Automotive Platform for Supply Chain

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Bosch has been a household mane for the past 130 years in more than 100 countries, known for its values, quality and more importantly the vision of "Invented for Life." Supplier Transparency is key especially in the era of COVID. Regulations and demands from governments, consumers, NGOs, and other stakeholders ask Organizations to divulge more information about their supply chains, and the reputational cost of failing to meet these demands can be high. Supply chain transparency requires companies to know what is happening upstream in the supply chain and to communicate this knowledge both internally and externally. Organizations and suppliers have feared that divulging too much information would undermine their competitive advantage or expose them to criticism. Another reason is relevant information, such as details of upstream supply chain practices, may not be collected or if it does exist, may be erroneous. Finally, the ROI for investing in transparency does not always satisfy near-term requirements.

1. PROBLEM STATEMENT

Develop a truly decentralized, democratized, transparent Supplier Platform across the supply chain based on Blockchain technology.

Stakeholder	**Roles/Tasks**	**Key Expectations**
Tier 1 Supplier	➢ Create Automotive parts ➢ Create Auto part serialization with unique identity. ➢ Create and manage inventory, serialize the batches and send them to OEM and Dealers of auto market parts	Ability to prove and provide relevant information that all contractual obligations per the contract are adhered to for the part supplied Ensure the information provided is always up to date
OEM – Vehicle Manufacturer	➢ Check incoming auto part ➢ Assemble them in Vehicle ➢ Ship vehicle to warehouse and dealers	1) Ensure the supplier is adhering to the below contract obligations for the part taken from the supplier: • Adequate working conditions: Workers are given appropriate safety gear, minimum work wages, working environment and working time. Any work beyond working time is compensated • Environmental protection: Supplier needs to ensure SVHC (substances of very high concern) materials are not used or are used to permissible limits 2) Suppliers will be subject to the external yearly audit and based on the audit the supplier will be able to provide the services for a period of one year. During the year a surprise audit can happen and f the supplier is not complying to these regulations then the supplier can no longer provide the services. 3) OEM should be able to show to dealers or customers that their suppliers are complying to the contractual obligations. This should be done without revealing any competitive information such as supplier name, supplier material mix indicating SVHC information but a

		obfuscated layer of supplier information should be shown
Multi brand dealer	Sells cars	Once the vehicle is shipped then dealer should be able to view that OEM's suppliers are complying to the contractual obligations
Customer	Buys vehicle	Before buying the vehicle the customer should be able to view that OEM's suppliers are complying to the contractual obligations

Key requirements: DLT & Smart contract:

- Transparent and reliable data flow management to visualize (static visualization) the physical flow of information.
- Stakeholder access and data management following privacy & security laws.
- If supplier is not meeting the contractual obligation then supplier should be automatically removed post OEM's consensus
- Automated stakeholder reputation management to provide trust levels (rating system) is available to selected stakeholders – Use appropriate parameters in the context of DLT platform is available to be viewed across the ecosystem

Deliverables for Demonstration

- Participating teams will need to build a working system on an available Blockchain platform of their choice and other privacy preserving techniques (preferably Hyperledger Technologies) fulfilling key requirements across smart contracts
- Participating teams are requested to create user interfaces for stakeholders
- The solution must follow a mobile compatibility approach (PWA / Web views for Mobile) for all stakeholders and use web-based interfaces on a need basis.

Stakeholder configuration:

Supplier	A, B and C	A creates Part 1 (example: spark plug) B creates Part 2 (example: tire) C creates Part 3 (example: steering wheel)
OEM	AA and BB	AA creates Vehicle 1 -10 BB creates Vehicle 11 -20
Dealer	AAA, BBB and CCC	N/A
Customer	AAAA and BBBB	N/A
Supplier reputation system	An independent system that is updated on a distributed manner. None of the stakeholders owns this system and is	Supplier A, B and C have to provide relevant information for Adequate working condition and environment

	held by the common services of the consortium	protection. System will approve supplier A , B and C based on automated checks. OEM's before taking services from Suppliers systematically check this system and only solicits parts from approved suppliers.

2.1. Scenario

- Create a multi node Blockchain network across the supply chain based on below scenarios
- Track and trace following scenarios:

Scenario	Description	Expectation
Scenario1	• Supplier A, Supplier B and Supplier C provides parts (Part 1, 2 and 3) to OEM A. • OEM A receives Part 1, 2 and 3 as they meets the contractual obligation and creates vehicle 1 and 2 by using part 1,2 and 3 • OEM A sends the vehicle 1 and 2 to Dealer AAA and Dealer BBB. Dealer AAA and BBB are able to verify the supplier contractual obligation information • Customer visits Dealer AAA and verifies the supplier contractual obligation information form Supplier A, B and C before buying Vehicle 1	OEM, Dealer and Customer are able to verify the contractual information from suppliers
Scenario 2	• Supplier A, Supplier B and Supplier C provides parts (Part 1, 2 and 3) to OEM A and OEM B. • OEM B receives parts first. It accepts Part 1, 2 but not 3 as it doesn't meet the contractual obligation (surprise audit) and creates vehicle 11 by using part 1,2. OEM B updates the supplier reputation system. • Next, during receiving parts (after OEM B), OEM A systematically checks the supplier reputation system and notices that Part 3 doesn't meet the obligation hence removes supplier after notification to the non-compliant supplier. OEM A creates vehicle 3 by using part 1,2. • Vehicle 11 is sent to Dealer AAA and vehicle 3 is sent to Dealer BBB. Dealer AAA and BBB are able to verify the supplier contractual obligation information • Customer visits Dealer BBB and verifies the supplier contractual obligation information form Supplier A, B before buying Vehicle 3	OEM, Dealer and Customer are able to verify the contractual information from suppliers
Scenario 3	• Complete audit trail of vehicle 1,2,3 and 11 is available • supplier reputation system a shared ledger between OEM A and OEM B shows the Supplier rating for Supplier A, B and C. For supplier C it should show the time period for which it was complying and when it stopped complying	Complete Audit trail is available

- Provide a visual representation of all product movement along with information on contractual obligations
- Simulate all smart contracts on at least 4 products SKU including minimum 1 smart contract supplier contract obligation failure
- Provide a visual rating of supplier reputation that is visible only across OEM's

3. Evaluation Criteria
    - Implementation (50%)
    - Creativity (25 %)
    - Scalability (15 %)
    - Presentation (10 %)