



SAP
Innovation
Awards 2019



SAP Innovation Awards 2019 Entry Pitch Deck

Automation of Car Damage Detection

intelligence - NTT DATA Business Solutions

THE BEST RUN



Automation of Car Damage Detection

itelligence - NTT DATA Business Solutions



“Quote”

“Automated detection and recognition of vehicle damage increases transparency and credibility in a system of frequently changing drivers, such as car rental or car sharing business”



Challenge

Renting a car can be stressful, complicated and lead to disputes between customers and the rental company. Automation of damage detection and handling saves time, increases customer satisfaction and lowers operational costs.

Solution

With Image Recognition (IR) and Augmented Reality (AR) for capturing a vehicle condition, using Machine Learning (ML) and Blockchain (BC) for automatic detection and recognition of vehicle damage, we optimize the service and transparency for the rental car business and aftermarket industry.

Outcome

We deliver a working POC to showcase the “Automation of Rental Car Damage Detection” powered by SAP SCP with components of SAP Leonardo, UX, AI/Machine Learning and Blockchain as a Service (BaaS).

Decrease in maintenance costs by detecting unreported or concealed damages

Faster and Easier Check-out Procedure increase Customer Satisfaction

Transparency between Customer and Claims Management improve Customer Relationship



Partner Information

itelligence

Technology partner. We Transform. Trust into Value.



At itelligence, we focus on SAP solutions to create value for our clients. As a partner, we help them transform, grow and be more successful.

With this POC, we help re-imagining the future of mobility. Automation of damage detection offers the opportunity for enhanced user experience through digitization and new value added service to improve the performance of car rental services.

