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Digital Business Partner Communications for Software Vendors (ISVs)

EDI, IDP, NTPI, and Hybrid Compared – Decision Support with Integration Plan, OEM/White Label Scorecard and ROI/Break-even

A practical guide for software providers, product managers, and technical decision-makers.

SUPEDIO

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Context and Objective of this White Paper

Independent software vendors (ISVs) and platform providers are under growing pressure to provide B2B business partner communication as a **product feature** . Orders, order confirmations, delivery notes and invoices are to be exchanged between companies reliably, quickly and in a scalable manner and transferred to specialist processes. In practice, however, scaling often fails not because of the technical logic, but because **of heterogeneous partner landscapes**, **onboarding difficulties** and **ongoing effort**.

This white paper is designed as a **decision-making guide for ISVs** . It helps you to evaluate the four common solution paths **EDI, IDP (Intelligent Document Processing), NTPI (No-Touch PDF Interchange)** and **Hybrid** in a structured way – and to create an **API-first integration architecture** as well as a robust **build-vs-buy/OEM/white-label decision** . In addition, it provides templates that you can transfer directly into selection, due diligence and PoC (scorecard, RFP form, gate checks, contract guardrails).

Who is the guide for?

This white paper is aimed at product and engineering leaders at ISVs who...

- Offer or expand B2B transactions **as a core feature** (e.g. P2P, O2C, SCM, ERP add-ons, industry solutions),
- need to cover the **long tail** of their customer partner networks (many small/medium-sized partners, different formats),

- **want to measurably improve** time-to-value **(partner activation) and** operational effort (support, exceptions),
- Seek **scalable OEM/white-label integration** – without fragmenting your own product architecture.

Which technology is the right one?

For ISVs, the decisive factor is not "which technology can do the most", but **which approach can best be integrated as a product**. The relevant decision-making dimensions are:

- **Activation & Coverage:** How quickly does a new partner go live – and how well do you cover the long tail?
- **Reuse/scale:** How much is the activation effort repeated across your customer base?
- **Operating model:** Who bears the mapping, rule and exception effort (vendor, your, customer)?
- **Product integration:** Does it fit into your UX/feature model, SLAs, support processes, and pricing logic?
- **Governance & Exit:** How do you ensure data sovereignty, auditability, change management, and exit capability?

This white paper provides an assessment framework to answer these questions **in a consistent and measurable** way .

EDI, IDP, NTPI, Hybrid - Comparison from an ISV Perspective

EDI (classic)
Strong with standardized partners and established networks. Weaker when activation has to be fast or partners are highly heterogeneous. Attractive for ISVs if your target segments are already "EDI-ready" and you can automate onboarding/mapping to a large extent.

IDP (Document Processing/OCR+AI)
Quick to pilot, especially suitable as a bridge for unstructured inboxes (z.B. PDF/scan/email attachments). Quality and process reliability depend heavily on data quality, layout/change management, validation mechanisms, and exception

processes. For ISVs, this often makes sense as a **coverage layer** – with clear rules for uncertainty, audit trails and rework.

NTPI (No-Touch PDF Interchange)
Aims to extract reusable **data from PDF documents** in a structured way in order to achieve EDI-like stability without classic EDI onboarding. Especially relevant for ISVs if you have many customers with **similar partner clusters**: The greater the reuse, the faster activation and support costs decrease.

E-mail agent
A central component of the hybrid target image is the e-mail agent with integrated extraction and **human-in-the-loop (HITL).** It extracts document data in the same way as IDP, enables manual review and correction, and transfers the processed data in an ERP-compatible manner via existing target protocols and formats (e.g. APIs, IDocs, REST). The email agent thus forms a controlled, operational processing path for email-dominated inboxes and serves as a precursor to deterministic NTPI fingerprints.

Hybrid (best practice across the board)
In many ISV scenarios, hybrid is the pragmatically best strategy:

- EDI where partners/networks provide it,
- NTPI/IDP as cover for the long tail,
- clear rules for routing, validation, exceptions, and step-by-step migration. The decisive factor is not "everything at the same time", but a **clearly defined path per partner class**.

Recommended target architecture: API-first, event-driven, decoupled

To ensure that business partner communication remains scalable as a product feature, the white paper recommends an **API-first** integration model with:

- **REST-APIs** für den Dokument-/Transaktions-Contract (z. B. orders, order_confirmations, shipments, invoices)
- **Events/webhooks** for status and process signals (received, validated, exception, processed, reprocessed)
- **Idempotency & Retry Policies** as Standard (Clean Resilience in Operations)

- **Tenancy/Identity** (OIDC/OAuth2, roles, tenant separation, isolation)
- **Exit & data sovereignty** (export of raw data + normalization, audit/process logs, ownership rules)

This keeps your core product stable while allowing you to exchange or combine communication channels and extraction/transformation logics via well-defined interfaces.

Economics: What really drives ROI/breakeven in ISVs

For ISVs, the business case is typically dominated by two levers:

- **Document volume:** The higher document volume, error costs, and manual rework, the faster automation pays for itself.
- **Reuse across your customer base:** The more partners, document layouts or process patterns are repeated, the greater the economies of scale (shorter activation times, less support, faster rollouts).

The guide provides an ROI/breakeven model that is not based on "ideal values", but works with assumptions, sensitivities and gate criteria (PoC → rollout).

What you will have in your hands after reading it

- **"Decision in 10 minutes"** as a fast path (for first direction/scope)
- A **decision-making framework with scorecard** (weighting, evaluation, documentation)
- An **ISV Integration Blueprint** (Chapter 2.3): Reference architecture for an API-first integration including endpoint/data model basics, events/webhooks (idempotency, retry, backpressure), tenancy/identity (OIDC/OAuth2, roles, tenant isolation) and exit/portability (export raw+normalized, audit logs, ownership). Serves as a checklist and input for the scorecard and decision tree (Chapter 9.3.6 / Appendix D).

- An **OEM/white label suitability matrix** (Chapter 5): Scoring and evaluation logic for product integration (branding/UX, multi-tenancy, configurability), operations/support (SLA, monitoring, change management) and commercials (pricing, channel fit, margin). Result: clear recommendation for OEM/white-label/co-brand/resell – as a decision-making aid and input for the decision tree (Chapter 9.3.6 / Appendix D).
- An **RFP/Due Diligence Form** (Appendix A): Standalone copy/paste questionnaire that vendors can fill out directly, with similar answers on API/Webhooks, Security/Compliance, Tenancy/Identity, Exit, Operations/SLAs, Change Management, and OEM/Commercials. Use the answers for the scorecard, gate checks and the decision tree (Chapter 9.3.6 / Appendix D).
- A **vendor evaluation template** including gate checks, PoC plan and contract guardrails
- A **build vs buy** appendix with guided decision-making and mini-walkthrough

Recommended Next Steps (ISV Playbook)

1. **Define scope:** Which flows (P2P/O2C), countries, document types, SLAs, and support models?
2. **Define a hybrid strategy:** partner classes, routing rules, validation, exceptions, reprocessing
3. **Shortlist + RFP:** Use Scorecard, Consistently Apply ISV-Ready Gate Checks
4. **PoC mit realen Partnerclustern:** KPIs, Activation Time, Touchless Rate, Exception Rate, Support Load, Change Effort
5. **Packaging & Commercials:** Feature-Bundles, Preismodelle, OEM/White-Label, Exit/Ownership vertraglich sauber fixieren

The result: scalable business partner communication that reduces your activation times, covers the long tail and makes your integration and operating costs predictable – without overloading your core platform.

Contents

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Important abbreviations

All explanations of abbreviations and in the appendix glossary, p. 127)

- **EDI** – Electronic Data Interchange: standardized, structured data exchange between companies. Variants: Direct EDI, Platform EDI/VAN.
- **VAN** – Value Added Network: EDI network service; often transaction or data volume fees (sometimes transaction or data volume fees). "KC"). In the text at Platform EDI.
- **Web EDI** – Portal-based, manual receipt capture (for long-tail suppliers).
- **IDP / OCR** – Intelligent Document Processing / Optical Character Recognition: AI/rule-based field recognition from PDFs/images, usually with review (Human in the Loop, HITL).
- **NTPI** – No-Touch PDF Interchange: deterministic PDF → standard conversion with the goal of "zero rework".

- **Email Agent** - Email agent/"mail-to-flow" building block (e.g., for microvolumes/portals).
- **Straight-Through Processing (STP).** An automated process in which transactions are processed electronically from start to finish with minimal or no manual intervention ("**no-touch").** This eliminates physical documents and human touchpoints, resulting in significant acceleration of workflows, reduced errors, reduced costs, and real-time visibility. In the text usually no-touch (STP).

1. Executive Summary

The obligation to e-invoice (EU/UK), a shortage of skilled workers and the persistent "long-tail" reality in suppliers and customer portfolios are forcing a pragmatic, scalable digital strategy. **Classic (platform) EDI** achieves the highest level of automation – but primarily where partners **and message types** are stably connected. **KIIDP/OCR** extends the coverage to un-/semi-structured documents, but requires review routes and brings accuracy-/cost variability. **NTPI** (NoTouch PDF Interchange) is a **new category** that specifically complements this mix: deterministic PDF →standard conversion with validation – ideal for **addressing the long tail** and additional **message types** with **NoTouch**- quality.

Important: Not just invoice/credit note (INVOICE/CREDITNOTE). **The goal is to digitize as many relevant supply chain document types as possible** – e.g. also purchase order, order confirmation, despatch advice, receipt advice, and others – via a standard process instead of many islands.

Short conclusion:

- **(Platform)EDI** for **high-volume & stable partners** as well as mandatory official routes.
- **IDP/OCR** for real **AnyDoc special cases** and when fast capture without prior knowledge is required (with *HITL*).
- **NTPI** as a deterministic **quality booster** for **LongTail & add-on types** – EDI quality from PDFs.

- **E-mail agent** (inbound + HITL) for e-mail/(PDF, Text, WORD, EXCEL): IDP-analogous extraction, manual validation/correction and ERP-enabled handover; recurring patterns are converted into NTPI fingerprints.
- **Hybrid usually wins**: EDI for stable top partners, NTPI as a core layer for broad coverage, plus an email agent (inbound + HITL) as a full-fledged process path for email/PDF/portal exports – including extraction analogous to IDP and ERP-capable handover; recurring patterns are gradually converted into NTPI fingerprints.

1.1 Decision in 10 minutes

Use the following five questions as a quick check. After that, the allocation table leads directly to a recommended target image (stack) and a pragmatic MVP start path.

- How important is deterministic quality vs. maximum any-doc coverage? (No-Touch (STP) Rate, Auditability, Risk)
- What OEM requirements are non-negotiable?
  (Branding, Billing, EU Residency, SLA, Exit/Portability, No Channel Conflict)
- What types of documents are mission-critical?
  (only invoice vs. orders/AB/delivery note/remittance etc.)
- Which input channels dominate?
  (EDI, e-mail/PDF, portal/web EDI, mixed operation)
- How is the partner volume distributed?
  (Top/Mid/Long-Tail, Partner vs. Document Volume)

1.2 Assignment (Quick Rule)

If ...	Recommended target image	MVP-Start
High-Volume Top Partner + Existing EDI Stack	Hybrid: EDI (Top) + NTPI-Core (LongTail) + kleiner IDP-Fallback	Top 10 partners + 1–2 types; NTPI fingerprints for frequent PDFs; Maintain EDI
Strong LongTail, Little/No EDI Team	NTPI Core + Input (Email/Portal) + IDP/HITL for Exceptions Only	Input + fingerprint setup for 10–20 layouts; KPI: Coverage curve + STP ratio
Portal/Web EDI dominates, low volumes	Inbound/Portal Routing + Narrow IDP/HITL Path; NTPI Selective	Automated classification/routing; Only a few fingerprints with high re-use
Invoice-only + regulatory paths	Peppol/EN16931/CIUS-Validator + (EDI or NTPI) per partner structure	Validator-Logs + Schema-of-Record; Start mit Invoice/Creditnote
Multi-document flow (O2C/P2P)	Standard process: Receipt → standardization (NTPI/EDI) → validation → ERP + 4-way reconciliation optional	INV + 1 logistic type (DESADV/ORDRSP); Setting up exceptions/queues

1.3 Digital Strategy – Why Now?

- **Regulation**: National B2B e-invoicing obligations (DE, FR, IT, PL ...) and Peppol/CIUS enforce structured formats; Portals/reporting channels are created.
- **Skilled workers**: EDI/mapping skills are scarce; Operation of parallel paths (portal, EDI, OCR) increases complexity.
- **LongTail**: Many small/medium-sized partners without EDI but with PDF documents. The goal is **no-touch (STP)** despite heterogeneous layouts.

- **Environmental, Social, Governance** : Energy/CO_2Pressure is increasing; CPU-light processing instead of CPU-heavy
- **Beyond the calculation**: Competition and efficiency gains are particularly achieved when **other message types** are automated, such as ORDERS, ORDRSP, Despatch Advice (DESADV), Receipt Advice (RECADV), and more. A **unified process** lowers TCO, increases data quality, and accelerates **end-to-end flows** (order-to-cash / procure-to-pay).

As a consequence, ISVs need a **(hybrid) standard process** across **several document types** that has an impact today and remains regulatorily compatible tomorrow.

1.4 Brief conclusion: Platform EDI, IDP/OCR, NTPI – and why hybrid?

- **Direct/platform EDI:** reliable, transaction-friendly with high volumes/stability, mandatory reporting channels.
- **IDP/OCR**: flexible but not error-free – useful with a clear review process.
- **NTPI:** immediate coverage, deterministic, no-touch (STP), long-tail economics.
- **E-mail agent** (inbound + HITL): full-fledged process path for e-mail/PDF, text, WORD, EXCEL/portal exports – extraction analogous to IDP, manual validation/correction, ERP handover; Bridge to NTPI (Fingerprint Lifecycle).
- **Hybrid**: NTPI as the core layer for no-touch from PDFs, EDI for stable top partners/mandatory routes, and the email agent as an equal inbound path for all email-based cases (incl. review/HITL) – without media disruption and with a clear migration logic to fingerprints.

Classification & target image from an ISV perspective

2.1 What ISVs Really Need

- **Coverage** ≥ 90% via partners & types
- **Multiple message types** (Order, AB, Delivery Note, Invoice, Credit Note, ...)

- **No-Touch (STP):** deterministic validation, sanity rules, external validators (EN16931/CIUS)
- **OEM/WhiteLabel**: API-first, branding, billing, full customer control
- **Plannable costs**: TCO transparency, graduated prices, synchronous cost model

2.2 Decision-making principles

- Customer Value
- Time-to-Value
- Operational risk
- Monetization
- Compliance/ESG

2.3 ISV Integration Blueprint (API-first)

This section makes the integration "productizable": minimal data model, events/webhooks, multi-tenancy, and fault tolerance. The goal is an OEM-ready standard process with clear handovers.

2.3.1 Minimum End-to-End Flow (Reference)

- **Input:** Document/message received (e-mail, upload, API, EDI).
- **Classification & Routing:** Determine type/partner/tenant, duplicate check, quarantine in case of uncertainty.
- **Standardization:** EDI mapper or NTPI fingerprint (deterministic); IDP/HITL only as an exception path.
- **Validation:** Schematron/Business Rules, mandatory fields, reference data checks (optional).
- **Handover:** idempotent handover to ERP/workflow; Feedback/status to partners (optional).
- **Monitoring:** STP-Quote, Durchlaufzeit, Exceptions, Reuse (Fingerprint-Reuse, Partner-Coverage).

2.3.2 Events & Webhooks (Examples)

Recommendation: Event-driven (webhooks) plus pull API. All calls are idempotent, with request IDs and clear status codes. Important events:

- Exception Raised
- Posted-To-ERP
- Validation Passed/Failed
- Document Normalized
- Document Classified
- Document Receive

Example payload (shortened, JSON):

```
{
  "tenantId": "T-123",
  "partnerId": "P-456",
  "docType": "INVOICE",
  "source": "EMAIL",
  "status": "NORMALIZED",
  "documentId": "D-789",
  "schema": "EN16931",
  "links": { "download": "...", "auditLog": "..." }
}
```

2.3.3 Multi-client capability, identity & exit

ISV governance: Front door/identity remains with ISV. OIDC/OAuth2, separate tenants, audit export (logs + normalized data), and a clear exit path (data portability, fingerprint ownership, SLA/change policy) are recommended.

Categories & Definitions

3.1 Direct EDI

Purpose: Direct EDI addresses high-volume, stable business relationships with reliably defined message types. The aim is the seamless and near-real-time data

exchange between two clearly known partners via standardised formats and protocols (e.g. EDIFACT/UBL/ANSIX12, AS2/AS4, Peppol), including defined error paths and technical and functional validations. Where volume, process stabilityand mutual readiness are high, direct EDI is the automation benchmark.

Cost model: Unit costs are lowest for high volumes, but they are made up of several building blocks:

- **Unique:** Analysis, mapping/transformation per message type, onboarding/partner tests, certificates/keys
- **Ongoing:** Licenses/Maintenance, Infrastructure/Monitoring, Protocol/Transportation Costs, Support/Operating Expenses
- **Change costs:** Adjustments for format/CIUS updates, partner layout changes, protocol or security changes

As a result , the document price decreases as the annual volume per type/partner grows, reaching the best values for "top partners"

Coverage/accuracy: The data quality is very high because format and mapping are deterministic; however, **coverage is** effectively limited to **connected partners** and actively mapped message types. New partners/types mean onboarding effort and extend time-to-value. In the case of multi-country rollouts, additional CIUS/Peppol specifics apply, which must be maintained regularly.

OEM/ISVFit: For ISVs, direct EDI is a strategic option when a dedicated team (B2B/EDI) and a viable partner ecosystem are in place. **Build** brings maximum control, but investments in skills, operations, and 24/7 processes.

Partner/OEM reduces time-to-market and operational risk, but can lead to **lock-in** . SLA, change processes, self-service capabilities (partner onboarding) and profitability over the customer lifecycle are decisive.

ESG/Compliance: Direct EDI is energy-efficient and easily auditable per transaction. Compliance requirements (EN16931/CIUS in the relevant flows, Peppol rules, traceability, document/process IDs) can be mapped cleanly. Important are data residency (EU/UK, where necessary), audit-proof archiving and consistent operational/security protocols.

Conclusion

- **Fields of application:** High-volume, stable partners/types, industry standards
- **Cost model:** One-time (mapping/onboarding), ongoing (admin/licenses, transactions), low unit price with high volume
- **Coverage/Accuracy:** Very high, but limited to connected partners/types
- **OEM/ISV-Fit:** Build vs. Partner; Risk: lock-in, resource scarcity
- **ESG/Compliance:** Very efficient per transaction, auditable

3.2 Platform EDI (VAN/Network/iPaaS)

Purpose: Platform EDI packages EDI functionality as a **service** with network effects. A central B2B network (VAN) or integration platform (iPaaS) provides connectors, routing, monitoring, onboarding services, and often compliance routes. For ISVs, this means fast access to many partners and transport routes (including Peppol/APs) with reduced in-house operation.

Cost model: A subscription **(tiers according to tenants/messages/SLAs) plus** volume components (transactions, data volume, protocol fees) **is typical** . In addition, there are **additional fees** for mapping/CIUS adjustments, onboarding services, premium SLA, certificate handling. The model is calculable, but **network/provider-specific** metrics (e.g. KC/traffic) should be included in the TCO consideration. For ISVs**, reseller/OEM models** open up additional margin paths.

Coverage/Accuracy: Coverage is high within the respective network. However, gaps remain in heterogeneous supplier landscapes (rare message types, partners without EDI readiness). The data quality is high, as long as it is mapped and validated in accordance with the standards; for network hops, clear end-to-end monitoring is essential.

