DRAFT

DIGITAL NEPAL FRAMEWORK 2.0

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Executive Summary - A Renewed Focus on Nepal's Digital Transformation

The Digital Nepal Framework ("*DNF*") intends to inform the strategic direction needed to effectively tap digital technologies and unleash extensive socio-economic transformation. The 2025 version of the framework ("*DNF 2.0*") builds upon the comprehensive vision set forth in the first iteration (*"DNF 1.0"*), initially unveiled in 2019.

Building on DNF 1.0: Addressing Key Challenges

While DNF 1.0 sought to drive digital development across eight key sectors with 80 digital initiatives, the framework experienced implementation issues owing to limited ownership, insufficient coordination across implementing agencies, inadequate funding, and a lack of technical capacity. DNF 2.0 specifically addresses these gaps by enhancing coordination mechanisms, boosting technical skills, and ensuring a phased and prioritized implementation of digital initiatives.

Adopting an Empowerment-Focused Approach

Empowerment and enablement lie at the core of this updated framework with a stronger focus on sound digital foundations, accountability, resource allocation, and data interoperability. DNF 2.0 simultaneously addresses, the accelerated adoption of digital technologies post COVID, the emergence of innovative technologies as a preferred medium for business and life, as well as the critical challenges that have prevented Nepal from participating equitably in the global digital landscape.

DNF 2.0 seeks to build digital foundations that will support cross-sector initiatives and create priority and capacity-based roadmaps for sector-specific successes. This strategy ensures that the digital transformation process is inclusive, enabling all sectors to participate and benefit from a robust digital ecosystem.

Key Dependencies in Unleashing a Digital Nepal

Since DNF 2.0 is a comprehensive strategy aimed at positioning Nepal as a digital leader in the region, it is imperative to ensure that its digital transformation plans and steps are inclusive, sustainable, and forward-looking.

The effective adoption of DNF 2.0 hinges on several critical dependencies, including expanded high-quality internet connectivity, data hosting and cloud infrastructure readiness, bolstered digital identity systems, and improved digital literacy, to name a few. DNF 2.0 establishes these core foundational elements to empower the seven sectors and beyond to use digital tools effectively, improving service delivery, productivity, and competitiveness.

Introduction: State of Nepal's Digital Landscape

The Government of Nepal (GoN) recognizes digitalisation as a cornerstone for building an equitable and empowered society. Digital transformation is a key enabler of growth, resilience, and inclusive development. It holds the key to unleashing better outcomes for people, governments, and businesses.

Nepal has seen considerable progress on many fronts of its digital development over the past decade. According to MIS report of NTA published on 2081 Magh (Data based on January End, 2025) Population Penetration of Voice Service (Based on Subscription) is 102.408 percent. Population penetration of fixed broadband service based on subscription is 45.88% and population penetration of mobile broadband service based on subscription is 89.55%. In the fiscal year 2023/24, mobile banking users in Nepal increased by 15.4%, reaching 24.65 million, while internet banking users rose by 3.4% to 1.92 million (NRB, Fiscal Year 2023/2024 Report). Several GoN ministries, departments, and agencies (MDAs) have begun to digitize, including simplifying government-to-citizen (G2C) services. These include the launch of a unified mobile portal for G2C services, an integrated office management system, and a Government Enterprise Architecture 2.0. The digital payments architecture is robust.

In recent years, GoN has also launched various initiatives aimed at improving digital government infrastructure and applications, aiming to foster growth and inclusivity. These initiatives include introducing the Nagarik App, implementing the Government Integrated Office Management System (GIOMS), and adopting Government Enterprise Architecture 2.0. Concurrently, efforts by MoCIT and the National Telecommunications Authority (NTA) seek to enhance both the country and its citizens' digital capabilities and enhance national telecommunications infrastructure.

Despite these improvements, there remain gaps in the digital transformation of the country. Nepal remains disadvantaged owing to the high costs of deployment, resulting in both limited coverage and demand for broadband connection in remote and mountainous areas. Gaps in digital literacy and income to afford digital devices further contribute to lower adoption of digital technologies and services across the country. Rural-urban and gender disparities1 further exasperate the issues and the legal and regulatory landscape show room for improvement.

The digital ecosystem development remains constrained across driving exports, creating jobs, and supporting whole-of-nation digital transformation due to policy uncertainties, skills gaps, and missing enablers of digital transformation.

- **Policy issues** include uncertainties in formulation and approval of legal and procedural provision.
- **Access and retain of talent** is regularly noted by digital businesses and startups as a major constraint to their ability to expand; this is worsened by the significant brain drain, especially of young people and of those with in-demand skills.
- **Gap in digital literacy**, particularly in rural areas and among women, marginalized group, with urban-rural divides still evident in digital access.
- **Overall digital capacity and preparedness** in Nepal remain low due to limited institutional capacity and significant gaps in core government infrastructure.

[1] https://documents1.worldbank.org/curated/en/995101654266502751/pdf/Nepal-Digital-Nepal-Acceleration-DNA-Project.pdf

Consequently, Nepal ranks 119 out of 193 countries in the UN e-Government Development Index (EGDI) and 150 out of 193 countries in the Government AI Readiness Index (Oxford Insights Government AI Readiness Index, 2024). The World Bank (WB) GovTech Maturity Index scores Nepal as having "some focus" on GovTech, but behind regional peers such as Bangladesh, India, Pakistan, and Sri Lanka. Nonetheless, there is a growing awareness and enthusiasm among the up-and-coming workforce to partake in jobs related to technology. Nepal's technology industry is beginning to make groundbreaking advancements in emerging technologies such as AI, cloud, and blockchain, making it crucial for Nepal to bolster its readiness to harness the benefits of these technologies.

DNF 1.0 - An Overview

To effectively harness the power of digital technologies and steer the nation's digital evolution, the GoN first commissioned the Digital Nepal Framework (referred to as DNF 1.0) - which defined a unified vision and strategy for Nepal's digital transformation in 2018. The framework was formally adopted by the GoN in October 2019.The national strategy document identified 80 key initiatives across the eight sectors of digital foundation, agriculture, health, education, energy, tourism, finance, and urban infrastructure.

DNF 1.0 was rooted in the imperative to be digitally ready to compete in the global digital market, and to advance Nepal's economic transformation. It aimed to leverage digital technologies to boost productivity, improve public services, and foster economic growth – making Nepal a more inclusive and digitally empowered society. Since 2019, many advancements have been made in implementing the strategy such as the expansion of internet penetration, growth of the technology start-up ecosystem, and prevalence of digital identification and payment systems. Specifically, DNF 1.0 sought to bring tangible advancements across the focus areas listed below. A complete review of the progress on the DNF can be found in Annex A.

DNF 1.0 Focus Areas	Progress Highlights
Enhanced Connectivity: The Digital Nepal Framework 1.0 prioritized bridging the digital divide by expanding internet access and improving connectivity across the country. This effort aimed to provide affordable, high-speed internet, particularly in rural and underserved areas, ensuring that all citizens can participate in the digital economy.	So far, approximately 17, 250 km of optical fiber network has been expanded. Utilizing the Rural Telecommunication Development Fund, 1399.435 km of optical fiber has been laid in Koshi Province, Madhesh Province, and Bagmati Province, while 308.638 km has been laid in Karnali Province and Sudurpaschim Province.
Capacity Building: To create a tech-savvy population, DNF 1.0 focused on enhancing digital skills across the workforce. By providing training and educational programs, the framework sought to equip individuals with the necessary skills to thrive in a digital environment, enabling greater participation in digital opportunities and innovations.	The different government agencies are conducting various types of capacity building program for public personnel.

E-Governance: DNF 1.0 introduced e-governance services to improve the efficiency, transparency, and accessibility of government services. This included digitizing public services, streamlining administrative processes, and enabling citizens to interact with the government through online platforms, reducing bureaucracy and enhancing service delivery.	Nepal's National ID system, NID began in 2018. NID assigns unique identity numbers based on biometric and demographic data, regulated by the Nepal Identity Act. By February 2024, over 17 million citizens have registered for NID. While intended to enhance public services, its current use is limited, lacking clear benefits. Data sharing progresses but faces challenges in interoperability and accessibility. The Government set up the Government Integrated Data Centre (GIDC) and cloud infrastructure yet faces management challenges and data security concerns. Various e-services like Online driving license system, Electronic Online Passport system, Tax payer's system, land record management system etc are being implemented .
Economic Growth: The framework aimed to foster a thriving digital ecosystem that would spur innovation and drive economic growth in various sectors, such as agriculture, finance, education, and tourism. By leveraging digital technologies, DNF 1.0 sought to create new business opportunities, improve productivity, and boost the overall competitiveness of the national economy.	The framework, DNF 1.0, has made progress in fostering a digital ecosystem, driving innovation, and stimulating economic growth across key sectors. This has created new business opportunities, increased productivity, and strengthened the national economy's competitiveness, marking substantial progress toward its objectives.

Other key areas that serve as markers of progress for *DNF 1.0* include:

- **Internet penetration:** According to MIS report of NTA published on 2081 Magh (Data based on January End, 2025) Population Penetration of Voice Service (Based on Subscription) is 102.408 percent. Population penetration of fixed broadband service based on subscription is 45.88% and population penetration of mobile broadband service based on subscription is 89.55%. The Government of Nepal is currently undertaking various initiatives to improve internet access in the country, including through competitive mobilization of private sector stakeholders and through funding provided by the universal service fund; these programs have also helped to connect many public institutions across Nepal to basic internet services.
- **Mobile penetration:** Owing to the significant investments made by Nepal in expanding network and increasing the affordability of mobile devices and services, has witnessed significant increase in mobile penetration.

- **Digital Skills:** Nepal is marred by limited focus around digital skills. In Nepal, there are systemic obstacles due to limited digital skills and literacy, which impede widespread access to and effective utilization of digital technologies for socioeconomic progress. A notable urban-rural and gender disparity is evident, with rural areas having approximately one-third fewer internet users on average compared to urban areas, and Internet usage rates and ownership of mobile phone among boys is higher than that of girls in Nepal.
- **Digital Health:** Since the launch of the national e-Health strategy in 2017, the government has made strides in several digital health initiatives, including the Digital Health Information Management System-DHIS2 (electronic or e-reporting), and the Insurance Management Information System (IMIS) digital software platform for managing Nepal's social health insurance.
- **Digital Payments and Financial Services:** The financial services sector in Nepal has made significant strides, driven by increased Internet and device usage. Supported by the Nepal Rastra Bank (NRB) and the Nepal Clearinghouse, the payments industry has swiftly evolved. Policy and regulatory measures have spurred the rapid growth of digital payments, with the NRB's Nepal Payment System Development Strategy (NPSDS) in 2014 and the establishment of the Payment System Department (PSD) in 2015 being key milestones. Indicators show a deepening adoption of digital payments, QR code-based payments saw significant growth, with the number of transactions increasing by 117.03% and the transaction value by 103.66% compared to the previous fiscal year. (NRB, Fiscal Year 2023/2024 Report).Additionally, cross-border payment services with India and Sri Lanka have been launched. Financial inclusion has also seen a boost, with 75% of adults utilizing payment services through banks (Nepal Financial Inclusion Report 2023).
- Moreover, collaborative efforts between the Government of Nepal and the World Bank have advanced the digitization of G2P payments, paving the way for a comprehensive system supporting safe, timely, and transparent social assistance delivery.

Key Learnings and Takeaways from DNF 1.0

DNF 1.0 faced some implementation challenges from which the following learnings were extracted:

- **Strengthening Ownership and Coordination:** DNF 1.0 highlighted the opportunity to enhance collaboration among implementing agencies for more cohesive execution of digital initiatives. Emphasizing clear central and sector-level leadership and maximizing the sectoral executives, steering and coordination committees' roles can pave the way for consistent funding and smooth project progression.
- **Building Technical Skill Sets**: There is potential to empower agencies with enhanced technical capabilities through targeted support and training programs. Strengthening standardized procurement policies will also streamline the acquisition of IT services, ensuring timely and efficient project delivery.
- **Optimizing Funding and Resource Allocation**: Addressing the allocation of resources offers a promising path to accelerate digital initiatives. By securing adequate funding and committed resources, projects can reach their full potential without delays and align to plan and annual ministry budgets.

