

GEMEINSAM DIGITAL: BERLIN

The Smart City Strategy
for the capital

BERLIN



FOREWORD

Dear Berliners,

We live in turbulent times. Crises such as climate change, the Russian war of aggression against Ukraine and the COVID pandemic are making us acutely aware that we have to be prepared to respond swiftly to tackle a wide range of challenges. In order to do so successfully, we have to become more results-oriented and pragmatic, more creative and more willing to experiment, as well as being able to move more quickly from an idea to its practical implementation - especially in the Berlin administration.

Our goal is a functioning city, and our aim is to tap into the potential of digitalization to make that happen, adopting a cross-thematic mindset, collaborating in different ways and trying out new approaches. This applies both within the administration and also to collaboration with stakeholders in the urban community.

The digital transformation can only come about if there is a cultural shift - and that has to start with us and in our administrations. For this reason, the city of Berlin created a new political position last year: that of the Chief Digital Officer (CDO) responsible for the city's digital transformation.

The strategy Gemeinsam Digital: Berlin (GD:B) now brings together the topics of smart city, digital strategy, administrative digitalization and digital citizen services.

We are breaking new ground with this strategy: the focus here is on the people who make Berlin what it is with all its diversity and quality of life. Many of them have contributed to the development of this strategy - including people from our administration. Together we have developed a vision for the digital city of the future. This vision will change, and in this respect GD:B is not a static document but something that we want to evolve on an ongoing basis. GD:B seeks to provide a dynamic framework for change.

We would like to expressly thank everyone who were part of the participation process in developing Gemeinsam Digital: Berlin! This process has laid a sustainable foundation for breathing life into the strategy and creating tangible added value for the city of Berlin.

We invite you to continue to actively support the further development and implementation of the strategy in the future. After all, the digital transformation of Berlin can only be a success if we tackle it together.



A handwritten signature in blue ink that reads "Franziska Giffey". The signature is fluid and cursive.

Franziska Giffey
Mayor of Berlin



A handwritten signature in blue ink that reads "Ralf Kleindiek". The signature is in a cursive style.

Dr. Ralf Kleindiek
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EXECUTIVE SUMMARY

What is the purpose of the **Gemeinsam Digital: Berlin strategy?**

Gemeinsam Digital: Berlin, or GD:B for short, establishes the direction for the digital and smart transformation of the city of Berlin in the coming years. GD:B aims to make Berlin a sustainable, community-oriented, cooperative and resilient city for the future.

Through GD:B, the administration seeks to bring about a cultural change and a digital transformation that is oriented towards the common good. GD:B provides a platform which brings together the relevant actors and provides the right tools while at the same time allowing sound implementation processes to be planned. “Gemeinsam” (“together”) conveys the conviction that the Values Compass (in the text of the strategy, certain terms are marked with a gray background: these are briefly explained in the glossary at the end of the strategy document) of a digital city can only be embraced in practice if Berlin residents, the city’s administration, business, academia and organized civil society work together to develop solutions. GD:B is an umbrella strategy for the digital and smart transformation of the city of Berlin. It does not replace specific, specialized strategies, but offers the opportunity to achieve existing specialized objectives more quickly and on a more interconnected and needs-oriented basis. Likewise, strategies such as the Berlin Open Source strategy with their specialized focus can be directly linked to GD:B.

Who is GD:B aimed at?

GD:B is a strategy that was developed by and for the city and is aimed at Berlin’s urban community. Its content was developed by means of a comprehensive participatory process involving Berliner residents, silent groups, the city administration, business, academia and organized civil society. Working together, these groups translate strategy into action. The strategy is aimed at everyone who wishes to play a part in implementing the future vision for a smart city described in this document and in the digital transformation of the city of Berlin. Deliberately, no framework conditions on the administrative side are mentioned here since this strategy text initially sets out the direction in which the city is seeking to develop from the perspective of the urban community.

What is GD:B seeking to achieve?

GD:B aims to initiate a cultural change in the administration and establish new forms of collaborative work in approaching overarching challenges and solutions.

Concrete measures are to be developed across different sectors, departments and levels by all stakeholders, working on an equal footing together with the administration. A standardized process model and the use of modern tools and methods will enable future projects to be implemented more quickly and on a more transparent and needs-oriented basis. GD:B’s activities also have a spatial impact, since urban development and digitalization are conceptually combined in the interests of the common good.

How is the strategy to be applied?

GD:B is a learning strategy. The content of the strategy is continuously updated and new measures are added at regular intervals. The current version, a knowledge repository, the latest information and the general possibility of contributing further ideas can be found on the website: <https://gemeinsamdigital.berlin.de>.

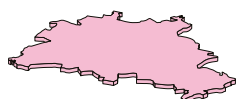
The first chapter sets out why the strategy is needed and is regarded as a platform that conceptually incorporates its own implementation. The text of the strategy also includes the following chapters:

- The **Values Compass** answers the question of what GD:B is to work towards achieving.
- The **fields of action** define the areas in which the activities are to have an impact.
- The chapter on **Measures** provides an interim status of all measures planned or approved to date; it is expanded on an ongoing basis.
- **Governance** outlines initial decision-making paths and the roles of the actors involved.
- **Implementation** proposes how GD:B measures are to be realized in individual phases.
- The chapter **Impact measurement** introduces the success factors required for good measures and also shows how dedicated indicators are developed for each measure, how the learning strategy works, and how proposed measures are evaluated. A look ahead at the end of the strategy provides a perspective on the steps to be taken in the first few months after the strategy has been adopted.

The example of the measure **Smart Water** is used throughout the chapters to provide a vivid illustration of the concrete significance and application of individual measures. The Annex to the strategy document includes an explanation of the extensive strategy process, a presentation of the formats used in the course of the preliminary process, and further details on the subject of impact measurement.

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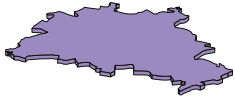
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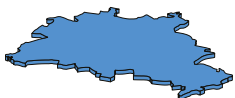
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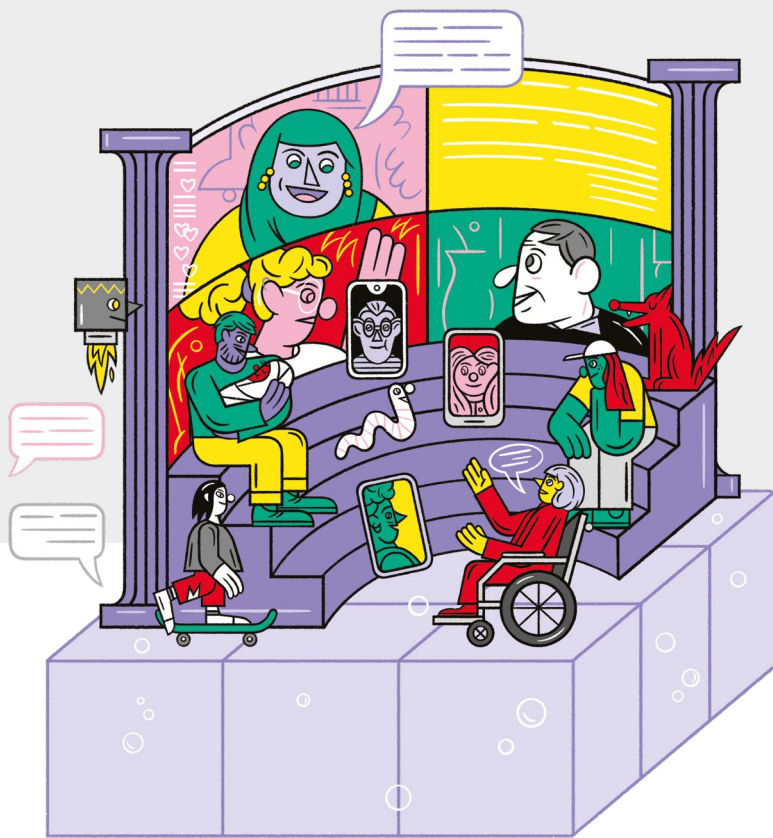
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WHY GD:B?



CHAPTER 1:

WHY GD:B?

Berlin is facing major upheaval: the city is seeking to become climate-neutral, tackle the mobility revolution, modernize its administration, strengthen social cohesion and promote gender equality, at the same time involving all residents more closely in the process. These are complex tasks that require creative and innovative solutions. Our goal is a functioning city – in the face of a momentum that Berlin has not seen in recent years and crises that will continuously confront us with major challenges.

A plan is required to make Berlin fit for the future, along with the relevant actors and the right tools. The digital transformation is to offer enormous added value for residents, the city administration, businesses, academia and research. Future-oriented urban development is to noticeably improve residents' quality of life. The administration is to become more efficient and be more appealing to urgently needed new personnel as a modern employer. For businesses, uniform standards and user-centered processes are to result in improved workflows and planning opportunities.

Digital transformation is not a purely technical task, however: it requires profound changes to existing structures and processes. Ultimately, this means a cultural change that will affect all administrative departments and all sectors of society. Innovative solutions contributed by Berlin's urban community have a crucial contribution to make here – whether Berlin residents, the city administration, academia and research, business or civil society.

GD:B – platform and tools for digital transformation

GD:B is not designed as a stand-alone specialized strategy: it aims to support the achievement of existing urban development goals¹ and other specialized goals through the appropriate use of new technologies, tools and methods. GD:B is an umbrella strategy for a sustainable, smart Berlin. In order to promote Berlin's transformation into a smart city², the GD:B³ strategy offers a way of establishing new working methods and forms of cooperation, more agile structures, competence building, and a systematic transfer of knowledge between administration and the urban community.⁴ In this way, it provides a platform for Berlin's digital transformation. The learning strategy and its implementation are the responsibility of and supported by the Chief Digital Officer of the State of Berlin, the State Secretary for Digital and Administrative Modernization (CDO/StS D) and his team.

1 These are summarized in particular in BerlinStrategie 3.0. See: Der Regierende Bürgermeister von Berlin. Senatskanzlei (2021). BerlinStrategie 3.0. Available online: https://www.berlin.de/rbmskzl/_assets/politik/berlin-strategie-3-0-langfassung.pdf

2 The Berlin definition was developed together with Berlin's urban community based on the Smart City Charter and the New Urban Agenda. See: Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) (2017). Smart City Charta: Digitale Transformation in den Kommunen nachhaltig gestalten. Available online: <https://www.smart-city-dialog.de/wp-content/uploads/2019/12/smart-city-charta-langfassung.pdf>; UN Habitat (2019). New Urban Agenda. Available online: <https://unhabitat.org/about-us/new-urban-agenda>

3 GD:B is a fusion of the Berlin Digital Strategy and the Smart City Strategy. The Digital Strategy provides the implementation expertise for the Smart City Strategy, which in turn offers the vision for Berlin – a conceptual merging of urban development and digitalization. See: Gemeinsam Digital (2022). Gemeinsam Digital zur Smart City. Available online: <https://gemeinsamdigital.berlin.de>

4 Urban society is defined as including the city administration, policymakers and actors from business, academia and organized civil society as well as silent groups and Berlin residents. See: Glossary.

Nevertheless, successful implementation requires the active cooperation and involvement of all Senate administrations and districts.

In Berlin's interpretation, smart does not merely mean "digital". Berlin's definition of a smart city aims to address how future challenges can be solved in a creative, open, purposeful and participatory way.⁵ In this connection, digital technologies are seen as an important tool in bringing about the sustainable, community-oriented transformation of the city, but not as an end in themselves.

The digital transformation must take into account the needs of Berlin residents as well as the interests of Berlin's business community, scientific and research institutions, and civil society. It can only succeed with the involvement of the whole of the urban community. The strategy was developed as part of an extensive participation process in which importance was attached to achieving the greatest possible diversity of perspectives. As such, it reflects the needs of the urban community.⁶ The strategy was created as part of the Model Projects Smart Cities (MPSC) funding program run by the German Federal Ministry for Housing, Urban Development and Building.⁷

The implementation phase is based on the principles of **humble government**⁸: key factors here are openness, the involvement of Berlin residents and cooperation with a range of different urban actors.

GD:B - a strategy that conceptually incorporates its own implementation

Berlin offers an excellent basis: hardly any other city has such a diverse ecosystem made up of actors in the worlds of business, academia and civil society with digital expertise. A wide range of innovation and transformation processes have already been initiated in the public sector in recent years.⁹ Experimental forms of collaboration are already being practiced at Berlin's eleven *Zukunftsorte*¹⁰ as well as through other initiatives. GD:B seeks to build on these and on Germany-wide and international experience to develop further measures through targeted collaborative activities. Disadvantaged and environmentally polluted neighborhoods and development areas in particular are to benefit directly from the measures. Since Berlin is both a state and a municipality, the situation in terms of interdepartmental and cross-level work within the administration is even more complex. At the same time, Germany's capital offers enormous potential for the further development of Berlin's ecosystem of actors¹¹, who are capable of driving innovative digitalization and benefiting from it. GD:B acts as an **enabler** that seeks to tap into Berlin's potential. Three key elements for implementation are as follows:

1. **Interdepartmental and cross-level work:** The solutions offered by the measures are geared towards tackling local or city-wide, cross-sector challenges. Even before measures are implemented, formats are used that support interdepartmental, cross-sector and cross-level work and promote the dovetailing of policy fields.
2. **Measures support:** As part of implementation and an important element in terms of the learning strategy, **Action Teams** receive methodological and technical support oriented towards agile approaches.

5 Der Regierende Bürgermeister von Berlin. Senatskanzlei (2021a). Strategischer Rahmen für die Entwicklung einer neuen Berliner Smart City-Strategie. Available online: <https://gemeinsamdigital.berlin.de/strategischer-rahmen-smart-city>

6 See the Annex for an overview of the participation process and its outcomes.

7 See: Smart City Dialog (2022). Smart Cities in Deutschland. Available online: <https://www.smart-city-dialog.de/modellprojekte>

8 See Annex III: Impact measurement, also Annala, M. et al. (2020). Humble Government: How to Realize Ambitious Reforms Prudently. Available online: <https://tietokaytton.fi/documents/1927382/2158283/Humble+Government.pdf>

9 Examples of this are provided in the analysis section of the Grünbuch für die Digitalisierungsstrategie des Landes Berlin ("Green Paper for the digitalization strategy of the state of Berlin"). See: Senatsverwaltung für Wirtschaft, Energie und Betriebe (2020). Grünbuch für die Digitalisierungsstrategie des Landes Berlin. Available online: https://www.berlin.de/sen/wirtschaft/digitalisierung/digitalstrategie/201006_gruenbuch.pdf. Further approaches are to be found among the submissions for the Berlin Administration Prize. See: Die Regierende Bürgermeisterin. Senatskanzlei. 2022. Berliner Verwaltungspreis. Available online: <https://www.berlin.de/verwaltungspreis>

10 Geschäftsstelle Zukunftsorte (2022). Zukunftsorte Berlin. Available online: <https://zukunftsorte.berlin>

11 The ecosystem includes numerous actors from different sectors. Educational institutions such as schools and state-owned organizations are also included.

3. **Prototypical approach:** The administration and other actors build and test prototypes and try out new approaches in order to learn swiftly, if necessary enabling them to define more precisely which specific services are to be put out to tender.

GD:B – an enabler for the administration and the urban community

GD:B claims to be an enabler and therefore an overarching action strategy for Berlin's development into a smart city. The status analysis showed that this is the right way to go.¹² Instead of a purely theoretical formulation of goals, aspirations and plans, the focus is on **strategic practice**. The aim here is to show how digitalization and smart city measures are to be implemented in Berlin: transparently, openly and on a participatory basis, but also based on central coordination, clear specialist responsibilities and according to an agile implementation model. In this way, all actors and existing projects are to be supported in achieving the goals of existing and future Berlin strategies. The new approach will initially be tested on various projects, then developed further and extended to other measures on a step-by-step basis. This process model is framed by the Values Compass, which was developed on a participatory basis, and the fields of action that guide the implementation of individual measures. From these, the vision of a **sustainable, community-oriented, resilient, and cooperative** city is evolving. This aims to ensure that the digitalization of Berlin benefits everyone in the city. Another focus to be incorporated is that of strengthening Berlin as a business hub. The measures are intended to ensure that Berlin's development is aligned with the Values Compass. They will have a local or city-wide impact, potentially even taking effect on a trans-regional scale. The **iterative** approach to implementation means that learning experience is gathered and taken into account when scaling. Berlin's digital transformation can only succeed if all the players involved are willing to engage in a collective learning process. Consequently, the strategy itself is designed as a learning strategy, too. Based on a comprehensive monitoring system, not only individual projects but also the strategy and its tools are to be evaluated and adjusted in regular cycles. For this reason, the individual chapters exhibit differing levels of detail, as in some cases they provide an in-depth account of how learning takes place. The strategy is not a substitute for specific specialized strategies such as the digital inclusion strategy, the **Open Data** strategy or the cybersecurity strategy: it lays out the framework conditions for the implementation of these specialized strategies and is complemented by them.

One important element of the strategy is the website <https://gemeinsamdigital.berlin.de>. In addition to providing an overview of ongoing and planned measures, it features a knowledge repository that is being established to offer a wide range of working materials and supplementary documents for free use. What is more, all Berlin residents can use the website to propose measures themselves or get actively involved in the ongoing process.



SMART WATER

Smart Water (see Chapter 4 **Measures**) is designed to help reduce the impact of the climate crisis on cities, such as heat islands, flooding, and water pollution. It is being financed as a pilot measure under the Smart City Berlin model project using funds from the Model Projects Smart Cities (MPSC) funding program run by the German Federal Ministry for Housing, Urban Development and Building. An agile digital planning tool is to support the development and implementation of urban development measures to take account of rainwater management at an early stage. To this end, a specific, combined focus is placed on water infrastructures and green spaces, also integrating other planning aspects such as road planning.

Among other things, the measure takes into account the following specialized objectives from the StrategieBerlin 3.0:

- Enhance water protection and climate impact adaptation,
- Ensure sustainable management of the water supply,
- Secure and improve (urban) ecological qualities.

The example illustrates the idea of culture change as a central element of the strategy:

- Close cooperation on the part of a range of different urban actors with the city administration (various Senate administrations and districts),
- Support from the GD:B team (Support Team) to ensure the process is creative, open, purposeful and participatory,
- Usage and testing of prototypes for the development of the digital planning tool. Lessons learned from the implementation of the Smart Water measure will inform the first learning cycle of the strategy.

¹² The status analysis includes the conclusions of the Grünbuch für die Digitalisierungsstrategie des Landes Berlin (Senate Department for Economics, Energy and Public Enterprises, 2020) and the definition of challenges by experts during the smart city strategy development process.

