



World Food Programme

SAVING
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WFP Information & Technology Strategy

2023-2026

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Foreword



An estimated 1 in 23 people on our planet will require humanitarian assistance in 2023,ⁱ in what is the worst global food crisis in modern times. This is a sobering statistic with significant implications for the World Food Programme (WFP), which will need to support more people than ever before.

Right now, the world is moving in the opposite direction of achieving zero hunger. Roughly 349 million people across 79 countries are facing acute food insecurity in 2023 – up from 283 million in 2021.ⁱⁱ Long-term conflicts, climate and economic shocks, and inequality have been exacerbated by the knock-on effects of the war in Ukraine and fallout of the COVID-19 pandemic, putting humanity and the planet in a complex and precarious position.

To face up to these compounding challenges, WFP must plan for future shocks while responding to this current crisis. **Efficiency will be paramount. To this end, the urgent and lasting solutions needed to achieve zero hunger will mean WFP harnessing the vast potential of information and technology (I&T).**ⁱⁱⁱ

Change comes with effort, but the results can be manifold. The goal is simple yet ambitious: to drive the I&T environment and governance that allows the entire WFP workforce and its partners to be laser focused on prioritizing and delivering the work that brings the most value to WFP.

Working with country offices and business units, WFP will take a localized approach to addressing challenges and to transforming the WFP Strategic Plan 2022-2025 into tangible actions across more than 120 countries and territories worldwide.

This will mean developing a Digital Blueprint for WFP that enables stronger I&T services, seamless partnerships with business functions, innovations that scale, and organizational machinery emboldened by the responsible use of data.

Extensive consultations with business stakeholders across WFP in 2022 confirm these needs,^{iv} as does the Strategic Evaluation on WFP's Use of Technology in Constrained Environments.^v

This strategy is therefore less about I&T as it is about the drive to enable country offices to save and change lives. It elaborates how I&T reinforces WFP's organizational muscle, increasing the metabolic rate of delivery and decision-making to reach those furthest behind.

1. Executive Summary



Student from Eugenio Tavares Primary School in Praia enjoys a hot meal provided by the National School Feeding Programme in Cape Verde. WFP/Richard Mbouet.

This I&T Strategy makes the case for how digital technology and data can reinforce WFP's strength and reach, propelling the organization toward achieving its Strategic Outcomes for 2022-2025.

Notably, from 2017 to 2020, the I&T function took steps to position itself as a critical partner to the business rather than solely a service provider.^{vi} However, until 2021, I&T was absent as a priority or enabler in WFP's Strategic Plan.

Now included among the Enablers of WFP's Strategic Plan 2022-2025, the I&T function must define a vision for how it will drive WFP to excel as a digitally and data-enabled humanitarian and development organization while factoring in the human-centred implications and responsibilities that this implies.^{vii}

WFP STRATEGIC OUTCOMES

There are five strategic outcomes identified in WFP's Strategic Plan:

- 1. People are better able to meet their urgent food and nutrition needs.**
- 2. People have better health, nutrition and education outcomes.**
- 3. People have improved and sustainable livelihoods.**
- 4. National programmes and systems are strengthened.**
- 5. Humanitarian and development actors are more efficient and effective.**

Outcomes **1**, **2** and **3** are relevant to Sustainable Development Goal (SDG) 2 – Zero Hunger – and encompass WFP's dual humanitarian and development roles of saving and changing lives.

Outcomes **4** and **5** are relevant to SDG 17 – Partnerships for the Goals – and encompass WFP's work to enable governments and all humanitarian and development actors to achieve the SDGs together.

Therefore, WFP's I&T mission and vision is to:

Vision: Be an enabling partner and catalyst for ending hunger and improving lives through innovative and efficient technology services and solutions, driven by a digitally and data empowered workforce.

Mission: Deliver human-centred, secure, and value-creating I&T solutions and services that enable operational excellence and transparency while empowering WFP staff and partners to work anywhere.

The following table positions the I&T Objectives as foundational enablers of WFP’s Strategic

Outcomes and Cross-Cutting Priorities, as they drive upward, toward the SDGs:

United Nations Sustainable Goals



WFP Strategic Outcomes

- | | | | | |
|--|---|--|--|--|
| 1. People are better able to meet their urgent food & nutrition needs. | 2. People have better nutrition, health & education outcomes. | 3. People have improved & sustainable livelihoods. | 4. National programmes & systems are strengthened. | 5. Humanitarian & development actors are more efficient & effective. |
|--|---|--|--|--|

WFP Cross Cutting Priorities

- | | | | |
|---|---------------------------------------|-----------------------|------------------------------|
| Protection & accountability to affected populations | Gender equality & women’s empowerment | Nutrition integration | Environmental sustainability |
|---|---------------------------------------|-----------------------|------------------------------|

Enablers

- | | | | | | |
|--------|-------------|---------|------------|----------|------------|
| People | Partnership | Funding | Innovation | Evidence | Technology |
|--------|-------------|---------|------------|----------|------------|

WFP Information & Technology Objectives

- | | | | | |
|---|--|---|---|---|
| 1. Deepen WFP’s aptitude in emergencies with comprehensive and lasting approach to I&T preparedness and response. | 2. Improve resilience & quality of life for those furthest behind through strengthened I&T collaborations with governments, partners & the greater UN. | 3. Strengthen data management including governance, data literacy and supporting systems as foundations for responsible data insights and evidence-based decision making. | 4. Enable operational agility & protect WFP with astute risk management and core service excellence across rapidly changing I&T contexts worldwide. | 5. Promote a service-driven I&T culture, supporting business units and operations with greater efficiency and in-novative solutions, establishing I&T architecture, and increasing effectiveness at scale for WFP and partners now and in the future. |
|---|--|---|---|---|

Reinforce WFP’s saving and changing lives agendas

Imperative to the continuity, security, and efficiency of the organization.

Information & Technology Enablers

- | | | |
|------------------|----------------------|--------------------------------|
| People & Culture | Funding & Governance | Operating Model & Partnerships |
|------------------|----------------------|--------------------------------|

A Digital Blueprint will bring together the I&T elements of WFP – including data, enterprise architecture (EA), and security strategies – to amplify the value of I&T to the organization. By aligning all business processes and supporting them through integrated business and I&T architecture.

The Digital Blueprint will significantly accelerate how teams across the organization collaborate while leveraging adaptive technology capabilities.

WFP’s Digital Blueprint will emerge based on connecting the outcomes of the Enterprise Architecture Strategy & Data Strategy.

2. United Nations Strategic Drivers



Rohingya family in Cox's Bazar, Bangladesh.
WFP/Sayed Asif Mahmudi

The UN Secretary-General initiated a UN Reform process in January 2017, calling on all agencies to pool their expertise and resources to serve affected communities better:

“Our shared goal is a 21st century UN development system that is focused more on people and less on process, more on results for the most poor and excluded and less on bureaucracy, more on integrated support to the 2030 Agenda and less on ‘business as usual’.”^{viii}

Humanitarian and development responses are becoming more complex and fluid given the compounding crises faced around the world. In this setting, inefficiencies and duplicated efforts will waste valuable resources unless UN agencies embrace new ways of working together. Innovation, digitization, data sharing and joint problem solving are crucial to this effort.

Building on the need for change, the Secretary-General released Our Common Agenda (2021), reaffirming a multilateral response to country needs and ensuring sustainable and nationally owned outcomes^{ix} — an approach that resonates with the field-first character of this I&T Strategy.

In the scope of Our Common Agenda are several directives and high-level tracks of work with digital, technological, and data-related implications:

→ The UN 2.0 Quintet of Change (2021), calls on UN agencies to energetically promote agility, integration, and cohesion across the UN family, accelerating its effectiveness over the next five years and is directed at reinforcing capacities in data, digital, innovation, strategic foresight and behavioural science.

A UN 2.0 Scorecards and 2022 Mapping of UN System Wide Capacity, released in November 2022, found that progress in data, digital and innovation was already visible across 300 UN entities. However, only 53 percent of these entities felt capable of assisting Member States in developing data, digital, innovation, foresight and behavioural science capabilities of their own.^x



Students enjoy a locally grown school meal in Malawi. WFP / Badre Bahaji

→ A Global Digital Compact will be agreed at the Summit of the Future in 2024, channelled through a technology track comprising stakeholders spanning the UN system to governments, the private sector, civil society organizations, academia, and individuals – with specific attention to youth.^{xi}

With its wide ranging I&T experience in the field, WFP is also well placed to action multi-stakeholder efforts supporting The UN Secretary-General's Roadmap for Digital Cooperation (2020). The report, which aims to maximize the benefits of digital technologies and data while mitigating risks of digital harm,^{xii} also complements Our Common Agenda with recommendations that can serve as a high-level compass for the WFP I&T Objectives:

Similarly, WFP can contribute to a single UN data ecosystem through joint data and analytics initiatives geared towards common and shared use cases, in accordance with the UN Secretary-General's Data Strategy:

- 1. Achieve universal connectivity by 2030**
- 2. Promote digital public goods to create a more equitable world**
- 3. Ensure digital inclusion for all, including the most vulnerable**
- 4. Strengthen digital capacity building**
- 5. Ensure protection of human rights in the digital era**
- 6. Support global cooperation on artificial intelligence**
- 7. Promote trust and security in the digital environment**
- 8. Build more effective architecture for digital cooperation**

Similarly, WFP can contribute to a single UN data ecosystem through joint data and analytics initiatives geared towards common and shared use cases, in accordance with the UN Secretary-General's Data Strategy.

3. Stakeholder Analysis

Affected populations and the broader humanitarian and development communities rely on I&T to access information and assistance. For example, I&T enables people to voice their needs and concerns to humanitarians through common feedback mechanisms, resulting in better designed services and greater accountability. Through blockchain technology, people can obtain seamless access to humanitarian entitlements – including food, cash and sanitary products.

Governments increasingly reach out to WFP for its social protection expertise as a way of strengthening their own safety nets or to reinforce supply chains. I&T can help reduce the time required for citizens to receive services, reduce overhead, and heighten the value of national programmes.

WFP staff in all parts of the world rely on well-managed and effective core I&T services to do their work, including robust connectivity and reliable network monitoring solutions.

With 87 percent of WFP staff working in the field, it is crucial that I&T systems are designed and built with constrained environments in mind. As many crises in today’s world are long-term and compounded by issues including climate shocks and protracted conflict, most WFP operating environments can be classified as “constrained”.^{xiii}

Digital technology and data not only enable staff to do their work, but help them do it better, for example by partnering with business units for improved coordination of supply chain and programme delivery, streamlined monitoring and evaluation, or the time and costs saved through automation and more data-driven decision making.^{xiv}



A UNHAS staff member on an airstrip in Burkina Faso. WFP/Esther Ouoba

Country offices and Country Strategic Plans are invaluable sources of insight into the needs of the organization and the people it serves. As such, country office staff and business leadership are crucial partners in I&T planning and decision making for WFP.

WFP is a humanitarian technology leader, providing digital services across the sector, making systems, solutions and knowledge available to national and international organizations.^{xv}

WFP's collaboration with humanitarian and development partners also involves joint data collection, analysis and sharing initiatives. When it comes to national governments and operational partners, who sometimes lack the necessary skills or resources to implement I&T solutions, WFP helps build local capacities and provides guidance.

