National eSkills Strategy 2022 - 2025

National eSkills Strategy

Strategy

2022 - 2025

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Foreword by the Minister

We are experiencing rapid strides in digital progress transforming our lives, which shall continue to do so in the coming years. Malta Diġitali, our national digital strategy for the coming years, along with other digital strategies of a more specialist nature, including the one for eSkills, are ensuring that such change is as strategically planned and as seamless as possible in its approach for the coming years.

Malta's economic future, national security, economic and social well-being, productivity and competitiveness depend on continued investment and success in digital technologies. Our ongoing strategic commitments, investments and initiatives aimed toward the productive and effective applicability of Artificial intelligence, distributed ledger technologies, cyber security, and data are among the ways we are doing so. However, all this cannot be sustainable in the short to long term without having the necessary investments in digital skills. Furthermore, we do not want to leave anyone out of the digital bandwagon. The government, through the National eSkills Strategy, is therefore ensuring that digital skills and competencies needed – be it for basic ones as well as for more advanced and even specialist ones – are comprehensively addressed.

We understand that this is no easy feat to accomplish. We are aware of major challenges in digital skill and competence availability being met by our European counterparts and in other digitally advanced economies across the globe. However, we believe that together, through the efforts and initiatives of various local players, we can come a long way.

The eSkills Malta Foundation has, since its inception, been striving to develop further our human capital within the digital sphere in collaboration with various local and EU stakeholders. It shall continue to do so. However, we believe that optimum success can only be attained with all relevant players within our local public and private sector coordinating and collaborating in closer cooperation with the Foundation.

Our ultimate aim is to ensure that our present and future Maltese generation is well prepared in the digital world not only within their workplace but also in their day-to-day business and social interactions. We want our enterprises to thrive and prosper in the local and overseas market, applying digital technology smartly and effectively in ways that overcome their organisational limitations. All this can be achieved if we work hand in hand. Together we can achieve more!

Hon. Silvio Schembri
Minister for the Economy, European Funds & Lands

Message from the Chief Administrator

Malta was one of the first countries to launch a coordinated Digital Skills Strategy in 2019, covering three years. Unfortunately, the COVID-19 pandemic came about during the strategy, and it came unexpectedly. Our Foundation had already been encouraging for some time for industry, government, and education to give more way to working virtually. The world scene was also pushing for this. The pandemic less disrupted those organisations that had already started on this, but others found it very hard to adapt to the new normal, while others had to close down.

During the COVID pandemic, eSkills Malta Foundation supported all the target groups in the industry, education, society and ICT sectors with online training and courses, awareness of best practices, and intelligence reports. However, we were not so lucky with initiatives that included stakeholders heavily hit by the pandemic.

In the last quarter of 2021 and the beginning of 2022, we commissioned a survey to assess the influence of the National eSkills Strategy 2019 – 2021, targeting industry, education and society. And although certain the results showed certain gaps and needed improvements, we were very pleased with the results.

Considering that MITA had experience in the formulation of national strategies and the proximity to the Public Administration, it was an appropriate choice to commission MITA for the National eSkills Strategy 2022 – 2025. Like the previous strategy, guidance was available by the Foundation. The work involved comprehensive research and many public and closed-group consultations with stakeholders, including one-to-one meetings with distinctive contributors. The current strategy is a continuation of the solid ground laid by the previous strategy; however, identifying more specific digital skills gaps. An important consideration was also given to the European Commission's Digital Decade so as to continue laying the right path.

The objective of the National eSkills Strategy 2022 – 2025 is to set a path for a coordinated approach to improve the skills, knowledge and attitudes of actors within the education, industry, society and ICT sectors. In this respect, the strategy identified a comprehensive set of actions and recommendations that respective stakeholders should implement. And the best way to do this is through a coordinated and collaborative approach. This strategy is proposed for Malta and not specific stakeholders. Nevertheless, the efforts must be there by all the respective stakeholders. In this manner, we would attain the established goals. eSkills Malta Foundation will monitor the progress of the strategy implementation, but as stated in its conclusion, the Foundation cannot see to it alone, and collaboration is crucial to attaining successful goals and outcomes.

Malta has achieved a lot in the realm of digital education and skills in all the target groups mentioned. The credit here goes not only to eSkills Malta Foundation but to all the stakeholders. The strategy will strive to instigate more policies and initiatives in skills development and lifelong learning to have an adaptable skilled workforce for a dynamic knowledge-based economy.

Carmel Cachia
Chief Administrator, eSkills Malta Foundation

Acronyms

AI	Artificial Intelligence
CEDEFOP	European Centre for the Development of Vocational Training
DESI	Digital Economy and Society Index
DIH	Digital Innovation Hub
DLT	Distributed Ledger Technology
EC	European Commission
EU	European Union
ICT	Information and Communications Technology
IoT	Internet of Things
KPI	Key Performance Indicator
MCA	Malta Communications Authority
MCST	Malta Council for Science and Technology
MDIA	Malta Digital Innovation Authority
MITA	Malta Information Technology Agency
NSO	National Statistics Office
OPM	Office of the Prime Minister
R&D	Research and Development

Executive Summary

Digital skills and their availability, now and in the future, are key to effectively bringing about digital transformation on a political, economic and social level on a national as well as on a wider scale. The local National and Public Administration digital strategies reflect such a recognition. Moreover, the European Union's *Path to the Digital Decade* highlighted targets for digital skills, digital infrastructures, digitalization of businesses and of public services to be reached by all Member States by 2030.

The new National eSkills Strategy aims to enable the attainment of such objectives, whilst keeping in view of the domestic national, sectoral and specialist strategies and initiatives effecting the digital skills domain. It aims to build further upon the National eSkills Strategy 2019-2021 and takes stock of the opportunities and challenges being faced by Malta in digital skills and competencies, as reflected through its Vision outlined as follows:

Reshaping Maltese society and economy through digital skills and competencies

The Vision encompasses a number of principles which include a comprehensive and inclusive approach to all cohorts of society and the economy, accompanied by education, awareness, multi-stakeholder engagement and alignment to relevant strategic direction. Therefore, it aims to attain the goals of:

- Improving further digital capabilities.
  Employees need fundamental digital skills to remain employable in the work place and make their employer more competitive. Employers need digitally skilled employees to be able to reap the benefits of their technological investment. Citizens need basic digital skills will increase their quality of life and well-being. In modern education, teachers and students must be equipped with the skills they need to thrive in the digital education environment. The way for the future is for persons to acquire even more and higher digital skills than they already have to be able to use the latest technology to do what you already do but better.

- Promoting inclusive, ethical and responsible use of digital technologies.
  Every persons needs to develop the necessary knowledge, skills and competencies that will contribute to the safe and ethical use of digital tools, including cybersecurity. This could have a significant impact to their well-being and resilience and to be able to foster confidence in the use of digital technology

- Promoting a promising career in digital.
  There is a great need for ICT specialists, and to increase the numbers, the transition from education to employment within the digital sector needs to be promoted as a ICT career. A career as important as other well-recognised careers. A career in the digital world offers an exciting employment which comes with many benefits but also with many responsibilities that needs to be developed in a professional manner to warrant recognition.

- Positively contributing to the digital economy, through increased availability of the necessary current and future skills.
  The digital economy involves the population, businesses, devices, data, and processes all connected using digital technology. This results in an increase in the transformation of the same to increase the country's economy, well being and prosperity as a whole.

Through such goals, digital skills are expected to lead to the following outcomes:

- **Society** acquiring more digital awareness and being increasingly confident in the productive use of digital.
- **Public Administration** pursuing its digital transformation and its online public service delivery, in line with the Public Service Strategy.
- **Enterprises** being increasingly willing and able to adopt digital transformation, as a means for them to thrive in an increasingly competitive digital world.
- The **educational system** evolving further at all levels so as to ensure readiness to the needs of current and future digital skills.
- Having more **ICT professionals** available on the local labour market.

The Strategic Model reflects the key stakeholders and the expected outcomes, as indicated by the following four pillars which also correspond to those identified by the *European Coalition for Digital Skills and Jobs, as follows:*

1. **Education** - covering various aspects for the development of digital skills and competencies from the primary level to post tertiary levels and vocational levels of formal education and viewing it as part of a wider ecosystem including students, educators, parents as well as the industry.
2. **Society** – covering the diverse segments of Maltese society and the digital competencies needed for them to exercise digital interaction and communication effectively and inclusively.
3. **Workforce** – ensuring, on an ongoing basis, the adequate digital competencies needed by the workforce at the various levels of management and in various disciplines within public administration and the private sector.
4. **ICT Professionals** – enhancing the country's ability to possess the appropriate digital skills and competencies needed to meet the related labour market demand within the public administration and within the private sector, now and in the future.

The four strategic pillars share a number of common governance enablers needed to ensure effectiveness of the Strategy and its implementation. They relate to:

- **Collaboration** needed to ensure consistency, coherence and avoidance of duplication of effort in all national initiatives related to digital skills.
- **Leadership and shared responsibility** through measures that need to be taken to enhance effective leadership within the digital skills domain, as well as the need for the various stakeholders to take effective responsibility for the activities that need to be undertaken, as appropriate.
- **Benchmarking** needed to assess, evaluate and qualify progress in goals and outcomes within various aspects of the digital skills domain
- **Funding**, including their source – local or otherwise - necessary to sustain the various related initiatives and activities
- **Focused strategic alignment** to various other strategies focusing on specific themes or sectors, a number of which are of a national scope

Each of the strategic pillars and potentially for some of the governance measures cover a number of actions or recommendations being proposed as the measures for implementation of the Strategy. Where relevant, a number of actions refer to those already proposed in other existing strategies, so as to ensure coordination, alignment and avoidance of duplication of effort by the various stakeholders involved.

As part of the process, before arriving at the recommendations stage, the strategy team listened and took in consideration the feedback received from consultations with the following groups:

- Public Administration and sector officials
- Industry representatives, including the social partners, including the Malta Employers Association, the Malta Chamber of Commerce, Enterprise and Industry, and the Malta Chamber of SMEs
- Representatives from Education, including Academia and training institutions
- Specific consultations with the University of Malta, Malta College of Arts and Technology (MCAST), and the Ministry for Education.

Nonetheless, the proposed actions or recommendations are not final as they may need to be reviewed and adjusted further, depending upon contemporary changing social, economic and technological developments. One key factor however remains unchanged. It is the clear understanding, willingness and ability for all stakeholders to contribute in some way or another to the right aptitudes, skills and competencies needed by all to work and interact effectively in any increasingly digital world of the future.
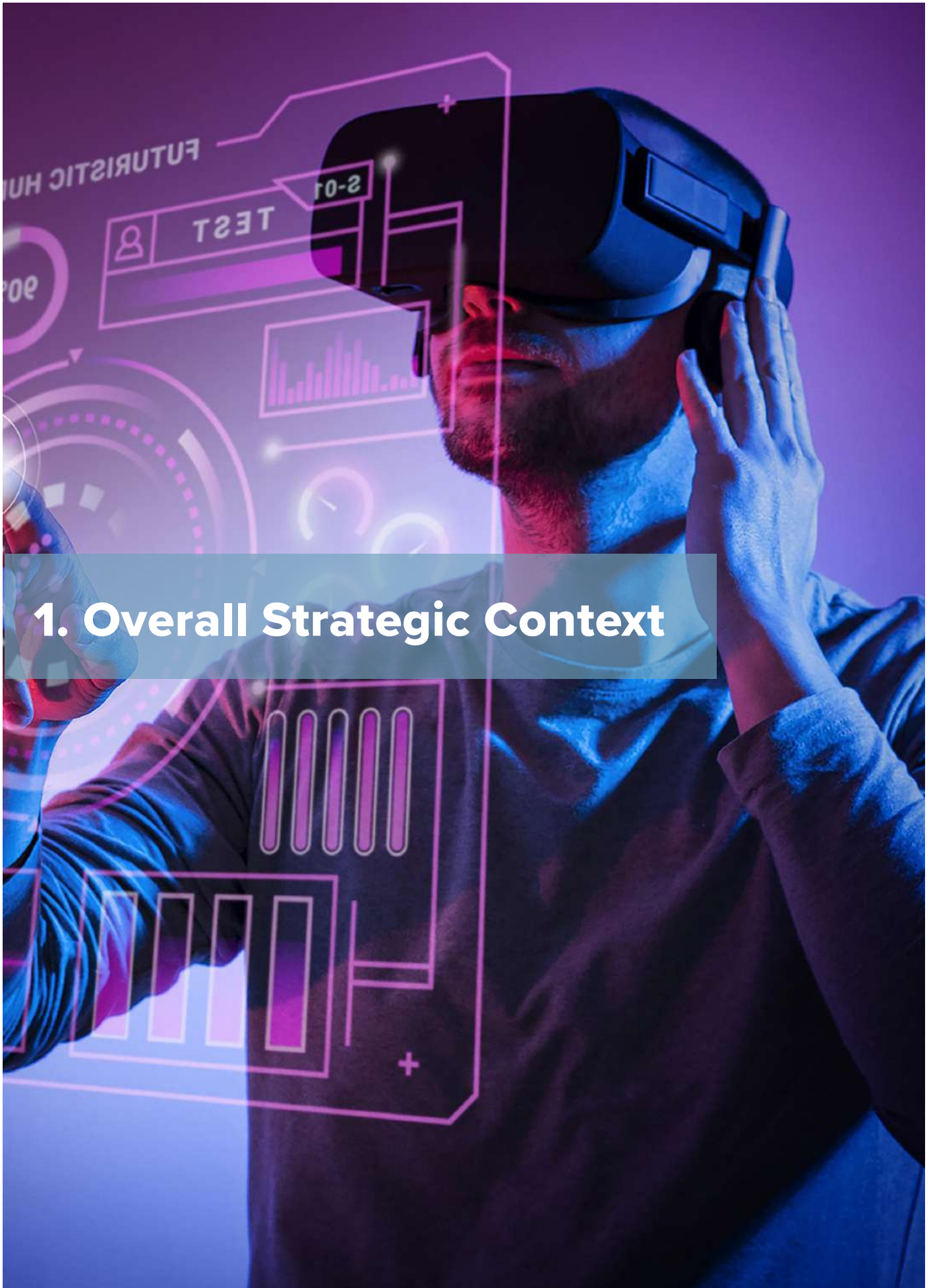
1. Overall Strategic Context

