# DIGITÁLNÍ A INFORMAČNÍ AGENTURA_

Export z Národní architektury eGovernmentu ČR

# Obsah

# Architectural vision of eGovernment of the Czech Republic

The architectural vision of eGovernment, as an electronic public administration, represents the target form of how eGovernment of the Czech Republic will look like and function when a substantial part of the measures listed in the Information Concept of the Czech Republic and the National Architectural Plan are implemented.

**The vision of the public administration architecture shows in particular how the existing and completed pillars of shared eGovernment services will be used to implement useful public administration services for its clients on the one hand and for the efficient management of its resources on the other hand.**

During the time horizon of the NAP issued in September 2019, i.e. 2019 to 2024, changes will be increasingly promoted towards the target vision of eGovernment and its IT support.

Fulfilling this vision must not only be an integral part of planning and promoting the objectives of digitalization of public administration in the Czech Republic in the authorities themselves and their IT departments, but also the basis of the policy objectives of the reform of public administration in the Czech Republic, which must actively develop the digitalization of public administration services and effective support of public administration performance using ICT.

## The overall architectural vision of eGovernment information support

The public administration of the Czech Republic will fully exploit the potential of **digitisation**, **consolidation** and **shared services** on all four layers of its architecture - business, application technology (platform) and communication (infrastructure).

Public administration information systems will no longer be designed, implemented and operated as an indivisible block running through all layers of the architecture (from the Full-Stack concept), but will be designed in layers - wherever possible, shared services will be used at the appropriate layer. Primarily, it will be a transformation of previously fragmented and isolated ISVS into logically centralised agenda ISVS:

- managed by the OVS responsible for the agenda,
- interconnected in the data layer by linked data pool and
- using shared ICT platforms and virtualization, e.g. in the form of PaaS or Cloud services; and
- shared communications infrastructure and shared data centres.

The public administration architecture will fully support **client service orientation** while fully and equally supporting both the client in self-service functions and the official in assistance and internal functions with information technology.

The **accountability of public administrations for the quality of their services** will be emphasised. From the citizen's point of view, public administration will be unified into two basic perceived areas - as state services, available anywhere (in direct and delegated competence, completely without local jurisdiction), and local government services, clearly linked to the place of life and its human community (municipality).

Both of these key categories of individual substantive public administration services for clients will be presented in universal and local contact points by means of so-called User Service Catalogues, oriented primarily to the solution of clients' life events.

At the same time and as a follow-up, the emerging central and shared ICT services for public administration

support will be published for the IT management needs of authorities in the form of the Catalogue of ICT Services for Public Administration. The first and basic preview of this catalogue is the Information Concept of the Czech Republic and its annexes, including the National Architectural Plan.

The key trend and way of optimising public administration will be the search for unity and similarity and the search for potential for savings and efficiency through sharing, at all layers of the public administration architecture.

The following diagram contrasts the complementarity of the local individual authority function and the corresponding shared service. The potential for the provision and use of shared services, whether central, corporate (in a ministry, county or ORP) or local services shared across the whole authority, exists at all levels of government and at all layers of the public administration architecture.

# Basics and essentials of change for each architectural layer

## Business Architecture - Public Administration Performance Layer

For a long time, the performance of public administration has been implemented only in physical and documentary form, this form of government, governance, can be called by the foreign name "Government". With the growing capabilities of information technology and the explosion in its use, the ordinary "paper" Government is becoming its electronic or digital form - "eGovernment" or e-Governance. At the level of the business architecture of the authority, it is important to have a good understanding of both the real business of the authority, i.e. all its processes, functions, roles, responsibilities, etc., and the way the digital aspects of the authority's business are centrally coordinated within the so-called agendovy model of public administration

- Public administration always operates exclusively within the confines of the law and legal obligations and uses the methods, ways and means that the law allows.
- The basic source of the business model of public administration, including the business model of individual agencies, is the agendovaya model of public administration, legislation expressed by eSběrkou and data on agendas registered in the Register of Rights and Obligations.
- For the operation of shared IT support services, only what is recorded in the RPP is valid. Data in the RPP that are inconsistent with the actual situation or legislative intent shall be modified by the notifier of the relevant agenda.
- Any public administration activity of the Authority must be based on the agenda and activities in the RPP.
- If the data on the agenda is not correctly stated, the authorities operating in the agenda will not be able to use the eGovernment tools and thus will not be able to properly fulfil their legal obligations and provide quality services to clients.

