Digitaliseringsdirektoratet
Norwegian Digitalisation Agency

National Architecture Principles for Digitalisation of the Public Sector

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This English version of the National Architecture Principles has been translated from the Norwegian version published on www.digdir.no/1065

The principles set out in the annual Digitalisation Memorandum issued by the Norwegian Government regarding digitalisation of the public sector are mandatory for central government and recommended for local government. In case of any discrepancy in the present principles and the Digitalisation Memorandum, the Digitalisation Memorandum prevails.

This document describes the purpose of the principles, their target audience, when the principles are to be applied, the administration model and elaborates on each principle. The new architecture principles are:

1. Adhere to a user-centric approach
2. Make architecture decisions at the right level
3. Contribute to digitalisation-friendly regulations
4. Share and reuse data
5. Share and reuse solutions
6. Create digital solutions that support interoperability
7. Instil confidence in service provision

The purpose of the principles

The principles are intended to ensure that architecture decisions provide the best possible result for citizens, businesses and society at large, and that they are made pursuant to the general objectives for digitalisation efforts in the public sector. The principles will serve to support work on enterprise architecture and shall facilitate increased interoperability across enterprises and sectors, and increased intra-enterprise adaptability. Reference is also made under the principles to authoritative guidance publications and other resources.

Target audience for the principles

The target audience for the principles is any entity that designs, develops and administers digital solutions, or makes decisions with implications for enterprise architecture.

Policies on application of the principles

The principles shall be applied when creating new IT solutions or when making significant changes to existing solutions. The principles are applicable to both custom developed and off-the-shelf solutions. Each sector and enterprise is responsible for transposing and incorporating the national architecture principles into their respective architecture, and when establishing their own architecture principles within their given sector or enterprise.

If the principles would have significant undesirable consequences in their domain, they may be deviated from wholly or partially. The enterprise must be able to substantiate and justify any such non-conformances.

Explanation regarding specification of the principles

Each principle is specified in terms of ID, name, explanation, recommendations, and guidance and resources.

The explanation describes what is meant by the principle, and the rationale describes why it is stipulated as a main principle. The recommendations describe how the principles are to be adhered to in practice. Links are provided to any relevant guidance publications and other resources.

The recommendations consist in part of existing policies and requirements such as those set out in the Digitalisation Memorandum. The recommendations are not a complete listing of relevant legal acts and regulations, although certain regulatory instruments are included where appropriate.

The principles and national objectives

The architecture principles support the objectives of the Digital Agenda for Norway (2016) and the action areas in the national Digitalisation Strategy (2019).

Administration and further development of the principles

The first version of the architecture principles was published in a white paper in 2009, and the updated principles are thus lodged with the Ministry of Local Government and Modernisation. The principles were prepared jointly by central and local government entities and submitted for consultation in the summer of 2019. The updated principles are lodged with the Architecture and Standardisation Council and with Skate's (the body for administration and coordination of eGovernment services) executive committee. The principles are supervised by the Norwegian Digitalisation Agency subject to the instructions of the Ministry of Local Government and Modernisation. In the event of material changes to the principles, a public consultation will be conducted.

Principle ID and name	1. Adhere to a user-centric approach
Explanation	Public services shall be based on the needs and perspectives of users and usable by everyone, regardless of age and ability. Users expect user-friendly and coherent services. This requires coordination and integration of work processes across public services, between public and private sector enterprises, and across national borders.
Rationale	All users will find it simpler to interact with public administration, will perceive the services as unified and coherent, and their rights and obligations will be provided for.
Recommendations for compliance with the principle	
As a minimum, you should	1.1. Create solutions based on the users' needs. 1.2. Facilitate coherent services by building processes across enterprises and sectors. 1.3. Adhere to regulations regarding universal design. 1.4. Use plain language in communication with users.
Further recommendations	1.5. Use appropriate methods to identify relationships and work processes such as service design and process modelling. 1.6. Assess the opportunities afforded by technology, organisation and regulations for identifying user needs beyond what users themselves demand. 1.7. Assess new ways of fulfilling the social mission. 1.8. Conduct user tests that also represent people with visual and other sensory impairments. 1.9. Create business systems and case management tools with universal design.
Guidance and resources	Requirements and regulations regarding universal design (Norwegian Digitalisation Agency) Criteria for the use of multiple languages and language variants (*Bokmål* and *Nynorsk)* (Norwegian Digitalisation Agency) Plain language style guide (Language Council of Norway)

Principle ID and name	**2. Make architecture decisions at the right level**
Explanation	Architecture is a development and governance task, with impacts on enterprise costs and gains. Architecture decisions should be made as close to service provision and the needs of users as possible. However, some decisions must be taken at a higher level in order to ensure interoperability and take into account common objectives for digitalisation in the public sector.
Rationale	To ensure balance between efficiency and user-centricity, as well as interoperability within the enterprise, across the public sector and between the public sector and private-sector enterprises.

