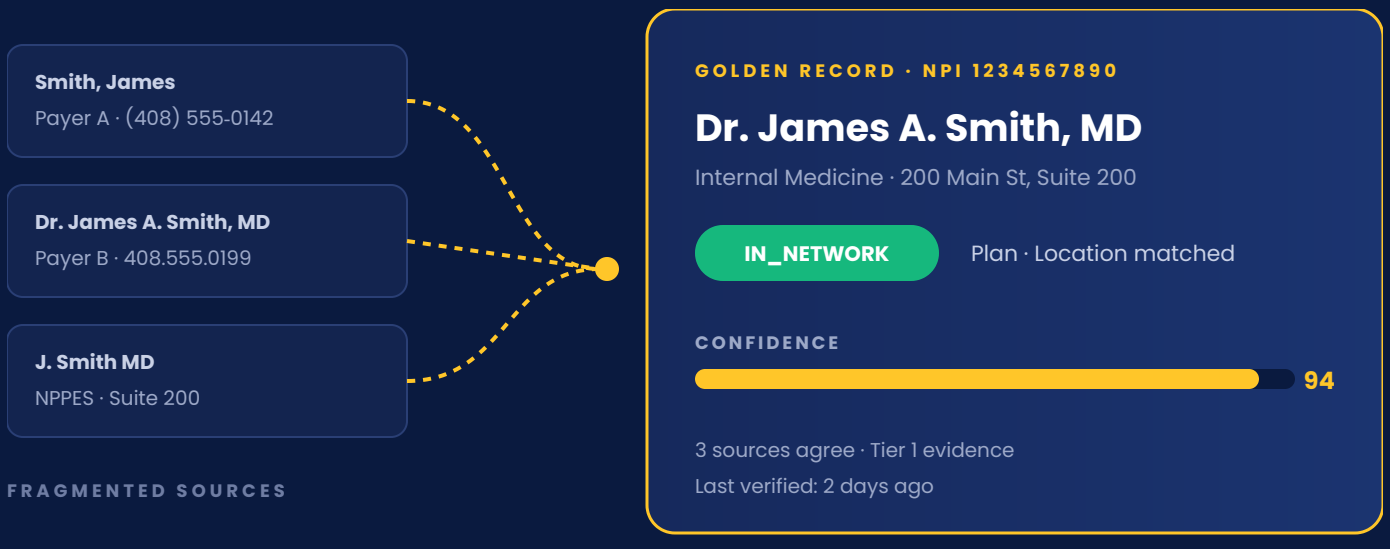
DR. VERIFY™

STRATEGIC WHITE PAPER · PROVIDER INTELLIGENCE

The 30% Problem: Turning provider verification into real-time intelligence.

Provider directories go stale the moment they're published. Dr. Verify replaces stale listings with continuously validated, confidence-scored intelligence that protects revenue, removes manual work and stands up to audit.



Illustrative example

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A National Provider Intelligence Platform
Confidential

01 · EXECUTIVE SUMMARY

Dr. Verify turns stale directory data into decisions you can defend.

Inaccurate provider and insurance data costs U.S. healthcare billions a year, yet most organizations still verify with spreadsheets, payer portals and phone calls. **Dr. Verify is a national provider intelligence platform** that continuously validates, reconciles and confidence-scores provider data so payers, providers and TPAs can act with certainty.

$262B+
in annual U.S. claims denied or delayed due to eligibility errors

30%
of provider directory records contain at least one inaccuracy

20–40%
reduction in manual verification time with Dr. Verify

<1s
target API response time for real-time verification

Three reasons Dr. Verify works

01

One golden record

NPI-anchored identity, location and insurance participation modeled as separate layers, so multi-site, multi-plan providers are represented accurately.

02

Scored, not displayed

Every participation answer returns IN_NETWORK, OUT_OF_NETWORK or UNKNOWN, with a confidence score, source evidence and a timestamp.

03

Audit-ready by design

Immutable history and surfaced conflicts give compliance teams a defensible record for CMS, No Surprises Act and state audits.

"Verification becomes faster. Defensible. Scalable. Revenue-aligned."

