Introducing Distributed Ledger Technology (DLT) in international operations: The blockchain in admissions processes

The Great Artesian Basin Institute of Technology
A blockchain discourse
AIEC October 2018
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Convocation to consider the merits of blockchain

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Distributed ledger technology (DLT) in international operations

The Frame: a modest purpose

- Let’s consider blockchain for IET as it’s on the curriculum & is in use.
- BC many aspects: our emphasis on DLT, not Bitcoin, T & L, not tech.
- Privilege international admissions: in use, all sectors & touches us all.
- Hypothetical: multi sector GrabIT. Relax & leave your day job behind.
- Approach. 5 Acts & Finale, breaks for Q&A, general discussion at end
  o Act 1. Welcome, introductions & overview (Kevin)
  o Act 2. Technical. What is blockchain? (Darragh) Q&A
  o Act 3. Practical. Recruiting & enrolling international students (Jo)
  o Act 4. To consider. If, when and how to adopt blockchain (Jason) Q&A
  o Act 5. The end user. Anticipating student needs and expectations (Arfa)
  o Finale Q& A. (All) Conclusion, thanks and acknowledgements

- Disclaimer: the panel are not experts. **Any BC experts here?**
ACT 1

INTRODUCTION TO THE CAST AND CREW & OVERVIEW

KEVIN BRETT

Graphic courtesy of collaboration between GrabIT Contemporary Art, Criminology & IT teams
Introducing the GrabIt panel

Director, Cryptic Analytics  Mr Darragh Murray
The PVC for Doubtful Students  Ms Johanna Castellaro
President’s Visiting Fellow for BS  Mr Jason Howard
Acting up, as Provost International  Ms Arfa Noor
Assistant to the spin doctor in residence (P/T)  Mr Kevin Brett

WHY OUR INTEREST IN THE BLOCKCHAIN?
THE WHAT? HEARD OF IT BUT....
Woolf University

Building the first blockchain university

“the Woolf education will mostly consist of one-to-one personal tutorials. The smart contracts on the Woolf blockchain will dramatically reduce the need for a traditional university’s administrative staff. Indeed, we hope many traditional universities will adopt Woolf and increasingly phase out their administrative staff.”
The blockchain is in use here and now. Time to have a think?

- The University of Nicosia is the leading university in Cyprus and one of the largest English language universities in the Mediterranean region. The first accredited university in the world to accept Bitcoin payments & launch an MSc Degree in Digital Currency. First course offered as a free online MOOC.

- TECH INSIDER Jul 24, 2018. “RMIT University students will soon be able to get blockchain-enabled digital credentials”.

- AFR Apr 30 2017. “University of Melbourne first in Australia to use blockchain for student records”.

- UAC 15 Dec 2017. “In the first of its kind in Australia, UAC has released official Australian Tertiary Admission Rank (ATAR) documents to NSW HSC students using state-of-the-art blockchain technology”

- Australia: Standards Australia, government, stock exchange, community.
“In the near future, students will not want to embark on a three- to four- year university programme, for a variety of reasons – from financial to opportunity costs. A degree will be deconstructed as an ‘a la carte’ set of courses.” (Domingue 2018)
A personal view: the stakeholder array

- Decade of student experience data: agency & stakeholder complexities
- The former – desire of students to engage with their institutions in meaningful ways is not sufficiently recognised. (CSHE 2016).
- Acknowledge the work of IEAA, institutions, CISA and government in addressing these issues, student ambassadors.
- Does framing the student as client inadvertently skew the fundamental T & L relationships? (S. Darwin on student feedback & surveys)
- Harnessing the team approach to experience: campus, community, third parties (Agents Group, ICEF, PIER, initiatives)
- BC may enable reframe institutions around student success.
  - Arfa......
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3rd party, community, professional associations

Grech & Camilleri, 2017
Blockchain start-ups and themes

Source: HolonIQ, 2018. 30+ start-ups grouped into five organising themes
Where is DLT/blockchain expected to impact on education?

- "Blockchain technology is forecast to disrupt any field of activity that is founded on time-stamped record-keeping of titles of ownership.

- Within education, activities likely to be disrupted by blockchain technology include
  - the award of qualifications
  - licensing and accreditation
  - management of student records
  - intellectual property management
  - payments.”

Grech & Camilleri, 2017
The rationale for adopting blockchain at GrabIT.