1.1 An Overview

Digital transformation is key within the digital strategies – *MaltaDiġitali* on a national level – and the *5-year Strategy for the Public Service* on a Government level. It implies a radical change on a national scale in terms of the functions of the state, the administration of public service delivery, the proper functioning of society and the economy according to accepted norms, rules and values and the efficiency and performance of the economy and its competitiveness on a global scenario. From a micro-economic perspective, digital transformation implies change in an organisation's business process, its business model, its business domain and ultimately its structure and ethos[1] .

As a result, the world of work is rapidly evolving, and devising healthy new work models is necessary to channel that change into the establishment of stronger labour markets and sufficient safeguards. Digital skills have already been a high priority on a European and global level prior to recent global health and economic disruptions. Thus, effective job creation for the future shall need to keep in view of the resulting paradigm shift in work whilst leveraging disruption as a means to design workplaces that genuinely meet everyone's needs[ii] .

As jobs continue to evolve, education needs to be seen as a life-long process. It is increasingly serving as the central tenet of local and global competitiveness. To thrive in a contemporary workplace, young people need to develop science, technology, engineering and mathematics (STEM) skills and digital fluency, which factors in ethical considerations to technical achievement, from an early age. Furthermore, according to CEDEFOP (2018)[iii] , in the coming years, only one in ten jobs in Europe shall remain available for those with a basic education level, as employers shall increasingly need to seek highly qualified skills. Hence upskilling and reskilling as part of lifelong-learning schemes could be viewed as an alternative to formal education and enable workers to progress further up in their careers[iv] .

Furthermore, as the global economy progresses further in its digitalization, according to the World Economic Forum (2022), an estimated 70% of new value created over the coming years will be based on digitally enabled platform business models. However, it is estimated that around half of the global population is still unconnected to the Internet. A lack of recognition, understanding or ability to use digital exacerbates the resulting exclusion, the unequal concentration of power and wealth and social issues. Hence preparedness, through appropriate education, training and aware-ness, is needed to ensure the use of digital for sustainable, inclusive and safe purposes within the new scenario of communication, operation and interaction[v] .

1.2 The European Union Context

A number of strategic initiatives are undertaken within the digital skills domain by the European Union to facilitate digital transformation of European society and economy. The European Commission (EC)'s *Path to the Digital Decade* aims to deliver such plan by 2030 with a number of digital targets along four cardinal points: digital skills, digital infrastructures, digitalization of businesses and of public services .

Of notable importance within the scope of a National eSkills Strategy are the following targets by 2030, as shown in Figure 1.

Digitally skilled population and highly skilled professionals	Secure, performant and sustainable digital infrastructures	Digital transformation of businesses	Digitalisation of Public Services
ICT Specialists - At least reach 20 million	Connectivity: Gigabit for everyone, 5G everywhere	Tech take-up - 75% of EU companies using cloud/AI/Big data	Key public services - 100% online
The increase in ICT specialists should be combined with a convergence of women and men	Cutting edge Semiconductors: double EU share in global production	Innovators – grow scale-ups and finance to double EU unicorns	e-Health - 100% of EU citizens having access to medical records
Basic digital skills - 80% of EU citizens (aged 6-74)	Data - Edge & Cloud: 10,000 climate-neutral highly secure edge nodes	Late adopters- More than 90% of SMEs have at least a basic level of digital intensity	Digital identity - 80% of EU citizens using a digital ID
	Computing: first computer with quantum acceleration		

Figure 1. Path to the Digital Decade Targets

The digital skills cardinal point is the one of the most relevance, followed by those related to digitalization of businesses and public services as the latter two also relate to establishing at least basic digital skills.

Overall, education and training is *sine qua non* with having digital skills. Through the Digital Education Action Plan 2021-2027, the EU aims to support the sustainable and effective adaptation of the education and training systems of EU Member States to the digital age. This shall be enabled by fostering the development of a high performing digital education ecosystem and by enhancing digital skills and competencies for digital transformation[viii] .

Moreover, a number of digital competence frameworks within various sectors of society and the economy such as for citizens, educators and educational institutions among others, have been devised by the EU, aimed to ensure capacity building for transformation of education and training and to address digital challenges within the digital realm[ix] .

1.3 The Local Scenario

On a local level, progress has been registered in education of the Maltese society over a fifteen-year period, between 2005 and 2020, with an increase from 10.3% to 28% of the population even attaining a tertiary level of education. During the same timeframe, early school leaving declined from 33% to 16.7% of the population, although such figure is still short of the EU's 10% benchmark. The lack of basic qualifications compromises the availability of required skills and thus employability , more so within the digital age.

According to latest DESI 2022 country report, Malta ranks 7th out of the 27 EU Member States with respect to the Human Capital dimension. Figure 2 indicates the various parameters which assess Malta's performance in such dimension, relative to corresponding EU averages.

	Malta			EU
	DESI 2020	DESI 2021	DESI 2022	DESI 2022
1a1 At least basic digital skills % individuals	NA	NA	61% 2021	54% 2021
1a2 Above basic digital skills % individuals	NA	NA	35% 2021	26% 2021
1a3 At least basic digital content creation skills[5] % individuals	NA	NA	71% 2021	66% 2021
1b1 ICT specialists % individuals in employment aged 15-74	4.6% 2019	4.4% 2020	4.9% 2021	4.5% 2021
1b2 Female ICT specialists % ICT specialists	11% 2019	11% 2020	26% 2021	19% 2021
1b3 Enterprises providing ICT training % enterprises	26% 2019	28% 2020	28% 2020	20% 2020
1b4 ICT graduates % graduates	6.9% 2018	6.0% 2019	6.5% 2020	3.9% 2020

Figure 2. Extracted from DESI 2022 Country Report for Malta

As indicated, in 2022 Malta appears to be above par in all terms of performance when compared with the EU average performance. This is a marked improvement when compared to the DESI 2021. The NSO survey on information and communication technology usage , in 2022 indicates that seven out of every ten internet users had 'basic' or 'above basic' overall digital skills[xii] .

On the other hand, relative to DESI 2019 findings, but before the DESI 2022, except for percentage of individuals having at least basic digital skills, all of the above parameters have indicated a longitudinal decline, the most significant one being that for female ICT specialists and for ICT graduates. The latest DESI results also indicate that the share of female ICT specialists is considerably below EU average. The low percentage of female participation both as ICT students at post-secondary and tertiary level as well as within the local ICT labour market was also noted within the NSO 2020 Malta Regional Statistics for the years 2016 till 2018. During these years a decline in female ICT professionals was also noted.

Additionally, all countries in the world experienced a dip in their performance during the COVID-19 pandemic, even if Malta came out better in than other countries by the end of the pandemic.

Overall it is also noted that the World Economic Forum Global Competitiveness Index (WEF GCI) has indicated a decline in the extent to which Malta is seen to possess sufficient digital skills[xiii] between the years 2017 and 2019 relative to the income level median and to the region level median, as indicated in Figures 3 and 4 respectively.
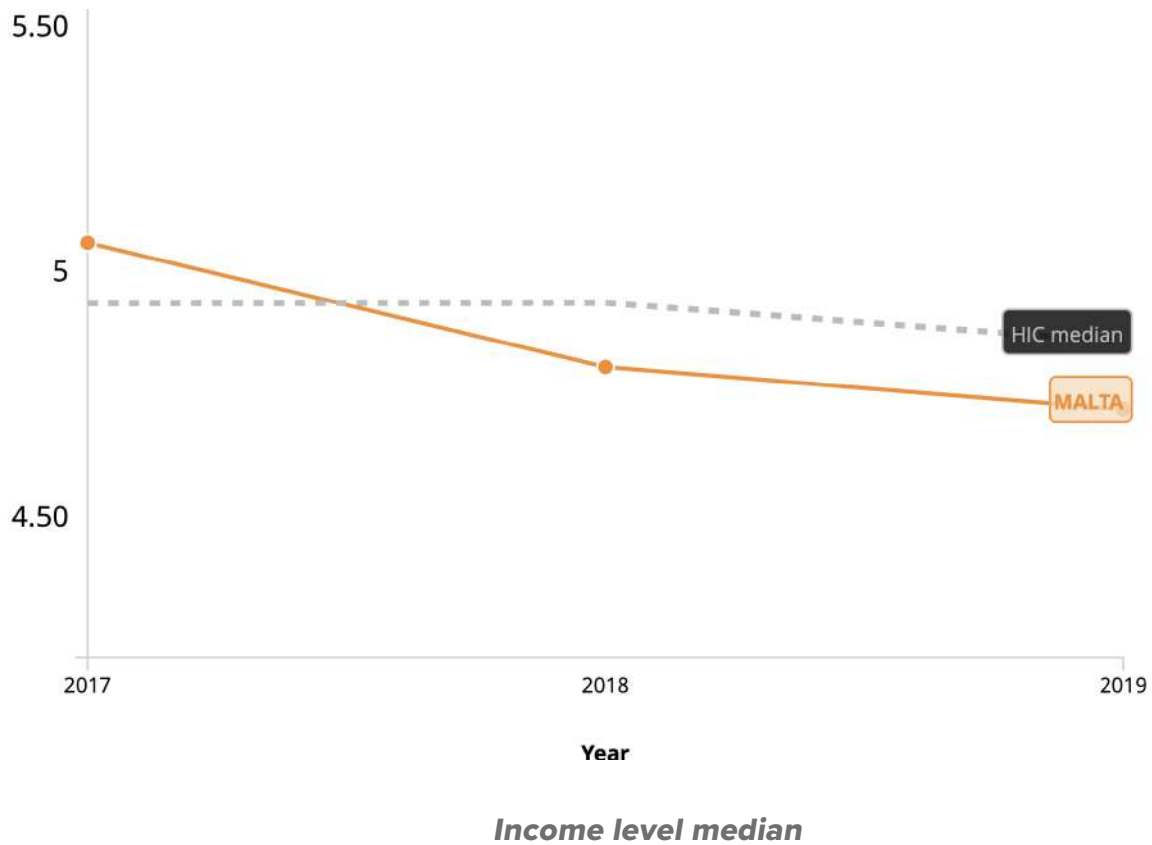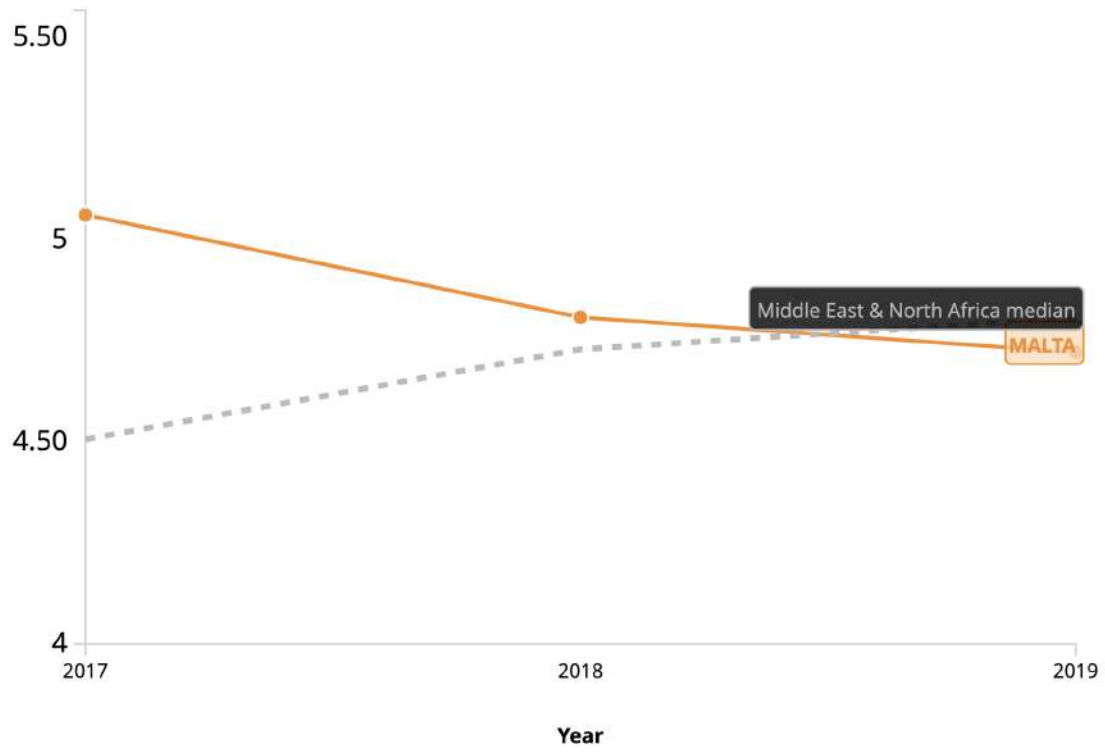
Income level median

