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SOFTWARE OUTSOURCING IN VIETNAM: A CASE STUDY OF A LOCAL PIONEER

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Abstract

This case study of a successful Vietnamese IT outsourcing partner identifies critical success factors for firms in less developed nations seeking to become strategic partners with firms abroad.

Keywords: Offshore information systems outsourcing, case study, video game industry, multimedia, Vietnam

Introduction

Earlier work on global technology outsourcing (Carmel and Agarwal, 2002) contends that information systems organizations in developed nations will evolve from being bystanders and experimenters to proactive portfolio managers, strategically outsourcing IT services from a buffet of world-class firms. But the question remains – how are potential offshore partners to mature to be considered more attractive to suitors? Such challenges are particularly daunting for outsourcing candidate firms in less developed nations. For example, firms located in nations at the bottom of Carmel’s (2003) four-tier taxonomy of software exporting nations must overcome a variety of challenges related to infrastructure, cultural and socio-political issues, labor and other key resources, and partner bias (Heeks, 1999; Coward, 2003).

Using a methodology employed in similar studies of technology in developing nations (Goodman and Press, 1995; Dedrick and Kraemer, 2001; Chidamber, 2003), this paper leverages information gathered from recent in-country site visits, state-side communication, and a content analysis of secondary sources. Three specific contributions are offered relating to the research question outlined above. *First*, the market for offshore outsourcing in a Tier Four nation (Vietnam) is explored, illustrating the nation’s advantages as well as key challenges that limit expansion. *Second*, a case study of an outsourcer in a Tier Four nation identifies success factors that enable firms in developing nations to emerge as strategic technology partners. *Finally*, the summary explores how existing models for considering firm attitudes toward offshore outsourcing can be expanded.

Outsourcing to Vietnam: The Benefits

When considering Vietnam, the first images to come to mind are rarely associated with technology. Yet the world’s twelfth most populous nation has a rapidly growing technology sector. Annual IT spending in Vietnam was estimated at \$1 billion in 2002 (Schwartz, 2002), and the market is expected to grow 25-30 percent a year through 2010, making it one of the fastest growing tech markets in the world (Vietnam Review, 2003; Schwartz, 2002).

While Vietnam suffers from a variety of market conditions that limit technology expansion, the market has been so tech-starved that demand-pull is outweighing the many in-country challenges. A significant portion of Vietnam’s growing tech sector is fueled by the development of an indigenous outsourcing industry catering to offshore contract work. By 2001, roughly 30 software development companies were operating in Vietnam. Anheuser Busch, Bayer, BMG, BP, Cisco, IBM, Merrill Lynch, Nortel Networks, NTT, the State of Oklahoma, and Sony have all outsourced development to Vietnam, either directly or through third-party outfits. And while India might initially be considered an offshore rival, several Indian firms have also been active in

Vietnam. India's Aptech, NIIT, and Tata Consultancy Services (TCS) have each opened training centers in Vietnam and TCS has deployed Vietnamese programmers at one of its centers in Mumbai.

Several factors favoring Vietnam for IT outsourcing are detailed below.

Cost

One of the most compelling reasons for software project outsourcing in general and offshore outsourcing in particular is cost (Ang and Straub, 1998; DiRomualdo and Grubaxani, 1998; Lacity and Wilcox, 1998). Carmel and Agarwal (2002) see cost as being the driver behind the first three stages of their four-stage work maturation model. While specific estimates on the cost savings for Vietnamese software projects vary, all show compelling price differentials. For example, Lopatin (2001) suggests that developing software in Vietnam is 90 percent cheaper than in the United States, and between one third and one seventh the cost of developing in India, Research Vietnam claims that software outsourcing costs in Vietnam are half the cost of Indian rivals, and Andersen Vietnam, estimates that current charge-out rates of Vietnam-based developers are about \$20,000 per person per year vs. \$40,000 in India.

A Strong Labor Pool

The population of Vietnam is young, literate, and increasingly interested in technology. Roughly 60 percent of the population is 25 years or younger and many are distinctly pro-Western. The literacy rate of 97 percent is among the world's highest. And while technology fields are relatively new to the Vietnamese higher education system (Goodman and Press, 1995), these disciplines attract some of the best Vietnamese students, creating some 20,000 technical engineers each year. Primary education emphasizes science, math, and logic providing a solid base for later training.

