REALISING DIGITAL MYANMAR

Leapfrogging to an inclusive digital economy

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THE GOVERNMENT'S VISION FOR DIGITAL MYANMAR

Following four decades of isolation, economic reforms beginning in 2011 have driven Myanmar's reintegration with the international community. This has set off an extraordinary series of events, including the liberalisation of the telecom sector and a democratically elected government. This creates new opportunities for the country to leap-frog from one of the least developed economies, to a low- to middle-income country equipped for the 21st century. According to the McKinsey Global Institute, the size of Myanmar's economy is expected to quadruple by 2030.

While the government has created the right conditions for the telecommunication sector to grow to a 105% SIM penetration, 80% smartphone penetration and the among the fastest mobile broadband in Asia in just 3 years[1], Myanmar will need to adopt digital solutions to its most pressing challenges[2], establishing a Digital Economy in the process. In August 2016, Myanmar's democratically elected government issued a people-centred 12-point Economic Policy, which aims to attract sustainable investment, increase employment and skills while raising competition. The plans aim to establish a digital government strategy and an e-government system, as well as a data ID card system.

Through modernizing its critical agricultural, tourism, manufacturing, financial services and infrastructure sectors, improving tax collection and trade, upgrading the education system, expanding the reach of the health system to building environmentally sustainable cities, widespread adoption of digital technologies will provide inclusive and sustainable socio-economic development across all states and divisions as targeted by the government's 12-point Economic Policy.

To facilitate Myanmar's digital transformation, the government established the Digital Economy Development Committee (DEDC) with Vice President U Henry Van Thio as patron. During the inaugural meeting of the DEEDC, he emphasised the Committee was: "formed with the intention of performing the tasks of effective and successful implementation of national economic policies, provision of governmental supports for the successful emergence of digital economy in the country, development of other economic sectors based on digital economy, development of social affairs, education, health and economy by the use of digital technology, creating Myanmar as a digital hub of ASEAN region by upgrading better economic environment and digital technology. "

The Digital Economy Development Committee is in the process of setting up goals to be achieved by 2020.

DIGITAL ECONOMY DEVELOPMENT COMMITTEE GOALS 2020

1 **5%**
additional GDP growth due to Digital Economy (direct & spillover effects)

2 **75%**
employment rate of ICT graduates

3 **80%**
of G2B and 50% of G2C services digitized

4 **10Mbps**
internet nationwide, ultra-high speed internet in major cities

5 **50%**
of transactions cashless

6 **50%**
of micro, small and medium enterprises (MSMEs) using technology

7 **2x**
local digital startups

8 **3x**
increase in digital foreign investment

9 **Top 100**
rankings on global indexes[3]

[1] ITU, Ministry of Transport and Communications
[2] McKinsey Global Institute, 2013
[3] E-Government Development, Network Readiness, Ease of Doing Business, Global Innovation Index

THE GOVERNMENT'S VISION FOR DIGITAL MYANMAR

HOW IS MYANMAR DOING[4]?

Myanmar's Digital Economy has high potential if appropriate digital policies are developed and implemented. Due to many years of low economic development, the country trails its regional peers in a variety of digital rankings, ranging from the World Bank's ease of doing business, the UN's e-government index, networked readiness index, the ICT development index and fixed broadband penetration, due to a legacy of low economic development. However, following supporting reforms and policies in the telecommunications sector, mobile related indicators are on-par with or leading the region, with SIM penetration of more than 105% percent, of which 80% are attached to a smartphone. However, given the low unique SIM penetration, there is still a lot of room for growth and particularly for rural, remote and vulnerable populations. Furthermore, Myanmar leads ASEAN in 3G/4G rollouts with 90% of the population living within range of mobile broadband. Though the unique mobile subscriber rate stands at 50%, uptake is impressive and shows good growth potential. It is evident that basic reform and liberalization delivered results; going further requires more targeted and sophisticated reforms as will be explained in this report.

Myanmar is thus a "digital native" country, with widespread use of smartphones and high penetration of mobile broadband. The country presents a unique test environment for digital services; it also points to the potential of Myanmar's Digital Economy to leapfrog its peers, given the right conditions.

80%
SMARTPHONE PENETRATION

50%
UNIQUE MOBILE SUBSCRIBERS

105%
MOBILE BROADBAND PENETRATION

A REGIONAL COMPARISON

Country	WB ease of doing business ranking	UN e-gov Rank	Global IDI[5] Ranking	Networked readiness index ranking	Total Mobile Penetration	Unique Mobile Subscribers	3G + 4G	Smart-phone %	Fixed broadband %
Myanmar	171	169	135	133	105%	50%	90%	80%	0.1%
Thailand	26	77	78	62	122%	85%	82%	59%	10.7%
Indonesia	72	116	111	73	126%	58%	40%	40%	1.9%
Singapore	2	4	18	1	145%	72%	63%	78%	25.4%
Malaysia	24	60	63	31	142%	76%	60%	65%	8.7%
Vietnam	68	89	108	79	152%	50%	36%	28%	9.9%

4   World Bank, World Economic Forum, UN, GSMA, ITU, Ministry of Transport and Communications, Telenor estimates
5   ICT Development Index

TELENOR'S SHARED VISION FOR DIGITAL MYANMAR

Telenor believes that the development of a Digital Economy is vital for inclusive and sustainable socio-economic development and increased foreign direct investments across all states and regions. Telenor is committed to supporting Myanmar's Digital Economy plan and collaborating with all the stakeholders from government, private sector and civil society to reach this goal. Since 2013, Telenor has been building the largest mobile network throughout Myanmar, the vital infrastructure required for Myanmar's digital ascent.

Myanmar's lack of digital legacy provides opportunities to learn from the accumulated experience of other countries and deploy the latest technology in supporting economic growth.

Telenor recommends that strong Digital Foundations are built – digital frameworks, digital infrastructure, digital ecosystem and digital skills. This then allows Digital Services that contribute to economic growth to be built on these firm

foundations – digital government, digital enterprises and digital consumers.

Telenor's suggested focus areas are aligned with the government's 12-point Economic Policy and the Digital Economy Development Committee's Strategy Framework. Our framework is intended as a complementary way of presenting the opportunities, challenges and a roadmap to reach our shared vision of inclusive and sustainable socio-economic development.

DIGITAL MYANMAR

DIGITAL SERVICES

5 Digital Government

6 Digital Enterprises

7 Digital Consumers

DIGITAL FOUNDATIONS

| **1** Digital Frameworks | **2** Digital Infrastructure | **3** Digital Ecosystem | **4** Digital Skills |
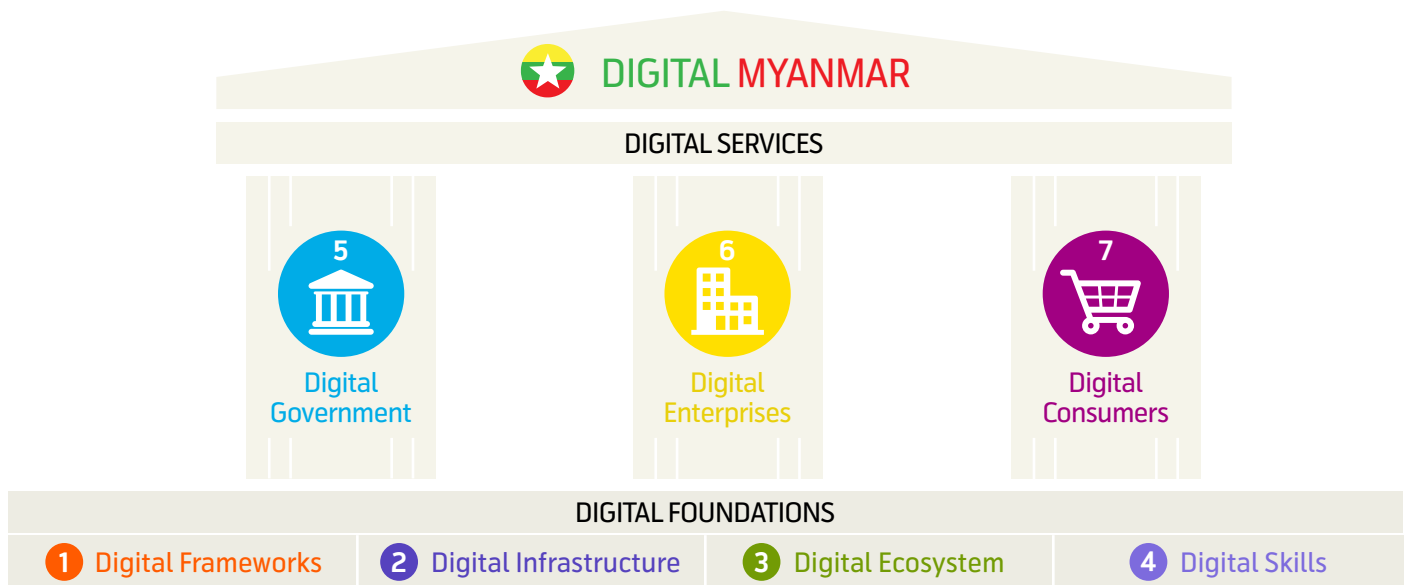
MAJOR MILESTONES WE WOULD RECOMMEND BY 2023 INCLUDE:

