

#### Stock Data

Share Price: 0.07p  
Market Cap.: £2.2m  
Shares in issue: 3,173.6m

#### Company Profile

Sector: Media  
Ticker: CTEAL  
Exchange: AIM

#### Activities

Catenae provides specialised Distributed Ledger Technology (DLT) otherwise known as 'blockchain' solutions to the digital media technology sector with the intention of solving commercial challenges and providing opportunities for clients.

#### Share price performance



Source: LSE

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## Catenae Innovation Plc

**Catenae Innovation is a provider of digital media and technology focused on Distributed Ledger Technology or 'blockchain' solutions. The company has developed a portfolio of products and services which have the potential to provide innovative solutions and commercial advantage to Catenae's growing client base.**

In simple terms, blockchain is a technology that allows digital information to be distributed across multiple locations in a manner that is guaranteed to be identical and immutable. This is achieved by each block of information being assigned a timestamp and a mathematical relationship between the new block of information and every preceding block being established. This 'chain' means that it is mathematically impossible to change the data once written to the chain.

The technology which has no central authority by design also possesses the potential to enable faster transactions and data processing, easier data base management between businesses and improved data security. Given that such a suite of characteristics would benefit a huge range of businesses, Catenae believes that blockchain could provide significant commercial opportunities. The lack of central authority gives the technology an advantage in that, to compromise the chain, any attacker would have to simultaneously compromise all systems in the network. It also gives rise to the term 'Distributed Ledger Technology' or DLT.

The company has developed a range of products based on DLT. These centre around Sequestrum; a simple to use universal digital asset storage and tracking utility that provides a secure repository for assets within the blockchain, while simultaneously providing the ability to monitor and report on those assets. Sequestrum can be seen as a sandwich layer product that sits between an application and the blockchain infrastructure, enabling the benefits of blockchain validation and auditing to be brought to legacy applications. Sequestrum is embedded in OnSite and OnGuard and integral to the functioning of OnSite. Catenae has signed its first commercial agreement in the form of Sequestrum-enabled version of OnGuard with and is generating revenue through an annuity licence and a transactional fee structure.

OnSite is a flexible management, inspection and reporting solution for the real time management of remote workforces. The product was developed for the construction industry but has the potential to address the requirements of a considerably wider range of sectors, with any sector that has an element of regulatory oversight being a natural fit. OnSite is currently revenue generating, with Catenae having signed its first contract with Firedoor Guardian Limited in January 2019.

Catenae also provides the OnSide management tool specifically developed for sporting organisations. OnSide has been adopted by several high profile community based organisations associated with Aston Villa FC, Southend United FC, Charlton Athletic FC, Rotherham United and Harlequins Rugby Club. In many of these cases, successful proof of concept trials could convert into long term commercial agreements.

OnGuard is a management solution developed for and in conjunction with man-guarding (security) organisations. Similar to OnSite and OnSide, the product provides real time management of a remote workforce with full operative auditing via geo-tagging and time-stamping capabilities. The company signed a new agreement for a Sequestrum-enabled version of OnGuard with STM Security UK Ltd, a long-time client of the company.

**At the end of February, Catenae raised £575,000 through its new joint broker Turner Pope. Combined with successful efforts to reduce the company's cost base over the last 12 months, these funds will be used to secure existing commercial opportunities and develop the company's sales pipeline. Catenae is operationally geared and should its range of products gain commercial traction over the next twelve months, the company has the potential to reduce losses substantially as a function of revenue growth on a comparatively fixed cost base.**

# Introduction to Catenae Innovation

Catenae Innovation (Catenae) is an AIM quoted provider of digital media and technology. In particular, the company provides specialised Distributed Ledger Technology (DLT) otherwise known as 'blockchain' solutions with the intention of solving commercial challenges and providing opportunities for its clients. The company has several core products which comprise:

**Onsite:** A modular and flexible mobile management, inspection and reporting solution that addresses the requirements of a wide range of sectors.

