

Bloomen

Blockchains in the new era of
participatory media experience

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1 Executive Summary

The goal of this deliverable is to provide an initial exploration of the innovation and exploitation potential of the BLOOMEN solution, both at project level and at each individual partner one.

The document starts by exploring the current state of implementation of Blockchain-based solutions in general, and complements this view with a list of examples of specific projects that are relevant to the sectors covered by BLOOMEN (see section 2).

It then moves to the analysis of the potential innovation achievable via the common platform and the development of the three core use case (see section 3). Here the document introduces a list of modules or assets that will enable the platform to generate this new range of services.

Then the document explores the same potential innovation, from the individual point of view of each of the consortium partners, both within the project timeline and after its conclusion (see section 4). Here the innovation is described not only within the Bloomen project itself, but also from the large perspective of each of the consortium partners, assessing how they expect to capitalize on their participation to boost the benefits in their core business or to develop new ones.

The following chapter explores how the use cases could evolve towards future real businesses, potentially organized around market consortiums (see section 5). In order to explore how this new and complex consortium business could look like, the BLOOMEN team has opted for the business model canvas tool to provide a high-level but complete overview of the possible key organizational characteristics.

Finally, the document includes a point on conclusions and next steps (see section 6) that highlights our understanding of the achievements currently achieved and the tasks where we should focus for the next phases of the project.

2 Market research

2.1 General state of Blockchain and where it has been applied

There are different points of view regarding the speed of implementation of Blockchain technology in the market, but what is certain is that everyone wants to be prepared to face the new challenges that this new technology can provide.

Some studies see a slowdown in the pace of implementation of Blockchain although others anticipate a splendid future.

The market that has most pushed this technology so far is the financial and insurance sector, although transport, government and utilities are beginning to take an interest in solving / improving issues such as efficiency, supply chain and logistics according to Gartner CIO Surveys 2018¹.

According to Tech Trends 2018 from Deloitte Consulting², now is the time for organizations to begin standardizing the technology, talent, and platforms that will drive future Blockchain initiatives. The big Blockchain opportunity is the capacity of orchestrate multiple Blockchains working together across a value chain. For this reason the organizations can begin to identify business consortia to join.

It is expected that initial use cases and PoCs will be soon converted into deployed production solutions. It's possible that the market embraces the following approaches:

- Focus Blockchain development resources on use cases with a clear path to commercialization
- Push for standardization in technology, business processes, and talent skillsets

Work to integrate and coordinate multiple Blockchains within a value chain. It will take time and dedication to get to large-scale adoption. But when it does arrive, it will be anchored in the strategies, unique skillsets, and pioneering use cases currently emerging in areas such as trade, finance, cross-border payments, and reinsurance.

¹ Source: Gartner Survey Reveals Death of Current Blockchain Deployments By Kyra Senese - May 9, 2018 in Blockchain news web (<https://www.the-blockchain.com/2018/05/09/gartner-survey-reveals-death-of-current-blockchain-deployments/>)

² Source: Deloitte Consulting Tech Trends 2018: The symphonic enterprise (file:///C:/Users/ES02270/Downloads/Tech%20Trends%202018_%20The%20symphonic%20enterprise8600.pdf)

General state of Blockchain³

Gartner forecasts that Blockchain will generate an annual business value of more than US \$3 trillion by 2030. It's possible to imagine that 10% to 20% of global economic infrastructure will be running on Blockchain-based systems by that same year. The place in the world where there are more Blockchain initiatives is USA, but Asian countries are growing very fast, especially China and Thailand.

ICOs in the first five months of 2018 raised \$13.7 billion. The largest ICOs to date have been diverse and included EOS, which is focused on Blockchain infrastructure; Huobi Token, a coin for a South Korean crypto exchange; and Hdac, an Internet of Things platform.

Enterprise software platforms that are the engine for company operations such as finance, human resources and customer relationship management are beginning to integrate Blockchain. For example, Microsoft, Oracle, SAP and Salesforce have all announced Blockchain initiatives.

Regarding the adoption of Blockchain in companies, PwC's 2018 global survey of 600 executives from 15 territories concludes that:

- 84% of respondents are actively involved with Blockchain
- 45% believe trust could delay adoption
- 30% see China as a rising Blockchain leader
- 28% say interoperability of systems is a key for success

How far along are companies with blockchain?

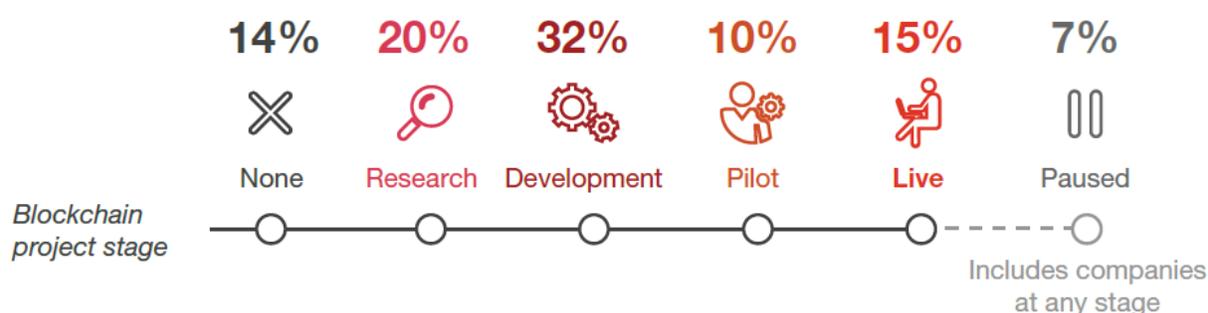


Figure 1: How far along are companies with Blockchain?

New industry and territory leaders are emerging. Gartner has found that 82% of reported Blockchain use cases were in financial services in 2017, but that sector's portion dropped to 46% of reported use cases in 2018. Moreover, an early centre of gravity in

³ PwC's 2018 global survey and 2018 PWC essential-emerging-technologies-blockchain. August 27, 2018 Blockchain is here. What's your next move?(<https://www.pwc.com/gx/en/issues/blockchain/blockchain-in-business.html>)

the US and Europe is shifting, the survey shows that the US is the most advanced territory in developing Blockchain today, but that in three to five years, the leader will be China.

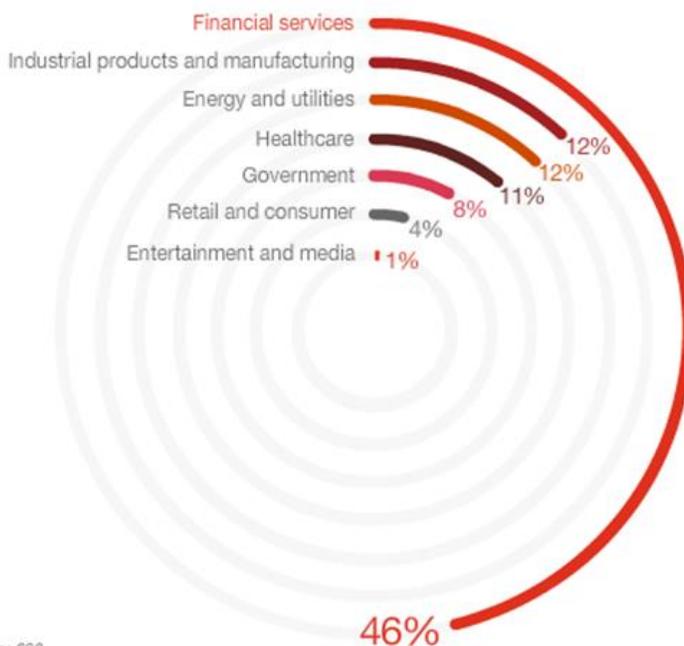
Which territories are seen as blockchain leaders — today and tomorrow



Note: Base: 600.
 Q: Which of these territories are most advanced in developing blockchain projects?
 Source: PwC Global Blockchain survey, 2018

Figure 2: Which territories are seen as Blockchain leaders – today and tomorrow

Which industries are seen as leaders in blockchain



Note: Base: 600.
 Q: Which of the following industries are the most advanced in developing blockchain today?
 Source: PwC Global Blockchain survey, 2018

Figure 3: Which industries are seen as leaders in Blockchain

Barriers to Blockchain adoption

Blockchain's benefits are best realised when different industry participants come together to create a shared platform.

According to the Gartner's survey mentioned in the previous points, the CIO interviewed shared concerns about the following points:

- regulatory uncertainty (48%),
- lack of trust among users (45%),
- the ability to bring the network together (44%),
- separate Blockchains not working together (41%),
- inability to scale (29%),
- Intellectual property concerns (30%),
- Audit/compliance concerns (20%).

As with any emerging technology, challenges and doubts exist around Blockchain's reliability, speed, security and scalability, while there are also concerns regarding a lack of standardisation and the potential lack of interoperability with other Blockchains.

Moreover, contributing to the Blockchain trust gap is a lack of understanding. Blockchain's role as a dual-pronged change agent – as a new form of infrastructure and as a new way to digitise assets through tokens, including cryptocurrency – is not easy to explain. Together with the lack of comprehension of the technical and business implications of the technology, there is evident lack of technical and functional talent in the market prepared to bring the initial tests up to industrial implementations.

Another challenge for Blockchain is building trust in the network. Though everyone plays by the rules of existing systems today, they don't necessarily agree on how an alternative Blockchain-based model should be designed and operated.

Likewise, there's a lack of comfort regarding regulation. Many territories have begun studying and discussing the issues, particularly as they relate to financial services, but the overall regulatory environment remains unsettled. With the proliferation of platforms and protocols in the marketplace today, no single solution has emerged as the clear winner; consequently, no technical or process standards are yet in place.

The standardization would have clear benefits:

- Enterprises would be able to share Blockchain solutions more easily, and collaborate on their ongoing development.
- Standardized technologies can evolve over time. The inefficiency of rip-and-replace with every iteration could become a thing of the past.
- Enterprises would be able to use accepted standards to validate their PoCs. Likewise, they could extend those standards across the organization as production Blockchains scale.

- IT talent could develop deep knowledge in one or two prominent Blockchain protocols rather than developing basic knowhow in multiple protocols or platforms.

Risks⁴

In order for Blockchain to be successful, there is a need for a broad adoption where enough parties are either using the same underlying Blockchain platform or interoperable platforms. The more autonomous a Blockchain environment becomes, the more risks it poses.

Blockchain-based solutions face the following challenges:

- Time and money to further development and adoption of standards and specifications (reviewing or integrating Blockchain technology in the existing systems).
- Scaling Blockchain to process a significantly higher volume of transactions.
- Uncertainty around how the technology will be regulated.
- Controls' implementation to ensure that the people doing the transactions are trustworthy.

Blockchain offers opportunities, but there are risks, too. It is still an emerging technology, so it needs to be proven before it can be scaled for broader use. A poorly-designed system can make it vulnerable to cybercrimes. There is also concern about data privacy and personal identity risks.

In the case of public Blockchains, users are typically identified only by pseudonyms, and transactions are encrypted so no personal information is shared. This anonymity can also enable criminal behaviour and create a haven for the perpetration of financial crimes. On the other hand, regarding private Blockchains, the group managing the chain's code determines how participants are identified.

Some world examples of Blockchain use⁵

Cybersecurity

Guardtime – This company is creating “keyless” signature systems using Blockchain which is currently used to secure the health records of one million Estonian citizens.

REMME is a decentralized authentication system which aims to replace logins and passwords with SSL certificates stored on a Blockchain.

⁴ Source: 2018 PWC essential-emerging-technologies-Blockchain

⁵ Source: FORBES May 14, 2018 by Bernard Marr “35 Amazing Real World Examples Of How Blockchain Is Changing Our World”

Healthcare

Gem – This startup is working with the Centre for Disease Control to put disease outbreak data onto a Blockchain which is expected to increase the effectiveness of disaster relief and response.

SimplyVital Health – It has two health-related Blockchain products in development:

- *ConnectingCare* which tracks the progress of patients after they leave the hospital, and *Health Nexus*, which aims to provide decentralized Blockchain patient records.
- *MedRec* – An MIT project involving Blockchain electronic medical records designed to manage authentication, confidentiality and data sharing.

Financial services

ABRA – A cryptocurrency wallet which uses the Bitcoin Blockchain to hold and track balances stored in different currencies.

Bank Hapoalim – A collaboration between the Israeli bank and Microsoft to create a Blockchain system for managing bank guarantees.

