ISMT-599

Capstone Paper

Gloco & EquipRentz
IoT and SAP S4/HANA-Leonardo
Business Transformation

Team 4

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1 Executive Summary

1.1 EquipRentz Overview

Our client EquipRentz.com is one of the nation's largest equipment rental services. With 8000 partner locations, they operate in all 50 states. They act as a portal to locate the requested equipment and facilitate the rental via one of their partners. While they do not rent out equipment of their own, they dramatically impact the efficiency of renting by linking users directly with the partner that has the equipment they require.

EquipRentz has exploded in popularity recently. With their new-found success, they have encountered a significant strain on their resources which have not properly scaled to meet their growing needs. They are experiencing noticeable lag in with both their customer and business portals, and many of their business partners have expressed frustration over this lag. Going forward they will need a solution that will improve both user and partner experiences and offers potential for new revenue streams.

1.2 IT Supplier

Currently, EquipRentz requires their own IT platform to interact with the IT platforms of their various Partners. This is an inefficient design which requires extra expense of time and effort to resolve. Additionally, they are on the cusp of introducing a telemetric device which will enable their partners to both monitor the health of their equipment and track its location to streamline the transport and delivery process. They have contracted with Gloco Consulting for advice and implementation assistance with managing this influx of data. Gloco Consulting is recommending using SAP's Leonardo suite of tools to gather and translate the telemetric data gathered from the IoT devices. They are also advocating the implementation of SAP S/4HANA in a cloud environment to improve the companies back-end performance.

2. Business Requirements

2.1 Business Goals

- **Develop an IoT solution to improve and compliment EquipRentz current offerings:** Gloco has also determined that beyond UX design EquipRentz has further opportunity to improve both their user/supplier relationships as well as their revenue generation via an IoT solution and analytics. With this in mind, Gloco will also be consulting with EquipRentz on the design and implementation of an IoT diagnostics and location systems to make available to suppliers as a service.
- **Improve EquipRentz Customer and User Experience:** EquipRentz is looking to provide additional services to attract and retain more renters and suppliers. The existing front-end web portal, therefore, needs to be enhanced to provide additional services as well ensure the renter and the supplier has an intuitive user interface, instantaneous performance of transactions, and added services such as transportation and repair services.
- **Improve EquipRentz Backend Systems:** EquipRentz does not own any of the equipment that they rent. Therefore their business model is entirely dependent on fostering and maintaining a positive user experience for both their renters and suppliers. By migrating their legacy systems to a cloud-hosted ERP system, they will gain the opportunity to:
    - Reduce Latency
    - Improve scalability
    - Improve the speed and accuracy of transactions

2.2.1 Existing (As-Is) Business Process:

Gloco's client EquipRentz is an Information Technology (IT) firm, which strives to provide their online services in the field of manufacturing and construction equipment. EquipRentz follows the traditional business model as the intermediary firm in between equipment supplier companies and renters. These are the components of the As-Is Business Process:

IT Infrastructure: EquipRentz provides a convenient web-portal to the renters, who need heavy construction equipment at their site(s), by connecting them with the third-party suppliers. The web application inserts the suppliers' inventory information and renters' orders in its back-end Oracle database. The complete application platform, i.e. web application and database are hosted on the bare metal (dedicated) infrastructure located at the corporate site of EquipRentz. The current on-premises infrastructure has poor scalability and could hinder business growth.

Web-Portal: The web application has different user views and functionalities for the renters and suppliers.

- Supplier view: The suppliers own the transport service along with the equipment. They can log in to the web application with partner login credentials and update their inventory status. The fields updated by suppliers on web-portal are Equipment Type, Id, Rental and Transport Rates, Location, and Availability window.
- Renter view: The renters, on the other hand, can view the inventory of suppliers, select and place the lease orders, and pay online. After the order is placed, renter receives the contact information of the supplier via email.

The web-portal just provides a browser-based utility for the users and doesn't have a mobile application yet. This limits the expansion of EquipRentz's business to the new consumer base who look for renting the equipment via new smart devices.

Order Processing: As the order is placed, EquipRentz sends email notifications to the suppliers with the information of order that contains: Equipment Type, Renter's site location, start and end date of the lease, and Renter's contact information. The supplier accepts the order by returning an acknowledgment email to EquipRentz, updates equipment availability in the inventory on EquipRentz web-portal, and contacts the renter to coordinate equipment delivery schedule. After that, the supplier arranges its transport–usually large flatbed trailer trucks–to deliver the equipment to the renter's site. The trucks pick up the equipment from the storage, deliver it to the renter's location and return deadhead, i.e., without cargo. After the lease ends, the renter calls the supplier to pick up the equipment. The supplier sends its truck that goes deadhead to the renter's site and brings the equipment back to the storage. The deadhead miles not only reduce the profitability of the supplier but also delay the delivery of the equipment to other renters who are waiting for the same equipment at the other locations.

There is limited equipment condition diagnostic data available to the suppliers for proactive maintenance. In some instances, the equipment doesn't even start up at the renter's site or breaks down in the middle of a project requiring the supplier to send the trucks again to replace the equipment at renter's site, which diminishes the supplier's profitability, delays the renter's project and ruins EquipRentz's reputation.

Revenue Stream: EquipRentz passes the rental revenue for the orders placed on its web-portal to the suppliers on a weekly basis after adjusting its service fee. The revenue stream for EquipRentz is limited to the suppliers that provide rental equipment via web-portal. EquipRentz hasn't completely tapped into the avenues of the digital economy in the current scenario. Image-A depicts the current business flow.

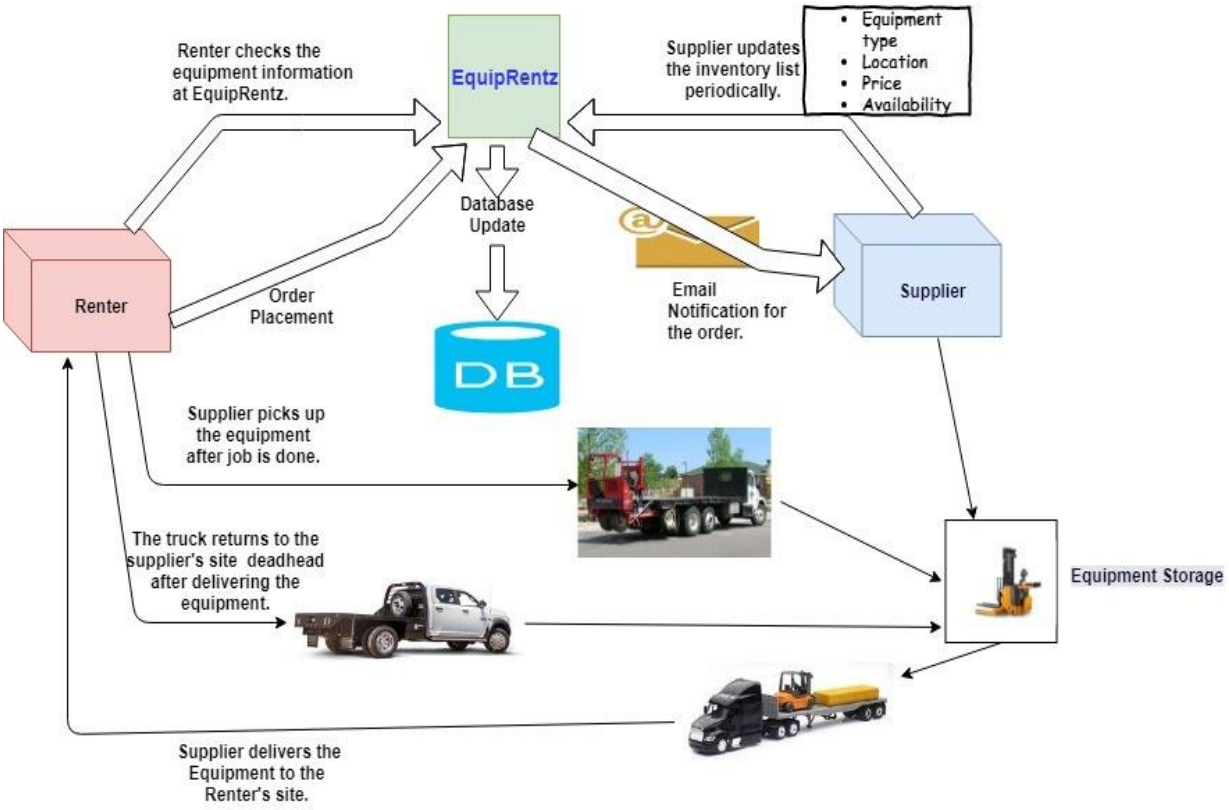


Image-A

2.2.2 To-Be Business Process and Architecture

Based on the exploration phase where all key stakeholders identified the future functional requirements (user stories), Gloco Consulting has developed an application architecture and process flows as inputs for the development of the technical design.

2.2.2.1 Functional Requirements

The following functional requirements were identified: (detailed user stories and process flows can be found in the appendix):

1. **Identifying Ownership of Equipment Transmitting IoT Device Data**– Provides the end to end flow of data communicated from equipment in the field, how the IoT data is linked with the owner of assets and also reporting on the condition and status of the equipment.
2. **Renter Request for Equipment and Transport** – Renter requests equipment and services and how this request is linked with the closest equipment and owner of the equipment and requested services.
3. **Repair Service Request** – Any partner in the EquipRentz network requests repairs and maintenance.
4. **Transport Service Request** - Any partner in the EquipRentz network requests transport services.
5. **Service Confirmation** - The transaction between the renter and/or service requester is confirmed and paid and how the ERP system will be utilized to confirm the transaction.
6. **Settle Service** – Settle the payment and service completion.
7. **Analysis and Reporting** – The following user stories are the required analysis and reports:
    a. Customer Experience reporting

b. Supplier Maintenance Analysis
c. Supplier Rent Analysis
d. Renter Rent Analysis

2.2.2.2 Non-Functional Requirements

A. IoT devices operation:

1. IOT should be water resistant at a rating of at least IP67.
2. The recharge time of the IoT should be no longer than 90 minutes to achieve full charge.
3. The IoT devices should be able to connect to all modern On-board diagnostic (ODB-2) protocols including and should conform to an international standard (e.g., SAE J1962) specification for US automotive.
4. The battery should be able to operate for 30 days until a recharge cycle is necessary.
5. The power consumption of the IoT device should be between 0.1-0.5W during a normal period.
6. The IoT device shall communicate to the cloud-hosted service via a cellular connection.

B. IoT Data Integration

1. Data "in motion" between the IoT and cloud service will be secured by an encryption protocol (e.g., SSL, TLS v1.2).
2. All data that cannot be processed immediately will be stored in a key-value datastore for later analysis.
3. The system architecture must be horizontally scalable to add commodity servers into a pool of I/O units. This is so that capacity to accommodate the communication necessary for added IoT devices is not impeded.
4. EquipRentz service shall be compliant with best practices of information security management and shall conform to ISO 27001 standards.

C. IoT Data Management

1. The data format used in communication between IoT and cloud service will use a key-value pair system that is easily recognized by most modern database and aggregator tools.
2. Access to the network and each system should be controlled through the use of individually owned accounts and their associated public/private security key and using 2-factor authentication methods.
3. Temporary users may have to be set up for test purposes on the production (live) environment. These temporary user accounts shall have only have a 30-day at which point they will expire.

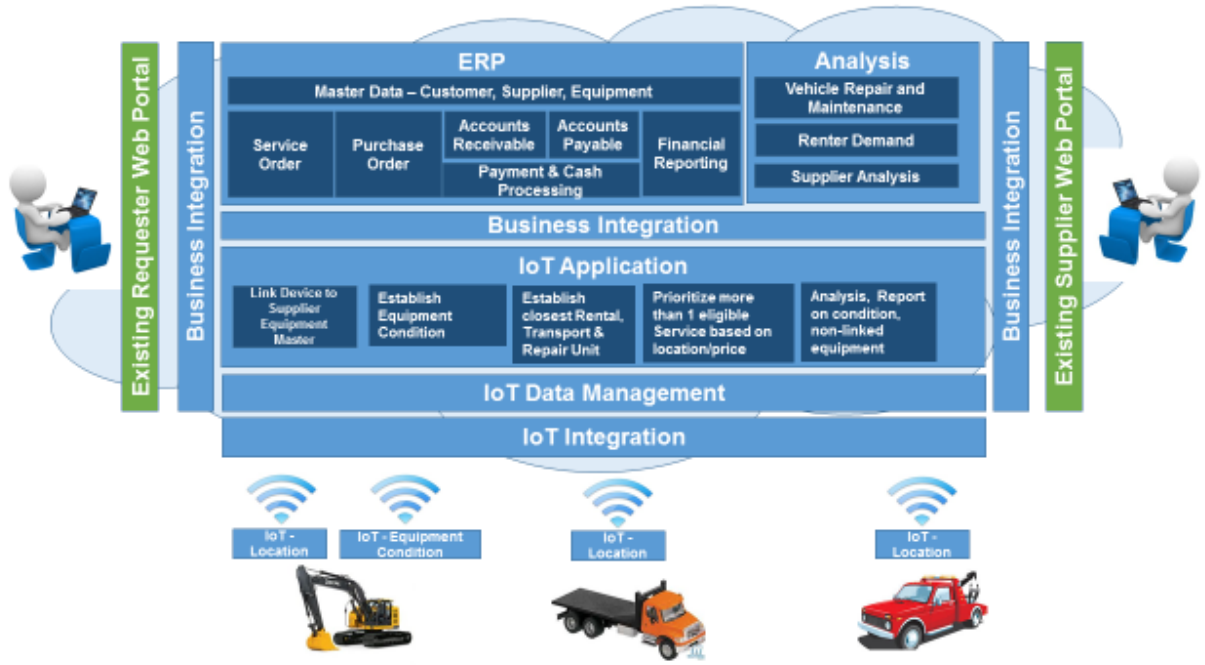
D. IoT Application

1. Users of a system shall not have access to other user accounts. This shall be enforced with 2-factor authentication.
2. Passwords should not be input within scripts or command line interfaces, unless they have been stored encrypted, hashed, or with access controls.
3. Applications should have controls to validate the correct processing of data to detect data integrity errors caused by processing errors or malicious acts.
4. Passwords should be encrypted during its transmission to the server for authentication.
    a. Developers who need to access production systems and applications for program maintenance or repair should be given temporary access. This temporary access should be revoked immediately after use.
    b. There should be separation of development, QA and live application environments.
    c. Audit trails should be linked to the user identity responsible for the security-relevant event.
    d. There should be audit trails of security-related events to help ensure application security.

e. Employees are responsible for reporting security-related incidents or suspicious activities immediately to help maintain application security.
f. Critical services should be identified as such and should be protected against denial of service conditions.
g. Messages from the IoT device to the service shall be processed in an asynchronous format.

2.2.3 To Be Application Architecture

The following application architecture is proposed in order to support the business requirements:



- **IoT Devices** – IoT devices will be installed on the equipment which includes rental equipment, transporters, and repair vehicles. The devices are small equipment-mounted IoT devices that have a small screen and simple user interface. The device will feature IP67 water protection and be powered by a small rechargeable battery. The battery will be recharged by a small attached solar cell and will have an endurance of thirty days without sunlight. EquipRentz will offer two versions of IoT devices, as follows:
  - One which only provides a location signal, for vehicles without onboard diagnostic capabilities.
  - The second device will have the capability to connect to the onboard diagnostics and will be able to transmit the condition of the vehicle.
- **IoT Data Integration** – The IoT data integration layer will provide the capability to communicate with the IoT devices and the centralized cloud data repository. The key requirements for integration are as follows:
  - Support of key protocols such as HTTPS, MQTT and REST
  - Capability to onboard new devices efficiently
  - Gateway edge and cloud options capabilities
  - Ability to customize protocols
  - Security management
  - Capability to receive and send commands from/to the IoT devices
  - Provide the capability to scale and support a high volume of devices

- **IoT Data Management** – The IoT devices generate a high volume of data on a continuous basis, and therefore the IoT data management layer requires the following key capabilities:
    - Aggregation management in real time to reduce the volume of data being transmitted.
    - Manage data that is collected at certain concentration points and aggregated for more efficient transfer.
    - Manage missing data and redundant data from different sources and in different formats, typically processed before finally being stored.
    - Utilize storage and retrieval management techniques for unstructured data such as NoSQL
    - Capability to manage the data in real-time which requires high-speed data base platforms such as in-memory appliances
- **IoT Application** – Applications will need to be developed specifically for EquipRentz. These applications will be using the unstructured data from the IoT devices and structured data generated from the web-based portals and back-office transactional systems. An application development platform will be required to develop these applications, manage the data and provide analysis and modeling capabilities.
- **Business Integration** - The information generated from the IoT applications will need to be communicated to the web portals and the back office transactional systems. Also, the IoT applications will require data from the web portal and back office systems. The Business Integration layer will require the ability to communicate as follows:
    - Data integration of non-relational data with structured data.
    - Cloud to cloud; and cloud to on-premise integration.
    - Intelligence and rule development in the integration tool to translate different data formats and structures.
    - API library
- **ERP** – The back-office functions for EquipRentz can be satisfied with standard back-office ERP systems, which reduces the development of in-house, custom developed applications. The ERP system will require the ability to support the following:
    - Service/sales orders created by the front-end web portals with the ability to manage status changes, pricing, services, and products.
    - Purchase order processing that can be linked to a service order, be pushed out to a web-portal, and manage multiple status changes, costing, commissions, services, and products.
    - The ability for the same organizational entity to be a supplier and a customer.
    - Manage the inventory of IoT devices rented out to suppliers
    - Accounts Receivable and Payables with the ability to off-set payments and costs for a customer/supplier.
    - Manage cash flow and financial reporting.
- **Analysis** – EquipRentz will require the capability to analyze the data generated by the rental transactions and IoT devices for internal use, such the demand, supply, services, quality and pricing of the different partners and identify trends for future growth and sustainability. Also, EquipRentz will in the future provide additional analytical services, such as predictive maintenance, for a fee to both the renter and supplier.
- **Existing Web Portal** – The existing web portal will be enhanced by providing a more intuitive customer experience, and key functions will be changed to accommodate the IoT additions, the new services, and the back office transactional system.

2.2.4 Technology Platform

Gloco Consulting in consultation with EquipRentz conducted a hardware and software selection process of products on the cloud.

The decision to have all the key components on the cloud was a key requirement since EquipRentz will be growing and expanding its business portfolio and therefore requires the ability to scale the technology platform. Also, since EquipRentz is offering a new and disruptive business model, the ability to predict the business growth and which services will be demanded is variable, and therefore a cloud platform that offers the flexibility to grow at the rate of the business is a key requirement. Also, a request by EquipRentz was to minimize the effort of managing multiple service providers and software vendors.

Gloco consulting therefore only included vendors that offered a comprehensive cloud platform that included IoT, Big Data analysis, integration and communication and back-end transactional management systems (ERP). The vendor list was therefore confined to SAP, Oracle, and Microsoft. The SAP technology platform was chosen based on the functional and technical criteria, technology development roadmap and price. The following components of the SAP technology were chosen:

- SAP IoT Leonardo cloud platform.
- SAP Cloud Platform Integration (CPI).
- SAP Analytics Platform (SAC).
- SAP S/4HANA ERP (Cloud Version).
- SAP HANA in-memory database on the cloud.

