Group:**
"Land.Digital: Opportunities of digitalization for rural regions"	Natural and legal persons; Private Initiatives; Private Organizations and Enterprises; Municipalities, Cities, Counties

Benefits:

- We will support innovative projects at the local level that want to take long-term advantage of the opportunities presented by using and networking information and communications technologies to solve problems in rural regions.

Initiative: BMU	**Target Group:**
Digital participation and online dialog formats	Citizens;

Benefits:

- We will expand our online dialog formats and will develop new participation formats in the social media channels of the BMU.
- We will test new digital participation formats for statutory initiatives of the BMU.

Initiative: BMG	**Target Group:**
Tap into the advantages of mobile applications and simplify market access for useful digital applications in healthcare.	Patients; Citizens; Health Insurance and Long-Term Care Insurance Carriers; Doctors; Caregivers (family caregivers and professional caregivers)

Benefits:

- We will facilitate the use of reliable apps that have a medical benefit.
- We will support patient self-management of their health and treatments with reliable online services.
- We will give innovative enterprises the ability to gain faster access to the primary health market with useful medical products (reimbursement through statutory health insurance).

Initiative: BMVI, BMBF, BMWi	**Target Group:**
Automated and networked mobility	Economy; Businesses; Science; Citizens

Benefits:

- Automated, networked mobility is a central component for the mobility of the future.
- We will leverage automated and networked mobility to improve traffic safety and traffic efficiency, and will create the legal framework conditions required for this.
- We will support reducing mobility-related emissions.
- We will facilitate new mobility services that permit all parts of society to participate in the innovations of automated and networked mobility.
- We will move forward research and development for autonomous mobility under the scope of the Autonomous Mobility research agenda.

Initiative: BMJV	**Target Group:**
Review liability regulations for autonomous systems and adjust these as needed.	Citizens; Businesses; Administration

Benefits:

- We will create legal certainty for use of autonomous systems by reviewing and adjusting liability laws as needed at the national and/or European level.

Initiative: BMVI	**Target Group:**
Data availability as a foundation for digitalizing mobility	Economy; Businesses; Administration; Science; Citizens

Benefits:

- We will create a data-protection-compliant, high-quality mobility system on the basis of comprehensive and accurate data that will benefit all mobility participants, in particular citizens

Initiative: BMAS	**Target Group:**
Experimentation clause in ArbZG for testing flexible work schedule models	Employees; Citizens; Administration

Benefits:

- We will create greater flexibility for businesses by giving workers the ability to determine their own work schedule.

Initiative: BMBF	**Target Group:**
MINT initiative	Children and youths Pupils; Educators; Trainees and Students; Citizens; Teachers

Benefits:

- We will increase the attractiveness of MINT subjects for the public.
- We will ensure the availability of trained workers in the MINT area.
- By creating a modern and welcoming work environment (including at authorities), workers with IT affinity, as well as innovative and possibly unconventional workers (“Geeks”) will be able to find a motivating and productive work environment.

Initiative: BMAS	**Target Group:**
Employment relationships and social safety net for platform work	Freelancers; Employees;

Benefits:

- We will ensure good working conditions and an appropriate social safety net for platform work.

Initiative: BMAS	**Target Group:**
Continuation of the national action plan for the UN Convention on the Rights of Persons with Disabilities with a focus on "Digitalization and Inclusion"	Persons with Disabilities; Administration; Employers; Private Service Providers; Businesses

Benefits:

- We will leverage digitalization to create better opportunities for persons with disabilities to participate in societal life.

Initiative: BMF	**Target Group:**
Subsidize digitalization of the finance industry	Finance Industry; Businesses; Citizens;

Benefits:

- We will create the framework conditions to safely use innovative financial services and products.

Initiative: BMWi	**Target Group:**
Finalize the digital single market	Businesses; Citizens; State Institutions

Benefits:

- We will secure the competitiveness of Europe by making a unified digital single market a reality.
- We give the citizens and businesses the ability to leverage the benefits of digital transformation within a digital single market.
- We categorically intend to avoid unilateral national regulations to simplify the European-wide implementation of digital business models.

Initiative: BMWi	**Target Group:**
Formulate a digital regulatory policy	Businesses; Startups; State Institutions; Workers; Citizens

Benefits:

- Our objective is to leverage the opportunities presented by digitalization for prosperity and growth and to enhance the model of the social market economy in terms of legal, institutional, regulatory, and cultural aspects under digital conditions (shaping the data economy).
- For this purpose, we will formulate a digital regulatory policy that supports the digital transformation by establishing economic policy framework conditions, while at the same time preserving competitive principles and social sustainability.
- We will modernize competition and anti-trust laws to create outstanding regulatory framework conditions for the German and European digital economy.
- We will create regulations allowing anti-trust regulators to quickly and effectively stop the misuse of market power, primarily in quickly changing markets. For this purpose, we will enhance the anti-trust regulatory supervision, particularly with respect to misuses by platform companies.

Initiative: BMZ	**Target Group:**
Digitalized Africa under the scope of the Digital Africa initiative – in particular with contributions in the sectors health, proper national governance, and education	Citizens in African countries; governments in developing countries, in particular ministries for health, administrative reforms, education, and their secondary authorities/institutions; private sector; civilian society

Benefits:

- *B*ased on the digital progress achieved by the projects of the "Digital Africa" initiative, we will facilitate better health, better participation opportunities, and better education. Since 2015, we have made funding available in excess of EUR 150 million for this purpose.

Initiative: BMZ	**Target Group:**
Promote the digital economy in developing countries, in particular cooperations with the private sector in the tech field and use of digital trading	Governments; Trade Ministries in developing countries, in particular economy and trading ministries; Citizens; Workers; German and African businesses

Benefits:

- We will promote the digital economy in partner countries of the German development collaborative to stimulate economic growth and employment. In particular, we intend to leverage the opportunities presented by digitalization for greater trade and more partnerships with the German digital economy, and to initiate better national regulations.

Initiative: AA	**Target Group:**
Strategic communication in the competition of narratives	Citizens at home and abroad; Administration

Benefits:

- We will communicate Germany's foreign policy to convey policies and to increase interest.
- We will communicate reliable and realistic information broad to explain and make German and European policies more readily understandable.
- We will identify disinformation and respond effectively.

Initiative: AA	**Target Group:**
Cyber foreign policy and cyber security for foreign policy	Citizens; Businesses; Administration

Benefits:

- We will ensure coherent foreign policy activity in regards to cyber-security.

Initiative: BMVg	**Target Group:**
Cyber cluster of the University of the Bundeswehr Munich	Officers; Officer Candidates; Officials of Security Authorities

Benefits:

- We will strengthen science research and science education, training, and continuing education related to cyber defense and information technology at the University of the Bundeswehr in conjunction with cooperation partners, e.g. ZITiS.

Initiative: AA	**Target Group:**
Define international limits for developing lethal autonomous weapon systems (LAWS)	Citizens; Businesses; Administration

Benefits:

- We will create regulations to ban lethal autonomous weapons systems.

Initiative: BMVg	**Target Group:**
Virtualize the Federal Academy for Security Policy (Bundesakademie für Sicherheitspolitik)	Administration;

Benefits:

- We will modernize and outfit the Federal Academy for Security Policy (Bundesakademie für Sicherheitspolitik (BAKS)) with the latest equipment.

Data ethics commission and forward-looking data policy

Departmental ownership: BMI, BMJV

Objectives:

- **Develop ethical guidelines for protecting the individual, for maintaining the societal fabric, and for protecting prosperity in the information age on the basis of scientific and technical expertise.**
- **Propose recommended actions and regulatory options.**

The coalition agreement stipulates installing a data ethics commission regarding the topics data policy, algorithms, artificial intelligence, and digital innovations. The committee is staffed with high-ranking and interdisciplinary experts, and started its work on September 4, 2018. The Federal Government has assigned key issues to the data ethics commission. These issues determine the boundaries within which the data ethics commission will independently prepare its report under its own direction.

Implementation steps:

- **Monthly meetings of the data ethics commission.**
- **Fall 2019: Final report.**

Shaping the data economy

Departmental ownership: BMF, BMWi

Objectives:

- **Safeguard the future viability and global competitiveness of the German economy.**
- **Protect prosperity and the societal fabric and the capabilities of the State to provide public services.**

Engage in discussions about legal, institutional, regulatory, and cultural adjustment requirements under the conditions of big data and data-rich markets.

Implementation steps:

- **Analytical and conceptual deliberations concerning relevant issues and actionable areas, including definition of strategic objectives.**
- **Dialog with stakeholders.**
- **Develop scenarios, actionable recommendations, and adjustment requirements.**
- **Building on these, develop options for shaping the national and international regulatory framework.**

Make algorithm-based decisions verifiable

Departmental ownership: BMJV, BMWi

Objectives:

- **Prevent inadmissible discrimination related to the use of algorithm-based decisions.**

Examine how consumers can be protected by making algorithm-based decisions verifiable with respect to potentially inadmissible discrimination, disadvantages, and fraud, and develop actionable recommendations.

Implementation steps:

- **Identify areas where the use of algorithm-based systems is particularly sensitive for consumers.**
- **Review the current legal framework.**
- **Develop actionable recommendations and applicable regulatory options for algorithm-based decisions classified as reviewable.**

End-to-end, situationally appropriate level of cyber and information security related to digitalization

Departmental ownership: BMI

Objectives:

- **Create and/or ensure end-to-end, situationally appropriate level of cyber and information security related to digitalization**

Cyber and information security is a cross-sectional topic of major significance that requires cross-departmental coordination by the BMI with support from the BSI. Cyber and information security as it relates to digitalization can alternatively be safeguarded with legal frameworks, services, standardization, and mandates, and with recommendations in all specified types (infrastructure, basic services, QS services, technology, legal framework and knowledge). Cyber and information security is a prerequisite for sustainable and successful digitalization.

Implementation steps:

- **Ongoing: Cyber and information security must be taken into account for all measures of the digitalization implementation strategy.**

Expand the German Digital Library (Deutsche Digitale Bibliothek (DDB))

Departmental ownership: BKM

The DBB is the State access portal to digital objects from culture and science in Germany, operated and financed jointly between the Federation and Länder. As stipulated in the coalition agreement, it is a paramount national digitalization project. The DBB has been operating in standard operation since 2014. Over the long-term, up to 30,000 public cultural and science facilities from all sectors and disciplines will be networked; these include libraries, archives, museums, media libraries, and science institutes.

Objectives:

- **Continue to expand the number of public cultural and knowledge facilities networked in the DDB.**
- **Optimize data processing, improve data and object quality, and expand the DBB as data platform.**
- **Expand contents and increase range.**
- **Improve the user experience.**

There are presently 4300 facilities registered to collaborate with the DBB; of these, more than 400 are already actively contributing data. The number of cooperating facilities continues to grow. The DBB currently contains more than 24 million usable objects. The DBB infrastructure, inventories, and usability options are constantly being expanded.

