Original Paper

Private Datapods: Web 3.0 does not Automatically Mean Blockchain Decentralization

Dr. Stephen Castell[1]

[1] Dr. Stephen Castell, award-winning ICT systems and software consultant professional, FinTech, Cyborgization and Algorithmic Governance visionary, and SNUT cryptoasset and blockchain entrepreneur; active as an international expert witness in major complex computer software and systems disputes and litigation, including the largest and longest such actions to have reached the English High Court.

Castell Consulting, PO Box 334, Witham, Essex CM8 3LP, UK, Tel: +44 1621 891 776

PO Box 270529, San Diego, CA 92198, USA, Tel: +1 310-890-9859

stephen@castellconsulting.com, http://www.e-expertwitness.co.uk

https://archivesit.org.uk/interviews/stephen-castell/

Abstract

*ICT and blockchain professionals must be careful not to equate Web 3.0 automatically with blockchain, or vice versa. That is an incorrect equivalence. Blockchain is certainly one possible architecture on which to base a Web 3.0 implementation. However, the essence of Sir Tim Berners-Lee's decentralized Web 3.0 concept is nothing automatically or implicitly to do with blockchain, but, rather, is focused on the important idea of Private Datapods. The author's own **Zykme / ZykPass** invention is an available working hybrid App (beta test version) compliant with this Web 3.0 Private Datapod fundamental design principle, ushering-in a new era of decentralized user-controlled and user-owned social media based on secure P2P personal data communications, implemented using edge computing. This article describes the architecture and future development of this invention. This includes potential addition of a future blockchain-based 'social media' ZykToken, awarded to, and owned and tradeable by, each Zykme / ZykPass user, implementing the author's novel CapChere (Customer Corporation) IP and business ownership structure. This contends to be a transformative, socially useful re-purposing of traditional industrial capitalism in which all are winners.*

Keywords

FANG, Blockchain, Cryptoasset, SNUT, Web 3.0, Berners-Lee, Datapod, Privacy, Decentralization,

cyborg, IoT, Artificial Intelligence, Machine Learning, Automated Decision Systems, digital, finance, risk, economics, management, algorithm, capitalism, expert witness, forensic, dispute, litigation, cybersecurity, infrastructure, IP, loyalty, ownership, wealth, financial, investment, lawyers, courts, software, failure, reliability, resilience, applications

1. Introduction

Much has been, and is being, discussed and written about Web 3.0, with sometimes variable or unclear definitions, interpretations and positions taken as to what Web 3.0 exactly is, or is not, and what are the associated implications for online and internet communications, integration, co-operation, e-commerce and media 'experience and utility' functionality for humans, cyborgs and, indeed, 'all things' (via IoT). A fundamental positional introduction to Web 3.0 was given in 2012 by Barassi and Treré at the opening of their 16-page paper [1]:

> In recent years, internet and media scholars have been confronted with new developments of the Web, developments that have seen the growth of social networking sites, the extension of mobile technologies and an increase in user participation. The term Web 2.0, as proposed by Tim O'Reilly (2005), has been adopted in a variety of studies aimed at offering at times very critical perspectives on the political economy of Web developments … business and application developers are suggesting that there will be a new era of the Web: Web 3.0. This will be defined by a new online environment, which will integrate users' generated data to create new meaning. In contrast to Web 2.0, … based on users' participation, Web 3.0 will be based on users' cooperation … Within these debates, the overall assumption is that the Web is changing and that these changes impact on the economic and political organization of society, as well as on people's attitudes, beliefs and practices.

The authors of that article went on to say:

> This article explores the somewhat scattered body of literature on Web developments and seeks to understand the logic of terms such as Web 2.0 and Web 3.0 by critically engaging with them. It will argue that although these concepts can be crucial when analysing the political economy of the Web, they present two main theoretical and methodological limitations for social research. In the first place, … they are entrenched within an evolutionary and temporary understanding of Web developments, which does not reflect processes of technological transformation and tends to give a linear progression to coexisting social and technical trends. The second problem … is the problem of practice. Concepts of Web 2.0 and Web 3.0 often carry assumptions of users' practices: Web 2.0 is seen as enabling user participation whilst Web 3.0 is seen as triggering users' cooperation. In this article we argue that these assumptions can have serious limitations when exploring the impact of Web developments on people's everyday experience …

More recently, a 2021 XR Today Team article, resonating to the scholarship of that 2012 fundamental introduction, provided a basic technical developmental history, and evolving current understanding, of

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what Web 3.0 is – and what it is not [2]:

> From its defence and academic roots, Tim Berners-Lee came up with a consumer-ready version of the internet and the world's first web browser in 1990. This was web 1.0 – a connected repository of web pages that weren't searchable and extremely limited in terms of interactivity. Then, in 2005, a new social web was popularised that was more democratic and relied on user-generated content. … All this while, Tim Berners-Lee spoke about the possibility of a new internet called the Semantic Web which would be capable of drawing connections between online assets to provide users with an infinitely richer experience. … this vision of … Web 3.0 … can be defined as the third generation of online services where AI-based semantics, AR/VR-based immersive-ness, and blockchain-based decentralisation come together to create transparent, ubiquitous, open, and socially responsible internet experiences. The notion … was elaborated by Berners-Lee along with AI researcher James Alexander Hendler and computer scientist Ora Lassila in a 2001 Scientific American article. … Web 3.0 as understood in 2021 … leverages other technologies …to envision decentralised and highly engaging internet experiences. … It's a very real technology in the making, which is why it is important to understand that Web 3.0 is NOT:
>
> - A super-fast AI-powered internet – While Web 3.0 uses AI to make semantic connections, this improves search quality, not speed. Internet speeds will be revolutionised by a different technology: 5G.
> - A completely virtual universe that exists in VR – The metaverse is related to Web 3.0, but the two concepts aren't identical. You may think of the metaverse as one of the operating systems through which you may access the new internet, Web 3.0.
> - Internet untethered from currently known interfaces – Internet decentralisation doesn't mean that it will mandatorily require different hardware and software interfaces. Users can continue on the same devices – just like across Web 1.0 and 2.0 – with new interfaces supported additionally.

