

ENGINEERING GROWTH

How to Assess the Value and Performance of a Global Engineering Center

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INTRODUCTION

Global Engineering Centers (GECs) are the in-house service delivery engines that conceive, design, build and deliver a company's products and engineering services. They are typically organized into geographically dispersed hubs and can consist of as few as 30 to as many as one thousand or more engineering resources and scientists. A GEC will generally serve a single industry vertical, but those that are set up as part of a conglomerate may sometimes serve multiple industry verticals.

GECs serve enterprises across a wide range of industries, including aerospace, automotive, telecommunications, semiconductors, computing systems and software/application products, consumer electronics, medical devices, energy, infrastructure, industrial automation, construction and financial services. The products and services they design and deliver are as wide-ranging as the industries they serve. GECs produce aircraft engines, automobiles and their many sub-systems, communication networks, smart phones, software products, laptops, servers, navigation systems, medical devices and health monitoring equipment, among many others.

Enterprises that invest in GECs need to drive value from their operations and service delivery. This white paper explores ISG's method of assessing GEC performance by gauging its effectiveness and value delivery across one set of categories and its cost efficiency and productivity across another. By creating a baseline that fully evaluates current operations, the GEC Value Assessment enables an enterprise to identify their gaps in performance and define a plan for targeted, transformational and ongoing improvement.

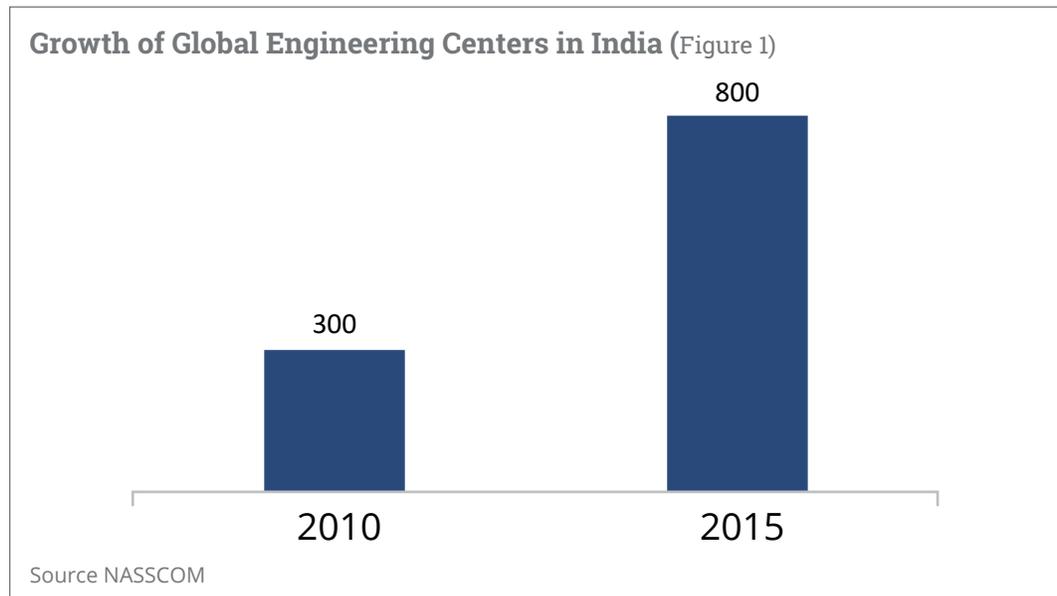
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GLOBAL GROWTH OF GECs

GECs have become an increasingly popular service delivery option for large enterprises that provide in-house engineering services and products to their markets and their end customers directly. In fact, the growth rate of new GECs now outpaces that of IT services. The third quarter of 2015 showed particularly strong growth in the U.S., India, China and Singapore.

Significant growth of GECs is nothing new. Except for the slowdown during and immediately after the financial crisis of 2007 and 2008, GECs have been growing rapidly in India and China for the last decade and more recently in other markets around the world, including the U.S., Canada, Europe, Singapore, South Korea, Vietnam, Australia, Brazil and Mexico.

According to The National Association of Software and Services Companies (NASSCOM), the number of GECs in India in 2010 stood at approximately 300. This was after half a decade in which the number of engineers serving GECs and engineering service providers (ESPs) more than tripled. Just five years later, NASSCOM is now reporting approximately 800 GECs in India. As seen in Figure 1 below, the number of GECs in India increased by 2.7 times during a period generally characterized by slow global economic growth.



