

# GLOBALLY DISTRIBUTED WORK – SOFTWARE PRODUCT ENGINEERING PERSPECTIVE FOR LARGE PRODUCT COMPANIES

Bhaskarjyoti Das  
Sun Microsystems India Engineering Center  
Bangalore, India 560025  
Bhaskarjyothi.das@sun.com  
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## ABSTRACT

What are the key issues in Globally Distributed Engineering for software products and what are the critical success factors ? This paper examines the key challenges and presents a framework. With the cost advantage fast becoming secondary, globally distributed engineering is now moving to the twin focus of “time to market and product innovation”. This aligns well with the fact that the emerging economies are fast becoming an increasingly large part of the product revenue of technology product companies. The “value contribution” is increasingly becoming as important (if not more) as the “cost and resource advantage” in the remote engineering centers. The best practices are still evolving as the Globally Distributed Product Engineering makes a gradual shift from “sustaining products in a cost-effective way” to “globally distributed product teams” making a difference by innovation and time to market on a global scale.

## AUTHOR

The author has been working with Sun Microsystems India Engineering center for last 6+ years and has set up more than one product engineering teams in this center.. He has 20+ years of experience in Indian IT industry and has been involved with globally distributed software product engineering for last 8+ years. The framework presented is from his experience as a practitioner.

## THE KEY ISSUES

A product company may decide to globally distribute it’s product engineering function for diverse reasons such as cost, availability of talent, proximity to the emerging market and customer base, proximity to developer population etc. Once this decision is made, engineering management needs to answer few key questions right at the beginning.

These key determinants in globally distributed engineering are :

1. Which products in the product portfolio are most suitable for globally distributed engineering ?
2. What are the different R&D work streams for globally distributed engineering ?
3. How the product charter will be divided amongst the globally distributed teams ?
4. What are the different stages of maturity of a globally distributed engineering team ? What will be the initial stage and what will be the target stage ?
5. What should be the competency focus for the remote engineering teams ?
6. What should be the dashboard for managing globally distributed engineering ?
7. Having decided the products, the work streams, target team maturity, distribution of charter, competency focus and the management dashboard, how the organization should be set up for success ?
8. How does the size of the engineering organization affect globally distributed engineering ?

The paper shares a framework for the above.

features. However, this mode of distribution requires effective “linkage roles” and success in this case depends on the quantity/quality of communication between the teams

- In actual life, it usually is a mix of the above i.e. remote teams may own certain full life cycle stages for all features while owning specific life cycle stages for certain versions or certain features

## 5. MATURITY STAGES OF GLOBALLY DISTRIBUTED TEAMS

Having decided the remote R&D work streams, the engineering management should consider the maturity stages of the remote engineering teams. Typically, the remote engineering team will transition from one stage to the next with passage of time.

1. Remote Team executes the tasks assigned by the parent team. The team members have an engineering manager who is not located with the team and is in a different time zone.
2. Remote Team executes the tasks assigned by the parent team but has a local engineering manager as a project manager and “linkage device”.
3. Remote Team owns a project plan for the tasks executed in the remote center but does not own the overall product engineering plan. The remote team’s engineering manager coordinates with the Parent team’s program manager managing the release
4. Remote Team owns the Program plan and the Program manager is also from the remote team. At this stage, the remote team is entirely responsible for the Time To Market of the product but does not work with the extended function like product management/marketing etc. Functional management still stays with the parent team to provide that linkage.
5. The remote team has the functional management and thought leadership. It manages the product program and works with the customer facing functional teams like product management, sustaining, marketing etc

The attrition risk and the maturity stages have a close correlation. It is observed that teams start to innovate once they reach the stage 3 and above ; team becomes a happy innovating team in stage 5. It is also observed that a key cause for attrition is the inability of the remote engineering team to transition from one stage of the above maturity model to the next. As the teams move to higher stages of maturity, it encounters increasingly lesser attrition risk and senior technical talents tend to stay with the team. Note that each of these stages means differently to different people. While a junior engineer may change job if the team fails to transition to stage 2, an architect or a senior manager may consider that if the team fails to transition to stage 5 !!

## 6. COMPETENCY FOCUS

The remote teams makes a faster transition through the above maturity stages if the management has a competency focus. Typically a large software product involves many competencies related to engineering skill, domain or technology. Typically, the distributed product engineering team gets started with a limited head-count budget and if the management focuses the approved head-count on a chosen competency instead of having bits and pieces of different things, the team quickly succeeds in making the above transitions. So, tasks around a competency should be followed by projects around the same and feature ownership around same competency should follow next. It finally leads to innovation around the same competency.

## 7. THE DASHBOARD

The dashboard is really about managing the globally distributed engineering team for success. The dashboard should ideally have the measures of success apart from monitoring the key processes. By monitoring both periodically, the engineering management can ensure progress and timely course corrections.

### The measures of success

The success parameters are a mix of both i.e. Innovation and execution. While innovation is important, execution is also equally important for the team as each product in the portfolio may require different percentages of both.

remote teams get demotivated while encountering issues such as attrition, instability, insufficient value contribution and the company fails to garner sufficient benefit out of the globally distributed engineering.

## **9. WILL IT BE THE SAME FOR ENGINEERING ORGANIZATIONS OF ALL SIZES ?**

The above framework is more in the context of large software multi-product companies having their own centers for globally distributed engineering. For a startup company with a simple organization structure ( with almost non-existent vertical or horizontal complexity), it is somewhat simpler as lot less influencing needs to be done. In a large company, some of the product teams may be operating like a startup and they may have similar advantages. For such groups, there is only one product to choose ; work stream is typically new product development ; team owns a complete life cycle component like QA or Development or is responsible for a feature end to end ; team maturity has to be in stage 4 or 5 ; people with existing competency have to be hired ; the team must achieve “time to market” faster than it’s competitors and should be able to tackle huge “time to market” pressure..

## **10. CONCLUSION**

So, building a large successful globally distributed product engineering team is both a management and leadership assignment. A proper understanding of the issues involved and ability to influence the larger engineering organization are paramount for success. Globally distributed product engineering works on the basis of shared understanding that the senior engineering managers achieve through active influencing by the leader.

In the present day reality of almost yearly corporate re-structuring by the technology companies, this dynamic equilibrium may frequently get disturbed and the leader advocating the globally distributed engineering has to re-influence to reach the common goals, awareness and commitment to the processes.

For the technology service companies having remote product engineering centers for the MNC product companies, the same set of issues apply with the additional complexity and challenge of integrating as a virtual part of the product company !