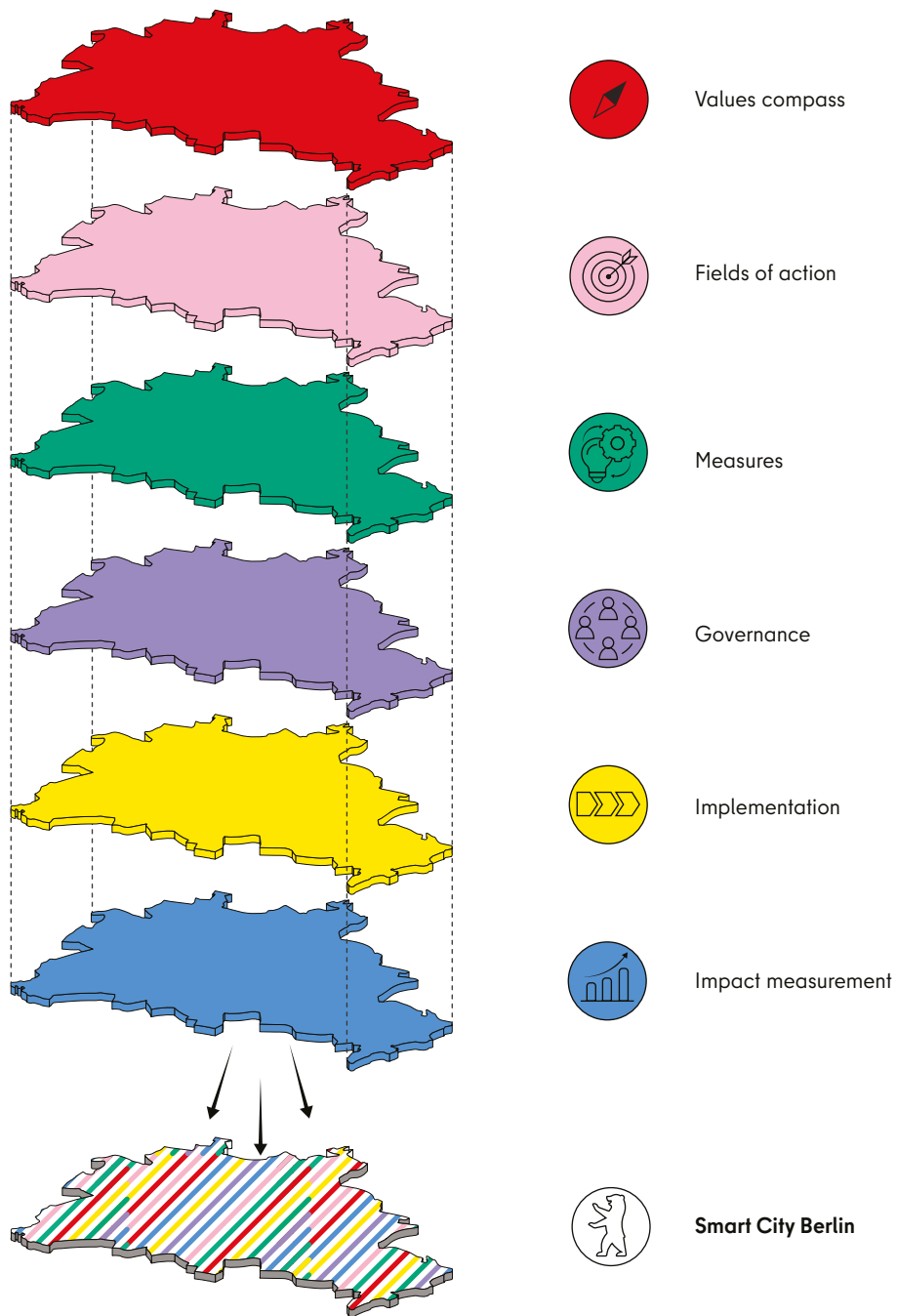
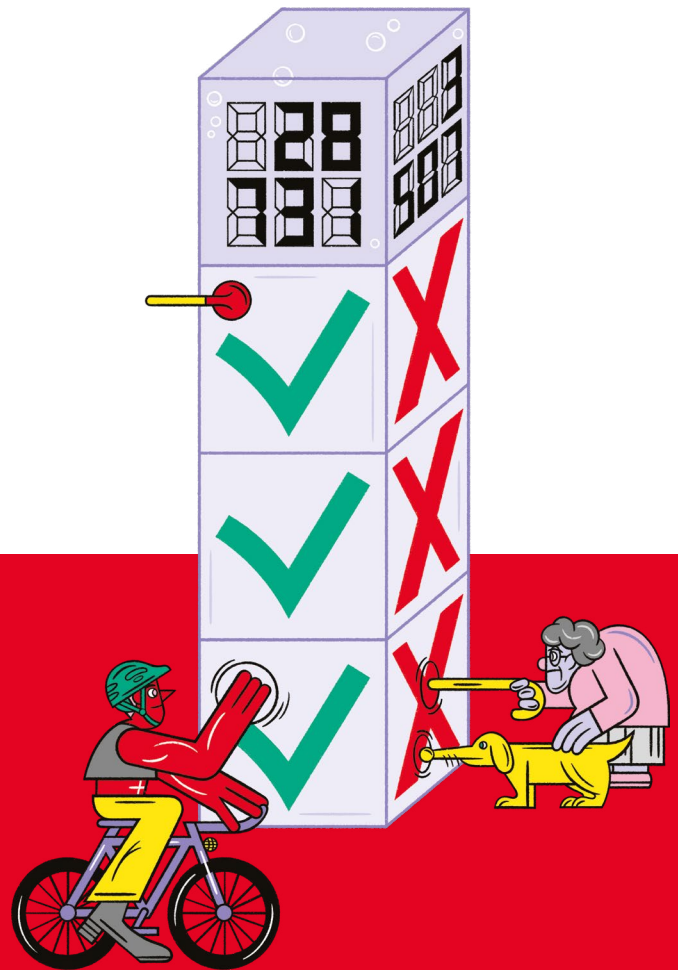


Fig. 1: Structure of the GD:B strategy

2

VALUES COMPASS



CHAPTER 2:

VALUES COMPASS FOR BERLIN

AS A DIGITAL CITY

The values of Berlin's urban community form the basis for the orientation of the strategy *Gemeinsam Digital: Berlin*. They were developed in 2021/2022 by way of a comprehensive, multi-stage participatory process.¹³ The question of how Berlin residents envision a “livable city for all” was taken as a starting point, alongside established approaches such as the **UN Sustainable Development Goals**¹⁴ (SDGs) and the donut model.¹⁵ The four guiding principles that emerged¹⁶ are described below: these form the basis of the Values Compass for implementing the strategy. They are the guiding principles underlying all GD:B activities.

The sustainable city

The basic requirement for a sustainable city is the protection of its resources and natural basis of existence so that future generations will continue to enjoy an intact and livable environment. Achieving sustainability is a cross-sectional task that concerns all policy areas of the Berlin Senate. For its realization, digitalization must be used with the inclusion of local, regional and global perspectives: this involves reducing urban emissions, resource consumption, and the acceleration of transformation processes in the areas of electricity, heat, food and mobility, and lastly - and importantly - the sustainable development and promotion of economic ecosystems that favor innovative and future-proof business models. In doing so, technologies must be made sustainable, while data-driven action and **artificial intelligence** (AI) are to

be used sensibly and free of the risk of discrimination for the sustainable development of the city. Gender aspects must always be taken into account when implementing measures.

The community-oriented city

In the smart city, all Berlin residents should have equal access to services of general interest, infrastructure and resources, and be able to actively contribute to their maintenance. The use of technology must serve the good of the city and its residents, not individual interests. In the desired expansion of a freely accessible digital and low-threshold infrastructure, in addition to the provision of public offerings and open data in connection with the digital transformation of the city, special consideration is to be given to ethical aspects, security, solidarity, digital and physical accessibility,

¹³ See Annex I: Strategy process

¹⁴ Engagement Global (2022). Ziele für nachhaltige Entwicklung. Available online: <https://17ziele.de/ziele/1.html>

¹⁵ Donut economics proposes an economic model based on the planetary and social limits of human activity. See: Doughnut Economics Action Lab (2022). About Doughnut Economics. Available online: <https://doughnuteconomics.org/about-doughnut-economics>

¹⁶ The guiding principles were previously formulated in a detailed version in the document *Strategischer Rahmen für die Entwicklung einer neuen Smart City-Strategie* (“Strategic Framework for the Development of a New Smart City Strategy”). See: Der Regierende Bürgermeister von Berlin. Senatskanzlei (2021a)

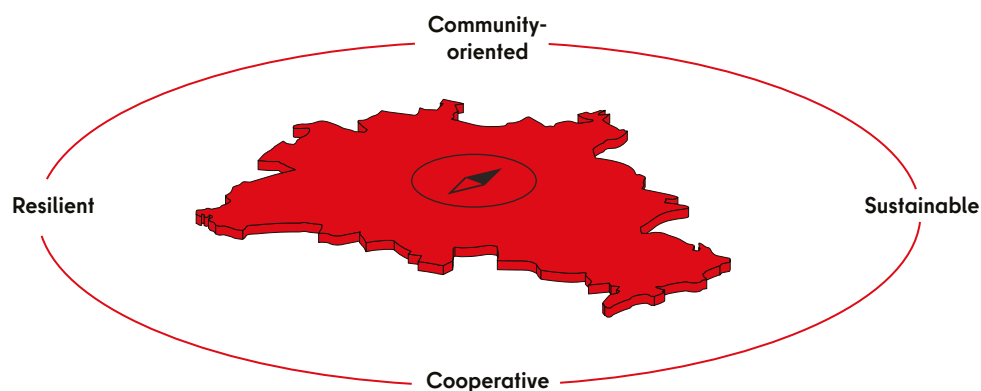


Fig. 2: The Values Compass for Berlin as a digital city

gender equality, and social justice at the local and global level. Social security, high-quality education and comprehensive participation in social life are to be advanced with the help of digital public services for all Berlin residents in line with their needs. This can also serve Berlin's economic development and the development of new business models.

The resilient city

In future, urban infrastructures and supply chains are to be designed with foresight to ensure both reliable operations and basic services for the city. The implementation of GD:B will help deal with crisis situations in a robust and adaptive way – in other words: with resilience. In order to achieve this, conventional management approaches must be improved and decision-making processes must be aligned in a crisis-proof manner with the help of intelligent systems. As part of a technology impact assessment, attention is to be paid to avoiding any existing discrimination mechanisms in the use of IT systems. Technology itself must also become more resilient and secure to ensure cybersecurity. This is supported by the fact that public IT systems are created on a modular and open-source basis and can be used independently. In order to strengthen the learning capacity and foresight of a resilient city, the learning strategy continuously assesses and takes into account new societal conditions inside and outside Berlin, also drawing on the input of experts.

The cooperative city

In the implementation of GD:B, creative participation of the entire urban community is required as the basis for the participatory development of the city. Public administration provides the link between municipal institutions, residents, business, academia and civil society. In order to fulfill this mandate, the administration must do more to tap into and expand existing possibilities, develop new governance structures for cooperation and social engagement, and promote inclusion on an equal footing – including in the digital space.¹⁷ The technologies themselves are developed in participatory processes and evaluated from the perspective of inclusion and gender sensitivity. In order to promote the cooperative city, GD:B places a special emphasis on transparency and openness.



SMART WATER

The Smart Water measure is primarily oriented towards the guiding principles of the sustainable and resilient city. Sustainable use of water resources and urban greenery is promoted. The city is to become more resilient and adaptable to the impacts of the climate crisis and related extreme events in the future such as heavy rainfall.

¹⁷ Berlin has already committed to protecting digital rights by signing the Declaration of the Cities Coalition for Digital Rights. Cities Coalition for Digital Rights (2022). Website. Available online: <https://citiesfordigitalrights.org>

FIELDS OF ACTION



3

CHAPTER 3:

FIELDS OF ACTION

The strategy *Gemeinsam Digital: Berlin* is designed as an enabling strategy that promotes new forms of collaboration inside and outside the administration. For this purpose it formulates **fields of action**. These are deliberately chosen to be interdepartmental: they do not fall under the responsibility of a single departmental administration. They are compatible with various specific strategies and measures¹⁸, reinforcing the latter's effectiveness. Through the fields of action therefore, the strategy also supports existing specific objectives rather than reformulating them. Here, *BerlinStrategie 3.0*¹⁹ was taken as a basis.

The fields of action were developed iteratively based on the needs described in the *Grünbuch zur Digitalstrategie*²⁰ and those identified in the participation process with the urban community. They address a fundamental question of urban transformation in different ways: how can new processes and technologies help achieve desired changes more effectively, more quickly and more in line with needs?

The fields of action show what the urban community would like to achieve by tapping into the potential of digitalization, technology and new methods in connection with the development of Berlin. Also, challenges and limits are indicated where the use of digitalization and technologies is not in the interests of the urban community. This might be the case where this would restrict residents' privacy or primarily serve individual interests, for example, or where digital processes do not offer any improvement in terms of synergies, quality of life, or efficiency. The fields of action define the space for measures that tangibly strengthen the common good, sustainability, cooperation and resilience. They take effect at different spatial levels - neighborhood, Berlin-wide, trans-regional.

Spatial impact

The dovetailing of digital and physical spaces leads to changes at various levels of the urban space. While the *GD:B* fields of action define the content framework for the measures, the participation process identified three spatial levels at which the activities of the strategy can have different effects. At the neighborhood level, possible effects can be seen in an improvement in the immediate quality of life and better networking within the neighborhood, for example. At the level of the city as a whole, positive effects in Berlin include the improvement of mobility and infrastructure services in line with needs, as well as the transformation and use of public spaces in a community-oriented way. Last but not least, (supra-)regional networking is also gaining in importance in terms of cooperative, learning urban development.

¹⁸ *BerlinStrategie 3.0*, the conceptual superstructure for the further development of the city of Berlin, which was adopted in 2021. Der Regierende Bürgermeister von Berlin. Senatskanzlei (2021).

¹⁹ Der Regierende Bürgermeister von Berlin. Senatskanzlei (2021). *BerlinStrategie 3.0*. Available online: https://www.berlin.de/rbmskzl/_assets/politik/berlin-strategie-3-0-langfassung.pdf

²⁰ Senatsverwaltung für Wirtschaft, Energie und Betriebe (2020).

Diverse, livable neighborhoods

In Berlin there is no **one** center but numerous small districts and neighborhoods in which Berlin residents spend their day-to-day lives and pursue all essential activities. GD:B activities strengthen life in the immediate surroundings of all Berlin residents, both in the city center and in the outer districts, thereby contributing to the implementation of the **15-minute-city** for everyone.²¹

At the neighborhood level, the measures therefore make a contribution in that people are to find a livable, diverse and safe environment on their doorstep. Neighborhoods are strengthened as places of cooperation and innovation for sustainable and inclusive urban development. Developments promote local involvement and self-efficacy among residents.

To this end, the goals of sustainable urban development are taken up in the various fields of action and further developed using digital means. In this way, neighborhoods become local spaces for interaction and innovation. This approach of an engaged city seeks to strengthen local autonomy and agility on a small scale, while remaining compatible with larger structures such as the districts, state or region. This is because solutions to global challenges can be tried out and validated on a small scale, especially when digital infrastructures enable quick and easy comparison with other local projects. The next step is to scale up successful approaches in other districts, in the city-wide or on a (supra-) regional basis.

Accessible urban space

The use of data as a possible information basis for decision-making processes in the context of urban development policy offers an opportunity to uncover inequalities in the distribution of financial resources, environmental pollution, and urban potential, thereby helping to make Berlin more inclusive at the city-wide level.²² This applies to all approaches that conceptually combine issues such as housing, mobility and urban greenery, for example. While local test sites can be useful in many fields of action, a city-wide approach to smart infrastructure and climate adaptation makes sense in order to work towards a city for all.

The fields of action provide an opportunity at the city-wide level to change processes and bring together actors who have so far acted separately, for example so as to make mobility services more flexible and bring them more into line with needs. Openly accessible, interoperable databases support a systemic view of complex interrelationships, enabling participation and needs-oriented management of measures. Working jointly and within a network, it is possible to find suitable responses to extreme weather, water shortages and pollutant concentrations in Berlin's conditions, e.g. based on concepts such as that of the **sponge city**.

(Supra-)regional networking

GD:B aims to strengthen the Berlin-Brandenburg metropolitan region. For this reason, GD:B's activities include close cooperation with the state of Brandenburg at the ministerial level, with individual municipalities (such as the Smart Cities model municipalities) and with other actors in Brandenburg. Due to close interdependencies and commuter links, it makes sense to collaborate and network in the various fields of action. This can contribute to greater flexibility in the choice of where to live and work available to all population groups, for example, resulting in a reduction in traffic. Regional networking not only solves acute problems such as the use of mutual aid in disaster situations, it also promotes the development of an innovative ecosystem in the long term. This also reinforces the underlying principles of the Strategischer Gesamtrahmen Hauptstadtregion ("Overall strategic framework for the capital region").²³

21 Berlin's urban development plans (StEP) and the Berlin land use plan offer points of departure here. See: Senatsverwaltung für Stadtentwicklung, Bauen und Wohnen (2022). Planung. Available online: <https://www.stadtentwicklung.berlin.de/planen/planung/index.shtml>

22 One example of this is the Berlin Umweltgerechtigkeitsatlas ("Environmental Justice Atlas"), which provides a neighborhood-by-neighborhood account of environmental impacts related to social disadvantage. See: Senatsverwaltung für Umwelt, Mobilität, Verbraucher- und Klimaschutz (2022). Umweltgerechtigkeit. Available online: <https://www.berlin.de/sen/uvk/umwelt/nachhaltigkeit/umweltgerechtigkeit>

23 Länder Berlin und Brandenburg (2021). Überlegungen zu einem Strategischen Gesamtrahmen (2021). Available online: <https://www.berlin-brandenburg.de/zusammenarbeit/strategischer-gesamtrahmen>

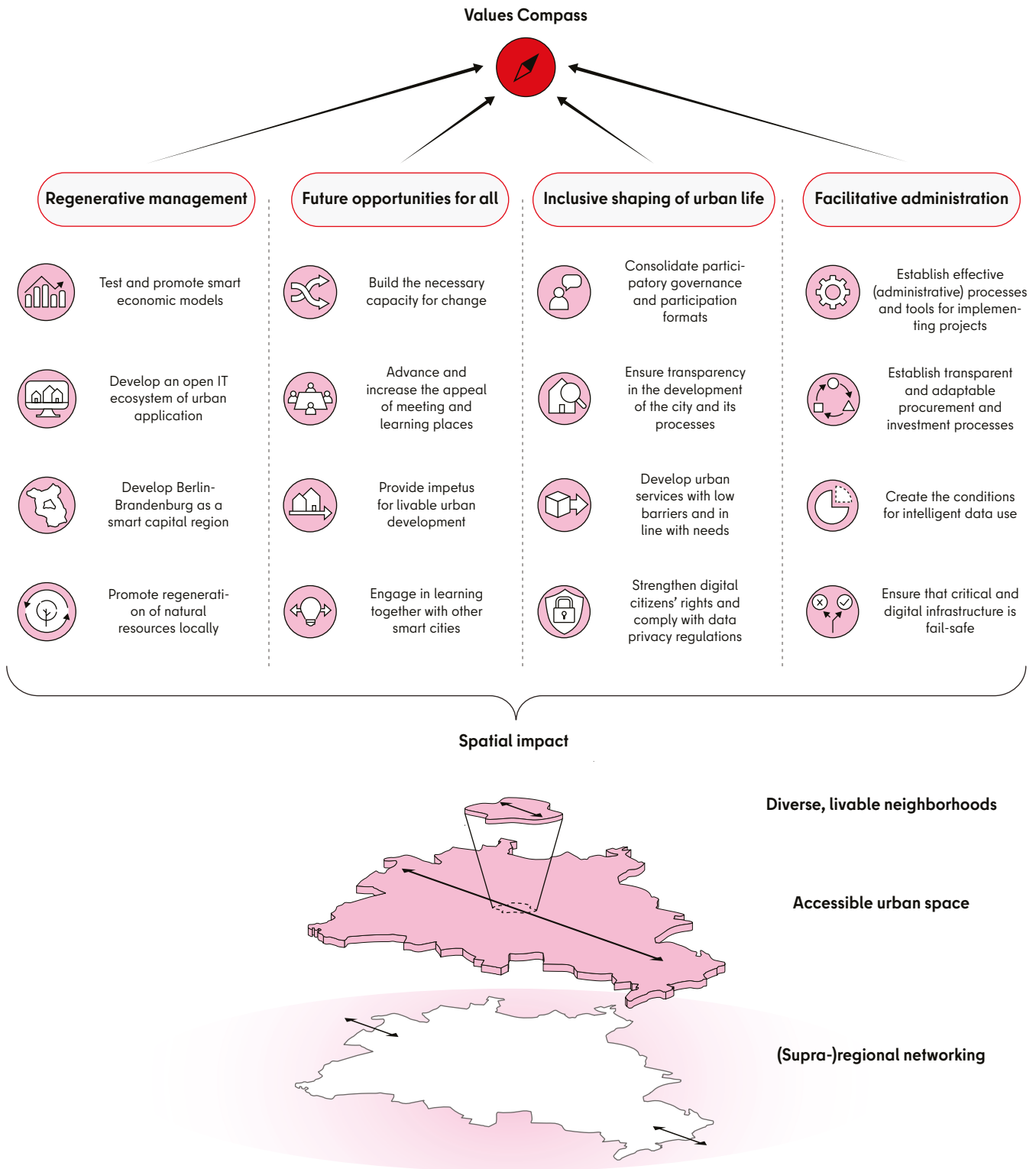


Fig. 3: The 16 fields of action and their spatial references

Fields of action

Regenerative management

GD:B will provide broad-based support for the expansion of innovative, sustainable and circular business models, ensuring a manageable process. For the area of IT, this means making urban applications available to everyone and developing them openly in compliance with the legal framework. Not only startups and established companies, academia and public administration but also the art and culture scene as well as non-profit actors are to play a key role in developing creative, needs-oriented solutions and new value-added concepts in the important development field of regenerative management.

