

Part 1: Decentr: The Foundations for a UK CBDC

Note: This document was produced at the request of the Bank of England’s (BoE) Cryptocurrency unit with a view to determining the merits and compatibility of our technology and deconomics model where this pertains to the BoE’s plans to introduce a UK CBDC.

1.0 Why a UK CBDC is Inevitable if Fiat is to Remain Relevant

1.1 The “Impediment” of a Fiat-Only Economy

Our interdisciplinary R&D has demonstrated that a fiat-currency-only economy is an impediment to accelerating 21st Century UK industry and commerce while simultaneously diminishing opportunities for UK “digital citizens”. This is because a fiat-only economy creates cross-border barriers to payments and trade coupled with asymmetric wealth creation at every level of UK society.

As a result, a fiat-only economy also represents an impediment to the development and implementation of radically improved domestic and international payments systems (which are the backbone of industry and commerce, and hence the UK economy), including the renewal of the BoE’s Real-time Gross Settlement Systems (RTGS). This is due to the fact that the “... *faster, simpler, cheaper and more flexible ways to pay*” that the RTGS blueprint correctly notes is demanded by “... *households, companies and financial intermediaries*” will not be able to match on any operational or service level a 100% decentralised, secure and immutable digital alternative (irrespective of who develops it). This means –

- By the argument of the RTGS’s own blueprint, either a central bank will step in to fulfil these requirements or a private company will assume the role, delivering enhanced value to consumers and businesses alike while becoming the default large-scale payments service provider for 21st Century industry and commerce.

However, an either/or development and implementation approach between a potential private developer and public implementation is in our view to be avoided at all costs: we need a comprehensive and coordinated effort between private and public stakeholders. If not –

- As a report by RTGS experts Peter Allsopp, Bruce Summers and John Veale for the World Bank spells out, the lack of harmonisation between central banks in terms of their RTGS approaches has led to a number of practical problems for central banks, users and other beneficiaries. One relates to the inconsistent terms on which central bank credit is available, especially against collateral, at times of stress.

It is this intimate and underappreciated relationship between system liquidity needs (and costs) and the RTGS technology central banks use to provide settlement services that Decentr in part seeks to stabilise: this is because these systems do not function smoothly unless commercial banks maintain sufficiently large reserves to cover payment settlement risk. Inconsistency across central banks on this front can lead to the possibility some banks may be inadvertently importing risk associated with subsidisation as well as varying policies towards non-bank accessibility into systems not geared up for such risks.

As a result, the introduction of a Central Bank Digital Currency (CBDC) at one institution but not at others – a CBDC equalling the broadest extension of central bank settlement services in terms of accessibility and payment size – would only heighten such inconsistency risk (as CBDCs currently stand). It would also introduce a new level of uncertainty about intraday liquidity demand and how exactly to responsibly provide it, especially to the central bank itself.

Moreover, if CBDCs were to be rolled on RTGS systems (or even blockchain equivalent ones) they would likely require significant subsidisation to be affordable for everyday users, given the increased processing and liquidity burdens that would come with it – and such liquidity concerns, as our R&D has proven, require foundational change at not only the level of digital assets and payments but the underpinning economy itself.

Regardless of these and other challenges, we share the BoE’s desire to ensure the “... *RTGS renewal is an open and collaborative effort*” between public and private stakeholders: it is of critical importance that the creation of a

scalable and sustainable CBDC that underpins this collaborative effort is not left exclusively in the hands of a private company or, worse, a foreign power that does not necessarily share British values.

The hijacking of digital economic superiority to serve narrow foreign national interests and political gain is what we aim as a priority to prevent by strengthening the RTGS and interdependent payment services, and hence the UK economy, through the creation of a sustainable, publically beneficial CBDC and underpinning digital economy.

1.2 The RTGS Service: The Forerunner of Digital Coins/DLTs

Long before blockchain was considered a transformational ledger technology the transition to RTGS (though far less hyped) was being treated as equally revolutionary. To many purportedly “forward-thinking” contemporary DLT developers and start-ups, “RTGS” is a meaningless jargon acronym that has no bearing on the development goals of modern decentralised payment solutions. However, in our view, to move forward with lasting and sustainable change in the area of DLTs/cryptocurrencies as viable enterprise payments systems, developers need to understand why RTGS is probably one of the most important and least-talked about technologies in the world.

