

RocketShoes



**A blockchain powered digital asset platform for the
future of education and work**

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INTRODUCTION

The world is full of centralised systems. They've served us well, but we know in our hearts there is a better way. The days of the Learning Management System (LMS) are numbered, and media management solutions are costly, insecure, and often don't let you easily find things when you need them. The introduction in May 2018 of the General Data Protection Regulation (GDPR) laws in the EU signals that the days are numbered for centralised educational platforms that do not attend to appropriate data protection of their users. Blockchains have demonstrated how digital currency can be securely transferred without the need for intermediaries. We need new tools that allow digital assets to be created, encrypted, stored, and used in the same way, while still allowing them to be seamlessly integrated into your digital life.

New decentralised technologies like IPFS are making it possible to do this in smart and useful ways. The focus is shifting from learners accessing content inside an LMS to supporting the connections between learners and teachers, learners and their peers, and learner generated content. Rather than one system to do everything, people are turning their attention to creating a dynamic collection of smart systems that work well together to suit everyone's individual learning journey. In short, what we need is a new kind of open educational content platform that can support the decentralised web, and provide key features like assignment submission, discoverability and interoperability at an API level. Enter RocketShoes.

THE PROBLEM

What we have observed...

Have you ever noticed that organisations like schools, universities and large organisations have educational content like video, pictures, learning resources, and student work all over the place. Let's face it. In most organisations, the whole area of digital media is a mess. When you need them digital assets are often stuck inside a system and we don't even know what's in there.

Today, the best option for video is often put it into Vimeo or Youtube where it's insecure or gets lost forever. Commercial media management systems are usually expensive, hard to scale, and content becomes a burden for the organisation.

When you have lots of stuff, as a learner or as someone managing learning content, discovering, finding and managing content is a huge pain. Surprisingly, it is often quite difficult to enable uploading of student-created content into a learning management system (LMS). There are other platforms such as Personal Learning Environments (PLEs) that can be better at doing it, but in the end they are just another container for content that needs to be integrated. In fact we have noticed that it can be such a pain that teachers often avoid getting students to submit their own creative work at all, unless it's something pretty standard like an essay.

Most organisations produce a lot of audiovisual content, pictures, and documents, but it often gets stuck in a particular system and does not integrate well. Imagine you want to find everything on a particular topic, but some of the best stuff is in lectures on your local media management server, and your system doesn't search there. Worse, it may be somewhere outside the organisation, like Youtube or Vimeo, and you have no idea it's even there.

Consider these scenarios:

1. *Jane is a new Lecturer who wants to set a video assignment for students but can't figure out how to let students upload them.*
2. *Bill is trying to find the best videos his company has on his topic area so he can put together a great presentation to present to the board. Where are they?*
3. *James is a knowledge manager and his users are complaining the media management software is slow and outdated. How can he move to another system?*
4. *Anouk is a just primary school kid when she does her first poster assignment about the blockchain, and it was really good. When she gets to high school she wants to find it again, but it's nowhere to be found. How can she get it back?*

THE SOLUTION

- Enterprises can manage and author content in a way that is not tied to a particular system.
- A fast, secure, decentralised cloud solution that can integrate with existing and future systems.
- Content is instantly searchable, discoverable, sharable and reusable online and offline.

The same scenarios with RocketShoes:

1. *Jane sets an assignment requiring a 5 minute video and tells students to use RocketShoes to upload it right inside their LMS.*
2. *Everything that Bill's company produces gets uploaded into RocketShoes because it's so easy. And it lets him browse everything right on his phone.*

3. *James has decided to recommend RocketShoes as his organisation's media management solution to make the move from Moodle to D2L easy.*
4. *Anouk has an app on her iPad that knows where all her stuff is, including the assignments she did in Primary School. She opens up RocketShoes and types in a couple of words and bingo, there's her interactive Blockchain poster! She can even pin it to her new iPad to view offline.*

ROCKETSHOES PLATFORM

RocketShoes will implement its storage layer via ProximaX and IPFS, making digital assets available on any IPFS node. IPFS supports object level cryptography, which secures content at an object level.

RocketShoes is an educational platform geared for a learner centric approach, and providing powerful tools to manage content in a decentralised way. For learners this means that you will be able to produce and keep track of your own learning materials, including assignments, notes, and digital assets. For organisations and institutions it means that very large amounts of content can be managed in a way that is not possible with today's systems, allowing for radically new functionality, for example deep integration with a Blockchain.