Barclays – Barclays has launched a number of Blockchain initiatives involving tracking financial transactions, compliance and combating fraud. It states that “Our belief ...is that Blockchain is a fundamental part of the new operating system for the planet.”

Maersk – The shipping and transport consortium has unveiled plans for a Blockchain solution for streamlining marine insurance.

Aeternity – It allows the creation of smart contracts which become active when network consensus agrees that conditions have been met – allowing for automated payments to be made when, for example, parties agree that conditions have been met.

Augur – It allows the creation of Blockchain-based predictions markets for the trading of derivatives and other financial instruments in a decentralized ecosystem.

Energy

Eneres – a Japanese energy company, which will be testing Blockchain as a means to re-distribute excess energy among households in Fukushima.

Manufacturing and industrial

Provenance – This project aims to provide a Blockchain-based provenance record of transparency within supply chains.

Jiocoïn – India's biggest conglomerate, Reliance Industries, has said that it is developing a Blockchain-based supply chain logistics platform along with its own cryptocurrency, Jiocoïn.

Hijro – Previously known as Fluent, aims to create a Blockchain framework for collaborating on prototyping and proof-of-concept.

SKUChain – Another Blockchain system for allowing tracking and tracing of goods as they pass through a supply chain.

Blockverify - A Blockchain platform which focuses on anti-counterfeit measures, with initial use cases in the diamond, pharmaceuticals and luxury goods markets.

Transactivgrid – A business-led community project based in Brooklyn allowing members to locally produce and cell energy, with the goal of reducing costs involved in energy distribution.

STORJ.io – Distributed and encrypted cloud storage, which allows users to share unused hard drive space.

Government

Dubai – Dubai has set sights on becoming the world's first Blockchain-powered state. In 2016 representatives of 30 government departments formed a committee dedicated to investigating opportunities across health records, shipping, business registration and preventing the spread of conflict diamonds.

Estonia – The Estonian government has partnered with Ericsson on an initiative involving creating a new data center to move public records onto the Blockchain. 20

South Korea – Samsung is creating Blockchain solutions for the South Korean government which will be put to use in public safety and transport applications.

Govcoin – The UK Department of Work and Pensions is investigating using Blockchain technology to record and administer benefit payments.

Democracy.earth – This is an open-source project aiming to enable the creation of democratically structured organizations, and potentially even states or nations, using Blockchain tools.

Followmyvote.com – It allows the creation of secure, transparent voting systems, reducing opportunities for voter fraud and increasing turnout through improved accessibility to democracy.

Charity

Bitgive – This service aims to provide greater transparency to charity donations and clearer links between giving and project outcomes. It is working with established charities including Save The Children, The Water Project and Medic Mobile.

Retail

OpenBazaar – OpenBazaar is an attempt to build a decentralized market where goods and services can be traded with no middle-man.

Loyyal – This is a Blockchain-based universal loyalty framework, which aims to allow consumers to combine and trade loyalty rewards in new ways, and retailers to offer more sophisticated loyalty packages.

Blockpoint.io – It allows retailers to build payment systems around Blockchain currencies such as Bitcoin, as well as Blockchain derived gift cards and loyalty schemes.

Real Estate

Ubiquity – This startup is creating a Blockchain-driven system for tracking the complicated legal process which creates friction and expense in real estate transfer.

Transport and Tourism

IBM Blockchain Solutions – IBM has said it will go public with a number of non-finance related Blockchain initiatives with global partners in 2018. This video envisages how efficiencies could be driven in the vehicle leasing industry.

Arcade City – An application which aims to beat Uber at their own game by moving ride sharing and car hiring onto the Blockchain.

La'Zooz – A community-owned platform for synchronizing empty seats with passengers in need of a lift in real-time.

Webjet – The online travel portal is developing a Blockchain solution to allow stock of empty hotel rooms to be efficiently tracked and traded, with payment fairly routed to the network of middle-men sites involved in filling last-minute vacancies.

2.2 Examples of Blockchain projects applied to the media sector

2.2.1 Music applications

Various types of Blockchain-based applications have been proposed for music. Most of these applications use Blockchains for various forms of “behind the scenes” or “B2B” rights and royalty processing, while others include end users in transactions. Here are some examples:

Ujo Music⁶

Ujo Music (ujomusic.com) is a project of ConsenSys, a startup incubator focused on the Ethereum Blockchain, which supports a technology called smart contracts. A smart contract is a protocol that ensures that participants in a Blockchain adhere to machine-readable rules, such as – in this case – license terms for content. Ujo Music built a prototype for the innovative British singer/songwriter Imogen Heap. The system makes it possible to license Heap’s song “Tiny Human” on different terms: as a permanent download, a stream, stems (individual tracks, for remixing), or for sync rights.

With the Ujo Music “Tiny Human” prototype, it’s possible to purchase permanent download rights (as a consumer would do), but it’s also possible to acquire the right to sell downloads of the song (as a DSP would do) and return a percentage of the purchase price to the copyright holder.

dotBlockchain Music Project⁷

The dotBlockchain Music Project (dotBlockchainmusic.com) is a public benefit corporation which is creating open-source technology to support a new file format for music called .bc (dotBlockchain), which will contain digital audio along with metadata that points to entries in Blockchains denoting music rights transactions. dotBlockchain started out using the Bitcoin Blockchain, but it is currently Blockchain agnostic.

The technology includes protocols and interfaces to record and read transactions on .bc files on the Blockchain.

dotBlockchain is based on the core concept of Minimum Viable Data (MVD). It contains only just enough data to disambiguate the work and identify rights holders. MVD is being defined by multi-stakeholder input. There are two versions of MVD: a very minimal one for registering a new work and a larger one for enabling rights transactions in the work. Several rights administrators have agreed to make their data available to the

⁶ Source: Fuente: Digimarc – Watermarking technology and Blockchains in the Music Industry by Bill Rosenblatt

⁷ Source: Fuente: Digimarc – Watermarking technology and Blockchains in the Music Industry by Bill Rosenblatt

project, including SOCAN, MediaNet (a “white label” wholesale DSP owned by SOCAN), Songtrust (an administrative service for music publishers), the indie artist distributor CD Baby, and the indie label aggregator FUGA.

Resonate⁸

Resonate is a music streaming cooperative that allows listeners to “pay as you stream” until you own the song. It’s a totally new listening model called “stream to own.” Only pay for what you play, making a seamless transition from casual listening into becoming a dedicated fan. Resonate is a cooperative owned by the musicians, indie labels, fans and workers that build it.

Using Blockchain technology provided by BigchainDB, it’s possible to build a database of artists and songs, to track who listens, and to set up cost-effective micropayment channels so that artists can be rewarded and listeners can show their love.

The #stream2own model works by slowly increasing the price as a fan falls in love with a song. It basically starts low-cost until it finally reaches the price of a regular download. All in all, artists will get to earn more revenue for their hard work and creativity. For what it’s worth, Resonate already has some labels onboard including RVNG Intl, Planet Mu, and Haycon Veil.

JAAK – KORD PILOT⁹

London-based tech start-up JAAK is working in a pilot of its Blockchain network, KORD. Pilot participants include BMG, Global Music Rights, Outdustry, Phoenix Music International Ltd, Sentric, Warner Music Group and Warner/Chappell Music.

The ultimate goal is to have a single database providing royalty and intellectual-property information, and JAAK’s pilot is a move toward that goal.

The participants provided product and rights data to JAAK, which was held in a private version of the KORD network (open data network which runs on the Ethereum Blockchain). According to the announcement, “KORD will operate as a permissionless, decentralized network of intellectual property information, allowing rights holders to collaborate on an industry-wide view of rights.” Users will be connected to a shared data network where they have the sole authority to insert, update and remove their own information, creating a public record of rights and an audit trail. It will include a framework to detect conflicting information in the network, allowing users to resolve conflicts and converge on a global view of intellectual property rights.

⁸ Source: <https://resonate.is/>

⁹ Source: Jem Aswad – Senior Music editor, Article written on May 2, 2018 in Variety magazine

Mediachain¹⁰

Spotify has acquired the Brooklyn-based Blockchain startup Mediachain Labs, whose team will join the company's office in New York.

Mediachain Labs is leading the open source development of Mediachain, a decentralized data network that aims to make it simple for organizations, creators, and developers to share and reuse information about creative works.

As a shared metadata network for music, Mediachain offers a uniform interface to data contributed by multiple participants with no central authority.

If two parties have information about the same song, Mediachain's resolver allows them to share a common identifier for the work. A modular data translator allows participants to preserve internal data formats while communicating with others, and a cryptographic identity layer enables filtering data by contributor.

Because Mediachain is open source and decentralized, all participants remain in control of their data and there is no central point of failure.

Blokur¹¹

Blokur claims to be building the most accurate source of global music publishing data in the world using Blockchain technology and machine learning with 50,000 songwriters and 7,000 publishers being represented on the platform.

The technology automatically surfaces conflicts in rights data and resolves 75% without human intervention. Blokur's music publisher clients experience a "4% increase" in ownership shares used by CMOs to pay royalties.

Blokur reconciles different sources of rights data to a single Blockchain state. An easy-to-use interface allows music publishers and CMOs to explore their catalogue in the cloud and compare their data with the global consensus view. Their algorithm resolves data conflicts automatically, eliminating labour-intensive tasks and increasing revenue for rights owners.

Blokur integrates with partners to deliver data efficiently and quickly. Industry standards such as CWR, DDEX and the OMI API are supported.

Blokur captures the rights structure in derivative works as they evolve, creating a new revenue stream for creators and collaborators

¹⁰ Source: www.mediachain.io

¹¹ Source: <https://www.blokur.com/>

Plugging derivative rights into the licensing ecosystem means that everybody gets paid for their work.

Finally, in the following table you will find other initiatives in the music market.

Projects	URL	Token	Platform
Core Rights	https://corerights.com/	-	Private blockchain based on IBM's implementation of the Linux Foundation's open-source Hyperledger technology
VEZT	https://www.vezt.co/	VZT (ERC20)	Ethereum
Inmusik	https://inmusik.co/	\$OUND	Ethereum
Maestro	https://maestroproject.io/	Ether	Ethereum
Musicoin	https://musicoin.org/	MUSIC	Similar to Bitcoin or Ethereum
Imusify	https://imusify.io/signin	IMU (NEP-5)	Imusify
Choon	https://choon.co/about/	NOTES	Ethereum
Voise	https://www.voise.com/	VOISE	Ethereum
BitSong	https://bitsong.io/	BTSG	Ethereum
Steem	https://steem.io/	SMT	Steem
Artbit	https://artbit.com/	ARTBit	Bitcoin and Ethereum

Table 1: Other initiatives in the music market

2.2.2 Photo applications

Blockchain can provide more than just funding solutions, another core function of Blockchain is its decentralised nature— taking the power back from a centralised structure and handing it to the crowd.

A lot of Blockchain projects offer what they call DAO structures (Decentralised Autonomous Organisation). Typically in a DAO structure, the community gets a say into metrics of business direction. Taking regular votes and deciding roadmaps / pricing / etc. DAO structures in stock photography might be what is needed to fix the corporate greed with a fair economic model for all parties involved.

Photochain.io¹²

Photochain claims to give clear advantages over conventional photo stocks to both kinds of users: contributors and customers. Contributors at Photochain benefit from an extremely low fee— only 5% of the selling price. This opportunity to keep 95% of the final sale price allows contributors to offer their work cheaper, and consequently the market becomes more affordable for customers. This type of fair market not only benefits the users, but should benefit the photography industry as a whole, as the possibility of increased income incentivizes contributors to perform better.

These profound market changes are only made possible by using Blockchain technology, Smart Contracts, machine learning and Photochain's own user community. Most of the processes become automated and decentralized, significantly reducing costs of platform governance.

- The main aims for the project come under three significant prongs:
- P2P Marketplace: only the artist themselves can determine the value of their work and that they are given the opportunity to offer their work to lots of potential buyers.
- Crypto Economy: The platform Photochain appeals to a broad audience that currently still aren't adopters of Blockchain and cryptocurrency technologies. The easy-to-use GUI and trading processes facilitate the onboarding process and supports the Crypto Economy to become mainstream.
- Photochain Digital Copyright Chain(DCC): the works will be linked to the artist's name. This link is manifested as a transaction in the Ethereum Blockchain and is therefore visible to all users at all times. This means that the artist's ownership of the image can be accounted for.