The SAP technology components are proposed to be hosted on the Microsoft Azure IaaS platform. A final evaluation and determination of the IaaS platform will be conducted during the technical design phase.

Particle.io (not part of the SAP suite) was selected to deploy their cellular-based IoT platform to track location and maintenance information on rental assets. EquipRentz will partner with Particle.io to deploy their all-in-one cellular based IoT platform to track location and maintenance information on rental assets. Gloco consulting will design and supply small equipment-mounted IoT devices that have a small screen and simple user interface. The device will feature IP67 water protection and be powered by a small rechargeable battery. The battery will be recharged by a small attached solar cell and will have an endurance of thirty days without sunlight. The Boron IoT device from Particle will also be equipped with a GPS receiver and gyroscope to detect positional changes and location. It contains several analog and digital inputs which will be configured to interface with the rental equipment to gather run-time and maintenance information.

2.3 Business Facility

2.3.1 Challenges

Area for Improvement	User Challenges	Solution
Improving EquipRentz.com Back-End Systems	Our legacy systems are nearing the end of their functional life. As an EquipRentz Network admin, I want to find a platform that will grow with our needs.	Migrating their systems to an SAP-based Cloud platform will allow them to scale their systems as they continue to grow.
	As a network Admin, I want to find ways to improve our current systems to reduce latency and improve performance.	Improve their ERP by implementing and migrating to an SAP s/4HANA cloud solution

Expanding Equiprentz offerings	As an EquipRentz Business analyst, I want to find new ways to generate revenue.	• Develop an IoT Device to integrate into the diagnostic systems of newer equipment. • Use SAP Leonardo to gather and manage the data being gathered by the IoT Devices. • Offer access to data and analytics to suppliers.
Improving Supplier and User Experience	As a supplier, I would like to have a way of monitoring the health of my equipment without having to take it out of service for inspection.	EquipRentz.com will offer an IoT Device that plugs into the Equipment's diagnostics port. This Device will communicate data back, via SAP's Leonardo toolkit, to a maintenance dashboard on the EquipRentz cloud the suppliers can access.
	As a supplier, I would like a system to keep track of my equipment so that I can redeploy it more efficiently.	EquipRentz.com will offer an IoT device that plugs into the equipment's diagnostic port. This Device will communicate location data back to EquipRentz via SAP's Leonardo toolkit. this will allow Equiprentz to include
	As a Supplier, I would like to have other options for moving my equipment around.	Equiprentz will offer to arrange transport with 3rd party trucking companies to help alleviate the strain on their suppliers and more efficiently serve their renters
	As a Supplier, I would like access to professional maintenance for my equipment.	Equiprentz will offer to arrange service and repair via 3rd party maintenance contracts on a per use basis.

2.3.2 Business Benefit Justification

Currently, EquipRentz derives its revenue from fees charged to equipment owners from brokering equipment rental. This has worked well, and EquipRentz now has agreements with over 8000 equipment owner locations. However, their current systems are stressed and unable to support the current workload. The implementation of a stable and scalable ERP system will provide the ability to service their current customers efficiently and allow for expansion of that business model.

The new ERP system will also allow EquipRentz to implement their new market disruptive business models. They will realize service revenue by creating an opportunity for the current transport truck owners, transport truck drivers, and maintenance providers to be members of the system and have jobs dispatched to them based on their locations without regard to their ownership.

In the rental equipment industry, equipment that is not actively being rented is a cost center, not a profit center. By extending their current technology to these new participants, EquipRentz will see new revenue opportunities and these new participants will achieve greater profitability by the more efficient use of equipment and personnel.

Particle.io application's location-sensing capability along with the new ERP system EquipRentz is installing will allow both more efficient equipment utilization, as well as fewer equipment load/unload cycles. Each time a

large piece of equipment is loaded or unloaded from a trailer, there is a time cost and the potential for equipment damage.

EquipRentz will also create a new service offering for both their new and existing clients – a simplified web-based portal. This portal will allow the equipment owners to see the location and maintenance information reported by the new IoT devices to their SAP S/4Hana ERP system by its interaction with SAP Leonardo.

This portal will also help EquipRentz manage its cash flow and track financial transactions as they occur. Today, EquipRentz collects both a deposit and partial rental payment from the renter at the time of the equipment rental. The length of the rental determines when EquipRentz pays the equipment owner. If it is short-term rental, the funds will be transferred at the termination of rental. If it is a longer-term rental EquipRentz may make payments to the owner as the payments are received from the renter.

Finally, EquipRentz will roll out a new service that will allow non-traditional equipment owners such as construction companies, farmers, and others to participate in the system. These large pieces of equipment are large capital purchases that sometimes go weeks or months between use. EquipRentz will target these new potential providers and allow them to turn these assets into profit centers for their businesses. These new non-traditional providers may provide transport trucks, drivers, maintenance services, or rental equipment. EquipRentz will also market its new IoT based location tracking and maintenance system to these companies.

2.3.3 Key Metrics

KPI	Current State	Measurement	Benefits
A 10% reduction in maintenance labor costs necessary to maintain vehicles.	Approximately four man-hours per vehicle every month.	Number of hours spent on maintenance repairs / Number of total vehicles in inventory.	
A positive feedback of at least 85% by the maintenance crew regarding the new EquipRentz service.	Not measured currently.	Number of	Allow maintenance crew satisfaction to be maintained at a high level and enables communication between transportation provider staff and EquipRentz
Fuel costs associated with transportation of vehicles between renters is reduced by 25%.	Not measured currently.	Monthly fuel cost of LEV transport trucks.	Reduction of cost to EquipRentz.
80% reduction of emergency repairs across all suppliers.	45% emergency repairs performed on LEVs.	The number of emergency repairs / number of maintenance requests. *An emergency repair is defined as a repair performed in the time period that a renter is scheduled to use the LEV.*	Less need for emergency services expending rental consumer time. Maintain high customer satisfaction ratings.

3. Technical Specification

3.1 Architectural Approach

We will approach this project understanding that we will use many new technologies and use others in ways that they haven't been used previously. EquipRentz will rely on SAP S/4HANA as its system of record. This ERP system will store all master files and transactional data in the HANA in-memory column-oriented data management system. We will use the AutoPI OBD2 to LTE IoT device to track both transport and maintenance truck locations. The AutoPI device will also feed maintenance data, usage data, as well as the location data to SAP S/4HANA via the SAP Leonardo gateway. We will use the particle.io Boron LTE IoT device to transmit location and other information from the rental equipment. We will house this in a proprietary waterproof IP67 2-inch by 2-inch box with an integrated battery and solar cell recharger. We will use SAP Leonardo to process this incoming unstructured IoT data and convert it into a useful format.

3.1.1 Data inflows

GeoLocation

- Equipment location from Boron LTE IoT device
- Transport truck location from AutoPi IoT device
- Rental equipment consumer location from mobile app (currently only for analytics)

Equipment Catalog

- Equipment master data (initial B2B data load, then updates as needed)
    - Type
    - Pictures
    - Capabilities
- Equipment transactional data
    - Current availability
    - Current Location
    - Maintenance records

Financial Settlement Data

- Equipment rental prices
- Rental payments from consumer
- Rental payments to supplier
- Transport payments to transporter
- Maintenance payments to maintenance provider

3.1.2 Data Manipulation

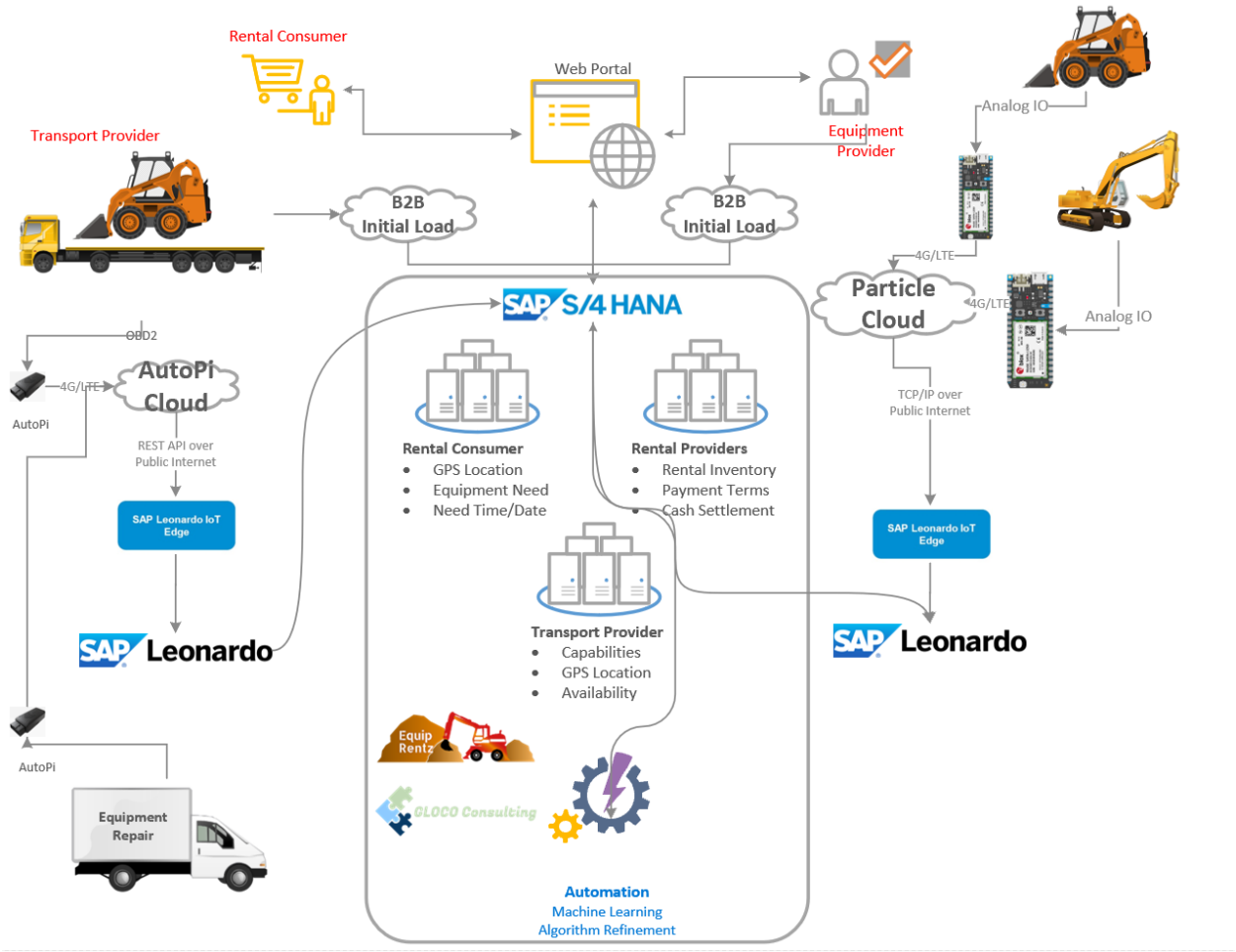
The incoming real-time location data from the IoT devices via SAP Leonardo will keep SAP S4/HANA updated with the location and status of each piece of rental, transportation, and maintenance equipment. As rental requests come in SAP will use predictive learning algorithms to select the most appropriate piece of rental equipment to satisfy the rental consumer's needs. This could be based on location, equipment status, rental history, transportation assets or other qualifiers.

3.1.2 Data Outputs

The system will output data in the form of rental requests presented to the rental equipment supplier for approval, confirmation of rental request to the consumer, notification of transport requests to the transporter, and maintenance request to the maintenance provider. The system will also notify EquipRentz of any outstanding

issues via on-screen and other push alerts. Finally, the system will output cash settlement transactions to all entities.

Figure 1 Overall System Architecture



ERP (system of record)

EquipRentz will track all equipment, locations, maintenance records, and cash settlements with their implementation of SAP S/4HANA

Business Integration

EquipRentz will receive real-time location and equipment status from the particle.io and AutoPi IoT devices. This data will be consolidated and integrated into S/4HANA using SAP Leonardo.

Analysis

We will use the machine learning and analytics engines included in SAP Leonardo to help properly position transport and maintenance providers where they can best be utilized based on historical trends and other information such as rental history and predicted needs.

3.2 Software Solution

3.2.1 Vendor Selection

The primary benefit of the SAP family of ERP systems for EquipRentz is they provide a single platform on which to build a system to cover all of their needs. Other potential solutions would require creating an increasingly complicated patchwork ecosystem of software and services to achieve the same functionality. With S/4HANA, SAP has created a simple solution that can span and unify all aspects of EquipRentz' business. SAP offers their customers full support through deployment, configuration, and maintenance. Their Leonardo toolkit integrates easily with external data sources and S/4HANA creating utility and opportunity for Equiprentz through expanded use of data and business intelligence. Boasting rapid deployment, ease of use, flexible functionality, and extensive configurability all in an integrated design, Gloco feels that SAP is an excellent solution for the next phase of EquipRentz' development.

3.2.2 Software

S/4HANA - SAP S/4HANA is a next-gen ERP business suite designed to encompass all of a business' day-to-day operational requirements. It is built on the HANA in-memory database which allows it to process large volumes of both transactional and operational data at once. By combining columnar database storage, compression, and in-memory storage, it greatly reduces the resources required to read, write, and update data. The result is high speed lower impact data processing. The increased speed executing and reporting using live data allows for end-to-end real-time business.

S/4HANA comes preconfigured with a guided configuration interface to help tailor it to EquipRentz' specific needs. Additionally, SAP offers full support for deployments. EquipRentz Would be building a new implementation on the Microsoft Azure Cloud Platform. Once their new cloud ERP is up and running, EquipRentz will configure and deploy modules to cover common business processes, e.g. finance or procurement, etc. These modules will allow EquipRentz to add to and adapt their systems to best fit their needs. Other modules such as The Predictive Maintenance software will allow S/4HANA systems to access and utilize the sensor data being sent by Leonardo. S/4HANA Cloud will provide EquipRentz with a flexible and scalable ERP solution.

Leonardo - Leonardo is SAP's digital innovation toolkit. It is an umbrella term for software and services designed to work in conjunction with a business' system of records to enhance their capabilities and open new revenue streams. It runs on runs on SAP Cloud Platform which is an open source Platform as a Service (PAAS) that provides a development and innovation space to extend SAP Hana ERP systems. It can also be installed on other Cloud systems such as AWS or Azure. The PAAS model allows Leonardo to easily integrate with other cloud-based solutions and applications. Leonardo includes technologies such as Advanced Analytics, Machine Learning, Big Data, AI, Blockchain, and IoT.

The IoT Bridge connects Leonardo to sensors, social networks, and connected partners in the world. It gathers and presents this data via a command GUI. EquipRentz will be using the IoT Bridge to gather location and diagnostic information, from the IoT devices installed in their supplier's equipment, and make it available within the S/4HANA environment. The data will come in through an edge processing unit or IoT gateway, which is a physical device connected to Equiprentz' network and communicates with the equipment IoT devices. A combination of IoT Technical Services and IoT Business Services, the IoT Foundation, is the core of the Leonardo Platform. Technical Services allow device management such as live streaming analytics, data management, and integration services etc. The Business services will allow EquipRentz to use the application builder and application service libraries to build applications to work with and process the data. The IoT Bridge comes with IoT microservices in the API hub as well as 23 individual toolkits. These kits are prebuilt applications such as Vehicle Insights, which are tailored for industry-specific solutions. If EquipRentz would prefer not to create their own applications SAP also partners with several IT firms to quickly develop Leonardo solutions.

3.3 Integration Points

1. **Which applications will interface with the new system and why?**

Each type of user in the system architecture will have their own method to connect with the new system according to what they are requesting from it. The connections will be linked in the form of REST API endpoints to support client and server communication, messaging frameworks to promote reliability and scalability of communication, and web portals to ensure that users will be able to sufficiently navigate and perform a digitized business process.

The table below represents each integration within the system. It encompasses the relationship between the elements and user interfaces to those elements. The *Data Source* column defines where the information asset is being collected from. The *Integration Point* depicts the connection between two software elements. Lastly, the *Integration Detail* section provides additional commentary on the software technology that is involved with the communication.

Data Source	Integration Point	Integration Detail
Transport Provider	OBD2 dashboard - IoT device	Integrated IoT with ODB2 port device that communicates with vehicle's internal data bus.
Transport Provider	IoT device - AutoPI Cloud	Robust and secure cloud infrastructure that captures vehicle event messaging with the use of REST APIs.
Transport Provider	AutoPI Cloud - SAP Leonardo IoT Edge	Edge services that are cloud-driven to deliver and respond to immediate business needs.
Transport Provider	SAP Leonardo IoT Edge - SAP Leonardo	Master data can be pulled and written into SAP Leonardo digital innovation system that utilizes APIs, Sensors, Big Data, and Data Intelligence features.
Transport Provider	SAP Leonardo - SAP S/4 HANA	Read-write to SAP's transactional and long-standing ERP system using HTTP/S and the SAP Web dispatcher.
Rental Consumer	Web Portal	Communicates with HTTP/S protocol and the SAP Web dispatcher. Will include a mobile application with limited/customized functionality.
Rental Consumer	B2B Initial Load	One-time migration from a non-SAP legacy system. Standard data migration tools and content such as SAP Data Services will be used to process text data and measure data quality at the time of the load.
Rental Consumer	Web Portal - SAP S/4 HANA	Communicates with HTTP/S protocol and the SAP Web dispatcher. Will include a mobile application with limited/customized functionality customized to the user type.
Equipment Provider	B2B Initial Load	One-time migration from a non-SAP legacy system. Standard data migration tools and content such as SAP Data Services will be used to process text data and measure data quality at the time of the load.
Equipment Provider	Web Portal - SAP S/4 HANA	Communicates with HTTP/S protocol and the SAP web dispatcher. Will include a mobile application with limited/customized functionality customized to the user type.
Rental Equipment Supplier	Analog IO - IoT device	Communication between analog devices IoT will be enabled by digital converter.
Rental Equipment Supplier	IoT device - Particle Cloud	IoT device will communicate with Particle Cloud with the Particle Device Cloud API - a REST API. Web browser API capabilities can be powered with the Particle Javascript SDK.
Rental Equipment Supplier	Particle Cloud - SAP Leonardo IoT Edge	Edge services that are cloud-driven to deliver and respond to immediate business needs.

Rental Equipment Supplier	SAP Leonardo IoT Edge - SAP Leonardo	Master data can be pulled and written into SAP Leonardo digital innovation system that utilizes APIs, Sensors, Big Data, and Data Intelligence features.
Rental Equipment Supplier	SAP Leonardo - SAP S/4 HANA	Read-write to SAP's transactional and long-standing ERP system using HTTP/S and the SAP web dispatcher.

1. What integration styles and methods will be used?

Most of the integration pathways for this system architecture will be point-to-point communication over a standard HTTPS/TLS channel. This is the case for connections between all SAP solutions as well as the initial B2B data imports that is necessary at the transport provider and the equipment provider. The only exceptions to a secure HTTPS connection would be those originating from the large equipment vehicles to the IoT device. This will be a communication protocol at the link level that will produce repair and diagnostic information about the rented vehicle.