1 Digital Economy Development Master Plan drawn from and implemented by an empowered Digital Economy Development Committee, supported by the best digital laws and regulations in ASEAN and rule of law.

2 USF funding for rural mobile broadband deployment to cover **95%** of the population by 2022[6]

3 Supportive ecosystem for digital startups – innovation centres, digital financial services, digital ID

4 Digital literacy curriculum in schools, and fixed broadband access at all universities

5 Significant penetration of G2B and G2C services and ICT used in all Ministries

6 50% of SMEs using digital G2B, B2B and B2C services

7 Localised m-agri, m-livestock and m-fishery digital content and services available

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[6] Post and Telecommunications Department, Universal Service Strategy for Myanmar (2018 to 2022), Draft for public consultation

FOCUS AREA 1:
DIGITAL FRAMEWORKS

A well designed digital framework is a critical foundation to develop a digital economy and a driver of foreign direct investment. A Digital Economy can only be holistically developed with a Digital Economy Development Master Plan and commitment from all levels of government. The Master Plan has to be supported by enabling laws and regulations, which have to be enforced fairly and transparently in line with the rule of law.

CHALLENGES

Upholding the rule of law and combating corruption are both government priorities – this creates a major opportunity to improve Myanmar's Ease of Doing Business ranking from its current level of no. 171 in the world[7]. This will draw much needed foreign investment and expertise in the country's nascent Digital Economy. When rule of law is replaced by subjective and inconsistent decision making across government bodies, this opens avenues for continued lack of transparency. This will inhibit Myanmar's efforts to improve its global rankings.

Enacting laws that support a Digital Economy are a critical part of the digital ecosystem. In a newly opened economy such as Myanmar, there are opportunities to benefit from global experience and by consulting experts when drafting protective laws such as the delayed Cyber Crime and Electronic Evidence Act and additional laws around data protection, digital / intellectual property rights and digital privacy, alongside enabling laws for e-commerce. These laws have not yet been enacted, creating uncertainty and hindering the Digital Economy.

Regulatory bodies created to ensure compliance with laws and regulations need to be empowered, trained to international standards and independent of government to ensure decisions are made to facilitate long term economic development. This includes the telecoms regulator, which is still not independent as mandated by the end of 2015 in the Telecoms Law.

On a more practical level, the lack of standardization has caused significant issues for businesses, government and consumers alike – digital interbank payments, non-interoperable mobile payment platforms and non-standard Myanmar fonts not being legible on all devices and applications.

GOVERNMENT ACTIONS TO DATE

The government has enacted the Telecoms Law 2013. The Council of Europe has drafted the Cybercrime and Electronic Evidence Act, but this has not been passed[8].

The government has also enforced the use of Unicode in all government communications as a first step to standardization, but has not enforced it nationally on device manufacturers or software developers[9].

TELENOR RECOMMENDATIONS

Telenor would recommend that digital laws, particularly the delayed and already-drafted Cyber Crime and Electronic Evidence Act should be passed without further delay, alongside laws on data protection, digital privacy, intellectual property rights and e-commerce protecting the rights of businesses and citizens.

The telecommunications regulator should be made independent to ensure decisions are taken in line with long term national interest.

Laws and regulations should be interpreted and enforced in line with international conventions on the rule of law. In addition to developing the Digital Economy, these actions will automatically improve Myanmar's World Bank rankings on the ease of doing business, helping to attract foreign investment to other sectors of the economy.

A holistic Digital Economy Development Master Plan should be created with international assistance and extensive local consultation.

The existing Digital Economy Development Committee could be appointed with capable full-time staff from both the private and public sector with a mandate and incentive to implement the Master Plan. Influential government figures could be appointed full-time to coordinate, negotiate, and where necessary, mandate Ministries to follow the Master Plan. The Committee could be supported with expertise and funding by both government and multilateral agencies.

The government should aim for Myanmar to be an ASEAN digital hub in the long term. A Digital Economy Investment Promotion Policy should be developed to attract international investors to Myanmar's digital startups. The government should enforce the standardization of Unicode Myanmar fonts in all devices and digital services, similar to the Cambodian government's action in 2010, which resolved its font issues[10].

7   World Bank, 2017
8   Cyber-Security – Myanmar Centre for Responsible Business
9, 10 Battle of the fonts, Frontier Myanmar, 23rd March 2016

FOCUS AREA 1: DIGITAL FRAMEWORKS

SUGGESTED TARGETS FOR 2023

1 Best digital **laws and regulations** in ASEAN implemented

2 Independent telecommunications **regulator**

3 **Rule of law:** enforced nationwide

4 Digital Economy **Development Master Plan** drawn and implemented

5 Digital Economy **Development Committee** empowered to implement Master Plan

6 Digital Economy **Investment Promotion Policy** developed

10 CHALLENGES ARISING FROM THE LACK OF A CYBERCRIME LAW AND ENFORCEMENT

Low understanding amongst civil servants, lawmakers and law enforcement agencies of Digital Economy and related cybercrime

Illegal e-commerce sites may establish in Myanmar – e.g. drugs trafficking

Low ecosystem security may attract international cybercriminals to Myanmar

Social exploitation of vulnerable citizens through child sexual abuse content, cyberstalking, cyberbullying

Vital government and financial services systems may be targeted by **international hackers**

Unclear and subjective boundaries between freedom of expression and cybercrime

Barrier to foreign investment in technology due to **lack of protection**

Social unrest from intentional spreading of hate speech and fake news

Lower digital and financial inclusion as consumers do not trust digital services

Raised ICT security costs for government and businesses

FOCUS AREA 2:
DIGITAL INFRASTRUCTURE

Strong digital infrastructure is a necessary backbone in building a Digital Economy. Since Myanmar's telecommunications market was opened in 2013, significant domestic and foreign investments have been made, accounting for 47% of foreign direct investment in the fiscal year 2016-2017[11]. For the fiscal year 2017-2018 (up to Nov '17, telecommunication investments from the existing operators represented the largest FDI portion[12]).

As a result, 90% of the population was covered by mobile voice and broadband within 3 years (from around 7% in 2013) and there have been significant improvements in fixed broadband availability and affordability in the main cities of Yangon and Mandalay, contributing to economic development and empowering societies. Telenor Myanmar's investments accounted for 5.2% of Myanmar's GDP in 2015 and created over 110,000 new jobs[13].

Owing to the lack of legacy, Myanmar's digital infrastructure uses the latest technology. According to OpenSignal, the world's biggest coverage crowdsourcing project, Myanmar's 3G networks reportedly delivered mobile data download connection of 4.79 Mbps on average while similar networks in many other Asian and Southeast Asian nations delivered less than 3.5 Mbps on average only. Telenor Myanmar's 3G network reportedly provided an average of 5.5 Mbps[14].

The speed and quality of Myanmar mobile broadband network, coupled with Myanmar's 80% smartphone penetration, provides a solid foundation to build government and private digital services that can leapfrog Myanmar into the 21st century, learning from and implementing the accumulated experience of other countries.

