Regional Digitalisation Strategy for Västerbotten 2022–2030

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Preface

The digitalisation of society has continued to accelerate with global effects in Europe, Sweden and Västerbotten. It has changed the lives of both private individuals and companies. It involves new services, new ways of working, new business models, new partners to work with and a lot more. Almost all modern innovations have a technical component and a lot of new companies established today are digital from the outset.

From a global perspective, the extent of our dependence on the outside world was exposed when the global COVID-19 pandemic closed factories, shut down supply chains and closed the borders between countries with knock-on effects throughout the economy. In our immediate area, a war and an increasing number of cyberattacks have reminded us of the need to protect our information and systems as more and more aspects of our lives move into cyberspace. Despite the fact that Sweden is one of the countries at the forefront of digitalisation, there are signs that our lead over other countries has decreased or disappeared.

The ability of digitalisation to permeate almost every aspect of society has many similarities in common with the transformation that is now taking place in the area of sustainability. Sustainability is complex and digitalisation provides new tools strong enough to manage the complexity and renewal required by the transition. The EU therefore highlights the transitions to digital and green transitions as "the twin transition", where one presupposes the other.

Demographic trends in both Västerbotten and in the rest of Sweden mean that the public sector is facing an enormous challenge. A significant increase in the number of older residents creates increased demand for welfare while the number of individuals of working age simultaneously decreases. Maintaining the welfare that we have today requires the introduction of new ways of working and solutions. In this situation, digitalisation can contribute to and create the conditions needed to solve this difficult equation.

Västerbotten has good conditions for digitalisation - not least in terms of broadband coverage and connectivity, combined with a large human capital and high level of internet use in the population. Västerbotten is also ranked as one of the most innovative regions in the EU. The good partnership that exists between municipalities, regions, academia and business in the country has continued. A powerful broadband network has been further developed under a joint initiative. Another joint initiative takes the form of a common service development platform created for the municipalities and supports digitalisation for the entire county. Within the framework of Digital Impact North, academia and the public sector have gathered around the joint promotion of digitalisation. A growing business community has jointly contributed to the continuation of digitalisation as an area of strength in Västerbotten.

The regional digitalisation strategy for Västerbotten will strengthen our ability to achieve the regional strategy development goals. Digitalisation will be a key factor in achieving all the strategic goals and priorities but this requires increased capacity for digital transformation. The strategy highlights focus areas that overall strengthen this and contribute to Västerbotten continuing to be a driver of digital development.

Strategy development has been characterised by joint participation and contributions from academia and the public sector, business and the non-profit sector. Many of these contributors have also been involved in the development of the regional innovation strategy and it is our hope that it will provide them with guidance, inspiration and a platform for collaboration.

Rickard Carstedt
Vice Chair

Anna Pettersson
Regional Development Director

Introduction

Digitalisation is a concept that is interpreted differently depending on knowledge, perspective or experience. Making information digital creates enormous volumes of data, which when combination with technology development gives us entirely new opportunities to communicate, personalise, interact and automate. This has a powerful impact on the development of society and creates new preferences and lifestyles, leads to new consumption patterns and business models and moves parts of our lives into new digital worlds.

A simplified way in which to describe digitalisation is to use the 3S model – things, ways and society. We use things, such as computers and mobile phones when we are digital. The use is what changes the way we do different things. In turn, this changes our behaviour, our attitudes and expectations and thereby it also changes also society[1].

Digitalisation creates opportunities for organising welfare and services more efficiently, interacting more closely with residents, customers and members and creating better ways to deliver products, services or experiences, all of which increases the quality of life. It provides new opportunities for engagement and entrepreneurship and not least, opportunities for reducing the negative impact on the climate and the environment. The EU Commission has described it as "The twin transition[2]", where the digital transition is a prerequisite for the green transition.

At the same time, there are negative effects of digitalisation with new forms of fraud, from cyberbullying and an increased risk of widespread disinformation. The increased digitalisation of society also involves challenges in the form of reduced physical activity and mental illness and new types of exclusion. The extensive impact this can have on different parts of society means that system perspectives and analyses are required to be able to both counteract and act on known and unknown negative effects. In many respects, society also becomes more vulnerable to disruption when many socially important functions depend on access to connectivity and electricity.

Digitalisation also leads to strong transformational pressure that creates friction when ethics, morals, laws, regulations and well-established business models are challenged and forced into rapid renewal and transformation in order to deal with the consequences of digitalisation.

The 3S model is a simplified way in which to describe digitalisation. We use things, such as computers and mobile phones when we are digital. The use is what changes the way we do different things. In turn, this changes our behaviour, our attitudes and expectations and thereby it also changes also society.

[1] *https://skr.se/download/18.3d1f64e117fc1ceca46178c8/1648470094250/Lilla-Digitaliseringsboken-TGA-220325.pdf*
[2] *https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1467*

Digitalisation is a social transformation and a more pervasive change that affects all parts of society. It takes place simultaneously at different speeds and with more or less challenges for different groups and sectors of society. There is an uneven distribution of digital maturity, digital inclusion and the power to shape social development across companies and organisations. There is a risk of loss of relevance and competitiveness if the maturity and change work within organisations and companies is slower than in society in general.

Despite the rapidly accelerating transformation, the knowledge of its impact on social development and how to reduce the risks of its negative effects remains relatively undeveloped. Achieving a value-creating and sustainable digital transformation of society as a whole requires strong management, governance and coordination. This, combined with driving forces and incentives creates the conditions for an innovative and collaborative public sector and innovation for companies and individuals.

The driving forces, incentives and conditions need to be long-term and cross over policy areas, authority boundaries, administrative boundaries and geographical boundaries. There are few areas that are as dependent on collaboration between different actors and across sectoral boundaries as the digital transformation.

Development takes place in a global context, where many local and regional development issues have a clear national or European dimension. The regional digitalisation is therefore interconnected with the local, the national and the European perspectives.

The complexity of digital social development makes it an increasingly difficult thing to predict for companies, public activities, politics and individuals. It imposes new and significantly greater demands on systematic ability and processes to continuously anticipate, evaluate, prioritise and reprioritise on an ongoing basis. There is also an increased demand for companies, public organisations and politics to have a built-in agility and resilience.[3]

[3] *VINNOVA (2021) Sweden's conditions in the digital structural transition, analysis appendix.*

