BLOCKCHAIN in AUTOMOBILITY

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VISION [1]

Automakers are starting to investigate blockchain, a novel and disruptive technology that might be vital to the development of a mobile environment in which autonomous and linked vehicles are the norm.

Ford, General Motors, Fiat and Chrysler which are based out of Windsor-Detroit are also into Decentralized Supply Chain Network.

We are proposing a system that will be extremely beneficial to the Windsor-Essex community in the production of automobiles

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Blockchain and Its Use Cases [1]

Blockchain technology has the potential to play a significant role in assisting with the upcoming automobile industry change.

The opportunities for blockchain in the automotive industry are limitless and the interest of businesses in implementing and integrating blockchain with the automotive industry is bound to grow within the next 2-3 years.

Automotive supply chain with Blockchain Moderation[2]

Authenticity may be traced throughout a vehicle's life cycle, from production to disposal, by assigning unique RFID tags to each individual component and then registering this ID on a blockchain

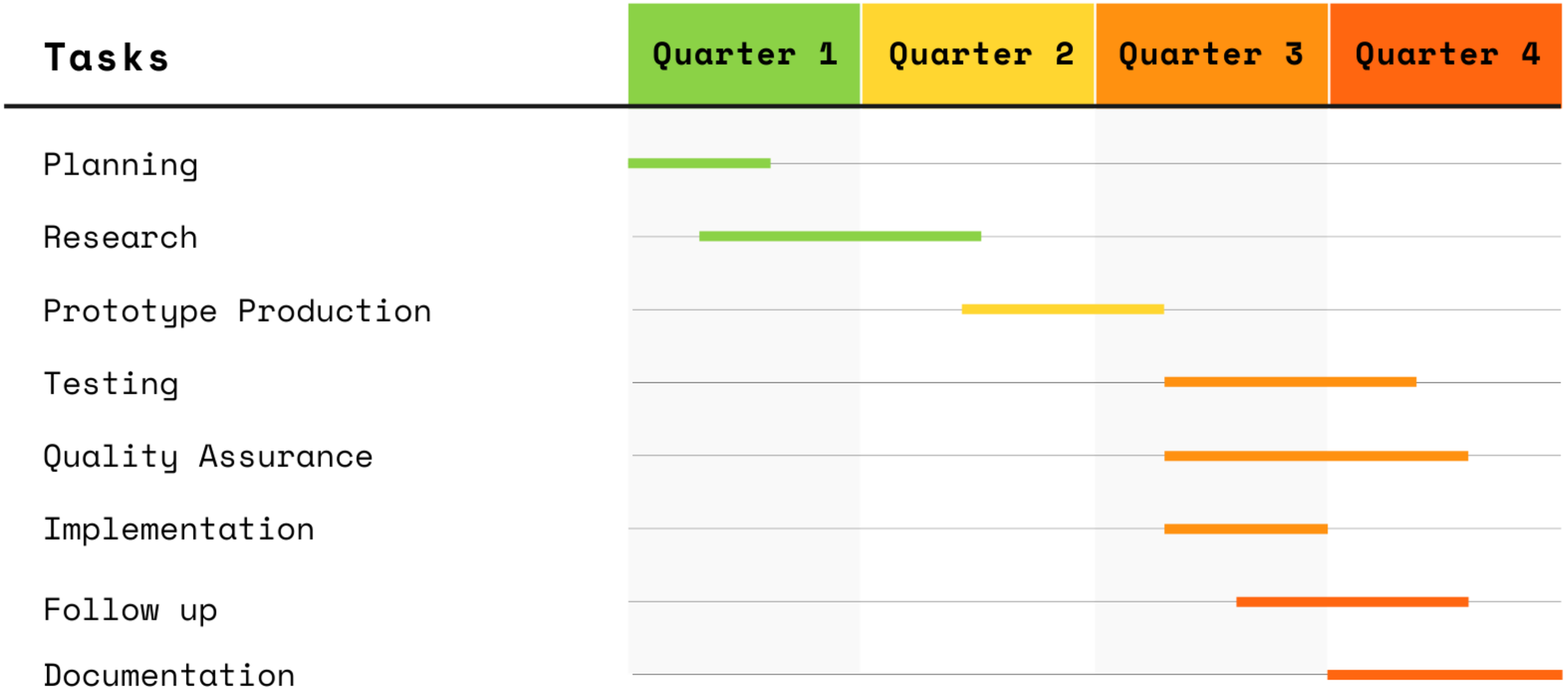
Blockchain to monitor Authenticity[3]

The use of blockchain for monitoring authenticity can assist to greatly reduce costs associated with recall efforts.

Blockchain for payments in Automotive Industry[4][5]

The information of the user will be validated by a trusted third-party service for payment, which will then supply the user with the identification attribute.