The basic legal framework concerning the electronicisation at the business layer of the public administration architecture is mainly defined by the following laws:

- Law No. 12/2020 on the Right to Digital Service
- Act No. 111/2009 Coll., on basic registers
- Act No. 250/2017 on electronic identification
- Act No. 297/2016 Coll., on trust services for electronic transactions
- Act No. 300/2008 Coll., on electronic transactions and authorised document conversion
- Act No. 500/2004 Coll., Administrative Procedure Code
- Act No. 106/1999 Coll., on free access to information
- Act No. 499/2004 Coll., on archiving and file service
- Act No. 110/2019 Coll., on the processing of personal data
- Act No. 123/1998 Coll., on the right to environmental information
- Act No. 200/1994 Coll., on Land Surveying

- Act No. 256/2013 Coll., on the Cadastre of Real Estate (Cadastral Act)

The Basic Registers Act governs in particular situations where a public authority operating in a particular agency in one of the agency information systems (AIS) has the right and obligation to draw (**use**) reference or agency data. The correct use of data from registers and other agency systems is conditional on the implementation of correct procedural steps ensuring the maintenance of a factually correct and up-to-date and historical data trunk of the Office with regular notifications of changes to reference and agency data.

According to the Act on Electronic Identification, **identification** and **authentication** of the client of the public administration - the subject of law is carried out. The person (client) with whom (and for whom) individual actions will be performed will be identified in the basic registers and provided with an identification means, always through a qualified identification service provider selected by the person.

Another key element of digitisation at this layer is the legal acts of **submission** and **delivery** via data boxes, which are regulated by the Act on Electronic Acts and Authorised Conversion. This submission then has the characteristics of a full-fledged legal act and one of the state-guaranteed electronic submissions.

The client has the right to **provide** the data kept about him/her from the information systems of the authorities, which is regulated by the Act on Public Administration Information Systems and is primarily addressed by the so-called Citizen's Portal - part of the public administration portal.

The client also has the right to the provision of public information from the information systems of authorities, i.e. information pursuant to Act No. 106/1999 Coll., on free access to information, or pursuant to other special regulations governing the provision of information to the public, for example Act No. 123/1998 Coll., on the right to information on the environment, in the form of open data. He also has the right to be provided with an extract of the individual data held on him, pursuant to Law No. 365/2000 Coll.

**Essence of changes in business architecture**

The main change is the nature of how digitalisation is becoming a normal part of the functioning of public administration. The complexity of processes, which not only within the authority but also inter-agency, are constantly increasing and becoming more complex, and the administrative burden, which by its very nature distracts the authority from being able to optimise processes, is a major obstacle to effective change leading to digitalisation. For own processes, there is a need to evaluate and monitor their effectiveness; for processes managed outside the organisation, there is also a need to alert the owner to inefficiencies that hinder improvement.

In the further development of eGovernment, transactional self-service for legal entities and its efficient assisted alternative for the electronically disabled are being introduced.

Individual public administration services, representing the concrete output of public administration processes through which the client (citizen or representative of an organisation) **exercises his/her legal rights (entitlements) or fulfils his/her legal obligations (commitments)**, will increasingly focus on the practical solution of individual life situations that arise for the client in relation to public administration through some life event, whether of his/her own volition, ex officio, through the action of a third party or other fact.

Part of this change will be the rapidly growing share of digital services that the client will be able to obtain and be served at universal contact points, whether self-service (such as Portal občana) or assisted (such as CzechPOINT, the public administration call-centre and also universal counters of local government offices).

All public administration services must therefore be gradually adapted so that they can be accessed equally, at any time and from anywhere through all service channels.