The initiative is designed to continue expanding the DBB. In alignment with previous financing, the expected funding requirements will be absorbed by the Federation and Länder in equal shares. Thereafter, the Federation will appropriate a total of approximately EUR 4 million for additional implementations

Implementation steps:

- **Expansion in three phases:**
  - **2018: Phase 1.**
  - **2019/2020: Phase 2.**
  - **2021/2022: Phase 3**

Digitalization strategy of the Federal Government for the cultural space

Departmental ownership: BKM

Objectives:

- **Support cultural facilities of all sectors to tackle and productively shape the digital transformation in all areas of activity.**
- **Achieve the most far-reaching synergy effects.**

The digitalization strategy of the Federation for the cultural area pursues the objective of developing measures that can optimize all types of digitalization processes and to show new paths as to how cultural facilities can achieve their mission even in an environment increasingly shaped by digital developments. Based on an approach that reaches across sectors, the strategy is intended to create cross-linkages and addresses various aspects of digitalization in the culture and media area, such as preserving the cultural heritage, portability, and digital production and research. This work will also review the legal and ethical dimensions.

In the course of planning and executing this comprehensive action plan, the BKM will involve all pertinent functional and political stakeholders, The Länder will also be involved.

Implementation steps:

- **2018/2019: Phase 1: Preliminary conceptual work and consultation proceedings.**
- **2020: Phase 2: Implement first projects, while also conceptualizing and coordinating additional measures.**
- **2021: Phase 3: Implement and conceptualize additional projects.**
- **2022: Phase 4: Evaluate already completed projects; also implement and conceptualize additional projects,**
- **2023 and beyond: Phase 5: Ongoing maintenance of the digitalization strategy.**

Digitalize inventories by the Federal Archives, the German National Library, and the International Search Service

Departmental ownership: BKM

Objectives:

- **Maintain access to, and preserve archive, film, and library assets of interest and relevant for citizens.**

Primarily for use purposes, and partially also to preserve assets, the Federal Archives (Bundesarchiv) and the German National Library (Deutsche Nationalbibliothek) are digitalizing the archive, film, and library assets maintained by them as an ongoing and/or permanent task. The selection is based on public demand and preservation expectations, predominantly based on currently relevant topics and based on anniversaries and memorial dates (e.g., online portal for the Weimar Republic at the Bundesarchiv; virtual museum „The Arts in Exile" at the DNB and the German-Israeli digitalization project between the DNB and the National Library of Israel).

Also for use purposes, the international search service in Bad Arolsen (financed by Germany) is digitalizing its total assets, including so-called original documents (including administrative documents from former concentration camps) that belong to the world document heritage of UNESCO.

Implementation steps:

- **Compile based on currently relevant topics and anniversaries/memorial dates.**

Digitalize the national film heritage

Departmental ownership: BKM

Objectives:

- **Adopt, finance, start, and implement a joint subsidy program between the Federation, Länder, and FFA.**
- **Option for film heritage facilities, archives, and private right owners to cost-effectively further evaluate, digitalize, and safeguard the films over a reliable timeframe of 10 years.**

As stipulated in the coalition agreement, we will swiftly implement the subsidy concept for digitalizing the national film heritage together with the Länder and the film sector. Over a period of 10 ten years, EUR 10 million per year (for a total of EUR 100 million) will then be awarded based on joint criteria and an approved procedure, controlled by a business office at the Film Subsidy Bureau (Filmförderungsanstalt (FFA)). The Federation, Länder, and the FFA will each provide one third of the financing. The program will be implemented based on a subsidy guideline.

Implementation steps:

- **Start of 2019: Start of subsidy awards.**
- **Start of 2022: Evaluation of first three subsidy years.**

Museum 4.0 – Digital strategies for the museum of the future

Departmental ownership: BKM

Objectives:

- **Develop digital instruments for portability, education, communication, and research in various museum types and infrastructure settings.**
- **Consolidate and network know-how.**
- **Visitor target groups will have the opportunity to explore museums in highly varied ways.**
- **Share gained knowledge with other cultural facilities.**

museum4punkt0 is the first of its kind effort nationwide to combine six German cultural facilities of varying sizes and institutional profiles under one project: Together, they will develop digital prototypes to enable new formats for communication, participation, education, and portability in museums. The affiliation includes the Staatlichen Museen zu Berlin, the Stiftung Humboldt Forum im Berliner Schloss, the Deutsche Auswandererhaus Bremerhaven, the Deutsche Museum, the Fastnachtsmuseen Langenstein and Bad Dürrheim, and the Senckenberg Museum für Naturkunde Görlitz under the functional ownership of the Stiftung Preußischer Kulturbesitz.

The focus is on museum visitors. The objective is to find new ways to interact with them, to develop personalized services for them, and to address additional target groups. The use of modern technologies, such as virtual reality, augmented reality, and 3D modeling will be tested for this purpose.

The project is scheduled for three years (2017 – 2020) and is subsidized by the BKM with EUR 15 million. The results will ultimately be available to all cultural facilities in Germany for their flexible use.

Implementation steps:

- **Coordination by Stiftung Preußischer Kulturbesitz (SPK).**
- **Regular interim reporting.**
- **Associated partnerships with Stiftung Schleswig-Holsteinische Landesmuseen Schloss Gottorf and Klassik Stiftung Weimar (completed).**

German Film Subsidy Fund (Deutscher Filmförderfonds) II

Departmental ownership: BKM

Objectives:

- **Improve utilization and expand production service providers in relation to digital film making (in particular VFX).**
- **Prevent digital film makers trained in Germany and German-coproduced film productions with high VFX content from migrating away from Germany.**
- **Innovative synergistic effects for other sectors.**

Since August 2018, production service providers for major cinematic productions residing in Germany – including those creating digital works – with minimum total production costs of EUR 20 million and EUR 8 million German production costs are eligible for subsidies. Starting in autumn of 2018, the subsidy preference is for service providers of animation film and animated film, e.g. in particular enterprises creating digital VFX (virtual effects) works, starting with German production costs as low as EUR 2 million. A guideline is required to implement the initiative.

Implementation steps:

- **August 2017: Introduce film subsidies based on applications from production service providers.**
- **September 2018: Reduce the barrier to entry for animation film and animated films to EUR 2 million of German production costs.**
- **1st half year 2019: Evaluate the measure and survey synergistic effects for other sectors.**
- **2020: Demand-driven adjustment of the guideline to economic and technical changes.**

Set up a research database for provenance research

In connection with cultural heritage losses as the Deutsche Zentrum Kulturgutverluste

Departmental ownership: BKM

Objectives:

- **Strengthen provenance research.**

Germany has an important moral responsibility to verify the provenances of art and cultural assets in order to do justice to the historical events and human fates behind these. The research database of the BKM strengthens provenance research. The objective is to document, archive, open, and network relevant information inventories for provenance research, to increase the effectiveness of provenance research, and to consolidate completed and on-going research efforts.

Implementation steps:

- **Find suitable software enterprises through a national tender.**
- **Customize the software.**
- **Compile existing data pools.**
- **Establish an internet presence.**

Build digital fitness of structures of civilian society

Digitalize the umbrella associations of the non-statutory welfare sector (Freie Wohlfahrtspflege

Departmental ownership: BMFSFJ

Objectives:

- **Strengthen the umbrella associations of the non-statutory welfare sector (Freie Wohlfahrtspflege) with shaping the digital transformation.**

As part of its „Digital Agenda for a Society Worth Living In", the BMFSFJ intends to start a program for subsidizing non-statutory welfare associations and to assist these with the challenges associated with digitalization, to participate in the process of shaping the digital transformation of society on the basis of its specific social and societal mission, and to work on central focus topics related to digitalization in the form of pilot projects.

Implementation steps:

- **January 01, 2019: Project kickoff, external committee to consult as the project progresses**

Digital urban development and promoting Smart Cities

Departmental ownership: BMI

Objectives:

- **Municipalities will be empowered to participate in the strategic effort of shaping digitalization in the spirit of a sustainable and integrated urban development in cities, counties, and municipalities (smart cities).**
- **Create and maintain municipalities worth living in.**
- **Place technology in the service of people, maintain freedoms and avoid a digital rift of society.**

The BMI intends to implement the coalition agreement by subsidizing smart city model projects starting in 2019 and by expanding the national and international dialog regarding urban development policy issues related to digitalization (smart city dialog).

The objective is to subsidize integrated smart city strategies and their implementation with investments into model communities, including knowledge transfer and competence building as well as supporting research and project evaluation. In order to promote the exchange of experiences, the national „Smart Cities“ dialog platform will be continued and an international smart city network will be built together with selected partner countries.

Implementation steps:

- **Starting in 2019: Start of phase one with about 10 model projects. On the basis of the smart city charter of the Smart Cities dialog platform, communities will be supported in the early identification of opportunities and risks of digitalization for forward-looking and responsible urban development in order to avoid undesirable developments and to place technology in the service of people locally. The total runtime of the subsidy measure will have four phases with a total of about 50 model projects.**
- **Starting in 2019: Set up a business office for smart city dialog; conduct events.**

Model initiative “Smart Rural Regions” under the scope of the Federal “Rural Development” program (Bundesprogramm Ländliche Entwicklung (BULE)).

Departmental ownership: BMEL

Objectives:

- **Improve the living conditions in rural areas with innovative digital solutions.**
- **Expand know-how related to digitalization at municipal and regional stakeholders.**
- **Identify digitalization opportunities to strengthen rural areas.**

The model initiative supports regional digitalization strategies in rural areas (counties). The use of new technical options is essential for maintaining an attractive living and working environment, particularly so in areas with future relevance, such as mobility, health, the supply with goods and services, and including social services and the rural club ecosystem. The model initiative will explore these opportunities and realize these to the benefit of people locally.

The objective is to find intelligent and transferable solutions for viable rural areas that are embedded into a standardized technical framework. The field test will serve to validate that as many regions in Germany as possible can subsequently benefit from the newly developed digital applications. The model initiative intends to combine theory and practice. The objective is to subsidize a research facility that will conceptualize and develop such a digital ecosystem and the underlying software platform as part of a pilot project. The participating counties are selected in a competition. By involving citizens, they will develop digital services (e.g. apps) together with the research facility based on specific requirements, and will then introduce these locally. The intent is to design transferable digital services and to test these locally.

Implementation steps:

- **Conceptual design phase (on-going)**
- **Starting 1st quarter 2019: Preparation phase.**
- **2020: Implementation phase.**

“Land.Digital: Opportunities of digitalization for rural regions”

Departmental ownership: BMEL

Objectives:

- **Maximize the use of opportunities of digitalization for rural regions.**
- **Develop transferable stand-alone solutions that can also serve as a model in other rural areas.**
- **Gain new knowledge for shaping policy.**

The Declaration No. 08/17/32 of the Federal Agency for Agriculture and Nutrition (Bundesanstalt für Landwirtschaft und Ernährung) for executing model and demonstration initiative „Land.Digital: Digitalization Opportunities for Rural Areas“ under the scope of the Federal „Rural Development“ program supports innovative projects at the local level that want to take long-term advantage of the opportunities presented by using and networking information and communications technologies to solve problems in rural regions.

The intent is to subsidize a wide range of different projects throughout the Federal Republic. The projects are assigned to seven different topics: health & care, qualification & education, commitment & involvement, commerce & work, platforms reaching across topics, mobility and local supply.