Language skills in Vietnam pale vs. the rich pool of native speakers in outsourcing hotspots of India, Ireland, and Canada. However, the Vietnamese benefit from an alphabet based on Roman characters and a historical legacy that has created a greater awareness of French and English than many East Asian rivals.

Staff attrition rates are lower when compared to Indian and the US onshore development (Lopatin, 2001). Low attrition rates foster familiarity between client and contractor and help ensure the project continuity that can be critical for timely and successful deployment (Davenport, 1998).

Stability

Although still considered oppressive by western standards, the Vietnamese government has proven to be both stable and secure and is now recognized as 'legitimate' by the world's major trade nations. The Clinton administration took steps to normalize relations with Vietnam, signing a sweeping trade agreement in 2000. Relatively positive relations with neighboring countries have been promoted, particularly in the wake of recent concerns regarding tensions in India, Pakistan, (Carmel and Agarwal, 2002) and on the Korean peninsula.

Government Incentives

The nation's communist government presents significant challenges for rapid economic liberalization, however the nation is clearly moving to open markets and offer incentives, particularly in the IT sector.

By the late 1980s, the government had largely abandoned socialist planning. After the failure of its economic policies led to a severe food crisis in the mid 1980s, the communist leadership began to institute a series of reforms in 1988 termed *doi moi* ("new thought"). The 1990s brought a boom-bust cycle that has led to a further maturing of the government's understanding of world markets. While many early investors flooded into the market, but initially struggled to wring profits from Vietnamese investments (Far East Economic Review, 1998), the situation has since improved significantly. The local government has learned from early mistakes, and intense involvement from foreign governments and multinationals has helped to create a more positive environment.

The strongest example of such improvement can be seen in the IT sector, which the Vietnamese government sees as one of the nation's keys to economic growth.

In June 2000, Vietnam's prime minister Phan Van Khai signed a decree to build and develop the country's software industry. The government has kept import duties on IT products low and has introduced a set of tax and other incentives for IT firms. Businesses involved in software production and services are exempt from corporate income tax for four years from the date they generate taxable income. Software products will receive a zero VAT (value added tax) rate and be free from export tax. The government allows for foreign investment and most significantly full foreign ownership of tech firms. Setting up a software firm is also considered easier than creating service firms in sectors like advertising, which may be considered more sociopolitically sensitive (Schmid 2000).

Further reforms and investments are targeted at infrastructure and training. In February of 2003 the government significantly restructured the leading state-owned technology entity, the Financing and Promoting Technology Corporation (FPT). Such moves presage further deregulation and an increasingly positive attitude toward domestic IT competition. The government has promoted backed the development of Quang Truong Software City, which opened in March 2001. When fully completed, it will house over 10,000 programmers. Two more parks are in various stages of roll-out. To fill these parks the government plans to train an additional 50,000 information-technology workers by 2005. By this time, the government hopes that Vietnam's software industry will contribute \$500 million to the annual gross domestic product. India-based Aptech is designing courses for the effort, while an aid package from the Japanese government has helped provide funds.

Foreign government and NGOs are also interested in developing the Vietnamese IT sector. With funding from several donor countries, the International Finance Corporation has established the Mekong Delta Project Development Facility to support the development of private, domestically owned small and mid-sized enterprises in Vietnam, Laos, and Cambodia.

The Vietnamese Diaspora: Viet Kieu

Having staff that can effectively operate across cultures can be key to the success of global projects such as offshore outsourcing (Carmel and Agarwal, 2001; Adler, 2001; Coward, 2003). Vietnam's painful past has yielded a resource that is now helping to revitalize the nation's economy - the Vietnamese diaspora, known as *Viet kieu*. More than 2 million people left Vietnam after the Vietnam War. Well over 1 million of these expatriate Vietnamese live in the United States, many working in technology industries. The Hanoi government had distrusted the Viet kieu, but is now courting the overseas Vietnamese as a source of capital and expertise. Vietnam currently offers Viet kieu business personnel a range of incentives from tax breaks to direct ownership of homes and businesses. Not surprisingly, some of the first offshore outsourcing efforts have been pioneered by returning members of the Vietnamese diaspora.

Outsourcing to Vietnam: The Challenges

A host of issues limit the nation's potential growth as a dominant player in offshore outsourcing and are detailed as follows.

