

# Emerging Use of Technologies for Development

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## A New Intelligence Paradigm<sup>1</sup>

With only 10 years left in the 2030 Agenda, development practitioners need to innovate how they make decisions and solve problems. Such innovations can be enabled by intelligences, born from innovative uses of new technology. Although technology poses certain risks, evidence now shows that under specific circumstances the responsible use of technology can improve how organizations analyze problems, identify opportunities, make decisions, and achieve goals.

### I. The New Intelligences, and Illustrative Applications for Development

We have identified **four forms of intelligence** that can be leveraged to make progress towards the Sustainable Development Goals (SDGs) through the emerging use of technologies:



**Data Intelligence (DI):** Development practitioners can generate new insights through methodologies and approaches that facilitate the analysis, use, or visualization of data, such as: **Open Data**, **Data Collaboratives**, and **Internet of Things**.

**Use-Case Example:** The Data4Nature initiative by the French Development Agency (AFD) aims to source biodiversity data drawn from environmental impact studies conducted by public development banks in various contexts. This data is compiled and made accessible for policymakers, researchers, and other actors via the Global Biodiversity Information Facility (GBIF), which contains over 1.6 billion species occurrence records of fauna and flora around the world.



**Artificial Intelligence (AI):** AI uses algorithms to mimic human learning and cognition, toward addressing narrowly specified tasks. AI can be classified as: **Machine Learning** and **Expert Models**.

**Use-Case Example:** Improving road in East Africa from “poor” condition to “good” can produce between a 20 and 65-time return on investment depending on traffic (World Bank). Researchers conducted an automated road condition survey project in Tanzania that evaluates the quality of unpaved roads using satellite images and deep learning techniques.

[1] This policy brief offers insights on a forthcoming policy paper that highlights more evidences, in-depth analysis of the concepts, and decision-making framework on the Emerging Use of Technologies for Development.

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# Policy Brief

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**Collective Intelligence (CI):** CI uses networked tools to engage and solicit input from groups. It includes, for instance: **Crowdsourcing** and **Citizen Science**; **Citizen Assemblies**; and **Open Innovation**.

**Use-Case Example:** Gender-based violence is a major problem in Kenya. Victims often do not receive adequate care or see their assailants charged. MediCapt is a secure digital platform that enables doctors to capture forensic medical evidence of gender-based violence in Kenya and the Democratic Republic of Congo. Doctors use the system to share “forensic photography of survivors’ injuries” and transmit relevant data to authorities.



**Embodied Intelligence (EI):** EI deploys DI and AI in the physical world to automate energy or time-intensive processes. It includes: **Robotics**; **Unmanned Aerial Vehicles**; and **3-D Printing**.

**Use-Case Example:** At the beginning of the COVID-19 crisis, a group Kenyan 3-D printing companies used 3-D models to print plastic face shields for healthcare workers. These wallowing for new forms of quick and affordable aid.

## II. The Potential Value and Risks of the Four Intelligences

Technology is never a uniformly positive or negative force. Ensuring communities will benefit depends on involving all interested parties, developing local capacities, promoting beneficiaries’ ownership over technologies, and responsible,

de-risked implementation. Emerging uses of technology are capable of producing value but, by extension, are also susceptible to certain risks.

Value	Risks and Negative Externalities
<ul style="list-style-type: none"> <li>• <b>Knowledge creation and situational awareness (DI, AI, CI):</b> filling information gaps, identifying relationships, and helping practitioners see risks.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Loss of Data Sovereignty (DI, CI):</b> failure to align data practices with local laws and customs or to help governance systems adapt to new technologies can reduce communities’ autonomy and perpetuate injustices.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Assessment, prediction, and experimentation (DI, AI):</b> clarifying causes of success or failure and using virtual modeling to find opportunities or optimal interventions.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Loss of Privacy (DI, CI):</b> poor data security, surveillance, and profiling can endanger individual privacy and organizational information security.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Improved legitimacy (CI):</b> improving accountability, participation, and transparency.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Diminished Agency (AI, EI):</b> inadequate consent, excessive automation, and over-reliance on technology can disempower communities.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Expanded capabilities and skills (AI, CI, EI):</b> increasing individual and community capabilities via peer-to-peer knowledge sharing and remote learning.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Increased inequality (DI, AI):</b> bias and the failure to incorporate ethical requirements in systems can worsen existing inequities.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>New forms of service provision, aid, and economic opportunities (AI, EI):</b> new service provision expanding organizational reach.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Loss of trust (DI, AI, EI):</b> project failure or concealing truths behind carefully selected data can diminish public trust.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Improved efficiency and automation (AI, EI):</b> increasing the agility and efficiency of interventions through automation, thereby freeing humans for complex tasks.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Environmental damage (EI):</b> production and use of emerging technologies can lead to waste, air and water pollution and emissions.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Increased social capital and networks (CI):</b> expanding opportunities for skill-building and new connections and partnerships.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Social Harms (DI, AI, CI):</b> some emerging technologies can be co-opted or subverted, exposing community members to harm.</li> </ul>

## III. Toward a decision-making framework to Determine Appropriateness

Practitioners require an adequate decision-making framework to determine whether to invest in emerging technologies to support development objectives. We recommend developing and deploying rigorous decision criteria that weighs the likely development impact of technology from any of the four types of intelligence along the following questions:

• **Fit for Purpose:** does the use of technology address a clear, well-defined issue in a way that matches the proposed value proposition and resonates with the targeted beneficiaries?

• **Risks/Benefits:** does the project’s proposed value outweigh the possible risks it generates?

• **Local Assets:** does the target country have the infrastructure and expertise needed to support the technology?

• **Governance:** are there policy frameworks and institutions that can meaningfully provide oversight and responsible use?

• **Timeliness:** how long will it take for the proposed value to be realized in the target country?

• **Maturity:** has the emerging technology been successfully deployed in similar development contexts?

Area: multi-country  
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