



Parcel goods traceability in last-mile delivery

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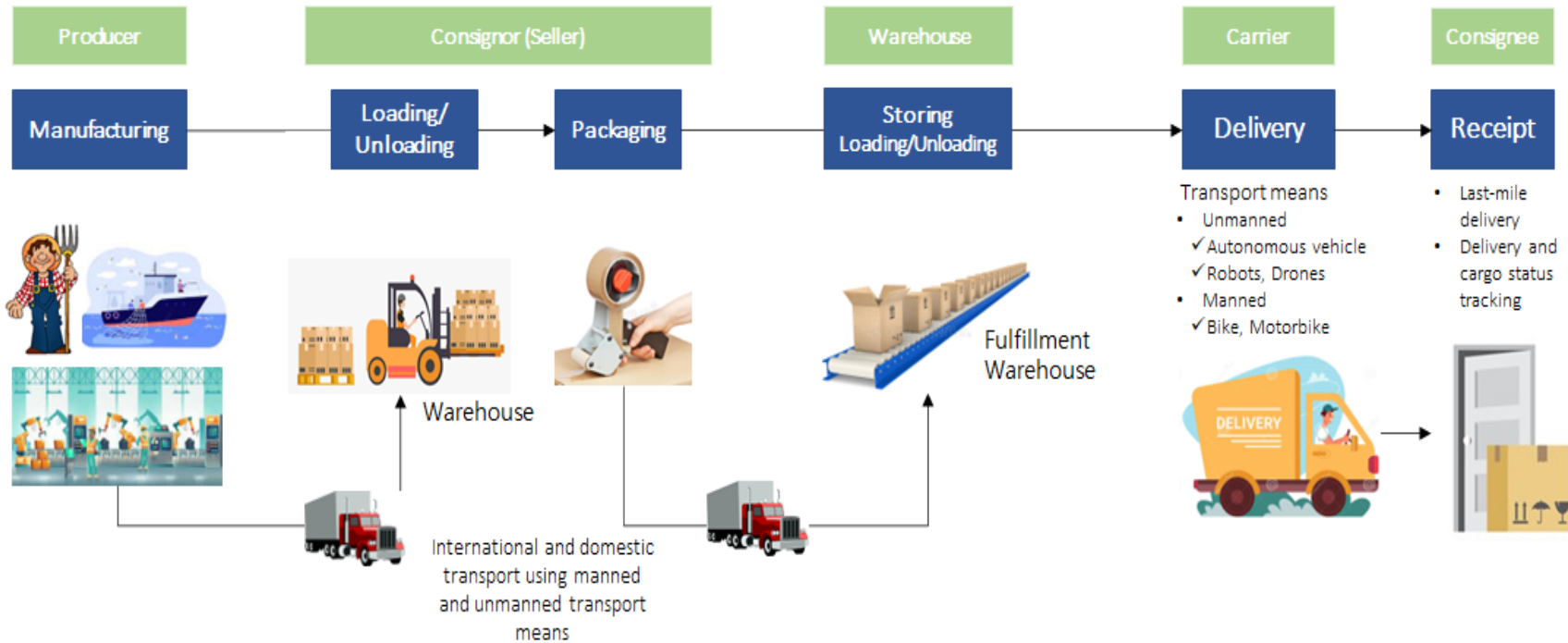
IV. Future

Generals

■ Purpose

- it is necessary to consider how to adapt monitoring and parcel goods tracking approaches from the current logistics environment to the altered logistics environment for a seamless supply chain

■ Scope



White Paper of Seamless traceability in Last-mile Delivery

Service Framework for seamless traceability in Last-mile delivery

○ Generals

■ Deliverables

- BRS and eBusiness Standard for Parcel Goods waybill
- BRS and eBusiness Standard for Parcel Goods delivery receipt
- Whitepaper on Parcel Goods Traceability in last-mile delivery

