UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

SUSTAINABLE DEVELOPMENT GOALS

A DIGITAL TRANSFORMATION JOURNEY

Reshaping the future of standards organizations

DIGITALIZATION TRANSFORMING QUALITY INFRASTRUCTURE

Digital transformation is affecting all spheres of life and quality and standards are no exception. The ongoing paradigm shift, driven by data, the convergence of technologies and their interconnectedness, will significantly impact quality infrastructure (QI) and related services. With new technologies increasingly connecting objects, machines, people and the environment, the digital transformation offers prospects for inclusive and sustainable development despite the potential challenges associated with these connections.

The right use of technology will be key to achieving the United Nations Sustainable Development Goals (SDGs), which guide all global, regional and national development endeavors until the year 2030. This is because leveraging digital transformation can enhance efficiency, reduce waste and improve resource management, all of which contribute to sustainable growth. It can also promote social inclusion, providing access to information, services and opportunities that were previously out of reach for certain communities.

When embarking on a digital transformation journey, many organizations only prioritize digital aspects, neglecting the necessary business transformation in the process, thus missing out on the full range of potential benefits. Developing countries, in particular, need to be integrated in this new interconnected era and require tools to close the digital divide.

While *digitization* encompasses converting and recording data, *digitalization* focuses on developing processes and changing workflows to improve manual systems. An example of this would be using digitized customer data from different sources to automatically generate insights from their behavior. *Digital transformation* is an even broader concept that involves using digital technologies to fundamentally change how a business operates, delivers value to customers, and engages with its stakeholders. Digital transformation encompasses the use of digital technologies to drive changes across an organization's strategy, reimagine the business model, redesign processes, recreate organizational structures and information systems, and renew organizational culture and stakeholder engagement, ultimately generating societal value. Successful digital transformation often requires a shift in mindset, organizational structure and strategic vision to fully embrace the potential of the transformation derived from digital technologies.

Standardization plays a pivotal role in the quality infrastructure system (QIS) of developing countries, serving as a critical foundation for industrial development and economic growth. By establishing and/or consolidating consistent and internationally recognized norms, standards promote efficiency, interoperability, and safety across industries, thus fostering a conducive environment for businesses to thrive. We are at a turning point for industry as powerful forces are transforming the sector to one driven by digitalization, new patterns of globalization, rapidly changing markets, shifting consumer preferences and the social and environmental sustainability imperative. This transformation, based mainly on the new breakthrough innovations of digital technologies applied to production processes, will require the adaptation of the QIS to address how digital transformation is reshaping QI into what we now call "Smart QI" and "Smart Quality" and how QI in turn supports and ensures adherence to the social and environmental sustainability paradigm.

ASSISTING DEVELOPING COUNTRIES ON THEIR DIGITAL TRANSFORMATION JOURNEYS

With standardization as a starting point, the United Nations Industrial Development Organization (UNIDO) developed a tool to assess the digitalization needs of developing countries and support their standards bodies to advance their digitalization journey, in view of international integration. UNIDO's **Maturity Assessment and Implementation Methodology** aims to improve the reach and effectiveness of national standards bodies worldwide, helping them to better understand the challenges, gaps and opportunities inherent in their digital transformation journey. Driving digital transformation aligns with UNIDO's overall commitment to *progress by innovation*.

Since its development in 2021, the methodology has been implemented in seven countries, comprising various transversal areas and organizational facets.

FIGURE 1: COUNTRIES THAT HAVE IMPLEMENTED THE METHODOLOGY

The Maturity Assessment and Implementation Methodology evaluates the whole value chain of standards development, including the main areas and stages of the workflow and other fundamental elements.

It is a continuous cycle of digital improvement and evolution (see Figure 2), the first stage of which integrates a comprehensive assessment of the digital maturity of the standards body as a guide for effective actions to be taken and implemented in subsequent stages.

