Persistent

Reinventing Testing, Inspection and Certification

Taking a leap to adopt emerging technologies

Table of Contents

Executive Summary

Persistent works extensively with top industrial companies for product development and enterprise application professional services. We've helped industrial companies create new revenue streams through innovative digital products, improve operations, and surpass customer experience expectations. As a testament to our expertise, Persistent was recognized as Best Enterprise Services Vendor by Constellation Research..

This whitepaper highlights Persistent's view of:

/ The high-level challenges and possible aspirations of Testing, Inspection and Certification (TIC) players.

/ The short- and long-term view of how technology offerings from TIC players can evolve for future trends, causing disruptions in the market.

We hope that this neutral and outside-in view will add another dimension to your view of the TIC domain.

Testing, Inspection and Certification (TIC)

Industry Analysis

With competition constantly intensifying, enterprises want to take their products to the market faster. They are also focused on making their products smarter, increasing product complexity and leading to increased demands from customers and investors to improve supply chain transparency. To reach these goals, companies are making additional technology investments in Internet of Things (IoT), data and analytics, and the cloud.

Increasing complexity in products, supply chains and systems elevates the need for data privacy, data security and complex integrations between enterprise applications. Sophisticated systems are in turn also required to ensure compliance with relevant international and local standards . Given all of these elements, enterprises globally are more often turning to outsourced testing, inspection and certification services to validate products, services and management controls.

Enterprises globally are focused on:

/ **Making products and assets smarter using complex tech and;**

/ **Increasing supply chain transparency**

Both factors are encouraging enterprises to outsource TIC work.

Key Macroeconomic Trends

Rising demand for standardization

As new digital commerce channels flourish, it creates opportunities for nefarious players to exploit the loopholes until regulations catch up.

For example, the recent INFORM Consumers Act in the US aims to solve the growing problem of illicit goods sold online.

Governments are making compliance norms stringent

In 2022, to minimize CO_2 emissions in the automotive industry, governments have put rigorous environmental rules on OEMs.

The Compulsory China Certification, for instance, includes more than 23 product categories, including those for wires, cables, appliances, consumer products, and automobile parts.
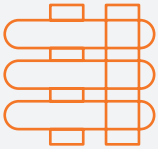
Accelerating infrastructure deployments in developing markets

The developing regions of South Asia, Southeast Asia and Latin America are undergoing massive infrastructure development, and the pace is expected to only accelerate in the near-term.

Regulations for new technologies

New technologies such as AI are expected to come under regulations. The EU has already reached a deal and the law regulating AI is expected to come in force after 2025. Other nations are expected to follow suit.

This presents TIC firms an opportunity to create new offerings such as data quality assessment, algorithm testing and ethical AI certification.

Strategic Responses to Trends

Leading players have adopted the following initiatives to increase competitiveness.

Types of Response	Value Add
Specialized Labs	Establish new testing facilities for upcoming key technologies
	Address critical testing needs within a region
	Provide competitive differentiation
	E.g. TUV Rheinland launched a Hydrogen competence center to provide testing services for safe storage, production, transport and use of hydrogen
Digital Products	Create differentiation in a crowded certification market
	Increase customer retention through value ads for common certifications
	E.g. UL launched SafeCyber, for cloud-based risk management. The SafeCyber dashboard provides users with a unified comprehensive view of their product security maturity and projects
Strategic M&A	The industry continues to consolidate, with large players acquiring niche service providers with complementary skills to further strengthen their presence within a sector.
	E.g. Socotec Italia acquired Tecnolab Srl, a provider of geotechnical testing services for building materials, strengthening its position in the Italian infrastructure sector.

Growth Prospects

Short Term

For TIC players, balanced digitalization of goods and services is critical, as it opens new market opportunities.

Auto TIC will be the new norm. To enhance speed and accuracy, TIC players are shifting focus toward technologies like AI / ML, robotics, Generative AI, etc. This requires building new TIC applications and developing technological innovations to reshape traditional inspection processes.

Cybersecurity is also a major area of interest for major TIC players, and many are bolstering their offerings through M&A and partnership activities. For example, TÜV Rheinland partnered with VisualThreat, a leading automotive cybersecurity testing provider from California.

Long Term

Two major technologies which are redefining the TIC industry and major players' strategies.

