



Infrastructure Asset
Management

UN

IAM UN INSIGHTS

Diving into Data: Why it matters for Infrastructure Asset Management

News and insights on Infrastructure Asset Management (IAM) delivered by the joint IAM initiative of the UN Department of Economic and Social Affairs (UN DESA), UN Capital Development Fund (UNCDF), and the UN Office for Project Services (UNOPS).



Photo taken at our workshop in Vang Vieng, Laos



In this edition of the UN IAM Newsletter, we explore the critical role of data in enabling resilient infrastructure asset management.

We discuss our recent experience in supporting Zanzibar's Ministry of Finance and Planning's goal to build a national infrastructure asset information system. We also feature an interview with Professor Ajith Parlikad from Cambridge University on how good IAM data practices and AI can enhance the quality and resilience of infrastructure and the public services they provide.*

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*Views expressed in this newsletter do not necessarily reflect those of the UN.

HIGHLIGHTS FROM IN-PERSON WORKSHOPS AND EVENTS

IAM at the UN's 2024 High-Level Political Forum

IAM featured strongly during side events at the UN's 2024 High-Level Political Forum (HLPF), which is the UN's main annual global event for reviewing progress on the Sustainable Development Goals. On 12 June 2024, a local finance panel highlighted the role of IAM as an enabler of local government finance, data-driven monitoring and reporting, as well as effective policy implementation. Additionally, on 16 July 2024, a panel on aligning budgets with SDG targets on 16 July 2024 showcased how Kisumu County in Kenya significantly increased their own source revenues through better IAM practices.

Towards a fixed asset registry in Zanzibar

From 15-19 June 2024, UN DESA, UNOPS, and UNCDF hosted a workshop in Zanzibar on developing a Zanzibar-wide fixed asset register. The event trained senior officials from key government departments and public entities managing critical infrastructure. The workshop highlighted the crucial role of data readiness and compliance with IPSAS guidelines, resulting in a national roadmap for a new asset registry. This initiative supports Zanzibar's transition from cash-based to accrual-based public sector accounting, emphasizing the transformative impact of accurate data on infrastructure asset management.



UNOPS and UN DESA at Zanzibar with senior officials

Nepal's Roadmap to Resilient Infrastructure

From 30 July to 1 August, UN DESA, in collaboration with UNOPS and UNCDF, conducted a workshop in Nepal to enhance the enabling environment for sustainable infrastructure asset management. The workshop brought together 44 participants from the Ministry of Finance, the Financial Comptroller General Office, agencies, Multilateral Development Banks, academia, and civil society. A key focus was on leveraging data and insights to design a draft roadmap for improving coordinated IAM at the national level. The next steps for the UN IAM team include integrating data-driven lessons from the multi-year initiative on curricula from public training institutions.

Optimizing Infrastructure: Workshop in Lao PDR

From 14-16 August, UN DESA, in collaboration with UNOPS, UNCDF, and the Ministry of Finance of Lao PDR, held a workshop on Infrastructure Asset Management. During the event, 71 participants from central and local governments designed evidence-based Asset Management Action Plans (AMAPs) to optimize infrastructure service value and address climate risks. The AMAPs placed particular focus on climate risk management and adaptation strategies. Participants highlighted the role of multilateral support in implementing AMAPs, with calls for technical assistance on all participating local governments for AMAP implementation.



Lao PDR's workshop

“By using the right data, we can achieve more objective and consistent assessments, lower inspection costs, enable better decision-making, and improve safety in IAM.”

Ajith Kumar Parlikad



The UN IAM team interviewed Dr. Ajith Kumar Parlikad, head of the Asset Management Group at the Institute for Manufacturing and Professor of Asset Management at University of Cambridge.

While everything is unique,

“it's the interconnected system or network of assets that actually deliver value. One bridge doesn't deliver value. It's the road network that delivers value.”

This makes IAM a challenging and interesting field to explore.