- **Enhancing Data Interoperability**: Achieving seamless data flow and interoperability is key to boosting cross-sectoral collaboration among government agencies. Improved data access and integration efforts will foster greater alignment and more impactful initiatives.
- **Staying Ahead of Technological Advancements**: Continuous capacity-building initiatives can better prepare implementing bodies to adapt to the rapid pace of technological progress, including advancements like AI and IoT, positioning Nepal to harness these technologies effectively.

The progress thus far suggests Nepal has room to improve on the GovTech Enablers Subindex, demonstrating significant potential to strengthen the enablers underpinning the digital economy, including data exchange and interoperability, legal and regulatory frameworks, and shared services that can enable integrated e-service delivery. There also exist gaps in data hosting, sharing, and security. Management challenges and concerns with resilience limit the willingness of other GoN organizations to rely on this infrastructure, leading to duplication and exacerbating the fragmentation of IT services and systems. Finally, the trust ecosystem is weak. Nepal's score in the Global Cybersecurity Index (GCI) has improved from 44.99% in 2020 to 69.76 in 2024, reflecting noteworthy progress over four years, (Global Cybersecurity Index, 2024). Legal and institutional reforms will be needed to fully develop the framework for personal data protection. Additionally, the NID has seen slow progress. Despite 16.6 million citizens being registered for NID (Source: NID), challenges persist around data interoperability and privacy protections, highlighting the need for clear benefits, clearer policies, and stronger infrastructure investments. Similarly, digital payments and financial services have grown, with notable progress in QR code transactions and cross-border payment services. Yet, there remains a need to strengthen financial inclusion through deeper adoption of secure and efficient payment platforms.

DNF 2.0: Reimagining a Digital Nepal

Since 2019, Nepal has undergone significant internal and external transformations, shaped by socio-political shifts, natural disasters, and the global COVID-19 pandemic. These events have accelerated the uptake of digital tools and reshaped how Nepalese people live, work, and engage in business. For example, Covid-19 led to an increase in digitalization of payments.

Simultaneously, the rapid evolution in the global and national digital landscape—marked by advancements in digital public infrastructure (DPI) and the emergence of Industry 4.0 technologies such as robotics, 5G, AI, IoT, and big data—further underscores the necessity for a more comprehensive and future-ready framework. The GoN also understands the urgency to provide concrete guidance to harness Industry 4.0 technologies like 5G, Artificial Intelligence (AI), Internet of Things (IoT), and cloud computing to enhance digital public infrastructure, expand digital access to services, create a conducive environment for innovation and growth, and unleash widespread economic transformation.

DNF 1.0 served as an important stepping stone, setting the foundation for Nepal's digital transformation journey. However, its implementation revealed valuable insights, particularly in the areas of coordination, leadership, supporting policies, technical skill sets, funding, data interoperability, and technological readiness.

Nepal's ambition to become a digital-first nation remains strong, underpinned by the eagerness to make strategic interventions through an updated version of *DNF 1.0*. As a result, the GoN commissioned *DNF 2.0*. The updated framework will address the learnings while embracing technological advancements to ensure that Nepal is not only digitally resilient but also poised to compete in the global economy. It will empower sectors with strategic enablers needed to harness the full potential of emerging technologies for long-term socio-economic growth, while also clearly outlining the core principles that guide the vision of a digital Nepal. This updated framework embodies Nepal's response to both its local digital challenges and global opportunities, ensuring a more inclusive, secure, and advanced digital future for all.

By focusing on core digital enablers, the updated framework seeks to strengthen foundational aspects such as connectivity, technical skills, data integration, and cybersecurity. This will empower the sectors to implement specific initiatives effectively, promote innovation, and achieve scalable impact. Prioritized investments in foundational elements will not only bridge the digital divide but also ensure sustainable, inclusive growth that benefits all regions and communities.

The DNF 2.0 aligns closely with Nepal's national development plans, which underpins information technology as a key cross-cutting sector. DNF 2.0 is guided by global digital principles, and is aimed at fostering an economically resilient, socially inclusive, and climate-friendly digital ecosystem.

This framework will serve as a roadmap for harnessing digital tools and emerging technologies, positioning Nepal to navigate future challenges and seize new opportunities for economic and social transformation. The framework will empower the GoN's vision of Nepal's IT Decade with realistic goal setting and focus on enablers that support a robust digital ecosystem.

Core Principles Guiding DNF 2.0

The overarching vision of *DNF 2.0* is to create a digitally empowered Nepal that is:

- **Economically Resilient:** DNF 2.0 aims to build a robust digital ecosystem that empowers both individuals and businesses. By investing in next-generation infrastructure such as 5G, broadband, and data centres, DNF 2.0 envisions creating an environment that is conducive for innovation and entrepreneurship, particularly in sectors like agriculture, tourism, finance, and IT. These advancements will promote private sector growth, enabling startups and small and medium enterprises (SMEs) to not only use digital tools for enhanced market access and but also increase their global competitiveness. The framework also focuses on expanding the use of digital payment systems, e-commerce, and fintech innovations, which are essential for driving sustainable economic growth in an increasingly digital world.
- **Socially Inclusive:** Ensuring social inclusivity is at the heart of DNF 2.0, aiming to bridge the urban-rural divide and promote equitable access to digital services. The framework emphasizes expanding digital literacy and access to underserved populations, including women, rural communities, and marginalized groups. Through initiatives like the National ID (NID) system, DNF 2.0 plans to streamline access to public services, empowering citizens to benefit from e-governance, healthcare, and education systems. Additionally, the framework seeks to ensure that digital tools are integrated into critical sectors, enhancing service delivery, and enabling wider participation in the digital economy.

- **Climate Friendly:** Nepal is among the most climate-vulnerable nations, ranking fourth in terms of potential impact from the climate crisis. DNF 2.0 seeks to address these challenges by utilizing technology both as a solution and as a tool for environmental sustainability. Initiatives such as smart grid technology, climate and weather forecasting, and advanced disaster preparedness systems are being prioritized to enhance resilience against natural disasters. Additionally, the framework promotes green procurement policies, e-waste management, and the establishment of energy-efficient green data centres, ensuring that the digital transformation does not exacerbate environmental degradation but instead contributes to a sustainable future.

Use Case: Reimagine AI as a Transformative Tool for Nepal

Artificial Intelligence (AI) alone, as a technology, offers transformative potential to address critical issues in climate resilience, inclusivity, and economic growth. By integrating AI across health, financial services, agriculture, tourism, education, and disaster management, Nepal can unlock new opportunities for tangible progress.

Outlined below are a few AI-led use cases that bring together the DNF 2.0 guiding principles and the opportunity to unleash economic transformation in Nepal through a keen focus on enablers.

Economic Resilience	**Climate Resilience**	**Social Inclusivity**
Promoting Innovation: AI hubs and innovation zones foster startups, creating jobs and stimulating the tech industry. **Optimizing Resources:** AI tools streamline government processes, improving efficiency and reducing costs in sectors like taxation, urban planning, and public services. **Enhancing Tourism:** AI creates personalized travel experiences, recommends itineraries, and manages crowds in popular destinations, boosting tourist satisfaction and revenue.	**Early Warning Systems:** Predictive models analyze weather patterns, enabling timely alerts for natural disasters like floods and landslides, reducing loss of life and property. **Smart Agriculture:** Machine learning optimizes crop planning, pest control, and resource use, increasing productivity while conserving water and soil resources. **Energy Efficiency:** AI manages smart grids, ensuring efficient energy distribution and supporting Nepal's renewable energy goals.	**Education and Financial Access:** AI-powered platforms deliver personalized education to remote areas, overcoming geographic barriers and improving literacy rates. **Healthcare Expansion:** Telemedicine solutions provide diagnostics and consultation services to underserved communities, ensuring equitable access to healthcare. **Digital Accessibility:** AI applications are tailored to accommodate diverse languages and dialects, enhancing usability for all demographics.

Methodology: A process of extensive consultations

DNF 2.0 is built on focus areas derived from extensive stakeholder consultations, international good practices, and technical advisory.

This included a comprehensive and inclusive methodology that engaged with various groups of stakeholders over nine months. Key stakeholders included government officers from key departments/agencies including sectoral ministries, private sector IT and digital services leaders, academics, civil society representatives, the Nepali diaspora and the public who were actively involved to ensure that the framework addressed the diverse needs of the country.

Through a series of workshop style focus groups, survey consultations, and discussions, stakeholders from various sectors provided valuable insights into the challenges and opportunities in their respective areas. This targeted approach allowed a nuanced understanding of sector-specific needs and helped shape initiatives that were both practical and impactful. Details of the research process can be found in Annex A

The workshops and focus groups facilitated collaborative discussions, ensuring that inputs were gathered from different regions, industries, and social groups, resulting in an integrated approach to Nepal's digital transformation.

In addition to these targeted engagements, a public consultation was organized to gather feedback from the general population, ensuring that the framework was inclusive and reflective of the broader societal needs.

This participatory approach was complemented by lessons learned from regional peers, where best practices and insights from countries with similar socio-economic contexts were studied and adapted to fit Nepal's unique environment. The synthesis of these diverse inputs and experiences informed the creation of **strategic enablers** and **actionable roadmaps** that guide DNF 2.0's initiatives, ensuring that the framework is grounded in both local realities and global digital trends.

A *FAST* Approach to Ensure a Digitally Enabled Nepal

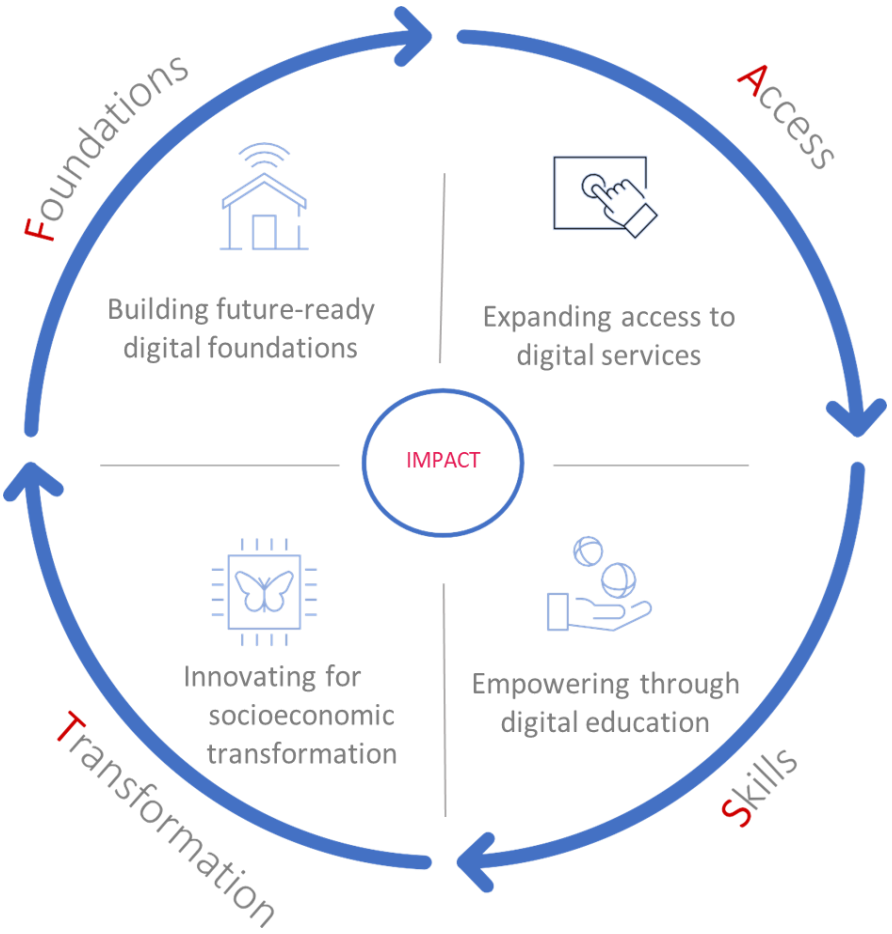
DNF 2.0 aims to be the strategic cornerstone for a sustainable and dependable digital ecosystem that drives inclusive access to digital infrastructure, fosters and promotes scalable innovation, bolsters cybersecurity and data protection measures, and prioritizes practical ways to enhance digital literacy and technical education to empower the workforce and government institutions.