To achieve the inclusive development stated in the government's 12-point Economic Policy, digital infrastructure needs to reach remote areas of Myanmar. The Universal Services Fund (USF) cited in the Telecom Law, which is scheduled to be implemented in 2018, provides an opportunity to bring such infrastructure into rural areas that would otherwise not be economically viable. The draft Strategy document was released for public consultation in January 2018. However, the Policies and Governance structure of this important fund needs to be aligned with the overall Myanmar Digital Policies, which are yet to be developed and implemented.

CHALLENGES

Telecommunication infrastructure which now covers over

90%

of the population has developed significantly faster than another vital infrastructure required to support its development – electricity, which only covers

34%

of the population[15]. Rural sites with no electricity have had to rely on diesel generators, creating environmental and noise pollution; the public outcry on noise pollution in particular has attracted the attention of the Ministry of Transport and Communications[16].

Inconsistent and delayed enforcement of laws and regulations may create a risk for digital inclusion, making it less accessible or affordable for consumers. In the case of build permits, fibre right of way, imports and taxes, this inconsistency decreases the feasibility and speed of rural infrastructure deployment. The lack of security and peace in border areas further compounds the issue of low rural digital inclusion.

GOVERNMENT ACTIONS TO DATE

Since the promulgation of the Telecom Law in 2013, the Union Government has issued four types of licenses[17]. It has allocated spectrum in the 1800 and 2100 MHz bands and auctioned the 2600 MHz band to local and international providers[18]. Coupled with overland and submarine international connections, this has led to significant increases in coverage and quality of voice and data services covering over 90% of the population nationwide in the space of only 3 years.

The government has similarly embarked on an ambitious National Electrification Plan, aiming for 100% of households to be connected by 2030[19], and is actively negotiating a nationwide peace agreement with ethnic armed groups[20].

[11] Myanmar Investment Commission, 20th December 2016
[12] Directorate of Investment and Companies Administration, 20th December 2017
[13] KPMG: Telenor's Global Impact, December 2016
[14] OpenSignal Survey: network speed tests conducted regularly over a time period from May 2016 to September 2017
[15] Department of Electric Power Planning, 2016-17
[16] Union Minister statement at the Pyithu Hluttaw, 9th September 2016
[17] "Telecommunication Licensing Framework In Myanmar", Posts And Telecommunications Department
[18] "Myanmar 1.8GHz spectrum costs operators $80M each", Mobile World Live, 22nd May 2017
[19] "Ministry talks target of 100% electrification by 2030", Myanmar Times, 19th June 2015
[20] "Third Session of 21st-Century Panglong Peace Conference to Convene in January", Irrawaddy, 27th November 2017

FOCUS AREA 2:
DIGITAL INFRASTRUCTURE

TELENOR RECOMMENDATIONS

Telenor would recommend that the government prioritises long term digital economic development instead of maxi-mising government revenues in the pricing and allocation of public natural resources such as spectrum. This is of vital importance in light of changes in the value chain where operators are more dependent on service providers throughout the value chain, rather than controlling the whole chain.

Affordable digital inclusion is at the core of a Digital Economy. To continue this trend, mobile and fixed infrastructure rollout should remain high on the government's agenda, alongside enforcing rule of law, transparency and a uniform build permit framework and right of way allocations throughout the Union. The initial focus for USF funding should be placed on mobile infrastructure and fibre, as rural populations will access the internet through mobile broadband for the foreseeable future. We support the USF strategy for 99% mobile voice coverage and 95% mobile broadband coverage by 2022[21]. Reconsidering land zoning restrictions to permit tower construction in agricultural and fallow land would aid rural tower deployment, reduce noise pollution concerns and would allow mobile services to be more affordable in line with international standards.

In urban areas, fixed broadband will become increasingly important especially as SMEs digitise– the government could facilitate the rollout of metro-broadband networks through transparent right of way allocations and permitting the use of electricity poles for fibre.

The government should also continue to invest in national grid expansion and conclude the peace process so digital infrastructure reaches the farthest reaches of the country and improves access and affordability.

CASE STUDY ON MYANMAR'S MOBILE MIRACLE

Prior to 2013, Myanmar's mobile penetration was amongst the lowest in the world at less than 7%. SIM cards could cost upwards of $3,000. Following the opening of the telecommunications sector and investment-friendly laws and policies, SIM card prices fell to $1.50, and mobile penetration rose to 105% by 2017. Myanmar has been one of the fastest growing countries in terms of net additions, according to Ericsson's Mobility Reports across 2015 and 2016, placing Myanmar at 3rd fastest, behind only India and China. Today, Telenor operates the largest mobile phone network in Myanmar with 8,000 towers covering over 90% of the population with an estimated 40% revenue market share, built within 3 years. The liberalization had a strong effect – boosting overall business confidence in the country and spurring the development of an entire industry, including tower companies and distributors and subsequent employment opportunities for Myanmar citizens.

TELENOR'S CONTRIBUTION TO MYANMAR (2014–2017)[22]

Total investment:
$2 BILLION

Financial contribution to Myanmar (taxes, license fees, CSR):
$250 MILLION

GDP contribution (2015):
5%

New jobs in supply chain:
110,000

Beneficiaries of education & health programmes:
540,000

SUGGESTED TARGETS FOR 2023

1 USF: rural mobile deployment prioritized (99% mobile voice coverage)

2 Easing metro-fibre rollout – transparent RoW allocation and ole access

3 Tower build in agricultural and fallow land permitted

4 High speed (>5Mbps) mobile data population coverage: >95% with USF support [23]

5 Affordable, high-speed (>10Mbps) fixed broadband in top 10 cities in line with international standards[24]

6 90% of households connected to grid

7 National peace agreement observed to permit digital infrastructure in border areas

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21   Post and Telecommunications Department, Universal Service Strategy for Myanmar (2018 to 2022), Draft for public consultation
22   KPMG: Telenor's Global Impact, December 2016 & Telenor internal data
23, 24 Linked to Digital Economy Development Committee 2020 Goals

FOCUS AREA 3: DIGITAL ECOSYSTEM

A functioning digital ecosystem is essential in creating an investment friendly Digital Economy that can directly contribute to GDP growth, in line with the government's Economic Policy. This ecosystem comprises of activities to promote digital entrepreneurship as well as enabling digital financial services and digital ID, which provide the foundation for innovative digital services for government, enterprises and consumers.
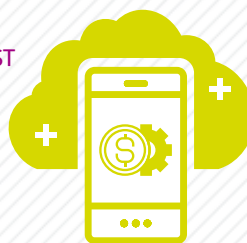
CHALLENGES

Digital start-ups challenge existing paradigms, creating innovation and growth in a Digital Economy. These start-ups require a conducive environment for their emergence and growth, including an incubation and support network, access to affordable financing, favourable taxation and an innovation-friendly legal and regulatory environment. While innovation centres like Phandeeyar and Social Impact Myanmar currently exist, there is an opportunity to holistically improve the environment for digital entrepreneurship in Myanmar.

Expanding access to financial services is necessary to ensure the Digital Economy has sufficient and affordable financing and payments mechanisms to grow sustainably. Enabling microfinance, unsecured bank loans, card payments and mobile payment providers such as Wave Money were important first steps. However, financial inclusion remains low at only 30% of the population accessing at least one formal financial service[25]. With a SIM penetration of over 105% and smartphone penetration of 80%[26], there are opportunities to improve financial and digital inclusion through the development of mobiledigital financial services.

The government's 12-point Economic Policy cites the need for a digital ID - while there are efforts to implement this at present, there are major opportunities to learn from successes such as India's Aadhar, which has improved digital inclusion, financial inclusion and access to government and private services. There is also a need to improve addressing in the country, as it is extremely challenging to identify individual houses or apartments uniquely, particularly in rural areas. Such addressing will be essential to long term development of digital services that require physical delivery, such as online shopping.

GOVERNMENT ACTIONS TO DATE

To support the digital startup community, the government is planning to open the Yangon Innovation Centre in April 2018[27].

Following the enactment of the Microfinance Business Law 2012, nearly 200 microfinance licenses have been awarded, with USD338m in outstanding loans as of early 2017[28]. The Central Bank Regulation on Mobile Financial Services has permitted 3 licenses to be awarded, with the first licensee being Wave Money, a joint venture between Telenor and Yoma Bank – both actions have raised financial inclusion substantially.