Figure 3. Malta's performance in digital skills amongst its population relative to median from countries within the same income levels

Regional level median

Figure 4. Malta's performance in digital skills amongst its population relative to median from countries within the same region

Although the parameters and scope of applicability for each of the above indexes may vary, one should nonetheless not discount the overall need to address further both basic digital skills as well as advanced ones. Studies conducted on behalf of eSkills Malta Foundation and related communications held with various relevant stakeholders in early 2022 indicate similar trends such as low female active participation, a lower intake of students undertaking ICT studies, more need for specialist advanced digital skills, as well as ancillary and complementary skills to ICT. Additionally, an ongoing re-thinking process of curricula at all educational levels, as well as the fostering of the symbiotic industry-education collaboration, have been cited to ensure further development and uptake of digital skills for the future.

From an organizational perspective, the DESI 2022 human capital dimension indicates further progress over the past three years in terms of the percentage number of Maltese enterprises providing ICT training to their personnel. The latest indication is indeed significantly higher than the EU average. Additionally, 71% of Maltese SMEs are envisaged, through DESI 2022, to possess at least a basic level of digital intensity, which is significantly higher than the EU 60% average. However, this should not imply that no further effort is required. The recent online survey conducted on behalf of the eSkills Malta Foundation indicates a further need for Maltese SMEs to understand and recognize the importance of digital transformation within their organisations, including digital skills training for their employees as well as management itself. Initiatives such as apprenticeships are also deemed important to ensure the easier and more rapid availability of required digital skills. More importantly, the digital skill perspective also needs to be seen to from the lens of the micro-enterprises, which constitute the majority of Maltese enterprises and where resource limitations tend to be more acute.

Related initiatives such as incentives to businesses (financial or otherwise), collaborative arrangements with overseas tertiary institutions, provision of new course opportunities, and other efforts aimed at reducing the digital divide are being undertaken. Their impacts should positively contribute to the digital skills sphere. However, as indicated during various consultations held, ongoing collaboration and coordination among the various stakeholders are key to ensuring sustainability and positive outcome of such efforts in the longer term.

Ongoing assessment of progress in digital skill developments along educational, economic and social fronts on an individual and corporate levels needs to be actively undertaken. Above all, wider recognition of the digital profession is needed so as to increase its profile, importance and active consideration from a career perspective.

1.4 The eSkills Malta Foundation and the National eSkills Strategy

The eSkills Malta Foundation, launched in 2014 as a national coalition between Government, industry, and education, carries the mandate to drive the growth of digital skills on a national scale . In the process, it closely follows the eSkills Manifesto – an EU blueprint aimed at briefing and advising policymakers on the state of demand, supply, development and best practice within the digital skills domain across the Member States[xvii] .

In line with its mandate and with the Manifesto, one of the key goals of the eSkills Malta Foundation is the articulation of a *coherent national strategy to serve as a policy point of reference*. The National eSkills Strategy for the period 2019-2021 is the initial fulfilment of this goal. It has aimed to complement existing initiatives on a local, regional and EU level, address existing skills gaps and mismatches, disseminate information on new digital roles, skills and jobs and promote the development of future digital skills across various sectors.

The new eSkills strategy for the period 2022-2025 (the 'Strategy') shall be building further upon the foundations laid by this initial strategy. It shall keep in view of related developments, opportunities and challenges within the digital skills sphere on a national and EU scale as outlined earlier.

2. Strategic Direction

2.1 Introduction

Apart from a strategic assessment of the current local scenario specific for digital skills, one cannot ignore the various strategic initiatives currently in place and which are of relevance, direct or otherwise, to the Strategy.

One of the key strategic enablers for the attainment of Malta's digital vision through its corresponding strategy - **Malta Diġitali 2022-2027** - which in itself is aligned to **Malta's Economic Vision 2021-2030,** is that on digital skills. Indeed, the Vision aims to achieve two key goals, among others, which are to:

- *Digitally upskill Malta's current and future talent pool.*
- *Further narrow the digital divide and assist underserved segments of society and business to go digital.*

The above policy outlook is also in line with **Malta's Sustainable Development Vision for 2050** which follows upon the UN Agenda 2030 and its 17 Sustainable Development Goals (SDGs). One of the three dimensions of the Vision for sustainable development is that of *Enhancing Economic Growth* which needs to be sustained by a *'Transition towards a Digital Economy'* and through 'High-skilled and High value-added jobs', among other strategic measures outlined. It goes on without saying that overall sustainable development and progress cannot occur without digital transformation.

The **Five-Year Strategy for the Public Service, Achieving a Service of Excellence 2022-2027** also aims to contribute to human capital from the digital skills perspective as well as to 'foster a digitally enabled and confident nation' for improved access to digital public services and tools.

The **National Strategy for Digital Education 2012-2030** and the **National Literacy Strategy for all Malta and Gozo 2020-2030** both aim to contribute to the eSkills dimension specifically through the educational aspect.

The **Smart Specialisation Strategy 2012-2027** identifies future digital technologies as one key area where Malta needs to focus – including in terms of related digital skills.

National strategies such as those focusing on **Cyber Security**, and **AI**, among others and regulation such as that pertaining to **Digital Ledger Technologies**, call for related digital skills sets in their own right.

The **National Employment Policy 2021-2030** as well as the **National Post Pandemic Strategy** both contain strategic direction that is of direct relevance or of a complementary nature to the further growth of digital skills on a national scale.

Similarly, **Malta's Recovery and Resilience Plan 2012** and the **European Commission's Digital Economy, Recovery Plan and Skills** contain elements of relevance.

Hence, the Vision and Strategy for digital skills for the coming years shall aim to keep in view all of the above strategic initiatives so as to ensure a comprehensive, coherent and concerted approach.

2.2 The Guiding Principles

Alignment to strategic initiatives of relevance is only one of the key premises that needs to be factored in strategy formation for digital skills. Strategic direction would not, however, be complete without identifying the basic principles that shall be guiding it accordingly. In this case, the following principles are being highlighted:

Active Citizenry

It refers to the ability for an individual to engage positively, critically and competently in the digital environment, drawing on the skills of effective communication and creation, to practise forms of social participation that are respectful of human rights and dignity through the responsible use of technology[xvii].

Digital inclusivity

Closely tied to digital citizenship is the notion of digital inclusivity. Digital should not only serve as a career opportunity to digital professionals. It should also be applied in a way such that challenges potentially of a social, economic, physical and cultural nature that may exclude members of society from active participation in today's digital world are surmounted. The concept also refers to equal gender opportunities, particularly with respect to digital or digitally related competencies and professions.

Effective digital skills formation

Digital skills formation should be enabled and fostered as from early childhood years at home, apart from the wider educational and training ecosystem which is equally important. Indeed, the education system needs to be seen as part of a larger ecosystem where decision-making and responsibility is shared among various stakeholders, including parents, employers, communities and students[xx]. Hence, the formation of digital skills is not only limited within the scope of formal education but is also extended to ongoing training initiatives undertaken within the workplace itself.

Digital skills multiplicity

The coverage of digital skills should be comprehensive so as to ensure the successful functioning of society and the economy within the digital world. Hence it implies keeping in view of ensuring the appropriate skills sets ranging from those that are core and basic to all, to those that are more advanced and even tailored to the various tasks needed[xxi]

Education as a life-long process

This is a notion that increasingly needs to be widely recognised and accepted as jobs continue to change, along with the digital transformation and evolution taking place [xxii].

Coherence to strategic direction

Digital increasingly permeates all levels of society and the economy, which is reflected in the strategic directions being projected on various fronts on a sectoral, national and EU level. Hence, relevant strategic linkages and alignment is necessary so as to foster multi-stakeholder coordination on digital skills on a multi-disciplinary and on a national scale.

2.3 The Vision and Goals

In the light of the overall digital scenario for Malta and based upon the referred guiding principles, the strategic vision for the coming years is of one that brings about effective digital transformation across Maltese society and economy, specifically through effort for and availability of digital skills and competencies. Hence the vision is as follows:

Reshaping Maltese society and economy through digital skills and competencies

The vision entails the following goals:

- Improve further digital capabilities.
- Promote inclusive, ethical and responsible use of digital technologies.
- Promote a promising career in digital.
- Positively contribute to the digital economy.

As the pivot for social and economic growth through these goals, digital skills should ultimately lead to the following outcomes:

- **Society** acquiring more digital awareness and being increasingly confident in the productive use of digital.

- **Public Administration** pursuing its digital transformation and its online public service delivery, in line with the Public Service Strategy.

- **Enterprises** being increasingly willing and able to adopt digital transformation, as a means for them to thrive in an increasingly competitive digital world.

- The **educational system** evolving further at all levels so as to ensure readiness to the needs of current and future digital skills.

- Having more **ICT professionals** available on the local labour market.

2.4 The Model

As indicated, the Strategic Model, shown in Figure 5, seeks to further build upon the strategic direction established by the initial strategy. In effect, the pillars of the Strategic model reflect the outcomes expected, as outlined earlier. They reflect the diverse needs and expectations of the key stakeholders, as also identified by the *European Coalition for Digital Skills and Jobs, as follows:*

1. **Education** - covering various aspects for the development of digital skills and competencies from the primary level to post tertiary levels and vocational levels of formal education and viewing it as part of a wider ecosystem including students, educators, parents as well as the industry.
2. **Society** – covering the diverse segments of Maltese society and the digital competencies needed for them to exercise digital interaction and communication effectively and inclusively.
3. **Workforce** – ensuring, on an ongoing basis, the adequate digital competencies needed by the workforce at the various levels of management and in various disciplines within public administration and the private sector.
4. **ICT Professionals** – enhancing the country's ability to possess the appropriate digital skills and competencies needed to meet the related labour market demand within the public administration and within the private sector, now and in the future.

