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Whitepaper

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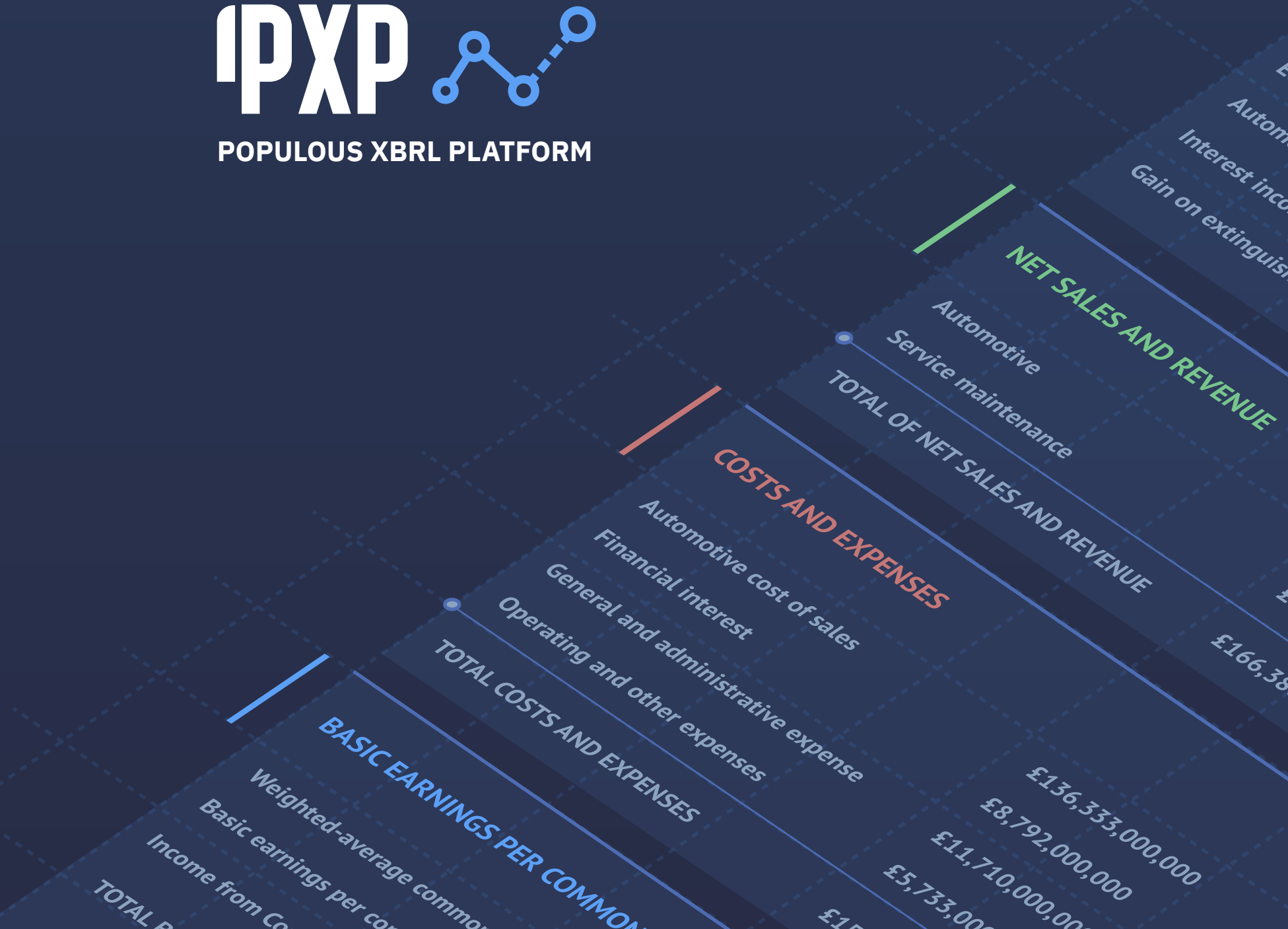
IPXP

POPULOUS XBRL PLATFORM



Contents

1. The intelligent choice

We live in the age of information and we are never more than a few clicks away from a wealth of data, yet the power of this data to provide real, actionable insight can remain largely untapped.

However, a new opportunity is set to change the shape of business intelligence by providing organisations with easy, cost-effective access to data analytics for more incisive and better informed decision-making.

This paper explains how businesses of all sizes can access information that will help them build an effective strategy to drive current performance and direct future growth.

2. Introduction

No business lasts long by making decisions in the dark. But in the search for enlightenment, business leaders can often find themselves facing a deluge of data, when what they need is a sound knowledge base for strategic planning.

In our era of big data, when more facts and figures are captured and stored than ever before, it can be difficult for organisations to get the insight they really need.

The role of Business intelligence (BI) is to help organisations cut through the proliferation of databases, spreadsheets and files and make sense of the information that matters to them. Quite simply, BI is the fuel that powers effective decision-making.

2.1 The impact of BI

Today's businesses need BI solutions which are robust enough to manage big data. Big data typically involves integration, aggregation and storage of structured and unstructured data. Structured data is what we tend to think of as traditional data, text files stored in a data warehouse, such as customer details or financial information.