Digitalization can reveal previously unused potential and synergies for regenerative management and enable their use. As a growing city, Berlin can create a foundation for opening up new spaces and constructing buildings that are geared towards sustainability and changeability. The Berlin-Brandenburg region also offers great potential for creating further infrastructure for a circular and resource-efficient economy. Here, a culture of solidarity in sharing and repairing can be established and, together with Brandenburg, it will be possible to build up healthy, sustainable and local food production in the long term.

Fields of actions

Test and promote smart economic models

Smart economic and business models that combine inventiveness with sustainability, community orientation, and gender equality are key to Berlin's economy. The development of new forms of enterprise in areas such as social entrepreneurship, digital cooperatives will receive greater support in the future, as will other locally based cooperative economic models.²⁴ For the development, implementation and sustainable, participatory operation of smart city solutions, new forms of cooperation between the state, public and private companies, startups, civil society organizations and Berlin's science and research landscape are being tested and evaluated – examples include innovative operating models and science-based startups that are emerging from Berlin's universities.

Fields of action

Develop an open IT ecosystem of urban applications

The foundation for a digital Berlin is an open and interoperable ecosystem of digital applications. Citizen services and specialized procedures run by the public administration are to consist of sub-modules and be linkable to each other via standardized interfaces so as to ensure efficient exchange of the relevant data. Wherever possible, open source components are to be used and newly developed codes are to be made available at a central location under an open license. Administrative data is made available to third parties in accordance with the open-by-default principle if there are no serious reasons for not doing so, such as violations of data privacy. These developments are taking place in line with Berlin's ICT architecture.²⁵ The issues addressed here such as standardized procedures, open source, data management and open data are priority areas that are still in need of intense development in connection with the ICT architecture of the state of Berlin.

²⁴ Berlin already leads the way here with its Social Economy Berlin (2022) initiative. See: Social Economy Berlin. Available online: <https://socialeconomy.berlin>

²⁵ Senatsverwaltung für Inneres, Digitalisierung und Sport (2022). IKT-Architektur - Zielbild für die künftige IT-Landschaft. Available online: <https://www.berlin.de/moderne-verwaltung/prozesse-und-technik/technische-standards/ikt-architektur/artikel.948212.php>

Fields of actions

Develop Berlin-Brandenburg as a smart capital region

Integrative planning of urban development, public transport, energy supply, other infrastructures and agriculture between Berlin and Brandenburg will promote the development of a smart capital region. For this reason, urban development processes in the Berlin-Brandenburg region are to be even more closely coordinated between the two states. This is also in line with the Strategischer Gesamtrahmen Hauptstadtregion (“Overall strategic framework for the capital region”) with its fields of action Digital Transformation and Residential Development and Housing Market.²⁶ Co-working spaces, including childcare infrastructure for better compatibility of care and work, are to be designed to support the flexibility of those living and working in the capital region. Closer dialog is to be promoted between the diverse innovative companies and startups in the capital region.

Fields of actions

Promote regeneration of natural resources locally

Natural and non-renewable resources are limited, so smart use must reduce their consumption and integrate them in material cycles. Here, the urban community must first recognize the intrinsic value and services provided by ecosystems and be motivated to invest in their regenerative capacity. Neighborhood sustainability is promoted by establishing coordinated cycles in terms of supply - water, urban greenery, food, energy and consumer goods - and also disposal, including residential waste and construction/demolition waste. The consumption of natural and non-renewable resources is also to be organized more efficiently at the local level - buildings, mobility. This development towards a smart, regenerative Berlin is being tested based on new urban development projects, for example, such as the Schumacher Quartier and the adjacent Urban Tech Republic.²⁷

26 Die Überlegungen zu einem Strategischen Gesamtrahmen. Berlin Brandenburg (2021. <https://www.berlin-brandenburg.de/zusammenarbeit/strategischer-gesamtrahmen/>) and the Gemeinsame Innovationstrategie der Länder Berlin und Brandenburg (“Joint innovation strategy of the states of Berlin and Brandenburg” - innoBB 2025) are relevant points of departure for activities under the strategy (<https://innobb.de/de>).

27 Berlin TXL (2022). Das Projekt. Available online: <https://www.berlintxl.de/das-projekt>

Future opportunities for all

GD:B helps ensure that all Berlin residents can acquire the skills they need to participate in the transformation of their local environment. They should be able to share knowledge and get actively involved in shaping the city so as to ensure that digitalization and the smart city are inclusive. One key concern here is to close the **digital gender gap**. This can also be supported by learning concepts in schools, universities and other educational institutions that are jointly developed as prototypes. The networking of different forms of learning and knowledge offers enormous potential in terms of viewing complex problems holistically and formulating interdisciplinary approaches to solutions. At the same time, the smart city offers a wealth of options for enabling people to learn at numerous different places in the urban space using technology. Nonetheless, analog, low-threshold, and barrier-free offerings must continue to be provided so as to guarantee participation opportunities for groups that do not have digital access.

Field of action

Build the necessary capacity for change

Berlin needs a culture of open learning and shared experimentation at all levels so as to be able to address urgent challenges and be prepared for crises. In public administration, the development of methodological and technical skills, e.g. relating to agile methods and **data science**, is being driven forward so as to improve independent action while at the same time facilitating impact-oriented collaboration with external actors. In order to achieve this, it will be necessary to expand the recruitment of IT specialists. In Berlin, a wide range of educational and networking opportunities enable all residents to operate on a self-determined basis within the digital sphere, to develop their knowledge, and to contribute this knowledge to shaping urban life. These efforts build on existing offerings such as the media literacy centers.²⁸ These new skills are to empower the urban community to address change together.

Field of action

Advance and increase the appeal of meeting and learning places

Meeting and learning places support the urban community in acquiring new skills, networking and shaping Berlin together. Local actors are supported in the development of inclusive services. The aim is to build on existing meeting and learning places – from institutionalized centers such as schools and universities to public libraries, adult education centers and other learning venues as well as freely accessible places such as neighborhood labs and digital workshops. This involves tapping into people's existing day-to-day routines and developing existing publicly accessible spaces. The offerings must be accessible and inviting for all Berlin residents²⁹ and ensure that digital participation is guaranteed according to the **Cities Coalition for Digital Rights**.³⁰ At the same time, digitalization offers the opportunity for universities to expand programs dedicated to lifelong learning and cooperation with urban and civil society, as well as living labs and citizen science.

28 Jugendnetz Berlin (2022). Die 12 Medienkompetenzzentren Berlins. Available online: https://jugendnetz.berlin/jn/00_Medienkompetenzzentren

29 In accordance with the State Anti-Discrimination Act (LADG), discrimination is prohibited here in connection with action under public law based on gender, ethnic origin, racist or anti-Semitic attribution, religion and ideology, disability, chronic illness, age, language, sexual and gender identity and social status. See: Senatsverwaltung für Justiz, Vielfalt und Antidiskriminierung (2022). Das Berliner Antidiskriminierungsgesetz (LADG). Available online: <https://www.berlin.de/sen/lads/recht/ladg>. Likewise, the Berlin Accessible Information and Communication Technology Act (BIKTG Bln) applies here, see: Berliner Vorschriften- und Rechtsprechungsdatenbank (2019). Gesetz über die barrierefreie Informations- und Kommunikationstechnik Berlin (Barrierefreie-IKT-Gesetz Berlin - BIKTG Bln). Available online: <https://gesetze.berlin.de/bsbe/document/jlr-BIKTGBErahmen>

30 Cities Coalition for Digital Rights (2022).

Field of action**Provide impetus for livable urban development**

Smart city approaches must provide impetus for livable and sustainable urban development. Measures under the GD:B strategy help swiftly try out processes under simplified conditions and bring about change to structural processes in urban development in the long term. In this connection, digital tools for visualizing future solutions can help make better-informed decisions. Here, particular emphasis is placed on inclusive, gender-equitable development, while projects are designed so that they can be experienced at first hand by residents in public spaces so as to enable them to get actively involved and provide feedback.

Field of action**Engage in learning together with other smart cities**

GD:B actors network with other smart cities at national and international level to learn from each other. Existing networks and appropriate new exchange formats enable the knowledge transfer that is fundamentally necessary for the design of livable, sustainable and community-oriented smart cities. Here, Berlin acts as a powerful voice to influence the international smart city debate while at the same time adapting and scaling any successful models on a local basis in project-related collaborations, developing solutions jointly with other cities.

Inclusive shaping of urban life

In many sections of the urban community, there is a desire to get proactively involved in urban processes and help shape them. The activities of GD:B support collaboration between different actors inside and outside the administration with regard to effective measures and the gearing of processes towards people. All policies must be reviewed to determine whether sections of the population are being excluded so as to ensure this does not occur.

The strategy makes a contribution to ensuring public participation processes enjoy central status. Appropriate participation approaches are tested and jointly developed across topics and departments, making the development of Berlin a task of the urban community. Future generations are taken into consideration and their future is integrated into current processes. Participation takes place at all levels – local, urban, regional – thereby opening up new spaces for cooperation.

Field of action

Consolidate participatory governance and participation formats

Only together with the city's residents can a Berlin be created that is geared towards their needs. To this end, inclusive, outreach-oriented and, as far as possible, dialog-oriented and gender-sensitive formats of participation – workshops, surveys, public events taking into account a mix of media and different languages, etc. – must enable all Berlin residents to contribute ideas and participate in their implementation. To achieve gender equality and in line with the government policy guidelines Berlin's women's projects are to be included in the design and implementation of the digital transformation. The methods and venue are chosen to suit the theme, occasion and target group, and are supported by additional specialist staff and in close cooperation with organized civil society. Participatory governance ensures that residents are involved in important decisions and that different interests are taken into account.

Field of action

Ensure transparency in the development of the city and its processes

Transparent and verifiable action on the part of all actors in the urban community strengthens trust in policymakers and the administration, facilitates collaborative work and enables joint learning and participation. Berlin will develop clear information offerings for this purpose. The algorithms and technical systems used must also be transparent and comprehensible in their mode of operation and as free as possible from any potential for discrimination. Finally, networking opportunities such as conferences and meet-ups are to promote dialog between different actors.

Field of action**Strengthen digital citizens' rights and comply with data privacy regulations**

In the spirit of the Cities Coalition for Digital Rights³¹, citizens' rights that apply offline must also be protected online. For example, residents must be able to find out at any time the purpose for which their data is stored and used by public authorities. The authorities are to set up clear, simple processes for data privacy compliance so as to facilitate the development of applications that are compliant with data protection requirements.

Field of action**Develop urban services with low barriers and in line with needs**

Berlin residents have differing backgrounds and capabilities. Digital Berlin offerings must take their diverse needs into account and include underrepresented or less visible groups at an early stage in developing and implementing processes – e.g. women, children, senior citizens, people with a limited knowledge of German, and people with disabilities. To this end, these groups – and women in particular – must be actively represented in digitalization-related bodies so that they can help shape decisions about processes and the design of IT. Public information services must reflect the range of diversity in the urban community in text and images: they must be formulated in a gender-appropriate manner, written in easily understandable language and in sign language, and made available in multiple languages. Digital offerings must be provided in the analog space, such as the 68 public libraries. At the same time, the right to analog life must not be curtailed: all services must also be accessible by analog means.

31 Cities Coalition for Digital Rights (2022).

Facilitative administration

Due to their cross-cutting nature, GD:B measures are used to test new forms of interdepartmental cooperation in the administration. Traditional hierarchies can be replaced by more flexible role models that promote networked and independent work and accelerate coordination processes. The strategy supports cooperative collaboration, both internally and externally, in order to establish joint work between the administration, Berlin residents, the business community, academia and organized civil society as normal practice.

The challenges of the digital future are better met by first creating or expanding the necessary foundations and simplifying processes. This includes matters such as contracting, process design, data literacy and quality, and interfaces for internal administrative collaboration.

Field of action

Establish effective (administrative) processes and tools for implementing projects

Modern (administrative) processes simplify and accelerate the implementation of projects and promote coordination between Berlin residents, the administration, businesses, academia, research and civil society. To this end, tools for management are being developed that take into account how the goals and directions of different city strategies interact and promote effective project-based collaboration. The perspective of potential users must always be taken into account. This includes clearly designating responsibilities between the individual authorities. Sample templates and method templates for individual work stages can be useful tools for facilitating a uniform approach and ensuring quality assurance in connection with individual implementation projects. A standardized process is described in Chapter 6 Implementation.

Field of action

Establish transparent and adaptable procurement and investment processes

Learning experimentation must be possible within the legal framework. This can also be pursued in the context of living labs based on exemptions. To this end, experimentation clauses must be anchored in the underlying legal framework and put to use. Flexible financing models and impact-oriented funding instruments support rapid testing of promising approaches and their stabilization. Agile procedures also have to be applied in public procurement, as far as the legal framework allows, so as to do better justice to the process-oriented nature of digital projects and products in particular and make public tenders more attractive for startups and locally based SMEs. To this end, regular sharing of experience is just as important as training courses in administration. In addition to more efficient processes, greater consideration will be given to transparency, sustainability and anti-discrimination criteria in public tenders. The requirements for the advancement of women based on the State Equal Opportunity Act must be observed.

Field of action

Create the conditions for intelligent data use

Efficient government data management and the provision of high-quality data are prerequisites for the development of intelligent applications in the urban context. The build-up of data skills in each authority and the central responsibilities for high-quality data resources ensure implementation of Berlin's Open Data strategy³² currently in development, and also offers crucial potential for planning in Berlin. Interfaces with the private sector, academia, and civil society are used to make data from these areas available for public use as well, e.g. (real-time) data in smart energy management and sustainable mobility planning. These developments are also pursued in line with Berlin's ICT architecture.³³

Field of action

Ensure that critical and digital infrastructure is fail-safe

Safe and reliable operation of basic utilities provides the foundation for a smart Berlin. These **critical infrastructures (CRITIS)** must be designed to be fail-safe in order to guarantee the security of supply to the civilian population. Municipal sovereignty and responsiveness also benefit from a secure infrastructure for owner operation of community-oriented digital applications. Owner operation must be standard where appropriate and possible and take into account current security requirements in information technology as well as the requirements of the Berlin ICT architecture. These are implemented through cybersecurity and data security strategies.

**SMART WATER**

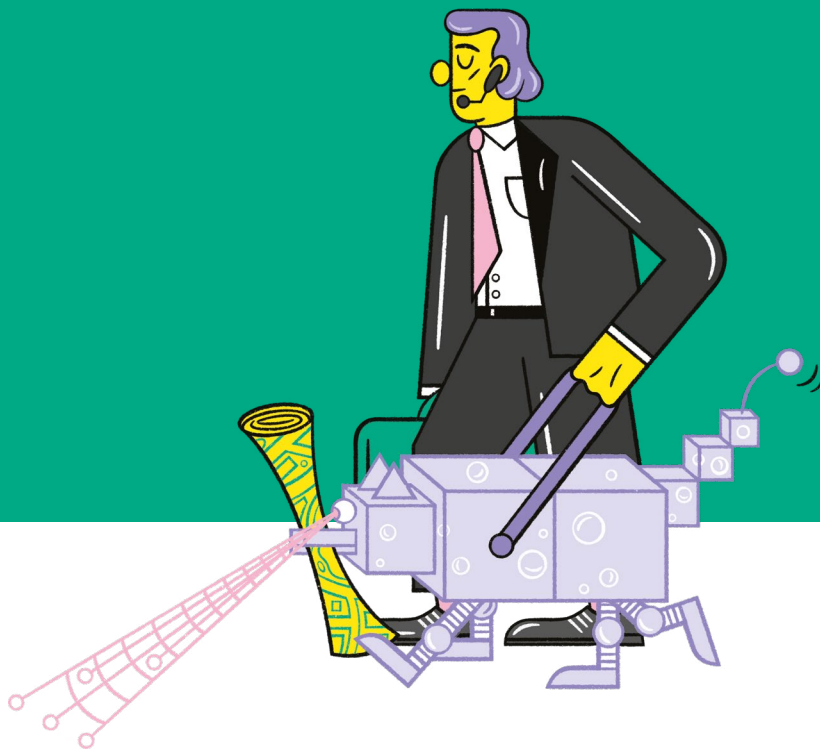
The Smart Water measure primarily contributes to the field of action **Promote regeneration of natural resources locally**, for example by using rainwater to replenish the groundwater and supply green spaces. Since awareness is to be raised among citizens in his area, **participatory governance and participation** also have a key role to play here. Likewise, the measure has an impact on the field of action **Establish effective (administrative) processes and tools for implementing projects**, since it establishes procedures for effective cooperation between several administrations and urban actors.

Spatial impact of the Smart Water measure: Rainwater management potentially impacts on new and existing housing developments. For example, areas for infiltration of roof or surface water have to be planned in new housing developments or newly created on existing development sites, for example in the form of additional green spaces in streets or on private land based on agreements.

32 Berlin Open Data (2022). The Berlin Open Data Strategy: Öffentliche Informationsseite. Available online: <https://strategie.odis-berlin.de>

33 Senatsverwaltung für Inneres, Digitalisierung und Sport (2022).

MEASURES



4

CHAPTER 4:

MEASURES

The implementation of concrete measures breathes life into the strategy *Gemeinsam Digital: Berlin*, advancing the digital transformation and services of general interest, and promoting a cultural change in the administration. The measures bring the smart city to life, helping people gain a better understanding of processes and realizing the transformation on a step-by-step basis. The strategy provides a methodological framework while at the same time ensuring that individual measures can take effect together and learn from each other.

Within the Berlin administration, GD:B promotes joint working across departments and levels. Likewise, the strategy promotes cooperation between the Berlin administration and the urban community, as has already been tested in initial measures. In this way, an integrated ecosystem can gradually emerge from projects that are currently still isolated.

