ECDC Digital Roadmap
2022–2027

ECDC CORPORATE

ECDC Digital Roadmap 2022–2027

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Related documents	
List of relevant standards, legislation and documents	• Regulation EC No 851-2004 establishing a European Centre for Disease Prevention and Control [1] • Decision No 1082/2013/EU of the European Parliament and of the Council of 22 October 2013 on serious cross-border threats to health [2] • World Health Organization, Global Strategy on Digital Health, 2020-2025 [3] • European Commission – People First – Digitalising the Commission 2022 [4] • European Commission Cloud Strategy 2019 [5] • European Parliament and Council Proposal for Cybersecurity Regulation laying down measures for a high common level of cybersecurity at the institutions, bodies, offices and agencies of the Union [6] • Proposal for a Regulation of the European Parliament and of the Council on information security in the institutions, bodies, offices and agencies of the Union [7] • World Health Organization (WHO European Region). Regional digital health action plan for the WHO European Region 2023–2030 [8] • World Health Organization (WHO European Region). Draft resolution 'Leveraging digital transformation for better health in Europe' [9]
List of relevant ECDC documents	• ECDC Strategy 2021−2027 [10] • ECDC Implementation Roadmap 2021−2027 • ECDC Application Map • IceCube Roadmap • ECDC IT Multi-annual Investment Plan 2022.

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Abbreviations

AI	Artificial Intelligence
BYOD	Bring Your Own Device
DMS	Document Management System
DPH	Digital Public Health
DTS	Digital Transformation Services Unit
ECMP	Enterprise Content Management Platform
EEA	European Economic Area
EFGS	European Federation Gateway Service
EHDS	European Health Data Space
EHR	Electronic health record
EI	Epidemic intelligence
EPIET	Intervention Epidemiology path of the ECDC Fellowship programme
ePLF	Electronic Passenger Locator Form
ESCAIDE	European Scientific Conference on Applied Infectious Disease Epidemiology
EU	European Union
EUPHEM	Public Health Microbiology path of the ECDC Fellowship Programme
EVA	ECDC Virtual Academy
EWRS	Early Warning and Response System
IAM	Identity and Access Management
IDSS	Integrated Digital Surveillance System
IKM	Information and Knowledge Management
IMF	Integrated Management Framework
ISMS	Information Security Management System
KPI	Key Performance Indicators
ML	Machine Learning
NLP	Natural Language Processing
PIR	Project Initiation Request
QM	Quality management
SARMS	Scientific Advice Repository and Management System
SSR	Surveillance System Reengineering programme
TESSy	The European Surveillance System
WHO	World Health Organization

Executive summary

This ECDC Digital Roadmap describes how digital transformation will support the implementation of the ECDC Strategy 2021−2027. It sets out ECDC's digital vision and the main areas of activity involved in its implementation.

The ECDC Digital Roadmap proposes innovative approaches to further digitalise knowledge gathering and the exchange of epidemiological information. The EU surveillance systems and tools will be further integrated and digitalised so that they can be used, in combination with the European Health Data Space, to extract, collect, exchange, validate, analyse and disseminate data in order to support Member States in responding to public health threats from infectious diseases. Innovative approaches, such as process automation, web scraping, smart analytics, artificial intelligence and cloud computing, will play a pivotal role in improving the performance and impact of public health surveillance and the scientific excellence of ECDC outputs. Platforms such as EpiPulse, the Early Warning and Response System (EWRS), the electronic Passenger Locator Form (ePLF) and the European Federation Gateway Service will facilitate data exchange, communication and interoperability between Member States.

The Roadmap also takes into account the need to increase productivity with a fully digital workplace, embrace the digital culture and adopt more cloud solutions. As the visibility of ECDC as an EU agency increases, security threats must be mitigated by improving cybersecurity resilience. The transition from local to cloud-based solutions and storage will improve the organization's digital competence. In order to respond more quickly to changing business needs, it will adopt more agile development approaches and environments, such as low code and service management platforms. ECDC will also continue to adopt more systems and services from the European Commission to streamline processes and save costs. The Digital Roadmap will also be an opportunity to align existing tools and develop any future tools with the highest standards of personal data protection.

In short, the automation of internal business processes will enhance organisational efficiency.