Unstructured data, on the other hand, consists of data from a diverse range of sources such as streaming from social media platforms, mobile applications, and the Internet of Things.

The process of BI is to take this data and to transform it into information or knowledge about the state of an organisation, its objectives and opportunities. BI software supports the analytical process, by making use of data warehouse software, data mining software and digital dashboards.

Informed decision-making

However, BI is not just about software, it is an approach to the management of data which supports an organisation's decision-making.

An effective BI solution involves the storage, analysis and the presentation of data in an easy to digest form, enabling businesses to access a wealth of information that will allow them to make decisions with confidence.

BI provides the tools to mine multiple sources of data and analyse them in combination for a more holistic, big picture result.

Analytics that turn data into knowledge

When a wealth of data is combined with powerful analytical tools, organisations can carry out a multitude of calculations on their data. These could include complex scenario analysis, business performance benchmarking to evaluate the health of a business, or trend analyses to identify patterns of customer behaviour.

These tools also drive predictive and prescriptive analytics to direct future business strategy. In effect, BI informs and adds certainty to the operational decisions that businesses make throughout the year. Equally, BI feeds into the longer-term strategic decisions for an organisation, helping to set goals for the future at the broadest level.

If a business leader is looking to test the viability of a new market segment, they might start by reviewing their internal data sources. Sales figures for instance, or current levels of customer satisfaction in the existing market segments.

By overlaying this information with external data on market share, demographic data and competitor performance, the business would have a much more accurate view of the risks, challenges and opportunities that could lie ahead.

A rapidly growing market

BI is big business. The combined market for big data and business analytics looks set to experience a phase of extremely rapid growth in the coming years. The reason being that demand for BI solutions is driven by better availability of data, innovations in technology, and the need for informed decision-making.

According to the International Data Corporation (IDC), worldwide revenues for big data and business analytics will grow from $130.1 billion in 2016 to more than $203 billion in 2020 at a compound annual growth rate of 11.7%.

The IDC predicts an increasing trend for big data and value-added analytics being bought and sold via marketplaces, or in bilateral transactions or exchanges, and enterprises will start to develop methods for valuing their data.

According to the IDC, data monetization will become a major source of revenues, as 180 zettabytes of data (180 trillion gigabytes) is created across the world in 2025. This is an increase from less than 10 zettabytes in 2015.

2.2 Who needs BI?

BI is not the preserve of big business. Any size of company can benefit, from the smallest start-up to the giant multi-national. Small and medium businesses (SMBs) in particular have been slow to adopt BI due to its perceived complexity, however these organisations could benefit considerably from investing in high quality, targeted BI.

For instance, a SMB might want more certainty around a new venture they are planning – perhaps an opportunity to partner with a larger firm in their sector. But they may not have the resources to spend days searching through data sets to uncover the information that will help them make a sound decision.

Avoiding information asymmetry

An SMB in this position runs the risk of information asymmetry – where they have imperfect knowledge of a situation, market or opportunity, while the party they wish to engage with has a superior understanding – and therefore the potential to exploit it to their own advantage.

The larger firm entering the partnership holds all the cards and will do better out of the deal than its smaller partner. However, good quality BI would re-balance this information divide, and give the SMB the knowledge it needs to make the right decision.

Investing in a confident future

We live in a competitive world and without BI, companies of all sizes risk missing out on opportunities to grow and thrive. What businesses need is a fast, easy and cost-effective way to access good quality information to help them map out a successful future.

3. The solution

To help organisations gain the actionable insight they need to make informed business decisions, while avoiding the risk of becoming awash with data, a new platform has been created.

3.1 The Populous XBRL platform

Developed by experts in storing, analysing and presenting data, The Populous XBRL platform (PXP) is a BI data analytics platform.

PXP provides datasets and analysis tools in a cost-effective way, so that businesses of all sizes can access the vast array of publicly available data and present it in an easily digestible format to help them make decisions that drive their business forward.

The resources include, but are not limited to, the following:

- eXtensible Business Reporting Language (XBRL), a format which allows users to access information on the financial health of companies.
- Companies House data which provides data taken from companies' financial statements.
- HM Land Registry data which gives registration details and information about:
  - Commercial property ownership;
  - Residential property ownership.
- Census data encompassing information about UK households, giving a detailed snapshot of the demographics of a location.

3.2 Harnessing the power of data

The storage and analysis of extremely large data sets can be problematic for the average business, which may not have the technology or skills to get the most from the abundance of content that the big data revolution has made available.

However, PXP enables businesses to benefit from easy access to high quality BI through the platform. By hosting large-scale datasets and the analytical tools to make sense of them, PXP ensures the intelligence is presented in a way that works for its users.

The way PXP has been developed means that skilled researchers are able to offer their services via the platform so that users benefit from high quality reports. And business owners who complete reports for their own use also have the option of selling these reports via the system to other users of the platform, helping recoup some of their investment in the service.