The growth in GECs from 2010 to 2015 has not been limited primarily to India and China, as it had in earlier years. GECs have been growing globally in lock step with the continued growth of the worldwide engineering services market. To some extent, this growth is a result of the need to position engineering services resources closer to, or within, end markets. Another contributor to global GEC growth is the drive to localize products and to decrease the time it takes to get a product to market.

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Is this dramatic growth sustainable? Will it continue globally? GEC growth, together with ESP growth, will mirror the ongoing robust global market growth of engineering services. However, success for both GECs and ESPs will depend on the evolving, value-driven relationship between these entities. Read more about these partnerships in my recent blog post, [Going from Good to Great: Engineering Services Partnerships can Increase Value](#).

GEC VALUE DEFICIT

Although the ongoing growth of GECs has been impressive over the past decade, especially in India and China, this rapid growth has brought with it deficiencies in both strategic and operational performance. Many enterprise clients claim their GEC operations suffer from either one or both of the following:

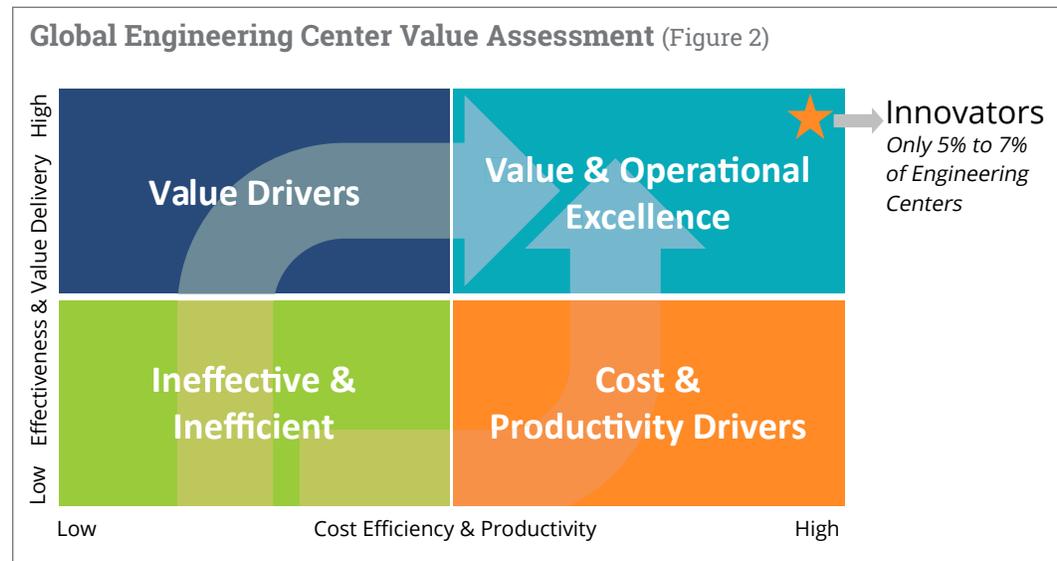
1. Insufficient effectiveness and value delivery.
2. Insufficient cost and productivity performance.

While the majority of enterprise clients need to drive greater value from their GECs, they also have a strong secondary goal to improve operational excellence, i.e., greater cost and productivity performance, in the engineering services market. Sustainable and successful GECs will typically migrate and evolve along one of two paths: either their primary focus will be on effectiveness and value delivery, or cost efficiency and productivity. Some will predominantly follow one transformation path and dip as needed into the other path to enhance value delivery or provide greater efficiencies to the company's bottom line. The two kinds of GECs are as follows:

1. **Effectiveness & Value Delivery GECs:** These GECs are focused primarily on enhancing and evolving the overall business value they provide to internal company operations or directly to the market. They increase operational efficiency incrementally without disrupting the current value delivery model. These GECs leverage deep expertise and intellectual property in business and technology, along with value-added services provided by highly skilled employees.
2. **Cost Efficiency & Productivity GECs:** These GECs focus primarily on continuously improving cost efficiency and productivity in a constrained tradeoff with higher value capability and services. These GECs achieve cost competitiveness through growth, critical mass and automation. They operate out of a culture of cost-containment and productivity increases; use strong measurements, systems, and controls; leverage automation, standardization, and process maturity where possible; and appropriately align human resources to workloads for optimal productivity.