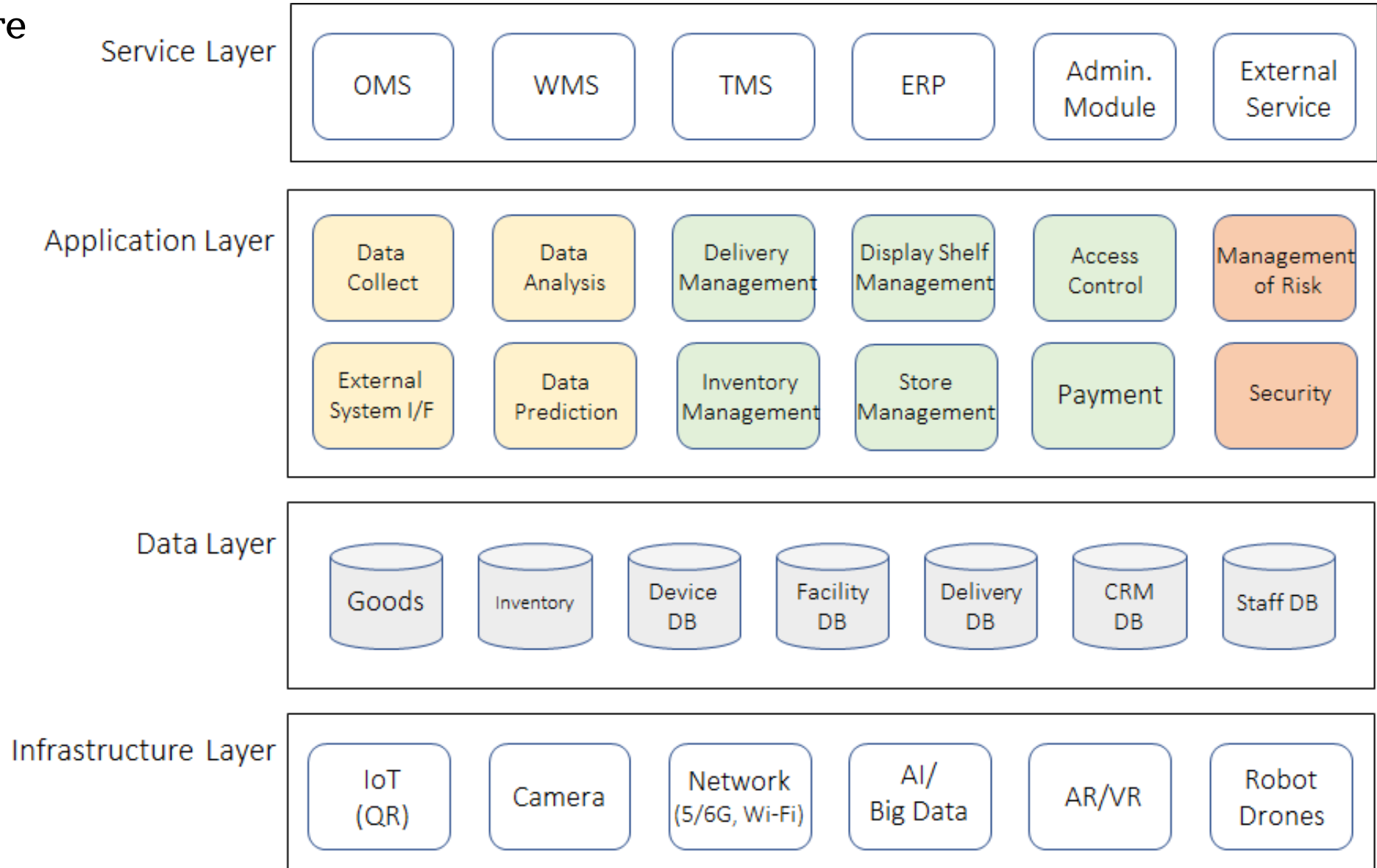
■ Contents of Whitepaper

- Introduction: goal, scope, needs, challenges
- Service framework for parcel goods traceability in last-mile delivery
 - Architecture framework
 - work flow (including business process modeling)
 - interface, exchanged message
- How to capture the required information: data source, capturing, preliminary requirements, etc.
- Cyber security
- Conclusion

2. Contents of Whitepaper

Service framework for parcel goods traceability in last-mile delivery

- Architecture framework

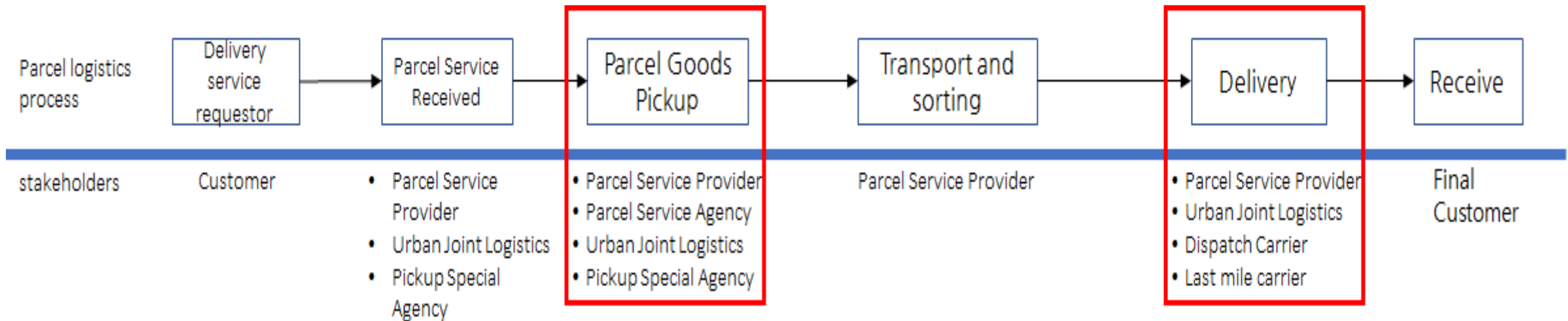


2. Contents of Whitepaper

Service framework for parcel goods traceability in last-mile delivery

Workflow of parcel logistics

- Describes workflow and participants for each process for last-mile delivery service
- Last-mile delivery services may be mainly related to parcel goods services.
- The process of parcel goods service begins with a delivery request and ends when the final customer receives the delivered parcel goods.