4. Generating a new report

The following user scenarios show how PXP users can create a tailor-made, company specific report for their business requirements by mining the data and conducting analytics targeted to their needs. These reports make use of the datasets and BI analytics tools accessed through PXP.

4.1 User scenario: a PEST analysis

In this case, a researcher wishes to carry out a PEST analysis for a new business opportunity.

An owner of a small chain of cafés is considering opening a new outlet in one of two medium-sized market towns in the UK.

The café chain has reviewed its internal data and identified three core customer groups which it caters for – people calling in for a coffee on their way to work, mothers of young children meeting up after the school run and older people taking afternoon tea.

While its existing outlets perform well among these customer groups, the café chain owner needs to be sure that this model can be replicated successfully in its new branch.

The café owner decides to carry out a PEST (political, economic, social and technological) analysis on the two possible locations for the new café. Census data shows that economically and socially, both towns have a similar profile, with a growing population and a higher than average proportion of affluent households, including premium retirement homes.

New housing developments have attracted young families to the locations and there are large numbers of professional employees. The technological profile of the two locations is similar too, with strong broadband provision and use of home internet and social media which is higher than the national average.

Both towns appear to be promising locations for a new café, so the owner decides to see how similar businesses have performed in these two areas. By cross-referencing census data on the PXP platform, the owner could see that in one of the areas, similar businesses had thrived, with healthy financial data and strong credit scores.

However, in the second location, a large number of small retail outlets and cafés have low credit scores and some have faced bankruptcy. Further investigation reveals that a large supermarket chain recently opened a new branch in the town, complete with a café that serves free coffee to loyalty card holders.

Having reviewed the data and taken a BI informed approach, the café owner decides to open a new café in the first location.

4.2 User scenario: a SWOT analysis

In this case, a researcher wants to carry out a SWOT analysis on investment prospects.

A large technology corporation is looking for a new investment opportunity to extend its business software offering. They are considering three possible contenders, each of which has an excellent product range, detailed business plans and a strong board of directors. So the corporation decides to carry out a SWOT (strengths, weaknesses, opportunities and threats) analysis to compare their investment prospects.

As part of its due diligence, the corporation calls upon its BI resources to investigate the three companies. Commercial land registration data verifies the registration numbers, addresses of the companies and details of any property owned.

Companies House data enables the corporation to look into details of the three companies' directors, their backgrounds and any other directorships held by these individuals.

The corporation overlays this information with financial data on the PXP platform including balance sheets, profit and loss statements and statements of cashflow. Using the Altman Z-score and other profitability ratios, including gross profit margin and operating profit margin, the level of risk in investing in each company becomes clear.

The data reveals that one of the entities under consideration has faced financial difficulties, while another company has a bad payment history – both of which could present threats to the investor. The third company has a healthy financial track record with good debt management and performance history, providing a positive investment opportunity for the corporation.

> ***ALTMAN Z-SCORE***
>
> *The Altman Z-score, published in 1968 by Edward I. Altman, is a formula that gauges a company's likelihood of bankruptcy. Based on five financial ratios that can be calculated from data on a company's annual report, it uses profitability, leverage, liquidity, solvency and activity to predict whether a company has a high probability of becoming insolvent.*

4.3 User scenario: locating distressed assets

In this case, a researcher uses land registry and Companies House data to identify low priced property investments.

A property entrepreneur wants to locate distressed assets (properties that an owner needs to sell due to debt or bankruptcy) in a particular area in order to take advantage of purchasing property at a low price. The entrepreneur uses the platform to cross reference the residential land registration data to compare and analyse the sale of properties over a period when the housing market crash occurred.

The entrepreneur finds an area in which houses were oversold and some residents are still in negative equity. They can now cross reference these records with Companies House data and electoral data which provides the name and contact address of the residents of those properties they wish to target.

With this information, the entrepreneur is able to contact these residents directly and make them an offer for their properties.

4.4 User scenario: using combined datasets

In this case, a researcher creates a report from financial data to identify potential customers.

An accountancy firm is looking for new clients. The firm uses the platform to identify businesses that they could approach in order to offer their services in line with the threshold set by the government on accounting standards.

Land Registry and Companies House data provide a full set of details about each company, including the background, date of incorporation and industry type.

The current year performance of the company can then be calculated using the Altman Z-score and financial ratios, and this is cross referenced with credit history analysis using invoice discounting data.

The firm carries out a SWOT analysis on the companies they plan to target and compares each of the companies with its competitors. Using the platform's analysis tools, they can see the companies' 10 closest competitors displayed as a tree map. This includes:

- A heat map of the five larger and smaller companies by postcode
- The average competitor's Altman Z-score and financial ratios
- Charges and debt comparison with competitors

From this report, the firm can see which businesses would present a lower risk and a better prospect for a successful business relationship.

4.5 User scenario: easy access to data

In this case, a user accesses reports to target new business and gain competitive advantage.

A web designer wants to identify companies which need web design services. He decides that new companies would be a good target for his services as they may not already have a company website.

The designer pulls Companies House data from the PXP API to build a list of newly incorporated companies. He then checks address details to see which newly incorporated companies are in certain locations that he wishes to target.