¹² Source: Medium

Selflery.com¹³

Selflery is a multifunctional social platform that allows to receive rewards in cryptocurrency for social activities related to publication and distribution of visual content. The product concept and its first versions were designed in early 2016. The Selflery reward system uses ERC20 tokens built on Ethereum Blockchain technology. Selflery enables people to make their visual content truly rewarding. The purpose of Selflery is to create an ecosystem that:

- Enables users to monetize their photos, videos and live streams in a gamified way;
- Supports charitable organizations and makes donations easy for users;
- Provides companies with easy-to-use and effective promotion tools that involve user photos;
- Expands the market of photo and video content for companies and news services, with a convenient search functionality;
- Integrates modern technologies and capabilities of Blockchain into the digital photography market, increasing the transparency and security of its transactions.

Creativechain.org¹⁴

Creativechain is a decentralized platform for the registration and distribution of content that certifies the authorship and license of any work or creation making them indelible. A tool for the empowerment of artists and all kinds of creative people who produce, share and distribute digital content.

The platform applies the power of attorney of the revolutionary Blockchain technology in the process of registering content to create incorruptible timestamps that certify the intellectual property of any digital work. Creativechain incorporates “all the advantages derived from the innovation of crypto coins”. In this way, without the need to use bank accounts, purchases, micropayments or donations can be made to the authors of the registered content.

When it is decided to use a copyleft licensed image to complete a new work of art, an invisible link is created that unites these two works forever, any payment or donation can be chained to reward with a percentage to all the authors that are aligned in a creative chain.

If the innovative Blockchain technology is used in Bitcoin to certify monetary transactions, in Creativechain it is used to certify content registrations (distribution licenses, smart contracts, metadata or files).

¹³ Source: Medium

¹⁴ Source: Medium

Kodakone.com¹⁵

Kodak and WENN Digital, in a licensing partnership, announced the launch of the KODAKOne image rights management platform and KODAKCoin cryptocurrency, a photo-centric cryptocurrency to empower photographers and agencies to “take greater control in image rights management”.

Utilizing Blockchain technology, the KODAKOne platform will create an encrypted, digital ledger of rights ownership for photographers to register both new and archive work that they can then license within the platform.

With KODAKCoin, participating photographers are invited to take part in a new economy for photography, receive payment for licensing their work immediately upon sale, and for both professional and amateur photographers, sell their work confidently on a secure Blockchain platform.

KODAKOne platform provides continual web crawling in order to monitor and protect the IP of the images registered in the KODAKOne system. Where unlicensed usage of images is detected, the KODAKOne platform can efficiently manage the post-licensing process in order to reward photographers.

TOTEM of Baidu¹⁶

On the July 18th, Chinese internet search giant Baidu officially announced the launch of “Totem”, the Blockchain-based copyright system of original photographs. The service, called Totem, timestamps each submitted original image with a real-time identity and other user data, storing it on a traceable and immutable Blockchain.

Thanks to the use of artificial intelligence – including image analysis and semantic understanding –, Baidu will be able to compare the images used with those saved on the Blockchain, thus being able to provide for the protection of their rights. In this first phase, Totem limits its activity to image upload functions, but it is expected that the service will also be extended to the transfer of images between people.

Baidu, on the other hand, uses only Blockchain technology, without wishing to throw itself into the world of cryptocurrencies, even for the still operational bans issued by the Chinese authorities. Baidu announced that traditional stock photo services – including Getty Images partner, Visual China Group – have already moved onto the platform.

The company has not clarified whether the Blockchain it is using for Totem is public or permission-based.

¹⁵ Source: Kodak.com

¹⁶ Source: The Cryptonomist “Baidu announced Totem Blockchain for copyright protection” by Fabio Lugano - 6 July 2018

IPStock¹⁷

IPStock claims to democratize the digital content market by virtually eliminating intermediaries and ensuring that the whole process is risk-free and transparent. In turn, this will lead to accelerated development and growth of the market.

Consumers can also ensure that they are purchasing legal and original content with a transparent history and a variety of options. Customers will have the ability to see a complete transaction history, with flexible options to manage one's license, royalty and subsidiary rights.

IPStock also aims to create a new segment in the stock photo market. The role of "Content Buyers" will be made available through IPStock – participants that will be able to buy out individual copyrights from its original authors.

The project was launched in Switzerland with the support of Fongit – a Swiss incubator of innovative startups with over 25 years of experience. IPStock will be launching the IPS token – a utility token used exclusively to pay transaction and service fees on the Blockchain-based IPStock platform, which already has a working prototype.

The company aims to enable a smart-contract based marketplace to buy and sell copyright licenses on the Blockchain before the end of 2018; the smart contracts will utilize the IPS token, based on the ERC20 standard.

Image Protect (to be launched in the first quarter of 2019)¹⁸

Image Protect is a company and a Blockchain-powered content rights platform. With the help of it, content makers, from publishers to advertisers, can protect, manage, and monetize images and digital media in general. The platform revolves around IPShare™, an embeddable in-image ad format that gives each image an identity, making it easily traceable online. This embeddable advertising format will ensure the attribution to the author and will come up with the right conditions that would support social engagement, secure sharing of content, straightforward ownership authentication, licensing, and revenue generation from internet advertising. The Blockchain technology, thanks to its smart contract feature, will bring transparency into image sale history and usage.

Image Protect wants to combine several features, like IPShare™, IPChain™, IPTrack™, Post Usage Licensing, and real-time image data analytics to deploy the IPMarket™ – a Blockchain-based marketplace where the users can protect their images and operate with them in a secure manner.

¹⁷ Source: Bitcoinisti.com

¹⁸ Source: Bitcoinist.com

2.2.3 Video streaming applications

SingularDTV (US)¹⁹

SingularDTV (Based in Switzerland and New York) is a Blockchain (based on Ethereum) entertainment studio laying the foundation for a decentralized entertainment industry. By building the future of rights management, project funding, and peer-to-peer distribution, SingularDTV's platform empowers artists and creators with powerful tools to manage projects from development to distribution.

SingularDTV produces original content. In early 2019, the company will put these and other titles through a Blockchain-powered, on-demand hub that will enable viewers to download content in exchange for digital currency.

SingularDTV relies on a tokenized ecosystem using a local cryptocurrency called SNGLS to help artists and creators benefit from transparent media production and distribution.

FilmChain Big Couch (UK)²⁰

Big Couch is launching its new product FilmChain—a decentralised and transparent platform using Blockchain technology, developing on Ethereum Blockchain. The revenue distribution platform supports film and digital content creators, by collecting revenues and automatically distributing them to all stakeholders, while lowering friction, increasing transparency and decreasing settlement times. Big Couch has established a reputation as a fintech startup energising the film industry with a unique finance model, Crewfunding, which helped independent film producers fund their films in the UK, Iceland, EU, and New York.

In the collection agreements, the producer sets out what percentage each stakeholder recoups from the revenues (the pool of deferring cast and crew being one of the stakeholders entitled to revenues) and this is then turned into smart contracts. This whole automated process runs over time and in perpetuity, and it simplifies in a modular way the work of the producer.

The support behind this startup is the Imperial College London, experts in Blockchain who are helping them to understand token dynamics, film industry luminaries, and platform experts. They have been fortunate to recently receive significant funding from Innovate UK.

¹⁹ Source: singulardtv.com, Streaming Media Europe, Arqiva Urges the Industry to Join a Blockchain TV Pilot Project by Adrian Pennington September 13, 2018

²⁰ Source: bigcouch.co.uk, Medium- The FilmTech Office by Logan Ouellette

Cinezen Blockchain Entertainment (SVE)²¹

Cinezen, the Swedish company behind the upcoming Blockchain VOD platform expected to launch late 2018, has added Celluloid Dreams and other content suppliers to its network.

Based on the Ethereum Blockchain, Cinezen promises transparency by giving content providers access to transactional data on each title, which removes the need for invoicing and royalties reporting. Automated smart contracts embedded in the Blockchain mechanism are designed to ensure swift payment from end-user to content creator.

Slate Entertainment Group – SEG (US Canada)

SLATE is a Blockchain-based entertainment utility protocol powered by a cryptographically secure multilayered network. The decentralized system will deliver low-cost, high-speed, high-definition video globally and facilitate live event ticketing on the Blockchain.

The use of SLATE cryptocurrency (SLX) enables fair and transparent compensation between creators, producers, and distributors. Creators are compensated fairly and consumers get higher quality entertainment. Tickets purchased with SLATE will be forgery resistant, virtually eliminating fraud. Service providers holding SLX can earn even more by storing and delivering content.

The SLATE network consists of a primary network, the distributed ledger for the SLX cryptocurrency, and a secondary layer of “masternodes.” These service nodes store videos and deliver them to customers. Masternodes also quickly secure the generation and redemption of forgery-resistant tokenized tickets for SLATIX. The “genius” of the network is in the aligned incentives: the SLX cryptocurrency motivates service providers to maintain an always-on global network.

MovieCoin (US)²²

MovieCoin is a next-generation financial technology company focused on leveraging Blockchain technology, digital assets and proprietary applications to create a new standard currency for entertainment financing, business transactions and consumer payments.

Moviecoin Tokens are cryptographic ERC20 tokens intended to be used as a means of accounting for and making payment for entertainment industry transactions initially by non-US citizens. The Company plans to have an increasing volume of transactions in the entertainment industry accounted for and paid in Moviecoin.

²¹ Source: ScreenDaily “Blockchain platform Cinezen adds new partners including Celluloid Dreams “ by Jeremy Kay, 14 MAY 2018, Cinando.com

²² Source: movie.io and Moviecoin powered by Bankex

All business users – producers, creators, financiers and others – can pay the costs of interacting on the MovieCoin platform with a MovieCoin Smart Asset at any time in its lifecycle using Moviecoin Tokens. Businesses can use Moviecoin Tokens to pay license fees to the Company for MovieCoin Smart Asset Assembly and Tokenization, and to pay commissions or fees to any vendors, suppliers and other participants that agree to accept Moviecoin Tokens for providing their services.

LiveTree ADEPT (UK)²³

Film and TV crowdfunding outfit LiveTree has built a Blockchain-based funding and distribution platform aimed at content creators. The platform also includes a Netflix-style subscription service, Blossom, which allows producers to upload their back catalogue as well as provide new content. LiveTree sought an alternative solution that empowered content creators and their supporting viewing audiences.

The next generation of the LiveTree platform, the world's first funding and distribution platform solely dedicated film and TV based on the Blockchain, is named ADEPT (Advanced Decentralized Entertainment Platform for Transparent distribution).

LiveTree is utilizing the Blockchain to manage and license the rights for film and TV content with its new ADEPT platform. On the funding side, this means a backer of a project no longer just receives a crowdfunded signed T-shirt or DVD; they can also profit from their investment when the TV/film hits the box office, just like the high-net-worth individuals or studio executives do today.

On the distribution side, it eases the burden for sales agents, meaning they have access to new content at a considerably lower cost (2.5% vs today's 35% fees). It also opens up possibilities for transparent revenue returns from online channels. If the content creator cannot get their content through traditional TV channels (BBC, ABC etc) they can fall back to online channels – such as LiveTree's Blossom TV, a Netflix-style, online channel. Using the Blockchain backers of the project and everyone involved can transparently see returns which are fully controlled by the creator.

TV-TWO²⁴

TV-TWO is a television ecosystem on the Ethereum Blockchain. The solution includes the following elements:

- An application for Connected TVs that blends broadcast television with a personalized and ad-supported video stream offering premium content on the Big Screen. While watching linear television through TV-TWO, the video stream can be accessed anytime by pressing Enter on the remote control. The

²³ Source: Bitcoinist Feb 8, 2018

²⁴ Source: Whitepaper-Establishing a Blockchain-Based Open Platform for the Television Ecosystem by TV-TWO, April 20, 2018

application establishes a new standard for TV advertising. Consumers are empowered to share data with advertisers on their terms. Advertisers can utilize user data and usage insights to reach consumers with more personalized and relevant messages that result in higher user satisfaction and return on ad spend.

- A custom Ethereum-based token called TTV, a token that administers the exchanged value between consumers, content providers and advertisers. Advertisers give tokens to users for watching sponsored videos and sharing anonymous user data. Content Providers get tokens and insights from users for offering premium video content. Consumers accumulate tokens that they can store in their wallet and offer on exchanges. We aim to establish a direct relationship between consumers, content providers and advertisers. The individual players are empowered to pursue direct interactions on the Blockchain, decentralizing the ecosystem as well as disarming oligopolistic TV networks, broadcast providers and tech giants, as they are actively hindering open innovation.