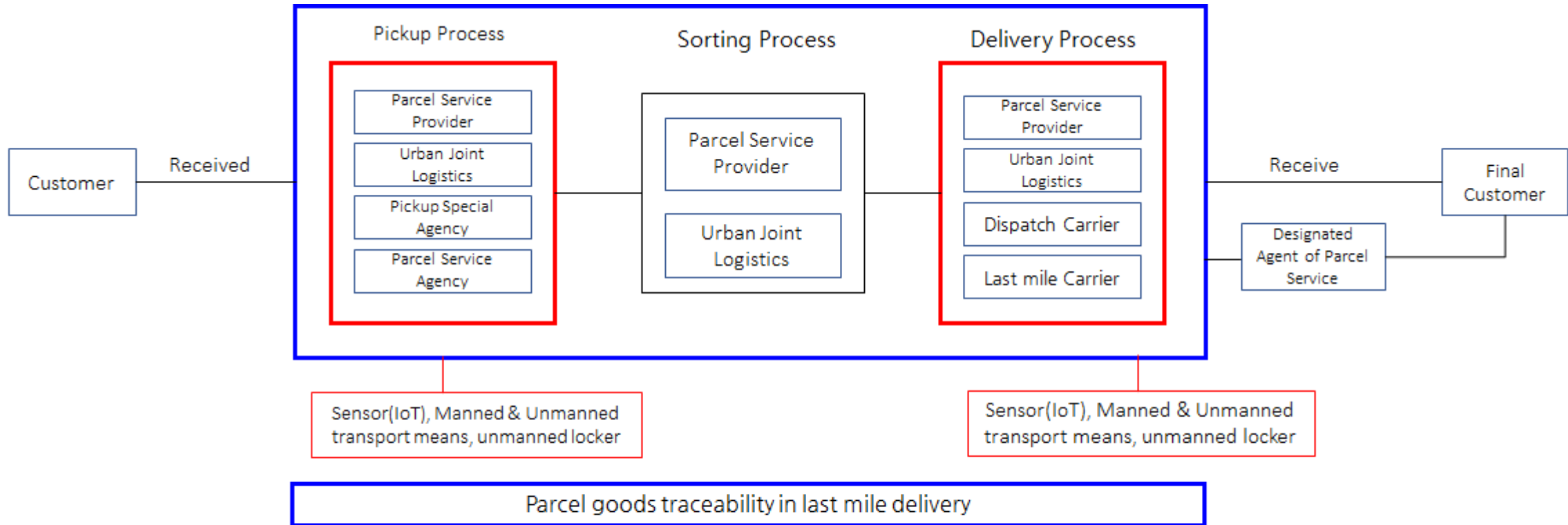


2. Contents of Whitepaper

Service framework for parcel goods traceability in last-mile delivery

Workflow of parcel logistics

Scope



Underlying Technologies

Business Process Model

Information Model (e-Document)

Cyber Security (user Authentication)

Required Interface

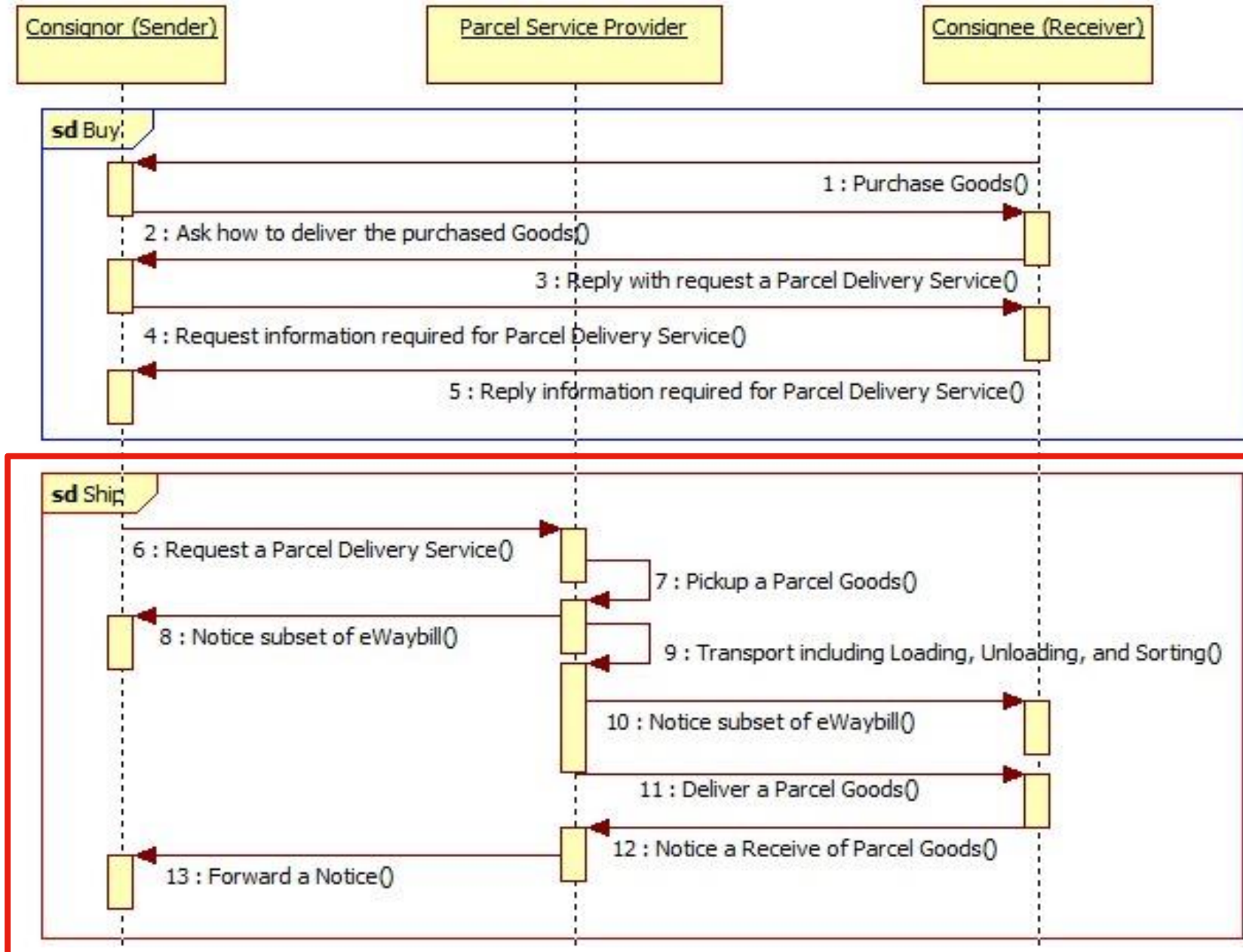
Network (5G, Wi-Fi, Mobile, BLE, etc.)

