HOW WILL BLOCKCHAIN REVOLUTIONISE BUSINESS PROCESS MANAGEMENT?

Roop Singh and Ian Hawkins

If you've ever read Adam Smith's The Wealth of Nations (1776), you'll know that Business Process Management is older than the United States of America:

'A workman not educated to this business ...could scarce, perhaps, with his utmost industry, make one pin in a day, and certainly could not make twenty. But in the way in which this business is now carried on, not only the whole work is a peculiar trade, but it is divided into a number of branches, of which the greater part are likewise peculiar trades. One man draws out the wire; another straights it; a third cuts it; a fourth points it; a fifth grinds it at the top for receiving the head; they could, when they exerted themselves, make among them about twelve pounds of pins in a day. Those ten persons, therefore, could make among them upwards of forty-eight thousand pins in a day. Each person, therefore, making a tenth part of forty-eight thousand pins, might be considered as making four thousand eight hundred pins in a day. But if they had all wrought separately and independently... they certainly could not each of them have made twenty, perhaps not one pin in a day; that is, certainly, not the two hundred and fortieth, perhaps not the four thousand eight hundredth, part of what they are at present capable of performing, in consequence of a proper division and combination of their different operations.'

So, for all the BPM software that we throw at our organizations today, have things really changed over 200 years? Adam Smith identified the division of labour and then their combinations of their different operations - as the number one way of exponentially increasing the output of a factory; and we know that whether we're building a car or making cupcakes for a summer party, an extra pair of hands, properly deployed, can increase our output – not by halving our labour, but by making our labour more productive. Isn't that what BPM, at heart, does? Small businesses often start out with a team of multitaskers, but a business doesn't have to grow so large that the CVs of the payroll clerk and the head of sales look very different. You certainly wouldn't expect them to cover for each other, except in the most dire of circumstances. This led to a division of labour, evolving into often siloed or department-oriented approach, rather than a process-oriented approach. BPM as a discipline has long sought to reach this goal of process efficiency and effectiveness.

Roop Singh

Roop is an authority on Digital Transformation, Distributed Ledger Technology and Blockchain Architecture and an AI Enthusiast. He is and experienced business transformation leader, trainer, and speaker with demonstrated proficiency in designing blockchain use cases and business models, architecting blockchain solutions and dramatically improving business processes to increase revenue, reduce cost, and deliver service excellence

Ian Hawkins

Ian has worked in trusted positions with high profile individuals and major companies. He has produced films about businesses for SMEs and blue chip companies on locations including Managua, Panama and Gothenburg.

As well as scripting television and radio, Ian's live event experience led to writing an acclaimed book, Insider Secrets of Public Speaking, running communications workshops on both sides of the Atlantic and coaching politicians, Olympians and CEOs on public speaking and crisis communications.

Ian's passion is helping businesses of all sizes understand how technology and communication can give them a competitive edge, and how personal change can drive transformation in the wider world.Today he is Editor of PEX Network for IQPC, bringing the latest business news to a global audience of C-suite leaders and decision makers.

Robotic Process Automation is a recent branch of the evolutionary tree: as we might divide labour so that people do the tasks best suited to them as individuals, we are beginning to assign tasks to computers that had previously

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been done by humans – and finding that the robot helpers are making very light work of many of the key processes are liable to be repetitive and prone to error when done by humans. Automation frees up humans to perform more complex activities. Where BPM is a functional discipline, RPA is a technology implementation advancement.

The objective of BPM, whether you work it out on a smart piece of bespoke computer software or shuffle pieces of card around on the boardroom table, hasn't changed that much: it's essentially about gaining process efficiency and effectiveness.

How companies can apply these methods, techniques and principles remains varied and hence determinant of their success.

As such, Adam Smith might quickly find himself at home with some of the concepts of BPM, and potentially even the more user-friendly products on the market (not to mention intrigued by the possibilities of our portable touch-screen analytical engines).

And then there came along blockchain.

Blockchain has been most conspicuous for the lottery-win type dividends that have made the headlines for 20-something investors in cryptocurrencies. But there is more to blockchain technology than making a few early adopters wealthy. What is the potential of blockchain beyond filing the pockets of the nouveau ultra-riche?

