

ROBUST GROWTH FOR ENGINEERING  
SERVICES OUTSOURCING

# Spend Shifts to Emerging Markets; Captives Reassessed

Jim Routzong, ISG



## INTRODUCTION

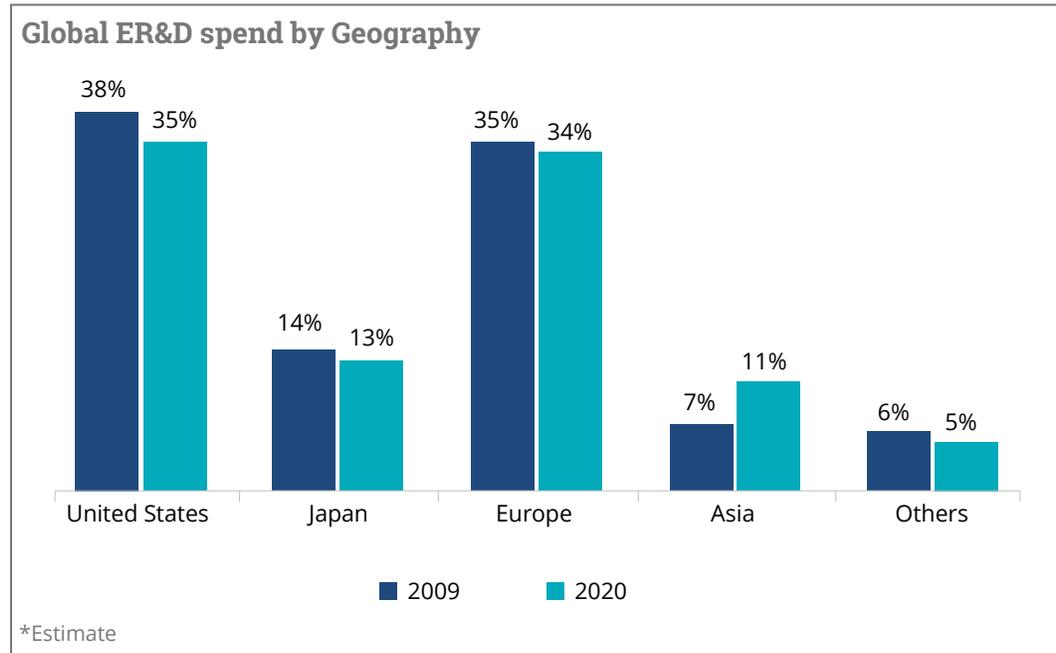
The Engineering Services Outsourcing (ESO) market has witnessed substantial growth in recent decades, and has evolved to encompass a broad range of new product development, value-engineering and engineering consulting functions. At a global level, ESO spend is shifting proportionally from mature to emerging markets, primarily to India. Captive operations have also grown significantly in India and China. Both trends reflect underlying dynamics of the global sourcing market.

Today's businesses, driven by cost reduction and product lifecycle pressures, are increasingly focused on developing effective outsourcing strategies that drive significant improvement in global engineering and R&D operations. Clients assessing their options require a clear understanding of existing environments in the context of industry standards, as well as a view into the risks and benefits of alternative change scenarios.

This ISG white paper examines market trends and factors contributing to the continued rapid growth of ESO. The author focuses on key success factors for clients and service providers seeking to evolve their relationships to maximize value from ESO initiatives.

## MARKET TRENDS

Since the 1980s, ESO has expanded from basic scanning and digitizing engineering drawings to the outsourcing of new product development, value-engineering and engineering consulting. Market sources estimate that global spend on engineering services was around \$930 billion in 2012, and will reach \$1.4 trillion by 2020 – a 50 percent growth in less than a decade.