RocketShoes will focus on an API approach, with the aim of making it highly interoperable and extensible. The goal is not to reengineer systems like the LMS, but to integrate with them in a way that makes them both more permeable and more secure, scalable and useful.

What does this mean?

- A platform that uses the best features of the decentralised web: secure, fast, open and searchable.
- Like Github or a wiki, anything on it is automatically under version control, and can be pinned to your device.
- For enterprises, it will have advanced authoring and media management capabilities that allow content to be gracefully moved from one system to another.
- For learners, it is a platform that gives them control of their own content. With RocketShoes, students will be publishing video from their smartphone and they'll maintain access and ownership of their assignments years after they get their degree. Industry projects can be submitted for assessment but also be used in a real world environment.

ProximaX

"ProximaX solves for the cost-effective conundrum in Blockchain ledger transactions, whilst maintaining flexibility, ease of adoption and integration, security, and speed. All packaged within an all-in-one extensible framework." By basing RocketShoes on ProximaX, we are able to leverage the existing integration of IPFS with the NEM



Blockchain, saving us valuable time and energy. We have already begun to work with the ProximaX team on their developing API framework, data architecture and developer workflow.

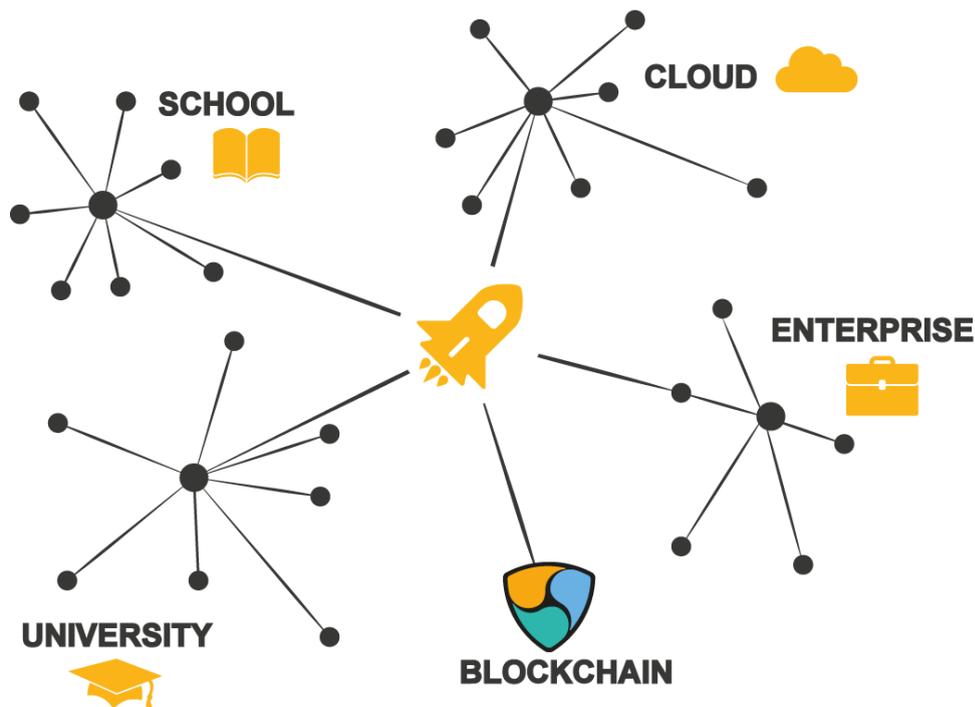
Based on IPFS

Inter Planetary File System (IPFS) is completely new a peer-to-peer hypermedia protocol designed to build what is known as the distributed or decentralised web (IPFS White Paper, version 2). Key features of IPFS make it extremely useful for the distribution of educational content. In particular, IPFS is designed to be high performance, secure and tamper-resistant and open. Content is stored permanently, and is accessible offline. This paper expands on use cases for of these aspects of IPFS, upon which RocketShoes is based. We are planning that the platform will later support other similar decentralised technologies as well.



Full Node or Cloud

RocketShoes will offer a premium, fully supported enterprise solution through the implementation of full nodes on IPFS, allowing guaranteed local network performance and offering the opportunity to earn Filecoin. We will foster a development community to build on the platform by making our source code available under open source license. We will maintain a stable version of RocketShoes as a common code-base cloud instance, offered free or at low cost for public sector and educational users, and available to learners in the most remote regions of the world. Improvements and desirable features will be crowdsourced via this community. A benefit of IPFS as a storage architecture is that increased take up of the platform increases performance as new nodes are connected.



