

# SAP Business Network for Logistics (BN4L) Integration Solution

## Background

For Syensqo, it has been decided by the business to use SAP Business Network for Logistics (BN4L) as the global carrier collaboration platform. The exception to this is road carrier operations in the US and Canada, which continue to use TMS4S for all GBUs except composites.

### BN4L Freight Collaboration — In-Scope Functionalities

- Subcontracting & Tendering
- Event Reporting
- Dock Appointment Scheduling
- Invoicing and Dispute Handling

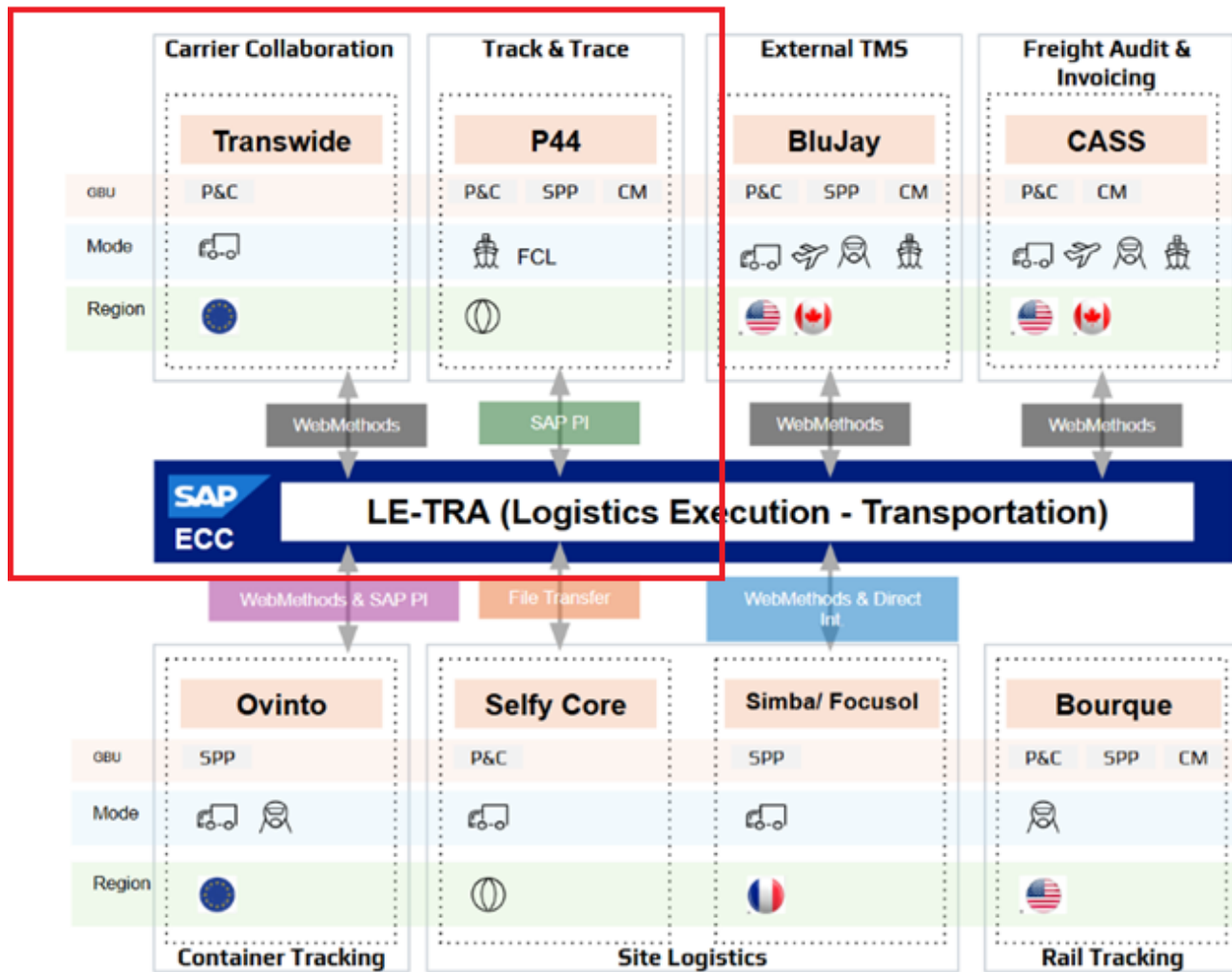
### BN4L Global Track and Trace — In-Scope Functionalities