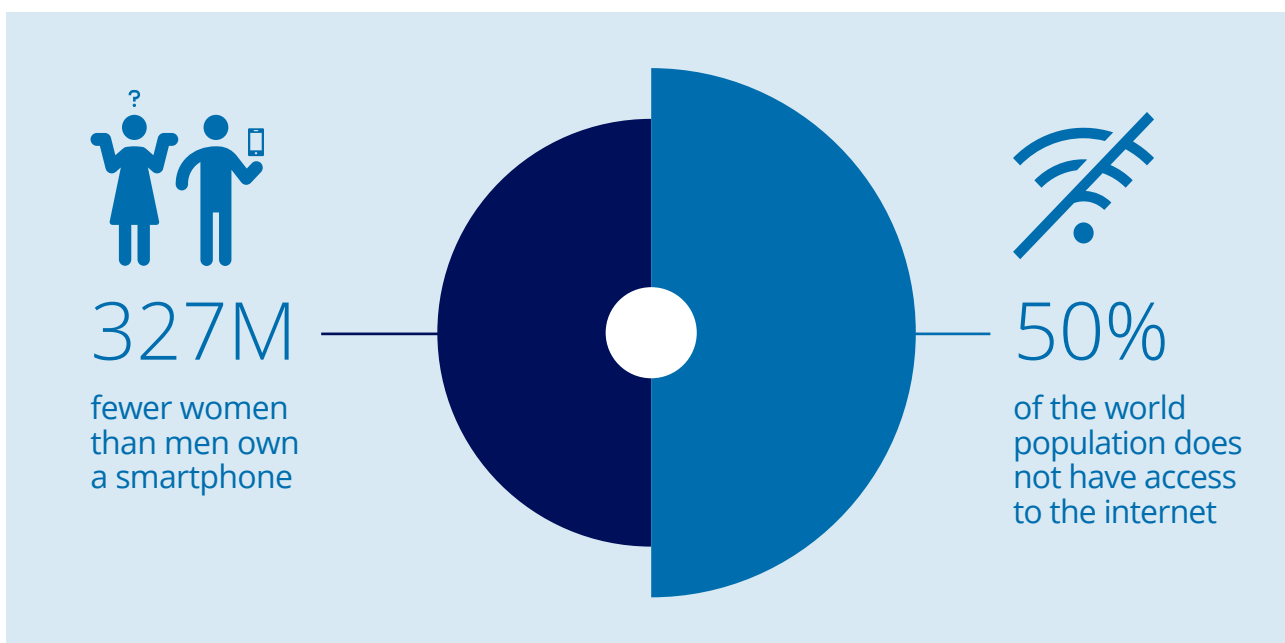
The WFP-led Emergency Telecommunications Cluster (ETC), an assembly of all the types of partners mentioned above (including UN inter-agency collaboration), provides operational as well as advisory I&T services in the emergency response cycle.

Globally, WFP works with a host of donors and partners (private sector, governments, Non-Governmental Organizations [NGOs], academia), whose support, in the form of funding, expertise, solutions and research, strengthens WFP's innovative capacity to prepare for and respond to emergencies while improving livelihoods. It is important that any collaboration with partners is aligned with the vision, objectives and goals laid out in both the I&T Strategy and

WFP's Strategic Plan.

For all the advantages they bring, digital solutions also come with responsibility. Reliance on digital tools and data creates new ethical risks and, if not managed with people at the centre, can widen inequalities based on gender, age, disability, geography and socioeconomic status. Digital solutions also face constraints. **Half the world's population does not currently have access to the internet, while 327 million fewer women than men own a smartphone.**

Power and connectivity issues can limit WFP operations and the efforts of governments to deliver services to their citizens and improve infrastructure. In other places, censorship impacts internet access, cutting people off from life-affirming information, particularly in emergencies and long-term crises.



Half the world's population does not currently have access to the internet, while 327 million fewer women than men own a smartphone.

4. WFP Business Challenges, I&T Objectives & Goals



Smallholder farmer works on her land in Rwanda. WFP / Irihose Mugiraneza Benjamin

Innovation, evidence generation, and technology are all Enablers of WFP’s Strategic Plan 2022 -2025 and each of them is integral to the WFP I&T Strategy, creating an interdependent relationship.

WFP business goals define this relationship by showing how technology and data can mesh with corporate needs to become part of the same durable fabric. For example:

— **By expanding how they use insights drawn from quality data**, WFP employees can make more effective operational and strategic decisions and tell more nuanced and powerful stories that advocate for WFP’s mission.

— **By identifying problems ahead of time**, such as where civil unrest may jeopardize WFP operations or where torrential rains may make it impossible for food trucks to pass, risks can be mitigated, and lifesaving work can continue.

— **By continuing to streamline and automate** some of the tasks that the 22,000+ WFP staff carry out every day, or even once a year, time and money are saved that can be redirected towards higher-impact work.

— **By refining the way information technology is managed and delivered in WFP**, digital tools can become more affordable and find their way onto the desks and into the hands of people in every country or field office.

— **By listening carefully to what is happening in the field and employing innovations**, WFP can expand the reach of solutions that save lives into ones that also change them, for example by training local responders to use drones to help people relocate ahead of impending floods.

In recent years, digital investment has soared in WFP, across divisions, functions and in many country offices. While these investments responded to specific needs, many have been undertaken in isolation, leading to a fragmented I&T landscape with increasing costs, technology and data initiatives that are not interoperable, and shadow I&T developments.^{xvi} The I&T Strategy will strengthen the I&T business partnership to deliver targeted, cost-effective solutions within a strong governance framework and a client-driven I&T culture.

The following I&T Objectives and Goals provide the strategic focus needed to fully enable and accelerate the WFP enterprise.

Additional details, in the form of Priority Actions, are provided in the Annex to illustrate the type of initiatives WFP will undertake to deliver against these I&T Objectives and Goals.

OBJECTIVE 1: DEEPEN WFP'S APTITUDE IN EMERGENCIES WITH A COMPREHENSIVE AND LASTING APPROACH TO I&T PREPAREDNESS AND RESPONSE.



Douglas Chilambo (centre) and school children from left to right (Mwale, Edith, Ester) enjoying school meals before class. WFP/Badre Bahaji

Current State:

WFP is **first on the ground** in emergencies and is **partner of choice** in serving affected populations. Deployment and delivery of services in a timely manner **is challenged by access and importation issues, authorization, and resilience of local infrastructure.**

Vision for the Future:

WFP continues to be first on the ground in emergencies and partner of choice in serving affected populations, **but more frequently augments governments in their own response with a robust approach to preparedness.** I&T services are more agile and scalable due to adequate emergency preparedness levels in the field and proper staffing of I&T resources in country offices. Analysis and decision making are enabled at all levels **based on real-time, cross-divisional data to effectively prepare for and respond to emergencies globally,**

leveraging WFP's reinforced monitoring, early warning and response capacities. Life-saving information in humanitarian crises is viewed as a form of aid and business continuity is more robust in emergencies, allowing WFP to succeed in sowing resilience, particularly in constrained environments.

Business challenge:

WFP's saving lives agenda requires it to meet people's urgent food needs by responding at the right time, with the right people and in the right way.^{xvii} Without ardent risk mitigation, climate change alone will lead to an estimated 216 million people becoming internally displaced by 2050, up from 30 million in 2020.^{xviii}

Contributing to the humanitarian-development-peace nexus, WFP will localize its approach to preparedness, saving and changing lives by ensuring that countries have the tools and skills to recover from conflict, economic turmoil and natural shocks.

The strategic evaluation of WFP's capacity to respond to emergencies notes that, to enable speed and scale in a response, preparedness must move beyond only logistical considerations.^{xix} Emergency response increasingly implies a robust approach to preparedness led by national and local actors with the goal of improving resilience and reducing need. ^{xx} I&T capacities are integral to both preparedness and emergency response. To keep up with needs resulting from emergencies worldwide, WFP will need to reinforce its monitoring, early warning and response capacities. Serving people more effectively will require WFP to automate even more manual processes; integrate data from a variety of systems to expedite decision making; and ensure that most WFP systems contribute to contextual mapping in all emergencies. Drones, equipped with machine learning to rapidly assess damage or map at-risk areas, can contribute valuable data to WFP's emergency preparedness and response acumen.

Robust capacity building for staff in all facets of emergency preparedness and response — including I&T and data analytics skills — will also be essential to maintain WFP’s readiness.

Humanitarian platforms, including the WFP-led Emergency Telecommunications Cluster (ETC), Logistics Cluster and co-led Food Security Cluster, not only offer operational access to crises around the globe, but also fortify training and skills in the response community. For its part, the ETC increasingly supports access to information for affected populations in humanitarian emergencies and is a point of reference for localized telecoms preparedness in at-risk countries.

Reinforcing its leadership in emergencies, WFP will use the expertise of its staff to help operational partners, country offices, governments and communities address the structural vulnerabilities that leave people at greater risk when shocks happen. Only by interrupting the cycle of vulnerability and emergency can WFP succeed in sowing resilience, particularly in constrained environments.

Goal 1.1: Strengthen emergency readiness through localized preparedness actions to help high-risk environments better withstand and recover more quickly from recurring shocks.

Goal 1.2: Enhance field-first I&T mechanisms, services and skills in emergencies, protracted crises and steady state contexts.



Communities obtain services from WFP in Guatemala. WFP / Nelson Pacheco

OBJECTIVE 2: IMPROVE RESILIENCE AND QUALITY OF LIFE FOR THOSE FURTHEST BEHIND THROUGH STRENGTHENED I&T COLLABORATIONS WITH GOVERNMENTS, PARTNERS, AND THE GREATER UN.

Current State:

Saving lives in emergencies and protracted crises remains WFP’s top priority. **WFP responds and mobilizes quickly, responding through and with partners.**

An emerging approach is to use digital technologies in assisting national governments, building on WFP’s multi-year experience in capacity strengthening.

Vision for the Future:

WFP works in collaboration with other UN Agencies, supporting UN Reform by improving digital cooperation and enhancing partnerships, contributing to Our Common Agenda, the UN 2.0 Quintet of Change, and the Global Digital Compact in 2024.

Digital capacity strengthening and social protection programmes are implemented through a standard WFP service offering consisting of contextual, needs-based advisory and implementation services. The goal is to **enhance governments’ digital maturity and their ability to own and sustain digital interventions.**

Business challenge:

WFP will need to continue building on its enormous global footprint and extensive network of partnerships with governments, the private sector, NGOs and UN agencies to multiply the positive effects of its efforts to change lives. Continuing to work through systems and partnerships will be essential to the entire humanitarian and development community on the road to achieving the SDGs.^{xxi}

By reinforcing the digital, data, and innovation capacities required by the UN 2.0 Quintet of Change, WFP will also contribute to UN Reform and its vision of a more effective UN family.

WFP's guiding principles ^{xxii} provide insight into how this work should be accomplished. By taking a country-owned, context-specific and programme-integrated approach, WFP will fortify its collaborations with country offices and governments, transforming lives in sustainable and relevant ways. For example, WFP is already engaging with the governments of Haiti, Iraq and Lebanon to institutionalize cash transfers and social protection systems.

WFP has the potential to bring a cascade of sustainable benefits to communities by establishing clear operating procedures, conditions and capabilities for engaging with governments on I&T projects.

To make meaningful progress on the UN Secretary-General's prescriptions for digital development, namely the Secretary-General's Roadmap for Digital Cooperation (2020), WFP will also need to employ a gender lens to its I&T and data activities. To facilitate women's inclusion in decision making, their safe mobility, access to information and financial empowerment, gender equality and equity — much like security provisions — must be factored into the design phase of all digital tools and interventions.^{xxiii}

I&T has an enabling and advisory role to play within country offices and governments to reinforce social protection systems and help people meet their own food, nutrition and other essential needs.^{xxiv} By capturing lessons from these actions, WFP can contribute a strong voice to the multilateral UN discussion on digital humanitarianism and development.

Goal 2.1: Be a proactive partner in UN Reform and Global Digital Compact (2024).

Goal 2.2: Support business functions and country offices in the design and implementation of government capacity strengthening programmes (example: social protection systems).

OBJECTIVE 3: STRENGTHEN DATA MANAGEMENT INCLUDING GOVERNANCE, DATA LITERACY AND SUPPORTING SYSTEMS AS FOUNDATIONS FOR RESPONSIBLE DATA INSIGHTS AND EVIDENCE-BASED DECISION MAKING.

Current State:

WFP has made strong efforts to move from a fragmented, siloed data landscape, which is managed from the bottom up, towards a unified structure. While progress has been made, more still needs to be done to sharpen WFP data and analytics competencies. Myriad dashboards with conflicting information cannot be readily reconciled; it is difficult to know which data source is accurate, to be confident in the data and to be able to tell convincing evidence-based stories.

Vision for the Future:

There is a sole source of truth, and all data is governed and managed through defined stewardship. Data and analytics initiatives are defined and driven by common and shared use cases, both in WFP and across the UN (facilitated by the adoption of open data standards and digital public goods). Dashboards are easy to build because data systems are designed to be interoperable. Insights can be curated to build knowledge so WFP staff take a disciplined approach to data literacy and are able to use data for decision making. Advanced analytics techniques and artificial intelligence are used to assist in realizing efficiencies and driving actions for measurable progress on the SDGs.

Business challenge:

Evidence is a strategic Enabler of WFP's work, and an evidence-driven programmatic approach is one of the organization's corporate guiding principles. Data is already at the centre of WFP operations, with staff collecting, analysing and communicating with data. However, there is an opportunity to improve current processes, technology and culture around data to transform

it into evidence-based, actionable insight.

The WFP Strategic Plan calls for stronger and more relevant evidence to help WFP improve decision making, for example through real-time insights into food security, climate data and disaggregated data based on sex, age and disability status, to ensure that the most vulnerable groups are assisted.^{xxv} Data protection and privacy must pervade all aspects of this work.