NEM Blockchain

NEM is a blockchain platform designed specifically to work with modular, smart assets. RocketShoes will integrate with the NEM blockchain to allow you to do smart things with your digital assets, such as voting on, timestamping, and sharing content. Many of these modules are already built in NEM, meaning the RocketShoes platform can be built out more quickly than it would otherwise have been. For example there are already apps built on NEM that can do things like multisignature access control, issuance of certificates, authentication and notarisation, and voting. NEM's architecture also makes it straightforward to expand on these capabilities.

Core Team



Matt Riddle has over two decades of experience in leading digital innovation, transformation and strategy. Currently Director of Educational Innovation at La Trobe University, with previously was a Research Associate at the Centre for Applied Research in Educational Technologies at the University of Cambridge. Matt started his career at the University of Melbourne in 1993 in multimedia development and e-Learning, contributing to a series of award-winning projects over thirteen years.



Matt Carter is the author of *Minds and Computers: An Introduction to the Philosophy of Artificial Intelligence*. Currently Director of Learning Environments and Analytics at La Trobe University, Matt has an extraordinary breadth of programming, technical and pedagogic knowledge, and has overseen the development of novel whole of enterprise systems.



Kieran Nolan is a qualified Network Engineer, certified Cloud Migration Architect, and Educational Technologist, with certifications from Google, Microsoft and Cisco and a Degree in Network Engineering. He has 10+ years of experience working in K-12 schools. Under Kieran's leadership, Wooranna Park Primary School has established itself as an exemplar in introducing the digital world to students. The school has led the way in establishing a '24/7 International Virtual Learning Environment' in Minecraft, Victoria's first CoderDojo, Australia's first Immersive Education Club (iED Club), the World's youngest Cisco class, and the very first 'School on the Blockchain'



Nick Byrne is CEO and co-founder at Type Human; and a recent fellow of Intersticia Foundation. He and partners founded TypeHuman because of a belief that we need to accelerate the adoption of Web 3.0 technologies in order to bring about a more human centric web. TypeHuman operates as a Blockchain Venture Studio, and is working with leading organisations across Australia.

Have you done this before?

Nobody has done exactly this before, that's why we are. However, we do have lots of experience with the following:

- Development of Blockchain and decentralised technologies in corporate and education settings (TypeHuman).
- Training on Blockchain and decentralised technologies.
- Innovating with educational technologies on a large scale.
- Building entire platforms from scratch, including an enterprise media management system.
- Blockchain innovations in schools.

What makes RocketShoes unique?

- A purpose built platform built from the ground up to suit education and corporate training contexts, with careful consideration for the kinds of functionality this entails, including transcoding of large volumes of data, control of permissions, inclusion of metadata, curriculum design and mapping, and personalised learning.
- Built to support all kinds of different media, from video and audio to documents and spreadsheets.
- The platform is designed as an educational content and media management system rather than simply a generic public video hosting platform, as there are already many of these kinds of services.
- Integrates with the NEM Blockchain to create the opportunity for new functionality applied in educational contexts that require trustless transactions. These include time-stamps for assessment, awarding and tracking grades and micro-credentials, voting systems, mentoring, educational credit systems and many more.
- The RocketShoes MVP is part of a much larger vision that will turn the LMS inside-out and to put learners at the centre, focusing on a model of Learning Relationship Management instead of managing data in centralised systems.
- “Educational technology should be designed for, and go first, into the remotest areas” (Sugata Mitra, 2006). RocketShoes makes this a reality, as being based on a storage layer that is decentralised means that high latency and low bandwidth internet connections do not prevent publishing, sharing and accessing educational content.

Roadmap



Future Road Map

Year 2 Milestones

- Focus on platform tools allowing:
- Integrations such as SSO, LTI, Classkit, and others
- Exploring and discovering federated assets
- Collection and bundling of assets for portfolio, auditing and accreditation purposes

Year 3+ Milestones

- Deep integration with learning relationship management tools
- Release of open-source common code-base cloud platform
- Tools to provide content development, curriculum development, course mapping and auditing of content in RocketShoes
- AI/smart tools allowing content recommendations

Client Development

From the earliest stages of development for RocketShoes we will be thinking about the product from the end user perspective. We will be addressing the needs of customers from perspectives in education, business and government. We recognise that the needs of enterprise customers in these categories will overlap in many very important ways, as will those of end users. However it is extremely important to us that the product is designed in a way that can be adapted to a wide variety of needs.