In order to support and achieve ECDC's Strategic Objectives, seven areas of activity will be prioritised:

1. Digital solutions for surveillance, preparedness and response to support Member States in responding to cross-border health threats.
2. Digital solutions for scientific excellence.
3. Digital solutions for smart analytics, artificial intelligence and data visualisation.
4. Digital solutions for knowledge management.
5. Digital solutions for integrated support, steering and communication.
6. Digital workplace, culture and literacy.
7. Common digital capabilities.

Introduction

This document outlines the Digital Roadmap of the European Centre for Disease Prevention and Control (ECDC). The Digital Roadmap is the successor to ECDC's Strategic IT Framework, which covered the period to 2020 and was implemented as part of the IT-2021 Transformation Programme. A new ECDC Policy and Digital Roadmap are needed to provide the digital solutions required for the achievement of the ECDC Strategy 2021-2027 and anticipate its new mandate.

The Digital Roadmap is the result of a collective effort with input from ECDC's units and business experts, coordinated by the Digital Transformation Services Unit (DTS). The Digital Roadmap applies to the ECDC as a whole and provides the basis for a common understanding of the digital vision and mission in support of ECDC's Strategy.

The Digital Roadmap is also the result of interaction with a number of other partners in a variety of projects. This includes the European Commission's Digital Strategy[1] and the initiative 'Europe's Digital Decade', the 'Joint Action for the European Health Data Space' undertaken by the Directorate-General for Health and Food Safety[2] and the World Health Organization's 'Global strategy on digital health 2020-2025'[3].

The Digital Roadmap will support the implementation of ECDC's Strategy by providing the required digital solutions during the period 2022 to 2027. It will serve as a tool to facilitate IT planning and monitoring, and to accommodate changes and provide guidance for the development and execution of the initiatives in the Roadmap (see Annex 1). The Digital Roadmap also provides a basis for the preparation of an IT investment plan and annual project planning. However, it does not replace the regular annual ECDC budgeting and planning process.

One of the cornerstones of the Digital Roadmap will be personal data protection. Existing systems will be regularly re-assessed to ensure that the technical solutions adopted always incorporate the most up-to-date solutions for safeguarding privacy. In parallel, any new systems or tools developed will include data protection as a precondition.

The Digital Roadmap is a living document and revisions will be considered when there are changes in the external environment (e.g. outbreaks or pandemics); ECDC's strategy; organisational and public health priorities; the European Commission Digital Strategy, or ECDC's mandate (new mandate soon to be implemented). Similarly, revisions will be discussed when important technological developments need to be addressed or when the roadmap needs to be realigned, following the evaluation of past results.

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[1] European Commission - A European Strategy for data - Shaping Europe's digital future. Available at: https://digital-strategy.ec.europa.eu/en/policies/strategy-data
[2] Information from European Commission on European Health Data Space. Available at: https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733646/EPRS_BRI(2022)733646_EN.pdf
[3] World Health Organization 'Global strategy on digital health 2020-2025'. Available at: https://www.who.int/docs/default-source/documents/gs4dhdaa2a9f352b0445bafbc79ca799dce4d.pdf

2. From ECDC's Strategy to the Digital Roadmap

2.1 Digital vision and mission

The Digital Roadmap is based on ECDC's Strategy 2021−2027 and subscribes to its vision and mission, while also incorporating elements of the World Health Organization (WHO) Global Strategy on Digital Health[4].

ECDC's digital vision and mission are set out below.

Digital vision

Develop and adopt digital solutions that improve lives in Europe, support scientific excellence and empower Member States, the European Commission and other partners to drive public health policy and practice.

Digital mission

Develop infrastructure and applications that enable ECDC, the European Commission and the Member States to use health data to identify, assess and communicate current and emerging threats to human health posed by infectious diseases.

2.2 Contribution to ECDC's Strategic Objectives

The Digital Roadmap supports the implementation of ECDC's Strategy 2021−2027 and its Strategic Objectives:

- SO1. Strengthen and apply scientific excellence in all ECDC activities and outputs to inform public health policy and practice.
- SO2. Support countries in strengthening their capacities and capabilities to make evidence-based decisions on public health policies and practice.
- SO3. Future outlook: prepare for the future through foresight and innovation assessments.
- SO4. Increase health security in the EU through strengthened cooperation and coordination between ECDC and partners in non-EU countries.
- SO5. Transform the organisation into the 'next-generation ECDC'.