To respond effectively to the main drivers of hunger — conflict, climate change and economic shocks — WFP will need to improve how it generates, analyses and maintains its data. Gathering data that helps WFP better understand and target the people it serves is crucial for the rapid scale-up of operations — particularly in constrained environments.^{xxvi}

To achieve these objectives, data will need to freely move across the organization, breaking existing silos while still adhering to governance processes and guidelines to address risks and security challenges. Focus must be paid to the business and system challenges which affect data quality so that WFP can be proactive in establishing good practices and procedures.

Operating with a people-centred approach to I&T,^{xxvii} WFP must also work to adequately address the risks and protection challenges that arise from holding large quantities of sensitive data and reinforce data protection practices among staff.^{xxviii}

Improving the data literacy of WFP's global workforce will be essential to obtain the most value from data while using it securely.^{xxix} Data literacy is a catalyst for using knowledge, generating evidence and making better decisions across WFP.

The ability to read and ask the right questions of our data are essential skills that all WFP staff should possess. In scenarios such as emergency response, these capabilities can make an

immense difference by assisting WFP operations to make better and timelier decisions on needs assessment, resource allocation and monitoring so that vulnerable populations obtain the assistance they require.

Goal 3.1: Holistically improve data quality and access to enable analytics and curated insight for evidence generation and informed decision making.

Goal 3.2: Support Country Offices and business functions to collect and use data appropriately, effectively, and efficiently.

Goal 3.3: Augment the capabilities of WFP staff, using advanced analytics and artificial intelligence to increase operational efficiencies.

OBJECTIVE 4: ENABLE OPERATIONAL AGILITY AND PROTECT WFP WITH ASTUTE RISK MANAGEMENT AND CORE SERVICE EXCELLENCE ACROSS RAPIDLY CHANGING I&T CONTEXTS WORLDWIDE.

Current State:

Data is protected only at the perimeter and is vulnerable to third-party breaches due to lack of access controls. Security of systems is inconsistent. There is limited monitoring of remote employee access, and limited security protocols on remote devices.

Core I&T services are limited and less adaptable in constrained environments. Poor connectivity in constrained environments is a common barrier to operations. Hardware malfunctions lead to delays in day-to-day work and beneficiary-facing activities. Malfunctions tend to be more frequent with hardware using proprietary components that cannot be sourced locally.

Vision for the Future:

Data is protected from both outside and inside attacks at the core through a “never trust, always verify” approach to network and data access.

Cybersecurity is a functional requirement defined at the outset of system design. All devices, not only computers, are known, verified and secured on the network.

Continual checks are conducted for authentication and authorization of users to filter out malicious insiders and enhance network performance through reduced network traffic processing. Devices are secured on remote networks.

Fewer business disruptions and delays occur due to reliable and predictable I&T services, including connectivity, networking and infrastructure services for applications.

More equitable allocation of equipment and hardware is achieved and there are faster response times to issues. More consultation and advisory services will be given to the field on solutions adapted to local contexts, especially in constrained environments, enhancing WFP’s agility.

Data protection and privacy are pressing issues for WFP and all organizations using digital tools to deliver humanitarian and development assistance.



Kassiabdullatif Tuahir, CODA Focal Point in South Sudan, makes a presentation at a health facility in 2021. WFP / Eulalia Berlanga

Cybersecurity is integral to protecting the data of the people WFP serves, its staff and partners.

Digital and data literacy are also part of this conversation because, without proper cybersecurity practices by staff, WFP opens itself up to risks^{xxx} that can imperil affected populations, especially those fleeing persecution and violence.^{xxxi}

Business challenge:

Balancing risks against business goals, WFP needs to maintain security services with an intelligent and robust posture to keep up with the changing threat landscape that comes with modernization. There are opportunities to strategically reinforce WFP cybersecurity practices in cyber incident response, threat intelligence, vulnerability management, information protection, application and data security, as well as identity and access management.

WFP must not only ensure predictable operations worldwide, but must also keep pace with the evolution of technology, bringing I&T excellence across core services such as networking, connectivity, application infrastructure, asset management (hardware and devices) and service management.

The availability of critical, specialized and foundational services is non-negotiable across the 120 countries and territories where WFP operates, particularly in constrained environments and locations with limited connectivity. Therefore, the security posture in certain environments must be risk-based with an agreed upon consideration for mission-critical service delivery.

Goal 4.1: Strategically enhance WFP’s security posture with a robust data privacy approach, and a secured Zero Trust network environment.

Goal 4.2: Continually improve I&T operational agility through effective and efficient core I&T services.

OBJECTIVE 5: PROMOTE A SERVICE DRIVEN I&T CULTURE, SUPPORTING BUSINESS UNITS AND OPERATIONS WITH GREATER EFFICIENCY AND INNOVATIVE SOLUTIONS, ESTABLISHING INFORMATION AND TECHNOLOGY ARCHITECTURE, AND INCREASING EFFECTIVENESS AT SCALE FOR WFP AND PARTNERS NOW AND IN THE FUTURE.

Current State:

Over the past few years, WFP has been gradually shifting away from a siloed and customized approach to I&T solutions where innovations were benefitting only local units. At times, country offices are still **reinventing the wheel because of low visibility on existing solutions** and using non-standard technology that needs to be retired because **it does not integrate with other systems, cannot be scaled or is not secure.**

Vision for the Future:

The focus is on WFP organizational needs, projects, and innovations, backed by a customer driven I&T culture of support to business units and operations.

More robust information and technology architecture – as well as governance - are provided at the macro level.

There is a reduction in duplication of effort and services. Reuse of existing systems and components occurs more frequently and easily. Risk and exposure are reduced. There is lower total cost of ownership, and technical debt is optimized.

The Technology Division (TEC) works proactively with the WFP Innovation Accelerator to meet changing needs, and innovation is enabled at macro levels while avoiding duplication through governance and knowledge management.

Business challenge:

With the growing severity, complexity and duration of humanitarian emergencies, there has been a marked increase in the need for digital and data solutions for early warning, crisis prevention and the rapid delivery and scale-up of assistance. At the same time, WFP must achieve more impactful results for livelihoods, nutrition, school-based and social protection programmes.

To respond to these challenges at scale, WFP requires a Digital Blueprint that links I&T services and capabilities with business goals and capabilities. The I&T guardrails and Digital Blueprint direction will allow innovative solutions to be co-created with stakeholders, such as country offices, business functions, governments and affected populations. This co-creation dynamic will support consistent and coherent development of WFP's decentralized structure, helping address the tendency towards overlapping I&T solutions.^{xxxii}

Capitalizing on its solid experience as an innovator, WFP can further harness frontier technologies and rethink legacy systems, accelerating the pace, value and reach of the organization. To do this, WFP will require enterprise architecture, which in effect means full visibility of end-to-end business capabilities, including the programme cycle, supply chain management, human capital management, financial administrative management, monitoring and reporting, and performance management.

Goal 5.1: In partnership with business functions and country offices, deliver quality I&T services in a timely manner at the right scale by introducing modular I&T platforms; selectively modernizing legacy solutions; and harmonizing the portfolio, to safely enable and govern business-led initiatives.

Goal 5.2: Empower business departments to co-design and support delivery of digital solutions adhering to I&T guardrails and leveraging modular I&T platforms.

4.1 WFP Digital Blueprint

WFP's Digital Blueprint, comprised of data and enterprise architectures, is a map of the organization's future, sketching the paths that can be taken to achieve WFP's Strategic Outcomes, powered by I&T Objectives.

Processes, information, applications, technology and governance come together in the framework of enterprise architecture, allowing I&T and business to move in the same direction.

Enterprise Architecture

Enterprise Architecture (EA) helps to provide the big picture, or long-term view, developing an organization's systems and processes with a focus on business strategy. By mapping the I&T portfolio and its dependencies, and designing reusable building blocks, EA creates a symbiotic and adaptable relationship between business and I&T.

EA complements trusted working relationships by helping I&T and business functions make informed choices within boundaries that guard the efficiency and effectiveness of the organization.

The result is not an end, but rather a cycle of constant improvement that moves WFP closer to achieving its Strategic Outcomes. Since EA uncovers the most logical and effortless path for business and I&T to collaborate, tensions are resolved and innovations that best serve the organization can come to the forefront, bringing WFP closer to zero hunger.

Evaluations, surveys and consultations, at all levels of WFP, point to data and analytics as priorities for the organization. The Global Data Strategy will set the pace and direction for how corporate data can empower WFP's Strategic Objectives.

Data Architecture

As with EA, WFP's Data Strategy will help I&T achieve symbiosis with business units, answering needs that promote a stronger and smarter organization. WFP's approach to data — or reference architecture — will define how it collects, stores, moves and shares data.

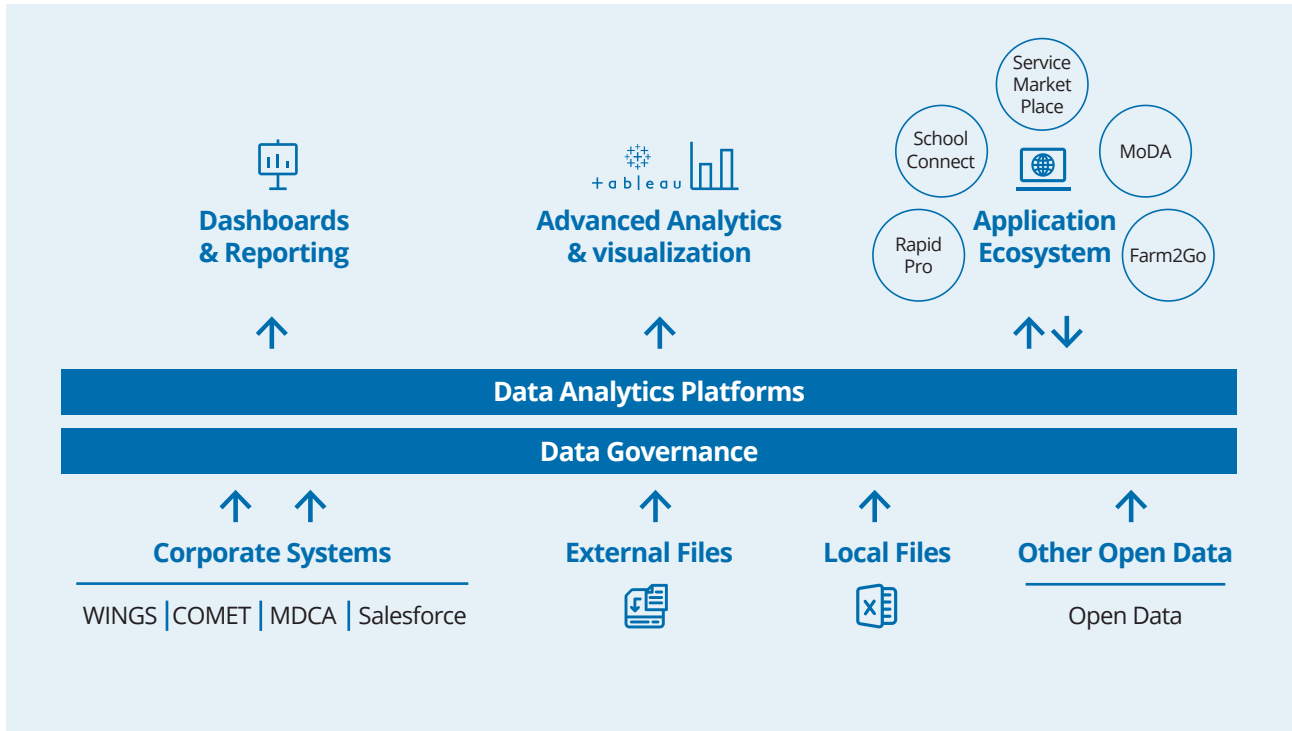
Using modern data architecture models, it is now possible to adapt flexibly to WFP's federated data domains. From here, it will be possible to identify ways of improving how data is used, defining a more mature WFP relationship with data, analytics, data management skills and fostering a data culture.

With these foundational elements in place, data analytics and artificial intelligence (AI) can bring transformational value to WFP, for example in how the organization manages food and cash delivery; assesses risks; monitors hunger, nutrition, health and education; operationalizes in emergencies; faces crisis management; complies with regulations; and ensures efficiency and effectiveness.