To capture all these elements in an implementation-focused framework, *DNF 2.0* is closely aligned with the **16th National Plan** to ensure that all DNF 2.0 efforts and subsequent results are tied to the **Plan**, while also supporting and/or complementing the initiatives and sectors mapped out in *DNF 1.0*, which was a result of months of thoughtful engagements and on-the-ground research of priority areas.

Primarily, *DNF 2.0* identifies four core enablers of the framework. While the intention is to ensure each sector benefits from tailored roadmaps allowing for scalable and sustainable digital solutions, the **core enablers** will be central to all efforts tied to DNF 2.0.

Strategic Enablers for Nepal's Digital Transformation

DNF 2.0 establishes **four core enablers – FAST**, an acronym for Future-Ready Digital Foundations (F), Access to Digital Services (A), Skills and Digital Literacy (S), and Transformation of Digital Economy (T). Each enabler aligns with the goals of the 16th National Development Plan (NDP) and complements one or more focus areas outlined in DNF 1.0. Additionally, the acronym signifies the urgency with which Nepal needs to embrace digital readiness to unleash socio-economic transformation in an inclusive and equitable manner.



Listed below are each of these enablers, complete with clearly defined objectives and performance indicators to ensure DNF 2.0 is being intentional and action-oriented about spurring innovation and bolstering socio-economic growth across all sectors.

1. Future-Ready Digital Foundations

Building robust digital foundations is crucial to support both the delivery and access to digital services across all sectors. Critical elements that are tied to the ability of different sectors to harness the full potential of digital solutions include uninterrupted access to high-speed connectivity, data hosting, and a failsafe trust ecosystem. Outlined below are the core objectives that are integral to this first enabler.

Core Objectives:

- **Develop and Enhance Digital Public Infrastructure (DPI)**: This objective ensures that digital services are delivered efficiently, inclusively, and securely, thereby supporting equitable access for all citizens. Effective DPI serves as the backbone for digital government services and private sector innovations, enabling a streamlined approach to service delivery.

The objective aligns with the 16th NDP target 6.3(9), which focuses on enhancing the effective use of ICT in public service delivery. Nepal aims to increase its E-Government Development Index (EGDI) score from 0.5117 to 0.600 over five years. Additionally, this objective is rooted in DNF 1.0's focus on building digital public infrastructure and e-governance to improve service delivery.

To achieve this objective, the key drivers with clearly defined performance indicators are outlined below:

Key Drivers	**Performance Indicators**
Digital ID Enhancements	- Percentage of citizens registered with digital ID. - Number of government services adopting NID for service delivery - Number of private services using NID for service delivery
Digital Payments	- Increase in the volume of digital transactions. - User satisfaction rates with digital payment systems
Data Exchange and Interoperability	- Implementation of data exchange and interoperability standards. - Establishment of common data dictionary, services registry, and authentication framework - Number of systems following data sharing standards - Number of data-sharing arrangements between agencies - Number of services consuming data from other agencies

- **Ensure Universal, Affordable High-Speed Internet Access**: This will ensure progress towards bridging the digital divide and facilitating equitable access to digital services across the nation, particularly in underserved areas to support digital transformation and inclusion.

This objective directly aligns with the 16th NDP target 6.3(9) of **developing, expanding, and sharing telecommunication infrastructure, making telecommunication services convenient, accessible, and of high quality** as well as DNF 1.0's focus area of **Digital Connectivity.**

Focusing on ecosystem readiness, use-case expansion, and phased network modernization will enable Nepal to build a strong foundation for advanced connectivity infrastructure, driving economic and

technological growth. To achieve this objective, the key drivers with clearly defined performance indicators are as identified below:

Key Drivers	**Performance Indicators**
Broadband connectivity and network security	- Increase in percentage of households using broadband - Increase in broadband penetration measured by active subscribers - Improvement in average internet speed - Increase in sustainable, reliable, and redundant bandwidth sources - Increase in bandwidth consumed per capita - Reduction in broadband service costs to 2% of gross national income[2] - Increase in no. of local Points of Presence (POPs) to enhance network security
Emerging and Advanced Connectivity Infrastructure	- Ecosystem Readiness: Number of public-private partnerships, investment volumes, and infrastructure readiness percentages - Use Case Expansion: Number of pilot projects and commercial services leveraging emerging connectivity technologies, such as 5G, Industry 4.0, IoT, and AI - Network Deployment Goals: Base station density and population coverage, to guarantee widespread access to advanced connectivity - Service Adoption: Subscriptions increase, and average download speeds meet or exceed international standards - Cost Effectiveness: Improved cost effectiveness by adding local exchanges
Device Affordability	- Reduction in the average cost of smart computing devices (smart mobile, laptop, tablets) - Increase in device ownership per household - Availability of low-cost financing options for low-income households

[2] In alignment with Broadband Commission for Sustainable Development targets for LMICs

- **Establish Secure, Scalable, and Sustainable Data Hosting Solutions**: This will ensure that data is stored and managed securely while promoting sustainability.

This objective directly aligns with the 16th NDP target 6.3(9) of **developing, expanding, and sharing telecommunication infrastructure, making telecommunication services convenient, accessible, and of high quality** as well as DNF 1.0's focus area of **Digital Connectivity.**

To achieve this objective, the key drivers with clearly defined performance indicators are as identified below:

Key Drivers	**Performance Indicators**
Sustainable and Resilient Data Infrastructure	- Number of Sustainable Data Centers: Established or upgraded to meet international sustainability standards - Energy Efficiency Improvements: Reduction in PUE and measurable resource optimization gains - Adoption of International Certifications: Number of centres attaining certifications (e.g., LEED, ISO 50001, Green Grid) - Policies Developed: Policies tailored for province and sector-based sustainable data infrastructure to ensure inclusive growth
Cloud Services	- Adoption and implementation of cloud-first policy - Adoption rate of cloud services by government agencies. - Increase in the number of cloud-based applications. - Cost savings achieved through cloud service utilization.

- **Establish a secure, transparent, and accountable digital environment to build trust among users and stakeholders**: This will foster a secure digital environment to safeguard data and build public trust in digital systems.

This objective directly aligns with the 16th NDP target **6.3(9) of creating a secure and resilient cyberspace** and addresses the universally pertinent need to safeguard sovereign, private and public sector data, particularly considering the mass-scale advent and adoption of artificial intelligence (AI).

To achieve this objective, the key drivers with clearly defined performance indicators are as identified below:

Key Drivers	**Performance Indicators**
Cybersecurity	- Number of cybersecurity incidents resolved successfully. - Implementation of national cybersecurity policies - User awareness and training programs conducted

	- Improvement in Nepal's GCI rankings
Data Protection	- Establishment and Implementation of a Data Protection Legal Framework. - Compliance rates with data protection regulations. - Number of data breaches, and corrective actions taken. - User trust and confidence in data protection measures.
AI Readiness	- Public awareness and education on AI ethics and regulations - Development of legal frameworks, guidelines, infrastructure, datasets and institutional arrangements - Implementation of responsible AI guidelines and standards for development and application in public and private sector - Capacity building around AI adoption and applications (curriculum updates, skills development programs, upskilling and reskilling initiatives across public and private sectors)
E-Signature and Authentication	- Percentage of government services integrated with e-signature functionality - Number of transactions completed using e-signatures - User satisfaction ratings with authentication mechanisms - Reduction in fraud or misuse related to authentication systems

- **Enabling Policy Reform for a Competitive, Investment Friendly and Consumer-Centric Digital Environment:** This objective is integral to building a regulatory environment that supports traceable and reliable digital growth with inclusivity at the centre.

The objective aligns with the 16th National Development Plan (NDP) of developing, expanding, and utilizing reliable, secure, sustainable, and accessible modern information and communication technology (ICT) to build a robust digital economy.

To achieve this objective, the key drivers with clearly defined performance indicators are as identified below:

Key Drivers	**Performance Indicators**
Cross-cutting laws and regulations	- Digital enablement focused laws and regulations updated to align with international best practices for competition, resource management, enabling investments, inclusion, and consumer protection [This measure will assess the extent to which new regulations align with global standards for market competition, resource allocation, and consumer rights protection.]

Policy-first approach	- Adoption of the "Policy First" approach to ensure digitization is structured, equitable, and aligned with economic growth, social inclusion, privacy, and security

2. Access to Digital Services

Expanding access to digital services is fundamental to ensuring that all citizens can efficiently engage with public services, fostering inclusivity, and enhancing the overall quality of life. This enabler focuses on developing robust Digital Public Infrastructure (DPI) and improving service delivery through digital platforms. Doing so will enable seamless, secure, and accessible services that support the broader digital transformation goals of the various sectors. The core objectives guiding this second enabler are outlined below.

Core Objectives

- **Digital Service Delivery**: This objective is to improve accessibility and efficiency of public services by providing user-friendly digital platforms and integrating NID for secure and multi-channel service access.

The objective aligns with the 16th NDP target 6.3(9), which focuses on enhancing the effective use of ICT in public service delivery. Additionally, this objective is rooted in DNF 1.0's focus on building digital public infrastructure and e-governance to improve service delivery.

To achieve this objective, the key drivers with clearly defined performance indicators are outlined below:

Key Drivers	Performance Indicators
Improved access to public services online	- Percentage increase in the number of public services available online - Resources deployed to empower local and provincial level offices to offer digital services - No. of digital services initiated at local, provincial, and central levels - Percentage increase in online transactions for public services - Reduction in service delivery turn-around time and average cost post-digitalization - User satisfaction ratings with online service platforms - No. of innovative applications of AI and other emerging technologies for seamless and fast service delivery

Integration of NID for services	- Number of services using NID for authentication and verification of its service seekers
Harmonized and Securely Accessible Digital Datasets	- Number of datasets harmonized across government departments - Level of data interoperability achieved (measured by standards compliance) - Percentage reduction in data duplication and inconsistencies - User feedback on ease of access to government data and cross-system interactions - Reduction of data security incidents (number and severity)

3. Skills and Digital Literacy

Digital skills arm the people in Nepal with the abilities required to effectively use digital devices, applications, and infrastructure to access critical services. The DNF 2.0 aims to equip everyone across the various demographics of Nepal with skills needed to not only navigate the new digital tools and technologies, but also to build a dependable IT workforce with more advanced capabilities such as coding, data analysis, cybersecurity, and managing digital projects. Digital skills and literacy are crucial for Nepal's technology-led digital transformation, enabling citizens to actively participate in the digital economy, access critical services, and improve their livelihoods by adding ease of access and efficiency. Additionally, developing IT skills across the workforce is imperative, as it equips individuals to seize emerging job and entrepreneurial opportunities created by digital advancements, by fostering digital literacy, Nepal empowers its people to make informed decisions about safety, security, and privacy, reducing vulnerabilities introduced by a rapidly digitalizing world. Moreover, digital literacy drives inclusivity. By fostering inclusivity, Nepal ensures that people from all backgrounds can benefit from and contribute to its digital progress, building a more resilient, equitable society for all.

Core Objectives

All four objectives listed under this enabler align with the 16th NDP's target 6.3(9) to regulate the mass communication sector to be systematic, accountable, and effective, thereby increasing public access to information and enhancing the capabilities of the involved workforce. The objectives are a continuation of DNF 1.0's emphasis on capacity building to support economic growth through a digitally skilled citizenry.

- **Build a Skilled Workforce for the IT Sector**: This objective seeks to systematically equip individuals with advanced, future-ready digital skills that are in high demand, enhancing Nepal's competitiveness in the global digital landscape through expanded IT export capabilities. This involves not only preparing the workforce for IT-related careers but also fostering a culture of innovation and digital entrepreneurship.

To achieve this objective, the key drivers with clearly defined performance indicators is outlined below:

Key Drivers	Performance Indicators
Skilled Workforce for the Private IT Sector	- Development and adoption of IT skills framework addressing training needs for each sector (skills to use services, skills to develop) - Number of individuals trained and certified in IT skills - Percentage increase in youth and women employed in the IT sector

- **Improve the digital skills and capabilities of the government workforce:** This will ensure seamless public service delivery and enhanced efficiency. Developing a government workforce proficient in IT skills will inhibit service delivery frictions and improve productivity.