The 2022 article by Selig underscored and re-confirmed this illumination, amplifying the author's identification and view of the significant features of Web 3.0 [3]:

> ... In Web 3.0, data is stored securely and distributed across many devices, removing the need for centralized servers. Such a design also reduces the risks of massive data leaks because data is no longer centrally stored — making it more resilient to compromise.
>
> What is Web 3.0? Is it the future of the internet? If you look for a Web 3.0 definition you probably won't find a clear and unique explanation. … Web 3.0 is highly decentralized, driven by machine learning and artificial intelligence, and leverages blockchain technology. The result is real-world human communication. Users retain control over their data and content, and they can sell or trade their data without losing ownership, risking privacy or relying on intermediaries. In this business model, users can log into a website without having their internet identity tracked.

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Key to the innovation in Web 3.0 is the digitization of assets via tokenization. Tokenization converts assets and rights into a digital representation, or token, on a blockchain network. Cryptocurrency and fungible tokens are forms of digital currency that can easily be exchanged across networks, driving a new business model that democratizes finance and commerce. ... The term Web 3.0, coined by reporter John Markoff of The New York Times in 2006, refers to a new evolution of the Web which includes specific innovations and practices. Below are eight main features that can help us define Web 3.0:

1. **Semantic Web**: The next evolution of the Web involves the Semantic Web. The Semantic Web improves the abilities of web technologies to generate, share and connect content through search and analysis by understanding the meaning of words rather than by keywords or numbers.

2. **Artificial Intelligence**: By combining semantic capabilities with natural language processing, computers can understand information on a human-like level to provide faster and more relevant results. In doing so, they become more intelligent and better satisfy the needs of users.

3. **3D Graphics**: Three-dimensional design is used extensively in websites and services in Web 3.0. Museum guides, computer games, eCommerce, geospatial contexts and more are all common examples of this.

4. **Connectivity**: With Web 3.0, information is more connected thanks to semantic metadata. As a result, the user experience evolves into a new level of connectivity that leverages all available information.

5. **Ubiquity**: Internet content and services can be accessed anywhere at any time via any number of devices, rather than exclusively via computers and smartphones. Web 2.0 is already ubiquitous in many ways, but the growth of IoT devices will take it to new levels.

6. **Blockchain**: With blockchain technology, user data is protected and encrypted. This prevents large companies from controlling and/or using users' personal data for their gain.

7. **Decentralized**: Decentralized data networks store data within a peer-to-peer interconnection. Users maintain ownership over their data and digital assets and are able to log in securely over the internet without being tracked.

8. **Edge Computing**: Web 3.0 relies on the advance of edge computing in which apps and data are processed at the network edge on devices such as mobile phones, laptops, appliances, sensors and even smart cars. ...

What clearly emerges is that most technical analysts and ICT professionals therefore seem to be in agreement that in absolute essence Web 3.0 is, and increasingly will be, concerned with securing personal data and transactional *privacy*, *security* and *reliability*, where, further, such personal data will principally be stored and processed through application functionality executed at the *edge*, on personal devices. Personal data will no longer be centrally stored – meaning, crucially, it will no longer be tracked, snooped upon, agglomerated and sold for profit by and to the sole benefit of third parties.

The most significant impact of Web 3.0, arising from the individual user's regaining control of his/her

personal data, thus looks likely to be the dramatic revision of the business model that has perforce become 'accepted and established' for the internet and web. That business model has created the FANGs, those handful of (US) corporations that dominate the international Web 2.0 commercial and media universe, and whose multi-billion revenues and valuations rely so critically on the massive data analytics and 'adtech' monetization-flows that are driven by, and dependent and drawing upon, the personal data, browsing history, profiles and dynamic preferences of individual customers and user, remotely and continuously monitored, tracked, recorded, stored – *and manipulated and sold for profit*.

Hitherto such personal information, whether willingly-donated, inadvertently-contributed or automatically-extracted, has not only been supplied to the FANGs free of charge by acquiescent 'data subjects', but also with no thought or consideration by the FANGs of compensating individual users, by way of, say, ownership stakes, transactional payments and/or other remuneration, for so generously providing, at no cost or other material financial obligation to the FANGs, the essential raw data material from which those FANGs make their continuing and escalating lucrative billions.

Web 3.0 is set to contest and dramatically change this business model, creating a new 'respecting, collaborating, caring, sharing' e-trading enterprise paradigm that acknowledges and embraces the importance of each individual e-consumer and data subject, and includes each individual in the asset growth, ownership, and financial returns created from his/her individual data, in a properly fair and even-handed way, *pari passu*.

The precise structures and mechanisms for this new equitable commercial paradigm are open to creative thought, entrepreneurial development and innovative technical design for their implementation in business, the market, and in society. This article gives an account of one such novel manifestation thereof.

2. *Private Datapods*: the Standout Feature of Web 3.0

Whilst taking due note of the wealth of literature and understanding regarding Web 3.0 as perceived in the context in particular of blockchain decentralization and potential metaverse activities, a firm cautionary note needs to be sounded: ICT and blockchain professionals should be careful not to equate blockchain *automatically* with Web 3.0, nor Web 3.0 *automatically* with blockchain. That is an incorrect equivalence, in either direction.

Blockchain is certainly one possible architecture on which to base a Web 3.0 implementation. However, it needs to be (re-)emphasized and understood that the essence of Sir Tim Berners-Lee's decentralized Web 3.0 concept is nothing automatically or implicitly to do with blockchain, but, rather, as noted, is focused on the important idea of *Private Datapods*.

It is worth re-iterating and underscoring the original Web 3.0 conceptualisation by Sir Tim Berners-Lee of the rationale for and the development of his Private Datapod model.