The Digital Roadmap consists of seven areas of activity in which tangible digital goals have been identified to achieve the Strategic Objectives.

1. Digital solutions for surveillance, preparedness and response to support Member States in responding to cross-border health threats.
2. Digital solutions for scientific excellence.
3. Digital solutions for smart analytics, artificial intelligence and data visualisation.
4. Digital solutions for knowledge management.
5. Digital solutions for integrated support, steering and communication.
6. Digital workplace, culture and literacy.
7. Common digital capabilities.

Table 1 shows how these areas of activity contribute to ECDC's Strategic Objectives.

Table 1. **Areas of activity contributing to the achievement of ECDC's Strategic Objectives (SOs)**

Areas of activity	SO1	SO2	SO3	SO4	SO5
Digital solutions for surveillance, preparedness and response to support Member States in responding to cross-border health threats	X	X	X	X	
Digital solutions for scientific excellence	X	X			X
Digital solutions for smart analytics, artificial intelligence and data visualisation	X	X	X	X	X
Digital solutions for knowledge management	X				X
Digital solutions for integrated support, steering and communication					X
Digital workplace, culture and literacy	X	X	X	X	X
Common digital capabilities.	X	X	X	X	X

Source: Strategic Objectives for Digital Roadmap Activity Areas

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[4] The vision of WHO's Global Strategy on Digital Health is 'to improve health for everyone, everywhere by accelerating the development and adoption of appropriate, accessible, affordable, scalable and sustainable people-centric digital health solutions to prevent, detect and respond to epidemics and pandemics, developing infrastructure and applications that enable countries to use health data to promote health and well-being, and to achieve the health-related Sustainable Development Goals and the triple billion targets of WHO's Thirteenth General Programme of Work, 2019–2023.'

3. Digital areas of activities

The areas of activity in the Digital Roadmap represent a high-level view of the current and desired digital capability of ECDC in terms of process, people and technology for each of the strategic domains identified.

3.1 Digital solutions for surveillance, preparedness and response to support Member States in responding to cross-border public health threats

This area of activity supports the following ECDC Strategic Objectives:

- SO1. Strengthen and apply scientific excellence in all ECDC activities and outputs to inform public health policy and practice.
- SO2. Support the countries in strengthening their capacities and capabilities to make evidence-based decisions on public health policies and practice.
- SO3. Support transformation: promote and contribute to digital health actions and support Member States in adapting, adopting and exploiting new technologies.
- SO4. Increase health security in the EU through strengthened cooperation and coordination between ECDC and partners in non-EU countries.

Digital vision for this area of activity

ECDC supports the European Commission and the Member States with digital solutions for surveillance, preparedness and response to enable the timely generation and exchange of standardised high-quality data to rapidly respond to cross border health threats involving infectious diseases.

The strengthening of EU surveillance systems is part of the broader objective of improving global health security. In order to address the gaps identified during the COVID-19 pandemic, standardised, interoperable, integrated and efficient systems are needed for data exchange and infectious disease surveillance, both at the EU and national levels.

Public health surveillance in the European Union/European Economic Area (EU/EEA) needs a broader base of data sources and methods, including modern technologies such as artificial intelligence (AI) to complement existing, traditional indicator-based and molecular and genomic typing data. Electronic health records (EHR), mobile health (m-health) applications and data from other existing sources may have huge potential for infectious disease surveillance and this should be explored and exploited.

Further digitalisation and integration of surveillance systems will strengthen and integrate event-based and indicator-based surveillance and improve data comparability, quality and timeliness. It is crucial to be able to unlock existing and new data sources in order to achieve more comprehensive surveillance, prevention and control of infectious diseases in the EU/EEA.

In practice:

Together with the European Commission, ECDC will support Member States with the further digitalisation and integration of their surveillance systems to improve data quality, comparability and velocity. The Agency will support Member States in developing and adopting digital solutions to prevent, detect, monitor and respond to infectious disease threats, both in the context of national and cross-border epidemics and pandemics.