There are several layers of data stores as expressed in the system architecture. The SAP S/4 HANA system will be treated as the system of record and will receive infrequent data changes. In the other end of the spectrum, the SAP Leonardo IoT Edge platform will experience the most frequent data changes. Specifically, due to large amounts of diagnostic and maintenance statistics that need to be consumed for the Analytics engine, the Analytics Services, Location Services, Event Processing, Data Management, and Device Management will see frequent data and state changes.

All initial B2B data loads will be defined JSON formatted files that will require a one-time ETL operation from transport and equipment provider databases. This allows for a non-invasive import procedure from third-party businesses that would like to share their large equipment inventory with EquipRentz.

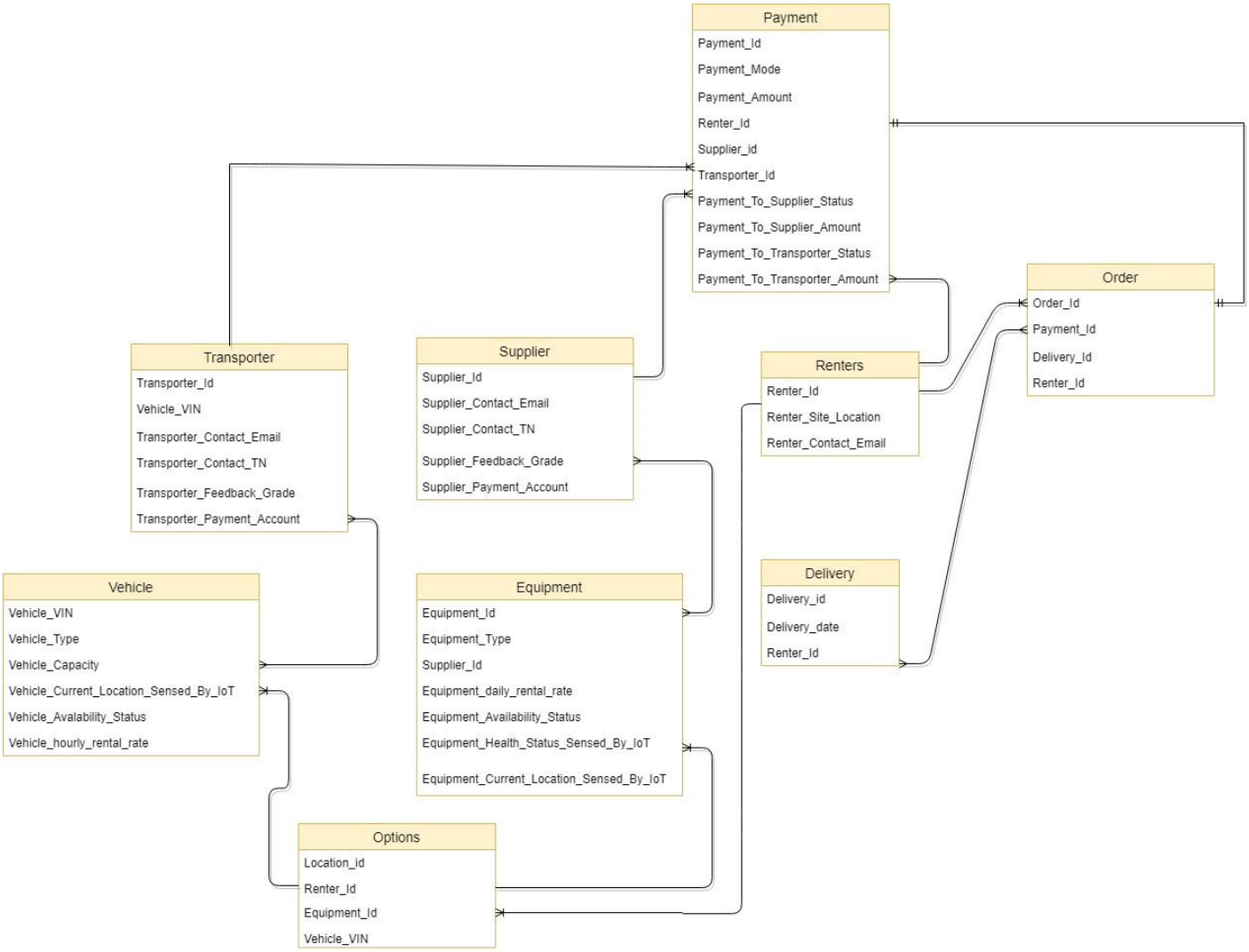
3.4 Data Design

3.4.1 Data Entities

There are nine different data entities in the solution designed for EquipRentz. These entities reside in the form of separate normalized tables in SAP HANA database. These entities are created to manage the data for independent actors, products, and processes.

- Entities representing Actors: Supplier for Equipment Supplier firms, Transporter for transport Provider Companies, and Renters for Equipment Renters.
- Entities representing Products: Vehicle, Equipment, and Options that are generated by Data Analytics.
- Entities that carry data for Process: Payment, Order, and Delivery.

The below diagram shows the entity relationship.



3.4.2 Data Sources and Management

- Input Feeds: EquipRentz hosts the APIs to receive the periodic inventory feeds from the equipment suppliers and transport providers. These APIs save the data in SAP HANA database in the actor entities described above. There are two types of feeds received from suppliers and transport providers:

    1) Inventory feed: This feed supplies the equipment and vehicle details that will be part of the contract with EquipRentz. The IoT devices will be attached to the equipment and vehicles that are part of this initial feed. This feed will supply the data for entity fields such as vehicle_VIN, vehicle_capacity, vehicle_type, equipment_id, equipment_type, supplier_id, and transporter_id. Any subsequent update in the inventory such as the addition of a new vehicle and equipment will be sent as an inventory feed. The feed files are received on a daily basis, but in case of no update in the inventory, there will no feed file transmission.

2) Price and Availability Feed: This input feed from suppliers and transport companies provide the equipment and vehicles current pricing and availability. These event-based feeds are received as and when the data for these fields is updated and supplied by Suppliers and Transport provider's applications. The B2B API process on SAP accepts the feeds and updates the Equipment and Vehicle entities. This feed from the equipment supplier provides data for entity fields: Equipment_Availability_Status Equipment_daily_rental. The similar feed from the transport provider updates the entity field Vehicle_Avalability_Status.

- IoT Devices: The equipment and the vehicle that transport them will have IoT devices attached to sense the health status and location. SAP Leonardo IoT bridge will collect the transmitted data from IoT devices, and feed to Equipment and Vehicles entities (tables) in the SAP HANA database. These are the fields supplied by data detected from IoT devices: Equipment_Health_Status_Sensed_By_IoT, Equipment_Current_Location, and Vehicle_Current_Location.

- Web Application: The Web-App/GUI for EquipRentz.com handles the data for the following functionalities:
  1) Registration of Account: Renters can register their account and search the available equipment and the vehicle required to transport the chosen equipment at their site. The application will generate an id and provide it to the renter. The fields supplied by this flow are Renter_Id, Renter_Site_location, Renter_Contact_Email.
  2) Presentation of data: The web application will present the data to renters in the form of best options for Equipment, Supplier, Vehicle and Transport provider. The 'Options' entity is fed with research data examined by SAP Leonardo data analytics.
  3) Order Placement: The renter chooses the best option and places the order along with the online payment. The data supplied is entered in Order and Payment entity to be used by SAP ERP(S4/HANA) order processing module. The order acknowledgment details generated by the ERP system are presented to the renter on the web application.

- SAP ERP: SAP ERP(S4/HANA) works on the order fulfillment process. It sends the transport and equipment order to the providers chosen by the renter after all the criteria are met for the successful order. It also places the payment order to the financial institution to supply the due funds to equipment and transport provider.

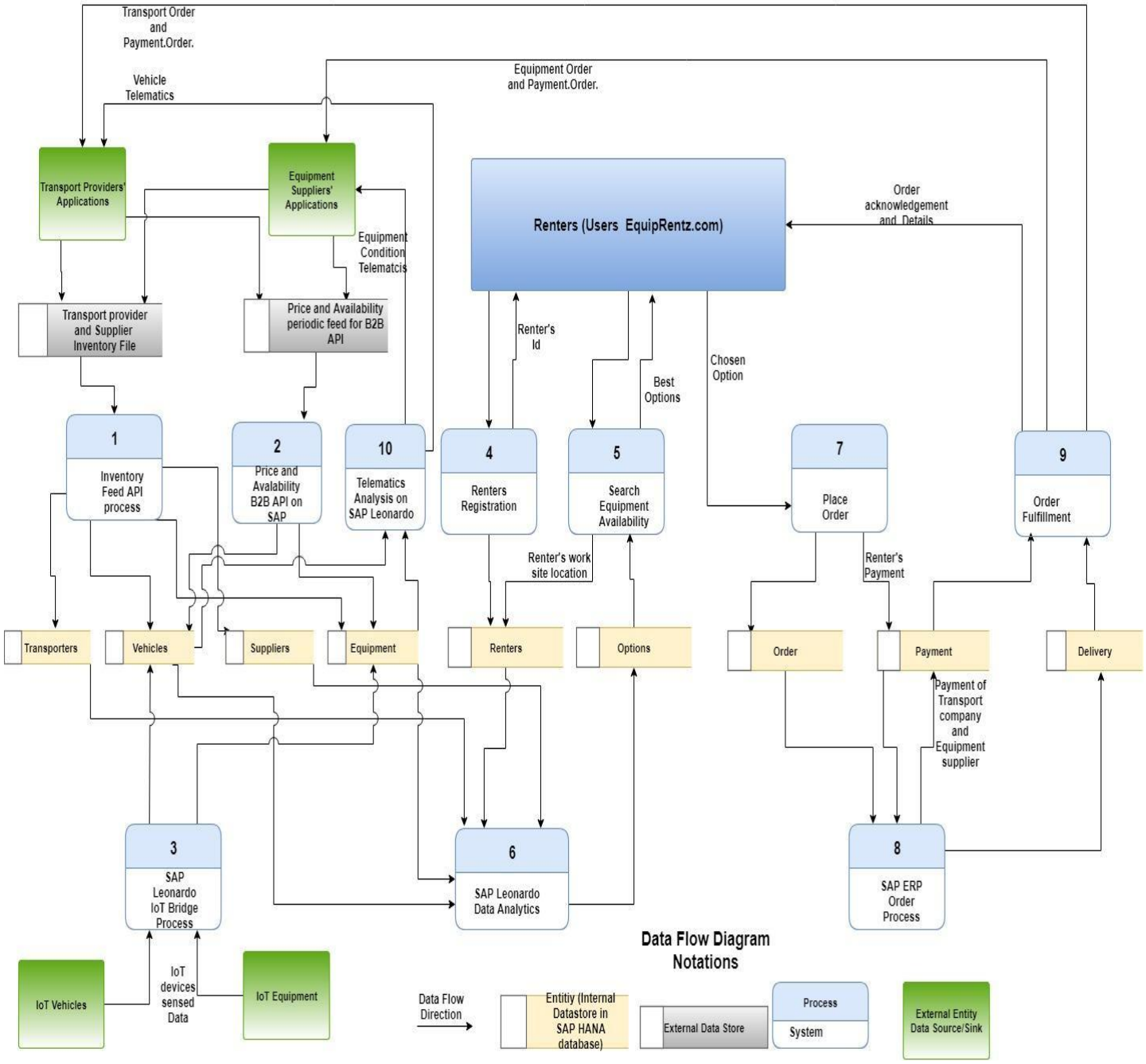
- SAP Leonardo: It provides APIs to accept the sensed data from IoT devices that are attached with affiliated transport companies' vehicles and suppliers' equipment, and feeds the fields stated earlier under IoT devices to vehicle and equipment entities. After the renter's request is received, it generates the best options for the renter with the consideration of following fields: renter_site_location, suppliers_feedback, transporter_feedback, equipment_health_status_sensed_by_IoT, equipment_current_location_sensed_by_Iot, equipment_availability_status, equipment_daily_rate , vehicle_current_location and vehicle_hourly_rate.

  Leonardo also generates intelligent analysis for the equipment supplier and vehicle providers by finding the likelihood of equipment and vehicle breaking down in a certain period and health status of other components for proper maintenance. This telematics analysis is passed back to the equipment suppliers and transport providers.

- Database: SAP HANA database stores the data of all entities, transactions, Leonardo and SAP ERP process workflow.

The data flow diagram represents the relation between the components mentioned above.

Data Flow Diagram



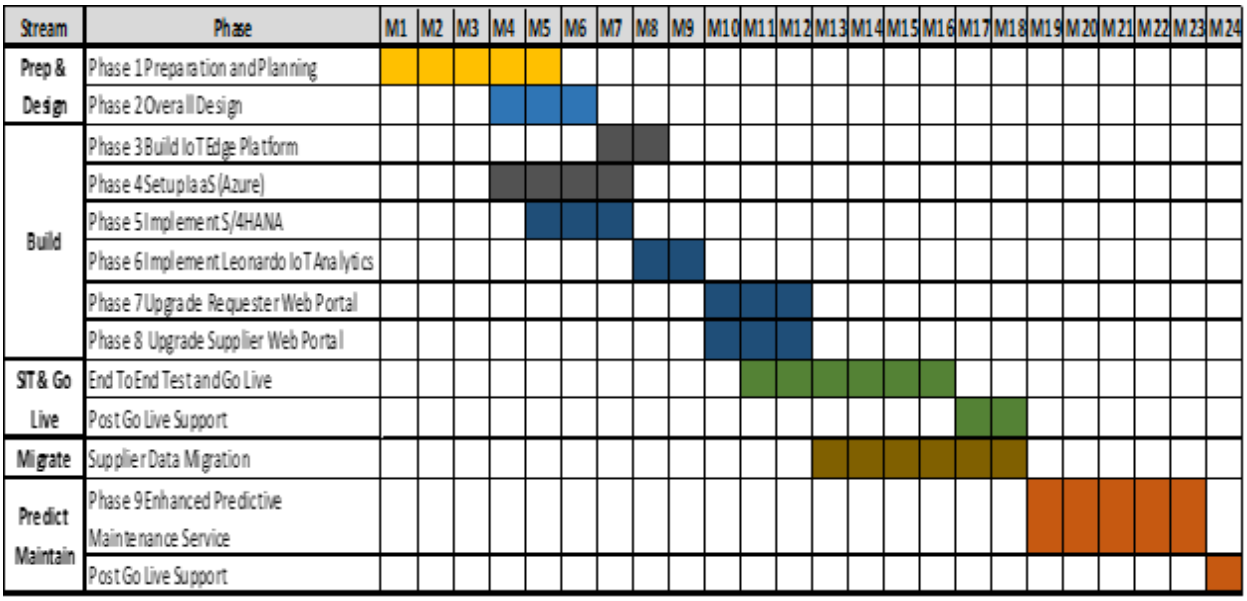
3.5 Demonstrations of Selected Use Cases

The demonstrations in the appendix provide a vision of what is expected to be developed. The use cases shown are as follows:

- Supplier of equipment maintains equipment details in the S/4HANA equipment master
- Supplier information on where their equipment is located and condition of the equipment
- Usage and business statistics of rental equipment
- Renter's selection of equipment

4.1 Solution Delivery Roadmap

A complete end to end platform will be implemented which includes IoT hardware and software on the vehicles, the collection, and storage of IoT data, IoT analytics platform, the implementation of the backend ERP system and the enhancement of the existing e-commerce platform. The proposed implementation approach is to implement the platform components in phases, starting with a planning phase and acquisition of all the hardware and software components and ending with the conversion of all key stakeholders to the new platform. The work streams, phases and schedule are as follows:



Details of each Work Stream and phase are as follows:

4.1.1 Work Stream – Preparation and Planning

4.1.1.1 Phase 1 – Preparation and Planning

Start with the planning phase which includes the acquisition of all required hardware and software components, as well contracting with the manufacturer to produce the IoT devices that will be installed on the contracting equipment in the field. The key deliverables of this phase are as follows:

- SAP S/4HANA application software subscription and bill of materials
- SAP Leonardo IoT and Analytics software subscription and bill of materials

- IaaS (Azure) cloud platform architecture and contract
- Identification and agreement with a contractor to manufacture IoT devices
- Integration partnerships with equipment manufacturers such as John Deere and Caterpillar
- The acquisition and tools to manage the program which include the following:
    - SAP Solution Manager 7.2 to manage the development environment and release management
    - Code review and standardization tools
    - Quality assurance toolset to manage the testing process (ALM)
    - Load Runner for performance testing
    - Support management tools
- Agreed and approved program.

4.1.1.2 Phase 2 – Overall Design

The next phase will be a comprehensive design phase which will include all key stakeholders, and the deliverable will be a business and technical blueprint for the new platform. The Blueprint will consist of 4 major stages, as follows:

- **Preparation** – The team will collect key data about the processes, technology, and organization. This information will be used to develop a going-in position for the design workshops.
- **Round One Design Workshops** - These workshops will be conducted with the key stakeholders in order to design the following:
    - Business processes
    - Identify key development backlog, key design decisions and security role design
    - Identify and address key controls
    - Identify improvement opportunities for the existing platform
    - Capture the key measures and metrics and KPIs for better business performance.
- **Gap Analysis** – Solutions for the process, technology and organizational gaps identified during the workshops will be designed.
- **Round Two Design Workshops** – The key stakeholders will be brought back into a second set of workshops where the stakeholders will evaluate the gaps based on the business case and cost within the overall business process. The stakeholders will be asked to approve the processes, supporting technology and organizational change for implementation.

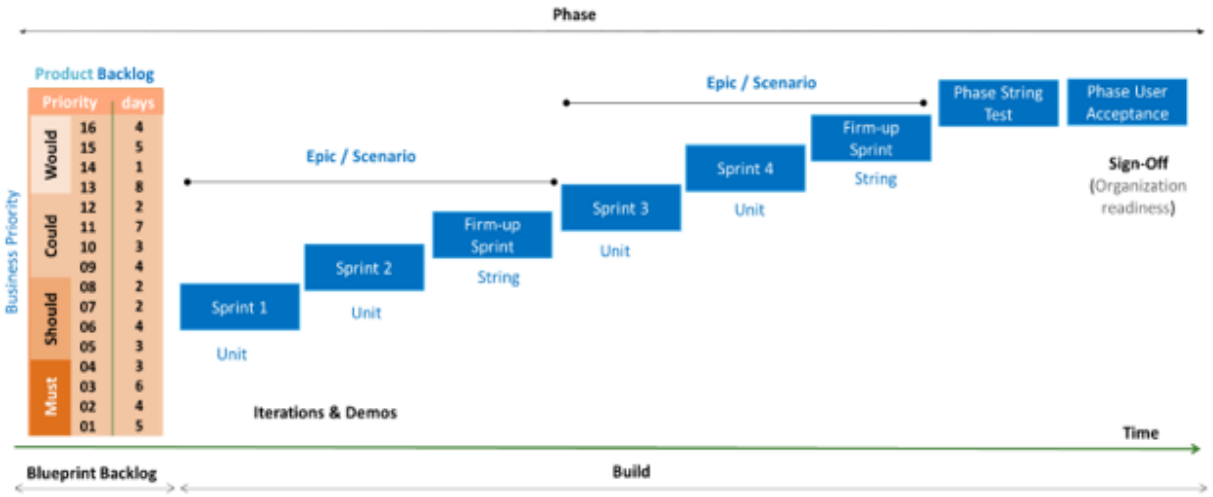
4.1.2 Work Stream – Build which includes Phase 3 to 8

The blueprint phase will be followed by multiple build phases of the key components of the platform using the agile methodology in multiple two week sprints. A definition of done of a phase will be a string tested component verified by the appropriate product owners. The proposed build phases are as follows:

Phases	Key Deliverables
IoT Edge Platform Build	Devices integrated with centralized IoT platform
IaaS (Azure) Set-Up	Operational IaaS and Application Platform
S/4HANA (ERP) Build	Backend Asset Management; OTC; P2P
Leonardo IoT Analytics Build	Location and Condition of equipment and who provides and services; Provide a requestor with the best option for renting and services
Service Requester Web Portal Build	Upgrade the requestor web portal to display the best options; make a request; agree; pay
Supplier Web Portal Build	Upgrade the supplier portal to maintain assets, services, prices, agree to service, receive payment

During the IaaS Set-Up phase (Phase 4) the SAP software will be installed on the SAP Azure cloud platform as per the agreed software Bill of Material. This will include setting up multiple environments to manage the build, testing and operations. This will include a Sandbox, Development, QA and the Production environment. An environment will be set-up on a sample set of equipment to test the IoT Edge technology and integration. Also, the existing web platform will also be ported to these environments.