All the local territorial and departmental agency portals (such as ePortal, Farmer's Portal, eAgri, BusinesInfo,

EPO, eHealth and eJustice, among others) will be gradually connected in a federated arrangement to the central Citizen Portal, which will thus be the only common entry point to all electronic services of the Czech Government.

The electronic services will be consistently implemented in authenticated service channel spaces, with full use of pre-populated data from the linked and public data pool of the VS. The computerisation of client service and information exchange in public administration will be solved in such a way that it will be a natural part of the work of civil servants, it will not put any extra burden on them, but on the contrary, their work will be facilitated and accelerated by computerisation, both in:

- the actual performance of agency services or services for dealing with life situations
- exchange of information between authorities
- assisting clients in filing or receiving documents
- internal operational tasks of the employee and the office.

Electronic services for clients will be based on the uniform and state-guaranteed electronic identification of citizens of the Czech Republic (NIA) and identification of EU citizens (eIDAS).

The eCollection and eLegislation services will play an important role in raising the legal awareness of citizens and officials, as one of the key knowledge systems of eGovernment.

Open data will become a natural and primary way for public authorities to publish information that is recorded in ISVS in the performance of their agendas and can be provided to the public as information under Act No. 106/1999 Coll., on free access to information, or under special regulations such as Act No. 123/1998 Coll., on the right to information on the environment.

Open data will also become the primary way for public authorities to obtain public information needed in the performance of their agendas, which is recorded by other public authorities in the performance of their agendas recorded in ISVS managed by them.

In the area of public administration operational processes, their corporate and national unification and centralisation will continue, with the possibility of establishing corporate and national shared service centres, especially in the areas of accounting and budgeting, purchasing and logistics, HR and payroll, asset management, information technology, legal and communication services, etc.

The degree of internal computerisation of operational processes and the electronic exchange of documents in business transactions will be increased, starting with the introduction of eInvoicing. The availability of timely electronic operational and economic information will lead to further optimisation and automation of operational processes (property management, controlling, etc.).

This will be accompanied by an increase in the proportion of electronically self-service processes, so-called employee self-service, so that by the end of the horizon of this concept, processes relating to individual employees, their equipment and working environment will be fully electronic, i.e. paperless, with the obvious exception of providing support for electronically disabled employees. These internal electronic services will be based on a single identity for officials, or staff in all types of employment and service, in the framework of the so-called authentication information system under § 56a of the Basic Registers Act (JIP/KAAS). These services will gradually be published on the Official's Portal and populate it with content.

The business architecture of the authorities, and in particular the overview maps of capabilities or processes, will become the starting point for designing, planning and managing the transformational changes of the authorities towards the achievement of this vision, but also the starting point for the subsequent detailed modelling and optimisation of public administration processes and services to address the life events of clients, and to manage and improve the performance, quality and accountability of these services.

Public administration will learn not to focus only on individual unconnected units in the management of the whole authority, but instead to focus on the greatest possible complexity in decision-making and in the performance of public administration. This means, above all, that it will learn to think in a "multi-agency

approach", i.e. that all processes that can be used in multiple agendas will be used in this way, and conversely, for processes where this is not yet possible, solutions will be sought to achieve this. The aim is to provide a comprehensive service to the client, regardless of what agenda it is in, or what resources are tied to the provision of the service.

To this end, office architecture will be promoted as a holistic discipline, going across - and de facto beyond - the whole office. It will also establish a unified management of processes across all agencies, rather than on an agency-by-agency or activity-by-activity basis. This means establishing central roles for the architects of the Authority, as well as increased cooperation between the professional officers in the Authority.

In particular, it is highly advisable to make common activities and principles truly common across the Authority. For example, the principles for the performance of the filing service are the same for the whole office and for all the agencies, although there may of course be differences in individual agencies (different AIS integrated on eSSL, etc.), but common principles will be set up and jointly monitored.

Among the operational capabilities in the business architecture of the Authority, the importance of IT governance and management will be reinforced, and the contribution of IT specialists to change management processes (from the design of feasible digital-friendly legislation), through the implementation of transformational changes to ensuring the delivery of expected benefits.