The extensive participation processes during the development of the strategy demonstrated clearly how many actors are already working with digital means today to make Berlin more sustainable, resilient, cooperative, and community-oriented. Not only was it possible to identify numerous ideas and projects that were already in action, but the need for central coordination and control also became apparent. For this reason, the strategy contains three types of measure. They differ in terms of the actors responsible for their implementation:

- **Central measures** are the responsibility of the CDO/StS D. These aim to lay the foundations in technical, procedural and organizational terms to support different actors in the city – Berlin residents, the administration, business, academia and civil society – in the implementation of their respective projects. These measures are additionally based on the preliminary work done on the Digital Strategy, which was commenced after the merger of the two strategy programs.
- **Decentralized measures** are the responsibility of actors in the Berlin administration – Senate and district administrations, subordinate authorities. They fall into different specialist areas, fulfill several specific specialized objectives, contribute to the fields of action of the GD:B strategy through their implementation, and are based on the strategy's Values Compass. Other actors of the urban community can be participants of a decentralized measure.
- **Network measures** are the responsibility of actors in the urban community outside the administration, in this case primarily the business community, academia and civil society. The administration can be a participant in a network measure. These measures also contribute to the fields of action and are based on the Values Compass. Cooperation with the administration is generally a good idea so as to ensure continuity and scaling.

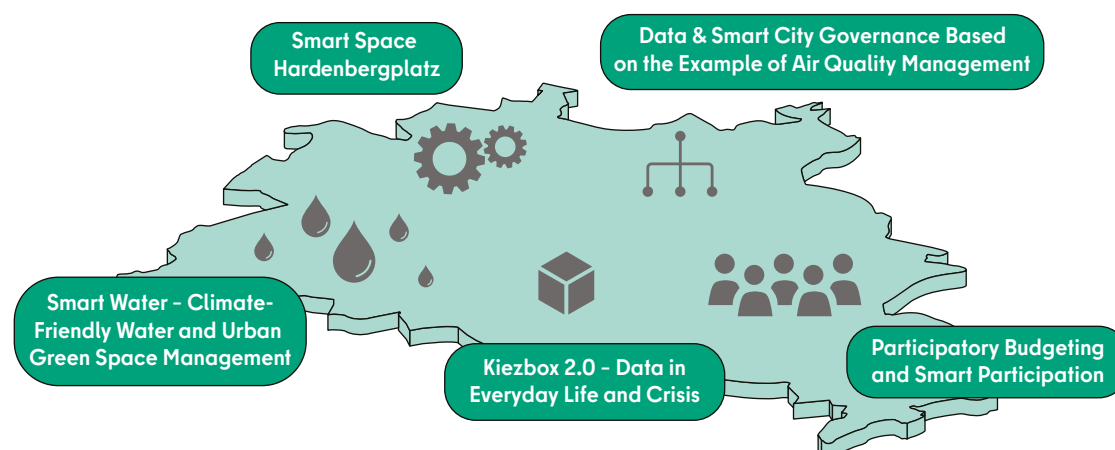


Fig. 4: MPSC-funded pilot activities under the Gemeinsam Digital:Berlin strategy

The selection of measures presented here is not final. In the course of the participation processes and based on the needs of the urban community, initial measures were identified as a foundation on which to test and rehearse the GD:B governance and implementation model. The measures presented here were selected because responsibilities have already been defined for them and resources have been made available. The measures **Participatory Budgeting and Smart Participation**, **Data & Smart City Governance Based on the Example of Air Quality Management**, **Kiezbox 2.0 - Data in Everyday Life and Crisis**, **Smart Space Hardenbergplatz**, and **Smart Water - Climate-Friendly Water and Urban Green Space Management** are being financed as pilot measures under the Smart City Berlin model project using funds from the **Model Projects Smart Cities (MPSC)** funding program run by the German Federal Ministry for Housing, Urban Development and Building. At the same time, the strategy develops a structured, participatory process so as to be able to continuously receive and evaluate new proposals for measures and decide on their implementation.

Central measures

Central measures are fundamental to enabling Berlin's digital transformation and the implementation of the smart city in line with the Values Compass. They form the foundation for smart infrastructures, citizen-friendly digital administrative services, open and transparent cooperation, forward-looking decision-making processes and, last but not least, cultural change in the administration. As such, they are the responsibility of the state's CDO/StS D. Depending on the focus of the measure, they are carried out by different Senate administrations, with the involvement of the urban community and incorporating the diverse perspectives of its users.

For many of the central measures, preliminary work has already been done in the state of Berlin, and concepts and initiatives have been developed that will be followed up in the course of implementation. Central measures are defined in close consultation with the stakeholders involved and the IT Service Center Berlin (ITDZ) in accordance with Berlin's ICT architecture.³⁴ Assistance here is provided by the GD:B strategy Support Team.

³⁴ Senatsverwaltung für Inneres, Digitalisierung und Sport (2022).

Central measures

Build capacity and skills for the digital transformation

The digital transformation of the administration has to be proactively shaped. Digitalization has long since become a core task that requires specific skills – ranging from IT and data expertise to agile project management. The specialist staff of the Berlin administration have to develop these skills for digital transformation and be offered options for further training and education. Here the principles of gender equity and gender sensitivity must be respected.

These skills are needed in every authority, but they require central coordination. A Gemeinsam Digital Unit will be established in the Senate Chancellery to drive the necessary cultural change. It will interact with the Senate Department for the Interior, Digitalization and Sport, which is responsible for the digitalization of the administration, with CityLAB Berlin as the interface between the authorities and other smart city actors as well as with the urban community. A foundation for capacity-building is laid down and further elaborated in Chapter 5 Governance. The aim is to benefit from the existing knowledge of regional specialist and industry networks as well as from municipal enterprises. This measure also includes the development and retention of additional specialized personnel for administration.



Responsible: CDO / StS D



Participants: ITDZ (IT Service Center)



Period: Continuous



Fields of action: Build the necessary capacity for change; establish effective (administrative) processes and tools for implementing projects

Central measures

A binding approach for digital projects

The development of modern IT infrastructure requires up-to-date, standardized processes and methods. This will establish a binding process model for the development of digital projects in Berlin's administration. The model is intended to enable an agile, open and needs-driven approach while ensuring development according to IT development standards – including interoperability, modularity, open source & open data, accessibility, data security, cybersecurity and user-centricity. Compliance with the principles of women's policy and equality policy is to be ensured by designing ICT systems in a gender-sensitive and non-discriminatory manner. The principles of **gender mainstreaming** and **gender budgeting** must be consistently taken into account in awarding contracts and in development.

As part of this model, both the fundamentals and the relevant templates are developed for individual work stages. These relate to problem analysis and any standards that still need to be developed as individual strategies on open data, open source, cybersecurity and information security, digital inclusion and participation – user research, service specifications, prototype development, data provision contracts, etc. In addition, a preliminary process is being developed here to ensure that only projects with a clear problem definition are launched, as well as ensuring sensible requirements management and functioning coordination of all agencies involved based on the standards to be taken into account across the entire administration. External expert input and transformational issues are to be given greater consideration in the future, and quality assurance in project planning and awarding is to be improved (see Chapter 6: Implementation). Source code development is to be documented in a publicly accessible Git repository. The result is a standardized process including tools and formats, ongoing documentation and permanent support for large projects which is to enable the gradual emergence of an ecosystem of interoperable components and avoid duplication of effort and errors. In this process, participation steps are integrated on a binding basis.

The procedure is to be published as a manual (for third parties) and integrated in the Berlin project management manual.



Responsible: CDO / StS D



Participants: ITDZ (IT Service Center)



Period: 2021 – end of 2023



Fields of action: Establish effective (administrative) processes and tools for implementing projects; establish transparent and adaptable procurement and investment processes

Central measures

Establishment of an overarching internal and public data infrastructure (DataHUB and OpenData Portal)

Digital management needs efficient internal data management. The GD:B strategy contributes to the establishment of an efficient infrastructure in Berlin's administration that enables the exchange of data between authorities. At the same time, this is to enable the community-oriented use of public data by various actors such as business, academia and civil society - in the form of a link between the data and the Berlin Open Data Portal, naturally taking into account the legal framework of data privacy. As a matter of principle, administrative data is no longer to be managed locally, but in a secure environment. This environment should be optimized for security, resilience, data sovereignty and cost. For this purpose, interfaces are to be set up for all specialized data-processing procedures that allow connection to a central data platform. Data are to be implemented as Linked Open Data. Data sets must be created in such a way that they are as open, compatible, well described and uniquely identifiable as possible. This enables links to be generated automatically.

The CDO/StS D is responsible for setting up and managing the platform from which the data is made available to the public via the Open Data Portal www.daten.berlin.de in accordance with the open-by-default principle, providing there are no exceptions to the Open Data Regulation such as personal data or other statutory data privacy provisions to the contrary. The Berlin Open Data portal is being further elaborated for this purpose. Visualization tools (e.g. dashboards) will be developed to display and contextualize data sets. Like the data infrastructure, data skills need to evolve across authorities. Together with central responsibility for the inventorization and publication of high-quality data resources in the public authority landscape, this ensures the implementation of Berlin's Open Data strategy as it is currently being developed. For this purpose, a Data Officer will be appointed in all authorities to take responsibility for the data flow between the different authorities and the quality of the data. Together with the CDO/StS D and the Berlin Open Data Information Office (ODIS), these form a network structure that drives the development of the data infrastructure. The data infrastructure is to enable data exchange within the administration while at the same time strengthening cooperation between the administration, business, academia and civil society. A data and actor mapping with the aim of exploring existing data stocks in the administration can usefully complement the development of internal data management. This is explained in more detail in the state's Open Data Strategy, which is currently being developed. The DataHUB and the Open Data Portal are being developed jointly with the ITDZ and as part of Berlin's ICT architecture, particularly with regard to data management and open data. As a prototype for the DataHUB, the data platform FutrHUB run by Urban Tech Republic, Tegel Projekt GmbH, can be used, which is already available for these applications in this project.



Responsible: CDO / StS D



Participants: IT Service Center Berlin (ITDZ). Tegel Projekt GmbH



Period: Still to be defined



Fields of action: Create the conditions for intelligent data use; strengthen digital citizens' rights and comply with data privacy regulations

Central measures

Collaboration toolkit - Basic Collaboration Service

All employees of the administration, as well as external partners, are to be equipped with modern tools for digital teamwork in projects. In many cases, open, soundly functioning solutions already exist. The tools required for collaborative teamwork include a secure short messaging service, shared file storage, parallel document editing, a digital whiteboard, a project management system (Kanban), and a video conferencing tool. These tools support collaboration with external partners. Such contemporary tools are already being used effectively by teams in ongoing strategy development processes. The Basic Collaboration Service is being developed jointly with the ITDZ and as part of the Berlin ICT architecture.



Responsible: CDO / StS D



Participants: IT-Dienstleistungszentrum Berlin, Senatsverwaltung für Inneres, Digitalisierung und Sport



Period: Still to be defined



Fields of action: Establish effective (administrative) processes and tools or implement projects; consolidate participatory governance and participation formats; build necessary capacity for change

Central measures

Facilitation of the awarding of IT services

Authorities will receive more expert support in awarding and managing IT projects. The specifications to be created as part of tender documents must be adapted to the reality of agile, digital product development. Technical and formal criteria and framework conditions for IT contracts must be formulated in a comprehensible manner and barriers to entry must be removed in order to make it easier for local SMEs and startups in particular to enter the market. Where commissioning bodies do not have the necessary IT expertise, they should be able to call on the appropriate support.

Clear processes are formulated for collaboration with external service providers that promote impact-oriented and agile collaboration. This ensures that digital products developed on behalf of the public sector also meet the requirements of public administration and contribute to an open and interoperable digital ecosystem.

Due to the possibility of being able to communicate challenges, the innovation potential of the Berlin startup scene (Gov Tech, Urban Tech, etc.) is directly influenced and its potential is used. Arena of Ideas, the standardized process, and innovations in contracting (such as development partnerships, market consultations, etc.) can be used for this purpose.



Responsible: CDO / StS D



Participants: ITDZ (IT Service Center)



Period: Still to be defined



Fields of action: Establish transparent and adaptable procurement and investment processes; establish effective (administrative) processes and tools for implementing projects

Central measures

Transparency and openness in the implementation of digital projects

The greatest possible transparency ensures that measures are implemented in line with needs. This promotes learning effects and synergies with other projects. For this reason, a central display of ongoing projects and a dashboard system will be created for the implementation of the GD:B strategy which will provide information on the progress and impact – output, outcome see Chapter 7 – of individual projects at any given time, enabling insights into the status of project planning. Work on this dashboard requires agreement on a binding definition of objectives and transparent monitoring of the impact of the projects. In order to ensure this, in addition to the architecture and connection to the Berlin Open Data Portal, a cultural change towards the impact-oriented management of projects is necessary. In order to productively use impact measurement and possible analysis steps, it is not only necessary to develop system components. At the same time, digitalization-related skills are required along with support structures and processes so that the technology used can initiate, accompany and promote the right cultural and organizational changes.

The IT infrastructure in the state is also to become more transparent. With the help of a presentation of the software systems within the Berlin administration, it will be possible to enable synergies, interfaces and shortcuts during new development, as long as no risks are associated with this in terms of information security, data privacy or cybersecurity. If new software is developed on behalf of the state or the districts in the future, it is mandatory for this development to be held in a central Git repository under an open source license.

Components:

- Presentation of measures and projects
- Development of key performance indicators (KPIs) and impact chains (based on Chapter 7)
- Impact Dashboard



Responsible: CDO / StS D



Participants: ITDZ (IT Service Center)



Period: 08/2021 – end of 2023



Fields of action: Ensure transparency in the development of the city and its processes; develop an open IT ecosystem of urban applications; establish transparent and adaptable procurement and investment processes

Central measures

The platform for Berlin: UX and design system as a basis for the further development of berlin.de

The success of digital administrative applications is measured by their user-friendliness. In the context of this work, consideration must be given to building an architecture for portals and platforms with citizens' needs in mind. In addition, mobile use and interaction with the city's services – citizen services and the offerings of the state-owned enterprises – must be made possible with a view to user-friendliness. This is to be considered holistically and integrated in the above-mentioned strategic plans; furthermore, a central touchpoint, a so-called Berlin app, is to be developed.

For example, as part of the redevelopment of berlin.de, uniform design standards for agile and user-centered administrative services are to be developed and subsequently made binding. In the course of this, care will be taken to ensure that the requirements are fulfilled for future portals, platforms, and participation opportunities on mein.berlin.de, as well establishing uniform strategies for apps, an overarching user account and a communication channel between the administration and Berlin residents. This is to be evaluated in coordination with and distinct from specifications issued in connection with the IT Planning Council (IT-PLR), the Single Digital Gateway Regulation (SDG-VO), the Online Access Act (OZG) and the IT Security Regulation Portal Network (ITSV-PV-VO) in order to define the truly existing scope available.

The architecture to be developed should also include a module for map-based representations in order to support the visibility and networking of actors, the reporting of improvement potential and the presentation of projects. Another equally important factor is the focus on digital inclusion and non-discriminatory offline offerings so that these services can be used by everyone. Furthermore, it will be crucial to initiate contact with projects in other countries (gov. uk) and initiatives within Germany (ITVSH, etc.) so that the Berlin solution can advance existing standards and if possible not exclude their integration.



Responsible: CDO / StS D



Participants: State Editorial Office, Berlin Senate Chancellery, IT Service Center Berlin (ITDZ)



Period: 08/2021 - end of 2023



Fields of action: Ensure transparency in the development of the city and its processes; consolidate participatory governance and participation formats; develop urban services with low barriers and in line with needs

Decentralized measures

Decentralized measures are the responsibility of the Berlin administration (Senate administrations, districts, subordinate authorities). They can fall into different areas of expertise and build on existing projects. Their implementation advances the fields of action and the Values Compass of the GD:B strategy. Decentralized measures are piloted in local projects, such as in districts or at schools. Successfully evaluated projects are rolled out in other areas, such as in

other districts. In this way, centralization and decentralization can interact and it is possible to make use of the principle of one-for-all.

All decentralized measures commit to a uniform procedure model (see Chapter 5) that ensures transparency, openness and mutual learning. Implementation is supported by the Gemeinsam Digital Unit in the Senate Chancellery and a Support Team (see Chapter 6). Implementation partners in the administration are networked with each other. They are provided with training, methods and procedures for implementation.

Decentralized measures

Participatory Budgeting and Smart Participation

MPSC Pilot Measure

In the context of participatory processes, interests tend to be distorted by a low level of non-representative participation. This lends significant weight to individual interest groups. For example, in participatory budgeting or neighborhood funds in the districts, it is often the same – small numbers of – citizens or groups who participate and contribute their ideas. Stimulating, digitally supported methods of participation and new forms of interaction that are designed to be free of discrimination help reach a diverse spectrum of people. The pilot district is Treptow-Köpenick. A variety of digitally supported participation methods are being tested in Treptow-Köpenick in order to increase participation in the district's long-standing neighborhood fund. The existing online participation platform mein.berlin.de is to be used and supplemented with additional formats. The procedure is coordinated with the departments responsible for the statewide participation budget.



Responsible: Treptow-Köpenick District Office



Participants: District contact point for citizen participation, Senate Chancellery – statewide participation budget



Period: 2022 – 2025



Fields of action: Consolidate participatory governance and participation formats; provide impetus for livable urban development; ensure transparency in the development of the city and its processes



Spatial level: Diverse, livable neighborhoods

Decentralized measures

Digital X Energy - Networking to Save Energy

Saving energy will become increasingly important for Berlin residents. There are already various startups in Berlin that develop solutions for residents of the city. **Digital X Energy** seeks to focus on the possibilities of innovative energy-saving solutions and network Berlin residents with startups. In order to get the process started, a series of events is being created to show the entire urban community the potential that the local startup landscape is able to offer Smart City Berlin by demonstrating the capabilities and opportunities of Berlin's startups. The first step is to show how Berlin households can reduce their energy consumption with the support of Berlin startups. Residents are put in a position to be able to save a lot of energy so that Berlin becomes climate-neutral as quickly as possible. The aim here is also to show clearly that Berlin's startups are very much part of the smart city and can provide technological solutions for the market.

With its innovative concept, the event series is to be used as a blueprint for various issues - such as mobility, clothing, waste, biodiversity, equality - so as to promote the general networking of innovative actors and Berlin's culture of innovation.



Responsible: Gemeinsam Digital Unit, Senate Chancellery



Participants: Senate Department for Economics, Energy and Public Enterprises



Period: 09/2022 - 12/2022



Fields of action: Test and promote smart economic models; promote regeneration of natural resources locally; build the necessary capacity for change



Spatial level: Accessible urban space

Decentralized measures

Needs-driven expansion of the charging infrastructure

It is crucially in the interests of the state of Berlin and numerous other stakeholders to support the market ramp-up of electromobility with a needs-driven expansion of the charging infrastructure (LIS) in order to support the targets in the energy, climate and transport sectors set out in the Berlin Energy Transition Act (EWG Bln). This includes the expansion of the charging infrastructure, particularly in the area of private and commercial passenger cars and light commercial vehicles. Qualitatively and quantitatively, this expansion is aligned with the goals of the EU Commission relating to public-access charging, which are currently undergoing revision, as well as with national requirements and those of the state of Berlin. Transparent co-ordination and a coordinated approach of the various actors will lead to a reduction of risks, a meaningful interlinking of use cases and services, the avoidance of duplicated work and more reliable implementation of profitability calculations. A crucial factor here is the collaboration of several Senate administrations with each other and with the state-owned enterprises. This is because the expansion of charging infrastructure in public spaces with the help of appropriate tools, subsidies and activities needs to be supplemented on private but publicly accessible land owned by the state, as well as on private land which is not accessible to the public. This requires the development of a joint strategy on the part of all stakeholders.



