



# **In Pursuit of Product Excellence: Quality Management in the Engineering Services Industry**

Engineering Services (ES)  
Market Report – May 2017 – Preview Deck

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## Custom research capabilities

- Benchmarking | Pricing, delivery model, skill portfolio
- Peer analysis | Scope, sourcing models, locations
- Locations | Cost, skills, sustainability, portfolio – plus a tracking tool
- Tracking services | Service providers, locations, risk
- Other | Market intelligence, service provider capabilities, technologies, contract assessment



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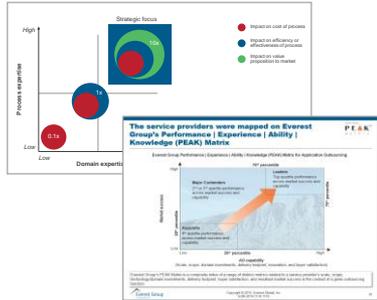
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# Our research methodology is based on four pillars of strength to produce actionable and insightful research for the industry

- Market thought leadership
- Actionable and insightful research
- Syndicated and custom research deliverables

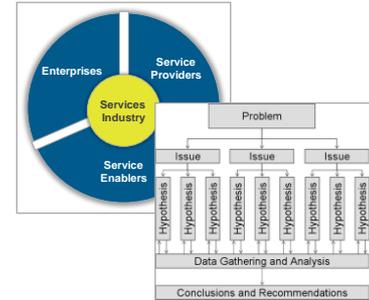
**1 Robust definitions and framework**  
(PEAK Matrix™, market maturity, and technology adoption/investment)



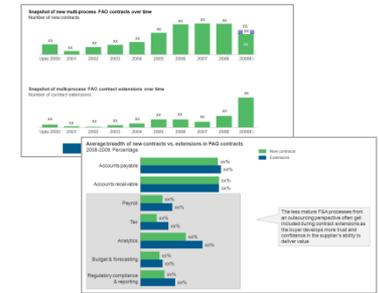
**2 Primary sources of information**  
(Annual, contractual and operational RFIs, service provider briefings and buyer interviews, and web-based surveys)



**3 Diverse set of market touchpoints**  
(Ongoing interactions across key stakeholders, input from a mix of perspectives and interests, supports both data analysis and thought leadership)



**4 Fact-based research**  
(Data-driven analysis with expert perspectives, trend-analysis across market adoption, contracting, and service providers)



- Proprietary contractual database of large active contracts (updated annually)
- Year-round tracking of 25+ service providers
- Dedicated team for engineering services research
- Over 20 years of advising clients in IT, BPO, and engineering decisions
- Executive-level relationships with buyers, service providers, technology providers, and industry associations

# Background and methodology of the research

## Background of the report

### Quality Management (QM) is critical to engineering services

- Enterprises have realized that lack of QM activities results in high cost and loss of brand image
- Superior quality of products act as a differentiating factor

### Drivers for sourcing quality management activities

- Accelerate speed-to-market
- Localize existing products for new markets
- Reduce cost
- Testing at scale

### Implementation of QM in Engineering Services (ES)

Quality management in the ES industry covers all activities that are involved in the validation, verification, and testing of new products (hardware or software) during all stages of the product lifecycle

## Scope of the report

This research covers the following elements of quality management:

### Market landscape

Define, describe, and forecast the quality management market size and demand drivers in product engineering services covering different industry verticals