To achieve this objective, the key drivers with clearly defined performance indicators is outlined below:

Key Drivers	Performance Indicators
Skilled Government Workforce	- Integration of IT skills into government training program - Establish a government ICT training centre - Number of government employees trained in digital skills - Implementation of digital tools and platforms in government operations

- **Enhance the capabilities of academic institutions:** This objective ensures a way to future-proof the workforce and ensure high-quality IT education that is directly aligned with current industry standards and technological advancements.

To achieve this objective, the key driver with clearly defined performance indicators is outlined below:

Key Driver	Performance Indicators
Empower academia to teach IT skills	- Development of IT curriculum and faculty training to address current and emerging technologies - Collaboration between academia and the IT sector to provide practical learning opportunities and internships

	- Number of educational institutions offering ICT courses and training programs - Number of students enrolled in ICT courses and programs at secondary and university levels - Establishment of IT labs and innovation centres within academic institutions for hands-on learning

- **Improve Digital Literacy among the General Population**: This objective aims to ensure all citizens, particularly those from underserved communities, have access to basic digital skills training.

To achieve this objective, the key drivers with clearly defined performance indicators is outlined below:

Key Drivers	**Performance Indicators**
Digital Literacy, Knowledge, and Awareness	- Develop and adopt digital literacy framework based on international standards - Number of individuals completing digital literacy programs - Number of youth and women trained in digital literacy - Percentage of the population with basic digital skills - Increased use of digital services

4. Transformation of the Digital Economy

Innovation in digital technologies is key to transforming Nepal's economy, while also elevating the country's brand among global stakeholders. This enabler emphasizes supporting digital entrepreneurship, enabling SMEs, and encouraging the adoption of advanced technologies to boost productivity and enhance competitiveness across sectors.

Core Objectives

All five objectives listed under this enabler align with the 16th NDP's target 6.3(9) to regulate the mass communication sector to be systematic, accountable, and effective, thereby increasing public access to information and enhancing the capabilities of the involved workforce. The objectives are a continuation of DNF 1.0's emphasis on economic growth through digital innovation.

- **Foster Innovation and Entrepreneurship in the Digital Sector**: This objective focuses on creating a vibrant digitally powered ecosystem that encourages private sector innovation and attracts investment. By supporting tech startups and enabling private sector visibility globally, will help Nepal establish itself as a leader in digital innovation. This objective is also tied to promoting

the adoption and application of new innovations to eventually strengthen the digital ecosystem, drive economic productivity, and enhance quality of life.

To achieve this objective, the key drivers with clearly defined performance indicators is outlined below:

Key Drivers	**Performance Indicators**
Empowered Private Sector	- Increase in private sector investments in IT and tech sectors including FDI - Growth in private sector-led digital startups, projects, and products - Number of jobs in the ICT sector - Growth in tech export capabilities - Investment in digital infrastructure by private entities - Number of policies enacted to support private sector involvement
Acceleration and adoption of new innovations	- Integration of innovative and emerging technologies such as AI, IoT, cloud, quantum computing, blockchain and advanced analytics into the core components of the digital ecosystem, including startups and product development processes - Increase in emerging technology and related research and development initiatives - Number of industries adopting emerging technology-led solutions - Growth in productivity and efficiency of services through AI implementation - Growth in innovation labs and tech incubators

- **Develop and implement policies to boost digital economy**: This objective aims to create safeguards, while fostering innovation and investments in the digital, technology and IT sector and startups.

To achieve this objective, the key driver with clearly defined performance indicators is outlined below:

Key Driver	**Performance Indicators**

Policies to foster a thriving Digitally Led Start-ups Ecosystem	- Number of enabling policies and regulations implemented - Increase in the number of tech startups established - Growth in investment and funding for tech startups - Number of tech startups collaborating with global brands

- **Implement Sustainable Practices in E-Waste Management and Green Procurement to Support Environmental Sustainability:** Nepal produces approximately 42,000 tonnes of e-waste annually, and, as the fourth most vulnerable nation when it comes to climate-related risks, needs to pay particular attention to the environmental impact of digital technologies, devices, and infrastructure. Through responsible waste management and procurement policies, Nepal can add to the global efforts of minimizing electronic waste, promoting recycling, and encouraging the use of environmentally friendly materials in technology products.

To achieve this objective, the key drivers with clearly defined performance indicators is outlined below:

Key Drivers	**Performance Indicators**
E-waste Management and Green Procurement	- Number of individuals and businesses trained in e-waste management - Reduction in e-waste generation - Implementation of green procurement policies - Number of green procurement practices adopted by businesses. - Reduction in the environmental footprint of the IT sector

- **Support SMEs across Sectors to Leverage E-Commerce and Digital Tools to Enhance Their Market Reach and Competitiveness**: Small and Medium Enterprises (SMEs) are essential to Nepal's economy, representing a sizeable portion of employment and economic output. By leveraging e-commerce and digital tools, SMEs can expand their market reach, improve efficiency, and enhance their competitiveness in both domestic and international markets.

To achieve this objective, the key drivers with clearly defined performance indicators is outlined below:

Key Drivers	**Performance Indicators**
SME Competitiveness	- Number of SMEs using e-commerce platforms - Increase in revenue for SMEs through digital channels

	- Availability of support programs for SMEs - Growth in the number of SMEs adopting digital tools - Improvement in the competitiveness and market reach of SMEs

- **Leverage the Country's Unique Cultural Identity, Digital and IT Capabilities, and Sustainable Practices to Attract Investment, Boost Exports, and Foster Innovation:** Nepal has a unique cultural identity and a rapidly developing IT sector that must be harnessed to attract foreign investment, promote exports, and foster innovation. By building a strong national brand that emphasizes Nepal's cultural heritage, digital capabilities, and green initiatives, Nepal can stand out with a distinct brand on the global stage.

To achieve this objective, the key driver with clearly defined performance indicators is outlined below:

Key Driver	**Performance Indicators**
Effectively Create a Digital Nepal brand	- Creation of a Brand Nepal strategy - Number of global companies operating in Nepal - High-value jobs in tech and creative industries - Increase in ICT exports - Number of local companies operating outside Nepal.

- **Empowering Government-Level Transformation to Support Digitalization:** Nepal's digital transformation relies on the proper capacitation of the public sector – complete with tools, resources, skills, administrative priorities, and the ability to effectively map out and prioritize initiatives that will deliver scalable and measurable impact.

To achieve this objective, the key drivers with clearly defined performance indicators is outlined below:

Key Drivers	**Performance Indicators**
Empower the Leadership in the Public Sector	- Clear institutional arrangement and inter-agency collaboration framework for digital transformation - Institutional capacity building of leadership - Streamlined key leadership and administrative processes to support faster decision-making, reduced redundancy, and greater agility in implementing digital reforms.

Improve Financial Resource Management and Procurement Processes	- Enhanced e-budget and revenue management - Strengthened fiscal reporting and controls - Enhanced and standardized procurement policy and processes (including digital services procurement) - Procurement capacity development
Ensure Implementation of High-Priority Initiatives	- Implement priority flagship digital initiatives - Establish updated and agile public-private engagement models

Relying on Digital Enablers for Sectoral Success

The Principles for Digital Development, first created in 2014 and later updated in 2024, provide guidance for sustainable and inclusive digital development, aiming to ensure that all people benefit from digital initiatives. The Principles, endorsed by over 300 organizations, shaped development programs and funding policies with a keen focus on emphasizing radical inclusion, local ownership, and responsible digital data use, acknowledging that digital ecosystems impact everyone, including those without direct access. *DNF 2.0* leverages these principles that call for open innovation and actions to empower individuals and communities. In doing so the framework prioritizes a pragmatic approach of leveraging enablers as key tools and catalysts needed to advance sector-specific digitalization in Nepal. These catalysts will facilitate data integration, supporting secure and inclusive access to digital services, and ensuring that the core infrastructure and policies are in place to enable sectoral growth. The focus on these enablers provides a structured approach to bring about scalable digital solutions across sectors like energy, health, agriculture, and more.

Example of Sectoral Digitization Using the Enablers: Education Sector

DNF 2.0 Initiative: Introduce a central Education Management Information System

Related DNF 1.0 Initiative:

Objective: Improve access to education, improve quality, generate future-ready graduates

Background: Despite progress in improving access to education, challenges in bridging the urban-rural divide, enhancing digital literacy, and integrating industry-relevant skills into the curriculum remain.

Role of the Foundations:

- High-speed broadband internet, modern hardware and software enable ICT labs across Nepal's education institutions.
- Access to education data across regions enables finer assessment of needs and promotes access to academic records, resources, and digital via a Unified Student Portal
- A central National Digital Library enables localized and multilingual educational content.

Role of the Sector:

- Partner with technology firms to develop entrepreneurship-focused curricula and support start-up incubation in higher education institutions.
- Train teachers in digital pedagogy and ICT tools, and conduct digital literacy workshops with a focus on rural communities.
- Implement coding, AI, and data analytics courses for secondary students

Expected Impact:

- **Increased Access:** Digital modes of education enhance access to education even in remote and rural areas.
- **Enhanced Learning Outcomes:** Digital tools and resources improve literacy rates and implementation of AI, IoT and cloud, enable personalized learning
- **Workforce Readiness:** Students gain employable digital skills, boosting participation in the IT sector.
- **Entrepreneurship and Innovation:** Incubation of startup ideas in schools and universities, leading to successful ventures.
- **Long-Term Viability:** Regular maintenance of digital infrastructure and continuous teacher training ensure a sustainable education ecosystem.

Example of sectoral digitization leveraging the enablers: Energy Sector

DNF 2.0 Initiative: introduce smart grid solutions to enhance the monitoring and management of energy resources.

Related DNF 1.0 Initiative: GIS Smart Grid Project

Objective: Enhance the efficiency of electricity management and distribution through advanced smart grid solutions.

Background: Nepal's energy sector has faced challenges in ensuring reliable electricity distribution due to infrastructure limitations and inefficient resource management. The introduction of smart grid technologies can transform how energy resources are monitored and managed, driving better energy planning and distribution.

Role of the Foundations

- Digital ID verification and authentication capabilities enhanced to be ready to access individual usage data to conduct data analytics on demand
- Data sharing platform developed and integrated to allow the sharing of data between the energy and ID systems
- Data centre updated to ensure ability to store large volumes of data securely
- AI ecosystem and regulation development to support sector-specific use-cases
- Digital skills to develop the required data analytical capabilities

Role of the Sector

- Digital hardware such as sensors to monitor energy demand and supply
- Digital software such as IT equipment and dashboards to monitor and manage demand and supply

Expected Impact

- Improved Efficiency: Data-driven approaches can optimize electricity generation and reduce transmission losses.
- Enhanced Reliability: Real-time analytics and predictive maintenance using IoT and AI can lead to fewer outages and more responsive service.
- Sustainability: Smarter energy management contributes to sustainable development by supporting climate-friendly practices and reducing carbon emissions.

Example of sectoral digitization leveraging the enablers: Health Sector

DNF 2.0 Initiative: Integrate Health Information Systems. Ensure the integration and storage of health-related data, such as diagnostic reports, within the National ID system.

Related DNF 1.0 Initiative: Electronic Health Records 2.0Objective: Enhance the efficiency of electricity management and distribution through advanced smart grid solutions.

Objective: Strengthen healthcare delivery by integrating health data systems with the National ID (NID) platform for better service coordination and data security.

Background: The healthcare sector in Nepal faces fragmentation in data storage and access, limiting the ability to provide cohesive and efficient services. Integrating health information with the NID system can centralize and secure patient data, improving service delivery and patient outcomes.

Role of the Foundations

- Digital ID verification and authentication capabilities enhanced for readiness to integrate with health systems
- Digital payment systems interoperability and technical capabilities advanced to be available across the country and health centres
- Data sharing platform developed and integrated to allow the sharing of data between the health and ID system
- Data centre updated to ensure ability to store large volumes of data securely
- Cybersecurity capabilities enhanced to ensure safety of transactions
- Data Protection laws and implementation in-place to secure personal data
- Digital Literacy to ensure the use digital health services across the country

Role of the Sector

- Digitized health records to integrate with the ID system and health systems across different centres
- Health IT system development to ensure it can communicate with the data sharing

Expected Impact

- Streamlined Service Delivery: Integrated data access allows for quicker patient verification and treatment coordination.
- Improved Health Outcomes: Enhanced data sharing can support early diagnosis and more comprehensive patient care.
- Secure Data Management: Reinforced cybersecurity measures ensure that personal health information remains protected and private.