The word 'blockchain' is a shorthand for a particular type of distributed ledger technology. In a public permissionless blockchain like Bitcoin or Ethereum, every node of the network has visibility over the whole. Think of friends meeting for coffee:

Adam: *I'll get your coffee, Barbara, because you got mine last week.*

Barbara: *Thank you, Adam!*

Clive: *I've left my wallet at home... Adam, could you get mine as well?*

Denise: *Oh, same here! Sorry Adam!*

Adam: *Look, I'll just buy everyone's coffee...*

Edward: *I'll tell you what, Adam – I still owe you $15 from last week. I'll get these and we're square, ok?*

The waiter takes a single payment from Edward, and although nobody would call it 'blockchain', that's exactly what it accomplishes: the participants of the network have kept track of all the transactions.

The difference is that a blockchain – with its blocks of transactions, lives on computers rather than in the memories of your friends who might remind you this is the third week in a row you've 'left your wallet at home' and maybe it's time you got the drinks.

It's the same with Bitcoin: there is no central bank issuing currency. By using the blockchain and military grade encryption to create Bitcoin, the digital currency solved the double-spending problem – i.e. not being allowed to spend the same digital money twice – without having to run it by a trusted central authority, just as you don't need the bank's seal of approval every time you hand over cash in a shop.

Blockchain's implementation as Bitcoin - a peer-to-peer digital cash avatar - is an article in itself, yet it is not the only use of blockchain. Let's focus on the non-monetary uses of blockchain for a moment. Here's a simple example of how it can help protect intellectual property:

Let's call the article you're reading right now 'Version A'. Now imagine that another publication decides to pad it out a bit with some more reporting and interviews for their journal, and publish what we're going to call Version B. This is then translated into Spanish (Version C) and published overseas. Before we get too involved in different versions, we can see this whole transaction is starting to operate a bit like a blockchain: each iteration of the article is unchanged, and we can see how it is built on in subsequent iterations. In practical terms, what does this mean? If you have a journal of your own, wish to re-publish the article, and want to pay the people who wrote it, you know immediately where to send the money, depending on which version you're going to publish:

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Version A: the original authors
Version B: original authors, plus the editor
Version C: original authors, editor, and translator

Each version of the article does not change the previous version. This is immutability and is a core concept which we'll come to later.

As we enter the world of blockchain - two key terms to introduce at this point are protocol and encryption.

Going back to our coffee shop friends, the transactions are following certain rules or protocols: they are all using the same currency, for example. We might say that other rules are that the amounts of money being discussed are quite small, and whatever other financial arrangements might be going on between the friends, what happens in the coffee shop, stays in the coffee shop.

All blockchains have some level of encryption: if our friends happen to be working out who pays what, in sign language, the information could be said to be encrypted (we assume the waiter doesn't know sign language – unless he's a hacker). We might also say this is a private permission-based blockchain as it only exists between the group of friends – a stranger couldn't walk in and ask Edward to pay for her coffee too.

A blockchain, then, can be open to some, and restricted to others. There will be agreed upon rules or a protocol, to participate in the network and to access data.

So that's what a blockchain is. Why would different companies need to use it for something like BPM?

Let's imagine Adam Smith is at our shoulder and we are having to explain it to him. We'll use his own process for pin making as a springboard. Here it is, highly simplified:

As Adam Smith noted, giving a separate task to each person makes the whole system exponentially more efficient. How may blockchain be applied to this?

Let's imagine that we're not just talking about five different individuals making the constituent parts of a pin, but five separate companies. Without every part of the system working together, there is no pin at the end, no product, and therefore, nobody getting paid. It helps if everyone works together.

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Let's imagine that the price of steel from which the wire is drawn fluctuates so much that it has a major impact on the profits of the manufacturers. This is a factor that can affect every company in the process, but only one company, the wire drawers, actually buys the raw material. On a day when steel is suddenly very cheap, the company drawing the wire is keen to buy as much as possible. Unfortunately, they don't have much money in the bank.

This is where blockchain might help.

Traditionally, the wire-drawers might have to go to the bank and ask to borrow more money. With a blockchain based lending platform, they can borrow money - or even other services - from the other businesses further down the line on a peer-to-peer basis.

As companies agreed to record transactions on the blockchain apriori, every company can see what the others

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are doing – there can be no dispute that even though the steel in the tip-sharpeners' warehouse was paid for with the head-fitters' money, delivered by the top-grinders' lorries and belongs to the wire-drawers.