THE DR. VERIFY PROMISE

WHAT THIS PAPER COVERS

The market forces behind the problem (Section 02), the golden record and entity resolution architecture (03), the insurance matching and confidence scoring engine (04), enterprise infrastructure (05), measurable business impact (06) and a three-phase deployment roadmap (07).

Healthcare's hidden revenue leak starts in the provider directory.

Healthcare has invested heavily in EHRs, revenue cycle and patient engagement. The layer underneath, **who a provider is, where they practice today and which plans they accept there**, still underperforms, and every downstream system inherits its errors.

Where verification failures hit

01
Claim denials
Providers wrongly flagged in-network trigger rejections and costly appeals.

02
Scheduling friction
Outdated addresses and phone numbers stall every referral.

03
Call center overload
Staff navigate payer portals and hold queues for automatable checks.

04
Regulatory exposure
Public directories fall short of CMS and state accuracy rules.

05
Billing surprises
Unexpected out-of-network bills erode trust and create bad debt.

Why the problem persists: no single source of truth

Provider data lives across dozens of systems, each with its own update schedule, schema and validation standard. Manual reconciliation cannot keep pace with how fast that data changes.

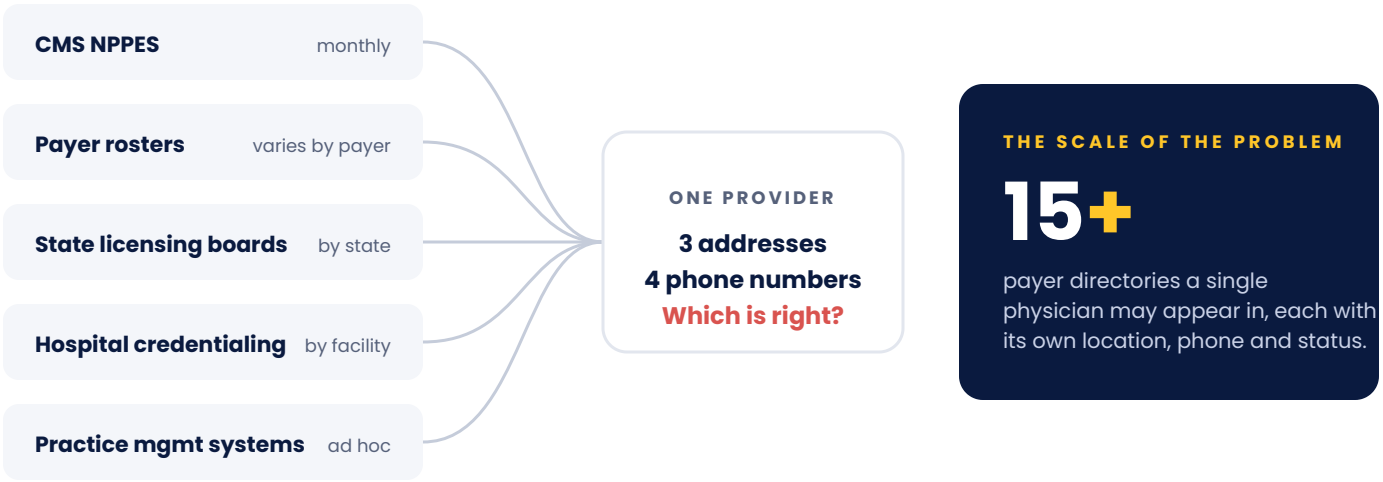


Figure 1. Fragmented provider data sources. Update cadences shown are general characterizations.

Three forces make verification a financial control, not a back-office task.

Regulatory pressure

CMS and the No Surprises Act raise the bar on directory accuracy. Organizations that can't show verifiable, timestamped accuracy face penalties and reputational risk.

Consumer expectations

Patients expect e-commerce precision. An in-network search that ends in an out-of-network bill drives complaints, bad reviews and plan switching.

Margin compression

Payers and providers can no longer absorb leakage from denials, billing errors and call center inefficiency.

How verification is evolving

YESTERDAY

Static directory

Displays data as published

"Is this listing still right?"