Synthetic Data using GenAI

Emerging technologies such as Generative AI can create thousands of test cases in an instant, without the need to rely on physical objects.

Blockchain

Leveraging blockchain for pertinent product data can ensure safety, authenticity and quality in supply chains within pharmaceutical, food, and allied industries.

In addition, new business models are emerging, such as qualified marketplaces for inspection and asset verification services that allow clients to directly book an audit with a certified independent provider.

To achieve long-term sustainability, Persistent believes TIC players can reinvent themselves by adopting emerging technologies.

Comparison — Top TIC Firms

	Bureau Veritas	TUV	Intertek	UL
Service Coverage	Certification & management, training, testing, inspection & asset management	Certification & management, training, testing, inspection & asset management, consulting & project management	Assurance, testing, inspection, certification	Certification, testing, advisory, audit inspection, verification, learning and development
Industries served	Agri-Food, automotive & transport, buildings & infra, retail CPG, cybersecurity	Traffic vehicles & rail, commodities & consumer goods, industry & infrastructure, infosec & telecom	Chemical, construction, energy, food & healthcare, transportation, hospitality, tourism, retail	Automotive, mobility, construction, HLS, energy, chemicals, FIS, retail, government
Labs (not exhaustive)	AI-enabled labs for data sample analytics & testing, food safety testing labs	Hydrogen competence center, EMC lab for automotive electronics & auto parts, textile testing, labs for testing of electrical products & regenerative energy technology	Analytical testing for allergen in cosmetics, advanced mineral labs, chemical testing	Cable fire safety testing lab, e-mobility & energy lab, wire, cable & appliances safety lab, manufacturer testing and certification lab
Focus industries for growth	Renewable, power grids, transport, automotive and chemicals	Electromobility or autonomous driving	Solar energy, retail, tourism, food, minerals ore and mining	EV batteries, wire / cables manufacturing, consumer electronics, IT

	Bureau Veritas	TUV	Intertek	UL
Niche Digital Products/ Point Solutions	**Quiktrak:** Qualified inspector marketplace	**TUV lift manager:** Condition monitoring for lifts, Green building calculator, **Compass:** Supply chain solution	**Intertek EcoCheck:** Sustainability solution for hotels, Intertek i2Q for inspection management	Chemical data management software, RAMS for medical devices compliance management
Technology Platforms	**V-Trace:** SCM traceability, **SafeGuard:** Safety for food, retail and hospitality, Veristar AIM3D	**DIM sense & DIM flight:** Digital infrastructure management platform	**ToxClear:** Digital chemical management for fashion, **Inlight:** Supply chain risk management platform, **INGRID:** Analytics platform for powerplant operations	**SPIRE 2.0:** Building management system, **UL 360:** ESG platform, **WercSmart:** Retail product compliance

Understanding TIC Industry Challenges

Global Expansion

Maintaining consistent service quality across diverse regions with different regulations and cultures is complex.

Wide Portfolio

Niche players with deeper industry knowledge could pose competitive challenges in certain sectors.

Price Sensitivity

Emerging smaller and regional players, especially in cost-sensitive industries, can undercut global players.

Economic Downturns

The global economic slowdown is impacting client spending on TIC services.

Evolving Regulations

Regulatory shifts in different countries can pose compliance challenges and require continuous adaptation.

Art of the Possible

Short-Term Solutions

1. Better Service Metrics via Automation

Recommendation

/ In the short-term, contract wins and retention for common services will depend on who can meet the requirements for TIC experts sooner, turnaround time of services, and quality of deliverables.

/ In all the above parameters, automation will play a crucial role by eliminating repetitive manual activities, improve first-time right rate, reducing rework costs, and matching supply to demand better.

Example

/ TÜV Rheinland's integrated data management platform accelerates the communication of timely information that is critical to product development and production quality control.

/ All stakeholders have access to up-to-date test requests and testing requirements while customers benefit from digital test results including automatic pass / fail evaluations, allowing for prompt and informed decision-making.

How can Persistent help?

/ TIC players need an Automation CoE (Center of Excellence) that can critically analyze the as-is state of both internal and customer-facing processes to determine which tasks are candidates for automation, prioritize automation projects based on business impact, and implement and monitor automation initiatives.