We can immediately see that blockchain has enabled these five companies to work together for their mutual benefit. Compare the otherwise identical pin-makers in the next town along who aren't on the same blockchain network and platform.

Our five businesses are working together to pool resources, including finance. Many small businesses find they are at the mercy of their banks when it comes to cash flow. Using a blockchain based network and platform, companies may loan each other funds with transparency. Could banks see value and join these networks as consortiums? Glad you asked, it's already happening.

This sharing of data with encryption means that quality of data is consistent, proprietary information is protected, and thanks to multiple points of verification, fraud is discouraged.

There is a clear motive for each part to work together for greater prosperity, and while Bitcoin has got everyone excited about the money, the real commodities here are data and trust.

'Blockchain is just a glorified database. What's the big deal about it?' That's a common refrain from people who still like to view things from a computing paradigm that rightfully brought us to this stage of evolution.

Blockchain is a 'shared encrypted ledger with a shared state' meaning all the participants have the same data and the same point of time. This is unlike databases connected via systems, in which one has to reconcile the data often. As we now start to see why blockchain is preferable to a standard database.

Clearly, while a database can be changed posteriori, by the custodian of the database, the information on a blockchain is immutable. A database is a snapshot of a moment individually, while a blockchain is a snapshot of a moment in the data's journey- shared by everyone. So, it tells you about the journey up to that moment.

A database may be untrustworthy; yet when two parties join up and share a common state of the data using secure manner, they have the makings of a blockchain.

Remember the three versions of this article (A – original; B – edited; C – translated)? A publisher reads Version C and thinks it is brilliant (it could happen). A database might say that this was written by the translator, rather than the original authors – and it would be a mistake to expect the translator to write another article on blockchain. Likewise, it would be a mistake to think that the original authors could translate an article into Spanish. Understanding who came on board the project at what stage of the process from authorship to editing and finally translation is useful data. If the publisher wants another article, a contributing editor, or a Spanish translator, an audit of the blockchain will point them to the right person more reliably. A blockchain based platform, can be used to establish intellectual property rights, credits and even associated royalties (using smart contracts, more on those some other time).

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When does it make sense to use blockchain? Data and trust are the key concepts here, and you might find it useful to think back to the analogies given above as we discuss these ideas. Blockchain is really a system of formalising the movement of data and trust between parties.

Authenticity
Immutability: Transactions published on the blockchain are immutable, meaning they cannot be erased or changed.
Auditability: This allows us to go back in time and being able to audit and review those transactions.

So, when it's needed to be certain that the transaction is authentic, has not be been and cannot not be tampered with, use of blockchain is highly effective. In this effect, it differs from the use of centralized owned and centralized stored databases.

Decentralization:
As Steven Johnson argues in the New York Times article *'Beyond the bitcoin bubble'* - The roots of the internet were decentralized, i.e. no one entity or set of entities directs or controls what everyday users experience on the internet. Somewhere along the last 20 years or so we have developed business models and applications that gives a lot of influence to a select few companies, namely Google, Facebook, Amazon, Twitter, Instagram, WhatsApp.

Public blockchains bring with them an egalitarian perspective of a community of people setting up nodes, participating in the network for the benefit of the network. This leads to three experts in different fields contributing to a Wikipedia article, for instance, or a dozen different companies producing and then tracking components for a car.

Furthermore, distributing data storage over a network rather than storing it on a centralized database removes the single point of failure for data compromise. Recent headlines about data breaches at companies such as Equifax, Home Depot and Target have been damaging to those brands, and left each organization with the problems of cleaning up the mess. Imagine, if they had distributed their data and secured it on a blockchain, their hacks might not have been so impactful.

Wherever there is a need to secure data or to remove single point of failure, think: would encrypted storage using a blockchain be useful?

Disintermediation
This is a long word for streamlining your process: disintermediation is reducing your reliance on intermediary middlemen. Our coffee drinkers make small payments directly to each other rather than via a bank, for example.

Proof of Ownership
Given the properties of immutability and auditability, blockchain offers the best yet technology to establish 'proof of ownership' of any assets. Your car, house, stocks, art pieces, bicycle - even your diploma. Anything that can change in ownership is a good candidate for the use of blockchain to track the chain of custody of that asset.