**OnSide:** A centralised management tool specifically developed for sporting organisations that deals with all the key elements of coaching from scheduling of staff and timesheet processing through to attendee management and reporting.

**OnGuard:** A management solution developed in conjunction with and specifically for man-guarding organisations.

**Sequestrum:** Simplifies access to the blockchain for use as a standalone repository for the storage of Copyright material or as a fully integrated blockchain portal. Sequestrum is embedded into the OnSide and OnGuard products and is integral to OnSite.

## The next phase of Catenae's development

It is important to note that Catenae has now completed the development of its initial product suite as outlined above and also in greater detail later in this report. Consequently, the company is now focusing on sales and marketing of its core products to achieve future revenue generation.

## What is Blockchain or DLT?

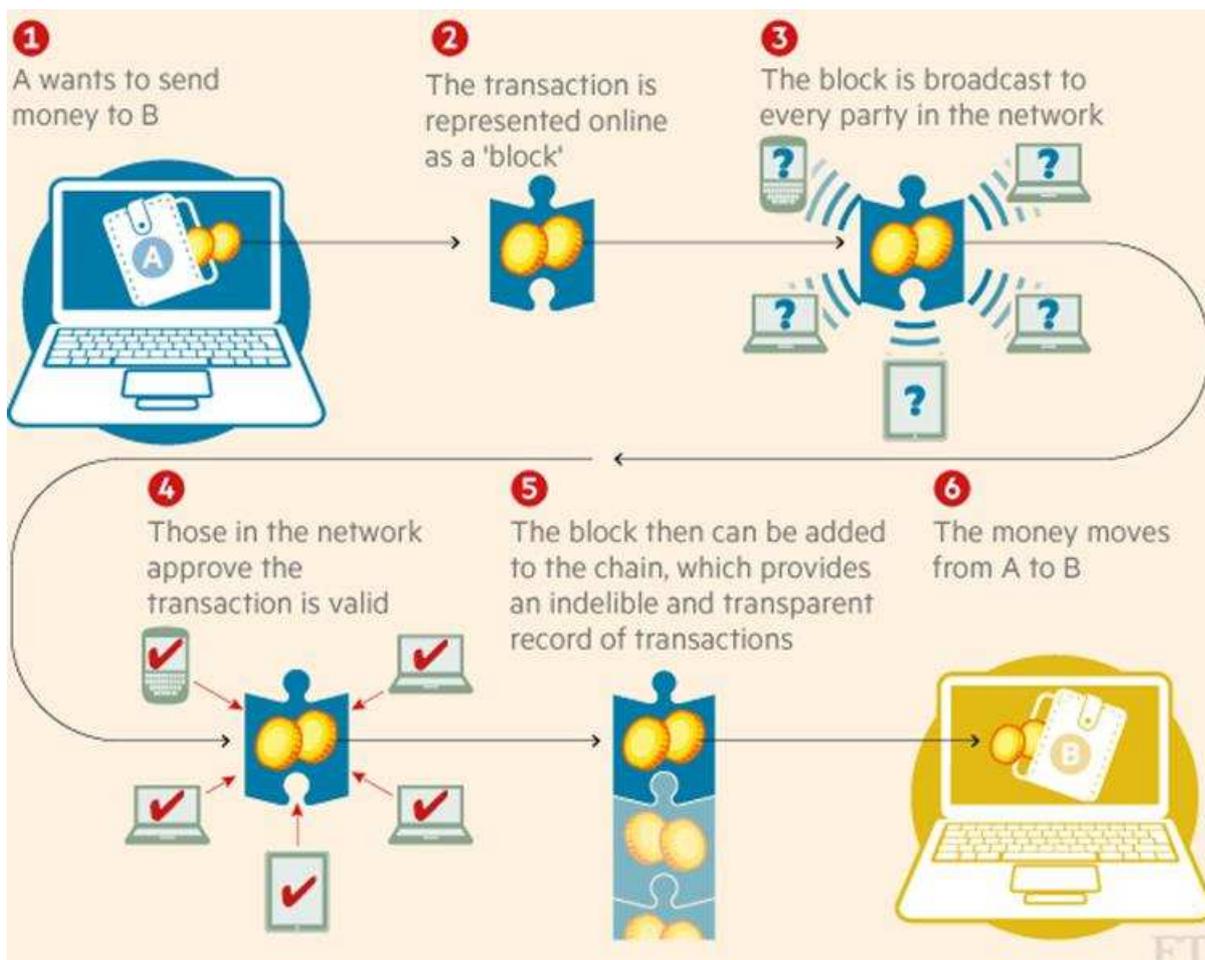
Blockchain was first described in 1991 as a system 'whereby document timestamps could not be tampered with'. The implications and uses for such a system remained fairly arcane outside the cryptography sphere until it was implemented by an individual operating under the pseudonym Satoshi Nakamoto in 2008 as the bases for the bitcoin cryptocurrency. Whilst the most public incarnation of Blockchain remains the bitcoin cryptocurrency, the understanding that Blockchain or Distributed Ledger Technology has significant capability as a disruptive technology is gaining weight.