How does your research work connect with your contributions to the UN's efforts on IAM?

I mainly contribute to the UN by focusing on asset information data collection and its use for lifecycle management. This strengthens my research as it allows me to use my experience with different companies to help developing countries manage their infrastructure better. My hands-on experience with real-world challenges and best practices helps me make a practical impact through the UN's projects.

What are some key takeaways from teaching and workshops on IAM?

The main takeaway for me is the importance of listening as much as talking. For example, the last time I was in Tanzania (in Zanzibar), connecting with national consultants was an eye-opening experience for me. They do a great job of gathering local insights, which helps me understand what's happening on the ground. I've also realized that the challenges in developing countries are often similar to those in the developed world, like poor data quality and unclear goals. These issues are pretty universal.

Can you tell us about your background and experience in the field of IAM, and in the manufacturing sector?

I have a background in mechanical engineering, with a master's and PhD in industrial and manufacturing engineering. My work focuses on leveraging data to improve asset resilience and maintenance. In the manufacturing sector, I have worked with companies like Siemens, Rolls Royce, and Scania on predictive maintenance and failure detection. I also develop strategies to boost system performance and reliability in infrastructure sectors such as rail, roads, and logistics. At Cambridge, my research is all about using data to make industrial systems more resilient.

What inspired you to focus on infrastructure assets?

About 15 years ago, I joined a Cambridge project on using innovative sensors in infrastructure. Healthy infrastructure is essential for a strong economy because it affects all sectors. Unlike manufacturing, where data is easier to collect, each infrastructure asset is unique. One bridge is very different to another bridge, what you learn from one bridge cannot be automatically translated to another bridge.



Dr. Ajith Kumar Parlikad at a workshop on building a national fixed asset register at Zanzibar.

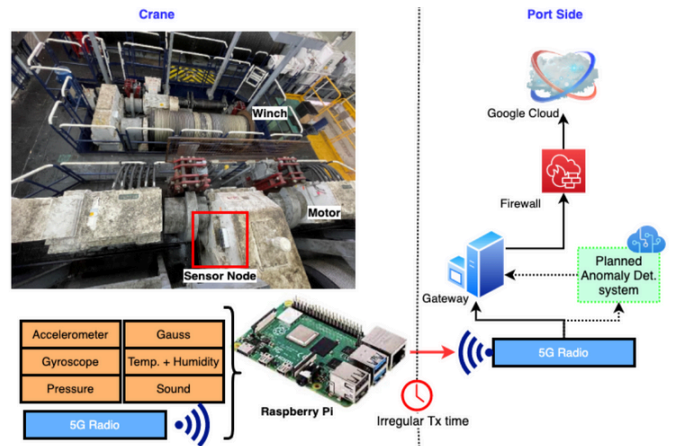
How can AI and machine learning improve infrastructure asset management?

AI and machine learning in infrastructure, are still just in the early stages due to data issues—either there's not enough data, or it's poor quality. Roads and bridges take decades to show issues, so it's a slow process to gather useful data. However, collecting accurate data allows us to make more objective decisions. Currently, many decisions are based on subjective assessments. For example, one inspector might rate a bridge as being in excellent condition, while another might rate it as poor. This subjectivity can lead to inconsistent evaluations. By using the right data and applying machine learning and data analytics, we can achieve more objective and consistent assessments, lower inspection costs, enable better decision-making, and improve safety in IAM.