- Real-time Event Reporting
- Project44 Visibility Provider Integration

## Landscape

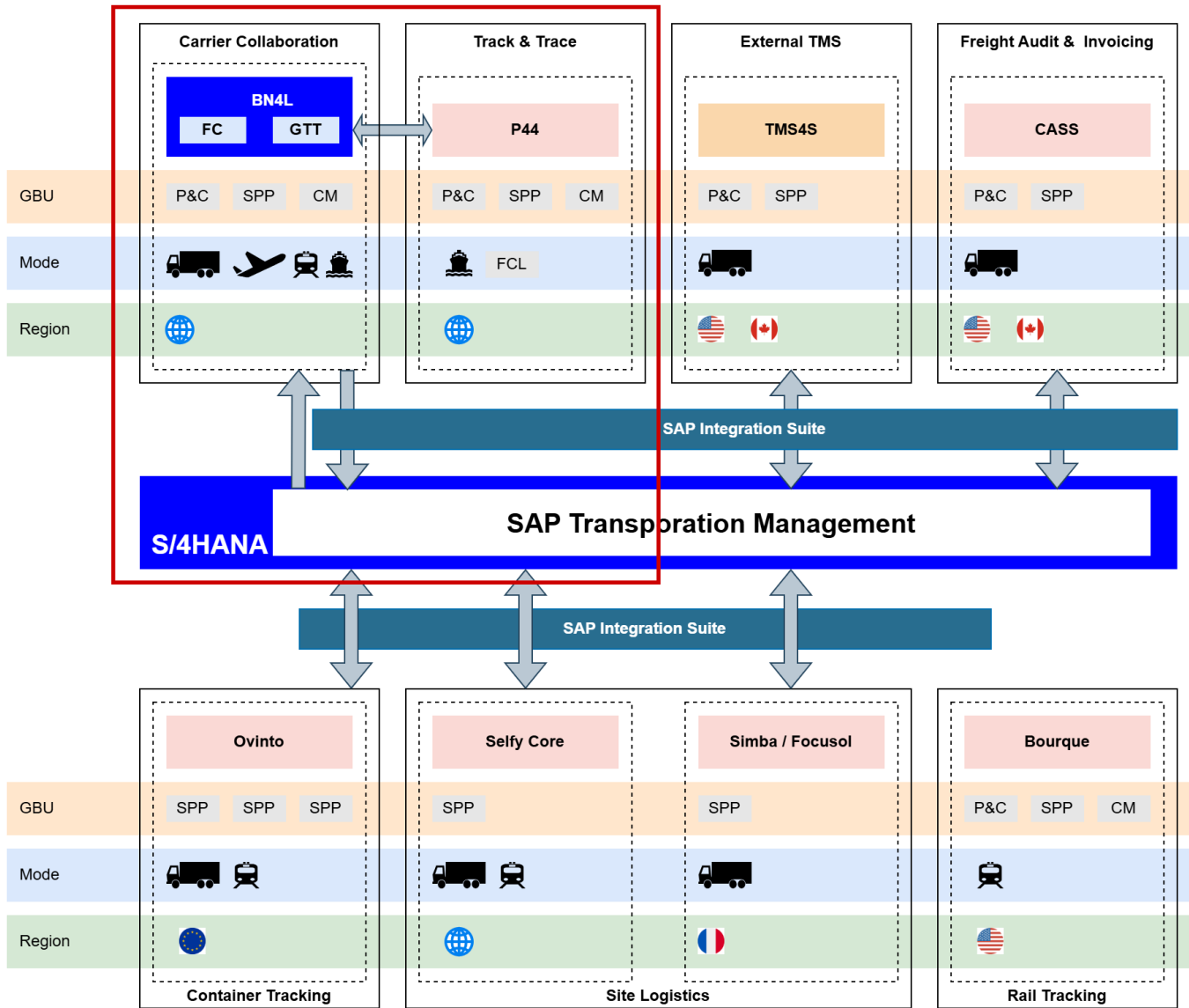
### As-Is Landscape

## As-Is Landscape



- Transwide serves as the Carrier Collaboration tool, but only for Road Transport in EU
- No direct integration between Project44 and Transwide
- BluJay (External TMS) and CASS (Audit & Invoicing) with US & Canada coverage for Road mode
- Integration with Transwide and P44 via WebMethods and SAP PI respectively