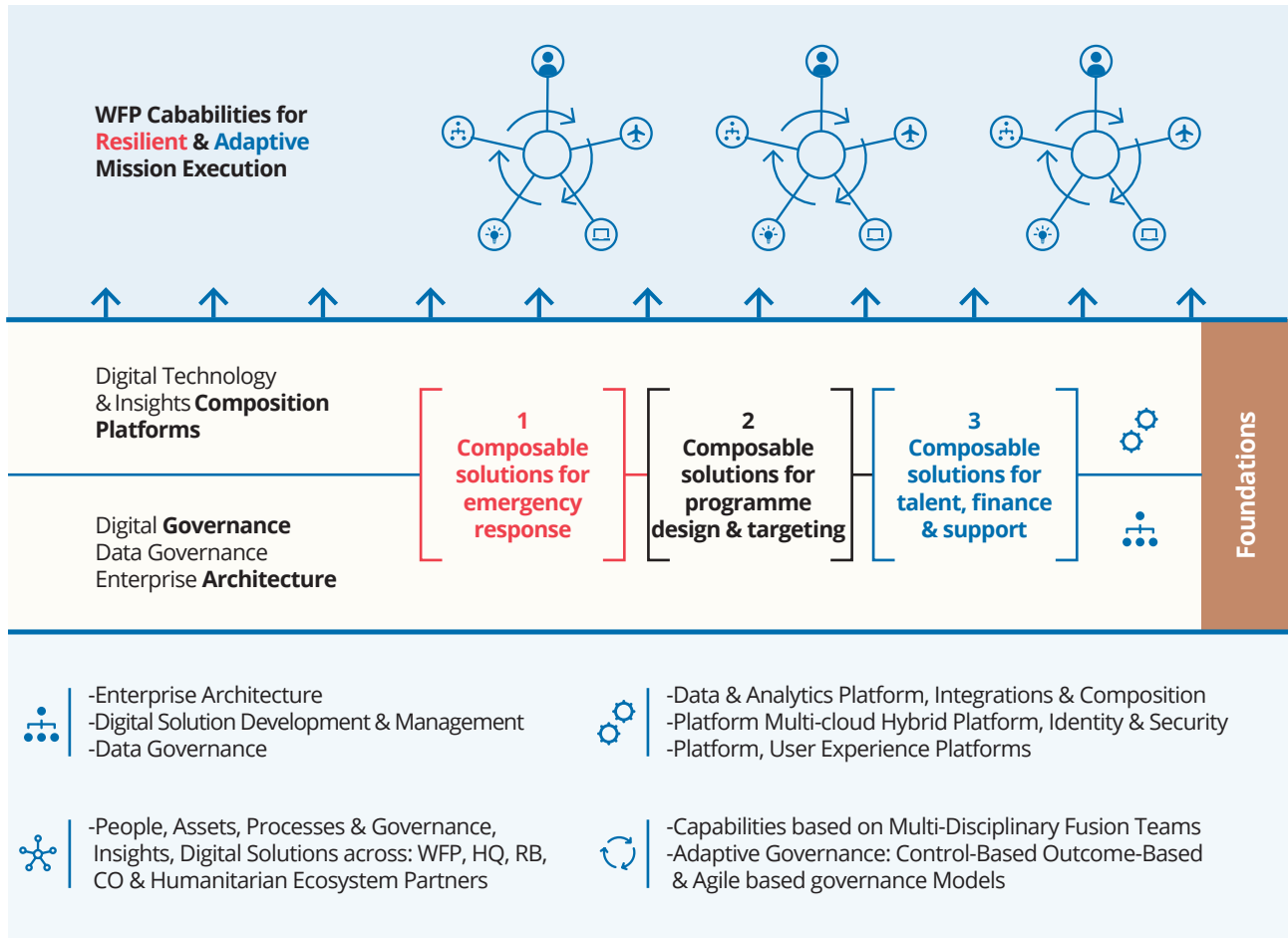
As WFP's Digital Blueprint takes shape over the next four years, it will significantly boost how teams across the organization collaborate, share, develop, change and improve. It is a watershed moment in WFP's history as it faces an uncompromising set of global challenges.

Enterprise and data architectures will empower WFP to become the interoperable, agile and intelligent organization it must be to face up to the largest food crisis the world has ever seen.

BEFORE Digital Blueprint: A siloed digital environment



AFTER: The target future state of WFP's Digital Blueprint



5. Strategic Enablers

The following strategic Enablers, which will drive the I&T Objectives with high performance, will also require investment and strategic focus. Priority Actions for these Enablers are elaborated in the Annex.

PEOPLE AND CULTURE

People are the most critical success factor in WFP's strategic agenda, and the I&T function is no exception. Implementing the I&T Strategy will require a workforce planning approach to talent acquisition and retention, upskilling and reskilling, as well as coaching and mentoring.

The people who carry out WFP's mission each day must be enabled with the tools, skills and knowledge they need to be successful in an increasingly digitized humanitarian sector.

Change Management

The I&T Strategy cannot be implemented without concerted action from people. Inspired by I&T sponsorship from WFP leadership cascading through all levels of the workforce, WFP's people must support the I&T agenda to ease the transition to sustained excellence. Comprehensive change management will be needed to:

— Create clarity

- Synthesizing what is complex into what is simple.
- Make sure everyone has a shared understanding.
- Define courses of action together.

— Generate enthusiasm

- Inspire creativity and growth.
- Create an environment where people can thrive.
- Cultivate a mindset of continuous improvement.

— Deliver for WFP

- Drive I&T and innovation that people want to use.
- Be open to new solutions and ways of working.
- Be persistent in achieving the best possible outcomes.

OPERATING MODEL & PARTNERSHIPS

As WFP is reviewing its operating model to strengthen support to country offices, TEC will adjust so that it is best organized to execute and implement the I&T Strategy.

Furthermore, I&T partnerships across the organization will be critical for effective emergency response and programmatic execution, increasing WFP's I&T capacities and reinforcing synergies for greater impact.

FUNDING & GOVERNANCE

Given that I&T investments and priorities compete for WFP's voluntary resources, there is a risk that financial resource constraints could impede or slow implementation of the I&T Strategy.

For optimal impact, the funding approach should be two-pronged:

1. WFP must place particular emphasis on high-value proposition investments in technology and data with a positive impact on many as many country offices as possible.
2. Country offices and local functions should be empowered to take ownership of certain risks and make I&T decisions that are best suited to their local conditions.

In parallel, I&T governance systems such as the Digital Business Technology Committee will ensure that WFP's I&T, data services and solutions are aligned with industry practices and UN-wide goals.

6. Guiding Principles

Value creation for WFP's business units and operations is an implicit focus for the I&T function and is considered a foundational principle behind I&T decision-making.

Building on this, the following technical principles will ensure that I&T is well positioned to amplify WFP's vision and mission:

INTEGRATED SYSTEMS FOR BETTER BUSINESS VALUE

WFP brings the components of its I&T solutions together, improving efficiency of products, and services.

Rationale:

Integration allows disparate I&T solutions to combine into a larger comprehensive ecosystem that enables easy access to solutions and data, streamlined end-to-end processes and scalability of solutions, among other benefits.

Implications:

The WFP Digital Blueprint, built on a foundation of security, data and enterprise architectures, will enable modular, composable solutions across the organization.

HUMAN-CENTERED THINKING

People are the first consideration for WFP when designing I&T solutions.

Rationale:

The needs, security, privacy and user experience of all those directly and indirectly impacted by I&T are the first consideration when creating solutions. These people include affected populations, WFP employees in all contexts and WFP's partners.

Implications:

- WFP measures and improves people's satisfaction with I&T services and products.
- I&T solutions are co-created with accessibility, local relevance, usability, and consistency in mind.
- Affected populations, governments, partners, business units and country offices are at the centre of the I&T planning and development process.

COMMITMENT TO THE CLOUD

WFP's I&T helps the organization stay agile, adaptable, and enables its global workforce through a commitment to cloud smart computing.

Rationale:

By situating I&T solutions and data in the cloud, WFP ensures data is integrated, accessible and the security posture is enhanced; has greater security over digital assets; more resilient applications; and employees can access tools whenever and wherever they are needed.

Implications:

- Cloud computing solutions are considered first when re-imagining or introducing new processes that involve I&T.
- While cloud suitability research will be conducted in the first instance, cloud-smart decisions will ensure other alternatives are considered for short and long-term impacts.

DATA AS A KEY ORGANIZATIONAL ASSET

WFP manages the data it collects and curates it while ensuring compliance with data governance and fostering data literacy.

Rationale:

WFP respects data as the mission critical asset it is. The organization believes in sharing quality data for the greater good and collecting high-quality, deep-field data while being mindful of the duty to protect the privacy of the people served by WFP.

Implications:

- Enterprise-wide data governance ensures that data can be trusted and allows maximum benefit.
- Employees must understand how to interpret and handle data before solutions are deployed in the organization.
- Data, I&T Security and Enterprise Architecture teams will collaborate with the Global Privacy Office, data stewards and solution owners to ensure solutions are deployed in compliance with data standards, and data privacy guidelines.

MANAGED RISKS FOR BETTER RESULTS

With consistency, discipline and respect for I&T governance, WFP manages a wide variety of technology platforms that drive efficiency and effectiveness across the organization.

Rationale:

Risks are reduced for WFP and the people it serves through effective I&T governance and security processes and policies, including data protection and privacy guidelines.

Implications:

- WFP views the health of its I&T solutions and data as non-negotiable enablers of all activities. As such,

it engages in consistent risk and security impact assessment audits to monitor and establish plan of action milestones to address recommendations.

- Supported by change management to help employees comply with secure solutions guidelines and regulations, I&T propels the organization to achieve better results safely, securely and efficiently.

REUSE>BUY>BUILD

WFP maximizes reuse of its current I&T assets. If reuse is not an option, an Open Source or commercially available solution is selected. Only if this is not an option, a custom solution is then built.

Rationale:

The organization reduces risk, cost and effort by reusing solutions first, then identifying open-source solutions or purchasing commercial products as an alternative. Maintenance of I&T becomes easier and staff adoption and acceptance of tools increases.

Implications:

- Reusing I&T is easier when solutions are built in such a way that they can be linked with other solutions (interoperability); come in manageable components (modularity); and are relevant across business units and country offices.

- When building solutions, a disciplined return-on-investment analysis must take place with consideration of how the tool will be reused across business units and country offices and how much it will cost to maintain it over the long term.

- WFP makes its digital tools available as open source when possible, helping governments and UN entities boost their capacities.

- Decisions to reuse, buy or build are taken within the EA governance framework to ensure effective I&T choices.

7. Risks

There are some risks associated with implementing or failing to implement the I&T Strategy. These risks will help inform initiatives on their strategic imperative, and they will inform any future decisions to stop, start, delay, accelerate or continue any strategic actions.



A WFP officer engages with retailers for Cash transfers (CBT) activities. WFP / Giulio d'Adamo

LOSS OF INSTITUTIONAL MEMORY

While WFP is transforming its staffing framework to enable continuity and offer long-term opportunities to short-term staff, redeployment (i.e. staff reassignment) is an annual cycle that can also result in limited knowledge transfer between outgoing and incoming staff. By ensuring that systematic collaboration and knowledge management best practices are observed, WFP can limit the impact associated with loss of institutional knowledge.

UNDERDEVELOPED TALENT PIPELINE

People are WFP's greatest asset. Attracting, retaining and re-skilling talent are core capabilities for upholding and emboldening WFP's brand and reputation.

LIMITED DIGITAL AND DATA LITERACY

By focusing on learning and development pathways in augmenting data and digital skills, WFP can improve digital and data literacy rates among its staff at all levels. This can also lead to improved rates of technology adoption and better cybersecurity practices. The risks posed by a digital and data illiterate workforce not only impact activities and operations but can also affect staff wellness, resilience to stress and productivity. Effective change management will be key to mitigating risks.

CAPACITY AND RESOURCING GAPS

To keep up with WFP's expanded mandate to extend its reach with governments and partners, both current and future I&T capacity and resourcing gaps need to be minimized. This strategy provides a prioritization framework to properly allocate existing resources and advocate for additional resources. It also offers a way to search for synergies with other UN agencies for solutions development.

LOSS, THEFT AND/OR UNAUTHORIZED DISCLOSURE OF, OR ACCESS TO, DATA AND ETHICAL RISKS

WFP processes large quantities of personal data. By ensuring the proper controls and procedures are in place to protect data, especially in the adoption of innovative technologies and solutions, WFP can mitigate associated compliance, security and

reputational risks. Without a privacy-by-design approach, accountability for data privacy will remain diluted; collaboration between I&T and the Global Privacy Office will be key. With the emergence of AI to augment decision making and optimize processes, the ethical considerations and risks of AI will need to be mitigated through new risk frameworks.