2. Contents of Whitepaper

- How to capture the required information
 - data source
 - Describes data elements for each data source
 - Physical data source: sensor (IoT device), camera
 - Where (place and things)
 - packaging, manned and unmanned locker
 - warehouse (including fulfillment), Carrier agent
 - Transport means including drones, robots, electronic bikes, etc.
 - Information system
 - Data handling
 - Data capturing -> data cleansing -> data analysis -> data provision -> seamless traceability
 - Data provision
 - Tracking
 - Fault, problem, error detecting
 - Prediction

3. BRS and eBusiness Standard for Parcel Goods waybill

Sequence diagram of delivery service in last-mile logistics



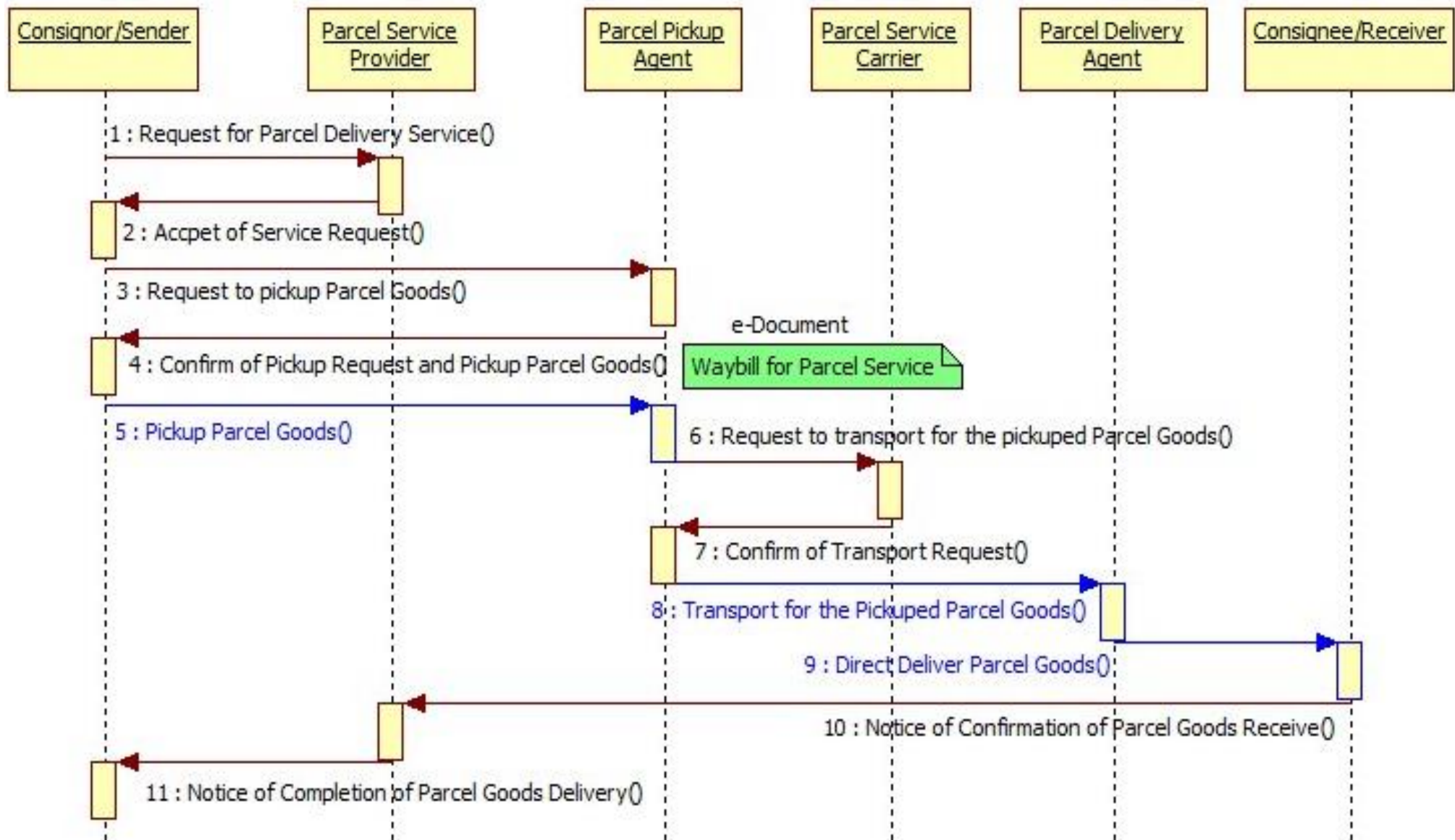
3. BRS and eBusiness Standard for Parcel Goods waybill