Government-Related

The present government struggles with finding what it feels is an appropriate balance between pro-market and pro-socialist ideology, often with mixed results. While success and progress in the IT sector is notable, particularly when compared with other sectors, the nation has been slow to broadly execute the second phase of *doi moi*. The Vietnamese government continues to suffer from a reputation for slow-moving, corrupt and capricious relations with foreign firms (Goodman and Press, 1995) as well as a lack of transparency and legal protection for firms doing business in country.

Much opportunity for economic reforms exists. The nation's currency, the Vietnamese *dong*, is non-convertible. Economic reforms slowed following the regional crisis of 1997, and foreign investment dropped precipitously, although it has begun to come back. The banking sector is also considered fragile, with the bulk of bank loans still going to state enterprises, of which roughly 60 percent are unprofitable or only marginally so.

Technology Infrastructure

Internet connections are often slow and expensive and there are strict controls on information flows. While the government has pledged to address the problem of telecommunications costs, Vietnamese telecommunications are among the costliest and most restricted in Asia (Peng, 2002). A 128K leased line can run \$2,000 per month and international phone calls are among the most expensive in the world.

The government is liberalizing Internet restrictions on privileged organizations, such as IT firms, however, the Internet was banned in Vietnam prior to 1997, and attitudes toward Net use remain rigid. Two Vietnamese 'cyberdissidents' were jailed in 2002. The Culture and Information Ministry has also proposed several restrictive measures including requiring Internet café's to monitor patron activities and requiring local websites to obtain licenses and approval when content is changed (Associated Press, 2003). The government continues to block hundreds of potentially useful commercial Internet sites for most users, however a gateway solely targeted at enabling software companies to bypass Internet restrictions has been promised (Levander 2000).

Workforce Limitations

While the nation continues to advance its training program for technology workers, Vietnam is still largely an agrarian society. 80 percent of the population still live off the land, and nearly 40 percent live in poverty. English skills among the local population, while better than many regional rivals, are still limited. Western-style management training programs are rare, and project management and general business skills remain in short supply.

Also as in many developing nations, piracy is rampant. This dynamic has the unusual effect of encouraging the local software market to remain focused on providing products for export (Yen, 2001). The lack of dependable intellectual property protection will restrict the growth of the domestic software industry as well as limit the appeal of Vietnam as a market for high-quality imported software and training materials.

Scale

For all its growth and promise, the Vietnamese market for quality export-oriented software services is still very small. While many draw comparisons with the Indian market, the two are significantly different in scale and capabilities. Software exports in India topped \$6.2 billion in 2001 (EU Business 2002), a figure that is over six-times larger than Vietnam's entire IT market. Vietnamese firms will also have to grow to be considered for larger, more comprehensive deals. There are only a few firms that have over 100 developers and no outsourcing firm currently has the deep talent pool of 500 plus developers common among leading global outsourcing firms.

Glass Egg – An Outsourcing Success

Background

Located in Ho Chi Minh City (Saigon), the heart of Vietnam's economic renaissance, Glass Egg Digital Media LTD is an offshore software development company specializing in multimedia projects. The firm operates in three principal business segments: video game development, web programming and content development, and 3D animation. It currently has 67 employees and carries out all development work in Vietnam. The firm's international client list that includes some of the leading firms in computer game development and advertising.

The senior management team is a group of five Americans with more than 20 years of collective experience in the multimedia industry. The firm's General Director, Phil Tran, was born in Saigon and immigrated to the US in 1975 when he was just 13 years old. He graduated from UC Berkley and moved back to Vietnam in 1995 to work for a law firm before he established a multimedia production studio for a California company that was one of the law firm's clients.

While Glass Egg was founded in 1999, many of the senior staff have been working together since 1995. The group previously worked for a Ho Chi Minh City firm that held an exclusive development contract with the failed Morgan Interactive, a San Francisco-based developer focusing on low-end edutainment game titles. From 1995-1998, the Vietnamese firm developed

roughly 20 projects for Morgan, many based on popular American children's books. The San Francisco firm had aspirations to grow from being a developer to a publisher, however margins from the Vietnamese unit were not enough to fuel the failed expansion effort. After Morgan's failure, the Vietnamese firm was left with a uniquely skilled and experienced work force.