The Digital ID is a part of the government's 12-point Economic Policy, and a pilot project was underway as of January 2017 in Nay Pyi Taw, Mandalay, Yangon and Rakhine[29].

200
MICROFINANCE
LICENSES

USD 338 MILLION
IN OUTSTANDING
LOANS

30% OF THE POPULATION ACCESS AT LEAST ONE FORMAL FINANCIAL SERVICE[25].

[25] UNCDF: Making Access Possible
[26] ITU, Ministry of Transport and Communications
[27] Digital Economic Development Committee press conference, 9th January 2017
[28] ADB: Risk Analysis and Lending Profitably to MFIs and Cooperatives in Myanmar, May 2017
[29] "'Smart' ID pilot project rolls out in 4 test areas", Myanmar Times, 13th January 2017

Focus Area 3:
Digital Ecosystem

TELENOR RECOMMENDATIONS

The government should aim for a top 100 ranking in the World Economic Forum networked readiness index, which scores and ranks countries based on their conduciveness to digital innovation.

Citizens should be encouraged to access digital formal financial services as a digital eco-system can only thrive if easy access to credit and payments is available. The government should promote digital financial services in G2C and G2B transactions, and run campaigns to educate citizens on C2C and B2C transactions to raise financial literacy and inclusion. Interoperable digital financial services should be a key Central Bank policy, applying both to bank based and mobile based services.

A digital ID for all eligible citizens should be expedited, learning from the experience of India's successful Aadhar ID. This digital ID should be tied to digital finance services when ready. Leapfrog technologies such as blockchain-based IDs, as used in Estonia and planned in Dubai, Canada and Japan, could be considered to improve security and lower cost.

Support for local start-ups could be provided through a digital innovation centre, with incubation and financing platforms, including government seed funding for digital startups. Registration processes for digital businesses should be streamlined by decreasing capital requirements, registration fees and paperwork.

Tax incentives should be provided for eligible local ICT businesses, whose innovations should be showcased on a national and regional stage. The tax system should be designed to encourage use and uptake of data services, including ecommerce. Taxes and duties on basic ICT equipment (computers, tablets, and phones) reduced or eliminated to encourage adoption by businesses and consumers. Taxes should be applied fairly and evenly across all sectors, with select incentives for industries that contribute to social and economic development. Myanmar-born digital expats should be incentivized back through taxation or other means, while there should be streamlined visa programmes for gifted foreign digital talent.

SUGGESTED TARGETS FOR 2023

1 Top 100 ranking in Networked Readiness Index[30]

2 Digital ID for 100% of eligible citizens

3 Interoperable digital financial services a critical part of Central Bank Policy

4 95% of citizens with ID have at least 1 active digital financial service account

5 Digital Innovation Centre established: Tripled number of local digital start-ups from 2017[31]

6 ICT service and device taxes and duties reduced

7 Wide, internationally experienced digital talent pool

Focus Area 3:
Digital Ecosystem

AADHAR CASE STUDY

India has been innovatively investing in the building blocks of a Digital Economy generally, and digital financial inclusion specifically. Aadhar, a nationwide biometric identification system, improves simplicity and security for citizens to access government and private services. Implemented in 2010, the programme has provided digital IDs for 1.16 billion Indian citizens, 99% of the adult population, within 7 years[32]. Income tax filings, passport applications, bank accounts opening, pensions, government subsidies, voting, online storage and share investments are just some applications that have been significantly simplified through the Aadhar ID.

Furthermore, India's regulators have implemented new rules that give financial institutions greater flexibility to provide a wider variety of services. For example, new payment banks have increased access to formal financial services for the base of the pyramid; in 2014, the government launched a program to help the poor open formal accounts and now provides payments to citizens to them through these accounts. Myanmar has an opportunity to learn from large scale successes in Digital IDs for its own application.

> "" The [digital ID] system in India is the most sophisticated I have seen. It's the basis for all kinds of connections that involve things like financial transactions. It could be good for the world if this became widely adopted.

Paul Romer, Chief Economist at the World Bank,
March 2017[33]

AADHAR IN NUMBERS[34]

Population registered: **$1.16 BILLION**

Percentage of adult population: **99%**

Years operational: **7 YEARS**

TEN PRINCIPLES ON IDENTIFICATION FOR SUSTAINABLE DEVELOPMENT[35]

As Myanmar embarks on its digital ID journey, it is important any system developed follows the World Bank's Principles on Identification for Sustainable Development, as shown below.

INCLUSION:
UNIVERSAL COURAGE AND ACCESSIBILITY

1 Ensuring universal coverage for individuals from birth to death, free from discrimination.

2 Removing barriers to access and usage and disparities in the availability of information and technology.

DESIGN:
ROBUST. SECURE, RESPONSIVE, AND SUSTAINABLE

3 Establishing a robust - unique, secure, and accurate - identity.

4 Creating a plaform that is interoperable and responsive to the needs of various users.

5 Using open standards and ensuring vendor and technogy neutrality.

6 Protecting user privacy and control through system design.

7 Planning for financial and operational sustainability without compromising accessibility.

GOVERNANCE:
BUILDING TRUST BY PROTECTING PRIVACY AND USER RIGHTS

8 Safeguarding data privacy, security, and user rights through a comprehensive legal and regulatory framework.

9 Establishing clear institutional mandates and accountability.

10 Enforcing legal and trust frameworks through independent oversight and adjudication of grievances.

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[32] UIDAI State/UT wise Aadhaar Saturation, as of 31/12/17
[33] Bloomberg, "India ID Program Wins World Bank Praise Despite 'Big Brother' Fears" 16/3/17

[34] UIDAI State/UT wise Aadhaar Saturation, as of 31/12/17
[35] "Ten Principles on Identification for Sustainable Development", World Bank

FOCUS AREA 4: DIGITAL SKILLS

A competent and innovative digital workforce that builds digital services and citizens that consume a wide variety digital services are vital components of a Digital Economy.

Myanmar's population is digitally curious. When the telecommunications sector was liberalized in 2013, the population's interest in technology and improved affordability led to rapid increases in SIM penetration to over 105% and a smartphone penetration of 80%[36], one of the highest rates of smartphone penetration globally. Data usage is also high – an average monthly usage of 1.2 GB nationally, and a significantly greater 5.6 GB in urban 4G users on Telenor's network is comparable to other countries in the region. Social media and communication interest is high – with a Facebook population penetration of 27%[37] and a Viber population penetration of 35%[38].

27%
FACEBOOK POPULATION PENETRATION

35%
VIBER POPULATION PENETRATION

CHALLENGES

The promising data usage statistics hides the fact that Myanmar's internet usage is largely focused on consumption – social media, communications and entertainment – rather than economic or social development. This is due to issues in both the supply and demand of digital skills that form the backbone of a Digital Economy. These issues are significantly more pronounced in lower socio-economic groups in rural areas.

78%
OF INTERNET USERS HAVE POOR DIGITAL LITERACY[40]

11% OF CHILDREN

17% OF ADULTS
HAVE EXPERIENCED CYBERBULLYING[41]

On the supply side, shortcomings in the skills of Myanmar's digital workforce has created challenges for local and international investors. Employers have had to provide time consuming and costly work shadowing and retraining for computer science and engineering graduates. This requirement is significantly beyond the training requirement for similar graduates in other countries, making Myanmar's digital workforce less competitive, and spurring imports of skilled labour. Development of digital services in both the private and public sector has been slowed as a result, while the quality of some locally produced services has been below international standards.

On the demand side, 78% of internet users have poor digital literacy[39] and have never used browsers or app stores. This has led to digital services that typically focus on

the urban middle classes for economic viability, with the base of the pyramid largely excluded. 11% of children and 17% of adults have experienced cyberbullying[40] while social media users have shown a propensity for creating and sharing hate speech and fake news – all symptoms of low digital literacy.

