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U.S. Navy photo by MC2 Patrick Dionne

IT Staff Member Introduces Bitcoin to Monterey Rotary

By Matthew Schehl

Members of the Monterey community were recently brought up to speed on cryptocurrency, which has rapidly emerged over the last few years as a global economic force to be reckoned with.

Naval Postgraduate School (NPS) information systems security manager Gerald Holland addressed the Rotary Club of Monterey at the nearby Hyatt Regency Hotel, May 10, enabling members to better understand the nuances of bitcoin and blockchain technology.

Since initially appearing in 2009, bitcoin saw a meteoric rise around the world as a new kind of money. The global bitcoin economy soon outgrew the economies of many of the world's smaller nations.

It's a virtual, secure, anonymous and direct financial transaction conducted without any intermediaries, such as financial institutions or the federal government, and as such, has proven highly appealing to criminals and venture capitalists alike.

Bitcoin, Holland explained, is a "type of digital currency in which encryption is used to regulate generation of units, verify authenticity, and operate independently of a central bank.

"They're selling cars with it, they're raising money with it, they're using it for crowd-sourcing, for starting businesses," he added. "Not necessarily in America, but worldwide, it's very widely used."

Bitcoin saw its origin in a 2009 white paper published by an unknown person or group of people operating under

the pseudonym Satoshi Namamoto, followed by the release of its open-source software to conduct trades.

At first, programmers used it to swap coding for fun, Holland explained.

“Then one of these geeks actually went and said, ‘well, let me see if somebody will sell me two pizzas for bitcoin,’” Holland related. “So, he made a trade of 10,000 bitcoin for two pizzas, and that was the first official transaction of something that had commercial value.”

At that price, those two pizzas today would be worth over \$82 million.

The value of bitcoin has fluctuated wildly since, as investors increasingly took note. The cryptocurrency reached parity with the U.S. dollar in February 2011, broke \$1,000 in November 2016 and almost reached \$20,000 in December 2017, but dramatic rises have been matched by a series of crashes.

“It’s very, very turbulent,” Holland said. “There’s a lot of turmoil in the bitcoin world, but it’s still used and is still of value.”

The unregulated and anonymous nature of bitcoin has made it quite appealing to those seeking to engage in illegal activity, and within a short span of time, several websites popped up using bitcoin to trade weapons, controlled substances and launder money.

In April 2012, an FBI intelligence assessment concluded that the virtual currency would likely continue to attract cyber criminals who view it as a means to move or steal funds as well as a means of making donations to illicit groups.

“A lot of the people who are not so good recognize that, ‘OK, if I don’t have to declare who I am and it’s on a back channel and money is not regulated, I can use it for other things,’” Holland said. “So that’s where it got a bad name, that bitcoin is only for criminals.

“I wouldn’t say that’s true, but that’s why it happened,” he added.

Holland then dove into the more technical aspect of cryptocurrency: blockchain.

Blockchain is the encrypted technology which acts as an immutable ledger to publicly record the history of transactions. Each ‘block’ contains both a header with transaction data and ‘proof of work’ for all previous blocks.

For each new block, “nothing’s going to happen until the whole community approves the blocks,” Holland said. “The ledger is a list; it’s a big database of all those ‘proof of works.’”

A simpler and efficient way to understand how this works, Holland says, is bananas.

“Pretend I had a bunch of yellow bananas right here,” he said. “The whole room could look at them and say it’s

yellow bananas: we'd all agree, and nobody could dispute that because we can all see it."

If someone said "no, it's a blue banana," that information would be rejected.

"It's the same way with Blockchain," he continued. "If somebody tried to put false data in the blockchain, it would just be repelled like it's nonsense; it doesn't fit."

This communal aspect is both a blessing and a curse, and the reason bitcoin falls within the cybersecurity domain.

As with the Internet itself, information becomes publicly accessible to both friends, and those with malicious intentions alike.

"For the blockchain, it's the same thing," Holland said. "It's globally connected and is extensively connected, so like a bunch of bananas, when I put it out there all other [users] can see it and identify it as a banana."

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