TODAY, FOR MOST

Manual reconciliation

Spreadsheets, payer portals, hold queues

"Who has time to check?"

WITH DR. VERIFY

Real-time intelligence

Continuously validated, confidence-scored

"We know, and we can prove it."

Dr. Verify moves verification from reactive correction to proactive intelligence.

Who feels it, and what Dr. Verify gives them

Stakeholder	Pain today	What Dr. Verify delivers
Health plans / payers	Directory accuracy mandates, network adequacy gaps	Timestamped audit trails, adequacy and drift analytics
Providers and health systems	Eligibility denials, referral and scheduling delays	Confidence-scored in-network checks at scheduling and referral
Third-party administrators	High manual verification volume	API-driven verification that replaces portal lookups
Revenue cycle leaders	Appeals, rework, delayed reimbursement	Higher first-pass claim accuracy
Compliance teams	Proving accuracy after the fact	On-demand, defensible records of directory state

03 · INTELLIGENT DATA ARCHITECTURE

One golden record, three independent layers.

Every record is anchored to the **National Provider Identifier (NPI)**, eliminating the false duplicates and missed matches of name-based systems. Identity, location and insurance participation are then modeled separately, so a provider at two sites with different plans at each is represented without duplication or distortion.

AUTHORITATIVE SOURCES

TIER 1

CMS NPPES

Federal NPI registry, taxonomy, locations

TIER 1

Payer roster feeds

Plan- and location-level participation

State licensing boards

Credential status, disciplinary history

Hospital credentialing

Affiliations and privileges

Partner data feeds

Contact, geolocation, specialty enrichment

THE GOLDEN RECORD

Layer 3 · Insurance Participation — WHAT THEY ACCEPT

Plan-specific and location-aware participation · effective and termination dates for time-aware queries · multi-source evidence trails · confidence scored at the participation level

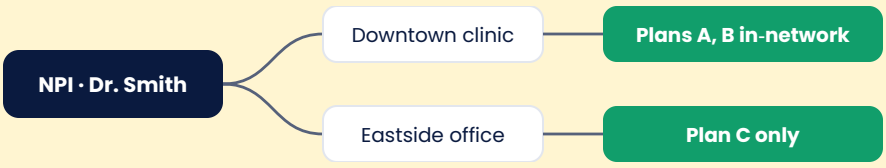
Layer 2 · Practice Location — WHERE THEY PRACTICE

USPS-validated addresses · deduped, verified phone and fax · geocoordinates for proximity and coverage mapping · accepting new patients, hours, telehealth

Layer 1 · Provider Identity — THE ANCHOR

NPI-anchored core profile · credentials, taxonomy and DEA data · multi-source active/inactive status · source provenance and full revision history

EXAMPLE: ONE PROVIDER, TWO SITES



Faster reconciliation

Conflicts resolved per layer

Cleaner APIs

Simple downstream integration

Scalable expansion

Add payers without rework

Audit-grade

Traceable for disputes

Reconciliation is the hard part. That's where the engine lives.

The same physician can appear as "Dr. James A. Smith, MD" in one source and "Smith, James" in another. Dr. Verify's entity resolution engine combines **deterministic and probabilistic matching** in a six-stage pipeline built for that reality.



Conflicts are surfaced, never suppressed

When two sources disagree, Dr. Verify shows which sources conflict, when each was last updated and the confidence for each candidate value. That transparency is the foundation of defensible, auditable verification.



Illustrative example.

Every conflict record captures

01
Which sources disagree
Each candidate value is tied to the source that reported it.

02
When each was updated
Timestamps expose stale data before it drives a decision.

03
Confidence per value
Scores show which value to trust and how much.

04 · INSURANCE MATCHING

From directory display to decision intelligence.

Most directories assume data is correct until proven otherwise, a dangerous default when inaccuracy exceeds 30%. Dr. Verify **evaluates** every participation record instead of displaying it, determining not only whether a relationship exists but how confident it is and why.

Four matching dimensions, from most to least specific

NPI + Plan + Location GOLD STANDARD

This provider, this plan, this site. The most defensible basis for scheduling and billing.