Implementation steps:

- **Select the projects to subsidize (completed). The first projects are already in the implementation phase.**
- **By 1st quarter 2019 (tentatively): Approve submitted applications.**
- **2022: Finalize and analyze.**

Digital participation and online dialog formats

Departmental ownership: BMU

Objectives:

- **Create important societal impulses for developing programs and decisions.**
- **Increase acceptance and competence building by citizens and also the innovation capabilities and transparency of administrations.**
- **Expand existing and newly developed online dialog formats in social media channels of the BMU.**

Module 1: Digital involvement

The BMU is particularly keen on a transformative and cooperative environmental policy that specifically focuses on involvement. Based on positive experience gained with online involvement, the BMU intends to continue this successful instrument by setting new standards, including testing of digital involvement formats for a bill proposal of the BMU.

Module 2: Online dialog formats

The BMU intends to specifically expand its existing dialog formats on social media channels. Examples include: Facebook live interviews with ministers, twitter interviews with ministers and state secretaries. New formats will also be developed over the coming months; for example, Instagram live interview or Instagram takeover.

Implementation steps:

- **Module 1:**
  - **Standardize onlive involvement based on studies and guidelines.**
  - **Conduct other forms of citizen involvement.**
  - **Document, evaluate, continue developing.**
- **Module 2:**
  - **Expand online involvement by intensifying dialog formats in BMU social media channels, incl. documentation, evaluation, and continuing development.**

Tap into the advantages of mobile applications and simplify market access for useful digital applications in healthcare.

Departmental ownership: BMG

Objectives:

- **Useful digital innovations for healthcare and long-term care.**

The benefits of mobile applications must be exploited and market access for useful digital applications must be simplified.

Implementation steps:

- **By 2019: Develop a meta catalog of criteria for evaluating health apps.**
- **By 2019: Measures for simplifying access to useful mobile health technologies for health and long-term care insurance.**
- **By 2021: Develop criteria for demonstrating the utility and reimburseability of digital products (primarily technical assistance systems) by health and long-term insurance carriers for the support of individuals in need of care.**

Automated and networked mobility

Departmental ownership: BMVI, BMBF, BMWi

Objectives:

- **Increase traffic safety and traffic efficiency.**
- **Reduce mobility-induced emissions.**
- **Develop new mobility services, in particular with focus on overall societal benefit and participation.**

The Federal Governments has planned a wide range of measures to make mobility modern, clean, barrier-free, sustainable and affordable. A central area of focus is to introduce systems for automated and networked mobility into the routine operation of road traffic. The already created framework conditions will be updated as required by technical progress. In particular, initial steps toward autonomous mobility will be implemented for specific applications. A particular focus is placed on data protection and data security. Societal dialog is also a high-priority area of activity.

Implementation steps:

- **Develop a legal framework to facilitate autonomous mobility for specific applications.**
- **Refine changes to the Road Traffic Act (Straßenverkehrsgesetz) from the 18th legislative session with a directive for data storage and security.**
- **Continue expanding traffic technology by deploying intelligent traffic systems.**
- **Develop new mobility concepts, in particular to improve the linkages between various mobility modes.**
- **Subsidize research initiatives and test these in digital test fields.**

Review liability regulations for autonomous systems and adjust these as needed.

Departmental ownership: BMJV

Objectives:

- **Review applicability of (non-) contractual liability to digital products and in particular to autonomous systems,**
- **in particular: review need to update and amend, as well as enhance liability laws.**

The coalition agreement stipulates that we will create a legal framework for autonomous mobility that provides for data protection and data security, and also maximizes safety. Experimentation clauses and/or exception regulations must also be created so that autonomous vehicles can be tested and deployed with legal certainty in the public domain.

The legal prerequisites for fully autonomous vehicles (level 5) on suitable infrastructure must be in place by the end of the legislative session. The liability regulations for using autonomous systems (e.g. self-driving vehicles, robots) must then be rigorously tested to close any identified risks due to liability gaps.

The liability regulation topic for autonomous systems primarily raises the question whether the conventional principles from the analog world for (non-contractual) liability for manufacturers and for (contractual) liability of sellers for defective products apply for digital products. The issue is the applicability of contractual and non-contractual liability laws, in particular pursuant to the BGB (Civil Code) and pursuant to the Product Liability Act (Produkthaftungsgesetz), wherein the German legal framework is in large parts based on EU law.

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Implementation steps:

- **The BMJV is currently heavily engaged in deliberations and consultations being conducted in this context at many levels, in particular at EU level in the negotiations concerning the Directive proposals of the Commission for contractual liability for (digital) products (Digital Content Directive, Goods Trading Directive) and for the expert groups installed by the Commission for non-contractual product liability, as well as the sub-committee "Robotic Law" of the Federation-Länder working committee "Digital Restart" (Digitaler Neustart).**

Data availability as a foundation for digitalizing mobility

Departmental ownership: BMVI

Objectives:

- **Citizens must have the ability to benefit from high-quality mobility systems on the basis of comprehensive and accurate data.**

Infrastructure and traffic data are an important factor for digitalizing mobility. However, the search for mobility-relevant data is frequently associated with considerable effort. The large variety of data types and data formats, along with the places where the data are collected and maintained can equally represent a barrier. In recent years, the BMVI has significantly improved access to data – primarily to public domain data – including by building special-purpose data portals (e.g. www.mCLOUD.de, www.MDM-portal.de). The various activities will be expanded further by consolidating these into a harmonized approach that gives access to mobility data from a single source – that is also open to data from private providers in addition to the departmental data.

The delegated Directive (EU) 2017/1926 to amend the IVS Directive creates an obligation for all EU member states to set up a National Access Point for Multi-Modal Travel Information [Nationaler Zugangspunkt für multimodale Reiseinformationen (NAP)].

Implementation steps:

- **By start of 2019: Technical implementation concept.**
- **By end of 2019: Set up the national access point (expand data services pursuant to the stipulations of the delegated Directive 2017/1926).**
- **Starting in 2020: Expand harmonized data access.**

Experimentation clause in the ArbZG for testing flexible work schedule models

Departmental ownership: BMAS

Objectives:

- **More self-determination for employees.**
- **Greater flexibility for businesses.**

Amend the work schedule act with a collective bargaining opening clause to test greater leeway for more self-determined work schedules for employees and greater flexibility for businesses in the increasingly digital working world. Site-specific agreements can then on the basis of these collective bargaining agreements in particular stipulate the maximum weekly work hours with greater flexibility.

Implementation steps:

MINT initiative

Departmental ownership: BMBF

MINT education, e.g. subject-matter skills in math, information technology, the natural sciences, and technology, is an essential ingredient for self-determined living and working in the modern digital world. The BMBF intends to strengthen MINT education in Germany with a MINT action plan. By 2022, financing of about EUR 55 million will be made available to subsidize new MINT measures.

Objectives:

- **Increase attractiveness of MINT subjects.**
- **Greater societal acceptance for issues related to natural sciences and technology.**
- **Vocational and academic training to replenish the pool of trained workers.**

As a comprehensive actionable framework for MINT education, the MINT action plan also comprises a wide range of already implemented subsidy measures in addition to the planned new measures.

The MINT action plan is structured into the following four actionable pillars: Early childhood MINT school education, MINT career, opportunities for women in MINT, and MINT in society.

Implementation steps:

- **Winter 2018/2019: Announcement of the action plan.**
- **Other subsidy measures distributed over the 19th legislative session, including improved visibility and networking of MINT services. This will include publishing an announcement for establishing a MINT E portal, subsidizing application-oriented research for MINT education, subsidizing MINT recreational services, start of associated communication measures.**

Employment relationships and social safety net for platform work

Departmental ownership: BMAS

Objectives:

- **Review regulatory requirements to secure good working conditions and an appropriate social safety net for platform work.**

Review the applicable legal framework with science, stakeholders, and practitioners.

Implementation steps:

- **Start of 2019: Define the governing legal framework.**
- **Spring 2019: Analyze protection and regulatory gaps by interacting with science, stakeholders, and practitioners.**
- **Mid-2019: Formulate potential actionable approaches by interacting with stakeholders.**
- **2019 and beyond: Adjust regulations at the international, European, and national level as needed.**

Continuation of the national action plan for the UN Convention on the Rights of Persons with Disabilities with a focus on “Digitalization and Inclusion”

Departmental ownership: BMAS

Objectives:

- **Increase participation opportunities in societal life for persons with disabilities.**
- **More efficient and effective practices for approving social services.**

Projects for subsidizing participation opportunities based on digitalization, in particular for persons with sensory and mobility disabilities. More efficient and effective administrative practices for approving social services.

Implementation steps:

- **Inclusion Days 2018 (11/19 – 11/20/2018) as kickoff**

Subsidize digitalization of the finance industry

Germany is to become a leader for finance technology.

Departmental ownership: BMF

Objectives:

- **Improve framework conditions for Germany as a FinTech leader.**
- **BaFin as digitalized supervisory authority.**
- **Legal certainty for new business models.**
- **Strengthen resistance of cyber and IT security of the financial sector to ensure protection and integrity of financial data.**

Advances in digitalization are also resulting in significant changes for the financial industry. Processes are becoming more efficient and cost-effective, traditional value-added processes are breaking up, new business models are created. The right national framework conditions are needed to best leverage opportunities presented by digitalization for business and society, while also appropriately confronting potential risks.

Implementation steps:

- **March 2017: Set up the FinTech commission.**
- **Review readiness of financial market laws for digitalization.**
- **Support digitalization of BaFin.**
- **Big data and artificial intelligence study by BaFin.**
- **Conduct international and national cyber drills.**

Finalize the digital single market

Departmental ownership: BMWi

Europe's ability to compete crucially depends on implementing a standardized digital single market. Citizens and businesses must be able to take advantage of the benefits of the digital transformation within a digital single market. We therefore categorically intend to avoid unilateral national regulations to simplify the European-wide implementation of digital business models. The Federal Government therefore supports the speedy completion of the digital single market.

Objectives:

- **EA standardized digital single market as the basis for the competitiveness of the European Union.**

In the meantime, The European Commission has announced all proposals and measures under the scope of the digital single market. At its core, these include 20 legislative initiatives along with supporting measures that are also intended to tap into Europe's digital potential. All measures of the DBM strategy are expected to be completed by the end of the term of the current commission (October 31, 2019). The Federal Government also continues to support speedy progress for negotiating and implementing the measures on the basis of deliberate discussions.

The Roaming Directive, the Code for Electronic Communication, the E-Privacy Directive, the Directive on „Free Movement of Non-Personal Data within the EU", the „Platform-to-Business" Directive, the Copyright Directive for the digital single market, the Directive for Audio-Visual Media Services or the GeoblockingDirective are examples for the importance and bandwidth of the strategy.

The need for national legislative action is based on implementing Directives into national laws. The European Commission should provide the details for a successor strategy no later than 2020. In anticipation of its Commission Presidency in the second half of 2020, Germany intends to assert a constructive role in shaping the initial phase of the successor strategy. As part of the on-going negotiations, the relevant measures and results will be closely meshed with the expectations and objectives of the national digitalization implementation strategy.

Implementation steps:

- **By end of October 2019: Finalize the current strategy for the digital single market of the European Commission.**
- **Finalize the negotiations for the individual dossiers at EU level.**
- **Implement into national law as needed.**

Formulate a digital regulatory policy

Departmental ownership: BMWi

Digitalization as a structural break requires that the regulatory policy framework must be challenged and adjusted. This calls for a fundamental discussion about shaping the social market economy in the digitalization age, and also about the relevance of the ordo-liberal principles for our economic order. Our objective is to leverage the opportunities presented by digitalization for prosperity and growth and to enhance the model of the social market economy in terms of legal, institutional, regulatory, and cultural aspects under digital conditions.