Digitalisation to achieve social goals

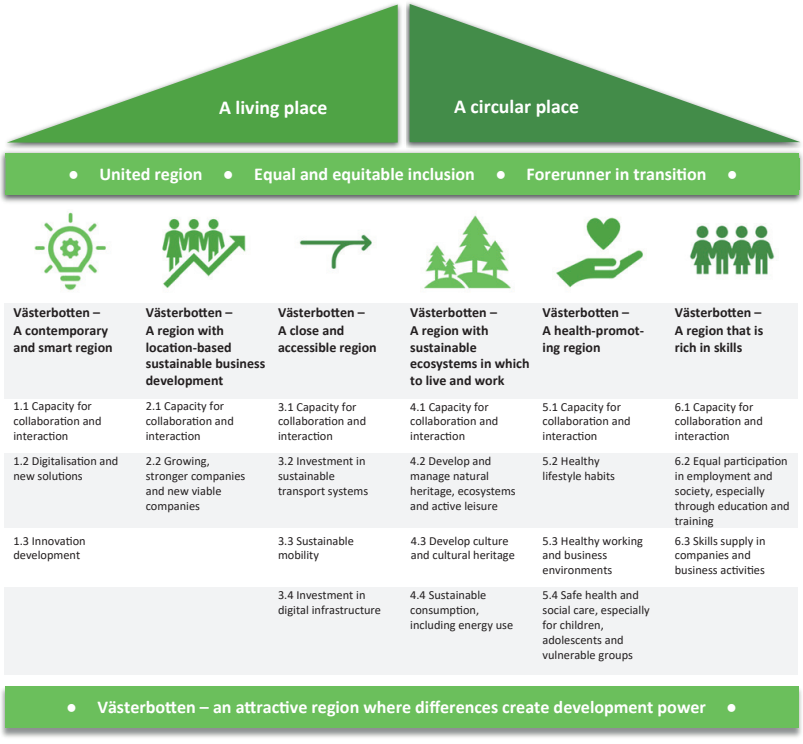
Just like the National Strategy for a Sustainably Digitised Sweden[4] the basis for this strategy is to make the best use of the opportunities provided by digitalisation for the creation of useful services for people, even if the strategic target group is primarily public actors, companies and organisations. Increased digitalisation is not a goal in itself but it will be a central part of achieving goals in all areas of society and consequently requires a strategy for how Västerbotten can strengthen its ability and capacity for digitisation.

The regional digitalisation strategy sets a common direction for Västerbotten in terms of digitisation. It will provide support and be a source of inspiration for actors within the public sector, academia, business and civil society in Västerbotten, which are the main target groups for the strategy[5]. Along with the regional development strategy for Västerbotten[6], it is also the basis for the prioritisation of digitalisation projects that are co-financed by certain European funds and regional project funds.

The strategy identifies issues for which regional collaboration and a focus on specific areas of development will help us take advantage of the potential of digitalisation and contribute to our ability to meet the challenges of digital transformation. This supports the achievement of the development goals of the regional development strategy for Västerbotten.

The regional digitalisation strategy contributes to achieving the social goals of the regional development strategy, that focus on Västerbotten as being a living and circular place. The digitalisation strategy also highlights the challenges and opportunities that guide the work towards the three strategic directions of development: A cohesive region, an equal and equitable inclusion and a region that pioneers transition.

The regional development strategy specifically addresses digitalisation within the "An innovative and smart region" priority. But is also crucial to achievement of the goals of the other priorities.



Goals, directions and priorities in the regional development strategy for Västerbotten.

4 https://www.regeringen.se/informationsmaterial/2017/05/for-ett-hallbart-digitaliserat-sverige--en-digitaliseringsstrategi/

[5] The Regional Digitalisation Strategy for Västerbotten is a territorial strategy that differs from the Region Västerbotten Digitalisation strategy, which has the aim of strengthening digitalisation in the activities that are run by the Region Västerbotten organisation.

6 https://regionvasterbotten.se/naringsliv-och-samhallsbyggnad/regional-utvecklingsstrategi

Digital transformation

Strong pressure for change is today encountered by all actors through new expectations and requirements, as well as the risk of the rapid loss of competitiveness and relevance in the event of shifts in technology or rapid changes in society.
Digital transformation is a prerequisite and sometimes absolutely crucial to success with other changes, such as the green transition where digitalisation provides opportunities for entirely new solutions including controlling and adjusting traffic, opportunities for more efficient control of energy flows and optimisation of processes and waste reduction.

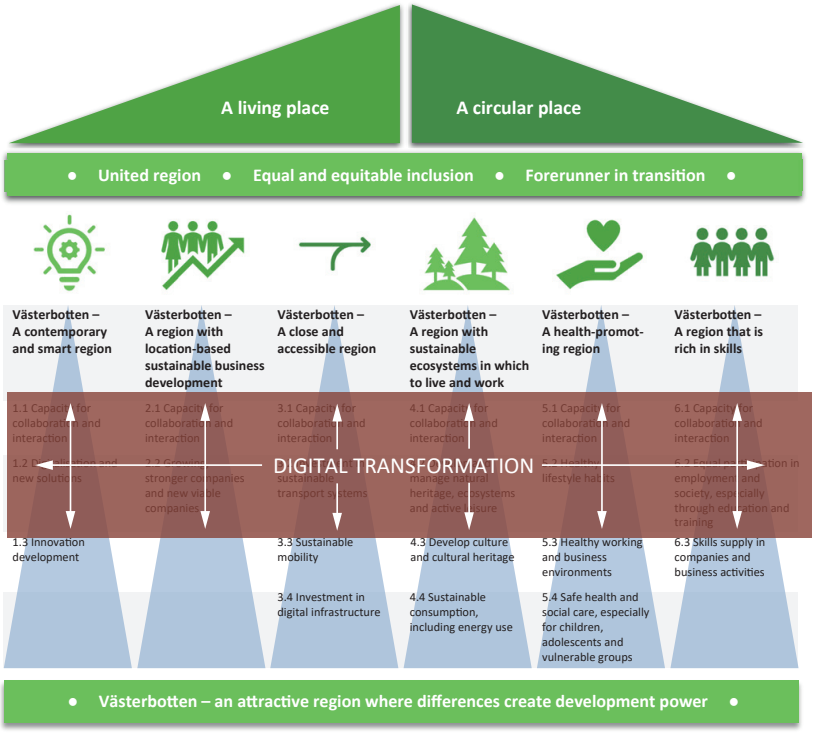
Digital transformation means extensive change through the conditions and opportunities that come with digitalisation.
In a first step, it may involve streamlining by making services and products digital. However, the transformative is about how companies, organisations and authorities can more comprehensively review how you can work, organise and act in entirely new ways based on fundamental assignments or business concepts both individually and together with the intention of creating both efficiency and new values that contribute to sustainability and competitiveness.

This requires monitoring of the surroundings, good examples and in particular, the courage to change. Vision and leadership are required to act and fundamentally change logics, business models and offers. An additional requirement is to have an understanding of how digitalisation creates completely new opportunities for flexible working life and of where skills can be found, as well as where the work is performed, where the workforce lives and is located. It also requires management models that are not based on traditional work in a building.

The importance and complexity of the technical and systemic change is usually overestimated, when in many cases it is rather the ability and opportunity to implement the change – or rather the transformation that has to place on many levels simultaneously that is what most organisations find difficult. This is also why digital transformation is often more about leadership, culture and competence than the use of new technology.

There is often a lack of insight into the fact that digitalisation can require the reallocation of resources and that it involves more than just the procurement of operational and IT systems. At the same time, the digital heritage such as the infrastructure, systems and processes that already exist can be something that both simplifies and complicates transformation.

For example, a business that wants to develop its capabilities needs to work with everything from a vision developed around its offering and trust-based governance to initiatives for increasing access to data and raising digital competence.



Digital transformation is a prerequisite for us to achieve the goals, directions and priorities of the regional development strategy by using the possibilities of digitalisation.