Sectoral Prioritization and Indicative Sectoral Initiatives

DNF 2.0 aims to emphasize the benefits of a sectoral prioritization approach, where using the core enablers FAST and digital enablers as the foundations, each sector has 2-3 priority initiatives that are most critical for impact.

By narrowing down to these key initiatives, DNF 2.0 ensures a strategic focus, directing resources and efforts to the areas with the highest potential for transformation and benefit. Sector-specific stakeholders, who best understand their needs and capacities, will play a leading role in determining and adding to the list of priorities independently, in the guidance of the proposed institutional arrangements, which will soon follow.

Outlined below are the key sectors identified as critical to Nepal's digitalization efforts based on DNF 2.0 primary and secondary research. Additionally, this section identifies key initiatives to prioritize for each sector based on the urgency, imperative, and the initiative that stands to generate the highest impact.

Smart Infrastructure

This sector encompasses urban infrastructure, energy, and transportation. It addresses Nepal's urbanization needs, sustainable energy goals, and transportation efficiency, directly impacting the country's economic productivity and quality of life. The identified key initiatives under this sector include:

Initiative	**Objective**	**Implementation**	**Responsible Agency**	**Impact**
Integration of Key Services across urban Infrastructure.	Enhance authentication and create centralized verification across urban infrastructure services for improved transparency and fraud reduction	Link services such as land and survey registries, water utility records, and property ownership with NID	Ministry of Energy, Water Resources and Irrigation	Simplified interactions for users Enhanced accountability Improved resource allocation and infrastructure planning.
	Create a unified platform for citizens to access urban services via a centralized digital portal.	Expand Nagarik App to cover comprehensive urban services (land records, tax payments, permits)	Ministry of Energy, Water Resources and Irrigation	Increases convenience. Reduces bureaucratic delays Enhances public service satisfaction Promotes civic engagement.

		Generate municipal partnerships for standardized data access across jurisdictions.		
Intelligent Transport Systems (ITS) and Smart Traffic Management	Improve urban traffic management and infrastructure safety through data-driven insights and real-time monitoring.	Deploy sensor networks, cameras, and traffic analytics in urban areas for traffic flow and road condition monitoring Share real-time data with drivers through mobile apps.	Ministry of Physical Infrastructure and Transport, Provincial and Local Governments Ministry of Home Affairs	Reduces congestion Lowers pollution Decreases commute times. Supports proactive infrastructure maintenance.
Enhanced Digitalization of Water and Sanitation (NWASH)	Improve water distribution efficiency and sanitation management through digital technologies.	Integrate GIS and remote sensing into NWASH for leak detection, demand forecasting, and water resource management. Use sensor-based monitoring systems to track usage and detect infrastructure issues in real time.	Ministry of Energy, Water Resources and Irrigation	Reduces water waste, enhances reliability of supply, and improves sanitation services. Helps ensure equitable water distribution.
Public Transport Apps and Smart Fare Payment Systems	Facilitate efficient and user-friendly urban transport through digital solutions.	Develop mobile applications for real-time public transport schedules, route information, and digital ticketing; implement digital fare systems for cashless transactions.	Ministry of Physical Infrastructure and Transport, Provincial and Local Governments	Promotes public transport usage, reduces reliance on cash, provides a modern commuter experience, and helps optimize urban transit flow.

Electronic Building Permit System (EBPS)	Digitize the building permit process to improve efficiency, compliance, and transparency.	Develop a centralized platform for EBPS with GPS tracking to monitor compliance with building regulations. Integrate with municipal systems for record-keeping.	Ministry of Urban Development, Provincial and Local Governments	Expedites approvals, improves data accuracy, simplifies monitoring, reduces unregulated construction, and aids urban planning.
Expansion of Municipal Mobile Applications	Facilitate citizen engagement and service access via smartphone-based municipal applications.	Establish a national framework for standardized municipal apps, allowing local governments to offer services like tax payment, complaint management, and public notices. Integrate apps into a central portal.	Ministry of Federal Affairs & General Administration, Provincial and Local Governments	Streamlined access to municipal services, increased satisfaction, improved revenue collection, and enhanced citizen-government interaction.
Climate and Weather Forecasting Enhancements	Strengthen forecasting systems to improve climate resilience and response preparedness.	Deploy AI-driven forecasting models and machine learning algorithms for weather pattern predictions; disseminate public alerts through SMS, apps, and websites.	Ministry of Energy, Water Resources and Irrigation, · Department of Hydrology and Meteorology	Increases public safety, especially in adverse conditions, enhances disaster management, and minimizes climate event impact.
Improved Disaster Forecasting and Preparedness	Utilize digital tools for enhanced disaster risk management and response.	Use AI and predictive analytics for early warning systems, robust disaster preparedness strategies, and	Ministry of Home Affairs, National Disaster Risk Reduction and Management Authority	Reduces disaster response times, improves coordination, minimizes natural hazard losses, and supports long-term resilience planning.

		inter-agency data-sharing platforms.	(NDRRMA), provincial and Local Government.	
Enhanced Urban Waste Management and Segregation	Modernize waste management with digital solutions to address environmental challenges.	Implement digital tracking, segregation, and management of urban waste. Integrate sensors in waste collection trucks to monitor levels and optimize schedules.	Local Government.	Reduces urban pollution, improves recycling, enhances cleanliness, and supports sustainable urban growth.
Optimize Electricity Planning and Distribution	Improve the efficiency of electricity planning, production, and distribution through data-driven approaches.	Use AI, IoT, and advanced analytics to enhance real-time monitoring of electricity grids, demand-supply forecasting, and fault detection.	Ministry of Energy, Water Resources and Irrigation, Nepal Electricity Authority	Increased reliability of power supply, reduced transmission losses, optimized resource allocation, and lower operational costs.
Implement Smart Grid Technologies	Enhance monitoring and management of energy resources using smart grid solutions.	Implement sensors, IoT devices, and advanced data analytics for efficient grid management, including demand response and load balancing.	Ministry of Energy, Water Resources and Irrigation, Nepal Electricity Authority	Reduces energy wastage, improves grid resilience, and enables responsive energy distribution that supports peak demand management.
Develop a smart monitoring system for bridges and other critical infrastructure.	Enhance structural safety and operational efficiency through real-time monitoring and	Deploy IoT-enabled sensors and AI-based analytics to monitor structural performance (e.g., load, vibrations,	Ministry of Physical Infrastructure and Transport, Department of Roads, Provincial and	Increases infrastructure safety and reliability. Reduces maintenance costs through early issue detection.

	predictive maintenance.	environmental stress). Integrate monitoring data into centralized platforms for analysis and maintenance planning.	Local Governments.	Enhances the lifespan of critical infrastructure. Supports sustainable urban development and disaster resilience.

Agriculture:

This sector plays a critical role in Nepal's economic resilience, food security, and rural development. By integrating technology-driven practices and digital solutions, the sector aims to increase productivity, improve resource management, and empower farmers with better access to information and financial services. The identified key initiatives under this sector include:

Initiative	**Objective**	**Implementation**	**Responsible Agency**	**Impact**
Formulate Soil Analysis Programs	Develop and implement technologies for soil testing and land management	Use drones, AI, IoT, and sensors in collaboration with central and local governments, and private sectors for extensive soil analysis and data collection.	Ministry of Agriculture and Livestock Development.	Improves soil health Optimizes fertilizer usage Increases crop yields Supports sustainable land management Contributes to long-term agricultural productivity
Expand E-Traceability and Quality Control	Enhance traceability and quality control systems for agricultural produce to strengthen marketability and safety standards.	Integrate e-traceability systems for crop tracking and quality assurance with customs and quality control departments.	Ministry of Agriculture and Livestock Development.	Builds trust in Nepalese agricultural exports. Enhances compliance with international standards Helps ensure consistent quality, boosting market

				access and competitiveness
Develop an Integrated Agricultural Information Management System	Improve data accessibility and transparency across agricultural supply chains to support data-driven decision-making.	Implement a centralized system to monitor demand and supply metrics, fertilizer distribution, production data, and supply chain inputs and outputs, linked to a farmer ID system for cohesive data management.	Ministry of Agriculture and Livestock Development.	Enhances policymaking Supports efficient supply chain management Ensures effective resource allocation for agricultural sustainability and productivity.
Digitalize the Farmer Registry and Link to NID	Establish a digital farmer registry linked to National ID (NID) to simplify access to agricultural services and subsidies.	Use NID for authenticating farmer identities Use NID to ensure eligibility for subsidies, insurance, and government programs Creating a unified system for support delivery.	Ministry of Agriculture and Livestock Development.	Streamlines subsidy distribution Increases transparency, and enhances policy planning Enables targeted support to the agricultural community for greater resilience and growth
Facilitate Digital Disbursement of Subsidies	Establish a secure, transparent digital platform for timely disbursement of agricultural subsidies, including insurance and fertilizer subsidies.	Implement an online payment system for subsidies and insurance premiums, with easy access options to facilitate participation and avoid delays.	Ministry of Agriculture and Livestock Development.	Increases subsidy reach Promotes financial inclusion Reduces administrative costs Mitigates risks of fraud.

				Ensures fair access to resources for smallholder farmers.
Implement Precision Agriculture	Enhance productivity and resource efficiency through precision agriculture techniques.	Integrate IoT, drones, and Package of Practice (POP) guidelines for optimizing crop management and ensuring resource-efficient horticulture and precision farming practices.	Ministry of Agriculture and Livestock Development.	Increases crop yields Reduces resource waste Supports sustainable agriculture through data-driven, precision-focused farming
Enhance Smart Livestock Management	Improve livestock management practices through digital systems to support rural livelihoods and food security.	Deploy SMS alert systems for critical livestock services such as liquid nitrogen supply and artificial insemination Implement health monitoring solutions for livestock.	Ministry of Agriculture and Livestock Development.	Increases productivity Reduces disease risks Provides timely support for livestock farmers Enhances the resilience of rural communities and the agricultural economy
Crop Health Monitoring and Yield Estimation	Use advanced technologies to monitor crop health and predict yields for proactive farm management.	Deploy drones and sensors for disease and pest detection, early crop health warning signs, and satellite imaging for yield estimation.	Ministry of Agriculture and Livestock Development.	Enhances crop health management, supports timely interventions, and helps farmers and policymakers make informed decisions for optimizing production.

Health:

The health sector in Nepal is focused on improving access to quality healthcare, streamlining medical records, and protecting patient data through digital health infrastructure. Digitalization aims to enhance efficiency, ensure continuity of care, and improve health outcomes. The key initiatives under this sector include:

Initiative	**Objective**	**Implementation**	**Responsible Agency**	**Impact**
Standards Development	Establish standards for health information exchange to ensure consistency and interoperability.	Define standards for electronic medical records (EMR), electronic health records (EHR), and data exchange focused on health, insurance, and diagnostics data. Standardize clinical forms for data-driven processes.	Ministry of Health and Population.	Promotes consistency across healthcare facilities Enables seamless data exchange Enhances overall healthcare quality.
Integrated Health Management Information Systems (IHMS)	Enable integrated and secure storage of health-related data such as diagnostic reports and health insurance details.	Implement a roadmap for IHMS Establish a self-service patient portal, Integrate health data with the National ID (NID) system.	Ministry of Health and Population.	Enhances continuity of care Reduces redundant data entry, Improves patient experiences by streamlining access to personal health information.
Open Data Framework	Improve data transparency and accessibility through open health data initiatives.	Create an open data framework to facilitate sharing of anonymized health data, ensuring safeguards and linking to the	Ministry of Health and Population.	Promotes public health research Enhances transparency Fosters innovation in healthcare.