RTGS is the tech that underpins central bank clearing and the settlement of large value payments by allowing the transfer of funds between banks in real time. In order to definitively determine whether concepts like CBDCs¹ are a logical evolution, it would essentially require a step back in time, as far back as the 1980s, when the big fintech discussions of the day were centred not around DLTs or cryptocurrencies but RTGS systems; however, this document does not have the scope to encompass such a wide-ranging, retroactive analysis.

Instead – our developers having researched critical RTGS/HVPS aims and protocols – this document is at liberty to jump ahead to an analysis of the cutting edge decentralised technology and heterodox economics we are developing – models and technology we feel can facilitate enterprise-level, real-time payments that are near-instant, convenient and fee-free. We propose our foundational technology can greatly enhance and expedite the RTGS’s remit to digitise payments – while actually creating added economic value for institutions and the businesses they serve, which will improve settlement services by ensuring commercial banks retain sufficiently large reserves to cover payment settlement risk.

Decentr’s timing and technology is right to implement this change, in conjunction with the RTGS’s commitment to modernising and improving the BoE’s RTGS service. This is with a view to strengthening the RTGS as the backbone for institutions to move money in real time between account holders, delivering radically-new, final and risk-free settlement solutions that will greatly empower and enrich individuals, industry and commerce and the broader UK economy.

1.3 The Foundations for a Stable UK CBDC and Digital Economy

Our solution to the security/convenience (and hence scalability) dichotomy at the heart of all enterprise-level payments systems is our radically-new “post-blockchain” DLT technology. Our technology forms the foundations for a “true” decentralised digital economy – one that is mutually supportive of both the BoE’s goal to deliver “... *monetary and financial stability*” to the UK and the RTGS’s remit to seek to

“... shape the future design in ways that promote efficiency, innovation and competition in sterling payments, wherever that can be safely done without impairing stability”

and as a result is of benefit to every UK citizen.

Decentr’s decentralised platform achieves this socioeconomic paradigm by eliminating “money” (fiat or digital) as an unnecessary and costly third-party medium of exchange for online transactions, building on the RTGS remit to promote “... *higher resilience; broader access; wider interoperability; improved user functionality; and strengthened end-to-end risk management*” by introducing cryptographic liquidity based on the data value that the aforementioned functionality, in large part, is positioned to self-create.

¹ For more information, see this article containing much of our research into CBDCs:

<https://medium.com/@DecentrNet/why-digital-fiat-currencies-need-to-be-based-on-data-value-a15651853548>

Our passion and goal is to create this “perfect” circular data economy² to ensure the broader UK economy remains robust and at the forefront of 21st Century commerce and industry. How we propose to achieve this forms the crux of this proposal: Decentr repurposes data as a near-instant and fee-free medium of economic exchange. This new fungible, economic “value store” is reflected in the corresponding “personalised” exchange rate – called users’ “Personal Data Value” (PDV) – assigned to every UK citizen, company (Commercial Data Value [CDV]) and government (National Data Value [NDV]) as part of users’ secure online Decentr ID (DID).

This paradigm creates a parallel digital economy to the real-world economy, based on the innate potential of UK citizens, industry and commerce as expressed in the secure and immutable data (public, private and PSI) created as part of this “true” circular data economy. As a result, the security and immutability of the RTGS service will be exponentially improved by the RTGS’s data generation, reuse and exchange being

“... organised around five key features: higher resilience, broader access, wider interoperability, improved user functionality and strengthened end-to-end risk management”

due to our MLA security protocols and decentralised public/private keys creating “unhackable” separate blocks *and* chains to store and exchange critical information. Hence, not only is security exponentially improved through widespread adoption and engagement but added economic value is actually delivered to “... *high-value cash payments in real time in sterling central bank money*” while making transactions at speeds that actually exceed those of quantum computing.

However, this can only happen with the simultaneous introduction of a robust and sustainable CBDC – one that can assign economic value to the RTGS (and other analogous) data that is generated, exchanged and reused while securely storing this value for later economic and other use. This is what Decentr, coupled with our native token (ticker: “DEC”), achieves at the conceptual and technical level, underpinned by our heterodox economic model. As a result, our “post-blockchain” technology offers a scalable and sustainable foundation for the UK to issue its own CBDC – a currency that is not reliant on (and is hence predicted to stabilise) the fractional reserve banking system and the debt-based economy it supports (through increasingly unsupportable levels of lending). The net effect will be to make real-time payments significantly faster and more reliable due to our new asset class creating vastly increased liquidity that will in turn help regulate the ratio of broad money to base money, redoubling the efficiency of the payments system and the robustness of the UK economy.