Sequence diagram of delivery service in last-mile logistics

items	category	Description
Received	Direct Received	The consignor (sender) requests the Parcel Depot Party/agency to deliver the parcel goods
	Indirect Received	The consignor (sender) visits the designated agency of the parcel service, which may include convenience stores or unmanned lockers, to request delivery of the parcel
	Agency Received	<ul style="list-style-type: none"> The consignor (sender) requests the Parcel Service Agency (Pickup special agency) to deliver the parcel goods. The Parcel Service Agency picks up the parcel goods and requests delivery from the Parcel Service Provider.
Pickup	Direct Pickup	Parcel Pickup Agents visit the pick-up point to collect the requested parcel goods for delivery.
	Indirect Pickup	Pickup Special Agencies visit the pick-up point to collect the requested parcel goods for delivery.
Delivery	Direct Delivery	Parcel Service Provider deliver parcel goods
	Indirect Delivery	Dispatch Carrier deliver parcel goods
Receive	Receive	<ul style="list-style-type: none"> The consignee (receiver) receives parcel goods directly from the Parcel Delivery Agent (dispatch delivery agent). The consignee (or receiver) visits the designated Agent of Parcel Service and receives parcel goods.

3. BRS and eBusiness Standard for Parcel Goods waybill

- Sequence diagram in case of Parcel Service Request – Direct Received, Pickup, and Delivery