OEM/ISVFit: White-label/branding, billing and tenant models, and self-service onboarding are the main selling points. Tradeoffs: lower technical load vs. dependence on platform roadmap and pricing mechanics. Important are API maturity, observability (end-to-end trace), export/exit scenarios, as well as the ability to cleanly orchestrate **HybridStacks** (e.g. NTPI or IDP next to it).

ESG/Compliance: Centrally operated platforms use economies of scale in energy and operations. Checkpoints: EU hosting/residency, order processing, Peppol/EN16931 compliance, audit-proof logs and SLA-supported incident handling.

Conclusion

- ASA service with network effect; Onboarding Services
- **Cost model:** Subscription + volume; Additional fees (mapping, SLA, KC)
- **Coverage/Accuracy:** High within the network; Gaps in rare types/partners
- **OEM/ISV-Fit:** White label possible; Margin model
- **ESG/Compliance:** Cloud Efficiency, Consider EU Residency

3.3 Web EDI

Purpose: Web EDI offers suppliers/customers without an EDI connection **a portal** for the manual entry and upload/download of structured documents. It is a **bridging technology** for the LongTail when volumes are small or a quick start is required – for example, in rollout phases, for individual partners or temporary projects.

Cost model: In terms of price**, user/monthly fees** plus **transaction fees dominate**. In the TCO view, however, **hidden costs** are decisive: manual entries take time, generate errors and correction loops (support, third-party data collection, queries). Training/enablement, governance (who is allowed to record what?) and portal operation (user/rights management, audits) increase indirect costs.

Coverage/accuracy: Theoretically, Web EDI reaches every partner – practically only those who use the portal and **maintain it correctly**. The data quality fluctuates with the diligence of the users and the portal's testing rules; **No-Touch (STP)** is rarely achieved. As volumes or critical processes grow, **automated paths** should be switched to (NTPI/EDI) to reduce errors and lead times.

OEM/ISV-Fit: Web EDI is suitable as a transition for ISVs: SSO integration, simple status feedback and basic exports can be implemented quickly. White label is possible depending on the provider, but limited. An **upgrade path** is key: Portal documents should be able to be transferred to standardized flows (NTPI/EDI) without re-keying.

ESG/Compliance: The infrastructure footprint is moderate, but **people-ops** dominate: Every manual minute is reflected in costs and indirect emissions. On the compliance

side, roles/rights, logging, GDPR-compliant storage and audit-proof filing must be ensured.

Conclusion

- **Zweck:** LongTail per Portal (manuell)
- **Cost model:** User/month + transactions; hidden costs due to manual errors
- **OEM/ISV-Fit:** Only as a bridge; replace as volume grows
- **ESG/compliance:** ok, but people-ops drive indirect costs/emissions

3.4 IDP/OCR

Purpose: IDP/OCR **probabilistically** extracts content from un- to semi-structured documents (PDF/scans/e-mails). It is the right choice for **"AnyDoc" scenarios** where layouts are not known, change frequently, or the variety is very large. Typical fields of application: Initial recording of unknown supplier layouts, sporadic documents, mixed mailboxes, classification/indexing.

Cost model: Often **consumption-based** (price per page/document/APICall) with package/subscription components. The decisive factor is the **rework costs**: Depending on the accuracy and risk class, a **human intheloop** (HITL) is required for each message (validation, correction, secondary controls). Optionally, there are costs for **Custom Models/Training**, Prompt/SkillDesign and GroundTruthMaintenance. In addition, GPUCompute (inference) is a cost factor.

Coverage/Accuracy: Modern IDP models achieve high field coverage, but accuracy **varies** by layout, scan quality, language/CI specifics. For critical fields/processes, threshold values/confidence rules, sampling plans and **escalation path** (e.g. to the specialist department) are mandatory. **No-Touch (STP)** is possible selectively, but should be seen as the result of consistent data/process maintenance – not as a standard assumption.

OEM/ISVFit: IDP is API and OEM compatible, but requires **operational discipline**: monitoring, queues, HITLO interfaces, feedback loops, model maintenance and telemetry (field accuracies, drift). A good fit is created when IDP **is operated in a hybrid** with NTPI/EDI: recurring layouts → NTPI/Fingerprint; real ad hoc cases → IDP/HITL.

ESG/Compliance: GPU-heavy inference and data storage for training/feedback have a noticeable impact on ESGFootprint. GovernanceTopics: AIAct classification, model transparency, bias/drift controls, PrivacybyDesign (data minimization, pseudonymization), clear order processing and hosting rules (EU/UK).

Summary:

- **Purpose:** probabilistic extraction from (partially) unstructured PDFs
- **Cost model:** per page/document (API), often subscription; Factor in rework
- **Coverage/Accuracy:** 80-95% field accuracy; Human-in-the-loop necessary
- **OEM/ISV-Fit:** API/OEM, Betrieb & Review-Team
- **ESG/Compliance:** CPU-heavy inference; AI Act Aspects

3.5 NTPI – No-Touch (STP) PDF Interchange

Purpose: NTPI generates **deterministically** standardized data records from incoming **PDFs** – for invoices, for example, EN16931/CIUS-compliant – and consistently pursues the **no-touch (STP)** -claim. The core is the **fingerprint** for each partner layout and message type. This makes NTPI ideal for the **long-tail** as well as for additional message types **beyond the invoice** (e.g. ORDERS, ORDRSP, DESADV, RECADV, CREDITNOTE,...). Transportation is **agnostic** (EMail, Peppol, API, PortalDrops). In combination with an **e-mail-AI agent with IDP capability**, an intelligent dual path is created: fingerprint-capable ⇒ **NTPI/NoTouch**; **NonFingerprintCase** ⇒ **IDP/HITL**.

Cost model

- **Once per fingerprint:** Recording/analysis of the layout, rule/extraction definition, tests/acceptance
- **Ongoing:** low runcosts per document, validation (internal sanity rules, external validators e.g. EN16931/CIUS), monitoring
- **Economies of scale:** Fingerprint reuse across the ISV customer base dramatically reduces the fixed share per document; Library growth accelerates future rollouts

An upstream email agent is also useful for microvolumes: It cleanly transfers email/PDF to a standardized process path (classification → extraction analogous to IDP

→ HITL in case of uncertainty → ERP handoff) and prevents small quantities from being processed manually outside the system as a "special way".

Coverage/accuracy: 100% field determinicity is achieved per fingerprint (deterministic per released fingerprint under defined input quality assumptions) – EDIQuality from PDFs. At the portfolio level, coverage is growing rapidly because fingerprints are being reused and incrementally expanded. Changes to the partner layout are detected via monitoring and followed in a controlled manner. Validation and AuditLogs ensure traceability.

OEM/ISVFit: NTPI is **API/WhiteLabel-capable** and predestined as a **CoreLayer** in ISV products: a **uniform standard process** for many input channels and message types. Commercial models (edition/addon, transaction or package pricing, RevenueShare) scale well. The **HybridStack** (EDI for TopPartner, NTPI for LongTail, IDP for special cases) reduces complexity compared to "IDP-only" and increases no-touch (STP) ratios.

ESG/Compliance: NTPI is **CPU light** (no GPUInference printing) and therefore ecologically beneficial. **Validator/SanityLogs** create audit security; EN16931/CIUSConformity is an integral part. Hosting/residency (EU/UK) and GDPR-compliant order processing are easy to implement.

Conclusion

- **Purpose:** "PDF in – standard out. Zero rework." Core principles: deterministic, validated, no-touch (STP), long-tail economics, transport-agnostic, auditable.
- **Cost model:** one-time fingerprint/partner layout, low variable costs/receipt; Email agent for micro-volumes.
- **Coverage/Accuracy:** EDIQuality from PDFs, 100% per fingerprint.
- **OEM/ISVFit:** WhiteLabel/API, fingerprint reuse across many customers.
- **ESG/Compliance**: CPU-leicht, minimaler CO_2-Footprint, Validator-Logs.

3.6 Email agents with HITL (Incoming, Extraction & Control)

Purpose: Email agents with HITL serve as a full-fledged incoming, extraction, and control route for email/(PDF, Text, WORD, EXCEL)-based communication. They guide unstructured inputs into a standardized process (classification → extraction analogous

to IDP → validation/HITL → ERP handoff) and enable manual review/correction in an integrated, auditable workflow.

Functional role in the overall processThe email agent:

- receives documents (e-mail, attachments, forwards),
- classifies document type, client, partner and process context,
- extracts structured data analogous to IDP/OCR,
- enables manual checking and correction (HITL),
- transfers the processed data via existing target protocols and formats (e.g. ERP interfaces),
- generates audit and processing logs.

Analogy and differentiation to IDP/OCR
Although email agents with HITL can technically use extraction methods (analogous to IDP), they differ significantly conceptually:
IDP is an extraction technology that extracts structured data from documents.
The email agent is a procedural orchestrator that processes business documents in the context of client, partner, channel and target system, makes decisions (routing, escalation, review) and generates an ERP-ready transaction. IDP can be part of an email agent, but not the other way around.

Functionally, the email agent with HITL is **similar to IDP**, but it differs in two ways:

- **Process proximity:** The extraction already takes place in the inbound context (email flow), not as an isolated AI service.
- **Automation path:** Recurring, stable layouts and process patterns that are initially processed in the HITL path can be gradually transferred to deterministic methods (e.g. NTPI/fingerprint) – without protocol/format changes in the target integration.

When IDP – When Email Agent?

- IDP if: Documents are to be extracted regardless of the input channel (batch, API, archive, scans).
- Email agent with HITL when email is the dominant channel and documents need to be processed procedurally (routing, escalation, ERP handover).

In practice, IDP is often used within an email agent, but the architectural responsibility lies with the agent.

Relationship with NTPI (Fingerprint)

The e-mail agent can be understood as a controlled precursor of a fingerprint: Through the existing transfer to a defined target protocol and format (e.g. ERP interface), extraction results and corrections are consistently collected. As soon as a partner/layout pattern is sufficiently stable, a fingerprint is derived from it; until then, the email agent remains the process path with review track (HITL, confidence thresholds, samples).

- Data is extracted,
- professionally checked/corrected,
- via defined target structures.

As soon as the layout and content are stable, this path can be converted into a deterministic NTPI fingerprint.

OEM/ISV-Fit

For ISVs, the email agent enables:

- fast coverage of new partners without prior knowledge,
- controlled quality despite any-doc inputs,
- ERP-related handover without media discontinuity,
- Step-by-step migration from HITL to No-Touch.

Conclusion

- Purpose: Input + Extraction + Manual Control
- Functionally comparable to IDP
- ERP-related, auditable, scalable
- Bridge from Any-Doc to No-Touch (NTPI)

Market & Vendor Overview – Tables (EU/UK Focus, ISV Relevant)

Basis: Your uploaded research/benchmarks. Selection by OEM/WhiteLabel suitability, EU presence and relevance for ISVs (Neutral)

Direct EDI / Platform EDI / iPaaS (Network & Integration Platforms)

This category includes classic EDI and B2B integration platforms that exchange structured business documents via standardized protocols and formats (e.g., EDIFACT, X12, AS2). They are particularly suitable for stable, high-volume partner relationships with clearly defined message types and established operating processes.

Provider	Category	EU/UK -Presence	OEM/White-Label	Strengths	Borders/Notes
EDICOM	EDI/VAN, E-Invoicing	stark in EU	Partner/OEM depending on the case	Broad compliance coverage, benefits from B2B mandates	Network access varies by country/type
Comarch	EDI/VAN + Web-EDI	EU focus	OEM/partner possible	Broad suite (VMI, tracking, industry solutions), strong EU compliance	Platform dependency/note lockin

Provider	Category	EU/UK -Presence	OEM/White-Label	Strengths	Borders/Notes
Pagero	E-Invoicing Network	EU/Global	Partners	Billing Network, Compliance Routes	Focus on e-invoicing; other types vary
Basware	P2P/E-Invoicing Network	EU/Global	Partners	P2P, supplier network	Not all supply chain documents
EDITEL	EDI/VAN	CEE/EU	Partners	Branchen (Retail, FMCG)	Regional Focus
Generix	SupplyChain EDI	EU	Partners	SCM-Focus, Logistics	
Descartes	Logistics Network/ EDI	Global/EU	Partners	Transport/Logistics	
Cleo Integration Cloud	Hybrid EDI + API (iPaaS)	growing EU presence	WhiteLabel/ OEM possible	Uniform platform for EDI & API, many connectors, monitoring	Targets mid/enterprise, pricing model projective

Provider	Category	EU/UK -Presence	OEM/White-Label	Strengths	Borders/Notes
MuleSoft	iPaaS + EDI-Adapter	EU	OEM rather selective/ enterprise deals	API-first + EDI-Adapter, einheitliches DevModel	EDI function usually via partner/adapter
Boomi	iPaaS + EDIModule	EU	OEM Editions/ Embedded & OEM-Partners	Lowcode, wide connectors	Similar to MuleSoft
Axway (AMPLIFY/B2B)	B2B/EDI + API	EU/Global	OEM Widely Used	Combines EDI, MFT, API, deep backend integration	
ecosio (Vertex)	Cloud-EDI (API)	EU/UK	WhiteLabel/ Partner	„EDI as a Service“ via Web-API	At Vertex since 2024, pay attention to orientation

4.2 Intelligent Document Processing (IDP/OCR)

IDP solutions extract structured data from unstructured or semi-structured documents using OCR, machine learning, and AI. They are technology-driven and document-centric and are often used as components within larger process chains – for example, to process scanned documents, PDFs or archived documents.

Provider	Out-of-the-box documents	Pricing model	Implementation effort	OEM/ API Suitability	Special features
ABBYY FlexiCapture/ Vantage	INV, PO, DES, B/L, Receipts; more via templates/training	Enterprise/ volume-based	Medium	Very High (APIs/ Connectors)	"Document Skills", ML+OCR, broad ecosystem
Tungsten Automation (ehem. Kofax) TotalAgility	Flexible for many supply chain documents (config./ML)	Enterprise	High	Extensive connectors	Cognitive Capture (ML/NLP + Rules)
Microsoft Azure Form Recognizer	Pre-trained (Invoice/Receipts/IDs), Custom for further	Consumption-based/side	Low–Medium	Hoch (SDKs/APIs)	DL Models, Power Platform Connectivity

Provider	Out-of-the-box documents	Pricing model	Implementation effort	OEM/ API Suitability	Special features
Google Doc AI	Pre-trained (invoice etc.), custom possible	Consumption-based	Medium	High	Powerful Parser Catalog
SAP Document Information Extraction	Invoices, etc., SAP-related processes	License/ Consumption	Medium	High (SAP-native)	SAP Integration
UiPath Document Understanding	INV/PO/ Packing Lists/ Avise (pre-trained) + Training	Enterprise (AI Units)	Medium	Very high (RPA native)	Humanintheloop, Marketplace
Automation Anywhere IQ Bot	Focus on INV/ Waybills/ Packing Lists; more via training	Volume/ Bot-based	Medium	High	GUI-Training, SAP-Flows
Rossum	Financial/SC documents (INV/PO/DES/B/L etc.)	SaaS by Doc Volume	Low	Very high	Self-learning, open API

4.3 Web-EDI (Portal)

Web EDI solutions provide business partners with web-based portals through which transactions are manually recorded or displayed. They often serve as a pragmatic transitional solution for partners without their own system connection. From a process perspective, however, they remain **manual,** not free of media discontinuity, and only scale to a limited extent as volumes increase or the number of partners grows.

Providers (examples)	**Portal/WebEDIFfunction**	**Note/ISVFit**
Comarch WebEDI	Supplier portal for SMEs/LT	Can be used as a bridge; manual work remains; as volume grows, replace
Other (e.g. networksof large EDI roviders)	Supplier/VendorPortale	Mostly part of the EDI stack; ISV-Fit limited (manual), temporary solution if necessary

4.4 NTPI – No-Touch (STP) PDF Interchange

NTPI solutions enable the deterministic, fully automated conversion of PDFs into structured business data – without OCR and without manual rework. They are particularly suitable for recurring, stable layouts and are designed to process high volumes with maximum process reliability and minimum operating costs.

Provider	Core principle	OEM/White -Label	Cost model	Coverage/ Accuracy	Compliance/Logs
PEDIF (Supedio)	Deterministic PDF → Standard Conversion ("PDF in – Standard Out")	Ja (API/WhiteLabel)	One-time fingerprints per layout + low run costs	100 % per fingerprint, long-tail suitable, transport-agnostic (deterministic per released fingerprint under defined input-quality assumptions)	EN16931/CIUS-Validatoren, Audit/Sanity-Logs

Provider	Core principle	OEM/White -Label	Cost model	Coverage/ Accuracy	Compliance/Logs
Connection (USA/CAN)	Service-based PDF data conversion, mapping→based, focus on PO/order automation	Rather not a classic OEM; Partner integrations in place	Annual/volume contracts (rarely communicated publicly)	High accuracy through supervised service and quality assurance	EU options via EU operation/regions; Audit/process logs project-dependent
CloudTrade (UK, One-Advanced)	Rule/anchor-based extraction with email agent	Strong OEM ecosystem (e.g. as a backend in platforms)	transaction-based; One-time layout setup	High quality per approved layout; Broad document focus	EU/UK hosting; Audit/validation protocols mostly provided by partners
Esker (FR)	AI/rule→based PDF data extraction with validation UI	OEM selten; Private Label/Direct	SaaS subscription per document/user, tiers	High Accuracy with Review Path (HITL)	EU regions available; Compliance & logs product-specific

Provider	Core principle	OEM/White -Label	Cost model	Coverage/ Accuracy	Compliance/Logs
IBM Sterling Conversion (USA/EU)	Managed Conversion Service (inkl. manueller QA)	part of larger IBM services; not a classic OEM	Service contract, price per converted document	Very high coverage, quality assured via QA	EU locations possible; Enterprise Audit/Reports
SEEBURGER PDF2EDI (DE)	PDF→EDI as a module in BIS/Cloud; complements EDI network	No (Seeburger brand); Integration with Suite	Add-on module to EDI contract: Setup + cost per document	EDI-like quality with stable layouts	Based on **Supedio/pedif technology** (see first row of the table). EU Cloud/OnPrem; technically based on PEDIF

4.5 Email Agents/Inbound + IDP (Classification & Routing)

This category includes e-mail agents/inbound gateways that convert e-mail/(PDF, Text, WORD, EXCEL)-based inbound into structured data in a process-reliable manner. Technically, it combines (1) input & classification (routing, client/partner assignment), (2) extraction analogous to IDP (LLM/models/OCR depending on input) and (3) human-in-the-loop (HITL) for manual validation/correction. Important for ISVs: The transfer takes place via defined target protocols and formats (e.g. ERP interfaces), so that this path is operated on an equal footing with NTPI/EDI. Recurring cases can be transferred from the HITL path to NTPI fingerprints.