The Build phases will include multiple sprints using the SAP Activate Agile methodology and will leverage the templates and tools provided by SAP. Each sprint will be completing an agreed prioritized backlog of requirements as defined during the Blueprint. The following diagram provides an overview of the Build phase:



The sprint deliverable includes developing test scripts during the sprints which will first be executed at the end of each sprint (unit test) as well as a demonstration for key stakeholders. The test scripts will be added to the test automation tools for re-execution during the string test at the end of each phase, the later systems integration tests and to execute automated regression tests for enhancements and upgrades after the platform is operational.

4.1.3 Work Stream – Systems Integration Test (SIT) and Go Live

At the end of the of the build phases, a final end to end systems integration test and user acceptance test will be executed to verify that all components of the platform are able to communicate the appropriate data between all components and ensure all the users of the platform are able to execute the required transactions and can access the correct information. The end to end system integration test will include:

- Ability for suppliers to maintain equipment and service data.
- The communication of data through the IoT devices located on the equipment in the field.
- The analysis by EquipRentz users and the suppliers of where their equipment is located and the condition of the equipment.
- The capability of service requestors to request and transact the rental of equipment and services.
- The capability of suppliers to verify the rental of the agreement
- The capability for service requestors to pay for the rental and services and for suppliers to receive payment as well the capability for EquipRentz to receive the agreed commission
- The accounting of all financial transactions
- Reporting for all stakeholders.

The following tests will be executed, as follows:

1. **System Integration Testing (SIT)** - End-to-end Integration testing involves testing business processes spanning the IoT Edge Platform, SAP Leonardo, SAP functionality, data, interfaces, reports, and integration with third-party applications and tools. SIT will go through 2 cycles starting with a mock data conversion and the execution of the test cases, recording of test defects, resolution of test defects and regular reporting of the test progress.
2. **User Acceptance Testing (UAT)** - For the stakeholders to ensure the functionality that will be needed to execute business on day 1 is working. Activities during the UAT includes:
    - Usability assessment
    - Security/Roles testing to verify that the correct system authorizations
    - Critical integration scenarios
    - Manual steps and forms
3. **Performance Test** - During the Performance testing stage, a set of key scenarios will be identified to validate overall system response based on average and peak use simulation. Both a baseline and target system will be used to simulate transactions and user sets.

In parallel, the key stakeholders will be trained on how to use the new platform and specifically the suppliers of rental equipment and service providers will be migrating their equipment and service data to the new platform.

On completion of the systems integration test and supplier conversion, the platform will be made available for requestors of rental equipment, transport services and repair services to execute the rental of equipment and purchase of services. The solution will be moved from the QA environment to the production environment.

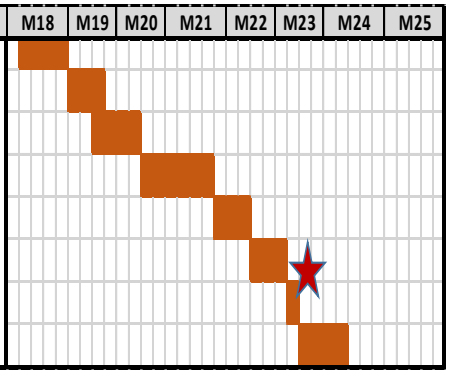
Before go-live, a comprehensive support infrastructure will be set-up for on-going support, maintenance and enhancements. Additional personnel will supplement the support team, in the first four weeks after go-live, in order to stabilize the platform.

4.1.4 Work Stream – Predictive Maintenance

This will include setting up multiple environments to manage the build, testing and operations. This will include a Sandbox, Development, QA and the Production environment. An environment will be set-up on a sample set of equipment to test the IoT Edge technology and integration. In addition, the existing web platform will also be ported to these environments.be executed at the end of each sprint (unit test) as well as a demonstration for key stakeholders. The test scripts will be added to the test automation tools for re-execution during the string test at the end of each phase, the later systems integration tests and to execute automated regression tests for enhancements and upgrades after the platform is operational. The end to end system integration test will include: for suppliers to maintain equipment and service data. EquipRentz to receive the agreed commissiona mock data conversion and the execution of the test cases, recording of test defects, resolution of test defects and regular reporting of the test progress. - For the stakeholders to ensure the functionality that will be needed to execute business on day 1 is working. Activities during the UAT includes: providers will be migrating their equipment and service data to the new platform.be moved from the QA environment to the production environment. be raised through the standard call center.being deployed and follow the change deployment process is an additional service

that will be offered to the suppliers of rental equipment. The schedule and key tasks for this phase are as follows:

Phase	Key Activities	Deliverables
Phase 9 Enhanced Predictive Maintenance Service	Prepare Install S/4H Predictive Maintenance Design Realize - Build E2E Regression Test User Acceptance Test Deploy - Final Prep & Go Live Post Go Live Support	Live Predictive Maintenance value added services for suppliers to improve up time and quality of assets



4.2 Operationalization

4.2.1 Roles

Due to the complexity of deploying a system, which will affect multiple business entities, there is a vital need to have clearly defined operational roles. By adhering to these roles the EquipRentz, Gloco, and their suppliers will place themselves in position for a successful deployment. The roles will coincide with the following responsibilities:

- Equiprentz will deploy and migrate their own systems from their legacy ERP to the S/4HANA ERP system.
- Gloco will support Equiprentz with their deployment and integration
- Suppliers will be responsible for compliance between their own systems and Equiprentz. However, Gloco and Equiprentz will offer training and support.

Role	Company	Responsibility
Project Owner	EquipRentz	• Take responsibility for the project • Interact with EquipRentz management on behalf of the project team.
Project Manager	EquipRentz	• Responsible for planning and coordination of the project.
Enterprise Architect	EquipRentz	• Responsible for the deployment, coordination and direction of the Deployment Team
Cloud Deployment Team		• Building and preparing Microsoft Azure cloud environment. • Deploying S/4HANA onto Azure cloud. • Migrating legacy data into new ERP system • Integrating new applications into existing systems.
Solution Architect	EquipRentz	• Responsible for the coordination and direction of the development team
Development Team	EquipRentz	• Develop ERP applications to meet EquipRentz internal needs. • Create and develop Leonardo applications to meet Equiprentz' IoT service needs.
Account Manager	EquipRentz	• Coordinate between the deployment and development teams and the supplier's • Communicate with suppliers to ensure smooth transition from the old to new systems.
Support	EquipRentz	• Solve and troubleshoot internal problems • Assist suppliers to solve and troubleshoot issues

		• Assist suppliers in integrating their systems with the new EquipRentz systems
Deployment and Migration Support	Gloco	• Aid EquipRentz in formulating a deployment strategy. • Offer deployment support to EquipRentz. • Aid EquipRentz with migration of their legacy data
Training	Gloco	• Provide training to familiarize EquipRentz staff with their new systems prior to implementation.
Network Admin	Supplier	• Integrate Supplier systems with new EquipRentz systems
IoT Installation Contractor	Supplier	• Install and configure IoT devices in rental equipment

4.2.2 Knowledge Database

The Subject Matter Experts (SME) team of Gloco will create a knowledge database, which will be stored on the Microsoft Azure Cloud. The knowledge database will constitute technology introductions, business process flow, data flow, data entity relations, references and models, troubleshooting steps, job aids, and handbooks. After Gloco consulting team has completed the migration to the new system, Gloco's services team will support the operational activities as Tier-3 SMEs and will update knowledge database as an ongoing process to keep it up to date. The knowledge database will be designed to have separate accessibility and privileges to knowledge assets for Renters, Equipment Suppliers, Vehicle providers, and Operations Team.

4.2.3 Incident Management

Gloco will help EquipRentz create an Operation support team to help the renters, Equipment suppliers and Vehicle providers on a daily basis. The hierarchy of Operations will have three tiers of support.

- Tier-1: This will be the helpdesk team of EquipRentz which will acknowledge the issue tickets, check knowledge database and respond to the requester. This team will be trained to understand an overview of the technology, business flow, user access management and to access knowledge database. If Tier-1 could help solve the client issue, they will engage Tier-2, Tier-3, Cloud support and leads depending upon the need.

- Tier-2: This team from EquipRentz will have an in-depth knowledge of application infrastructure, database, data flow, and entity relations, and security model. It will be a team of DBAs, Application Infrastructure architects and Cloud SMEs.

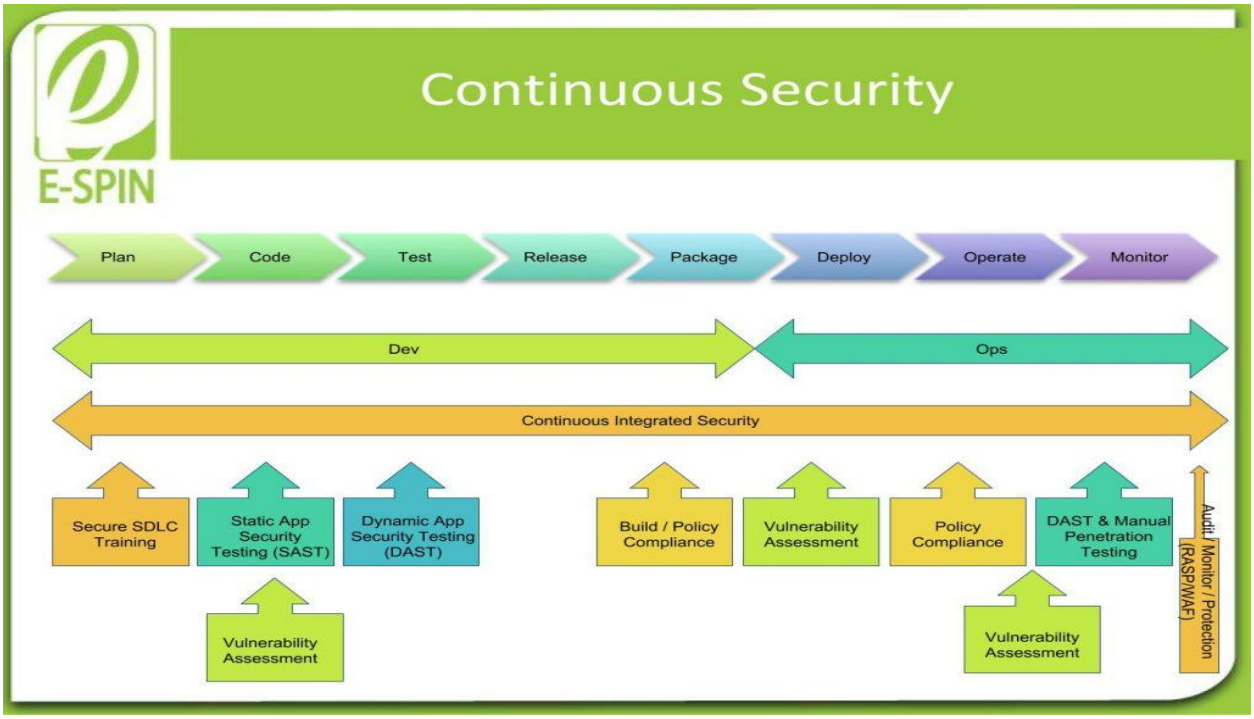
- Tier-3: Gloco's services team will provide the support as Tier-3 in case of an unresolved escalated issue. This team will compose of consultants who worked on delivering the solution for EquipRentz and other internal support resources from Gloco. Tier-3 will also be responsible for continuously updating knowledge database.

4.2.4 Change Management

The project management (PMO) of EquipRentz will control the changes of applications, configurations, code, infrastructure and other IT components in a Configuration Management Database (CMDB). All the changes will be tracked in CMDB and will require approval from the IT and business authorities. A weekly meeting will be arranged to discuss the changes scheduled and to get the necessary approvals.

All the changes will be deployed using DevSecOps (DSO) pipelines. The DSO pipelines will automate the application components build, deployment and security inspections as depicted in Image -A. The vulnerabilities found during the code scans, Static Application Security Testing (SAST), and Dynamic Application Security Testing (DAST), will be fixed in the User Acceptance Test (UAT) environment, followed by re-testing. Only the fixed and certified changes will be deployed via the DSO production pipeline.

The change deployment will happen only in the weekly maintenance window.



[1]

4.2.5 Release Management

During the transition phase, release managers from Gloco and EquipRentz collectively will be part of the Release Management team to design the project roadmap, track the progress, and to coordinate the project activities with Gloco's and EquipRentz' SMEs. After the project implementation, EquipRentz will solely own the release management. However, Gloco's services team will still provide support and services for future changes and incidents.

4.2.6 Service Level Agreements

SLA	Responsible Party	Metric	Measurement
Cloud Up-time	Microsoft	<99%	Per Microsoft Azure
Max time taken to Locate Rental Machinery	EquipRentz	>10 seconds	Time from when User submits search to when results of supplier inventories are returned.
Max Time to complete Transaction	EquipRentz	>5 minutes	Time from when user begins order to when the equipment is reserved by supplier

[1] Image- A, Source: https://www.e-spincorp.com/2018/04/12/from-devops-shift-left-testing-to-devsecops-shift-left-security/

4.2.7 Operation Level Agreements

OLA	Responsible Party	Metric
Cloud Support	Microsoft	24/7 Access to support engineers via phone and email
SAP Deployment Support	Gloco	Full support 6AM EST to 6PM PST during deployment and migration
Supplier Support	EquipRentz	Full support with technical operation and integration of new system during normal business hours and on weekends

4.2.8 System Performance Metrics:

SAP Dashboard applications will be used to monitor the performance of the SAP system. Two specific applications will be utilized.

- System Performance App: To display the performance metrics such as response time for the SAP managed services.
- System Availability App: To display the availability of all SAP managed services.

Microsoft Azure's console will be used to monitor the infrastructure performance by Tier-1 team. There will be reporting, and alerting services settled on Azure for Cloud hosted infrastructure and services.

4.3 User Enablement

4.3.1 Rollout Plan

Since EquipRentz is already working with over 8,000 rental equipment suppliers the first order of business will be migrating the current equipment catalog over to SAP S/4HANA. Gloco will export our current tables and use the SAP Data Services (BODS) tool to import the data into the new system. After the initial extract, we will work with our suppliers to validate the data that has been converted. We will check for errors and also help our suppliers access the new web portal to add additional data that was not held in the legacy system (see training below**). During this initial load, we will also procure the IoT devices for the rental equipment and the transport providers. EquipRentz will place an initial order for 1,000 AutoPi IoT devices (transport) and 5,000 particle.io IoT devices (equipment). While we anticipate a need for at least 10,000 AutoPi devices and 40,000 particle.io devices we understand our suppliers will have to manufacture and ship these items to us on a phased basis over a six-month period based on their production capacities. Gloco will work with EquipRentz and the suppliers on the initial IoT rollout. We will first focus on the hardware installation and develop a quick, standardized method of device attachment and connection to the equipment. We will then train and work with the equipment suppliers so that they can install and troubleshoot their IoT software while simultaneously cleansing their data on the web portal. Since the transport providers will be new customers, we will push their implementation to the end of the project. We will work with our suppliers and incent them to bring their current transport providers into the new EquipRentz system.

We will focus on our 'preferred' list of twenty suppliers near our Boston home office on the initial rollout. This will allow us to hold their hands and deliver a high level of support during our initial rollout. We will perform a pilot cutover with these initial customers and the second set of 80 customers (see details below) to bring them out EquipRentz's new SAP system. After this initial stage, we will cut over the remaining customers as our team resources allow. We will designate a team of twenty EquipRentz employees for this initial test. Gloco will assign their internal resources to support this team, and we anticipate a one-to-one representation between Gloco and EquipRentz on this team. They will be organized in two ways – Each will be the primary point of contact for a single supplier, and each will additionally be a subject matter expert in one of the following fields:

1. IoT hardware
2. IoT software

3. SAP BODS – ETL
4. SAP S/4HANA
5. SAP Leonardo

After this initial test, the members of this rollout team will train an additional three teams of twenty employees for the remainder of the rollout. If the rollout timeline becomes extended, we will add additional teams as needed. We anticipate each team of twenty will be able to support 100 suppliers in the rollout phase and they will require one week.

During this rollout period, we will work with our suppliers and our marketing department to promote our new capabilities to our current equipment consumers and market ourselves to a new previously unserved more sophisticated consumer base. We will create an advertising campaign focusing on our ability to give the rental consumer more choices and detailed information before making a rental decision. The rental consumer will primarily interact with the system through his web portal.

We will not focus on integrating the maintenance partners until we are satisfied that we are at the end-state of the supplier equipment rollout since that is our primary source of revenue and this rollout will be disruptive to our business and cash-flow model.

4.3.2 User Acceptance

We will define user acceptance across five different user roles:

1. Equipment Supplier
2. Equipment Consumer
3. Transport Provider
4. Maintenance Provider
5. EquipRentz Internal

User acceptance was defined in the user requirements section previously. EquipRentz will follow up with the users in each role to determine user acceptance. As the system is rolled out, we will allow a limited number of 'system critical' changes if needed but will make an effort to not incorporate new features and frills until after the system is operational. We will closely monitor and document new feature requests and work with EquipRentz to prioritize and monetize each request so that they can develop a priority list.