Strategic focus areas

Five strategic areas of focus have been identified as prerequisites for digital transformation in Västerbotten and are discussed in the regional digitalisation strategy. Each focus area encompasses broad issues that address fundamental functions, as well as more pointed efforts for driving and developing digitalisation in Västerbotten.

The following includes both a brief and comprehensive presentation of each area:

- ***Digital infrastructures***

Västerbotten needs to have fundamental conditions for individuals, companies and organisations throughout the whole of Västerbotten in order to be able to make use of the opportunities that come with digitalisation.

- ***Digital inclusion***

If not everyone is able or and wants to be part of the digitised society, this means that Västerbotten cannot realise the service benefits of digitalisation either. Exclusion and social division also arise in the community.

- ***Digital competence***

The digitalisation of society brings with it opportunities and simplifies everyday life but also involves a requirement for more recurring change, which demands both broad and specific skills.

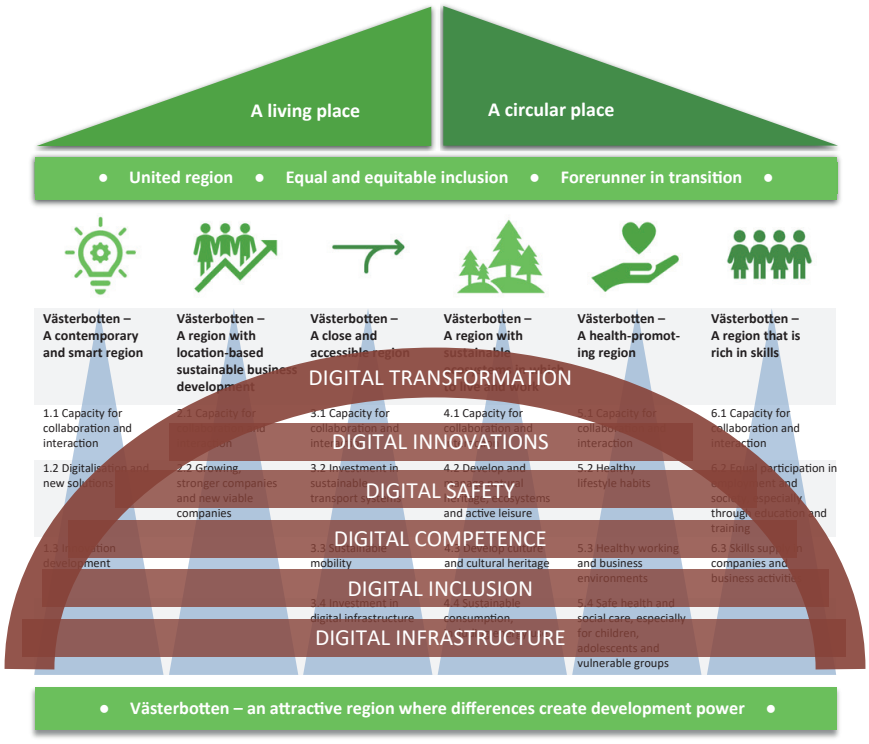
- ***Digital safety***

An increasing number of people, things, places and services are continuously being connected. This creates an enormous number of opportunities but they also come with great risks and vulnerabilities that must be managed.

- ***Digital innovation***

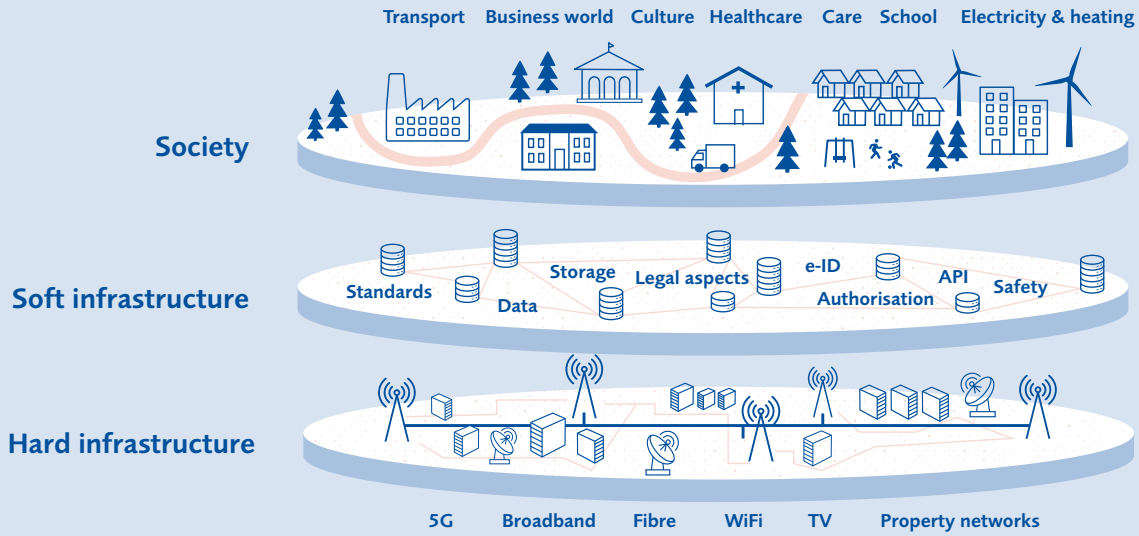
Västerbotten needs to strengthen and develop both the ability and the conditions for increasing the number of digital and data-driven innovations.

A more detailed description of each area and proposals for measures and actions is reported in the following chapters.



The five strategic focus areas of the digitisation strategy are based on breadth, depth and connection to the six priorities in the regional development strategy.

• *Digital infrastructures*



Access to a robust digital infrastructure is a fundamental prerequisite for the digitalisation of Västerbotten. It includes physical infrastructure with the option of backup connections but it also includes soft infrastructure such as standards and basic services. There is also a need for efficient and modern information systems based on common standards and interoperability between systems at local, regional, national and global level. A third type of fundamental prerequisite includes both access to data and access to platforms for making data available - the sharing and exchange of data for better decision support and deeper insights for organisations.

For many years, Västerbotten has had one of the best expanded and fastest broadband networks in Sweden[7]. Effective regional collaboration with large joint investments for expansion with city networks and a regional network has been a factor for success. The broadband expansion in Västerbotten has been financed using public subsidies, as well as funding from the market but then exclusively in areas that have been commercially attractive. The largest part of the Västerbotten area consists of areas that are not considered to be adjusted to the conditions of the market and are where expansion has been based on funding from public subsidies.