1.4 Citizens and CBDCs: Does the Public Want a CBDC?

The creation of a UK CBDC, regardless of policy and consultation issues, is an urgent priority simply because it is happening anyway: dissatisfied citizens (and increasingly SMEs, LEs, etc) are turning to unstable and unsustainable, so-called “alt” (“alternative”) currencies and economies (Bitcoin, Etheruem, Libra, etc) in ever-larger numbers to facilitate payments and trades and generate wealth.

Regardless of the issuance body or regulatory framework for these alt coins, citizens (including commerce and industry) are only concerned about autonomy, value and convenience. It is the citizens’ choice, and they are making this choice in ever-larger numbers – away from state-backed currencies and the control of their issuing authorities.

The need to facilitate the economic activities of individuals, commerce and industry is what UK regulators urgently need to respond to as the UK economy falters in the wake of Brexit – the UK economy actually having shrunk on a quarterly basis for the first time in 2019, with the GDP having contracted by 0.2% in the three months to June 2019. This is in the context of resilience and growth continuing to decrease and, as a direct result, economic sovereignty (from the perspective of next- generation cryptocurrencies/DLTs) hangs in the balance.

It is into this uncertain local and global climate that alt coins and economies continue to beckon the public and private enterprise with the promise of sustainable, democratic and wealth-creating alternatives to fiat and the mainstream UK and global economy.

² For more, see condensed EIC bid research into the current “data economy” <https://cryptocurrencyhub.io/why-the-data-economy-is-not-yet-a-real-economy-616c3733dd5d>

1.5 Avoiding a Privatised “Monopoly on Money”

The deferral of public debate and consultation on this issue is a luxury no longer afforded to us as a company and a society: we need to react proactively, and *now*.

What concerns us greatly as a UK company with global ambitions is that whoever first issues a widely adopted, publicly accessible digital token will accrue exponential economic value (at a speed and scale far surpassing current digital “money”), while also accruing disproportionate influence over global currencies and economies and hence broader international affairs.

It is highly possible – even *probable* as of the writing of this document (as we ourselves have already developed a foundational digital coin that has been accepted for listing on top-tier exchanges) – that the first to issue a publicly accessible digital currency will be a private company. With no state consultation or governance, this development threatens to dangerously and dramatically remove economic sovereignty *away from* nation states, while not necessarily supporting mainstream socioeconomic values in the way we propose is necessary for a fairer and more egalitarian society. We view the kind of privatised “monopoly on money” this could create as potentially detrimental for individuals, industry and commerce within broader UK and global society. The only way this threat can be minimised is by getting there first with the issuance of a sustainable CBDC.

1.6 The Risks of an Unregulated Digital Economy

Even our coin risks creating the very “monopoly on money” we are trying to avoid: with the best will in the world, private development and oversight of a publicly accessible new digital token and economy cannot cover every regulatory aspect in the detail that interceding BoE, FPC and other regulatory consultation, prior to issuance, could. Hence, the urgency of this [document]: after our token issuance (in 6-9 months), it becomes largely unworkable to alter or influence the behaviour and metrics of the world’s first and only, “true” decentralised currency due the nature of smart contracts and the sophisticated cryptographic techniques used for content encryption.

Considering our technology (a decentralised web browser + platform), as well as our radically-new decentralised heterodox economic model, called “deconomics” (“decentralised economics”) (*see Part 2 below for full deconomic theory*), are proven in practice, the main challenges we face are not technical, business, ethical or societal but are governance and oversight. We need to ensure the UK is the first to widely support such an initiative and set the foundation, rules and governance for the future of “money” within this new economy and broader society while ensuring for every UK citizen the continuation and promoted uptake of a free and open Web 3.0 and Industry 4.0 – both paradigms that are yet to fully emerge in a publically beneficial way.

1.7 Decentr: A Comparison with Existing DLTs/Blockchains

In ten years, digital currencies and the blockchains that support them have failed to produce a single large-scale public use case of benefit to anyone (other than niche investors, drug dealers and terrorists). In fact, the very term “blockchain” itself is now a byword for unfulfilled potential while also lending itself as the foundational technology for many digital asset-based pyramid, Ponzi and other suspect money-making schemes.

As a result, it was our singular goal at Decentr to determine what went so wrong so fast to destroy the potential of DLTs, then work to reverse this misapplication of the technology and concept and move forward, as we are doing, to implement lasting change. The change we propose is based on a radically- new type of decentralised technology – technology not based on incremental improvements of existing paradigms. By creating a decentralised, intuitive “user layer” (in effect, “Windows for DLTs”) that ensures all other aspects of DLTs – including decentralisation, distribution, automation, etc – are able to more effectively “communicate” between one another, Decentr redoubles the value of data generated, reused and exchanged.