Responsible: Senate Department for Economics, Energy and Public Enterprises



Participants: Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action; Gemeinsam Digital Unit, Senate Chancellery; Berlin Agency for Electromobility (eMO)



Period: 10/2021 – end of 2023



Fields of action: Promote regeneration of natural resources locally; test and promote smart economic models; develop Berlin-Brandenburg as a smart capital region



Spatial level: Accessible urban space and (supra-)regional networking

Decentralized measures

Life situation concept for administrative services

The life situation concept sets out a further development of the range of online services offered by the administration based on the principle of user-centricity. It facilitates access to services needed for a particular life situation and makes them readily available based on a keyword search and a website. The life situation principle organizes services and access to state forms not according to the logic of the various competent authorities, but in a way that is oriented towards the user. For example, a website is set up and designed with the target group in mind that combines all the necessary forms and digital services, for instance for parents of newborn babies, couples before marriage, children starting school and immigrants in Berlin. This facilitates access to digitalized administrative services and ensures a better experience for Berlin residents in dealing with their administration.

Drafts and prototypes can be used to determine Berlin's scope for freedom in view of the specifications of the portal network and the so-called information areas under the Single Digital Gateway Ordinance, SDG-VO.



Responsible: Senate Department for the Interior, Digitalization and Sport



Participants: Technologiestiftung Berlin/CityLAB Berlin



Period: 10/2022 - 2026



Fields of action: Develop urban services with low barriers and in line with needs; establish effective (administrative) processes and tools for implementing projects



Spatial level: Accessible urban space

Decentralized measures

Smart Space Hardenbergplatz

MPSC Pilot Measure

Hardenbergplatz in Charlottenburg-Wilmersdorf is a typical station square with a high density of usage. It is to be made smart and flexible for all forms of mobility, i.e. geared towards the specific event, day, weather and season. In order to make spaces like Hardenbergplatz more responsive to future needs, new forms of governance of public spaces are needed, e.g. in the form of innovative, community-oriented operating models. With the help of a digital negotiation platform, usage requirements are coordinated in order to take specific mobility needs into account and improve quality of stay. The project focuses on four interrelated building blocks: implementation of a Mobi-Hub open to providers as a use case for the development of an operating model; development and testing of a platform for operators to allocate space; and scaling of the use case with the aim of improving quality of stay on the square.



Responsible: Charlottenburg-Wilmersdorf District Office



Participants: Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action; Senate Department for Urban Development, Building and Housing; DB Station & Service AG; Berliner Verkehrsbetriebe AöR (BVG); Technologiestiftung Berlin/CityLAB Berlin



Period: 03/2022 - 06/2026



Fields of action: Test and promote smart economic models; consolidate participatory governance and participation formats; ensure transparency in the development of the city and its processes



Spatial level: Diverse, livable neighborhoods

Decentralized measures

Use of comprehensible language in administrative forms

The accessibility of administrative forms is to be implemented consistently, particularly with regard to comprehensible language – this approach is being tested in a pilot project to form the basis for possible scaling. It is a challenging task to re-word complicated legal and technical texts – something that can be off-putting for many users – but there is a risk of resorting to overly simplistic language that is often perceived as unappreciative.

On a model basis, forms at a Citizens' Office are checked together with citizens for their comprehensibility and accessibility, ideas for their improvement are developed, and existing forms are revised based on the findings. Further steps: scaling of outcomes for additional forms and the creation of foreign language forms – in addition to German, at least English is to be offered. An initial approach was previously tested at the Digitalwerkstatt Verwaltung ("Digital Administration Workshop").

In this way, draft and prototypes can be used to determine Berlin's scope for freedom in view of the specifications deriving from the approach of the system Föderales Informationsmanagement (Federal Information Management – FIM) system. The FIM seeks to base the descriptions on the standardizations provided by law. Work stages required under the law cannot be resolved by designing the form differently: a change in the law is needed.



Responsible: Senate Department for the Interior, Digitalization and Sport



Participants: Technologiestiftung Berlin/CityLAB Berlin



Period: 2022 – end of 2023



Fields of action: Develop urban services with low barriers and in line with needs; establish effective (administrative) processes and tools for implementing projects



Spatial level: Accessible urban space

Network measures

Responsibility for the implementation of network measures is borne by the diverse actors of Berlin's urban community from business, academia and civil society. Many of them are already actively engaged and are implementing measures that contribute to the transformation of Berlin. In order to be included in the strategy as a further network measure, the participating actors commit themselves to the Values Compass, the fields of action and the implementation principles of the GD:B strategy.

The measures are supported in their implementation by the fact that the actors are networked with each other, can resort to the Support Team and gain visibility under the GD:B umbrella. All actors and organizations implementing network measures are regularly invited to conferences to present their progress and learning experiences to a broad public. Financial incentives and funding opportunities for network measures will be provided in the medium term.

Network measures

Data & Smart City Governance Based on the Example of Air Quality Management

MPSC Pilot Measure

The starting point for the measure is the question of how municipalities and technology companies can cooperate on an equal footing on the topic of data use and processing in a way that is oriented towards the common good. The measure aims to balance conflicting interests in the collection and use of data, focusing in particular on their technological, organizational, and legal or normative dimensions. Data governance concepts are firstly developed inductively (bottom up) based on the use case of a data-driven air quality management tools, and secondly deductively (top down) by evaluating existing governance principles in the field of smart city, corporate and data governance. As a result, a guideline for data governance in data-driven public services is generated that is transferable to other municipalities and projects.



Responsible: Alexander von Humboldt Institute for Internet and Society (HIIG)



Participants: Kompetenzzentrum Wasser Berlin gGmbH (KWB); SIEMENS AG; Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action; Senate Department for Economics, Energy and Public Enterprises



Period: 07/2022 - 03/2025



Fields of action: Create the conditions for intelligent data use; strengthen digital citizens' rights and comply with data privacy regulations; develop an open IT ecosystem of urban applications



Spatial level: Accessible urban space and (supra-)regional networking

Network measures

Indicators for Sustainable Development Goals - SDGs at district level

The 17 Sustainable Development Goals (SDGs) are intended to drive sustainable development worldwide at the economic, social and environmental levels and were ratified by all UN member states in 2015 under the 2030 Agenda.

In the implementation of the goals, municipalities are faced above all with the question of how the SDGs can be recorded and evaluated, and how they can be used to derive appropriate measures and activities? For this reason, a considerable amount of additional work is required so that manageable activities can grow out of the global objective.

In implementing its sustainability strategy, Treptow-Köpenick is the first Berlin district to show how this can work. Together with the Berlin University of Applied Sciences (HTW Berlin), the district has developed a sustainability monitoring system that lists selected measures categorized according to the 17 SDGs, clearly showing how progress is being made in implementing the goals.

Much of the data generally available and collected by the district office - e.g. unemployment rate, school dropout rate, etc. - can be used as a rough indicator of the particular SDG. This is supplemented by other freely available data or by data provided as part of local cooperation with **data sponsorships**. In this way, the elements of the monitoring approach can be adapted to local conditions and provide a much more accurate picture of the maturity of implementation of the overall municipal sustainability strategy.

The monitoring tool can help other districts develop sustainability and climate action plans based on a specific data set and track the maturity of implementation.



Responsible: Berlin University of Applied Sciences



Participants: Treptow-Köpenick District Office



Period: Still to be defined



Fields of action: Promote regeneration of natural resources locally; create the conditions for intelligent data use



Spatial level: Diverse, livable neighborhoods and accessible urban space

Network measures

Kiezbox 2.0 - Data in Everyday Life and Crisis

MPSC Pilot Measure

Crisis-proof local communications infrastructure is essential for the resilience of an increasingly digitalized city and supports disaster management on a needs-oriented basis. In the event of a crisis (e.g. A power outage), Kiezbox 2.0 provides solar-powered or battery-powered hotspots for public wi-fi where employees of emergency services and critical infrastructure companies or citizens can log on with their smartphones to communicate and identify any urgent need for action. Furthermore, the project is exploring its potential in connection with such things as digital pinboards located at (semi-)public places like bus stops. These are used for low-data information transfer in the event of a crisis and as a communication hub for neighborhoods. As this project develops further, the creation of a geo-based real-time situation picture (BOS) is also possible in the long term. In normal situations or when Kiezbox 2.0 is operated on a day-to-day basis, urban sensor data - temperature, air quality, noise, etc. - can be collected and made available, for example, via a LoRaWAN network for public, civic or economic use by urban actors.



Responsible: Technologiestiftung Berlin



Participants: Still to be defined



Period: 10/2022 - end of 2025



Fields of action: Ensure that critical and digital infrastructure is fail-safe; create the conditions for intelligent data use



Spatial level: Diverse, livable neighborhoods and accessible urban space

Network measures

Climate protection and energy-saving measures at “Learning Places of the Future”

Cities and schools of the future will be smart, digital and sustainable. With their **Smart School** pilot project, InfraLab Berlin and the Berlin Energy Agency developed a concept for a learning site that serves as a role model for other schools and also as a place for experimentation and creation.

The concept includes four areas that are being developed together with school students, teachers, parents, neighbors and the district: a sustainable learning concept, modern IT equipment, building technology, the school environment and a variety of learning opportunities.

For the state of Berlin and the Berlin schools, sustainable effects can be derived from this initial prototype: for students in that they implement climate action and energy-saving measures in their day-to-day school life, put their ideas into practice at school and with their neighbors, and discover climate action as a possible career; for teachers and school administrators in that they receive professional support in teaching the topic of innovative, smart climate protection, and there is also an enhanced sense of identification with the school; for the state of Berlin in that the Smart School project directly contributes to its climate protection and energy-saving targets.

The catalog of measures developed in connection with the pilot project can be transferred to other educational institutions such as schools and high schools - independently of any existing renovation roadmaps.



Responsible: InfraLab e.V.



Participants: Berlin Energy Agency, Berliner Immobilienmanagement GmbH (BIM), Senate Department for Education, Youth and Family, Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action



Period: 10/2022 - end of 2025



Fields of action: Ensure that critical and digital infrastructure is fail-safe; create the conditions for intelligent data use



Spatial level: Diverse, livable neighborhoods and accessible urban space

Network measures

Mobile CityLAB

As a public innovation lab, CityLAB Berlin is a central hub for piloting and experimentation. At CityLAB Berlin, innovation and participation are conceptually combined: the administration and the urban community, together with all their stakeholders, collaborate on solutions for the digital Berlin of tomorrow.

The mobile CityLAB transports expertise and skills to the citizens and the local administration at different locations in Berlin, reaching a broad group of actors based on a low-threshold approach. The focus is on participative formats as well as methods drawn from the field of service design. These are intended to help local actors from administration, business, academia and civil society, among others, to independently implement projects in their districts and neighborhoods and thereby participate in the development of Berlin. The mobile CityLAB also aims to become a place of dialog with less digitally savvy Berlin residents, children, young people and marginalized groups so as to introduce them to the possibilities and participatory potential of the CityLAB and invite them to acquire new skills.



Responsible: Technologiestiftung Berlin / CityLAB Berlin



Participants: GD:B Unit



Period: end of 2022 - end of 2023



Fields of action: Consolidate participatory governance and participation formats; advance and increase the appeal of meeting and learning places; provide impetus for livable urban development



Spatial level: Diverse, livable neighborhoods

Network measures

Smart Water - Climate-Friendly Water and Urban Green Space Management

MPSC Pilot Measure

Integrating blue-green infrastructure and other planning aspects (street planning) can significantly mitigate the effects of the climate crisis and add additional qualities to the city. Smart Water aims to use agile rainwater management planning to enable climate-smart urban planning that specifically mitigates water pollution, heat islands, and flooding hotspots.³⁵ Furthermore, residents are to be made aware of the potential of rainwater utilization for water protection and for the cityscape based on data visualization. Since extreme weather events such as heavy rainfall constitute a significant risk of acute damage and danger, targeted risk communication for the administration is being established along with forward-looking planning, with testing being carried out based on the example of urban drainage. These results are derived by combining existing and newly generated data from the urban space with models via an interoperable data platform that enables data visualization for the purpose of urban planning and for use by citizens.



Responsible: Kompetenzzentrum Wasser Berlin



Participants: Technologiestiftung Berlin; Berliner Wasserbetriebe AöR (BWB); Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Protection ; Senate Department for Urban Development, Building and Housing



Period: 07/2022 - 09/2026



Fields of action: Promote regeneration of natural resources locally; consolidate participatory governance and participation formats; establish effective (administrative) processes and tools for implementing projects



Spatial level: Diverse, livable neighborhoods and accessible urban space

³⁵ Currently, the Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action, among others, is working in this context on an amendment to the building code to ensure more greening of buildings. Information sheet: Begrenzung von Regenwassereinleitungen bei Bauvorhaben in Berlin (BReWa-BE). Available online: https://www.berlin.de/sen/uvk/_assets/umwelt/wasser-und-geologie/publikationen-und-merkblaetter/hinweisblatt-brewa-be.pdf

Network measures

Water Hygiene Monitoring

The technology of the hygiene monitoring app (HyMoApp) developed by Berliner Wasserbetriebe accelerates and standardizes workflows between all agencies involved in water supply and disposal. A digital platform allows easy information exchange so as to be able to identify and communicate health risks to citizens at an early stage. The platform meets the security requirements of operators of critical infrastructure (CRITIS).

The data communicated via the app is collected and updated by means of regularly conducted wastewater analyses. If it is possible to identify a local increase in health-endangering contamination from the collected parameters of targeted and intensive wastewater monitoring, recommendations for action can be communicated to citizens and institutions by way of an early warning system. The coordination of workflows and publication channels enables the establishment and optimization of a Berlin-wide early warning and response system and complements the state's information services. In coordination with the public health departments, authorities and operators of properties, findings in buildings can be transmitted based on the use case Legionella. In this way, a more transparent process for coordinated appropriate measures is being tested and evaluated for two districts.



Responsible: Berliner Wasserbetriebe



Participants: Senate Department for Science, Health, Care and Equality; Berliner Immobilienmanagement GmbH (BIM); public health offices of the districts Neukölln and Treptow-Köpenick



Period: 2022 - end of 2023



Fields of action: Ensure that critical and digital infrastructure is fail-safe; create the conditions for intelligent data use; ensure transparency in the development of the city and its processes



Spatial level: Accessible urban space

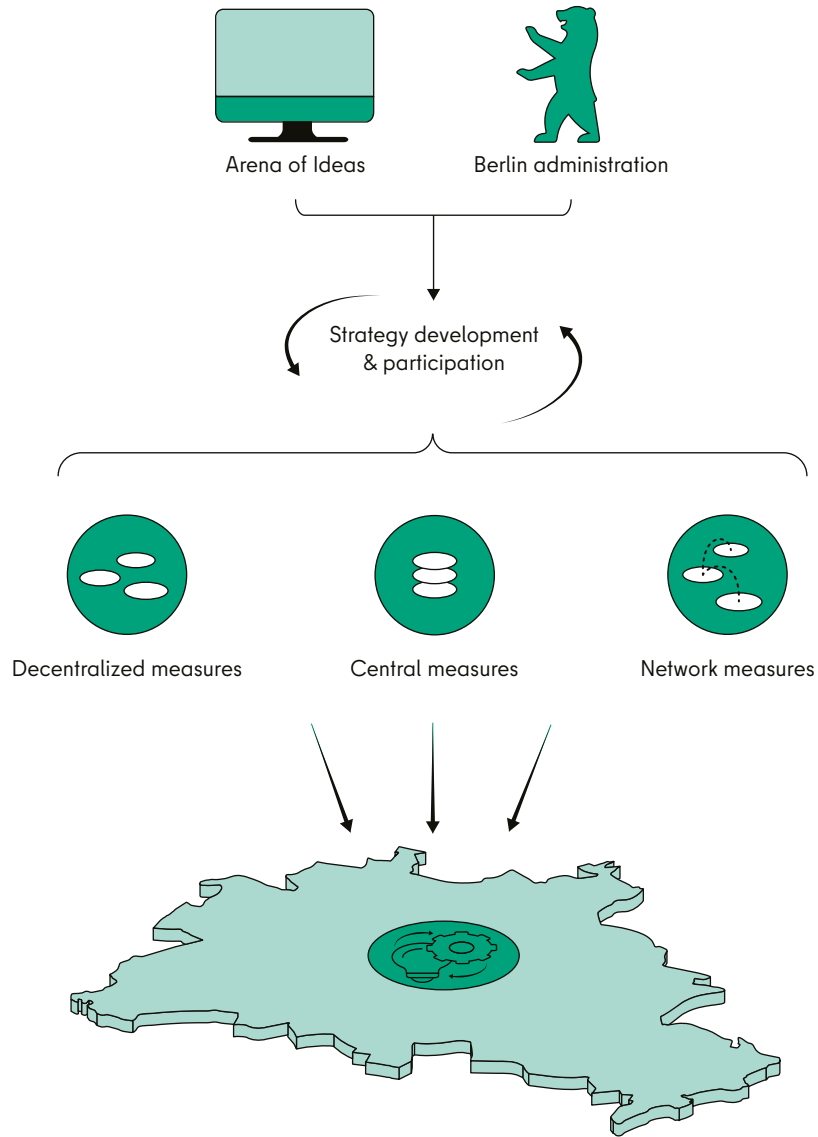


Fig. 5: Development of new GD:B measures



Development of new measures

Once the GD:B strategy has been adopted, the first measures will be implemented by the end of 2023. As a learning strategy, it also defines a procedure for developing new measures for Berlin on a participatory basis and incorporating these into the GD:B strategy. An online platform provides the framework for this. As an Arena of Ideas, the aim is to enable ideas, challenges and solutions to be submitted which can in turn be qualified and further developed.

The Arena of Ideas offers all actors within the urban community the opportunity to contribute ideas, discuss them and refine them further based on the strategy. It creates visibility for the diversity of ideas generated within Berlin's urban community and provides a common platform for Smart City Berlin actors. Actors can take responsibility for the ideas they bring to the table and are networked with each other according to their skills and expertise. This allows similar ideas to be merged and worked on jointly in consortia. The Arena of Ideas also enables people to raise challenges within the urban community so as to be able to develop solutions collaboratively. Proposals can come from all interested stakeholders, whether civil society, startups and SMEs, or research institutions.

The Arena of Ideas forms the basis for feeding new measures into the strategy implementation process. Ideas developed and solutions proposed are qualified in such a way that they become part of the GD:B strategy as measures. Measures are selected taking into account the criteria developed based on the Values Compass (see Chapter 5: Governance and Annex). Measures can also be developed from within the Berlin Senate and district administrations. For this reason, numerous measures in the area of administrative digitalization are listed in the Online Access Act (OZG)³⁶ and the Berlin E-Government Act.³⁷ These can be implemented as part of the GD:B strategy.

³⁶ Bundesministerium des Innern und für Heimat (2022). Onlinezugangsgesetz. Available online: <https://www.onlinezugangsgesetz.de>

³⁷ Senatsverwaltung für Inneres, Digitalisierung und Sport (2016). E-Government-Gesetz: Das Gesetz, das den Weg ebnet. Available online: <https://www.berlin.de/moderne-verwaltung/e-government/e-government-gesetz/artikel.965432.php>

5

GOVERNANCE



CHAPTER 5: GOVERNANCE

The development of a smart city requires the cooperation of different actors. For this reason, measures taken under the Gemeinsam Digital:Berlin strategy must be geared to the needs of the urban community, respond to current challenges and be created with the involvement of the city's diverse actors. Nevertheless, clearly defined responsibilities and process stages are necessary in order for the state government to be able to manage smart urban development strategically and transparently. Flexible and rapid interaction for a functioning and capable city is supported by governance structures that regulate decision-making processes in the areas of smart city and digital transformation.

