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Blockchain believers seek to shake up financial services

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Meet one of the innovators looking at mainstream applications for the infrastructure behind bitcoin



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involved. They wanted a shared database to provide an indelible and tamper-proof record of who had spoken to who and when.

Mr Mainelli did not know it at the time, but the decentralised electronic ledger that his consultancy produced was an early type of the technology now being called

a blockchain.

Fast-forward 20 years and the invention of bitcoin, the digital currency, whipped up publicity about the technology that powers it — the blockchain — and what else it might be able to do.

“To be candid, bitcoin has made this popular,” he says. “It’s back to the future for us.”

In essence, a blockchain is a digital ledger on which parties can log transactions. No one group has control over another. Because it is decentralised it eliminates the need for intermediaries, such as in the case of transferring money instantly without a central clearing house.

Mr Mainelli and his team are just one of many groups in the financial services industry that are experimenting with how blockchains could be used for central clearing, back office operations and cross-border payments. They are looking at how blockchains could replace existing systems, stripping out layers and streamlining processes.

From Z/Yen’s office near the Guildhall in London, Mr Mainelli’s team have built about 40 blockchains in the past three years. These have been for projects involving the professional services firm PwC; the Australian insurance group Suncorp, a handful of gambling companies, five global banks and three exchanges that wish to stay anonymous.

Mr Mainelli walks across to some sheets of white board propped against a wall to explain the experiments that Z/Yen has been masterminding. Dozens of pieces of paper are tacked to the boards and these show diagrams and text. They are a distinctly low-tech way to illustrate a technology that many in Wall Street and the City say is set to revolutionise the industry — and save billions of pounds.

This work on digital ledgers is not the first time that 56-year-old Mr Mainelli has been at the forefront of technology. After an early career in rocket science, he developed a commercial digital map of the world in the early 1980s, a Google Earth of its day. A spell at accountants BDO Binder Hamlyn was followed by the Ministry of Defence research division, and he then co-founded Z/Yen.

Mr Mainelli, who lectures in finance at the London School of Economics and Gresham College, is also an alderman of the City of London. He plays the bagpipes, at Burns Night dinners.

He sees a future where blockchains are the infrastructure behind much of our world and there are millions of different chains.

“They are going to be like databases, doing different things. In the history of the database we didn’t try and put everything through one big database.”

For now, that vision is far off, but Prof Mainelli is enthused about a step along the way. A prototype blockchain that his team has built — a type known as a mutual distributed ledger — could vastly simplify compliance with anti-money laundering measures and be aware of customer rules, he says.

PwC is assessing how a blockchain could be used for “know your customer” procedures.

A wealthy individual who needed to prove their identity could walk into a PwC office with their passport and identity documents, he explains. The firm’s staff would run checks on who the person

was, then scan and upload the documents on to the blockchain. The next time that person wanted to prove their identity, they could refer to those records, eliminating the need for later paperwork costing time and money.

“No one owns the data except the person with the key, the individual whose data it is,” Mr Mainelli says. He moves to a nearby computer, smiles, claps his hands and leans towards the terminal. On the screen are rows of data, showing files, numbers representing companies and cryptographic information: a sample data set.

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“This is inordinately dull,” he says apologetically, adding that the interface needs more work on its design. “This can be an exciting application but really it looks like this.”

Custom-built blockchains may take two months to build — or longer if the project is more complex. The team creating them at Z/Yen have backgrounds in maths, cryptography, statistics and computer science.

“One of the great myths is that a lot of people think these things are really difficult to build,” Mr Mainelli says.

Despite the increase in interest this year, much remains to be proved as systems are tested in real-life situations.

While there is broad agreement that the technology has potential in areas such as proving identity, Mr Mainelli points out that, ultimately, it is still fallible humans who will log the records and take decisions. Transactions logged on a blockchain could also become out of date if, say, an individual went on to commit a crime.

Biometric features such as finger scanners and facial recognition are being proposed as ways to increase security, and the industry in general is interested in how identities could be processed to cover many facets of a person’s life.

Does this not also raise the prospect of blockchain being the ideal tool of a dictatorship or Orwellian dystopia?

Mr Mainelli’s face falls. “There is a danger of that. He argues, however, that data on a chain cannot be accessed without a cryptographic key owned by the individual. He says this is one of the reasons why the integrity of encryption must be maintained in the face of government proposals to be able to access all communications.

“I don’t see that the government has any right to do this,” he says. “If we’re all owned by the state, sure, but if you want your Orwellian nightmare, it’s going to come from that sort of thing, maybe, not from this [blockchain]. That’s how centralised, fascist control starts.”

In some eyes, the concept of blockchains has been tarnished by the connection with bitcoin. Mr Mainelli admits there has been scepticism. He says, though, that you have to ask what people are sceptical about. “A lot are sceptical about the coins. So am I; there we are in agreement. There are no coins on these ledgers.”

Coins are integral only to some blockchains, such as Ripple and Ethereum, which are both being

tested by banks, and of course bitcoin.

The objections to the technology are falling away, he says. Its foundation of cryptography has been robust over the past few decades.

While in the past, a criticism was that running such systems from multiple machines was too complex, he says that now “we live in a world where we don’t think twice about the cloud and have five devices each”.

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