1.8 Why Blockchain is a Failed “Experiment”

The reason blockchain has failed is simple: all current blockchains are *centralised* systems (masquerading as pseudo-*decentralised* systems) and therefore the coins issued on them are also centralised (the disproven myth of “... *decentralisation, transparency, and immutability*” surrounding blockchains accounting for this lack of progress).

This means modern cryptocurrencies share more in common with easily-manipulated fiat than with a “true” decentralised alternative, whilst also being difficult and resource-consuming to acquire and trade. In short, what is the point of them? Why should the public engage positively with current digital alternatives? Digital currencies in their current form

almost exclusively service the needs of wealthy investors and bad actors on the global economic stage. The solution is to base a “true” digital economy – *not* on a third-party medium of exchange (which includes all digital coins *as well as* fiat) – but on the exchange of secure data.

2.0 Assigning “Value” to Data

2.1 How Decentr Derives for Users Value from Data

Decentr is an enterprise-level DLT platform + web browser that assigns secure user data (for individuals, enterprise, supply chains, telcos, governments, etc) with payable value.

Our platform achieves this economic paradigm by applying in conjunction with cooperative-game theory the same market value to secure user data that big companies have been applying to user data (much of it technically “stolen” from private citizens and unsuspecting SMEs) for over a decade.

However, whereas big companies buy and sell this user data (and the “rightful” owner receives nothing), Decentr stores this value for each user securely as part of their DID, with users maintaining 100% control and ownership of their data. Decentr/deconomic protocols assign this user data with payable value, underpinned by our native token, Dec – value that users own and use to transact as they choose.

2.2 How the Economic Expression of DID – PDV – Works

Our system essentially operates by accepting secure data (public, private and PSI) stored securely on users’ DID as “collateral” against purchases, payments, transfers, etc made by users, offsetting the amount of “money” (fiat or digital) required to complete a transaction.

This drives the costs of goods and services down for users in line with the generation, reuse and exchange of increasingly structured and refined data as part of the same system. This structuring process happens by default as users (individuals and industry) continue to use the internet as they always have – only now accessing the internet via our secure and immutable, decentralised browser. This includes accessing our suite of features and tools that ensure retrieval and exchange of data becomes increasingly refined – and secure – through ongoing engagement with the internet via our web browser + platform.

The net result is that the more useful the data that is generated/exchanged by the user = less “money” (fiat or digital) needed at point of sale (POS), for payments, money transfers, etc.

2.3 Deconomic Theory: Who pays the “difference”?

The “difference” (due to data value increase) between user price and cost price is met by our native digital token value. Dec is calibrated to rise 6–10x the assigned value of user data value, as benchmarked³ against existing Proof-of-Work (PoW; Bitcoin, etc) and Proof-of-Engagement (PoE) protocols, ensuring liquidity of the system and the mid- to long-term increased liquidity of any payments system, including the RTGS, that integrates with our platform.

2.4 Market Demand and User Base

Broadly speaking, the Total Addressable Market (TAM) for our platform is every online digital citizen (3.6Bn people). This is because our technology is designed to be intuitively adopted by the mainstream public as an alternative to the hyper-aggressively centralised systems, economies, currencies and internet we currently have as the only online and offline options.

Our value-added proposition to all citizens (and enterprise partners) is clear and compelling: users, both individuals and industry, download our browser for free and continue using the web as they always have, for business, education, communications, etc. Due to deconomic principles engaging with users secure and immutable data storage *and* dataflow, next time a user purchases something online (or pays, transfers money, etc) the user requires less “money” (fiat or digital) to complete the transaction. This price-reduction paradigm continues *ad infinitum* (dependent upon ongoing positive

³ For an in-depth look at how we benchmark (“deconomics”) please see page 21 “DECENTR DECONOMICS” of our whitepaper: https://decentr.net/files/Decentr_Whitepaper_V1.4.1.pdf

engagement, purchasing history, etc) simply because the data generated *by the action* of purchasing actually *increases* a user’s PDV, meaning for each subsequent purchase the *same item* becomes ever-cheaper *relative to* its real-world price and user engagement. (See **Part 2** below for full deconomic theory.)

This is true for private purchases, *as well as* wholesale purchases, wages, invoice settlement, economic trades, etc across a wide range of vertical and horizontal businesses and services. Deconomics predicts this will create a massive stimulus in supply and demand – a stimulus that will further dramatically enhance UK industry by aligning a UK CBDC with our underlying protocols.