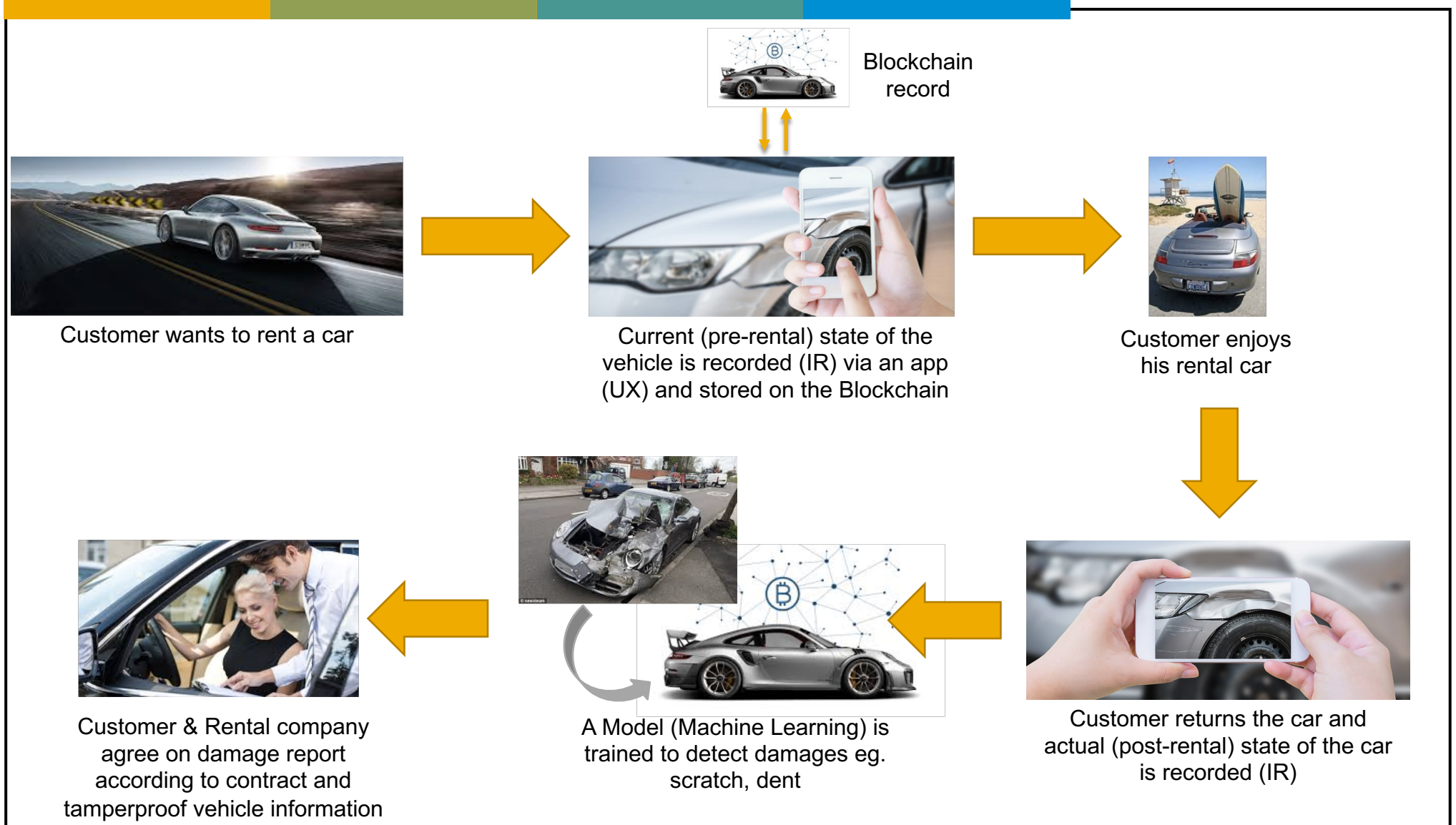


Business Challenge & Objectives

- Renting a car can be stressful, complicated and lead to disputes between customer and rental company about being (unfair and illegal) charged for damage.
 - Rental companies hold drivers liable for anything that happens to the vehicle during the rental period.
 - Customers complain that the damage occurred before or after the rental period, or pre-existing damage was not properly recorded by employees.
 - It is essential to have a secure and tamperproof pre/post-rental car damage report before/after driving the vehicle.
- The objective is to have a working POC to showcase “Automation of Damage Detection” powered by SAP Cloud Platform, with:
 - Reusable concepts and components for SAP Leonardo, UX, Blockchain, AI/Machine Learning
 - Customer feedback on user flow, design and architecture
 - Reference Customer story
 - Feasibility to Expand Industry Focus to industries with similar requirements, like Automotive & IMC aftermarket



Project / Use Case Details





Project / Use Case Details

Use case: “Automatic assessment of car damage with Image Recognition, Machine Learning and Blockchain.”

- **Image recognition:** Scanning the license plate to identify the vehicle.
- **Proof of state:** Capture the (pre- and post rental) condition of the vehicle with a smartphone. The state of the vehicle is stored as unchangeable data on the Blockchain.
 - **Pre-rental:** The current state of the vehicle is recorded and stored on the Blockchain
 - **Post-rental:** The state of the vehicle is recorded and the pictures are sent for analysis (Machine Learning). A model (ML) will be trained to detect damages, eg. scratches, windscreen.
- **Machine Learning (ML):** Employing machine learning, it will be possible to train a model to inspect a car and to detect damaged car (parts), assess damage. (In future smart contracts can be deployed to execute a cost report according to contractual agreements.)
- **Blockchain:** Implementing the blockchain technology provides a secure and trustworthy platform by ensuring the transparency and credibility of all rental transactions



Benefits and Outcomes

Business / Social

Credibility and Trust between Customer and Company

Faster and Easier Check-out Procedure

Lower maintenance cost by unreported or concealed damages

Value added service to improve rental service

IT

Enhanced technologies in car rental service:

- Image Recognition
- Machine Learning/AI
- Blockchain
- Object Storage
- UX (Mobile App)