In addition to process and other public service activities, this includes the development and maintenance of the operating rules of the ISMS of which the Authority is the administrator. The development of the ISVS operating rules is itself a business (process) matter, but the content of the operating rules is mostly an application matter. The authority must be able to demonstrate compliance with this obligation according to § 5 of Act 365/2000 Coll.

## Application Architecture - Public Administration Information Systems Layer

The application architecture layer includes not only individual public administration information systems or agency information systems, but also operational information systems and all application components that are operated in the authority or to which the authority integrates in any way.

When creating the model of the application layer of the authority architecture, it is very often forgotten about the integrations that on the one hand reflect business requirements (such as the use of data from basic registers by integrating on the interface information system of basic registers) and on the other hand, compliance with other obligations related to public administration information systems, use of basic eGovernment components, operation of IS both in my own and in cloud, use of other IS, and interconnections between my information systems and, last but not least, interconnections between OVS information systems and IS of other administrators.

- The Authority's application architecture includes not only the IS that OVS itself manages or operates, but also the IS services used by its users or the IS to which its applications integrate.
- The information system (according to the legal mandates) must be perceived as a logical whole, which is implemented by individual application components.
- In the models of the application layer of the authority's architecture there are not only elements for logical IS and their components, but also their functions and services, integration interfaces (internal and external) and elements expressing the mutual cooperation of application components.

At the application layer of the Authority's architecture, the basic legal constraints are mainly defined by the following laws:

- Act No. 365/2000 Coll., on public administration information systems
- Act No. 499/2004 Coll., on archiving and file service
- Act No. 181/2014 Coll., on Cyber Security
- Act No. 111/2009 Coll., on basic registers
- Act No. 250/2017 Coll., on electronic identification

- Act No. 297/2016 Coll., on trust services for electronic transactions
- Act No. 300/2008 Coll., on electronic transactions and authorised document conversion
- Act No. 106/1999 Coll., on free access to information
- Act No. 110/2019 Coll., on the processing of personal data
- Act No. 123/1998 Coll., on the right to environmental information
- Act No. 200/1994 Coll., on Land Surveying
- Act No. 256/2013 Coll., on the Cadastre of Real Estate (Cadastral Act)

According to the Act on Information Systems of Public Administration, it is useful to define the administration of ISVS, distinguishing the competences and responsibilities of the subject administrator, the technical administrator and the operator. The Cybersecurity Act separates the competences and responsibilities between the information system administrator, the communication system administrator, the information system operator and the communication system operator.

**The nature of changes in application architecture**

Public administration information systems are primarily used to support the performance of public administration or for the actual performance of public administration services. They will provide the appropriate resources and functions for the official who is responsible for the performance of activities in given agencies or for the client who is self-serving. The ideal information system should guide the official or client through his/her activities and facilitate his/her work to the maximum extent possible, for example by automating activities where possible, including activities related to the use of data from other agent ISVS.

This does not primarily mean fully automated public administration decision-making, but maximum facilitation of decision-making and client service by officials. The official does not have time to spend on administration, or even on obtaining or verifying the relevant facts, the system will do that for him, either by request or by right of the subject of the law, or ex officio. The information system will always offer the official the relevant information and the basis for decision-making, if administrative decision-making on the matter is appropriate at all. As a result, the official will then be able to prepare a decision on the matter using up-to-date and relevant data.

Some of the changes to the application architecture will result directly from changes to the business architecture of public administration services. That is, for example, that applications to support these services will become increasingly unified in terms of supporting the resolution of life situations across departments and across service channels.

The application support for individual public administration services must be implemented in such a way that **targeted** services can be dynamically process **orchestrated** into universal service channels of public administration contact points for configurable (composite) services for complex solutions of individual life situations of VS clients and open them to third-party service providers using open APIs (where allowed by cybersecurity principles).

Application support will be implemented to ensure **publication of data as open data** and to enable the use of open data by other public administrations, for whose needs the availability of open data needs to be ensured in the first place.