ECDC will unlock, and/or enhance the usability of existing and new data sources via a European surveillance portal for infectious diseases - the EU platform (EpiPulse) – to ensure timely surveillance, multi-country outbreak detection and pandemic preparedness, and to facilitate a coordinated response across Member States. The objective is to increase the availability of high-quality data from multiple sources and to collect and collate data automatically and systematically. The on-going Surveillance System Reengineering programme (SSR) is already providing a platform for both indicator-based and event-based surveillance data (including data from epidemic intelligence, molecular and lab-based surveillance) and work is continuing to deepen and widen the integration.

Through its e-health programme, ECDC will offer guidance and support to Member States transitioning to surveillance based on information from EHR. In addition, the European Health Data Space (EHDS) will offer a hub where ECDC will access and analyse data from Member States (e.g. data from EHR and research databases) to inform public health action.

ECDC supports Member States in adopting standards and systems that enable interoperability. It will continue to work with the European Commission and the Member States to improve the reporting of relevant data through the Early Warning and Response System (EWRS), including the use of modern technologies, to encourage digitalisation of the process and its integration with national systems. The European Federation Gateway Service (EFGS) is responsible for the interoperability of COVID-19 contact tracing apps. Based on the outcome of a study on the epidemiological impact of contact tracing apps and their expected usefulness in future outbreaks, EFGS is currently being reassessed. EWRS connects to electronic Passenger Locator Forms (ePLF) to facilitate cross-border contact tracing related to aircrafts and ships.

3.2 Digital solutions for scientific excellence

This area of activity supports the following ECDC Strategic Objectives:

- SO1. Strengthen and apply scientific excellence in all ECDC activities and outputs to inform public health policy and practice.
- SO2.3 Training: provide adequate training opportunities, taking into account the changing environment for infectious disease prevention and control.
- SO5.3 Stakeholders and external communication: Enhance the transparency, visibility and availability of ECDC's outputs.

Digital vision for this area of activity

Enable collaboration and exchange of knowledge, bring experts together and support joint problem-solving.

Scientific excellence is at the heart of ECDC's vision. This area of activity encompasses the processes for strengthening scientific excellence, including the quality assurance of ECDC's scientific work, the definition of the standards for the Centre's scientific processes and outputs, and the monitoring of performance against those standards. It also covers other activities, such as the organisation of the European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE).

Digitalisation can help disseminate scientific results, to facilitate the retrieval and accessibility of ECDC content for target audiences, and policymakers in particular. This will improve the external communication of ECDC's scientific evidence and recommended public health measures.

Digitalisation to support the production and dissemination of scientific outputs facilitates the development of timely scientific output. This assures the quality of ECDC's scientific activities which are key to maintaining the Agency's institutional reputation and scientific integrity. Digitalisation can provide new and better ways to identify gaps in epidemic knowledge and the scientific needs of Member States in order to trigger external research projects.

ECDC needs to provide engaging and effective training content. ECDC supports and coordinates training programmes for external audiences and also offers learning and development activities for its staff. In addition, the public health training provided by ECDC facilitates networking and interactions through communities of practice and this also needs to be available in a hybrid mode.

In practice:

The dissemination of scientific results to external users is facilitated by ECDC's website. Improved metrics on website usage will help us to better understand user needs and the most consulted content. This could facilitate the optimised delivery of content suitable for specific audiences.

ECDC's Scientific Advice Repository and Management System (SARMS) supports the production of ECDC outputs with scientific content, from registration to clearance and dissemination using electronic workflows. It also provides a repository of ECDC scientific outputs for reference and auditing purposes. As one of ECDC's core applications, the functionality of SARMS will be enhanced and the solution will be adapted to changes in technology.

ECDC's ambition is to facilitate networking and interactions through various communities and to facilitate simple, intelligible communication between stakeholders. The aim is to increase interactions with external partners, so knowledge and tools can be shared among the different stakeholders. Community management capabilities will be enhanced to enable these exchanges. For example, the ECDC Fellowship programme on epidemiology (EPIET) and public health microbiology (EUPHEM) will require improved tools for the operation of their various expert communities and networks (for example through the expansion of ECDC's Virtual Academy – EVA).

The Centre also will investigate solutions in areas such as open source and crowd sourcing for systematic review, as well as further support for the digital edition of *Eurosurveillance*.