In the model, each of the four target groups have different link to all the others.
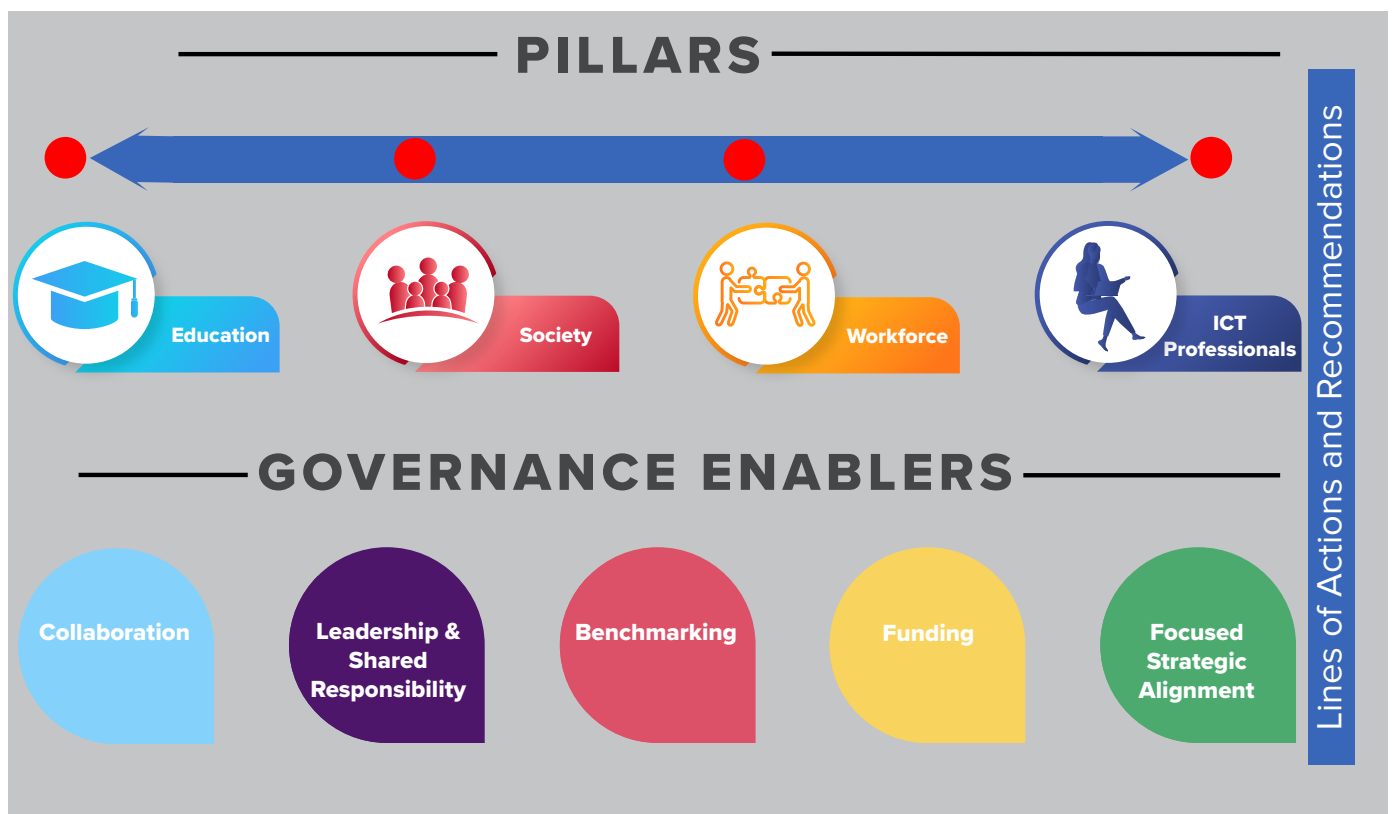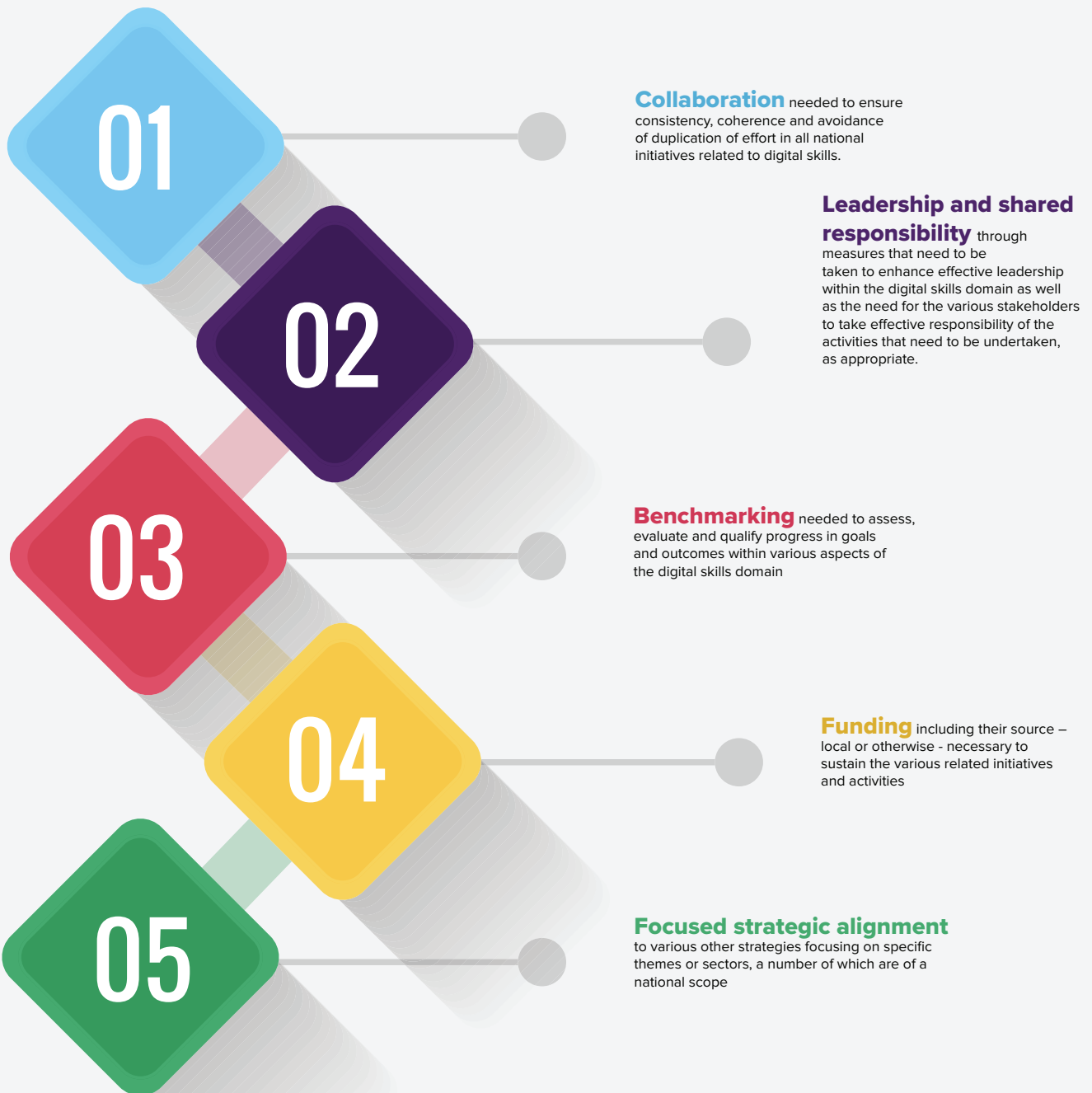

Figure 5. The Strategic Model

Governance Enablers

The four strategic pillars share a number of common governance enablers needed to ensure effectiveness of the strategy and its implementation. They relate to:

01 **Collaboration** needed to ensure consistency, coherence and avoidance of duplication of effort in all national initiatives related to digital skills.

02 **Leadership and shared responsibility** through measures that need to be taken to enhance effective leadership within the digital skills domain as well as the need for the various stakeholders to take effective responsibility of the activities that need to be undertaken, as appropriate.

03 **Benchmarking** needed to assess, evaluate and qualify progress in goals and outcomes within various aspects of the digital skills domain

04 **Funding** including their source – local or otherwise - necessary to sustain the various related initiatives and activities

05 **Focused strategic alignment** to various other strategies focusing on specific themes or sectors, a number of which are of a national scope

For each of the strategic pillars and potentially for some of the governance measures, are a number of key themes. Each key theme covers a number of actions or recommendations being proposed as the measures for implementation of the Strategy. Where relevant, a number of actions refer to those already proposed in other existing strategies, so as to ensure coordination, alignment and avoidance of duplication of effort by the various stakeholders involved.

Some of the recommendations and actions include typical examples for achieving the goal. The examples are mere suggestions that may be considered for implementation.

Education

Society

Workforce

ICT Professionals

PILLARS

3. The Pillars

3.1 Education

Digital transformation implies a paradigm shift on a number of social and economic fronts. Education is no exception. The accelerated technological innovation such as physical technology, social media, AI, robotics, IoT, 3D printing and blockchain, among others, have brought about new business opportunities, new business models and ultimately, the way of working. On the other hand, challenges such as those on cyber security, on privacy through the use of big data, fake news aided by social media and possible unethical outcomes through incorrect applicability of AI applications, among others, are also emerging. All these call for a diverse set of skills and knowledge that does not simply relate to the purely digital aspects. They also need to encompass a safe, ethical and responsible consciousness in the use of technology apart from being supportive of an organisational structure that is increasingly flexible and appreciative of teamwork rather than hierarchy.

Hence, on a national and corporate scale, education is increasingly seen more as a central tenet of the country's competitiveness. The ability for a national economy to sustain efforts allowing a constant reskilling and up-skilling of its workforce and talents is key to its future sustainability. Therefore, on an individual level, it needs to be seen more as a life-long process that evolves as jobs continue to change. It should enable individuals to gain skills that will make them more productive, more effective and more in a position to deal with rapidly changing conditions, thus enhancing their employability in times of rapid digital changes.

Investments in digital teaching and learning resources, as well as the complementary development of digital competencies by educators, are among the key areas for action for a high-performing digital education ecosystem as highlighted within the EU Digital Education Action Plan (2021-2027). Other areas for action related to the enhancement of digital skills and competencies for the digital transformation as also highlighted within the same Action plan. To thrive in the contemporary workplace, the younger generation needs to develop digital fluency and science, technology, engineering and mathematics (STEM) skills from an early age. The importance of high-value-added STEM in future workplaces also calls for the need to ensure comprehensiveness and inclusivity in access to related education. Females are especially under-represented within the STEM disciplines, and it is, therefore, crucial to proactively increase their engagement during secondary and tertiary education . Schemes and campaigns that incentivise students, especially the female gender, to follow STEM paths would be necessary. Furthermore, active consideration could also be made to increasingly integrate the 'arts' element within the STEM education so as to foster the inclusion of creative individuals within the digital skills domain too. Such an approach would eventually imply a change in the teaching process, requiring further school coordination to more synergetic cooperation among language and different subject teachers [xxv] .

Therefore, the effectiveness of education within such a modern digital reality essentially calls for more shared responsibility and stakeholder engagement, where everyone — educators, students, parents, employers and communities - need to have the skills, knowledge and the desire to contribute accordingly. Educational institutions are not to be seen as closed entities in themselves but as part of the larger ecosystem in which they essentially need to operate. Hence forms of collaboration and networks not only at the education institutional level but also with other organisations — local and overseas - such as digitally related businesses, public sector entities and universities are to be increasingly encouraged. Such arrangements could enable educators and students to become more familiar with the skills and competencies which employers and other economic stakeholders deem as critical. Symbiotic industry-university collaboration and interaction are also to be actively pursued within the digital realm to intensify the creation and transfer of tacit digital knowledge, and expertise is enabled and fostered[xxvi] .

Parents or guardians also need to be more appropriately informed about digital career paths so as to support children in their decision-making on career and skills development. They should thus be in a better position to consider digital skills as relevant to the future career prospects of their children.

The teaching institutions also need to ensure that they operate with a curriculum that recognises the current and future needs for the evolving digital transformation as well as the values and

attitudes that enable it. This will be critically important in areas such as AI. Thus, curricula and methods would need to be updated on an ongoing basis[xxvii].

Last but not least is the need for objective and ongoing assessments within the digital field at an individual – student and educator, as well as at a corporate – school and intra-school level. EU effort through its various specific competence frameworks, including those within the educational sphere, may help further in this aspect. The focus and objective of monitoring performance in this area, along with the rest of the educational system, is to be oriented more towards continuous system improvement through feedback at all levels of the system rather than to the more traditional valuing of accountability and compliance.

