

Global OD
VIRTUAL TEAMS*

Vijay Padaki

The P&P Group, India

Deepak Padaki

Infosys Technologies, Ltd., India

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Infosys Technologies, Ltd., was in the vanguard of the software development revolution that swept across the Indian business scene in the eighties. The company continues to stay in the lead, matching growth in scale with innovations in management practice.

The software boom was undoubtedly one of the effects of the economic reforms in India that linked up the country to a networked global economy. Software development (SD) is best seen as that which makes the hardware work. SD is, therefore, complementary to hardware development, the two tasks being integrated in the larger task of technology development (see Figure 1).

The impetus for SD as we know it today came with the appearance of the micro-processor. Rapid advances in microprocessor technology itself resulted in wider applications, reaching more people through new products and services, and, therefore, accelerating demands for software development for the products and services to cater to these growing needs.

Distributed R&D

In contrast to earlier times, technology development in the post-microprocessor era, especially since the 1980s, has moved steadily towards breaking up the total task into component tasks and outsourcing them. This model of technology development can be called *distributed R&D*. It has been facilitated by the globalization process of the economic system. Indeed, the two processes can be seen as being mutually reinforcing. The SD subset of technology development appears eminently suited to a distributed arrangement.

Virtual Teams

The knowledge processing nature of the task in SD has led to yet another innovation within the basic team-based work setting: the virtual team structure. This refers to the interdependent functioning across its members without face-to-face interactions. Two broad types of virtual team structures have emerged in recent times:

1. *Virtual Teams*. Usually these are
 - more transaction oriented than person oriented
 - set up, utilized and disbanded in rapid project cycles, in short time frames
 - not necessarily with geographical separation of members
2. *Distributed (Global) Teams*. Usually these have
 - geographical separation of team members
 - team members working together over extended periods of time

In the context of Indian software services companies, teams are typically organized globally. The marketing functions of the team are performed in the target market (e.g., North America), and production teams are located in one or more centres in India. In the emerging scenario, production teams are being set up across several countries to tap locally available pools of talent. Customer support functions are performed by teams located close to the customer. This wide distribution of team members usually causes a duality in reporting structures—an extension of the matrix form of organization. Administrative reporting is handled within the geographical area and functional reporting takes place across geographical boundaries.

Given the high time-to-market pressures on the software industry, these teams need to set up quickly, function with high productivity levels in very short time frames, and then disband on project completion. Low availability of resources with the right technical skills puts a premium on the time that they can devote to team building activities. In many instances, these are shared across project teams. Typical project time frames range from four-week prototyping efforts to two or three year application deployment schedules.

The Project Experience

TeleWise, a communications technology giant in North America (name of company disguised), was the business partner of Infosys in a major SD programme. In a particular project within the programme, the principal requirement was a steep ramp up in resources within a short time frame to meet customer demands. More than 60 trained personnel were required immediately. Resource availability at any one location in such a short time frame was unrealistic, causing Infosys to split the project across two development centers in Mangalore and Bhubaneswar. Specialized resources had to be brought into the project from Bangalore from time to time to address certain parts of the customer's requirement. All through the project, another team worked at the customer location in California. The teams worked with each other on a day-to-day basis for over 3 years, though the team composition itself changed every few months due to business dynamics.

In this scenario of quite extensive distribution and virtualization of the team, the following challenges needed to be addressed:

1. Smooth integration of work items delivered by the various teams
2. Dealing with the insufficient experience levels within the teams to ensure stability, because sometimes teams are disbanded even before they reach functional equilibrium
3. Dealing with the tendency in team members to identify themselves by geography rather than assignment
4. Dealing with the reality of local socio-economic factors affecting optimal mobilization of resources

HRM Challenges and Lessons

Sharing the experiences of managing virtual teams in a national conference of HR Managers, the team from Infosys made the following observations. The tasks and challenges in managing virtual teams in SD organizations may need to be viewed in a multidimensional framework if they are to be addressed effectively.

Dimension 1: Location in the HRM System

It must be admitted that the greatest effort in HRM in Indian SD organizations goes into the Compensation and Benefits system (C&B). This is simply a reflection of a contextual reality. This preoccupation with filling slots and keeping them filled can have at least two serious consequences:

- Less attention to other procedural systems in the HRM chain
- Poor integration across the procedural systems that constitute the chain

Dimension 2: Location in the Staffing Structure

HRD inputs for effective teams can be at various system levels of the project organization:

- the individual team member
- the whole team
- the team leader
- the team of team leaders
- the project manager
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A well-conceived HRD plan must enable effective functioning at all of these system levels.

Dimension 3: Location in Realm

In addressing the question of the *origins* of challenges in HRM, we are likely to find at least three broad frames of reference relevant:

1. Psychological realm, e.g., the relevance of personality, job attitudes, motivation, and so on.
2. The socio-economic realm, e.g., the influence of class, family aspirations, community values, and so on.
3. The business-economic realm, e.g., the technology development imperatives, the partnership equation, and so on.