With this information, the designer is able to contact potential clients who are looking for web design services, set up meetings and make a sale.

Using PXP the designer gained the information he needed quickly and simply, enabling him to approach potential customers swiftly and secure the business in advance of his competitors.

5. Accessing BI from the PXP community

Another way businesses benefit from BI is by purchasing pre-prepared reports which have already been created by other platform users who are happy to make these reports available to others. This allows a café owner, for example, to consult the platform to see whether there is an existing report on prime locations for new outlets, or a property company might be able to access pre-prepared reports on distressed assets.

The skills of specialist researchers can be purchased within the platform too, thus saving time for busier users who do not have the resources or skills to create the more detailed reports for themselves. These elements ensure that PXP is becoming a rich interactive community of information exchange to help businesses and investors.

5.1 User scenario: using the PXP community

This case illustrates how the platform connects three parties, a person in need of BI, someone with the knowledge to conduct the research, and the PXP platform.

The owner of a building services firm requires specific geographic and industry research to locate specialist companies in the building trade to create partnerships with. The business owner contacts a researcher through PXP who has the knowledge to respond to this BI request.

The researcher compiles a report which includes the mean and median sales of each prospective company, along with data on receivables and payables, using the PXP platform. This information is clearly presented in a tree map format which makes it easy for the business owner to make comparisons between the companies.

The researcher also generates a heat map of the most influential players in a particular sector. This shows where each of the companies are located and identifies areas where certain businesses have the highest concentration, along with a description of these areas. The report also includes links with census data, providing a profile of the areas in question.

When the research is completed, the researcher is rewarded with Populous XBRL tokens (PXT), the payment system used on the platform, which is outlined later in this paper.

The business and the researcher are connected through the platform, and the PXP community grows stronger.

6. BI at your fingertips

PXP provides easy access to all the data described in the above scenarios and more. With the analytical tools available, businesses can cross reference, identify trends and generate new insights which help them find answers to their business questions.

Examples of the resources available through PXP include:

6.1 Financial information

For a business considering investing in or entering into a partnership with a company, it is essential to have a clear understanding of that company's financial performance. Similarly, when deciding whether to trade with, buy from or sell to a company, it is important to know whether it has a good track record of paying its invoices promptly and meeting its financial commitments.

PXP provides businesses with this information in the following ways:

XBRL format

XBRL format is a computer language which is used for communicating and exchanging business performance reports. XBRL brings all this information together in a standardised format, making it easy for users to draw comparisons and weigh up the financial health of a company.

Companies submit financial statements to government regulators each year. XBRL uses these statements and internationally standardises this data so that it can be reviewed and compared, regardless of geographic origin.

As such, XBRL data has become a global standard for exchanging business information and is freely available to anyone.

PXP has built XBRL into its in-house credit reference system, and with this XBRL engine, useful data can be extracted that gives users the ability to predict multi-industry trends in real-time.

Companies House

Companies House is a UK government agency which registers company information and makes it available to the public. This data is taken from more than two million sets of financial statements that are collected every year as they are filed with Companies House.

Populous, the organisation behind PXP, currently collects approximately one petabyte of data – the equivalent of nearly 20 million four drawer filing cabinets filled with text documents – every six to 12 months. This is an exceptionally large amount of data that we are able to extract useful insights from, using automated analytical tools, for our users such as the profitability and liquidity of a selected group of entities.

Land Registry data

The government makes available information about registered land and property in England and Wales which is commercially and residentially owned.

- The commercial data is a rich source of information about companies, including the registration number, address of the property, price paid and the country of incorporation, providing users with an essential overview of any organisation they are planning to trade with.

- The residential information provides details of property prices, previous owners and boundary information.

6.2 Population information

For a business investigating areas for relocation, or a retail chain looking for the right place to open a new store, information about the demographics, housing and infrastructure in that area is absolutely key.

Equally, decisions taken in the public sector need to be informed by data about local populations. Knowing how many single people, families and retired people there are in any given location can help to identify where a new school should be built or ascertain the need for childcare settings or provision for the elderly.

This information is collected by a census and many types of censuses are carried out globally including business, agricultural and traffic censuses. PXP makes this available to the businesses that use its platform.

UK census data

The Office for National Statistics (ONS) conducts a census of the UK population every ten years. Census statistics help paint a picture of the nation and how we live.

If harnessed, this data is a key source of insight for commercial organisations in reviewing areas in the UK for business opportunities. An investor would be able to focus on a location and see at a glance details of local traffic, population density, ethnicity and gender, postcode classification and average incomes.

7. Business intelligence on the blockchain

In a bid to make BI technology more affordable and accessible, the team behind PXP made the decision to ensure payment can be made via the blockchain, using smart contract technology.
Because the blockchain is a decentralised system that exists between all permitted parties, there's no need to pay intermediaries or middlemen, which saves time and helps to avoid conflict.

Decentralisation

Decentralisation enables the platform to run autonomously so the entire process is automated, resulting in multiple benefits including time saving, efficiency and the lower costs associated with a peer-to-peer system.