## New Landscape



#### Key Points

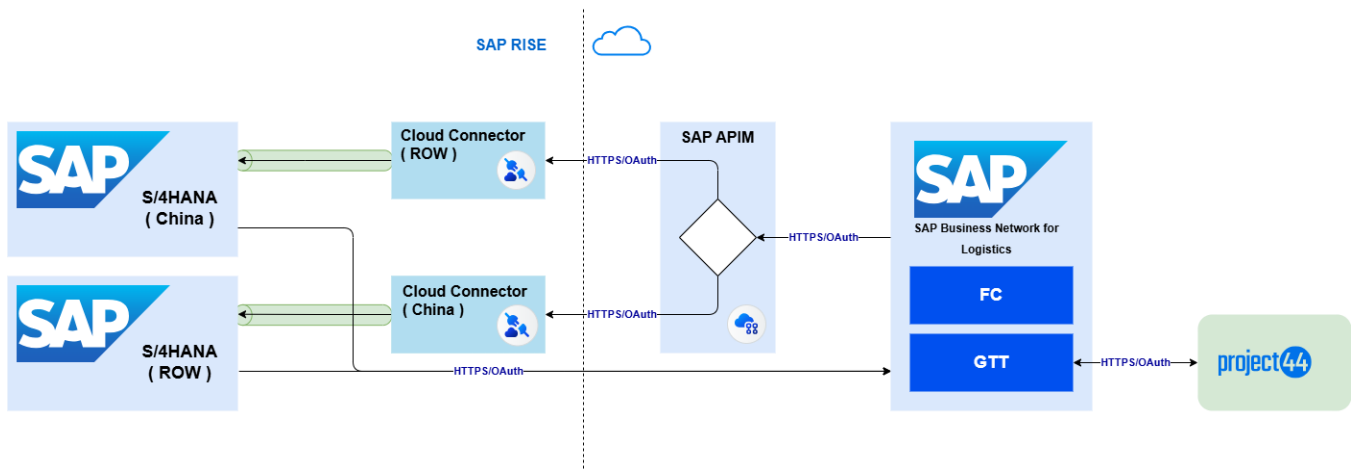
- **BN4L** will serve as the **global carrier collaboration tool** across all modes of transport worldwide, fully replacing Transwide
- Project44 (P44) will integrate directly with BN4L. **No direct connection between P44 and S/4 HANA (P44 is only applicable for FCL Ocean Port to Port Scenario)**
- **TMS4S** will replace BluJay and will be used for **Road mode only in US & Canada** for all **SPP** and **P&C** GBUs — **Composites are excluded from TMS4S scope**
- BN4L integration with S/4HANA :
  - **For Outbound from S/4HANA** - direct connections between **S/4HANA** and **BN4L** .
  - **For Inbound to S/4HANA** - **SAP Integration Suite (API Management Component)** will be used for routing.



#### Middleware consolidation

In Syway, middleware used in interfaces with other tools - i.e. TMS4S, CASS, Ovinto, Selfy and Simba - will be consolidated to SAP Integration Suite.

## Technical Integration Diagram



## BN4L Integration Interfaces

The table below describes all integration interfaces for BN4L in scope, organized by functional area. Each interface includes the corresponding message type, a description of its function, and whether it is a Provider API (inbound to BN4L) or Consumer API (outbound from BN4L).