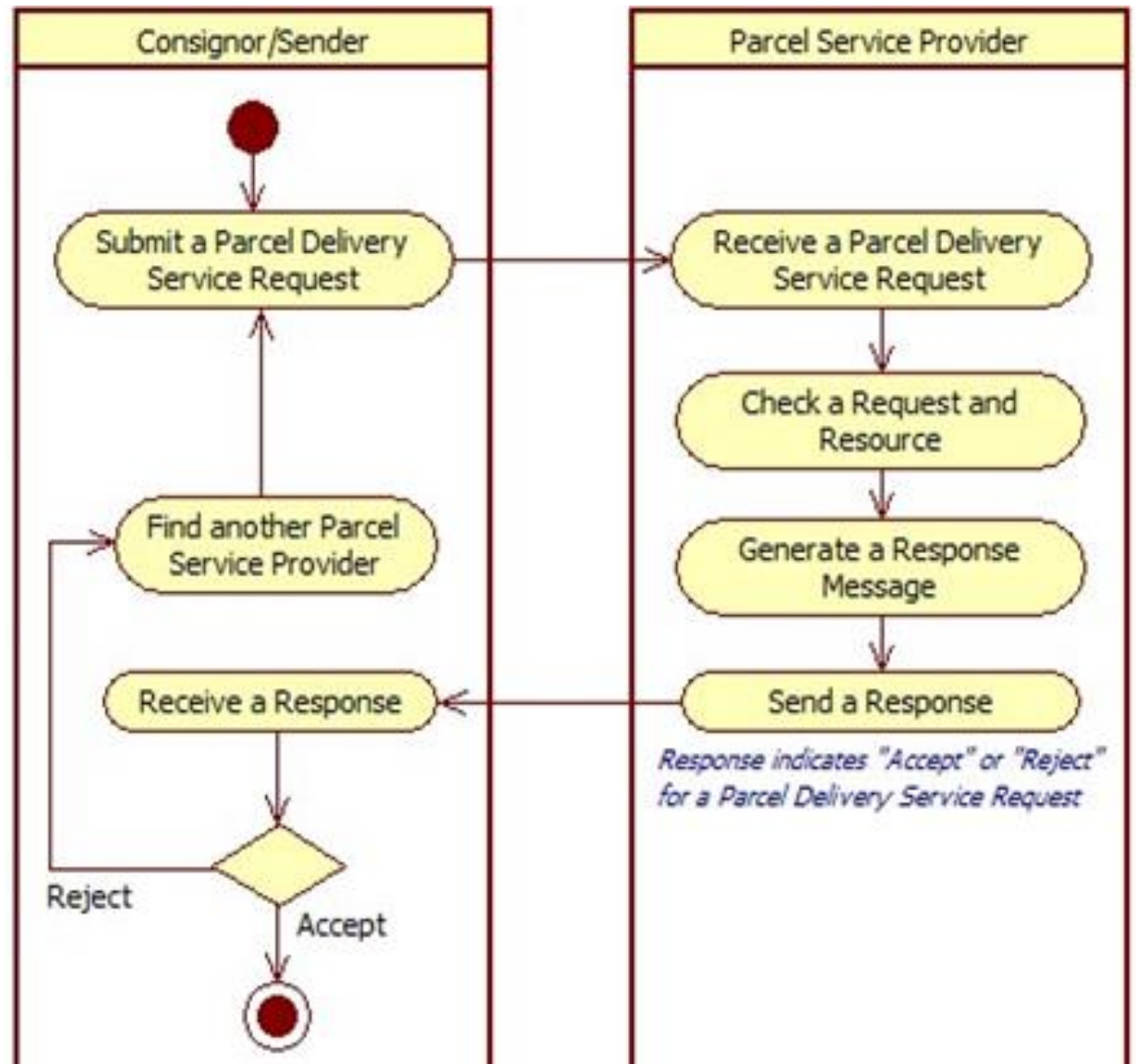
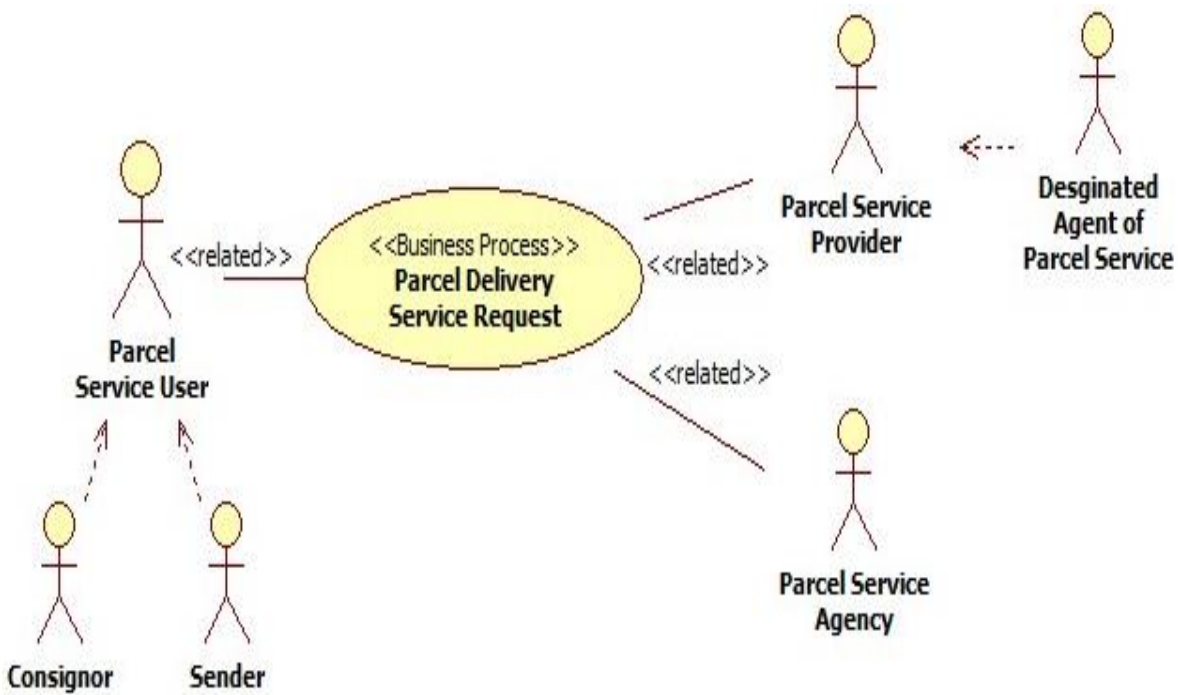
3. BRS and eBusiness Standard for Parcel Goods waybill

Business domain view model

<div style="border: 1px solid black; padding: 5px; display: inline-block; background-color: yellow;"> <<bDomain>> Parcel Logistics </div>	
Industry	Parcel Logistics
Justification	This document is the parcel logistics (mainly last-mile delivery) industry-wide specification.
Reference	<ul style="list-style-type: none"> • UN/CEFACT Unified Modeling Methodology • CCTS, XML NDR, CCL
Stakeholder	<ul style="list-style-type: none"> • User of parcel logistics service: Consignor, consignee, sender, receiver • parcel logistics service provider <ul style="list-style-type: none"> ◦ Parcel Service Provider (carrier): Parcel Pickup Agent, Parcel sorter, parcel service carrier, Parcel depot party, Parcel ◦ Dispatch carrier: Dispatch delivery agent ◦ Designated agent of parcel service: Parcel drop place, parcel drop box (unmanned lock) • Transport means: Trucks, trains, airplanes, vessels, transport means for last-mile delivery including robots, drones, electronic bicycles, motorcycles, etc.