		NID-derived health ID.		
Data Protection and Privacy Laws	Strengthen legal protections for health-related data to ensure patient privacy.	Reform laws for health-sector-specific data protection with focus on safeguarding sensitive patient information Establish oversight mechanisms for compliance	Ministry of Health and Population.	Builds public trust in digital health systems Safeguards personal health information Ensures compliance and accountability
Digital Health Infrastructure	Improve digital infrastructure in healthcare facilities to support efficient service delivery.	Upgrade hardware, software, connectivity, and medical equipment at national and local facilities; simplify data entry for healthcare providers.	Ministry of Health and Population.	Increases healthcare facility efficiency Improves data management Enhances the quality of patient care.
Digital Health Services	Leverage digital tools to expand access to healthcare services across the country.	Deploy telemedicine, e-maternal care, and next-generation healthcare services (e.g., AI and robotics); use drones for emergency medical supply delivery.	Ministry of Health and Population. Department of Health Services	Enhances healthcare accessibility, reduces geographical barriers, and ensures timely care, especially in remote areas.
Health Insurance Integration	Streamline health insurance delivery through integrated data systems.	Link health insurance systems with social security programs, establish a data quality framework, and	Ministry of Health and Population. Health Insurance Board	Increases insurance reach, reduces fraud, and helps reduce the financial burden on patients by improving service coordination.

		integrate with NID for verification.		

Tourism:

The Tourism sector initiatives aim to create a seamless experience for tourists by integrating digital systems, enhancing security, and promoting Nepal as a destination. The goal is to boost tourism, generate economic growth, and establish Nepal as a globally recognized tourism hub. The key initiatives under this sector include:

Initiative	**Objective**	**Implementation**	**Responsible Agency**	**Impact**
Tourist Centralized Data System (CeTMIS)	Centralize data collection and analysis for tourists to improve services and planning.	Develop an integrated system for tracking tourist arrivals and stays, linking data from various touchpoints. Integrate the system with immigration for real-time data.	Ministry of Culture, Tourism and Civil Aviation, Nepal Tourism Board	Provides a comprehensive view of tourist trends, enables targeted marketing, and enhances resource allocation.
One-Door Tourism Service Platform	Simplify access to tourism-related services through a unified platform.	Enhance the NTB website to offer comprehensive services, mobile app accessibility, and online booking for tourism services like hotels.	Ministry of Culture, Tourism and Civil Aviation, Nepal Tourism Board	Streamlines the tourist experience, increases convenience, and boosts tourism revenue by simplifying service access.
Multilingual Tourist Support Center	Improve communication and assistance for international tourists.	Establish a helpline with language experts and a 24/7 online support system to address queries in multiple languages.	Ministry of Culture, Tourism and Civil Aviation, Nepal Tourism Board	Increases tourist satisfaction, improves service accessibility, and enhances Nepal's reputation as a tourist-friendly destination.
Omnichannel Marketing Campaign	Promote Nepal’s tourist destinations	Launch campaigns across social media, TV, and websites. Include	Ministry of Culture, Tourism and Civil	Increases Nepal’s visibility on global platforms, attracts a broader audience,

	through digital channels.	international vlogger competitions and digital training for tourism stakeholders.	Aviation, Nepal Tourism Board	and boosts tourism traffic.
Tourism Security Infrastructure	Enhance safety measures and regulatory oversight to improve tourist security.	Implement systems like GPS tracking for trekking routes, online registration for hotels and expeditions, and increase CCTV coverage in key tourist areas.	Ministry of Culture, Tourism and Civil Aviation, Nepal Tourism Board	Increases safety for tourists, enhances tourism management, and helps foster trust in Nepal as a safe travel destination.

Education:

The Education sector initiatives aim to improve educational access, quality, and equity through digital transformation, enabling efficient resource management, data accessibility, and innovative learning methods. The key initiatives under this sector include:

Initiative	**Objective**	**Implementation**	**Responsible Agency**	**Impact**
Enhance EMIS Integration	Improve data sharing and interoperability across educational institutions and levels to promote social inclusivity.	Connect the Integrated Educational Management Information System (IEMIS) with other systems and ensure data sharing across sectoral, central, provincial, and local education entities.	Ministry of Education, Science and Technology, Centre for Education and Human Resource Development	Supports evidence-based policy-making Enables efficient resource allocation Enhances educational transparency.
Improve Central Assessment System	Create a standard system for all levels of education monitoring and evaluation.	Coordinate among local and central governments to establish a uniform monitoring and	Ministry of Education, Science and Technology,	The standardization will create a homogenous way to grade students across regions to promote fairness and equality.

		evaluation metric and system.		
Centralized Education Portal	Centralize information on educational institutions, resources, and performance data.	Create a portal for managing academic results, institutional information, and resource allocation across education levels.	Ministry of Education, Science and Technology,	Improves transparency, streamlines data management, and supports strategic planning in the education sector.
Advance the National Digital Library	Provide easy access to digital educational resources to enhance learning experiences.	Digitalize educational materials and expand smart classrooms with open educational resources (OER) and smart technologies.	Ministry of Education, Science and Technology,	Increases educational accessibility, reduces barriers to learning, and enhances the quality of education through modern resources.
Promote Educational Innovation and Entrepreneurship	Encourage skill-based and entrepreneurial learning.	Develop skill-based online platforms and focus on entrepreneurial skills within the curriculum.	Ministry of Education, Science and Technology,	Prepares students for the modern workforce, fosters innovation, and promotes entrepreneurship.
Emphasize Skills-Based Learning and ICT Integration	Equip students with industry-relevant skills and digital literacy.	Integrate ICT tools into sectoral education as per guidelines from CTEVT and universities to support hands-on learning.	Ministry of Education, Science and Technology,	Enhances employability, supports digital literacy, and bridges the skills gap in the job market.
Promote Self and Distance Learning Programs	Expand access to learning for students in remote or underserved areas.	Utilize virtual learning platforms and learning management systems (LMS) to support self-paced and distance education programs.	Ministry of Education, Science and Technology,	Increases educational inclusivity, reduces access disparities, and supports continuous learning regardless of location.

Enhance Open-Learning Education Portal	Create direct access to relevant and contextual multimedia learning materials	Digitize learning materials and curriculums with a focus on multilingual content that represents multiple cultures and regions, including engaging audio and video learning materials.	Ministry of Education, Science and Technology,	Creates ease of access and longevity of relevant content in alignment with national standard and curriculum
Devise an integrated education system	Enhance operational efficiency, streamline service delivery, and monitor the career outcomes of graduates,	Develop an integrated system that consolidates all applications under the ministry into a single platform, incorporates a single-window system for scattered applications, and introduces a TVET graduate tracking system.	Ministry of Education, Science and Technology,	Creates a unified way to analyse, track and alter workforce development
Availability of ICT Resources and Infrastructure	Establish well-equipped ICT labs in schools to enhance digital access and allocate resources such as budgets and skilled ICT personnel for sustainable monitoring and support. Additionally, introduce dedicated internet	Set up ICT labs in schools with essential hardware and software tools. Allocate financial and human resources for the maintenance and ongoing support of these facilities. Collaborate with internet service providers to create cost-effective,	Ministry of Education, Science and Technology,	Enhanced digital literacy among students and teachers, improved access to online educational resources, and a sustainable foundation for integrating ICT into learning environments. This initiative supports long-term digital

	packages tailored for the education sector to ensure consistent online connectivity.	high-speed internet packages for educational institutions.		transformation in the education sector.
Create skill-enhancing clubs for teachers and students that promote digital learning.	Cultivate a collaborative learning environment where both students and teachers can enhance their digital skills and benefit from innovative educational tools and resources.	Establish clubs that focus on technology-driven learning and skill development. Leverage digitized educational materials for equitable access and introduce OER in classrooms to complement traditional smart boards. Provide training for educators and students to effectively utilize these resources.	Ministry of Education, Science and Technology,	A more interactive and skill-oriented learning environment that prepares students for a tech-driven world. Teachers gain access to modern teaching tools, fostering innovation in instructional methods.
Emphasize Skills-Based Learning	Incorporate digital tools and occupational-specific competencies into Technical and Vocational Education and Training (TVET) curricula. Create an online employer network to connect TVET	Integrate occupational-specific digital competencies into TVET courses and provide hands-on training with relevant tools. Build an online network platform for employers to engage with graduates for on-	Ministry of Education, Science and Technology,	Graduates with industry-relevant skills are better prepared for the job market, resulting in higher employment rates. Stronger industry-academia connections drive curriculum relevance and workforce readiness.

	graduates with industry for internships, job placements, and incubations.	the-job training, internships, and job placements.		
Promote Self and Distance Learning	Expand access to quality education through flexible and remote learning solutions, enabling students to learn at their own pace.	Deploy virtual classrooms and LMS platforms equipped with interactive tools and digital content. Design programs tailored to self-learning and remote education, making use of live and recorded sessions, assignments, and assessments.	Ministry of Education, Science and Technology,	Broader access to education, especially for underserved and remote areas, fostering inclusivity. Students develop self-learning skills, while institutions reduce dependency on traditional infrastructure.
Create and Implement Virtual Labs	Provide students with hands-on, practical experience in a virtual setting, enhancing their understanding of complex concepts in STEM and other subjects.	Develop and deploy virtual lab solutions using AR, VR, and MR technologies. Train educators and students to effectively use these technologies for experiential learning. Ensure the labs are accessible via affordable devices and platforms.	Ministry of Education, Science and Technology,	Increased engagement and comprehension of challenging subjects through immersive experiences. Virtual labs democratize access to advanced educational tools, overcoming physical and financial barriers to traditional lab setups.

Governance, Social Protection, and Lifecycle Services

This sector focuses on delivering seamless, digital-first governance and lifecycle services that are accessible, efficient, and transparent. Key initiatives aim to digitize social protection, streamline government services, and ensure easy access to critical services. The initiatives include:

Initiative	Objective	Implementation	Responsible Agency	Impact
End-to-End Digital Government Services	Digitize key government services for greater accessibility and convenience.	Utilize the unified Nagarik App to deliver services related to birth, marriage, death registrations, and property records.	All sectorial ministries	Enhances convenience, reduces bureaucratic barriers, and increases government efficiency.
Integrated Social protection Service Delivery	Streamline social protection services through a common digital platform.	Create an integrated system to manage social services, such as pensions, subsidies, and welfare programs, with eligibility verification via NID.	Ministry Of Labour, Employment and Social Security, Ministry of Finance, Social Security Fund,	Improves service accessibility, ensures equitable distribution, and increases transparency in social protection services.
Paperless Government	Transition to a fully digital, paperless government for improved efficiency.	Digitize essential services, such as licensing, permits, and registration processes, to facilitate electronic submissions and record-keeping.	All sectorial ministries	Reduces paperwork, speeds up processing times, and supports sustainability through reduced resource use.

Finance:

The Finance sector initiatives are focused on creating a resilient, inclusive, and efficient financial system through digital public infrastructure, interoperability, and advanced security protocols. These initiatives aim to improve financial inclusion, streamline transactions, and enhance economic stability. Key initiatives include:

Initiative	Objective	Implementation	Responsible Agency	Impact

Operational Efficiency and Growth via Digital Public Infrastructure	Leverage DPI to streamline financial services and expand access.	Integrate financial organizations with the National ID for e-KYC, reducing transaction costs and enhancing digital lending opportunities.	Ministry of Finance, Nepal Rastra Bank	Enhances financial inclusion, increases access to capital, and supports economic growth through streamlined processes.
Digital Transformation of Credit Rating Systems	Establish a centralized platform for enhanced credit scoring and financial transparency.	Develop credit rating models that incorporate financial behaviours of individuals and SMEs, particularly in the informal economy.	Ministry of Finance, Nepal Rastra Bank	Supports better risk assessment, promotes financial inclusion, and improves transparency in financial systems.
Digital Payments Integration	Enhance interoperability and compliance within Nepal's digital payment ecosystem.	Strengthen PSO-PSP interoperability, harmonize regulations, and adopt secure, interoperable platforms for faster settlements.	Ministry of Finance, Nepal Rastra Bank	Reduces transaction costs, enhances security, and supports widespread adoption of digital payments.
Enhanced Financial Ecosystem Resilience	Strengthen security protocols to safeguard financial transactions.	Implement cyber defence mechanisms, conduct regular audits, and establish a dedicated agency to oversee transaction security and data integrity.	Ministry of Finance, Nepal Rastra Bank	Reduces fraud, protects consumer data, and ensures a stable, trustworthy financial ecosystem.
Streamline Digital Cross-Border Payments	Improve the ease of cross-border transactions to boost financial inclusion.	Integrate AML compliance and leverage remittance inflows as credit scores to	Ministry of Finance, Nepal Rastra Bank	Increases remittance utility, supports financial inclusion, and boosts the economy by facilitating smoother

		support local financial services.		cross-border transactions.