Objectives:

- **Support the digital transformation by adopting an economic policy framework.**
- **Prevent market abuse, in particular by platform businesses.**
- **Continue developing European competition laws.**

The Federal Government also has the declared objective to modernize anti-trust laws in order to create an excellent regulatory framework for the German and European digital economy.

The 10th amendment of the Act to Combat Restrictions on Competition is intended to render competition laws even more effective. There is a need to quickly and effectively combat the misuse of market power, primarily in rapidly changing markets – specifically with respect to misuse by platform businesses. This specifically also includes the anti-competitive handling of data, for example by denying access. The reform must find the proper balance between growth opportunities of German and European platforms on the one hand and preventing misuse of market power on the other.

The „Commission Competition Law 4.0“ in particular is expected to present proposals for developing the next generation European competition laws. The Federal Government intends to harmonize and integrate the legal foundations in the digital area.

Implementation steps:

- **Concept for an actionable regulatory policy program as support for the digital transformation 10th GWB amendment:**
  - **the study on behalf of the BMWi regarding the topic “Modernizing misuse supervision for businesses with market power” has been completed and is available for download on the BMWi website.**
  - **This is followed by analyzing the study, reviewing the GWB for revision requirements, and the further legislative proceedings.**
- **Commission Competition Law 4.0:**
  - **the members of the Commission Competition Law 4.0 have been appointed. The commission has started its activity. More information about the commission’s work is available under www.bmwi.de.**
  - **By autumn of 2019: Develop specific actionable recommendations for European competition law.**

Digitalize Africa under the scope of the initiative “Digital Africa”

Departmental ownership: BMZ

In 2015, the BMZ created the „Digital Africa“ initiative as an innovative instrument for establishing a tight link between development work and the digital world. The initiative meshes with the Marshall Plan with Africa (coalition agreement) and the digital agenda of the BMZ. A BMZ-wide idea competition provides a platform for submitting proposals for digital projects in Africa, of which the best ones will be subsidized. Since 2015 the BMZ has made more than EUR 150 million available under the „Digital Africa“ initiative. Additional funds of about EUR 50 million are also planned for 2019. The majority of subsidized initiatives are active in the areas of good national governance and media, education and vocational training, sustainable management, health and energy.

Objectives:

- **Better health based on access to digital health insurance protection and digital pandemic prevention.**
- **Better participation options, combat mismanagement and corruption based on access to more efficient and transparent digital administrative systems.**
- **Better education based on digital innovation.**

Examples include expanding access to internet and telephone networks, conveying digital skills and education, new IKT solutions for greater transparency of, participation in, and efficiency of government; digitalization in the financial sector; subsidizing tech entrepreneurs; innovation for pandemic prevention, and innovative learning methods in schools.

Implementation steps:

- **BMZ investments into the “Digital Africa” initiative and project implementation by the Development Bank (KfW Entwicklungsbank) and the German Enterprise for International Collaboration (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)).**
- **Screen and implement joint projects with the German and European digital sector through the more than 150 businesses of the “Strategic Partnership Digital Africa”.**

Subsidize the digital sector in developing countries

Cooperate with the private sector in the tech field and leverage digital trade

Departmental ownership: BMZ

We will support partner countries of the German development collaborative in their efforts to enter into cooperations with the German and European private sector in order to strengthen their digital economy. We specifically intend to leverage digitalization options for more trade – along the entire supply chain. The digital solutions for inclusive trade and investments we create will generate economic growth and more jobs, and will help to increase African exports, improve the regulatory framework, and reduce the digital rift.

Objectives:

- **Economic growth, jobs, and humane working conditions.**
- **Better national digital strategies and regulations for digital trade.**
- **Simplify trade and reduce costs of trade.**
- **Enforce fair and sustainable digital trade.**

As part of this effort, we intend to mobilize private funding for the development collaborative through at least 20 new collaborations with private businesses in the tech field. In order to increase the share of digital trade in economic growth, we will support preparing national digital strategies for trade and investments in developing countries..

Implementation steps:

- **Support the "eTrade for All" initiative by UNCTAD and its "eReadiness-Assessments", in particular for the least developed African nations.**
- **Establish a certification system for fair work in the digital platform economy through the Oxford Internet Institute (OII) and the "Fairwork Foundation".**
- **Implement cooperations with German and European private sector enterprises, including through the "Strategic Partnership Digital Africa (Strategische Partnerschaft digitales Afrika)", the program "Development partnerships with the private sector (Entwicklungspartnerschaften mit der Wirtschaft (EPW))" the BMZ and the "EU D4D coalition", and alliance of the European digital economy on topics such as smart cities and connectivity.**
- **Simplify customs procedures through digitalization in 12 countries based on the "global and national alliance for simplified trade",**
- **Training and continuing education for – in particular women-managed – small and midsized businesses active in online trade.**

Strategic communication in the competition of narratives

Departmental ownership: AA

Objectives:

- **Improve communication defined by, and appropriate for, target groups.**
- **Combat the spread of misinformation.**

As the competition of narratives becomes increasingly difficult – specifically in the internet and social media – the Foreign Office supports the speedy and sustainable establishment of skills in order to defend and strengthen our European economic and values model also in the global information space. The expansion of strategic international communication must address the digital future in order to convey an objective-driven and sustainable German and European (foreign) policy, specifically in view of hybrid information falsification worldwide.

Implementation steps:

- **Modernize and diversify our communication instruments, specifically by acquiring a social media listening and engagement tool to expand and optimize the strategic communication of the Foreign Office.**
- **Hire experts (including data analysts) to work on big data and expand the number of workers employed in strategic communication, including their training and continuing education.**

Cyber foreign policy and cyber security for foreign policy

Departmental ownership: AA

Objectives:

- **Improve German and international cyber security.**
- **Strengthen internationally coordinated approaches.**
- **Expand the developing framework for stability in cyberspace.**

Secure a coherent cyber foreign policy and coherent foreign policy actions by the Federal Government in cybersecurity matters. Involve the BMI as the agency in charge of cybersecurity.

Implementation steps:

- **Increase involvement of German foreign representations.**
- **Strengthen German engagement in relevant international committees and organizations.**
- **Expand the issues-oriented collaboration with like-minded countries, institutions, and other stakeholders.**
- **Build additional formats, as needed.**

Cyber cluster of the University of the Bundeswehr Munich

Departmental ownership: BMVg

Objectives:

- **Appoint additional faculty chairs for scientific research and science education and continuing education in the cyber defense space.**
- **Install a cyber security master degree at UniBwM.**
- **Expand capacity for information technology bachelor and master degrees.**
- **Offer science continuing education programs in relevant cyber subjects for the IT management and operational staff of the Bundeswehr and the Federation.**

The existing options for science education and continuing education in relevant study subjects of the MINT spectrum will be aligned at the University of the Bundeswehr Munich (UniBwM) – including by offering new degree programs – to strengthen the digital skills acquisition in the cyber and IT field for the relevant operational and management staff of the Bundeswehr and the Federation. This involves expanding the University of the Bundeswehr Munich into a central science education and continuing education facility of the Bundeswehr for activities related to cyber defense and cybersecurity.

Implementation steps:

- **Conduct appointment proceedings for additional faculty chairs (under the scope of the academic self-management act).**
- **Accredit new degree programs (under the scope of the academic self-management act).**
- **Finalize the research and teaching infrastructure for operating the cyber cluster.**

Define international limits for developing lethal autonomous weapon systems (LAWS)

Departmental ownership: AA

Objectives:

- **Prevent the existence of lethal weapons systems that completely take away power from the individual to decide the use of weapons against others.**

The coalition agreement stipulations for the worldwide ban of lethal weapons that completely take away power from the individual to decide the use of weapons against others will be pursued under the functional ownership of the Foreign Office and in close collaboration with the BMWg. The related negotiations have been on-going since 2014 in the UN Weapons Convention.

Implementation steps:

- **Current German/French initiative for a political declaration.**
- **Next step: Agree on an international military code of conduct. Our objective for the negotiations is to obtain international agreement for effectively banning the development and use of fully -autonomous weapons worldwide.**

Virtualize the Federal Academy for Security Policy (Bundesakademie für Sicherheitspolitik)

BAKS

Departmental ownership: BMVg

Objectives:

- **Significantly increase user numbers of various backgrounds and therefore the reach in a range of digital media.**
- **Increase relevance of professional conferences.**
- **Expand seminar services by other digital tools.**

To achieve its mission, the BAKS must be modernized with contemporary resources (staffing, technology, and infrastructure). This for example includes hiring online editors and installing a high-performance WLAN. This initiative is based on the academy concept for the BAKS from 2015 to strengthen public interaction in social media as adopted by all BSR departments, and on the coalition agreement adopted in 2018 to also strengthen the BAKS as a security policy competence center and highest-ranking security-policy continuing education facility of the Federal Government.

Implementation steps:

- **December 2018: Presentation of a detailed work schedule plan.**
- **April 2019: Define 10 work packets for incremental implementation.**

Modern government

Our common guiding principles

The administration must simplify, and not overcomplicate, the lives of citizens. We therefore intend to make interacting with the administration and applying for services simple and safe for everyone. Our administrative services will therefore be offered digitally going forward. And we will remove barriers for digital access to the administration, so that more persons with disabilities can also reach us digitally.

The State as service provider

Individual administrative services can already now be taken care of online, simply, quickly, and securely. By the end of 2022, all administrative services will also be available online. And this does not just mean merely supplying PDF files online.

Whenever possible, we want to go further: we will adapt the laws governing digitalization and in certain cases completely eliminate application procedures. We can then actively address the concerns of individuals. For example, following the birth of their child, parents could receive the birth certificate, and child allowance could be paid without having to file an application.

Digitalizing the administration

We will also continue digitalizing the administration itself. Only then can it become a permanently modern service provider for individuals and remain an attractive location factor for businesses and entrepreneurs.

As part of this effort, we will remain open to innovations, with open standards, open source software, and good technical infrastructure. This infrastructure must be sophisticated, as well make efficient use of resources and energy. Modern administration calls for modern equipment. But equipment alone is not enough. The necessary skills must also be available. We want a digitally competent administration in a digital society. The administration must actively participate in shaping the digital transformation and establish an appropriate framework for business and society.

Taxing digital business models

A modern state also needs funding. To the extent our economic structure is changing due to data-based business models, the State must also question its methods for assessing and imposing taxes.

All economic stakeholders must appropriately share in the financing of public goods, even in a digital future. There is agreement with our European and international partners that we need fair taxation of internationally active businesses – even from the digital economy.

How we intend to achieve our objectives

Initiative: BMI	**Target Group:**
Expand the digital State and modern administration in the Federation and the Länder(1) – comprehensive and secure digitalization of about 575 administrative services governed by the online access act (Onlinezugangsgesetz (OZG))	Citizens; Businesses; Administration

Benefits:

- We intend to make all administrative services according to the OZG implementation schedule available to citizen, businesses, industries, and to make user-friendly digital activities available nationwide.
- Specifically for prioritized services (e.g. those with high volume), we intend to create significantly simplified and intuitive digital application processes that greatly increase online user rates for the corresponding services.
- We intend to review what registers can be relied upon for digitally provided services and plan to create regulations that allow users to freely decide over the use of their data on a case-by-case basis so that they do not have to supply/enter these yet again for the specifically defined purpose (also called once-only principle).