The three-dimensional framework proposed above may be neither complete nor perfect. It is simply a beginning for a more *strategic* perspective to HRM tasks in SD organizations. Piece-meal HRM inputs are generally unhelpful.

Lessons in Organization and Management

The Infosys project management team has also attempted to pose pointed questions for management practice from case experiences such as this one.

1. *Integration in Management*

If we accept that the technical/engineering process and the human/interactive process in SD teams are complementary, then it must be obvious that the tools and prescriptions of human resource management and those of project/line management in software development must also be complementary and mutually reinforcing. For too long these two management functions have

proceeded as parallel streams, artificially separated, occasionally in confluence, often at variance. What do we know about how to integrate them?

2. *A Systemic Perspective*

Teams in SD organizations may function in ways that appear radically different, but they are human organizational systems. Explaining their behaviours, predicting them, and, finally, managing them needs premises that are proven and reliable rather than flavour-of-the-month catchphrases—in other words, a scientific base. One such premise is from systems science and appears particularly relevant for SD teams. Can we catalogue the reasonably reliable theory-methodology premises for actual management practice?

3. *Towards a Dynamic Balance*

SD teams, especially in virtual structures, appear to have an urgent need to work towards a process that achieves a dynamic balance, i.e., innovation *while* conforming or conformance *while* innovating.

This has been attempted through a framework called *Common Come From* and brought into the team's periodic review-goalsetting cycles as part of project management. The essence of the *Common Come From* is in constantly going back and forth between agreed avenues of innovation/divergence and a set of parameters to guide the innovative explorations. The process is shown in Exhibit 1. While we have an empirical basis for our faith in the practice, is there a behavioural science basis to this?

4. *Team Maturation Level and Effectiveness*

We have experimented with a 5-stage Team Maturation Model to compliment the 5-level software process Capability Maturation Model (Software Engineering Institute). Which comes first? Team process maturation or software engineering process maturation, the chicken or the egg?

5. *Accelerating the Learning Curve in Virtual Teams*

It appears clear that SD in virtual contexts:

- must be carried out through team structures,
- must attain high levels of team effectiveness for the requirements of productivity and quality,
- must attain the required levels much faster than in many other team based work settings.

The challenge is formidable enough. To add even more pressure to the jobs of HR and project managers, there are the various contextual forces that retard the learning curve in teams, as seen in the case experiences. On the surface, the solution might appear to be in tighter conformance procedures, in both the technical/engineering and human / interactive processes. Is there sufficient research or data-based evidence to say what works best? The fear in most managers is that (a) the creativity will be stifled and (b) the more creative will leave. A fuller solution is waiting to be found.

6. *Value Premises in Management*

Every system of management—made up of methods, tools and techniques in practice—seems to have underlying assumptions of what *ought to be* the way of doing things in the organization. Many of these assumptions have implications in how people ought to relate to other people in the various roles played.

On the other hand, there is in every organization an existing culture—some traditions, conventions, outlooks, norms of conduct, ways of relating with others—that have their own *ought to* assumptions.

What do we know about how to ensure compatibility between organizational values and the management systems adopted? For instance, is participation a value or a management method? Is working in teams itself a value or a method?

7. *Camouflaged Alienation*

In the services software organization there is the distinct danger of an alienating work environment being the norm rather than the exception. This arises out of the very nature of distributed R&D in which the SD team is working on one component that is to be fitted into a larger whole by somebody else, somewhere else. Besides being cost effective, distributed R&D also controls ownership of intellectual properties very effectively. It is not at all uncommon for a software engineer in a services SD team to have no idea at all about the end product of the technology development mission to which s/he is a contributor.

This serious lacuna in the job *content* is compensated through several attractions in the job *context* – the “hygiene factors” of compensation, perks and lifestyle.

What can management of SD organizations do to arrest and reverse the alienation process?

8. *Understanding the Phenomenon of Mobility*

Software engineers have acquired the reputation of sprouting wings on their Reeboks. Organizations differ in their statistics of turnover rates. A 20 to 25 percent rate is not considered uncommon and does not raise eyebrows. Apart from the obvious costs involved in maintaining a staffing level with such turnover, it also amounts to an entirely new staff complement every 4 to 5 years. The impact on virtual teams then is even greater.

Have we understood the phenomenon of mobility wholly? Are our solutions piece-meal? Could they be aggravating the problem?

9. *Is there a Silver Lining?*

Indian SD organizations responded to the challenge of distributed R&D through innovations in organization form. The emergence of virtual teams may be seen as a natural outcome of the innovations. It must be recognized that, in spite of all the strains in managing operations, the system has worked. High levels of quality and reliability have been achieved, customer confidence has been built, and the sales and profitability figures for the industry have continued on the upward path.

Can we work towards a body of theory and methodology for effective virtual teams? What responsibility does OD have in each of the areas of concern outlined above?

*Given the context in which this case is set, the original spellings have been retained.

Figure 1

Development Model