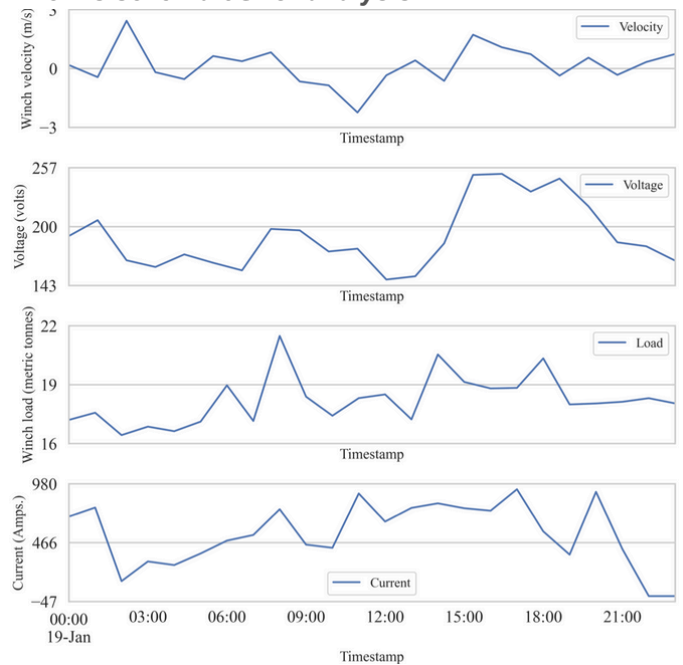
Can you share some examples or case studies where your AI solutions have made a significant impact?

We recently worked with a major container port in the UK to examine how 5G and Internet of Things (IoT) can be used to improve the performance of critical assets like the quay cranes. By gathering data on the vibration of the hoist motors and combining that with operational data, we were able to detect abnormalities in the motors, thereby delivering predictive maintenance capability. This has the potential to reduce the number of unexpected failures and downtime on these critical assets.

The following graph and diagram were created by Dr. Ajith Kumar Parlikad.



This diagram shows how sensors collect crane data, which is sent via 5G for analysis.



This graph shows quay crane performance metrics (velocity, voltage, load, and current) over time to identify maintenance needs early.

Based on your experience, do you see opportunities for the UN to make an even greater impact in the field of IAM, including through AI-driven maintenance?

The UN is key for bringing together stakeholders from public and private sector who manage infrastructure assets to share best practices and standardize data collection. This could help researchers develop better AI and machine learning tools. The UN could also help the efforts to data collection with affordable technology in the countries that the UN is working with. Moreover, connecting leaders from both developed and developing countries could lead to real, practical insights that translate into coordinated action.

UPCOMING EVENTS AND INITIATIVES

UN IAM will be hosting the following workshops:

- Enabling Environment Workshop in Gambia (October)
- Enabling Environment Workshop in Costa Rica (5-7 November)
- Training of Trainers in Gambia (11-15 November)
- Capstone Workshop Program in collaboration with Columbia University (Spring 2025)

UN IAM will be presenting in the following conferences:

- IAM North American Conference 2024 in Denver, USA (21-24 October)
- The 18th World Congress on Engineering Asset Management in New Delhi, India (23-25 October)
- SDG Local Solutions Summit in Barcelona, Spain (7-8 November)

IHS Erasmus University and UN DESA partnership on IAM

UN DESA and IHS Erasmus University are together exploring ways to bring the IAM UN toolkits to future generations of public sector officials, through partnering on teaching graduate programs and classes. The partnership will build on existing efforts of IHS' MSc in Urban Management and Development, where students are already applying the Infrastructure Asset Management (IAM) approach developed by the UN to analyze real-world urban infrastructure projects. Using the IAM approach, the students have implemented life-cycle cost analysis and proposed innovative financing approaches to IAM, making academically and practically significant contributions to the UN IAM capacity development work. Further integrating IAM into urban development curricula will provide future professionals with essential skills to manage and sustain urban assets and can play a key role in promoting and spreading the use of the IAM tool across the globe.

We Value Your Input on Infrastructure Asset Management!

We invite you to connect with us by [sharing](#) your experiences and insights on IAM and the role of data in IAM. Additionally, we'd love to hear any comments or ideas you have for future issues of our quarterly roundup.

Thank you for your contribution!



Photo taken at our workshop in Vang Vieng, Laos