Tran hired the production team, quickly secured \$400,000 in funding and the emergent independent firm became known as Glass Egg, incorporating in the British Virgin Islands in February of 1999. Glass Egg Digital Media (Vietnam) Limited is a wholly owned subsidiary of the British Virgin Islands company and retains a license to operate as a 100% foreign-owned company in Vietnam. The firm has no joint venture partner. The initial funding for the venture was provided by Dragon Capital's VEIL (Vietnam Enterprise Investment Limited) fund, the largest Vietnam-dedicated investment fund.

Businesses

The firm's core business is multimedia systems. Core skillsets of computer graphics, programming, and project management are reinforcing and translate across the firm's three business segments: computer video games, web programming and content development, and 3D animation (see Figure 1). These segments are not only fast growing, but industry dynamics and evolution favor firms that are able to harness offshore talent.

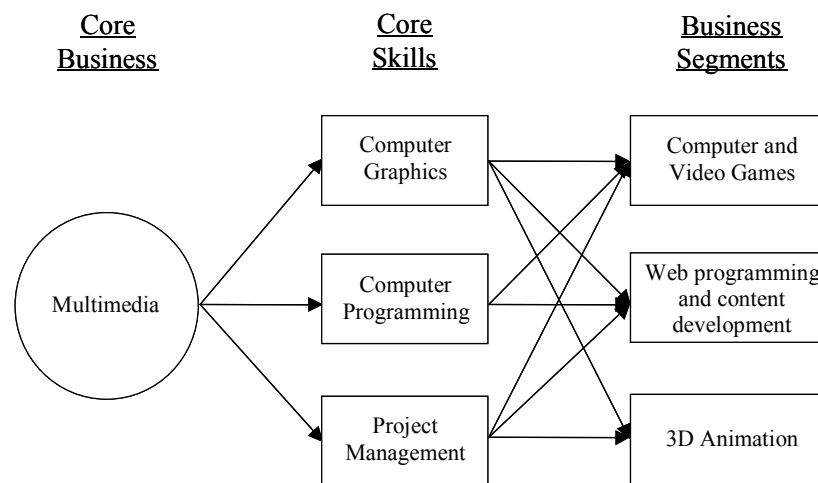


Figure 1. Skill and Segment Synergies

Over the past decade firms have gained increased access to the technology necessary to create complex multimedia projects. While detailed multimedia projects such as 3D animation initially used proprietary tools, new efforts rely on commercial software such as 3D Studio Max, Maya, and SoftImage, which run on inexpensive hardware and can be easily extended via custom or third-party plug-ins. As such we observe a common pattern where an industry has become increasingly commoditized, in this case shifting competitive advantage from firms owning proprietary technology to those with high artistic and technical skill and low-cost advantages (D'Aveni and Gunther, 1994; Christensen et al., 2001).

Video Game Development

While diversified across three segments, the video game industry represents Glass Egg's most successful. Clients include 3DO, Activision, Disney, Electronic Arts, Fox, Infogrames, Nintendo, Marvel Comics, Mattel, McGraw-Hill, Microprose, Simon and Schuster, and Warner Bros.

The video game industry remains attractive for Glass Egg, both due to its growth and the changing dynamics of competition. In the US, this sector has been one of the few solid growth areas in the tech sector over the past two years. 60 percent of Americans routinely play computer or video games and more than one third of all US households now have at least one game console in their homes. The average computer gamer is 28 years old, and nearly half are women. In the US, this industry is larger than the motion picture industry's box-office gross. As publisher margins have been reduced, there is an increased pressure to find lower cost development alternatives, with offshore firms well suited to contract complex work for increasingly expensive titles.

Two types of firms are engaged in the game software industry: producers and developers. *Producers* assume the function of sales and marketing titles. Leading companies include Activision, Electronic Arts, and Infogrames. *Developers* are responsible for creating the game design, programming, and art production. The publisher finances the product costs as an advance against a 10-25% royalty. Production costs, sales volume, retail prices, and royalties can vary dramatically depending on target market, the strength of the license, and the skills and experience of the developer. Edutainment titles retailing for less than \$30 and with a production cost of less than \$500,000 are targeted at smaller markets (less than 200,000 units). High end products can offer retail prices of \$50 or more and production costs of over \$5 million, with sales of hits easily topping 1 million units.