Leveraging decentralised technologies opens up a significant range of capabilities for enterprises as well as users that will be unfamiliar and even sometimes difficult to comprehend, as it represents a quantum leap forward in many ways. For this reason the front end design needs to be as familiar as reasonably possible, while providing functionality that is entirely new. We believe this means that the client development aspect of the project is even more critical than usual, and we will be spending a great deal of time in the first stage getting this right.

Minimum Viable Product

Our MVP will implement the raw functionality of a modern media management solution with the enterprise client in mind in order to secure our first customers in business and education. Development will focus on the integration of IPFS as a repository with a web app front end (native app to come later).

Pilot Program

RocketShoes is already in the process of selecting partners to pilot our MVP for Enterprise so that we assure quality of design in customer and user experience. Our plan is to build a solid customer base of early adopter institutions and organisations, through which we can fund continued platform development and gain the necessary momentum for Series A funding around the end of our first year.

NEM Integration

Integrating with the NEM Blockchain is a critical step to developing the functionality of RocketShoes into areas requiring trustless transactions. We will focus on this integration at an early stage of development, with specific areas of functionality being initially guided by the needs of individuals, institutions and enterprises involved in the pilot program. Certain core areas of functionality are already anticipated, including submission of assignments, grading and microcredentials, and voting.

References

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- [ProximaX: Blockchain reimagined and evolved](#) (website)
- Juan Benet, [IPFS - Towards The Permanent Web](#) (Draft 2)
- Protocol Labs, [Filecoin: A Decentralized Storage Network](#) (August 14, 2017)
- [NEM Community Projects](#) (website)
- Mitra, S. (2006). The Hole in the Wall. New York NY.
- Finley, K., (June 2016). [The Inventors of the Web are Trying to Build a Truly Permanent Web](#), Wired.
- [The EU GDPR Information Portal](#) (website)

Appendix 1: Lean Business Model Canvas

<p>Compelling Problem</p> <ul style="list-style-type: none"> Digital assets in education don't have appropriate data protection (GDPR) Media stored all over the place is hard to manage Learners often can't submit A/V content Organisations gets stuck with media in a system and can't use it or move it out <p>Alternatives</p> <ul style="list-style-type: none"> Cloud storage platforms (Dropbox, Box, etc.) Public AV channels (Youtube, Vimeo etc) Enterprise AV management vendors (Echo, Brightcove etc.) None are secure and decentralised 	<p>Solution</p> <ul style="list-style-type: none"> Secure decentralised cloud solution with data sovereignty for content authors Manage and author educational content in a platform agnostic way Content is searchable, discoverable, sharable and reusable online and offline 	<p>Unique Value Proposition</p> <ul style="list-style-type: none"> Next-generation, fast and secure platform Designed to integrate with existing platforms Our team has successfully built similar enterprise ready platforms We have a high level of experience and well established connections in education 	<p>Unfair Advantage</p> <ul style="list-style-type: none"> First to market Combined 45+ years of technical knowledge, leadership and decision-making experience in educational technology Partnerships with industry leaders 	<p>Customer Segments</p> <ul style="list-style-type: none"> Universities VET Corporate Education and Training K-12 <p>First (Early Adopter) Segments:</p> <ul style="list-style-type: none"> K-12 University / HEP Corporate entity 			
<p>Cost Structure</p> <ul style="list-style-type: none"> Interview 20-30 customers Complete UX Design White Paper Startup cost Build platform 		<p>Revenue Streams</p> <table border="0"> <tr> <td data-bbox="805 1003 1034 1207"> <p>Type:</p> <ul style="list-style-type: none"> Subscription fees on platform and support (B2B) Full node establishment (B2B) Micropayments (on transactions, B2C) </td> <td data-bbox="1034 1003 1209 1207"> <p>Fixed Pricing:</p> <ul style="list-style-type: none"> Enterprise (B2B) subscription bands </td> <td data-bbox="1209 1003 1394 1207"> <p>Dynamic Pricing:</p> <ul style="list-style-type: none"> Yield management Education real-time marketplace </td> </tr> </table>			<p>Type:</p> <ul style="list-style-type: none"> Subscription fees on platform and support (B2B) Full node establishment (B2B) Micropayments (on transactions, B2C) 	<p>Fixed Pricing:</p> <ul style="list-style-type: none"> Enterprise (B2B) subscription bands 	<p>Dynamic Pricing:</p> <ul style="list-style-type: none"> Yield management Education real-time marketplace
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