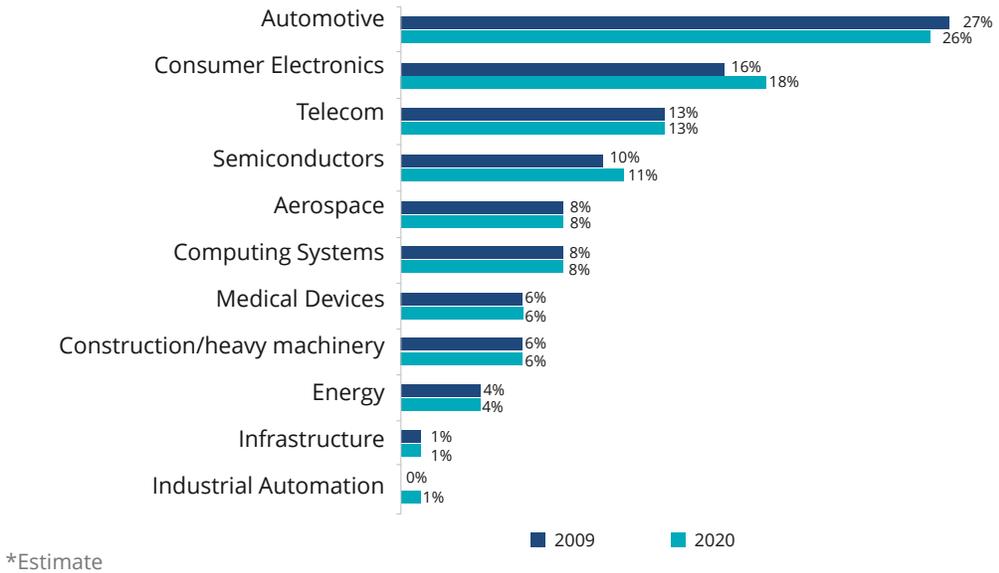
Outsourceable spend on engineering services stood at around \$325 billion in 2012, with offshored spend comprising around \$100 billion, or approximately 10 percent of the total market. Total outsourcing spend on engineering services is estimated to be growing 3-4 times the rate of total spend on engineering – an indicator of growing propensity to outsource engineering services.

## EMERGING MARKETS

Another key trend is a continued shift in the overall allocation of spending from the mature markets to emerging markets. The United States, Europe, and Japan collectively account for over 85 percent of the total spend today, but are likely to see their collective share drop by 5 percent by the end of decade, with the emerging markets of Asia expected to gain the most from this market shift. Asia (excluding Japan) is expected to account for approximately 11 percent of the total global engineering services spend by 2020. The spending shift from mature markets into emerging will impact the United States the most, followed by Japan and to a lesser degree Europe.

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### Global ER&D spend by Vertical



Engineering services spend by industry vertical has been led by the automotive sector, which accounts for a quarter of global spend. Automotive OEMs and suppliers are the largest spenders of Engineering Research and Development (ER&D), driven by the need for superior performance, safety, reliability and fuel economy. Consumer electronics and telecommunications firms seeking shorter product lifecycles and technology innovation are the next largest spenders of ER&D. The proportion of ER&D by vertical is expected to remain stable through the end of this decade.

Companies are increasingly turning to outsourcing as a strategy to improve their global ER&D operations. ISG has identified seven key factors driving this trend (shown below), with cost reduction pressures and the need to shorten product lifecycles being the top priorities.



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**Increased need  
for access to  
global talent pool.**

ESO has evolved considerably due to increasing competitive pressure on companies, an ongoing tough economic climate, slowing growth of mature economies and constrained R&D skill capacity and budgets in mature markets. While cost pressures and speed to market are still the leading drivers of engineering outsourcing growth, customers are increasingly offshoring engineering services for access to the global talent pool to counter balance skills shortage in mature markets. Offshoring also provides flexible engineering resource capacity, allowing firms to scale up/down based on product lifecycle and demand while assisting in decreasing overall time to market.

Other rapidly evolving trends for ESO growth include ever-changing consumer preferences towards localized market in terms of customs, environment, and customer experience, the development of multiple function devices through embedded systems, and the ongoing convergence of technologies.