An Effective Institutional Arrangement for DNF 2.0

For Nepal's digital transformation journey to take speed, effective institutional arrangements are essential. DNF 2.0 has identified a structured, collaborative, and empowered governance model with clearly defined roles, responsibilities, and coordination mechanisms by borrowing ideas and approaches derived from in-person consultations conducted over a period of five months. Additionally, the successfully implemented institutional arrangements from countries, including India, Singapore, Indonesia, Kingdom of Saudi Arabia, Denmark, Mexico, and Brazil have informed DNF 2.0's institutional arrangement.

By employing a comprehensive arrangement, DNF 2.0 aims to guide the processes that ensure better alignment of various government, private, and subject matter experts to drive impactful digital transformation.

Guiding Principles for DNF 2.0 Institutional Arrangements

The core objective of the institutional arrangement outlined in this framework is to ensure the success of national digital transformation, by ensuring leadership and accountability extend beyond simple role assignments.

Simultaneously the structure aims to actively integrate key leadership, foster cross-sector collaboration; and ensure data accessibility, while empowering the required legal authority and resources by applying the following guiding principles:

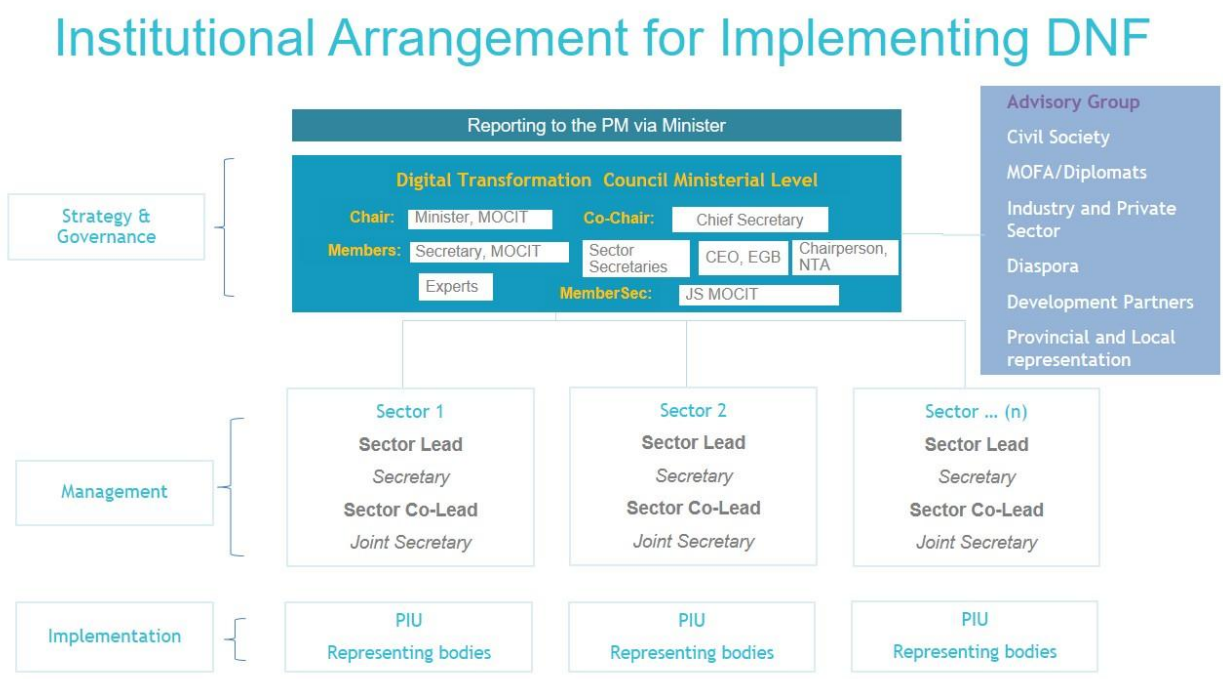
- **Empowering Top Digital Leadership –** A successful institutional arrangement is one that ensures digital leadership is integrated at the highest levels of government by ensuring digital transformation is national priority. Often, this digital leadership ensure the national digital agenda receives complete political backing.
- **Developing a Visionary Strategic Roadmap:** The institutional arrangement must empower an equitable and inclusive national vision that leads to a strategic roadmap with clear, measurable goals that address sectoral and community-based needs.
- **Fostering Political and Sectoral Collaboration:** The success of a national digital agenda relies on collaborative relationships between ministries, local governments, and sector-focused private and public entities. This support base provides the diverse input and resources necessary to tackle challenges in digital policy and execution.
- **Creating a Legal and Regulatory Foundation:** A robust legal authority enables institutions to enforce digital policies and regulatory frameworks effectively and adapt quickly to technological changes. These frameworks should empower institutions with the mandate to implement and oversee digital initiatives across sectors.

- **Allocating Dedicated Human and Financial Resources:** Digital transformation requires a specialized workforce and sufficient funding to support continuous digital integration. Institutions need dedicated teams trained in digital skills and access to resources that facilitate efficient project management. Consistent budget allocations and financial planning enable uninterrupted project progress and capacity building, ensuring institutions remain equipped to handle evolving digital demands.
- **Enhancing Sharing of Data for Progress Monitoring:** Effective tracking and course-correction of digital transformation across government relies on a government-wide approach to sharing data. Enhanced data sharing between ministries and agencies not only improves the efficiency of service delivery but also strengthens data-driven decision-making. Sharing such data through digital means with appropriate governance protocols, combined with secure infrastructure, will support real-time collaboration, analytics, and transparency.

Through a well-coordinated, resource-backed, and legally empowered structure that can adapt to rapidly changing digital landscape, Nepal can curate a digital ecosystem that supports sustainable economic growth, social inclusion, and resilience.

Centralized Digital Transformation Council

The institutional arrangement of DNF implementation will be led by Digital Transformation Council (DTC) for nation digital transformation. This not only ensures that the digital transformation is strategically guided, but is also consistently coordinated, and executed across all sectors. The following outline is provided to guide further discussions on structure and responsibilities.



- **Digital Transformation Council (DTC) for Strategic Oversight:** The DTC will be responsible for setting national digital transformation priorities, monitoring project milestones, addressing cross-sectoral challenges, and ensuring policy coherence. The DTC, led by experienced and empowered government leaders (at the level of Secretary), will serve as the strategic decision-making body. DTC will be led by minister, MoCIT and will comprise of relevant ministry secretaries, and representatives from the e-Governance Board and from the Office of the Prime Minister and Council of Ministers (OPMCM). The DTC shall report to the Prime Minister and the Cabinet, to ensure that the digital transformation receives support and guidance from the government. In order to support DTC there will be dedicated team in MoCIT lead by Joint Secretary.
- **Ensuring Coordination:** For digital transformation efforts to align seamlessly with national goals, centralized coordination through the DTC with relevant ministries within this high-level framework will be critical for digital transformation to be implemented through responsible government agencies.

Identifying Roles and Responsibilities

Each of the key stakeholders shall have clearly defined roles and responsibilities to enforce accountability, promote cross-sector collaboration, and ensure effective oversight at every level.

Role	Responsibilities
Office of the Prime Minister and Council of Ministers (OPMCM)	- Establish overarching vision and direction for digital transformation - Approve major strategic decisions
Digital Transformation Council (DTC)	- Coordinate digital initiatives across ministries - Establish strategic priorities - Monitor overall progress
Ministry of Communication and Information Technology (MoCIT)	- Support DTC to Manage and coordinate the execution, - Coordinator on digital policies implementation - Track project progress - Ensure compliance across ministries - Report on challenges and updates
Ministry of Finance (MoF) and National Planning Commission (NPC)	- Provide financial oversight, validate budgets - Monitor spending on digital initiatives
Sector Co-Lead from relevant ministries	- Oversee sector-specific digitization initiatives - Develop and drive sectorial roadmaps and action plans - Set sectorial direction and achieve results

Project/Program Implementation Unit (PIU)	- Drive deliverables and milestones for each project /program
Experts	- Provide technical expertise on subject matters - Support innovative solutions within projects/program

Indicative Action Plans

Enablers

Based on the priorities, strategic areas of focus, and core group responsible for implementing DNF 2.0, here is a breakdown of the core enablers essential to realizing the DNF 2.0. These organized by focus areas, key actions, and responsible agencies, with the goal of building a resilient, inclusive, and technologically advanced Nepal.

1. Future-Ready Digital Foundations

The foundation of Nepal's digital transformation relies on creating infrastructure and policies that ensure reliable connectivity, data security, and innovative capabilities.

Focus Area	Action Items	Lead	Support	Implement
Broadband Expansion leveraging Rural Telecom Development Fund (RTDF)	- Expand broadband infrastructure to underserved areas, reduce broadband costs and improve connectivity.	NTA	MoCIT	Telecom Operators, ISPs
Advanced Connectivity Infrastructure	- Develop an Advanced Connectivity Ecosystem: Create and enforce regulatory frameworks supporting connectivity infrastructure. - Foster public-private partnerships to drive infrastructure investment. - Offer incentives for R&D in advanced connectivity applications. - Develop and execute training programs to cultivate expertise in connectivity technologies.	NTA	MoCIT	Telecom Operators, ISPs

	- Encourage the establishment of local Points of Presence (POPs) to enhance network security, reduce latency for local users, and improve overall service quality through localized traffic management. - Establish local Internet Exchange Points (IXPs) to reduce dependency on external bandwidth and improve cost-effectiveness.			
	- Expand Emerging Connectivity Use Cases: - Launch pilot projects in sectors like smart infrastructure, agriculture, healthcare, and education. - Build partnerships between telecom providers and industry innovators for IoT and AI solutions. - Establish innovation hubs for prototyping and scaling advanced connectivity services - Provide special provisions for emerging technologies, such as free or subsidized spectrum allocation, and facilitate the development of testbeds by creating rules and policies to encourage trials and innovation	NTA	MoCIT	Sectorial Ministries, Telecom Providers, ISP's, Industry Stakeholders
	- Modernize Legacy Networks - Implement a phased retirement plan for 3G networks. - Reallocate spectrum from 3G to advanced connectivity services.	NTA	MoCIT	Telecom Operators, ISPs

	- Provide support to facilitate smooth transitions for consumers and businesses relying on older networks.			
Device Affordability	- Promote local assembly of devices.	MoICS	MoCIT, MoF, NTA	Industry Stakeholders
	- Reduce taxes on imported internet-enabled devices.	MoF	MoICS, MoCIT	Department Of Customs
	- Implement subsidies or low-cost financing options.	MoICS	MoCIT, MoF	Department of Industry
Resilient and Sustainable Data Infrastructure	- Develop and enforce a Sustainable Data Infrastructure Policy Framework aligned with international benchmarks (LEED, ISO 50001, Uptime Institute Tier III/IV). Develop provincial and sector-specific guidelines for sustainable and energy-efficient data centres.	DoIT	MoCIT	IDMC
	- Promoting Public-Private Partnerships (PPPs): Offer tax breaks, subsidies, and financial incentives to encourage private investment in sustainable data centres. Develop a PPP-driven roadmap for establishing new infrastructure and upgrading existing facilities.	MoICS	MoF, MoCIT, EGB, IBN, Private Sector	DOICS
	- Government Data Center Modernization: Upgrade existing government data centres to meet international energy efficiency and operational standards. Conduct periodic energy audits and ensure compliance with	MoCIT	OPMCM, MoF, EGB	IDMC

	certifications like ISO 50001 for resource optimization.			
	- Collaboration and Capacity Building: Foster partnerships between local IT firms, global operators, and academia to drive innovation and sustainability best practices. Launch capacity-building programs to train a skilled workforce on energy-efficient data infrastructure technologies.	MoICS	MoF, MoCIT, EGB, IBN, Private Sector	Universities, DOICS
Cloud Services	- Assess government systems' cloud readiness.	MoCIT	MOF	DoIT, IDMC Telecom Providers, Private Data Center
	- Develop a cloud-first strategy	MoCIT	OPMCM, MoF	DoIT
	- Develop a cloud standardization framework – complete with security guidelines – that enables private sector growth.	MoCIT	EGB	DoIT, NCSC, Private Sector
	- Establish a cloud governance framework that equally enables the public and private sector.	MoCIT	EGB	DoIT, NCSC, Private Sector
	- Promote public-private partnerships for cloud service expansion.	MoCIT	EGB	DoIT, NCSC, Private Sector
Cybersecurity	- Establish a National Cybersecurity Implementation Committee and framework.	MoCIT	Sectorial Ministries	NCSC