Provider	Core function	IDP Skill	OEM/WhiteLabel	EU-Hosting	Special features
mailious (Supedio)	E-mail Agent (Inbox, Classification, Routing)	Yes (HITL eligible)	Partner/OEM possible	Yes	Direct integration to PEDIF/NTPI: AnyDoc fallback for non-fingerprint cases
Microsoft 365 + Power Automate + Form Recognizer	M365 Mailbox Input + Flow Routing	Yes (Azure FR)	– / Direct	Optional (EU regions)	Fast for M365 shops; Pay attention to license/cloud binding

Provider	Core function	IDP Skill	OEM/WhiteLabel	EU-Hosting	Special features
Google Workspace + Apps Script/Make + Document AI	Gmail/Label + Routing	Yes (DocAI)	– / Direct	Optional (EU regions)	Modular; Compliance/Residency prüfen
Parseur / Mailparser / Docparser	Email Parsing (Templates/Rules)	Optional (via API/KI)	SaaS/Direct	partly EU options	Quickly ready to go; Adding Standards/Validators

5. OEM/WhiteLabel Suitability Matrix

5.1 Rating scale

- **API maturity** = High / Medium / Low
- **Branding** = Full / Partial / None
- **Billing** = OEM / Reseller / Direct / RevShare
- **EU-Hosting** = Yes / Optional / No
- **Support-SLA** = Standard / Advanced / Enterprise

5.1.1 API Maturity

High

- Complete, stable **REST/GraphQL API** with **OpenAPI/Swagger**, version strategy (semver), **idempotent** endpoints, **webhooks/events**, **OAuth2/OIDC**, multitenancy, **sandbox** & sample SDKs
- **Monitoring**: Request IDs, rate limits documented, audit/change logs, status page, backward compatibility >12 months

Medium

- Solid REST API, good basic documentation but **gaps** (e.g. missing webhooks, inconsistent error codes, limited idempotence/sandbox)
- Versioning in place, but occasional **breaking changes** or manual workarounds

Low

- No or rudimentary API (batch/SFTP/email/portal-only), sparse documentation, no regulated version/event model; Integrations are **project-specific**

Evidence: public API portal, OpenAPI spec, changelog, status page, limits/quotas, example SDKs, tenant/RBAC description

5.1.2 Branding

Full

- **White label** with your own **domain/sender branding**, logos/colors, e-mail/PDF templates, UI texts, system mails, sender IDs; Multi-tenant capable

Partly

- Logo/colors & individual texts customizable; Domain/sender only partially, system mails/error messages remain **provider-branded**

Not

- No significant brand customization possible

Nachweise: Style-Guide-Optionen, Mandanten-Branding-Screens, Template-Editor, Custom-Domains/Certificates

5.1.3 Billing

OEM

- Contract/price list especially for **embedding** in ISV products: **wholesale pricing**, usage billing per client/document, permitted **re-branding**, technical usage reporting

Reseller

- Resale on behalf of the Provider; ISV receives **discount scales**/margin, customer is contracted with the provider

Direct

- The end customer concludes directly with the provider; ISV only integrates technically (no margin, but little effort)

RevShare

- Revenue share per transaction/volume; often in combination with OEM/Reseller

Evidence: sample order form, price scales, usage exports (API), billing frequency, audit reports

5.1.4 EU-Hosting

Yes

- **Primary and secondary operation in EU/UK,** incl. **backups/logs/telemetry** and **support accesses**; Subcontractors in EU/UK; contractually guaranteed **data residency**

Optional

- Regional selection per client (EU/UK **or** Global); clear documentation of what is stored/processed where; Data export without geo-shift

Yes

- Operation/processing exclusively outside EU/UK; no regional election

Evidence: Procedure Directory/Subcontractor List, DPA/AVV, Architectural Sketch (Data Flows/Residency), Pen Test/ISO Certificates

5.1.5 Support SLA (Standard / Advanced / Enterprise)

Level	Cover	Response Time	Solution/Goal	Uptime Goal	Extras
Standard	Business hours (e.g. 8×5)	≤ 4–8 h	"Best Effort" / Next working day	99,5-99,8 %	Ticket-Support, Basis-Monitoring
Advanced	12×5 or 24×5	≤ 1–2 h	≤ 8–12 h	99,9 %	On-call duty, runbooks, change windows, Statuspage SLA
Enterprise	**24×7**	**≤ 15–60 min**	**≤ 4–8 h**	**99,95-99,99 %**	**TAM/CSM**, architecture reviews, escalation matrix, **RTO/RPO**, performance SLOs, individual reports

Evidence: SLA document, escalation paths, measurement/reporting mechanism, sample monthly report, RTO/RPO information, incident postmortems

Note: Vendor offers vary by contract/region; Matrix serves as a quick ISV pre-selection.5.2 EDI/VAN/iPaaS

From an OEM and white-label perspective, EDI and B2B integration solutions are characterized by high stability, standardization, and compliance. At the same time, they often involve high integration and operational overhead, which can limit productization and scaling in ISV scenarios.

iPaaS and middleware solutions are technically well OEM-capable and offer flexible integration mechanisms. For ISVs, however, it is crucial that these platforms primarily represent infrastructure and do not assume any technical responsibility for document logic, process security or business partner communication.

Provider	Category	API maturity	Branding	Billing/ Reseller Model	EU-Hosting	Support-SLA	Notes (short)
EDICOM	EDI/VAN	High	Light–Full (Case-based)	Direct/Reseller/OEM	Yes (EUOptions)	Enterprise	Strong compliance-coverage EU; Networks/Portals

Provider	Category	API maturity	Branding	Billing/ Reseller Model	EU-Hosting	Support-SLA	Notes (short)
Comarch	EDI/VAN + WebEDI	High	Light–Full	Direct/Reseller	Yes	Enterprise	Wide suite (EDI, P2P, SRM); PortalStrengths
Pagero	eInvoicingNetwork	Medium-High	Light	Direct/Reseller	Yes	Advanced – Enterprise	Focus on the Accounting Network/ Compliance
Basware	P2P + eInvoicing	Medium–High	Light	Direct/Reseller	Yes	Advanced – Enterprise	Strong P2P processes, supplier network
EDITEL	EDI/VAN	Medium–High	Light	Direct/Reseller	Yes	Advanced	CEEFokus, Retail/FMCG
Generix	EDI/SCM	Medium–High	Light	Direct/Reseller	Yes	Advanced	SCM/LogisticsFocus

Provider	Category	API maturity	Branding	Billing/ Reseller Model	EU-Hosting	Support-SLA	Notes (short)
Descartes	Logistics network/EDI	Medium–High	Light	Direct/Reseller	Yes	Advanced – Enterprise	Transport/logistics strong
Cleo Integration Cloud	Hybrid EDI + iPaaS	High	Full	OEM/Reseller/Direct	Yes	Enterprise	Unified platform (EDI+API), monitoring
MuleSoft	iPaaS + EDIAdapter	High	Light–Full (case-based)	Reseller/Partner (OEM case-based)	Optional (EUCloud)	Enterprise	APIfirst; EDI meist via Adapter/Partner
Boomi	iPaaS + EDI	High	Full	OEM/Reseller	Optional (EU)	Advanced – Enterprise	Lowcode, wide connectors
Axway (AMPLIFY/ B2B)	B2B/EDI + API	High	Full	OEM/Reseller	Optional (EU)	Enterprise	MFT + API + EDI from a single source

Provider	Category	API maturity	Branding	Billing/ Reseller Model	EU-Hosting	Support-SLA	Notes (short)
ecosio (Vertex)	CloudEDI (API)	High	Light–Full	Reseller/Direct	and	Advanced – Enterprise	„EDI as a Service“, WebAPI

5.3 IDP/OCR

IDP solutions offer powerful extraction technologies and can always be OEM or white label integrated. For ISVs, however, consumption-based pricing models, probabilistic outcomes, and additional orchestration overhead are critical, especially when pursuing an end-to-end, no-touch strategy.

Provider	APIReife	Branding	Billing/Reseller Model	EUHosting	Support-SLA	Notes (short)
ABBYY Vantage/Flexi	High	Light–Full	OEM/Reseller/Direct	Optional (EU)	Enterprise	"Document Skills", broad ecosystem
Tungsten (Kofax) TA	High	Light–Full	OEM/Reseller	Optional (EU)	Enterprise	Cognitive Capture, BPMAnbindung

Provider	APIReife	Branding	Billing/Reseller Model	EUHosting	Support-SLA	Notes (short)
MS Form Recognizer	High	–	Direct (Azure)	Optional (EURegions)	Advanced–Enterprise	Pretrained + Custom, Power Platform
Google Doc AI	High	–	Direct (GCP)	Optional (EURegions)	Advanced–Enterprise	ParserKatalog, Custom Parsers
SAP DIX	Medium–High	Light	Direct (SAP); OEM case-based	Yes (SAP EUCloud Options)	Enterprise	SAPnative, S/4Approximation
UiPath DU	High	Light–Full	OEM/Reseller	Optional (EU)	Enterprise	RPAnative, HITLWorkflows
AA IQ Bot	Medium–High	Light	Reseller/Direct (OEM rare; case-based)	Optional (EU)	Advanced–Enterprise	BotLicensing, GUITtraining
Rossum	High	Light	Direct/Reseller	Yes (EU)	Advanced	Open API, self-learning

5.4 NTPI

NTPI solutions are particularly attractive from an OEM and white label perspective because they work deterministically, have clearly defined interfaces and can be easily integrated into scalable product offerings. The prerequisite is sufficient stability and repeatability of the underlying document layouts.

Provider	APIReife	Branding	Billing/Reseller Model	EUHosting	SupportSLA	Notes (short)
PEDIF (Supedio)	High	Full	OEM/Reseller	Yes	Advanced–Enterprise	Deterministische NTPI; FingerprintReuse; ValidatorLogs
Connection	High	Light–	Direct/Reseller	Yes (Options)	Enterprise	Managed Service; annual/volume contracts; EUExpansion
CloudTrade (UK, OneAdvanced)	Medium–High	Full/Light (depending on OEM)	OEM/Reseller/Direct	Yes	Advanced–Enterprise	Rule/Anchor Based, NoOCR; strong OEM hitoria

Provider	APIReife	Branding	Billing/Reseller Model	EUHosting	SupportSLA	Notes (short)
Esker (FR)	High	Light–Full (module/program dependent	Direct/Reseller/OEM (program dependent)	Yes	Advanced–Enterprise	IDPAnteil/ValidationUI; Product brand in the foreground
IBM Sterling Conversion	Medium	–	Direct	Yes	Enterprise	Managed conversion with human QA; EU Cities
SEEBURG PDF2EDI	High	–	Direct	Yes	Enterprise	Based on **Supedio/Peif technology** (see first row of the table); Module in BIS/Cloud; based on PEDIF

Email Agents/Inbound + IDP (Classification & Routing)

From an OEM perspective, email agents with HITL are suitable if they are implemented as a **productized process path** – including multi-tenancy, role/queue models, audit logs, and ERP-enabled handover. It is crucial that the HITL content remains controllable and that recurring cases can be transferred to deterministic procedures (e.g. NTPI fingerprints) in a targeted manner.

Provider	APIReife	Branding	Billing/ Reseller Model	EUHosting	SupportSLA	Notes (short)
mailious (Supedio)	High	Full	OEM/Reseller	Yes	Advanced–Enterprise	Entrance & Classification; deep PEDIFIntegration; AnyDocFallback
Microsoft 365 + Power Automate + Form Recognizer	High	–	Direct	Optional	Standard–Advanced	Tenant-bound; fast start; License Binding
Google Workspace + Apps Script/Make + Document AI	High	–	Direct	Optional	Standard–Advanced	Modular; Residency/Compliance je Setup

Provider	APIReife	Branding	Billing/ Reseller Model	EUHosting	SupportSLA	Notes (short)
Parseur / Mailparser / Docparser	High	Light	Direct (SaaS)	partial EUOptions	Standard	Template/rule-based; Quick start, add standards/validators

Efficiency: Coverage & Accuracy per Category

The performance of the five technology categories is essentially measured by two parameters: **coverage** (how many partners and message types can be connected in a reasonable time) and **accuracy** (how high the data quality is per document without manual rework). For ISVs, it is also crucial how **plannable** these sizes can be scaled as soon as the product is used in many clients.

6.1 Direct EDI

Direct EDI delivers the **highest data quality there** because formats, mappings and validations are deterministic. In stable, high-volume relationships, Direct EDI achieves virtually no-touch **(STP)** – errors then result from master data discrepancies rather than transmission. However, coverage is tied to the actual connected partners and actively mapped message types; each new partner and message type requires onboarding and testing. In large ecosystems, coverage therefore increases **gradually** and remains limited in the long-tail without accompanying measures. For ISVs, that means excellent accuracy, but a coverage curve that relies heavily on **partner readiness** and **onboarding resources**.

6.2 Platform EDI

Platform EDI (VAN/Network/iPaaS) increases **coverage** through network effects: Existing connectors, routes, and community onboarding accelerate the connection of typical partners and standard flows. Within the network, **the accuracy** is comparable to that of direct EDI, as long as the respective platform **consistently applies CIUS/Peppol profiles** and technical checks. Gaps arise with **rare news types**, **specialized industry formats** or partners who do not use the network. In practice, platform EDI can cover the **first 50-70%** of partners relatively quickly; moreover, the curve flattens out when long-tail partners insist on **email/portal**. For ISVs, the combination of **faster ramp-up** and **operational relief is** attractive – while at the same time there is a need to close edge cases with complementary paths and ensure that no channel conflict arises.

6.3 Web EDI

Web EDI is helpful as a **bridging technology** to reach the long-tail in the short term, so it nominally increases coverage. However, it is only used in real life by partners who accept and maintain the portal – this leads to **a spread of use and quality**. The **accuracy** depends heavily on the care of the input and the test rules stored in the portal; **No-Touch (STP)** is rarely achieved. As the volume increases, **the indirect costs** (rework, corrections, support) and the risk of errors grow. For ISVs, Web EDI is therefore a **temporary path** that should be replaced as soon as automated alternatives become available.

6.4 IDP/OCR

IDP/OCR maximizes nominal **coverage** for un/semi-structured documents, especially in "any-doc" scenarios without prior knowledge of layouts. Modern models achieve high field detection rates, but there is still a **review remainder.** The **no-touch (STP) rate** fluctuates depending on layout quality, language, scan, and field complexity. With good setup (confidence rules, validations, random checks), the manual part can be minimized, but rarely eliminated. For ISVs, IDP means: **broad coverage**, **variable accuracy**, **HITL processes**, and thus **scaling operational costs** that are factored into TCO.

6.5 NTPI

NTPI (No-Touch PDF Interchange) combines high **accuracy** with scalable **coverage**: per **fingerprint**, the extraction is **deterministic** and achieves **EDI quality** (practically 100% field accuracy per approved layout). Coverage grows **cumulatively** because fingerprints **can be reused** and **incrementally** expanded – especially efficient in ISV scenarios with many tenants and cross-supplier roots. In conjunction with an **email agent with IDP capability, a** dual path **is created**: fingerprint-enabled receipts run **no-touch (STP)** via NTPI; Non-fingerprint cases are **specifically** routed to an IDP/HITL path. Thus, coverage increases quickly without losing the accuracy benefits.

Comparatively, the no-touch ladder can be read as follows: EDI/NTPI (deterministic, no-touch) ≫ e-mail agent/IDP (with review remainder) ≫ Web EDI (manual). For long-tail coverage, however, the ability to standardize e-mail/(PDF, Text, WORD, EXCEL) inputs in a process-reliable manner dominates: NTPI + E-Mail Agent provide broad

coverage in a short time – without e-mail being excluded from the operational process as a secondary channel.

For ISVs, a **hybrid approach is** therefore usually superior: **EDI** for stable high-volume partners, **NTPI** as a **core layer for long-tail** and additional message types, **IDP / email agent** as a targeted **fallback** for real any-doc situations, and **web EDI** only temporarily as a bridge. This architecture combines **high no-touch (STP) rates** with **fast coverage ≥ 90%,** limits review efforts and keeps TCO predictable – especially if fingerprints and validation rules **are reused across clients** and governance criteria (front door/identity, data sovereignty/portability, vendor lock-in) are taken into account from the outset.

6.6 Email Agent with HITL (Extraction & Control)

Email agents with HITL maximize functional coverage by handling email/(PDF, Text, WORD, EXCEL)-based inboxes cleanly, even when deterministic processing is not possible. The extraction is analogous to IDP methods; Uncertainties are resolved via HITL (manual validation/correction). By handing over the same target protocol/format as NTPI (e.g. ERP interfaces), the path remains fully ERP-capable and auditable.

The no-touch rate is naturally lower than NTPI or EDI, however:

- controlled,
- auditable,
- ERP-capable,
- and clearly separated from no-touch paths.

In combination with NTPI, a graduated degree of maturity is created:

- **Email Agent + HITL:** Controlled Automation Without Prior Knowledge
- **NTPI:** deterministic no-touch processing for stable layouts

7. Cost Models in Detail (ISV Perspectives)

From an ISV perspective, what counts is how **fixed costs** (setup, certificates, mappings/fingerprints, enablement) and **variable costs** (transactions, review, operation) can be scaled predictably across **many clients**—while at the same time maintaining a short **time-to-value**. It is not only the price per document that is decisive, but also the **cost form** (fixed vs. variable), its **elasticity** in the event of volume changes and how well it can be converted into a **margin-eligible package** for your product.

7.1 TCO Driver

7.1.1 Setup & Onboarding

- **EDI/Platform EDI: one-time** analysis, **mapping per message type and partner**, test & certificates; fixed ramp-up peaks
- **IDP/OCR:** parameterization/training, confidence thresholds, review workflows; initially moderate, later iterative
- **NTPI: Fingerprint per partner layout** (deterministic); Fixed costs fall sharply with **fingerprint reuse** via clients
- **Web EDI:** Setup of portal/SSO/rules; low technical fixed costs, but operational effort (support, training)

7.1.2 Ramp-up (time → productive costs)

- The faster standards/mappings/fingerprints are **released**, the sooner transactions flow through. **Parallelization** (e.g., top 10 partners first) reduces opportunity costs.

7.1.3 Transaction Fees

- **EDI/Platform EDI:** per message/volume (e.g., KC/traffic, AP/network charges) – often **tiers**
- **IDP/OCR: per page/document**; Price decreases with volume, but remains **variable**

- **NTPI:** low **run costs per document** after fingerprint approval; **Email agent** can feed micro-volumes cost-effectively
- **Web EDI:** Portal costs + possibly transaction tariffs; **indirect costs** dominate (see below)

7.1.4 Rework/Review

- **EDI/NTPI: practically** no-touch **after approval**; Costs are more likely to be incurred in the event of **changes** (partner layout, CIUS update)
- **IDP/OCR/E-Mail Agent: Human-in-the-Loop** Remains a Structural Cost Block (Validation, 4-Eyes Principle, Escalation)
- **Web EDI:** manual entries → **correction loops**, helpdesk

7.1.5 Operation & Support

- Monitoring, alerting, **validator runs** (EN-16931/CIUS), certificate lifecycle, **SLA** compliance, incident handling. **Hybrid stacks** increase this base cost

7.1.6 Hybrid-Penalty

- Multiple parallel paths (portal, EDI, IDP, NTPI) mean **double checks, double monitoring, double training**. Where possible: **a standard process** with a targeted **branch** (e.g. NTPI core, IDP/email agent only for non-fingerprint cases)

7.1.7 Hidden Costs (Often Overlooked)

- **Human-in-the-loop (IDP/e-mail agent):** Personnel costs per document (validation, clarification cases), re-work in case of model drift, **lead time costs**
- **Portal errors (Web EDI):** Typing errors, incomplete receipts, media discontinuities; act as **quality and reputation costs** for the end customer
- **VAN/KC billing (platform EDI):** Charge logic (connectors, volume metrics, additional SLA) → **TCO slippage** in case of high traffic

- **Partner onboarding:** Friction (forms, certificates, tests) → **extended time-to-value**; with long-tail, this effort scales **linearly** if there is no automatic path

7.2 Economies of Scale for ISVs

- **Fingerprint reuse (NTPI):** Once a fingerprint has been created**, it** delivers **EDI quality** across **many clients** – this shifts fixed costs into **assets** and reduces unit costs in the long term.
- **Margin model & price bundling:**
    - **Editions/add-ons** (e.g. "Docs Basic/Pro/Enterprise") with tiered prices per client/document type
    - **Clearly define** transaction packages **(incl. x fingerprints + y thousand receipts/month) and** overage
    - **Hybrid discounts**: When NTPI runs as core, **EDI/IDP costs are reduced – pass on these effects as a** bundle benefit **(remains margin)**
- **Operating leverage:** A central **schema-of-record**, common validators and **identity/front door** (tenant PKI, mTLS/OIDC) reduce **operational fixed costs** per additional customer

7.3 Pricing Design & Negotiation Points (Practical)

- **Clearly separate: build fee** (setup/fingerprint/mapping), **run-fee** (transaction) and **change fee** (layout/CIUS changes)
- **Minimum commit & tiers:** Volume commitments per client/ISV overall portfolio ensure **purchasing conditions**; Define **price guardrails** for upsell (other message types)
- **SLA surcharges vs. margin:** Pricing higher SLAs (24×7, RTO/RPO) as **premium packages** – do not cross-finance
- **Buy exit path: contractually fix portability** (export of **fingerprints/mappings**, open formats, BYOK/KMS) – reduces **lock-in risk** and supports your **margin** in re-negotiations

- **Minimize hybrid penalty:** "Web EDI as a bridge, not as a permanent solution"; **IDP/email agent only as a fallback** with clear review quotas; **NTPI as a core layer** for long-tail and additional types; **EDI** for stable high-volume partners

7.4 Rules of thumb

- **≥ reach 90% coverage quickly: NTPI + email agent** first; selectively follow EDI for top partners; IDP only for true "any-doc" special cases.
- **Break-even NTPI vs. IDP**: The more partner/layout stable and the higher the volume, the more NTPI is worthwhile. For volatile or rare cases, the email agent with HITL remains the robust process path: extraction analogous to IDP, manual check/correction in the same target format/protocol as the no-touch paths – and when stabilized, transfer to a fingerprint.
- **Make TCO transparent: No-touch quota** and **review minutes** are the real price levers—anything that reduces them increases **contribution margin and customer satisfaction**.