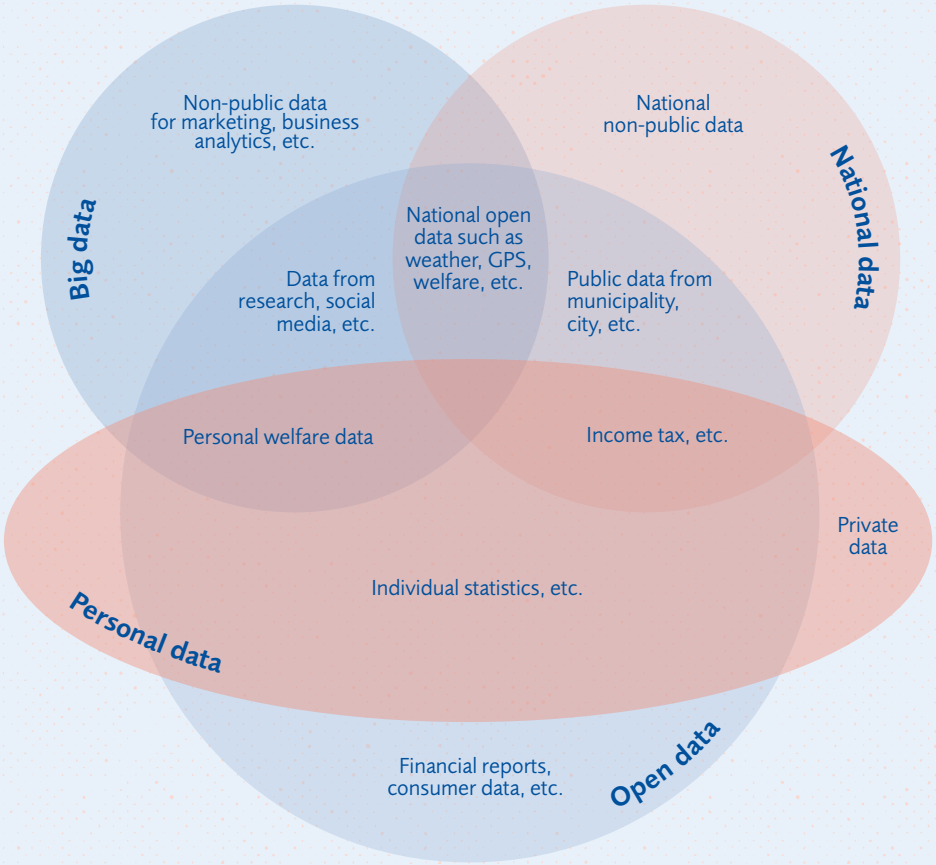
However, there are still areas in Västerbotten that lack or have weak connectivity and in which expansion is more difficult. This has contributed to other regions currently having better coverage. To maintain and improve the availability of connectivity in the county, it is necessary for the existing broadband network to be developed on an ongoing basis, as well as there being a requirement for continued expansion through fibre or other technical solutions.

In a sparsely populated county such as Västerbotten that has long distances between communities, towns and villages, access to well-developed and functioning mobile broadband today is as equally as important as fixed broadband. Full coverage is of great importance for new digital solutions to be utilised throughout the county. High bandwidth and access to sensor networks such as through 5G are required for more advanced welfare services, technology solutions and business needs.

Access to both fixed and mobile broadband is a central part of creating increased accessibility and creating conditions for being able to live and work throughout Västerbotten. Additional funding from public actors is required in order to achieve the broadband targets. There is also a need for a regional support model that creates a more rounded Västerbotten where funds are allocated in consultation based on needs and challenges.

The fact that digital systems and products have interoperability meaning they can communicate with each other and work together, is an important challenge for taking advantage of digitalisation. This requires that systems and products use the same standards to the greatest extent possible and that the possibility of interaction is built into software and procedures.

[7] *https://bredbandskartan.se/*



How data will become a resource

There are currently major challenges with regard to this, as both companies and different regions and municipalities or authorities develop solutions that cannot be combined between the organisations. In many cases, systems, services and products are procured through internal processes, when there is potential for interaction with other organisations with similar needs. At the same time, it is a complex issue and in many cases initiatives are required mainly at national or European level in parallel with regional cooperation for this to be possible. Working from common frameworks for different parts of digitalisation, such as architecture and maturity measurements also involves joint learning and strengthens the view of what the most important aspects are to successful digitalisation. It also creates the conditions for finding common platforms and coordination.

Access to data is a cornerstone of the digital transition and affects all areas of society. It consists partly of the creation, sharing and use of data and partly about developing standards and national and international exchange[8]. Access to data and the possibility of its being shared and reused by several different actors will be important for taking advantage of the opportunities of digitalisation in Västerbotten and promoting the quality of life and well-being of residents. Making public data available enables both more people to participate in the creation of services and service solutions, as well as the streamlining of operations through better decision support and knowledge of needs and patterns. As data becomes a more significant part of our lives and our social structures, there is a simultaneous need for social actors to ensure that rights and obligations with regard to this are protected and guided, and that services are characterised by a universal design[9].

Business models based on large amounts of data and the buying or selling of data will be crucial for the competitiveness of companies in the long run. Data is currently made available to some extent but still not to the extent that might be possible. In many cases, there are also complex ethical and legal issues in terms of making certain types of data available. Regulatory developments in data and data access will be of fundamental importance to the development and social sustainability of digital transformation. Within the EU, work is underway to create marketplaces for the buying and selling of data for commercial use. There is potential to further develop the accessibility of data in Västerbotten and to take advantage of the opportunities for efficiency, quality improvement and not least the long-term competitiveness of companies.

Key actions

- Expansion and development of the fixed and mobile broadband network for increased availability, robustness, higher performance and quality, as well as further development of regional collaboration on broadband issues
- Develop and strengthen collaboration in terms of common frameworks that facilitate and accelerate the ability of organisations to drive digitalisation, for example regarding architecture, soft infrastructure and maturity measurements.
- Initiatives to develop and strengthen the opportunities for regional actors to create, provide and share data in a sustainable way, including by strengthening collaboration at different levels and thus creating conditions for interoperable data sharing.

[8] *VINNOVA (2021) Sweden's conditions in the digital structural transition, analysis appendix.*
9 Universal design means the design of products, environments, programmes and services that they can be used by everyone to the greatest extent possible, without the need for adaptation or special design.

• *Digital inclusion*

Digitalisation is underway in all parts of society and creates opportunities that contribute in many ways to making society better. However, development takes place at different speeds and with different effects. In an environment with fast-paced technology development and a high rate of change, individuals, groups and places risk ending up in an exclusion with limited opportunities for taking part in the development or to influence it. In order to be able to take advantage of the opportunities that exist with digitalisation, digital inclusion is required, along with an insight and drive to act on negative consequences of digitalisation. Digital inclusion should therefore be a central part of social sustainability efforts such as gender equality, integration and public health.

In many cases, digitalisation occurs at a pace that means that it can be difficult to overview the consequences and predict negative aspects that may arise, which requires ongoing work to identify and support groups for inclusion. One challenge is that there is currently no clear collective responsibility for digital inclusion, which contributes to efforts becoming short-term and fragmented.

Digital services mus be accessible, residents must have digital competence in order to be able to live and work in a digital age [10]. Community structures and institutions such as libraries and schools are also required to create both physical and organisational nodes that are tasked with providing support.