The blockchain database isn't stored in any single location, so the records it keeps are truly public and easily verifiable. No centralised version of this information exists, making it hard for a hacker to corrupt, so that any transaction between PXP and its users is secure.

Blockchains are undeniably, faster, cheaper and more secure than traditional systems, which is why banks and governments are increasingly turning to them.

7.1 The Populous XBRL token: PXT

To enable customers to benefit from BI resources, Populous XBRL Tokens, or PXT can be used as payment for BI data requests through the platform.

PXT is an ERC20 token with a value that can be sent and received, rather like Bitcoin, Litecoin or any other cryptocurrency. PXT runs on Ethereum, one of the most popular cryptocurrency and blockchain systems.

ERC20 Tokens

The reason we have chosen the ERC20 token standard is due to its broad compatibility. By working across most other platforms and running hand-in-hand with smart contracts, PXT is a flexible, easy to use payment method.

PXP users can visit the platform and exchange their PXT for credit, which they then use to purchase BI reports. The pricing of the platform's services is set by smart contracts and when a user purchases data, smart contracts ensure the payment is made and the report is received.

7.2 Smart contracts

Smart contracts are a form of digital agreement. A smart contract uses computer code containing a set of rules under which the parties to a contract agree to interact with each other.

Smart contracts use blockchain technology to help individuals and businesses exchange money, property, shares or anything of value in a transparent, conflict-free way while avoiding the services of a middleman. The value of the exchange is only unlocked when certain conditions are met, such as goods and services being delivered, ensuring the security of a transaction.

This enables users to access and pay for their data safely, easily and swiftly.

8. Delivering the data

To deliver BI to its users, and to connect the platform community, PXP uses oracles. Oracles provide the necessary data that ensure smart contracts execute when the original terms of the contract are met.

8.1 Oracles

In the blockchain, an oracle is the element which provides the necessary data to ensure the transaction completes correctly. It is necessary because blockchains like Ethereum do not have easy access to information outside the chain, and there is no direct way to validate the smart contract conditions.

For instance, smart contracts cannot access the current value of the US Dollar, the price of gold or the latest exchange rates, so an oracle needs to provide this information and translate it into the smart contract. The oracles bring trusted, up-to-date information into the blockchain so that the contracts between PXP and its users can be fulfilled when the terms specified have been met.

The oracle confirms that the data fetched from the original data-source is genuine and untampered. This is accomplished by returning the data together with a document called authenticity proof.