This promise of accrued data value that makes life ever-cheaper and more affordable for millions will promote in conjunction with our communications & marketing and dissemination activities exponential uptake for both individuals and industry. This creates the foundation for CBDC that is based on the principles of an alt economy underpinned by the release of innate potential of UK citizens, organizations, businesses, etc as expressed in secure data.

Part 2: Deconomic Theory: An “Obviously False” Dogma

As touched on in the Part 1, value is “assigned” to data on Decentr by PoE protocols that are a combination of market prices and community consensus arrived at through cooperative game- theory: that is what data value on Decentr “is”. Our radically-new heterodox economic model, “deconomics”, describes what decentralised dataflow/value “does”.

Deconomics, as implied in the name, describes how all values, including economic value, behave in a 100% decentralised environment. It is critical to understand the nature of causality in a 100% decentralised environment in order to be able to validate many of the assumptions that underpin Decentr/Dec.

Moreover, deconomic theory is critical to a CBDC: the fact that the theory and application of “decentralised economics” does not yet exist is in large part the reason why CBDCs cannot be made to work in their current forms. Deconomics describes the nature of “value creation” and distribution in a system where data storage and dataflow are both 100% decentralised, accounting for why data becomes increasingly structured (and therefore utilitarian and “valuable”) by default of user engagement.

At its essence, deconomics describes an economy that happens when the method of value creation and the means to pay are indivisible concepts.

This section is a condensed, plain English analysis of deconomic theory, its origins and application.

Deconomics is the only theory with the explanatory power to account for the presenting algorithms on our platform.

Why “2+2” Really Does Equal “5” in our New Data Economy

The economic model that our new data economy is based on actually emerged from the algorithms of the radically-new platform we are building to make this economy viable.

In effect, we did not have the economic model fully realised prior to an agile build of our core technology, and it was only *after* we had built it that strange values and dimensions kept occurring in our algorithms: our platform seemed to be suggesting the “impossible”. It seemed to be indicating that “value”—actual *payable* and *tradable* value—could be generated from within a dataset at a mathematical and geometric rate that challenged commonsense reasoning (and mainstream mathematics).

Put simply, our technology was effectively telling us that data value creation on our platform could be generated using formulas whereby it was perfectly okay to express a (seemingly random and unrelated) number or number set on *one side* of the equal sign that did not have to have the same value as the number or expression on the *other side*.

Explaining an “Orwellian” Mathematical Disparity

This LHS/RHS disparity was (and continues to be) very odd indeed – one that continues to have neo- classical economists dismissing our findings as “not possible” in spite of strong evidence to the contrary.

To be useful to broader society and a healthy economy, deconomics needs to be considered with a more rational approach.

Certainly, the numbers we were (and are) getting seemed as counterintuitive as asserting that $2+2=5$ (or any substitution of non-correlating number combinations, higher *or* lower than 4, on either side of the equal sign) – a distinctly unnerving Orwellian proposition (for anyone who takes their science fiction neat). The real-world implications of our figures were that a user who “generates”, for example, 2 units of value then a further 2 units of value on our platform can (somehow) *actually* have 5 units of payable and tradable value as a result.

This suggests that on Decentr an item that, by way of a further example, costs 5 units of value can (somehow) be

purchased for 4 units of value and everyone walks away happy, the seller with their asking price and the buyer with an effective 20% “discount”.

Like Winston Smith in 1984, Moliere’s Dom Juan and Johann Wigand in *De Neutralibus et Mediis Libellis* before him (with only Rene Descartes suggesting a philosophical way round the problem) we assumed the figures were wrong, as such an equation is, superficially anyway, an “obviously false” dogma – and surely this was *especially* so where mainstream economics is concerned. However, we could find no obvious errors in our algorithms, and so began our search to explain how this phenomenon could be possible where it concerned *economic value* – and, tantalisingly, how/if we could exploit this to create a truly beneficial new foundational socioeconomic paradigm.

The trick was opening our minds to (what appeared to be) the “impossible”, and tackling it using some radical interdisciplinary thinking. We cracked it (we *think*) using the following assumptions and deductions:

In purely mathematical terms, it can be “proven” that $2+2$ can indeed “equal” 5, and that indeed any number can be said to equal any other number (simply because it can be mathematically “proven” that $1=2$):

To “prove” that $2+2=5$:

Let $A=B=1$; $A=B$; Multiply by A ; $A.A=B.A$; Subtract by $B.B$; $A.A-B.B=B.A-B.B$; On LHS you have the new formula of $a^2-b^2=(a-b).(a+b)$; $(A-B).(A+B)=B(A-B)$; Cancel common $(A+B)=B$; Put the values $1+1=1$; $2=1$; Add 3 on either side $2+3=1+3$; $5=4$; $5=2+2$.

