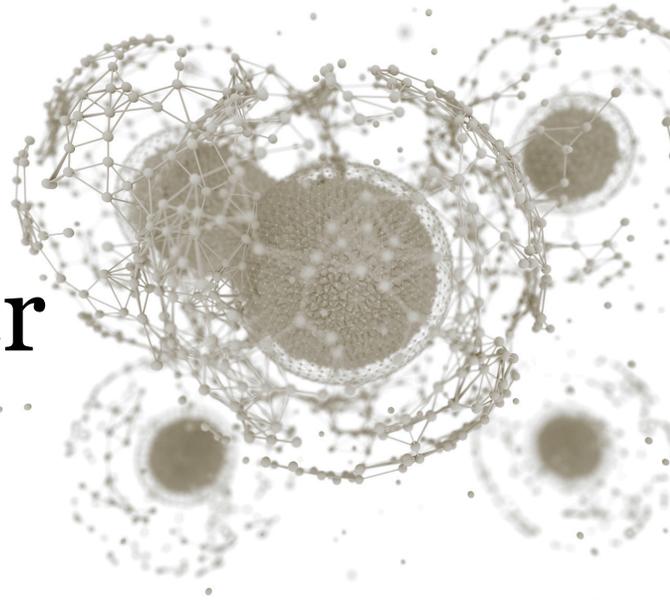


# Diagnostics Production Scaler

*The automated operating system  
for modern molecular diagnostics*



In high-volume molecular diagnostics, success is defined by one metric: turnaround time delivered at scale—without sacrificing margin. As test volumes spike and assay complexity grows, fragile homegrown pipelines become a critical liability. Failed runs, re-processing, and SLA penalties quietly erode profitability and patient trust.

The **Diagnostics Production Scaler** replaces brittle, DIY bioinformatics with a production-grade operating system purpose-built for commercial diagnostics—turning your sample-to-report workflow into a scalable, reliable software factory.

## KEY TAKEAWAYS

- **Reliability at Production Scale:** Eliminate pipeline failures during volume spikes with automated retry logic and fault-tolerant execution.
- **Lower Cost-per-Sample:** Reduce re-runs and optimize cloud economics through intelligent reuse and automated infrastructure management.
- **Faster Time to Market:** Validate, launch, and scale new assays dramatically faster without rebuilding pipelines or hiring additional staff.

## THE REAL-WORLD CHALLENGE

Diagnostics is a volume business with unforgiving economics:

- **Production Fragility:** Custom scripts break under load, causing failed runs, delayed results, and SLA penalties.
- **Margin Compression:** Re-runs and manual intervention quietly destroy cost-per-test targets.
- **Compliance Exposure:** CAP/CLIA validation and auditability are difficult to maintain in evolving DIY environments.
- **Global Scaling Barriers:** Expanding internationally requires data residency, security, and reliability that are costly to replicate site-by-site.
- **Talent Misallocation:** Highly skilled teams are forced to maintain infrastructure instead of focusing on proprietary tests.

At scale, infrastructure fragility becomes an existential risk.

## THE SOLUTION:

# A Production Operating System for *Diagnostics*

The DNAnexus Diagnostics Production Scaler is a production-grade, CAP/CLIA-aligned platform designed to automate the full lifecycle of a clinical test—from R&D validation through high-throughput commercial operations.

Rather than stitching together cloud services and scripts, diagnostics teams gain a hardened execution layer that delivers reliability, speed, and cost control by design.

### KEY CAPABILITIES

- **Fault-Tolerant Execution Engine:** Automatic retry and failover logic ensures pipelines complete successfully—without manual intervention.
- **Smart Reuse Technology:** Detects completed pipeline steps and skips redundant computation, reducing runtime and cloud costs by 40–80%\*.
- **Global Centralization Model:** Sequence locally, analyze centrally—protecting intellectual property while operating across multiple regions.
- **Immutable QC & Provenance:** Every sample, parameter, and result is fully traceable and reproducible—even years later.
- **Production-Ready Compliance Foundation:** Built to support CAP/CLIA validation, audits, and inspection readiness as volume scales.

*\*Based on customer deployments and internal benchmarks.*

### USE CASE: SCALING LIQUID BIOPSY AT VOLUME

A commercial diagnostics provider running high-volume liquid biopsy testing experiences frequent pipeline failures during demand spikes—driving re-runs, missed SLAs, and margin erosion.

By deploying the Diagnostics Production Scaler, the lab standardizes execution across assays, automates failure recovery, and centralizes analysis across regions. The result is predictable turnaround time, fewer re-runs, and a materially lower cost per test—without expanding the team.

### QUANTIFIABLE IMPACT

- Up to 50% reduction in dry-lab cost per sample\*.
- 7x faster time-to-market for new assays\*.
- 3x faster validation cycles\*.
- Fewer infrastructure-focused FTEs required per test launched.
- Consistent TAT performance, even during volume spikes.

#### Why DNAnexus

DNAnexus operates some of the most demanding genomic production environments in the industry. The Diagnostics Production Scaler distills that experience into a hardened platform trusted by leading diagnostics organizations to deliver results at scale—without compromising reliability, compliance, or margins.