	- Activate NP-CERT and strengthen institutional infrastructure.	MoCIT	Sectorial Ministries	NCSC
	- Integrate cybersecurity education, conduct national drills, and develop skilled professionals.	MoCIT	Sectorial Ministries	NCSC
	- Launch awareness campaigns, mandate incident reporting, and enact robust data protection laws.	MoCIT	Sectorial Ministries	NCSC
	- Secure infrastructure with a national intranet, technical standards, and upgraded tools for resilience.	MoCIT	Sectorial Ministries	NCSC
Data Protection	- Develop a data protection framework to ensure compliance and safeguard citizen data.	MoCIT	Sectorial Ministries, NTA	EGB
	- Implement data protection regulations.	MoCIT	Sectorial Ministries, NTA	EGB
AI Readiness	- Develop a comprehensive national AI policy that ensures safe, ethical, and regulated use of AI	MoCIT	EGB	MoCIT
	- Establish high-speed networks	MoCIT	MoF	NTA, Telecom Companies, ISPs
	- Establish AI nodal agencies to drive research, development, and deployment.	MoCIT	NTA, EGB	MoCIT
	- GPU-powered computational facilities, scalable data centres	MoCIT	MoF, NTA, EGB	DoIT, IDMC
E-Signature and Authentication	- Develop a national framework for e-signature usage.	MoCIT	EGB	OCC, DoNIDCR

	- Promote integration with government and private sector platforms	MoCIT	Sectorial Ministries, Private Sector	OCC
	- Conduct public awareness campaigns to drive e-signature adoption.	MoCIT	NTA	OCC
Assessment and Reformation of all Relevant Policies	- Conduct a comprehensive assessment to identify regulatory gaps	MoCIT	Sectorial Ministries	NTA, DoIT, NCSC, OCC
	- Update telecom and digital policies to support competition, investment, and consumer protection.	MoCIT	IBN, MoICS	NTA

2. Expand Access to Digital Services:

The aim is to improve public service accessibility through digital channels and ensure interoperability for secure, inclusive, and efficient service delivery.

Focus Area	Action Items	Lead	Support	Implement
Digital Public Infrastructure (DPI)	- Develop a common data dictionary.	MoCIT	Line Ministries, NID, MoHA	DOIT
	- Create a centralized service registry.	MoCIT	Line Ministries, NID, MoHA	DOIT
	- Establish authentication and authorization protocols.	MoCIT	Line Ministries, NID, MoHA	DOIT, OCC
	- Implement Single Sign-On (SSO) for easy and secure service access.	MoCIT	Line Ministries, NID, MoHA	DOIT
Digital Service Platforms	- Enhance and/or build user-friendly online platforms.	MoCIT	NID, MoHA, eGB	Sectorial Ministries, DoIT
	- Strengthen e-payment policies.	MoF	MoCIT, eGB	NRB

	- Integrate National ID (NID) for secure service access.	MoCIT	NID, MoHA, eGB	Sectorial Ministries, DoIT
Data Interoperability	- Establish standardized data-sharing protocols.	MoCIT	EGB	Sectorial Ministries, NCSC
	- Implement robust data security measures to allow cross-agency data exchange without compromising privacy.	MoCIT	EGB	Sectorial Ministries, NCSC
Priority Digital Initiatives Implementation and Sector-Specific Digitalization	- Initiate tailored digital solutions for citizen-centric sectors such as agriculture, health, and education.	MoCIT	EGC	Sectorial Ministries, DOIT
	- Identify and implement 2-3 flagship digital transformation projects across these critical sectors	MoCIT	EGC	DOIT
	- Provide financial and technical support to each project with a focus on speedy and scalable service delivery and economic development	MoCIT	OPMCM, NID	DOIT

3. Skills and Digital Literacy

To fully leverage Nepal's digital transformation, it is crucial to foster a digitally skilled workforce and improve public digital literacy across all demographics.

Focus Area	Action Items	Lead	Support	Implement
IT Workforce Development	- Develop an IT skills development framework.	MoCIT	EGB	MoEST, Universities
	- Implement training and certification in emerging technologies.	MoCIT	MoEST, EGB	Universitie, CTEVT, NASC
	- Encourage educational institutions to incorporate advanced technology courses.	MoEST	EGB	Universitie, CTEVT, NASC
Government Workforce Training	- Conduct capacity and skills assessments of government agencies to identify training	MoEST	MoCIT	EGB, DoIT

Government Workforce Training	needs and strengthen workforce capabilities.			
	- Conduct digital skills training for government employees.	MoCIT	EGB	DOIT, MoCIT
	- Integrate digital tools into public service delivery to enhance efficiency and citizen engagement.	MoCIT	EGB	DOIT, MoCIT
Public Digital Literacy Enhancement	- Launch community-based digital literacy programs targeting underserved areas.	MoEST	MoCIT	EGB, Provincial and Local Government
	- Foster inclusive digital participation by offering multiple training modalities that encourage youth, minority, and women participation.	MoEST	MoCIT	MoWCSC,EGB, Provincial and Local Government
Educational Institutions Support	- Update IT curriculum.	MoEST	MoCIT, Universities, NEB, CTEVT	Curriculum Development Centre
	- Provide training for faculty in emerging tech.	MoEST	MoCIT, EGB	Universities, NEB, CTEVT
	- Create partnerships between academia and industry to offer internships and practical experience in digital skills.	MoEST	MoCIT, EGB	Universities, NEB, CTEVT

4. Transformation of the Economy

To fully leverage Nepal's digital transformation, it is crucial to empower the private and public sectors, equip ICT companies and workforce alike with supporting policies, and build a reliable and credible Digital Nepal brand.

Focus Area	Action Items	Lead	Support	Implement
Empowered Private Sector	- Promote private sector investment in digital innovation.	Nepal Investment Board	CNI, FNCCI, NAS-IT, CAN Federation, foreign investment agencies	MOICS, MoF

	- Provide incentives to enhance tech export capabilities,	MOICS	MoCIT	MoF
	- Facilitate growth in ICT-related startups, projects, and jobs.	MOICS	MoCIT	MoF
	- Implement supportive policies to encourage private sector engagement in digital infrastructure.	MoCIT	OPMCM, MoF, MoLJPA	MOICS
Policies for IT Sector and Tech Startup Enablement	- Streamline regulations to support IT startups.	MoICS	IBN, EGB	MoCIT
	- Create fiscal incentives like grants and tax breaks for startups to innovate and solve local and global challenges.	MoICS	IBN, EGB	MoF
	- Fast-track approval processes to attract foreign investment and encourage international collaboration.	MoICS	MoCIT	IBN, EGB, MoFA
	- Promote international partnerships for Nepal-based tech startups through bilateral agreements and cross-border venture funding opportunities	MoICS	MoCIT	IBN, EGB, MoFA
Acceleration and Adoption of New Technologies	- Integrate innovations like AI, IoT, and advanced analytics into digital ecosystems.	MoCIT	Private sector partners (CNI, FNCCI, NAS-IT, CAN)	Universities, Research Center
	- Promote AI-related research and development initiatives	MoCIT	Private sector partners (CNI, FNCCI, NAS-IT, CAN)	Universities, Research Center
	- Establish and grow innovation labs and tech incubators.	MoCIT	Private sector partners (CNI, FNCCI, NAS-IT, CAN)	Universities, Research Center

	- Encourage industries to adopt AI solutions to improve productivity.	MoCIT	Sectorial Ministries, Private sector partners (CNI, FNCCI, NAS-IT, CAN)	Universities, Research Center
e-Waste Management and Green Procurement	- Establish a comprehensive legal framework for e-waste management in Nepal.	MOFE	MoCIT, NTA, private sector partners	DoENV, Provincial and local Government
	- Develop and implement policies for green procurement in IT sectors.	MOFE	MoCIT, NTA, private sector partners	DoENV, Provincial and local Government
	- Promote the reduction of e-waste generation through public training and awareness campaigns.	MOFE	MoCIT, NTA, private sector partners	DoENV, Provincial and local Government
SME Competitiveness	- Provide training for SMEs to adopt e-commerce platforms, develop support programs for digital tool adoption, and facilitate access to funding for SMEs in the digital economy.	MoICS	MoICS, MoCIT	DOCSI
Enhance Visibility of Digital Nepal Successes and Developments	- Create and implement a "Digital Nepal" branding strategy.	MoCIT	MoFA, MoICS, IBN, EGB, Diaspora Organizations	IBN
	- Market Nepal as a leading destination for tech talent and global investment on digital platforms.	MoCIT	MoFA, MoICS, IBN, EGB, Diaspora Organizations	IBN
	- Engage and consult with diaspora networks to identify ways to enhance the visibility of Nepal's technology landscape.	MoCIT	MoFA, MoICS, IBN, EGB, Diaspora Organizations	IBN
	- Invest in expos, trade shows and events, and in	MoICS	MoFA, MoCIT IBN, EGB,	IBN

	recurring participation and presence at global events.		Diaspora Organizations	
	- Highlight the nation's ICT strengths and digital success through strategic international media partnerships.	MoCIT	MoFA, MoICS, IBN, EGB, Diaspora Organizations	IBN
	- Increase industry partnerships in global markets.	MoICS,	MoFA, MoCIT IBN, EGB, Diaspora Organizations	IBN
	- Enable ICT export growth by promoting innovation, empowering startups.	MoICS,	MoFA, MoCIT IBN, EGB, Diaspora Organizations	IBN
Public Sector Leadership Empowerment	- Establish frameworks for inter-agency collaboration in digital transformation.	OPMCM	Line Ministries	MoCIT, EGB
	- Strengthen leadership training for digital transformation initiatives	OPMCM	Line Ministries	MoCIT, EGB
	- Streamline governance for digital projects.	OPMCM	Line Ministries	MoCIT, EGB
Public Financial Management and Procurement	- Enhance and implement revenue management systems.	MoF	FCGO, DoC	IRD
	- Strengthen fiscal reporting and controls to improve financial transparency and accountability;	MoF	OAG, NRB	FCGO
	- Standardize procurement policies and processes, including those for digital services procurement.	OPMCM	MoF, MoLJPA, MoCIT	PPMO
	- Build procurement capacity through training programs and modernization initiatives.	OPMCM	NASC, PFMTC	PPMO

ANNEX

- **Digital Public Infrastructure (DPI):** DPI is a trusted and accessible vehicle that ensures services can be safely, securely, and efficiently delivered. Integral to DPI are digital IDs, digital payments, and data exchange systems that allow citizens and organizations to authenticate, transact, and share digital data securely.
- **Trust Environment:** This encompasses cybersecurity, data protection, and governance standards that ensure people's data is safe, secure, and used responsibly. A robust trust environment is critical in building confidence among users and organizations interacting with digital systems.
- **Digital Skills for Jobs:** Building digital literacy and skills across the population, particularly among the workforce, ensures that individuals can use digital tools effectively and participate in new digital jobs and industries.
- **Data Hosting & Cloud Services:** The adoption of cloud services and secure data centres enables efficient storage, processing, and accessibility of data, a necessary component for real-time digital services and scaling data-driven solutions.
- **Data-Driven Innovation:** By establishing open data systems and ethical AI applications, Nepal can enhance decision-making and unlock transformative potential across sectors like healthcare, agriculture, and education. Similarly, centralized, interoperable data systems support seamless information sharing, improving service delivery and fostering targeted, proactive solutions.
- **Broadband Connectivity and Devices:** Broadband access is essential for a digitally inclusive Nepal, as high-speed internet enables online services, supports digital literacy, and enables digitally led economic opportunities. By expanding connectivity to underserved areas, advancing 5G and next-generation networks, reducing broadband costs, and promoting affordable devices to bridge the urban-rural divide. This will not only support innovations in smart agriculture, telemedicine, and data systems, but also ensure seamless government services, digital education, and economic opportunities, fostering a more inclusive, resilient digital society.