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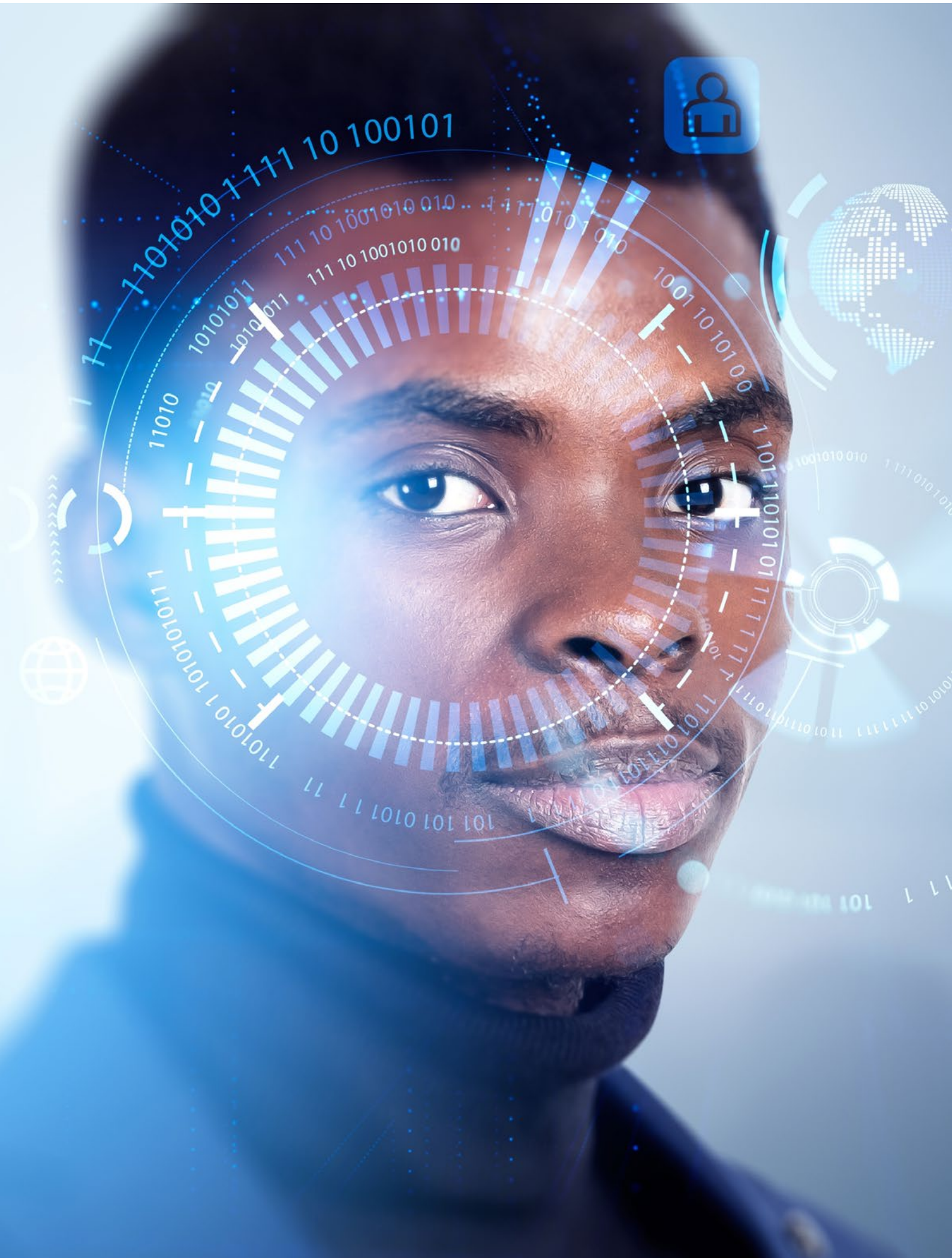
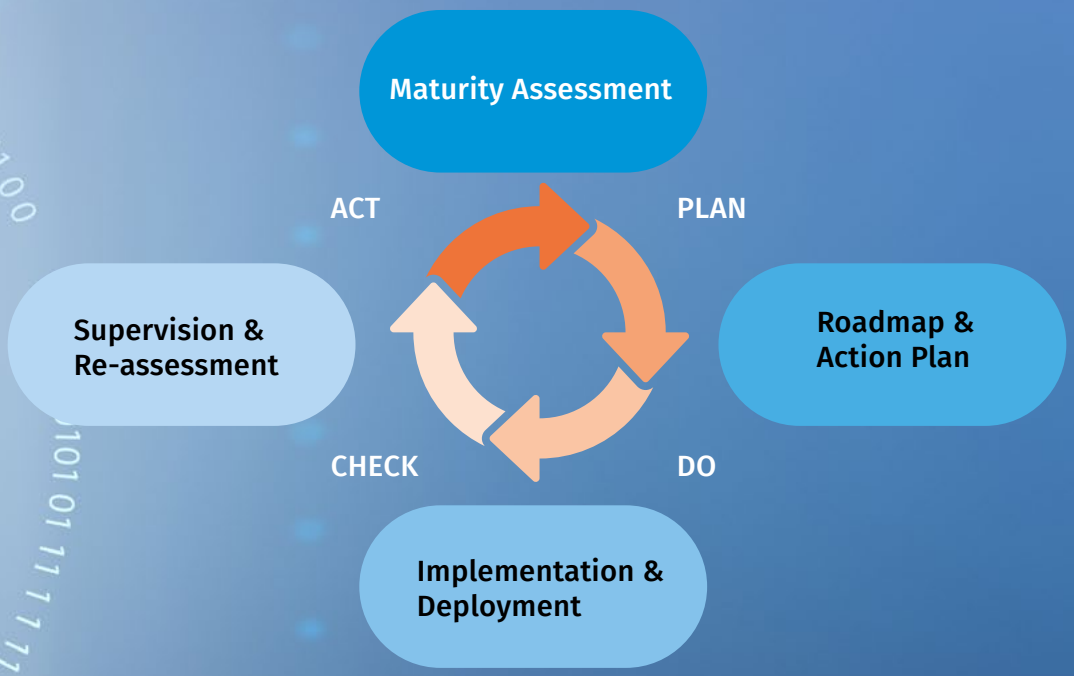