/ Persistent features a 4,000+ employee strong Intelligent Automation practice with partnerships with leading providers of process mining, RPA, and low-code no-code technologies. We have a strong track record of excellence with a 5 / 5 delivery excellence rating.

2. Focus on Niche Value-added Services

Recommendation

/ For niche services, complementing technical skills with the right customer-facing value-added services is critical.

/ It becomes a differentiator for global TIC players in the face of competition from smaller local service providers.

Example

/ Lloyd's Register (LR) launched the AI Register to assist maritime customers in finding LR-certified providers and solutions on a single platform.

How can Persistent help?

/ Persistent works with 14 of the top 30 most innovative companies (as ranked by BCG), with a wealth of experience in helping market leaders innovate through our Digital Engineering expertise.

/ We have completed 5,500+ releases in the last five years, backed by the expertise of more than 16,500 product and platform engineers and a strong agile practice for rapid product release.

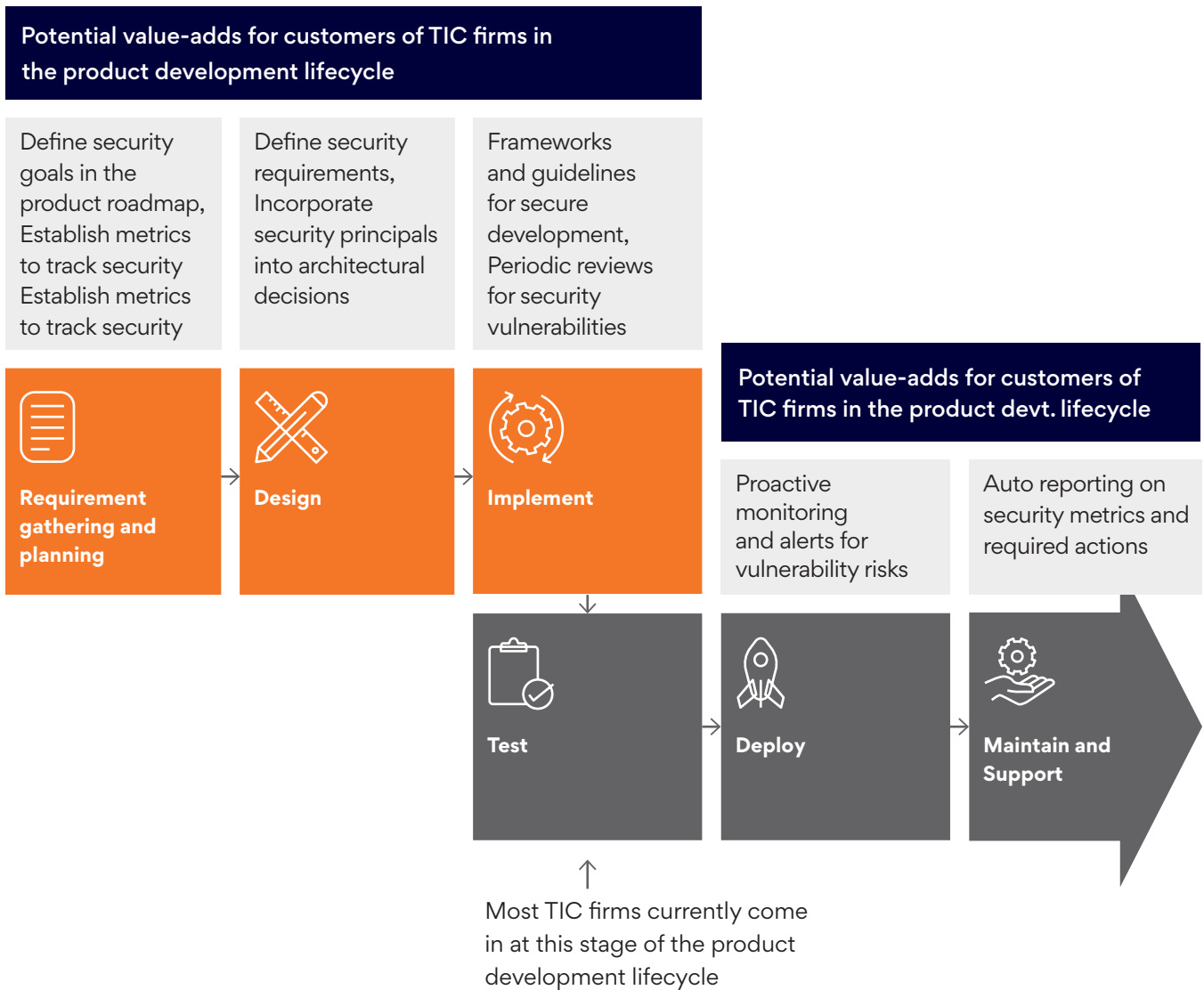| TIC players can leverage technology strategically for different objectives.	For common services, technology becomes an efficiency lever which reduces cost and increases service quality.	For niche services, technology becomes a unique proposition in a market crowded by offerings from smaller rivals.