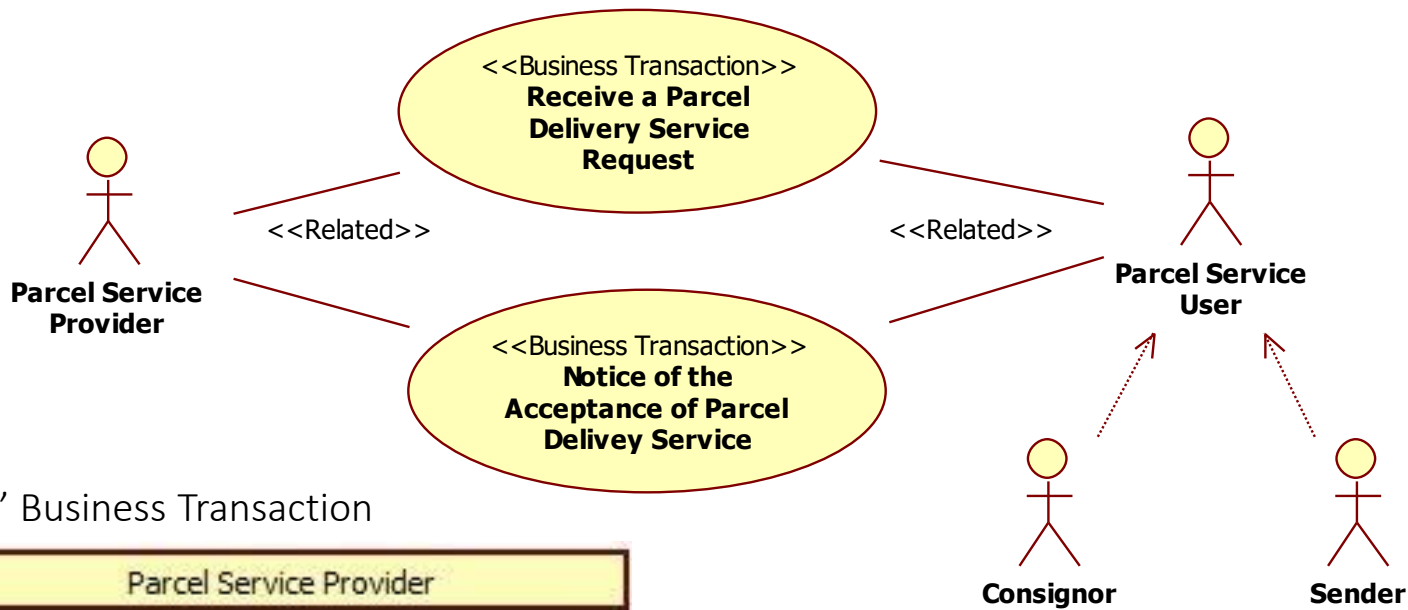
3. BRS and eBusiness Standard for Parcel Goods waybill

BP - Use case diagram in case of Parcel Delivery Service Request

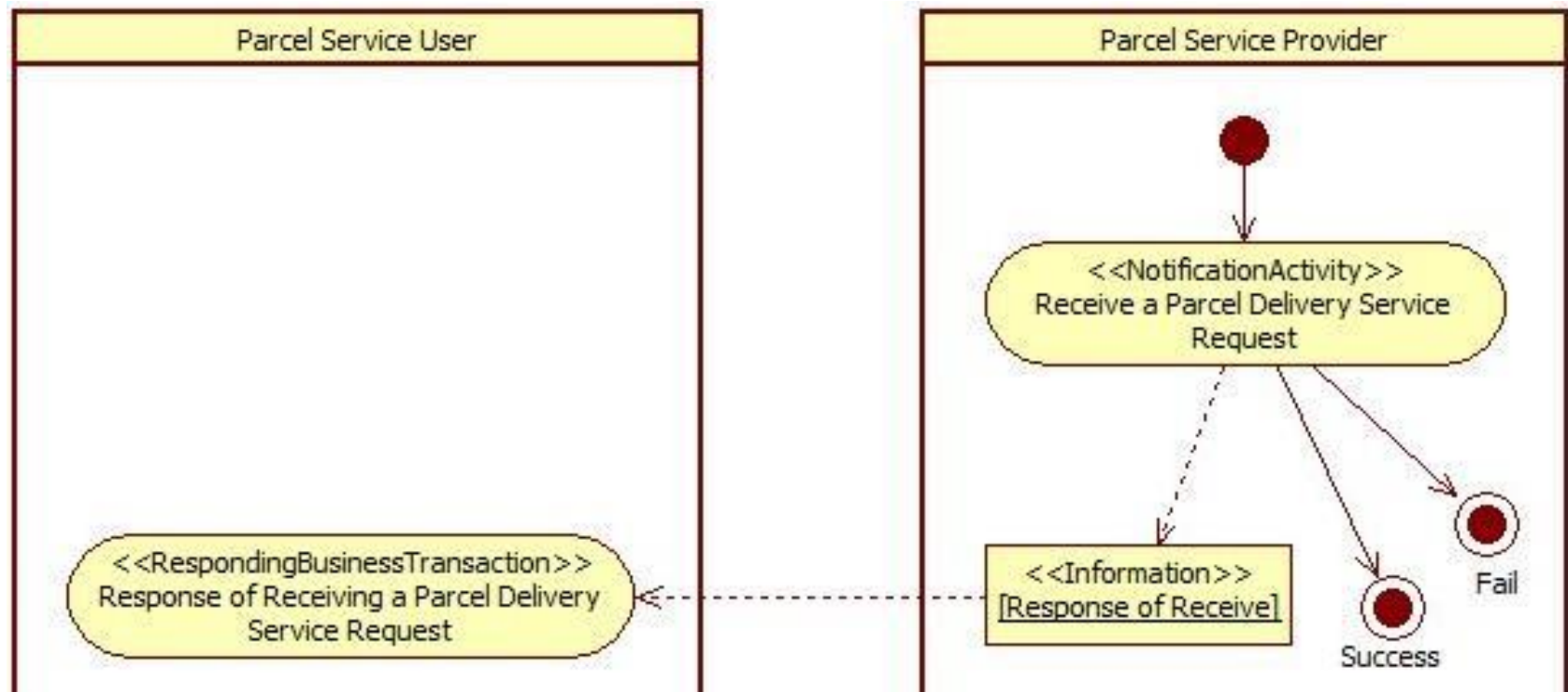


3. BRS and eBusiness Standard for Parcel Goods waybill

BT - Use case diagram in case of Receive a Parcel Delivery Service Request and Notice of the Acceptance