Recommendations for compliance with the principle	
As a minimum, you should	2.1. Make architecture decisions as close to service provision and users' needs as appropriate. 2.2. Architectural decisions must follow national and sectoral requirements and regulations, and take into account the objectives of the digitalisation of the public sector.
Further recommendations	2.3. When establishing or further developing solutions, the design should be assessed with reference to relevant national and European services. 2.4. Architecture governance should be an integral element of corporate governance.
Guidance and resources	Digital Agenda for Norway (the Government) The Digitalisation Strategy (the Government) Digitalisation Memorandum (the Government) National Architecture (Norwegian Digitalisation Agency)

Principle ID and name	3. Contribute to digitalisation-friendly regulations
Explanation	Regulations govern public service provision, and must be continuously further developed to adapt them to present and future opportunities and challenges. The work on architecture can help identify legal barriers to interoperability and digitalisation, and initiate amendments to statutory instruments.
Rationale	Digitalisation-friendly regulations are a prerequisite for optimising procedures and seamless services, and facilitate automated service provision.

Recommendations for compliance with the principle

As a minimum, you should	3.1. Examine and make the most of scope permitted by existing legislation. 3.2. Submit proposals for amendments to legal acts and regulations to the responsible ministry. 3.3. Establish processes in which legal experts, technologists and the business side cooperate on rule and IT development efforts.
Further recommendations	3.4. Inform and seek advice from the Norwegian Digitalisation Agency about the need for amendments to acts and regulations that deter digitisation.
Guidance and resources	Guide to plain legal language (Norwegian Digitalisation Agency) Instructions for the preparation of central government measures ("Official Studies") (Norwegian Agency for Public and Financial Management (DFØ)

Principle ID and name	4. Share and reuse data
Explanation	Enterprises should facilitate sharing and reuse of data. Data is a common resource that through sharing and reuse yields huge gains for the public administration, citizens, businesses and NGOs.
Rationale	By sharing public data, the public domain stands to benefit from information managed by the public sector for increased knowledge, value creation, innovation, greater efficiency and transparency.
	Data sharing is a prerequisite for optimising procedures and seamless services, and facilitates automated service provision. Users do not have to provide information about themselves that is already known to the public sector ("Once Only" policy).
	Data sharing also contributes to better data quality, as there are more to discover and notify any errors.

Recommendations for compliance with the principle

As a minimum, you should	4.1. Reuse relevant data, and facilitate data sharing upon establishing or enhancing services.
	4.2. Offer data in conformance with the Government's "Public Data Disclosure Policy".
	4.3. Reuse data from authoritative sources. Use copies only when necessary and make sure the copies are up to date.
	4.4. Make descriptions of data sets, APIs, concepts, and information models available in the National Data Catalog.
Further recommendations	4.5. Avoid data lock-in with proprietary formats.
	4.6. Use the National Information Governance Framework to achieve good information governance, and unified description of data across the public sector.
	4.7. Use the National Data Catalog to discover, assess, and adopt data from other sources.
	4.8. Use reference architectures for sharing and reusing data.
Guidance and resources	Information Governance Framework (Norwegian Digitalisation Agency)
	Norwegian Interoperability Framework (Norwegian Digitalisation Agency)
	Public Data Disclosure Policy (the Government)
	National Data Catalog (Norwegian Digitalisation Agency)
	Reference architectures (Norwegian Digitalisation Agency)