Long-Term Solutions

Persistent envisions that TIC players will evolve beyond being service providers of testing, inspection, and certification, and become ecosystem players enabling proactive asset monitoring, certification management, asset analytics, and reporting. The technology platforms powering these services will be the differentiators.

/ Product lifecycle management and asset management platforms will be pivotal for TIC players to expand their wallet share and increase customer touchpoints. The diagram below gives an example of how TIC firms can increase value-add and the number of customer touchpoints for cybersecurity assessments in the product development lifecycle.

/ Players in the TIC industry are best positioned to evolve from being services providers to ecosystem creators. Customers are increasingly focusing on adopting a proactive approach to reduce non-compliance and downtime.

Potential value-adds for customers of TIC firms in the product development lifecycle

Define security goals in the product roadmap, Establish metrics to track security Establish metrics to track security	Define security requirements, Incorporate security principals into architectural decisions	Frameworks and guidelines for secure development, Periodic reviews for security vulnerabilities
Requirement gathering and planning	**Design**	**Implement**

Potential value-adds for customers of TIC firms in the product devt. lifecycle

Proactive monitoring and alerts for vulnerability risks	Auto reporting on security metrics and required actions
Test	**Deploy**	**Maintain and Support**

Most TIC firms currently come in at this stage of the product development lifecycle

A few TIC industry participants are already moving toward becoming ecosystem providers to enable predictive analytics and platforms to support their customers' missions. For example, UL has launched SafeCyber, a cloud-based cyber risk management platform.

The best way to create these platforms is to adopt a modular approach. For example, an asset management platform will commonly have the following modular components:

/ An IoT module to capture real-time data.

/ An analytics platform which proactively monitors the asset conditions, ensures they are operating within the stipulated guidelines and warns users before they become non-compliant.

/ An integration module to orchestrate smooth data exchange among all modules.

/ An asset management and compliance module for managing all assets in one place and which operates as a system of record.

Our expertise in Software Product Engineering

Fueling the next wave of digital transformation for our clients

Digital Strategy and Design

Experience Design

Digital Innovation Lab

Technology Advisory and Consulting

CX Transformation

CX Strategy

Salesforce Cloud Implementation

CX Platform Integration

Customer Analytics and Insight

Salesforce Industry Solutions and Accelerators

Data and Analytics

Data and Analytics Advisory

Data Governance, Management and Security

Data Stack Modernization

Data Connectors and Certification

Data Science and Machine Learning

Intelligent Automation

Hyper Automation Strategy

Business Process Management

Low-Code Development

Robotic Process Automation

Conversational AI

Software Product Engineering

Product and Platform Strategy

Product and Platform Engineering

Product Modernization

Product Sustenance and Support

Enterprise Applications and Integration

Application portfolio Rationalization

Application and Platform Development

Application Modernization

Application Maintenance and Support

Enterprise Integration

Cloud and Infrastructure

Cloud and Infrastructure Advisory

Cloud Migration and Modernization

Hybrid and Multi-Cloud Transformation

Data Center Modernization

Intelligent IT Operations

Enterprise Security

Cyber Resiliency Strategy

Security Assurance and Data Security

Identity Access Management

Governance, Risk and Compliance

Managed Security Services

Focused on Delivery Excellence

Persistent utilizes a three-pronged approach to ensure delivery excellence for its clients.

Delivery Predictability

Our delivery excellence and delivery orgs ensure predictability through SQA reviews, robust risk management practices, metrics management, and internal quality audits.

Engineering Excellence

We're constantly enhancing engineering practices by utilizing tools and automation to improve cost, quality, and cycle time. We also provide recommended action plans, business value articulation and metrics for ongoing improvement.