TV platform iPowow (US)²⁵

iPowow's "Participation TV" concept allows viewers to connect directly to TV content via second screen mobile devices such phones and iPads. The company, through the use of Blockchain, aims to deepen connections between viewers and content providers through tokenized content. All the players in the media ecosystem benefit using HITs, for a sustainable exchange of HIT tokens between members.

In short, this new platform based on the HIT protocol will allow:

- Viewers to get compensated for watching and participating with their favorite show
- Content Creators to engage with viewers and create a revenue stream
- Advertisers to gain transparency & insight on their audiences.

Towards this quest, iPowow is developing a smart contract for integration into its existing platform – one designed to enhance the overall experience for viewers, content providers, and brands.

Treeti (US)²⁶

TREETI is the first Blockchain-enabled media platform that empowers people to discover content through social interactions. Designed for and by film professionals, TREETI offers a "better way" to distribute, monetize, and build an audience for your content.

²⁵ Source: BlockchainBeach Magazine by Michael Scott Published on August 18, 2018

²⁶ Source: Treeti.net

Producers can use this platform to identify an audience that's perfect for their content. They can even screen movies with their fans, creating a direct relationship with key influencers.

TREETI gives full control of users' data—purchasing, viewing, social engagement—so that businesses can make their marketing more dynamic and responsive, targeted to a highly curated fan base.

StreamSpace(US)²⁷

StreamSpace is a content delivery and distribution world computer secured by smart contracts and powered by an incentivized distributed network. A key component of the platform is the StreamSpace popularity-driven distributed Content Delivery Network (dCDN), where nodes are compensated for storing and delivering content. For example, someone could monetize the extra computing power on their home PC by becoming a StreamSpace Curator and delivering encrypted content to consumers.

The primary StreamSpace service is a Blockchain-based transaction marketplace for consumer/ viewers to buy the right to watch video content on their personal devices. The initial plan is to implement a Transactional Video on Demand (T-VOD) service with a zero cost or minimal monthly fee rather than a pure subscription-based model like Netflix.

StreamSpace will ensure that each film or other video content meets their criteria for artistic quality, regulatory compliance (no illegal content), and originality / copyright integrity. The content contributor can specify an allocation percentage for royalty payments and any other special terms. A copy of the film and its attributes are uploaded into the master StreamSpace library.

A Blockchain transaction ledger records all payments in a decentralized fashion, ensuring the integrity and security of all purchases through Ethereum wallets; a virtual exchange shows account values in USD or other fiat currencies.

LINO (CHN)²⁸

Lino, a decentralized autonomous video startup, announced (Feb. 5, 2018) that it has secured \$20 million in funding through a private token sale. Led by ZhenFund, the new funding will help Lino build its video distribution network with Blockchain technology.

The funding will be used to develop Lino Blockchain and Lino's video streaming DApp, both of which will be launching later this year, as well as expand marketing and operations. This round was led by ZhenFund and other investors including FBG Capital, DFund, and INBlockchain.

²⁷ Source: www.stream.space and [StreamSpace_White_Paper](#)

²⁸ Source: Coindesk "Startup Raises \$20 Million to Build 'YouTube on the Blockchain'" by Annaliese Milano

The company, which faces competition from Streamspace, Flixo, Viuly and Stream, all of which are developing similar concepts, received a \$20 million vote of confidence from prominent Chinese seed investor Zhenfund during a private token sale.

Content creators, are facing content monetization challenges. Lino aims to create a decentralized autonomous content economy by leveraging the Blockchain technology. In this economy, content value can be recognized efficiently, and all contributors can be incentivized in a more direct and effective manner that helps promote long-term economic growth for individual creators and for content creation generally.

3 Exploitation of the common platform

3.1 Use case driven exploitation

The Bloomen project is characterized by having three use cases that share strong common requirements regarding the unique identification and correct management of digital assets rights, whereas they still maintain important specificities and distinctive priorities that recommend a customize approach in order for the final service to be relevant for the future users.

Facing this evident dichotomy, the Bloomen project team has reached a compromise that aims at optimizing the right mixture of productivity and personalization (enabled via common platform and services) and personalization (via the development of functionalities fully adapted to each use case).

In order to achieve this, we have placed our initial focus on optimizing the adaptation to the needs of each use case. We started by identifying the main requirements per use case as well as the target scope that would be required to cover.

Once we had this information, we have identified the functionalities that could cater for these services and have made an exercise to gather those functionalities in potential shared modules (i.e. with a common API and shared backend modules), accessible by all use cases as they may need them.

Therefore, while we are designing a platform that produces modules accessible by all three use cases, each use case could obtain similar or completely unique functionalities from those modules. This approach has allowed us to score well on customization (adaptation to use cases) while maintaining a strong performance (strong common platform and shared services).

In the next section, the first list of initial key modules and shared functionalities would be identified.

3.2 Common assets

The common modules developed within the Bloomen platform and accessible by the three use cases, commented in the previous section, will constitute the common assets to be developed within the Bloomen project.

In the next table you can see the first list of these common assets to be developed, as well as the use cases that we estimate that will use them.

Key solution modules	Owner	Photo	WebTV	Music
Anonymity module	ICCS/NTUA	Under evaluation		
ANT1 Bloomen management tool	WLI		X	
Bloomen wallet	WLI		X	
Smart contracts		X	X	X
ICCS/NTUA video player (demonstrator)	ICCS/NTUA		X	
Kendraio app	Kendraio	Under evaluation		
REST API	ATC	X	X	X

Table 2: Key solution modules

Regarding the functionalities to be made available to the three use cases via the common API, the following table lists the initial ones identified as well as the use cases that most likely will use them.

Key functionalities available via the common API REST	Photo	WebTV	Music
Browse /search content and copyrights	X		X
Browse content	X	X	X
Buy content	X	X	
Claim copyrights	X		X
Confirm copyrights	X		X
Create/delete users	X		X
CRUD (Create Read Update Delete) - Authorization scheme			X
Define Smart Contract	X	X	
Deploy Smart Contract	X		
Describe content (metadata)	X		X
Distribute public keys			X
KYC functionalities	X		X
Link and merge musical assets			X
Manage user profile	X		X

<u>Platform governance functionalities:</u>			
Search content	X		X
Update copyright information	X		X
Upload content	X	X	X
View balance of wallet			
View content	X	X	X
View Smart Contract	X		
View transactions of the user	X	X	X
Write/define copyright information	X		X

Table 3: Key functionalities available via the common API REST

3.3 Sustainability of the platform

All effort in the design of the platform to make it performant and adapted to the requirements of each of the use cases is useless if Bloomen cannot ensure its continuous availability, mainly during the time of the project, but also, ideally, after its conclusion.

This availability depends not only on the accessibility to the platform, but also on its capacity to process transactions made over it. In order to ensure maximum capabilities for the Bloomen project to provide its services, the Bloomen team has decided to build its platform over the Alastria Blockchain infrastructure²⁹, which uses the Quorum Blockchain technology for its underlying platform (same technology to be used by Bloomen).

Alastria is a consortium, cofounded by Worldline in Spain in 2017, aimed at building a semi-public, multi-sector and permissioned Blockchain, together with a digital ID solution to be shared by all partners using the common infrastructure. Alastria is intended to support fully legal services, potentially for the whole private and public activity of a country such as Spain. It is a model that has been proposed to the EU Commission via the EU Blockchain Observatory & Forum, as a potential strategy to extend Blockchain infrastructure Europe-wide, one country at a time.

Because of its definition, Alastria can provide both very strong transactional capabilities (capacity to validate strong amounts of transactions) as well as security both in

²⁹ check more info on [Alastria.io](https://alastria.io).

technical and legal terms. Furthermore, Worldline's participation in the consortium may facilitate the continuity of the availability of the Bloomen assets, although this will be decided at a later stage, closer to the end of the project.

3.4 Innovation & IPR Management

3.4.1 Introduction

As part of the innovation management work in Task 6.3, Bloomen identifies innovative elements of the work conducted and defines a *Schedule of Innovations*, which are to be produced during the project. This is maintained throughout the project as a collaborative effort, also informing exploitation activities. One key objective is the assessment of opportunities with regard to applying for patents or declaring copyrights. Another purpose is the management of intellectual property rights (IPR) issues, taking into account the collective interests of the participating partners.

For the purpose of Task 6.3 in Bloomen, we define "innovations" as new, original technology components or applications developed within the project (foreground), which are not necessarily yet implemented in a business context.

3.4.2 Status and next steps

At this point in the project (M16), the consortium has generated and discussed a wider list of innovative aspects in Bloomen. On this basis - and from the perspective of IPR management - the consortium has narrowed down and identified 12 key components to form the Bloomen *Schedule of Innovations*, which also defines the respective owners (partners) and related Bloomen work plan tasks. Currently, none of the owners of the 12 components are reporting any critical IPR issues related to their components.

Using the existing schedule, the consortium will conduct further IPR management activities and hold discussions related to these components. The next iteration of the schedule will collect the IPR status and other information on Copyright, Licensing or Patent opportunities. Owners of key Bloomen innovations will use a template that has been developed for this purpose, which covers Innovation Type, Version Status, Planned Licences, Use by Partners and Use Cases, Description, IPR Opportunities and Application Area.

The results of this activity will be summarised in the final Bloomen Exploitation and Sustainability Plan (M36).

3.4.3 Bloomen Schedule of Innovation

The following components and applications have been identified as key Bloomen innovations for which IPR issues will be considered and managed.

- Bloomen Blockchain Framework
- Basic Blockchain Services (Alastria/Quorum Deployment Approach)
- Anonymity, Data Privacy and Personalisation Services
- Smart Contracts for the Media Industry
- Kendra Hub Tool
- Bloomen Integrated Platform
- Bloomen Mobile Wallet
- Interoperability Framework/Layer and APIs
- Integrated Bloomen Web Platform/Clients
- Music Application
- News Photo Application
- WebTV Application

4 Individual exploitation plans

4.1 Worldline

4.1.1 Business objectives in the project

Worldline, apart from being the overall project leader, it also acts as one of the technical partners, supporting the use case partners to identify their requirements, define a solution and produce the matching platform that caters for both the whole solution and each use case.

If we focus on Worldline individual exploitation plan, we can talk of the following business objectives around the participation in the Bloomen project:

1. To maximize the technical and business expertise around the development of Blockchain-based solutions in general and, particularly in the sectors and assets cater for in the project.
2. To develop technical assets that could be used later in future versions of the project or in other projects, both by Worldline and by third parties, ensuring in this way the sustainability of the results of the Bloomen project.
3. To position itself as the ideal technical and business partner for the Bloomen use case partners in order to develop future phases of their solutions or other ones based on Blockchain technology. This is also extensible to other third parties who may find Worldline as a good partner for their projects.
4. To position itself as the ideal technical and business partner for future research project both in Blockchain and other emerging technologies.

4.1.2 Innovation and exploitation possibilities

4.1.2.1 Worldline business profile

Worldline is the biggest European payment services provider and a leader in digital transformation. With annual revenues of €2,3 Bn and +11.000 employees worldwide, it specializes in the development of cloud-based platforms that customizes for its clients and exploits through transactional business models (i.e. pay per use). Worldline is part of the Atos group, with annual revenues of €13 Bn and +120.000 employees worldwide, it is one of the top IT service providers worldwide.

Worldline is currently working on existing and future platforms around technologies such as Internet of Things (IoT), Artificial Intelligence (AI), Cyber Security, Biometrics or Blockchain, apart from many others.

Finally, Worldline invests very heavily on Research & Development, both via internal projects and via collaborative ones such as the ones included in research programs such as H2020. In all of these projects, the objective is always to explore innovation in technologies and business applications that may enhance existing solutions/business lines or create completely new ones. This requirement is also applicable to the Bloomen project. In this sense, Worldline intends to maximize the short and medium term applicability of the developments done under the Bloomen project, so that they can be transferred to the market via future phases of Bloomen-based platforms or applying the developed assets to other projects.