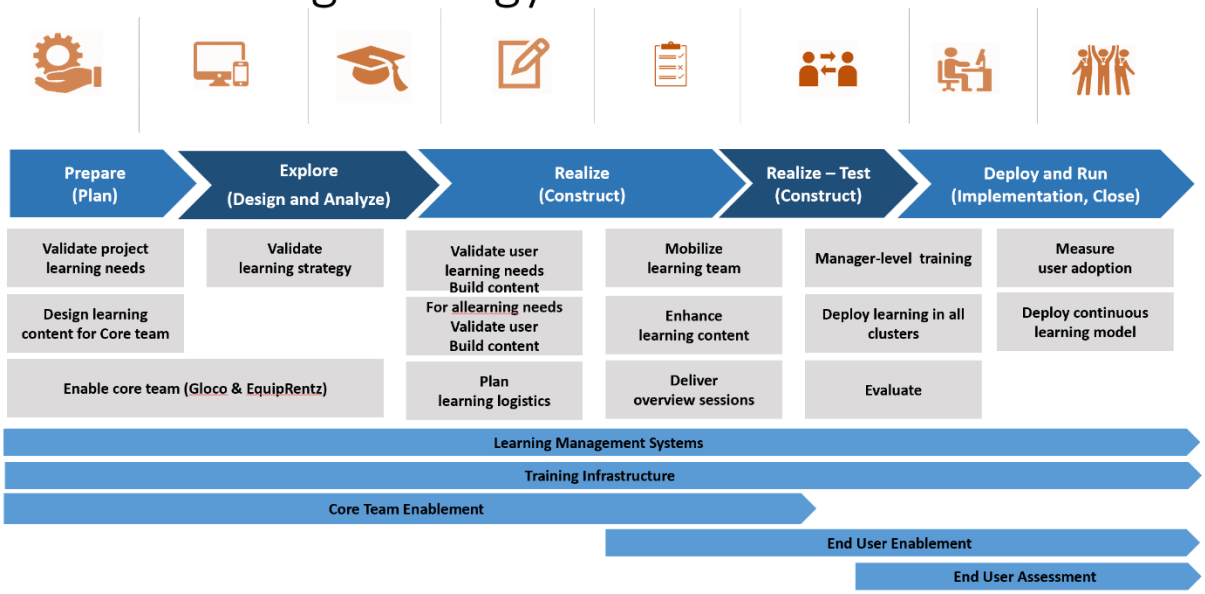
Gloco will work with EquipRentz to support both their internal users and all external user classes. We will first train a help desk and support team at EquipRentz to take all trouble calls and solve problems as they are able. Gloco will initially provide tier two support and hopes to quickly move that support to EquipRentz and remain only as tier three support.

4.3.3 Training

Gloco will work with EquipRentz to create several different modes of training for each user role. We will create a library on instructional videos, webinars, and knowledge bases customized to each of the five user roles (Equipment supplier, Equipment consumer, Transport provider, Maintenance provider, and EquipRentz internal). We will work with EquipRentz on creating a curriculum for on-site classroom instruction for each role.

We will first train the EquipRentz teams in each of the roles and then participate in the initial round of classroom instruction. This will provide the opportunity to refine and adjust the materials we will be providing. Gloco anticipates very little training will be required for the equipment consumer and will primarily use videos for that role.

Overall Training Strategy



Training will cover the following areas for each of the listed user roles:

1. Equipment Supplier
    - Iot hardware mounting and connection to the equipment – power and monitoring
    - IoT software use including logging into dashboard to confirm device communication and associate IoT device serial number to physical rental equipment.
    - IoT system status reporting. Review analytics available
    - Initial equipment load options
    - Equipment add/change/deletions via SAP dashboard
    - Equipment location and utilization via SAP dashboard
    - Financial information and cash settlement options
2. Equipment Consumer
    - How to locate and login to app/mobile dashboard. This will primarily be accomplished by marketing
3. Transport Provider
    - Iot hardware mounting and connection. The AutoPi device is easily connected to the vehicle's OBD port and attached using the included Velcro straps
    - IoT software – logging into our dashboard to confirm communication and associate IoT device serial number to the physical truck.
    - Logging in to the dashboard to provide truck capabilities and availability.
    - Monitoring and accepting transport requests
4. Maintenance Provider
    - Logging in to the dashboard to provide maintenance capabilities and availability
    - Monitoring and accepting maintenance requests
5. EquipRentz Internal
    - Helpdesk setup and operation
    - Initial equipment loads – how to process

- System monitoring tasks
- Disaster recovery planning
- IoT hardware troubleshooting
- IoT software troubleshooting
- SAP S4/HANA operations
- SAP S4/HANA financial reporting and reconciliation

4.3.4 Training Responsibilities

- Gloco
  - Develop web-based, and instructor let training courses
  - Provide last level of support through SME's
  - Create an initial list of FAQ's and knowledge base data
  - Create initial QRG
- EquipRentz
  - Provide personnel for end-user support to be trained by Gloco
  - Maintain and add to book of knowledge through knowledge base, FAQ, and QRG.
  - Offer and monitor training opportunities for all user roles
- Suppliers
  - Enroll and complete training classes offered by EquipRentz
  - Designate their internal point or contact for EquipRentz

4.4 Success Metrics

Metric (KPI)	Target for Success	How to measure
Project Implementation		
Total cost of project	20% reduction in cost as compared to previous implementation method.	Research, collection, and analysis of previous contract statements as compared to current project cost. Calculation of the difference of the two.
Support team satisfaction rating	85% satisfaction rating that EquipRentz have met or exceeded the satisfaction of all transport, equipment, and maintenance providers.	EquipRentz Marketing department to coordinate and distribute online surveys designed to solicit level of service and overall experience on a quarterly frequency to all third-party providers and vendors of their services.
Number of issues raised since launch of product	Up to a maximum of 15% "Bug" Issue Types in Product Development backlog after the first three months of product launch.	Weekly dashboard/reporting in incident management system.
Service and Maintenance		
% of maintenance contracts for new and existing customers	15% increase of recurring maintenance contracts on a month over month basis.	Number of contracts collected in EquipRentz service contract. Made available as part of an enterprise report.
% of maintenance operation costs	10% reduction in monthly maintenance operations, primarily in the area of overhead cost.	Reduction in the amount of hours taken to open orders and support administrative efforts.

Overall support team satisfaction	85% satisfaction rating that EquipRentz have met or exceeded expectations of support staff hired by third-party vendors.	Third-party vendors to coordinate and distribute online consumer surveys designed to solicit overall experience when completing service orders using the EquipRentz platform.
Proportion of work orders performed when first scheduled	90% work orders completed when first scheduled.	Number work orders completed when first scheduled / Total Number of completed work orders. Made available in weekly dashboard available to all executive level team members.
Transport Provider		
Reduction of labor associated with moving equipment vehicles.	30% reduction in time associated with moving vehicle from one renter to the other. As compared to previous year.	Number of hours spent moving vehicle per request / Total number of requests. Compared to year prior. Available enterprise reporting suite.
Dropoff Request fulfillment.	15% reduction in time associated with completing drop-off orders from the EquipRentz platform. This is due to real-time fulfillment data.	Average amount of time taken to respond to drop-off requests. Available in enterprise reporting suite.
Pickup Request fulfillment.	15% reduction in time associated with completing pickup orders from the EquipRentz platform. This is due to real-time fulfillment data.	Average amount of time taken to respond to pickup requests. Available in enterprise reporting suite.
Equipment Repair		
Reduction of time spent in gathering and transmitting health status checks on large equipment vehicles.	40% reduction of time spent in collecting diagnostic checks from large equipment vehicles.	Frequency of diagnostic records that is collected through SAP's Leonardo and Edge services. Available through Leonardo Analytical services.
Automatic transmission of diagnostic data of large equipment to nearest equipment repair vendor in the event of a critical event involving immediate maintenance support.	Daily collection of diagnostic data compared to the previous weekly data collection frequency.	Frequency of diagnostic records that is collected through SAP's Leonardo and Edge services. Available through Leonardo Analytical services.
Enabling processing of critical business decisions for equipment repair dispatches.	80% reduction of incidents occuring in a vehicle's rental period.	Number of incidents during a scheduled rental period of a vehicle. Available in EquipRentz Order Fulfillment system.
Equipment Provider		
Provide inventory, location, purchase orders, service orders, and payment processing services in one integrated ERP system.	40% reduction in time associated with opening a rental order, invoicing, and payment processing.	Length of days between consumer request to payment processing.
Identifies best drop-off and pick-up locations based on locations of scheduled rental consumer and demand time.	40% reduction in transportation costs and storage costs.	Material, transportation, and variable mileage costs associated with pick and drop offs.
Rental Consumer		

Access competitively priced large equipment vehicles for rent. The consumer accesses this catalog through the front-end website of EquipRentz.	20% more vehicle selections to choose from as EquipRentz can now aggregate multiple vendor inventory.	New inventory count available to the consumer in EquipRentz site vs old inventory count available to the consumer.
Provided convenient pick-up location of large equipment vehicle via advanced machine learning software.	80% reduction in distance traveled to the consumer for the pickup of their rented vehicle.	The Distance traveled from customer address to drop off location vs. Distance traveled from customer address to equipment provider.
Consumer Satisfaction Rating	85% satisfaction rating that EquipRentz have met or exceeded the satisfaction of all large equipment vehicle renters.	Marketing team will coordinate and distribute email consumer surveys designed to solicit level of service, overall experience after the renter has returned their vehicle back to EquipRentz.
EquipRentz (Internal)		
Contract labor costs associated with hiring labor for short-term projects.	65% reduction in overhead costs associated with hiring maintenance, transport, and equipment repair onsite contractors.	Repair, maintenance work orders / total number of inventory assigned to EquipRentz.
Cost of customer acquisition	30% cost of customer acquisition due to forming new relationships with vehicle renters.	Marketing spend dollars / Revenue collected over a weekly period. AvailableA2:C37 in SAP reporting system.

4.4.1 Revenue Sharing Model

EquipRentz provides business intelligence to transport, equipment, and maintenance providers across their platform. Because this business operation results in more sales to their suppliers, EquipRentz will receive a portion of sales (e.g. - 35%) that was secured through the proven use of one or all of the following services:

SAP's Leonardo Edge
SAP Analytics
IoT Cloud hosted service

EquipRentz staff will implement clear steps to measure how revenue will be collected, measured and distributed across their supplier base. Operational Level Contracts will outline these methods in detail. The departments responsible for these processes will be subjected to regular audits by their partner companies and internal departments to ensure accuracy.

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Appendix

SAP Leonardo IoT Bridge correlates your IoT sensor data with business process data to provide better insights.

Identifying unforeseen events

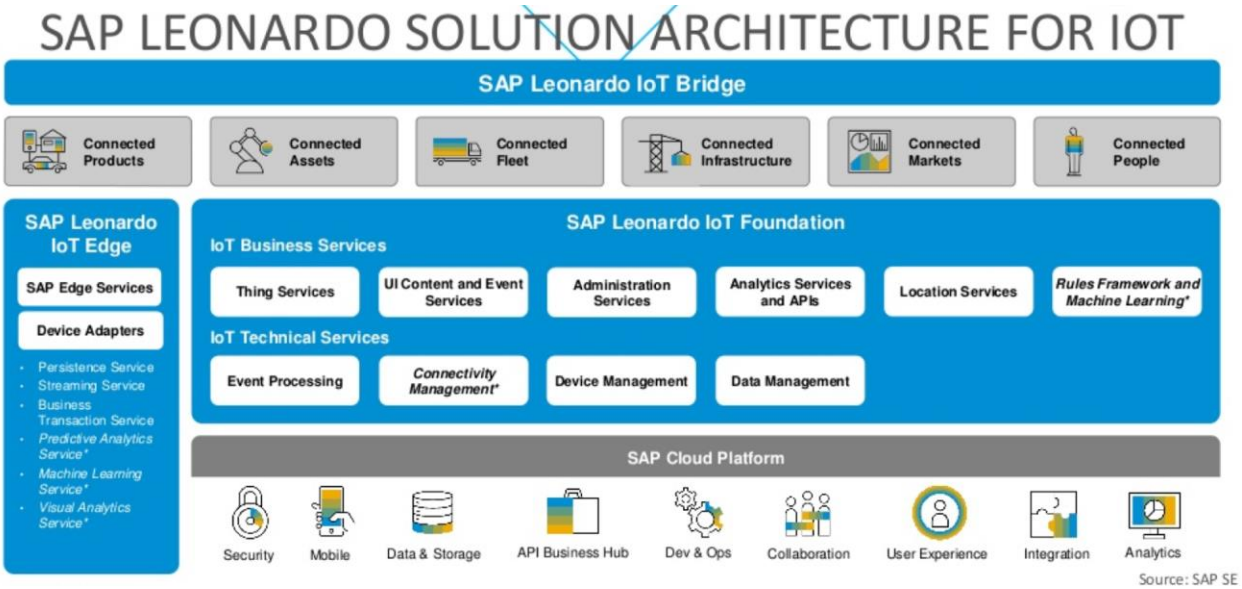
- Correlate IoT sensor data with business process information
- Integrate with SAP and non-SAP systems
- Identify unforeseen events in real time

Triggering actions

- Trigger actions in underlying source applications directly from the SAP Leonardo IoT Bridge work environment
- Turn insights into actions with end-to-end process visibility across multiple IoT and business applications

Resolution support

- Gain fully configurable resolution support
- Make business impact predictions for each offered resolution option
- Monitor operations proactively to avert potential problems



Source: SAP SE

Training

- User Role-Based
- Recommend an appropriate training solution.
- Multiple delivery methods

Web-based Training	Instructor Led Training (ILT)	WebEx Learning Lab or "the doctor is in"	Frequently Asked Questions	Job Aids / Quick Reference Guide (QRG)
• Role based, delivered through an LMS or standalone • Links to current policies, procedures, and other resources • Include real-world simulations • Self-study or facilitated	• Concepts, exercises, test delivered by subject matter experts (SME) • Focused on power users	• Delivered by Subject Matter Experts (SME) • Staff on regularly scheduled basis by SME's from both Gloco and EquipRentz to help users on an ad hoc basis	• Contains a list of common queries • Could be a virtual list of common queries • May need to be user role specific	• Describes commonly performed tasks and provides quick tips (*Financial settlements)* • Part of a robust performance support solution

Slide 1

Demonstrations of Selected Use Cases

The demonstrations provided in this attachment provide a vision of what is expected to be developed. The use cases shown are:

- Supplier of equipment maintains equipment details in the S/4HANA equipment master
- Supplier information on where their equipment is located and condition of the equipment
- Usage and business statistics of rental equipment
- Renter's selection of equipment

1

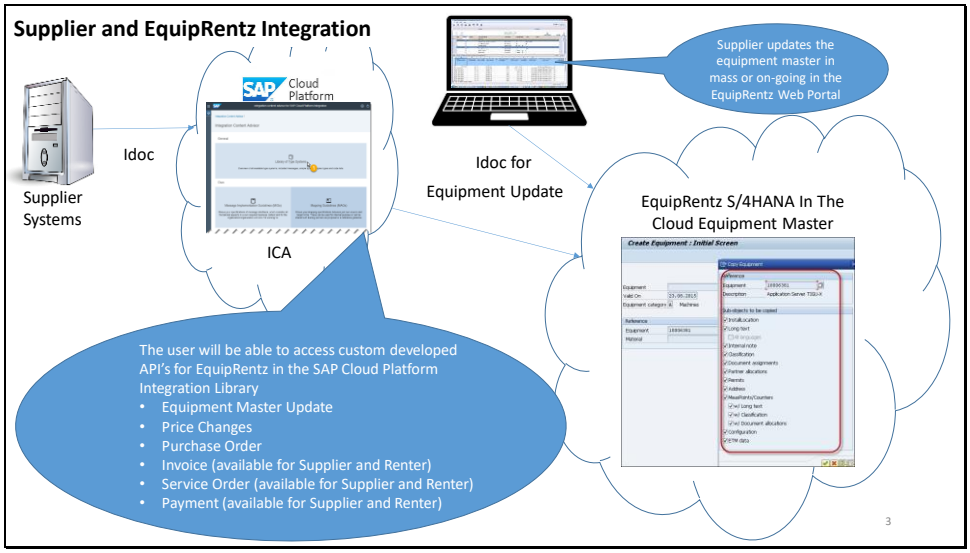
Slide 2

Supplier of equipment maintains equipment details in the S/4HANA equipment master

- A new equipment supplier joining the EquipRentz family will initially upload all the equipment the supplier has available using a mass upload facility accessed via the EquipRentz web portal
- The supplier has the option of linking its supplier systems directly with the EquipRentz platform using the SAP Cloud Platform Integration (CPI) tools specifically for B2B transaction processing (SAP ICA)
- EquipRentz will offer pre-configured API's that the supplier (and renter) can access via the ICA library and modify these to facilitate event driven data interchanges between the supplier and EquipRentz
- The supplier can update master and transaction data manually via the EquipRentz portal, if the supplier is unable to link directly to Equiprentz using standard B2B protocols

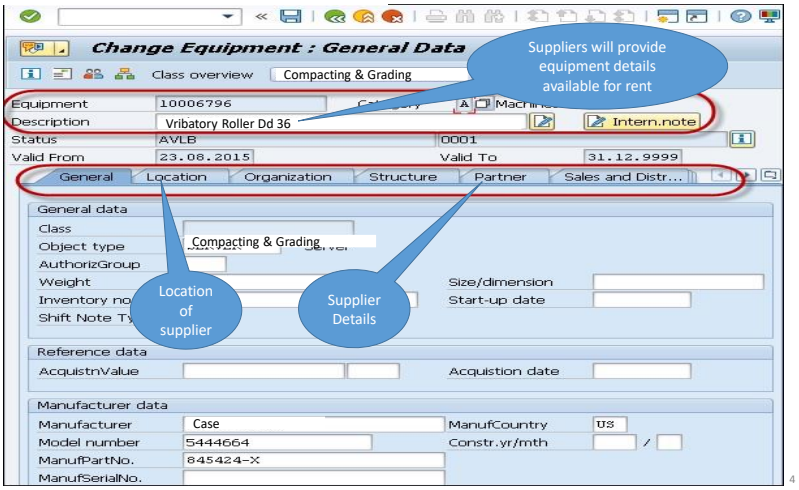
2

Slide 3


Supplier and EquipRentz Integration
Supplier updates the equipment master in mass or on-going in the EquipRentz Web Portal
SAP Cloud Platform
Idoc
Supplier Systems
Idoc for Equipment Update
EquipRentz S/4HANA In The Cloud Equipment Master
ICA
The user will be able to access custom developed API's for EquipRentz in the SAP Cloud Platform Integration Library
• Equipment Master Update
• Price Changes
• Purchase Order
• Invoice (available for Supplier and Renter)
• Service Order (available for Supplier and Renter)
• Payment (available for Supplier and Renter)
3

Slide 4

Equipment Master Change Screen in S/4HANA



Slide 5

Supplier information on where their equipment is located and condition of the equipment

- The IoT devices will record the location and condition of the equipment on a continuous basis.
- This IoT data is transmitted to EquipRentz's SAP IoT Leonardo cloud analytics platform
- The IoT data is matched with the Equipment Master in S/4HANA to determine ownership, type of equipment and any other master data details
- The IoT devices transmitting the condition of the equipment is uploaded into the S/4HANA Predictive Maintenance application to analyze the condition and determine any repair or maintenance needs. The diagnostics tool will be implemented as an additional service, enhanced by Machine Learning, to manage the equipment maintenance
- The supplier will be able to request service requests from a third party through the EquipRentz web portal or dispatch its own repair services