3.3 Digital solutions for smart analytics, artificial intelligence and data visualisation

This area of activity supports the following ECDC Strategic Objectives:

- SO1.2 Evidence: provide partners with robust evidence and guidance for public health policies and practice.
- SO2. Support the countries to strengthen their capacities and capabilities to make evidence-based decisions on public health policies and practice.
- SO3. Future outlook: prepare for the future through foresight and innovation assessments.
- SO4. Increase health security in the EU through strengthened cooperation and coordination between ECDC and partners in non-EU countries.
- SO5.3 Stakeholders and external communication: enhance the transparency, visibility, and availability of ECDC's outputs.

Digital vision for this area of activity

Implement smart analytics and artificial intelligence to assess and interpret data effectively and offer relevant and timely scientific evidence, using modern visualisation tools.

Digitalisation for horizon scanning, forecasting, foresight and modelling will support and enhance the ECDC outputs used by stakeholders for planning, preparedness, prioritisation, intervention and scenario building in the short-, medium- and long-term future.

ECDC will collate available data and information to provide visual and concise country overviews to facilitate the identification of Member State vulnerabilities and needs. In line with the new mandate, ECDC will also analyse available data to monitor the progress of prevention and control programmes for selected diseases in the Member States.

ECDC will continue improving the quality of its epidemic intelligence tools – for example, by integrating AI solutions to support the early detection of threats. Similarly, ECDC will continue to identify opportunities for the implementation of AI solutions where they facilitate the timely and accurate detection of threats, leading to actionable information being provided to the Commission and the Member States.

Nevertheless, the opportunities granted by AI must not overshadow the challenges related to safeguarding the privacy of individuals. Every time systems using innovative technologies (including AI) pose a potential risk to the protection of personal data, data protection impact assessments will be carried out, to ensure that appropriate measures are taken to prevent or mitigate such risk.

In practice:

ECDC will make use of data visualisation tools to produce interactive outputs, such as maps, graphs and dashboards, in order to improve communication of data summaries on infectious diseases to its stakeholders. To do this, ECDC will apply modern tools and technologies, to create dashboards displaying events and threats being monitored, and country overviews to inform country support. Data visualisation enables information from different sources to be connected, assessed and interpreted appropriately.

ECDC will investigate where AI could be used to serve the objectives of the organisation. Potential uses may include using Natural Language Processing algorithms (NLP) to retrieve information from unstructured sources; Machine Learning (ML) to find patterns and abnormalities (epidemic intelligence). ML can also be used for large surveillance datasets, disease prediction and sentiment analysis, and ML techniques can also accelerate systematic literature reviews. In addition, ECDC will explore the use of smart analytics tools to improve the monitoring of key performance indicators and also investigate the use of smart document template technology.

3.4 Digital solutions for knowledge management

This area of activity supports the following ECDC Strategic Objectives:

- SO1.4 Knowledge transfer: bridge the gap between science, policy, and practice to ensure sustainable impact on prevention and control of infectious diseases.
- SO5. Transform the organisation into the 'next-generation ECDC'.

Digital vision for this area of activity

ECDC will introduce continuous improvement mechanisms and training courses to facilitate the efficiency and effectiveness of the Agency. The knowledge of experts is captured, collected, formalised and enhanced in different areas.

ECDC's objective is to improve the efficiency and effectiveness with which its scientific outputs are designed, drafted, edited and finalised for publication.

Knowledge Management addresses the tools, processes and enablers in place within ECDC to facilitate knowledge flow and increase access to the accumulated information and knowledge of the Centre, both internally and externally. Knowledge Management involves the development of internal knowledge resources to improve access to the Agency's scientific outputs and knowledge services that facilitate the development, conveyance and application of knowledge. This helps to empower ECDC's partners and drive forward public health policy and practice.

In practice:

The Information Asset Catalogue will be overhauled to improve the governance of information assets and bring greater clarity to roles and responsibilities.

The Enterprise Content Management Platform (ECMP) will include the Information Centre, the Document Centre and the Collaboration Centre, which will respectively replace the Intranet, Document Management System (DMS) and the external DMS/Extranet. The ECMP will be used more extensively to collaborate with external stakeholders (for instance, when exchanging documents).

In addition, ECDC will evaluate its need for an Enterprise Data Catalogue. The Enterprise Data Catalogue would help to harmonise terminology, structure knowledge using ontology connections and offer master data and reference data management.

3.5 Digital solutions for integrated support, steering and communication

This area of activity supports the following ECDC Strategic Objective:

- SO5. Transform the organisation into the 'next generation ECDC'.