4.1.2.2 Innovation & exploitation during the project

The innovation and exploitation possibilities to be explored during each of the 3 years included in the timeline of the Bloomen project are the following:

Year 1

- During the first year Worldline has explored the possibilities of different Blockchain platforms, as well as its fit with different solutions such as utility tokens, APIs, secure repositories, among others. This has reinforced its expertise around Blockchain-based solutions.
- This expertise has been presented both within the Atos and Worldline groups as well as to external clients, as a way to express Worldline's capabilities not only as a solution designer and operator but as one of the few service providers with real Blockchain solutions under development, not just with Proof of Concepts (PoC) or pilots.
- In the context of Bloomen dissemination activities carried out by Worldline, such as Decentralized 18 in Athens, Worldline has encountered several experts and companies/organizations working around the media/copyright/Blockchain sectors. Worldline has detected several potential collaboration opportunities around innovation on the topic, both within and outside the Bloomen framework.

Year 2

- The year 2 implies the development of the core platform that would support the provision of the 3 use cases, with all its individual customization and dedicated services.
- Worldline has agreed with the rest of the consortium partners to base the Bloomen core platform and its use cases on the Alastria Blockchain platform.
- Alastria is a Quorum-based platform developed by the Alastria consortium, cofounded by Worldline in Spain, which intends to develop a fully legal and scalable multisector Blockchain infrastructure. The Alastria project has already been presented to the EU Commission, via DG Connect, as a model for different countries in the EU to develop Blockchain infrastructure.

- The combination of the Bloomen solution over the Blockchain underlying infrastructure will allow to:
 - Capitalize on all the work done by the Alastria on consortium/Blockchain governance and transactional performance, among other aspects, to reinforce the solutions to be provided by Bloomen.
 - Test the Alastria platform capability to support different and demanding use cases such as the ones present in Bloomen.
 - Provide a real chance for the Bloomen assets to continue working and being testable after the conclusion of the Bloomen three-year project timeline, independently of whether any of the use cases implemented has a future commercial continuation.
- Worldline intends to gain strong expertise in aspects such as Governance within Blockchain consortiums, business case definition for all stakeholders and other critical topics for a Blockchain-based solution to be successful. This will be directly transferable to its other Blockchain-based solutions to be defined and proposed to other customers.
- Furthermore, the development of the core platform and the different services for each of the use cases will imply the creation of a series of digital assets that may be used to accelerate the development of solutions for third parties.
- Finally, Worldline will present the Bloomen project to its media sector existing customers and potential leads for them to participate in the project and/or to explore similar solutions.

Year 3

- During the year 3 Bloomen platform and its 3 use cases will be implemented and exploited in order for the Bloomen consortium to establish a strong feedback and improvement cycle. This will allow the consortium to learn what it works and what needs to be mended.
- Worldline will count with working solutions for the 3 use cases to be showcased to potential Bloomen collaborators and/or Worldline customers, which may increase its capacity to transform leads into clients.
- Furthermore, the feedback obtained during this period would position Worldline as a leader among its peers, since not many companies would count with the experience of implementing a real life project internationally. At this stage, Worldline expects to have gained at least a project based on some of the assets produced at Bloomen or related to the value proposition developed within Bloomen, particularly within the media sector.
- Finally, Worldline will propose a strong collaboration to the use case partners that would like to move to an industrialization phase in their vertical after the conclusion of the Bloomen project.

4.1.2.3 Innovation & exploitation after project conclusion

Once the project concludes, Worldline intends to work on the following elements to capitalize on the developments achieved during the Bloomen project execution:

- The fact that the project is hosted on the Alastria platform would increase the future accessibility of the solution even after the conclusion of the project.
- Collaboration with the use case partners that would like to continue with the technical and commercial development of their vertical solution.
- Increase the commercial push for Blockchain-based solutions for media sectors, even to new ones not included among the initial Bloomen use cases (i.e. even those not included in the music, news photos and video streaming verticals).
- Open potential collaboration with other consortiums or solutions providers that may complement the value proposition developed by Bloomen.

4.2 ICCS

4.2.1 Business objectives in the project

ICCS is the technical leader of the project and as such the main objectives of the further exploitation of the Bloomen outcomes are structured around extending the technology arsenal and portfolio and act as knowledge transfer organization between the researchers and the industry with which it has liaison. This can be further analyzed into the following.

1. To maximize the technical expertise on Blockchains, smart contracts and decentralized applications in general.
2. To develop technical assets that could be used later in future versions of the project or in other project, ensuring in this way the sustainability of the results of the Bloomen project.
3. To position itself as a technical partner for future research projects related to Blockchains (through national or international funding such as H2020 or the forthcoming Horizon Europe).

4.2.2 Innovation and exploitation possibilities

4.2.2.1 ICCS/NTUA profile

The National Technical University of Athens (NTUA) is the oldest and most prestigious technical university in Greece. It was founded in 1837 and has since been contributing

to the progress of the engineering science in Greece, through the education of young engineers and its multi-faceted research and development activities. The University comprises nine departments, each one covering a different aspect of the engineering field.

The School of Electrical and Computer Engineering (ECE) of NTUA is well known in Greece and abroad for the research achievements of its faculty members and the good reputation of its students and alumni. The field of Electrical and Computer Engineering spans a wide range of subject areas, like computer science, telecommunications, electronics, automatic control and electric power.

The Institute of Communication and Computer Systems - ICCS (www.iccs.ntua.gr) is a research organisation associated with the ECE school and has about 40 laboratories and research units. ICCS/NTUA participates in Bloomen through the Distributed, Knowledge and Media Systems Group (DKMS) that focuses on research activities related to advanced distributed computing, dealing with topics such as Blockchains, Distributed and P2P computing, Cloud Computing, Internet of Services and Things and Big Analytics.

4.2.2.2 Innovation & exploitation during the project

Technical outcomes: ICCS has developed Blockchain core services on Hyperledger and Quorum and has actively led the overall Bloomen architecture. Moreover, ICCS has implemented anonymous personalization service particularly applicable when end-users consume media content in a personalized way without disclosing personal preferences data.

Competence and skills improved: Bloomen is offering ICCS the opportunity to improve competences and skills related to Blockchains, Distributed Ledger Technologies, Decentralized Apps as well as privacy enhancing technologies. Moreover, ICCS improved its knowledge in many Blockchain related frameworks through its experimentation in the frame of the Bloomen project. In particular it has gained knowledge and skills in Bitcoin-based Proof-of-Work Blockchains, Ethereum and ERC20 tokens, Hyperledger, Multichain and Quorum.

Individual exploitation intentions: ICCS' exploitation will be in the context of the institution's strategic plans, which extend in (a) education, (b) technology & knowledge transfer towards the national and European IT, (c) promotion of research and enrichment of the Institute's scientific expertise. Through its participation in Bloomen, ICCS aims to develop innovative mechanisms that may be contributed to the open source community. Since ICCS/NTUA is a non-profit Academic Research Body, we will be releasing all related results as open source contributions under Open Source licenses: more specifically, permissive licenses, as are not restrictive licenses it can be

used to create a proprietary good, allowing a commercial exploitation and ensuring high impact. Furthermore, ICCS exploits the research projects in which it participates in order to connect them with M.Sc. and Ph.D programme theses, for the active engagement of young researchers in a multi-cultural and highly innovative environment.

The innovation and exploitation possibilities to be explored during each of the 3 years included in the timeline of the Bloomen project are the following:

Year 1: During the first year ICCS has explored the possibilities of different Blockchain platforms. This has reinforced its expertise around Blockchains technology suite and resulted into specific research results published already in research papers. In the context of Bloomen dissemination activities carried out by ICCS, such as Decentralized 2018 which was held in Athens on November 2018, ICCS has encountered several experts and researchers on Blockchain sectors and has detected several potential collaboration opportunities.

Year 2 and Year 3: The year 2 implies the development of the core platform that would support the provision of the 3 use cases, with all its individual customization and dedicated services. During these 2 years ICCS will particularly focus on deriving education material especially for the post-grad education program and pursue further publication activities especially due to the fact that the derived prototypes will be validated within pilots' context. At this stage, ICCS expects to have gained at least a new research project (funded mainly through national funds) based on some of the assets produced at Bloomen or related to the value proposition developed within Bloomen.

4.2.2.3 Innovation & exploitation after project conclusion

Once the project concludes, ICCS intends to work on the following elements to further pursue possible dissemination and exploitation activities:

- To sustain at least one Alastria node that will help ICCS have a testbed for further researching Quorum and Ethereum like Blockchain research issue through its participation in this near-production environment. This will enhance further the research results of ICCS as far as it concerns Blockchains, Distributed Ledger Technologies and related topics.
- Collaboration with the use case partners that would like to continue with the technical and commercial development of their vertical solution.
- Sustain and possible extend the open source code repository with the Bloomen results as a way for knowledge transfer to other researchers and open source community members.
- Participate in further European funded (or national funded) projects and collaborate with other consortia.

4.3 Deutsche Welle (DW)

4.3.1 Business objectives in the project

The main business objective is to use blockchain technologies for the handling of media assets leading to more, better selection of photos, videos, animations, etc. while potentially achieving this at lower costs and with leaner workflows. While this can apply to any media company the focus in Bloomen is on how this could apply to public broadcasters. Another, equally important aspect is fair and reliable payment for creative work, which is an obligation specifically for public broadcasters. For the sake of simplicity, the focus will be on handling of photos, but of course other creative items such as music, animations, graphics, data & charts, video and audio can be considered in the long run.

4.3.2 Business objectives in the project

4.3.2.1 Deutsche Welle business profile

Deutsche Welle (DW) leads the Bloomen photo use case. Athens Technology Center (ATC) is the technical partner responsible for demonstrators. DW and ATC are working together and as part of the project as a whole. DW is Germany's international broadcaster. As an organization with more than 3.000 employees, around 600 journalists and multimedia reporting via TV, Radio and the web the organization must cope with changes and opportunities created by digital convergence. The use of blockchain technologies has the potential to affect multiple areas, both for how the organization acquires content including a verification process and how it uses such content in workflows. Digital production for multiple platforms (mobile, web, TV, social networks) poses a challenge and creates a pressure to develop "smart production" of media content, this is where blockchain technologies understood as a transaction database combined with smart, rules based contracts could have a big effect on the organization. It should be noted that DW is a non-profit organization, which means that most business objectives are focused on process and costs, but not on commercial marketing activities.

4.3.2.2 Innovation & exploitation during the project

First year: Prior to the start and during the first year of Bloomen DW and ATC developed a vision for an application called Bloomen Photo. Based on previous experiences in sourcing photos, interviews with photo editors in-house and other material we envision an application/workflow where photos are sources from users (amateurs, semi- and professional photographers) around the world, leading firstly to a wider selection of

photos from regions or sites of interest than what can be achieved with traditional photo wires. An innovative aspect is how the application will ensure that the identity of the creator can be checked and verified easier and faster than with traditional methods. Further we defined methods to ingest the photos using registration in a blockchain and other elements.

Second year: The second year of the work will be structured by pilots and testing of the application with user groups, in order to innovate workflows for photo handling in public broadcasters. We expect to extend the work from a general photo application managed through blockchain technologies to a more specific solution, specifically serving the news photo market in times of worldwide digital distribution and use of web/mobile applications.

Third year: Exploitation will be geared towards creating new ways to exchange photos between creators/photo agencies and public broadcasters. While it can be possible to open up the application later in the process the focus on public broadcasters fits into the experience and network of Deutsche Welle.

Bloomen Photo aims to be tested out how to create benefits for both creators of digital photos and users (media companies or similar). The focus is on mid-market photo creators, e.g. professional producers who already derive some income for their photos, with the goal to simplify offering and selling photos plus getting regular payments based on Blockchain records and rules-based “smart contracts”.³⁰

4.3.2.3 Innovation & exploitation after the project conclusion

Expected exploitable results for Bloomen photo:

1. Identity module: A module to identify a creator or group as owners of certain media assets. This can be a module or extension, to be reused by other applications (e.g. music or video).
2. Assets: Module(s) to connect to and identify existing photos for a creator, where the photos might be stored on a variety of different cloud storage solutions.
3. Ledger/database: Blockchain based ledger to track and collect photo sales and usage over time. The Blockchain will be used to connect identity and assets for a given user and consumer.

³⁰ Smart Contracts are basically a feature only available via Ethereum, though other platforms and concepts are emerging, either as add-ons or fully integrated solutions. In the context of the Bloomen photo app we assume that rules-based and KPI driven dynamic contracts or rules-based collection and execution of specific actions is possible. The demonstrators for Bloomen Photo will use simple mechanisms as proof-of-concept and later extend complexity, either through self-developed software or by using available software from the market.