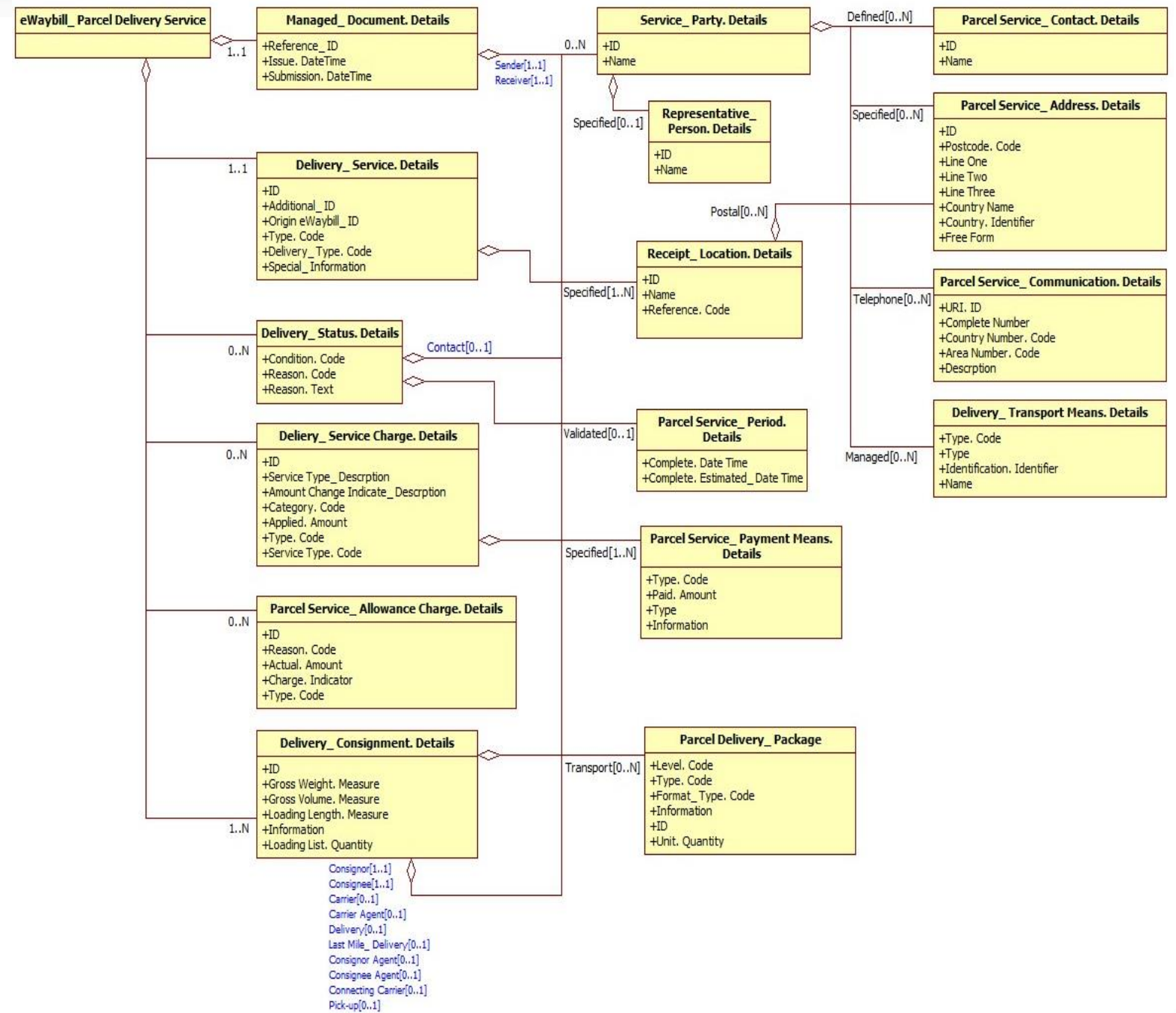


Activity diagram - Receive a Parcel Delivery Service Request” Business Transaction



3. BRS and eBusiness Standard for Parcel Goods waybill

Class diagram



4. Future

- Tentative schedule
 - Whitepaper on Parcel Goods Traceability in last-mile delivery
 - Contents table: ~ August 2024
 - Draft: ~ October 2024
 - Circulation among the participated experts: November 2024

 - BRS and eBusiness Standard for Parcel Goods waybill
 - Contents table: ~ September 2024
 - Draft: ~ December 2024
 - Circulation among the participated experts: January 2025



Thank you

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