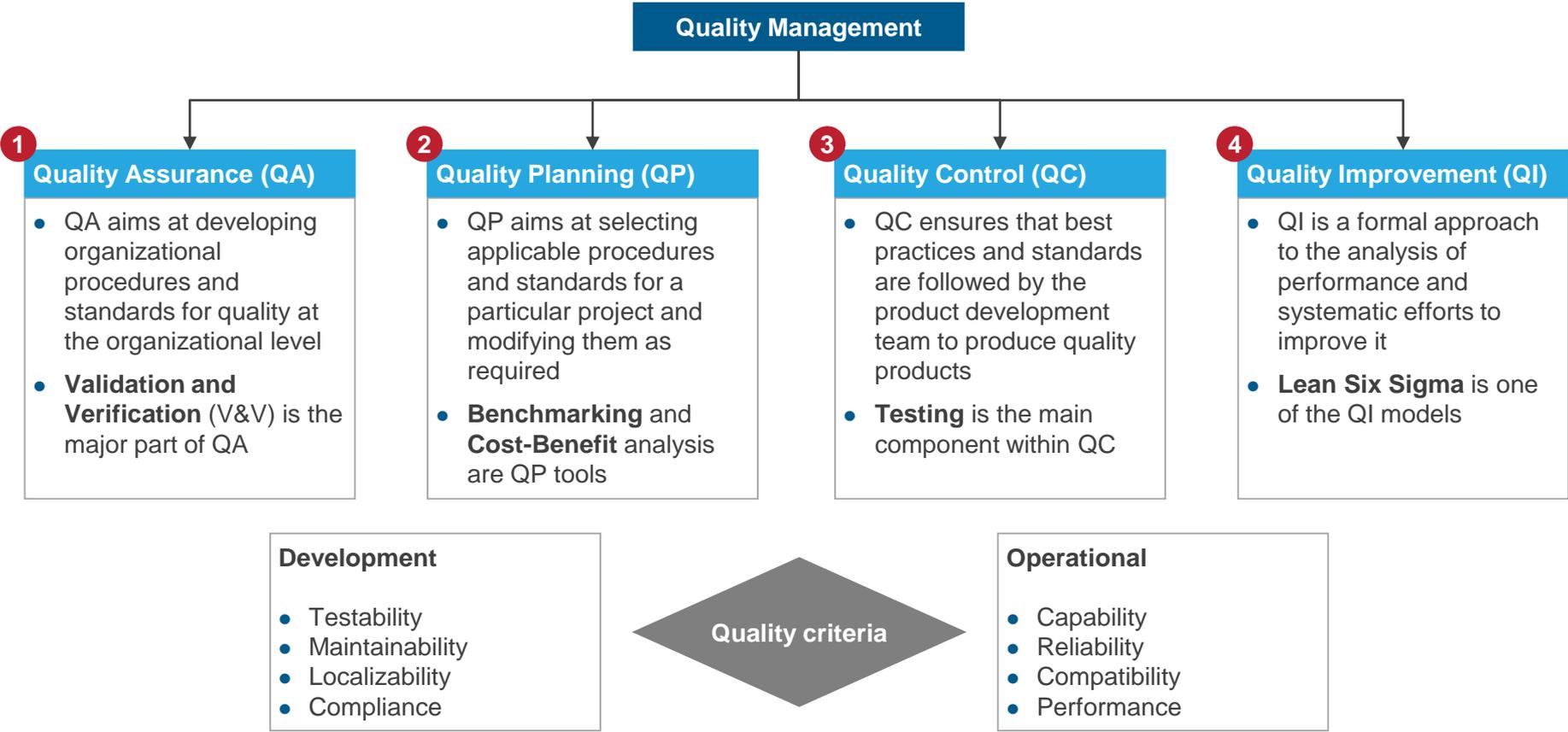
### Industry trends

Understand the importance, challenges, and impact of digital transformation for quality management activities

## Methodology of the report

This report draws insights from Everest's Group existing market report "**The Evolving Demand Paradigm in the Engineering and Research and Development (ER&D) Services Industry – November 2016**". The research is anchored on interactions with multiple service providers and enterprises, augmented with Everest Group's expertise and proprietary transaction intelligence database and service provider tracking, both of which are updated quarterly.

# Quality management contains a set of activities needed to maintain a desired level of excellence of the product



This report provides market trends – global demand themes, market size, and digital transformation for quality management activities in the engineering services industry.

Source: Everest Group (2017)

# Overview and abbreviated summary of key messages

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Quality management is a critical activity in the engineering services industry and enterprises have realized the implications of failure in quality management. Superior quality of products act as a differentiating factor for enterprises. Quality management covers all activities that are involved in the validation, verification, and testing of new products (hardware or software) during all stages of the product lifecycle.

The report covers the evolving quality management services for product engineering industry in terms of the demand trends for across major industry segments, market landscape, global sourcing landscape, and digital transformation of product validation activities in the engineering services industry.