4. Contract terms: Smart contracts or rules-based module to define the terms of usage for each photo (or: assets). While the bulk of used photos might have an inclusive license, some of the photos are expected to be of higher value, for what they show or because they are re-usable, etc. For such assets the terms can be negotiated and captured by the “smart contract” mechanism – e.g. that beyond a certain usage there is another payment or that usage in a certain region triggers an additional payment and so on.
5. Update module: Based on work already demonstrated by Kendraio, there can be a service module, enabling a creator to update her/his credentials across multiple services (updating name, postal address, accounts, etc.)
6. Tagging module: Again, based on work by Kendraio, another extension can be a tagging module which would help to tag people or places in photos for additional meta-data. The module had been demonstrated in Bloomen meetings in 2018.
7. Open architecture: It should be noted that identity, assets and contract modules are thought of as key modules, which can and should be extended by other modules as needed. As such we see the Bloomen photo demonstrator as an example on how we could manage the flow of creative assets between creators and consumers.

Summary of exploitation goals: Bloomen Photo is a research effort to develop, test and implement modules for Blockchain-based photo usage between creators and consumers (media companies).

Benefits: For the creator/photographer the application can have the effect that regular payments can be achieved with a lower effort into single sales, single contracts, and so on. Instead the available assets are all identifiable in a trusted way to one creator and provide a way to partially, temporarily or fully transfer usage rights for such items to a consumer. Based on a flexible and adaptable smart contract module this exchange can be further extended in a flexible way and per consumer. The difference to today’s distribution methods is that there is a chance to achieve regular income without having to manage multiple platforms, thus driving administration down while potentially having a positive effect on income.

For consumers (here understood as public broadcasters), Bloomen Photo can open a door to usage of more and better pictures for news. Currently most pictures used are coming from wire services such as Picture Alliance or Getty and others. Bloomen Photo is more flexible and would – for example – allow to connect in trusted and regulated way to photographers in crisis regions and thus provide access to relevant photo material.

4.4 BMAT

4.4.1 Business objectives in the project

BMAT is leading the Bloemen Music use case. Since the primary conception of the project, BMAT has carrying out the definition of the Music Use case along with its requirements, user scenarios and functionalities. Despite BMAT's role in this project being more focused on the use case and pilot leadership, BMAT's technological nature guides them to also be aware of the technologies to be used, as well as to assist technical partners in defining the architecture, application and interface.

If we focus on BMAT individual exploitation plan, we can outline the following goals in the Bloemen project:

1. To understand the position of the industry stakeholders towards technologies at an early stage such as distributed ledgers and Blockchain.
2. Identify Blockchain technologies that are closest to the needs of the music industry for clean, reliable and auditable rights information.
3. To position itself as a music industry technology stakeholder for future research and development project (both EU funded, and non-EU funded - private investment and clients) in emerging technologies.

4.4.2 Innovation and exploitation activities

4.4.2.1 Innovation and exploitation during the project

The innovation and exploitation possibilities to be explored during each of the 3 years included in the timeline of the Bloemen project are the following:

Year 1

- The definition of the use case is strongly linked to the future exploitation of the project. BMAT is a customer-focused company. In addition, BMAT's developments are always focused on the needs of a market - that of technologies for the music industry - whose competitiveness is increasingly greater and fiercer. It is therefore that the case for the use of Bloemen Music is defined from the point of view of the future exploitation of its results. Identification of how distributed ledgers could help the music industry and enhance BMAT own technological solutions.
- The mentioned above makes a priority for BMAT to identify how distributed ledgers could help the music industry and enhance BMAT own technological

solutions. The requirements of the project are already used internally for new ideas and opportunities.

- Identify industry stakeholders interested in a Blockchain solution that offers them the possibility of obtaining a new Blockchain-based, global music information database for rights management and claims.

Year 2

- Define the Bloomen Music pilot, engage interested stakeholders to participate in the pilot phases. Having an application with which BMAT can get closer to interested parties, in most cases potential customers, will allow them to create a strong image for the acceptance of risk involved in configuring solutions based on emerging technologies.
- Make use of the Alastria Quorum-based platform as the technology to build the final Blockchain-based Bloomen Music solution.

Year 3

- Evaluate pilot results. What's the market opinion on Bloomen Music?
- During the year 3 Bloomen platform and its 3 use cases will be implemented and exploited for the Bloomen consortium to establish a strong feedback and improvement cycle. This will allow the consortium to learn what it works and what needs to be mended.
- International positioning.
- Obtain a path-forward for the following years in order to incorporate Blockchain solutions to BMAT's ecosystem and architecture.

4.4.2.2 Innovation & Exploitation after project conclusion

Once the project concludes, BMAT intends to work on the following elements to capitalize on the developments achieved during the Bloomen project execution:

- Take industry leadership in solutions based on the blockchain after drive change and bring a sharp increase in the circulation of music usage data and consequently the payments made to the music industry.
- Diversification of BMAT solutions for new market channels such as music labels, digital distributors, publishers and music venues, to support their individual services. It is expected that Bloomen will have a massive impact in the music industry -specially towards the Distributed Database For Music Copyright Information- that BMAT will be able to benefit from.
- Open potential collaboration with other consortiums or solutions providers that may complement the value proposition developed by Bloomen.

4.5 KENDRAIO

4.5.1 Business objectives in the project

Kendraio is responsible for developing technologies to enhance clarity with copyright and interactions with third party service providers who may want to work with Bloomen. Kendraio is building on work started in previous EU funded projects, to create a dashboard for copyright management, which will enable creatives and managers to utilise their assets on Bloomen.

Kendraio sees itself as a potential leader in the field of interfaces for copyright management and intends to increase that expertise within Bloomen and share this knowledge with industry and creative individuals alike. For Kendraio's individual exploitation plan the following applies:

1. To work with third party service providers interested in integrating with Bloomen.
2. To develop technical assets, such as Kendraio App, that will be used later in future versions of the project or in other projects.
3. To position itself as a technical partner for development collaborations within projects which need to create dashboards for asset and copyright management.
4. To position itself as a technical partner for future research projects related to blockchains (through national or international funding such as H2020 or the forthcoming Horizon Europe).

4.5.2 Innovation and exploitation possibilities

4.5.2.1 Kendraio profile

Kendraio is an international media, technology, academic and industry alliance backed by international governments. The mission is to foster an open distributed marketplace for digital media (including films, music, images, games and text). The nonprofit initiative researches, recommends and develops enhancements to the digital media marketplace that facilitate interoperability between and revenue generation for content owners and service providers; to enable consumers to use any device or application to browse, search and purchase content from any content catalogue, seamlessly. The cross-industry stakeholder group is currently investigating collaboration workflow, rights management, content description, search, visibility, discovery, delivery and payment whilst developing and trialing prototypes and promoting support.

Its goals are to:

- Simplify and streamline buying and selling digital content by driving industry adoption of open protocols.
- Enable interoperability between service providers, media applications and devices - every link in the content value chain.
- Build a system where consumers can use any device or application to browse, search and purchase from the globally distributed collection of content catalogues.
- Create a more pleasurable buying experience for consumers and increase reach and revenue for content owners.

By bringing together content creators/owners and specialists from industry and academia Kendraio is constructing a framework that will enable all organisations and individuals in the content distribution industry to exchange ideas and build this system.

4.5.2.2 Innovation & exploitation during the project

Technical outcomes: Kendraio is developing cutting edge software that will drastically cut down the admin workload for creative people and their management staff, whilst also allowing them to be more effective. Kendraio's work is specifying technologies that will enable agile development within the project. We are creating generic models for building cross sector API clients (Adapters). We are creating generic models for tagging multi-mode media with scene, credit and copyright information. We are creating a dashboard for media asset management from the viewpoint of different roles: creative, manager, distributor, etc. We are building interfaces to provide the Bloomen pilots with functionality via an App: tagging, claim requests, conflict resolution, sales/engagement report visualisation, etc.

The innovation and exploitation possibilities to be explored during each of the 3 years included in the timeline of the Bloomen project are the following:

- **Year 1:** During the first year Kendraio has continued to develop the Kendraio App and Kendraio Adapter models as demonstrators for third party integration with Bloomen. We have taken the music focused dashboard and integrated photos into the App.
- **Year 2 and Year 3:** Kendraio will continue to add functionality into these software assets. We will continue to seek collaboration with external service providers and make the onboarding process much more fluid. We will continue to build the dashboard as a way to view, explore and interact with the 'sea' of copyright data available for creative works.

4.5.2.3 Innovation & exploitation after project conclusion

Once the project concludes, Kendraio intends to work on the following elements to further pursue possible dissemination and exploitation activities:

- To continue to work with individual creatives and industry to harmonise the process of distribution and remuneration for creative works.
- To make it easier for smaller artists to play with the 'big fish' by reducing administration workload by reducing the need for repetitive work (see: form filling).
- Collaboration with the use case partners that would like to continue with the technical development. Obviously, there is lots of synergy with BMAT and DW in this case.
- Sustain and possibly extend the open source code repository with the Bloomen results as a way for knowledge transfer to other researchers and open source community members.
- Participate in further European funded (or national funded) projects and collaborate with other consortia.

4.6 ATC

4.6.1 Business objectives in the project

ATC is responsible for Bloomen pilots and one of the technical partners of the project. It is responsible for the web platform, that will be used by all the use cases, and the overall system integration, based on its expertise in Blockchain technology.

Apart from the joint exploitation plan, ATC has also its individual plan, based on its expertise, commercial offerings and needs:

1. To actively participate in the development and improvement of Bloomen use cases and final system.
2. Some ATC's commercial products are targeted for the news sector; specific examples are NewsAsset (www.newasset.com) and TruthNest
3. (www.truthnest.com), ATC's products for organizing the content and workflow of media organisations. Such applications make extensive use of media data, therefore making the Bloomen outcomes excellent add-ons for improving these products.
4. To maximize the technical and business expertise around the development of Blockchain-based solutions.

5. To use the acquire expertise around Blockchain technology for participation in future projects, ensuring at the same time the sustainability of Bloomen results.

4.6.2 Innovation and exploitation possibilities

4.6.2.1 ATC business profile

ATC is an international software company. For more than 30 years, it provides innovative solutions for the Media, Banking and Retail Sectors, Utilities and Public Sector Organisations as well as horizontal solutions focusing on Content Management, Enterprise Software, Web Applications, Human Capital Resource Management and eLearning, and Mobile Applications. The activities of the Company span among several countries in EU, Eastern Europe and CIS countries, as well as the Balkans. Having acquired ISO 9001 certification since 2000, the company provides a broad spectrum of value-added products and services such as consulting, customer training, installation and maintenance, warranty and post warranty services, SLA projects, project management, and professional support. ATC has also been certified with ISO 27001:2005 for its Information Security Management system applicable to Design, Development, Implementation and Support of ICT solutions and digital services, as well as for Technical, Business, Consulting and Project Management Services in the ICT domain.

The ATC Innovation Lab carries more than 25 years of expertise in Research and Development. It focuses on innovation aspects, which are often overshadowed by research concerns, and on turning promising ideas into concrete and robust products, in a cost and time-efficient manner. It discovers or conceptualizes Innovation first, then turn it into working systems through intense and continuous involvement in cutting-edge research projects, focusing primarily in areas that can offer the next big advance to its commercial offerings, discovering, at the same time, new domains and creating the next company targets.

ATC, is a partner in the NESSI ETP (www.nessi-europe.com) and a full member in the Big Data Value Association (www.bdva.eu).

Being an innovative IT company, ATC is actively involved both in R&D and commercial activities relevant to Bloomen. Having commercial products addressing the needs of media companies but also large enterprises, ATC has a strong interest in advancing the technologies and activities in order to remain competitive in the fast-moving sector of Blockchain.

4.6.2.2 Innovation & exploitation during the project

The innovation and exploitation possibilities to be explored during each of the 3 years included in the timeline of the Bloomen project are the following:

Year 1

- During the first year, ATC has explored the possibilities of different Blockchain platforms, mainly in relation to News Media use case. This has reinforced its expertise around Blockchain-based solutions.
- ATC increased awareness of Bloomen solutions especially in ATC Sales and Marketing Departments.
- In the context of Bloomen dissemination, ATC participated in IFRA World Publishing Expo, in Berlin, and IFRRO World Congress, in Athens. Both presentations resulted in very positive feedback from the attendees and the organizers of the events, while they disseminated Bloomen approach and created collaboration opportunities.