In his 2021 posting, Brahambhatt noted [4]:

… a new era of the internet — a more transparent and open version of the web that would be collectively controlled by users, instead of tech giants like Google and Facebook. Some experts believe this decentralized Web, which is also referred to as Web 3.0, will bring more transparency and democratization to the digital world. Web 3.0 may establish a decentralized digital ecosystem where users will be able to own and control every aspect of their digital presence. Some hope that it will put an end to the existing centralized systems that encourage data exploitation and privacy violation.

Verdegem, in his 2021 posting, highlighted Sir Tim's 'data sovereignty' vision [5]:

... in an effort to return the internet to the golden age that existed before its current incarnation as Web 2.0 – characterised by invasive data harvesting by governments and corporations – Berners-Lee has devised a plan to save his invention. This involves his brand of "data sovereignty" – which means giving users power over their data – and it means wrestling back control of the personal information we surrendered to big tech many years ago. Berners-Lee's latest intervention comes as increasing numbers of people regard the online world as a landscape dominated by a few tech giants, thriving on a system of "surveillance capitalism" – which sees our personal data extracted and harvested by online giants before being used to target advertisements at us as we browse the web.

Noone's posting of 2021 drew particular attention to the taking back of control by individuals of their personal data, and the mechanism for achieving that [6]:

… In Berners-Lee's opinion, much of the success of the Google's and Facebook's of the internet rested on their amassing of the personal data of billions of ordinary consumers, over which the latter possessed no meaningful say in how it was used. And so … the inventor of the web now proposes to remake his creation with a new platform that allows users to take back control in the future. … it affords consumers the ability to secure all the information about themselves online into 'personal online data stores,' or pods – and force websites and public institutions to ask them for access. ... The new Berners-Lee vision of Web 3.0 stems from concerns over personal data protection. It presumes that users are disturbed by the accumulation of their data by Facebook, Google and Amazon and will embrace a model that puts them in control. Solid is designed to do just that, giving all requests for personal data from websites, companies or state institutions to an individual's data vault, or 'Pod,' for authentication.

To summarise:

(i) Private Datapods address in particular the issues of data privacy, theft, security, reliability, and software failure that is endemic to centralised systems (and it should be noted that, in regard to the crucial aspect of software and systems quality and reliability, there is a wealth of professional systems engineering, and legal, literature concerning, for example: achievement of fit for purpose software; analysis of data compromises, software failures, risk, resilience, and disputes; and as regards the woeful 'presumption of the reliability of computer evidence' [7]);

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and

(ii) Private Datapods challenge and will reign-in, remove or replace untrammelled, unsupervised commercialisation by third-parties of private user data;

and above all

(iii) The Web 3.0 Private Datapod fundamental design principle introduces the reversal of the 'traditional' digital commerce business model and economic value-chain, *putting an asset value on the individual's personal data that is of direct financial and other benefit to that individual, and <u>not</u> simply to the profit of a commercial exploiter and of other third-parties.*

3. *Zykme*: A Web 3.0 Compliant App

The author's own **Zykme** / **ZykPass** invention is an available working hybrid App (beta test version) compliant with the Web 3.0 Private Datapod fundamental design principle, and ushering-in a new era of decentralized user-controlled and user-owned social media based on secure P2P personal data communications, implemented using edge computing.
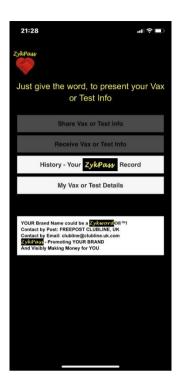
ZykPass is a re-purposing of the basic Zykme App invention, encompassing all of its features, but tailored for use as a P2P 'Covid Vaccination Passport'. ZykPass is actually readily usable for P2P transfer of *any* image or data – just by way of one example, it could be used for secure P2P transmission of cryptocurrency wallet addresses and/or keys. There follows a user-oriented description of the current ZykPass functionality and utility:

3.1 ZykPass Downloading and Initiation

beta hybrid

Step 1. Clicking on https://www.zykpass.net/ downloads instantly the *ZykPass* App, giving the initial *ZykPass* App Home Screen:
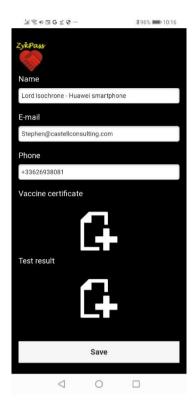
The 'Share Vax or Test Info' and 'Receive Vax or Test Info' Buttons are greyed-out at the start. To make *ZykPass* operative, personal details and data are first entered.

Step 2. The 'My Vax or Test Details' Button is pressed:

Name, E-mail address and Phone details are to be entered. These are free-form data entry fields: any characters may be typed-in, there is no verification or validation of data on input.

That is all there is to setting-up *ZykPass*. This minimal personal data-entry is enough to access and initiate the user's privately-controlled *ZykPass* App functionality. The 'Vaccine certificate' and/or 'Test result' details can always be added and/or modified later. Return to this screen is achieved by pressing the 'My Vax or Test Details' Button on the Home Screen, at any time, and then any details may be modified or added.

NB Reminder: *ZykPass* is a unique invention. It is a peer-to-peer personal and private data exchange App, that uses a proprietary patentable secure one-time transfer code protocol. Unlike almost every other App currently, it does not require the user to 'register', 'create an account', 'sign in', or 'logon'; nor give details to, be connected to, or be monitored by any central website or platform. No personal data or user behaviour histories are recorded remotely, nor stored centrally. Personal details entered are established and maintained by the user alone, locally on his/her own smartphone or other personal device. All entered free-form details are held privately, totally under the user's sole care and control. If and when user data is shared with another *ZykPass* user, that is solely and exclusively at each user's discretion, privately and securely peer-to-peer, and completely subject to the individual decision and management of each user alone. The personal details transferred between users are never logged, copied or stored by any third party or system.