HOW TO ASSESS GEC VALUE

ISG assesses GECs for market performance by evaluating their ability to execute operations and deliver products and services. ISG's GEC Value Assessment tool, as depicted in Figure 2 below, uses both qualitative and quantitative techniques to map GECs to four quadrants that reflect degrees of effectiveness, value, cost efficiency and productivity. From this baseline assessment, we help enterprises develop a transformational roadmap to drive greater value delivery, operational excellence, or a combination of both.



The GEC Value Assessment tool measures GEC performance by mapping effectiveness and value delivery along one axis and cost efficiencies and productivity along the other. The four quadrants are defined as the following:

- 1. Ineffective & Inefficient:** These GECs deliver ineffective value at inefficient costs and productivity. They perform below expectations and fall short of market-average benchmarks. Characteristics of GECs performing in this quadrant include above-market costs of operations for value delivered, underperforming productivity, and uncompetitive speed to market for product design and delivery, and lower-valued skills.
- 2. Value Drivers:** These GECs are increasing their value delivery with effective operations through higher-end skills and capabilities and continuous improvement of the quality of their products and services. These operations may be trading off cost efficiencies and productivity for value delivery or may be improving marginally with cost efficiencies and productivity as their value delivery is increasing.



- 3. Cost & Productivity Drivers:** GECs in this quadrant focus on continuously improving and evolving their cost and productivity to achieve above-market performance. They are continuously improving cost of operations, productivity, process maturity and speed to market for product design and delivery. They may be trading off degrees of effectiveness and value delivery for costs and productivity performance measures, or improving marginally their value delivery as their cost efficiencies and productivity improves.
- 4. Value & Operational Excellence:** These GECs may have taken either of the paths marked in the above graphic, but they have, ultimately, balanced performance improvements with overall value and operational performance. These GECs typically have effective and efficient operations that drive operational excellence and innovation. They are achieving high-value delivery, satisfactory and improving productivity, and highly competitive speed to market in the delivery of products and services.
 - **Innovators:** These GECs are a small subset of the Value & Operational Excellence quadrant. They have a culture and operating model that are consistently modifying and transforming with new processes, automation, tools, techniques, products and services. Like the path taken by GECs to the Value & Operational Excellence quadrant, GEC innovators may favor innovation from an Effectiveness and Value Delivery focus or they may favor innovation from a Cost Efficiency and Productivity focus with ongoing significant improvements.

Only about 10-15 percent of GECs currently perform in the Value & Operational Excellence quadrant. Only 5-7 percent of all GECs qualify as true innovators of service delivery. Approximately a quarter of the GECs perform in the Value Driver quadrant and another quarter performs in the Cost & Productivity quadrant. The remaining third of the GECs performs in the Ineffective & Inefficient (lower left) quadrant; these require an assessment and transformation plan to deliver greater value or efficiencies.

HOW TO ASSESS GEC PERFORMANCE

To effectively assess its effectiveness/value delivery and cost efficiency/productivity, a GEC must measure its performance across 20 categories, give or take a few depending its charter, strategy, justification, goals, performance objectives, products and services, and other relevant performance criteria. Of the 20 foundational categories, ten relate closely to effectiveness and value delivery and ten relate closely to cost efficiency and productivity.



The following are the ten key effectiveness and value delivery categories and the scope of each:

- 1. Service & Product Value:** This category assesses all of the engineering services and products provided along the engineering services value chain, from basic to advanced and from simple to complex, with higher-functioning value to the end customer.
- 2. Business Alignment & Expansion:** How aligned are the services and products to the business's evolving requirements and demands? Can the services and products expand as required by the business?
- 3. People & Skills/Capabilities & Expertise:** This category assesses the skills, experience and competency of the human resources involved in delivering products and services across the engineering services value chain and its verticals.
- 4. Vertical Industry Coverage:** What is the depth and breadth of vertical industry coverage of the GEC's people resources? What are the capabilities, skills, experience and expertise across the engineering services value chain and the demonstrated capabilities to deliver value through products and services?
- 5. Speed to Market:** What is the overall speed and duration—including the maturity of the methodology, tools, processes, procedures and results over time—to bring new or modified products and services to market through the lifecycle product and service delivery methodology?
- 6. Quality:** This category measures all quality-related programs, processes, systems, and procedures across the products and services delivered in the engineering value chain.
- 7. IP & Knowledge Resources:** What processes, systems, procedures and policies effectively capture, develop, maintain, evolve, share and leverage the services and products across the engineering services value chain?
- 8. Application Business Alignment:** How well do the GEC's internal application systems support the business processes, functions, integrations and requirements?
- 9. Security and Business Continuity:** This category assesses all security and business continuity processes, systems, policies, operations, validation and coverage across the development and delivery of engineering services and products.
- 10. Effectiveness Innovation:** Does the GEC demonstrate and continuously apply information, knowledge, imagination and initiative to the development of new ideas that result in significantly more value for new or enhanced products and services?



