Transforming Governance: behind the success of India's digital public infra

Synopsis

The India-born chief executives of Microsoft and Google may have heaped praise on the country's digital public infrastructure recently. But not many know that the seeds of its success were sown by a little-known non-profit from Bengaluru, eGov Foundation, some 20 years ago.

Much before digital public goods had become the talk of the town, **Nandan Nilekani** and **Srikanth Nadhamuni** envisioned nearly 20 years ago that their eGovernments Foundation (eGov) would act like the 'Linux' - free and open source - of municipal governance.

And, true to intent, within 45 days of starting up their non-profit entity, a property tax system that it had developed for the Bengaluru city corporation had gone live.

eGov, founded as a collective of technologists, strategists, and policy professionals committed to solving societal challenges, began functioning with a seed capital of Rs 25 lakh from Nilekani.

It turns 20 this May, and Nilekani, a tech billionaire and the non-executive chairman of **Infosys**, has fond memories of its initial days.

State governments needed support in digital transformation to achieve efficiency and save costs, something that the private sector had already been doing. The foundation came into being to support urban governments with digital transformation initiatives, he said.

"Since its inception, eGov's work has evolved and scaled beyond urban areas and its focus for the next 20 years is to reimagine governance through digital public goods and digital public infrastructure," Nilekani told ET.

Nadhamuni had worked in **Silicon Valley** for about 14 years as a chip designer in several private and internet companies before deciding to move back to work on social impact projects.

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It was a chance meeting with Nilekani, who was officiating at a meeting of the

Bangalore Agenda Task Force as its chairman, that brought about this partnership.

"I met him at that meeting. All the local body heads - from the BWSSB, the BBMP, and the BDA - were there ... and they were presenting what needs to be done for the city. I was very impressed. Nandan was obviously officiating this to improve the city," Nadhamuni said. "I said to myself, here is someone who seems to know how to work with the government and make progress."

Nilekani also said that his first exposure to the need "for transforming governance happened during my time with the Bangalore Agenda Task Force."

Much before he became known as India's chief technology officer following the successes of the unique identity programme Aadhaar and the digital payments railroad Unified Payments Interface (UPI), Nilekani had already laid the groundwork for a Digital India through eGov, which is supported by the Bill and Melinda Gates Foundation, Tata Trust, and Omidyar Network, apart from his own Nandan Nilekani Philanthropies.

One of the most notable digital public goods produced by eGov is **Digital Infrastructure** for Verifiable Open Credentialing (DIVOC), a system that drove the nation-scale rollout of digital Covid-19 certificates in India.

DIVOC has now successfully expanded its footprint to other countries -- Sri Lanka, Philippines, Indonesia, and Jamaica. These certificate services have aided their governments in enabling key policy priorities, such as the reopening of international travel. Their certificates are valid in over 120 countries today.

DIVOC has also collaborated with the Indian Council of Medical Research (ICMR) to generate Covid-19 test certificates in India so that citizens could easily access and download their test reports. So far, over 1.6 million Covid-19 test reports have been issued in India.

Digital story

Today, UPI has seen 7 billion transactions a month, the number of Aadhaar authentications has touched 1.5 billion a month, and DigiLocker has more than 135 million users with more than 5.5 billion verifiable documents.

Account Aggregator (AA) linkable accounts have crossed 1 billion, while DIKSHA has content in more than 35 languages with over 60 billion learning minutes; Co-WIN has helped vaccinate a billion people, and ONDC (Open Network for Digital Commerce) may witness a full-scale public launch this year.

The rollout of Aadhaar 2.0 is also expected later this year, apart from iterations in the m-Aadhaar app, and a full rollout of face authentication.

While the Co-WIN dashboard is well known, as it aided in registering Indian citizens for Covid-19 vaccinations and provided district-wise statistics on the number of those vaccinated, not many know about DIVOC.

Since the virus had to be contained safely, countries needed a fool-proof mechanism to verify those who were vaccinated and those who were not, Viraj Tyagi, CEO, eGov, told ET.

"As we know, there was a lot of fraud in vaccine certificates. DIVOC was essentially built to issue verifiable certificates at a national scale. They are digitally signed with a tamper-proof QR code, so it is almost impossible to defraud the system," Tyagi said.

It is a great way of building trust at scale as travellers can be verified at any point, he said.

"Till now we have enabled five countries to issue more than 2.2 billion certificates," Tyagi said.

DIVOC was built as an open-source platform and designed for use globally.

"We spoke to multiple countries including India. DIVOC was integrated with Co-WIN as the national rollout of vaccination started," Tyagi said.

Apart from health, eGov predominantly functions in the areas of urban governance, sanitation, and public finance management.

"The idea was to bring the transformative power of technology into everything, be it paying property tax or ridding the city of black spots," he said.

Another digital public good – DIGIT (Digital Infrastructure for Governance, Impact and Transformation) - is currently being used in more than 1,000 cities in India. This is an open-source technology that the foundation has developed for the delivery of government services electronically.

DIGIT Urban Stack is a set of open Application Programming Interfaces (APIs), services, and reference implementations, set up as a public good to allow government entities, businesses, startups, and civil society to use and build solutions for urban India at a large scale. It is interoperable and reusable.