India's dominant position in the offshoring market has been diminishing as China and other emerging markets of Brazil, Mexico, Russia, Hungary, Czech Republic, South Africa, Philippines, Malaysia, Turkey and Ireland emerge as preferred offshoring destinations for engineering services. ESO will continue to evolve along with the supplier market landscape, as emerging markets become more attractive to global customers seeking to address requirements related to cost reduction, time to market, responsiveness, changing market preferences and access to a global engineering talent pool.

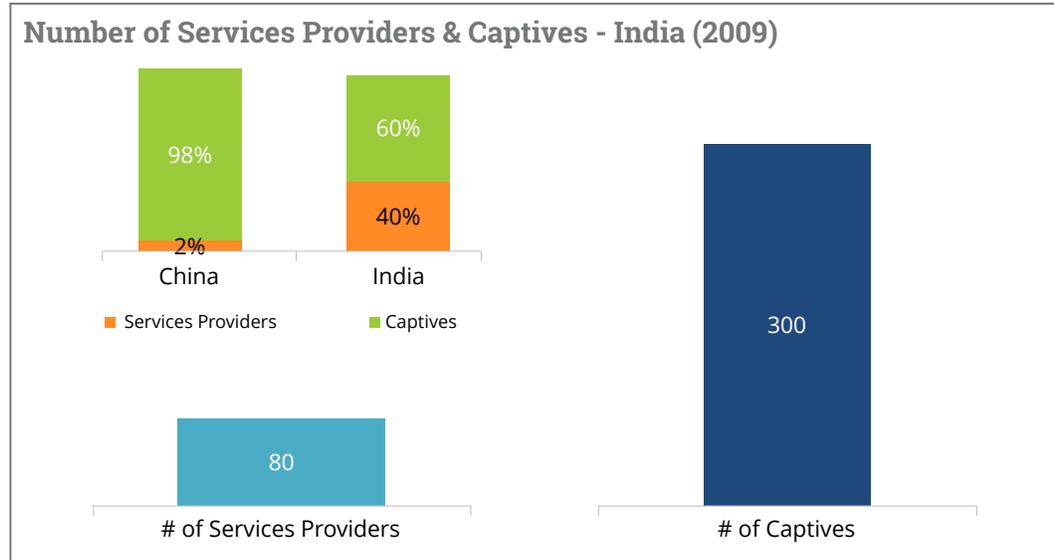
## **GROWTH OF CAPTIVES**

Another significant trend over the past decade has been the growth of engineering services captives, primarily in India and China. Over 300 engineering services captives have emerged in India; these operations account for 50 percent of the engineering services market spend there, with the remaining 50 percent share held by Indian and multi-national service providers. China is currently dominated by captives with service providers just beginning to gain share and momentum.



**Slowdown  
in growth of  
engineering  
services captives.**

However, ISG is seeing a slowdown in the growth of engineering services captives as organizations begin to recognize the need to improve the productivity, capabilities and effectiveness of this model. Operational assessments and market-based benchmarking initiatives have yielded significant improvements in captive ADM, BPO and ITO operations over the past decade. ISG anticipates similar optimization strategies will emerge in the engineering services market, as organizations recognize the potential value of improving captive assets, as well as the value of the service provider model as a higher value and more cost effective alternative to the captive model.



### SOURCING SUITABILITY

As does any initiative, outsourcing ER&D services requires determining which functions are to be sourced to a service provider and which are to be retained by the client organization. Sourced versus retained decisions are typically determined by what is “core” versus “non-core”, or what is essential or most critical in terms of success versus what isn’t essential or critical to the client in a particular industry. The sourced to retained mix is then mapped against the service providers’ capabilities, strengths, depth, vertical expertise, scale, global footprint and value propositions to ascertain whether they would meet the objectives of those functions.