Presto! The proof is in!

This toy example is, of course, not really very satisfying: it is only meant as a rhetorical device to illustrate the folly of concrete assumptive thinking as regards pure mathematics, and that the rigidity commonly attributed to pure mathematics is in practice something of a misnomer – to say nothing of a hindrance if ascribed as such when describing real-world phenomena. It follows that, in this regard, economics could be argued to be on even shakier ground, as mainstream economics is based on imposing axiomatic “closed system” mathematical models to describe a phenomenon – i.e., any real-world economic system – that is in practice an exclusively “open system”.

This underscores the problem with mainstream modern economic theory – one not widely commented on in the absence of any “alternative” global economic system with which to compare it. Government economists have to work hard to bend the current global economic system to work “as it should” in line with *their* economic models and *their* world view, which essentially means bending the system as per their (and their masters’) *will* to maintain control; to achieve this they need to keep artificially manipulating economic outcomes as best they can, via the three principle methods of control at their disposal – the allocative, stabilisation and distributive function – to maintain the “fiat delusion”. Whereas mathematics – as any natural scientist (perplexed by mainstream economic models that cannot even be defined as *hypothesis*) will tell you – is supposed to describe or predict a phenomenon, not *dictate* its behaviour.

But we digress. Suffice to say, mainstream economics does not really work when invoked to describe how “value” behaves as part of the “true”, 100% decentralised data economy we are creating – and was why we were initially baffled by our results.

To describe the strange algorithms created by our platform we were compelled to default to what some critics (and contrarian supporters) call the “anti-math” of heterodox economics.

It is all Relative: The Interdisciplinary Approach

For the purposes of explaining the nature of the mathematics at play within our system, the “proof” we needed that “ $2+2$ ” could (where it relates to our decentralised platform) on some tangible level equal “5” could not be of the rhetorical, “pure mathematics” kind (the toy example above doesn’t really “prove” anything).

This “proof” would need to have a real-world application if it was to be useful for us to explain the real-world

phenomena we were observing (and deliver to our hypothetical user their 20% “discount”).

We knew this real-world “proof” would be necessary for the purposes of an analogy with our technology, and any useful economic model—heterodox or orthodox—we might apply to it. We eventually figured out (interestingly, through our analogous AI R&D, whereby we were discovering similar “value” anomalies—though not purely economic—created by our DL RNN algorithms) that this real-world “proof” would most likely be *relative* (in the Einsteinian sense).

This notion of “relativity” was worth pursuing due to our platform being a network based on 100% disintermediated, network-wide, interdependent socioeconomic *causation* (causation being fundamental to the principles of general relativity).

Having figured this out, when we started treating the numbers we were getting as numerical concepts based on discrete quantities (in this case data, or more specifically *dataflow*), we hit on the notion that, of course, *any* discrete quantity can *theoretically* increase or decrease based on the laws of quantum physics and general relativity. It stood to reason, then, that the same *could be* said of values in heterodox economics where they are extended to our causative system. How so? Again – and this needs to be firmly borne in mind – analogous principles of general relativity *could be said* to apply to our heterodox economics, due to the fact the interconnected system generating the strange numbers we were getting is based on observable and hence predictive and predictable *causality*.

Arriving at a Real-World Example of $2+2=5$

But was that what was *really* going on? We took another look at the problem from the fresher perspective of causality: we imagined four tangible, real-world objects of the same weight, whereby two were still and two were moving at an exponentially increasing speed. The *relative* mass of the two that are moving will eventually, at some point of their journey, equate to $\times 1.5$ their mass that they shared when still, meaning as a practical, real-world example, the mass (and hence value) “ $2+2$ ” *can* legitimately equal the mass (and hence value) of “ 5 ” (or any number relative to the speed of the two moving objects), in line with the principles of general relativity.

That was our *Eureka!* moment: we realised these *same* principles actually *do* apply to Decentr as regards heterodox economics, whereby it can be perfectly correct to say of our platform that $2+2=5$, as regards *data* (and hence) *value creation*, due to the value our platform assigns to data by network-wide consensus. This consensus is arrived at by applied co-operative game theory⁴, which assigns ever-greater value to ever-greater positive user activity (or “*speed*”, where speed also assumes consistent quality by mutual Proof-of-Engagement [PoE] consensus), granting this data ever greater “weight” (or relevance/importance) in line with the principles of relativity.