Year 2

- During the second year, the web platform will be developed, in order to support the three different use cases. At the same time, the first version of the integrated system will be also delivered. ATC will get the sales networks of ATC and its partners familiar with Bloomen approach, generating also interest from larger partners, through Internet, partners' networks, ATC Sales Department and Existing Customer Base. The whole approach will be presented as an introduction of new innovative technologies and solutions, understanding of new capabilities and market advantages.

Year 3

- During the third year, Bloomen platform and its 3 use cases will be implemented and exploited in order for the Bloomen consortium to establish a strong feedback and improvement cycle. This will allow the consortium to learn what it works and what needs to be mended.
- During the third year, there will be the first attempts of customization of solutions to partners' needs and an increased awareness of target market.
- There will also be a further investigation for possible new features and adaptations. Support services for training personnel will be available.

4.6.2.3 Innovation & exploitation after project conclusion

Once the project concludes, ATC intends to work on the following elements to capitalize on the developments achieved during the Bloomen project execution:

- Collaboration with the use case partners that would like to continue with the technical and commercial development of Bloomen solution.
- Increase awareness of target market
- Increase the commercial push for Blockchain-based solutions for media sectors, by adapting Bloomen solution and adding new features.
- Open potential collaboration with other consortiums or solutions providers that may complement the value proposition developed by Bloomen.

4.7 ANTENNA

4.7.1 Business objectives in the project

ANTENNA is the WebTV use case partner in the Bloomen project. Its purpose is to provide industry insights relative to the business, copyrights management as well as outline technical guidelines and recommendations arising from experience in the TV and digital streaming environment.

On an individual level, here are the main business objectives of ANTENNA around the participation in the Bloomen project:

1. Set the foundations for a smooth transition of TV to web and mobile video solutions, while maintaining the ease-of-access the current status of the television industry.
2. Maximize business expertise around the development of Blockchain-based solutions in the audiovisual industry.
3. Explore further development of the current set of tools developed by the Bloomen consortium, by disseminating the work done and form new partnerships.
4. Position the company as an ideal and experienced partner for future R&D projects in Blockchain.

4.7.2 Innovation and exploitation possibilities

4.7.2.1 ANTENNA business profile

ANTENNA is the biggest private media company in Cyprus, with properties in traditional media such as TV and Radio but also a digital presence through multiple web and mobile properties. With annual revenues of around €13m and around 130 employees, it specializes in producing high quality content (news, series, documentaries), as well as channeling these productions through digital properties in a personalized manner.

The Research & Development department of ANTENNA does not only participate in projects focusing on emerging technologies such as Blockchain but is also involved in educational research projects such as through Erasmus+ programs, as well as media-specific programs through collaborations such as one with the European Parliament for the year 2019.

4.7.2.2 Innovation & exploitation during the project

The innovation and exploitation possibilities to be explored during each of the 3 years included in the timeline of the Bloemen project are the following:

Year 1

- During the first year ANTENNA has explored various features of Blockchain technology and has collaborated with industry and technology experts to identify certain business prospects and KPIs relevant to the WebTV use case.
- The company has also investigated the several Blockchain platforms researched by the technical partners of the consortium, to explore fundamental advantages and challenges, such as transaction throughput and tokenization possibilities and integration, in order to adapt the WebTV use case to what later would be the Bloemen platform and API capabilities.
- Information about the consortium's progress was disseminated on Television and digital properties, particularly when ANTENNA hosted the consortium the summer of 2018, but also by being the media sponsor of Decentralized 18, an event that hosted partners of the consortium (NTUA & Worldline). ANTENNA also introduced Bloemen to the University of Nicosia, a leading university in Blockchain R&D, where it was agreed that future collaboration would happen as a joint effort to promote Bloemen activities further.

Year 2

- During the second year, ANTENNA continued the talks and its involvement in the selection of Alastria, a Quorum-based Blockchain platform, developed in Spain, to be the infrastructure hosting the Bloemen Use Cases.
- ANTENNA is currently testing some implementations based on Alastria, such as the mobile wallet developed by Worldline, and intends to collaborate further with technical partners such as NTUA to establish a web platform that can also communicate with Alastria and integrate with the mobile wallet.
- Furthermore, ANTENNA will organize a community involvement event around month 21 (May 2019), whereby community and industry experts will be invited to participate in a social event in Nicosia, Cyprus, in order to have solid feedback on the current developments of the Bloemen consortium. This will also of course be disseminated through ANT1 TV and digital properties handled by ANTENNA.
- At the same time, ANTENNA will also hold private talks with other prospect companies for assessing the WebTV use case as an investment opportunity.

Year 3

- The most important component of year 3 for ANTENNA is the integration of the core website www.ant1.com.cy and iOS/Android applications of the company with the Bloomen API and the Alastria Blockchain. This is expected to be early into the project year, where it is expected that the solution, as well as the company's experience and know-how around Blockchain will be much more advanced.
- ANTENNA will host 2 more community involvement events: a hackathon right after the launch of the second iteration of the Bloomen use cases, as well as a conference towards nearing the end of the third year, where international speakers and community will be invited to participate to observe real Blockchain solutions designed and developed by the consortium.
- Finally, it is expected that the maturity of the services and the WebTV use case itself, will be at a stage that ANTENNA can take to the next level, together with prospect partners, either to a further R&D stage or an actual final product that can be launched worldwide.

4.7.2.3 Innovation & exploitation after project conclusion

Once the project concludes, ANTENNA intends to work on the following elements to capitalize on the developments achieved during the Bloomen project execution:

- Collaboration with the technical partners that would like to continue with the technical and commercial development of the Bloomen solution.
- Increase awareness of target market
- Increase the commercial push for Blockchain-based solutions for media sectors, by adapting Bloomen solution and adding new features.
- Explore further R&D opportunities regarding advanced technical, security and financial aspects of the WebTV Use Case, not currently fitting the scope of the Bloomen project.
- Open potential collaboration with other consortiums or solutions providers that may complement the value proposition developed by Bloomen.

5 Use case business models

As indicated in the introduction, this section focuses on the future potential businesses to be built around each of the use cases, once the Bloomen project concluded, and probably managed via industry consortiums and led by the Bloomen use case partners.

We have chosen the business canvas methodology in order to provide a high-level overview while focusing on the key elements required to define each of the business models. It is important to highlight that these are just initial reflections that would evolve throughout the timeline of the Bloomen and notably via the feedback obtained from the initial implementations of Bloomen on the different use cases.

In the following points you will be able to find a business canvas of each of the use cases. In case you are not fully aware of the business canvas methodology, you will find a general description of each of the categories displayed in the canvas according to Christopher Bartlett ³¹.

Value Proposition

It is the fundamental concept of the exchange of value between your business and your customer/clients.

Generally, value is exchanged from a customer for money when a problem is solved or a pain is relieved for them by your business.

Good questions to ask when defining your business/product:

- What is the problem I am solving?
- Why would someone want to have this problem solved?
- What is the underlying motivator for this problem?

Customer Segments

Customer Segmenting is the practice of dividing a customer base into groups of individuals that are similar in specific ways, such as age, gender, interests and spending habits.

Things to consider when determining your Customer Segments:

- Who are we solving the problem for?
- Who are the people that will value my value proposition?

³¹ Source: <https://medium.com/seed-digital/how-to-business-model-canvas-explained-ad3676b6fe4a>

- Are they another business?
- If so, what are the characteristics of those businesses?
- Or, are they other people?
- Does my value proposition appeal to men/women or both?
- Does it appeal to young adults aged 20 to 30 or teenagers?
- What are the characteristics of the people who are looking for my value proposition?
- Another thing to gauge and understand is your market size, and how many people there are in the Customer Segment. This will help you understand your market from a micro and macro perspective.

Customer Relationships

Customer Relationships is defined as how a business interacts with its customers.

Good questions in this category may include the following:

- do you meet with your customers in person?
- Or over the phone?
- Or is your business predominantly run online so the relationship will be online too?

Channels

Channels are defined as the avenues through which your customer comes into contact with your business and becomes part of your sales cycle.

This is generally covered under the marketing plan for your business.

Good questions to ask when identifying the channels to reach your customers are:

- How are we going to tell our customer segment about our value proposition?
- Where are our customers?
- Are they on social media?
- Are they driving their car and listening to the radio?
- Are they at an event or conference?
- Do they watch TV at 7pm on a Friday night?

Key Activities

The Key Activities of your business/product are the actions that your business undertakes to achieve the value proposition for your customers.

Questions to ask:

- What activities does the business undertake in achieving the value proposition for the customer?
- What is the resource used?
- Time?
- Expertise?
- Distribution of product?
- Technical development?
- Strategy?
- Offer resources (human/physical)?
- What actions does it take you and/or your staff to achieve value exchange?

Key Resources

Key resources are what is needed practically to undertake the action/activities of your business.

Key resources could include office space, computers and staff.

Key Partners

Key Partners are a list of other external companies/suppliers/parties you may need to achieve your key activities and deliver value to the customer.

This moves into the realm of 'if my business cannot achieve the value proposition alone, who else do I need to rely on to do it?'.

An example of this is 'if I sell groceries to customers, I may need a local baker to supply fresh bread to my store'.

They are a key partner to achieve the value my business promises to the customer.

Cost Structures

Your business cost structure is defined as the monetary cost of operating as a business.

Some questions to pose may include the following:

- How much does it cost to achieve my businesses key activities?
- What are the cost of my key resources and key partnerships?
- How much does it cost to achieve the value proposition for my customers/users?

- Are there additional costs to running a business?
- Legal?
- Insurance?
- What is the cost of my business?
- It is important also to place a monetary value on your time as a cost.
- How much would it cost you to hire you?
- What is the opportunity cost of running your business?

Revenue Streams

Revenue Streams are defined as the way by which your business converts your Value Proposition or solution to the customer's problem into financial gain.

It is also important to understand pricing your business accordingly to pain of purchase in exchange for the pain of solving the problem for your customer.

There are many different revenue models here:

- Pay per product (pay per view)
- Fee for service
- Fixed rate
- Subscription
- Dividends
- Referral feeds
- Freemium
- Equity gain

5.1 Music use case business canvas

Business Model Canvas		Designed for:	Music Copyright Consortium (Bmat)	
		Designed by:	Worldline	
KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITIONS	CUSTOMER RELATIONSHIPS	CUSTOMER SEGMENTS
<ul style="list-style-type: none"> - The CS1 should be the first members of the consortium, followed by some CS2 (particularly publishers and label companies) - Technical partner to design and manage the updates of the platform - European Union for funding and dissemination - Funding partners 	<ul style="list-style-type: none"> - Build the demonstrator and evolve it to a platform - Get feedback from stakeholders - Generate awareness about Blockchain and the project itself - Agree on a pilot with BMAT and the initial pilot partners - Evaluate pilot and prepare key messages to "sell it" - Start the service awareness and implementation processes. 	<p>VP1 (CS1-8): provide a unique version of the truth of which are the copyright owners of each media piece for all rights owners and rights managers.</p> <p>VP2 (CS1): reduce the admin cost of ensuring that the sector knows who are the rights owners at each time.</p> <p>VP3 (CS1-8): provide access to a common repository of all media rights available, together with their copyright owners and managers.</p> <p>VP4 (CS1-8): provide traceability of all changes made to the declared copyrights info.</p> <p>VP5 (CS1-8): ensure system resiliency (no single point of failure) and end user privacy</p> <p>VP6 (CS2): creators' capacity to control that their rights are properly declared and be able to complain to the CS1 in case they estimate they have not been properly compensated.</p> <p>VP7 (CS3-5): facilitate the CS1 the reporting of the assets that have been consuming</p> <p>VP8 (CS2): for creators that develop assets out of existing ones (i.e. DJs), capacity to: 1. identify the original assets they use to create the derivative ones and include that info as a meta data for the new asset, 2. be able to have clear ranged collections of assets (based on metadata) to use to create new ones.</p> <p>VP9 (CS7): when a CS7 carries out an audit and detect consumption data for an asset that is managed by a CS1 (CMO) different from the one who contracted them, to have the possibility to sell that data to the CS1 that did not contracted the service.</p>	<ul style="list-style-type: none"> - Self service on front end (web) for all users except for CS6 - Super admin users to support internally corporate customers (CS1) and CS3-5 if we finally offer asset consumption data. - P2P support among CS2 (experienced users supporting new ones for a reward, i.e. to help a new artist during the ownership claiming process). - Email support for technical service. - Consortium management (i.e. committees) 	<p>Collective copyright managers CS1: CMOs - they manage the copyrights of their members. They aim at getting the lowest admin cost so that they can push their margins.</p> <p>Rights owners CS2: Producers, Publishers, Labels, Creators, Performers & Others - they have copyrights and are interested in them to be recognized and compensated properly.</p> <p>Media consumers (broadcasters & end users) CS3: TV & Radio broadcaster CS4: Venues - night clubs, commercial centers, leisure centers, etc. Provide media to mass consumption at their premises.</p> <p>CS5: Digital service providers (DSP) - Spotify, youtube, itunes, etc. make the media available for end user consumption.</p> <p>CS6: End-users that consume media via CS3-5.</p> <p>Consumption monitoring service providers CS7: Usage auditors via sampling: they visit venues or DJs and ask for consumption data. They are mainly contracted by CMOs. CS8: Tech-based usage monitoring services: companies such as Bmat that are contracted by CMOs, broadcasters or publishers to access reports of media consumption.</p>
COST STRUCTURE		REVENUE STREAMS		
<ul style="list-style-type: none"> - Technical partner cost for maintaining and evolving the platform - Personnel costs: product ownership / project management, communication roles, business roles (funding, business model definition and evolution), consortium governance roles and business model expertise - dissemination costs (travel, tradeshow, articles, etc.) - hosting infrastructure - consortium creation and maintenance 		<p>Reflections on the model to be defined:</p> <ol style="list-style-type: none"> 1. We want the maximum of CMOs to participate and include the maximum of content, so making them pay for each asset presented does not seem positive, since they would only include the assets that have consumption. 2. Until there is no consumption data, there is no end2end model, so we have to analyze alternative ways of financing / payment for use to the consumption of the registered data 3. Initially we could propose a monthly fee for all the corporate users (CS1 mainly) relative to the volume of the database they share, with a minimum for the smallest and an escalation that does not penalize putting the whole database of the large ones . 		