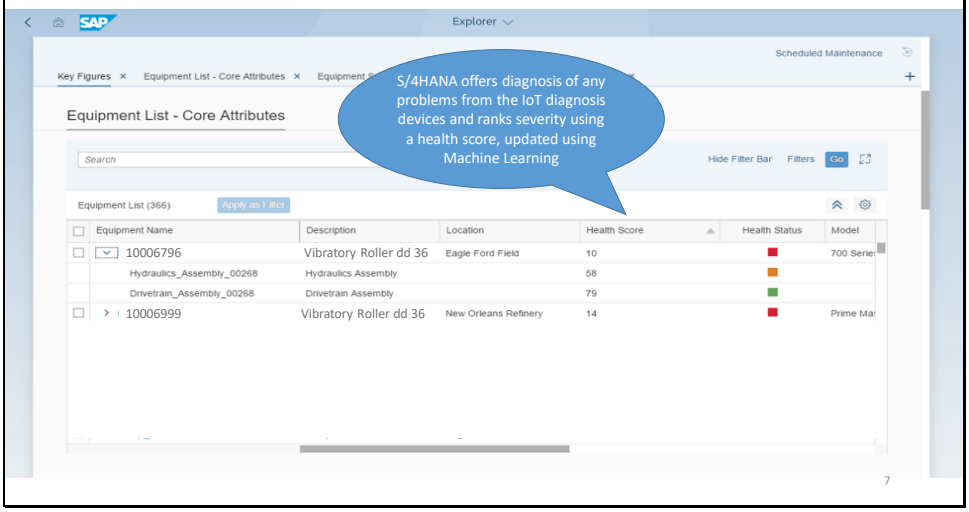
5

Slide 6

Supplier Equipment Location View in the EquipRentz Portal from S/4HANA

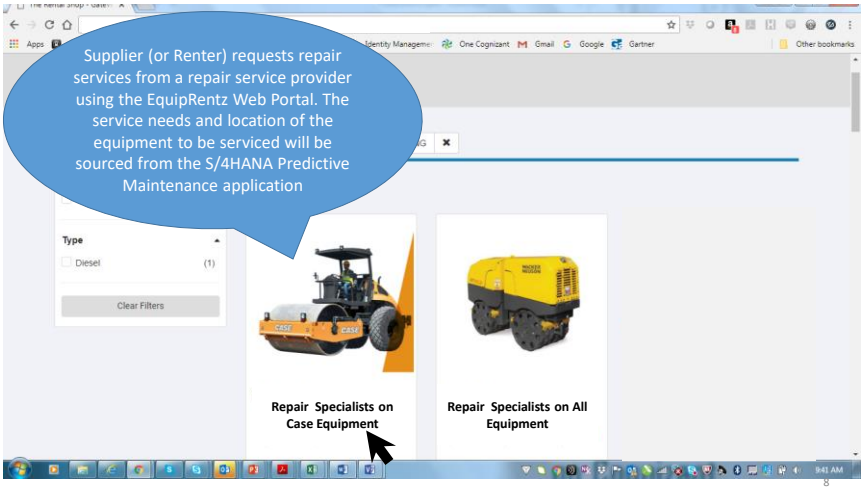
Slide 7

Supplier Health Score in the EquipRentz Portal from S/4HANA Predictive Maintenance App

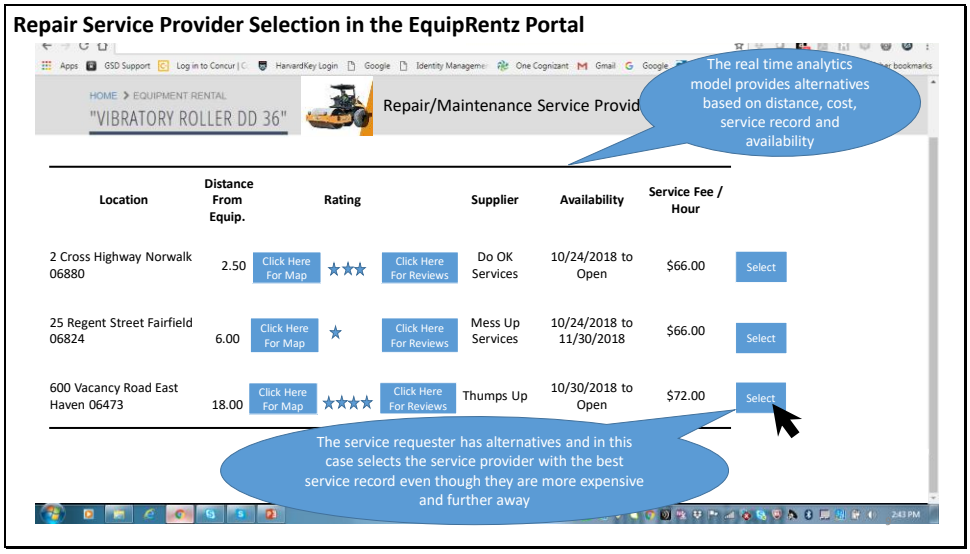


Slide 8

Request a Repair Service in the EquipRentz Portal



Slide 9


Repair Service Provider Selection in the EquipRentz Portal
HOME > EQUIPMENT RENTAL
"VIBRATORY ROLLER DD 36"
Repair/Maintenance Service Provid
The real time analytics model provides alternatives based on distance, cost, service record and availability
Location
Distance From Equip.
Rating
Supplier
Availability
Service Fee / Hour
2 Cross Highway Norwalk 06880
2.50
Click Here For Map
Click Here For Reviews
Do OK Services
10/24/2018 to Open
$66.00
Select
25 Regent Street Fairfield 06824
6.00
Click Here For Map
Click Here For Reviews
Mess Up Services
10/24/2018 to 11/30/2018
$66.00
Select
600 Vacancy Road East Haven 06473
18.00
Click Here For Map
Click Here For Reviews
Thumps Up
10/30/2018 to Open
$72.00
Select
The service requester has alternatives and in this case selects the service provider with the best service record even though they are more expensive and further away

Slide 10

Usage and business statistics of rental equipment

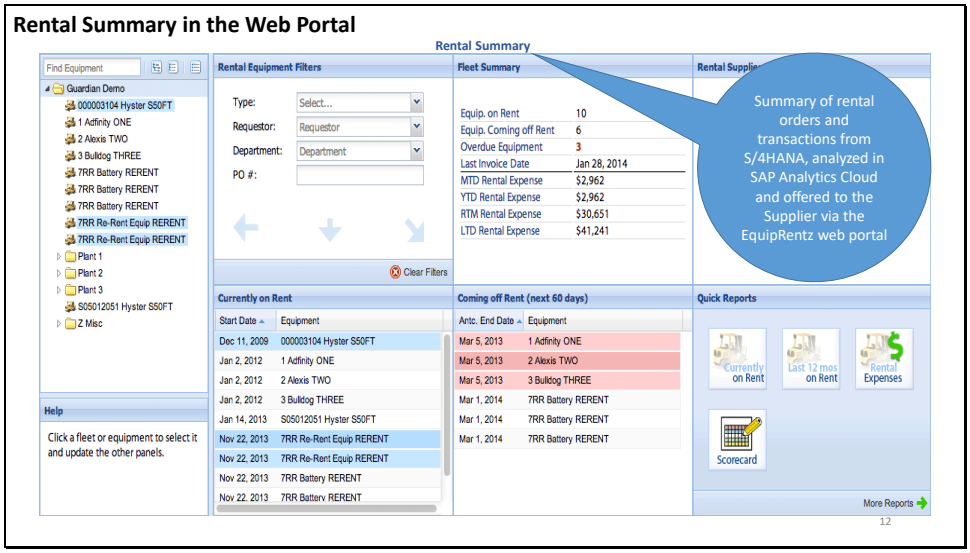
- The IoT devices will record the location and condition of the equipment on a continuous basis.
- This IoT data is transmitted to EquipRentz's SAP IoT Leonardo cloud analysis platform
- The IoT data is matched with the Equipment Master in S/4HANA to determine ownership, type of equipment and any other equipment master data details
- The rental (or repair service or transport) status of the equipment is established from the service order details obtained from S/4HANA
- EquipRentz provides the supplier with usage and business statistics of the supplier's rental equipment to assist the supplier with managing the business.
  - Usage and business analysis is transacted in EquipRentz SAP Analytics Cloud
  - The information is reported to the supplier via the EquipRentz web portal

10

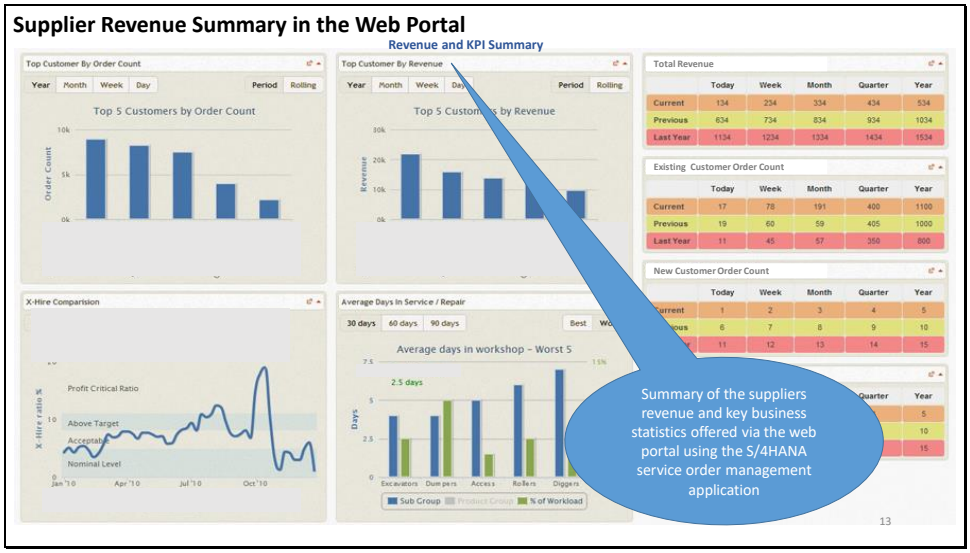
Slide 11

Supplier Usage Summary in the Web Portal

Slide 12


Rental Summary in the Web Portal
Rental Summary
Find Equipment
Guardian Demo
000003104 Hyster S50FT
1 Adfinity ONE
2 Alexis TWO
3 Bulldog THREE
7RR Battery RERENT
7RR Battery RERENT
7RR Battery RERENT
7RR Re-Rent Equip RERENT
7RR Re-Rent Equip RERENT
Plant 1
Plant 2
Plant 3
S05012051 Hyster S50FT
Z Misc
Help
Click a fleet or equipment to select it and update the other panels.
Rental Equipment Filters
Type:
Select...
Requestor:
Requestor
Department:
Department
PO #:
Clear Filters
Fleet Summary
Equip. on Rent 10
Equip. Coming off Rent 6
Overdue Equipment 3
Last Invoice Date Jan 28, 2014
MTD Rental Expense $2,962
YTD Rental Expense $2,962
RTM Rental Expense $30,651
LTD Rental Expense $41,241
Summary of rental orders and transactions from S/4HANA, analyzed in SAP Analytics Cloud and offered to the Supplier via the EquipRentz web portal
Currently on Rent
Start Date
Equipment
Dec 11, 2009 000003104 Hyster S50FT
Jan 2, 2012 1 Adfinity ONE
Jan 2, 2012 2 Alexis TWO
Jan 2, 2012 3 Bulldog THREE
Jan 14, 2013 S05012051 Hyster S50FT
Nov 22, 2013 7RR Re-Rent Equip RERENT
Nov 22, 2013 7RR Re-Rent Equip RERENT
Nov 22, 2013 7RR Battery RERENT
Nov 22, 2013 7RR Battery RERENT
Coming off Rent (next 60 days)
Antc. End Date
Equipment
Mar 5, 2013 1 Adfinity ONE
Mar 5, 2013 2 Alexis TWO
Mar 5, 2013 3 Bulldog THREE
Mar 1, 2014 7RR Battery RERENT
Mar 1, 2014 7RR Battery RERENT
Mar 1, 2014 7RR Battery RERENT
Quick Reports
Currently on Rent
Last 12 mos on Rent
Rental Expenses
Scorecard
More Reports
12

Slide 13


Supplier Revenue Summary in the Web Portal
Revenue and KPI Summary
Top Customer By Order Count
Top 5 Customers by Order Count
Top Customer By Revenue
Total Revenue
Existing Customer Order Count
New Customer Order Count
X-Hire Comparision
Profit Critical Ratio
Above Target
Nominal Level
Average Days In Service / Repair
Average days in workshop - Worst 5
2.5 days
Excavators
Dumpers
Access
Rollers
Diggers
Sub Group
% of Workload
Summary of the suppliers revenue and key business statistics offered via the web portal using the S/4HANA service order management application
13

Slide 14

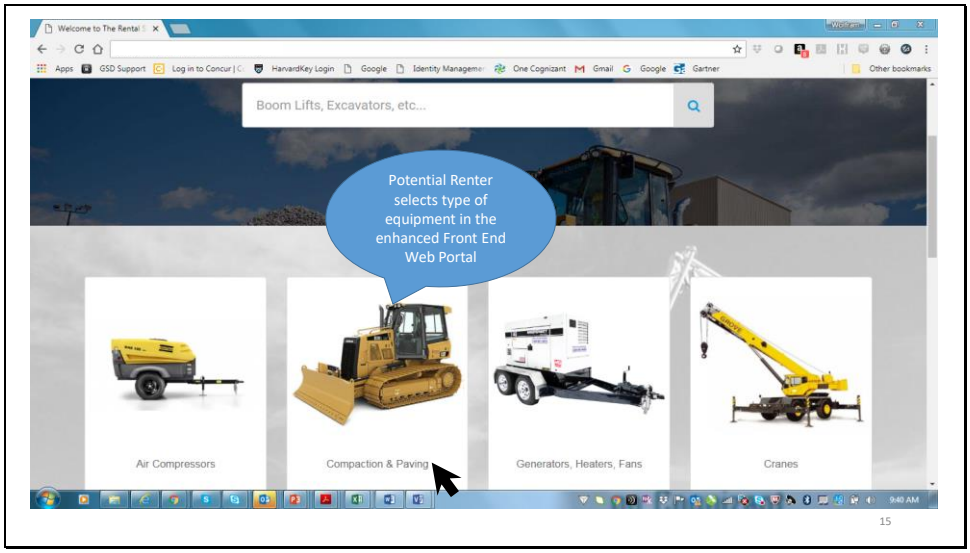
Renter's Selection of Equipment

An example of how technology from IoT, Analytics and ERP are required for the renter to make the appropriate choice of equipment:

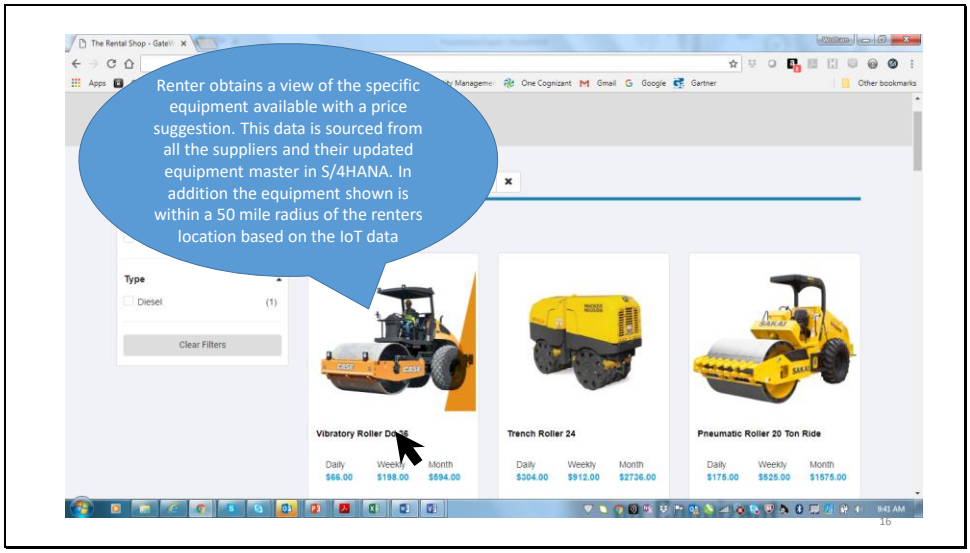
- Renter interacts with the web portal
- Location and condition is determined from the IoT devices on the equipment
- IoT analytics platform analyzes the best options for the renter
- S/4HANA pricing and service order management transacts the rental and transport arrangements.