The GD:B strategy proposes a decision and implementation model for the development and implementation of measures. This includes three key elements:

- A **governance model** which sets out the roles, competencies and tasks of the actors involved. Coordination and steering of the overall process is based on this structure, with the inclusion of various perspectives from the urban community³⁸ – Berlin residents, policymakers, the administration, business, academia and civil society. This also determines how measures are prioritized, selected and finally evaluated. The governance model mainly takes effect within the administration.
- An **implementation model** that enables measures in line with the strategy to be planned, tested and realized according to uniform principles. This includes a process before the start of the project (preliminary process), in which the problem is analyzed with the involvement of the relevant internal and external actors and synergies are clearly identified.

As a result, this process gives rise to requirements and a project plan for the solution. Subsequently political bodies give a mandate to this plan, establishing an Action Team and a budget (see Chapter 6).

- A system of **impact measurement** that can be used to verify that the measures are achieving the desired effects. This defines key performance indicators for each measure and for the learning strategy so that new measures can be proposed, existing ones can be evaluated, and the strategy can be adjusted according to the annual learning cycle (see Chapter 7).

The GD:B strategy is cyclical at various levels: Governance structures ensure that the strategy itself is evaluated at regular intervals and adapted to changing needs and lessons learned. Individual measures are prototypically implemented, tested and refined. Based on targeted knowledge transfer and feedback loops, a continuous learning process is triggered from which the administration and the urban community benefit to an equal extent.

³⁸ The definition of the urban community follows the quadruple helix approach (business, academia, civil society, policymakers and administration), expanding this to include all citizens, including a targeted approach to so-called silent groups. See: Schütz, F. et al. (2019). Co-shaping the Future in Quadruple Helix Innovation Systems: Uncovering Public Preferences toward Participatory Research and Innovation. *She Ji: The Journal of Design, Economics, and Innovation*. Volume 5, 2, pp. 128-146.

Governance actors

Governance of the GD:B strategy involves a range of actors, both inside and outside the administration, working together at different levels. This involves centralized steering and decentralized implementation of the strategy. The following actors play a central role in this process; their roles will be explained in the course of this chapter:

Chief Digital Officer of the State of Berlin and State Secretary for Digital Affairs and Administrative Modernization (CDO/StS D)

The Chief Digital Officer of the State of Berlin in the Senate Chancellery is also State Secretary for Digital and Administrative Modernization in the Senate Department for the Interior, Digitalization and Sport: in this role he is responsible for the strategic management of the areas of smart city and digitalization, administrative digitalization, and administrative modernization and management.

Gemeinsam Digital Unit

The Gemeinsam Digital:Berlin Unit reports to the CDO and operates out of the Senate Chancellery. It is responsible for the strategic implementation of the GD:B strategy, including the strategy learning cycle (coordination and steering).

Digital Transformation Coordination Group

The Digital Transformation Coordination Group reports to the CDO/StS D as an operational level, covering the above-mentioned work areas.

Interdepartmental and cross-level team Gemeinsam Digital

The interdepartmental and cross-level team consists of employees of the Berlin Senate Administrations (currently: SenSWB, SenUMVK and SenWEB), as well as employees of the districts who coordinate decentralized implementation of the strategy and help set up and implement measures in line with the strategy.

Strategy Board

The political strategy board is made up of equal numbers of State Secretaries from various Senate administrations and representatives of the district offices.

Strategy Advisory Board

The Strategy Advisory Board is made up of experts primarily drawn from Berlin's urban community and representing the four most important stakeholder groups - the administration, business, academia and organized civil society - as evenly as possible. Here, equal participation of women is ensured. The Strategy Advisory Board is appointed by the CDO.

Digital Berlin Municipal Committee

The Digital Berlin Municipal Committee is a committee of Berlin residents that is selected by the drawing of lots and therefore randomly: it is intended to be as representative as possible.

Smart City Unit, Berlin Partner GmbH

The Smart City Unit is a separate unit of Berlin Partner GmbH. It is the central point of contact for smart city actors from the areas of business, academia and research, and organized civil society.

Technologiestiftung Berlin

Technologiestiftung Berlin is a non-profit foundation that promotes digitalization and technology in the state of Berlin. It is to be expanded to become the control center for implementing the essential elements of digital policy.

CityLAB Berlin

CityLAB Berlin is a public innovation lab and a project run by Technologiestiftung Berlin, funded by the Berlin Senate Chancellery, which is also intended to act as a hub for the implementation of key elements of digital policy.

Support-Team

The Support Team consists of CityLAB Berlin employees and external service providers and aims to provide methodological and technical support for the Action Teams in the implementation of measures.

Action Team

Action Teams can consist of different actors from the administration, the urban community or both working together. They are assembled for each measure and are responsible for its implementation.

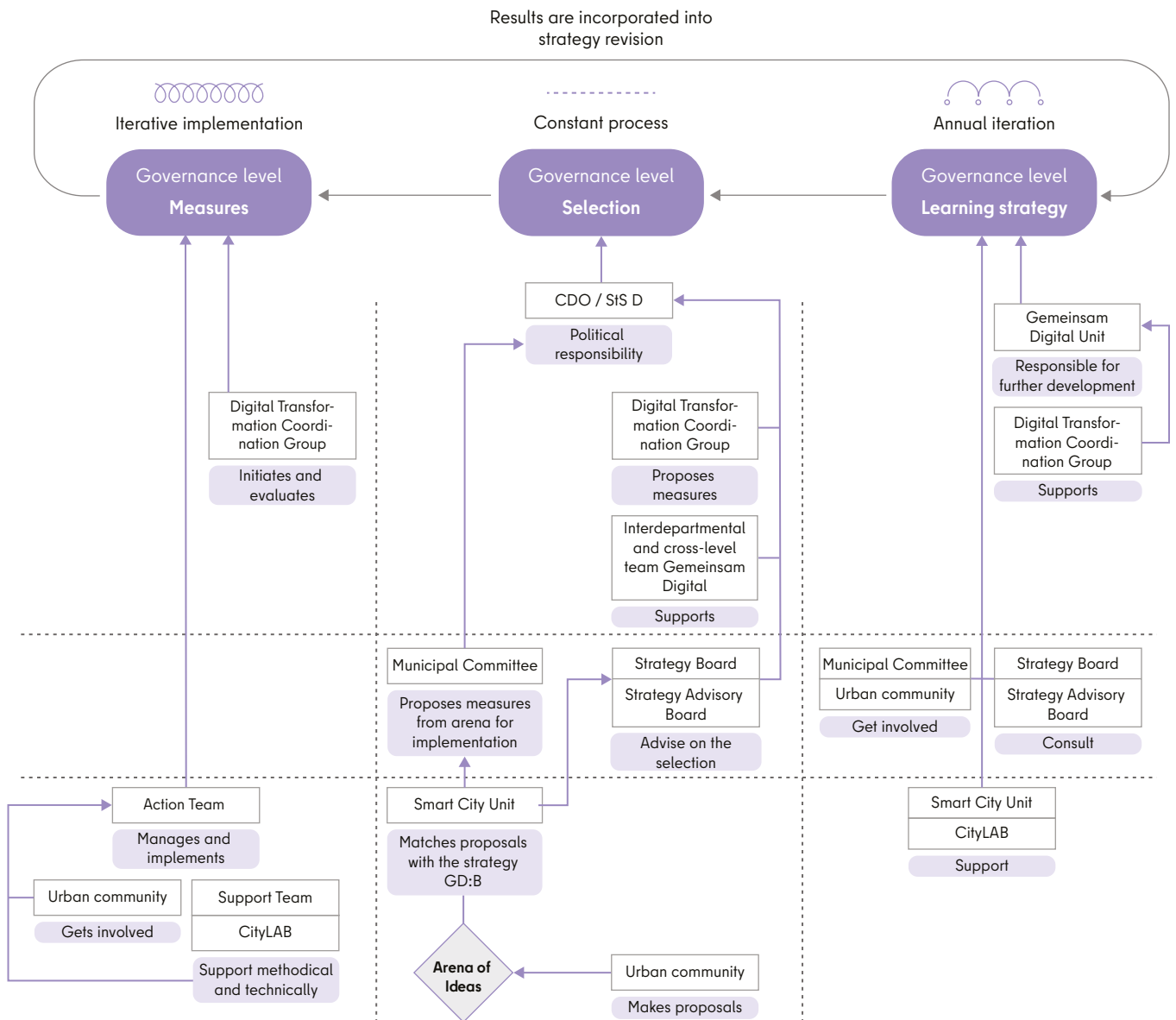


Fig. 6: Governance of the Gemeinsam Digital:Berlin strategy

Decision-making levels

In the course of implementing the strategy (see implementation model in Chapter 6 Implementation), decisions have to be made at several points that determine whether and how the process will continue. For this reason, GD:B governance sets out the ways in which decisions are made at different levels, each of which includes specific roles, competencies and tasks:

1. Governance level: Measures

Strategy measures are implemented by Action Teams. These can consist of different actors from the administration, the urban community or both working together. In the context of each measure, an appropriate governance structure is defined at the outset establishing clear-cut roles, responsibilities and contact persons (the preliminary process outlined in Chapter 5 serves this purpose). The Action Teams can act independently in the implementation of their measures. They receive methodological and technical assistance from the central Support Team when applying the implementation model. Through regular exchange formats, those responsible for measures are networked with each other so they are

able to share their experiences. Berlin's urban community is involved in the development of GD:B strategy measures in a participatory manner so as to ensure they are inclusive, gender-appropriate and user-friendly.

2. Governance level: Selection

The key activity at this decision-making level is the selection of measures. Proposals for measures can come from the Berlin administration or via the Arena of Ideas (see Chapter 4: Measures) from the urban community. The Smart City Unit at Berlin Partner GmbH supports the actors involved in developing and qualifying proposals to contribute to the fields of action defined in the GD:B strategy. The interdepartmental and cross-level Gemeinsam Digital team is able to provide support for measures put forward by the administration that are to be incorporated in the strategy. The CDO/StS D is responsible for deciding which of the proposed measures are to become part of the strategy, based on a selection made by the Digital Transformation Coordination Group, taking into account the needs of the urban community and potentially involving both the Strategy Advisory Board and the Strategy Board. The selection criteria³⁹ are based on the impact measurement of the strategy (see Chapter 7) and the Values Compass. Selection of measures also depends on the availability of human and financial resources.

3. Governance level: Learning strategy

The GD:B strategy is designed as a learning strategy that is developed on an ongoing basis and whose effectiveness is reviewed annually. The further development of the strategy is the responsibility of the Gemeinsam Digital Unit, which receives support from the Digital Transformation Coordination Group. The Strategy Advisory Board, the Digital Berlin Municipal Committee, and the Strategy Board are involved in further development, and the insights from the participatory formats of measure implementation are also used. Strategy evaluation is based on indicators of progress against the strategy's Values Compass (see Chapter 2) and strategy implementation indicators (see Chapter 7). These help draw conclusions from the experience, thereby driving the joint learning process. This process allows elements of the strategy to be adapted as needed.

The path from governance of strategy development to governance of strategy implementation

The levels of governance described above have to be operationalized on the administrative side. This requires a structure that helps the CDO/StS D take effective action in a cross-sectional role so as to implement the GD:B strategy. The bodies described form part of this implementation governance. They support the CDO/StS D, are staffed under his responsibility and are to be guided in their interaction by the exemplary procedure followed in developing the strategy. Accordingly, the members of the Strategy Advisory Board and Strategy Board are appointed by the CDO/StS D of the state. The Municipal Committee is assembled based on a drawing of lots, with attention paid to ensuring the most diverse and gender-balanced membership possible. In addition to establishing decision-making structures, the development of central implementation competencies is crucial for the effectiveness of the strategy. For this purpose, Technologiestiftung Berlin is being expanded as a hub for the implementation of digital policy.⁴⁰

As a project run by Technologiestiftung Berlin, CityLAB Berlin forms the core of the Support Team to provide assistance strategy measures. This includes not only guidance but also technical prototyping. The Smart City Unit at Berlin Partner GmbH supports implementation of the strategy process as a central point of contact for actors from business, academia, research and civil society. This involves providing ongoing consultation on the elaboration and qualification of new measures. The administration is also able to provide support in this regard. The Smart City Unit is the first point of contact for advice on potential funding and brings together various actors through formats such as the Smart City Berlin network.

In terms of Berlin's path to becoming a smart city, the politically responsible individuals and the Berlin administration are at the center of governance and are responsible for adopting and implementing the GD:B strategy. The CDO/StS D makes use of the departments under his authority for the purpose of coordination and steering. Other actors are involved in Berlin's transformation in addition to policymakers and the administration. They wish to participate in shaping the future and are of great importance not only in terms of developing the strategy but also in its implementation. In this way, the GD:B strategy therefore establishes a form of governance that draws on the city's potential by involving different groups. The urban community advises and supports implementation of the strategy and the learning processes

³⁹ A proposal for selection criteria is provided in the Annex.

⁴⁰ This was set down in the state government's 2021 - 2026 coalition agreement and government policy guidelines. See: Die Regierende Bürgermeisterin. Senatskanzlei (2021). Koalitionsvertrag 2021 - 2026. Available online: <https://www.berlin.de/rbmskzl/regierende-buergermeisterin/senat/koalitionsvertrag>

that go with it. As with the development of the strategy, the subsequent phases are to be shaped with and for Berlin. The governance model permanently involves political actors via the Strategy Board, city residents via the Municipal Committee, and actors from administration, business, academia, and civil society via the Strategy Advisory Board.

The governance model ensures that:

- clear-cut roles, responsibilities and interfaces are defined at various levels of action;
- differing perspectives and target groups are included, thereby enabling needs-oriented and gender-appropriate⁴¹ development of measures as well as long-term co-determination;
- framework conditions are created that support the establishment of bottom-up initiatives from the urban community and ensure their integration in the overall strategy;
- individual measures are supported in establishing an implementation model that enables independent work, while at the same time ensuring transparency, comparability and knowledge transfer;
- rapid practical testing of promising ideas is promoted, reducing bureaucratic hurdles;
- structures for regular dialog and reflection among the various actors are offered in order to strengthen the exchange of knowledge and support the approach of the learning strategy.



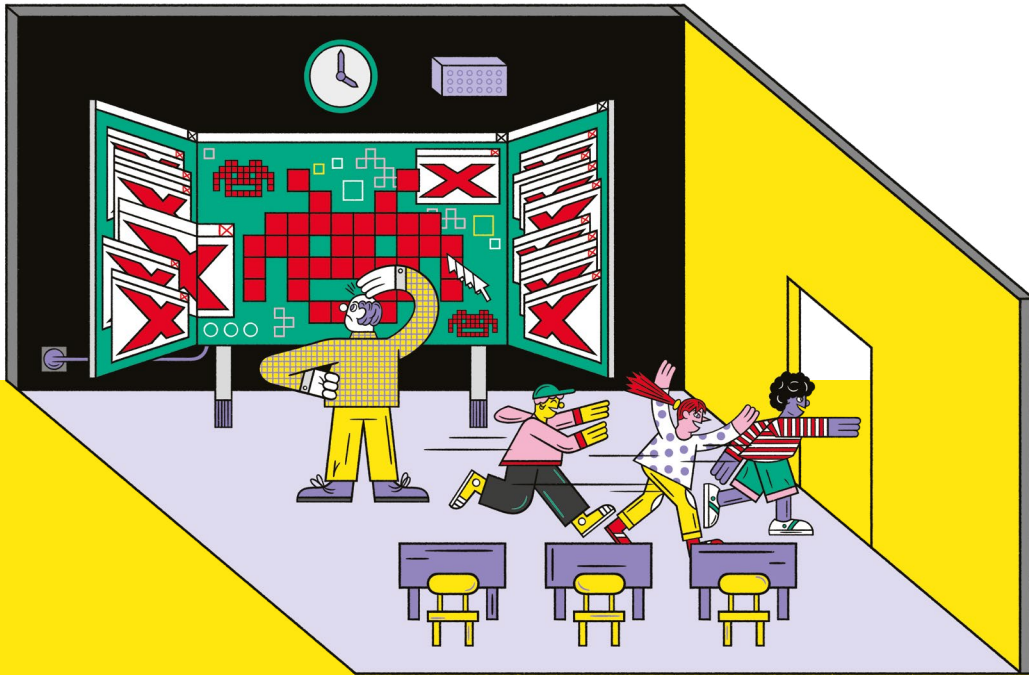
SMART WATER

The Smart Water Action Team organizes implementation of the measure independently (Governance Level 1 - **Measures**) and receives support from the Support Team. The Action Team consists of: Kompetenzzentrum Wasser Berlin (coordination), Technologiestiftung Berlin, Berliner Wasserbetriebe, Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Protection and Senate Department for Urban Development, Building and Housing. The mandate and funding are provided to the Action Team by the CDO/StS D (Governance Level 2 - **Selection**). The outcomes and experience derived from the implementation process and collaboration are incorporated in the evaluation of the learning strategy. To this end, the Action Team reports regularly to the Gemeinsam Digital Unit (Governance Level 3 - **Learning Strategy**).

⁴¹ According to the principle of gender mainstreaming

6

IMPLEMENTATION



CHAPTER 6:

IMPLEMENTATION

A central component of the strategy *Gemeinsam Digital: Berlin* is a uniform implementation model for the measures that promote agility, enable comparability of different approaches, and support shared learning. The uniform implementation model is to be applied to all smart city and digital projects in the future. These projects are methodically supported by the GD:B Support Team. The implementation model helps breathe life into the strategy, realize the measures and have an impact in the city.

The model is deliberately designed to take into account the heterogeneity of different measures, their scope of action and framework conditions, and the persons responsible for the measures. It gives the actors involved a great deal of freedom in terms of operational implementation. It offers actors, including newcomers such as startups, an attractive procedure, thereby also encouraging other groups to apply for tenders and drive forward the implementation of GD:B. Approaches and instruments that serve gender equality (e.g. gender budgeting) are taken into account during implementation. In addition, the division into standardized project phases aims to facilitate open, collaborative work and enable the mutual sharing of interim outcomes and insights.

Based on specific method templates, formats and checklists, the implementation model offers its own support for each process phase. These promote the implementation of individual measures while at the same time enabling the transfer of knowledge between the actors. To this end, the strategy involves the development of a manual that makes these materials available for action and provides guidance through each phase. This manual is expanded and adapted as the strategy is implemented. The materials are based on the principles for good practice set out in the strategic framework for the development of the Smart City Strategy⁴², which were developed by way of a participatory process involving the urban community and through the preliminary work on

the Berlin Digital Strategy.⁴³ The materials are continuously expanded as part of the learning strategy and complement the methodologies of the Project Management Manual of the State of Berlin.⁴⁴ Within the Berlin administration, implementation of a project according to the Project Management Manual is possible at any point; from a strategy point of view, the recommendation is to go through the preliminary process for each measure.

The implementation model consists of different phases, each of which is to lead to a concrete outcome. It is possible to start in different project phases, depending on the maturity of the measure in question. Based on the result of the preliminary process - a uniform description of the measure - it is straightforward to estimate in which phase and according to which methodology the project can be effectively continued.