Developers are increasingly relying on sub-contractors to handle various independent components of the development process. For example, Glass Egg has handled track and car design in a variety of racing games, as well as providing programming and project management for sub-components. This disaggregation of the game industry has developed the firm, allowing it to initially bid on smaller projects, while gaining expertise and credibility and growing into larger, more integrated development projects.

Web Programming and Content Development

The firm's skills have also been leveraged on several projects creating interactive web sites. Glass Egg leverages in-house expertise in Java, C++, HTML, SQL, Flash, and various web scripting languages, and staffers continually upgrade their skills as the industry evolves.

The smaller scope of web projects has allowed the firm to quickly move beyond subcontracting to handle entire projects for clients. Interactive sites benefit from the firm's experience in both game and advertising-oriented 3D modeling. The firm has acted as the sole contractor on entire online game projects for clients, including concept development, art work, programming, project management, and quality assurance.

3D Animation

Glass Egg also provides 3D animation services, primarily for television commercials and promotional films. Contracting partners include worldwide advertising agencies J. Walter Thomson, McCann-Erickson, Ogilvy & Mather, Satchi & Satchi, as well as VTV (Vietnam Television). When developing 3D content for local advertisers, the firm's partners handle issues of content sensitivity with governmental authorities, freeing the firm to focus on graphic content that has already been cleared through authorities.

Success Factors

The firm's timing and industry developments in its target segments are converging in a way that combine with factors highlighted earlier to further assisted growth.

Post-Reform Timing

The firm has emerged at a time when the Vietnamese government has learned painful lessons from earlier bureaucratic missteps and has made important strides to streamline foreign investment. Glass Egg further benefits as one of the initial local success stories in an industry highlighted for state-sponsored privileges. In addition to the tax breaks and financial incentives, Glass Egg is not required to have a local joint venture partner. The firm is a 100 percent wholly-owned limited liability company, organized as a subsidiary of a foreign firm. This leaves it free of government intervention, mismanagement by less experienced or ill-equipped partners, and strengthens the firm's margin position. The slowdown in foreign direct investment following the 1997 financial crisis has actually had a positive impact on the firm, allowing it to recruit better people as fewer foreign firms were in-country or expanding.

Development Trajectory Symbiotic with Industry Changes

The video game industry is increasingly mimicking Hollywood, where producers seek outside developers to create titles, while production houses provide financing and marketing. Web service firms and systems integrators are increasingly relying on subcontracting, leaving offshore firms positioned to offer appealing cost advantages. Starting as a subcontractor allowed the firm

to gain legitimacy and establish its reputation, grow scale, and cultivate management expertise. The firm's skill set deepens with each project, while growth creates a regional scale benefit, offering a time-based sustainability to these competitive advantages (Mata et al., 1995; VanderWerf and Mahon, 1997). This dynamic is allowing the firm to 'bootstrap' its way into the premium game market. The diversity of its three core skill in animation, programming, and project management have assisted this advancement and helps broaden and diversify its customer and project base. In-house programming and project management talent help broaden its project work. For example, when approached by Mattel to do the artwork on a 3D racing game, Glass Egg's prototypes demonstrated a software 'engine' to animate the graphics which was technically superior to the original US code. As a result, the firm won the entire bid for both art and programming. This growth parallels low-to-high segment moves seen in other Asian markets, such as those for autos and electronics in Japan and Korea (Bartlett and Ghoshal, 2002).

Cost

Glass Egg's project work is priced at roughly 30 percent below comparable developers in the US, Europe, and Australia, however its developers earn salaries 1/10th to 1/20th their US counterparts. Even when expatriate salaries are factored in, the firm earns margins in excess of 50 percent.

Nearly all products are exported and contracts are denominated in US dollars, while local salaries and most expenses are paid in the non-convertible Vietnamese dong, greatly reducing foreign exchange risk. Payment from clients are also funneled through the offshore parent, eliminating problems converting dong to dollars, when the government tax holiday expires this will also legally minimize local tax exposure.

Workforce

The firm considers the development of a strong team of local Vietnamese management essential to the success of their operation (Adler, 2001; Carmel and Agarwal, 2001). The firm has nurtured a team of Vietnamese middle managers, all of whom are conversant in English and are capable of operating with a large degree of confidence and autonomy. All of the programmers have graduated near the top of their class from Vietnam's most prestigious technical universities. All of the firm's graphic artists have been recruited from traditional art disciplines. The firm's design team includes formally trained sculptors, painters, and cell animators. The prospect of working for Glass Egg can be particularly attractive for an artist – as artists universally struggle to find paid employment to finance their passion.