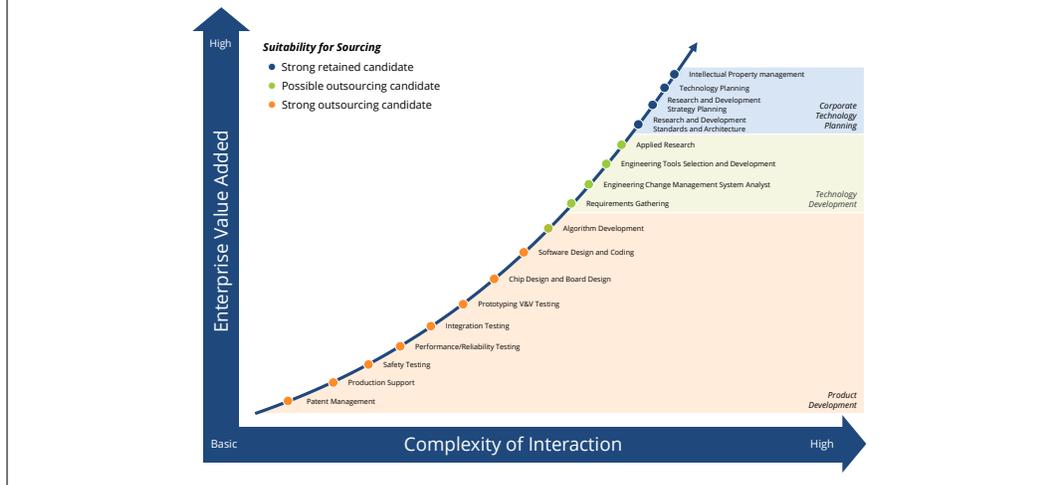
Within ER&D services, product development methodologies and product life cycles differ by vertical industries and products. At an aggregate level, the engineering services product development life cycle can be classified into two different product development work flows:

1. R&D/Engineering Services for Electronics, Software, and Embedded Software Product Development.
2. R&D/Engineering Services for Mechanical and Hardware Product Development.

The sourced versus retained decision process varies considerably for these two work streams.

Chart 1 (next page) shows an example of ISG recommendations for a sourced vs. retained mix for functions within R&D/Engineering Services for Electronics, Software, and Embedded Software Product Development.

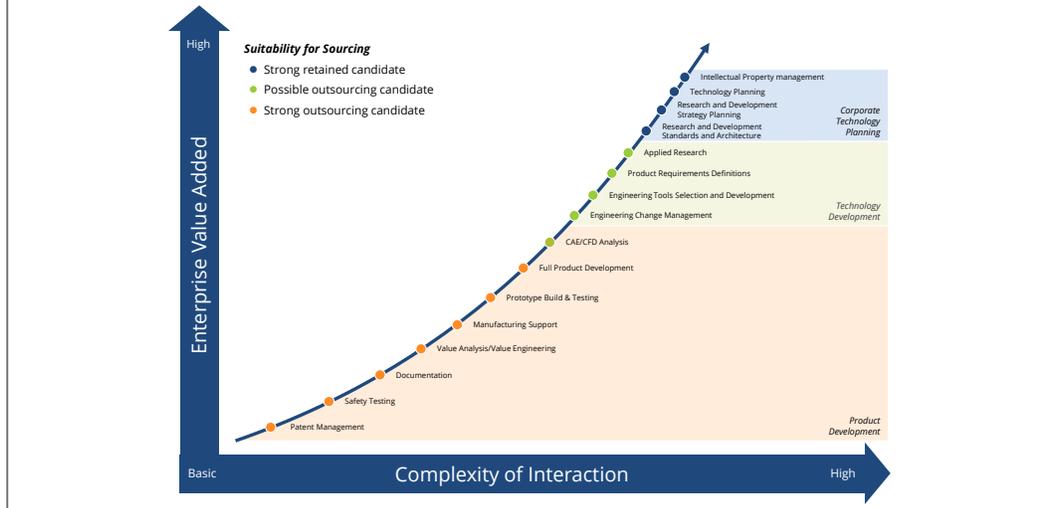
**Chart 1: R&D/Engineering Services for Electronics, Software and Embedded Software Product Development**