Initiative: BMFSFJ	**Target Group:**
Continuing development "Parenting Allowance"	Parents; Administration;

Benefits:

- We desire a simplified and convenient, data-protection-compliant online application and processing of parenting allowances.

Initiative: BMBF	**Target Group:**
BAföG Online	Citizens; Students;

Benefits:

- We desire a simplified and convenient, data-protection-compliant online application and processing of BAföG.

Initiative: BMI	**Target Group:**
Expand the digital State and modern administration in the Federation and Länder (2): Provide a Federal portal with user account; build a secure portal network (digitalization platform) between the Federation, Länder and municipalities with user account	Citizens; Businesses; Administration

Benefits:

- We intend to provide new centralized, secure and fast, data-protection-compliant online services from the Federal Authorities. Centralized access must be available to all administrative services of the Federation, and to the administrative services of the Länder and municipalities over the portal network.
- We desire the secure, data-protection-compliant exchange of information between online services of the Federation, Länder, and municipalities.
- We intend to strengthen the EU single market with cross-border, discrimination-free access to online procedures; in the same manner, binding quality requirements must apply in all EU countries for information provisioning to online procedures and to assistance and problem resolution services.
- We desire EU-wide data-protection-compliant, complete digital access to 21 key administrative procedures.

Initiative: AA	**Target Group:**
Set up the foreign portal of the Federation	Foreign nationals; German nationals living abroad

Benefits:

- We desire convenient, data-protection-compliant online applications for visa and consular services, including retrieval of information about the processing status.

Initiative: BMFSFJ	**Target Group:**
Digital Family Ministry	Citizens; Professionals; Industry Associations

Benefits:

- We desire simple and target-group-appropriate access to the services and information of the BMFSFJ.

Initiative: BMFSFJ	**Target Group:**
Family portal and info tool	Families; Administration;

Benefits:

- We intend to give families easier access to information and services.

Initiative: BMF	**Target Group:**
Payment processing platform (E-Payment)	Administration; Citizens Businesses

Benefits:

- We intend to make a high-performance electronic solution that supports online payments for administrative services available to all stakeholders.

Initiative: BMF	**Target Group:**
IT-supported cross-departmental holding monitoring and information system (Beteiligungs-Monitoring- und Informations-System (BeMIS))	Administration; Bundestag

Benefits:

- We intend to increase the efficiency and effectiveness of administrative processes for Federal holdingsby decreasing leadtimes and by providing information to decision-makers in a timely manner.

Initiative: BMF	**Target Group:**
Project – citizen and business customer portal of the customs administration	Citizens; Industry; Administration;

Benefits:

- We desire media-break-free and efficient access to customs administration applications, including application filing and notice service.

Initiative: BMF	**Target Group:**
Digitalize the finance administration	Citizens; Industry; Administration;

Benefits:

- We desire more time for “what matters” based on efficiency increases, speeding up and simplifying compliance with tax obligations. Information already in the hands of the tax administration does not need to be redeclared, unnecessary administrative steps are eliminated, and tax declarations become more complete and accurate as a result.

Initiative: BMI/BMWi	**Target Group:**
Digitalizing public procurement	Administration; Businesses;

Benefits:

- We intend to completely digitalize public procurement by comprehensively introducing E-awards. The award document (specifically the statement of deliverables) must be freely accessible and available over the internet free-of-charge. Bidders will also be incrementally required to submit proposals electronically.
- The new award statistic will be used to collect data completely electronically for the first time. Going forward, the competition register will give public principals access to electronic data about legal violations committed by bidders. Digitalizing procurement reduces the workload for businesses and the administration while also speeding up tenders.
- We are working toward implementing an end-to-end, digitalized, media-break-free, and cross-departmental purchasing process, including requirements analysis, procurement, and invoicing.

Initiative: BMF	**Target Group:**
Modernize consumption and transaction tax enforcement by customs administration	Businesses

Benefits:

- We desire a media-break-free and efficient application process and notice service.

Initiative: BMG	**Target Group:**
Modernize the public health service by providing a digital reporting and monitoring system for infectious diseases.	Citizens; Public health service

Benefits:

- We desire improved protection against infectious diseases and a simplified reporting method for reportable persons; e.g. by practices, labs, hospitals, community facilities, such as schools and childcare facilities.

Initiative: BMG	**Target Group:**
Digital patient information portal	Citizen, specifically individuals without prior medical training; chronically ill patients

Benefits:

- We desire reliable, quality-assured, and coherent health information.

Initiative: BMG	**Target Group:**
Digital health information portal	Citizen, specifically individuals without prior medical training; chronically ill patients

Benefits:

- We desire reliable, quality-assured, and coherent health information.

Initiative: BMI	**Target Group:**
Digital State – consolidated services	Federal Administration; Citizens Businesses

Benefits:

- We will consolidate the basic and cross-sectional services of the Federal Administration to no more than two IT services per function.
- We will provide IT solutions and digital platforms to support the digital transformation of the Federal Administration.

Initiative: BMVg	**Target Group:**
Groupware Bundeswehr (Groupware BW)	All workers at IT workstations of the BMVg department

Benefits:

- Provide an IT platform, also to improve electronic collaboration.

Initiative: BMVg	**Target Group:**
Digitalize the administration on the basis of the DMS DokMBw	All workers at IT workstations of the BMVg department

Benefits:

- Increase the effectiveness and efficiency of electronic administrative work, also provide the functions “electronic file” and “transaction processing”.

Initiative: BMI	**Target Group:**
Attract and develop staff for the digital administration	Workers at the Federal Administration

Benefits:

- We will establish a cross-departmental staff development process for managers (specifically skills required in the future and qualification measures) and will improve processes for attracting employee, in particular for IT professionals.

Initiative: BMVg	**Target Group:**
Early crisis detection by using key technologies and by developing innovative services	Administration;

Benefits:

- We will improve analysis capabilities and the ability for the best possible actionable and decision-making recommendations.

Initiative: BMVg	**Target Group:**
Federal Crisis Management Information System (Krisenvorsorgeinformationssystem Bund (KVInfoSysBund))	Administration;

Benefits:

- We will improve the Federal Government's ability to respond and act based on its overall State mission of national risk and crisis management to protect German nationals abroad, based on an innovative system for speedy information processing and for comprehensive information and data interchange in a common information space.

Initiative: BMVg	**Target Group:**
Digitalize situational awareness BMVg	Administration;

Benefits:

- We will improve the management and control capabilities of the Bundeswehr with faster and more reliable situational awareness.

Initiative: BMVI	**Target Group:**
Building Information Modeling (BIM)	Public principals; Construction sector

Benefits:

- BIM will give us the ability to plan and build more efficiently and simpler, while having reliable schedule, cost, and quality control and reducing coordination errors.

Initiative: BMU	**Target Group:**
Green IT initiative: Energy consumption, energy efficiency and sustainable IT procurement for Federal IT	Administration;

Benefits:

- By 2022, our aim is that the electricity consumed by Federal IT does not exceed 350 GWh/year in spite of the expected service increases.

Initiative: BMU	**Target Group:**
Satellite-supported monitoring of all agricultural land on the basis of Sentinel satellite images under the scope of EU agricultural subsidies.	Farmers;

Benefits:

- We will create satellite-based monitoring of all agricultural land.

Expand the digital State and modern administration in the Federation and Länder

Comprehensive and secure digitalization of the about 575 administrative services governed by the online access act

Departmental ownership BMI

Based on the „Digitalization Program Föderal“ to be adopted by the IT Planning Commission in autumn of 2018, the 575 services will be implemented in 14 groups of topics based on joint planning and preparation between the Federation, Länder, and municipalities.

Objectives:

- **Citizens and businesses will b e able to apply online for all administrative services**
- **Speedy digitalization of the 155 services offered by the Federation**
- **Implement the nationwide digitalization of services**

For each topic, the services will be worked on by one Federal department each, together with one or several Länder and with support from municipalities.

The 115 so-called „Type 1 Services“ to be digitalized, for which the Federation has regulatory and enforcement authority, will be worked on under the „Federal Digitalization Program“ under the functional ownership of the respectively competent Federal department. The objective is to make Type 1 services available digitally so that these can be made available and integrated as quickly as possible for the overarching planning efforts in the digitalization program of the IT planning commission

Implementation steps:

- **By end of 12/2019: Finalize topic group planning and reference implementation of first services.**
- **By end of 12/2020: Digitalize at least 90% of the services offered by the Federation.**
- **By end of 12/2022: Implement the nationwide digitalization of services.**

Continue developing ElterngeldDigital (Parenting Allowance Digital)

Departmental ownership: BMFSFJ

The new application ElterngeldDigital gives mothers and fathers the ability to apply online for the popular and widely drawn against „parenting allowance“ service. By taking this initial step, the BMFSFJ is implementing an initiative as mandated in the coalition agreement for the present legislative session to make even more online services than before available to families. The range and functions of ElterngeldDigital will be incrementally expanded.

Objectives:

- **Parents will have the ability to apply for the parenting allowance online and media-break-free.**

The transmission of application data to the competent parenting allowance authorities requires the ratifications of the 2nd data protection adjustment and implementation act (2nd DSAnpUG-EU). The omnibus act will produce an amendment of the federal parenting allowance and parental leave act.

Implementation steps:

- **Mid-October 2018: Press conference announcing the release of the application assistants for Berlin and Saxony.**
- **Starting 4th quarter 2018: Release of application assistants for other Länder.**
- **Starting in 2019: Release of interfaces to functional procedures of parenting allowance authorities.**
- **End of 2019 (tentatively): Implement the user account of the Federation.**
- **Then: Develop solutions for transmitting the required records.**

BAföG online

Departmental ownership: BMBF

The application „Antragstellung BAföG-Online (Online BAföG application)“ in the future portal network is assigned to the topic pillar „Education“ that also comprises the life situation school, vocational training, studies, and continuing education.

Objectives:

- **Pupils and students will be able to submit the BAföG application completely online without a media break.**

The standardized identification methods mandated by the online access act (Onlinezugangsgesetz (OZG)), the topic pillar owner from the Federation and Länder will be involved in determining where statutory regulations are required. Section 46 para. 1 BAföG with reference to Section 36a SGB I stipulates an electronic application with identification by means of eID or De email. As the initiative progresses, the BMBF will suggest a review of other identification methods. The BMI already has a working committee tasked with working on ELSTER-like identification methods for all administrative procedures. ELSTER has been in use for several years by the tax administration for secure tax data transmission and could be a future solution as a user-friendly identification method in connection with transmitting BAföG data.

Implementation steps:

- **Kick-off with all topic owners from the Federation and Länder has taken place.**
- **A core team of the “Digitalization Lab” will over the coming months develop the exact implementation plans (baseline analysis, specifications, phased implementation).**
- **By 12/31/2022, the OZG stipulates that all administrative services must be offered through administrative portals, and that user accounts must be made available in a portal network.**

Expand the digital State and modern administration in the Federation and Länder

Build a secure portal network (digitalization platform) between the Federation, Länder, and municipalities with user accounts; provide a Federal portal with user account.