Proof of Authorship
In the event of a dispute over payment, or a question from a reader, it's a straightforward matter to agree which author contributed what, and which author owes the reader an answer. Similarly, were an author to quietly remove the name of a co-author from a document and pass it off as solely their own work, the presence of a blockchain enabled platform would make any subsequent claim on royalties an open and shut case.

Automation
Blockchain, with its built-in consensus mechanisms, is essentially automation of complex business processes. In today's world, these processes are operated by disparate systems amongst various supply chain partners. Imagine a system for each company, and then further systems built to interact, share data and reconcile data over and over again. Now try to imagine the cost of all those transactions. Blockchain eliminates the need for the regular periodic reconciliation thereby reducing the transaction costs. It does this by implementing a consensus mechanism that simplifies creation of a single shared version of the truth. Here's an article about how that works:

Blockchain Beyond the Hype
A Practical Framework for Business Leaders >

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Transparency

These above properties bring us to a central theme: transparency.

'We, the participants, of the network, believe this to be the single shared state of all the transactions in the network.'

This ease of creating transparency is the power of blockchain.

All of these finally lead us to Trust. Think about what happens when there's absence of trust. Think about the time, effort and resources we spend on establishing the intangible sense of trust. We're slowly, yet surely moving towards a new paradigm – 'Trust merely not in a company or an organization, but trust in the chain.' Trust in a trustless automated world. Trust underpins so much of what we value: collaboration, creativity, security. An absence of trust leads quickly to paranoia and paralysis. Blockchain, then, is truly an opportunity for entities of all flavours to be creative and collaborative, without the risk of losing data, intellectual property and digital assets.

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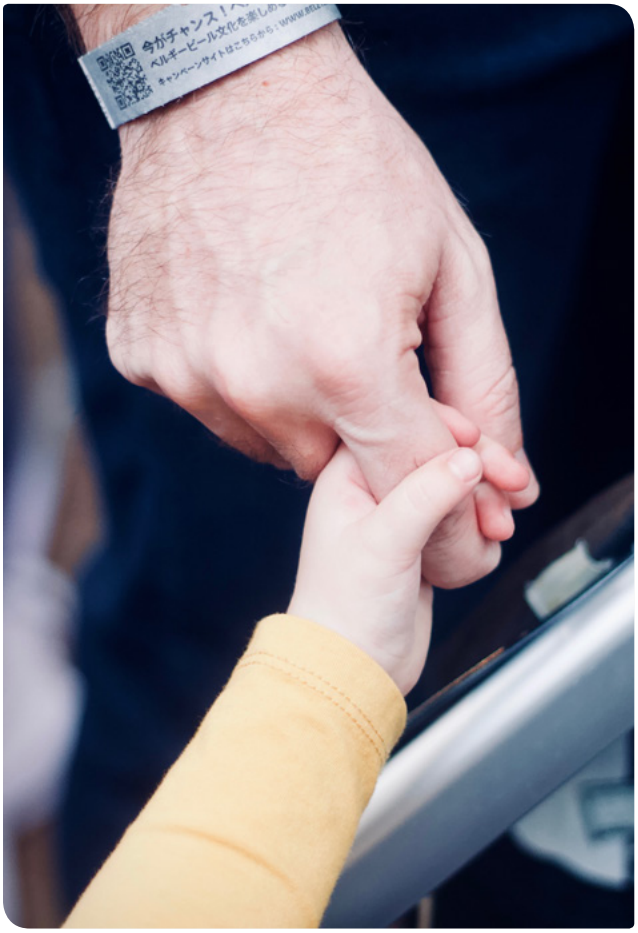
Picture the inner workings of your company. Now bring into vision the urban sprawl of data, ERPs, home grown customized applications with a patch work of interfaces, middleware and customer portals. Now extend this vision into systems across all of your partners throughout your supply chain. That's the operational reality of today's incumbent corporation. Now imagine a streamlined automated process with all your network partners, sharing the same state of the data. That could possibly be the reality of tomorrow's corporation. As many transformational landscape changes, this one may not be a choice for some.