Both supply and demand skills issues can be traced back to well-known needs in the education system: incorporating digital skills in education policy, developing an ICT curriculum, raising the digital skills of education policymakers, teachers and lecturers, replacing rote learning with creative thinking, supplementing theoretical lecturing with practical self-learning, investing in modern, functional ICT equipment and grid connections in schools and universities nationwide.

GOVERNMENT ACTIONS TO DATE

Since the 2015-16 academic year, the government has been revising the curriculum to be student-centric. However, the new curriculum and education policy documents do not include any ICT education as yet[41]. Key Ministry staff have also received computer literacy training with multilateral funding – this is of critical importance in enabling Myanmar's digital journey[42].

The Universal Service Strategy, which was out for public consultation in January 2018, includes provision for broadband Internet connectivity and ICT training in government high schools.

[36] ITU, Ministry of Transport and Communications
[37] We Are Social Singapore, January 2017
[38] Viber, January 2016
[39] LirneAsia/MIDO National ICT study, 2016
[40] Telenor survey, 2016
[41] "Myanmar adopts new first-grade curriculum with help from Japan", Japan Times, 20th June 2017
[42] KMD Training Center

FOCUS AREA 4: DIGITAL SKILLS

TELENOR RECOMMENDATIONS

In government, Telenor recommends that all civil servants, starting at senior levels, receive digital literacy training to increase familiarity with modern ICT. Priority should be placed on training education policymakers, schoolteachers and lecturers that will be nurturing future digital workforces and digital consumers of a Digital Myanmar.

In schools, student-centric learning, digital literacy and Science, Technology, Engineering and Maths (STEM) should be a key tenet of 21st century education policy and embedded in the middle and high school curriculum. The digital literacy curriculum in particular could cover mobile and computer digital skills and a digital mind-set (using internet productively, avoiding hate speech, detecting fake news). Telenor has developed a digital literacy training curriculum and training videos for use at its Lighthouse digital literacy centres and government school safe-internet talks, which could support the development of a school curriculum. In preparation for a Digital Economy, high school students should receive basic programming skills using Scratch or similar programming training tools to prepare students for a 21st century Digital Economy. The government should consider partnering with suitable parties while ensuring a transparent and impactful implementation.

All universities should be equipped with a grid connection, functioning ICT labs and high speed fibre internet while university curriculums should include online research to prepare students to find information online effectively in their future employment.

Computer universities should promote computer science programmes such as modern web and mobile app focused coding, and design thinking skills. Partnerships with international universities and working with international companies to upgrade the quality and content of courses should be considered. Furthermore, computing degrees should include computer science internships and industrial attachments so students are ready for employment.

For citizens already out of school or university, vocational digital literacy qualifications should be made available at schools and training centres nationwide. The government may also consider partnering with established computer training centres to provide the said vocational qualification. For citizens that do not want official qualifications, the government should incentivise and support the establishment of digital literacy training centres, similar to Telenor's Lighthouses (see case study) in rural areas.

SUGGESTED TARGETS FOR 2023

1 All existing and new civil servants trained in basic digital literacy

2 Practical ICT curriculum and student-centric learning in all government middle and high schools through partnerships

3 Basic Scratch coding classes in all high schools through partnerships

4 All universities equipped with high speed fibre internet, grid and functioning IT labs implementing internet-facilitated learning

5 Web and mobile app focused coding, internships and industrial placements for computing students

6 Vocational ICT qualifications and digital literacy centres nationwide

ERICSSON CONNECT TO LEARN CASE STUDY

In 2015, Ericsson launched the Connect to Learn (CTL) Myanmar program. Together with UNESCO, UK-DFID, the Earth Institute, Qualcomm, Myanmar Posts and Telecommunications and the Ministry of Education, CTL provided devices, mobile connectivity, context-specific content, and extensive teacher training to 31 schools across Myanmar, serving 21,000 students. In addition, around 200 teachers and staff from the Ministry of Education received tailor-made training on how to integrate ICT into their classroom teaching. The devices – laptops for the teachers and tablets for the students – allowed teachers and students to gain access to the internet for the first time. Today, Connect to Learn Myanmar continues to serve this population and around 4,000 new junior high school students for schoolyear 2017-2018, improving digital literacy of teachers and students alike, while improving the quality of learning.

TELENOR LIGHTHOUSE & SAFE INTERNET SCHOOL TRAINING CASE STUDY

In 2014, Telenor partnered with Myanmar ICT for Development Organisation (MIDO) to implement a digital literacy curriculum and a network of digital literacy training centres targeted at rural areas – Telenor Lighthouses. These centres engage social entrepreneurs to provide outreach digital literacy training to rural communities nationwide. The network of 61 centres in 13 states and divisions have trained over 85,000 students to date. Telenor further capitalized on the success of the Lighthouse programme by developing a curriculum and interactive training video that educates schoolchildren on the opportunities and risks of the internet. This programme has educated over 130,000 government and local private school students as of December 2017. These videos are also available for online self-learning[43].

[43] http://bit.ly/TelenorSafeInternetVideos

FOCUS AREA 5:
DIGITAL GOVERNMENT

A government with commitment and resources to support the development of a Digital Economy is imperative. Government has the disproportionate capability to act as an enabler to such development with supportive policies, laws and regulations, e-government services, citizen education and capacity building.

Government also has an equally disproportionate capability to act as an inhibitor through counterproductive entrenched interests, lack of co-ordination or misguided policies. Myanmar's government has a unique opportunity to learn from international digital government experiences to develop a model that suits the Myanmar context. Implementing digital government would also reduce corruption, enhancing Myanmar's international rankings and attract foreign investment.

There are two aspects to digital government: e-government, where the government adopts technology from within and makes digital services available to citizens and enterprises; and a mind-set that embraces and facilitates the positive and transformative changes that technology brings in the legislative, executive and judiciary branches.

CHALLENGES

Myanmar has evolved through several e-government strategies over the last decade, which has seen mixed results. Extensive interviews with experienced industry experts highlight a conservative culture, lack of commitment and capacity limitations as key reasons.

A conservative culture hinders development as new technologies may be viewed as a disruption to the status quo. Traditional authority structures based on seniority and tenure may be misaligned with taking guidance from relatively junior e-government implementers with the necessary skills and experience. There may also be an unwillingness to take ownership and associated risks with new technologies due to fear of failure, and consequent loss of authority, reputation and financial security. Subsequently, there may be hesitance to digitize existing processes around technology for efficiency, with verbatim digitization of existing analogue processes at best, or active resistance at worst.

The lack of commitment stems from decentralised authority with a mandate to enforce inter-ministry alignment with an e-government strategy. Inter-ministerial co-ordination has historically been challenging due to legacy power structures. At best, this has led to a set of unconnected, siloed e-government initiatives, with no resources or will to integrate these systems. Furthermore, the transparency and accountability provided by e-government systems may challenge entrenched interests arising from in-person interfaces with citizens, leading to misguided incentives that drive a lack of participation and interest at all levels of the civil service.

The issues above are compounded by a lack of technical capacity of both civil servants and citizens, which has roots in the previously mentioned poor digital skills. While there are some examples of successful e-government projects, some projects are not effectively maintained after implementation, leading to outdated or non-functional services. Lack of transparency in e-government procurement depletes government resources and may lead to the most capable parties not winning contracts, further compounding the capacity issue[44]. Finally, the low digital literacy of the population also means that citizens are often unaware of e-government services or how to access these services, which may lead to a vicious cycle of lack of government interest due to perceived low citizen interest.

GOVERNMENT ACTIONS TO DATE

Despite the challenges mentioned, there are successful examples of both digitally minded government authorities and e-government services. e-government is a part of the government's 12-point Economic Policy. The most recent e-government strategy was drafted by Infosys in 2016 with the assistance of the ADB.

The Union government has launched a successful e-visa service which has aided Myanmar's tourism. Other more recent e-government services to facilitate digital ID, vital registration statistics, industrial machine registration, cargo clearance, income & commercial tax filing, low cost housing applications and driving test appointments have been developed. Selected government staff have been provided with computer literacy training with multilateral funding. There are plans to launch an e-government portal in early 2018 that will consolidate the websites of all e-government services for the first time[45].

