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PENSION FUNDS

United Nations pension fund sees major savings after blockchain replaces paper system

(Jeenah Moon/Jeenah Moon/Bloomberg)

PG By **Palash Ghosh** December 26, 2025 09:37 AM EST

The United Nations' $106 billion pension fund has slashed paper-processing costs by 40%, archiving costs by 95% and overtime expenses by 77% after replacing a paper verification system in 2021 with blockchain technology to upgrade its identification management protocols for retirees and beneficiaries.

Those are just a few of "tangible benefits" found in a report the fund issued in September, said Dino Cataldo Dell'Accio, deputy chief executive of pension administration at United Nations Joint Staff Pension Fund and a co-author of the report.

The case study arrives as pension funds globally wrestle with whether blockchain can deliver on its promises. Despite the U.N. fund's success, pension funds have been slow to embrace

blockchain technology, with several high-profile pilots stalling or failing to demonstrate clear benefits.

In this case, paper cuts are welcome

For some 70 years, UNJSPF had relied on a paper-based system to identify more than 80,000 beneficiaries across 190 countries around the world and to verify they were all alive and residing at their stated addresses.

That approach was slow and cumbersome — and vulnerable to errors, Dell'Accio said, resulting in about 1,400 payment suspensions annually due largely to delivery failures and signature verification issues.

After a pilot test in 2020, the fund moved forward with deploying a blockchain-based app called a Digital Certificate of Entitlement.

The DCE system, he said, uses a combination of blockchain — a distributed database or ledger shared across a computer network's nodes — facial recognition technology, artificial intelligence, and location verification to confirm beneficiaries are alive and living where they claim.

These tools, Dell'Accio noted, help to confirm "proof-of-life" verification.

As of early 2025, more than 43,000 beneficiaries, or about 53% of the fund's total beneficiaries around the world, were actively using the DCE platform, Dell'Accio said. Of those 43,000, only 15 have opted to return to paper-based processing.

Dell'Accio pointed to several additional benefits, including improved identity security, with lower risk of fraud and identity theft and improved privacy, since personal data is user-controlled and not centrally stored.

While notching benefits in administrative functions, Dell'Accio confirmed that UNJSPF has not considered using blockchain to assist in the fund's investment activities.

Data breaches that have compromised millions of identities become substantially less threatening when personal data is no longer centrally stored, the report said.

"The elimination of single points of failure through decentralization dramatically reduces vulnerability to both attacks and system failures," he wrote. "Perhaps most importantly, blockchain returns control of personal information to individuals, allowing them to share only what is necessary with each service provider without relinquishing ownership of their identity."

For users without access to suitable smartphones or in areas with limited connectivity, the fund has developed and deployed kiosks in relevant U.N. field offices, he said.

Risks and challenges that come with blockchain

However, Dell'Accio pointed to some risks and challenges related to the adoption of blockchain. For one thing, the move from paper to blockchain-based infrastructure raises questions of proper governance. In addition, beneficiaries with low digital literacy, limited access to technology, or those who live in remote regions may still face barriers to adoption.

Governance decisions around blockchain infrastructure, Dell'Accio noted in the report, often remain complex, particularly regarding the balance between privacy and transparency. "The transition from legacy systems presents significant technical hurdles, requiring investment in both infrastructure and training," he added in the report.

Roman Beck, professor of computer information systems and blockchain economist at Bentley University in Boston, and also a co-author of the UNJSPF report, said in an interview that adopting a blockchain-based system at the UNJSPF required overcoming obstacles such as lack of trust in new technology, regulatory concerns and scalability questions.

"In the end, what was convincing was the associated long-term savings in combination with a significant quality of service improvement," he said. "Importantly, the blockchain's tamper-proof ledger and audit trails raised confidence as every pension certificate is now immutable and fully auditable."

Still, while some pension funds have run blockchain pilot programs, they have yet to officially enact utilization of the technology.

For example, APG, the in-house manager for Dutch pension fund ABP, has conducted research on using blockchain technology for practical applications in pension administration and investment purposes.

ABP had €552 billion ($640 billion) in assets as of Nov. 30.

As far back as July 2016, APG's then-CEO Gerard van Olphen, said in a statement: "Blockchain's inherent promise, artificial intelligence and the effects of climate change will all exercise significant influence on the future of APG, the commercial world and society. By investing substantially now in such technical innovations, entering into partnerships with companies, startups and knowledge institutions, APG is contributing to the strength, synergy and speed needed for the Netherlands soon to be a leading player."

By October 2017, APG and PGGM, the in-house manager of another Dutch pension fund PFZW, said they successfully completed the first phase of a joint experiment involving the development of a pension administration blockchain application.

"The two pension administration organizations will now be conducting further research with this prototype," APG stated at the time in a release. "Over time, the continued development of this prototype will produce a more flexible and transparent pension administration system at considerably lower costs."

A spokesperson for APG declined to comment on the progress or the results of its blockchain endeavors. Officials at PGGM could not be reached for comment.

PGGM had €251 billion ($294 billion) in assets as of that date.

Moreover, in 2018, Canadian pension fund Ontario Teachers' Pension Plan, Toronto, and BMO Capital Markets successfully tested a fixed-income transaction using a blockchain platform. The pilot transaction mirrored an actual Canadian dollar fixed-income transaction. In the actual exchange, Ontario Teachers bought a Bank of Montreal-issued C$250 million one-year floating rate deposit note.

OTPP, which did not respond to requests for comment on the pilot transaction, had C$269.6 billion ($197 billion) in assets as of June 30.

James Scullary, a spokesman for the $584.1 billion California Public Employees' Retirement System, Sacramento, said that while the pension fund did a preliminary analysis several years ago on the use of blockchain, "we did not pursue any meaningful progress on utilizing this technology."

Beck of Bentley University commented that in the U.S. most pension systems have been cautious about blockchain due to regulatory and practical issues.

"Widespread use of blockchain in retirement administration would mean overcoming significant hurdles like regulatory changes and investment in infrastructure and many funds haven't faced a pressing use-case yet," he added. "Unlike the U.N. fund's clear need to modernize a 70-year-old paper-based proof-of-life process, typical U.S. plans use trusted legacy systems."

In contrast, Beck noted, some European funds and consortia are experimenting more. "Until recently, Europe's push for digital identity (like EU Digital ID Wallet pilots) and collaborative initiatives (like the European Blockchain Services Infrastructure) created a more favorable environment for such pilots," he noted. "But that might change now with new legislation coming out of Washington, providing more regulatory clarity when using blockchain-based systems nationwide, such as the Deploying American Blockchains Act. The act encourages all federal agencies to assess and expand their use of blockchain by reviewing current usage, identifying benefits, and planning needed security enhancements and asks for a digital identity system as a key issue, which is also of high relevance for U.S. pension funds."

Beck added that he is "cautiously optimistic" that some U.S. pension systems will run more blockchain pilot programs, followed by selective adoption in the coming years.

"The UNJSPF case and similar experiments demonstrate real benefits, for example, a major cost reduction in processing (printing, mailing, manual checks) and that will not go unnoticed," he stated. "I expect adoption to be gradual and pragmatic. Blockchain will spread where it directly alleviates a pain point. Funds will wait for standards and regulatory clarity before large-scale rollouts."