"It is a non-commercial open-source platform on which multiple applications

can be built by the ecosystem. It offers protocols, specifications and building blocks on which multiple app builders can build apps," Tyagi said.

In the space of urban governance, DIGIT has more than 40 services in getting birth certificates, building plan approvals, raising complaints about civic issues, paying property tax, etc. Under sanitation, it has aided in monitoring the movement of garbage, and faecal sludge.

In the health sector, it has helped in vaccination, managing health campaigns, and distribution of medicines. Around 40 solutions have been built on DIGIT over two decades, such as the Punjab government's E-Sewa, Odisha's SUJOG, and eChhawani of Cantonment Boards.

"We also provide libraries, documentation, training, and the code is available on GitHub. Every six months, almost 8,000 hours of training is provided. We believe unless capacity building and handholding is done, it cannot be used for newer use cases," Tyagi said.

The non-profit, apart from being a member of the Digital Public Goods Alliance, is also a partner of multi-stakeholder initiative GovStack.

"These multi-stakeholder initiatives have a focus on African countries to have better outcomes from the deployment of digital public goods there and achieve their sustainable development goals faster," he said.

Many takers

eGov is working with the International Monetary Fund (IMF) to make iFIX a part of their public finance strategy. The India Fiscal Information Exchange Platform, or iFIX, has been built by eGov as a digital public good to provide real-time information on the financial health of districts and states, covering expenditure, revenue, and available funds.

System integrators and 45 commercial players are also a part of eGov's ecosystem.

Digital public goods need funding by philanthropic capital to scale up. "And, unless you create an active market on top of DPGs, it will not scale. We work with the Big Four like PwC, and Deloitte, and smaller companies in Chennai and Kolkata," Tyagi said.

For example, PwC is implementing DIGIT in Odisha, and the National Informatics Centre is also implementing it. eGov's goal is to help at least 30 countries achieve sustainable development goals by 2030.

Punjab was the first Indian state government to use DIGIT in 2018, and within 90 days, at least 100 local bodies were up and running on the platform.

The estimated cost on a commercial RFP (request-for-proposal), which was Rs 200 crore earlier, had come down to Rs 8 crore four years after DIGIT was implemented.

"This is when states and market players got interested. We also signed an MoU in 2021 with the Ministry of Housing and Urban Affairs for a national platform called Upyog," he said.

The technology team of eGov comprises around 75 people including its vendors.

DIVOC has aided in providing proof of vaccination for all Sri Lankans needing to travel overseas during the pandemic, Dasun Hegoda, director, Information and Communication Technology Agency (ICTA), Sri Lanka, told ET.

ICTA is the apex government-backed policy making body under the Ministry of Technology entrusted with guiding Sri Lanka's digital transformation journey.

"We have integrated DIVOC with another open-source platform for Covid-19 immunisation tracking which is based on DHIS2. We offer digitally signed PDF as a certificate along with a printable version free-of-charge," Hegoda said.

Until the second week of October 2022, the country had generated up to 500,000 Covid-19 vaccination certificates.

"We're working with eGov on multiple other initiatives as well. We went live in July 2021. The reason we selected DIVOC was that it is a W3C verifiable credential open-source product. Our certificate needed to be authentic, cryptographically verified and carried on any smart phone," he said.

The linguistic diversity of the Sri Lankan population required Covid-19 vaccination certificates to be available in Tamil, Sinhalese, and English.

Hegoda said the country is currently providing Covid-19 vaccination certificates to only those citizens who want to travel abroad.

Its constrained finances and limited budget had stopped the island nation from giving Covid-19 vaccination certificates to all vaccinated citizens. "But it'll happen in the future," Hegoda said.

Liv Marte Nordhaug, co-lead, Digital Public Goods Alliance (DPGA), told ET: "Via early-stage dialogue with people like Nandan Nilekani, the story of how India

developed the India Stack has been a huge influence on the DPGA."

The Indian experience has led DPGA to focus strongly on how digital public goods can help other countries build digital public infrastructure, she said.

"Digital public goods like DIVOC can truly make a difference internationally through helping countries build critical use cases – such as vaccine delivery and certification – on top of their foundational digital public infrastructure systems, like digital identity," she explained.

It is important, for example, for migrant workers to show proof of vaccination to continue earning their livelihoods, and DIVOC helps in this process, Nordhaug said.

India is part of the 20-member DPGA. eGov joined DPGA as a member in December 2021.

According to the DPGA, as many as 36 digital public goods were developed in India, whereas around 46 have been deployed in the country.

In all, there are 138 solutions globally that the DPGA has vetted as digital public goods.

DIVOC was part of the list of 13 solutions that the DPGA published of immunisation delivery management systems.

Lucy Harris, another co-Lead of DPGA, told ET, "Since DIVOC is open source, it complements existing systems that are already there. Jamaica wanted to adopt DIVOC to interact with their existing system, CommCare, and provide certain missing components like scheduling. DIVOC came in to fill the needs in their existing system."

Since DIGIT Urban and DIGIT Sanitation are modular, open source and configurable, many countries could benefit from it, Harris added.