FIGURE 2: PROCESS OF THE MATURITY ASSESSMENT & IMPLEMENTATION METHODOLOGY



This assessment is imperative for standards organizations to effectively navigate the complexities of digital transformation. It serves as the strategic roadmap, shedding light on the organization's current digital capabilities, weaknesses, risks and opportunities. Without such an assessment, planning, implementing and evolving in a continuous digital transformation journey become akin to navigating a labyrinth without a map. After the assessment, tailored solutions to different country contexts are also integrated into this continuous cycle, consolidated into Toolkits for Digital Transformation for support organizations.

THE 8 STEPS OF THE MATURITY ASSESSMENT & IMPLEMENTATION METHODOLOGY

STEP 1 GROUNDWORK PREPARATION

An awareness-building presentation is made to the national standards body team with the presence of the senior staff and the director of standards development to illustrate the main goals of the Digital Transformation project, the methodology to be applied and the questionnaire to be filled out.

STEP 2 NEEDS ASSESSMENT

The questionnaire, consisting of questions in which levels of maturity can be chosen by the respondent, is made available to the national standards body team. Meetings can be held to clarify any concerns that may appear among the applicants and to guide them through the process.

STEP 3 PLOTTING & ANALYSIS

Answers are analyzed and plotted in a worksheet. After the plotting, the numerical results generated by the worksheet are thoroughly compared to understand if there are doubts or inconsistencies that might lead to deeper discussions further in the next stages of meetings and interviews.

STEP 4 DEEP DIVE

The analysis of the questionnaire should guide the UNIDO team to pose deeper questions about more detailed aspects of the organization.

STEP 5 CONSOLIDATION

The questionnaire results should be consolidated with the more in-depth information gathered over the numerous meetings into a comprehensive report.

STEP 6 VALIDATION & ALIGNMENT

This comprehensive report is shared and discussed with the national standards body team, allowing for an alignment and reflection process.