Step 2. When personal details have been entered (or amended), pressing the 'Save' Button returns to the *ZykPass* Home Screen, but now with the 'Share Vax or Test Info' and 'Receive Vax or Test Info' Buttons no longer greyed-out. ZykPass is ready to operate:

3.2 ZykPass Operation

ZykPass operation is simple: The user has encountered someone to whom he or she needs, or wishes, and is happy, to transfer, instantly, privately and securely, the user's *ZykPass* personal details. This someone could be a person checking Vaccination or Test Details on entry to or through, say, an event (celebration, concert, party, sports match, etc.), travel channel (highway checkpoint, country border, holiday resort, etc.), or hospitality or other venue (shop, pub, restaurant, hotel reception, etc.); or it could simply be a new contact whom the user has encountered informally, socially or in a business setting. To transfer or exchange the user's details with this other person, a check is first made that the other person has downloaded the *ZykPass* App, and has entered their own basic initial personal details, as described above. Then:

Step 3. The user who is the <u>Sender</u> presses the 'Share Vax or Test info' Button. The screen changes, and displays, for just a few moments, a 'Please wait…' message; then it shows as follows:

A 'share word', the *ZykWord*, is displayed, which is used by the unique *ZykPass* algorithm as the secure one-time code protocol for transferring personal details, privately, peer-to-peer, from <u>Sender</u> to <u>Receiver</u>.
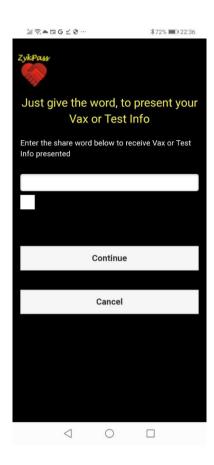
The *ZykWord* in this example happens to be the word 'FACEBOOK', but, under the algorithm, it could be any other randomly generated word. Generally, it will be a familiar word of one, or two, syllables, easily recognizable and/or capable of being readily and accurately typed-in.

This random *ZykWord* one-time code cannot be guessed, hacked or otherwise determined, by anyone; it is spontaneously generated by the *ZykPass* proprietary patentable algorithm, comes live and remains operative for only a short while, then becomes inoperative and is forgotten.

The user who is the Sender gives the *ZykWord* to the intended Receiver, saying "Type in FACEBOOK" (in this example), or "The *ZykWord* is FACEBOOK"; or, more simply, just "FACEBOOK"!
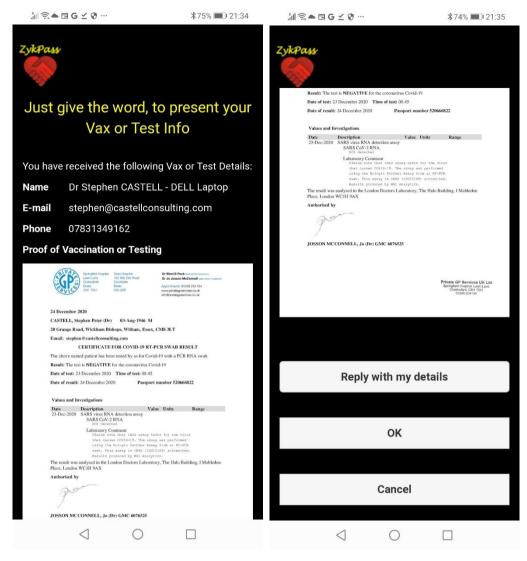
(Alternatively, if the Sender changes his or mind and does not wish to proceed with transferring personal details to the Receiver, pressing the 'Stop waiting' Button returns *ZykPass* to its Home Screen).

Step 4. The Receiver presses the 'Receive Vax or Test info' Button:

Step 5. The Receiver types in the *ZykWord* that the Sender has told to the Receiver. In this example, 'FACEBOOK' would be typed-in. The Receiver should enter 'FACEBOOK' (or whatever is the given *ZykWord*) carefully and accurately. It can be entered in lower case, upper case, or a mixture; it is not case sensitive.

Having typed-in the *ZykWord* given to the Receiver by the Sender, the Receiver presses the 'Continue' Button (or simply hits Return). The Sender's details are then immediately privately and securely transferred and displayed on the Receiver's screen:
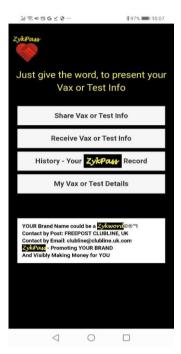
(Alternatively, if the 'Cancel' Button is pressed, *ZykPass* simply returns to the Home Screen).

Step 6. If the Receiver presses the 'OK' Button, *or* the 'Reply with my details' Button, *ZykPass* returns to the Home Screen, with a log of the Sender's details that have been received by the Receiver being stored within the Receiver's App. The stored log can be reviewed later at any time by pressing the 'History – your **ZykPass** Record' Button on the Home Screen.

If the Receiver has pressed the 'Reply with my details' Button, the Receiver's details will have been immediately, privately and securely, sent to and displayed on the Sender's screen. The Sender then, respectively, has available exactly the same options.

(Alternatively, if the 'Cancel' Button is pressed, *ZykPass* simply returns to the Home Screen, with no details being stored, or sent).
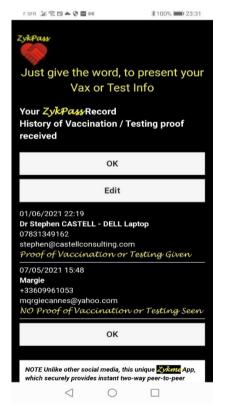
For both the Sender and the Receiver, *ZykPass* is now back at the Home Screen:
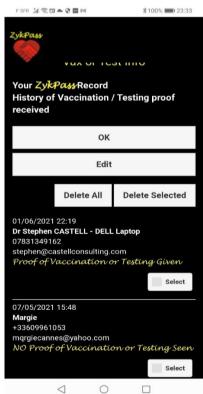
3.3 ZykPass User Records Management

Step 7. Whether as Sender or Receiver, pressing the 'History – your **ZykPass** Record' Button allows the user to review all the records of transfers <u>to</u> the user's *ZykPass* App <u>from</u> other *ZykPass* users with whom the user has privately and securely transferred or exchanged data.