SLOW DECISION MAKING AND INEFFECTIVE OPERATIONS

WFP will become a data-driven organization only by training staff to transform the organization's data into useable knowledge. To achieve zero hunger, reinforce partnerships and contribute to a thriving UN system, WFP must define a Data Strategy and adopt industry-standard data governance and management practices that allow it to employ and fully leverage analytics and AI for operational decision making.

DISRUPTION OF BUSINESS CONTINUITY

Although WFP's core foundational services have good customer satisfaction levels, the organization must continually improve the effectiveness of these services to keep up with modernization and an evolving cyber threat landscape. Without continual investment in these foundations, WFP could easily put business continuity at risk.

DIMINISHING RETURNS

By focusing on how a composable I&T platform underpins business goals, WFP can capture and harness more high-value work that will result in compound returns.



A woman farmer in Twic County, South Sudan.
WFP / Gabriela Vivacqua.

8. Implementation

Country offices and regional bureaux will align to the WFP I&T Strategy as they each formulate their own goals and objectives that reflect the requirements of their users. Business functions will use road maps to outline how I&T and data will be leveraged to support WFP business outcomes.

WFP will work to reinforce its value as an implementing partner and provider of global end-to-end processes as it did with notable success during the COVID-19 pandemic.^{xxxiii}

I&T planning will respond to the growing importance of data and I&T for all functions and across all levels of WFP. Increasingly, business functions have managed to acquire I&T capabilities to respond to their own specific set of demands. At the same time, and in response to the greater complexity of digital solutions, the I&T function has evolved to become much more than a service provider of foundational I&T.

TEC will support and advise on developing road maps that support Country Strategic Plans.

While the I&T Objectives and Goals (and Priority Actions and Metrics elaborated in the Annex) offer strategic focus, current activities preceding the I&T Strategy will need to be reassessed considering this framework. Decisions to stop, continue, modify or start activities should be taken based on their alignment to the strategy.

As WFP operates in a constantly changing environment, and I&T itself is rapidly changing, special attention will need to be paid to change management between the I&T function and business stakeholders. Change management plays an essential role in helping people accept, understand and cooperate when new processes and technologies are introduced.

9. Review and Communication

This document will need to be updated to include the direction of the Enterprise Architecture Strategy, Digital Blueprint and Data Strategy to create a comprehensive and holistic WFP Enterprise I&T Strategy.

The WFP I&T Strategy will be reviewed annually. The I&T function will be ready to respond and reprioritize activities based on the changing contexts faced by WFP and based on endorsed reprioritization by the Digital Business Technology Committee.

There has been continuous consultation with business functions, country offices and regional

bureaux as the I&T Strategy was developed and this dialogue will continue. Consistent and clear communication, aided by a strong change management posture between business stakeholders and the I&T function, will be paramount to the success of the WFP I&T Strategy and for sparking new ways of tackling business problems with I&T.^{xxxiv}

There are powerful stories to be told about how technology and data enable and transform WFP's mission. These examples will serve the dual purpose of documenting lessons learned and positioning WFP as a UN leader in digital humanitarianism.

10. Annex

Information & Technology Objectives, Goals, Priority Actions, Metrics

OBJECTIVE 1: DEEPEN WFP'S APTITUDE IN EMERGENCIES WITH A COMPREHENSIVE AND LASTING APPROACH TO I&T PREPAREDNESS AND RESPONSE

Goal 1.1:

Strengthen emergency readiness through localized preparedness actions to help high-risk environments better withstand and recover more quickly from recurring shocks.

Priority Actions:

1. Reinforce WFP emergency preparedness and response (EPR) in constrained environments.
2. Fortify the WFP EPR framework through I&T services, data, knowledge and training.
3. Further strengthen localized preparedness efforts led by the ETC.

Metrics:*

1. Average response time for I&T deployment to support emergencies (within 48 hours).
2. Emergency preparedness in country offices measured through compliance with IT Minimum Preparedness Actions (MPAs).
3. Progress made on ETC 2025 strategy pillars 35, including improved emergency response, increased regional and country preparedness, empowered communities, innovative and sustainable solutions, and harnessed strategic partnerships.

Note*: Baseline metrics across all indicators will be established by Q4 of 2023 in the I&T Security Strategy. Quantifiable performance goal setting will follow.

Goal 1.2:

Enhance field-first I&T mechanisms, services and skills in emergencies, protracted crises and steady state contexts.

Priority Actions:

1. Focus emergency response and surge and operational capacity on critical services.
2. Bring greater effectiveness and efficiency to operations, saving time and costs for country offices.
3. Consolidate the EPR framework with Emergency Division (EME) protocols.
4. Build strategic partnerships with I&T/telecoms service providers to improve speed of deployment.

Metrics:*

1. Training, I&T workforce planning and strategy measurement.
- 2 WFP metric to measure effectiveness and efficiency to operations.
3. Effective EPR consolidation time versus plan.

OBJECTIVE 2: IMPROVE RESILIENCE AND QUALITY OF LIFE FOR THOSE FURTHEST BEHIND THROUGH STRENGTHENED I&T COLLABORATIONS WITH GOVERNMENTS, PARTNERS, AND THE GREATER UN.

Goal 2.1:

Be a proactive partner in UN Reform and Global Digital Compact (2024).

Priority Actions:

1. Identify UN initiatives on common and shared use cases for data and contribute to aligned data ecosystems.
2. Make digital public goods initiatives available to UN and partners leveraging open source where applicable.
3. Develop a local and global partnership framework to assist governments.
4. Provide on-demand digital advisory services to governments based on clear needs assessments and programmatic objectives.

Metrics:*

1. Number of UN-wide data and digital initiatives in which WFP actively participates as adviser, facilitator, lead or contributor of assets.



Mali. Nafissatou and her classmates share their lunch. WFP/ Arete/Arlette Bashizi.

Goal 2.2:

Support business functions and Country Offices in the design and implementation of government capacity strengthening programmes (example: social protection systems).

Priority Actions:

1. Establish clear standard operating procedures, assistance principles and funding model(s) for I&T advisory service delivery and handover to governments.
2. Provide technical advisory and implementation services to governments as part of integrated capacity strengthening programmes for solutions that bolster social protection, optimize supply chains, and strengthen food systems..
3. Maximize existing WFP structures to assess, coordinate and lead Digital Advisory and Solution Services (DASS) for governments (consultancy rosters, mainstreaming existing guidance and roles, integration with Country Strategic Plans, governance model for DASS demands).

Metrics:*

1. DASS policies and procedures validated by relevant WFP stakeholders.

Note*: Baseline metrics across all indicators will be established by Q4 of 2023 in the I&T Security Strategy. Quantifiable performance goal setting will follow.

OBJECTIVE 3: STRENGTHEN DATA MANAGEMENT INCLUDING GOVERNANCE, DATA LITERACY AND SUPPORTING SYSTEMS AS FOUNDATIONS FOR RESPONSIBLE DATA INSIGHTS AND EVIDENCE-BASED DECISION MAKING.

Goal 3.1:

Holistically improve data quality and access to enable analytics and curated insight for evidence generation and informed decision making.

Priority Actions:

1. Create a global data strategy and road map of initiatives in partnership with business stakeholders.
2. Provide streamlined support to country offices and regional bureaux on data and analytics initiatives.
3. Strengthen data architecture, governance and management.
4. Work with business functions across WFP to ensure improvements in data capacity and processes to contribute to better data access.

Metrics:

1. With data stewards, jointly establish a baseline for data management and governance including data quality performance indicators by end of 2023.
2. Select and implement monitoring tools for data management and data governance by 2024.
3. Number of annually updated data policies, standards and guidelines for data owners, data stewards, developers and end-users.
4. Annual assessment of the metrics established against the baseline to measure progress and data maturity levels.

Goal 3.2:

Support country offices and business functions to collect and use data appropriately, effectively and efficiently.

Priority Actions:

1. Assess skills and gaps.
2. Implement a data literacy programme for WFP staff.
3. Create peer and community-based events to support progress.
4. Explore and foster inter-agency forums and communities of practice.

Metrics:*

1. Number of staff assessed annually.
2. Number of staff engaged with data literacy initiatives annually.
3. Number of annual events to support data literacy in WFP offices.
4. Percentage of staff using analytics as part of their activities based on annual assessment.
5. Number of staff who become trainers under Training of Trainers efforts for data literacy.

Goal 3.3:

Augment the capabilities of WFP staff, using advanced analytics and artificial intelligence to increase operational efficiencies.

Priority Actions:

1. Pilot advanced analytics and artificial intelligence (AI) use cases.
2. Create and implement an initiative and road map for scaling advanced analytics and AI in WFP.
3. Upskill and hire data resources with the necessary competencies to accelerate WFP's progress.

Metrics:*

1. Number of advanced analytics/AI use cases successfully piloted from 2023 to 2024.
2. Initiative and road map for scaling advanced analytics and AI from 2023 to 2024, endorsed by WFP.
3. Number of business processes supported by AI/machine learning annually.
4. Number of WFP staff who have gained credentials in advanced analytics/AI annually.
5. Number of WFP staff hired using standard data job profiles and Terms of Reference annually.



WFP staff, teacher-researchers and staff from Niger's Ministry of the Environment collect aerial photographs with a drone.
WFP/Richard Mbouet

Note*: Baseline metrics across all indicators will be established by Q4 of 2023 in the I&T Security Strategy. Quantifiable performance goal setting will follow.

OBJECTIVE 4: ENABLE OPERATIONAL AGILITY AND PROTECT WFP WITH ASTUTE RISK MANAGEMENT AND CORE SERVICE EXCELLENCE ACROSS RAPIDLY CHANGING I&T CONTEXTS WORLDWIDE.

Goal 4.1:

Strategically enhance WFP's security posture with a robust data privacy approach, and a secured Zero Trust network environment.

Priority Actions:

1. Implement Zero Trust security architecture and a privacy-by-default approach that brings enhanced protection of WFP's digital assets (data, applications, services).
2. Build and consolidate identity access management.
3. Through a global connectivity programme, unify communications and network monitoring.

Metrics*:

1. Percentage of WFP IT budget spent on cybersecurity.
2. Improve Zero Trust architecture maturity from current 2.4 level.
3. Rate of incidents.
4. Average number of attacks blocked.
5. Number of vulnerability entry points for a data breach.
6. Breach detection time.
7. Update the Infosec with a data classification policy.

Note*: Baseline metrics across all indicators will be established by Q4 of 2023 in the I&T Security Strategy. Quantifiable performance goal setting will follow.

Goal 4.2:

Continually improve I&T operational agility through effective and efficient core I&T services.

Priority Actions:

1. Enable better data sharing by staff and give stronger control over security with next-generation cloud and hybrid backbone applications infrastructure.
2. Improve the remote and on-site employee workplace experience through Global Service Management.
3. Reduce "time-to-fulfil" metrics through process automation, and by strengthening the knowledge and outreach of first level support functions
4. In line with the Crown Jewel principle, enable cybersecurity (Single Sign On combined with Identity and Access Management) for all corporate level WFP applications by 2024.

Metrics*:

1. Improve customer satisfaction rate for I&T support from current Info-Tech rating of 61 percent.
2. Introduce feedback mechanisms in the Global Service Management Tool to methodically gather feedback on service provision.
3. Number of requests automated per year.

**OBJECTIVE 5:
PROMOTE A SERVICE-DRIVEN I&T CULTURE, SUPPORTING BUSINESS UNITS AND OPERATIONS WITH GREATER EFFICIENCY AND INNOVATIVE SOLUTIONS, ESTABLISHING I&T ARCHITECTURE, AND INCREASING EFFECTIVENESS AT SCALE FOR WFP AND PARTNERS NOW AND IN THE FUTURE.**

Goal 5.1:

In partnership with business functions and country offices, deliver quality I&T services in a timely manner at the right scale by introducing modular I&T platforms; selectively modernizing legacy solutions; and harmonizing the portfolio, to safely enable and govern business-led initiatives.

Priority Actions:

1. Promote a customer-driven I&T culture fostering high satisfaction for TEC governance, support and innovation.
2. Redefine a fully integrated and coherent portfolio of digital road maps orchestrated into a Digital Blueprint by the EA discipline and adhering to common standards.
3. Selectively modernize legacy solutions (reduce technical debt) and develop modular IT platforms to achieve end-to-end business process integration and a more agile delivery of digital solutions (including citizen development in support of Goal 5.2).

Metrics:*

1. Improve satisfaction among staff that IT delivers high value.
2. I&T platform uptake: percentage of new IT/digital solutions realized leveraging WFP EA-sanctioned IT platforms.

Note*: Baseline metrics across all indicators will be established by Q4 of 2023 in the I&T Security Strategy. Quantifiable performance goal setting will follow.