The Yangon Region government has taken a pioneering step on a global stage by actively inviting ride-hailing services such as Uber and Grab to Yangon in a bid to tackle taxi-related congestion[46]. The reform of the Yangon Bus Service was accompanied with open APIs to permit developers to connect to the system, while mandated GPS-tracking of all buses will provide compliance to timetables, information for citizens and data for future route planning[47]. It is also possible to apply for 21 types of permits with the Yangon City Development Committee online[48].

[44] "e-governance: Myanmar got its wires crossed", Myanmar Times, 12th May 2014
[45] "Government plans to launch internet portal in January", Myanmar Times, 16th November 2017
[46] "How technology is changing the face of Yangon's taxi industry", Myanmar Times, 28th July 2017
[47] "Yangon govt starts GPS rollout for new bus service", Myanmar Times, 2nd February 2017
[48] "YCDC Introduces Online Services", Myanmar Business Today, 7th January 2015

FOCUS AREA 5:
DIGITAL GOVERNMENT

TELENOR RECOMMENDATIONS

Telenor believes that implementing an effective digital government should be a priority, as highlighted by the 12-point economy plan. An e-government taskforce under the Digital Economy Development Committee should be established. Once this taskforce is formed, the current e-government plan could be revised in consultation with Ministers, KPIs, budgets, human resources. Roles and responsibilities must also be agreed between Ministries. Additional discretionary budgets for e-government projects should be allocated based on a ministry's successful implementation. Capacity building is required among the civil service to see technology as an aid in economic development and peace. All senior leadership in every Ministry should attend Digital Economy awareness building workshops and digital literacy training organised by the taskforce.

Once high level buy-in is achieved and co-ordination, monitoring and incentive mechanisms are established, operational implementation should be prioritised. Ministry staff tasked with e-government duties should receive special recognition and additional financial incentives in light of their rare skills.

In parallel, digital G2B and G2C e-government digital services could be developed, with an initial focus on Digital ID, Digital Land Management, Digital Taxation, Electronic Medical Records and Civil Infrastructure Databases (such as roads, bridges, electricity poles, telecom poles etc.). Digital Taxation is particularly important as it can play a pivotal role in establishing a fair and efficient tax system as stipulated by the government's 12 point Economic Policy. Other government services should be digitised sequentially, with a priority based on value to citizens. Any e-government systems developed should emphasize simplicity, service quality, citizen engagement, mobile-first design, interoperability and unified open standards.

SUGGESTED TARGETS FOR 2023

1. Top 5 UN e-Government ranking in ASEAN (currently 169 of 193, last in ASEAN)[49]

2. 100% of ministries complying with Digital Economy and e-government strategy

3. All ministries using technology in daily processes

4. 100% of citizen and business tax submissions and payments online

5. 100% of G2B services accessible on a smartphone app or web browser[50]

6. 80% of G2C services accessible on a smartphone app[51]

MOBILE BIRTH REGISTRATION CASE STUDY

Birth registration is a fundamental human right and is the first legal identity of a child, enshrined in the UN Convention on the Rights of the Child. In Pakistan, the birth registration rate is low due to various socio economic factors - time, cost, travel, process hindrances, and general lack of awareness. Given the ubiquitous prevalence and adoption of mobile technology in Pakistan, Telenor and UNICEF Pakistan embarked on a project to increase the birth registration rate in selected provinces in 2015 by allowing birth registrars to process registrations in an Android app[52]. The project saw increased birth registration rates from 30% to 90% in pilot areas, and the project has been extended. Telenor Myanmar is committed to pilot mobile birth registration in Myanmar, targeting universal mobile birth registration in Mon state in 2019. Discussions with UNICEF and the Union Government are currently underway.

MOBILE BIRTH REGISTRATION IN PAKISTAN

1. Pilot project duration: 18 months

2. Improvement in registration rate: From baseline of 30% to 90% overall. An increase of more than 300 per cent in Sindh province and 126 per cent in Punjab province during the pilot phase. Across all three pilot locations, almost three times as many children were registered between June and December 2015, as compared to the same time period in the previous year.

3. The most significant improvements: rural Dhabeji, Sindh province, where Lady Health Workers registered four times as many births as were registered in the previous year and where an 800% increase in the number of registered female births was witnessed.

2014
REGISTRATION

2015
REGISTRATION

2014
BIRTH

2015
BIRTH
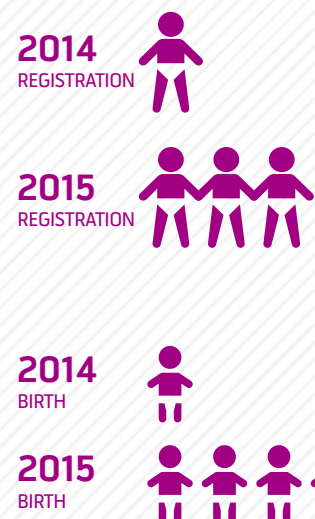
49,50,51   Linked to Digital Economy Development Committee 2020 Goals
52   GSMA: Innovations In Mobile Birth Registration: Insights From Tigo Tanzania And Telenor Pakistan

FOCUS AREA 6: DIGITAL ENTERPRISES

A Digital Economy will necessarily require the digital transformation of the current economy. This requires existing Myanmar businesses to adopt modern ICT to improve productivity, growth and profitability, particularly SMEs that form over

98% of all registered companies

and accounting for

83% of private sector employment[53].

GOVERNMENT ACTIONS TO DATE

As part of building a digital government, some customs clearances and tax filings have been digitised, requiring businesses to follow suit. An SME Working Committee and an SME Agency is planned, but there is no focus on promoting digitisation of SMEs[55].

CHALLENGES

According to the Boston Consulting Group, SMEs who heavily use ICT grow and export twice as much as their competitors[54]. However, Myanmar SMEs generally deploy labour to increase output rather than deploying technology to increase productivity. While this may help reduce unemployment, the continued reliance on low skilled, low cost labour for simple repetitive tasks in the manufacturing and service sectors creates a vicious cycle. Businesses remain regionally uncompetitive by failing to reap the economies of scale presented by technology widely used elsewhere in the region, while employees do not get the opportunity to improve their skills and livelihoods. SME hesitance to adopt technology can be partly traced back to the ongoing need to develop the foundations of a Digital Economy - lack of understanding and experience of technology, capital constraints and a cultural desire to support large workforces as philanthropy.

TELENOR RECOMMENDATIONS

The government should continue to build the foundations of a Digital Economy – as discussed in the digital frameworks, infrastructure, ecosystem and skills focus areas – to allow businesses to digitize in a sustainable and affordable manner. As such, Telenor recommends that the government aims for 50% of SMEs to be using the internet for G2B, B2B and B2C services.

The government could also provide incentives for businesses to digitize – for example, tax incentives for online tax submissions, government funds for SME ICT deployments, or arranging technology capacity building sessions for local entrepreneurs. To lower the upfront cost of new technology deployments, the government may consider selectively incentivizing software as a service (SaaS) providers in Myanmar.

To holistically aid SMEs' development through technology, an inter-ministry

National SME Agency should be established. This one-stop-shop could provide free trade, technology, finance training to SMEs. One key priority of this agency should be export promotion – educating SMEs on exporting their products and services online, facilitating all customs clearances and permits required for a smooth operation.

This type of support and capacity building is critical as once government processes are digitized, businesses will be required to digitize to continue to access government services.

53   Myanmar Central Statistical Office
54   Boston Consulting Group, Ahead of the Curve: Lessons on Technology and Growth from Small Business Leaders, 2013
55   "Government plans to establish SME Working Committee", Myanmar Cable News, 14th September 2017

FOCUS AREA 6:
DIGITAL ENTERPRISES

SUGGESTED TARGETS FOR 2023

1 **50% of SMEs** using fixed or mobile broadband for digital G2B, B2B and B2C services[56]

2 **National SME Agency established** – free technology advice and trade services

3 **Government subsidies** for low-cost, high-impact deployments for SMEs – devices, internet, business digital literacy training, priority SaaS deployments (email, finance, HRM, production / inventory planning & tracking, POS)

SPRING SINGAPORE TECHNOLOGY ADOPTION PROGRAMME CASE STUDY

Singapore has invested significant resources in ensuring its SMEs are competitive globally. One example is **SPRING Singapore** an agency under the Ministry of Trade and Industry helping Singapore enterprises grow.