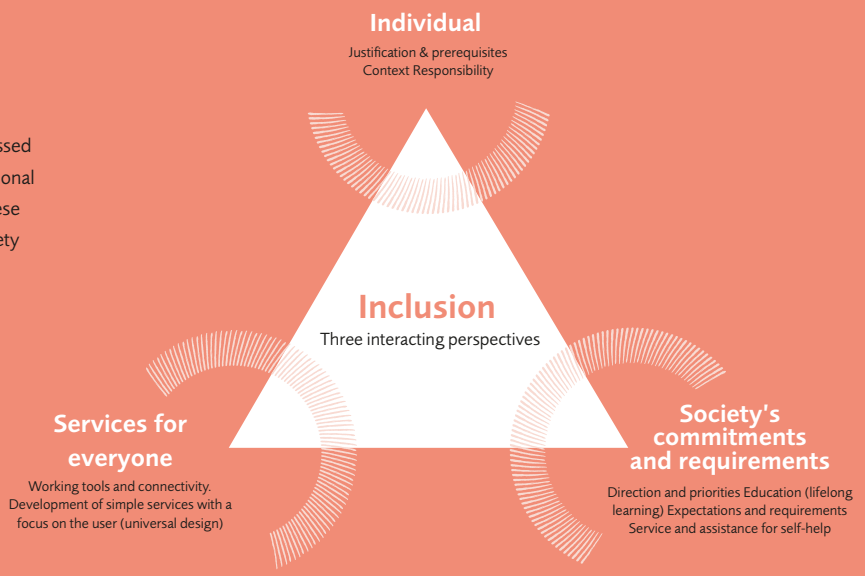
Organisations within civil society have worked successfully with outreach activities and directed initiatives to target groups with low digital competence. In a time where social change is fast-paced, initiatives are required that contribute to digitalisation strengthening trust in society, contributing to trust between people and to trusting the institutions and systems that comprise society.

Challenges are encountered as a result of the fact that digitalisation efforts are often carried out without the participation and co-ownership of those who work in new ways. This involves the risk of negative effects, wasting of resources and that digital solutions instead create reduced efficiency and increased stress. Digitalisation needs to be made more equal in terms of how different groups are involved and have the opportunity to shape technologies and transformation, as well as with models based on user involvement and trust in employees, users, consumers and customers.

Being able to participate in the digital society is an issue of democracy, a prerequisite for being able to be involved in and be part of society. Digitalisation also provides the opportunity to deepen the democratic conversation through new ways of being involved in political decision-making processes. Open data also contributes to increased transparency. The educational

Digital inclusion

Digital inclusion needs to be addressed from several perspectives. The National Digitalisation Council described these perspectives as the individual, society commitment and requirements and services for all.



[10] *https://digitaliseringsradet.se/aktuellt/foerdjupningsomraaden-2019/delaktighet-i-en-digital-tid/*

institutions and knowledge brokers located in the country, for example in the form of compulsory school, upper secondary school, municipal adult education, folk high schools and civil society organisations have a central role in strengthening the opportunities for residents.

Digitalisation of important public services such as government services, payment services and healthcare is needed to be able to meet needs and expectations and for an increased quality of life. But digitalisation must not contribute to creating exclusion and a deterioration in the quality of life for certain groups in society. Therefore, initiative are required for digital inclusion as an integral part of the digital transformation, from the accessibility of services and processes to the knowledge and skills of individuals and workplaces.

Digital exclusion can be analysed through four steps: Motivation, access, skills and use, where motivation forms the broad basis for the inclusion of the individual.

Digital services are used in different ways by different groups in the population. A review of five public services[11] shows that men use digital services associated with the economy to a greater extent while more women use digital services for healthcare.

There is a requirement for analyses of how digital services are used by different groups in society, for example based on gender, age and socioeconomic factors in order for digitalisation to contribute to equality and equal inclusion.

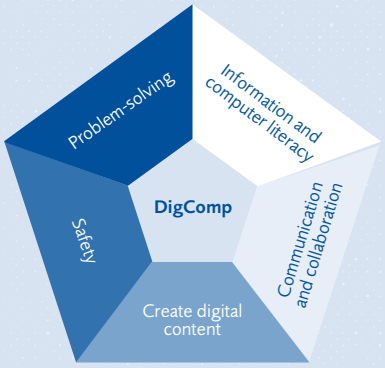
There is a simultaneous need for insight into the fact that certain types of work and processes should not be digitised or perhaps should only be supplemented by digital solutions, for example in areas in which the human encounter is important. AI and robotisation can contribute to an equal treatment, for example, when government affairs are handled but also involve a risk that individuals will be treated in a discriminatory manner if they fall outside the norm on which the function of the machines is based. Physical meetings can give a sense of security or social inclusion, while the digital meeting can lead to a sense of distance and alienation[12]. Therefore, it is important that digitalisation has a consequence perspective from the individual point of view in order to be socially sustainable.

Key actions

- Create or further develop methods to identify and strengthen groups or actors in society who are in digital exclusion or are at risk of ending up in digital exclusion.
- Develop and disseminate knowledge with regard to methods and working methods that promote participation, equality and gender equality in digitalisation processes at companies, in public organisations and civil society.
- Implement or develop structures and models that strengthen coordination, the roles and long-term perspective in local and regional inlcusion work linked to digitalisation.

[11] Svenskarna och internet, 2019, https://svenskarnaochinternet.se/rapporter/svenskarna-och-internet-2019/
[12] VINNOVA (2021) Sweden's conditions in the digital structural transformation, analysis appendix. https://www.vinnova.se/publikationer/sveriges-forutsattningar-i-den-digitala-strukturomvandlingen/

• *Digital competence*



Digital competence

For a number of years, a European standard model for digital competence called DigComp has been developed that shows five fundamental areas of knowledge and skills that are broken down into 21 skills.

1.1 Browse, search and filter data, information and digital content
1.2 Review data, information and digital content
1.3 Manage data, information and digital content

2.1 Interact using digital technologies
2.2 Share using digital technologies
2.3 Engage citizens using digital technologies
2.4 Cooperate using digital technologies
2.5 Netiquette
2.6 Manage digital identity

3.1 Develop digital content
3.2 Integrate and rework digital content
3.3 Copyright and licenses
3.4 Programming

4.1 Protect equipment
4.2 Protect personal data and privacy
4.3 Protect health and well-being
4.4 Protect the environment

5.1 Solve technical problems
5.2 Identify needs and technical responses
5.3 Creative use of digital technologies
5.4 Identify digital skills gaps

The digitalisation of society places new demands on skills and knowledge. It brings with it opportunities to use services and simplifies everyday life but also means a requirement for more recurring change. For those who are growing up in Västerbotten today, the digital society is a matter of course. At the same time, digital competence, maturity and willingness to develop skills vary both between groups and individuals in society and between companies and organisations. Crucial to taking advantage of the opportunities of digitalisation is that both leaders and employees are involved in the work and that they are equipped to be able to lead and contribute to the digital transformation.

In order to be able to benefit from digitalisation, both basic and advanced digital skills need to be present. Simplified, it can be described as requiring leading-edge skills and strategic digital competence to be able to identify and implement digital systems, processes and innovations. But in order to be able to take the effects of new systems, processes and innovations home, a broad digital competence and change management are also required.

For a number of years, a European standard model for digital competence called DigComp has been developed that shows five fundamental areas of knowledge and skills that are broken down into 21 skills[13].