Group-level fallback

Evaluates the affiliated group when individual data is missing, with confidence discounted.

Regional participation

Checks the location falls inside the plan's service area.

APPLIED TO EVERY QUERY

Cross-source consistency

Compares all sources and computes an agreement score. Agreement raises confidence; conflict lowers it and flags for review.

The three-state output model

IN_NETWORK

Cross-source evidence confirms active participation at the plan and location, above threshold.

OUT_OF_NETWORK

Evidence shows no participation at that plan and location, or it has lapsed.

UNKNOWN

Insufficient or conflicting evidence. Routed for supplemental or manual review.

SAMPLE RESPONSE · ILLUSTRATIVE

```
{
  "determination": "IN_NETWORK",
  "confidence": 0.94,
  "evidence": ["payer_roster", "nppes"],
  "last_verified": "2022-06-02T14:10Z"
}
```

Not a yes/no. A decision record.

Every determination ships with a **confidence score**, a **source evidence trail** and a **last-verified timestamp**. It can be retained, surfaced in disputes and used to demonstrate regulatory compliance.

Confidence you can calibrate to risk.

Dr. Verify calculates participation confidence with a **weighted composite model** of five factors, so every organization can set decision thresholds that match the stakes of each workflow.

Recency of source data
Confidence decays as records age

Source reliability tier
Tier 1 outweighs aggregators and scrapes

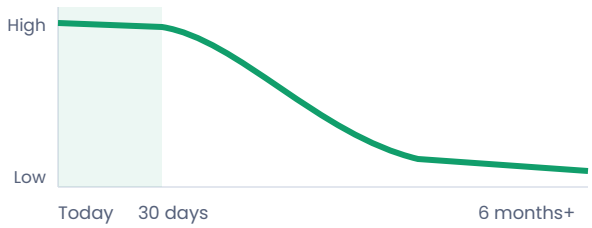
Location specificity
Exact site beats group or other site

Cross-source agreement
Independent sources that agree add weight

Historical validation
Learning layer tracks each source's accuracy



RECENCY DECAY



Data confirmed in the last 30 days carries far more weight than data untouched for six months or more.

SOURCE RELIABILITY TIERS

TIER 1	CMS NPPES, direct payer roster feeds
TIER 3 & BELOW	Third-party aggregators, scrape-derived data

SET THRESHOLDS BY RISK

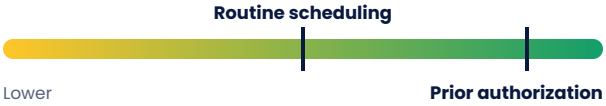


Figure 2. Confidence scoring model. Score, curve and threshold positions are illustrative.

Same engine, different bar for different decisions.

A high-stakes prior authorization can require a higher confidence threshold than a routine scheduling check. Dr. Verify's output supports that kind of risk-aware decision-making.

05 · ENTERPRISE TECHNICAL ARCHITECTURE

Not a directory widget. Infrastructure built for national scale.

Dr. Verify processes millions of provider records across thousands of payer plans with **sub-second API responses** and enterprise availability, organized into four functional layers.

HOW THE PLATFORM STACKS UP

API Layer

Where systems consume intelligence

REST + JSON · FHIR R4 outputs · OAuth 2.0 + RBAC · <1s p99 · 99.9% SLA · Bulk export

Processing Layer

- Schema normalization to a canonical model
- USPS address standardization
- Taxonomy mapping across NUCC, SNOMED and payer codes
- Entity resolution and deduplication

Storage Layer

- Relational golden record database with referential integrity
- High-speed search index by name, NPI, location, specialty, plan
- Optional graph layer for physician-group-facility-system affiliations

Ingestion Layer

FULL HISTORY, NOTHING OVERWRITTEN

Scheduled bulk roster imports via secure file transfer · incremental API updates pushed in real time · immutable data lake retaining every version of every record

Capability	Specification
API protocol	REST with JSON responses; FHIR R4 compatible outputs available
Response latency	< 1 second (p99) for real-time verification queries
Authentication	OAuth 2.0 with role-based access control
Data retention	Immutable audit log with full historical record retention
Uptime target	99.9% availability SLA for API endpoints
Security standards	HIPAA-compliant; SOC 2 Type II aligned architecture
Bulk export	Scheduled file delivery or on-demand extract via secure API

06 · BUSINESS IMPACT & STRATEGIC ROI

Revenue protected. Manual work removed. Audits answered.