In straightforward terms, a blockchain is a time-stamped series of records called 'blocks' (blocks of data) which can be managed by a cluster of computers not necessarily owned by a single entity. Each block is linked and secured to another using cryptographic principles (i.e. chain).

Each block contains a cryptographic hash of the previous block, a timestamp and transaction data. By design, a blockchain is resistant to modification of the data although it is "an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way" according to Harvard Business Review (January 2017).

For use as a distributed ledger, a blockchain is typically managed by a peer-to-peer network collectively validating new blocks. Once recorded, the data in any given block cannot be altered retrospectively without alteration of all subsequent blocks, which requires consensus of the network majority. As such, although blockchain records are not unalterable, they are considered to be highly secure by design. When used outside the cryptocurrency sphere, DLT's are fast and efficient to use and don't require significant computational resource and are therefore not power hungry.

**How blockchain works**



Source: World Economic Forum

**The opportunity**

DLT is considered to be a disruptive technology given that the network is highly transparent with no central authority. Consequently, it is considered a highly democratised system since it is a shared and immutable ledger where the information within is open to anyone and everyone to examine. The technology is also understood to have the potential to enable faster payments and data processing, easier data base management between businesses and improved data security. Catenae is developing layers of security to protect and enable authorised access to the data contained in the chain.

Using blockchain carries no direct transaction cost and data can be transferred between parties in a fully automated and secure manner.

### Disruptive technology

In a more generalised application yet one which is pertinent to countless aspects of wider economic activity, DLT has the potential to replace all transactional processes and business models which rely on third parties or a 'middleman' type entity charging fees to complete a transaction, such as a credit card company or a broker. In the example of buying a rail ticket, the railway operator can move the transaction onto blockchain thus removing the credit card company and its associated fees from the transaction. The only two parties in the transaction are the rail company and the passenger. The issue of the ticket represents a block in the chain and the monetary payment for the ticket in the transaction represents a linked block and a verifiable record of the transaction.

Blockchain technology has the potential to disrupt dominant companies in the music distribution industry, such as Apple or Spotify. These commercial giants could be sidestepped whereby music is encoded digitally creating a cloud-based archive for any song purchased. The potential for music created by artists to be profitable is augmented hugely as revenue flows directly to the artist. The consumer would also benefit hugely as the unit price for songs could be reduced significantly with the removal of middlemen.

Blockchain also has the potential to usurp companies already considered disruptive, such as AirBnB and Uber, which are nonetheless still middlemen in their respective sectors. However, a considerably more disruptive impact from blockchain could be felt in the global financial sector where the platform could easily change the way stock exchanges function in addition to the countless products and services offered by debt providers, insurance companies and brokers.

## Catena's core products

### OnSuite products: OnSite

OnSite is a flexible mobile management, inspection and reporting solution applicable to a wide range of economic sectors. The application combines the real-time management of a remote workforce in addition to paperless inspection and reporting, encompassed with an audited proof of work underwritten by blockchain.