Digital vision for this area of activity

ECDC increases the effectiveness, efficiency and added-value of its steering and support operations by involving its main stakeholders. New tools enhance the execution of business processes.

ECDC enhances the experience of its target audiences and their access and understanding of complex scientific content through improved digital communication tools and outputs.

ECDC is managed effectively through the integrated management framework (IMF) for governance, organisational performance, internal control, quality assurance and support functions such as procurement, human resources, meetings organisation and finance. The integrated management framework enhances the Centre's organisational excellence, through standards and processes designed to engage and motivate employees to deliver products and services that meet stakeholder requirements using the organisation's resources.

One of the main aims of the IMF is to improve the clarity and transparency of the management procedures in place. It also aims to ensure that ECDC's management has the information it needs to take well-informed and timely decisions. Such decisions increase the potential for achieving strategic targets and ensure the involvement of stakeholders and employees. Digitalisation plays a vital role in building IMF and organisational excellence.

ECDC delivers risk, crisis, external and internal communication through a wide array of digital tools and translates complex scientific content into formats that are easily accessible and understandable for its target audiences.

While ECDC's existing websites are informative, recommendations from several external evaluations point to the need to find ways to further tailor them to the needs of each specific target audience. In addition, exploring new communication formats and tools is a must. The production of high-quality interactive animations, infographics, and other data-driven formats needs to be expanded and reconfigured to fit the requirements of each channel.

In the coming years, timely and effective action to address misinformation and its negative impact on the prevention and control of infectious diseases, vaccination coverage or prudent use of antibiotics, will become a

central element of communication activities. Therefore, it is important to have the necessary tools for early identification of misinformation, disinformation and infodemics[5].

With regard to internal communication, ECDC must focus on increasing internal transparency and employee engagement, with aim of creating a positive effect on performance and improved organisational culture. For example, this can be done by improving the Intranet and other digital channels.

In practice:

The Integrated Steering and Support Systems programme (IceCube) has facilitated an exhaustive review of current applications and the development of a roadmap to build an architecture and adopt systems that are more cost-effective and better support ECDC business needs. The IceCube programme includes solution recommendations for core administrative process (HR, Finance, Procurement, etc.) as well as support systems (e.g. Events Logistic Management).

The introduction of digital solutions such as the Planning and Monitoring System (PMS) and monitoring data warehouse/dashboards will support the planning process and enhance the monitoring of progress related to strategic KPIs and annual work plan implementation.

ECDC will further adopt shared solutions from the European Commission (i.e. migration from ABAC to SUMMA for finance and accounting, and implementation and migration to the Commission HR management system).

Internal support functions will be further digitalised with the adoption of a state-of-the-art service management system (ServiceNow) which provides ticketing and case management capabilities, as well also other modules that can be configured to fulfil business needs.

ECDC will continue to improve user experience of its websites through expanded content, better structure, and clearer design. This will involve the implementation of tools to find and solve accessibility, quality, performance, and search engine optimisation issues on the websites easily, and audience customisations based on user search and traffic patterns, keyword research, reduction of duplicate content and tagging. In addition, enhanced social media listening projects will be established to help ECDC identify and tackle misinformation, manage infodemics to reduce their impact on health behaviour during health emergencies, and develop better and more targeted risk communication campaigns.

All ECDC reports and other types of documents are published on the ECDC website as PDFs. However, new formats need to be developed for digital publications, using innovative tools that respond to current technical needs. This will also apply to interactive graphic elements and with the integration of data visualisation tools and outputs as part of defined communication strategies.

As part of the wider ECMP, ECDC will also deliver a new Information Centre to replace the current intranet and support a more holistic approach to internal communication practices. Other digitally-based channels will also be upgraded, including those to push or pull information (e.g. newsletters, digital screens, and hybrid staff meetings and briefings).

3.6 Digital workplace, culture and literacy

This area of activity supports the following ECDC Strategic Objectives:

- SO1. Strengthen and apply scientific excellence in all ECDC activities and outputs to inform public health policy and practice.
- SO2. Support the countries to strengthen their capacities and capabilities to make evidence-based decisions on public health policies and practice.
- SO3. Future outlook: prepare for the future through foresight and innovation assessments.
- SO4. Increase health security in the EU through strengthened cooperation and coordination between ECDC and partners in non-EU countries.
- SO5. Transform the organisation into the 'next-generation ECDC'.

