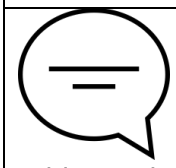
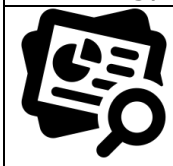
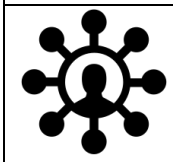
Roadmap for mobile devices

Description and state of the art	
Definition	A mobile device (or handheld computer) is a small computing device, typically small enough to hold and operate in the hand and having an operating system, capable of running mobile apps. These may provide a diverse range of functions. Typically, the device will have a display screen with a small numeric or alphanumeric keyboard or a touchscreen providing a virtual keyboard and buttons (icons) on screen. Many mobile devices can connect to the internet and interconnect with other devices via Wi-Fi, Bluetooth or near field communication (NFC)[325].
 Addressed societal /business or public sector need	The identified Societal need was the faster and transparent access to PS services. The identified public sector needs were increase resource productivity and digitization.
Existing solutions /applications /services	• Conduit[326] • CatSalut Respon • PlatgesCat[327] • ECIM[249] Smart Mobility API • Gov2go app (personal government assistant)[328] • Commercial Driver License (CDL) practice knowledge test mobile application[329] • Mobile inspections app for agencies to easily conduct inspections in the field right from a tablet[330] allows users in Thailand to make police reports using their phones, instead of having to locate a police station.DubaiNow, Unified Government Services App, to enable citizens transact with government services through a single platform[331]. • Whim, Mobility-as-a-Service App, linking all transport networks in Finland and suggesting travel routes using all available means of transport[Error! Bookmark not defined.]. • Qlue, City Improvement and Monitoring App (Jakarta)[Error! ookmark not defined.]. • Most of the existing solutions are related to cloud services and connected mobile devices. There are plenty of providers of such solutions, some of them combining hard- and software solutions. Companies like T-Systems are

	offering dynamic workplace IT infrastructure. The most popular end-user solution is Microsoft Office 365. On stores like Apple's App Store[332] and Google's Play Store[333] users can find thousands of apps under the category productivity. • Gives flexibility of workers to work from any place they want to. • Allows for better integration of work and private life • Facilitates working on business trips and saves costs because of shared workspace
 Main actors regarding R&D of this technology	• Fraunhofer-Gesellschaft zur Förderung der Angewandten Forschung e.V. • Technische Universiteit Delft • Universidad Politecnica de Madrid
 Current research activities	There are a lot of projects dealing with mobile devices in general – in **CORDIS** 279 projects have been published. Specifically, in the area of mobile devices in the public sector the following projects are running: Innovative mobile e-government applications: THUNDHUB, NAV4I, PW, A-BAM, Mobile E-Admini, MPGS, TAIS, PRIFOG, Foodakai-1 , ICT-enabled open government: Mobile-Age Call of the **German Federal Ministry of Education and Research** 'smart services of the cities'[334]; EUREKA project (Use of mobile devices such as tablets & smartphones for data collection, data processing & operational process management)[335] **DG 'Internal Market, Industry, Entrepreneurship and SMEs'** has published a call regarding 'Innovative mobile e-government applications by SMEs' in 2013 [336] and on 'INSO-1-2015 - ICT-enabled open government'[337] in 2015. In 2013, the European Commission published an orientation paper in which research and innovation activities in the area of 'ICT-supported co-created, personalised and high impact public services, including the use of social media and smart mobile devices' were recommended[338].
 Impact assessment	**Public Sector Modernization:** • Institutional/Capacity Development • Efficiency/Productivity • Quality of services provided • Image Modernization **Public Sector as an Innovation Driver:Innovation** • Privacy & Security

	• Transport Infrastructure • e-Security • Environmental Awareness Creation	
 Potential use cases	• M-learning. • Mobile services. • Booking and payment of health services. • Reservation of doctor appointment in mobile. • Transport-related services (traffic updates, footprint monitoring)	
 Technological challenges	• Internet access required for certain functions. • Variable connectivity. • Hindering real human interaction. • Increasing the probability of accidents.	
Necessary activities (in or for the public sector)		
 Development of a specific training necessary	**Open task**	Before using this technology a specific training is needed. In the public the implementation of a specific training for different stakeholders is discussed for using mobile devices in the public sector.[339] On the one hand it may be necessary to train the general public and on the other hand the staff in the public sector. These training could be set up by educational institutions as well as private providers.
 Advanced or adapted ICT infrastructure needed	**Open task**	For the implementation of this technology an advanced or interoperable ICT infrastructure is needed. The existing IP network has to be strategically built into a medianet: optimizing the connectivity for all areas in the country and the available bandwidth to make sure that new features can be used without problems (entry to documents, possibility to make video conferences etc.).[340] In the literature some technologies and trends are mentioned that can function as enablers for the ICT structure in a country for the implementation into the public sector[341]: • Open governance systems and how the public sector can create open ICT-supported platforms for public value creation. • ICT-supported co-created, personalised and high impact public services, including the use of social media and smart mobile devices.

		• Open participation and engagement supported by ICT across all areas of public sector operation. • Experiments with ICT-supported open, bottom-up and social innovation involving large numbers of actors. • Infrastructures, processes and interoperability integrating different parts of the public sector, and linking the public sector with other actors. • The innovative use of open and big data by the public sector and together with other actors, including policy modelling tools. • Measurement and monitoring tools for use by the public sector itself or other actors. • Further development of Web 2.0 tools and the introduction of Web 3.0 methods. • Empowering the civil servant and making work processes more efficient and effective. • Identity management, personal data protection and data security.
 Change of (public sector internal) processes necessary	**Open task**	The experts' opinion was that there needs to be a change of processes in the public sector for the successful implementation of mobile devices in the public sector. Through mobile devices the connectivity of persons can be increased. Still it has to be guaranteed that everyone will have easy access to not make people and workers frustrated, for example in rural areas[342] Also some things need to be implemented to successfully work together in the public sector via mobile devices: virtual desktops and mobile videos to participate in web conferences. Because of the connectivity it will be possible for people working in the public sector to work from home. New policies will have to be introduced to handle this new form of work.
 Promotion / information of stakeholders necessary	**Open task**	The technology has to be explained and promoted among business stakeholders or citizens to make sure that all the citizens and stakeholders are able to work with mobile devices in the public sector. Guideline and fact sheets could be part of a strategic implementation of these mobile devices.[343]

Need to deal with cyber security issues		No specific need for the implementation of mobile devices into the public sector to deal with cyber security issues was identified. Still in literature some risks are discussed with regard to cyber security and data protection as there are risks associated with the inappropriate use of the information available on mobile devices and the sharing of information that is not supposed to be shared.[343]
New or modified legislative framework or regulations necessary		There is no need for a new or modified legislative framework or new regulations.
Development of a common standard necessary		No need for a new common standard was identified.
Need for a more economical solution	**Open task**	The implementation of mobile devices in the public sector seems to be a challenge with regard to the costs. It will be necessary to find shared services that can provide several technologies and still stay within a reasonable cost limit.[343] Another challenge will be to have a managerial oversight to ensure that costs are contained.[343]
Dealing with challenges		
Ethical issues	**Open task**	The technology is likely to raise ethical issues. This can also be connected to some fears regarding the misuse of the availability to access and share information from everywhere.
 Societal issues		No societal issues were identified.

Health issues		No health issues were identified.
Public acceptance	**Open task**	The technology is likely to encounter problems regarding public acceptance.