- International admissions processes have changed little in decades. To maintain competitive advantage we must re-think the way we attract and recruit students, in the face of global competition and innovation. It is time for our Great Institute GrabIT to prepare for the 21st century.

- Rationale pointers for admissions:
  - Better decision making with better data
  - Lower administration costs
  - Increased transparency
  - Reduced fraud risks/ risk management
  - Student-centred: the student ‘owns’ their application credentials and documentation
ACT 2

WHAT IS BLOCKCHAIN?

DARRAGH MURRAY

Graphic courtesy of collaboration between GrabIT Contemporary Art, Criminology & IT teams
Cars and engines
Remember the GFC?
If blockchain is the answer, what was the problem again?

In a globalised, connected world, facts can sometimes be difficult to verify!
An initial definition

“Blockchain is a collection of distributed ledger technologies that can be programmed to track things of value.”
Tracking and storing data

- Information stored in batches called blocks
- Blocks are linked together in a chronological fashion – like a chain, hence block chain
- Additional data or changes to existing data in the block results in the addition of new blocks – existing blocks are never edited.
- Each addition is timestamped and also linked to the previous block in the chain via cryptography.
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Ledgers

Accounts for Demo

- Distributed ledger technology (DLT) in international operations

Ledgers
Distributed and decentralised

- A blockchain exists in many different places at the same time.
- It is a shared record book recording information distributed across a network of computers (nodes).
- Decentralising of information increases security as it is difficult to make changes because tampering requires all copies to be updated at the same time.
Creating trust: an example scenario

Suppose Kevin has just won a local 10 kilometre running race and a crowd has gathered to see the awarding of the winners medals.

Do we agree that this is Kevin?

Did I just award Kevin the first place medal?

How do you know that this did or did not occur?

Given what you all saw, what if I said “Actually I gave Arfa the first place medal?”
Consensus and updating the blockchain

• Instead of people agreeing that a transaction happened, computers attached to the blockchain network do the hard work.

• Only when consensus is reached (>50%) amongst the network on which a blockchain is stored, a valid transaction is then added to every instance of the blockchain ledger on the network.
Intermediaries not required! Security guaranteed!

**Traditional transfer**

- Origin
- Intermediaries
- Destination

**Blockchain-based transfer**

- Origin
- Destination
- Instead of a centralized network, where only middleman holds all the power...

The blockchain is maintained and verified by the distributed crowd. So there's no hierarchy, and nobody can tamper with it!
Types of blockchain

- **Public**
  - Many, unknown participants
  - Writes by all participants
  - Reads by all participants
  - Consensus by Proof of Work

- **Private**
  - Known participants from one organization
  - Write permissions centralized
  - Reads may be public or restricted
  - Multiple algorithms for consensus

- **Consortium**
  - Known participants from multiple organizations
  - Writes require consensus of several participants
  - Reads may be public or restricted
  - Multiple algorithms for consensus
What is blockchain? A summary

• “Blockchain is a collection of distributed ledger technologies that can be programmed to track things of value.”

• Shared ledger for recording transactions between parties.
• It is technology that is distributed and decentralised – owned by all and none at the same time.
• It’s secure and immutable dude to the consensus requirement.
• No trusted intermediary needed!
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Discussion

Q & A

*Knowledge is the water of life*
ACT 3

RECRUITING AND ENROLLING INTERNATIONAL STUDENTS

JOHANNA CASTELLARO

Graphic courtesy of collaboration between GrabIT Contemporary Art, Criminology & IT teams
Recruiting and Enrolling International students

Long process often taking months and years from start to finish – not to mention just how convoluted the processes can be!
Recruiting and enrolling international students

■ Validation of a prospective student and their data
  ■ Proof of Identity
  ■ English language proficiency
  ■ Academic qualifications

■ Visa requirements (Australia)
  ■ Financial requirements – proof of documents, bank statements/salary/loans etc.
  ■ Personal history including visa history

■ Personalisation of communications
  ■ faster and more efficient, personal and relevant touchpoints
Recruiting and enrolling international students

Contractual requirements

- Transparent information upfront
- Privacy requirements
- Agreements
- Signed contracts
- Sharing of data
- Release of funds
Recruiting and enrolling international students

Outcomes

- Interconnectedness
- Great Timelines
- Satisfied Students
- Progress
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ACT 4