Table 4 : Music Use Case Business Canvas

5.2 Photo use case business canvas

Business Model Canvas		Designed for:	Bloomen Photo - News Picture Usage Consortium (post project canvas)	
		Designed by:	Worldline	

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITIONS	CUSTOMER RELATIONSHIPS	CUSTOMER SEGMENTS
<ul style="list-style-type: none"> - The CS5 should be the first members of the consortium, followed by some CS6 - Photographers associations (to amplify the message) - Technical partner to design and manage the updates of the platform - European Union for funding and dissemination - Funding sources representatives 	<ul style="list-style-type: none"> - Build the demonstrator and evolve it to a platform - Get feedback from stakeholders - Generate awareness about Blockchain and the project itself - Agree on a pilot with DW or another candidate - Evaluate pilot and prepare key messages to "sell it" - Start the service awareness and implementation processes. 	<p>VP1 (CS1-6): provide a unique version of the truth of which are the copyright owners of each media piece.</p> <p>VP2 (CS-6): reduce the admin cost of ensuring that the pictures are well attributed.</p> <p>VP3 (CS1-6): provide access to a common repository of all media rights available, together with their copyright owners and with the trust that the data is correct.</p> <p>VP4 (CS1-6): provide traceability of all changes made to the declared copyrights info.</p> <p>VP5 (CS1-6): ensure system resiliency (no single point of failure), end user privacy and business confidentiality.</p> <p>VP6 (CS1-4): capacity to control that their rights are properly declared and be able to complain to the media companies (CS5.6) if the media has not be properly attributed.</p> <p>VP7 (CS1-4) : facilitate media creators the introduction of ownership metadata to their media works. There will be 2 levels of metadata: personal info and technical info for each photo. This will facilitate the attribution process and the conflict management.</p> <p>VP7 (CS1-6): Facilitation of attribution process / conflict management</p> <p>VP8 (CS1-6): provide reliable payment models to reduce/eliminate admin costs for media companies and creating reliable source of income for media suppliers.</p> <p>VP9 (CS4, CS5-6): provide efficient auctioning tools for high-value photos.</p> <p>VP10 (CS1-4): propose monitoring data for a clearer overview of photo usage and payment for media suppliers.</p> <p>VP11 (CS5-6): monitoring data for photo popularity, identification of key creators, evolution of payment, etc.</p>	<ul style="list-style-type: none"> - Self service on web for all users - Super admin users to support internally corporate customers - P2P support (experienced users supporting new ones for a reward). - Email support for technical service. - Consortium management (i.e. committees) 	<p>Photos Suppliers</p> <p>CS1: Producers of UGC (User Generated Content) - any end user that produce valuable content i.e. eye witness.</p> <p>CS2: Photographers - professional producecers of photos.</p> <p>CS3: Newswire and photo agencies - they enhance visual content to be sold to media companies.</p> <p>CS4: Very high value visual content providers - this content may be treated separately because it could be auctioned i.e. Plane in the Hudson. Can be produced by CS1-3.</p> <p>Media companies</p> <p>CS5: Public Service Media (PSM) organizations - 64 companies such as DW, ARD (all German public broadcasters), EBU (European Broadcasters Union). They are publicly funded and are not selling content.</p> <p>CS6: Commercial News Media (newspaper, magazines and broadcasters). They sell subscriptions and not individual photos, normally.</p>
		CHANNELS		
		<ol style="list-style-type: none"> 1. Awareness: <ul style="list-style-type: none"> - Pilot within DW and feedback from stakeholders. Once we have results we more to the next phases. - direct meetings with EBU to reach CS5. - articles on how the service is much better than existing processes - web marketing to lead interested users to an informative/call to action landing page 2. Evaluation: surveys and feedback programs via web 3. Purchase: self service web 4. Delivery: via web and node managed by consortium members. 5. After sales: see relationship point. 		
COST STRUCTURE		REVENUE STREAMS		
<ul style="list-style-type: none"> - Technical partner cost for maintainng and evolving the platform - Personnel costs: product ownership / project management, communication roles, business roles (funding, business model definition and evolution), consortium governance roles and business model expertise - dissemination costs (travel, tradeshows, articles, etc.) - hosting infrastructure - consortium creation and maintenance 		<p>For CS5 and CS6, a small monthly fee to access the picture database.</p> <p>For CS5 and CS6, payment fee per used photo in a fully transactional model: 5% (TBD) on all successful payments to supplied photo (taken from the existing photo price and reducing the price received by the photo supplier).</p> <p>Possibility to cap the fees paid monthly or reduce them against the cost of running a node.</p> <p>If any personalisation is required to integrate with the IT systems of the customer, an ad hoc setup fee would be charged.</p>		

Table 5: Photo Use Case Business Canvas

5.3 WebTV use case business canvas

Business Model Canvas		Designed for:	Video Copyright Consortium (Antenna)	
		Designed by:	Worldline	
KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITIONS	CUSTOMER RELATIONSHIPS	CUSTOMER SEGMENTS
<ul style="list-style-type: none"> - Content Delivery Network (CDN) for media delivery and, potentially, via a revenue sharing scheme. - The CS1 should be the first members of the consortium. - European Union for funding and dissemination - Investment partners representatives - Consumption measurement partners (i.e. Nielsen) 	<ul style="list-style-type: none"> - Build the demonstrator and evolve it to a platform - Get feedback from stakeholders - Generate awareness about the new service for end users - Generate awareness of the blockchain implementation and foster cooperation with key stakeholders in Cyprus and the EU. - Evaluate pilot and prepare key messages to "sell it" - Start the service awareness and implementation processes. - Create a consortium and invite potential partners (ideally starting by CS1 companies) 	<p>VP1 (CS3): share audience broadcasting figures validated by trusted partners such as Nielsen</p> <p>VP2 (CS4): pay for the exact consumption of media assets. The platform would provide proof of consumption of each media by each public address (CS5). This would prompt the correct billing of broadcasting rights consumed.</p> <p>VP3 (CS4): generate new pay per view business model (full pay per view or basic fee + pay per view for extra). This is empowered by VP2.</p> <p>VP4 (CS3, CS4): access to greater range of media, especially by small players that before could not access it because of it was not efficient for media suppliers to make it available for them.</p> <p>VP5 (CS1, CS2, CS3, CS4): fast and cost-efficient distribution of broadcasting rights for media content.</p> <p>VP6 (CS1-4): better reach of the media, particularly regarding media consumers which are small players because the platform make it economically viable to make the media available for them.</p> <p>VP7 (CS1-4): real-time reporting of the evolution of the consumption of their media and the sector, keeping anonymity of the data.</p> <p>VP8 (CS5): CS5 would be able to pay only for what they see and not a monthly fee. Or they will have variable payment for extra content.</p> <p>VP9 (CS5): smarter recommendations for end users, based on their behavior and on what is happening in the whole sector, keeping anonymity of the data.</p>	<ul style="list-style-type: none"> - Self service for CS5 - Personal business attention for CS1-4. - Email and telephone support for technical service (CS1-6). - Visit to premises (CS1-4) - Consortium management (i.e. committees) 	<p>Media Suppliers</p> <p>CS1: Production Companies - media copy right owners. They will put media on the platform or do it via a media distributor. They may share rights with CS3.</p> <p>CS2: Media Distributors - agents to facilitate media distribution, can put media on the platform on behalf of CS1 and CS3</p> <p>Media supplier and consumer</p> <p>CS3: Television Networks - media copy right owners. They will put media on the platform or do it via a media distributor. They may share rights with CS1. They may purchase broadcast rights from the platform</p> <p>CS4: Streaming (WebTV) Platforms - media copy right owners. They will put media on the platform or do it via a media distributor. They may share rights with CS1. They may purchase broadcast rights from the platform</p> <p>Media consumer</p> <p>CS5: Media Content Consumers</p> <p>Media supplier</p> <p>CS6: Media Content Producers - potential issue with identifying original content rights</p>
COST STRUCTURE		REVENUE STREAMS		
<p>IS YOUR BUSINESS MORE</p> <p>Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing)</p> <p>Value Driven (focused on value creation, premium value proposition)</p> <p>SAMPLE CHARACTERISTICS</p> <p>Fixed Costs (salaries, rents, utilities)</p> <p>Variable costs</p> <p>Economies of scale</p> <p>Economies of scope</p>		<p>CS5 will prepay a balance for their account and they will be capable of using that balance to access content via Antenna web</p> <p>Payment will be mainly per view but Antenna will explore other billing formulas (i.e. packs, monthly fees, etc.) according to CS5 and CS6, payment fee per used photo in a fully transactional model: 5% (TBD) on all successful payments to supplied photo (taken from the existing photo price and reducing the price received by the photo supplier).</p> <p>Possibility to cap the fees paid monthly or reduce them against the cost of running a node.</p> <p>If any personalisation is required to integrate with the IT systems of the customer, an ad hoc setup fee would be charged.</p>		

Table 6: WebTV Use Case Business Canvas

6 Conclusions and next steps

6.1 Conclusions

As described in the present deliverable, the partners in the consortium have explored different ways to maximize the innovation and business possibilities of the Bloemen project, both for the project itself and for each of the participants.

This is a summary of the main decisions taken in order to achieve the best use of the funding obtained:

- Regarding the dichotomy between a strong and performant common platform and a fully adapted solution to each of the use cases, the Bloemen project team has reached a compromise that aims at optimizing the right mixture of productivity and personalization. While we are designing a platform that produces modules accessible by all three use cases, each use case could obtain similar or completely unique functionalities from those modules. This approach has allowed us to score well on customization (adaptation to use cases) while maintaining a strong performance (strong common platform and shared services).
- The different modules of the platform will be considered as assets for all uses cases and other projects to work with, both during the duration of the Bloemen project and once concluded.
- The agreement with the Alastria consortium to use their platform as an underlying infrastructure will ensure both the security, scalability and performance required during the project life and a potential active repository for the project developments to continue even after the conclusion of the project. The latter will have to be finally confirmed before the end of the project with the Alastria consortium.
- We have made an exercise where all partners, both technical and use case ones, have identified the areas of potential innovation that they want to explore within the Bloemen project and that are transferable to their activities.
- Finally, we have worked with the use case partners to visualize, through the business model canvas format, how a future consortium around their use case could define a business case valid for all potential participants.

6.2 Next steps

This is a first version of the plan, which will need necessarily a future revision, at a later stage of the project, in order to update the vision of the exploitation plans that we have currently.

In the coming months we will deploy the pilots, validate or modify our initial value propositions and so forth. The different feedback for our activity, together with the future interest of the use case partners to push for a full service development after the conclusion of the project may be key elements to impact the current exploitation plans as described in the current document.