Human Empowerment

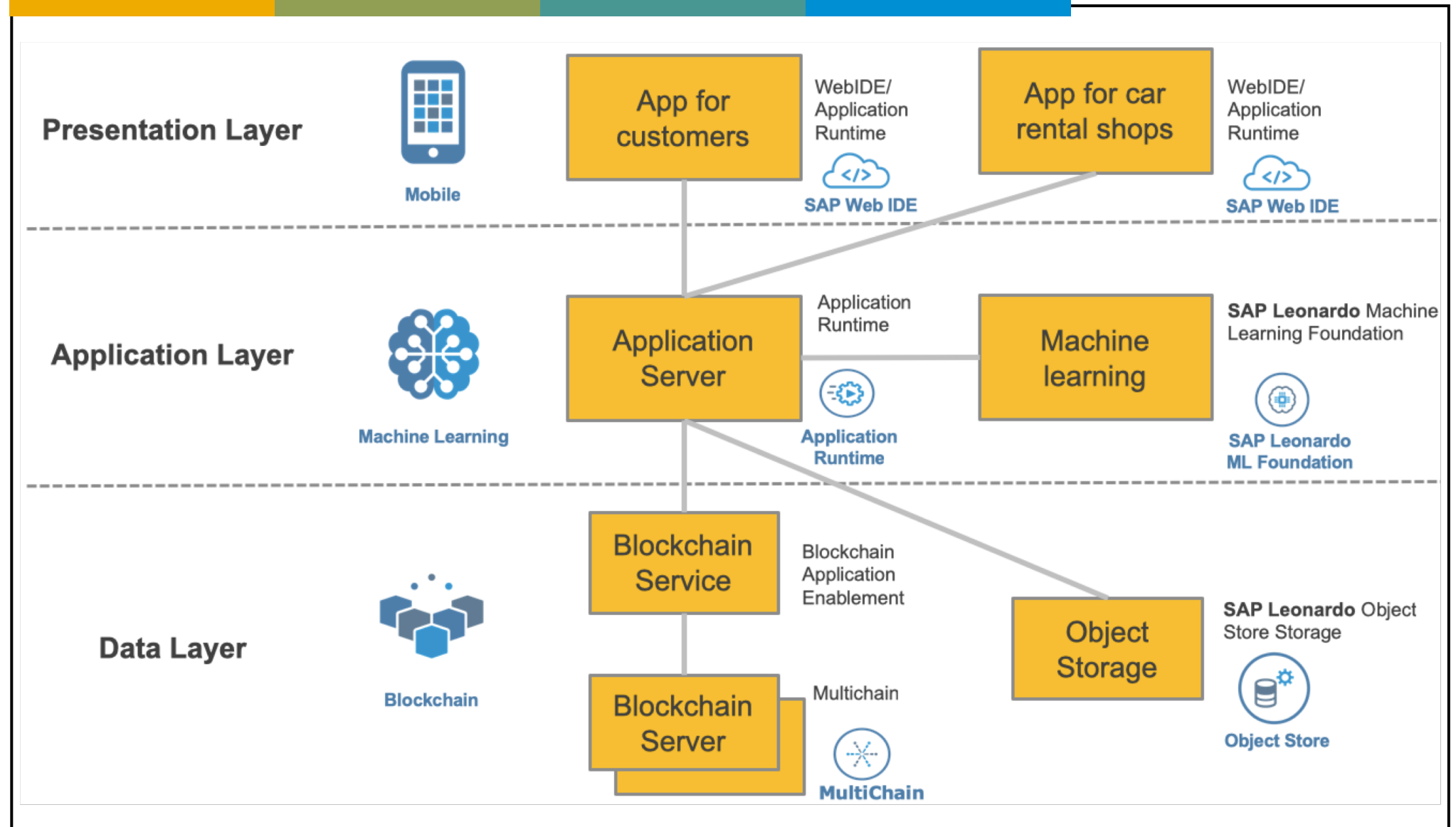
Enhanced user experience through digitization, enhanced technologies in car rental service

Transparency overall

Damage Inspection App to empower employees for better customer service



Architecture





Deployment

Date of Deployment or POC: 02/2019

Number of live users: POC

SAP Technologies Used:

SAP SCP		POC
SAP Leonardo	Blockchain	POC
SAP Leonardo	Machine Learning	POC
SAP Leonardo	Object Store	POC
SAP UX		POC

Server Processor: n/a

Linux Distribution: n/a



Emerging Technologies and Use Cases

The following Emerging Technologies and use-cases are part of the project and describe the contribution

	Technology or Use Case	Yes/No	Contribution to Project
1.	Machine Learning / Artificial Intelligence	Yes	Image Recognition and Machine Learning to detect damages
2.	IoT	No	
3.	3D printing	No	
4.	Blockchain	Yes	Tamper safe storage of pre/post-rental state to build trust
5.	API Economy / Integrate the Intelligent Enterprise	No	API to integrate Object Store, Machine Learning services and Blockchain services
6.	Cloud Native / Event Based Architectures	No	
7.	Extending the digital core with SAP CP / ABAP in SAP CP	Yes	SAP CP for UX development and integrating SAP Leonardo services for ML and Blockchain
8.	SAP Leonardo Application (extending SAP application, using Industry Innovation Kits or result of Design Thinking workshop)	Yes	Design Thinking workshop to define User Flow and UX components