The user can delete old records, or any that are longer required, by pressing the 'Edit' Button. This then gives the option to 'Delete All', or 'Delete Selected', records:
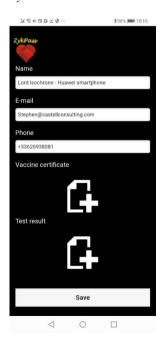
Since *ZykPass* is a peer-to-peer personal and private data transfer App, these details are <u>not</u> also additionally recorded anywhere remotely, nor stored centrally: they are for each user alone to control and maintain privately, so that, once deleted from the user's *ZykPass* App, they cannot be retrieved from anywhere else.

Once all Edits needed by the user to these records have been finished, pressing the 'OK' Button returns *ZykPass* to the Home Screen:

Step 8. Adding Vaccination Certificate and Test Results details.

Whenever a Vaccination Certificate and/or a Test Result is issued to the user, it is straightforward to add them into the user's *ZykPass* personal details, by pressing the 'My Vax or Test Details' Button on the *ZykPass* Home Screen:

If it is desired to add the details of a Vaccination Certificate, the user first uses the smartphone or other device to take a photo of it, and save it to the photo gallery or a folder on the device. If it is desired to add the details of a Test Result, again, the user first uses the smartphone or other device to take a photo of it, and save that also to the photo gallery or folder on the device. When taking each picture, the document should be well-lit, crease-free and fill the whole frame, so the photo image is captured fully and clearly, and is as readable as possible.
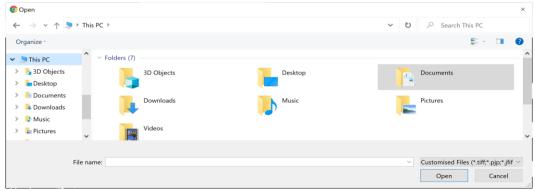
To add the Vaccination Certificate details, the plus symbol under 'Vaccine certificate' is pressed:
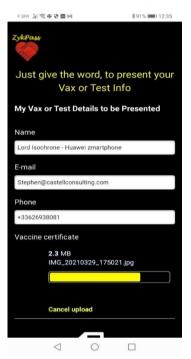

This opens up a search box or area on the screen, enabling selection by the user of the photo just taken of the user's Vaccination Certificate. The form of the box or area depends on which smartphone or other device is being used. For example, if using an Android smartphone, the selection box will look something like:
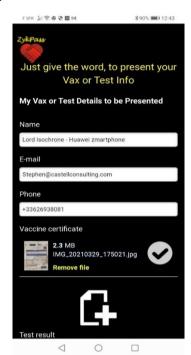

If using a MS laptop PC, it will look like:

The user navigates to the photo of the Vaccination Certificate, selects it (by clicking on it, or selecting with a tick, or pressing 'Open' etc), and the image will be loaded into *ZykPass* under 'Vaccine certificate'; and then will be confirmed with a tick symbol as having been loaded correctly, and stored under 'Vaccine certificate', within 'My Vax or Test Details to be Presented':

The same process is followed to load a Test Result into *ZykPass* under 'Test result'.

Pressing the 'Save' Button then returns *ZykPass* to the Home Screen.
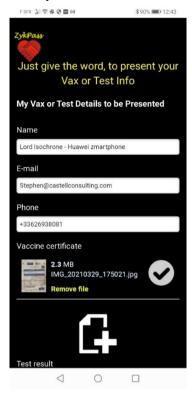
Step 9. Amending Vaccination Certificate, Test Results, or other personal details.
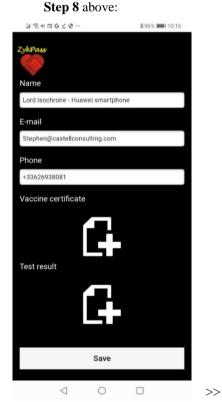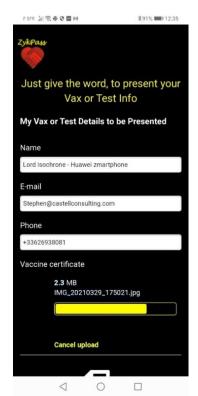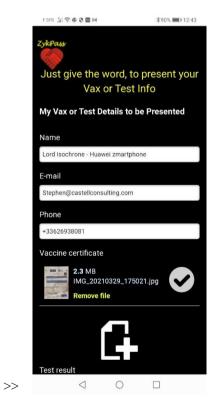
From the *ZykPass* Home Screen

the 'My Vax or Test Details' Button is pressed:

If the amendment desired is, say, to update and replace with a new Vaccine Certificate that has been issued to the user, 'Remove file' is first clicked; then the new Vaccine Certificate image added, as at **Step 8** above:

If the amendment needed is as regards a new Test Result, exactly the same process is followed, to 'Remove file', then add the new image under 'Test result'.

The original 'Vaccine certificate' (and/or 'Test result') image(s) recorded in the user's private *ZykPass* under 'My Vax or Test Details to be Presented' may also be kept, adding a second or further image by simply pressing the appropriate plus symbol:

In all circumstances of amendment or addition of personal details, and/or 'Vaccine certificate' and/or 'Test result' images, under 'My Vax or Test Details to be Presented', the operation is finished by pressing the 'Save' Button, and *ZykPass* returns to the Home Screen.

When a user transfers or exchanges personal details using *ZykPass*, all of the images currently recorded under 'My Vax or Test Details to be Presented' will be sent to the other *ZykPass* user to whom they need to be transferred.

4. *ZykToken* and *CapChere* Developments: Transforming Traditional Industrial Capitalism

"Nothing is more powerful than an idea whose time has come" (usually credited to Victor Hugo, the French poet and novelist, as a paraphrase of a similar idea in his *Histore d'un Crime* of 1877).

It is suggested that one such potentially powerful idea contender is the author's Zykme / ZykPass hybrid App Web 3.0 invention. To recapitulate: Zykme did not, and does not, require or encompass any blockchain architecture or component in its fundamental functioning. Zykme is a unique P2P secure 'social communications media', whose algorithms are implemented using wholly-on-platform, device-resident (eg smartphone) *edge computing*, with no private or personal user data being recorded, held or materially processed remotely. Its essential patentable P2P secure one-time code data transfer protocol uses neither a blockchain nor any other third-party centralized or decentralized system, database, repository or ledger.