Conclusion

At the tactical level, Blockchain, beyond all its jargon, is a medium of process efficiency. It's the latest evolution in process automation and secure data sharing. Blockchain is Business Process Automation and Management. One may apply it within the boundaries of the organization, though it's much more potent and dynamic when the lens is much wider. At a strategic level, it's a medium of trust efficiency, enabler of new business models, facilitator of asset exchange and will usher in new markets. It'll even produce outcomes that we were promising with the now traditional BPM approaches and techniques. You might even ignore it, thinking it does not affect your industry today. The ones with that viewpoint, do so at the risk of becoming obsolete. Foundational evolution is technology has a way of doing that. You can either be a part of the shift ...or you can watch it happen.

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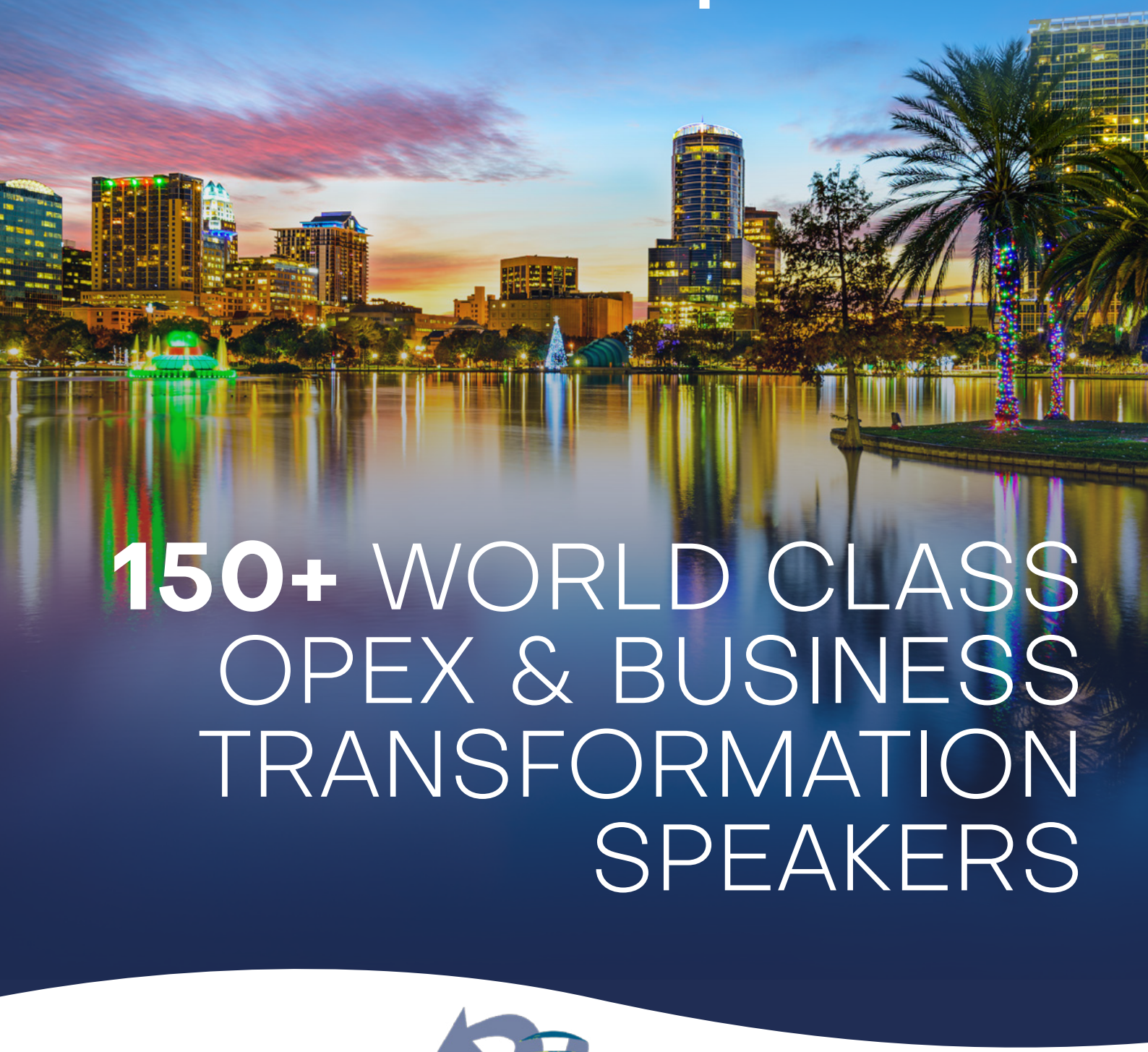

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