## **Some of the findings in this report, among others, are:**

- Increasing adoption of new-age technologies such as machine learning, artificial intelligence, and robotized testing in quality management
- Increasing importance of non-functional testing such as security and customer experience
- Enterprises are re-aligning their quality management efforts to meet their business objectives of reducing cost, reducing time-to-market, improve customer experience and drive digital innovation
- Enterprises are using global sourcing as a lever to meet the challenges of quality management and drive competitive advantage in the industry
- Enterprises need to continuously track the service provider landscape to identify the right set of partners that align with their business objectives
- Enterprises need to collaborate with engineering services vendors to build strong governance mechanism that mitigate risks of outsourcing as well as define metrics to measure success of such engagements

# This study offers a deep dive into the key aspects of quality management in engineering services; below snapshots illustrate the depth of analysis of this report

## Implications for failure of quality management

	<b>Toyota Corolla/Yaris, Toyota (2016)</b> Toyota, one of the world's biggest carmakers had to recall more than 5.8 million cars worldwide over potentially faulty air bags installed in them, made by supplier Takata
	<b>Galaxy Note 7, Samsung (2016)</b> Soon after its launch on August 2016, many units started exploding due to faulty battery when put to charge and the company had to stop sales and then completely abandon the product within two months of its launch
	<b>Nissan Maxima/Altima, Nissan (2016)</b> Nissan had to recall over 3 million cars on account of software failure, which was due to a glitch in the airbag's sensory detectors that lead to incorrect detection of an adult as a child or classify the seat as empty, thus turning off the air bag safety
	<b>FitBit Force, FitBit (2014)</b> FitBit Force, a popular activity-tracking device caused skin irritation and severe blisters which resulted in a class-action lawsuit against the company in California

**Implications for failure of QM**

- Loss of consumer trust
- Loss of revenue
- Loss of credibility

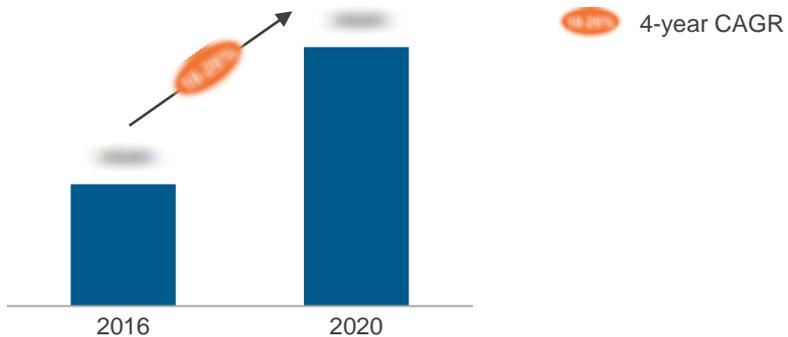
## Quality management is evolving given digital transformation

<b>Automation testing</b> <b>It is applicable for both hardware and software product testing</b> <ul style="list-style-type: none"> <li>To test fast changing diverse scenarios</li> <li>It helps to simulate the physical environment, enabling speedy and easier testing</li> <li>Helps to cut down hardware costs</li> </ul>	<b>Real-time testing</b> <b>To test usability of the product</b> <ul style="list-style-type: none"> <li>It mainly includes field testing</li> <li>It helps to identify uncertain problems, which is not possible in a simulated environment</li> <li>It is an important measure for customer experience</li> </ul>
<b>To test the reliability of the product</b> <ul style="list-style-type: none"> <li>It tests the product in different usage conditions</li> <li>It checks whether the data is being collected and stored accurately at service disruption</li> <li>It also tests for connectivity and interaction with other devices</li> </ul>	<b>To test the safety and security of the product</b> <ul style="list-style-type: none"> <li>As a greater number of devices interact, more robust security tests have to be conducted in order to protect data breaches, hacks, and attacks</li> <li>It is important for product brand image and customer satisfaction</li> </ul>
<b>Performance testing</b>	<b>Security testing</b>

**Dedicated and specialized QA teams**

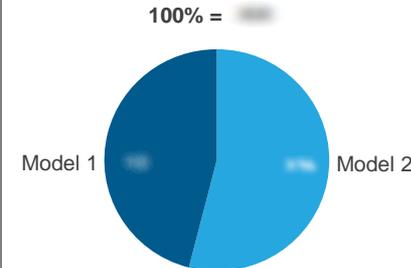
- These focused teams are aligned towards business needs with defined KPIs
- More and more companies are moving towards dedicated test centers and teams

## Growth of global sourcing industry for quality management – supply-side revenue (2016-2020E; US\$ billion)

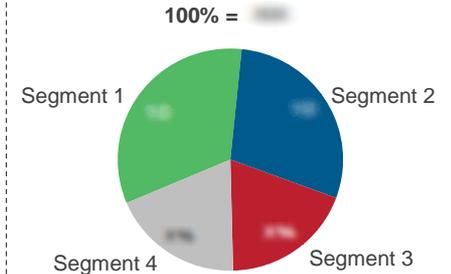


## Size of the quality management global outsourcing industry

ES global sourcing quality management industry by sourcing model 2016; US\$ billions