Under its **Technology Adoption Programme (TAP)** local SMEs can receive up to

70%

funding support for qualifying technology deployment and/or adoption costs that provide at least

20%

productivity gain such as process improvement or cost savings.

Technologies being promoted include

Cloud accounting solutions

Paperless procurement systems

RFID/barcode-based Item Management & Tracking Systems.

This allows Singaporean SMEs to be competitive globally and could form the basis of a simpler Myanmar government programme to incentivise basic technology adoption in Myanmar SMEs.

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56 Linked to Digital Economy Development Committee 2020 Goals

FOCUS AREA 7: DIGITAL CONSUMERS

Once Myanmar's digital enterprises and government embrace technology, the next milestone to a Digital Myanmar will be to build a digitally inclusive society where technology is ubiquitous to all consumers, rural and urban, in their daily life. By this stage, all consumers, rural and urban, will have access to innovative, value-adding digital services beyond social media, communications and entertainment, such as e-commerce, m-health, online learning and others. Municipal authorities will also adopt smart city concepts as a way of using technology to improve the quality of life for consumers.

CHALLENGES

According to industry experts, there are some popular local digital services in Myanmar, such as local media, Wunzin, Pyone Play, CarsDB and Duwun. However, low digital literacy as highlighted in the digital skills focus area leads to a continued high user reliance on social media, communications and entertainment, with low awareness of how to acquire or use other digital services. This is further compounded by the overall lack of Myanmar language digital content beyond Facebook, low localization of global digital services (Google Maps, Uber, and Grab), low English comprehension among most users and non-standard Myanmar fonts on services and devices.

As Myanmar's rural population migrates to cities in line with global trends, managing issues that come with economic growth, such as traffic, pollution, migration and housing will be vital. Building environmentally sustainable cities in line with the government's 12-point Economic Policy will require smart city concepts, particularly internet of things (IOT) and big data analytics, to be integrated in urban planning.

Digital services can help make rural economies more sustainable by providing vital economic information and access to global markets. However, there is limited agricultural, livestock or fishery local language content or services available or accessible due to difficulties in monetizing content, low ability to pay, low digital literacy, and device issues (affordability, unstandardized fonts). As these livelihoods cover nearly 50% of the population[57], it is vital to provide relevant digital services for sustainable, inclusive economic growth as stipulated by the government's 12-point Economic Policy.

> "There is limited agricultural, livestock or fishery local language content or services available or accessible due to difficulties in monetizing content, low ability to pay, low digital literacy, and device issues."

50%
OF THE POPULATION[58]

GOVERNMENT ACTIONS TO DATE

Both the Union and Regional governments have been largely receptive to private sector digital services. Ministries at all levels of government are widely using Facebook for direct citizen engagement – from distributing government statements, new laws and information about service outages, weather and natural disasters to directly answering citizens' questions and complaints.

The Yangon and Mandalay regional governments have invited Uber and Grab to provide ride hailing services to resolve traffic issues and improve availability of public transport, while incident crowdsourcing is used by the Yangon traffic police and Yangon Bus Service, as seen on Facebook.

These actions also support the development of a future smart city, as data collected from Uber and Grab, smart traffic lights and GPS trackers in Yangon Buses could facilitate big data analytics and government decision making in future urban planning.

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[57]   Demographic and Health Survey 2015-16

FOCUS AREA 7:
DIGITAL CONSUMERS

TELENOR RECOMMENDATIONS

Telenor believes that private sector digital service providers need to prioritise a mobile-first approach towards end users, as the majority of internet access in Myanmar for the foreseeable future will be from a smartphone. Future e-government portals could promote useful private sector digital services to citizens, further blurring the divide between public and private digital services.

The government should actively seek to incorporate smart city concepts wherever possible. This includes incorporating IOT and data analytics in urban planning and decision making in public fleet management, traffic planning, environmental planning or others.

To provide economic use cases of the digital services to rural communities, the government may take a lead in developing, or incentivizing civil society and the private sector to create useful rural local digital content and services through the use of government funds or tax incentives, as this content may not otherwise be economically viable.

Citizens nationwide also need to be acquainted with living in a digital consumers, where knowledge of personal digital rights and privacy, economic uses of the internet and avoiding harmful uses of the internet (hate speech, fake news) are widely understood and accepted. Apart from training in schools, universities and vocational training as mentioned in the digital skills focus area, the government needs to proactively educate citizens using its e-government channels. The government may also consider establishing a legal and regulatory framework within the Cybercrime and Electronic Evidence Act to remove hate speech in specific, defined scenarios that have a negative impact on society. The framework should be established in consultation with local and international civil society groups. Any removal of content should be announced publicly to align with public interest. However, the government should refrain from censorship at all times to preserve freedom of expression.

SUGGESTED TARGETS FOR 2023

1 **Localised m-agri, m-livestock and m-fishery** digital content and services widely used

2 **100% of private digital services** fully accessible on smartphone

3 **Useful private digital services** listed and updated in e-government portal

4 **Smart city concepts** and IOT an intrinsic part of urban planning

5 **All consumers** familiar with digital rights

6 **Digital interactions prioritised** between government, citizens and businesses

TELENOR START IOT CASE STUDY

IOT, or the Internet of Things, are internet-connected sensors that automatically collect data for real-time or long term monitoring and decision making. IOT will be the backbone of urban planning and monitoring for at least the next decade. Given the relative novelty of the technology and its use cases, experimentation is required to discover innovative applications. In May 2017, Telenor launched Telenor Start IOT in Norway, which comprises of a physical Low Power Wide Area (LPWA) experimental network, a backend system and development kits for start-ups, students and developers free of charge for testing and experimentation purposes over 5 years. This is part of a broad initiative from Telenor to drive growth in the use of cutting-edge technologies such as artificial intelligence, IoT and big data in Norway, which Myanmar has the opportunity to adapt in a Myanmar city context.

DTAC SMART FARMER CASE STUDY

dtac implements the Smart Farmer program in collaboration with the SamnuekRak Ban Kerd Foundation, RuamDuayChuayKan community radio, the Department of Agricultural Extension, and the Bank for Agricultural Cooperatives. The program creates and supports promising young agriculturalists age 17-45 across the country, using technology to improve farming techniques, share commodity prices, encourage innovation, and pool agricultural knowledge and practices. Participants receive training in using the dtac-designed Farmer Info application, which provides agricultural knowledge and farming tips in the form of video clips. The application also provides real-time agricultural commodity prices, as well as an online shop that provides Thai SME products direct to consumers. Since its inception in 2008, the program has empowered 250,000 farmers and won multiple awards for ICT excellence. This programme could be useful in Myanmar given similarities between the two countries' agricultural communities.

Smart Farmer Program
supports young agriculturalists age 17-45

Receive training
in using the dtac-designed Farmer Info application

Empowering 250,000 Farmers

THE JOURNEY TO DIGITAL MYANMAR

Role of government, civil society, regulator and private sector

TELENOR MYANMAR RECOMMENDATION

Empower Digital Economy Development Committee to implement Digital Economy Master Plan

GOVERNMENT

- Implement 12-point Economic Policy effectively
- Pursue economic development and peace with equal priority, exploiting linkage between the two
- Develop Digital Economy Master Plan as centrepiece of modern economic development
- Facilitate foundations of a Digital Economy – frameworks, skills, ecosystem, infrastructure
- Place digital skills at same priority as numeracy and literacy
- Digitalize key public services – digital ID highest priority
- Encourage digital inclusion, particularly rural
- Adopt long term vision of Myanmar as a developed digital nation

PRIVATE SECTOR

- Invest in high-speed networks and mobile-first innovative products and services at fair and competitive prices
- Ensure protection and appropriate use of customer data
- Link government with international expertise
- Contribute to digital skills, online safety, innovation, entrepreneurship and an equitable digital consumers by undertaking impactful social programming

CIVIL SOCIETY

- Advocate 21st century digital consumers with digital consumer protection to government
- Contribute to building digital skills and online safety
- Link government with international digital expertise