Many of the firm's potential recruits are initially paid just \$50 a month as they complete a six-month training program. Those who are eventually hired are paid roughly \$4,000 a year, where comparable US talent would early \$70,000-\$100,000 (Knecht 2001). Only 2 in 10 trainees are offered full-time work at Glass Egg, yet talented artists and programmers jump at a chance to get free, high-level training and experience in the Glass Egg environment. Those invited to stay enjoy salaries at the high end of the Vietnam pay scale, and managers provide mentorship to all employees. The firm recently flew a group of employees to an international game expo in the United States. The firm feels that such travel can be an enormous incentive, improve expertise, and engender enduring loyalty.

Financial Backing

Being a successful, visible, early leader has allowed Glass Egg to secure additional funding to fuel its progress toward its growth targets. In December 2002, the firm secured \$3.0 million in additional funding, \$1.75 million from the International Finance Corporation of the World Bank Group, the rest from Dragon Capital, the firm's original investor.

Direction and Challenges

Glass Egg has remained obsessively client-focused, while adhering to strategic plans for systematic advancement. The firm's long-term goals in its three areas – emerge as a publisher/developer in games, become a leading regional web development integrator, and secure a regular animation contract for a western cartoon series – are indeed aggressive. The firm's geography, the source of so many of the firm's advantages also presents the greatest obstacle for its advancement (Coward, 2003). As one US executive claimed, telling clients that a firm's programmers were in Vietnam is 'a door slammer'. (Levander 2000). Further, while time has offered the firm scale and skill advantages and an impressive portfolio of client-satisfying projects, local

competition is inevitable, while regional competition remains strong. Finally, it is recognized that the firm aspires to grow in a way not unlike that of its former failed US partner, Morgan Interactive. Management is keenly aware of the example of Morgan's failure. However, advancing the firm from subcontractor to developer, systems integrator, and entertainment producer involves an enormous cash commitment and a set of skills that the firm is still developing. The new funding has provided an opportunity for the firm to establish a small office in Los Angeles. Such a presence is seen as a critical advantage in outsourcer choice (Coward, 2003), and it is hoped that this presence will allow the firm to cultivate relationships to secure a wider variety of entertainment projects and to more closely monitor technology developments in entertainment multimedia. However the cost of this presence represents a significant expense unfamiliar to a firm that has always operated in the low-cost world of Ho Chi Minh City. Larger scale products where the firm is the lead developer, rather than a subcontractor, further expose the firm to the industry's hit-miss cycle.

Interpretation and Summary

While many of the world's largest firms are outsourcing to Vietnam, most of this work consists of small-scale and low-end project work. Carmel and Agarwal (2002) have proposed a four-level framework whereby firms move through states as global outsourcers (bystander, experimenter, cost-focused, and strategy-focused). We propose an extension to this theory in that firms consider nations in similar ways. Rather than considering all nations as equal, a firm may be a strategic outsourcer in one country, but an experimenter in another. Most firms outsourcing projects to Vietnam are in the experimenter stage. Glass Egg, however, is uniquely positioned to be among the first firms in Vietnam considered a strategic partner. Helped by the project-nature of its work and the specifics of its target markets, the firm has been able to counteract some of the concerns that plague broader IT outsourcing. Video-games and animation rarely need follow up enhancement and maintenance work. Once a project is completed the outsourcer can move on to the next effort, removing the risk premium common among purchasers of IT (Gallaughar and Wang, 2002) and assisting acceptance of what today is widely perceived as an unorthodox destination.

Similarly, we also propose an outsourcer maturity mechanism that is evidenced in the Glass Egg case. Outsourcers begin with small project work, perhaps providing components of a larger effort. Once credibility has been established, firms move to a greater level of project autonomy – becoming the lead or sole outsourcer. Finally, the firm's strengthened skills in management and marketing allow it to emerge as an independent software developer, offering its own products to the global market. Glass Egg has emerged through the first two-phases of this work, and is now entering the third. Such a path can be particularly attractive in developing nations, where in-country management experience is limited and where partnered project allows staff an opportunity to continually improve skills and develop confidence.

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