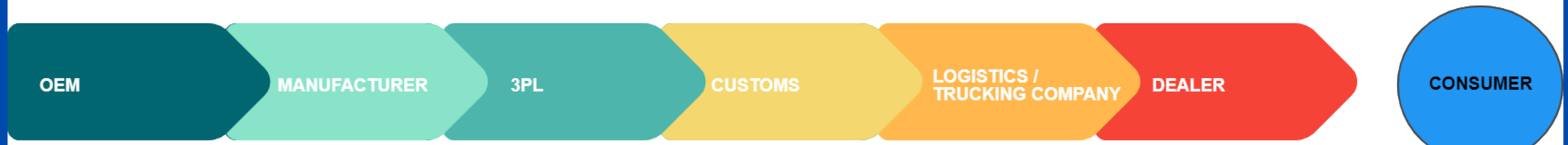
Proposed Timeline



Phases of Automotive Blockchain validation

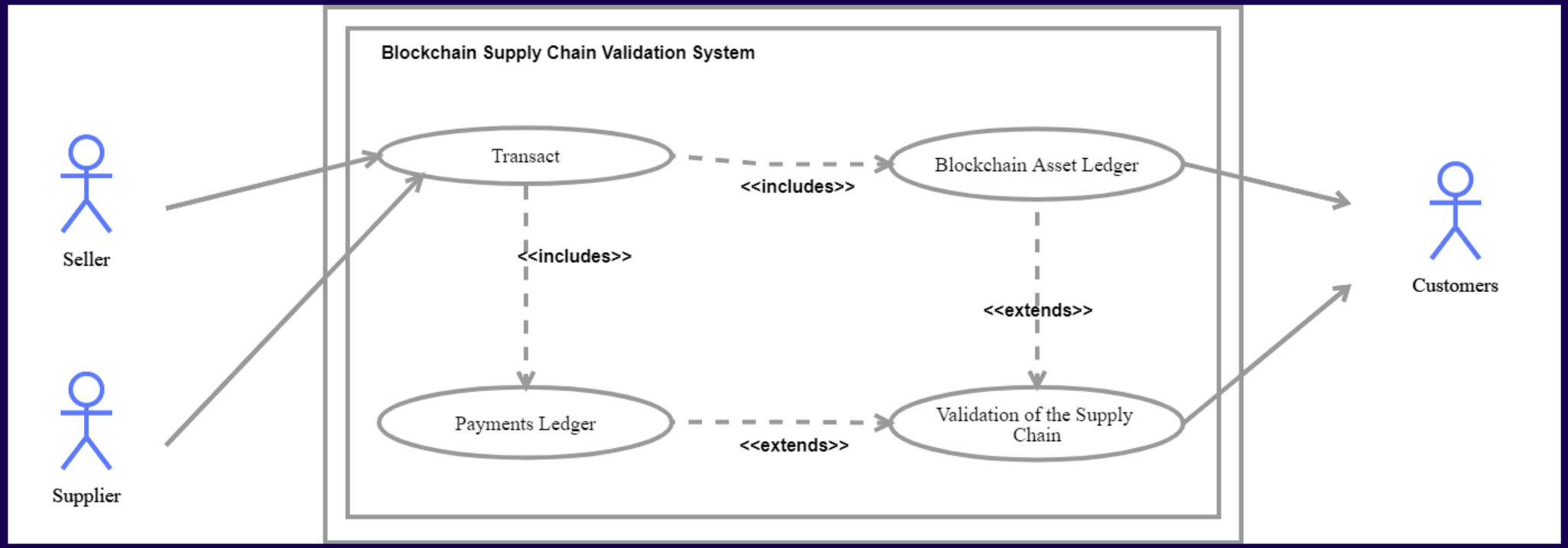
A six step framework is followed in order to supply a consumer with a car and an entire validation system is to be followed in order to complete the same.

Phases of Automotive Blockchain Validation



1	2	3	4	5	6
Original Equipment Manufacturer produces parts for Companies like Chrysler, Ford etc. and updates the ledger with Unique node associated with the distributed blockchain	The car Manufacturer like Fiat, Chrysler or Ford	A Third Party Logistics company registered on the distributed blockchain which validates the parts	Customs and Port Entry Officials to verify proper import/export of supplies	Trucking Company to bring the finished products as in the cars from the ports to the dealers	The car dealer sells the car to the consumer who then becomes the owner of the node which is a part of the blockchain since the car is a part of the blockchain.

Blockchain Supply Chain Validation Use-Case Diagram



BENEFITS[4]

1

Improving resources and asset management

The blockchain allows us to track the origin of individual car parts, which opens prospects for not only cost savings but also greater asset usage.