Goal 5.2:

Empower business departments to co-design and support delivery of digital solutions adhering to I&T guardrails and leveraging modular I&T platforms.

Priority Actions:

1. Strengthen research and development for innovation, emphasizing scalable solutions that address business problems for constrained environments.
2. Enable an orchestrated citizen development approach, particularly in constrained environments, while ensuring adherence to EA guardrails.
3. Gather feedback on application improvements directly from users.

Metrics:*

1. The degree to which pre-existing innovations have scaled in WFP year-on-year as expressed through people reached and costs/time saved.
2. The number of viable (and mobile-first) innovations emerging from the Innovation Accelerator to begin scaling in operations.

Information & Technology Objectives: Priority Actions in Depth

OBJECTIVE 1: DEEPEN WFP'S APTITUDE IN EMERGENCIES WITH A COMPREHENSIVE AND LASTING APPROACH TO I&T PREPAREDNESS AND RESPONSE.

- **Focus emergency response and surge capacity efforts towards critical services**, while strengthening WFP regional bureaux/ country offices' ability to respond to emergencies through augmented preparedness tools.
- **Provide technology services and knowledge transfer/capacity building** to the entire response community including humanitarian organizations and governments to ensure positive impact on the affected population.
- **Ensure current and potential partners and donors are in line with Emergency Preparedness and Response (EPR) strategic priorities**, filling the gaps and supporting rapid delivery of effective services in the field.
- **Consolidate the EPR Framework** (see chart on next page) through the integration of Emergency Division Protocols in TEC and TEC Emergency Preparedness and Response processes with corporate protocol. Fully set EPR Standard Operating Procedures and Guiding Principles.
- **Excel in field operations, exceeding customer expectations whenever possible**, ensuring effectiveness, bringing multiple efficiencies to WFP such as savings in the deployment time in emergencies, time to source equipment and avoiding other costs to country offices.
- **Ensure emergency response workforce has the right capabilities, capacity, availability and scalability.**



Women at a WFP registration site in Mogadishu, Somalia. WFP / Ismail Taxta

EMERGENCY PREPAREDNESS AND RESPONSE (EPR) FRAMEWORK

EPR enhances WFP's leadership in emergency response by offering effective mechanisms and information and communications technology (ICT) services to respond quickly, with the right professional skills and field-first approach in different operating contexts, e.g. emergency preparedness and steady state, sudden on-set emergencies and protracted crises.

Emergency Preparedness and Response Value Added Services

These services include data and connectivity, security telecommunications, ICT equipment and standardizations, drones, emergency coordination and assessments, among others, and are delivered through UN mandated services like ETC and TESS+, and On Demand Services including FITTEST and WFP Drones.

Technology Workforce Capabilities in Emergency Operations

Key capability components rely on the workforce's customer-centric approach, technical expertise, coordination and project management knowledge, allowing them to assess, design, plan, prepare, deploy, manage, build, enhance, reinforce, equip and train, along the whole cycle of emergency preparedness and response.

Knowledge Transfer/Capacity Building for WFP and the Response Community

Provide technology services ensuring properly structured knowledge transfer/capacity building to WFP and the entire response community, including humanitarian organizations and governments, to help them build sustainable EPR capacities with a positive impact on the affected population.

Continuous interaction with customers, understanding needs, looking for constructive feedback and exceeding expectations. Current and potential partners and donors are in line with WFP EPR strategic priorities, helping to fill gaps and rapidly deliver effective services in the field.

Scope of the EPR framework

The EPR Framework serves as an overarching policy that governs emergency preparedness and response at all levels. It informs WFP country offices and regional bureaux management of how EPR works, driven by field needs. It consolidates and expands mutually beneficial collaboration and coordination within the I&T function and other WFP Divisions and functional units, including but not limited to EME, CBT, Field Security, as well as national governments and the private sector. The result is a reduced need for operational input, increased preparedness, and reduced time and effort required for emergency response.

Operational Excellence and Process Improvement

Operational excellence relates to the effective, consistent execution on the EPR Framework. Regular performance measurements through key performance indicators and evaluation towards targets are represented in a Balanced Scorecard where financial considerations, customers, donors, partners, operations and people are the key dimensions to monitor the outcomes of the I&T Strategy. Continuous process improvement is a key element to achieving WFP operational efficiency gains.

OBJECTIVE 2: IMPROVE RESILIENCE AND QUALITY OF LIFE FOR THOSE FURTHEST BEHIND THROUGH STRENGTHENED I&T COLLABORATIONS WITH GOVERNMENTS, PARTNERS AND THE GREATER UN.

- **Identify cross-UN initiatives** on common and shared use cases for data, and actively contribute to a single data ecosystem for the UN.

- **Identify and register digital public goods** that can be shared and determine where WFP I&T can be an adviser on adapting open-source code for local use cases. Develop a corporate approach to open-source tools, aligning with the UN Secretary General's Roadmap for Digital Cooperation, Our Common Agenda and contributing to the Global Digital Compact.

- **Develop an inventory of local and global partnerships**, including their capabilities and how WFP or governments can engage with them. Develop a framework for when and how WFP I&T will facilitate and advise governments on establishing technology partnerships for national capacity strengthening and social protection programmes.

- **Provide on-demand digital advisory for governments**, based on clear needs assessments and programmatic objectives defined by WFP's business functions.



In kind food distribution in Kramatorsk, Ukraine.
WFP / Antoine Vallas

OBJECTIVE 3: STRENGTHEN DATA MANAGEMENT INCLUDING GOVERNANCE, DATA LITERACY AND SUPPORTING SYSTEMS AS FOUNDATIONS FOR RESPONSIBLE DATA INSIGHTS AND EVIDENCE-BASED DECISION MAKING.

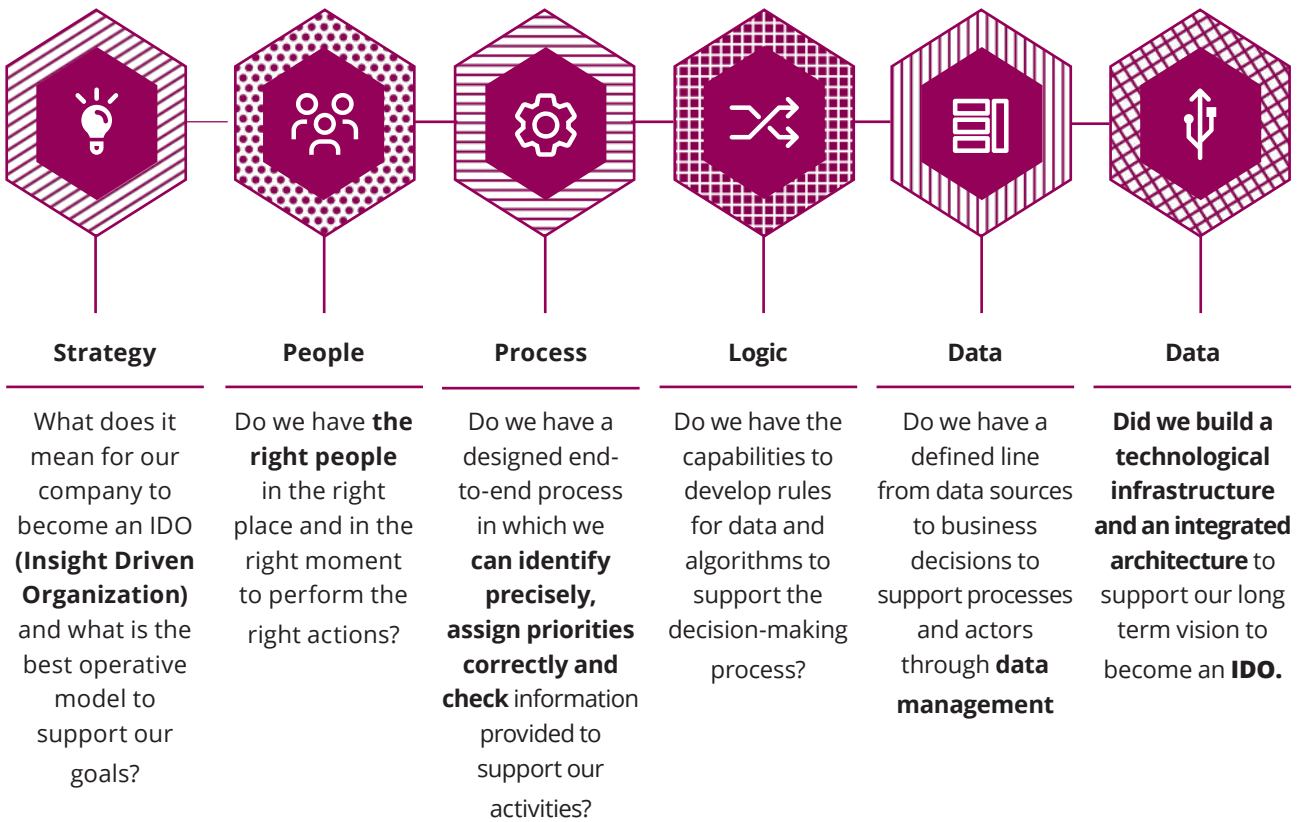
Develop a Global Data Strategy and Roadmap with Business Functions

By setting the direction, purpose and intended use cases for data managed and processed by WFP, the organization will be able to unlock the true value of its data to achieve zero hunger. These values include insights generation, data-driven decisions, support to innovation, readiness to adapt to change, improved data literacy and data protection, and building of digital foundations. The Data Strategy and road map will also create opportunities to partner with other UN agencies on broad system-wide use cases for data and analytics as public goods to be broadly shared.

Provide Field Support on Data Streamlining and Analytics Initiatives

At country office level, multiple data entry points and non-interoperate systems contribute to poor data quality, inefficient use of resources and limited ability of staff to obtain the most value from data. Ineffective practices also inhibit full visibility of the WFP programme cycle.

To reduce duplicative and siloed approaches to data in country offices and functional units, field support efforts will focus on improving the processes, tools and methodology to manage and transform data into actionable insights. From this position, I&T will be well placed to scale good data and analytics solutions for global WFP use and enable business units with domain knowledge to support country offices.

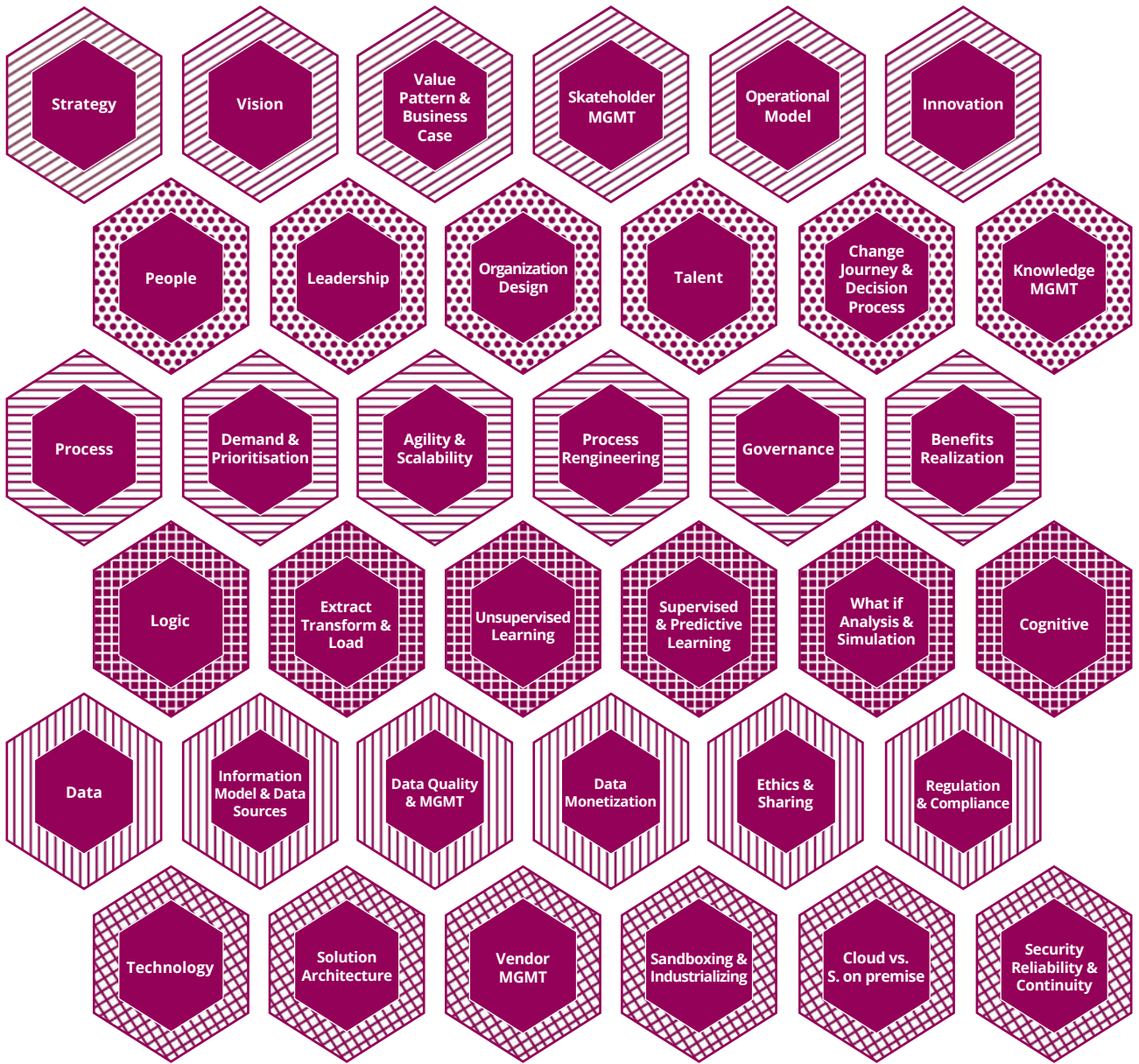


Simon Altahir, 5 years old being registered with biometric for the Juba Urban Programme. WFP/Gabriela Vivacqua

Strengthen Data Architecture, Governance and Management

WFP must establish the right policies, procedures and architecture, drawing from industry-standard practices, to govern the collection, storage, processing and usage of its data.