ESG & Compliance in a nutshell

8.1 Energy/CO_2 is a Document

For ISVs, the environmental load per document processed is a tough operating factor. Deterministic, **CPU-light** methods (e.g., NTPI/fingerprint-based conversion) typically lie in the **millisecond to second range of CPU time** and consume orders of magnitude less energy than **GPU-based AI inference**. Concrete measurements show about **~0.0008 kWh** or **~0.16 g CO_2 per document** (EU electricity mix ~200 g CO_2/kWh). In contrast, **cloud IDP pipelines** (ML inference) are usually **~0.05–0.1 kWh** (**10–20 g CO_2/doc**) and **LLM-based** extractions are as high as **~0.1–0.5 kWh** (**20–100 g CO_2/doc**).

Result energy/CO_2 consumption: NTPI ≪ EDI ≪ IDP/OCR ≪ LLM. The effect scales directly with the volume – the more documents per month, the stronger the advantage of CPU-light methods (see environmental benchmark for guideline values and derivation; ESG comparative research.)

8.2 EU/UK Data Residency, Auditability, Validation Logs, Privacy by Design

For B2B communication in regulated processes (e.g. e-invoicing), **data processing should be verifiable in EU/UK regions** (hosting regions, sub-processors, DPA).

8.3 Regulatory Anchors (Product/Architecture Decisions)

- **EN 16931 / CIUS:** Semantic core model and national profiles (e.g. XRechnung, Factur-X). Relevance: Incoming/outgoing invoices must be **validable**; deterministic pipelines with **schema/schematron checking** reduce the risk of errors and checking effort.
- **Peppol (BIS/PINT, AS4, AP/SMP/SML):** Interoperability & delivery; important for ISVs on outbound/inbound routes and as an "exit path" from proprietary networks.
- **GDPR / UK-GDPR:** Personal reference in business documents is common (contact persons, addresses). Key points: **Legal basis**, **purpose limitation**, **data minimization**, **data subject rights**, **order processing (DPA), transparency** and **suitable TOMs**. **EU/UK residency** plus **verifiable logs** are strong evidence.
- **EU-AI-Act (relevance for AI-based IDP):** Classical **rule/deterministic** conversion (NTPI) is usually not the case. **not** under high-risk AI. **ML-based IDP** can trigger duties (risk management, data/model governance, logging, transparency) depending on the context of use. **Misclassification** entails the risk of fines (up to **€30 million or 6% turnover**). Recommendation for ISVs: **Document AI use cases**, risk/context analysis for each feature, **maintain governance artifacts** (data cards, evaluation protocols).

8.4 Takeaways für ISVs

- **Eco-efficiency is a cost and trust criterion**: CPU deterministic pathways (NTPI/EDI) reduce energy/CO_2 and reduce operating load – an advantage in tenders and CSRD/ESG reporting
- **Compliance is architecture, not add-on**: EU/UK residency, **audit logs** and **validators** belong in the standard process; Exports/portability secure the exit path

- **Targeted use of AI**: IDP as a **fallback** with clear review quotas and AI Act governance; **NTPI as a core layer** for no-touch compliance and low footprint.

9. Decision Framework for ISVs

The decision-making framework serves to systematically compare technology options (e.g. EDI, platform EDI/web EDI, IDP, NTPI, Hybrid) and translate them into an **ISV-compatible target image**. In addition to coverage, quality and time-to-value, three guardrails in particular are crucial for ISVs: **(1) front door/identity at the ISV**, **(2) exit/portability**, **(3) channel conflict risk** (disintermediation/partner economy). The goal is a decision that is **productizable** (OEM/white label, billing, multi-tenancy, operation) and scalable at the same time (long-tail coverage without exploding operating costs).

9.1 Catalogue of criteria (weightable)

9.1.1 Business

Contribution margin & use-case fit (which option creates the highest benefit in the target segment), monetization (pricing model, overage, bundles), and customer loyalty (retention leverage, cross-sell capability) are evaluated. Also relevant: **risk from market/vendor positioning** (e.g. network/portal approach vs. OEM approach) and impact on existing revenue streams.

9.1.2 Product

The focus is on coverage (proportion of partners and message types that are realistically covered), product UX (self-service/onboarding, exception handling) and reuse (e.g. fingerprints/mappings) as scaling levers. The path from MVP → scaling is important: What is ready for product in 6-8 weeks, and what is later?

9.1.3 Technology

This includes integration effort (APIs, connectors, identity), operational architecture (multi-tenancy, isolation, scaling), and data governance (schema-of-record, audit logs, validation credentials). Exit**/portability** (export of normalized data, ownership of mappings/fingerprints, exit mechanisms) is critical.

9.1.4 Operations

Onboarding speed (partners, types), change handling (layout/mapping changes, regression), support load (exception rate, HITL processes), and run operation (SLA, monitoring, status, incident playbooks) are evaluated. The decisive question is: How much special know-how is required in the long term – and how well can this be standardised as an OEM service?

9.1.5 Compliance/ESG

Test criteria are EN 16931 conformity (incl. CIUS/Peppol profiles, validator logs), auditability (traceability per document), as well as data residency (EU/UK), privacy-by-design and security controls (RBAC, BYOK/KMS, certificate management). ESG indicators are to be treated as benchmarks (make measurement methodology transparent).

9.1.6 Channel Conflict & Ecosystem Fit

For ISVs, channel conflict risk is a **strategic gate factor**: Does the solution replace or weaken existing partner roles (SI/BPO/EDI service providers), shift ownership (identity/billing/data relationship), or does disintermediation occur? The following are evaluated: OEM/white label capability, go-to-market neutrality (no "new gatekeeper"), partner economy (services for SIs/BPOs) and contractual guardrails (no-channel conflict, account protection, clear roles/responsibilities).

9.2 Scoring-Matrix & Methodik

How to use the matrix:1. Prioritize **weights** per ISV (e.g., API maturity, exit, OEM/billing),2. assign **scores 1–5** per option (with receipts),3. **Check governance gates** (front-door/identity, exit/portability, channel conflict),4. Translate result into an MVP target image (core + fallback + rollout plan).

9.2.1 Scorecard template (to fill in)

Criterion	Weight	Score (1–5)	Comment / Receipt
Time-to-value (MVP in weeks)	1.5		
Coverage strategy (top/mid/long-tail)	1.2		
STP/Quality (deterministic vs. any-doc)	1.5		
API-Reife (REST, Webhooks, Idempotenz, Sandbox)	2.0		
OEM/Branding & Billing (White-Label, Mandanten)	1.8		
Channel conflict & ecosystem fit (disintermediation risk, partner economy, account protection)	1.6		
EU/UK-Residenz & Compliance (EN16931/CIUS, Audit)	1.8		
Exit/portability (data export, fingerprint ownership)	2.0		
Run operation (SLA, monitoring, change policy)	1.6		
TCO-Transparenz (Preislogik, Overage, Caps)	1.6		

Each criterion is scored **with 1–5 points** and multiplied by the **weighting** (default: 1.0; governance issues such as lock-in/channel are usually higher, e.g. 1.5–2.0). The **category scores** (Business/Product/Technology/Operations/Compliance) add up to the **total score per technology**.

Recommendation: In addition to a minimum overall score, set a **minimum governance threshold** (e.g. lock-in ≥ 4/5, audit/export ≥ 4/5) so that economically attractive but risky setups are excluded.

5-point scale for time-to-value (MVP in weeks)

5 – Very fast: MVP productive in **≤ 6–8 weeks** (incl. at least 1–2 document types, monitoring, clear exception flow), low dependencies.

4 – Fast: MVP in **8-12 weeks**, onboarding/setup largely standardized, low project load.

3 – Medium: 12–20 weeks, multiple dependencies (mapping/partner coordination), MVP still with noticeable project work.

2 – Slow: > 20 weeks, high customization, recurring custom projects per partner/type.

1 – Not MVP-eligible: Unclear MVP, no realistic path without a major project.

5-point scale for coverage strategy (top/mid/long-tail)

5 – Long-Tail Scalable: Top/Mid/Long-Tail can be covered with **reusable artifacts** (e.g. fingerprints/mappings) and a clear activation factory.

4 – Good: Long-tail possible, but with moderate onboarding effort; Reuse works in practice.

3 – Okay: Mid-tail good, long-tail only selectively useful; Effort grows noticeably.

2 – Weak: Focus on top partners; Long-tail leads to a sharp increase in project/support load.

1 – Very weak: Coverage remains selective; Scaling is practically impossible.

5-point scale for STP/quality (deterministic vs. any-doc)

5 – Deterministic & auditable: Very high STP rate in the target scope; **deterministic standardization** + clear evidence; Exceptions can be controlled cleanly.

4 – High: High quality, low review rate; changes/regression.

3 – Medium: Mixed quality; regular reviews/HITL necessary, but controllable.

2 – Low: Common errors/deviations; high review rate; Quality risk in operation.

1 – Unreliable: No reliable quality; not production-ready for core processes.

5-point scale for API maturity (REST, webhooks, idempotency, sandbox)

5 – Enterprise API: Full REST APIs + **webhooks/events**, idempotenz keys, pagination, versioning, sandbox, clear error codes, good documentation/SDKs.

4 – Mature: REST + good documentation; Events/webhooks available or easily replaceable; solid auth options.

3 – Base: REST exists, but gaps (events, versioning, sandbox, error codes).

2 – Weak: Limited APIs, many manual steps, lack of standards; Integration becomes project-heavy.

1 – Not API-enabled: Portal/file batch-only; no clean product integration possible.

Scale of 5 for OEM/Branding & Billing (White-Label, Clients)

5 – Fully OEM-ready: White label full (UX, domains, email, certificates), **billing/resell** via ISV, true multi-tenancy, branding without vendor footprint.

4 – Very good: OEM largely possible; low visible vendor traces; Billing/resell possible with few restrictions.

3 – Medium: Partial White Label; Billing only to a limited extent; Multi-client capability ok, but not consistently.

2 – Weak: Vendor portal visible; Billing at the vendor; OEM only "light".

1 – Not OEM-capable: Vendor remains front-door (identity/billing/UX), ISV model is undermined.

5-point scale for channel conflict & ecosystem fit

5 – Channel strengthening/conflict free: OEM/white label complete; ISV remains front-door (identity/billing/UX); Partners can monetize services (onboarding, operations, exceptions, process consulting) cleanly; Contractual account protection.

4 – Low risk (well controllable): No direct end-customer disintermediation; clear roles (RACI), transparent pricing/billing logic; optional partner programs in place; Branding/identity remains ISV-led.

3 – Medium risk (with guardrails): Partial overlap (e.g. vendor also has direct business/network narrative), but OEM possible; Risk can be limited via contract/technology (client separation, no-sell clauses, account lists).

2 – High risk: portal/network approach dominates; Identity/Billing (partially) bypass the ISV; Partner economy unclear; high resistance in the SI/BPO/EDI channel likely.

1 – Critical / exclusion criterion: vendor positions itself as the primary layer/gatekeeper; direct end-customer relationship + cross-sell in the ISV account; hardly any OEM; Lock-in and exit unclear → strategically not ISV-compatible.

Scale of 5 for EU/UK Residency & Compliance (EN16931/CIUS, Audit)

5 – Fully compliant: EU/UK hosting, clear data flows, EN16931/CIUS/Peppol capability (where relevant), **audit logs/validator credentials**, security controls.

4 – Strong: EU/UK possible; Compliance good; auditability largely exists.

3 – Medium: Basic controls; individual gaps (e.g. audit depth, CIUS variants, verification).

2 – Weak: Residence/Compliance blurred; auditability limited; Enterprise deal risk.

1 – Not suitable: Residency/compliance not achievable or insufficiently documented.

Exit/Portability (Data Export, Ownership)

5 – Clean exit: export of normalized data + artifacts (mappings/fingerprints/rules) regulated; clear ownership; defined exit process (time, format, support).

4 – Good: Data export good; Artifacts partially exportable; Exit process in place.

3 – Medium: Data export possible, but artefacts/know-how are strongly tied; Exit plannable, but painful.

2 – Weak: Export restricted; high lock-in (artifacts/workflows not portable).

1 – Lock-in: Virtually no exit without rebuilding.

Run operation (SLA, monitoring, change policy)

5 – Enterprise run: SLA stages, monitoring/status page, incident process, change policy, regression testing; clear operation for layout/partner changes.

4 – Stable: Solid operation, good transparency, defined response times; Change handling works.

3 – Basic: operation possible, but with manual workarounds; Transparency/regression limited.

2 – Fragil: Häufige Incidents/Exceptions; keine klare Change-Policy; Supportlast hoch.

1 – Not run-ready: Operations not resilient; missing SLAs/processes.

TCO-Transparenz (Preislogik, Overage, Caps)

5 – Fully transparent: Clear metrics (per doc/partner/tenant), overage rules, caps, forecasting possible; Costs scale predictably.

4 – Good: Pricing logic understandable; Overage clear; few gray areas.

3 – Means: Basic logic clear, but individual unclear cost drivers (e.g. special cases/changes).

2 – Non-transparent: Many "professional services"/special positions; Scaling difficult to calculate.

1 – Risk: Costs cannot be planned; Pricing model hinders productization.

9.2.2 Example (filled out, short form)

Criterion	Weight	Score	Comment
API maturity	2.0	5	Webhook-Events, Sandbox, idempotente Calls, Statuspage
EU Residency/Compliance	1.8	4	EU-Hosting; Validator-Logs; CIUS-Updates planbar
Exit/Portability	2.0	4	Export Normalized Data + Audit-Logs; klare Ownership-Regeln
Time-to-Value	1.5	4	MVP in 6-8 weeks for top 10 + 2 types
Channel conflict & ecosystem fit (disintermediation risk, partner economy, account protection)	1.6	4	White-Label/OEM + Billing via ISV; Affiliate program for SI/BPO; No-channel conflict clause; Identity at ISV.

9.2.3 RFP/Due Diligence Issues (excerpt)

The following questions are intended as a **checklist** for ISVs/platforms to make vendors/approaches comparable along the criteria of 9.2 . The goal is not "feature bingo", but to clarify **operational reality, portability, OEM capability and channel fit**.

Product/Use-Case Fit & Scope

- Which **document types** and **process chains** are in the scope (order → AB → delivery note → invoice), and which are "roadmap"?
- For which **channels** (EDI, API, E-Mail/PDF, Portal Upload, Peppol) are there product-ready input options?
- What are the **minimum requirements** for a "no-touch" route (inputs, quality criteria, mandatory fields, validation rules)?
- How is **exception handling** implemented (queues, workflows, roles, deadlines, escalation)?

API, Events & Integration Capability

- Which **API endpoints** are available (input, status, artifacts/mappings, validation, export), and how is **versioning** regulated?
- Welche **Webhooks/Events** gibt es (z. B. Document-Received/Normalized/Validated/Posted/Exception-Raised)?
- Are there **idempotency** (keys), **retry policy**, **rate limits**, **backoff** rules, and documented error codes?
- Is there a **sandbox** including test data, mocking, document replay, and CI-enabled test paths?
- Which **data models**/standards are used (schema-of-record, UBL/CII/EDIFACT mappings) and how are mapping changes versioned?

Tenancy, Identity & Security

- How are **tenants/identity** implemented (OIDC/OAuth2, SSO, SCIM, Service Accounts, mTLS), and what does **tenant isolation look like** ?
- What role/rights structures (RBAC/ABAC) are there for partners, customer support, HITL, auditors?
- How are **secrets/keys/certificates** managed (rotation, KMS/BYOK, HSM, audit trails)?
- What security evidence exists (ISO 27001/SOC2 or similar), and how are **vulnerabilities** (SLAs, disclosure) handled?

Compliance, Auditability & Data Residency

- What **data residency** options are there (EU/UK), including subprocessors, log locations, backup/DR regions?
- How are **audit logs** provided (in terms of time, content, export), including "why" evidence (Rules fired, Validation Results, Human Actions)?
- Which standards are supported (EN16931, CIUS/Peppol profiles, validators) and how are they updated?

- How are retention, deletion concepts and data protection requirements implemented (retention policies, DSAR)?

Operating Model, Observability & SLA

- What **observability** is delivered (request IDs, correlation IDs, tracing, metrics, logs, alerting), and what is self-service vs. support ticket?
- Are there **Statuspage**, incident postmortems, RTO/RPO, defined maintenance windows?
- What does the **SLA model** look like (availability, response times, recovery times, change response)?
- How does **backpressure**/queueing work during peak loads (bulk ingestion, prioritization, dead-letter queues)?
- What typical **operating metrics** do you share (STP rate, exception rate, time-to-resolve, change frequency)?

Change-Handling (Layouts, Partner, CIUS, Regeln)

- How are **layout/partner changes** detected (monitoring, drift detection), prioritized and processed?
- What SLAs apply to change fixes (e.g. P1/P2), and how is the **release/regression process** organized?
- How do you prevent changes in Partner A from affecting other partners (isolation/regression suites)?
- Is there a **golden sample** concept, test catalogs and automatic replays?
- What does the process look like if mandatory fields are missing/inconsistent (fallback rules, enrichment, query)?

Partner-Onboarding & Activation Factory

- How does partner onboarding work (sample count, minimum quality, duration, roles, self-service shares)?
- How is **the reuse** of artifacts (mappings/fingerprints/partner clusters) enabled and measured?

- How is partner communication supported (invite flows, portal, email templates, partner support)?
- What are the "onboarding at scale" mechanics (batch, prioritization, coverage reporting, partner health)?

mExit, Portability & Ownership

- What does the **exit** look like: data export (raw + normalized), artifacts (mappings/fingerprints/rules), audit logs – in which formats?
- Who owns artifacts (mappings/fingerprints/rules), and what is contractually regulated for **reuse** ?
- Is there a defined **exit runbook** (timing, cost, support level, data deletion)?
- How are vendor-specific dependencies reduced (e.g., open standards, portability guarantees)?