2

Improving end user experience

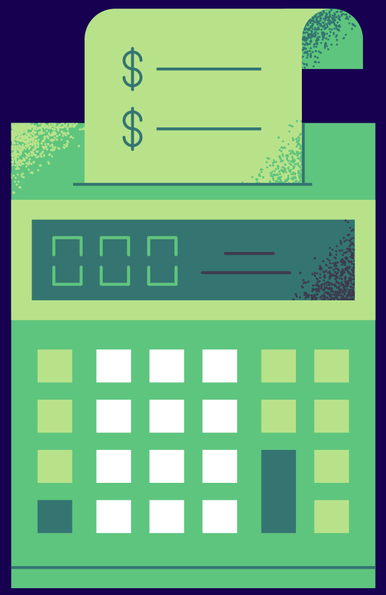
Better products at cheaper costs will result from a more efficient and transparent manufacturing process.

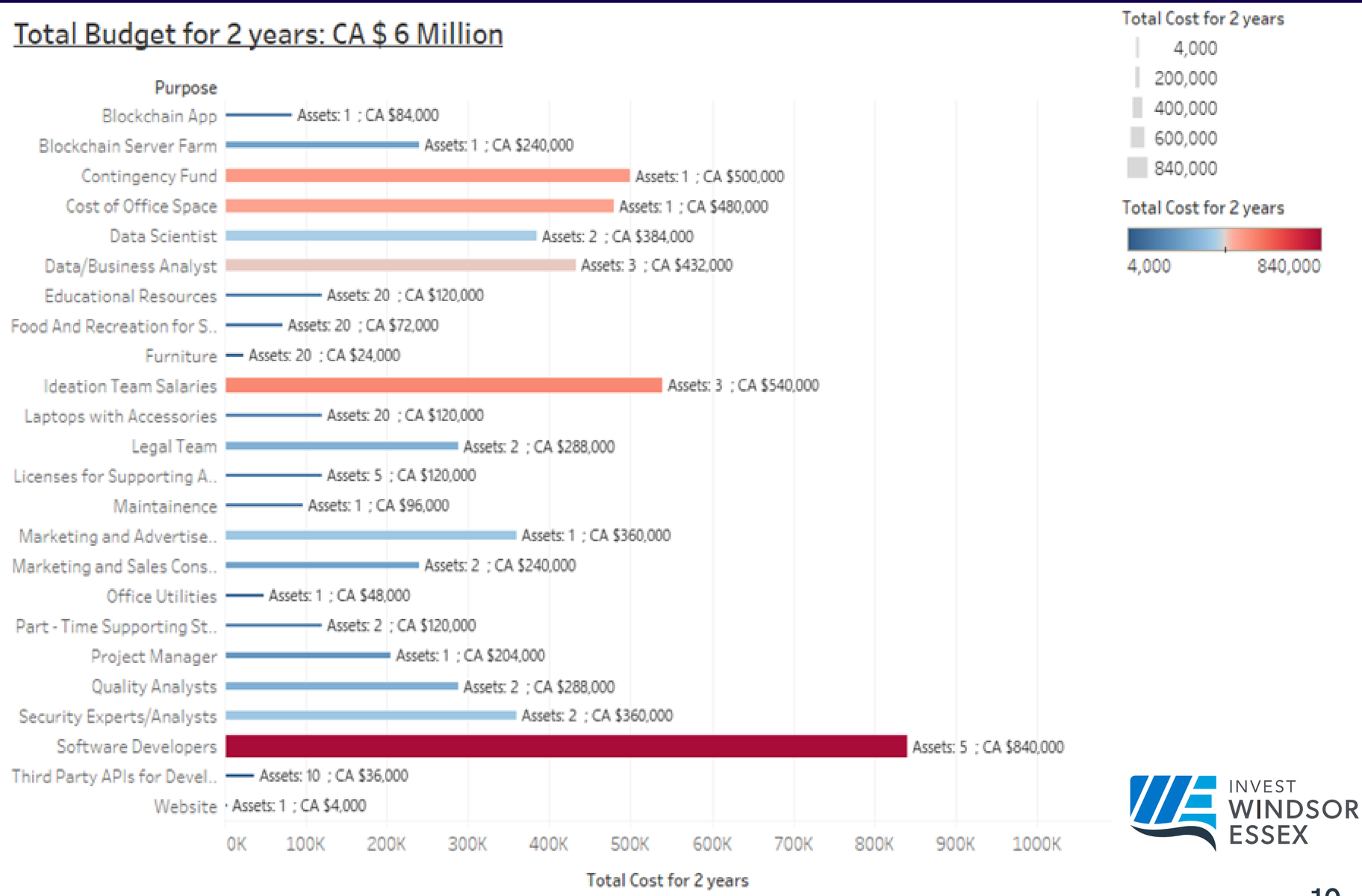
3

Cutting Cost

Streamlining the supply chain and increasing responsibility throughout the network of suppliers will allow the company to save money across the spectrum.