## Configurable Services in S/4HANA

| Functional Area: Subcontracting & Tendering |                                          |                                                     |                                                                                                                                             |
|---------------------------------------------|------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Provider or Consumer                        | Interface                                | Message Type                                        | Description                                                                                                                                 |
| Consumer                                    | Create Freight Order for Subcontracting  | TransportationOrderGenericRequest_Out               | Creates a freight order for subcontracting in SAP Business Network for Logistics. The request is presented to carriers via inbound service. |
| Consumer                                    | Cancel Freight Request for Quotation     | TransportationOrderQuotationCancellationRequest_Out | Enables shippers to cancel a freight request for quotation. Inbound service provided by SAP BN4L to cancel from external TMS.               |
| Consumer                                    | Create Freight Booking Request           | TransportationOrderBookingRequest_Out               | Creates a freight booking request in SAP BN4L based on data from external TMS or SAP S/4 HANA. Request is presented to carriers.            |
| Provider                                    | Confirm Freight Order for Subcontracting | TransportationOrderConfirmation_In                  | Outbound service consumed by SAP BN4L to confirm a freight order for subcontracting in external TMS. Confirmation is sent by the carrier.   |
| Provider                                    | Confirm Freight Booking                  | TransportationOrderBookingConfirmation_In           | Receives confirmation of freight booking in external system (SAP TM on S/4 HANA) based on information from SAP BN4L.                        |
| Consumer                                    | Cancel Freight Booking                   | TransportationOrderBookingCancellationRequest_Out   | Inbound service to cancel a freight booking in SAP BN4L based on information from external TMS or SAP S/4 HANA.                             |
| Consumer                                    | Create Freight Request for Quotation     | TransportationOrderQuotationCreateRequest_Out       | Creates a freight request for quotation in SAP BN4L. Inbound service from external TMS; request is presented to carriers.                   |
| Consumer                                    | Notify Freight Quotation                 | TransportationOrderQuotationNotification_Out        | Notifies freight quotation statuses in SAP BN4L. Inbound service to update status of quotation from external TMS.                           |
| Provider                                    | Create or Update Freight Quotation       | TransportationOrderQuotationConfirmation_In         | Creates or updates a freight quotation in the shipper's transportation management system.                                                   |
| Consumer                                    | Receive Freight Waybill Notification     | TransportationOrderBookingWaybillNotification_Out   | Sends a waybill notification for a freight booking from external TMS. Enables carriers to receive waybill details.                          |

| Functional Area: Event Reporting |               |                                        |                                                                                                                                                   |
|----------------------------------|---------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Provider or Consumer             | Interface     | Message Type                           | Description                                                                                                                                       |
| Provider                         | Notify Events | TransportationEventBulkNotification_In | Outbound service consumed by SAP BN4L to update freight order event information in external TMS. Events received from carrier or network partner. |

|                 |                                       |                                                         |                                                                                                                       |
|-----------------|---------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Consumer</b> | <b>Create or Update Track Process</b> | TransportationOrderGenericTrack<br>edProcessRequest_Out | Creates a freight order for tracking in SAP BN4L. Inbound service from external TMS to enable freight order tracking. |
|-----------------|---------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|

| Functional Area: Settlement & Dispute |                                                  |                                                      |                                                                                                                                            |
|---------------------------------------|--------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Provider or Consumer                  | Interface                                        | Message Type                                         | Description                                                                                                                                |
| <b>Consumer</b>                       | <b>Create Freight Order for Settlement</b>       | TransportationOrderGenericReq<br>uest_Out            | Inbound service provided by SAP Logistics BN to create a freight order for settlement from external TMS. Request is presented to carriers. |
| <b>Provider</b>                       | <b>Create Dispute (Inbound)</b>                  | TransportationDisputeCaseNotifi<br>cation_In         | Enables shippers to create or update a dispute in their transportation management system.                                                  |
| <b>Consumer</b>                       | <b>Create Dispute (Outbound)</b>                 | TransportationDisputeCaseNotifi<br>cation_Out        | Inbound service to create or update a dispute in SAP BN4L based on information from external TMS.                                          |
| <b>Consumer</b>                       | <b>Create Freight Booking for Settlement</b>     | BNTransportationOrderChargeE<br>lementRequest_Out    | Inbound service to create or update a freight booking for settlement from external TMS. Request is presented to carriers.                  |
| <b>Provider</b>                       | <b>Update Freight Order with Dispute Charges</b> | TransportationOrderChargeEle<br>mentRequest_In       | Enables shippers to update dispute charges on a freight order in their transportation management system.                                   |
| <b>Consumer</b>                       | <b>Confirm Freight Order Dispute Charges</b>     | TransportationOrderChargeEle<br>mentConfirmation_Out | Inbound service to confirm freight order charge updates after dispute resolution and acceptance by shipper.                                |
| <b>Provider</b>                       | <b>Create Invoice</b>                            | InvoiceRequest_In                                    | Outbound service consumed by SAP Logistics BN to create an invoice for a freight order in external TMS. Invoice submitted by carrier.      |

| Functional Area: Sharing Documents |                         |                                    |                                                                                                                                   |
|------------------------------------|-------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Provider or Consumer               | Interface               | Message Type                       | Description                                                                                                                       |
| <b>Provider</b>                    | <b>Send Attachments</b> | BNAttachmentForConfir<br>mation_In | Outbound service to receive attachments during freight booking confirmation in SAP TM on S/4 HANA, based on SAP BN4L information. |