Principle ID and name	5. Share and reuse solutions
Explanation	The sharing and reuse of solutions covers architecture products, solution components, and services. This includes solutions that are national, sectoral and at enterprise level.
Rationale	Sharing and reuse promote interoperability, innovation and efficiency, and contribute to harmonisation, information security and privacy protection. This allows enterprises to focus on digitalising core activities rather than addressing challenges that have already been solved.
Recommendations for compliance with the principle	
As a minimum, you should	5.1. Identify existing and planned solutions that may be relevant to reuse. 5.2. Use available common components and common solutions where these are fit for purpose. 5.3. Architect systems and services to support adaption and change management. 5.4. Consider acquiring market and cloud solutions rather than engaging in in-house solution development.
Further recommendations	5.5. Provide input on improvements to solutions and architecture products to product management for further development and enhancement. 5.6. Consider whether lock-in to individual solution providers can be avoided in order to support flexibility and reuse. 5.7. Take into account recognised design principles for service-oriented architecture, such as loose couplings, modularisation, standardised service contracts etc. 5.8. Make available information about and offer reuse of your solutions that may be of value to others. 5.9. Reduce complexity and technical debt in systems, interfaces and services.
Guidance and resources	National Architecture (Norwegian Digitalisation Agency) Overview of National Common Solutions (Norwegian Digitalisation Agency) Strategic principles for the use and development of national common components (the Government, Digital Agenda Chapter 11.1) The SOA Sourcebook (The Open Group)

Principle ID and name	6. Create digital solutions that support interoperability
Explanation	Digital solutions should be developed so that they can interface with other solutions in the public and private sectors. Achieving this means facilitating legal, organisational, semantic and technical interoperability. This includes the need for standardisation, agreements and a common frame of reference.
Rationale	Interoperable solutions are a prerequisite for realising integrated services and end-to-end processes flexibly and cost-effectively.

Recommendations for compliance with the principle

As a minimum, you should	6.1. Target interoperability between solutions for both inhouse development and procured solutions. 6.2. Apply mandatory standards in regulations on IT standards in public administration. 6.3. When establishing or enhancing digital services for optional or mandatory interoperability with other enterprises, the Norwegian Interoperability Framework should be used. 6.4. Ensure necessary agreements between interoperating parties in order to meet requirements for security, privacy, service quality and interoperability. 6.5. Ensure sufficient performance for information exchange solutions so that users perceive the services as up to date.
Further recommendations	6.6. Use recommended standards in the IT Standards Reference Directory, or other open standards. 6.7. Use reference architectures and apply best practices in new and further development as and when appropriate. 6.8. Solutions should be designed for scalability in the event of changes in use such as those relating to number of users, volume, response times, or usage patterns. 6.9. Consider using open source rather than closed, commercial solutions. 6.10. Use the Government's standard contracts when procuring external services.
Guidance and resources	Norwegian Interoperability Framework (Norwegian Digitalisation Agency) *Forskrift om IT-standarder i offentlig forvaltning* (Regulation regarding IT standards in public administration) (Lovdata) The IT Standards Reference Directory (Norwegian Digitalisation Agency) Reference architectures (Norwegian Digitalisation Agency) The Government's standard contracts (Norwegian Digitalisation Agency) Data Processor Agreement Guide (Norwegian Data Protection Authority)

Principle ID and name	**7. Instil trust in service provision**
Explanation	Citizens, businesses and NGOs should have confidence that public enterprises provide their services in a satisfactory and secure manner. This entails that the public administration entities comply with regulations and fulfil requirements for lawfulness, effectiveness, information security and privacy. Public administration entities should to the greatest possible extent be open and transparent concerning rules, processes, data, services and official decisions. This entails transparency surrounding what the entity does in terms that are comprehensible to citizens, businesses and to other public administration entities.
Rationale	Confidence in public sector service provision is a prerequisite for citizens, businesses and NGOs opting to use digital public services. Protection of legal rights, efficiency, privacy, information security and transparency are important factors in building and maintaining that trust.
Recommendations for compliance with the principle	
As a minimum, you should	7.1. In choosing between different architectural options, balance the need for legal protection, efficiency, information security and privacy. 7.2. Privacy and information security must be assured throughout all phases of development and the entire lifetime of architectures and solutions. 7.3. Enterprises must exercise governance and control to ensure that information security and privacy are safeguarded in service provision. 7.4. Adhere to the Norwegian Data Protection Authority's principles and recommendations for privacy. 7.5. Ensure that decisions made in service provision are clearly worded, traceable and verifiable. 7.6. Comply with prevailing requirements for documentation of case work and decisions with a long-term perspective, as stipulated in legislation on national documentation and archives.
Further recommendations	7.7. Follow the Norwegian Digitalisation Agency' recommendations regarding information security.
Guidance and resources	Internal control in practice – information security (Norwegian Digitalisation Agency) Guides to privacy legislation (Norwegian Data Protection Authority) Privacy Principles (Norwegian Data Protection Authority) Guide to systems security (Norwegian National Security Authority (NSM) Guide to the eGovernment Regulations (the Government)