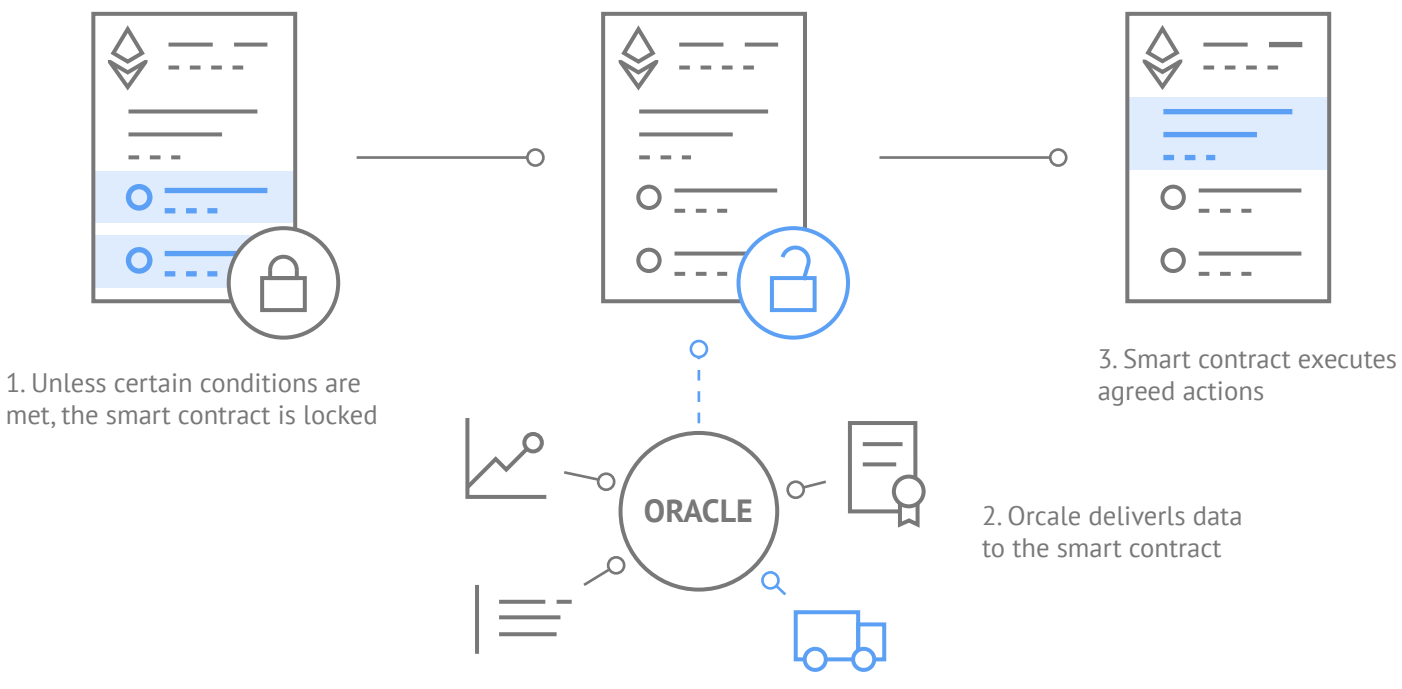


FIGURE 1: SMART CONTRACTS AND ORACLES

Example of an Oracle

For instance, a user would require the foreign exchange price of ETH/USD when ETHER, the Ethereum currency, is deposited into his smart contract app. The user may need this data to determine the price of Ether 'ETH' so he can allocate the products or services at the current USD price, therefore not losing out on foreign exchange risk.

IPFS

Oracles can also contain data from the InterPlanetary File System (IPFS). IPFS is a hypermedia distribution protocol created to make the web faster, safer, and more open. By storing multiple copies of data, the IPFS protocol, considered to be a tool for building a more permanent web, makes data more difficult to erase.

The IPFS data source type can be used to retrieve the content of a file on the IPFS network, making sure that transactions are carried out safely and accurately.

9. How PXP works

9.1 How the platform flows

Actors:

Administrator
The platform and administrator who also generates reports for purchase.

Researcher/Seller
The person who takes it upon him or herself to create a report for possible sale.

Business/Buyer
The person who purchases the report that is on sale or any other service such as API or Oracle.

System modules:

XBRL Engine

API

Oracle

Credits/Payment/PXT

9.2 Breakdown of pricing

This example shows how pricing works on the PXP using PXT.

If the price of 1 PXT = £15. Then the following applies:

- 1 PXT = 10,000 credits
- 1 PXT = 5,000 API calls = 10,000 credits.

The credits have purchasing power which can be used to buy reports, so for instance:

- 1 PXT = 30 Company Credit Reports = 10,000 credits
- 7 PXT = 7 Industry Reports = 70,000 credits.

The more traffic the platform attracts, the more the value of the token will increase. Therefore PXT's value is tied to demand for the data.