This service is appropriate for companies that require secure, real-time auditing and the administration of field operatives and assets. In particular, OnSite can provide users with the confidence of knowing that each inspection and report submitted comes with its own audit trail showing time of submission, a geographic location tag and an immutable copy of documents and UGC (user generated content). This would demonstrate that the inspection took place (proof of work) and the report had not been tampered with.

OnSite works with any internet-connected device such as a tablet, smartphone or laptop and is a highly scalable tool. It represents a paperless system through which companies can manage every discrete part of their operation. Aside from the inspection, reporting and proof of work applications outlined above, OnSite can also function as an effective mobile HR application reconciling timesheets and employee holiday booking. This would enable OnSite to automate many business processes while at the same time, allocating internal resources more effectively.

## OnSide

Catenaes has developed OnSide as a centralised management tool specifically for sporting organisations. In particular, OnSide deals with the key elements of sports coaching from scheduling of staff, timesheet processing, attendee management and reporting. With many sporting organisations operating on restricted budgets, Catenaes states that OnSide can save entities money and time by improving administration processes, increasing efficiency and enhancing the accuracy of data and reporting.

OnSide functions as an easy to use central management tool providing a clear interface with all aspects of a sporting organisation such as scheduling, training and participation metrics. Catenaes also suggests that the technology can contribute to the efficiency of sporting organisations by accelerating and streamlining risk assessments of sporting venues and vetting of personnel (e.g. coaches) through the DBS service (Disclosure and Barring Service).

As OnSide can be accessed from any internet enabled smartphone, the mobile nature of the technology is highly applicable for sports coaching. All information shared between devices is real-time ensuring that any incidents or alerts are communicated instantly. The system is also designed to improve efficiency for coaches in that timesheets can be created and information recorded with a couple of clicks rather than spending considerable amounts of time consolidating individual forms and excessive paperwork.

The recent changes to GDPR regulations and an increasing need from clubs to be able to provide proof of outcomes for their programmes has resulted in increased interest in OnSide.

## OnGuard

OnGuard is a management solution developed specifically for man-guarding (security trained employees tasked with guarding property or other individuals) organisations. OnGuard was developed in conjunction with its client base and provides real-time management of a remote workforce with full operative auditing via geo-tagging and time-stamping. The system also provides integrated scheduling, timesheet management and incident reporting, in a framework similar to OnSite and OnSide.

As with all the products provided by Catenaes, OnGuard provides an integrated blockchain repository representing an immutable record of information and events in addition to an online document library and a full audit trail.

## Sequestrum

Sequestrum is a simple to use digital asset storage and tracking utility. The technology provides a secure repository for storing assets within the blockchain at the same time as providing the ability to monitor and report on activity relating to those assets. The universal nature of Sequestrum allows it to be operated as a standalone service or integrated into a client's new or legacy business applications, acting as a sandwich layer between the application and the blockchain platform adding blockchain validation to almost any application. For instance, the product can be used in the music copyright protection sector and as a platform for immutable regulatory or health and safety reports and high speed trading transactions.

Catenaes notes that Sequestrum simplifies access to the blockchain, enabling it to be used for real world solutions. The Sequestrum system assigns a unique fingerprint for each asset as it is stored in the form of a cryptographically secure hash as outlined previously. This hash is used to compare new uploads to assets already in the system and will identify where the proposed upload already exists. This is particularly useful when validating copyright ownership or proof of work in the music industry.

Sequestrum also provides a comprehensive search utility to identify specifics within stored assets and the platform has undergone independent performance testing in conjunction with the National Physics Laboratory and the Toronto Stock Exchange in the context of high speed and high volume trading transactions. Catenae notes that testing showed that the system had a capacity to deal with approximately 288,000 transactions per second compared to Visa's Visanet system that typically processes 1,600-2,000 transactions per second on average.

## Recent progress

Catenae has made substantial progress over the last twelve months. The company changed its name from Milestone Group PLC to Catenae Innovation in March 2018, a move which coincided with the streamlining of the business and a commensurate reduction in group headcount to reduce ongoing operating costs.