20–40% typical reduction in staff time spent on manual verification, with matching drops in insurance-related call center volume.

REVENUE PROTECTION

Fix eligibility denials at the root

- In-network calls made on current, scored data at scheduling and referral
- Higher first-pass claim accuracy
- Less appeal, rework and write-off; faster reimbursement

OPERATIONAL EFFICIENCY

Replace lookups with API-driven intelligence

- Faster referral coordination and patient access
- Cleaner intake with fewer registration errors
- Automated directory monitoring and maintenance

COMPLIANCE & RISK

A defensible record, on demand

- Audit trail of every query, result and score
- Source documentation behind each determination
- Timestamps that reconstruct directory state for disputes
- Logged conflicts that prove active monitoring

STRATEGIC INTELLIGENCE

Analytics from a longitudinal data model

- Network adequacy gaps found before regulators do
- Directory drift alerts for proactive correction
- Provider movement and payer participation trends
- Geographic coverage modeling for network design

MEASURED EARLY

Organizations that embed Dr. Verify in scheduling or prior authorization workflows report measurable reductions in eligibility-related denial rates within the first full billing cycle after deployment.

07 · IMPLEMENTATION ROADMAP

Value at every phase. Enterprise scale by the end.

A structured, three-phase deployment that delivers **measurable value at each stage** while building toward full enterprise capability.

Phase 1

NATIONAL PROVIDER MASTER · 8–12 WKS

Establish the provider identity and location foundation.

- Full NPI ingestion and normalization
- Location standardization and geolocation
- Search and lookup API by NPI, name, location, specialty

Phase 2

INSURANCE MATCHING MVP · 8–10 WKS

Layer participation intelligence onto the provider master.

- Initial payer roster integrations
- Matching engine and confidence scoring
- In/out-of-network API, conflict flagging and audit trail

Phase 3

ENTERPRISE SCALE & ANALYTICS

Expand coverage, analytics and compliance.

- Multi-payer expansion
- Adequacy and drift dashboards
- Compliance reporting, optional graph layer, developer portal



Kickoff
Data onboarding

Weeks 8–12
Provider master live

Weeks 16–22
Insurance matching live

Ongoing
Enterprise scale

How success is measured

>95%
of active NPIs covered (Phase 1)

>98%
address standardization accuracy (Phase 1)

<1s
query response time, sustained

↓ Denials
measurable drop in eligibility denials (Phase 3)

Phase 2 is validated by participation coverage for integrated payers, confidence calibration against known-good test cases and audit trail completeness. Phase 3 adds documented compliance audit readiness and stakeholder satisfaction with analytics.

08 · ABOUT ECOSMOS SOLUTIONS

Data without intelligence is risk.

eCosmos Solutions designs intelligent SaaS platforms that turn fragmented, unreliable data into scalable operational infrastructure. Our team brings deep expertise in **healthcare data standards, entity resolution, payer-provider relationships and enterprise integration**. In healthcare, the cost of uncertainty is measured in revenue, compliance and patient outcomes.

Three principles behind every decision

01

Precision over assumption

No data is displayed without evaluating its reliability. Every record carries a confidence score and a source trail.

02

Transparency over opacity

Discrepancies are surfaced, documented and traceable. Honest uncertainty is safer than false confidence.

03

Infrastructure over patchwork

Built as a foundation, not a workaround, integrating cleanly with existing systems and scaling as needs grow.

CONCLUSION

The financial, operational and compliance costs of directory inaccuracy are too high, and regulation too demanding, for manual approaches to remain viable. Dr. Verify turns verification from an administrative cost center into a strategic capability.

Verification becomes faster. Defensible. Scalable. Revenue-aligned.

And that changes everything.

READY TO LEARN MORE?

Schedule a platform demonstration or talk through your organization's provider verification challenges.

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