Today, the need for competence is broader and includes both the ability to criticise sources, digital tools, digital security and new forms of learning within the school, as well as the ability to lead in digital transformation. Creating a broad digital competence in society, requires early initiatives and lifelong learning and a broad digital inclusion, where groups do not end up outside the digital society, which is a prerequisite for taking advantage of and using digitisation. This means that several different types of actor from the public, private and non-profit sectors are needed to meet the need for large, changing and multifaceted educational needs.

Deepening knowledge in order to understand how digital systems work and can be connected to each other and the sprawling landscape of digital systems needs to be based on common standards to a greater extent. This places demands on continuing education but also creates the need for new roles in the operations with skills such as change management, procurement and portfolio management.

With the increasing number of digital environments and services, the need for computer scientists, informaticians and engineers also increases while at the same time, there are too few being trained in these skills in today's education system. Education and the labour market in this sector have also found it difficult to attract both females and males. More educational places are needed,

[13] *https://joint-research-centre.ec.europa.eu/digcomp_en*

as well as initiatives to get more students to stay in the county after completing their education. Today, a large majority leave Västerbotten for offers from companies and organisations in other parts of Sweden and around the world.

In the business world, there are large differences in the digital maturity that is not isolated to a particular industry or entrepreneur. There are also variations present in the willingness and ability to digitise, where it can be difficult to prioritise long-term skills development in boom times and limited resources in recessions. The number of digital business models will continue to increase, built on Business Intelligence (BI) and contain more data and AI solutions, which means that companies must have the ability and competence to both streamline and simplify, but also to transform their business models using digitalisation. Here, good examples and companies that are forerunners can be important here to more easily identify the benefits and the business deal.

For many companies, it is difficult to find a fully trained workforce and therefore, they need to invest more in internal training and so-called talent recruitment. Faster processes may be required to gain an education in certain qualifications, models based on micro-courses that can also be combined to complete degrees in the long term. At the same time, digitalisation opens up to a global labour market where it is possible to meet skills supply needs with the option of remote work, platform solutions or skills located in other parts of the world.

The corresponding recruitment challenge exists in the public sector and civil society, where it may be necessary to build more models that are based on shared competence resources in the area of digitisation and with more partnerships in terms of the procurement of digital systems and services. For example, it is currently difficult for smaller municipalities and organisations to have the client and change management skills required themselves, while in many cases the needs are similar. Functional collaboration is required but also more platforms and arenas for the exchange of knowledge and experiences between actors, for example in the public sector. Today, many testify that they have poor knowledge of what other similar actors are doing and what are good existing examples.

Key actions

- Develop or further develop methods that create new or improved ways to increase digital competence in individuals, companies and organisations.
- Initiatives for increasing the number of individuals with high digitalisation skills in Västerbotten, for example by getting more students to stay in the municipality after their studies, attracting talent and gender equality initiatives.
- Develop or introduce collaboration and partnership models for sharing resources and competencies in digitalisation between companies, public actors and civil society.

• *Digital safety*

Society has dealt with security issues throughout all phases of industrialisation. The direction of safety work has been characterised by prevailing technology conditions and technological shifts, for example in the introduction of electricity and the development of commercial aviation. Digitalisation is often referred to as the fourth industrial revolution and is changing almost every aspect of society, as well as affecting our handling of information. Payment systems, business systems, record systems, logistics chains and energy systems and becoming increasingly based on digital technology and are connected to the internet in most cases. This creates enormous opportunities but also inherent risks that require management because society cannot cope with longer interruptions.

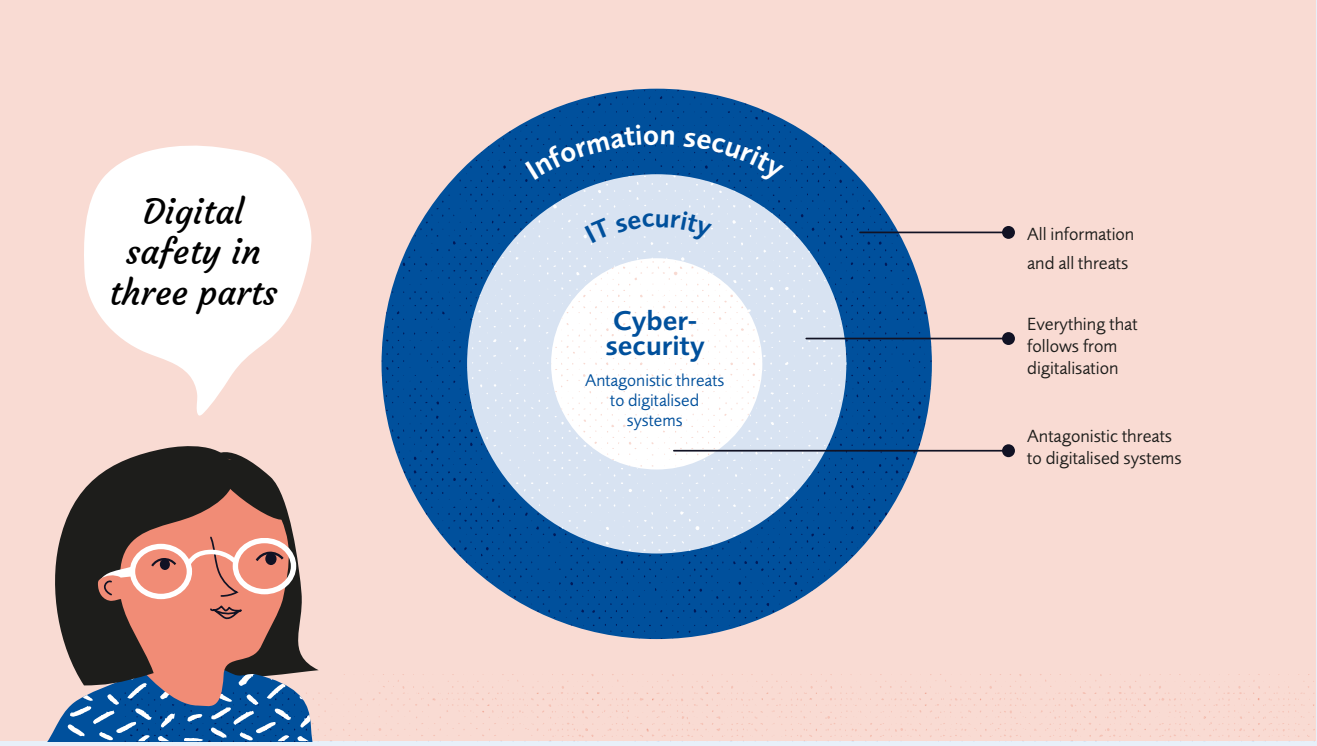
A significant driver of digitalisation is the demand for efficiency and simplified working methods. This must be weighed against the legal and security requirements for authorities and companies, as well as the privacy of the individual. The ability to reference these parameters is one of the biggest challenges of digitalisation.

As an increasing number of people make use of the capabilities of the internet and the fact that things, places and services are connected, the need for information systems and infrastructures that are secure and robust has also increased. A large amount of information is handled by individuals and within organisations.

Information can be seen as the hub, an important building block for running a business. This requires that the information is handled correctly and protected, it must be available when it is needed, we must be able to trust that it is correct and that only those people who are authorised can access it.