BUDGET





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CHALLENGES AND ETHICAL IMPLICATIONS[8][9]

DATA QUALITY

ENVIRONMENT ASPECTS

STANDARD-IZATION

REGULATIONS

SMOOTH INTEGRATION

FINANCIAL RESOURCES

SECURITY PROBLEMS

SUSTAINABILITY AND SCALABILITY

LACK OF BLOCKCHAIN DEVELOPERS

PROPOSED SOLUTIONS[8][9]

Data Access

Determine multiple levels of data confidentiality so that unauthorized users, such as third parties, do not have access to information they should not.

Planning the Architecture

We must carefully plan the architecture of the system, considering all APIs (Application Programming Interface), containers, and microservices.

Training

We need to train our developers to adapt to the blockchain technology and allocate some resources towards their training.

Environmental

The problem of increase in number of mining warehouses for meeting computational power needs can be solved by using Holo-chain method.

Regulations

To get over these challenges, governments and extremely controlled sectors may need to create regulations for blockchain

Risk Mitigation Matrix for Blockchain in Automobility

	Third Party Applications	Security of E-wallets	Public Keys	High Energy Demands	Cost and Implementation	Legacy Systems	Expertise Knowledge
Low Risk	Low Risk						
Moderate Risk		Moderate Risk	Moderate Risk		Moderate Risk		Moderate Risk
High Risk				High Risk			
Very High Risk						Very High Risk	

CONCLUSION

- AFTER REVIEWING A VARIETY OF POTENTIAL USE CASES FOR THE TECHNOLOGY, IT IS CLEAR THAT BLOCKCHAIN IN AUTOMOTIVE HAS THE POTENTIAL TO SIGNIFICANTLY BENEFIT THE INDUSTRY BY IMPROVING SUPPLY CHAIN PROCESSES, INTRODUCING TAMPER-PROOF RECORD KEEPING, STREAMLINING PRODUCTION, AND SUPPORTING OTHER INNOVATIVE TECHNOLOGIES AND TRENDS.

- THE OPERATION OF SYSTEM SHOULD BE SECURED FROM HOSTILE OPERATIONS, BECAUSE FAILURES IN SUCH SYSTEMS HAVE DISASTROUS REPERCUSSIONS. USERS WHO ARE NOT ALERT ENOUGH, LIKE WITH OTHER TECHNOLOGY EMPLOYED IN THE DIGITAL ERA, ARE THE WEAKEST LINKS.

- CAREFUL CONSIDERATIONS BY THE DEVELOPERS AND MANAGERS WILL BE THE KEY STEP TOWARDS THE SUCCESSFUL IMPLEMENTATION OF THE PROPOSED PLAN FOR THE AUTOMOBILE BUSINESS.

References

[1] "Blockchain Risk Management," Deloitte, [Online]. Available:https://www2.deloitte.com/content/dam/Deloitte/us/Documents/financial-services/us-fsi-blockchain-risk-management.pdf.

[2] A. Jain, "Blockchain App Development Cost Breakdown in 2021," 16 October 2019. [Online]. Available: https://oyelabs.com/blockchain-app-development-cost/.

[3] The Mobility Blockchain Platform," June 2021. [Online]. Available: https://www.orange-business.com/sites/default/files/mobility-whitepaper_june21_final.pdf.

[4] "Blockchain in automotive," [Online]. Available: https://limechain.tech/blockchain-use-cases/blockchain-automotive-industry/.

[5] T. Phillips, "Automotive IQ Guides: Blockchain in the Automotive Industry," 04 June 2020. [Online]. Available: https://www.automotive-iq.com/electrics-electronics/articles/automotive-iq-guides-blockchain-in-the-automotive-industry.

[6] G. Iredale, "Blockchain Risks Every CIO Should Know," 21 Feb 2021. [Online]. Available: https://101blockchains.com/blockchain-risks/.

[7] T. B. K. A. I. M. K. S. A. P. Saltanat Narbayevaa, "Blockchain Technology on the Way of Autonomous Vehicles," [Online]. Available: https://pdf.sciencedirectassets.com

[8] D. Turpitka, "Five Challenges To Prepare For When Using Blockchain For Supply Chain Operations," 29 September 2020. [Online]. Available: https://www.forbes.com

[9] L. H. Y. A. Muhammad Rizqi Nur, "CHALLENGES IN USING BLOCKCHAIN FOR SUPPLY CHAIN MANAGEMENT INFORMATION SYSTEMS," May 2020. [Online]. Available: https://www.researchgate.net

THANK YOU!!

WE ARE READY FOR ANY QUESTIONS