Commercials: Pricing, Packaging, Minimum Commitments

- How does pricing work (per document/page/partner/tenant), incl. **Overage**, **caps**, graduated prices?
- What are the costs for onboarding/changes/support (PS vs. inclusive quotas)?
- Is there an OEM/resell model (wholesale/resell, margin logic, revenue share) and how is billing/tax handled?
- What are the termination/contract terms, price change clauses and indexations?

OEM/White Label, Channel Fit & Go-to-Market (Channel Conflict)

- OEM/white label: Is full branding possible (UX, email domains, portal URLs, certificates)?
- Identity/Billing: Who is Front-Door? Who invoices? Can resell/OEM pricing models be mapped?
- Account Protection: Is there **no-sell/no-poach** in the ISV account? How will this be enforced contractually/operationally?

- Go-to-market neutrality: Is there a network/portal narrative that cannibalizes ISV positioning?
- Partner economy: What services can SI/BPO/EDI partners sell (onboarding, exceptions, monitoring, compliance setup)?
- Are there partner programs, enablement, co-selling rules, and clear RACI between vendor/ISV/SI?

In Appendix A you will find the appropriate **RFP/due diligence form** (copy/paste)

9.3 "When does what win?" – Rules of thumb

9.3.1 Existing EDI Stack & Stable High-Volume Partners

EDI remains the primary path for the top partners (maximum data quality, low unit costs); **NTPI** adds **new message types** and **additional partner classes** without long onboarding; Email agent handles the rest of the long tail. **IDP** only for real special cases with **a defined review route** (HITL, sampling, escalation).

9.3.2 No EDI Module & Pronounced Long-Tail

NTPI as a **core layer** for fast **coverage ≥ 90%** (deterministic, reusable fingerprints); EDI may be **selectively** retrofitted later for high-volume, stable relationships; **IDP/e-mail agent** specifically for **"any-doc"** situations in which fingerprints are (still) missing or layouts vary greatly.

9.3.3 Documents beyond the invoice (ORDERS/ORDRSP/DESADV/RECADV/...)

NTPI + EDI deliver **deterministic quality** and **standard compliance** across multiple types; **IDP** only with a clear **HITL route** and confidence rules to avoid misbookings.

9.3.4. Email Channel Dominates

If the email channel dominates, an email agent with extraction and HITL is the operational entry point. It enables structured, ERP-capable data transfers even without stable layouts.

The recommended target image is a **two-stage model**:

- **Manually controlled path:** Email agent + HITL (analogous to IDP)

- **Deterministic path:** NTPI/fingerprint for stable, recurring layouts

In this way, e-mail is gradually transferred from any-doc to no-touch – without a break in the process or in the target integration.

9.3.5 Conclusion

With this framework, ISVs prioritize a **uniform standard process**, maximize **no-touch** and **coverage**, limit **hybrid complexity** – and make robust build/partner decisions with a clear ROI and governance guardrail.

9.3.6 Decision Tree: If A/B/C, then Stack X (short version)

For quick stack choice (EDI vs. IDP vs. NTPI vs. Hybrid), use the Decision Tree in Appendix D.

Short logic:

- If you **already operate EDI stably today** (or can enforce it) and the top partners bear the majority of the volume: **EDI-first**.
- If you **need deterministic EDI quality for recurring PDF layouts** (orders/AB/delivery note/invoice) and high layout reuse is possible: **NTPI-first**.
- If the **long-tail dominates (many rare layouts),** probabilistic extraction is acceptable, and human-in-the-loop is possible: **IDP-first**.
- If you **have mixed reality** (some EDI partners, many email/PDF, different maturity levels): Hybrid gateway (**routing: EDI -> NTPI -> email agent/IDP**).
- For each stack, Appendix D includes an MVP start (scope, KPIs, 4-6 week plan).

With this framework, ISVs prioritize a **uniform standard process**, maximize **no-touch** and **coverage**, limit **hybrid complexity** – and make robust build/partner decisions with a clear ROI and governance guardrail.

9.4 Example decision (walkthrough)

Attention: To carry out the example decision, access to the pedif calculator is required. Access can be requested at: partner@pedif.digital.

Initial situation (vertical ISV): 1,500 customer clients, ~1,200 suppliers, 4 message types (**INV/ORD/DESADV/ORDRSP**). Goal: **≥ 90% coverage** in a short time, **maximize no-touch rate**, lower TCO.

9.4.1 As-is analysis

- **Volumes per type:** Split according to INV/ORD/DESADV/ORDRSP (example: Invoices & Purchase Orders dominate).
- **Channel mix:** E-mail PDF and portals in the long tail, partly existing EDI with top partners.
- **Partner classes:** Top 50 with high & stable volume; Mid-tail with medium volume; **Long-tail** with sporadic receipts.
- **Mandatory channels/standards:** EN-16931/CIUS & Peppol (depending on the market); internal booking rules; Archive/Audit.

9.4.2 Scenarios (transferred to the calculator)

- **EDI-only:** Expansion/new connection of all partners via (platform) EDI.
- **NTPI-only:** Deterministic PDF → standard conversion (fingerprints) for all suitable partners/types.
- **Hybrid: NTPI as core layer**, **selective EDI** for top partners & stable flows, **IDP/HITL** only for special cases.
- **E-mail agent** (e.g. mailious) **as input & classification**: dual-path
    - **Fingerprint-capable ⇒ NTPI=No-Touch**
    - **Non-fingerprint ⇒ email agent/HITL** (defined review rate)

9.4.3 Assumptions/KPIs in the Calculator

- **Onboarding speed:** Fingerprints for top partner layouts in waves (e.g., 10-20 p.w.).
- **STP/No-Touch Odds:** EDI≈NTPI High; IDP with defined review rate.
- **Cost blocks:** Setup (mappings/fingerprints), transactions, **review** (IDP path only), operations/support, **hybrid penalty**.
- **Coverage factor:** How quickly do we reach **≥ 90%** across all types?

9.4.4 Outcome (Typical)

- **Hybrid** achieves **lowest TCO** in **coverage ≥ 90% in < 6 months**:
    - **NTPI as core**: Covers long-tail + many types deterministically; **Fingerprint reuse** over 1,500 clients reduces unit costs.
    - **EDI selective**: For top partners with high/stable volumes; minimizes transaction costs and maintains quality to the maximum.
    - **IDP for special cases only**: Any-doc/alternating layouts with **clear HITL range** (confidence thresholds, samples).
    - **Email Agent↔NTPI:** Email Agent, Classification & Routing in the **Dual Path**; Portals/e-mail are **operationally relieved**.

9.4.5 Target architecture (standard operational process)

E-mail/EDI/API inbox:

→ **e-mail agent** (inbound & classified; e.g. Mailious) → **NTPI** with EN-16931/CIUS validation (e.g. PEDIF) **or** → **IDP/Email Agent/HITL** (only if necessary) → **Standardized API/Peppol/ERP booking**, **audit/validator logs**, monitoring.
Identity/Front-Door at ISV (Clients, Certificates, RBAC, BYOK/KMS), **Schema-of-Record** central.

9.4.6 Decision & Rollout

- **Phase 1 (0–8 weeks):** Top 50 suppliers + 2 message types via **NTPI,** email inbox with email agent active; continue existing **EDI**; define first IDP special cases.
- **Phase 2 (up to month 6):** Expand fingerprint catalog (mid-/long-tail), **selectively add EDI** ; Review rate < 5%.
- **Phase 3 (from month 6): Optimization** (more types, international profiles), reduce **hybrid penalty** (one process, clear branches), increase **margin** through bundles/tiers.

9.4.7 Summary

With **NTPI core + email agent inbox,** the ISV achieves **fast, wide coverage** with **a high no-touch degree**; **EDI** stabilizes high-volume relationships; **IDP** remains **targeted fallback**. This keeps **TCO, quality and governance** in balance.

Architecture Patterns & Operating Models (for ISV Products)

10.1 Target Image

A **uniform standard process** from receipt to booking – minimal parallel operation, clear branches, full audit capability. The core flow is:

Receipt → classification → standardization → validation → handover (API/Peppol/ERP)

10.2 Standard Process (Receipt → Classification → Standardization)

1. Inbound (E-Mail/EDI/API/Portal Export)E-mails do not run as a secondary channel, but via an e-mail agent (e.g. Mailious or Alternative) into the standard process. The agent collects mail body/attachments, normalizes metadata (tenant, channel, sender, partner notes), and provides the inputs for extraction/HITL and downstream handoffs.

2. **ClassificationThe e-mail agent recognizes document type (INV/ORD/DESADV/ORDRSP/...), language, partner/relationship context and layout stability and thus decides on the appropriate processing path.**
3. **Routing** – uniform process with clear branches(a) NTPI if a fingerprint is present/derivable → deterministic PDF standard conversion (no→touch; e.g. PEDIF).(b) Email Agent/IDP Extraction + HITL if no fingerprint applies → extraction analogous to IDP, manual validation/correction, then transfer in the same target schema/protocol as (a). If a pattern stabilizes, it is transferred to (a) (fingerprint lifecycle).
4. **ValidatorsTechnical and formal checks (e.g. EN-16931/CIUS-Schematron, business rules, master data checks) are applied uniformly to both paths and generate verifiable logs (mapping version, fingerprint ID or review ticket, runtime, hash/signature).**
5. **TransferStandardised output to API, Peppol** or directly to the **ERP** (e.g. IDoc/REST). Error paths are routed to the **exception workflow** (see Monitoring).

10.3 Hybrid Stack – An Operational Process Framework

- **Building blocks: EDI + NTPI + IDP** in **one** operational process, not as three silos.
- **Inbound & Fallback: Email Agent** (e.g. mailious)↔NTPI (e.g. PEDIF) seamlessly connects email inboxes to NTPI and provides **any-doc fallback** to the IDP branch if there is no fingerprint.
- **Guardrails: Front-door/identity** for the ISV (clients, certificates, RBAC), **monitoring** /alerting, **a** "scheme of record". This keeps the hybrid penalty (training, monitoring duplicates) to a minimum.

10.4 Fingerprint-Lifecycle (NTPI)

Recording → creation → testing/acceptance → rollout → monitoring → updating

- **Recording:** Example documents, field definitions, target format (EN-16931/UBL/EDIFACT).
- **Creation:** Fingerprint per partner layout; deterministic field location & rules.
- **Test/Abnahme:** Golden Samples, Negativtests, Validierungs-Reports.
- **Rollout:** Roll out client-wide, **reuse** via customer base.
- **Monitoring:** KPIs (STP/no-touch rate, error rate, lead time).
- **Update: Layout change detection**, fast correction & versioning (downtime-free, backwards compatible).

10.5 Monitoring & „Schema of Record“

- **Schema of Record:** Uniform, **versioned target schema** (e.g. internal JSON/XML standard) against which all documents are normalized – regardless of the input channel.
- **Check rules & sanity rules:** mandatory fields, amount logic, VAT consistency, reference chains (PO↔ASN↔INV), GLN/IBAN/Tax-ID validation.
- **Validation logs:** Full **Schematron/Validator logs**, mapping version, fingerprint ID, runtime, hash/signature (audit).
- **Exceptions:** Uniform **exception queues** with cause, severity, restart; **Auto-remediation**, **RTO/SLAs** per criticality.
- **Observability:** End-to-End-Tracing, Korrelation über **Request-IDs**, Dashboards (STP-Quote, Coverage, Kosten/Beleg), Alarme (z. B. STP < Zielwert).

10.6 Operating Models

- Managed vs. Productized: The email agent incl. HITL is available as a productized process path (queues, roles, SLAs, audit logs); HITL service can

optionally be booked as a service contingent. NTPI/EDI run deterministically and scale productively – both paths share target schema, monitoring and handover protocols.

- **Regional operation: EU/UK data residency**, BYOK/KMS, mTLS/Peppol certificate delegation.
- **SLA tiers:** Standard (8×5), Advanced (12/24×5), Enterprise (24×7) with promised response/resolution times and availability.

10.7 OEM/White Label Packaging (for ISVs)

- **Editions & Bundles:** *Basic/Pro/Enterprise* or *add-on "Documents"* (e.g. incl. x fingerprints + y thousand transactions/month); **Overage rules** transparent.
- **REST API & SDKs:** multi-tenant, idempotent, webhooks, **OpenAPI spec**, sample flows (input→NTPI/IDP→Validator→ERP).
- **Branding: Voll-White-Label** (Logo/Domain/Systemmails), UI-Texte & E-Mail-Templates; Mandanten-Branding pro Kunde.
- **Pricing & Margin Model: Transaction-based** with **Scales** (Run-Fee) + **Build Fee** (Setup/Fingerprints/Mappings) + **Change Fee** (Layout/CIUS Updates). **ISV margin** via wholesale/OEM rates, **price bundle** with core product.
- **Support/SLA:** Ticket/Chat, **Runbooks**, Escalation Matrix, **TAM/CSM** optional; **SLO key figures** (STP rate, TTV, error rate) as an annex to the contract.
- **Governance/Exit: Portability** (export of data & **fingerprints/mappings**), open formats, **BYOK/KMS**, documented exit path – reduces **lock-in** and strengthens bargaining power.

10.8 Result

This pattern delivers **no-touch (STP) quality** where layouts are stable (NTPI), holds with email agent (mailious or alternative) for fast **coverage**, and remains **brandable and margin-worthy as an** OEM building block – with a **single** operational process that scales.

Business Case & Monetization for ISVs

11.1 Objective

Put together an offer that (a) sells quickly, (b) delivers predictable margin per client and (c) automatically gets better as volume grows. The decisive factor is the **form of the price** (fixed vs. variable) and how much **economies of scale** – especially **fingerprint reuse** – depress your unit costs.

11.2 Packaging

- **Add-on / Editions:** "Documents Basic/Pro/Enterprise" or as an **add-on** to existing editions. Differentiation via contained **message types**, **fingerprints**, **transaction quotas**, **SLA levels**.
- **Bundles per type/volume:** e.g. *Invoice-Starter* (1 type, 5 fingerprints, 20k docs/year), *Multi-Type* (4 types, 25 fingerprints, 250k docs/year). **Clearly define overage rules** (per 1k/10k documents).
- **Metered Billing:** Transparenter „Pay-as-you-go“ je Dokument + ggf. **Build-Fee** (Fingerprint/Mapping) + **Change-Fee** (Layout-Update, neue CIUS). Optional: **Commit-Stufen** mit günstigeren Run-Rates.

11.3 Commercials

- **Revenue Share:** OEM/Wholesale purchase price → **resell** with margin (e.g. 30% depending on edition/commit). Alternatively**, fixed price white label** (you set end customer prices).
- **Tiered prices:** Run rate decreases with volume (**tiers** per client and/or **group aggregate** across all clients).
- **Minimum sales:** Monthly or annual **volume commits** (e.g. 50k/200k/1 million documents/year) secure your purchasing conditions and stabilize gross profit.

11.4 Example calculations (thought patterns)

- **Per customer (client): Revenue** = package price (incl. x fingerprints + y docs) + overage – discounts. **Cost** = Wholesale-Run-Cost· Docs + Build/Change-Fees (external) + Your Operations (Support/SLA). Contribution margin increases with utilization of the contained contingents.
- **Per partner (supplier/customer): Fingerprint reuse** acts like an asset, once created, **reused in many clients** → build costs are distributed → **run-cost dominates**, margin grows
- **Per document type. Stable layout/standard** types (INV/ORD/DESADV/ORDRSP) are suitable for **NTPI** (deterministic, no-touch). **IDP/email agent** remains fallback for "any-doc".

11.5 Break-even scenarios

- **IDP/Email Agent ↔ NTPI (per partner): NTPI** wins as soon as (a) **layout is stable** and (b) **volume** is above the break-even threshold. With **fingerprint trap** , the threshold drops rapidly (build virtually "written off").
- **EDI ↔ NTPI (per partner): EDI** is worthwhile for **very high, stable volumes** and when partners cooperate. **NTPI** scores when **time-to-value** counts (not a partner project) or when several **types** are needed quickly.
- **Mixed types:** Often optimal, **EDI** for top partners/standard flows, **NTPI** as core for **long-tail + additional types**, **IDP/email agent** only for real special cases. This reduces the **hybrid penalty**, the coverage increases faster.

11.6 Risiken & Mitigations

- **Change of partner / layout changes:** Risk fingerprint breaks. **Mitigation:** Layout change detection, **change SLA** (e.g. 48–72 h), **change fee catalog**, versioning & canary rollout.
- **Regulatory changes (EN-16931/CIUS/Peppol):** Risks are validation errors, rework. **Mitigation:** "Evergreen validators" included in maintenance, **backward compatibility**, early sandbox tests.

- **SLA/Availability:** Risks include delayed bookings, penalties. **Mitigation:** SLA tiers (Standard/Enhanced/Enterprise).
- **Cost drift (VAN/KC, review rates).**
  Risk of TCO rising unnoticed. **Mitigation: Dashboards** (€/doc, STP quota, review minutes), **caps** in contracts, regular **plan-actual reviews**.

11.7 Praxis-Blueprint für ISVs

1. **Productize:** Edition + Metered Overage + SLA Seasons.
2. **Secure purchase:** Wholesale tiers + minimum commit (annual volume).
3. **NTPI as Core:** Targeted Fingerprint Catalog, Measure **Reuse** (KPI).
4. **Dual path through email agent** (e.g. mailious): Input/classification → **NTPI** (if fingerprint) **or IDP/HITL** (special case).
5. **Visibility:** Break-even reports per type/partner, coverage curves (target ≥ 90% in ≤ 6 months).

The result is a **scalable, high-margin** business model: **fast time-to-value** via NTPI core, **growing gross margin** through fingerprint reuse, **risk control** through clear SLAs and evergreen compliance – and a pricing model that customers **can** easily understand **and** budget.

12. Implementation Guide (Step by Step)

12.1 Objective

Fast coverage ≥ 90%, high no-touch (STP) level and a **uniform standard process** (receipt → classification → standardization → validation → ERP/Peppol) that scales. The following five phases are pragmatic, measurable, and repeatable.

12.2 Discovery

What happens:

- **Partner/volume analysis:** Clusters by size classes (top/mid/long-tail), channels (email, portal, EDI), countries/CIUS.

- **Message types & mandatory channels:** INV/ORD/DESADV/ORDRSP (if necessary), regulatory paths (EN-16931/Peppol, B2G/B2B).
- **Systems & data quality:** ERP target integration, master data checks (VAT ID, GLN, article), current error/rework rate.
- **KPI goals: No-Touch (STP) rate**, **coverage curve** (≥ 90% in X months), **time-to-value**, **cost/receipt**.
- **Governance:** Front-Door/Identity (clients & certificates at ISV), EU/UK residency, audit/export path.

Results: Baseline KPIs, segment list (top-10, top-50, long-tail), type roadmap, "candidate fingerprints", integration/validator plan.

12.3 MVP (0–8 weeks)

Scope: Top 10 suppliers & **2 message types** (e.g. **INV + DESADV**).
Building blocks:

- **Email Inbox: Set up** email agent (mailious or alternative) → classification & routing.
- **Dual path:** (a) **NTPI** (e.g. PEDIF) for **fingerprint-enabled layouts** (**No-Touch (STP),** EN-16931/CIUS validation), (b) **IDP/HITL** only for true **any-doc** special cases.
- **Validators & Logs:** Schematron/Business Rules, Full Logs; **Schema-of-Record** .
- **Monitoring:** STP dashboards (STP quota, throughput time, €/receipt), alarms, exception queues.
- **Acceptance criteria:** STP ≥ defined target value (e.g. 85-95%), time-to-post ≤ X min., error rate < Y%.
- **Enablement:** Runbooks, Admin-Training, RACI (ISV/Provider/Customer).