Departmental ownership: BMI

The online access act went into effect in August 2017. It requires that the Federation, Länder, and municipalities must offer all administrative services in Germany over digital administrative portals or link these over a portal network by 2022.

Objectives:

- **Consolidate access to all administrative services of the German administrations for citizens and businesses.**
- **Provide a Federal portal with user account as a contribution from the Federation.**
- **Implement European stipulations with the SDG.**

The services themselves are digitalized by a separate project, the digitalization program. Both projects are working in close coordination.

In addition to the already existing functional portals of the Federal authorities, the administrative portal of the Federation will provide centralized, secure, and speedy access to all administrative services of the Federation and will – through the portal network – provide access to administrative services of the Länder and municipalities. including their online processing. The Länder will also provide centralized administrative portals and link the functional and municipal portals for their Land.

The Federation and Länder will also provide user accounts for securely authenticating users in connection with the digital administrative services.

The EU Directive to install a „Single Digital Gateway" (SDG) (tentatively to go into effect 2018) also contains other obligations to provide online capabilities.

Implementation steps:

- **By end of 12/2018: Pilot for a basic infrastructure for the portal network and integrate the administrative portal of the Federation and Länder Bavaria, Berlin, Hamburg, and Hesse; followed by incrementally integrating all Länder into the online gateway portal network.**
- **9/20/2018: Provide the beta version of the Federal portal (www.beta.bund.de); then continue developing the administrative portal of the Federation in quarterly release cycles.**
- **3/2019: Commission the Federal user account; then provide and integrate online services of the respective Federal authorities into the user account.**
- **By end of 12/2018: The Single Digital Gateway Directive goes into effect; then implement SDG requirements in the portal network.**

Implement the foreign portal of the Federation

Departmental ownership: AA

Objectives:

- **German nationals living abroad can retrieve administrative/consular services in an end-to-end online process.**
- **Foreigners who wish to travel to Germany for only a short time can submit the application online and may be able to receive the visa electronically.**
- **Prospective immigrants can receive extensive online information about the visa application process and about other relevant topics after arrival. They can submit their application online and may be able to receive the visa online.**

The foreign portal will be created as a platform that supplies information about the Federation's services offered abroad and that gives German nationals (specifically those residing abroad) and foreigners the ability to apply for and receive online visa and consular services whenever possible. The services and information will either on an as-needed basis or largely be made available in the respective national language. The foreign portal will also provide the infrastructure to allow for the required data interchange with foreign representations, domestic authorities, and other agencies.

The foreign portal functions as a service portal and is therefore a supplement to the administrative portal of the Federation (= domestic portal), to which it will be linked. The foreign portal directly implements the online access act (Onlinezugangsgesetz (OZG) – in effect since 2017), which requires the Federation and Länder to make their services also available digitally by the end of 2022. The worldwide use of the portal network is backed by a secure and high-performance IT infrastructure.

Implementation steps:

- **Create the link to the administrative portal of the Federation.**
- **Develop multilingual online application forms (VIDEX) for all visa categories and miscellaneous services.**
- **Employ a user account.**
- **Introduce a fee component.**
- **Introduce a multi-lingual request management system.**
- **Information available to prospective travelers and immigrants is consolidated, standardized, and offered in several languages.**
- **Review the funding required for a successful implementation and secure financing over the project timeframe.**

Digital Family Ministry

Info tool, digitalize family services, interactive data tool, digital equal treatment atlas, Digital German Womens' Archive (Digitales Deutsches Frauenarchiv)

Departmental ownership: BMFSFJ

Objectives:

- **Information for families and (expecting) parents about State family services and support options.**
- **Develop digital application processes for services.**
- **Make centralized equal treatment policy indicators publicly available.**
- **Secure and provide available documents, letters, photos, and audio recordings through the Digital German Womens' Archive.**

The BMFSFJ intends to make its programs, services, and information available through innovative digital technologies. Based on the notion of a digital family ministry, the Federal Family Ministry has developed and incrementally expanded an online-based application (with future media-break-free feature) for one of the most popular and most heavily demanded services – the parenting allowance. Other family services will also be made available online in the future. The next service will be the child allowance (Kinderzuschlag).

Information about services will also be compiled digitally (Infotool-Familie.de), information about equal treatment policy indicators (equal treatment atlas) and the share of women in leadership positions (interactive data tool) will be made transparent, and extensive data inventories in other archives regarding the history of German womens' movements, incl. the Archive of the German Womens' Movement Kassel (Archiv der deutschen Frauenbewegung Kassel (AddF)) and Womens Media Tower (FrauenMediaTurm (FMT)) will be digitalized and made available.

Implementation steps:

- **2019 and beyond: Plan and implement ChildAllowance Digital (KinderzuschlagDigital).**
- **2019: Plan the digitalization of other family-related services.**
- **Regular updates of the digital equal treatment atlas.**
- **The interactive data tool and the info tool family will continue to be expanded.**
- **September 2018: Digital German Womens' Archive to be made available online.**

Family portal and info tool

Departmental ownership: BMFSFJ

Objectives:

- **Coherent information for families and (expecting) parents about State family services and support options.**

The family portal (www.familienportal.de) bundles all relevant information about State family services, statutory regulations, and support options into a single source. It is based on the various life situations of families, such as „pregnancy and birth“, or „family and job“. The local assistance search feature lets users enter their postal code to find government offices and resources in their vicinity where they can apply for services or get access to consultation and support programs. The family portal also makes various calculators and applications available, including parental allowance digital (ElterngeldDigital), the parenting allowance calculator, the child allowance check, the return-to-work calculator, the family care timeframe calculator, and the family services info tool. By entering only a few details about their personal situation, (expecting) parents and family caregivers can use the info tool to gain personalized information about what family services they may be eligible for and where they can find related information.

Implementation steps:

- **Online since July 2018, followed by incremental enhancements.**

Payment processing platform (E-Payment)

Departmental ownership: BMF

The E-Government Act (EGovG) requires Federal authorities to simplify electronic communication and to make administrative services easier, more user-friendly, and efficient. This includes enabling typical internet-based payment methods (Section 4 EGovG).

Objectives:

- **Enable typical internet-based payment methods for EGovernment services.**

A development alliance between several Länder and the Federation has assumed the continuing development and strategic planning of the ePayBL (ePayment Federation-Länder) software. New technology requirements (such as payment processing security notices from the BSI, PCI-DSS), operability requirements (e. g. absence of barriers) or requirements for the available payment methods can be implemented cost-effectively and made available for use by Federal managers. Any enhancements required based on statutory regulations – such as E-Invoice (original invoice) – will be made available for general use.

The ePayBL software gives members of the developer community access to a feature-rich eGovernment platform for payment processing. With its assistance, members of the developer community can collect online payments on their eGovernment platforms for administrative services securely and in compliance with household requirements. ePayBL acts as an intermediary between various functional public administrative processes and their respective payment systems. It transmits payables (posting lists) incurred by functional processes when services are purchased to the associated payment processors and in return supplies information about payment status for payables (actual posting) from the payment systems back to the functional processes. ePayBL also provides convenience services for administrations and functional procedures. This includes a paypage by which integrated functional procedures can completely delegate the payment process to ePayBL.

Implementation steps:

- **In addition to four major releases, the base version of ePayBL 4.0 also offers interim deliveries to give stakeholders speedy feedback and the ability to intervene. The exact schedule must be coordinated by the developer community.**

Introduce an IT-supported cross-departmental holding monitoring and information system

Departmental ownership: BMF

Objectives:

- **The system is intended to provide a modern IT platform that supports the departments in their further professionalization of holding management.**

The initiative intends to introduce a holding monitoring and information system (BeMIS) in the Federal administration while also maintaining the decentralized holding management by the departments. This includes preparing analyses and reports and meeting preparation by directors of the Federation in supervisory boards or comparable governance bodies. A knowledge platform related to the holding management topic will also be provided. The increased standardization of performance verification as mandated by the Federal Budget Office (Bundesrechnungshof) for Federal holdings can also be incorporated.

Implementation steps:

- **A cross-departmental requirements analysis to determine user requirements for the IT system to be introduced was already completed together with a functional-strategic specification document that includes a functionally prioritized development path.**
- **Due to the functional scope, the system will the technically implemented and introduced in the Federal administration in smaller releases. A system tender is currently being prepared.**
- **2020: Start of routine operation of the first release (planned).**

Citizen and business customer portal of the customs administration

Departmental ownership: BMF

The project core is to expand the online information services of the customs administration (zoll.de) based on a conceptual design and implementation of a portal. Citizens and businesses will be given modern, media-break-free, digital, and efficient access to administrative services of the customs administration. As a prerequisite, the stakeholder master data for the individual procedures will be consolidated into a stakeholder master data service.

Objectives:

- **Online access by citizens and businesses for services of the customs administration.**

Individual services related to cross-border goods movements are governed by EU legal regulations for offering administrative services electronically. Fully electronic processing and applications must be bindingly implemented for binding customs tariff information by October 1, 2019.

The citizen and business customer portal will be integrated as a functional portal into the portal network. An identification service operated jointly with the finance administration of the Länder (EKONA) will provide identification at a substantial trust level.

Implementation steps:

- **By October 01, 2019: Consolidate holding master data from cross-border movement of goods.**
- **By May 02, 2020: Consolidate holding master data from consumption taxes.**
- **October 01, 2019: Start a citizen and business customer portal with the services: commercial legal defense insurance, banking data changes motor vehicle taxes, binding customs tariff information Use of the EKONA identification service.**
- **May 02, 2020: Expand the portal by energy tax assessments.**
- **By 2025 (tentatively): Further expansion of services by administrative services governed by tax law.**
- **As needed: create the legal conditions for expansion by non-tax services of the customs administration.**

Digitalize the finance administration

Departmental ownership: BMF

E-Government-enabled tax laws speed up and simplify the completion of tax obligations for citizens and businesses, while also creating efficient taxation methods for the tax administration. As stipulated in the coalition agreement, we will review all present and future laws for digital compatibility and make these E-Government-enabled (standard screening plus). This also includes the renewed, ambitious review of written form requirements. We also desire binding regulations for standards, system architectures, and interoperability.

Objectives:

- **Speed up and simplify completion of tax obligations for citizens and businesses.**

Information relevant for taxation already in the possession of the tax administration must not be redeclared. The coalition agreement aims to introduce a preformatted tax declaration for all taxpayers by the 2021 assessment period.

By doing so, we also intend to achieve that justified claims for services, such as the child allowance (Kindergeld) after reporting a birth can in the future be granted proactively without an application.

The statutory regulations for the seven income types for income taxes (employment income, self-employment income, return on capital, rentals and leases, agriculture and forestry, commercial operations, miscelleneous income) and for the corporation and business taxes, as well as value-added tax must be revised such that a digitally identifiable legal situation that supplies the relevant tax information occurs at any time in the course of life circumstances.