To be able to take advantage of the opportunities offered by digitalisation, it is important that the digital society is permeated by a democratic approach and that everyone should feel a fundamental sense of security in the digital development of society. Everyone should dare to trust digital services and both want and be able to contribute to the use of these. Both private and public actors need to act in a responsible manner.

One way in which to describe the concept of digital security at a glance is to divide it into three parts or levels[14]. Information security is the first level and includes the protection of all types of information. Not only the digital information but also physical information, such as spoken and information on paper. The next level is IT security, which includes the protection of digital information and information systems from incidents such as natural disasters, handling errors, excavated cables, fire, faults in hardware and applications, etc. The third level is cybersecurity, which refers to the protection of information systems from external threats that have the intention of knocking out social functions or committing crimes directed against individuals or organisations.



[14] *https://www.iva.se/globalassets/projekt/201902-iva-digitalisering-slutrapport-l.pdf*

Working with information security and IT security is a long-term systematic work for the protection of information assets. This includes the development of guidelines, policies, action plans and classification of information, as well as managing technical protection such as firewalls and encryption. There is a need for analysis of vulnerabilities to determine which assets are vulnerable and knowledge of the mechanisms that may lead to a security threat or weakness. In addition, there is also a requirement for individuals, both privately and in companies or organisations to have a basic competence and understanding of digital security, for example in terms of password management and attempts at fraud through different digital channels in order to reduce vulnerability.

The world around us is constantly changing and the security situation has deteriorated with an increased risk of cyberattack and sabotage. Security work also involves building up computer systems that can withstand external attacks, as well as system errors or equipment that is destroyed. For public and civil society actors, it is a question of being able to protect the security of individuals and democracy while for companies, it also involves the protection of their businessactivities, technology, research and development. This may involve a number of different types of solution, for example through cloud solutions that protect the information if your own server fails.

At the same time, there are challenges in storing information on external servers that may be located in other countries. Larger companies and organisations often have the resources to develop resilience but for smaller actors and especially small companies and associations, this work can involve excessive costs. To create the conditions for digital safety and security in society, here in Västerbotten we need to develop and strengthen both our local and regional partnerships and connect it to the national structures for example, those for which the Swedish Civil Contingencies Agency (MSB) is responsible.

Key actions

- Competence development initiatives for increased knowledge and ability for digital security for companies, public actors and civil society.
- Develop or further develop local or regional models that support companies, public actors and civil society actors in the analysis and adaptation of security measures, legislation and directives.
- Develop or further develop regional or local partnership models that strengthen the digital security and resilience of society.

• *Digital innovation*

Digitalisation is closely linked to innovation. Almost all modern innovations contain some form of digitalisation that contributes to the creation of new products, services or processes. To reverse the reasoning, digitalisation and digital transformation are not possible without innovation in terms of renewal and new thinking.

It requires plans and the ability to implement. Companies, authorities and organisations need to identify and resource both efficiency-enhancing and more proven digital solutions, as well as more radical and exploratory innovative digitalisation. The initiatives also need to ensure that more people are included in the work. In Sweden today, there is an overrepresentation of men in digital innovation work, tech companies and education, which results in an uneven distribution of power and influence over the digital transformation of society[15].

Because the development and application of technology, digital platforms and human behavioural patterns and expectations change faster than society, legislation and organisations can change and other types of development work are required. Digital innovation often requires a test run to be able to test complex systems, different types of service and new processes that can present challenges to ethical and legal aspects.

In the public sector, there may be a lack of incentives and drive for testing innovation work if there is a limited amount of knowledge and evidence in the field or where completely new ways of working and organising are required if the benefit is to be brought home. There are also digital innovation challenges for civil society organisations where funding through gifts or member financing can provide limited opportunities for systematic innovation work. With limited opportunities for risk-taking, good knowledge of other people's experiences and good examples are often required to be able to justify innovation work.

Sometimes the term "legal sandboxes" is used to describe limited projects or environments in which new solutions are tested in order to identify potentials and needs for legislative amendment. Digital twins is another way of working in which it is possible to create a copy of reality in a virtual environment and test and analyse complex relationships and flows.

Complex social challenges and limited resources mean that collaboration and partnership become important for digital innovation. In recent years, the importance of cross-sector arenas as a method for problem solving has increased and changes have been made, for example to the Swedish Public Procurement Act and the Local Government Act that will simplify innovation and new types of collaboration and the procurement procedure.

For companies, there is a corresponding challenge linked to resources and the opportunity to work with innovation. Linked to digitalisation, there is often a greater degree of digital maturity

[15] *See for example: (Allbright 2020) Techbolagen lever grabbmyten*

in large companies or in so-called start-ups that often have a digital business model from the outset. The challenge is greater in established small and medium-sized companies where interest and resources vary and where resources are mainly spent on day-to-day operations and incremental improvements. While this may be a sign of a well-functioning business model,it can be risky at a time of fast-paced technology change and rapid change in people's habits and expectations. Companies can quickly lose competitiveness if they are unable to keep up with disruptive technology shifts or rapidly changing demand. A prerequisite for digital development in companies is often that there is an existing business plan, which is sometimes lacking. With a clear picture of how the company should develop, it will also be easier to see which technology or digital solution is required to reach a goal.

Västerbotten has built up expertise and cutting-edge knowledge in digitalisation and today it is an area of regional strength[16]. This area of strength is an important resource for driving digital innovation and creating innovative environments that are important knowledge nodes for business and society. The area of strength is built up through a driving force propelled by academia and business, as well as the public and non-profit sectors. Not least, non-profit initiatives and actors can be an important source of social innovation. One challenge is that to come extent, the non-profit sector, social entrepreneurs and social innovations lack support structures and often find it more difficult to find their way around the existing support systems.

Both research and education are undertaken at the universities and there are a number of centres linked to different areas of digitalisation. In addition to being a source of important competence and knowledge, universities are also important for driving the development and testing of new technologies and models in partnership with other social actors.

Within the business sector, there is a wide range of companies working with software development, gaming, infrastructure and service-based solutions. These include several successful specialisations in digital services and development in other industries, such as manufacturing, media, process manufacturing and banking and finance. These industries also function as catalysts for digital innovation in other industries and in society but this requires the arenas and infrastructure for partnership and the generation of ideas where the industry and other actors meet across sectors. Digital Impact North[17] is an example of a gathering of forces that aims to create a regional arena and serve as an innovation hub for digitalisation.

There are many examples of digital innovation from the county municipalities, authorities and region. Not least linked to digital welfare, health and service as well as smart cities and communities. There are also simultaneous major challenges where small municipalities in particular lack resources for systematic innovation work and often lack the structures and proximity to innovation-promoting actors or knowledge environments. This also contributes to challenges in recruiting the necessary skills. Another obstacle is that in many cases, it has been difficult to scale up successful tests or pilot projects and thus to realise the benefits of the initiatives.

Key actions

- Initiatives to create collaboration areas and meeting places that connect public organisations, academia, business actors and civil society with regard to digital and data-driven innovation development.
- Establish test areas, system demonstrators and other methods and models of research and exploration to promote more digital and data-driven innovations.
- Initiatives to develop the ability and capacity of companies and organisations to be included in digital innovation work and implement and utilise new processes, products or services.