Digital vision for this area of activity

ECDC staff are digitally empowered in a user-centric digital workplace, guided by a common digital etiquette and trained with the necessary digital skills.

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[5] An excessive amount of information concerning a problem whereby the information, which is typically unreliable, spreads rapidly and makes it more difficult to find a solution.

The digital workplace allows ECDC staff to work efficiently and independently from their location or used device, while maintaining high security standards[6]. It also enables the use of technology to enhance collaboration, share and produce content. This can be achieved by (re)designing the workplace with user-centric innovation and ensuring an effective user-experience.

Digital literacy is the ability to identify, understand, use, create and protect information using information technologies. With the shift to remote working, digital skills have become even more essential to create a competitive and innovative working environment. With the aim of achieving an increasingly competent workforce, digital skills need to be a life-long learning objective. For ECDC this means that all staff needs to have a basic level of understanding of technology and its use, particularly since technology changes over time. Digital literacy is also a key factor in decreasing the risk of human errors which could compromise the protection of personal and corporate data.

In practice:

The digital workplace provides a user-centric office environment that caters for the mobility and collaboration needs of staff and offers flexibility regarding the use of devices by implementing a BYOD (Bring Your Own Device) policy. This allows the use of personal laptops/tablets within agreed security boundaries.

ECDC will adopt a digital etiquette defining a common digital culture, including advice on how to best handle hybrid meetings. To ease the user experience, ECDC will further adopt a user-centric innovation approach to better understand its users, business needs and drivers (e.g. by using web analytics data and design techniques).

Employees will be able to improve their digital skills continuously with the inclusion of digital skills as part of ECDC's skills gap analysis and development framework.

3.7 Common digital capabilities

This area of activity supports the following ECDC Strategic Objectives:

- SO1. Strengthen and apply scientific excellence in all ECDC activities and outputs to inform public health policy and practice.
- SO2. Support the countries to strengthen their capacities and capabilities to make evidence-based decisions on public health policies and practice.
- SO3. Future outlook: prepare for the future through foresight and innovation assessments.
- SO4. Increase health security in the EU through strengthened cooperation and coordination between ECDC and partners in non-EU countries.
- SO5. Transform the organisation into the 'next-generation ECDC'.

Digital vision for this area of activity

ECDC's digital transformation will be implemented with the necessary velocity, quality, sustainability and security.

ECDC needs to adopt and operate digital solutions with sufficient velocity, quality and security. This implies leveraging cloud infrastructure and adopting agile development approaches to even greater extent.

In order to be affordable, scalable and sustainable, ECDC's digitalisation must be fit-for-purpose, with digital solutions that match business needs and are based on supported and cost-effective technologies. ECDC's digitalisation also needs to be user-centric, with information systems designed from the users' perspective so that they can interact with the system to get the information and data they need.

Maintaining the security and privacy of information systems is a growing area of concern. Security compliance of information systems means that the organisation meets the standards for data privacy and information security. This includes fulfilling the principles of data protection by design and default, and ensuring that technological solutions are always state-of-the-art in terms of personal data protection, both when designed and during their lifecycle. Compliance of information systems brings significant benefits to the organisation and its employees, and is an important safeguard for the rights of individuals whose personal data is processed by ECDC. Cyber resilience, the ability of information systems to recover quickly from any type of adversity, is one of the main factors for increasing the compliance of information systems. Furthermore, it is vital to raise the awareness of ECDC employees and collaborators in order to increase the security of information systems.

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[6] European Commission Digital Workplace Strategy available here: https://ec.europa.eu/info/publications/digital-workplace-strategy_en

In practice:

To respond to the ever-evolving need for new digital solutions, ECDC will make increased use of cloud-based technologies. The Centre will study and introduce new application designs and architecture, such as serverless computing/low code and leverage Agile/DevSecOps methodologies for its software development lifecycle.

ECDC will make use of the common services and components of the European Commission. The possibility of leveraging reusable third party components will also be investigated and implemented when appropriate. ECDC makes use of essential services provided by the European Commission (e.g. SUMMA, HRM or EU-Sign). ECDC works closely with the European Commission on cybersecurity to ensure the provision of security governance, risk and compliance as part of the community of information risk managers in the European institutions.