Put simply, if we apply the analogy of four objects, whereby two are moving and two are still, then on Decentr the *user* (or any given user *group*) can generate, reuse and exchange a quantity of data that is represented by the two objects moving at speed (with the other two “unmoving” objects representing a set[s] of data with which there is no current engagement). It then follows that the data value of this quantity of data can increase the “*faster*” the user (or user group) generates, contextualises, exchanges and re-uses in a socially beneficial manner this “moving” data – data that *in itself* is assigned an economic value by PoE consensus as part of our *causal* system. Hence the “*speed*” of this online activity, in correlation with the two-real-world-moving-objects example will – in a direct analogy with the principles of general relativity – eventually bring the combined user data value to a value of $1.5 \times 2 + 2 = 5$ (where “ 5 ” is, for the purposes of this example, assigned as the number to be reached by this instance of user activity).

The tangible, payable and tradeable outcome of the value “ 5 ” *is* possible under the above described circumstances as it is *relative* to real-world value – both economic (such as the prices of goods, currency exchange rates, etc) *and* data value – with both these real-world dimensions remaining as a *near-static constant*.

This *near-static constant* state is a valid assumption due to real-world value being almost completely unaffected by

⁴ See here for more on our game theory protocols: <https://medium.com/@DecentrNet/how-decentr-assigns-value-to-user-data-3bd0275d2c30>

individual activity; i.e., no amount of individual activity a user generates – online or offline – can actually *affect* the *value* (not the *quantity*) of the ten pound note in the user’s wallet, the price of a pint of milk or the value of a compiled mailing list.

But – and it is an important “but” – this *cannot be said to be true* at the level of the individual where it concerns comparable exchange rates and mechanisms *between* “data” and “value” on our system.

Moreover, it is critical to note that this near-static state is, in practice, entirely absent whereby a user pursues PoE value creation on our platform (with the previous $2+2=5$ example holding the static value of “2” by way of a simplified example). In practice, on our platform, the two sets of “2’s” are reassignable across a whole range of potential user types and groups, none of which would be static on Decentr in relation to analogous real-world activity; i.e., both sets of “2’s” on Decentr would in practice be assigned to different types of users and user activity across our network *by default*.

The outcome of the equation $2+2=5$, where it relates to data value creation, is therefore more likely on Decentr if we assume the following value assignments: the first “2” is the value assigned to *individualist* user activity while the second “2” is the value assigned to *collectivist* user activity on Decentr. These twin dimensions increase in value in direct correlation to positive user activity but at different relative speeds; for example, collectivist activity would in theory dramatically increase in speed due to increased network effects and hence the generation, exchange and reuse of data resulting from collectivist activity would occur at a faster speed. In this case, the value “5” would theoretically be reached faster than in the previous $2+2=5$ example, due to the relative values of the first set of “2’s”, which might only reach for this user 2.2 in the same time period his or her joint collectivist activity reaches 2.8.

This direct analogy with relativity is endemic to the exponential network effects created by our system, whereby these twin “value” dimensions (real-world value and data value) are measured by a PoE consensus of the *dynamical* and *topological* “potential” inherent in the data generation, re-use and exchange on Decentr. (“Topological” and “dynamical” principles essentially refer to mathematics and geometry *in motion* – a pendulum or dripping water being good examples of these measurable phenomena.)

The topological and dynamical nature of this potential is only possible on Decentr (and *not* the current internet, which is for the purposes of this example part of the near static, real-world constant) because all activity *within* our system is rendered effectively four-dimensional by the underlying *causation* of our multidimensional network.

Decentr: Underpinning a “True” Data Economy

Our R&D has shown us that it looks very much like the nature of the medium of assigning “value” to data on our platform is *also* the medium of value/currency exchange that will underpin a “true” data economy (and hence a “true” Internet of Value [IoV] to support 21st Century industry and commerce). From a user perspective, our R&D further reveals how the above assumptions can actually be applied to Decentr for wealth generation opportunities for every user:

In line with the above behavioural economic principles, each user’s PDV essentially functions as a secure personalised “exchange rate” – used to modulate payments and trade *across all currencies* (hence actually helping to stabilise these currencies).