REGULATOR

- Independent of government
- Implement transparency and level playing field between all parties
- Ensure appropriate use of USF for digital economic development by supporting infrastructure projects and rural service delivery.
- Safeguard consumer rights

PROPOSED ROADMAP
TO 2023

DIGITAL FRAMEWORKS
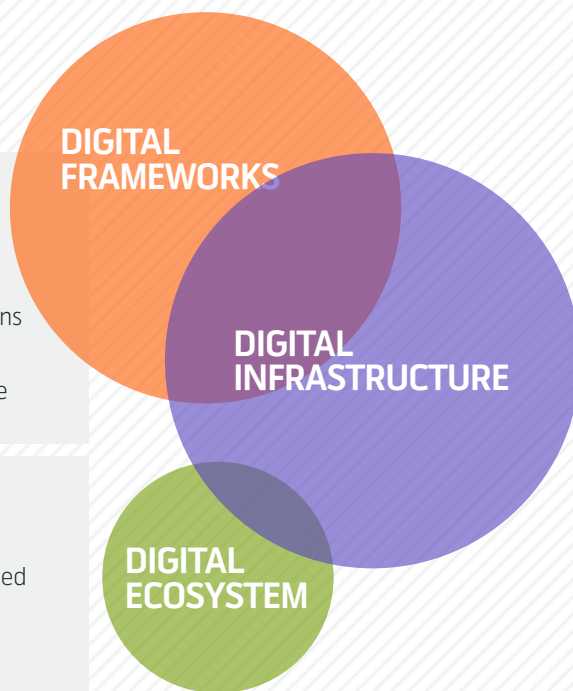
2018

Cybercrime and Electronic Evidence Act implemented

Independent telecommunications regulator

Rule of law: enforced nationwide

2019

Digital Economy Development Master Plan drawn & implemented

Empower Digital Economy Development Committee to implement Master Plan

Data protection, online privacy and e-commerce laws implemented

2020

Digital Economy Investment Promotion Policy developed

DIGITAL INFRASTRUCTURE

2018

USF funding allocating for rural mobile deployment

Easing metro-fibre rollout – transparent RoW allocation and pole access

Tower build in agricultural and fallow land permitted

2020

Affordable, high-speed (>10Mbps) fixed broadband in top 10 cities

2021

National peace agreement observed

2023

99% mobile voice coverage with USF support

High speed (>5Mbps) mobile data population coverage: >95% with USF support

90% of households connected to grid

DIGITAL ECOSYSTEM

2018

Digital ID rolled out nationwide

2019

Interoperable digital financial services a critical part of Central Bank Policy

2020

Wide, internationally experienced digital talent pool

ICT service and device taxes and duties clarified
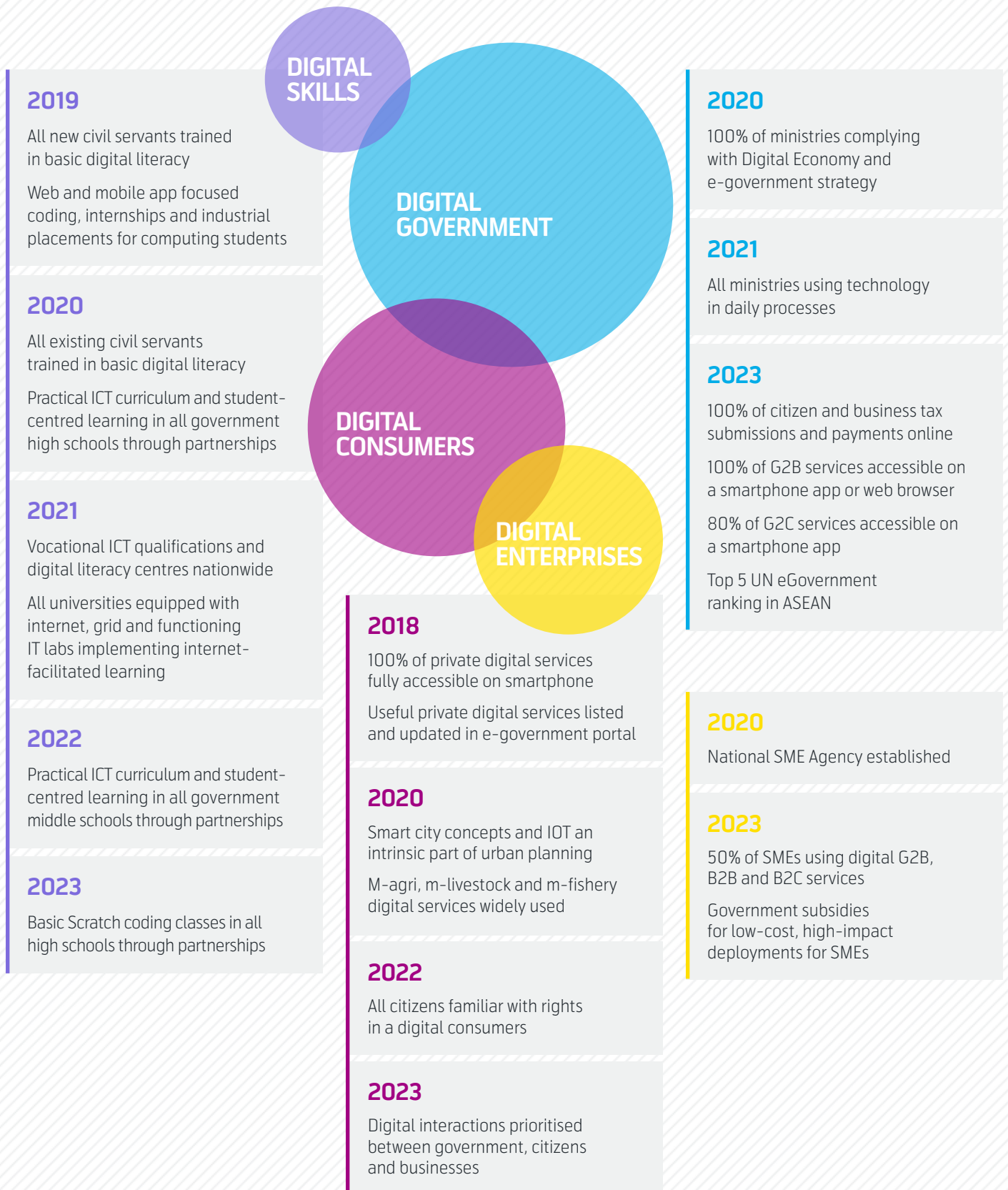
2023

Top 100 ranking in Networked Readiness Index

Digital ID for 100% of eligible citizens

95% of citizens with ID have at least 1 digital financial service account

Tripled number of local digital start-ups from 2017

PROPOSED ROADMAP TO 2023

DIGITAL SKILLS

DIGITAL GOVERNMENT

DIGITAL CONSUMERS

DIGITAL ENTERPRISES

2019

All new civil servants trained in basic digital literacy

Web and mobile app focused coding, internships and industrial placements for computing students

2020

All existing civil servants trained in basic digital literacy

Practical ICT curriculum and student-centred learning in all government high schools through partnerships

2021

Vocational ICT qualifications and digital literacy centres nationwide

All universities equipped with internet, grid and functioning IT labs implementing internet-facilitated learning

2022

Practical ICT curriculum and student-centred learning in all government middle schools through partnerships

2023

Basic Scratch coding classes in all high schools through partnerships

2018

100% of private digital services fully accessible on smartphone

Useful private digital services listed and updated in e-government portal

2020

Smart city concepts and IOT an intrinsic part of urban planning

M-agri, m-livestock and m-fishery digital services widely used

2022

All citizens familiar with rights in a digital consumers

2023

Digital interactions prioritised between government, citizens and businesses

2020

100% of ministries complying with Digital Economy and e-government strategy

2021

All ministries using technology in daily processes

2023

100% of citizen and business tax submissions and payments online

100% of G2B services accessible on a smartphone app or web browser

80% of G2C services accessible on a smartphone app

Top 5 UN eGovernment ranking in ASEAN

2020

National SME Agency established

2023

50% of SMEs using digital G2B, B2B and B2C services

Government subsidies for low-cost, high-impact deployments for SMEs