Results: Productive standard process for 2 types, **fingerprint catalog** started, first reference KPIs and quick wins documented.

12.4 Scaling (up to ~6 months)

Rollout-Mechanik:

- **Size class waves:** Top 50 → mid-tail → long-tail; fixed sprint cadences per wave.
- **Fingerprint Reuse:** Reuse fingerprints once created **across clients** ; Rate "Partner with existing fingerprint" as KPI.
- **Automated onboarding factory:** email auto-reply/guide, sample capture, sandbox testing, approval checklist.
- **Snapshots & Benchmarks:** Monthly STP/Cost-Per-Doc comparisons; Track coverage curve (target: ≥ 90% in < 6 months).
- **Selective EDI:** Expand EDI in parallel for stable high-volume partners (lowest unit cost); The rest remains in the NTPI core.
- **Internationalization:** CIUS/Peppol profiles, language/currency rules; Version management of validators.

Results: Broad coverage with growing no-touch share; decreasing unit costs due to **fingerprint reuse**.

12.5 Operation (Run)

Quality & Stability:

- **Sanity Rules & External Validators** (EN-16931/CIUS, Master Data Plausibility Check).
- **Exception handling:** Uniform queues, escalation levels.
- **Monitoring/Alerting:** End-to-end tracing, correlation (request IDs), **SLAs/SLOs** (availability, RTO/RPO).
- **Change management: Layout change detection**, fingerprint versioning, regression tests, **change SLA** (e.g. ≤ 72 h).
- **Security & Compliance:** EU/UK hosting, **BYOK/KMS**, audit logs, legally compliant **exports** (portability).

- **Cost control:** Actively reduce review minutes (IDP), portal share (web EDI) and VAN/KC fees; Minimize hybrid penalty (one process, clear branches).

Results: Stable, auditable operation with predictable costs and continuous improvement (STP ↑, €/receipt ↓).

12.6 Go-to-Market

Product & Price:

- **Packaging/Editions:** e.g. Basic/Pro/Enterprise, bundles per type/volume; **Metered Billing** + **Overage Rules**.
- **Communication:** Value props (no-touch, ≥ 90% coverage, EU residency, CO_2/Doc), calculator-based ROI story.
- **Enablement:** Sales playbooks (use case fit, objection handling), demos (email→NTPI→Validator→ERP), references & benchmarks.
- **Partner ecosystem:** OEM/reseller contracts, co-sell rules (avoid channel conflict), marketing assets (white label).

Results: Scalable offering with a clear margin, fast time-to-value and reliable references for roll-ins.

12.7 Checklist (compact)

- **Discovery:** Baseline KPIs, segmentation, governance decisions (identity/portability).
- **MVP:** Email agent live, dual path active, 2 types productive, STP goals achieved.
- **Scaling:** Wave Plan, Fingerprint Reuse Rate ↑, Coverage ≥ 90 % < 6 months
- **Operation:** Validator logs, change SLA, dashboards, export path documented.
- **GTM:** Editions, price list, ROI evidence, sales playbooks & references.

This is how a focused MVP becomes a **standardized, auditable mass process**: **e-mail agent** (e.g. mailious for input/classification) + **NTPI** (No-Touch-Core, e.g. PEDIF) +

IDP/HITL (special cases) – with **selective EDI** for high-volume partners and clear guardrails for cost, quality and compliance.

Conclusion & Recommendation

The core message of this handbook and the in-depth information is clear: **a hybrid standard process beats individual solutions.** For ISVs, this means **establishing NTPI (e.g. PEDIF) as a deterministic core layer**, using **selective (platform) EDI** for stable high-volume relationships, and using **IDP/HITL** only where true "any-doc" cases remain. **Email inbox** via an agent like mailious (or alternatives) ensures that the dominant channel is operationally engaged and automatically routes to the **dual path** (NTPI ↔ IDP). In this way, ISVs achieve **≥ 90% partner coverage** across multiple message types in a short time with **a high no-touch (STP) rate** and predictable TCO.

13.1 Effect on TCO & Speed

Direct/platform EDI deliver the highest data quality, but only scale with partner readiness and onboarding capacity. NTPI closes the gap in the long-tail deterministically; **Fingerprint trap over the installed base** turns every newly developed supplier into an asset. IDP remains important – but as a **targeted fallback** with clear review quotas instead of as a primary path. The result: **faster ramp-up**, **low unit costs** during ongoing operations and **fewer hybrid penalties** because everything runs within **an** operational process framework.

13.2 Product & Monetization Logic

The most economically powerful model combines **editions/add-ons** (e.g. Basic/Pro/Enterprise), **metered billing** (transaction scales) and **build/change fees** (fingerprints/mappings, layout updates). As the fingerprint library grows, the **gross margin** automatically increases. **Break-even**: NTPI beats IDP as soon as volume per partner/type exceeds the (usually low) threshold – and **even earlier** if fingerprints are used multiple times. EDI is worthwhile where volume and stability are permanently high.

13.3 Architecture that scales

A **uniform standard process** (receipt → classification → standardization → validation → API/Peppol/ERP) with **front door/identity** at the ISV (tenants, certificates, RBAC) and a central **schema of record** reduces operational risks, simplifies monitoring/alerting and makes **audits** trivial. **Validator logs** (EN-16931/CIUS) and clean error paths (exceptions, auto-remediation) increase quality and trust – both internally and externally.

13.4 Governance First: Channel, Portability, Lock-in

The non-functional **guardrails** are decisive:

- **Avoid channel conflict** (clear co-sell rules, no-compete clauses).
- **ISV remains "front door"** (identities, certificates, Peppol IDs under your control).
- **Data sovereignty and portability** (export of data & **fingerprints/mappings**, open formats, BYOK/KMS, documented exit path).
- **Minimize vendor lock-in** (contractual & technical). These points are to be weighted highly in the scoring matrix and anchored as the minimum threshold ("governance gate").

ESG & Compliance as a Competitive Advantage

Deterministic, **CPU-light** processing (NTPI/EDI) has a **significantly lower energy/carbon footprint** than GPU-based AI inference. **EU/UK data residency**, **privacy-by-design** (pseudonymization/tokenization optional, BYOK/KMS), **validator credentials** and a transparent **audit trail** are decisive for purchases today – and reduce regulatory risk (GDPR/UK GDPR, Peppol, EN-16931/CIUS, EU-AI Act in the case of AI use).

13.6 Implementation pragmatic – from MVP to mass adoption

The **step-by-step guide** (Discovery → MVP with top 10 & 2 types → scaling in waves → stable operation → go-to-market) provides measurable KPIs: **No-Touch (STP) rate**, **coverage curve**, **€/document** and **time-to-value**. mailious (or alternative) + **NTPI**

(PEDIF or alternative) form the backbone; **selective EDI** and **IDP/HITL** complete the stack. At the same time, you will establish pricing logic, SLAs and sales enablement – supported by the **ROI/Break-even & Coverage Calculator** for resilient business cases.

13.7 Decision in one sentence

NTPI core with email agent and selective EDI—in a single, auditable process—is the fastest, most cost-effective, and low-risk **way for most ISVs** to digitize and monetize **business partner communications** across multiple message types.

If you do this, you not only provide your customers **with compliance-proof, no-touch automation**, but also a **scalable product business** with increasing margins – and at the same time retain **data sovereignty, channel control and portability** in your own hands.

Anhang A: RFP-/Due-Diligence-Formular (Copy/Paste)

RFP/Due Diligence Questionnaire for Digital Business Partner Communication

(ISV/Platform - Vendor Fill Form, Standalone)

0) Purpose, Completion Rules, Evidence

PurposeThis questionnaire is intended to evaluate solutions for digital business partner communication (e.g. EDI/platform EDI/WebEDI, document standardization from PDF/e-mail, hybrid) in a comparable way – from the perspective of an **ISV/platform provider** (OEM/white label, multi-tenancy, operation, compliance, portability, channel fit).

Please fill in: Vendor + integration/delivery partner if applicable.

0.1 Filling rules (important)

- **Answer format:** Short & precise, but complete. Per question: **(a) answer**, **(b) concrete proof (link/doc/screenshot/reference), (c) limitations/assumptions, if applicable**.
- **Obligation to provide evidence:** Every material statement requires **evidence** (public or NDA). Examples: API documentation/swagger, architecture diagram, SLA excerpt, security certificate, DPA/subprocessor list, price sheet, sample payload, status page.
- **Mark "roadmap":** Please make a clear distinction between **GA (General Availability), Beta**, **Roadmap** (with target quarter).
- **Tenant view:** Please give answers from the perspective of a **multi-tenant OEM product** (not just "we can do a project").
- **Scope:** If something is not offered, please mark **"not available"** and optionally name alternatives.

0.2 Evaluation Logic (Helpful for Vendor)

We typically rate each block with a **score of 1–5** (optional for you to self-score):

- **5** = Product-ready, standardized, auditable, scalable, clearly proven
- **3** = possible in principle, but gaps / project load / restrictions
- **1** = not available or only as a special project without resilient operation

Please fill in optionally: "Vendor Self-Score" per question or per block.

0.3 Glossary (short definitions)

- **ISV/Platform:** Software vendor that integrates OEM/embedded capability functionality into its product.
- **OEM/White Label:** End customers primarily see the ISV brand (UI, Domains, Emails, Certificates, Billing).
- **Front Door:** Who holds the end customer relationship for login, UX, billing and support entry.
- **Tenant:** Mandant/Organisation in Multi-Tenant-Umgebung.
- **STP (Straight-Through Processing):** Processing without manual rework in the target scope.
- **HITL:** Human-in-the-loop (manual check/correction).
- **CIUS:** Country/Industry Usage Specifications (Varianten/Regeln zu EN16931).
- **Audit logs:** Traceability per document (inputs, rules, validation, human actions).
- **Artifacts:** mappings, rules, fingerprints/layouts, validator configurations, partner profiles.

A) Product/Use-Case Fit & Scope

A1 Document Types & Process Chain

What types of documents are **covered by GA**? (Please tick and complete)

☐ Order ☐ AB (Order Response) ☐ Delivery Note/ASN ☐ Goods Receipt/RECADV ☐ Invoice ☐ Credit Memo ☐ Other: _____

Response (GA/Beta/Roadmap): _____

Restrictions/Assumptions: _____

Document (e.g. Product Sheet)**:** _____

A2 Communication Channels (Input)

Which channels can deliver documents/messages? ☐ EDI (AS2/OFTP2/VAN) ☐ API ☐ E-Mail ☐ Portal Upload ☐ Peppol ☐ Other: ____Response
(maturity level per channel, incl. limits): _____
Document: _____

A3 No-Touch/STP – Definition & Scope

How do you define "No-Touch/STP" (what conditions must be met)?

- Mandatory fields/validations: _____
- Exceptions that always need HITL: _____
  receipt (e.g. ops documentary): _____

A4 Exception Handling

How are exceptions handled? (queues, roles, UI, SLAs, escalation)
Answer: _____
document (screenshots/process description): _____

A5 Coverage/Scaling (Partner Structure)

How do you scale from top partners to mid/long-tail? (mechanics, trap, activation factory)

Answer: _____
Case/Reference: _____

B) API, Events & Integration Capability

B1 API Overview

Please list the most important **API endpoints** (or Swagger link) for:

- Input / Document Upload
- Status / Tracking / Reprocessing
- Normalized outputs / export
- Artifacts (mappings/rules) if accessible
  Answer/Link: _____
  Reference:
  _____

B2 Events/Webhooks

What events/webhooks exist (list + payload examples)? Examples: Document-Received, Classified, Normalized, Validated, Posted, Exception-Raised, Human-Review-Completed
Response: _____
Receipt (Example Payload): _____

B3 Robustheit: Idempotenz, Retry, Rate-Limits

- Do you support **idempotence keys**? How exactly? _____
- Retry-Policy (Backoff, max retries): _____
- Rate-Limits/Throttling: _____
- Error Codes/Problem Details Default: _____
  Document:
  _____

B4 Sandbox & Testability

Is there a sandbox? Does it contain: ☐ Test Data ☐ Replay/Redrive ☐ Mocking ☐ CI-Enabled Tokens ☐ Separate Tenants ☐ Webhook Test
Answer: _____

Evidence: _____

B5 Data Model & Standardization

- What is the **schema-of-record** ? _____
- Supported standards (UBL/CII/EDIFACT/etc.): _____
- Versioning of mappings/rules: _____
  document (schema/mapping policy): _____

C) Tenancy, Identity & Security

C1 Multi-client capability & isolation

Please describe your tenancy model: ☐ Multi-Tenant shared ☐ Dedicated per Tenant ☐ HybridHow is isolation implemented (DB, Schema, KMS, Network, Access)?
Answer: _____
Proof: _____

C2 Identity/SSO

Supports: ☐ OIDC ☐ OAuth2 ☐ SAML ☐ SCIM ☐ mTLS Service AccountsRoles/Privileges (RBAC/ABAC), Delegation for Partners/HITL/Audit:
Response: _____
Proof: _____

C3 Keys/Certificates/KMS

- Certificate Management (AS2/OFTP2/Peppol): _____
- Key Rotation/Secrets: _____
- Bike/KMS/HSM: _____
  Different: _____

C4 Security Verifications & Processes

- Certifications (ISO27001/SOC2/etc.): _____
- Vulnerability/Disclosure/SLAs: _____
- PenTest Frequency, Findings Handling: _____
  Proof: _____

D) Compliance, Audit & Data Residency

D1 Data Residency & Subprocessors

- Data Region(s) for App, Logs, Backups, TL;DR: _____
- Subprocessor List + Regions: _____
  Document (DPA/Subprocessor): _____

D2 Audit Logs & Traceability

What is logged per document (inputs, rules, validation, human actions)? How can I export (format, period, API/batch)?
Answer: _____
Proof: _____

D3 Standards & Validatoren (EN16931/CIUS/Peppol)

What standards/profiles are GA? How do updates (change management) work?
Answer: _____
Proof: _____

D4 Data Protection & Retention

Retention Policies, Deletion, DSAR (Information, Deletion Request), Pseudonymization:
Answer: _____
Reference: _____

E) Operation, Observability & SLA

E1 Observability

What self-service visibility is there?
☐ Request/Correlation IDs ☐ Tracing ☐ Metrics ☐ Log-Access ☐ Alerting ☐ Statuspage
Answer: _____
Reference: _____

E2 SLA & Incident-Prozess

- Availability (SLA): _____
- Response/Recovery Times: _____
- Maintenance Window/Change Policy: _____
- Postmortems / RCA: _____
  Beleg: _____

E3 Scaling/Load Peaks

Bulk Ingestion, Queueing, Prioritization, DLQ, Backpressure:
Response: _____
Proof: _____

E4 Operational KPIs (Benchmark in Operations)

Which KPIs can you deliver (typically per customer): STP quota, exception rate, TTR, change frequency?
Answer: _____
Proof: _____

F) Change-Handling (Layouts, Partner, Regeln, CIUS)

F1 Change Detection

How do you detect layout/partner/rule changes? (Monitoring/Drift/Alerts)
Answer: _____
Proof: _____

F2 SLA & Regression & Freigabe

How does Fix → Test → Release → Rollout work?

- Regression-Suite, Golden Samples: _____
- Isolation (no side effects): _____
  Proof: _____

F3 Mandatory Field Gaps & Data Quality

How do you deal with missing mandatory fields/inconsistencies (enrichment, query, blocking)?
Answer: _____
Proof: _____

G) Partner-Onboarding & Activation Factory

G1 Onboarding Process

Please describe step-by-step: samples, rolls, duration, self-service portion.
Answer: _____
Proof: _____

G2 Re-Use

How is reuse achieved (clusters, templates, fingerprints/mappings) and measured?
Answer: _____
Proof: _____

G3 Partner Communications & Enablement

Invite flows, partner portal, templates, support channels, training material:

Answer: _____
Proof: _____

G4 Coverage-Reporting & Partner-Health

Which reports/dashboards exist (coverage, activation, health, SLA violations)?
Answer: _____
Proof: _____

H) Exit, Portability & Ownership

H1 export (raw + normalized + logs + artifacts)

Please be specific: Which exports are possible, in which formats, via which interface?

- Raw data: _____ (Format: ____)
- Normalized: _____ (Format: ____)
- Audit-Logs: _____ (Format: ____)
- Artifacts (Mappings/Rules/etc.): _____ (Format: ____)
  Document: _____

H2 Ownership & Reuse

Who owns the artifacts (ISV, Vendor, Shared)? What is contractually regulated for reuse/porting?
Answer: _____
Proof: _____

H3 Exit-Runbook

Timing, cost, level of support, data erasure, responsibilities:
Answer: _____
Reference: _____

I) Commercials (Pricing, Packaging, Commitments)

I1 Pricing Model

Metric(s): ☐ per document ☐ per page ☐ per partner ☐ per tenant ☐ per channel ☐ other: ____

Overage rules & caps: _____

Mindestcommits / durations: _____
document (price sheet): _____

I2 Professional Services & Change-Kosten

Which services are included, what is PS? (Onboarding, Changes, Support)
Answer: _____
Proof: _____

I3 OEM/Resell Model

Wholesale/Resell/Revenue Share possible? Billing/Tax/Invoice Flow?
Answer: _____
Proof: _____

I4 Contractual Clauses

Price Changes/Indexation, Termination, Audit Rights, Liability:

Answer: _____
Reference: _____

J) OEM/White Label, Channel Fit & Go-to-Market (Channel Conflict)

J1 OEM/White Label Depth

Please specify what "white-label" means:

- UI/Portal Branding: _____
- Custom Domains/Email Domains: _____
- Certificates/Trust (e.g. Peppol): _____
- Vendor Footprint sichtbar? _____
  Beleg: _____

J2 Front Door & Support Entry

Who is Front Door (Login, UX, Billing, Support Entry)? How is 1st/2nd/3rd level regulated?
Answer: _____
Proof: _____

J3 Account-Schutz (No-Sell/No-Poach)

Is there a no-sell/no-poach in the ISV account? How is it operationalized (lists, process, audits)?
Answer: _____
Proof: _____

J4 Partner Economy (SI/BPO/EDI Partners)

Which services remain monetizable in the channel (onboarding, exceptions, monitoring, compliance)?
Answer: _____
Proof: _____

J5 GTM Neutrality

Are you positioning yourself as a network/portal/gatekeeper? If so, how do you ensure that ISV positioning is not cannibalized?
Answer: _____
Proof: _____

J6 Affiliate Program & RACI

Partner Program/Enablement, Co-Sell Rules, Clear RACI (Vendor/ISV/SI):
Answer: _____
Evidence: _____

K) Attachments/references (please attach or link)

☐ API/Swagger + Auth Guide☐ Webhook/Event Catalog + Sample Payloads☐ Architecture Diagram (Tenancy, Data Flow, DR)
☐ SLA/Support Model☐ DPA + Subprocessor List + Residence Details☐ Security

Certificates (ISO/SOC2) + PenTest Summary (if possible) ☐ Price Sheet + PS Catalog☐ Exit Runbook/Export Formats (Example) ☐ OEM/White Label Example (Screenshots/URLs) ☐ 1–2 References (anonymized possible) incl. Volume/Scope

L) Vendor Summary (1 page, mandatory)

Summary:

- **What is the core approach** (1–2 sentences): _____
- **What is GA vs. Roadmap** (Top 5 Points): _____
- **Typical Go-Live** (Timeframe + Prerequisites): _____
- **Operation & SLA** (short): _____
- **OEM/Channel-Fit** (kurz): _____
- **Exit/Portability** (short): _____

Appendix B: Vendor Evaluation Template

(ISV/Platform – internal evaluation of vendor responses, standalone)

0) Meta & Context

ISV/Product: _____
Rated provider: _____
Offer/Edition: _____
Date: _____
Evaluation Team (Roles): _____
Target image (1 set): _____
Volume Assumptions (Monthly): Docs _____ | Partner _____ | Tenants _____
Document types in the MVP: _____
Channels in MVP: _____

1) Gate checks (exclusion criteria)

If a gate is "fail", the provider will **only** be considered further if there is a reliable mitigation (contractual + technical + scheduled).