Implementation steps:

- **In the planning stage.**

Digitalizing public procurement

Electronic award, award statistics, competition register

Departmental ownership: BMI und BMWi

Objectives:

- **Implement an end-to-end, digitalized, media-break-free, and cross-departmental purchasing process, including requirements analysis, procurement, and invoicing.**
- **Reduce the burden on businesses and public administrations by speeding up tenders with digitalization.**
- **Increase efficiency while also reducing costs, both for public principals and private contractors.**
- **Increase transparency of tender processes (award statistics).**
- **Simple and faster tenders - bidders can place queires with the electronic competition register regarding blacklisting reasons.**

The statutory obligation of public principals and businesses to principally use electronic communication channels and therefore the electronic award, or E-Award, was adopted in April 2016 for awards above the EU threshold in the Act against Restraints of Competition (Gesetz gegen Wettbewerbsbeschränkungen (GWB)) and in the legal codes based thereon. The award document (specifically the statement of deliverables) must be freely accessible and available over the internet free-of-charge. Since 10/18/2018 businesses are also required as contractors to submit their bids electronically.

The obligation to submit electronic bids for contract awards for goods and services by Federal authorities below the EU thresholds only applies after January 2020, and then only when certain contract values are reached.

The Federal Government intends to implement an end-to-end, digitalized, media-break-free, and cross-departmental purchasing process, including requirements analysis, procurement, and invoicing.

The currently pending new nationwide award statistic will be used to collect public procurement data completely electronically. This will be the first valid database of its kind in this area.

After the specific legal code is ratified, the pending electronic competition register will give public principals easy, reliable, and nationwide information about legal violations by businesses that can result in blacklisting from tenders. The communication between the principal, businesses, and the register authority will then be conducted by electronic transmission channels.

Implementation steps:

- **Implement an end-to-end, digitalized, media-break-free, and cross-departmental purchasing process (functional ownership: BMI)**
- **By 2019: Ratify the competition register directive and commission the competition register no later than 2020 (functional ownership: BMWi)**
- **Implement the new award statistic by 2020 (functional ownership: BMWi)**

Modernize consumption and transaction tax enforcement by customs administration

Departmental ownership: BMF

Objectives:

- **Comprehensive IT solution to support consumption and transaction tax enforcement for customs administration.**

Customs administration will be given a modern and comprehensive IT solution to support consumption and transaction tax enforcement. The process must also include an online application that gives businesses the option to submit tax declarations or tax relief applications electronically and to download legally binding tax notices over the portal. Access will be made available over a central internet portal operated by customs administration – the citizen and business customer portal. The portal is currently being built and will be integrated into the planned administrative portal of the Federation.

MoeVe Customs (MoeVe Zoll) will be implemented in several phases.

Implementation steps:

- **May 02, 2020: Planning date for start of full production. Scope: Various case facts related to energy tax law (e. g. energy tax declaration, including electronic application), as well as various IT base components that will also be reused for the subsequent steps.**

Modernize the Public Health Service (Öffentlicher Gesundheitsdienst (ÖGD))

Provide a digital reporting and monitoring system for infectious diseases

Departmental ownership: BMG

Objectives:

- **Establish a complete digital reporting system for infectious diseases as stipulated by the Infectious Disease Act.**
- **Automate and simplify the ÖGD workflows.**
- **Early recognition of breakout events and target-group-appropriate compilation of data by using artificial intelligence.**

As stipulated by BMG, the Robert Koch Institute will in consultation with the Länder install an electronic reporting and information system. Going forward, all reporting processes according to IfSG will be fully automated in this system. Digital workflows will replace the previously used analog structures (fax messages, etc.).

Implementation steps:

- **Since 2016: Project subsidies for the RKI.**
- **Since 2017: Statutory framework for the system in place.**
- **Since 2018: RKI to develop a reporting platform and software for embedding in practice, lab, and hospital management systems (PVS).**
- **Since 2018: Develop the interface configuration for manufacturers of PVS in collaboration between RKI, KBV and DKG.**
- **Render the Telematik infrastructure usable in collaboration between RKI and gematik.**
- **Starting in 2019: A joint planning board to coordinate between the Federation and Länder.**
- **Starting in 2020: Connection of the complete ÖGD.**
- **Starting in 2021: Rollout; all reporting facilities to be connected by statutory use obligation (decree declaration).**

Digital health information portal

Departmental ownership: BMG

Objectives:

- **Develop a central national health portal.**
- **Improve the general health skills in the population.**

The coalition agreement stipulates the development of a „National Health Portal“ that will become the central German internet access tool to inform citizens about health issues. The portal will therefore also be an important contribution toward improving the general health skills in the population. The portal will be strictly guided by the criteria of user-orientation, transparency, the absence of advertising, high quality standards, and data protection.

Implementation steps:

- **Decisions concerning subsidy structures and financing will shortly be made on the basis of a feasibility study on the “Concept for a national health portal” contracted by the BMG with the Institute for Quality and Efficiency in the Health System (Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen) and published in September 2018, which comprehensively outlines important content modules and possible content partners.**
- **The subsidy structures will be established in 2019 in order to develop the specific contents and formats for the individual portal modules in 2020.**

Digital State – consolidated services

Departmental ownership: BMI

Objectives:

- **Reduce IT-basic and cross-sectional services to no more than 2 IT services per function.**
- **Build an end-to-end and standardized digital overall architecture for the Federation as the basis for modern administrative practices.**
- **Provide IT solutions and digital platforms to support the digital transformation of the Federal administration and facilitate digital innovation related to artificial intelligence.**

Services are consolidated by bundling joint cross-functional requirements and by developing and introducing standardized IT-basic and cross-functional solutions related to E-Government, electronic administrative work, enterprise resource planning, and infrastructure.

This also includes developing an overall Federal architecture and providing standardized IT solutions in user-friendly digital service platforms.

Implementation steps:

- **By June 01, 2019: Develop a standardized overall federal architecture.**
- **On-going by December 31 of each year: IT measure planning and implementation to provide and introduce standardized IT solutions.**
- **Iteratively build cross-functional digital service platforms for modern use (digital workflow platform, enterprise resource planning platform, holding and legislative platform, infrastructure platform, portal and integration platform).**

Groupware Bundeswehr (Groupware Bw)

Departmental ownership: BMVg

Objectives:

- **Expand functionality, modernize, and harmonize services already in place at GB BMVg in support of the collaboration.**

The project „common Bundeswehr collaboration platform (bundeswehrgemeinsame Kollaborations-plattform) – Groupware Bw“ is intended to support the fulfillment of missions over the entire capability profile of the Bundeswehr, both for basic operations and as part of deployments, quasi-deployment obligations, and exercises. The focus in this case is on expanding the functionality, and on modernizing and harmonizing capabilities related to informal electronic collaboration (e-collaboration) and already in place in the business division (Geschäftsbereich (GB)) BMVg. With its basic services, the project Groupware Bw forms the IT platform for developing, migrating, and using other functional applications and/or existing IT services. Examples for this include the Central Regulation Management System (Zentrales Regelungs-Managementsystem (ZRMS)), the Document Management System of the Bundeswehr (Dokumentenmanagementsystem der Bundeswehr (DokMBw)), De-Mail and e-scanning (e-Scannen).

Implementation steps:

- **By end of 2019: Planned end of concept phase, including contract conclusion.**
- **2020 until end of 2022: Planned rollout in the business division BMVg.**

Digitalize the administration on the basis of the DMS DokMBw

Departmental ownership: BMVg

The document management system (DMS) for the Bundeswehr „DokMBw“ will be introduced in two expansion phases throughout the entire business division (GB) BMVg. The first expansion phase (1st EP) envisions making the DokMBw available for users of the BMVg and to facilities of the first subordinated tier. The second expansion phase (2nd EP) rolls out the DokMBw to all other IT workstations of the departmental facilities. The first expansion phase largely implements the processes and functionality related to e-transaction processing, including e-file. The second expansion phase plans the implementation of other functionality and modules according to the „organizational concept electronic administrative processes“, such as long-term archiving and e-scanning.

Objectives:

- **Introduce and use a document management system in the GB BMVg.**

Implementation steps:

- **By end of 2020: DokMBw 1st EP, currently being implemented**
- **Starting in 2021: Planned implementation DokMBw 2nd EP.**

Attract and develop staff for the digital administration

Departmental ownership: BMI

Objectives:

- **Improved cross-departmental collaboration regarding over-arching human resources topics, resulting in synergy effects.**
- **Test and refine the findings from workshops in pilots at individual authorities.**
- **Solidify the initiated measures and impulses in regards to organizational culture.**

The focus of the PersDiV project is to establish a cross-departmental staff development process for managers (specifically skills required in the future and qualification measures) and will improve employee retention processes, in particular for IT professionals.

The agencies already have various approaches for this. The PersDiV project therefore promotes department-wide interaction: the individual agencies learn from each other and together develop new ideas. The results obtained during the workshops will be refined further by the individual federal agencies. Measures will be implemented and the agencies will roll out additional implementation plans. The project will also help to strengthen existing training and continuing education structures.

Implementation steps:

- **By October 2018: Cross-departmental workshops**
- **Since September 2018: Start of pilots and speedy implementation of customized worker retention and development measures in limited areas.**
- **1st half-year 2019: Develop customized continuing education measures to close existing qualification gaps among managers.**

Early crisis detection by using key technologies and by developing innovative services

Departmental ownership: BMVg

The software-based project IT-U KFE will give the Federal Ministry of Defense sufficiently early warnings for crisis developments worldwide with relevant military implications to create the advance notice required to prepare actionable recommendations for tackling these. The IT-U KFE will rely on sub-processes for crisis early warning, in particular as support for data analysis and forecasting and to reduce the workload, thus leaving more time to work on analysis.

Objectives:

- **Crisis developments worldwide with relevant military implications must be identified early to create the advance notice required to prepare actionable recommendations for tackling these.**

Approach: Analyze available open and classified data sources (by reviewing structured and unstructured data) as part of an integrated solution with sophisticated software-based tools to reduce the manual effort for reviewing, sorting, and structuring documents and information.

Predict departmentally relevant crisis six to 18 months in advance with the assistance of scientifically substantiated forecasting models by isolating identified crisis potential with up-to-date information, including requirements for additional information.

Implementation steps:

- **Develop an information management system to automatically collect, sort, store, render, classify, and correlate information as much as possible by relying on a wide range of sources and databases.**
- **Predictive indicators for defined crisis types six to 18 months in advance down to the sub-state level on the basis of scientifically substantiated forecasting models.**
- **Interoperability with other comparable systems operated by the Federal Government.**

Federal Crisis Management Information System (Krisenvorsorgeinformationssystem Bund (KVInfoSysBund))

Departmental ownership: BMVg

Objectives:

- **Contemporary protection of German nationals abroad under the scope of NatRKM.**

Tackling the increasingly complex overall State mission under the scope of the National Risk and Crisis Management for the Protection of German Nationals Abroad (Nationales Risiko- und Krisenmanagement zum Schutz deutscher Staatsangehöriger im Ausland (NatRKM)) requires a KVInfoSysBund for common departmental use, inluding stationary and mobile capabilities and flexible scalability. KVInfoSysBund must address the growing need of the BMVg and associated departments in comprehensive information and data interchange and modern communication methods as support for common workflows for tackling crisis situations.