14

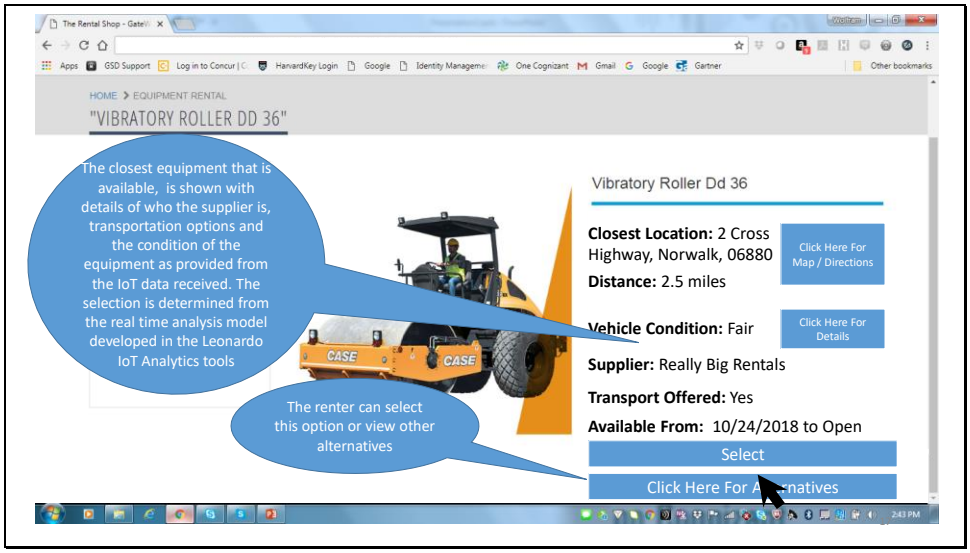
Slide 15


Boom Lifts, Excavators, etc...
Potential Renter selects type of equipment in the enhanced Front End Web Portal
Air Compressors
Compaction & Paving
Generators, Heaters, Fans
Cranes
15

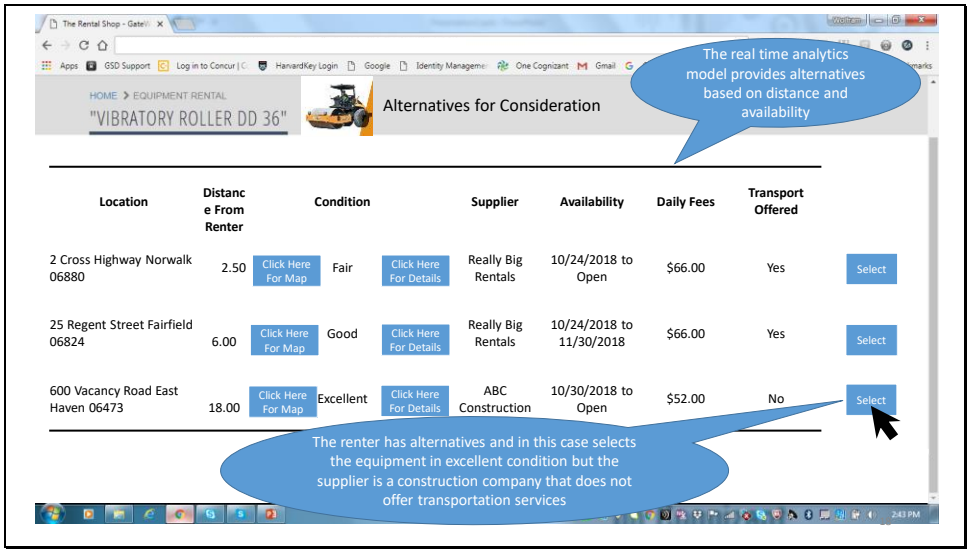
Slide 16


Renter obtains a view of the specific equipment available with a price suggestion. This data is sourced from all the suppliers and their updated equipment master in S/4HANA. In addition the equipment shown is within a 50 mile radius of the renters location based on the IoT data
Type
Diesel
(1)
Clear Filters
Vibratory Roller Do
Daily
$66.00
Weekly
$198.00
Month
$594.00
Trench Roller 24
Daily
$304.00
Weekly
$912.00
Month
$2736.00
Pneumatic Roller 20 Ton Ride
Daily
$175.00
Weekly
$525.00
Month
$1575.00
16

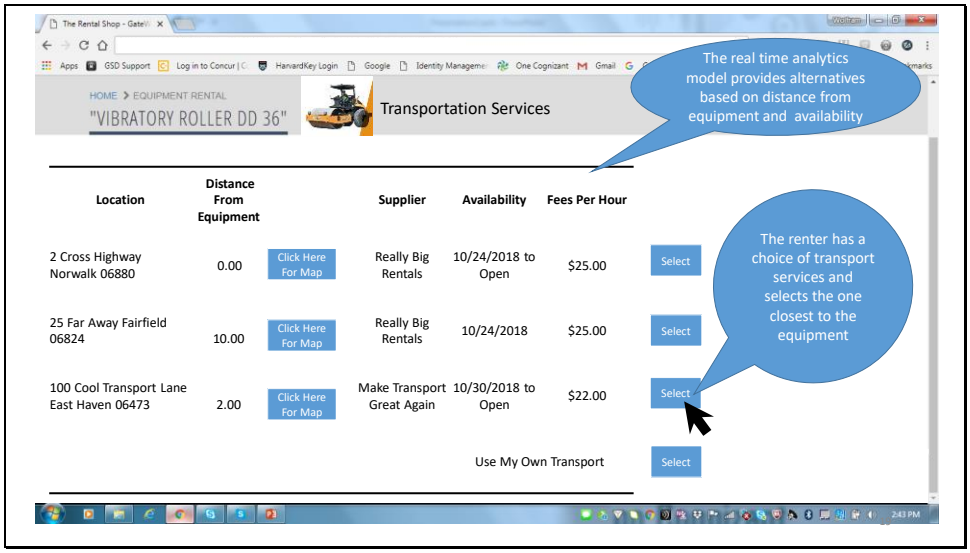
Slide 17


HOME > EQUIPMENT RENTAL
"VIBRATORY ROLLER DD 36"
The closest equipment that is available, is shown with details of who the supplier is, transportation options and the condition of the equipment as provided from the IoT data received. The selection is determined from the real time analysis model developed in the Leonardo IoT Analytics tools
The renter can select this option or view other alternatives
Vibratory Roller Dd 36
Closest Location: 2 Cross Highway, Norwalk, 06880
Click Here For Map / Directions
Distance: 2.5 miles
Vehicle Condition: Fair
Click Here For Details
Supplier: Really Big Rentals
Transport Offered: Yes
Available From: 10/24/2018 to Open
Select
Click Here For Alternatives

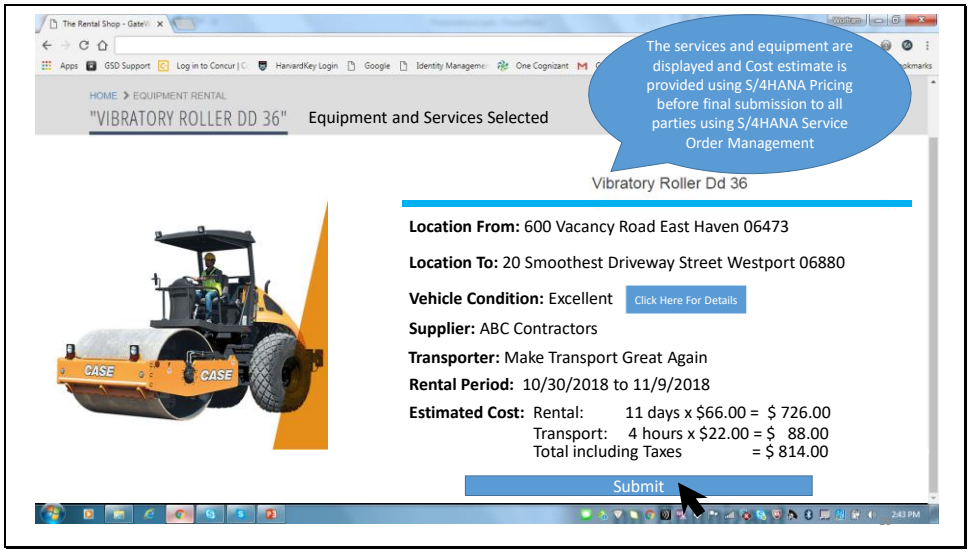
Slide 18


HOME > EQUIPMENT RENTAL
"VIBRATORY ROLLER DD 36"
Alternatives for Consideration
The real time analytics model provides alternatives based on distance and availability
Location
Distance From Renter
Condition
Supplier
Availability
Daily Fees
Transport Offered
2 Cross Highway Norwalk 06880
2.50
Click Here For Map
Fair
Click Here For Details
Really Big Rentals
10/24/2018 to Open
$66.00
Yes
Select
25 Regent Street Fairfield 06824
6.00
Click Here For Map
Good
Click Here For Details
Really Big Rentals
10/24/2018 to 11/30/2018
$66.00
Yes
Select
600 Vacancy Road East Haven 06473
18.00
Click Here For Map
Excellent
Click Here For Details
ABC Construction
10/30/2018 to Open
$52.00
No
Select
The renter has alternatives and in this case selects the equipment in excellent condition but the supplier is a construction company that does not offer transportation services

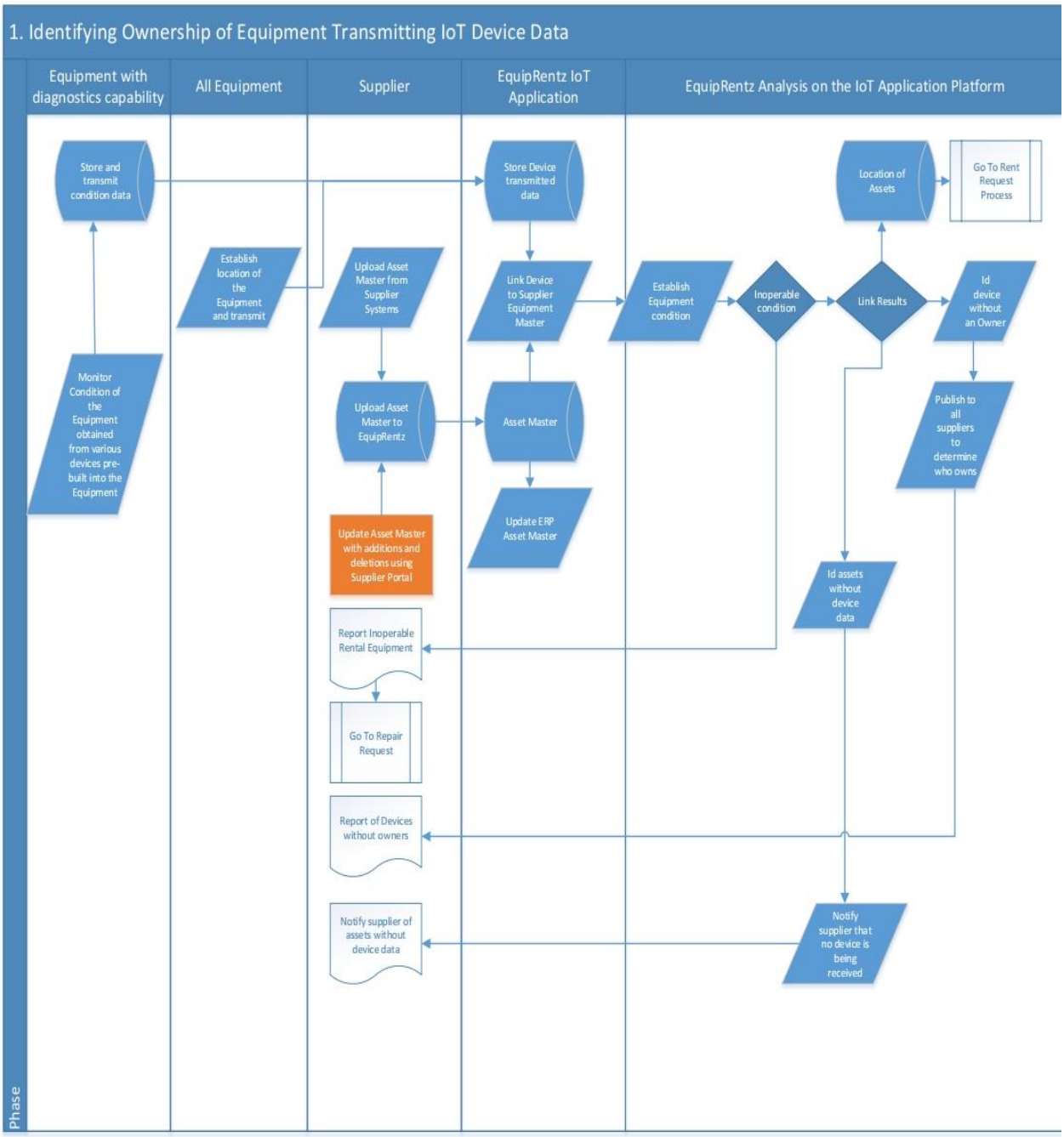
Slide 19

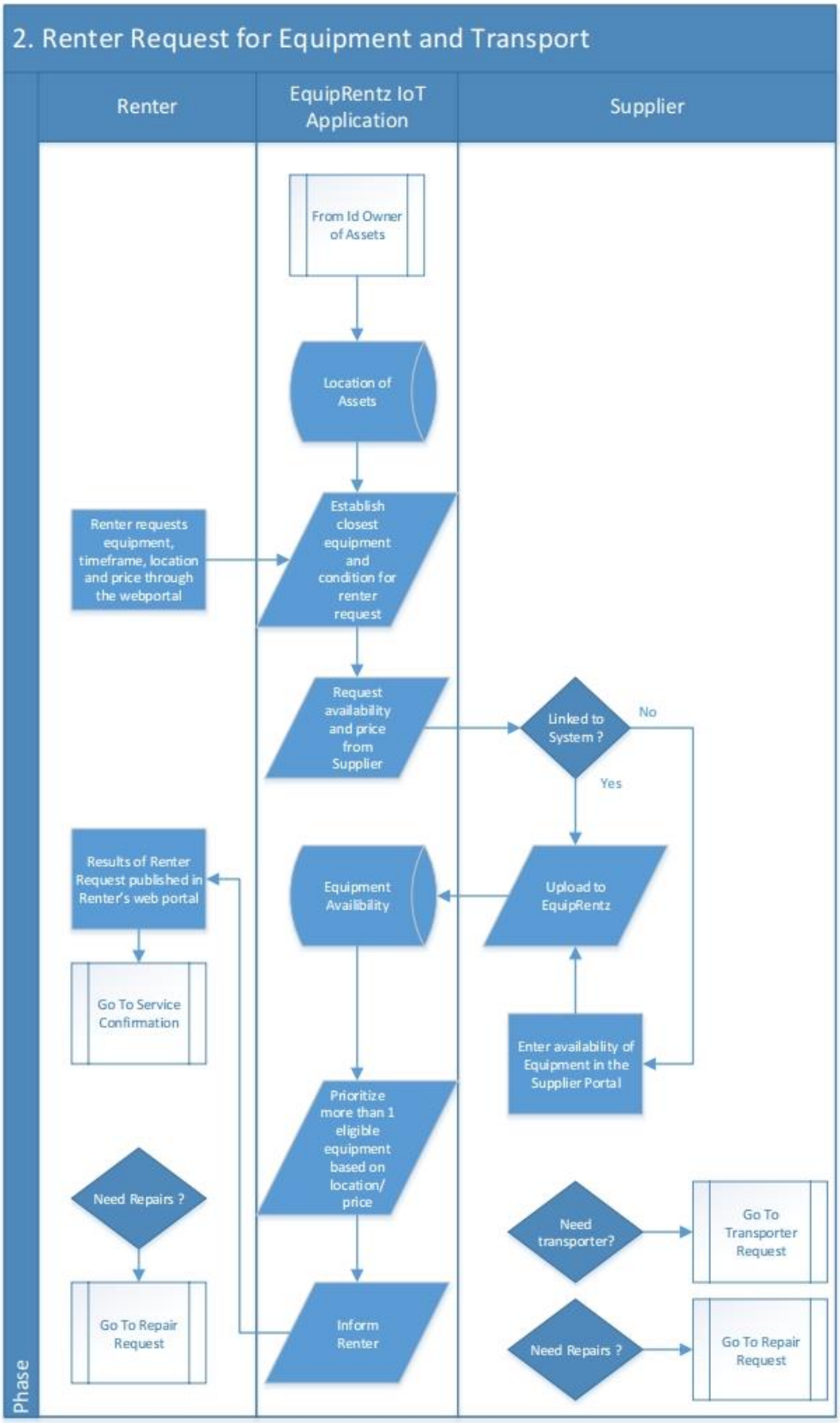

HOME > EQUIPMENT RENTAL
"VIBRATORY ROLLER DD 36"
Transportation Services
The real time analytics model provides alternatives based on distance from equipment and availability
Location
Distance From Equipment
Supplier
Availability
Fees Per Hour
2 Cross Highway Norwalk 06880
0.00
Click Here For Map
Really Big Rentals
10/24/2018 to Open
$25.00
Select
25 Far Away Fairfield 06824
10.00
Click Here For Map
Really Big Rentals
10/24/2018
$25.00
Select
100 Cool Transport Lane East Haven 06473
2.00
Click Here For Map
Make Transport Great Again
10/30/2018 to Open
$22.00
Select
Use My Own Transport
Select
The renter has a choice of transport services and selects the one closest to the equipment