In recent years, service provider capabilities and services have evolved quickly across the R&D/Engineering Services for Electronics, Software and Embedded Software Product Development life cycle and value chain. Service providers have expanded their foundational strengths in software development and testing services by building/investing additional capabilities in vertical domain knowledge and expertise and technical competencies. As a result of these enhanced capabilities, the range of functions that are strong candidates for outsourcing has expanded.

Chart 2 (below) represents ISG’s sourced vs. retained recommendations for R&D/Engineering Services for Mechanical and Hardware Product Development. Since mechanical engineering services require much higher domain expertise by vertical industry, relatively fewer strong outsourcing candidates appear.

**Chart 2: R&D/Engineering Services for Mechanical and Hardware Product Development**



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While service provider capabilities have historically been limited to the engineering documentation function, over the last five years they have expanded for value analysis/value engineering (VA/VE) across all verticals. In addition, providers now offer full services for Computer-Aided Engineering/Computational Fluid Dynamics (CAE/CFD) analysis, Full Product Development, Prototype Build and Testing and Manufacturing Support across nearly half the industry verticals.

Although service provider capabilities and service offerings have grown significantly, outsourcing growth in mechanical and hardware product development remains half that of electronics, software, and embedded software product development. The main reason is that the former requires far more specific vertical industry and domain and product expertise. For these reasons, the growth trajectory for mechanical and hardware product development is anticipated to always lag behind electronics, software and embedded software development product development.



**Note: I believe "ESO outsourcing" is redundant (Engineering Services Outsourcing outsourcing)**

### SUMMARY

ISG anticipates continued rapid growth of ESO outsourcing as clients and service providers seek to evolve their relationships and move up the value chain of engineering services. Key characteristics and trends in today's ESO market include:

1. Current global spend on engineering services (\$930 billion in 2012) is expected to reach \$1.4 trillion by 2020 – a 50 percent growth in less than a decade.
2. Total *outsourcing* spend on engineering services is estimated to be growing 3-4 times the rate of total spend on engineering.
3. Allocation of ESO spend is shifting from the mature to emerging markets, with Asia expected to gain the most from this shift.
4. Captive operations have grown significantly, although the rate of that growth is slowing as clients begin to recognize the need to optimize and focus on improving captive operations and begin to explore service provider options.
5. An increasing number of ER&D functions will be outsourced as service provider capabilities expand. However, functions that require a high level of specific industry and domain expertise will remain primarily retained.

## ABOUT THE AUTHOR

### **ROBUST GROWTH FOR ENGINEERING SERVICES OUTSOURCING Spend Shifts to Emerging Markets; Captives Reassessed**

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#### **JIM ROUTZONG**

Director, Manufacturing Vertical

Jim is an expert in engineering services, applications outsourcing, IT infrastructure outsourcing, restructuring/re negotiations and business process outsourcing. Clients benefit from his communication, leadership and global relationship management skills. Jim works with enterprises to assess sourcing contracts, evaluate sourcing and service delivery solutions, manage and negotiate contracts, manage transitions and ongoing relationships for engineering services, applications and IT infrastructure and finance and administration BPO solutions. Jim has led or participated in more than 40 engagements over the past decade across many diversified clients and global industries from vehicle and high-tech manufacturing to retail, energy, financial services, biotechnology, and media and entertainment. Jim has extensive engineering services experience and was responsible for researching and justifying ISG's entry into the engineering services market place. Jim has a degree in Chemical Engineering and a Master in Business Administration and is ITIL Foundation v3 certified.



## ABOUT ISG

**ISG (Information Services Group)** (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 more information, visit [www.isg-one.com](http://www.isg-one.com).

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