[16] *Regional innovation strategy for Västerbotten 2022-2030 (RIS)*
[17] *https://digitalimpactnorth.se*

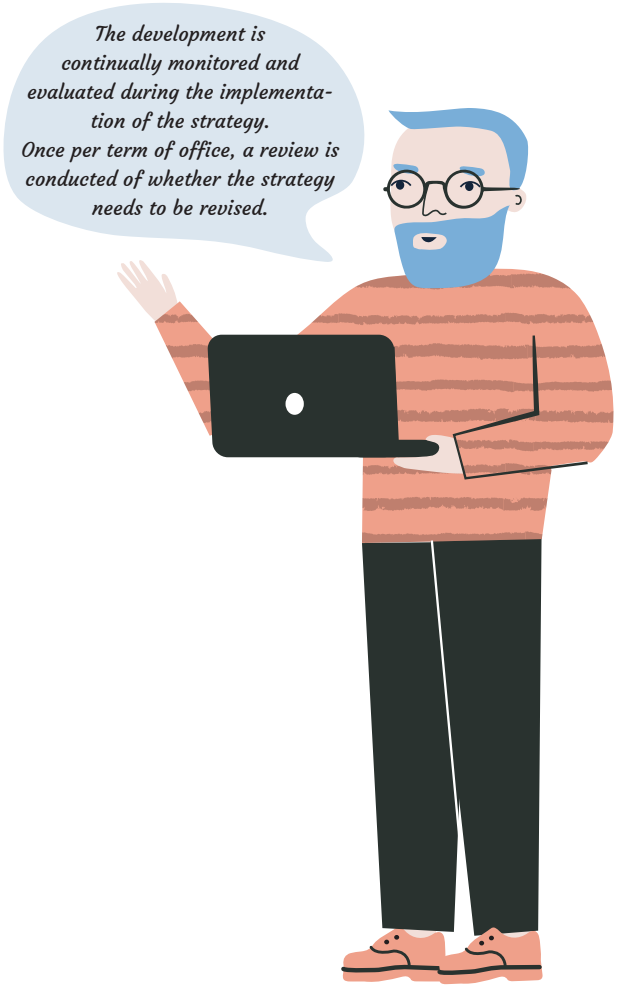
Implementation and follow-up

Region Västerbotten is tasked with the regional development responsibility in Västerbotten County and is responsible for driving the implementation, following up and evaluating the regional digitalisation strategy.

The implementation takes place through the initiatives in the direction of the strategy that have been created by all actors in the county. An important implementation tool is different types of partnership and other forms of collaboration.

For example, today there is Digital Impact North, which is a strategic partnership for digitalisation between Umeå University, the Swedish University of Agricultural Sciences, RISE, Umeå Municipality and Region Västerbotten. The county municipalities collaborate in the area of digitalisation on both a strategic and practical level and there are examples of joint procurements and operational organisations.

The strategy is monitored and evaluated as part of the regional development strategy. An examination of the relevance of the strategy based on the following up and evaluation is conducted once in each term of office. Structured working methods for follow-up, evaluation and learning of the regional development strategy are on the Region Västerbotten agenda for strategic learning. The work on digitalisation is also measured there linked to the annual wheel of strategic learning as a whole in the development of our region.



Key concepts and definitions

Agility: Agility in organisations and companies can be described as seeing and understanding the needs of the recipient (customer, owners, employees, partners) and based on this knowledge, being able and daring to change not only focus and direction but also change priorities and activities. Seeing and understanding the changing needs and having the ability to act on the new knowledge.

AI: Artificial intelligence (AI) or machine intelligence is the ability of computer programs and robots to mimic the natural intelligence of humans and other animals, primarily in the form of cognitive functions such as the ability to learn things from past experiences, understand natural language, solve problems, plan a sequence of actions and the ability to generalise. It is also the name of the academic field of study that examines how computer programs with intelligent behaviour are created. Examples of older sub-areas and methodology are expert systems while more current subareas include machine learning, data mining and computer vision. Examples of areas of application are machine reading, voice control, machine translation, chatbots, digital assistants, business intelligence, facial recognition.

BI: Business Intelligence (BI). Business analytics is a set of methods used for data-driven decision-making in companies. The methods include statistical data analysis and continuously examine the company data to provide insight and drive the business plan forward. The insights enable understanding of business outcomes, thanks to faster analysis and reporting facilitating decision-making and planning. With a systematic set of metrics, past performance is valued and thus companies can continuously improve their operations over time.

Cybersecurity: The subset of information security that includes the protection of information systems against antagonistic threats intended to knock out critical activities or carry out crimes against individuals, such as identity theft, credit card and investment fraud

Digital heritage: Refers to the consequences of previously completed investment in a company or an organisation's digital infrastructure and can both limit and enable new digital initiatives. According to the digital maturity measurement model DIMIOS, digital heritage consists of three primary components: technology, organisation and users. It includes what existing technical infrastructure looks like, how it functions and is controlled, the organisation that will make operation, development and utilisation of IT possible, including skills development, perceived user-friendliness and previous experience of both introduction and application of technical solutions by users.

Digital maturity: Digital maturity is the ability of an organisation to assimilate the benefits of digitalisation.

Digital transformation: Refer to each particular chapter.

Digital twins: A digital twin is a copy of something that exists in real life that is created in a computer environment. It can be a machine or vehicle but also a house, a tunnel, a bridge or an entire city. The real object reports its current status to the digital twin, for example using sensors, which facilitates both operation and maintenance planning. With the twin it is also possible to test and simulate different events to see how the real object will be affected. Working with a digital twin is a cost-effective way of managing your assets and is also good for the environment.

Digitalisation: See introduction

Disruptive: The phenomenon often "destroys" the value of doing something the old way. Disruptive innovation with regard to new products, services or processes differs from incremental innovation, which is more in the nature of improvement and also does not have the same rapid impact and powerful effect.

Information security: The term includes the protection of all information, not only the digital security but also the physical, for example spoken information and that on paper.

Innovation: in the strategy it refers to a new or improved product, service or process that is significantly different from earlier products, services or processes and that has been made available to customers and users or implemented in operations in which the intended benefit can also be realised. There are many different types of innovation such as product and service innovation, process innovation, organisational innovation and broad system innovation. Irrespective of the type of innovation, the core of the concept relates to that which is new, useful and beneficial.

Internet: A global computer network consisting of several different types of interconnected physical networks.

IT security: The term includes everything that covers the protection of digital information and IT-based information systems, such as protection against natural disasters, handling errors, miscalculations, excavated cables, fires, faults in hardware and applications.

Resilience: Refers to the long-term ability of a system to manage impact without transitioning into a less desirable state but also its ability for self-organisation and competencies in terms of learning and adapting itself. For the purposes of this strategy, "systems" refers to digital systems.

Talent recruitment: In this strategy, it refers to a recruitment strategy in which employers do not sort out people who lack formal skills for a profession but can imagine training or paying for training for people who possess other good qualities that are deemed important.

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