Gate	Pass/Conditional/Fail	Evidence	Notizen/Mitigation
G1 Front-Door/Identity for ISV (OEM/SSO/Billing possible, vendor not gatekeeper)	☐ Pass ☐ Cond ☐ Fail	_____	_____
G2 Exit/Portability (export raw+normalized+logs, ownership/runbook)	☐ Pass ☐ Cond ☐ Fail	_____	_____

Gate	Pass/Conditional/Fail	Evidence	Notizen/Mitigation
G3 Channel Conflict (No-Sell/No-Poach/Account Protection + Partner Economy)	☐ Pass ☐ Cond ☐ Fail	_____	_____
G4 Data Residency & Compliance (EU/UK + Auditability + DPA/Subprocessors)	☐ Pass ☐ Cond ☐ Fail	_____	_____
G5 Operations/SLA (Monitoring, Incident Process, Change Policy)	☐ Pass ☐ Cond ☐ Fail	_____	_____

Gate result: ☐ Further in scoring ☐ Only with mitigation further ☐ exclusion

2) Scoring matrix (1–5) with weighting

Scale (short): 5 = product-ready/standardized/occupied · 3 = possible but gaps/project load · 1 = not available/high risk

Note: Always store the score with **an evidence link** (Doc/URL/Screenshot/Contract).

Criterion	Weight	Score (1–5)	Weighted Score	Evidence	Comment
Time-to-value (MVP in weeks)	1.5	__	__	__	__
Coverage strategy (top/mid/long-tail)	1.2	__	__	__	__
STP/Quality (deterministic vs. HITL)	1.5	__	__	__	__

Criterion	Weight	Score (1–5)	Weighted Score	Evidence	Comment
API-Reife (REST, Webhooks, Idempotenz, Sandbox)	2.0	__	__	__	__
OEM/Branding & Billing (White-Label, Mandanten)	1.8	__	__	__	__
Channel conflict & ecosystem fit	1.6	__	__	__	__
EU/UK-Residenz & Compliance (EN16931/CIUS, Audit)	1.8	__	__	__	__
Exit/Portability (Export, Ownership, Runbook)	2.0	__	__	__	__
Run operation (SLA, monitoring, change policy)	1.6	__	__	__	__
TCO-Transparenz (Pricing/Overage/Caps)	1.6	__	__	__	__

Total Weighted Score: _____
Max Score (Weights×5): _____
Degree of Fulfillment (%): _____ %

Interpretation (Proposal):

- **≥ 80%**: very suitable (if Gates Pass/Cond)
- **65–79%**: suitable with measures/negotiation/PoC risk reduction
- **< 65%**: rather not suitable (or only for niches/sub-scope)

3) Evidence checklist (mandatory evidence)

Marks per provider whether evidence is available:

- ☐ API/Swagger + Auth-Guide
- ☐ Webhook/Event Catalog + Sample Payloads
- ☐ Architecture diagram (tenancy, data flow, DR)
- ☐ SLA/Support Model + Incident Process
- ☐ DPA + Subprocessor List + Residence Details
- ☐ Security certificates (ISO/SOC2 or similar)
- ☐ Preisblatt + PS-Katalog (Onboarding/Changes/Support)
- ☐ Exit Runbook + Export Formats (Example)
- ☐ OEM/White Label Examples (Screenshots/Flows)
- ☐ References (anonymized ok) incl. volume/scope

Lack of evidence: _____

4) Risk register (for decision & negotiation)

Risk = statement without proof, roadmap instead of GA, high project load, lock-in, SLA gaps, channel conflict, etc.

ID	Risk	Impact (M/M/L)	Probability(H/M/L)	Evidence Gap / Triggers	Mitigation	Owner	Two
R1	_____	☐H ☐M ☐L	☐H ☐M ☐L	_____	_____	_____	____
R2	_____	☐H ☐M ☐L	☐H ☐M ☐L	_____	_____	_____	____

ID	Risk	Impact (M/M/L)	Probability(H/M/L)	Evidence Gap / Triggers	Mitigation	Owner	Two
R3	_____	☐H ☐M ☐L	☐H ☐M ☐L	_____	_____	_____	____

Top 3 risks (brief):

1) _____

2) _____

3) _____

5) Action Plan / To-Dos (PoC & Contract Negotiation)

5.1 PoC Plan (max. 4-6 weeks) – Standard

Goal: Reduce risks + verify integration capability + measure STP/exception rate.

PoC-Scope (Minimal):

- Document types: _____
- Channels: _____
- Tenants: _____
- Number of partners: _____
- Ziel-KPIs: STP ≥ ___% | Exception ≤ ___% | TTR ≤ ___ | Latency ≤ ___

PoC-Tests (Checkliste):

- ☐ API Input + Status Tracking + Export
- ☐ Webhooks/Events + Retry/Idempotency
- ☐ Sandbox/CI-Testpfad
- ☐ Drift/change handling (simulated layout change)

- ☐ Observability (Request IDs, Metrics)
- ☐ Client isolation / SSO
- ☐ Audit-Log Export
- ☐ Pricing-Simulation (Overage/Caps)
- ☐ Exit mini-test (export raw + normalized + logs)

5.2 Vertrags-/Commercial-Todos (Must-Have Clauses)

- ☐ **No-Sell/No-Poach** + Account Protection (List/Process/Audit)
- ☐ **Ownership** of artifacts (mappings/rules/layouts/fingerprints) + reuse
- ☐ **Exit-Runbook** (Formate, Timing, Support, Kosten, Löschung)
- ☐ **SLA** & Change-Policy (inkl. Regression/Hotfix-Fenster)
- ☐ **Residenz** (EU/UK) + Subprozessor-Change-Notification
- ☐ **Price protection** (price increase logic, caps, indexation)
- ☐ **OEM/Branding** Assurances (Front Door at ISV)

6) Decision Template (1 page)

Recommendation: ☐ Go ☐ Go with conditions ☐ No-Go ☐ PoC first

Reason:

- _____
- _____
- _____

Conditions (if "Go with conditions"):

- Condition 1: _____ (Deadline: ___)
- Condition 2: _____ (Deadline: ___)
- Condition 3: _____ (Deadline: ___)

Next step: ☐ Start ☐ PoC Negotiate ☐ Alternatives shortlist ☐ Stop

7) Optional: Provider comparison (shortlist)

To compare providers, use this mini-table:

Provider	Gate Result	Score %	Top Strengths	Top Risks	Recommendation
A	Pass/Cond/Fail	__%	__	__	Go/Cond/No
B	Pass/Cond/Fail	__%	__	__	Go/Cond/No
C	Pass/Cond/Fail	__%	__	__	Go/Cond/No

8) Excel-Scorecard

An **Excel scorecard with automatic weighting + heatmap** (incl. gate checks, scoring 1–5, weighted totals, degree of fulfillment % and color scales) is available on request. Please contact: partner@pedif.digital.

Appendix C: Build vs. Buy – Guided Decision-Making

This appendix helps ISVs/platforms to make a robust decision as to whether digital business partner communication should be implemented as a separate module (build), as an OEM/white label (buy) or as a hybrid (buy + own productization). The logic is deliberately pragmatic: first governance gates, then economy & differentiation, then an actionable path (PoC → contract → rollout).

1) Decision logic in 6 steps

- Define target image:
  document types, channels, countries/CIUS, desired coverage (e.g. ≥ 90%) and no-touch target (STP quota).
- Define product and architecture boundaries:
  schema-of-record, inbound (e-mail/EDI/API/portal), standardization (EDI/NTPI/IDP), validation (EN16931/CIUS), handover (ERP/API/Peppol) and exception flow.
- Define options:
  (A) Build (in-house),
  (B) Buy as OEM/White Label,
  (C) Hybrid (Buy Core + Build UX/Glue/Billing/Analytics),
  (D) Transition (Buy Now, Build Later).
- Check governance gates (exclusion criteria):
  Front Door/Identity, Exit/Portability, Channel Conflict, Residency/Compliance, Run Operation/SLA.
- Scoring & Business Case:
  1-5 score per criterion (weighted) + ROI/breakeven & coverage calculator + hybrid penalty as a deduction.
- Translate decision into a roadmap:
  PoC (4–6 weeks), contract guardrails, MVP (0–8 weeks), scaling (up to ~6 months), operation (run) and packaging/monetization.

2) Governance gates (exclusion criteria)

The following gates are strategic for ISVs. In the case of "fail", the option should only be pursued if there is a reliable mitigation (technical + contractual + scheduling).

Gate	P / C / F	Minimum proof (evidence)	Typical risks	Mitigation (Examples)
G1 Front-Door / Identity at ISV	☐ Pass ☐ Cond ☐ Fail	SSO / OIDC, client model, billing / resell possible, branding	Vendor becomes gatekeeper; Billing / Identity Passes	contractually guarantee OEM / white label; technical separation; clear support RACI
G2 Exit / Portability	☐ Pass ☐ Cond ☐ Fail	Export raw + normalized + audit logs; artifacts; Exit Runbook	Lock-in (mappings / fingerprints / workflows not portable)	Ownership / Export / Exit Runbook + Support / Fix Costs; Open formats
G3 Channel Conflict	☐ Pass ☐ Cond ☐ Fail	No-Sell / No-Poach; Account-Schutz; Partnerprogramm; RACI	Disinter-mediation; Resistance in the SI / BPO / EDI channel	Account Lists/Process; Co-sell rules; Explicitly design partner economy
G4 Residenz & Compliance	☐ Pass ☐ Cond ☐ Fail	EU/UK residency (incl. logs/backups); DPA/Subprocessors; Validator Logs	Deals scheitern an Residency / Audit; regulatorische Updates	Region determination; Change policy; Evergreen validators as maintenance
G5 Run Operations & Observability	☐ Pass ☐ Cond ☐ Fail	SLA, Statuspage, Request-IDs / Tracing, Incident-	High support load; unclear causes; long TTR	SLOs / KPIs contractual; Monitoring dashboards;

Gate	P / C / F	Minimum proof (evidence)	Typical risks	Mitigation (Examples)
		Prozess, Change-SLA		Regression & Golden Samples

3) Guided Decision Tree (Quick Check)

Use the Quick Check for a first direction. The final decision will be made via Gates + Scoring + PoC.

- Is time-to-value critical (MVP ≤ 8-12 weeks) and are internal EDI/IDP/compliance skills missing?
  → leans towards Buy or Hybrid.
- Is digital business partner communication a strategic differentiator of your product (e.g. proprietary process logic, deep industry rules) that should carry IP permanently?
  → tends to build or hybrid (build "IP layer", buy "commodity").
- Does coverage need to reach ≥ 90% quickly (long-tail dominates, many partners without EDI)?
  → leans towards NTPI/hybrid (deterministic core standardization + fallback).
- Are residency/compliance/audit highly critical (public sector, regulated industries, multi-CIUS)?
  → buy/partner only with strong evidence; otherwise build with high effort.
- Is channel conflict a risk (SIs/BPOs central to sales/delivery)?
  → Buy only with No-Sell/No-Poach + Partner Economy; otherwise Hybrid/Build.
- Is there already a functioning EDI team/stack and stable top partners?
  → Build/further development EDI selectively; Long-tail via complementary paths (hybrid).

4) Build vs Buy vs Hybrid – Decision Matrix (1–5)

Rate each option (Build / Buy / Hybrid) with 1–5 per criterion. Multiply by weights (ISV default below).

Criterion	Weight (Default)	Build Score (1–5)	Buy Score (1–5)	Hybrid Score (1–5)	Commen-tary/ Evidence
Time-to-value (MVP in weeks)	1,5				
Coverage strategy (top/mid/long-tail) & type expansion	1,2				
STP/Quality & Auditability	1,5				
API maturity & integration effort	2,0				
Run operation (SLA, monitoring, change policy)	1,6				
EU/UK-Residenz & Compliance (EN16931/CIUS, Validator-Logs)	1,8				
Channel conflict & ecosystem fit	1,6				
Exit/Portability & Ownership	2,0				
TCO Transparency & Predictability	1,6				
Differentiation/IP Potential (Strategic Advantage)	1,4				

5) What should an ISV build – and what should it buy?

Pragmatic rule: Rather build everything that differentiates your product core or concerns front-door/control; buy everything that is commodity/scale/compliance mechanics – as long as gates are met.

5.1) Build rather (typical ISV core)

- Front-Door: Tenancy, Identity/SSO, Rollenmodell, Billing/Entitlements, Admin-UX.
- Schema-of-Record + domain logic: internal standardized data model, business rules, shares, workflows.
- Produkt-UX: Exception-Queues, Kunden-/Partner-Self-Service, Reporting (Coverage, STP, €/Doc).
- Orchestration/Glue: Routing between paths (EDI/NTPI/IDP), Retry/Idempotency, Observability end-to-end.
- GTM/Packaging: Editions, Metered Billing, Overage Logic, Upsell Paths.

5.2) Rather buy (commodity & scaling)

- Transport/network components (e.g. AS2/OFTP2/VAN/Peppol Access) incl. certificate operation.
- Standardization/conversion engines (e.g. EDI mapping, NTPI fingerprints) incl. change factory.
- Validatoren/Compliance-Routen (EN16931/CIUS/Peppol) inkl. Evergreen-Updates.
- Managed Operations (24×7) where special skills would otherwise have to be maintained permanently.

Hybrid is often the sweet spot: Buy "Engine & Compliance", Build "Control Plane & Product". This keeps your product OEM/white-label-capable, channel-compatible and portable – with a fast time-to-value.

6) Evidence & PoC-Plan (Minimal-Set)

For Buy/Hybrid, the provider should provide the following minimum set; ideally before signing the contract and at the latest in the PoC:

- API/Swagger + Auth Guide; Event/Webhook Catalog + Sample Payloads; Sandbox access.
- Architecture diagram (tenancy, data flow, DR/backups, log locations).
- SLA/Support-Modell + Incident-Prozess + Statuspage; Change-Policy (Layouts/CIUS) + Regression-Ansatz.
- DPA/DPV + Subprocessor List + Residence Details (EU/UK) + Security Credentials.
- Preisblatt + PS-Katalog (Onboarding/Changes/Support) + klare Overage/Caps.
- Exit runbook + export formats (raw + normalized + audit logs + artifacts) + ownership rules.

PoC (4–6 Wochen) – Standardtests: API Eingang/Export, Webhooks/Retry/Idempotenz, Change-Simulation (Layout-Änderung), Observability (Request-ID), Audit-Log Export, Mini-Exit (Exports), Pricing-Simulation (Caps/Overage).

7) Vertrags-Guardrails (Must-have)

- No-sell/no-poach + account protection (incl. operational enforcement).
- Ownership & portability of artifacts (mappings/fingerprints/rules) + defined exit (timing/costs/support).
- SLA/SLOs (Availability, Response/Resolution Times) + Change SLA (Layouts/CIUS) + Regression Standards.
- Residenz (EU/UK) inkl. Logs/Backups + Subprozessor-Change-Notification.
- Price protection: transparent metrics, caps, indexing/price adjustment, commit logic.

8) Outcome: typical recommendations

- Buy (OEM) when: fast market entry is crucial, skills are scarce, and gates (front-door/exit/channel/compliance/SLA) are cleanly met.
- Build if: a strong team + operation is in place, the function is strategically differentiated, and IP/Control is to be maximized in the long term (with acceptable time-to-value).
- Hybrid if: has to be delivered quickly, but front-door/control/packaging is to remain with the ISV – and engines/compliance/operations are to be purchased as a commodity.

Note: A buy decision without exit/ownership and without channel guardrails is rarely stable in practice. Governance first – then optimization of TCO and coverage.

9) Mini-Walkthrough (Example Decision)

9.1) Initial situation (example ISV)

An ISV operates a multi-tenant platform (ERP/procurement) for the upper middle class. The aim is to integrate digital business partner communication as an OEM function into the company's own product (front-door/identity/billing at ISV).

Partner structure: few high-volume partners (top), large mid-/long-tail (many suppliers/customer relationships).

Channels today: Email/PDF dominates (~70%), EDI for strategic partners (~15%), the rest portals/uploads (~15%).

Document types in the scope: purchase order, order confirmation, delivery note/ASN, invoice (later credit note/RECADV).

MVP goal: live in 6-8 weeks for 2 document types + 10-20 pilot partners, with monitoring & exception flow.

Compliance: EU/UK hosting, auditability per document; EN16931/CIUS relevant (at least for invoices).

Channel/Ecosystem: Implementation partners (SI/BPO) should continue to be able to monetize services.

9.2) Governance Gate Check (Exclusion Criteria)

Before each technical assessment, the three ISV guidelines are used to check whether an approach is fundamentally compatible with products and channels:

Gate	Must criterion	Example Receipt	Result (Pass/Cond/Fail)
Front-Door/Identity	SSO/OIDC, OEM/White-Label, Billing via ISV possible	SSO Guide, Branding Screenshots, Billing Model	Cond
Exit/Portability	Export raw + normalized + audit logs + artifacts; Ownership regulated	Export Specification, Trade Term, Runbook	Pass
Channel conflict	No-Sell/No-Poach in the ISV account; Partner economy/RACI clear	Contract/Policy, Affiliate Program, RACI	Cond

Interpretation: "Cond" means: basically possible, but only with clear guardrails (contractually + operationally) and, if necessary, PoC proofs.

9.3) Build vs Buy vs Hybrid – Scoring (Kurz)

In the next step, the options are evaluated along the scorecard criteria from Chapter 9. The numbers below are deliberately chosen as an example (1–5) to demonstrate logic.

Criterion	Weight	Build (1–5)	Buy/OEM (1–5)	Hybrid (1–5)
Time-to-value (MVP in weeks)	1.5	2	5	4
API-Reife (REST, Webhooks, Sandbox)	2.0	3	5	4
OEM/Branding & Billing	1.8	4	4	5
Channel conflict & ecosystem fit	1.6	4	3	4
Exit/Portability	2.0	5	3	4

Run operation (SLA, monitoring, change)	1.6	2	4	4
Compliance & Audit (EU/UK, EN16931/CIUS)	1.8	3	4	4
STP/Quality in the target scope	1.5	3	4	4
Coverage (Top/Mid/Long-Tail)	1.2	3	4	5
TCO-Transparenz (Pricing/Overage/Caps)	1.6	4	3	4

Reading: "Build" typically wins on exit/ownership control, but loses heavily on time-to-value and run operations. "Buy/OEM" wins in speed and operational maturity, but must be strictly checked via guardrails for exit and channel fit. "Hybrid" is often the pragmatic middle ground: selective EDI/network where it makes sense, plus a scalable long-tail path.

9.4) Recommendation & Next Steps (Example)

Recommendation: Hybrid target image. Short-term OEM/Buy for fast MVP delivery capability + operational operation; at the same time, contractually fix clear exit/ownership rules and channel guardrails.

MVP plan (6-8 weeks): 2 document types, 10-20 pilot partners, API + webhooks + monitoring; defined exception playbook incl. HITL only as a fallback.

PoC Evidence (4-6 weeks): Idempotency/Retry + Webhooks, Drift/Change Test (simulate layout change), Audit Log Export, Tenant Isolation/SSO, Mini-Exit Test (raw + normalized + logs).