ES global outsourcing quality management by industry vertical 2016; US\$ billions



# This report covers four industry clusters comprising 13 industry segments that account for over 90% of the annual global engineering services spend

We use the following taxonomy to define industry clusters and segments in our research

Cluster	Segment	Definition
 <b>Software</b>	<b>Software products</b>	Development, testing, and maintenance of software products
 <b>Mechanical</b>	<b>Automotive</b>	Design, manufacturing support, and operations support for automobiles, motorcycles, trucks / heavy engines, and their engineering systems
	<b>Aerospace and defense</b>	Design, manufacturing support, and operations support for aircraft, space craft, and their engineering systems
	<b>Marine</b>	Design, manufacturing support, and operations support for boats, ships, other marine vessels/vehicles, and their engineering systems
 <b>Hi-tech</b>	<b>Semiconductors</b>	Design, development support, and engineering services for embedded systems and semiconductor devices
	<b>Telecom</b>	Design, manufacturing support, and operations support services for telecom and networking equipment (routers, switches, modems, etc.)
	<b>Consumer electronics</b>	Design, manufacturing support, and post-production support for direct-consumer equipment and appliances
	<b>Computing systems</b>	Design, manufacturing support, and support services for computer hardware and accessories (Bluetooth peripherals, chipsets, etc.)
 <b>Industrial and energy</b>	<b>Industrial, energy, chemicals, and natural resources</b>	Design, development support, and operations support for industrial, energy, chemical production, and natural resources sectors

Source: Everest Group (2017)

# Glossary of key terms used in this report

Term	Definition
API	Application Programming Interface is a set of functions and procedures that allow the creation of applications which access the features or data of an operating system, application, or other service
CAGR	Compounded Annual Growth Rate refers to year-over-year growth rate over a multiple-year period. Formula used : $CAGR = (Ending\ Value / Beginning\ value)^{(1/number\ of\ years)} - 1$
ER&D	Engineering and Research and Development include all activities involved in the development of a new product – hardware or software
GIC	Global In-house Center
Global sourcing / offshoring	Transferring business process activities or its complete ownership to a different country where the company receiving the service is located, is referred to as offshoring or global sourcing
IoT	Internet of Things is the internetworking of physical devices, vehicles, buildings and other items through sensors, software, and network connectivity
KPI	Key Performance Indicator
PAT	Portable appliance testing (PAT) is the term used to describe the examination of electrical appliances and equipment to ensure they are safe to use
Service provider	A company/entity that provides outsourcing services to another company/entity
TaaS	Testing as a Service (TaaS) is an outsourcing model where companies outsource some of their testing activities to service providers rather than their employees

# ES research calendar

■ Published
 ■ Current

Topic	Release date
Innovation Beyond Borders – Global Talent Hotspots for Engineering Services and Research & Development (ER&D) .....	August 2016
The Evolving Demand Paradigm in the Engineering and Research and Development (ER&D) Services Industry .....	November 2016
In Pursuit of Product Excellence: Quality Management in the Engineering Services Industry .....	May 2017
Identifying the Right Partners for Quality Management in the Engineering Services Industry – Service Provider Landscape .....	May 2017
Reimagining Design Thinking for the Human-Machine Nexus in the Global Connected Ecosystem .....	Q2 2017

# Additional research references

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The following documents are recommended for additional insight on the topic covered in this report. The recommended documents either provide additional details on the topic or complementary content that may be of interest

1. **The Evolving Demand Paradigm in the Engineering and Research and Development (ER&D) Services Industry** ([EGR-2016-0-R-1977](#)); 2016. This report provides an overview of the ER&D services industry. It covers demand trends in ER&D services industry across different industry verticals and global sourcing trends across major ER&D segments
2. **Innovation Beyond Borders – Global Talent Hotspots for Engineering Services and Research & Development (ER&D)** ([EGR-2016-2-R-1865](#)); 2016. This report provides an in-depth view of the ER&D global sourcing industry from a talent perspective. It covers the global distribution of ER&D talent and cost competitiveness of leading global sourcing locations providing readers with an up-close view of global talent “hotspots” for various ER&D segments
3. **Creating Enterprise Wealth with IoT** ([EGR-2016-4-V-1867](#)); 2016. This report examines the rationale behind IoT adoption and the different moving parts of the enterprise for each category

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## About Everest Group

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