In the future, existing platforms such as MS Dynamics, ServiceNow and Microsoft 365 will be configured to incorporate new solutions. The use of out-of-the-box features provides efficiency in business processes and makes it easier to maintain solutions. The Digital Transformation Services Unit (DTS) will need to invest in new competences and skills in order to obtain the full advantage from use of these platforms.

With the increased visibility of ECDC resulting from the COVID-19 pandemic, cyber resilience has become even more critical. In order to comply with the draft Regulation on cybersecurity and the draft Regulation on Information Security, the Centre will adopt a cybersecurity roadmap and an information security roadmap.
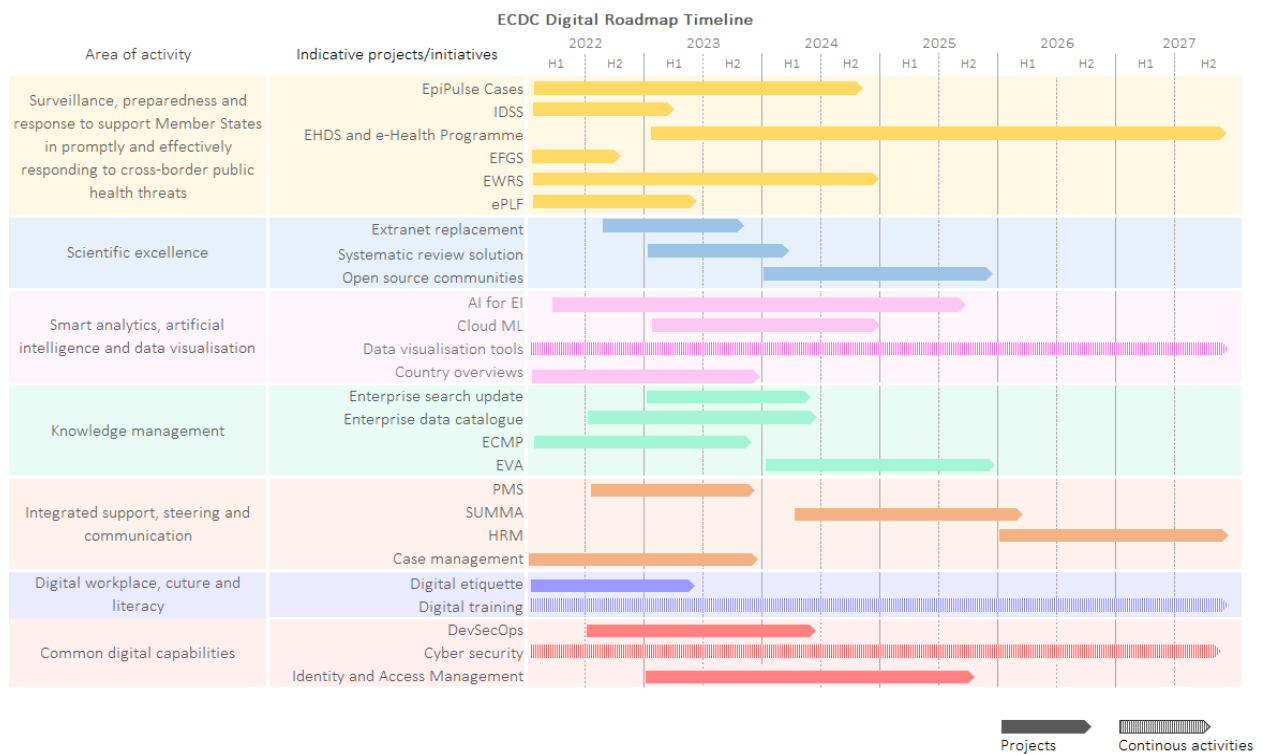
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Annex 1. Implementation of roadmap

The Digital Roadmap will support the implementation of ECDC's Strategy, providing the required digital solutions during the period 2022 to 2027. A plan of the main initiatives for each area of activity is set out in the timeline below.

This Digital Roadmap will be implemented in accordance with ECDC's work planning process, taking into account available resources. It will be monitored in accordance with established ECDC governance and project management procedures. Responsibility for the governance of the initiatives will lie with the bodies in charge of the respective business activity or strategic objective.

Figure 1. **Timeline of ECDC's Digital Roadmap**