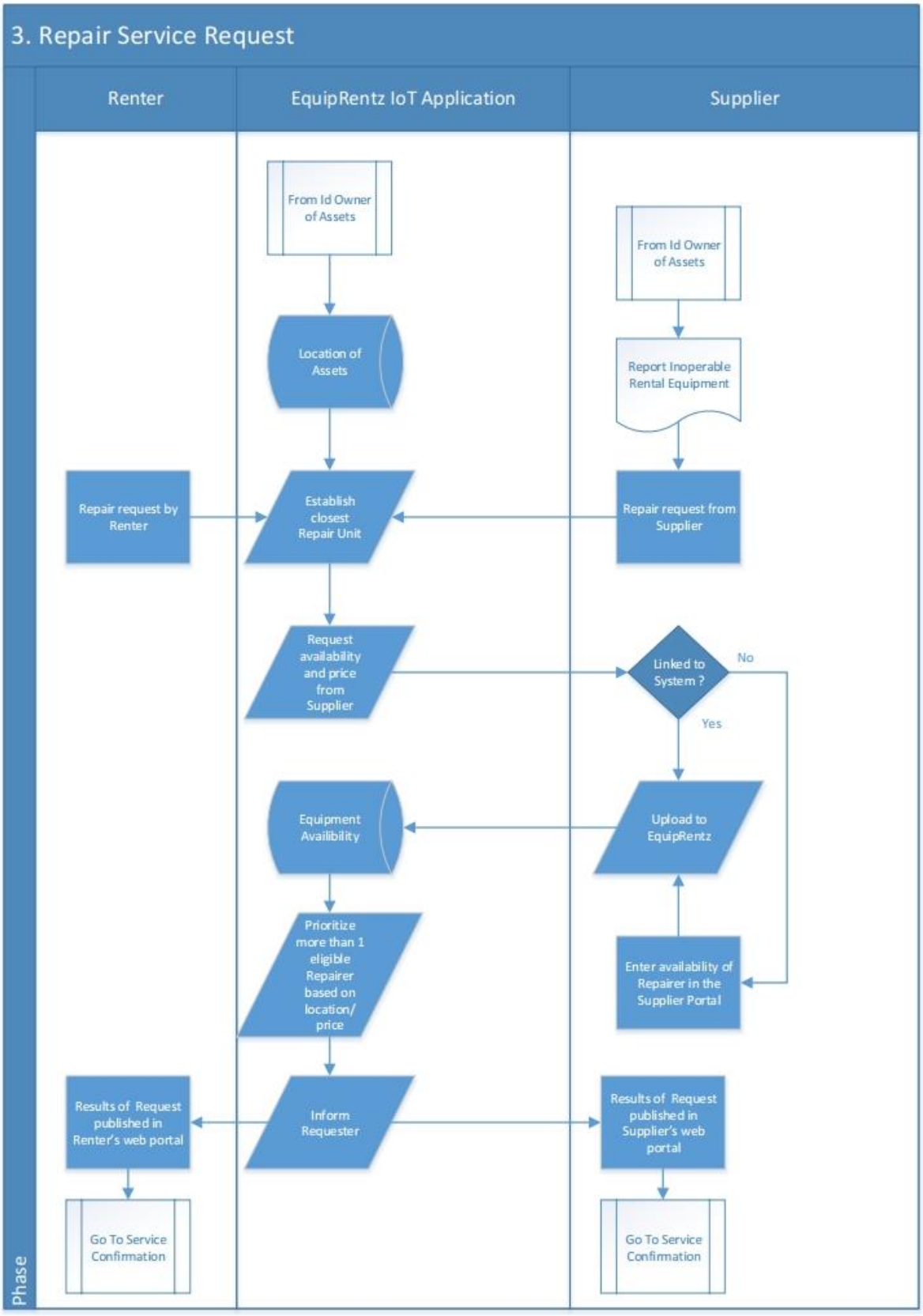
Slide 20

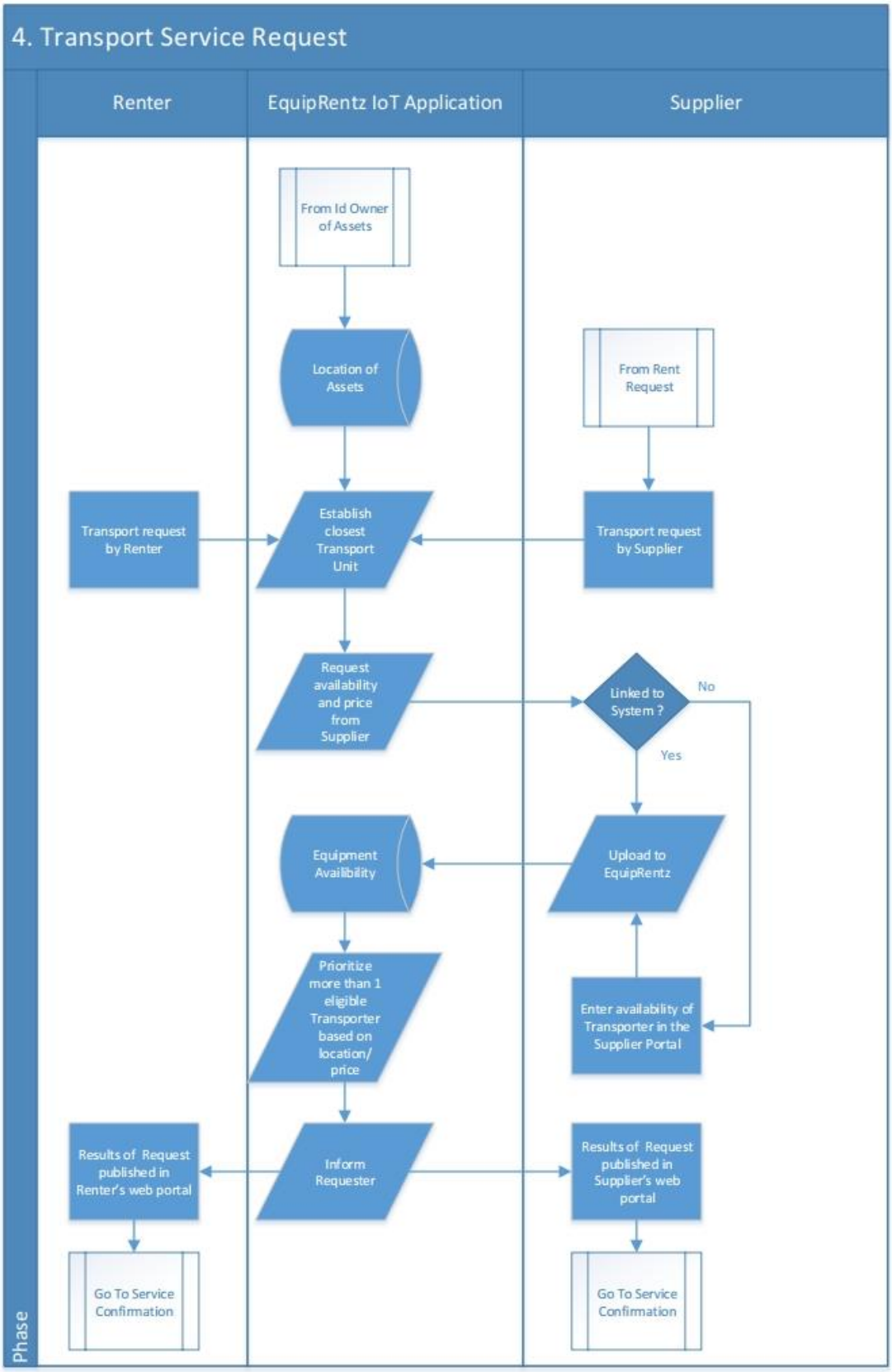

The services and equipment are displayed and Cost estimate is provided using S/4HANA Pricing before final submission to all parties using S/4HANA Service Order Management
HOME > EQUIPMENT RENTAL
"VIBRATORY ROLLER DD 36"
Equipment and Services Selected
Vibratory Roller Dd 36
Location From: 600 Vacancy Road East Haven 06473
Location To: 20 Smoothest Driveway Street Westport 06880
Vehicle Condition: Excellent
Click Here For Details
Supplier: ABC Contractors
Transporter: Make Transport Great Again
Rental Period: 10/30/2018 to 11/9/2018
Estimated Cost: Rental: 11 days x $66.00 = $ 726.00
Transport: 4 hours x $22.00 = $ 88.00
Total including Taxes = $ 814.00
Submit

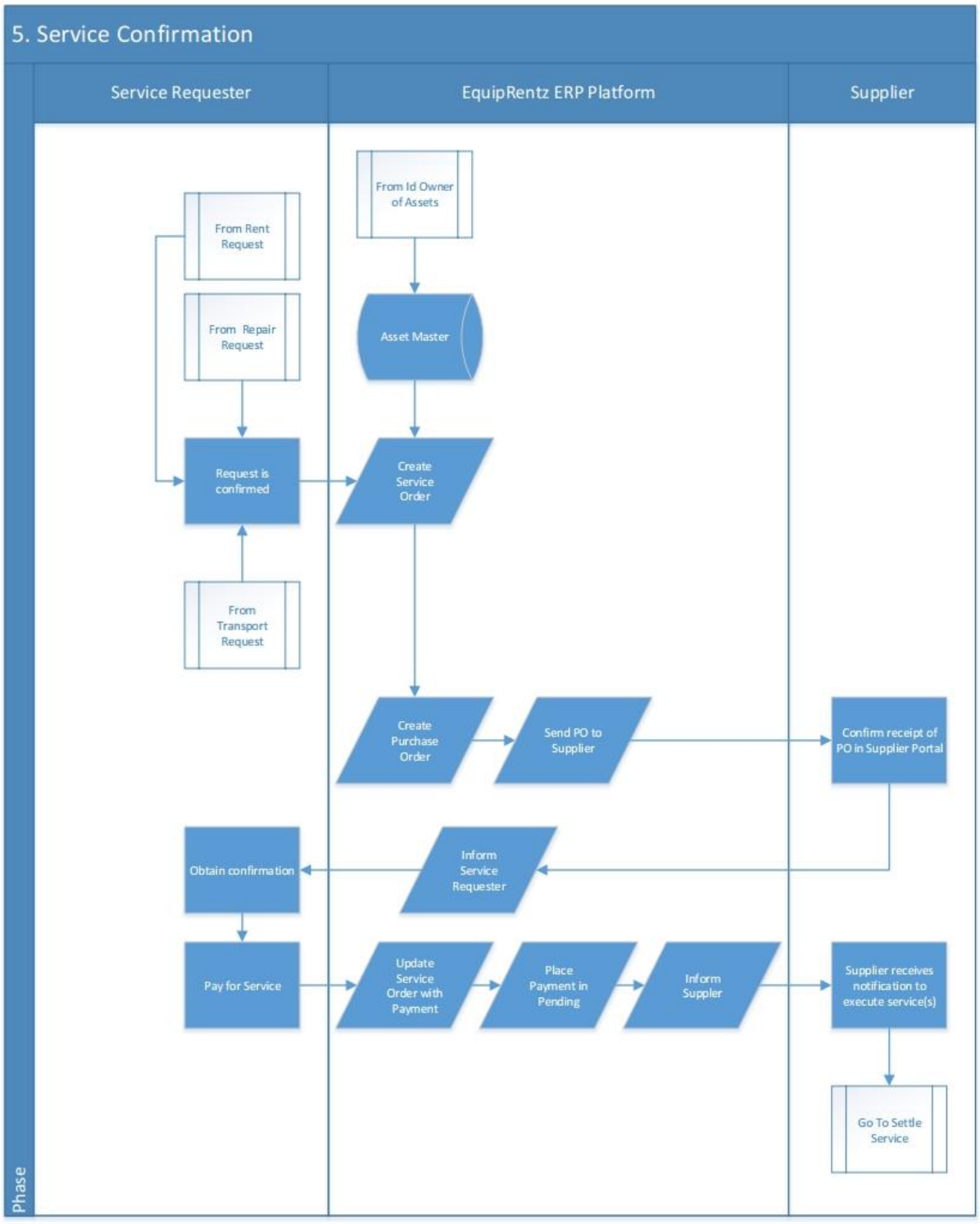
Process Flows

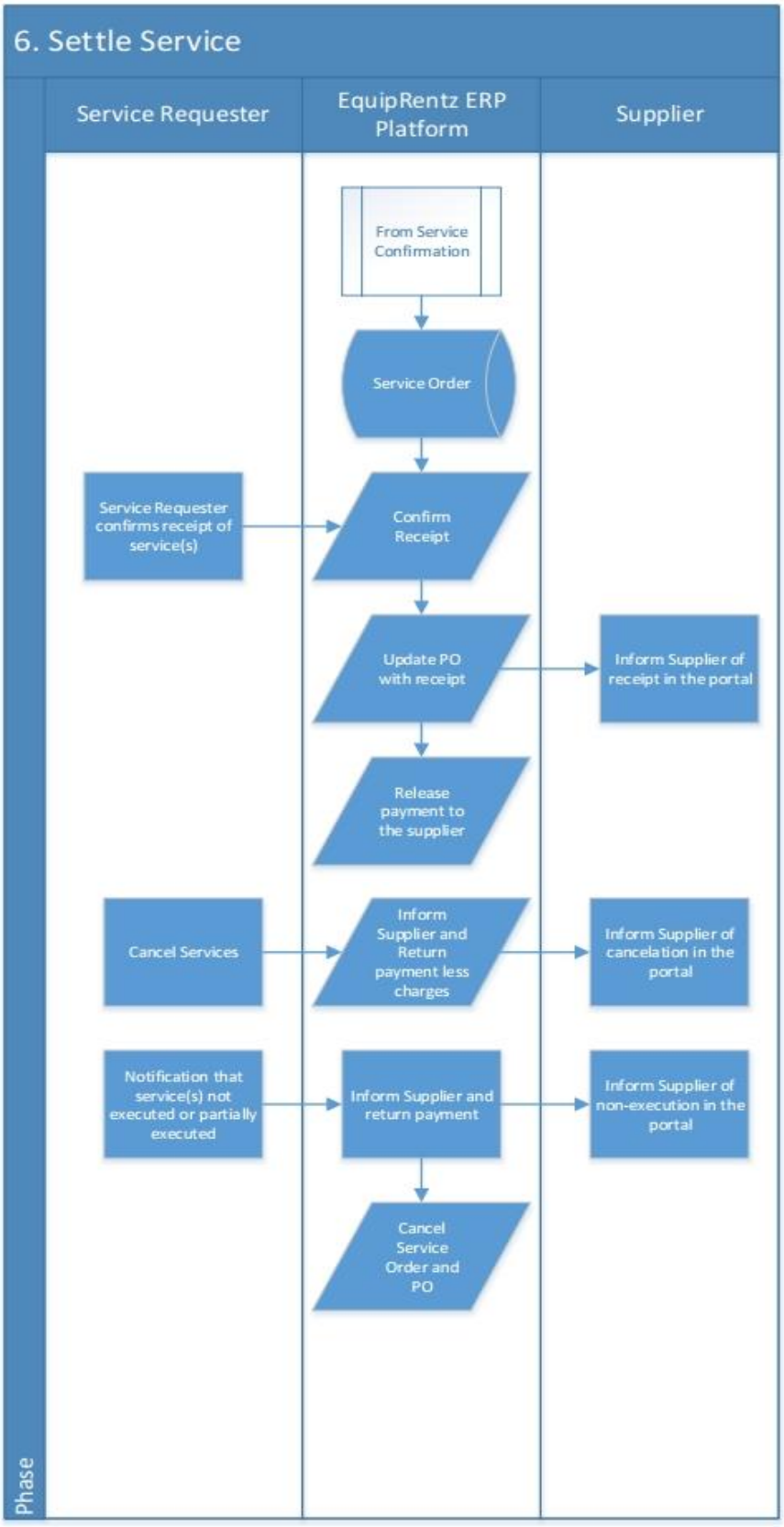
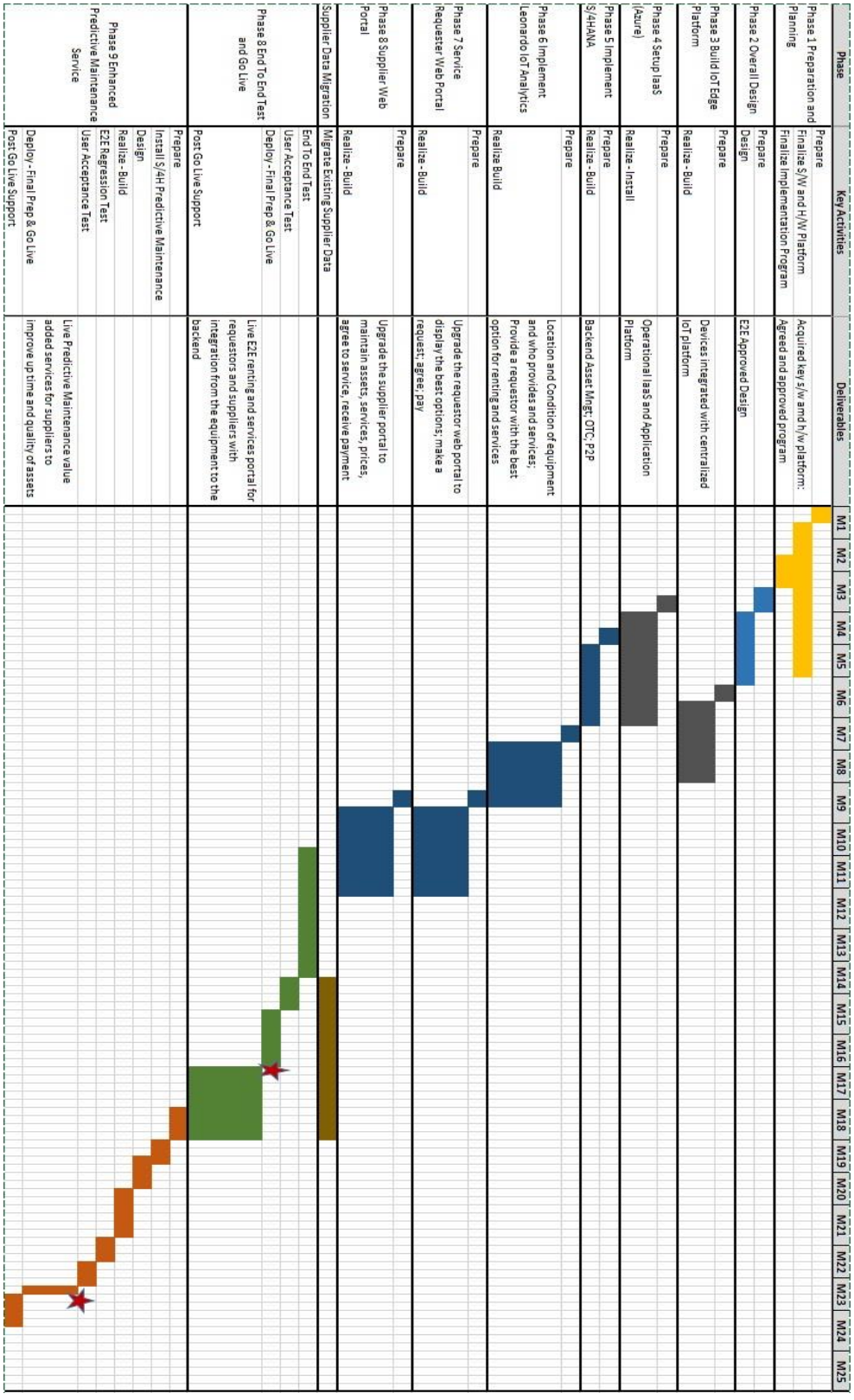

1. Identifying Ownership of Equipment Transmitting IoT Device Data
Equipment with diagnostics capability
All Equipment
Supplier
EquipRentz IoT Application
EquipRentz Analysis on the IoT Application Platform
Phase
Store and transmit condition data
Monitor Condition of the Equipment obtained from various devices pre-built into the Equipment
Establish location of the Equipment and transmit
Upload Asset Master from Supplier Systems
Upload Asset Master to EquipRentz
Update Asset Master with additions and deletions using Supplier Portal
Report Inoperable Rental Equipment
Go To Repair Request
Report of Devices without owners
Notify supplier of assets without device data
Store Device transmitted data
Link Device to Supplier Equipment Master
Asset Master
Update ERP Asset Master
Establish Equipment condition
Inoperable condition
Link Results
Location of Assets
Go To Rent Request Process
Id device without an Owner
Publish to all suppliers to determine who owns
Id assets without device data
Notify supplier that no device is being received


2. Renter Request for Equipment and Transport
Renter
EquipRentz IoT Application
Supplier
Phase
From Id Owner of Assets
Location of Assets
Renter requests equipment, timeframe, location and price through the webportal
Establish closest equipment and condition for renter request
Request availability and price from Supplier
Linked to System ?
No
Yes
Results of Renter Request published in Renter's web portal
Equipment Availibility
Upload to EquipRentz
Go To Service Confirmation
Enter availability of Equipment in the Supplier Portal
Prioritize more than 1 eligible equipment based on location/ price
Need Repairs ?
Need transporter?
Go To Transporter Request
Go To Repair Request
Inform Renter
Need Repairs ?
Go To Repair Request


3. Repair Service Request
Renter
EquipRentz IoT Application
Supplier
From Id Owner of Assets
From Id Owner of Assets
Location of Assets
Report Inoperable Rental Equipment
Repair request by Renter
Establish closest Repair Unit
Repair request from Supplier
Request availability and price from Supplier
Linked to System ?
No
Yes
Equipment Availibility
Upload to EquipRentz
Prioritize more than 1 eligible Repairer based on location/ price
Enter availability of Repairer in the Supplier Portal
Results of Request published in Renter's web portal
Inform Requester
Results of Request published in Supplier's web portal
Go To Service Confirmation
Go To Service Confirmation
Phase


4. Transport Service Request
Renter
EquipRentz IoT Application
Supplier
From Id Owner of Assets
Location of Assets
From Rent Request
Transport request by Renter
Establish closest Transport Unit
Transport request by Supplier
Request availability and price from Supplier
Linked to System ?
No
Yes
Equipment Availibility
Upload to EquipRentz
Prioritize more than 1 eligible Transporter based on location/ price
Enter availability of Transporter in the Supplier Portal
Results of Request published in Renter's web portal
Inform Requester
Results of Request published in Supplier's web portal
Go To Service Confirmation
Go To Service Confirmation
Phase


5. Service Confirmation
Service Requester
EquipRentz ERP Platform
Supplier
Phase
From Id Owner of Assets
From Rent Request
From Repair Request
Asset Master
Request is confirmed
Create Service Order
From Transport Request
Create Purchase Order
Send PO to Supplier
Confirm receipt of PO in Supplier Portal
Obtain confirmation
Inform Service Requester
Pay for Service
Update Service Order with Payment
Place Payment in Pending
Inform Suppler
Supplier receives notification to execute service(s)
Go To Settle Service


6. Settle Service
Service Requester
EquipRentz ERP Platform
Supplier
From Service Confirmation
Service Order
Service Requester confirms receipt of service(s)
Confirm Receipt
Update PO with receipt
Inform Supplier of receipt in the portal
Release payment to the supplier
Cancel Services
Inform Supplier and Return payment less charges
Inform Supplier of cancelation in the portal
Notification that service(s) not executed or partially executed
Inform Supplier and return payment
Inform Supplier of non-execution in the portal
Cancel Service Order and PO
Phase

Program Schedule