10. Platform interactions

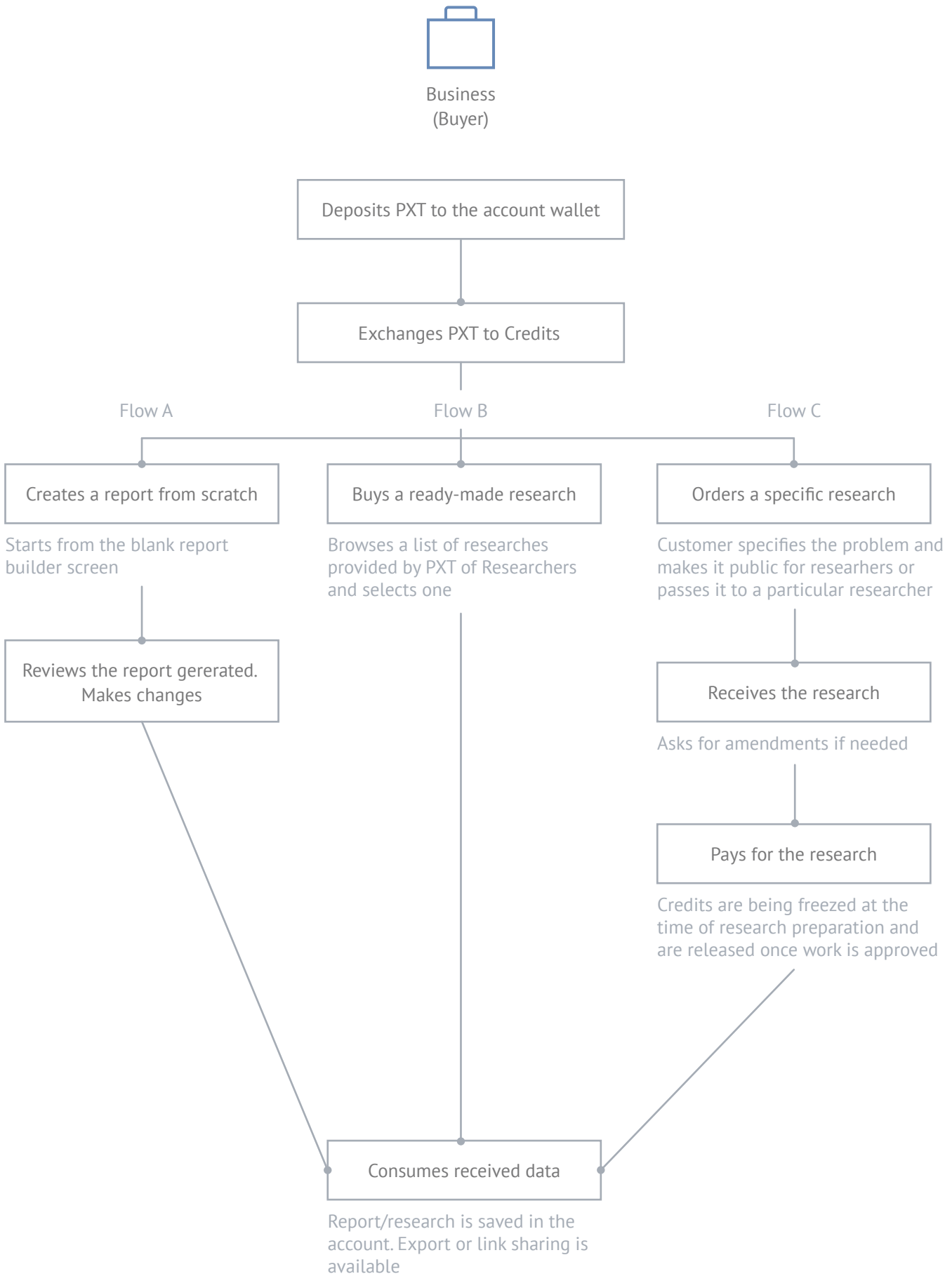
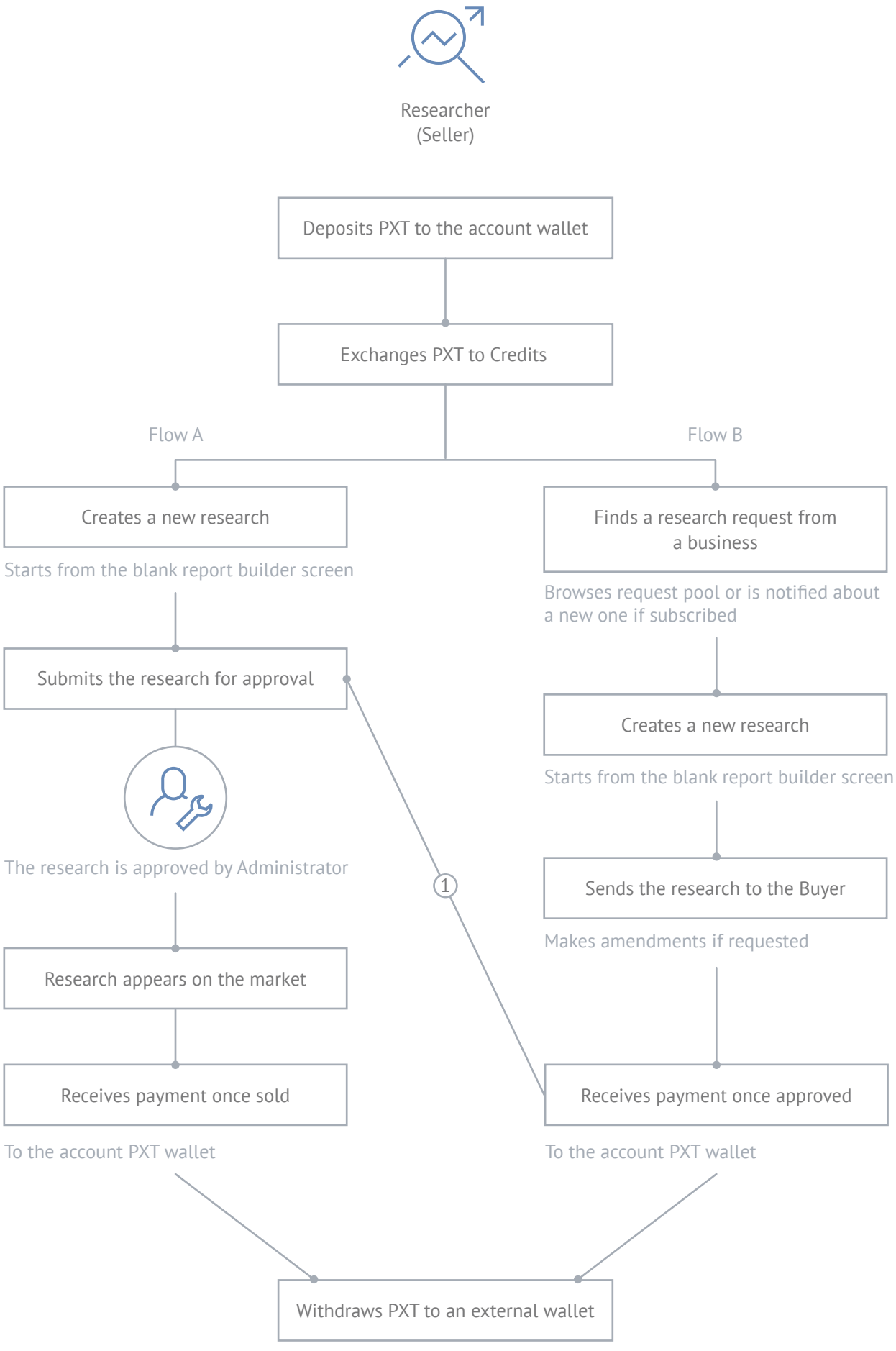


FIGURE 2: A DIAGRAM OF THE WAY PXP WORKS: BUSINESS/BUYER



(1) The research may be sold on the market if agreed with Buyer.