However, in its future wider developmental social and business media context, the Zykme Private Datapod architecture was nevertheless conceived as, and is capable of, being developed with addition of a blockchain-based 'customer loyalty program' *ZykToken* awarded to, and owned and tradeable by, each Zykme / ZykPass user. This will furthermore be an implementation of the author's novel *CapChere* (Customer Corporation) IP and business ownership structure: the objectives of and aspirations for these developments include that they are intended to be a socially useful, transformative re-purposing of traditional industrial capitalism, in which all are winners [8].

These future ZykToken and CapChere blockchain developments and objectives are further set in context and outlined briefly as follows.

4.1 ZykToken

A 2019 *The Times of India* article, looking at customer loyalty programs, noted that [9]:

> Blockchain technology can lower the cost of entry for many companies due to its ability to be highly secure and decentralized ... many believe that the technology could prove to be disruptive in the consumer rewards space ...

In an undated posting, c. 2018, Shalchi noting that "Customer Loyalty Programs Need an Upgrade" and identified the advantages of moving to Blockchain Loyalty Tokens [10]:

> For a long time, ecommerce and brick-and-mortar stores have used loyalty programs to encourage repeat business. … Sometimes involving cards or complex registration processes, these programs are beginning to fall out of favor with modern customers. Instead of heightening the customer experience, they can actually have the opposite effect — dampening customer enthusiasm with complex rules and transactional rewards. One solution that some businesses are coming to embrace is implementing blockchain technology for customer loyalty. The hope is that blockchain technology will revolutionize customer loyalty rewards by eliminating some of the pain points of traditional programs. …

TokenD, explaining in 2017 its blockchain-based 'Tokenization solution for Loyalty', noted that [11]:

> According to the Bond Loyalty Report, where 280 loyalty programs across all industries are described, in 2017, only 50% of all members were active. Notably, one-fifth of these 50 percent had never redeemed their rewards. The first and foremost reasons for these inefficiencies is the lack of uniform management systems across loyalty and rewards programs, which confuses customers. …

It went on to explain its 'tokenization as a way forward':

> Tokenization is the process of transformation of rights to an asset into a digital token on a blockchain. It provides a way to enable efficient ownership transfer and secondary market ... Tokenized loyalty programs go way beyond classic plastic cards approach and take businesses to the next level of customer interaction without intermediaries. …

Ziya's 2020 posting, noting that 'Customer Loyalty Programs are Authentic Methods for Growing and Encouraging Market share', identified increased profits by sustaining repeat business, and other benefits [12]:

> Benefits of having Crypto Token in a Loyalty Reward Program …
>
> - Using Crypto Token, you can invest in some of other business
> - You can Trade your crypto token to get Virtual Currency.
> - You can start a new business by turnout your Crypto Token to Utility Token.
> - You can exchange to fiat currency like Dollar, Europe, Yen, Rupee and more
> - Invest your Crypto Token to Initial Coin Offering ICO Crowdfunding Platforms
> - Referring your Friends to get Crypto Tokens …

Davies, in an undated technical posting, provided a detailed presentation answering the question 'Wondering how you can make your rewards program app using blockchain technology?', and noting [13]:

There are various advantages of using a blockchain rewards program…:

- Loyalty points as crypto tokens: … Businesses can offer crypto tokens as loyalty points, and consumers can take advantage of these irrevocable stores of value.

- Improved transparency: Consumers receiving crypto tokens as loyalty points can see a clear audit trail of the transaction. Businesses can't suddenly take these loyalty points back, by citing a change of rules.

- Clarity about the loyalty program rules: With the blockchain rewards program, businesses need to use smart contracts to set the rules of their rewards programs. These are transparent, and no one can tamper with them after their deployment. The rules of the blockchain rewards program are always open for everyone to review.

- Cost reduction: Businesses using blockchain to run their loyalty program take advantage of the immutable distributed ledger, thereby reducing costs to maintain customer data within loyalty program budgets.

- Eliminate fraud: Tamper-proof loyalty records and immutable smart contracts can eliminate fraudulent transactions.

- Flexibility: With crypto tokens, consumers can redeem a portion of their reward points. This increases flexibility and provides a better customer experience. Consumers can also sell their crypto tokens for other digital currencies like Bitcoin or Ether, or they can sell them for fiat currencies through their digital wallet. This ensures customer satisfaction while using a loyalty app. ...

It is intended that the ZykToken will draw on, reflect and follow these developments such that each user earns a ZykToken every time they use the future enhanced-with-blockchain Zykme App. Furthermore the ZykToken will, uniquely, create a novel corporate structure whereby ownership of Zykme and its IP becomes more and more spread into and by its users, in accord with the novel *CapChere* (Customer Corporation) construct described in the following section of this paper.

It may be noted that the ZykToken paradigm is consistent also with two other recent innovations conceived of, developed and published by the author:

1. The *QE2-Coin*, already minted as an Ethereum Token, a Specialized National Utility Token ('SNUT'), targeted at stimulating and expanding the UK affordable homebuilding sector economy [14].

2. Tokenization of ownership by the People of the author's conception, the *Genesis Algorithm*, under Direct Government By Algorithm ('GBA'), in tune with the author's proposed Algorithmic Compact with the People [15].