Education - Proposed Actions & Recommendations

Education

Key Themes	No.	Action or Recommendation	Action	Recommendation
Digital Teaching and Learning Resources	1.1a	Pursue investments in digital infrastructure within educational institutions. *(e.g. Digital devices, networks, VR/AR headsets, Robots, tablets, PCs)*	X	
	1.1b	Invest further in the use, adoption and enhanced access to digital technologies and resources for teaching, learning and assessment.[1] *(e.g. for use in pedagogy delivery)*	X	
	1.1c	Ensure that investments in digital technologies and resources cover students at all education levels[2], including vulnerable students, so as to ensure equal access. *(e.g. continual and incremental use of digital tech, skills and literacy according to education level)*		X
	1.1d	Actively encourage use of assessment tools such as SELFIE across all schools so as to improve how they can use digital technology for teaching and learning *(e.g. regular training and tracking on the use and benefits of SELFIE)*	X	

[1]**Refer to:**

- Societal Persona Action Number 1 of *Malta Diġitali*
- Strategic measures 1.1 and 1.2 of Pillar 1 of the *National Strategy for Digital Education*
- Strategic actions of Objective 3 of Pillar 2 and those of Objective 3 of Pillar 3 of the *National Literacy Strategy*

[2]**From early learning stages to post- secondary, tertiary and vocational levels**

Key Themes	No.	Action or Recommendation	Action	Recommendation
Development of digital competencies relevant to educators and learners and related assessments	1.2a	Address students' core entitlement to digital literacy in a coordinated manner starting from early years and primary up to the advanced years at secondary level. Further, develop digital literacy from a cross-curricular theme to a core subject having specific weekly lessons, and that is measured by assessment[3] . *(e.g. integrated digital content in all cuuricula, formal and informal and formal assessment tools)*	X	
	1.2b	Ensure cross-party, multi-stakeholder review of educational curricula and teaching methodologies so that they reflect the necessary digital skills and soft skills required for the present and future workforce[4] *(e.g. include review cuuricula by industry and other stakeholder represesntative as part of the formal process)*	X	
	1.2c	Seek the conduct of such educational curricula and teaching methodology review, at all educational levels (from early-school years to post-secondary, tertiary and vocational levels) and across all local educational institutions whilst ensuring consistency in the process. *(e.g. by regular formal assessments)*		X
	1.2d	Ensure that such reviews are undertaken on a regular basis so as to assess both the progress being made as well as the currency of the digital literacy (computing) content to evolve future digital skill requirements		X

[3]Refer to:

- **Strategic Action 3.1.1 of Strategic Measure 3.1 of Pillar 3 of the *National Strategy for Digital Education***
- **Strategic action 2.1.10 of Strategic Measure 2.1 of Pillar 2 of the *National Strategy for Digital Education***
- **Strategic action 3.2.2 of Strategic Measure 3.2 of Pillar 3 of the *National Strategy for Digital Education***
- ***Computing as a Core Entitlement Framework (2014) – Dep. Of eLearning and Dep. Of Curriculum - DQSE***

[4]Refer to:

- **Strategic Action 4.3.1 of the *National Strategy for Digital Education***
- **Strategic Measure 6B of the *National Post Pandemic Strategy***
- **Statement in 3.1.4.1 Human Capital of the *Public Service Strategy***

Key Themes	No.	Action or Recommendation	Action	Recommendation
	1.2e	Apart from significant updates being brought out, such as by the Learning Outcome Frameworks, further significant changes may need to be contemplated following the reviews of the educational system, curricula and syllabi. However, any such proposed updates need to be well-considered and planned accordingly, in a coordinated fashion, in collaboration with all relevant stakeholders involved, so as to ensure smooth transitions needed to the maximum extent possible[5]. *(e.g revisit the existing review and collaboration process for faster implementation for changes).*		X
	1.2f	Ensure particular consideration to digital literacy requirements for special needs students having intellectual disabilities		X
	1.2g	Ensure particular consideration to digital skills required in emerging technology areas as well as in specialist areas of critical importance such as cybersecurity, AI and data science- in line with their respective strategies. *(e.g. regular formal reviews in collaboration with respective entities and authorities in the field, regular formal and informal engagement with respective training providers).*		X
	1.2h	Ensure that specific business/technical specialisations under study focus on the appropriate digital skill(s) needed. *(as in 1.2g).*		X
	1.2i	Encourage and motivate (especially post-secondary) students to become independent learners so as to enable them to keep abreast with developments and skills they would need within their professional area of specialisation, including that within the digital domain. *(e.g. integrate this outcome in the pedagogy).*		X
	1.2j	Equip educators with digital competencies[6] and ensure the necessary support[7]. *(e.g. provide time for formal teacher upskilling, introduce and encourage voluntary teacher assessments and support in line with the EU Digcomp standard) .*	X	

[5]**The changes required are to be taken with a view not to overburden the educational ecosystem, apart from leading towards a smooth transition.**
[6]**Refer to Strategic actions of Strategic Measure 2.2 and 2.3 of Pillar 2 of the *National Strategy for Digital Education***
[7]**Refer to *Computing as a Core Entitlement Framework (2014) – Dep. Of eLearning and Dep. Of Curriculum - DQSE***

Key Themes	No.	Action or Recommendation	Action	Recommendation
	1.2k	Specifically, ensure among educators, above all, that: •their own training and education programs help them create new teaching and learning methods for their students in such a way that digital technology could be more easily adopted and be more effective in related needed transformation within classrooms. •ways of collaboration are fostered between the non-computing and computing teaching members so as to strengthen further the digital mindset needed even on a cross-curricular basis[8]. *(e.g. introduce or strengthen a teacher digital platform where teachers can share resources and create forums or threads of discussion)*		X
	1.2l	Pursue ways to attract, motivate and/or retain educators to digital literacy (computing) education. *(e.g introduce strong public national campaigns, introduce well-thought out benefits and rewards system).*	X	
	1.2m	Promote and incentivise digital literacy education as a highly attractive option to digital/ digitally competent professionals seeking career changes or to those reaching retirement[9].		X
	1.2n	Seek to apply concepts such as design thinking, critical and computational thinking as pedagogical approaches that foster the growth of critical digital competencies[10] required both among students as well as educators themselves. *(e.g. further cross-curricula training or courses on the subject to teachers).*		X
	1.2o	Establish standard digital competence frameworks to be applied to educators, learners, schools *(e.g. EU DigComp standard)*	X	
	1.2p	Seek to apply standard digital competence frameworks on an ongoing basis and across all schools. *(e.g. EU DigComp standard).*		X

[8]So that digital literacy at cross curricular level is not limited to the use of digital tools for, say, presentations or report writing, but also to one that is conducive to a stronger digital culture and skills across the various spectra of economic, social and technological disciplines.
[9]Refer to Recommendation 3 of the *National Employment Policy 2021-2030*
[10]Such as coordination, teamwork, critical thinking, problem solving, innovation, among others

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Key Themes	No.	Action or Recommendation	Action	Recommendation
Increase STEM students and converge the gender gap	1.3a	Focus further on career guidance frameworks and seek to foster further related programmes and initiatives aimed at encouraging and motivating students to take an active interest in STEMˣˣˣ studies and eventually pursue a professional career in the digital fields[11]. *(e.g. increasing STEM events).*	X	
	1.3b	Assess the hindrances impeding students from viewing STEM in a positive light, with a view to address the identified challenges accordingly. *(e.g. Further studies focusing on possible and practical change implementations).*		X
	1.3c	Pursue ways to proactively increase engagement and motivation of female students in the digital sector throughout the formal education years[12] as well as through other educational activities and initiatives[13] *(e.g. generate more events on the subject, regular review of studies carried out on the subject)*	X	
	1.3d	Promote female entrepreneurship in ICT at tertiary and vocational educational and training levels[14] *(e.g as 1.3c)*		X
	1.3e	Actively consider integrating the 'arts' element within STEM education – as part of the STEAM concept - looking into how related initiatives: •Are to be designed •To what extent and if so, in what manner are they to be applicable across schools •To what extent are they to be undertaken by educators •Are to be integrated within the curricula, including their consideration as a cross-curricular theme		X
	1.3f	Promote related initiatives, such as awards amongst the general public so as to widen appreciation and understanding.		X

[11]**Refer to:**
- Societal Persona Action Number 4 of Malta Diġitali
- Strategic Action C of Theme 6 of the National Post Pandemic Strategy. *This also refers to career guidance frameworks which challenge gender stereotypes*

[12]**Refer to:**
- Strategic action 3.1.10 of Strategic Measure 3.1 of Pillar 3 of the *National Strategy for Digital education*
- Strategic action 4.3.3 f Strategic Measure 4.3 of Pillar 4 of the *National Strategy for Digital education*

[13]**Such as those by eSkills Malta Foundation**

[14]**As recommended by the *eSkills Malta Foundation 2018 Guidelines to Increase and Retain Women in ICT***

Key Themes	No.	Action or Recommendation	Action	Recommendation
Symbiotice links between education and industry	1.4a	Establish strong relationships and strategic arrangements with experts to enrich digital education and encourage students towards professional digital careers through their expertise and knowledge[15]. *(e.g. Industry visits by students and teachers, sessions by industry and experts in schools)*	X	
	1.4b	Support industry-led training[16] and organisation of extra-curricular events by industry NGOs[17] to ensure that digital education is in line with industry requirements whilst keeping in view of pedagogic requirements.		X
	1.4c	Undertake educational partnerships related to digital with key FDI companies[18] *(e.g. as a feature in FDI agreements)*		X
Support and empowerment in digital competencies at home	1.5a	Empower parents/ guardians and families so as to enhance their digital competencies and be able to support student's digital competencies, learning and aspirations[19] *(e.g. through digital literacy events and courses to society)*	X	
	1.5b	Consider outreach activities even among parents/guardians that address fears, misconceptions or misunderstandings about STEM subjects and that highlight their increasing importance for digital skills and careers.		X

[15]Refer to Strategic Action 4.3.1 of Strategic Measure 4.3 of Pillar 4 of the *National Strategy for Digital education*
[16]Refer to *National Productivity Report 2021.*
[17]Refer to *eSkills Malta Foundation 2018 Guidelines to increase and retain women in ICT*. Also considering such initiatives as professional development activities to educators
[18]Refer to the *National Post Pandemic Strategy*
[19]Refer to
- Societal Persona Action 3 of *Malta Diġitali*
- Strategic Measures 4.1 and 4.2 of Pillar 4 of the *National Strategy for Digital education*
- Strategic measure 1.2 of Pillar 1 of the *National Strategy for Digital education*

3.2 Society

The development of digital skills is critical not only for job success but also to participate fully within a digital society. The digital skills required at a societal level, however, vary from those required at a professional level. They should at least be the basic ones – those that enable all members of society to function at a minimum level. They are, in essence, the foundational skills for performing basic tasks and need to be seen as essential, along with traditional literacy and numeracy. The basic skills need to cover the hardware aspect (such as using a keyboard and operating touch screen technology), software (such as word-processing, managing privacy settings on digital devices), and basic online operations (such as email, online searches, completing online forms, online Government and banking services, apart from cybersecurity and safety awareness, among others) .

Therefore, individuals with such relevant digital skills should be able to safely access news and information, communicate with friends and family, and access important services related to e-health, e-government, and digital finance, among others and thus be able to enjoy the benefits resulting from participation in a global knowledge society. Furthermore, society, through its diverse constituents, is part of the wide ecosystem of which contemporary education needs to form an integral part of an effective digital skills strategy. Unfortunately, on a European scale, the Digital Economy and Society Index (DESI) indicates that four out of ten adults and every third person who works in Europe lack basic digital skills .

The global socio-economic inequities within society such as the lack of Internet access at home, dire financial situations, fear of technology or outdated mindsets, are among the key contributors to the digital divide, and which ultimately reflects a skills divide . One of the key challenges to low uptake of digital services is an individual's lack of capacity and skills to use online platforms and resources to the best advantage .

Primarily, addressing the digital divide, and by implication, the skills divide within Maltese society requires identifying all of its constituent members and their varying digital needs and requirements. This includes all Maltese and EU nationals within the country as well as third-country residents. A holistic perspective of addressing the skills divide would include keeping in view of the digital disadvantages that could potentially be of an economic nature or pertaining to hindrances in the useability of the online services themselves or whether the individuals are fully confident and trust the use of technology for their daily activities. The society also needs to understand and be empowered to make full use of the potentialities that technologies such as those for social media afford, apart from their widely known basic usage.