FIGURE 3: A DIAGRAM OF THE WAY PXP WORKS: RESEARCHER/SELLER

11. Cost effective data sharing

So how can PXP enable customers to access, analyse and interpret the data they need, while keeping the costs as low as possible?

The solution is to make the data available via a private API (application programming interface). An API is a software intermediary that allows two applications to talk to each other.

A good example of an API is when you use an application on a mobile phone which connects to the internet and sends data to a server. The server then retrieves that data, interprets it, performs the necessary actions and sends it back to your phone. The application then interprets that data and presents you with the information you wanted in a readable way.

With a private API, the publishers have total control over what and how applications are developed. This will keep the costs down for our users, enabling data to be shared simply and securely.

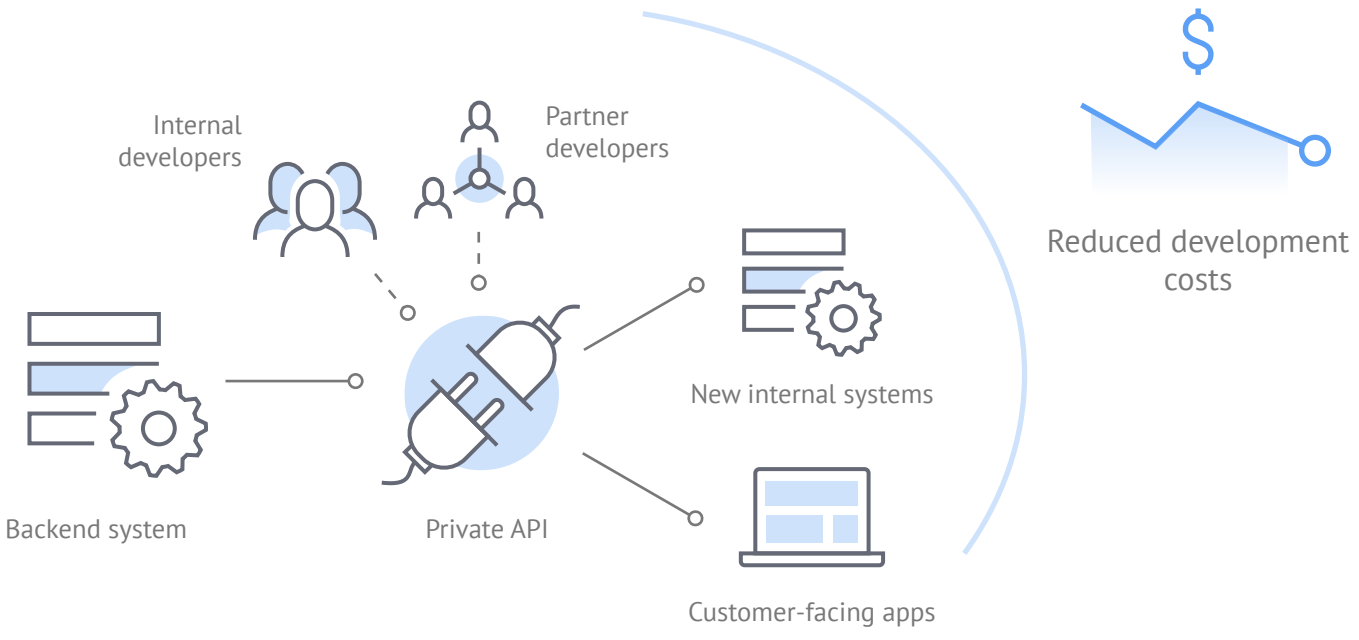


FIGURE 3: PRIVATE API

By using oracles to activate smart contracts on the blockchain and passing on the cost savings of developing a private API, users can rest assured that they are benefitting from secure, real-time data at the best possible price.

PXP users will therefore be able to buy the industry reports they need online and make a payment according to the price of PXT at the time of purchase.

12. Conclusion

To compete in today's fast-paced, global marketplace, businesses need to make informed strategic decisions. They can only do this with the right data to hand. These days there is no shortage of data, and the sheer abundance of facts and figures can lead to confusion rather than clarification.

Sharper insight and a clear view of the bigger picture are key ingredients of successful strategic planning. Businesses are starting to recognise the importance of BI, and to acknowledge its central role as the engine room of the decision-making process.

PXP offers a fast, efficient and cost-effective solution for organisations looking to enhance their BI capability. By making big data more easily accessible to the user and enabling targeted analytics of demographic and company information with XBRL financial data, PXP is opening up new opportunities for business, investors and service providers from across the industry spectrum.

Providing a service using the blockchain, PXP enables its users to benefit from the cost savings inherent in private API technology and helps them to cut out the middleman with the help of smart contracts. The result is that business users gain the BI they need to build a healthy, sustainable future.

By offering high quality, low cost BI on the blockchain, PXP's disruptive technology is a game-changer for the business community.

To find out more about how PXP can help your business to succeed, please contact us on

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