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4.2 CapChere

The novel *CapChere* (Customer Corporation) construct was actually conceived of initially by the author over forty years ago. The author's vision arose from noting that capitalism lauds, and avers that it draws its power, strength and utility from, the principle of the 'survival of the fittest', whereby constantly-evolving human innovation, capital and labour deliver new enterprises that out-compete – and replace (or buy-out) – older, inadequately agile or less imaginative businesses that do not evolve sufficiently, nor react to changes in market demand, who fail to innovate, to improve their products or services and/or miss taking advantage of increased efficiencies and margins afforded by new technologies and business models. However, despite capitalism's trumpeting of the value of this 'brutal evolution', to deliver the benefits of the resulting 'survival of the fittest', *the requirements for, and the 'design, build, delivery and operation' of, capitalism itself have barely evolved at all.*

Industrial capitalism, as first crystalized, and now enduringly-established and firmly embodied, in its dominant working 'tool', or 'vehicle', the limited liability company or corporation, remains overwhelmingly driven by, and subject almost exclusively to, the single overarching objective of 'making a profitable return to its shareholders'. In other words, pure industrial capitalism – which actually means, effectively, *all* capitalism, as it continues today to survive, and thrive, *unevolved* – still, and enduringly, dictates that the supervening *essential purpose* of the profitable industrial firm, and its three key components, enterprise, capital, and labour, is to strive to increase the wealth of just one of these three, the preferred and privileged *provider of capital*, who is rewarded from those profits, above, and before, all others.

It is has always been something of a puzzle to the author as to why this pure industrial capitalism, with its overarching objective of being predominantly to enhance the capital of those who have capital in the first place ('the rationale for capitalism is intrinsically and simply to make the wealthy even more wealthy'), has endured almost unassailed, and has not itself been out-competed with, and replaced by, some 'fitter' version or form of capitalism.

However, putting to one side that curious perplex (but nevertheless keeping it in mind in the background), and simply accepting the enduring foundational construct of industrial capitalism, *viz*, the 'dynamics of the firm', upon which capitalism depends for its energy and success, the author analysed and perceived, forty years ago, a fundamental flaw, blindingly obvious to the author, but one which no-one else seemed to have spotted.

Presuming that any day this manifest flaw would surely become noticed, the author did nothing about his perception and conclusion. However, the flaw that the author discerned those years ago seems still, today, to remain overlooked and unobserved, 'hiding in plain sight'. Some along the way have occasionally explored ideas and proposals that have resonated a little with the author's insight and vision, but have never directly addressed it.

For example, a brief 2011 paper, published by the UK Centre for Policy Studies (CPS), proposed distributing the shares that the UK Government had bought in RBS and Lloyds. This was reported at

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the time in the *Daily Mail* newspaper in terms "Taxpayers could be given £l,000 worth of shares in bailed-out banks under radical new plan" [16]. The report also noted that "Proposing a similar scheme earlier this year, Lib Dem Stephen Williams said that if people own a share in the banks they can encourage them to change their behaviour. … Every citizen would have the same rights as shareholders … there could be shareholder associations set up of citizens who own these shares, who will put pressure on the banks to change their behaviour".

Noting the *phone bill credit note equity* idea for BT plc shares, at the time of its 1984 public flotation, that the author floated in a *Financial Times* letter published nearly thirty years earlier [17], the author responded to this CPS proposal that his BT plc share idea could be realised in the banks' case as *bank customers' deposit slip credit note equity*. This posited that, with a little financial engineering, the banks could then get a good proportion of the share valuation onto their balance sheets, thus beneficially enhancing their capital adequacy ratios to boot. These proposals were not adopted by the UK Government at the time.

The bottom-line is that it is now more than time that the author's new, evolved form of capitalism, fixing the fundamental flaw that he has discerned, be revealed, and put to the test. Described in general terms as perhaps 'the Customer Corporation', and which the author has proprietorially christened *CapChere*, once instantiated it should quickly come to dominate, as 'more fit', since it would be an outstandingly fairer construct for increasing and distributing wealth and ownership of economic activity and enterprise, in which *all* would be winners, *including – and even more so – the owners and providers of capital*.

Recalling that "nothing is more powerful than an idea whose time has come", the timing appears good for this revelation. Today the yearning for a system better than traditional industrial capitalism, to distribute more fairly wealth and ownership of economic activity and enterprise, is intense. The climate for new, 'more fit' ideas for capitalism – including therefore *CapChere* – has perhaps never been more propitious, for a number of reasons.

Exploring some of these reasons, in their 2021 paper, Hall and Davis noted the importance of climate change as a driver of this yearning [18]:

> The grand scale of GGR [Greenhouse Gas Removal] deployment now necessary to avoid dangerous climate change warrants the use of grand interpretive theories of how the global economy operates. We argue that critical social science should be able to name the global economy as "capitalism"; and instead of speaking about "transforming the global economy" as a necessary precondition for limiting climate change, instead speak about transforming, or even transcending, *capitalism*. ...

In a 2021 article by King, inequality and environmental damage were identified [19]:

> Nearly 250 years ago, the economist and philosopher Adam Smith wrote The Wealth of Nations, in which he described the birth of a new form of human activity: industrial capitalism. It would lead to the accumulation of wealth beyond anything that he and his contemporaries could have

imagined. Capitalism has fuelled the industrial, technological and green revolutions, reshaped the natural world and transformed the role of the state in relation to society. It has lifted innumerable people out of poverty over the last two centuries, significantly increased standards of living, and resulted in innovations that have radically improved human well-being, as well as making it possible to go to the Moon and read this article on the internet. However, the story is not universally positive. In recent years, capitalism's shortcomings have become ever-more apparent. … In one 2020 survey by the marketing and public relations firm Edelman, 57% of people worldwide said that "capitalism as it exists today does more harm than good in the world". Indeed, if you judge by measures such as inequality and environmental damage, "the performance of Western capitalism in recent decades has been deeply problematic", the economists Michael Jacobs and Mariana Mazzucato wrote recently in the book Rethinking Capitalism. However, that does not mean there are no solutions. "Western capitalism is not irretrievably bound to fail; but it does need to be rethought," argue Jacobs and Mazzucato. ...

Hutton, giving the 2021 Campaign for Social Science Annual SAGE Lecture, also emphasised the wide disparities of wealth resulting from capitalism, plus the stultifying effect on human endeavour and energy arising from the associated creation of economic and financial power concentrated in just a few hands [20]:

> ... There is widespread agreement that contemporary capitalism needs a reset. This lecture brings together theory, evidence and practice to point the way to a new capitalism. Capitalism is not delivering balanced sustainable growth, the source of its legitimacy, while rewards at the top and bottom are wildly out of kilter; dynastic fortunes are being created ossifying our society while monopoly power, extracting ever more economic rent, is growing more prevalent and drains away economic dynamism. ...