## Services Requiring Custom Implementation in S/4HANA

As per Syensqo requirement . the appointment dates has to be updated back to the freight order /freight booking . This will be updated back to the Outbound Delivery Order in EWM for the warehouse activities .

| Functional Area: Dock Appointment Scheduling |                                                   |                                              |                                                                                                                                                                           |
|----------------------------------------------|---------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Provider or Consumer                         | Interface                                         | Message Type                                 | Description                                                                                                                                                               |
| <del>?? Required ?? in S/4HANA</del>         | <del>Dock Appointment Cancellation</del>          | <del>GenericAppointmentCancellation_In</del> | <del>Enables shippers to cancel dock appointments in SAP Business Network Freight Collaboration.</del>                                                                    |
| <del>Consumer</del>                          | <del>Dock Appointment Scheduling (Inbound)</del>  | <del>GenericAppointment_In</del>             | <del>Creates dock appointment requests and confirmed appointments in SAP BN Freight Collaboration from external systems (TMS, WMS, YMS).</del>                            |
| <del>Provider</del>                          | <del>Dock Appointment Scheduling (Outbound)</del> | <del>GenericAppointment_Out</del>            | <del>Outbound service to update external systems (TMS, WMS, YMS) with appointment details created in SAP BN Freight Collaboration.</del>                                  |
| <b>Provider in S4HANA</b>                    | <b>Dock Appointment Scheduling</b>                | ZGenericAppointment_In                       | This is a custom interface to be created with the structure same as GenericAppointment_Out to get appointment details from BN4L to S4HANA to update the freight documents |

## SAP BN4L GTT Provider Services - REST

| Name           | URL Path              | Supported URL Methods |
|----------------|-----------------------|-----------------------|
| Order Events   | /OrderEvents/         | GET                   |
| Order Tracking | /LBNOrderForTracking/ | PUT, DELETE           |

# Impacted L4 Processes

The following Level 4 business processes are impacted by the BN4L integration:

- 06.12.02.01 — Select Road/Rail Freight Carrier
- 06.12.02.02 — Select Ocean/Air Freight Carrier
- 06.12.03.01 — Transport Road/Rail/Air/Parcel Outbound Freight
- 06.12.03.02 — Transport Road/Rail/Air/Parcel Inbound Freight
- 06.12.03.03 — Transport Ocean Outbound Freight
- 06.12.03.04 — Transport Ocean Inbound Freight
- 06.12.04.01 — Manage Freight Charges Road/Rail/Parcel
- 06.12.04.02 — Post Transportation Charges
- 06.12.04.03 — Process Transportation Invoice Disputes
- 06.12.04.05 — Manage Freight Charges Ocean/Air

## Business Rules Register

The following business rules govern the BN4L integration and carrier collaboration processes across Syensqo.