Thus, a user *can* achieve the $2+2=5$ outcome where, for example, this user achieves his or her personal “exchange rate” (as expressed in a user’s PDV) – to our native currency, of

PDV 1.2500 I DEC 1.0000

This “exchange rate” is then applied across both sets of “2’s”, and can hence complete a “5” unit value exchange for 4 units of value (relative to this user’s PDV value) – in exactly the same way as any trade made across fiat currencies at differing exchange rates would work.

In other words, Decentr offers users a “personalised” exchange rate that is no longer controlled by arbitrary external factors outside of the user’s influence or control but by each individual’s (company, business, PSP, etc) online

activity and productivity; an exchange rate that facilitates payments and trades *in the user’s favour* between all other currencies (fiat and digital) via the user’s PDV as underpinned by the value of our native token.

The Urgency of Creating a Decentralised UK CBDC

A UK CBDC issued on Decentr will effectively “bridge the gap” between the real-world economy and Decentr’s decentralised “data economy” – with the pound and a UK CBDC being mutually supportive of each economy: i.e., deconomics predicts the real-world economy will continue to reward a post- industrial trade-off, characterised by time and labour exchanged for an agreed number of state- backed units of exchange, while the deconomy will compensate for deficiencies in that system by continuing to reward the generation, reuse and exchange of data as an additional tradable and exchangeable asset class. This asset class is accessible and controllable by every citizen, *at the level of every citizen*, in the form of a UK CBDC.

Decentr and the deconomy can in practice function (from an internal theoretical, economic and technical standpoint) perfectly well without the requirement for CBDCs – or indeed any coins – to be issued on the platform; however, we do not feel this is in the best interests of the broader economy and UK society. If Decentr exists as a platform that exclusively supports our native token (which is the frankly, to us, alarming route certain private/institutional investors are encouraging us to take), then the laws of deconomics predict that the effect will be dangerously inflationary; i.e., as costs of goods and services are driven down (in many cases, deconomics predicts, *lower than* the actual cost of producing them), relative to real-world prices, driving Dec up, then all fiat will rapidly lose value to point of redundancy.

This is a worst-case scenario, but cannot be discounted: the point at which the increase in aggregate Decentr system data results in majority user affordability, with costs for goods and services being increasingly less when paid for in data value/digital assets, then the majority of people will lose confidence in fiat as a glorified I.O.U. – secured against nothing tangible – and fiat will be unable to fulfil its primary purpose as a “value marker” to be accepted against future purchases.

At this point, when the purchasing power traditionally created by banks through lending erodes, we risk testing Henry T Ford’s prediction that

“... it is well enough that people of the nation do not understand our banking and monetary system, for if they did, I believe there would be a revolution before tomorrow morning.”

How to future-proof the UK economy against this scenario? Our R&D reveals only one conclusion: we need *both* “economies” – the deconomy and the real-world economy – to work interdependently in order to redouble the economic strength of the pound and the UK economy through an increase in individual, societal and national wealth creation: our projections predict that only a “true” CBDC, issued on Decentr as part of the UK’s monetary base, can create the confidence necessary to achieve this.

Why do we view this “twin-economy” prediction as sound? Because by issuing a CBDC on Decentr the value of this digital equivalent of the pound is supported by the two mutually buttressed economies in the following symbiotic manner:

1. The increased strength of the CBDC’s “paper” counterpart facilitates increased economic growth due to restored confidence in real-world payments and trades, which is in large part the result of;
2. The CBDC facilitating the creation of increasingly refined and structured data-as-payable- value (as part of Decentr’s “circular” deconomy); a new asset class that increases the liquidity of the UK monetary base (and hence the efficiency, speed and future reliability of payments systems, including the RTGS service, etc), which has the net effect of;
3. Making every citizen a keen participant of this new digital economy through the personal wealth generated. This will encourage citizens to hold and use both CBDC and fiat, due to *each* currency’s value being mutually supportive of *both* types of socioeconomic activity – the output from commerce and industry *and* data creation – that citizens are now free to directly participate in and benefit from.

In this ideal scenario, the strength of each “economy” redoubles that of the other, and any concerns as to which type

of “money” (fiat or digital) is “preferable” are, from the standpoint of the pound and the UK economy, no longer valid. Why not? Because in this ideal scenario it is up to individuals, commerce and industry to organically choose which method is most convenient, and for what purpose, and whichever choice society makes – considering both methods of payment are linked to increased national productivity – the output from commerce and industry *and* data creation – the broader socioeconomic goals of a healthy, and increasingly wealthy, UK economy and society are robustly and sustainably supported.