⁴² Der Regierende Bürgermeister von Berlin. Senatskanzlei (2021a)

⁴³ Senatsverwaltung für Wirtschaft, Energie und Betriebe (2022). Digitalstrategie. Available online: <https://www.berlin.de/sen/wirtschaft/digitalisierung/digitalstrategie>

⁴⁴ Senatsverwaltung für Inneres und Sport (2007). Projektmanagement Handbuch des Landes Berlin. Available online: <https://www.berlin.de/moderne-verwaltung/prozesse-und-technik/verwaltungsprozesse-gestalten/projektmanagement/artikel.962683.php>

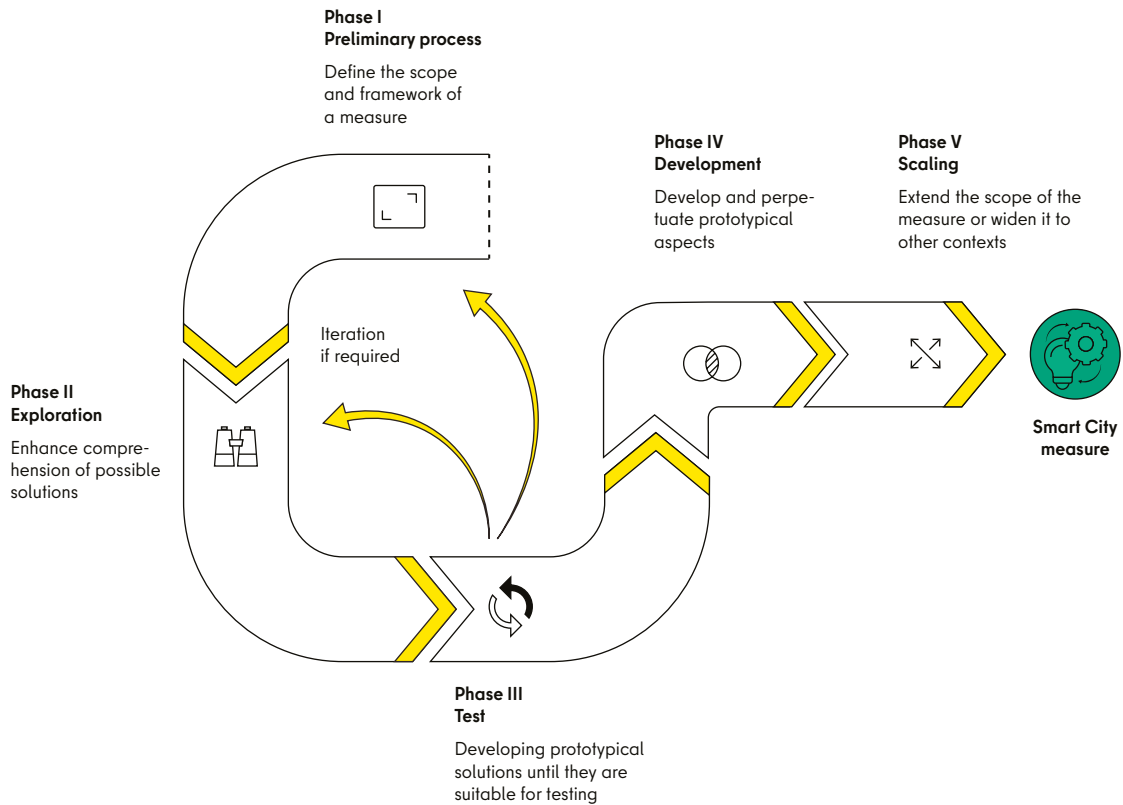


Fig. 7: Process phases of the implementation model

Phase I - Preliminary process

The preliminary process aims to help define the scope and framework of a measure before its implementation begins. It helps clarify the underlying challenges and the objective of the measure and the roles and mandate of the actors, as well as resource planning, ICT framework conditions, and cost-effectiveness. The main objective is to arrive at a precise definition of the issues to be addressed. Initial public and expert participation⁴⁵ ensures that the measure is designed to meet needs and can be linked to other relevant measures. In addition, in order to enable sound planning of the measure, methods from project phases II - IV are applied in the preliminary process. In this way, it is possible to explore which

work stages are to be carried out in which of the subsequent phases, or whether it is possible to start with later phases right away.

Outcome: At the end of the phase, an Action Team has been established with clearly defined roles, responsibilities and capacities, along with a political mandate for implementation and a standardized description of the initial project and its intended impact.

⁴⁵ Expert participation allows representatives of relevant businesses, civil society, academia and the administration to be invited and involved from the very beginning.

Phase II - Exploration

In the exploration phase, the perception of potential solutions is refined, depending on the objective. Based on research and interviews with users and experts, related examples of good practice are examined and existing assumptions verified. Key actors for the further process phases are identified and involved. Lessons learned from previous projects and other cities are considered for further development.

Outcome: At the end of the phase, there is a clear understanding of the needs to be addressed as well as initial solutions that can be operationalized: these have been developed in participatory consultation and are now ready to enter the testing phase. In addition, indicators are defined in this phase that can later be used to verify the effectiveness of the measure.

Phase III - Test

In the test phase, promising solution approaches are prototyped until they are ready for testing based on a rapid learning cycle. The goal here is not yet to develop a complete solution but to carry out a practical verification of previous assumptions on a small scale. By taking this initial practical step, it is possible to reduce the often high level of complexity of smart city and digital projects, thereby clarifying uncertainties and allowing aspects to emerge that were previously not considered or were overlooked. If necessary, the test phase can be repeated several times until the prototype meets expectations.

Outcome: At the end of the test phase, there is a clear understanding of the measure to be developed and the developmental tasks that accompany it, based on empirical evidence.

Phase IV - Development

In the transition from Phase III to regular operation, the tested prototypical aspects of the measure are (further) developed and consolidated. This phase can vary considerably, depending on the type of measure. The focus is on the further development and systemic integration of the measure into already existing structures, procedures and processes. In addition, the framework conditions for permanent operation must be guaranteed including continuous evaluation based on the overall learning strategy. The effectiveness of the measure is reviewed and ensured when it is transferred to regular operation based on the indicators defined during the course of the project.

Outcome: At the end of the development phase, there is a functioning product that has been developed, systemically integrated and established on a permanent basis by the participants.

Phase V - Scaling

In the final phase, the experience gained from the implementation of the measure is used to broaden the scope of the measure and to extend it to other contexts where applicable. This ensures a transfer of knowledge inside and outside Berlin so that others can benefit from the experience gained from implementing the measure. Measures are developed so that they can be adapted or replicated in other contexts.⁴⁶ For this reason, learning experiences are standardized, documented, and published by Action Teams in Phase V so as to enable scaling. Central agencies such as the Gemeinsam Digital Unit, the Digital Transformation Coordination Group and the Support Team provide assistance here. The scaling of successful measures is to be taken into account in the budget planning of the state of Berlin.

GD:B's phase model enables a structured planning and implementation process for digitalization and smart city projects. The measures of the GD:B strategy differ from others not primarily through the use of digital technologies but because of the smart approach.

⁴⁶ This idea is also reflected in the guidelines of the BBSR Smart City Charter (2017).

Smart action means that:

- Challenges are approached creatively, openly, effectively and on a participatory basis;
- Silos within the administration and between different actors are broken down and cross-administrative cooperation is cultivated more intensively;
- Implementation expertise is built up both inside and outside the Berlin administration;
- Mutual learning takes place and a broad perspective is adopted so as to gain a comprehensive understanding of problems;
- Collaborative involvement, elaboration of user-centered requirements that are put up for discussion;
- Prototyping, testing, optimizing and stabilizing (partial) solutions based on shared principles.

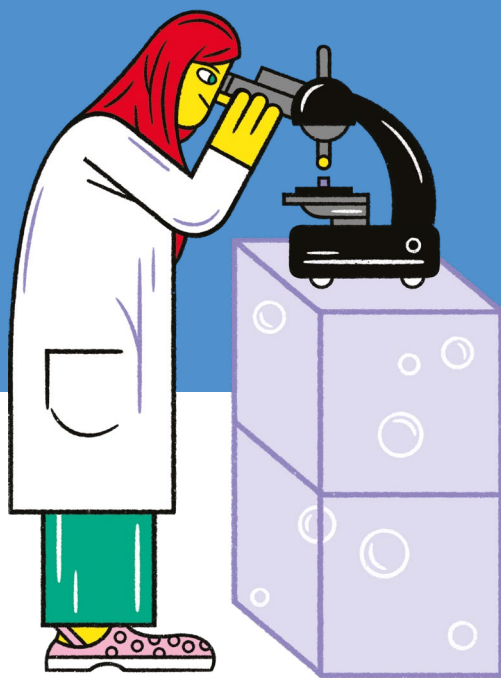
Despite the complexity of many measures, the involvement of the urban community and a wide variety of perspectives make them more tangible, manageable and user-centered. This approach begins in the pre-planning stage and can take effect through to the various implementation phases. The process of mutual learning between different measures and the bringing together of differing perspectives allows more robust and transparent decisions to emerge that are compatible with further developments in the future.



SMART WATER

Smart Water is a network measure. It first goes through the preliminary process, where the Action Team is assisted by the Support Team. At the end of the preliminary process, a decision is made as to which phase to change to and using which methodology going forward. The project plan is then adapted accordingly. Before final development of the agile planning tool, a phase of exploration and testing is probably conducted by means of a prototype in a district. If this is successful, the planning tool can be applied to the whole of Berlin and transferred to other cities.

IMPACT MEASUREMENT



7

CHAPTER 7: IMPACT MEASUREMENT

As described above, Gemeinsam Digital: Berlin is establishing a new process model for the implementation of digital and smart city projects. At the heart of this model is a step-by-step testing of promising approaches resulting in needs-based outcomes and faster learning effects. A well-functioning system of impact measurement is required in order to achieve these goals and compare the effects of different measures.

Impact measurement is carried out at three levels, analogous to the **governance model** presented in Chapter 5⁴⁷:

1. At the **measure implementation** level, the implementing Action Teams define criteria to measure the success of individual measures
2. At the **measure selection** level, selection criteria are defined to ensure that individual measures can work in line with the overall strategy
3. At the level of the **learning strategy**, criteria are defined in order to review and if necessary adjust the system and objectives of the strategy itself; the impact of all measures is recorded here, too

Level 1: Measures implementation

GD:B strategy measures are implemented by different cross-sector Action Teams. As part of the measures planning process, each team defines its own **output indicators** and **outcome indicators** at the outset to measure the progress of a measure. These indicators are based on the **success factors** of the **Values Compass** (see Fig. 9) and take into account existing resources and data as well as sectoral municipal objectives. The elaboration of the measure-specific indicators follows the guidelines of the central measure **Transparency and openness in the implementation of digital projects** (see Chapter 4). On this basis it is possible to make comparisons between measures, and their outcomes can be fed into further participation processes. In addition, each measure is located in at least one field of action (see Chapter 3).

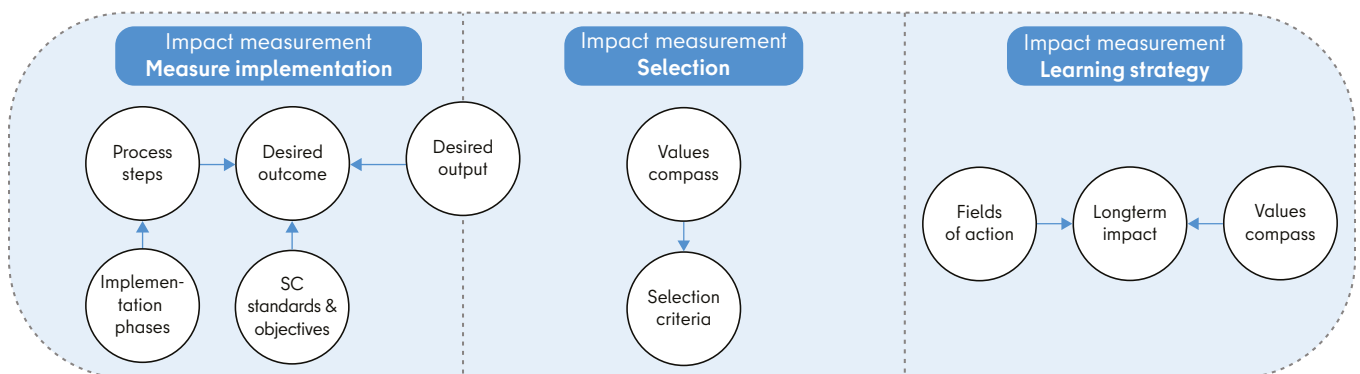


Fig. 8: Indicators at the three levels and how they are interlinked

⁴⁷ The system for impact measurement and a concrete proposed procedure are provided in Annex III: **Impact measurement**.

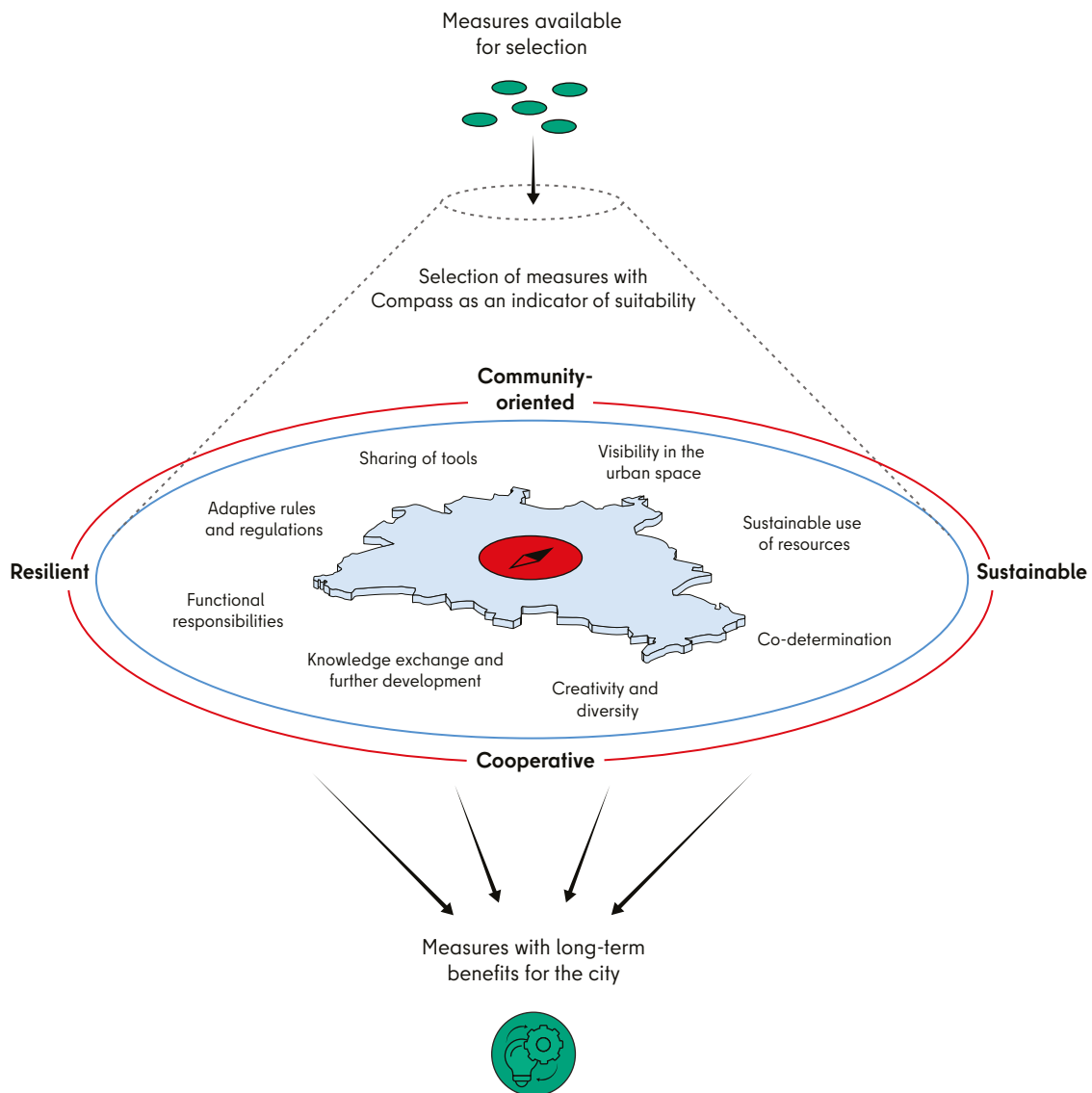


Fig. 9: Values Compass for a digital city with success factors

The progress of a measure is also communicated via **process indicators**: these transparently show which phase of the process model (see Chapter 6) a measure is currently in and which interim outcomes have been achieved in the phases already completed. The interim outcomes are recorded in standardized templates and made available as shared knowledge to other Action Teams and the general public.

Level 2: Measure selection and Values Compass

As part of strategy development, a Values Compass was developed by way of a participatory process which provides guidance regarding the well-being of the city and its residents. It also forms the basis for selecting measures from the Arena of Ideas to be implemented under the strategy. By prioritizing measures that are particularly well aligned with Values Compass, the aim is to ensure that the strategy can achieve its desired effects.

Measures can be proposed for implementation in different ways by the urban community, policymakers and the administration (see Chapters 4 and 5).⁴⁸ The Values Compass provides a shared basis from which added value and long-term potential can be assessed (urban foresight) and subsequently reviewed on a regular basis.

The success factors of the Values Compass contribute to the long-term benefits for the city. These are explained in detail in the Annex and briefly presented here:

- Functional responsibilities
- Adaptive rules and regulations
- Sharing of tools
- Visibility in the urban space
- Sustainable use of resources
- Co-determination
- Creativity and diversity
- Knowledge exchange and further development

The strategy's indicators are linked to international goals such as the UN Sustainable Development Goals⁴⁹ (SDGs).⁵⁰ In future there will be an indication of links between the measures and the individual SDGs. This link will allow comparability, thereby enabling fundamental learning.

Level 3: Learning strategy

GD:B addresses problems and need for change of great complexity. Classic strategy models based on fixed five-year plans, for example, reach the limits of their usefulness when confronted with the dynamics of digitalization, the climate crisis and pandemics.⁵¹ For this reason, more flexible models of strategic management are needed that can adapt quickly to changing conditions. In this regard, the **learning strategy** level is guided by the approach of **humble governance**, i.e. “adaptive policymaking”.⁵² The model is based on the conviction that solutions to complex problems cannot be known in advance so they should not be determined by policymakers by way of a top-down process. Instead, solutions have to be developed, tested, and negotiated with experts, the general public, and people at a greater

distance from the digital sphere. Since this approach centers on a shared learning process, the strategy's objectives, methods, and measures are necessarily subject to change. Accordingly, the GD:B strategy is to be evaluated based on an annual cycle with regard to its effectiveness and adapted if necessary. Participatory bodies tried and tested in the course of the strategy development process are incorporated in this process (see Chapter 5).



SMART WATER

Application of the indicators for the implementation of measures (Level 1) based on the example of Smart Water:

Process indicators:

Achievement of milestones from the project description, e.g. data needs and data sources have been identified, workshops have been conducted in pilot areas. The project is currently in the preliminary process.

Output indicator:

The web-based planning tool is up and running.

Outcome indicator:

Widespread use of the outcomes and planning tool prototypes by the administration (SenUMVK, SenSBW, possibly districts) after the end of the project in Berlin and beyond.

Impact indicators:

Linking water infrastructure, urban green spaces, and street spaces has a measurable impact on urban climate goals such as those contained in BerlinStrategie 3.0: **enhance water protection and climate impact adaptation, ensure sustainable management of the water supply, secure and improve (urban) ecological qualities**. The measure also contributes positively to SDGs 6 and 12: **Clean water and sanitation, sustainable consumption and production**.

