

# BLOCKCHAIN BRAVE NEW WORLD

**F**urther to the previous editorial, let me attempt to highlight the main advantages of blockchain in relation to the Maltese healthcare industry...

## INTEROPERABILITY - CLINICAL HEALTH DATA EXCHANGE

Health data interoperability, integrity and security, portable user-owned data ... these are only a few of the buzz words surrounding blockchain-enabled health IT systems. Blockchain can enable data exchange that is cryptographically secured, allowing seamless access to historic and real-time patient data, thus eliminating the burden and cost of data reconciliation. This is exemplified by the recent collaboration between Guardtime, a security software firm, and the Estonian eHealth Foundation to secure the health records of one million Estonian citizens.

## BILLING MANAGEMENT

In the US, it has been estimated that 5-10% of annual healthcare costs are fraudulent, primarily resulting from excessive billing and billing for non-performed services. In 2016 Medicare fraud was, in fact, estimated to amount to \$30 million. By automating claim adjudication and payment processing activities through blockchain-based systems, one can forgo intermediaries and thus reduce administrative costs, time and obviously, the risk of fraud.

## DRUG SUPPLY CHAIN INTEGRITY

Counterfeit drugs incur an estimated global annual loss of \$200 billion. Indeed, approximately 30% of drugs found in developing countries is considered to be counterfeit. The pharmaceutical industry is already using technology to detect counterfeits such as scratch-off labels and radio frequency identification tags, although with some limitations. Blockchain seems to be the next evolution of these efforts, in that a blockchain-based system could ensure a chain-of-custody tracking log. This would enable manufacturers to track and trace every ingredient throughout its life-cycle as well

as track and verify the authenticity of the finished product. Add-ons such as private keys and smart contracts could also help offset this plague. One such example is the Advanced Digital Ledger Technology [blockchain], being developed by iSolve LCC, a US company, aiming to ensure drug supply chain integrity.

## CLINICAL TRIALS

It has been estimated that as much as 50% of clinical trials conducted worldwide go unreported, often because the results are negative. This creates knowledge gaps for healthcare stakeholders. Blockchain-enabled, time-stamped records of clinical trials, protocols and results could address important challenges such as selective reporting.

## CYBER SECURITY

According to Protenus, a cloud-based analytics platform, there were a total of 450 health data breaches in the US in 2016, affecting over 27 million patients. The majority [43%] related to insider-caused breaches, followed by hacking and ransomware [27%]. One main challenge is the rise in connected health devices; an estimated 25 billion healthcare Internet of Things [IoT] connected devices will be used globally by 2020, posing challenges in the evolution of IoMT [Internet of Medical Things] ecosystems. Blockchain-enabled solutions will be the cornerstone of such ecosystems, bridging gaps of device data interoperability and at the same time, ensuring security, privacy and reliability.

Our future is exciting.

In order to conclude this short analysis, I quote Miranda's words from *The Tempest*...

*'O Brave New World,  
That has such [technology] in 't!'*

With apologies to William Shakespeare... ❄️

*Ian Ellul*



Cover: Sir Paul Boffa Hospital, former King George V (KGV) Hospital, is not only a military building but it was initially opened in 1922 as a memorial to the men of the Merchant Navy who died in World War I. The building was severely damaged in 1942 during World War II, and although there had been a temporary halt due to air raid bombardment, the hospital services were never interrupted. The memorial was then rebuilt in 1948 under the premiership of Paul Boffa and renamed Sir Paul Boffa Hospital in 1976. This building has been in existence for over 50 years, and out of all the naval hospitals in Malta to date it is only Zammit Clapp Hospital and Boffa Hospital that still maintain a medical function.

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Publisher:  
Medical Portals Ltd  
The Professional Services Centre  
Guzi Cutajar Street, Dingli  
Malta, Europe

Production: Outlook Coop

Printing: Europrint Ltd

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The magazine is distributed free of charge to all Maltese doctors, pharmacists & dentists, as well as students of the aforementioned professions, with a print run of 3500 copies.

Annual subscription rates outside Malta: Six issues €90 or equivalent, worldwide

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