In addition, AIS applications will be adapted to support **service for the subject of law with electronic identification**, providing him with all the data that are kept about him in non-public records, as introduced by the amendment to the ISVS Act, effective from 1 July 2018.

Both the client support applications, in particular the national Citizen's Portal, and with it the federalized portals of central administrative authorities and portals of local governments, as well as applications to support the work of the official, in particular the transactional Official's Portal, enabling a unified user experience and navigation to all key systems of the office where the official works and, gradually, to the growing number of services of central shared internal information systems of public administration integrated into the Official's

Portal.

Integration of users in the citizen and clerk service applications, called Front-Office integration, **takes precedence over integration of data** through the exchange of electronic information between offices, called Back-Office integration.

There will be a generational renewal of large agency systems, their componentization and flexible opening to multi-vendor services.

At the same time, an increasing number of application services will be identified in the offices themselves across agencies, and across eGovernment across offices and departments, and will be provided as central shared services, in particular as shared services eGovernment cloud.

Examples are ISVs to support services implemented under delegated responsibilities. The responsibility of the agency reporting the agenda for the application support of the agenda as well as the responsibility for the agenda data will increase significantly. This concept foresees that each notifier of an agenda with delegated competence will become the substantive and technical administrator of the corresponding logically centralised electronic register (agenda IS) connected to the Linked Data Pool. Together with the delegation of the agenda to the local government offices (KÚ, ORP, municipalities), the notifier will also offer to their users an accessible central application service guaranteed by the notifier, integratable with the local systems (especially eSSL, ERP) of the office. In any case, it is not possible to require a double acquisition of data, the local authority may also use the local application, provided that it is responsible for its legislative adaptation and uses the offered data interface to the central ISVS (registry) of such service. The notifier of the agenda, through the central application service guaranteed by it, shall also ensure the provision of data held in the central application service in the form of open data.

In proportion to the unification and centralisation of **operational processes** of public administration to the level of corporations and the state, the applications supporting these processes will be unified, consolidated or centralised. An essential part of the changes in these applications will be the rapidly growing support for employee self-service.

With the development of the eGovernment cloud, the SaaS offering of eGC (Software as a Service, application level services) will grow, mainly focused on standardized implementations of operational information systems (such as email, eSSL, ERP, PIS) and standard municipal agendas. SaaS eGC services will be subject to at least the same architectural requirements as on-premise ISVs.

### The essence of the changes in the data architecture

The scope of available agency and reference data within the linked data pool of the Czech Republic will be significantly expanded.

There will be a substantial increase in the professions associated with data management and data use, due to the increasing exchange of electronic data and responsibility for its quality, as well as its increasing vulnerability and protection.

There will be a shift in the focus of efforts from the current concentration on reference data and agenda data, through an emphasis on transactional data and documents, to analytical and statistical data and to effective support for their automated collection and use in public administration management.

In cases where the law allows for the publication of data on subjects and objects of law held in basic registers or agency information systems, these data will be provided in the form of open (and optimally also linked) data and in the form of linked open data.

In order to support national and international interoperability of public administration services, the elements of the conceptual data models of the data stock of individual ISVS and their corresponding legislative concepts will be gradually harmonised.

A semantic dictionary of terms as a means of harmonising the semantics of data held in individual ISVS will be created on the basis of the enumeration of data held for agendas in the Register of Rights and Obligations according to § 51(5)(a)(b)]. g), h) and i) of the Basic Registers Act and will gradually elaborate them into shared information models (ontologies), which will be linked to the data held in the agendas and also linked to dictionaries and ontologies emerging from the EU initiative (e.g. The logical schemas of the data held in the ISVS describing their machine (syntactic) expression at the logical level will be linked to the concepts of the semantic dictionary of concepts, thus linking the semantics (meaning) of the data across the ISVS. By linking the semantic dictionary of terms to the data held for the agendas and linking them to legislation, the linking of semantics to legislation will also be realised.