A Data Strategy fully supported by solid data architecture – tackling core, advanced and cross capabilities on sources, integration and translation, storage, analytics and presentation – can unlock WFP’s vast information into high-quality, well-integrated, trustworthy, relevant information readily available to the users who need it. The entire data life cycle should be managed securely, and WFP must seek to guarantee the protection and privacy of personal and sensitive data. To this end, ongoing data audits will monitor the use and integrity of WFP’s data.



OBJECTIVE 4: ENABLE OPERATIONAL AGILITY AND PROTECT WFP WITH ASTUTE RISK MANAGEMENT AND CORE SERVICE EXCELLENCE ACROSS RAPIDLY CHANGING I&T CONTEXTS WORLDWIDE.

Implement Zero Trust security architecture (ZTA) and a privacy-by-default approach.

This way of working will bring about full visibility and enhanced protection of WFP’s digital assets including data, applications and services. ZTA will establish strong user identity verification and validation of access to WFP’s digital assets, enhanced cyber intelligence and monitoring, and 24/7 incident detection and response. This approach is envisaged to lead to consistently reduced and managed cyber risks to WFP data and systems and the safeguarding of WFP’s digital transformation and promotion of business resilience.

Establish the next-generation cloud and hybrid backbone applications infrastructure for WFP programmes and operations. This infrastructure will give WFP better control over its data security and improve access and sharing experiences for employees. Appropriate

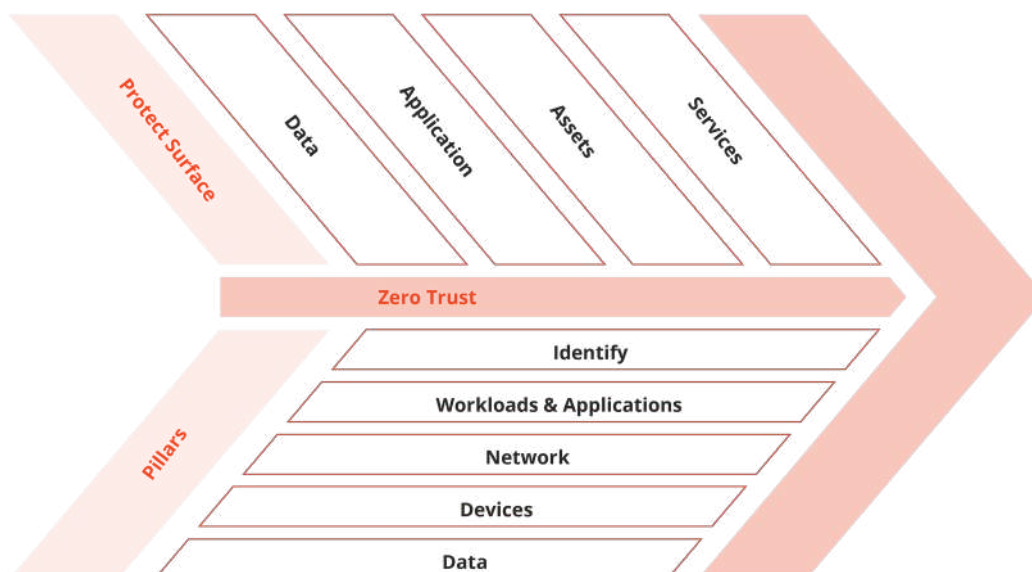
consideration will be given to locations where bandwidth continues to be a limitation, including in certain constrained environments.

Improve the remote and on-site employee workplace experience. Enhanced, follow-the-sun, multilingual and automation-enabled Global Service Management will be implemented.



A woman surveys the high tide in Bangladesh. WFP/Sayed Asif

Zero Trust Security Framework



OBJECTIVE 5: PROMOTE A SERVICE-DRIVEN I&T CULTURE, SUPPORTING BUSINESS UNITS AND OPERATIONS WITH GREATER EFFICIENCY AND INNOVATIVE SOLUTIONS, ESTABLISHING I&T ARCHITECTURE, AND INCREASING EFFECTIVENESS AT SCALE FOR WFP AND PARTNERS NOW AND IN THE FUTURE.

WFP will establish an EA framework to fully integrate WFP's digital ecosystem, properly scale solutions and help the organization accelerate the value of I&T. In other words, EA will establish a Digital Blueprint, which links I&T services and capabilities with business goals and capabilities, as the basis for planning and prioritizing I&T initiatives and modernizing legacy systems. The Digital Blueprint will also include a consolidated view of all digital road maps. Additional reference architectures will be applied to all I&T initiatives in WFP. By moving from an I&T landscape characterized by siloes to one united under EA, WFP will not only make user experiences easier, but it will also eliminate wasteful and duplicative processes, encourage re-use of I&T, contain runaway I&T costs and promote enterprise-level security.

Selectively Modernize Legacy Solutions

Under the framework of EA, WFP will create an ERP road map to keep up with changing business requirements. This will require maintaining, augmenting, optimizing or transforming legacy corporate systems that support fully integrated end-to-end business processes, including planning and performance reporting, financial management and global payments, workforce planning, supply chain management, programme integration, among others. There are several paths that can be taken to optimize WFP's future state and each system and process will need to be reviewed, as part of the new EA framework, to determine which path to take.

Strengthen research and development for innovation, emphasizing scalable solutions that address business problems for constrained environments.

Leveraging external experts and partners, especially from the private sector and academia, WFP will employ a sandbox approach, through which innovation teams, regardless of location and function, can experiment and cultivate creativity to develop and test innovation without exposing WFP systems and data. Special emphasis should be placed on innovation that is scalable and addresses the operational demands of constrained environments. WFP will support the expansion of existing innovative technologies such as:

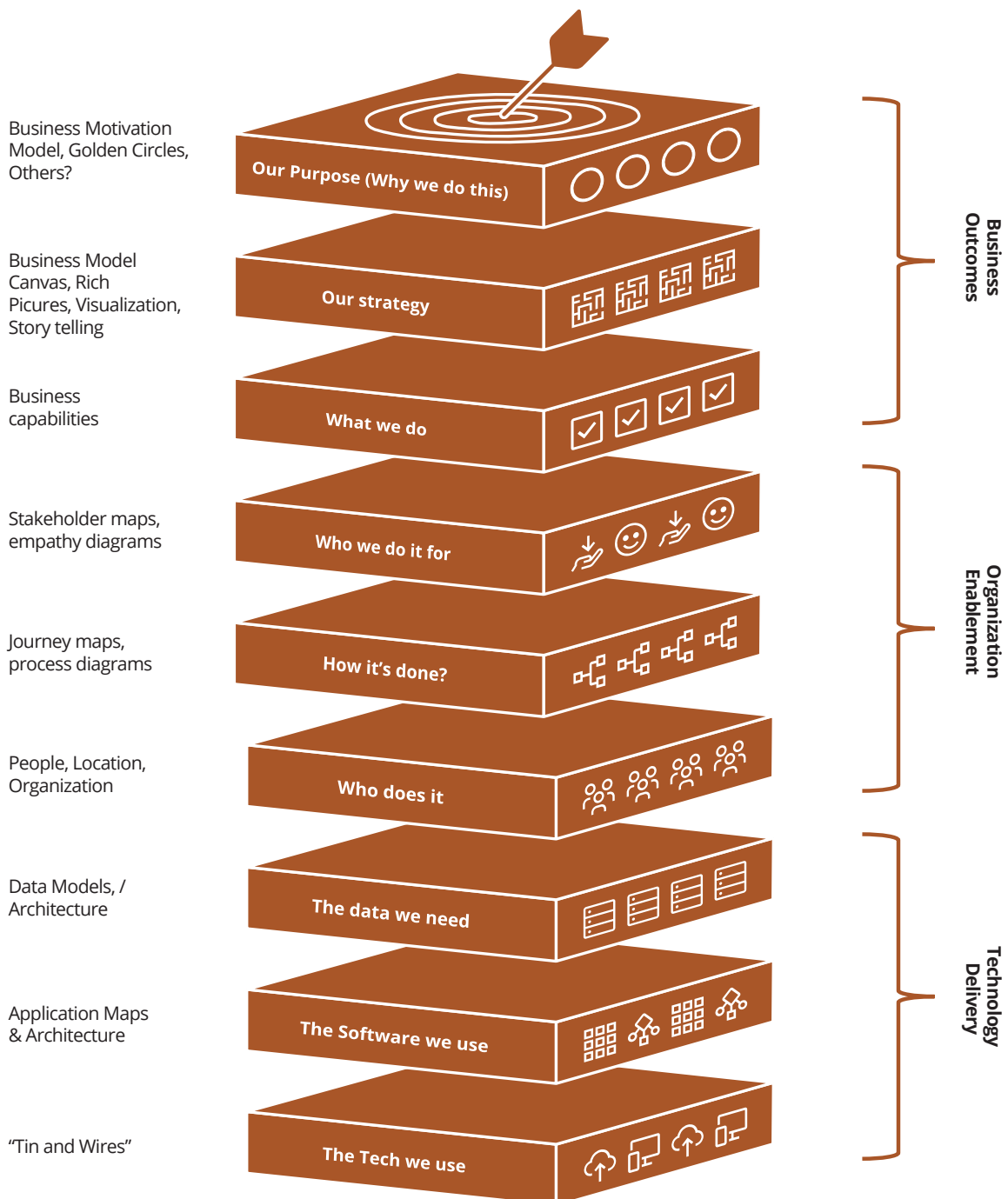
- AI to identify trends in the data WFP manages and draw actionable insights through analytics across disciplines. WFP will also expand its use of AI to solve business problems and achieve efficiency gains by simplifying processes.
- Drones to assess WFP operations in crop monitoring and damage assessment, provide connectivity and deliver assistance, including in constrained environments.
- Internet of Things for use cases to capture real-time data that support supply chain optimization and distribution monitoring.
- Enable an orchestrated citizen development approach, particularly in constrained environments, while ensuring adherence to EA guardrails.

To enable the field, country offices and business functions will be supported in adopting a citizen development approach to solutions development that does not compromise the safety of the organization's network or the data it manages.

WFP will support a development framework that facilitates timely deployment and is sensitive to users' needs, especially in constrained environments. Cross-functional teams across regions will be encouraged to share solutions to common or similar problems.

WFP Digital Blueprint realized through enterprise architecture

Source: WFP



I&T Enablers: Goals, Priority Actions in Depth

PEOPLE AND CULTURE

Define a workforce planning strategy that includes career management tools for staff engaged in I&T activities across WFP.

Workforce planning, employee retention and acquisition, and global learning and development are critical to ensure quality, delivery, and business continuity. These actions will be guided by the WFP People Strategy. WFP will strive for high performance and retention of employees as well as attract new talent and be guided by the principles of equality with respect to gender and diversity.

Roll out a comprehensive programme on data literacy.

The backbone of an insights-driven culture in WFP will be a digitally literate workforce. WFP commits to equipping its employees with the knowledge and skills to interpret, analyse and communicate using data.