Contract guardrails: No-sell/no-poach, account protection process, ownership of artifacts, exit runbook (formats/timing/costs), residency/subprocessor change notice, SLA & change policy.

GTM/Ecosystem: Define partner program (SI/BPO) – Make services monetizable (onboarding, exceptions, compliance setup, monitoring).

Result: The decision is not only technically justified, but also comprehensible and repeatable along the Chapter 9 logic (gates → scoring → MVP target image → operation/contract).

Appendix D: Stack Decision by Decision Tree (EDI, IDP, NTPI, Hybrid)

This appendix provides a quick, pragmatic decision tree to choose the right integration stack for business partner communication. It complements Chapter 9 (Decision Framework) with a concrete "if-then" logic and gives an MVP start per stack (scope, KPIs, minimal architecture).

1) Purpose and application

Use the Decision Tree when you need to make a reliable starting decision in a short time - without getting bogged down in detailed debates. The tree prioritizes three factors:

- Partner and volume structure (top partner vs. long-tail).
- Desired process quality (deterministic/STP vs. probabilistic/HITL).
- Channel reality (EDI available, PDF/e-mail dominates, mixed operation).

Important: The tree provides a starting architecture. In practice, a hybrid often emerges as soon as you move from MVP to scaling (more document types, more partners, more countries/compliance).

2) Decision Tree: If A/B/C, then Stack X

Answer the questions in order. Once a path is unique, choose the recommended stack and start with the MVP start (Section 4).

1) Do core processes have to run deterministically (STP) - with high auditability and low error tolerance?

- Yes -> continue with 2).
- No/"HITL is ok" -> Stack X2 (IDP-first).

2) Do you already have a stable EDI stack OR can you make EDI mandatory for your largest partners?

- Yes -> Stack X1 (EDI-first).
- No -> continue with 3).

3) Are the relevant PDF documents recurring/stable in your core flows (layouts are repetitive) and is there noticeable layout reuse across partners?

- Ja -> Stack X3 (NTPI-first).
- No/many unique layouts -> Stack X4 (hybrid gateway).

Note: If you have to cover several document types over the entire process (order -> AB -> delivery note -> invoice), the decision is clearly tilted in favor of deterministic paths (EDI or NTPI) - especially for high volumes.

3) Stack X at a glance

The stacks are deliberately defined as starting points. You can (and will) combine them later - but the MVP should be based on a clear path.

Stack X1: EDI-first (Platform-EDI/iPaaS/VAN)

Suitable if:

- Top partners bear the majority of the volume and are EDI-capable.
- You need high determinism for transactional flows (ORDERS/ORDRSP/DESADV/RECADV/INVOIC).
- Onboarding can be scaled via well-defined partner packages and mapping governance.

Typical extension:

- DP/Portal only for exceptions and long-tail.

Stack X2: IDP-first (OCR/IDP + Validation + Human-in-the-Loop)

Suitable if:

- Many rare layouts/partners (long-tail) and volume per partner is low to medium.
- A certain amount of uncertainty is acceptable and you can work with review/exception queues.
- The initial focus is more on invoices/receipts than on end-to-end 4-way processes.

Stack X3: NTPI-first (Fingerprint-based No-Touch PDF Extraction)

Suitable if:

- You have recurring PDF layouts in core flows (order, AB, delivery note, invoice).
- STP quality is key (little manual rework) and auditability is important.
- High layout reuse is realistic (e.g. industry-specific supplier base, shared suppliers).

Typical extension:

- IDP as a fallback for unknown layouts + optional EDI for a few very large partners.

Stack X4: Hybrid-Gateway (Routing: EDI -> NTPI -> IDP)

Suitable if:

- Mixed reality: some EDI partners, many email/PDF partners, different levels of maturity.
- You want a uniform input and a canonical data representation (API-first) - regardless of the input format.
- You want to migrate "to the right" step by step: first fallback/HITL, then more deterministics via fingerprints/EDI.

4) MVP-Start Stack

The MVP is cut in such a way that it delivers a reliable signal (time-to-value) in 4-6 weeks and makes the most important integration risks visible.

MVP-Start X1 (EDI-first)

- Scope: 3-5 top partners, 2-3 message types (e.g. ORDERS + ORDRSP + INVOIC) against a canonical data model.
- Architecture: EDI platform/iPaaS with REST adapter in your product; Monitoring, ACKs, Retry/Idempotenz, Error-Queue.

- KPIs: throughput, onboarding time/partner, error rate per mapping, manual touches per 1000 messages.

MVP-Start X2 (IDP-first)

- Scope: 1-2 document types (start: invoice or purchase order), 200-500 representative documents as training/validation set.
- Architecture: Input (Email/Upload/API) -> IDP -> Field Validation (Rules/Master Data) -> Review-Queue -> Posting via REST.
- KPIs: Field accuracy, STP rate, review minutes per document, drift rate for layout changes.

MVP-Start X3 (NTPI-first)

- Scope: 5-10 recurring layouts/partners, 2-4 document types along a process line (e.g. Purchase Order -> AB -> Invoice).
- Architecture: Input (Email/Upload/API) -> Fingerprint Matching -> Deterministic Extraction -> Validation -> Posting via REST; Fallback route for Unknowns.
- KPIs: STP rate per layout, activation time per new layout, error rate after layout change, proportion of unknowns.

MVP-Start X4 (Hybrid-Gateway)

- Scope: Focus on 20-30% of volume (top cohorts) + defined long-tail fallback. Start with 2-3 document types.
- Architecture: Unified Input + Routing Rules (EDI -> NTPI -> IDP) + Canonical Event/Schema + Observability (SLA per path).
- KPIs: End-to-End Cycle Time, Anteil je Pfad, Kosten pro Dokument/Message, Touches pro 1000, Time-to-Onboard je Partner.

Appendix Glossary

Core Categories & Solution Types

- **EDI** – Electronic Data Interchange: standardized, structured data exchange between companies. Variants: Direct EDI, Platform EDI/VAN. In the calculator as "Direct EDI"/"VAN" options.
- **VAN** – Value Added Network: EDI network service; often transaction or data volume fees (sometimes transaction or data volume fees). "KC"). In the text at Platform EDI; in Calc as an option.
- **Web EDI** – Portal-based, manual receipt capture (for long-tail suppliers). In Calc as an option.
- **IDP / OCR** – Intelligent Document Processing / Optical Character Recognition: AI/rule-based field recognition from PDFs/images, usually with review (HITL). In Calc as an option "IDP/OCR".
- **NTPI** – No-Touch PDF Interchange: deterministic PDF → standard conversion with the goal of "No-Touch (STP)" (zero rework).
- **Email Agent**—Email agent/mail-to-flow building block (e.g., for microvolumes/portals). In Calc as a separate option.
- **PEDIF** – Supedio module name for NTPI (No-Touch PDF Interchange) – deterministic PDF-to-data conversion via fingerprints.
- **PDF2EDI** – short form for PDF→(structured data/EDI) conversion; usually referred to as an alternative/supplement to classic EDI.
- **RPA** – Robotic Process Automation: Automation via UI/workflow bots (typical for exceptions/legacy).
- **BPM** – Business Process Management: Modeling/orchestration of processes (workflows, rules, monitoring).
- **BPO** – Business Process Outsourcing: Outsourcing of process steps (e.g. manual validation/back office).

Standards, Formate & Profile

- **EN 16931** – EU semantic standard for e-invoices (core model).
- **CIUS** – Core Invoice Usage Specification: national/industry-specific characteristics of EN16931 (e.g. XRechnung, FacturX/ZUGFeRD).
- **XRechnung** (DE), **FacturX/ZUGFeRD** (DE/FR), **Peppol BIS 3.0**, **UBL 2.1**, **UN/CEFACT CII, FatturaPA** (IT), **KSeF** (PL), **RO eFactura** (RO), **OIOUBL** (DK), **Facturae** (ES), **SI-UBL** (NL). Purpose: Prescribed syntax/validation rules for e-invoices.
- **Peppol** – EU-wide interoperability network (4-corner model) incl. **BIS** specifications; includes addressing/directory components.

Peppol Roles & Identifiers

- **AP** – Access Point: certified connection to the Peppol network.
- **SML / SMP** – Service Metadata Locator/Publisher: centralized indexing (SML) and decentralized directories (SMP).
- **Peppol ID / VAT No. / GLN / GTIN** – identifiers for participants, locations and items (e.g. in the NHS environment).
- **IBAN** – International Bank Account Number: standardised account number (e.g. in invoices/payment data).
- **PINT** – Peppol International Invoice: Peppol profile/rules for international e-invoices (BIS/PINT context).

Transport & Integration Protocols

- **AS2 / AS4** – secured transmission protocols (AS4 established in EU/Peppol).
- **SFTP / OFTP2 / API (REST/WebAPI)** – other common transport routes; **MFT** (Managed File Transfer) as a platform feature.
- **API** – Application Programming Interface: Interface for system integration (e.g. ERP/platform).

- **OpenAPI** – Specification for describing REST APIs (often called Swagger), useful for SDKs & automation.
- **GraphQL** – API-Query-Language/Runtime for flexible queries (alternative to REST).
- **Webhook** – Event-based callback (HTTP) for push notification; Basis for event/webhook integrations.
- **JSON** – JavaScript Object Notation: lightweight data format (especially in APIs/events).
- **XML** – Extensible Markup Language: structured data format (especially in standards/EDI/UBL/CII).
- **URL** – Uniform Resource Locator: Address/link to resources (e.g. API endpoint).
- **DLQ** – Dead Letter Queue: Collection point for non-deliverable/processable messages for later analysis/redrive.

EDI Messages & Business Documents (Examples)

- **INV** (Invoice), **ORD**/**ORDERS** (Order), **ORDRSP** (Order Response), **DES/DESADV** (Despatch Advice), **INVOIC** (EDIFACT Invoice), **B/L** (Bill of Lading). Used in Decision Guide and Vendor Tables.
- **PO** – Purchase Order: Purchase Order (often abbreviated as PO; EDI/ERP context).
- **AB** – Order Response; Counterpart to the order in the 4-way match.
- **ASN** – Advanced Shipping Notice: ASN/Packlist (often as an EDI message; related to DESADV).
- **RECADV** – Receiving Advice: Goods receipt confirmation (e.g. EDIFACT RECADV).
- **INVOICE** – Invoice (e.g. UBL Invoice); not to be confused with EDIFACT INVOIC (message type).
- **CREDITNOTE** – Gutschrift (Credit Note; z. B. UBL CreditNote).

Regulations & Frameworks

- **B2B / B2G / B2C** – business relationships (business-to-business/government/consumer) in e-invoicing obligations.
- **ViDA** – VAT in the Digital Age (EU framework), drives uniform **DRR** (Digital Reporting Requirements).
- **Clearance / Post-Audit** – government release platform vs. downstream audit (e.g. IT: SDI clearance, DE: Post-Audit).
- **GDPR / UK GDPR** – Data Protection Law; **EU AI Act** – Regulation of AI-powered IDP.
- **DPA** – Data Processing Agreement.
- **DPA** – Data Processing Agreement (DE) according to GDPR, incl. subprocessors/technical & organizational measures (TOMs).
- **DSAR** – Data Subject Access Request: Data subject request according to GDPR (information/deletion/export, etc.).
- **CSRD** – Corporate Sustainability Reporting Directive (EU): Reporting obligations on sustainability/ESG (company report).
- **VSBG** – Consumer Dispute Resolution Act (DE); often in a B2B context Note: no participation in dispute resolution.

KPIs, Economy & ESG

- **ROI** – Return on Investment; **TCO** – Total Cost of Ownership; **Break-even** – point at which an option pays off. In Text & Calc.
- **Coverage** – Coverage Ratio (Partner ×Types/Documents, %); in Calc as "Coverage %".
- **No-Touch (STP) (Rate)** – fully automated without manual rework.
- **CO_2** emissions per document; in Calc as "CO_2 [g/doc]" and in charts.
- **ESG** – Environment, Social, Governance; Energy/CO_2, data residency, etc.

- **KPI** – Key Performance Indicator: Measurement variable for control (e.g. STP rate, throughput time, error rate).
- **TAM** – Total Addressable Market: Total addressable market (business/GTM metric).
- **TTV** – Time-to-Value: Time to the first measurable benefit after go-live.
- **TTR** – Time-to-Resolution: Time until an incident/problem is resolved.
- **SLO** – Service Level Objective: internal target level (e.g. availability/latency) – basis for SLA.
- **RPO** – Recovery Point Objective: maximum tolerable data loss (time window) in the event of recovery.
- **RTO** – Recovery Time Objective: maximum tolerable recovery time until recovery.
- **DR** – Disaster Recovery: Recovery/recovery strategy in the event of failures/disasters.

ISV & Business Terms

- **ISV** – Independent Software Vendor. Target group of the guide.
- **OEM / White Label** – Integration/branding of a third-party product under your own brand.
- **RevShare** – Revenue Share; **SLA** – Service Level Agreement.
- **GTM** – Go-to-Market (market entry strategy).
- **ICP3 (Multiplier)** – edition/business heuristics mentioned in the guide.
- **MVP** – Minimum Viable Product: Minimally functional product version for early validation.
- **GA** – General Availability: generally available, productive release stage (as opposed to Beta/Roadmap).
- **RFP** – Request for Proposal: formalized request for proposal.
- **RACI** – Responsible/Accountable/Consulted/Informed role model.

- **CSM** – Customer Success Manager/Management: Responsible for Adoption, Value Realization & Renewals.
- **PS** – Professional Services: project-based services (onboarding, changes, out-of-standard support).
- **NDA** – Non-Disclosure Agreement: Non-disclosure agreement (e.g. for PoC/references).
- **IP** – Intellectual Property: intellectual property (e.g. models, rules, fingerprints, code).
- **O2C** – Order-to-Cash: Process chain from order to payment (Sales/Order/Delivery/Invoice/Cash).
- **VMI** – Vendor Managed Inventory: Supplier controls inventory/replenishment on behalf of the customer.
- **SME** – Small and medium-sized enterprises (SME/long-tail segment in partner communication).
- **LT** – Long Tail: a large number of partners with small volumes (typically e-mail/web EDI/portals).
- **CI** – Continuous Integration: automated build/test/deploy pipelines (e.g., CI-enabled test paths).
- **QA** – Quality Assurance: Quality assurance (tests, reviews, acceptance).
- **RCA** – Root Cause Analysis: Root cause analysis after incidents/deviations.
- **SC** – Supply Chain: Procurement/supply chain (documents/processes along P2P/O2C).

Technology & AI

- **HITL** – Human-in-the-Loop (human follow-up/review at IDP).
- **NLP / ML / DL** – Natural Language Processing / Machine Learning / Deep Learning (KI-Verfahren in IDP).
- **CPU / GPU** – Types of Calculations; GPU-heavy for AI inference, CPU-light for deterministic conversion (NTPI).
- **SDK** – Software Development Kit; **iPaaS** – Integration Platform as a Service.

- **ERP** – Enterprise Resource Planning: leading system for orders, master data, accounting, etc.
- **DB** – Database: Database (isolation/schema/storage in the tenancy context).
- **GUI** – Graphical User Interface: graphical user interface (UI/Portal).
- **LLM** – Large Language Model: AI model class for speech/extraction/assistance (e.g., best-effort parsing).
- **GCP** – Google Cloud Platform (cloud provider; e.g., Document AI).
- **MS** – Microsoft (z. B. Azure / Form Recognizer).

Identity & Security

- **SSO** – Single Sign-On: single sign-on via Identity Provider.
- **OIDC** – OpenID Connect: Identity protocol based on OAuth 2.0 (often for SSO).
- **OAuth2** - OAuth 2.0: Authorization framework for API access/token-based authentication.
- **SAML** – Security Assertion Markup Language: SSO standard (XML-based, often enterprise).
- **SCIM** – System for Cross-domain Identity Management: Provisioning/deprovisioning of users/groups.
- **mTLS** – Mutual TLS: Two-way certificate authentication for service-to-service communication.
- **RBAC** – Role-Based Access Control: role-based permissions.
- **ABAC** – Attribute-Based Access Control: attribute-based permissions (policies).
- **BYOK** – Bring Your Own Key: Customer manages their own keys (usually via KMS/HSM).
- **KMS** – Key Management Service: Management of crypto keys (rotation, access, audit).
- **HSM** – Hardware Security Module: Hardware-based key storage/signature (high protection level).

- **PKI** – Public Key Infrastructure: Certificate/key infrastructure for TLS/signatures.
- **ISO27001** – ISO/IEC 27001: Standard for Information Security Management Systems (ISMS).
- **SOC2** – SOC 2: Audit standard/report on controls (security, availability, confidentiality, etc.).

Industry/platform abbreviations (from provider overviews)

- **P2P** – Purchase-to-Pay; **SRM** – Supplier Relationship Management; **SCM** – Supply Chain Management; **FMCG** – Fast-Moving Consumer Goods; **CEE** – Central & Eastern Europe.
- **NHS** – National Health Service (UK), uses Peppol in procurement.

Vendor/product abbreviations (from tables/examples)

- **SAP** – SAP (provider; in the document, among other things, SAP Document Information Extraction (DIX)).
- **DIX** – SAP Document Information Extraction: SAP service/component for document extraction.
- **ABBYY** – ABBYY (provider for OCR/IDP, e.g. FlexiCapture).
- **IBM** – IBM (provider; including document/integration services).
- **EDICOM** – EDICOM (EDI/E-Invoicing/Compliance Services Provider).
- **EDITEL** – EDITEL (provider for EDI/e-invoicing/network/onboarding).
- **SEEBURGER** – SEEBURGER (provider of EDI/B2B integration).
- **AMPLIFY** - Axway AMPLIFY (B2B): B2B integration suite/platform name.
- **AA** – Automation Anywhere (RPA platform; IQ Bot included in the document).
- **IQ** – IQ Bot (Automation Anywhere): Document/Unstructured Data component.
- **TA** – TotalAgility (Tungsten Automation/formerly Kofax): Workflow/IDP platform abbreviation.

- **DU** – UiPath Document Understanding: IDP component (often abbreviated as DU).

Costs & Billing (examples from Text & Calc)

- **KC** – kilo sign (billing method of some VANs).
- **Graduated prices** – decreasing unit costs for volume (VAN/platform).
- **Mapping / Onboarding** – One-time effort for partners/types. In Calc as **M + O + S**.

Other, Frequently Viewed

- **ANSI X12 / EDIFACT** – gängige EDI-Standards (NA/EU).
- **KC Billing** – VAN fee per 1,000 characters (kilo characters).
- **Lock-in** – vendor lock-in/switching hurdles (evaluation criterion).
- **EMAIL** – Electronic Mail; mentioned in the guide as a channel/input.
- **HRB** – Commercial Register B (DE): Registration number for corporations.

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ContactE-Mail: info@supedio.comWeb: www.supedio.com

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Questions, feedback or interest in Pilot/PoC:E-Mail: info@supedio.com
Contact: Margareta Kleine, Assistant Managing Director, Phone: +49 (0)351-418816863

Digital business partner communication is facing radical change.

While traditional EDI has long been considered the standard, new market requirements, heterogeneous partner landscapes, and increasing pressure to automate are calling for alternative approaches.

Software providers (ISVs) are thus faced with the task of rethinking document and process integration - both technologically and economically.

This decision-making guide provides structured guidance on the relevant solution approaches: EDI, Intelligent Document Processing (IDP), No-Touch PDF Interchange (NTPI), and hybrid models.

In addition to architecture and integration issues, the focus is on economic aspects – from ROI and break-even considerations to operational, scaling, and production decisions.