The semantic dictionary of terms will be used for both linked data pool and public data pool. Data published as open data will have to be accompanied by a published logical schema describing their data structures in a machine-readable way. Elements of the logical schema will then be able to be linked in a machine-readable way to a semantic vocabulary of terms and the links published as open data.

Using the semantic vocabulary of terms, the functionality of NKOD will be extended to display better documentation of dataset semantics and wider search capabilities for related datasets. Open data consumers will use the semantic dictionary of terms to integrate open data obtained from different providers.

## Technology/Platform Architecture - HW and SW Technology Layer

The IT technology architecture (also referred to as "platform architecture") is the layer dealing with the technologies that support applications, systems and, in general, elements from the application architecture with their functionalities and services. The areas of platform architecture can be divided into:

1. Computing power,
2. Data storage,
3. Endpoint devices (Firewall, Switch, generally active elements).

For capture in this layer, it is not critical whether it is proprietary HW and SW or purchased as a service (Platform as a Service - PaaS). What is important is to capture in which structure and to whom the technology layer services are provided. Typical examples are in-house servers and disk arrays providing computing power and data storage services for a public administration information system. Servers may then provide load-balancing or data replication services to each other.

At the technology layer, the basic legal constraints are mainly defined by the following laws:

- Act No. 365/2000 Coll., on public administration information systems
- Act No. 181/2014 Coll., on Cyber Security
- Act No. 110/2019 Coll., on the processing of personal data

### The nature of changes in IT technology architecture

A fundamental trend at the technology layer level is the use of shared platforms of computing power and data storage, both on-premise (virtualization) and targeted mainly in cloud services. If computing platforms are built in Active - Active mode, it is necessary to have at least 3 sites, where 2 sites are used for the computing platforms themselves and the third site is used to host the technologies that monitor the remaining sites and decide on their behaviour.

The eGovernment cloud services will offer cost-effective, standardised and secure shared platform services (PaaS - at operating system and database level) and infrastructure (IaaS - computing power, data storage, DC location). This will gradually lead to the use of eGC services for all ISVs and operational information systems

(migration to eGC). This will allow authorities to completely decouple the "commodity" components of the information systems architecture and focus their efforts on specific components related to their agendas and competences.

The network of national shared service centres and regional data centres connected by a secure data communication infrastructure will continue to be built to provide shared ICT services to public administrations.

National Data Centres, which are currently in operation and newly built, will continue to play their role and will meet the qualification requirements. Such NDCs will primarily accommodate all centralised ISVS for public administration services under delegated competence, providing their application services via CMS.

The two forms of shared technology services (NDC and eGC) will complement each other, flowing into each other, and the NAP emphasises their compatibility and interdependence.

To ensure the availability of open data provided from an ISVS for use in another ISVS, a common repository will be created within the NDC or eGC.

## Communication Architecture - Public Administration Communication Infrastructure Layer

For the purposes of the public administration architecture of the Czech Republic, the communication layer is a specially separated layer containing common elements with the technology layer, but focusing on a different type of services with different responsibilities. Thus, the communication layer contains only physical data centres and communication paths through which external and internal interconnection is mediated. Thus, within the public administration layer, the data centre (physical building), communication networks (Internet, KIVS) and communication nodes (CMS) must always appear on this layer.

At the communication and network layer, the basic legal constraints are mainly defined by the following laws:

- Act No. 365/2000 Coll., on public administration information systems
- Act No. 181/2014 Coll., on Cyber Security
- Act No. 127/2005 Coll., on electronic communications

### Nature of changes in the communication infrastructure

The development of a secure and reliable CMS/KIVS communications infrastructure will ensure that the growing demands of the OVS for secure publication of and access to the State's application services are met for both VS clients and individual OVS.

Part of the shared infrastructure vision is the mandatory publication of State digital services exclusively through CMS. The state's communication infrastructure will be consolidated to the extent that a single secure (duplicated, secured) connection KIVS to CMS will be provided from each OVS for all digital services of local OVS, relying on the central shared eGovernment services, and all other multiple network connections will be eliminated, except for connections for state security and crisis management.