Support knowledge management innovation

To enhance efficiency and make the most of its global experience, WFP will need to renew its approach to knowledge management – particularly in the I&T function whose influence cascades to every corner of the organization. WFP will create reliable systems for capturing, storing and sharing information.

Define and support enterprise change management and communications

A strategic enterprise change management and communications approach will be taken to ensure that all aspects of the WFP I&T Strategy are understood, accepted and embraced by staff worldwide.

Change management in I&T is particularly important because data, innovation and digital technology involve all business functions and require adoption support through the full life cycle: from launch to institutionalization of products, applications, services, activities and more.

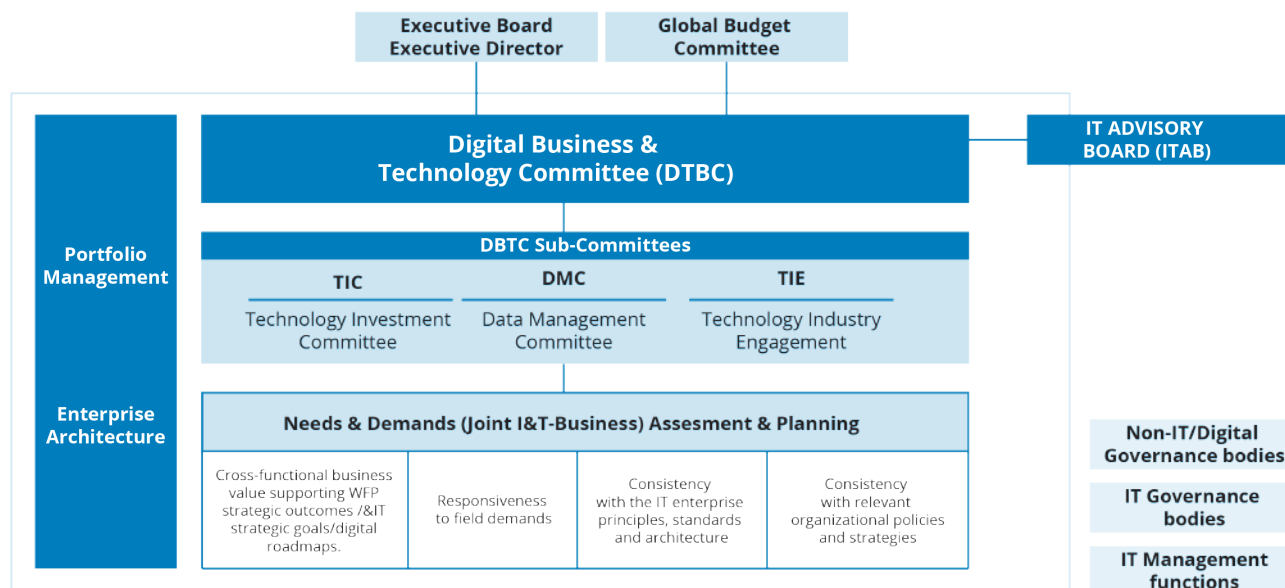
FUNDING AND GOVERNANCE

Create a centralized fund dedicated to addressing high-value non-differentiated field needs.

Review the I&T Per-Capita for adjustments to centralize specific areas (for example, network equipment) where the risks of non-compliance are particularly high.

Enhance Business Relationship Management (BRM)

I&T BRM is key to improving satisfaction with I&T. When business partners are satisfied that I&T understands their needs, they have a higher perception of the value of technology. The BRM function will have a critical role in the I&T Division by focusing on generating value through shaping demand, understanding business needs through business analysis, gathering business requirements in value terms, exploring trends and identifying innovative solutions. As a true business partner, Business Relationship Managers will support I&T governance and requests for changes that reflect new business challenges and advocate for new ways of working.



Establish Portfolio Management:

To support the Chief Information Officer and I&T governing boards, portfolio management will ensure strategic alignment and value realization of the total portfolio. Portfolio management provides visibility on strategic initiatives and supports articulation of the delivered value. A Portfolio Management function will maintain the portfolio of I&T investments, monitor at the aggregate level, and continually recommend the optimal mix and prioritization of investments based on actual performance and financial health versus planned levels. The Portfolio Management function will be fully integrated into the broader I&T management and governance frameworks, making it an integral part of future strategic decisions. The function will complement project management, which is aimed at execution and resourcing.

Reinforce Enterprise I&T Governance:

This strategy underscores the critical role of the Digital Business and Technology Committee (DBTC) and its sub-committees in prioritizing high-value proposition digital initiatives that are consistent with the goals set out in this I&T Strategy. Working methods of the DBTC and its sub-committees will be reviewed to

reflect criteria and thresholds for governance deliberation and prioritization. Proposals to the governance bodies must consider:

- Value creation based on field needs and opportunities.
- Consistency with the I&T enterprise principles, standards and architecture.
- Consistency with relevant organizational policies and strategies.
- Cross-functional coordination and clear ownership and sponsorship of digital initiatives.



An employee carries boxes from a United Nations Humanitarian Air Service (UNHAS) plane.

OPERATING MODELS AND PARTNERSHIPS

Adjust the I&T operating model so that strategic functions are centralized to ensure global impact and delivery functions are decentralized and establish an engagement model with country offices to enable greater local impact.

Actively manage and leverage more third-party partnerships (i.e. academic institutions, private sector, NGOs) whose specialized expertise, financial and in-kind support enable WFP to achieve greater impact through strengthened foundational I&T services, faster and more cost-effective data insights, and collaborative digital innovation. This requires active management of WFP inventory and contracts with third-party partners.



Jean, a student at a school in the Tanganyika province, Democratic Republic of the Congo. ADS/Victor Useni

I&T Holistic Metrics

By governing and managing the value life cycle of I&T, WFP can begin to improve the essential business metric for I&T in any organization: the degree of satisfaction with I&T and its perceived added value.

WFP aspires to achieve a 5 percent year-on-year improvement in I&T satisfaction among business stakeholders and I&T staff.

In 2022, WFP completed a series of staffing and stakeholder benchmark surveys for I&T satisfaction **to inform a target of achieving a 75 percent I&T satisfaction rating by 2024.**

To measure this, WFP will gather I&T staffing and stakeholder benchmarks through annual organization-wide surveys and begin gauging improvement indicators in 2024.

The strategy to improve services is expected to result in achieving I&T satisfaction levels of 85 percent by 2026.

In addition to the metrics identified with each of the I&T Goals in this Strategy, the I&T function will continue tracking existing metrics as part of its performance reporting, and work to achieve the management results and targets defined in the WFP Corporate Results Framework.

Run-the-business activities are fundamental to maintaining performance, while change initiatives are necessary to engage in new projects and services, ensuring an organization's long-term vitality and resilience in the face of change. A bi-annual benchmarking exercise across government and international organization sectors will be conducted to support this analysis. Spend by Run versus Change will also be measured.

Glossary of Information & Technology Terms

1. Application infrastructure: The set of computational and operational assets (software, servers, operating systems, etc.) required to successfully design, build, manage and deliver an application and related services to end-users.

2. Artificial Intelligence (AI): The simulation of human intelligence by machines, especially computer systems.

3. Authentication: An information security process which verifies the identify of a user.

4. Authorization: An information security process which determines a verified user's access rights.

5. Business continuity: An organization's ability to ensure critical business processes can continue to function following a disruptive event.

6. Citizen development: Process by which non-IT staff use so-called low-code/no-code platforms sanctioned by TEC to create and customize existing software programmes to suit their needs, thereby improving operational efficiency.

7. Data ecosystem: The set of infrastructure and applications used to aggregate and analyse information.

8. Data governance: Process of managing the availability, usability, integrity and security of the data in enterprise systems, based on internal data standards and policies that also control data usage. Effective data governance ensures that data is consistent and trustworthy and isn't misused.

9. Data literacy: The ability to derive information from data.

10. Data streamlining: The process of eliminating duplicated data from a database.

11. Digital literacy: The ability to consume, create and communicate information online or in a digital format.

12. Digital Public Goods: "Open-source software, open data, open artificial intelligence models, open standards and open content that adhere to privacy and other applicable international and domestic laws, standards and best practices and do no harm."

13. Enterprise Architecture (EA): The process by which TEC streamlines the use of technologies across WFP through standardization and the implementation of best practices.

14. Fintech: Financial technology, or Fintech, refers to new technology that seeks to improve and automate the delivery and use of financial services.

15. Information and technology (I&T): Throughout the Strategy, we have referred to "information and technology" or I&T, rather than "information technology" or IT, to emphasize that information and technology are strategic assets for WFP, rather than assets owned and controlled by TEC only, as implied by the term IT.

16. Legacy system: Any outdated computing system, hardware or software that is still used by an organization. Outdated does not necessarily mean it is obsolete.

17. Mandated services: Service required by the UN system and assigned to a specific agency or agencies. The Emergency Telecommunications Cluster (ETC) (mandated by the Inter-Agency Standing Committee) and Telecommunications Security Standards (TESS+) service (mandated by the UN Department of Safety and Security) are examples of mandated services.

18. On-demand services: Service that is ready to deploy when requested. WFP Fast IT, Telecommunications, Emergency and Support Team (FITTEST) is an example of an on-demand service.

19. On premise: When I&T assets and software applications are hosted on premise, they are physically hosted within an organization, as opposed to being hosted on a public cloud platform or in a remote data centre.

20. Open-source software: Computer software that is developed through open and public collaboration and that is freely available to the public. Contrary to proprietary software, which is owned by a single organization.

21. Open data: Data that is publicly and freely available for use and redistribution.

22. Platform uptake: The extent to which an I&T platform is used by staff within an organization.

23. Privacy-by-default: Principle according to which organizations ensure that the strictest privacy settings are applied automatically and that, by default, only strictly necessary data is processed.

24. Privacy-by-design: Principle according to which data protection is integrated into new I&T systems and solutions (hardware, software, network infrastructure) and corporate policies from the moment they are created.

25. Run versus change: Running refers to keeping up normal business activities, while change refers to new projects, usually with less clarity around processes.

26. Shadow IT: The use of I&T hardware, software or applications by a department or individual without the knowledge of the organization's IT or security functions.

27. Technical debt: The costs incurred, in the form of time, money and resources, when an organization chooses speed over quality when developing software solutions.

28. Workforce planning: the process by which an organization analyses its workforce and determines the steps it must take to prepare for future staffing needs.

29. Zero-trust security architecture: A security framework requiring all users to be authenticated, authorized and continuously validated to be granted or keep access to an organization's network, applications and data.

Citations

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ⁱⁱ WFP Strategic Plan 2022-2025

ⁱⁱⁱ Information and technology - (I&T) rather than IT refers to all the technology and information activities the organization puts in place to achieve its strategic goals regardless of where this occurs in the organization

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^v WFP, 2022

^{vi} [A journey of digital transformation](#) at WFP, 2017-2020

^{vii} Strategic Evaluation on WFP's Use of Technology in Constrained Environments, p. 6

^{viii} <https://www.un.org/sg/content/sg/statement/2017-07-05/secretary-generals-remarks-economic-and-social-council-repositioning> Accessed 19 February 2023

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^{xii} United Nations Secretary General's Roadmap for Digital Cooperation, 2020

^{xiii} Strategic Evaluation on WFP's Use of Technology in Constrained Environments, p. 2

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^{xvi} Strategic Evaluation on WFP's Use of Technology in Constrained Environments, p.9

^{xvii} WFP Strategic Plan 2022-2025, p. 21

^{xviii} World Bank, *Climate Change Could Force 216 million People to Migrate Within Their Own Countries by 2050*, 2021

^{xix} WFP Strategic Plan 2022-2025, p. 12

^{xx} WFP Strategic Plan 2022-2025, p. 15, 21

^{xxi} WFP Strategic Plan 2022-2025, p. 16

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^{xxiii} WFP Strategic Plan 2022-2025, p. 13

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^{xxvi} Strategic Evaluation on WFP's Use of Technology in Constrained Environments, p. 32

^{xxvii} WFP Strategic Plan 2022-2025, p. 40

^{xxviii} Strategic Evaluation on WFP's Use of Technology in Constrained Environments, p. 9

^{xxix} "Data protection and privacy in humanitarian action" by the International Committee of the Red Cross (IFRCC).

^{xxviii} Strategic Evaluation on WFP’s Use of Technology in Constrained Environments, p. 9

^{xxix} Data protection and privacy in humanitarian action by the International Committee of the Red Cross (IFRCC)

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^{xxxi} <https://www.weforum.org/agenda/2023/01/davos23-tech-innovators-smartphonesdigital-humanitarian-response> - Accessed 14 January 2023.

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