The missions/functions of an IT-based system to support all measures under the NatRKM scope include:

- procedural, organizational, and technical foundation for cross-departmental access to an “information space of the NatRKM”.
- Use of modern tools and communication methods for preparing, planning, executing, and reviewing all measures under the NatRKM scope.
- Flexible, immediate, worldwide, and delay-free access to a support system for all required measures related to preparing, planning, executing, and reviewing the NatRKM.
- Speedy regeneration of a common situational profile based on current situational intelligence.
- Efficient search and analysis of available information and processing options on the basis of the latest collaboration tools worldwide.
- Differentiated situational analysis and processing with high level of currency.
- Accurate situational assessment and support for decision-making processes by the competent crisis committee of the Federal Government and by situational centers/deployment teams of the various departments.

Implementation steps:

- **Prepare solution proposal according to CPM and contract implementation.**
- **Service implementation, test and acceptance, and service deployment.**

Digitalize situational awareness BMVg

Departmental ownership: BMVg

Objectives:

- **Improve efficiency by reducing the manual effort for preparing managerially relevant information requirements on the basis of better data quality and availability.**
- **Noticeable workload reduction of agency workforce at all downstream levels.**
- **Capability to make meaningful assessments of one's own situation so that actionable areas can be identified at an early stage and deficiencies can be proactively addressed.**

The project Digitalize Situational Intelligence BMVg (Digitalisierung Lagebilder BMVg) is intended to create an IT-based system for digitalized analysis of deployment readiness and deployment availability. In parallel to developing the digital deployment readiness situation, the competent coordination group „Digitalization of Situational Intelligence (Digitalisierung Lagebilder)" will develop/refine other/existing digitalized situational profiles on the basis of this application. This involves bringing together previously not-harmonized situational profiles that were developed independently from each other in order to improve management and control capability at all levels of the BMVg business area.

Implementation steps:

- **September 2018: Provision the application for analysis support of the deployment readiness for the units Army (Heer) of the VJTF (Land) 2019.**
- **January 2019: Expand by all military organizational units under the scope of VJTF 2019.**
- **August 2019: Expand analysis support for deployment readiness to the entire mission spectrum of the GB BMVg.**
- **In parallel: Conceptual design for other digital situational profiles to be implemented after 2020 (two situational profiles per year until 2026).**

Building Information Modeling (BIM)

Widespread use of the BIM method to speed up digitalizing planning, building, and operating

Departmental ownership: BMVI

Increasing urbanization and increasingly complex requirements for building structures, technical facilities, and infrastructure require more intelligence and efficiency over the entire lifecycle. Digitalization and networking of services for planning, building, and operating represent significant opportunities in this respect. The BIM method plays a key role in this case. It permits reliable cost, quality, and schedule control, reduces coordination errors, and promotes and facilitates inter-disciplinary collaboration in all phases.

Objectives:

- **Reduce coordination errors**
- **Reliable cost, quality, and schedule control.**
- **BIM to be used as per 2020 on all infrastructure construction projects.**
- **Install a national BIM competence center.**

The planning comprises the phased plan „Digital Planning and Building“ and installing the National BIM Competence Center. It will support the Federation‘s efforts to optimize, intensify, and establish the digitalization of the construction sector.

Implementation steps:

- **Start of 2019: Tender award for the national BIM competence center.**
- **Starting mid-2019: Competence center to start operational activity.**

Green IT initiative: Energy consumption, energy efficiency and sustainable IT procurement for Federal IT

Departmental ownership: BMU

Objectives:

- **By 2022, the stated objective is that the electricity consumed by Federal IT does not exceed 350 GWh/year in spite of the expected service increases.**
- **Sustainable IT procurement is to be implemented on the basis of the architecture directive and the IT procurement strategy.**
- **The IT service providers of the Federation shall base their expansion of service centers on Blauer Engel criteria for energy-efficient data center operation.**

The project frame of reference is the resolution of the IT Board No. 2017/7 dated 07/07/2017. In the context of fundamental changes in the IT landscape of the Federation due to IT consolidation and digitalization projects, the objectives defined in 2008 and 2013 will be refined and/or expanded to reflect the new challenges.

Implementation steps:

- **2018: Aktualisierung des Berichtswesens und Vorschlag für ausgewählte Kennzahlen für ein Projektcontrolling 2018–2022. (erl.)**
- **2018: Finalisierung der IT-Beschaffungsstrategie. (erl.)**
- **2019: Aktualisierung von Maßnahmeempfehlungen zur Sicherstellung der IT-Energieeffizienz in den Behörden.**
- **2019: Unterstützung der IT-Beschaffungsstrategie durch themenspezifische Handreichungen zur weiteren Stärkung nachhaltiger und ressourcenschonender IT-Beschaffung und –Nutzung.**
- **2019: Redesign der Datenerhebungsmethoden vor dem Hintergrund der Anmietung von Rechenzentrum-Leistungen durch IT-Dienstleister.**
- **2022: Vorschlag für Kennzahlen für ein kontinuierliches Controlling.**

Satellite-supported monitoring of all agricultural land

on the basis of Sentinel satellite images under the scope of EU agricultural subsidies.

Departmental ownership: BMEL

Objectives:

- **Modernize and simplify EU agricultural subsidies, both for farmers and for the national administrations.**

A monitoring system on the basis of Sentinel satellite imagery is to be installed under the context of efforts by the European Commission to give new technologies more consideration for EU agricultural subsidies. These satellite images will then be used to automatically monitor agricultural land for the purpose of enforcing compliance with subsidy requirements. Communication platforms yet to be installed will give administrations and farmers on-demand access to information about relevant land.

Implementation steps:

- **2018/2019: Conduct pilot projects in the countries.**

Index

1. AS	1st Expansion Phase
2. AS	2nd Expansion Phase
AA	Federal Foreign Office
AddF	Foundation Archive of the German Women's Movement
App	Application
ArbZG	Working Time Act
Art. 104c GG	Article 104c Basic Law for the Federal Republic of Germany
BaföG	Federal Training Assistance Act
BAKS	Federal Academy for Security Policy
BeMIS	Holding Monitoring and Information System
bff	Federal association of rape crisis centres and women's counselling centres
BIM	Building Infoprmation Modeling
BKM	The Federal Government Commissioner for Culture and the Media
BMAS	Federal Ministry of Labour and Social Affairs
BMBF	Federal Ministry of Education and Research
BMEL	Federal Ministry of Food and Agriculture
BMF	Federal Ministry of Finance
BMFSFJ	Federal Ministry for Family Affairs, Senior Citizens, Women and Youth
BMG	Federal Ministry for Health
BMI	Federal Ministry of the Interior, Building and Community
BMJV	Federal Ministry of Justice and for Consumer Protection
BMU	Federal Ministry for Enviroment, Nature Conservation, and Nuclear Safety
BMVg	Federal Ministry of Defense
BMVI	Federal Ministry of Transport and Digital Infrastructure
BMWi	Federal Ministry of Economic Affairs and Energy
BMZ	Federal Ministry for Economic Collaboration and Development
BSI	Federal Office für Information Security
BSI-Kritis-VO	Federal Agency for Security in Information Technology Critical Directive
BSR	Federal Security Board

BULE	Federal Rural Development Scheme
CISPA	Helmholtz Center for Information Security
CPM	Corporate Performance Management
CRISP	Center for Research in Security and Privacy
DBM	Digital Single Market
DDB	German Digital Library
DigiNetz-Gesetz	Digital Network Act Law to facilitate the development of digital high-speed networks
DKG	German Hospital Federation
DMS DokMBw	Document Management System for the Bundeswehr
DNA	Deoxyribonucleic acid
DNB	German National Library
eGK	Electronic Health ID Card
EGovG	E-Government Act
E-Health-Anwendungen	Electronic Health Applications
eID	Electronic Identity
EIF	European Investment Fund
EKONA	ELSTER User Account Authentication and Identification Service
ELSTER	Electronic Tax Declaration (project of the German Administration)
ePA	Electronic Patient File
ePayBL	ePayment Federation-Länder
EQUALS	The Global Partnership for Gender Equality in the Digital Age
ERP	European Recovery Programme
ESL-Milch	Extended shelf life
EU	European Union
EU D4D-Koalition	Alliance of the European Digital Economy for topics such as smart cities and connectivity
EU-KOM	EU Commission
EU-MS	EU Member States
EWP	Development Partnerships with the Private Sector
EZ	International Development Collaborative
FF BMWi	Functional Ownership by Federal Ministry for Economy and Energy
FFA	National film funding institution
FMT	Womens' Media Tower
FttB/H	Fiber to the building / home
G20	Group of 20
G7	Group of 7
GB	Business Division
gematik	Operating Organization (Gesellschaft für Telematikanwendungen der Gesundheitskarte mbH (mit beschränkter Haftung))
GINSEP	German Indian Startup Exchange Program
GISEP	German Israeli Startup Exchange Program

GIZ	German Corporation for International Cooperation
Groupware Bw	Groupware Bundeswehr
GWB	Act against Restraints of Competition
GWh	Gigawatt Hours
IfSG	Infection Protection Act
IKT	Information and Communication Technology
IT	Information Technology
IT-U KFE	Information Technology-Supported Early Crisis Warning
IVS	Intelligent Traffic Systems
KASTEL	Competence Center for Applied Security Technology
KBV	Federal Alliance of Health Fund Doctors
KfW	Credit Institute for Reconstruction
Kfz	Motor Vehicle
KI	Artificial Intelligence
KMU	Small and Midsized Businesses
KoaV	Coalition Agreement
KOM	European Commission
KVInfo SysBund	Federal Crisis Management Information System
LAWS	Lethal Autonomous Weapons Systems
LTE	Long Term Evolution (4th Mobile Radio Generation = 4G)
Mbit/s	Megabits per second
MENA-Region	Middle East & North Africa
MINT	Mathematics, information technology, natural sciences, and technology
MoeVe Zoll	Modernization of Consumption and Traffic Tax Enforcement of the Customs Administration
NAP	National Access Point for Multi-Modal Travel Information
NatRKM	National Risk and Crisis Management
NavLog	NavLog GmbH - Contractor preparing a data set to classify the ability to navigate logging routes
NFDI	National Research Data Infrastructure
NPNK	National Program for Sustainable Consumption
ÖGD	Public Health Service
OII	Oxford Internet Institute
ÖPNV	short-range public transportation
OZG	Online Access Act
PCI-DSS	Payment Card Industry Data Security Standard
PersDiV	Attracting and Developing Human Resources for Digital Administration
PLM	Product Lifecycle Management
ProgRess	German Resource Efficiency Program
PVS	Private Doctor Clearinghouse
Q4.0	Qualifcation Initiative 4.0

QS-Dienste	Quality Control Services
RKI	Robert Koch Institute
RL Waren-handel	Goods Trading Directive
SDG	Single Digital Gateway
SPK	Prussian Cultural Heritage Foundation
TI	Telematik Infrastructure
TKG-Novelle	Telecommunications Act Amendment
ÜBS	Inter-company vocational training centres
ÜBS-Digita-lisierung	Inter-company vocational training centres/Digitalization
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UniBwM	Bundeswehr University München
VFX	Virtual Effects
VJTF	Very High Readiness Joint Task Force (NATO spearhead)
VO	regulation
WLAN	Wireless Local Area Network
ZITiS	central office for information technology in the security sphere
ZRMS	Central Regulation Management System

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