Customer Experience

We value customer feedback and our customer relationships to improve overall CX and CSAT, leveraging comprehensive CSAT surveys and QBRs with relevant stakeholders.

Our Delivery Excellence initiatives include Delivery 360, which is focused on Customer, Commercial, Contract Engineering, and Team Excellence, as well as enhancing our internal Quality Management Systems.
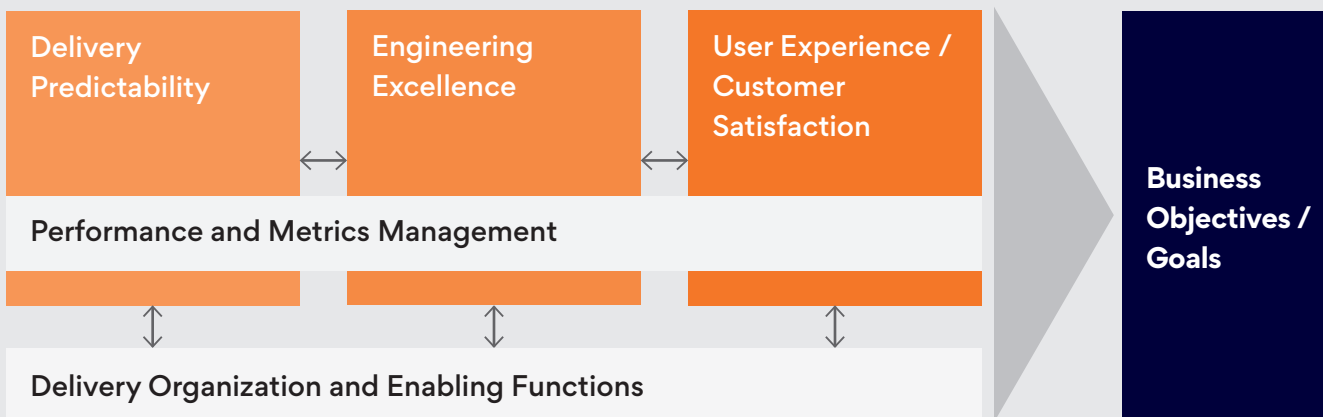
Delivery Excellence

Delivery Predictability	Engineering Excellence	User Experience / Customer Satisfaction	Business Objectives / Goals
Performance and Metrics Management			
Delivery Organization and Enabling Functions			

Figure: Persistent Delivery Excellence & Metrics Management Framework

Culture

Persistent's remarkable culture is founded on six commitments.

Support one another in being vulnerable, bold, and human, with mandated EQ training for all managers.

Build trusted relationships and encourage peer feedback from workplace collaborators.

Activate an innovators mindset by scaling participation and promoting outcomes of our global hackathon.

Recognize efforts, celebrate success (with a dedicated project success celebration fund), and learn from failures.

Nurture our differences to tap the potential of everyone, with new quarterly awards for advocacy in Diversity, Equality & Inclusion.

Cultivate an environment of belonging to help employees bring their human side to work.

To build a sustainable cultural movement, we will measure our progress through the Persistent Culture Score, a composite measure of the overall health of the culture across the company.

Corporate Governance

Persistent Systems has been honored with the **Golden Peacock Award for Excellence in Corporate Governance 2023 in a national category (IT Sector)**

Persistent adopts special measures to bring transparency and accountability to its governance. The Chairman of the Board also conducts sessions for the directors and newly appointed directors at regular intervals to share current and global business scenarios.

We also have a one-of-a-kind stakeholders relationship committee to communicate with all key stakeholders, and through its foundation have supported numerous programs related to education, health, community development, and relief from natural calamities.

See
Beyond.
Rise
Above.

About Persistent

With over 23,000 employees located in 20 countries, Persistent Systems (BSE & NSE: PERSISTENT) is a global services and solutions company delivering Digital Engineering and Enterprise Modernization. We work with the industry leaders including 14 of the 30 most innovative companies as identified by BCG, 8 of the top 10 largest banks in the US and India, and numerous innovators across the healthcare and software ecosystems. As a participant of the United Nations Global Compact, Persistent is committed to aligning strategies and operations with universal principles on human rights, labour, environment, and anti-corruption, as well as take actions that advance societal goals.

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