

# The 24-Hour Knowledge Factory: Work and Organizational Redesign and Associated Challenges

*Amar Gupta, University of Arizona and MIT, USA*

*Satwik Seshasai, IBM and MIT, USA*

*Ravi Aron, John Hopkins University, USA*

*Siddharth Pareek, University of Arizona, USA*

---

## ABSTRACT

*The term “24-Hour Knowledge Factory” connotes a geographically dispersed team of workers in which members of the team work on endeavors on a continuous basis. This work has five defining features: (i) the same body of work is processed sequentially and handed one unit to another; (ii) the handover of work is characterized by short cycle times and the frequency of handover is greater than in traditional offshore work; (iii) the functional units of the 24-Hour Knowledge Factory operate in a peer-to-peer relationship where each functional unit audits the work of other units; (iv) the knowledge transfer between the different work units and work history between units is effected through specialized mechanisms and a distributed human agency called the composite personae; and (v) the constituent units of the 24-Hour Knowledge Factory feature similar work capabilities, as opposed to the more traditional model of global teams where the distributed teams usually possess complementary work capabilities. The distributed units of the 24-Hour Knowledge Factory work on the same body of work and do very similar work; therefore, the units have nearly identical capabilities. The authors identify two sets of research issues surrounding this phenomenon that fall within the technical paradigm and the organizational paradigm of information systems.*

*Keywords: Accelerated Systems Development, Globally Dispersed Teams, IT Productivity, Strategic Reorientation*

---

## 1. INTRODUCTION

The term “24-Hour Knowledge Factory” connotes a globally distributed work environment in which members of the global team work in a sequential manner on a project around the clock; while each functional unit works during the normal day time hours for that particular region,

the team itself works around the clock with the work being handed from one constituent unit to another (Gupta, 2009a). For example, there could be three centers located in the US, Japan, and the UK, each operating from 9 am to 5 pm based on the respective local times, collectively providing round-the-clock coverage to clients. Such a work mechanism is contingent on the use of appropriate information technologies and methodologies (Gupta, 2009b).

DOI: 10.4018/irmj.2010100103

The software industry has been the pioneer in adopting the 24-Hour Knowledge Factory model. For example, the mobile industry firm, WDSGlobal, utilized Extreme Programming methodology to enable programmers to contribute to the same lines of code in tandem, in a globally distributed, round-the-clock software development project (Yap, 2005). Another example of this phenomenon is seen in the automobile industry where the concept of platform shifting allows members of a product development team in one country to work on a prototype and to transfer the work-in-progress to another country at the end of the workday (PBS, 2007).

The concept of 24-Hour Knowledge Factory emerges from the fundamental belief that, in most cases, a person can work most effectively during the normal daytime work period (roughly from 9 am to 5 pm). While one can temporarily work during the night, such a mode of operation is not convenient or optimal over an extended period of time. Further, the World Health Organization and the American Cancer Society have concluded that working at night is a potential cause of prostate cancer in men and breast cancer in women (MSN, 2007).

While the concept of the 24-Hour Knowledge Factory bears some similarities with globally dispersed knowledge work, there are some crucial differences that set this phenomenon apart from the more widely studied phenomenon of global sourcing and offshore outsourcing. In the sections that follow, we will discuss the nature of the 24-Hour Knowledge Factory and analyze how it differs from global sourcing of knowledge work.

This paper is organized as follows: The next section features a discussion of the differences between the 24-Hour Knowledge Factory and Globally Distributed Teams, followed by an analysis of how work can be decomposed into components. This leads to a discussion of the differences and similarities between Offshore BPO and the 24-Hour Knowledge Factory. Section 2 features a detailed review of extant research, followed by an analysis of key elements of 24-Hour Knowledge Factory and

what factors impact on efficiency and quality outcomes in 24-Hour Knowledge Factories. Section 3 discusses the technical and economics paradigms within IS, while Section 4 provides the concluding remarks.

## 1.1 Evolution from Globally Distributed Teams to 24-Hour Knowledge Factory

In globally distributed teams, the overall endeavor is usually decomposed into discrete modules where the offshore unit executes a set of tasks that are then handed back to the 'client' who works on other subsystems. Consider the example of offshore transaction processing: a retail bank in the US designates an offshore entity – a third-party BPO or its own captive center – to process several sets of transactions during a period (usually a fortnight). The bank does not work on these same transactions and instead uses the output of the offshore entity (in this case, the fully processed transactions). We contrast this with the work that goes on at OfficeTiger<sup>1</sup> (OT). OT provides information-intensive services – such as research, modeling and analytical support – to the financial services industry. Typically, investment banks in the US and Europe work on an analytical model of a merger and acquisition (M&A) target; the model is transitioned – via a custom-designed inter-organizational information system called T-Tracks – at the end of their work day to the analysts at OT. They add new features to the model, including scenarios based on their secondary research, and hand the model back to the clients at the end of their day (the start of the work day in the western hemisphere) (Knowledge@Wharton, 2005). Often the two entities – the concerned investment bank and OT – exchange extensive information and 'working notes' during the transition zones. Both units are jointly responsible for the shared body of work. OT has developed fine-grained knowledge transfer mechanisms and managerial coordination mechanisms that enable each unit to function as an extended organizational form of the other (Aron & Liu, 2005; Aron & Singh, 2005).

15 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/article/hour-knowledge-factory/46633](http://www.igi-global.com/article/hour-knowledge-factory/46633)

## Related Content

---

### Using Information Technology for Strategic Growth from Single-Mission Transportation Company to Multi-Faceted Global Logistics Corporation

Shirley Hanshaw and Lemuria Carter (2008). *Journal of Cases on Information Technology* (pp. 10-20).

[www.irma-international.org/article/using-information-technology-strategic-growth/3225/](http://www.irma-international.org/article/using-information-technology-strategic-growth/3225/)

### Current Network Security Technology

Göran Pulkkis, Kaj Grahn and Peik Åström (2009). *Encyclopedia of Information Science and Technology, Second Edition* (pp. 879-887).

[www.irma-international.org/chapter/current-network-security-technology/13680/](http://www.irma-international.org/chapter/current-network-security-technology/13680/)

### Web-Based Supply Chain Strategy

Hanns-Christian L. Hanebeck (2005). *Encyclopedia of Information Science and Technology, First Edition* (pp. 3085-3089).

[www.irma-international.org/chapter/web-based-supply-chain-strategy/14748/](http://www.irma-international.org/chapter/web-based-supply-chain-strategy/14748/)

### Enabling B2B Marketplaces: The Case of GE Global Exchange Services

James Paul, Shiro Withanachchi, Robert Mockler, Marc E. Gartenfeld and Matthew Jenkins (2003). *Annals of Cases on Information Technology: Volume 5* (pp. 464-487).

[www.irma-international.org/article/enabling-b2b-marketplaces/44559/](http://www.irma-international.org/article/enabling-b2b-marketplaces/44559/)

### ERP Lifecycle: A Retirement Case Study

Moutaz Haddara and Ahmed Elragal (2013). *Information Resources Management Journal* (pp. 1-11).

[www.irma-international.org/article/erp-lifecycle-retirement-case-study/73790/](http://www.irma-international.org/article/erp-lifecycle-retirement-case-study/73790/)