The measures within this strategic pillar largely need to look from an educational and awareness perspective, apart from other initiatives needed to address the economic and cultural challenges faced by members of society. Additionally, service providers need to be increasingly conscious of ensuring user-centricity in their online service provision so as to foster the digital services' useability, experience and accessibility even among vulnerable members of society.

Specialised national strategies such as that for cyber security need to be effectively implemented, including in terms of their education and awareness campaigns so as to engender security and trust and thus boost further confident uptake of technologies by all members of society.

Above all, active citizenry within the digital world cannot be simply attained by society becoming conversant with technology, although this is a major step. The imparting of digital skills is not to be limited to the operational and passive use of technologies but also towards the active creation, critical understanding and problem solving through digital means. This, in effect, means that society, starting at the school level, is to be empowered to apply digital technology available in a multimodal and thus in a more comprehensive and effect manner.

Even if Malta ranks highly in some of the areas effecting Society, the country must strive to keep improving.

Society - Proposed Actions & Recommendations

Society

Key Themes	No.	Action or Recommendation	Action	Recommendation
Define the audience and their needs	2.1a	Conduct a study that comprehensively identifies the digital needs of all strata of society so as to ensure that the digital divide challenge is effectively addressed. *(e.g. using EU funding).*		X
Reduce the digital divide with a focus on the economically and culturally disadvantaged	2.2a	Work with the private sector to channel part of Corporate Social Responsibility initiatives to contribute towards improving digital education within society[20]. *(e.g. through the Social Partners and associations)*	X	
	2.2b	Pursue initiatives to support economically disadvantaged individuals to mitigate the digital divide[21] *(e.g. through the establishment of a common fund and funding opportunities)*	X	
	2.2c	Bolster schemes which address affordability issues relating to device access and high-speed connectivity[22]	X	
	2.2d	Actively keep in view of basic digital skills as part of Continuous Professional Development for educators who wish to work specifically with adults on basic skills[23] *(e.g. investing and setting up a network of Champions and ambassadors on the subject)*		X
	2.2e	Provide services and conduct outreach activities which support non-Maltese nationals in digital education as well as in related employment opportunities as part of the drive to reduce the educational inequality gap between Maltese nationals and migrants[24] *(e.g. through collaboration with NGOs or national bodies)*	X	
	2.2f	Actively keep in view of digital education, outreach, and related employment opportunities as part of the drive to address the early school leaving and training challenge[25]		X

[20]**Refer to Strategic Action 4.3.2 of Strategic Measure 4.3 of Pillar 4 of the *National Strategy for Digital education***
[21]**Refer to the Malta EU Recovery and Resilience Programme**
[22]**Refer to Strategic Action A of Thematic Area 10 of the *National Post Pandemic Strategy***
[23]**Refer to Strategic Action 1 of Strategic Measure 8 of the *Lifelong Learning Strategy***
[24]**Refer to Strategic Actions 1 and 2 of Strategic Measure 6 of the *Lifelong Learning Strategy***

Key Themes	No.	Action or Recommendation	Action	Recommendation
	2.2g	Conduct cultural (educational and awareness) activities in line with the related strategic actions highlighted within digital specialist strategies, including those for Cyber Security, Data, AI, etc. *(e.g. through collaboration with national bodies, setting up a common fund)*	X	
	2.2h	Leverage community networks and businesses to boost uptake of digital skills structured programme[26]. *(e.g. establish further collaboration between local councils and digital industry).*	X	
	2.2i	Actively consider digital skills training as part of diversification in the provision of adult learning courses to address skills gaps[27] *(e.g. establish community digital training and support centres)*		X
	2.3a	Provide assistance and training to those in need to enable their access to digital technologies[28] *(e.g. as in 2.2f)*	X	
Foster user-centric tools to facilitate digital uptake, especially among the useability disadvantaged.	2.3b	Provide the elderly and vulnerable with assisted living technologies and smart devices and make online services more accessible[29] *(e.g. invest in courses to elderly and vulnerable group about living technologies to increase their well-being)*	X	
	2.3c	Assist citizens, especially those who are not digitally savvy, to use online services efficiently and securely. *(e.g. investing further in community digital support and education centres)*	X	
	2.3d	Further sensitize and encourage private sector service providers – especially those providing critical services such as banks- to boost further user-centricity in their online service deliveries, especially to the vulnerable and elderly clients. *(e.g. optimising existing and investing further in effective feedback systems)*		X
	2.3e	Implement digital solutions aligned towards the adoption of service design standards to address all quality determinants and to ensure that stakeholders' engagement and clients' skills and needs are considered throughout the service delivery chain[30]. *(e.g. investing further in User Experience (UX) design education and implementation).*	X	
Address the digital empowerment challenge	2.4a	Aim, as part of educational (including school) or awareness activities, towards attaining a multimodal and productive perspective on the various digital technologies being used by society, apart from focussing on their ethical, security and safe use[xxxv]. *(include the practical approach aspect in education).*	X	

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Refer to
- Strategic Actions 3 and 7 of Strategic Measure 6 of the *Lifelong Learning Strategy*
- Strategic Action 4 of Strategic Measure 7 of the *Lifelong Learning Strategy*
- Early school leavers data warehouse project of the *Malta Recovery and Resilience Programme*

[26]Refer to Strategic Action B of Theme 3 of the *National Post Pandemic Strategy*
[27]Refer to Strategic Action 1 of Strategic Measure 1 of the *National Strategy for Lifelong Learning*
[28]Refer to Societal personal action 2 of *Malta Diġitali*
[29]Refer to Societal personal action 9 of *Malta Diġitali*
[30]Refer to Government Persona actions 29 of *Malta Diġitali*

3.3 Workforce

Digital transformation is increasingly driving the need for business organisations to adapt themselves accordingly, embracing in the process the applicability of emerging technologies for their operations and for their service/product provisioning. As a result, the nature of work is changing, and digital skills are increasingly being regarded as crucial and fundamental for the workforce. Employees need the appropriate digital skills to work with the technologies introduced and to keep up to date with the rapid digital advancements. The latter factor essentially necessitates flexibility and agility from the employees to gain the new skills required and adapt accordingly to the changing working environment and marketplace. They may have worked for an organisation for a number of years and may possess an in-depth understanding of the firm's ethos and its customer base. Hence effort is required to retain the employee base whilst adjusting the organisation accordingly to the new digital realities. On the other hand, the availability of a skilled workforce may not largely meet the required demands, and formal and traditional modes of education may not necessarily suffice to meet the employer's needs.

Reskilling and upskilling are considered as two effective strategies to tackle such skills shortages and building resilient workforces. Reskilling involves ensuring that employees are provided with a lateral learning experience so as to be effective in the new 'adjacent' digital skills required. Upskilling involves teaching employees new advanced skills so as to be able to close talent gaps. It involves the need for the organisations to support employees to adopt a lifelong learning approach.

It is of utmost importance that employers provide the time necessary for reskilling and upskilling.

Unfortunately, organisations may not necessarily be in a position to do so. This could potentially be due to their management's inability to recognise the need and opportunities arising from digital transformation to their internal processes and to their product provisioning. However, especially prevalent within the small organisations are financial resource constraints to undertake such changes, including support to the related work development programs. It is crucial that digital transformation plans include the process of inclusive training to resources at all levels.

Indeed, organisations, especially SMEs and micro-enterprises (which constitute the majority of Malta's businesses), need support in terms of both awareness as well as appropriate incentives, that are easily accessible and with minimal constraints, to enable them to undertake digital transformation within their business. Training support needs to cover all employees at all levels, including those at managerial level capacity . The digital skills needed are not to be seen as the ability to use the Internet or communicate digitally or simply to be able to operate digital technologies within an organisation. They are more likely to involve the development of a rigorous and structured mindset with a good ability for abstraction and learning, including building a STEM background that cannot be gained overnight. Above all, training needs to foster a culture of continuous process improvements and product enhancements, as well as environmental protection through the effective use of digital technologies. Workplaces, therefore, need to be transformed to stimulate workers to incrementally build their digital skill capacity. The establishment of designated learner hubs and their active promotion, including management encouragement and support by organisations for their use, may also help. Digital technologies also provide new modes of online distance learning, such as through Massive Open Online Courses (MOOCs). Such courses could be produced and disseminated easily. For effectiveness, they, however, need to include tutor interaction, active exercises, measurable outcomes and certification of the acquired competencies .

Digitally inclusive initiatives and programmes, such as with early school leavers and migrants, as well as guidance programmes, should also help to encourage and entice adult workers to become active participants within the digital labour market.

Unified online digital skills and courses platform may provide a better holistic aid to existing and future job prospects. This could potentially be complemented by a digital skills anticipation system through which updated digital labour market intelligence may enable the monitoring of evolving digital industry skills demands.

Workforce - Proposed Actions & Recommendations

Key Themes	No.	Action or Recommendation	Action	Recommendation
Support digital transformation through training and awareness	3.1a	Assist businesses to transform digitally, including through the uptake of emerging technologies – including through training and related incentives[31] *(e.g. budgeting more time for education and training), appointing e-leaders and corporate digital champions)*	X	
	3.1b	Ensure the appropriate digital skills training not only for employees but also for management. *(e.g. include every level of the organisation in the digital transformation plans)*		X
	3.1c	Seek to orient management skills towards: • a very good understanding of the digital transformation required within an organisation and the ensuing skills required • recognising the need to plan and budget accordingly for the relevant ongoing digital training needs of employees • the ability to oversee related outsourcing which may need to be carried out, such as, for example, to compensate for cloud computing skills gap[xxxviii.] *(e.g. refer to 3.1a).*	X	X X
	3.1d	Ensure that the related incentives are suitable and fit for the modern business models and operations. Additionally, outreach programmes are to be enhanced and that it is made simpler and easier for firms to apply for support[32]. *(e.g. funding instruments processes made much simpler and achievable).*	X	
	3.1e	Ensure that fiscal incentives also emphasise digital upskilling or reskilling of non-ICT professionals too. *(e.g. introducing a condition in fiscal incentives for digital transformation and projects).*		X

[31]**Refer to Business Persona Action 29 of Malta Diġitali (adapted to make specific reference to training (which can be on-the -job) and to related incentives (which can be fiscal or otherwise)**
[32]**Refer to Action C of Theme 5 of the National Post Pandemic Strategy**

Key Themes	No.	Action or Recommendation	Action	Recommendation
	3.1f	Increase uptake of advanced digital technologies by also increasing the skill set through the establishment of the Digital Innovation Hub[33]	X	
	3.1g	Strengthen work-based learning in collaboration with the industry, including through outreach campaigns, strategic alignment to industry needs, piloting job training with employers, apprenticeship and internship programmes and related initiatives, among other activities[34]. *(e.g. comprehensive campaign on the benefits, increase apprenticeship degrees, introduce more fiscal incentives to SMEs for collaboration with education)*	X	
Encourage and support digital upskilling and reskilling	3.2a	Pilot a physical, digital hub for learners with state-of-the-art technology and a community space fit for lifelong learners with the possibility of further extending the hubs in various geographical locations, including Malta and Gozo[35]. *(e.g. through Community Digital Learning and Support centres)*	X	
	3.2b	Improve access to the Internet and technology and offer learning solutions such as MOOCs, OERs, and Blended and Online courses for different learners[36]. *(e.g. include online learning as part of the curriculum).*	X	
	3.2c	Organise and promote part-time courses as another way to contribute to lifelong learning as well as for future career opportunities within the digital domain. *(e.g. introduce further incentives and benefits for attenting evening courses, allocate time for training during the day).*	X	
	3.2d	Partner with educational establishments and industry to develop educational and employment pathways – as one way to contribute to digital skills, apart from other skills[37]. *(e.g. through collaboration with social partners).*	X	

[33]Refer to Innovation Action 34 of *Malta Diġitali*
[34]Refer to Strategic Actions 1 – 4, 6 and 7 of Strategic Measure 2 of Pillar 2 of the *Lifelong Learning Strategy*
[35]Refer to Strategic Action 7 of Strategic Measure 3 of Pillar 2 of the *Lifelong Learning Strategy*
[36]Refer to
- Strategic Action 8 of Strategic Measure 3 of Pillar 2 of *Lifelong Learning Strategy*
- *Malta Recovery and Resilience Programme* which refers to the establishment of an e-College – an online teaching and learning platform which tends to focus on digital specific subjects and which targets students (old or young) who want flexibility, and those employees who want to upskill or reskill.