### Sequestrum launched

Catenae's digital repository solution, Sequestrum, which utilises blockchain to record inspection reports in an immutable manner was launched last year and has now been embedded in the company's legacy products, OnSide and OnGuard in addition to OnSite, to which the technology is integral.

In October 2018, Catenae's Mobile Business Solutions division, which operates remote workforce management tools, completed a proof of concept exercise with a provider of building management and inspection services which involved the use of Sequestrum. The companies have now engaged in commercial discussions regarding the long-term use of Sequestrum and as a result of this proof of concept exercise, the client has requested Catenae expand the project to include the creation of the mobile application and management dashboard that will form the basis of their product offering.

The company announced in December 2018, that it had completed final testing of Sequestrum and this progress opens up the opportunity for Sequestrum to be run on the client's choice of blockchain platform, significantly broadening its potential application.

### OnSide development

In October 2018, Catenae completed a proof of concept exercise with Aston Villa FC and commenced commercial negotiations with a view to integrating OnSide into Aston Villa's ongoing operations.

The company followed this up in the same month with the signing of a three-year agreement with Southend United Community and Educational Trust, part of Southend United FC, for the provision of OnSide. The agreement attracted a modest one-off implementation fee in respect of initial set-up and customisation and an ongoing annual licence fee payable in advance.

In January 2019, Catenae signed its first agreement for OnSide within Premiership Rugby as it entered into a proof of concept agreement with Harlequins Foundation, the independent charity created by Harlequins Rugby Club. Catenae expects that, upon the successful completion of the proof of concept, Harlequins will convert the programme to a commercial agreement.

This agreement was followed up in February 2019 with the news that Catenae had signed a proof of concept agreement with Rotherham United Community Sports Trust (RUCST). Under the agreement, RUCST will be utilising OnSite for a proof of concept programme expected to run for eight weeks. Similar to the Harlequins agreement, it is anticipated that RUCST will convert the programme to a commercial agreement upon successful completion.

### **OnSite launched**

In December 2018, Catenae launched OnSite, its management and inspection platform. As outlined previously, Sequestrum is integrated into the OnSite platform to ensure that inspection reports are stored in an immutable form directly from the mobile input device, recording the geo-coordinates of the device and centralised time-stamping as meta data for full auditability.

In January 2019, Catenae signed its first agreements for OnSite with Firedoor Guardian Limited (FDG), a provider of building management and inspection services to the construction industry. The agreements have an aggregate value of £50,000 and include a licence agreement and a support agreement with provision for pricing of additional volume related transactions that may occur during the term of the contract.

FDG use of OnSite is driven by its wish create an immutable database of its inspection records and audit information as required under the BS9999 and The Regulatory Reform (Fire Safety) Order 2005 and as recommended in the independent review of Building Regulations and Fire Safety report following the Grenfell Tower fire.

### **New Licence framework agreement signed**

In February 2019, Catenae entered into a five-year renewable licence framework agreement with Z/Yen Group Limited for the use of ChainZy, Z/Yen's distributed ledger (blockchain) platform. ChainZy delivers high speed, secure data and transaction handling capabilities utilising distributed ledgers and is designed for a range of commercial sectors including financial services, private utilities and the public sector.

The ChainZy platform has been extensively tested and the company has identified it as the preferred platform to support Sequestrum, as well as future applications that Catenae may develop. The use of the ChainZy product and associated licence fee will be dependent on the Catenae's solution for each specific client.

## Financial review

For the financial year ended 30 September 2018, the company reported revenue of £157,218, up from £24,040 in the previous year. The net loss after tax was reduced significantly from almost £2.3m in 2017 to £1.1m in 2018 as the company improved its management of costs.

We note that Catenae is operationally geared and should its range of products gain commercial traction over the next twelve months, the company has the potential to reduce losses substantially as a function of revenue growth on a comparatively fixed cost base. We anticipate that the company's administration cost base for the current year will be approximately £1.3m-£1.5m at current levels of expenditure.

