

Product Requirements Document (PRD)

Project: DSCSA EPCIS 1.2 Receiver & Sender “Lite”

Version: 1.0 (revised for non-technical usability) **Date:** 12 May 2025

1 Purpose & Scope

Deliver a **click-simple service** that allows **any trading-partner employee—technical or not—to receive, validate, store, and forward EPCIS 1.2 XML ZIP files** required under U.S. DSCSA. No command-line knowledge is expected; all routine tasks are wizard-driven.

2 Design Principles

1. **Zero-jargon UI** – use plain English; hide EPCIS acronyms unless in an expandable “Learn more.”
2. **One-screen upload** – drag-and-drop or browse; progress bar; colored success/fail badge.
3. **Guided onboarding** – a 3-step wizard creates trading-partner endpoints with boiler-plate defaults (AS2 ID, URL, cert upload).
4. **Actionable errors** – show “What went wrong” and “How to fix” in human language (e.g., “File had two XMLs—compress only one file before sending.”).

3 Goals / Non-Goals

Category	Goals (MVP)	Out of Scope
Usability	Non-technical user can complete: (a) partner setup, (b) file upload, (c) resend, without reading docs	Complex analytics, custom scripting
Compliance	Same as v0.9: validate & store EPCIS 1.2 + TI/TS	EPCIS 2.0
Transport	AS2 & HTTPS, wizard-configurable	AS4
UI	Web app with drag-drop, dashboards, tooltips, inline help	Native mobile app

4 Personas

- **Ops Clerk (Non-Technical)** – uploads supplier ZIPs, views pass/fail, clicks “Resend.”
- **Integrator** – sets up certificates, monitors webhooks.
- **Compliance Lead** – audits archived files.
- **Trading-Partner Admin** – same as before.

5 User Stories (MVP)

1. *As an Ops Clerk*, I drag a ZIP onto the upload area and instantly see a green check or red X with an explanation.
2. *As an Ops Clerk*, I click “Resend” next to a past file and choose a partner from a drop-down; the system confirms success.
3. *As an Ops Clerk*, I complete partner onboarding by filling **three fields** (Partner Name, Endpoint URL, Certificate file) guided by tooltips.
4. *As a Compliance Lead*, I export a CSV of all uploads for a date range.

6 Functional Requirements

6.1 File Intake (Receive)

ID	Requirement	Acceptance Criteria
R-IN-01	Drag-&-drop / Browse Upload – accept application/zip and application/xml ; max 100 MB (configurable)	File ≥ 1 B and \leq limit uploads; other types blocked with tooltip
R-IN-02	ZIP Integrity – if a ZIP, it must contain exactly one .xml file	ZIP with >1 or 0 XML \rightarrow reject with code MULTI-XML ; UI shows remediation steps
R-IN-03	XSD Validation – validate XML against EPCglobal-EPCIS-1_2 US-Healthcare XSDs (R1.2 and R1.3)	Fail \rightarrow 400; UI lists first 10 schema errors; full log downloadable

R-IN-04	DSCSA Header Check – confirm <code><ds:transactionStatement></code> present	Missing → reject with code TS-MISSING
R-IN-05	Version Check – <code>schemaVersion</code> must equal "1.2"	Else reject VERSION-MISMATCH
R-IN-06	Metadata Extraction – count <code>ObjectEvent</code> , <code>AggregationEvent</code> , <code>TransactionEvent</code> and pull sender GLN	Counts + GLN displayed in success banner and stored in DB
R-IN-07	Immutable Storage – save raw ZIP/XML to object storage, compute SHA-256, keep ≥6 yrs	Row added to File table with hash and storage URI
R-IN-08	Receipt Generation – return JSON (<code>fileId</code> , timestamp, sha256, eventCounts)	Receipt delivered synchronously (HTTP/MDN) within 5 s

6.2 File Transmission (Send)

ID	Requirement	Acceptance Criteria
R-OUT-01	User-Initiated Send – operator selects stored file + partner, clicks Send	Modal confirmation; job queued
R-OUT-02	Outbound Transports – support AS2 (RNIF 1.2) and HTTPS POST with basic-auth	Partner profile defines transport; system uses correct protocol
R-OUT-03	Delivery Confirmation – capture MDN (AS2) or HTTP 2xx body; show in UI	Success banner; MDN ID stored
R-OUT-04	Retry Logic – automatic back-off (1 min → 5 min → 15 min → 30 min → 60 min, max 5 tries)	On final failure, status = "Error"; operator can click Retry
R-OUT-05	Payload Fidelity – system sends the exact stored raw file, no transforms	SHA-256 of outbound payload = stored hash

6.3 Partner Management

ID	Requirement	Acceptance Criteria
R-PART-01	3-Step Wizard – collect Partner Name, Endpoint URL/AS2 ID, X.509 cert or auth token	Wizard completes in ≤ 3 min without error
R-PART-02	Endpoint Test – optional “Send Test Ping” to verify connectivity	Green check/Red X returned; result stored
R-PART-03	Editable Profiles – admin can edit, disable, or delete partner entries	Disabled partners hidden from send dropdown

6.4 Dashboard & Search

ID	Requirement	Acceptance Criteria
R-DASH-01	File List View – table with File ID, original name, partner, received time, status, event counts, actions	Loads ≤ 2 s for 10 k rows with pagination
R-DASH-02	Filtering – filter by status, partner, date range (calendar pickers)	Filters combine; URL query string sharable
R-DASH-03	CSV Export – export current view to CSV	File downloads within 5 s
R-DASH-04	Audit Timeline – detail page shows chronological events (received, validated, sent, retries)	Includes hyperlinks to MDN receipts and raw file

6.5 Security & Roles

ID	Requirement	Acceptance Criteria
R-SEC-01	Roles – <i>Administrator</i> (all functions), <i>Operator</i> (upload/send/view)	Role shown in user badge; unauthorized actions greyed
R-SEC-02	Authentication – username/password (bcrypt) + optional OAuth2 OIDC SSO	JWT issued for 8 h; refresh token support

R-SEC-03	API Protection – all API calls via HTTPS; require API Key for service-to-service upload	Key rotation UI in Settings
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6.6 Accessibility

ID	Requirement	Acceptance Criteria
R-A11Y-01	WCAG 2.1 AA – contrast $\geq 4.5 : 1$, focus indicators, alt text, ARIA labels	Wave/axe scan shows zero critical issues
R-A11Y-02	Keyboard Navigation – all interactive elements reachable with Tab; drag-drop area has keyboard fallback	Usability test passes with only keyboard

7 Non-Functional Requirements Non-Functional Requirements

Category	Requirement
Accessibility	WCAG 2.1 AA contrast & keyboard navigation
Performance	UI first-paint <1 s on 3 Mbps connection
Reliability	Same as v0.9

8 KPIs / Success Metrics

- **Task-completion rate (non-tech users)** $\geq 95\%$ on first try.
- **User satisfaction (post-task survey)** $\geq 4 / 5$.
- **First-pass acceptance rate** $\geq 95\%$ (unchanged).

10 Risks & Mitigations

Risk	Impact	Mitigation
Non-tech confusion over AS2 certs	Onboarding stalls	Provide sample email template to request cert from partner + video walk-through
Browser drag-drop fails in legacy IE	Upload blocked	Fallback HTML form + message urging browser upgrade