[37]Refer to Strategic Action 3 of Strategic Measure 7 of *Lifelong Learning Strategy*

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Key Themes	No.	Action or Recommendation	Action	Recommendation
	3.2e	Capitalise on the establishment of an independent guidance unit as an aid to guide adults in digital educational opportunities and, in collaboration with industry stakeholders as a means to foster digital education and training opportunities and to reduce digital skills mismatches[38]	X	
	3.2f	Encourage, promote and foster digital skills development among the workforce through the various forms of the lifelong learning opportunities available as well as incentives that may enable such opportunities[39]. *(e.g. as part of career development).*		X

[38]Refer to Strategic Actions 1 and 2 of Strategic Measure 2 of the *Lifelong Learning Strategy* (Adapted from both actions)

[39]Such as fiscal incentives for retired worker to offer training/mentorship programmes at their place of employment, with a focus on vocational skill set (Refer to Recommendation 3 of the *National Employment Policy 2021-2030*

3.4 ICT Professionals

Malta's progress in digital transformation cannot be sustainable without adequate investment in human capital with specialized digital expertise. The rapid digital developments, including the evolving applicability of emerging technologies, are leading to the need for ICT professionals to remain constantly updated, follow the trends and gain new skills. Additionally, apart from being a specialist in a specific digital field, it is increasingly important for an ICT professional to have a wide and transverse background and skills, particularly the soft ones. Above all, ICT professionals need to be in a position to foster high-value-added activities that may drive sustainability goals at environmental, economic and social levels. The increasing range of activities and occupations where ICT professionals are needed is not being adequately offset by the supply. Such shortages are exacerbated by under-representation, especially by females in higher education courses in ICT-related courses and within the industry as a whole.

Further active promotion and support to the ICT profession that builds upon related proposals within the previous strategy and which should further ensure inclusivity and equitability - is therefore necessary. Tertiary educational institutions- locally and overseas – enable the growth of digital specialist courses such as AI, cybersecurity and data sciences, among others. Initiatives in this regard, such as through the provision of local specialized courses or through strategic arrangements with overseas tertiary institutions, are commendable. The active consideration of a Centre of Excellence in digital, keeping in view Malta's targeted areas of specialisation as identified by the Smart Specialisation strategy, may help in sustainably building up a strong digital competence. However, these are not sufficient, especially to quickly and easily build the specific skill sets required by organisations. Further uptake of apprenticeship programmes by employers may help further ICT students to obtain, within the shortest time possible, an insider's view of the industry, the necessary skills and experience through exposure to real projects, the establishment of professional contacts and useful guidance from mentors at the workplace.

Efforts should also be expended in attracting foreign digital expertise onto the local market. This can enable the availability of digital skills required within the short term and could also serve as an opportunity to enhance the local workforce in terms of skills, knowledge and abilities. The facilitation of mentoring facilities from the employer's end may also help impart such tacit digital knowledge and skills on the local scene. External networking is thus a key element to be actively encouraged as it not only enables the acquisition of new knowledge but it also improves the way individuals learn from each other and transfer knowledge within and outside an organization. Organisation or participation in conferences, blogs, or other networking events may contribute to education on specialist digital aspects among technical and non-technical individuals across various industries[xxxix] . Indeed, the presence of a strong ICT professional network, potentially reinforced through a local professional body, is important and should enable the digital industry to thrive whilst also attracting further digital talent.

Such methodologies could form part of Continued Professional Development (CPD), which acts as supplementary learning that professionals should undertake to further augment and enhance their capabilities at the workplace in a proactive manner. Indeed, ICT professionals should not rest on their laurels but seek to keep advancing on career skills that their employers are increasingly seeking, also considering the dynamic and emergent nature of digital technologies[xi] . Industry certifications also complement formal education and experience at the workplace and may even serve as an alternative path to seeking a career in ICT. Indeed, certifications carry merit even for newer employees as they offer an opportunity to indicate to employers that a certain level of mastery has been achieved.

Employers may facilitate the notion of ongoing, lifelong learning at the workplace for digital transformation whilst addressing professional skills challenges through adopting appropriate digital competence frameworks. The promotion and applicability of the European Union's Digital Competence frameworks, specialising in various domains- educational or otherwise - may appropriately serve accordingly.

It is also of utmost importance for employers to provide for the necessary time for the training

and development of their employees.

Other proposed national strategic measures in favour of more inclusive and equitable professional digital skills development are to be actively considered and implemented, along with the adoption of best practices. From a female ICT professional perspective, they not only include encouraging girls to consider a career in ICT and undertaking female-friendly measures within the educational sphere. The undertaking of recruitment and retention measures and best practices to influence gender equality in the labour market as well as support to women entrepreneurship and leadership within the digital world are to be further actively pursued.

Digitally skilled migrants are also to be kept in perspective as one means to facilitate their integration within society whilst tackling the digital skills shortage and contributing to the country's economic growth[xii] .

ICT Professionals - Proposed Actions & Recommendations

Key Themes	No.	Action or Recommendation	Action	Recommendation
Popularise the Profession	4.1a	Pursue specialised ICT education offerings at tertiary levels in sector-specific areas and specific digital domains such as AI, Data Science, Cloud computing, and IoT. *(e.g. making use of employer sponsorship or government or EU funding schemes, incentivise with benefits, ICT practitioners to take-on further studies).*	X	
	4.1b	Launch specialised ICT scholarship schemes on an ongoing basis as a means to create an ecosystem of excellence that can attract and retain digital talent.	X	
	4.1c	Seek to broaden the pool of specialist digital skills through incentives for related tertiary studies and by attracting related foreign professionals or Maltese nationals working overseas. *(e.g. increase national campaign soverseas targeted at foreign nationals to highlight benefits in studying and specialising in Malta).*		X

[40]**Refer to Malta Recovery and Resilience Program**
[41]**Refer to Strategic Action F of Theme 6 of the *National Post Pandemic Strategy* (this has been adapted accordingly to the digital domain)**

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Key Themes	No.	Action or Recommendation	Action	Recommendation
	4.1d	Support and incentivise ICT professionals for more specialised digital training and certification. *(e.g. specific funding scheme for career paths through industry certifications.*		X
	4.1e	Actively consider the establishment of a Centre of Excellence and potentially a specialised school for the digital domain, giving particular focus to the areas of specialisation as identified within the Smart Specialisation Strategy. *(e.g. Advanced Smart and Innovative Technology learning Centre).*		X
	4.1f	Follow up and promote the European e-Competence Framework and encourage other frameworks that are more applicable to specific industries. *(e.g. through a national campaign, roadshows, or events).*		X
	4.1g	Actively promote the ICT profession through various events and campaigns on a national scale. *(e.g. strong national campaign).*		X
Seek the Professional recognition	4.2a	Conduct a study on how to establish a formal professional network of ICT professionals and implement resulting recommendations accordingly. *(e.g. implementing recommendations put forward by local studies, setting up and sponsoring a local computer society).*	X	
Address the Skills gap	4.3a	Establish specialised learning plans that follow nationally recognised career frameworks, and that keep in view of the local digital market requirements. *(e.g. based on the European e-Competence Framework).*	X	
	4.3b	Consider establishing a national platform for digital skills, in collaboration with industry stakeholders, that includes the specialised learning plans and relevant courses. *(e.g. the Digital Skills and Jobs Platform being developed by the eSkills Malta Foundation).*		X
	4.3c	Develop a Continuous Professional Development (CPD) toolkit for digital skills as a means to enable ICT professionals to systematically maintain and improve their knowledge, skills and competencies on an ongoing basis. *(e.g. in collaboration with the ICT industry).*	X	

Key Themes	No.	Action or Recommendation	Action	Recommendation
	4.3d	Attract leading universities and companies specialising in digital technologies to invest in Malta[42]. *(e.g. through a comprehensive national campaign)*	X	
	4.3e	Further offerings and availability of training and certifications in emerging and disruptive technologies such as Machine learning and AI. *(e.g. encouraging and agree with local Universities and Colleges to launch certificate courses).*		X
	4.3f	Seek to represent the digital skills domain within the centralised internship and placement agency proposed to be established[43].	X	
	4.3g	Further promote and incentivise the uptake of the work-based learning approach such as through apprenticeship and internship programmes so as to hasten the availability of the digital skills required. *(e.g. set-up a national ICT work-based learning scheme which can be used by all local educational institutions through the review of foreign best-practices).*	X	
	4.3h	Actively consider, from an employers' perspective, the organisational participation in apprenticeship and internship programmes or even potentially consider freelance work within the digital domain as a means to address digital skills shortages. *(e.g. incentivise ICT employers with benefits to participate, part of 4.3g).*		X
	4.3i	Seek to promote accordingly the fiscal incentives aimed at continued work after retirement and those aimed at training/mentorship programmes at the place of work by the retired workers,[44] keeping retiring/retired ICT professionals in mind. *(e.g. introduce a government scheme whereby ICT organisations can make use of retired ICT professionals).*	X	
	4.3j	Seek effective ways how to develop migrants' digital skills further.[45] *(e.g. as part of a migrant employment scheme).*	X	
	4.3k	Capitalise on actions to increase employment and secondment opportunities, for underprivileged groups, with a particular focus on people with disabilities[46] also within the digital skills domain. *(e.g. highly equipped hot-desk hubs for ICT Gig-workers).*	X	
	4.3l	Support investment in high-quality local coworking spaces in Malta and Gozo and develop guidance and policies to support flexible, hybrid, and remote working practices[47], also within the digital skills domain. *(e.g. highly equipped hot-desk hubs for ICT Gig-workers).*	X	

[42]**Refer to Business Persona Action 25 of** *Malta Diġitali* [43]**Refer to Recommendation 21 of the** *National Employment Policy 2021-2030*
[44]**Refer to Recommendations 19 and 3 respectively of the** *National Employment Policy 2021-2030 .* [45]**eSkills Manifesto refers to a good practice from Sweden whereby young digitally skilled migrants are trained as ICT guides for elderly Swedes, who in turn teach them local language, history and culture.** [46]**Refer to Strategic Action C of Theme 3 of the** *National Post Pandemic Strategy* **from which it was adapted.**

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Key Themes	No.	Action or Recommendation	Action	Recommendation
Address gender imbalance	4.4a	Seek to address gender imbalance by facilitating remote or hybrid work within the private sector and public administration.[48] *(e.g. introduce benefits and schemes to implement remote and hybrid working, set up a Remote Working Support centre to tackle remote-working).*	X	
	4.4b	Incentivise industry-led training programmes for women re-entering the labour market with a focus on STEM careers. [49]	X	
	4.4c	Promote best practices[50] to influence gender equality in the labour market with particular focus on ICT.		X

[47]**Refer to Strategic Action I of Theme 3 of the** *National Post Pandemic Strategy*
[48]**Refer to Business Persona Action 6 and Government Persona Action 28 of** *Malta Diġitali*
[49]**Refer to Recommendation 17 of the** *National Employment Policy*
[50]**In areas related to attracting and retaining female employees, promoting female leadership and awareness on related legislation, as highlighted within the** *eSkills Malta Foundation 2018 Guidelines to Increase and Retain Women in ICT*

Stronger leadership role and shared responsibility

Collaboration

Benchmarking

4. Governance enablers

Funding

Focused Strategic Alignment

4.1 Stronger leadership role and shared responsibility

A strong leadership role in a domain that, in essence, leads to various actions by multiple stakeholders is key to effective strategy governance in terms of its progress and expected outcomes. Elevating the role of the eSkills Malta Foundation to one that is more strategic and that fosters stronger collaboration amongst the various digital skill stakeholders on a national scale would be necessary. The eSkills Malta Foundation would be in a better position to advise government and liaise accordingly with the various stakeholders on a local and EU level. It should also be in a position to leverage higher influence in using EU funding for digital skills projects and to facilitate a strategic rather than a piecemeal approach to tackling digital skill challenges through various initiatives by multiple key stakeholders.

This does not imply that eSkills Malta Foundation shall also be responsible for implementing the Strategic actions or recommendations made. It shall serve as a driver towards successfully monitoring the implementation of the Strategy actions or recommendations made within a context of clear ownership, as well as stronger cooperation and collaboration. The strategy shall thus call for all other stakeholders to share responsibility and proportionately contribute their part to further digital change within the digital skills perspective.