At the end of the financial year, the company had cash on the balance sheet of £49,105. The balance sheet was strengthened in November 2018 through the issue of 437.4 million new shares at 0.12p per share to raise almost £525,000 before expenses. The company, through its new joint broker, Turner Pope Investments, also raised a further £575,000 through the issue of 575 million new shares at 0.1p per share in February 2019.

Prior to the raising of new funds in recent months, the balance sheet reported a negative net asset position of £891,929 at the end of September 2018. This is primarily due to trade creditors amounting to almost £674,247 and a loan of £315,662. We note that of the full loan amount, £300,662 is unsecured, attracts no interest and has no fixed repayment term. The balance of £15,000 is also unsecured but attracts an interest rate of 10% per annum. We note also that the company has historically been able to settle several creditor balances with shares.

### Five year financial summary, 2014 – 2018

Year ended September	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Item	GBP	GBP	GBP	GBP	GBP
Revenue	157,377	318,035	37,255	24,040	157,218
Profit before tax	-1,071,383	-1,402,542	-1,767,941	-2,246,186	-1,127,269
Profit after tax	-1,071,383	-1,402,542	-1,671,696	-2,246,186	-1,106,788
EPS (p)	-0.23	-0.25	-0.25	-0.20	-0.06
Net assets	-1,162,250	-1,706,090	-1,019,656	-552,280	-891,929
Net debt (cash)	2,328	-14,032	-5,565	456,791	-266,557

Source: Company RNS

# Senior management

## **Tony Sanders – Chief Executive Officer**

Tony has extensive experience within IT services, digital transformation, communications, facilities management and business continuity, including: B2B, B2C, start-ups, executive and non-executive director roles. Before joining Catenae, he was Technical and Operations Director at ICM Group PLC (Latterly, Phoenix IT Group) for nine years.

During his time at ICM he was key to implementing a growth strategy for new products resulting in a three-fold increase in revenue to £18.8m over a 4-year period, placing ICM in the top 3 of UK Business Continuity providers. He was instrumental in ICM winning the CIR Industry Awards Most Innovative Solution for Emergency Office v1.0 and again the following year for v2.0. He also oversaw a business unit turnaround and transformation achieving a 60% margin against a previous 30% forecast and enlarging revenue on a legacy service turning it into the fastest growing business unit in the group.

Tony has previously held senior roles and Directorships at British Telecom, Hill Samuel Merchant Bank, Profile Computers PLC, Thorn EMI Computeraid and CSF Assurity.

## **Edward Guy Meyer – Business Development Director**

Guy ran his own cross-platform marketing agency, Firebelly, for nearly 20 years as CEO. Firebelly provided award-winning marketing strategies, content creation and execution services mainly in the entertainment and publishing sectors. Operating across traditional and digital media, he is experienced in business strategy formulation and sales & marketing.

His clients included The Walt Disney Company, Harper Collins, Lionsgate, Paramount Pictures and Universal Pictures International. He sold Firebelly in 2013 to concentrate on business consulting where he worked globally, mainly with sales teams, helping them expand and accelerate their sales pipelines in verticals that included financial services, government and telecoms.

## **Alan Simpson – Chief Technology Officer**

Alan has experience in a number of high-profile projects in a career ranging from Military Cryptologist through to those projects which can be publicly named such as being the Technical Delivery Manager for BBC's flagship iPlayer project. Alan joined Catenae in June 2018 and has been responsible for the delivery of technical projects within the company including Sequestrum, its DLT/Blockchain platform and Onsite.

## **John Farthing – Chief Financial Officer (Non-Board appointment)**

John qualified as a Chartered Accountant in 1988 following which he moved to stockbroking, gaining significant experience with start-ups and smaller companies with a focus in the software and technology sectors. He is also a Chartered Fellow of the Chartered Institute for Securities & Investment, having been involved in corporate acquisitions and disposals as well as fund raising. John will report to the Board and be responsible for day to day financial operations and strategic input, augmenting the existing governance and financial controls.

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