STEP 7 MATURITY ASSESSMENT REPORT

The Final Assessment Report of Digital Transformation Maturity Level is then prepared and presented to the national standards body, already aligned with the team, showing the main conclusions, challenges, weaknesses, gaps to be filled, in various areas and business layers.

STEP 8 DIGITALIZATION ROADMAP & ACTION PLAN

The gaps identified in the Final Assessment Report of Digital Transformation Maturity provide the foundation for the actions that will compose the Roadmap. Those actions will be distributed in several areas such as governance, ICT, sales, standards development, standards demands processing, or public enquiry, and can be of various natures, including strategic, structural, human capital, and business.

THE METHODOLOGY IN ACTION

GHANA

In the case of Ghana, the Maturity Assessment and Implementation Methodology was applied to GSA (Ghana Standards Authority), the state-owned organization responsible for quality infrastructure system services. The implementation related to:

- ICT infrastructure structuring and implementing a cloud structure
- Modelling a database of standards to hold national and international standards
- Data structuring and import, including gathering, structuring and cleansing standards metadata and importing it to the cloud, gathering PDF files containing standards and establishing a procedure to link each PDF file with the corresponding metadata of the standard
- Developing a data management platform to manage data and standards metadata, to be operated on the cloud
- Developing eCommerce – National and International Webstore connected to the database of standards to sell national and international standards
- CRM – Internal Management Platform to manage the digital sales process and related information

These implementation actions have facilitated the creation of a comprehensive standards database, streamlining data structuring and import processes. They have also significantly enhanced GSA's data management, sales efficiency and operational effectiveness.

PERU

The Maturity Assessment and Implementation Methodology was implemented on standards development activities of INACAL (Instituto Nacional de la Calidad), the state-owned national standardization body. The implementation process consisted of the following activities:

- Internal analysis and development meetings of experts to design, model, develop and implement a new Digital Standardization Platform for INACAL
- Weekly meetings with UNIDO experts and INACAL staff
- Monthly meetings with UNIDO experts, UNIDO managers and INACAL staff
- Periodic meetings with UNIDO experts and INACAL Technical Cooperation managers
- Webinars about the new Digital Standardization Platform for the Peruvian standards community

As a result, INACAL has achieved a new level of internal management control, enhancing accuracy and expediting decision-making, as well as a high degree of flexibility and adaptability for the standards development process. INACAL has also provided a higher level of transparency to society, disclosing its main activities being deployed in the area, and has facilitated the participation of stakeholders.

UKRAINE

The Maturity Assessment and Implementation Methodology provided UAS, the state-owned national standardization body, the support needed to digitalize in times of war and in alignment with the European Union. Suggested actions aligned to strategic objectives for the entire country and economy, focusing on the capacity of repair, reconstruction and rebuilding of the country's infrastructure to improve resilience.

In this sense, improving the structuring, access, and integration of information of the quality infrastructure system, starting with standardization, can increase resilience of Ukrainian society in the context of the damage suffered in the war. The creation of a digital information platform based on an information classification structure for the country's infrastructure was proposed to UAS to allow standards, regulations, metrology, conformity assessment, laboratories, companies, and experts to be classified and to allow the creation of an ecosystem to bring quick and precise responses to any damage imposed to the country's infrastructure by the war.

DIGITAL TRANSFORMATION SUPPORT ACROSS ALL QUALITY INFRASTRUCTURE DIMENSIONS

The Maturity Assessment and Implementation Methodology contributes to steering developing countries towards a higher level of digital readiness. Considering the importance of standardization as a major source of input requirements and guidelines for all other pillars of the QIS (i.e. metrology, accreditation, conformity assessment and market surveillance), having better digitally transformed national standards organizations can also stimulate the other QIS pillars to develop digital strategies. UNIDO is currently expanding upon the Maturity Assessment and Implementation Methodology to encompass all facets of the QIS. This will contribute to generating a “smart” QIS, capable of supporting a multitude of digitally connected networks of supply chains to enable a smart economy, sharing material and energy resources in a more efficient circular approach, thereby aligning with the sustainability imperative.

For more on the topic, check out the publication “Smart Quality Infrastructure: Shaping a sustainable future”.

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