4.2 Collaboration

Indeed, a strong collaborative approach is at the core of growing the talent pool of a skilled ICT workforce and advancing the profession, which has become the backbone for all economic sectors for innovation. This can only be attained if all stakeholders of the economy participate in the design, development and implementation of strategic initiatives, ensuring communication, coordination and alignment in the process. In this manner, ICT professionalism may be strengthened, and the increasing skilled ICT talent shortage may be mitigated. Such modes of cooperation would be required not only to address digital skills on the broad national multi-stakeholder level but also within the specific sectors and elements that contribute, indirectly or otherwise, to such a wider perspective.

4.3 Benchmarking

Ongoing monitoring of the Strategic progress shall need to be made not only against the deliverables set by the individual actions and possible implementation of recommendations but also with a view to the goals and outcomes set on a national and on a European/international scale. National, international or European recognized set targets, as well as key performance indicators, should help accordingly.

The use of benchmarks is not to be limited to the overall implementation of the strategy but also in its various constituent actions. The use of Competence Frameworks for digital skills by various stakeholders primarily calls for ongoing assessments as against expected levels of skill and competencies required, with a view to being able to conduct the necessary progress required.

Therefore, effort should be made accordingly to track and measure attainment levels on a regular rather than on an ad-hoc basis of

- Goals and outcomes where applicable for activities forming part of each of the four pillars — which could be based upon established frameworks locally or on an EU or international scale [xlii].

- Attainment levels targeted on the eSkills strategy as a whole or through its individual constituent pillars, the bases of which could be EU-wide or internationally established goals or those set on a national scale to be reached within a stipulated period of time.

4.4 Funding

Financial support within the domain of digital skills, through local and EU funds, shall need to cover all four key pillars — the education aspect from primary to tertiary levels and inclusive of its key stakeholders, society, the non-ICT workers, as well as the ICT professionals. This needs to be seen as an integral part of the transition to the wider economy occurring within both the public administration and the private sector. Hence, relevant funds may have already been factored in within the context of other relevant strategic planning and budgeting initiatives. Local fiscal support schemes, such as those provided to SMEs with respect to digitalisation need to be further pursued and, most importantly, actively promoted for their wider utilisation.

4.5 Focused Strategic Alignment

Specialist digital strategies such as those for AI and Cybersecurity are already addressing the build-up of digital skills within their context. The pertaining skills range from those at a basic level through awareness to more advanced skills that need to be covered by formal education and/or other forms of ongoing training initiatives at the workplace.

Various specialist business sectors and domains, as identified on a national scale, also cover the corresponding digital skills needed and which thus form part of the national formation of digital skills for the coming years.

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Key Themes	No.	Action or Recommendation	Action	Recommendation
Stronger leadership role and shared responsibility	5.1a	Elevate the role of eSkills Malta Foundation so as to facilitate the framework of cooperation and collaboration needed and to leverage higher influence in the use of related EU funds.	X	
	5.1b	Advocate the need for all stakeholders in contributing effectively to the implementation of strategic actions as appropriate	X	
	5.1c	Promote and encourage the use of EU funds for digital skills initiatives, as appropriate.	X	
	5.1d	Follow up and actively participate in EU and international working groups, fora, initiatives and developments on digital skills and liaise with local stakeholders accordingly.	X	
	5.1e	Facilitate further ongoing strategic thinking and concrete proposals for a contextualised future Maltese digital skills scenario, even by seeking active participation in relevant skills bodies[51] and relevant skills activities[52] of national importance.		X

[51]**Such as the National Skills Council**
[52]**Such as skill related surveys**

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Key Themes	No.	Action or Recommendation	Action	Recommendation
Collaboration	5.2a	Encourage and foster approaches that ensure clear ownership, coordination and cooperation that, in turn, facilitate collaboration amongst the various stakeholders contributing to the digital skills domain.		X
Benchmarking	5.3a	Establish or apply established (international/EU/local) metrics as applicable on an overall strategic level	X	
	5.3b	Seek to identify, agree upon and establish metrics on an individual project/activity level and monitor progress accordingly		X
	5.3c	Monitor progress of Strategy implementation on an established regular basis as against goals set within the respective projects or on a wider scale.	X	
	5.3d	Agree upon and establish competence frameworks for digital skills to be applied as appropriate.	X	
Funding	5.4a	Actively seek sources of funds from the EU and locally as financial support for the actions to be undertaken.	X	
	5.4b	Encourage and promote the utilisa-tion of funding schemes and incen-tives contributing to improving digital skill availability, especially in the private sector.	X	
Focused Strategic Alignment	5.5a	Seek to follow existing national sectoral or specialist strategies where related actions and recommendations aim directly or indirectly to the actions/recommendations highlighted within this Strategy.	X	

5. Conclusion

National eSkills Strategy 2022 - 2025

This strategy aims to highlight the key salient areas that need to be seen to within the coming three years so as to address the European and global digital skill challenges within the local context.

Overall, it takes a holistic perspective of what needs to be addressed so as to ensure that the opportunities and challenges within the eSkills domain can be comprehensively challenged. It views education in digital skills as an ecosystem that, in essence, goes beyond focusing solely upon the learner and the educator or that simply focuses on a particular set of digital skills to the exclusion of other equally important ones. It also embodies the notion of education as a life-long process, which is indicated more clearly within the context of ICT professionals as well as the rest of the workforce, the latter of whom essentially need to recognize and embrace digital technologies as an integral part of their work. The eSkills strategy also gives the concept of inclusivity due focus by seeking to address the gender digital skills disparity as well as proposing ways of engendering societal engagement within the digital domain to the maximum extent possible.

In the process, the strategy seeks to provide a comprehensive set of actions, some of which may have already been highlighted in other existing strategies. In this manner, coherence and consistency could be ensured whilst seeking to avoid duplication of effort, especially during monitoring of the progress of Strategy implementation. Several recommendations are also stated, as applicable, so as to ensure that the strategic approach towards digital skills for the coming years is tackled in a more comprehensive and holistic manner.

Nonetheless, the proposed actions or recommendations are not cast in stone. They may need to be reviewed further, depending upon contemporary changing social, economic and technological developments. One key factor, however, remains unchanged. It is the clear understanding, willingness and ability of all stakeholders - political, economic and social ones - to contribute in some way or another to the right aptitudes, skills and competencies needed by all to work and interact effectively in an increasingly digital world of the future.

The eSkills Malta Foundation has, since its inception, sought to take a leading role towards a strategic approach to addressing digital skills opportunities and challenges arising on a national scale. It shall pursue its commitment to strategic progress that looks beyond the immediate market needs and requirements. However, it cannot see to it alone. Cooperation and coordination by all stakeholders are key in ensuring the long-term sustainability and, ultimately, the successful goals and outcomes of the strategy.

Vocabulary

Basic digital skills	Digital skills to study, work, communicate, access online public services and find trustworthy information[xliii].
Digital Competence	The set of knowledge, skills, attitudes (including abilities, strategies, values and awareness) and behaviours that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socialising, consuming, and empowerment . It is a transversal key competence which enables the acquisition of other key competencies[xlv].
Digital Density	Measures the impact of digital technologies on economic growth, underlying the importance of investments in both business and public digital development to foster economic growth. Its index is built from 50 indicators that are grouped into four activity areas: making markets, sourcing inputs, running enterprises and fostering enablers .
Digital Skills	See eSkills
eCompetence Framework	A tool aimed to improve the digital competence of whom it is intended on an ongoing basis.
eSkills	Another word for digital skills, taken to mean digital abilities needed to make use of Information and Communication Technologies (ICTs) as well as to those required to apply and develop the ICTs to perform a given job successfully[xlvii] .
Reskilling	Process of learning new skills to find a different job or career path.
Upskilling	Process of learning new skills or of teaching workers new skills to the existing skills set.

Endnotes

[i]Dutta, S. & Lanvin, B. (2020) The NRI 2020, Accelerating digital transformation in a post-COVID Global economy. Portulans Inst.

[ii]https://intelligence.weforum.org/topics

[iii]European Centre for Development of Vocational Training CEDEFOP (2018)

[iv]https://intelligence.weforum.org/topics

[v]bid

[vi]https://digital-strategy.ec.europa.eu/en/library/proposal-decision-establishing-2030-policy-programme-path-digital-decade

[vii]To be reviewed by 2026

[viii]https://education.ec.europa.eu/document/digital-education-action-plan

[ix]Punie,Y. (2019) SELFIE's sister projects on Learning and Skills, The European Commission's science and knowledge service Joint Research Centre.

[x]Gauci T. M. (2021). An analysis of educational attainment in Malta - Policy Note June 2021 Central Bank of Malta

[xi]https://nso.gov.mt/en/News_Releases/Documents/2022/02/News2022_026.pdf

[xii]In this case, the digital skills areas where a high percentage of persons resulted to be more fluent in, were for accessing information and for communication.

[xiii]Taken to include by the WEF GCI, by way of example as, computer skills, basic coding, digital reading.

[xiv]National Survey Report, eSkills Malta Foundation, PwC 2022

[xv]Micro-enterprises defined as made up of one to ten employees

[xvi]https://eskills.org.mt/en/Pages/eSkills-Malta-Foundation.aspx

[xvii]https://eskills.org.mt/en/Pages/eSkills-Manifesto.aspx

[xviii]Adapted from https://www.coe.int/en/web/digital-citizenship-education

[xix]Adapted from Cunha and Heckman, 2007, 2008; Cunha, Heckman, and Schennach, 2010, OECD

[xx]https://www.oecd.org/education/2030-project/contact/OECD_Learning_Compass_2030_Concept_Note_Series.pdf

[xxii]bid

[xxii]THE NETWORK READINESS INDEX 2020 Accelerating Digital Transformation in a post-COVID Global Economy

[xxiii]https://intelligence.weforum.org/topics/a1Gb0000000LPFfEAO/key-issues/a1Gb00000015QnVEAU?utm_source=Weforum&utm_medium=Topic+page+DidYouKnow&utm_campaign=Weforum_Topicpage_UTMs

[xxiv]Fabri JP, Fenech G, Ellul J, Marmara V; (2020) Digital Malta, Digital transformation as a route to national productivity and competitiveness. National Productivity Report 2021

[xxv]https://www.schooleducationgateway.eu/fr/pub/teacher_academy/catalogue/detail.cfm?id=174914

[xxvi]https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.465.5406&rep=rep1&type=pdf

xxviihttps://www.uneca.org/sites/default/files/COVID-19/Leveraging-Digital-Transformation-post-COVID-19-era/NRI%20 2020%20Final%20Report%20October2020%20%281%29.pdf

xxviiiSuch as career exposure experience programs

xxixSuch as through hackathons, gamification.

xxxFor example, in the field of data sciences, the drawing of valid insights from data would require training in statistics and computer science, apart from subject area knowledge.

xxxihttps://www.itu.int/en/ITU-D/Digital-Inclusion/Documents/ITU%20Digital%20Skills%20Toolkit.pdf

xxxiihttps://digital-strategy.ec.europa.eu/en/policies/digital-skills-and-jobs

xxxiiihttps://www.oecd-ilibrary.org/education/oecd-skills-outlook-2019_4459d32d-en

xxxivhttps://www.itu.int/en/mediacentre/backgrounders/Pages/skills-development-digital-economy.aspx

xxxvFor example, exposing the validity of the use of social media tools not just for recreational purposes but also for productivity purposes such as in study and at work.

xxxviFabri JP et al(2020), op. cit.

xxxviihttps://eskills.org.mt/en/Documents/eSkills_Manifesto_2016.pdf

xxxviiihttps://www.computerweekly.com/news/252512123/Gartner-IT-spending-forecast-points-to-skills-rebalance

xxxixhttps://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.465.5406&rep=rep1&type=pdf

xlhttps://sustainabledevelopment.gov.mt/wp-content/uploads/2021/10/Maltas-Sustainable-Development-Vision-for-2050.pdf

xlihttps://eskills.org.mt/en/Documents/eSkills_Manifesto_2016.pdf

xliiSuch as through the e-Competence Frameworks

xliiihttps://digital-strategy.ec.europa.eu/en/policies/digital-skills-and-jobs

xlivFerrari, A (2012), Digital Competence in Practice: An Analysis of Frameworks, JRC Technical Reports, European Commission.

xlvKelentric, M., Helland, K. and Arstorp, A (2017) Professional Digital Competence Framework for Teachers, Senter for IKT I Untdanningen.

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xlviihttps://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:ESkills#:~:text=E%2Dskills%20or%20 electronic%20skills,to%20apply%20and%20develop%20them.
and https://social.hays.com/2019/10/04/skills-competencies-whats-the-difference/