IF, WHEN AND HOW TO ADOPT BLOCKCHAIN

JASON HOWARD

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EDUBLOCK
'It's not that exciting anymore': how Bitcoin turned boring
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Business case for blockchain

- Avoid the ‘bleeding edge’ and start small
- Focus on areas that reduce costs by removing:
  - Reconciliation
  - Verification
  - Mistakes and errors
- Other benefits:
  - Reputation risk
  - Data is a toxic asset
- New business opportunities:
  - Track and promote based on outcomes
  - Flexible and life-long learning
- Timing
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An expert

Not an expert

Can you spot the difference?
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Discussion

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ACT 5

SHIFTING RELATIONSHIPS – AGENTS, EMPLOYERS, COMMUNITY AND STUDENTS

ARFA NOOR

Graphic courtesy of collaboration between GrabIT Contemporary Art, Criminology & IT teams

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Shifting relationships

 Agents

For GrabIT, the role of agents has evolved in certain markets

- Smart contracts and agent management (performance, commission, subagents)
- Fraudulent documents
- From collecting and submitting of admissions documents to greater focus on counselling and guidance
- Financial and resource savings: Greater focus on student experience and welfare rather than administration
Shifting relationships

- Employers and industry partners
  - The GrabIT approach: Broker relationships and verify learning securely without putting learners and educators in traditional boxes
  - Questions we are considering: How much student performance should be shared with potential employers and partners? What is the impact of recording (and sharing) every failure?

https://www.blockchaindailynews.com/attachment/756565/
Shifting relationships

■ Community

– “The best teachers are behind ivy covered doors, giving access to those who are able to pay with administration there to ensure quality and act as intermediary between teachers and students”

https://cryptocoremedia.com/smart-contracts-upward-mobility/
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Shifting relationships

10 ultra-successful millionaire and billionaire college dropouts

Abigail Hess | @AbigailJHess | 2:53 PM ET Wed, 10 May 2017
David Dobrik

22 years old

Reported net worth - $2 million

3 billion views

9 million subscribers

Averages 3-4 million views per video

High school drop out
Shifting relationships

Community

Shifting community engagement from passive observers of education processes to active participants in the evolution of education delivery

- Data about resource allocation available to public: accountability and involvement of community
- Student performance data publicly available
- Donors, scholarships and finances: direct connection to students without the involvement of intermediaries/institutions
Shifting relationships

Students
- Shift in power dynamics
- Cultural shift in teaching in learning (customized and personal)
- Shift in pedagogy (student centered, micro-credentials, recognition of competencies, clear learning pathways)
- Student performance patterns, resource allocation and early intervention
- Management of digital rights and access to expanded learning resources. A more internationalised learning experience?
- Equity: greater access to previously marginalized students?
To consider

- Could having more efficient and secure data systems create the illusion of improvement but actually reinforce our reliance on limited and sometimes inequitable measures of student achievements?

- The role of cultural and racial bias and the permanency and transparency of disciplinary records?

https://www.blockchaindailynews.com/attachment/756565/
FINALE

THINKING ABOUT BLOCKCHAIN?

ALL

Graphic courtesy of collaboration between GrabIT Contemporary Art, Criminology & IT teams
The GrabIT findings from our discussions

- DLT could make admissions systems more efficient and reliable.
- The potential to transform other admin, and the learning experience.
- Complexity: consumer protection, data integrity, transaction speed, environmental footprint, legal, regulatory and technological issues.
- DLT applications will be incremental, as they replace processes.
- We encourage dialogue within and across institutions to monitor, research and pilot applications based on blockchain and DLT.
- The excitement is in the application, not the technology.
- Begin with the user – student and stakeholders.
Concluding our purpose: five key messages

1. The BC is established in education. Consider from your perspective.
2. You don’t need to have detailed technical info (unless you are in IT).
3. It’s about application. How might you use the blockchain?
4. The thinking in your institution? Pitch in from the IET perspective.
5. Approach: the implications for the student and stakeholder experience. Step aside from the institutional perspective.

And an afterthought:

Is there a role for IEAA to promote discussion, perhaps a BC SIG?
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Discussion
Q & A

*Knowledge is the water of life*
Credits: thanks to the following for advice and the loan of colleagues

- Australian Digital Commerce Association (ADCA)
- CQUniversity (CQU)
- Masterly
- Queensland University of Technology (QUT)
- StudyLink
- Study Queensland
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THANK YOU ALL