The 2019 paper by Delanty, contemplating the future of capitalism, posited one influence on a potential changed future to be limits to the accumulation of capital [21]:

> The article provides a framework for thinking about how the question of the future of capitalism might be addressed. ... a likely future trend will be less the end of capitalism than the harnessing of 'super-capitalism' and that there are limits to the accumulation of capital ...

In 2010 Zsolnai had also addressed the future of capitalism and singled-out the tension between competition and collaboration [22]:

> The moral foundation of capitalism should be reconsidered. Modern capitalism is disembedded from the social and cultural norms of society and produced a deep financial, ecological and social crisis. Competitiveness is the prevailing ideology of today's business and economic policy. … Competitiveness involves self-interest and aggressivity and produces monetary results at the expense of nature, society and future generations. The collaborative enterprise framework promotes a view in which economic agents care about others and themselves and aim to create values for all the participants in their business ecosystems. Their criterion of success is mutually

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satisfying relationships with the stakeholders. …

Jessop's classic 1986 article reviewed the contentious nature of sociological theories and drivers of the future of industrial capitalism, and noted a paradoxical 'change but no real change' persistency that is resonant with the author's own analysis of the lack of evolution of capitalism itself and the curious non-emergence of a 'more fit' version thereof [23]:

> Theories and forecasts about the future of capitalism have proved among the most important and most contentious topics in the history of sociology. … The genesis of sociology itself is closely connected with the rise of industrial capitalism and reflections on its origins, nature, dynamic, effects, and future were central issues for most sociologists. … capitalism has survived and expanded, changed in some respects and remained the same in others ...

To come to the point: CapChere is the author's practical invention for a powerful, and economically better, way, by and through the *evolution of capitalism*, and *not by replacing capitalism*, to distribute wealth and ownership of economic assets and activity – more powerfully, and more fairly. CapChere does this by fixing the flaw that the author discerned forty years ago, as follows.

The accepted classic micro-economic model and theory of the firm holds that, as earlier noted, there are three ingredients or drivers for profitable commercial activity:

- Capital
- Labour
- Enterprise.

The author's CapChere invention arises from the perception that actually there is a fundamental flaw in this classic model, which is: <u>*the most important component, The Customer, is (curiously) missing*</u>. (As to why this is a fundamental flaw, simply recall the insightful adage of commercial enterprise: 'Nothing happens until you make the first sale', or 'Nothing Happens Until Somebody Sells Something', attributed to both Peter Drucker and IBM's Thomas Watson [24]).

Rectifying this lacuna, the author's CapChere constructs a simple scheme of inclusion and enfranchisement rightfully reflecting, for the first time, The Customer's critical *sine qua non* role in profitable commercial activity.

Specifically, *CapChere* uses the basic and established edifices and forces of capitalism to deliver a new *economic ownership infrastructure* by way of a uniquely powerful – but simple to implement – new evolution of the standard limited liability company construct (as already noted, that construct is arguably the most effective and beneficial – but, however, never much evolved – invention and implementation of capitalism).

CapChere's principal features are, and/or imply that:

- It is simple, low cost, and entirely legal, to implement, needing no new laws or regulations, but achievable within existing and established procedures for issuing shares in limited liability corporations.

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- It creates a constantly growing and solid equity base, i.e. ready access to increased/additional capital, for any company which implements the scheme. Importantly, that equity base, and thus corporate control, is widely spread (thus having a further beneficial side-effect of assisting with, for example, the elimination of corruption).

- For almost any company or corporation it provides a novel, sound way of enhancing its shareholding base, together with reinforcing customer loyalty and brand impact, derived from and within the, now economically enfranchised, population of customers. This is achieved without any need for the large costs and other implications of 'floating' or taking a company public in the traditional manner.

- Once it catches on with the first one or two companies, every other company in the world will eventually need or wish to follow suit 'to remain fit and competitive' in regard to its own capital base strength and structure.

- It may properly be said that the limited liability company, and industrial capitalism, will at last have evolved into something 'more fit for purpose'.

The author's CapChere invention is currently being assessed for its patentability, and only limited information may therefore be published at present.

5. Conclusions

Web 3.0 will achieve its most socially and economically useful impact by way of decentralization through Private Datapod applications, systems and architectures.

These Web 3.0 implementations may utilise blockchain, but professional care should be taken not to assume the false equivalence of Web 3.0 automatically with blockchain.

Zykme and Zykpass are the author's novel Web 3.0 hybrid App designs and implementations that are Private Datapod compliant, offering:

(1) Secure one-time-code instant P2P communication using edge computing.

(2) Future development through the ZykToken and CapChere models of a socially useful, transformative re-purposing of traditional capitalism, in which all are winners.

These objectives and developments are work in progress, and the author welcomes contact and participation by those potentially interested in progressing their successful evolution and achievement. This is in particular with regard to developing a formal rigorous mathematical economic model to support and illustrate the ubiquitous (beneficial) effects of the practical implementation of the *CapChere* invention. Such a mathematical model could also be useful in relation to the granting of patents.

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Veronica Barassi, Department of Media and Communications, Goldsmiths, University of London, New Cross, London SE14 6NW, UK Email: v.barassi@gold.ac.uk, and Emiliano Treré, Autonomous University of Querétaro, Mexico.

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Further details available from:

Gill   Ringland   (gill.ringland@btinternet.com),   Professor   Ed   Steinmueller (w.e.steinmueller@sussex.ac.uk), Dr. Stephen Castell (stephen@castellconsulting.com) or Dr David Miller, Chair (david.r.miller@hotmail.com), BCS *IT Leaders Forum*

https://www.bcs.org/membership-and-registrations/member-communities/bcs-it-leaders-forum/