The following are the ten key cost efficiencies and productivity categories and the scope of each:

- 1. Financial Cost Management:** This category assesses all of the financial tools, processes, procedures and deliverables and measures their impact on operations.
- 2. Service Delivery & Scalability:** Does the GEC have the people, skills, facilities, infrastructure, tools, processes and procedures that can scale up and down efficiently and productively over time based upon demand?
- 4. Product Life Cycle:** How efficient are the processes that integrate resources—including people, skills, facilities, infrastructure, methodologies, tools, processes and procedures—across the product lifecycle? How well do they meet product lifecycle objectives in terms of cycle time, time to market, costs and quality?
- 5. Productivity:** How does the GEC compare to the market in its ability to design, build, validate, distribute and process products and services at a sustained rate?
- 6. Process & Standardization Maturity:** How defined, standardized and optimized are the processes being utilized by the GEC across the product lifecycle?
- 7. Transition Maturity:** How mature are the processes needed to design, build and deploy new services or modify existing services? What is the process for educating and validating the transfer of services to third-party service providers?
- 8. Infrastructure Maturity:** This category assesses the capabilities and flexibilities of the infrastructure technology systems, including cloud, social, mobile and analytics, and how they are being used to continuously optimize services.
- 9. Governance & Organization Management:** How effective are the governance policies, processes, systems, reporting, standards, roles and resource allocation in governing the GECs?
- 10. Performance Management:** How well defined are the key performance metrics and service level agreements? Are they aligned with the business objectives? And to what extent do the systems, tools, measurements, processes, procedures and reports support the continuous improvement of current operations, including third-party service providers?
- 11. Efficiency Innovation:** Does the GEC demonstrate and continuously apply information, knowledge, imagination and initiative to the development of new ideas that result in significantly more efficiency as it relates to new or enhanced products and services?



When an enterprise completes a qualitative and quantitative assessment of these 20 foundational categories, they must then analyze and determine new GEC category performance targets and develop a transformation plan to achieve those new targets.

Further maturity gains include integrating additional GECs into the transformation process across the portfolio of GEC operations, along with integrating service providers into the overall engineering services global service delivery model with the long-term goal of sustaining the improvements over time.

CONCLUSION

The rapid growth and global expansion of GECs over the past decade and the parallel growth of the engineering services market is likely to continue into the near future. Over this time, enterprises that are eager to see their GECs deliver greater value and operational excellence will have plenty of opportunity to encourage and seek continuous improvement with their GEC operations. The first step is to assess GEC performance. This will become the baseline from which new GEC performance targets can be defined. The next step is developing a well-engineered transformation planning and execution program so a GEC can meet and even exceed its performance targets, while setting out on a path and program for continuous improvement.

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Information Services Group (ISG) (NASDAQ: III) is a leading global technology research and advisory firm. A trusted business partner to more than 700 clients, including 75 of the top 100 enterprises in the world, ISG is committed to helping corporations, public sector organizations, and service and technology providers achieve operational excellence and faster growth. The firm specializes in digital transformation services, including automation, cloud and data analytics; sourcing advisory; managed governance and risk services; network carrier services; technology strategy and operations design; change management; market intelligence and technology research and analysis. Founded in 2006, and based in Stamford, Conn., ISG employs more than 1,300 professionals operating in more than 20 countries—a global team known for its innovative thinking, market influence, deep industry and technology expertise, and world-class research and analytical capabilities based on the industry’s most comprehensive marketplace data. For additional information, visit www.isg-one.com.

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