48 The selection process is explained in detail in the Annex.

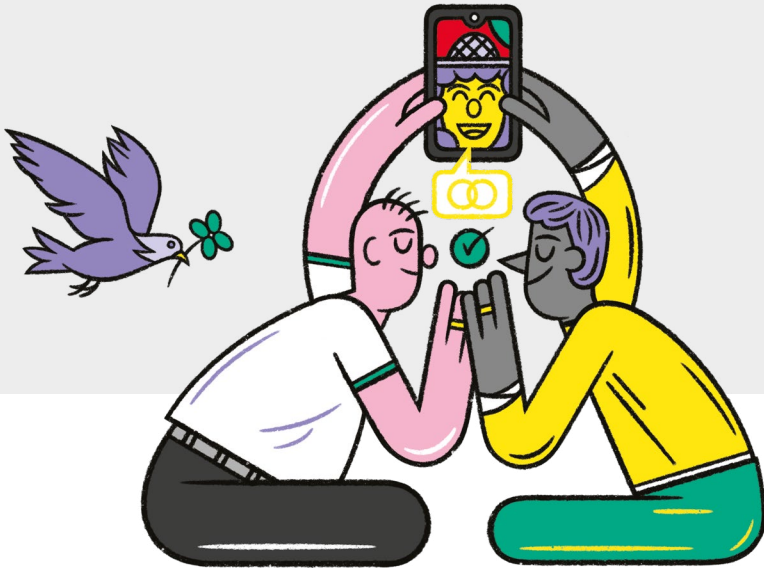
49 Engagement Global (2022).

50 The state of Berlin has published an indicator report on the UN Sustainable Development Goals. Senatsverwaltung für Umwelt, Mobilität, Verbraucher- und Klimaschutz (2021a). See: Indikatorenbericht 2021 – Nachhaltige Entwicklung in Berlin. Available online: <https://www.berlin.de/sen/uvk/umwelt/nachhaltigkeit/indikatorenbericht>

51 Governance and transformation research describes these as so-called “wicked problems” that can hardly be solved by means of conventional, linear planning due to their complexity and multiple interdependencies. See: Rittel und Weber (1973)

52 Annala, M. et al. (2020)

OUTLOOK



CHAPTER 8:

LOOKING AHEAD

Publication of the strategy *Gemeinsam Digital: Berlin* marks a key milestone in the process of the city's digital transformation. The process of developing the strategy was supported by numerous Berlin actors as well as national and international experts (see Annex). For Berlin, implementing the strategy means taking leave of old ways and trying out new ideas along the path to digital transformation as it becomes a smart city.

For the Berlin administration, it sends out a signal that steps are being taken towards a cultural change aimed at encouraging the testing and establishment of new forms and processes of work. The implementation of GD:B can provide a crucial impetus for the necessary improvements in terms of administrative modernization and services for citizens and businesses, allowing it to function as a catalyst and make a key contribution to a functioning city. If allowed to develop its full impact, the strategy has the potential to make contact with the administration easier and more pleasant for city residents than ever before due to improved online services. One essential element here is the need for functioning end-to-end digitalized citizen services, especially the most frequently requested ones such as the following: compensation under the Infection Protection Act, digital residence permits for refugees from Ukraine, electronic construction and approval procedures, housing subsidies, vehicle re-registration, applying for a registration certificate, business registration, re-registration and de-registration, daycare vouchers, BAföG applications, parking permits for residents, applying for the severely disabled ID and advance VAT registration. The following services are already being implemented for use in the future: energy aid, digital registration certificates, electronic residence registration, housing subsidy application (involving a fully integrated process with no media discontinuity), Berlin Pass: digital ticket, application for maintenance advance, leaving the church, severe disability assessment procedure, application for integration assistance, application for housing entitlement certificate. The digitalization of procedures also means they are optimized, thereby reducing the administrative staff and money required.

For the business community, the implementation of the strategy aims to ensure that fully integrated processes free of media discontinuity, uniform standards and clear responsibilities help create a fertile basis for a diverse Berlin

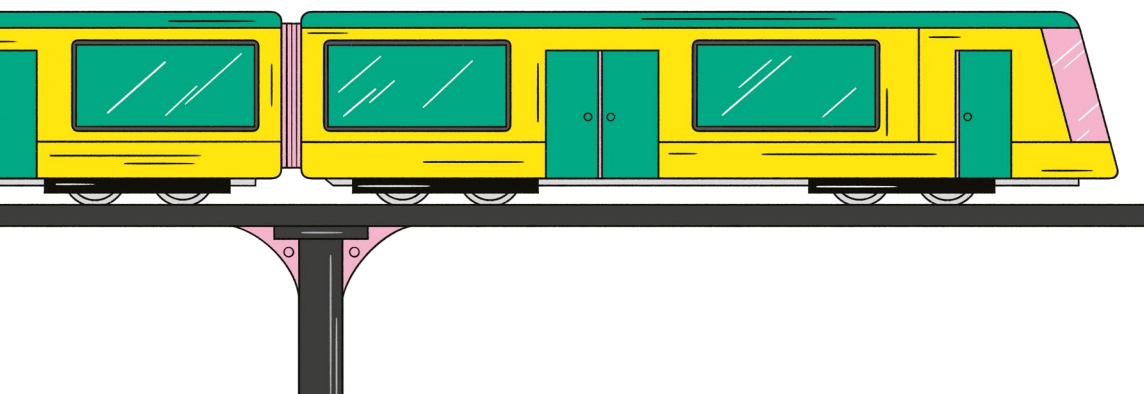
business landscape. Measures and an implementation model are also specifically proposed in the strategy in order to support the administration in its dealing with different actors on an interdepartmental basis and across level boundaries. In particular, this will require the close involvement of Berlin's urban community and a joint approach. This clearly demonstrates that the digital transformation in Berlin is being shaped collaboratively. The selection and implementation of measures also depends on the priorities of the politically responsible actors. GD:B outlines a way forward for Berlin to become a smart city on a step-by-step basis.

The learning strategy and the implementation process are closely interrelated. For this reason, this strategy document will continue to evolve in the course of future dialog with the urban community. For this purpose, a participatory process is planned that includes regular evaluations as well as networking and learning formats for all actors involved. Likewise, the Support Team is to build on the strategy development process and involve the broad urban community through various (event) formats. The purpose of these formats is to report on the progress of the measures while at the same time offering people the opportunity to get involved in the further development of the strategy. The learning strategy aims to evaluate and incorporate this experience as well as learning from related and ongoing processes, such as those in connection with Berlin's implementation of the Online Access Act (OZG).

Action	Title	Period	Responsible
Start of measure: Central measure	A binding procedure for the implementation of IT projects	2021 - end of 2023	CDO/StS D
Start of measure: Central measure	The Berlin platform: UX and design System as the basis for the new development of berlin.de	08/2021 - end of 2023	CDO / StS D
Start of measure: Central measure	Transparency and openness in the implementation of digital projects	08/2021 - end of 2023	CDO / StS D
Start of measure: Decentralized measure	Needs-driven expansion of the charging infrastructure	10/2021 - end of 2023	Senate Department for Economics, Energy and Public Enterprises
Start of measure: Decentralized measure	Participatory Budgeting and Smart Participation	2022 - end of 2025	Treptow-Köpenick District Office
Start of measure: Decentralized measure	Digital X Energy - Networking to Save Energy	09/2022 - 12/2022	Gemeinsam Digital Unit, Senate Chancellery
Start of measure: Decentralized measure	Life situation concept for administrative services	10/2022 - 2026	Senate Department for the Interior, Digitalization and Sport
Start of measure: Decentralized measure	Smart Space Hardenbergplatz	03/2022 - 06/2026	Charlottenburg-Wilmersdorf District Office
Start of measure: Decentralized measure	Use of comprehensible language in administrative forms	2022 - end of 2023	Senate Department for the Interior, Digitalization and Sport
Start of measure: Network measure	Wastewater Hygiene Monitoring	2022 - end of 2023	Berliner Wasserbetriebe
Start of measure: Network measure	Mobile CityLAB	end of 2022 - end of 2023	Technologiestiftung Berlin / CityLAB Berlin
Start of measure: Network measure	Data & Smart City Governance Based on the Example of Air Quality Management	07/2022 - 03/2025	Alexander von Humboldt Institute for Internet and Society (HIIG)

Start of measure: Network measure	Kiezbox 2.0- Data in Everyday Life and Crisis	10/2022 - end of 2025	Technologiestiftung Berlin
Start of measure: Network measure	Climate protection and energy-saving measures at "Learning Places of the Future"	10/2022 - end of 2025	InfraLab e.V
Start of measure: Network measure	Smart Water - Climate-Friendly Water and Urban Green Space Management	07/2022 - 09/2026	Kompetenzzentrum Wasser Berlin
Event	Gemeinsam Digital: Berlin Conference	mid-2023	Smart City Unit at Berlin Partner GmbH in cooperation with CityLAB Berlin
Process	Evaluation of the learning strategy	end of 2023	Gemeinsam Digital Unit, Senate Chancellery
Process	Evaluation of the learning strategy	end of 2024	Gemeinsam Digital Unit, Senate Chancellery

As mentioned above, this strategy is not to be regarded as finalized. By maintaining it as a work in progress, Berlin is also ensuring that new developments in digitalization can be incorporated and that future needs of the urban community can be responded to. This involves prioritizing measures and their implementation - depending on the financial and human resources made available by the Berlin Senate and the House of Representatives. With the involvement of Berlin's administration and Berlin's diverse urban community, Berlin's digital transformation will succeed and Berlin will become a smart city.



GLOSSARY

Here is an initial collection of terms from the GD:B strategy which are defined here for ease of understanding. This list is not final. We are happy to include other terms: feel free to provide suggestions.

15-minute-city

In this urban development concept, the focus is on ensuring that everyday routes can be covered in 15 minutes. The idea is that these journeys are covered on foot or using a sustainable means of transport such as a bicycle or local public transport. Everyday routes include travel to work, shopping, nurseries, schools, medical facilities, parks, cultural and sports facilities.

Action Team

An Action Team can be formed from various actors and implement measures independently. Action Teams can consist of individual organizations but are usually made of representatives of the administration, business, academia, and civil society. They pursue a common goal in the implementation of a measure.

Actors

Individuals and organizations actively engaged in the smart city.

Agile

Processes are defined as agile if they are adaptable, flexible and proactive. They involve short learning cycles and are repeatedly adapted during the course of the process.

Arena of Ideas

The Arena of Ideas offers all actors within the urban community the opportunity to contribute ideas, challenges and solutions, to discuss them and to refine them further based on the strategy. They can be submitted, qualified and further developed on an online platform.

Artificial intelligence

Artificial intelligence is the automated replication of intelligent behavior, mostly based on big data analysis and machine learning.

Cities Coalition for Digital Rights

Launched at the end of 2018, this initiative is based on the principle that all rights apply equally online and must be protected. Now involving more than 50 cities worldwide, Berlin has been part of the initiative since March 2019.

(Organized) civil society

Organized civil society stands for all initiatives, associations and organizations that are involved in shaping the public life of the city. It includes any commitment that is in line with basic democratic values. (Organized) civil society is thus an important part of urban society.

Critical infrastructures

Critical infrastructures (CRITIS) are infrastructures that are essential for maintaining important societal functions of health, safety, and the economic and social well-being of the population – e.g. water, food, health, energy, transportation, ICT, media, insurance, administration.

Dashboard

In the context of digitalization, this refers to a graphic presentation of information and data in a clear, easily comprehensible way.

Data science

Data science deals with the generation of knowledge from large amounts of data. It is an interdisciplinary science that has to do with both the processing and preparation of data and its use to gain knowledge.

Digital gender gap

According to the D21 Digital Index 2018/2019⁵³, women achieve a lower level of digitalization than men across all sociodemographic characteristics. They are more likely to belong to the group of **digital outsiders** and tend to be underrepresented in the group of **digital pioneers**. This imbalance is known as the digital gender gap.

53 Initiative D21 (2019). Digital Gender Gap. Available online: <https://initiated21.de/publikationen/digital-gender-gap>

Digital transformation

This term describes the transformation of the city with the support of digital technologies used for the common good and to promote sustainability, resilience and cooperation. In the digital transformation, digitalization and urban development are conceptually combined.

Enabler

The term enabler is used in connection with GD:B. The point here is that the administration's main role is to enable the digital transformation in line with the Values Compass. It is to function as an actor in its own right in connection with measures, remove existing (legal) hurdles, and provide tools and exchange formats that are currently lacking so that other actors from the urban community can advance implementation.

Exploration

Exploration describes the examination, investigation, or testing of a problem or issue. It is a key basis for the development of measures.

Field of action

A field of action within the GD:B strategy defines the focus of activities pursued by a measure. In contrast to many specialist strategies, no specific goals are named here, as GD:B ties in with existing specialist goals and supports their implementation through measures, tools and new processes.

Gender budgeting

This term calls for gender-sensitive budgeting. Gender equality is included as a goal in the preparation of the budget and is taken into account in the equitable distribution of financial resources.

Gender mainstreaming

This term refers to a strategy designed to promote gender equality. It is based on the assumption that women, men, and non-binary people have different prerequisites and therefore need to be strategically supported in different ways in the interests of equality.

Git repository

Git is free software for the distributed version management of files. It allows parallel and decentralized work on files, such as codes, which are stored and shared in so-called Git repositories.

Governance

Governance describes agreements and rules on how different actors in administration, politics and the urban community make decisions together, implement them and steer processes.

Humble government

Humble government is a concept for the long-term development of policy. It is based on the assumption that political decisions should always be scrutinized and adapted to new developments and the impact of measures.

ICT

Information and communication technology is a collective term for technology used for the digital processing of data and information. It therefore includes hardware, digital terminals, servers and software.

Impact indicators

Impact indicators measure the effect of a measure on the achievement of clearly defined, urban and global goals such as the UN Sustainable Development Goals.

Interoperable ecosystem

IT systems that are interoperable are independent systems that can communicate and interact with each other. For this reason, an IT ecosystem that is to be interoperable requires the same standards, e.g. in the use of file formats.

IT

Information technology is dedicated to the electronic processing of data and the hardware and software used for this purpose.

Iterative

An iterative approach is a step-by-step approach to a solution. This can also mean that interim outcomes are discarded precisely when they do not prove to be useful solutions.

Kanban system

The Kanban system is a system for managing joint project work and joint project management. In most cases, a so-called Kanban board is used: this provides a transparent overview of tasks for team members, helping them to collect outstanding assignments and showing which team member is currently working on which task, and which work stages have already been completed.

Learning strategy

GD:B is designed as a learning strategy that is developed on an ongoing basis and whose effectiveness is reviewed annually. The content of the strategy is continuously updated and new measures are added at regular intervals.

LoRaWAN

A Long Range Wide Area Network (LoRaWAN) is a network protocol that enables low-power transmissions of Internet-of-Things application information.

Online Access Act

OZG for short: this was passed by the German Bundestag in 2017. It aims to make administrative online services accessible or more easily accessible across the board.

Open-by-default

Open-by-default is the principle according to which data is made available as open data by default. Failure to provide data in this case requires a specific justification and should be the exception.

Open data

Open data is the publicly available provision of data sets, usually in the form of raw data for use, in particular for reuse and redistribution. Personal data and data otherwise subject to protection (e.g. security-relevant data, trade and business secrets) are excluded from this. Linked open data refers to open, structured information that is linked to other data sets and external, commonly recognized objects.

Open Source

This term refers to software whose source code is open. This means that it is publicly viewable and can be modified and used by others, so it can also be edited jointly.

Operating model

Private operation of infrastructure facilities, often in the form of an enterprise that is jointly managed by a private company and a public corporation. Widespread in the municipal sector, e.g. waste disposal.

Outcome indicators

Outcome indicators measure the medium-term impact of the results of a measure.

Output indicators

Output indicators describe the quantitative results of a measure at the end of the project.

Process indicators

Process indicators transparently show which phase of the process model a measure is currently in and which interim outcomes have been achieved in the phases already completed.

Service design

Service design is a collection of methods for designing services in a user-centered way.

Silent groups

These include Berlin residents who are rarely or hardly heard in participation processes: people with disabilities, people who have experienced displacement, people who have experienced discrimination, children and young people, and the homeless.

Smart (city)

In Berlin's interpretation, smart does not merely mean "digital". Berlin's definition of a smart city aims to address how future challenges can be solved in a creative, open, purposeful and participatory way. In this connection, digital technologies are seen as an important tool in bringing about the sustainable, community-oriented transformation of the city, but not as an end in themselves.

Specialized procedure

A specialized IT procedure – also called an IT process or specialized procedure – is an IT application that is developed specifically for the administration. It maps official processes within an administration either holistically or in significant parts with ICT support. Users can be both employees of the administration and citizens or companies.

Sponge city

The sponge city is a concept of urban development that envisages absorbing, storing and harnessing the rainwater that accumulates in cities rather than simply draining it away. The aim is to achieve more efficient use of water as well as better flood protection.

Success factors

The success factors of the Values Compass were developed in the course of the participation process for the creation of the Smart City Strategy. They all contribute to the long-term benefits for the city:

- Functionality and responsibilities
- Adaptive regulation
- Sharing of tools
- Visibility in the urban space
- Sustainable use of resources
- Co-determination in decisions and implementation
- Creativity and diversity
- Knowledge exchange and further development

Transformational issues

These aim to bring people together and align their interests so that they can then work together to tackle specific projects. Issues such as the climate crisis, the transportation turnaround, vibrant neighborhoods and good quality of living require a cooperative and innovative mindset. They are the transformational issues to which a smart city is to provide answers.

UN Sustainable Development Goals (SDGs)

The 17 United Nations Sustainable Development Goals (SDGs) came into force in 2016 and provide an overarching framework for sustainable development for countries and cities worldwide. Their period of validity lasts 15 years, ending in 2030. The goals are often abbreviated as SDGs.

Urban community

In the context of the Smart City Strategy, this term refers to the diverse groups that characterize Berlin society. It includes the administration and policymakers, business actors, organized civil society, academic actors, silent groups and Berlin residents.

Urban foresight

Foresight in urban planning means that actors of the urban community investigate probable and alternative future scenarios of the coming 5 - 30 years in order to support current decision-making processes in an anticipatory manner.

Use case

A use case is a practical instance of a concept or theoretical model.

UX/UI

UX stands for user experience, **UI** for user interface. User Experience Design describes the development of a design of a user's interactions with an application. The user interface is the visible image of an application that users can see.

Values Compass

The Values Compass of the GD:B strategy consists of four guiding principles and eight success factors which seek to provide direction for the success of projects.

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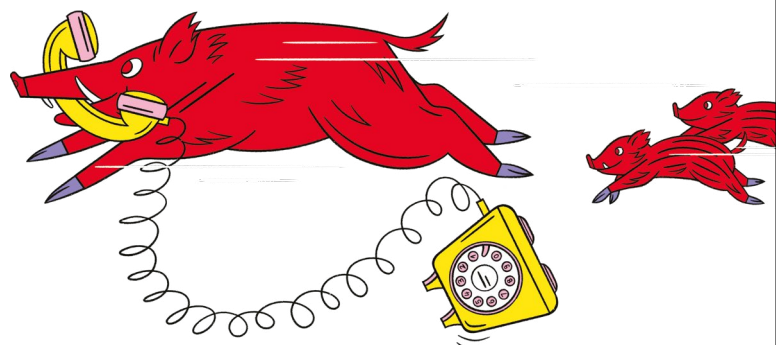
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