| Rule ID   | Rule Title                                                           | Rule                                                                                                                                                                         | Rationale                                                                                                                                                                                                                                                                                   |
|-----------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P2F-R061  | <b>Carrier Confirmation is Mandatory</b>                             | When a carrier does not confirm the Freight Order or Freight Booking through BN4L or TMS4S, the transportation planner must manually confirm the freight document in SAP TM. | Carrier confirmation status is mandatory on the Freight Order for further processing of warehouse activities in EWM.                                                                                                                                                                        |
| P2F-R062  | <b>Tender When No Freight Rate is Available</b>                      | If no rate is available for an ocean transport, the rate must be obtained through a tender in the system.                                                                    | Ocean Freight Bookings must be placed using the BN4L platform. Spot tendering through BN4L is mandatory for an audit trail on agreed freight costs. Agreed rates via email or phone are not permitted.                                                                                      |
| P2F-R064  | <b>Ocean and Air Freight Through BN4L</b>                            | Freight Forwarders receiving Ocean Freight Bookings or Air Freight Orders must connect to SAP BN4L for integration.                                                          | To achieve standardization, the platform for integrating with freight forwarders is standardized using BN4L. Freight Forwarders may use API integration or the BN4L web portal.                                                                                                             |
| P2F-R082  | <b>Automatic Trigger of VLPOD Without Events</b>                     | When no event has been reported to trigger the VLPOD, the user must trigger the VLPOD manually. A report will be in place to monitor missing VLPODs.                         | VLPOD is triggered from TM when a Carrier reports a relevant event (Arrival, POD, etc.) at the incoterm location. If the carrier missed posting the event or is not onboarded on BN4L/TMS4S, VLPOD must be manually posted as it is mandatory for further processes in L2C (e.g., Billing). |
| P2F-R088  | <b>Sending Shipping Instructions After PGI</b>                       | After PGI, shipping instructions (all details for a freight booking) must be sent to the freight forwarder through BN4L.                                                     | BN4L is the primary tool for Carrier Collaboration. The Freight Booking must be sent to the Freight Forwarder so they can process the booking at their end.                                                                                                                                 |
| P2F-R097  | <b>Carrier Invoices Submitted Through BN4L</b>                       | Carriers connected through BN4L must submit their invoices through the BN4L platform.                                                                                        | BN4L provides the capability to submit carrier invoices directly on the platform, including updating transportation charges, providing an invoice number, uploading an invoice PDF, or using the available API for direct integration.                                                      |
| P2F-R109  | <b>Ocean/Air Invoices Through BN4L</b>                               | For Ocean Freight Bookings and Air Freight Orders, freight forwarders must submit invoices through SAP BN4L.                                                                 | Consistent use of BN4L for invoice submission ensures auditability and process standardization for international freight.                                                                                                                                                                   |
| P2F-R112  | <b>Invoice Disputes Handled by Transportation Charge Auditor</b>     | The transportation charge auditor will evaluate invoice disputes and accept or reject additional charges.                                                                    | When invoice discrepancies arise from BN4L or VIM, the transportation charge auditor makes the final decision on whether charge changes are accepted or rejected.                                                                                                                           |
| P2F-R205  | <b>Carrier Communication on Forms</b>                                | For carriers not connected to TMS4S or BN4L, output documents will be communicated offline.                                                                                  | Carriers connected to BN4L/TMS4S receive communication via integration. Carriers not connected to any platform will have documents shared via email.                                                                                                                                        |
| P2F-R206  | <b>Carrier Onboarding and Access</b>                                 | Carriers not electronically connected to BN4L via API or EDI must connect through the BN4L web portal.                                                                       | Carriers without API/EDI integration are expected to use the BN4L web portal for connectivity.                                                                                                                                                                                              |
| P2F-R2011 | <b>Exception: Composite US Carrier Collaboration (Willow Island)</b> | For Willow Island plant (US), carrier collaboration will be in TMS4S for both P&C and composite products.                                                                    | Willow Island is the only plant handling both P&C and composite GBU products, managed by a single transportation planning team. This plant is an exception to the standard design where composite US uses TMS4S and not BN4L.                                                               |

## Build Register

The table below lists all registered WRICEF objects related to the BN4L integration.

| WRICEF ID | Description                                                   | Build Status | Linked L4 Process                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|---------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ERP-190   | Integration SAP BN4L to SAP TM                                | In Progress  | <ul style="list-style-type: none"> <li>• 06.12.02.01 — Select Road/Rail Freight Carrier</li> <li>• 06.12.02.02 — Select Ocean/Air Freight Carrier</li> <li>• 06.12.03.01 — Transport Road/Rail/Air/Parcel Outbound Freight</li> <li>• 06.12.03.02 — Transport Road/Rail/Air/Parcel Inbound Freight</li> <li>• 06.12.03.03 — Transport Ocean Outbound Freight</li> <li>• 06.12.03.04 — Transport Ocean Inbound Freight</li> <li>• 06.12.04.01 — Manage Freight Charges Road/Rail/Parcel</li> <li>• 06.12.04.02 — Post Transportation Charges</li> <li>• 06.12.04.03 — Process Transportation Invoice Disputes</li> <li>• 06.12.04.05 — Manage Freight Charges Ocean/Air</li> </ul> |
| ERP-41    | Integration SAP BN4L to Project44 (3rd Party SAP BN4L add-on) | In Progress  | <ul style="list-style-type: none"> <li>• 06.12.03.03 — Transport Ocean Outbound Freight</li> <li>• 06.12.03.04 — Transport Ocean Inbound Freight</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |