Register Number.....

M.B.A. DEGREE EXAMINATIONS: NOVEMBER 2009

Fourth Trimester

P07BA441: SOFTWARE DEVELOPMENT

ime: Three Hours **Maximum Marks: 100**

Answer ALL Questions:-

PART A (1 x 20 = 20 Marks)

. CASE STUDY

WORLDWIDE HOST

"Your home away from home." That motto captures the mission of Worldwide Host, a global hotel chain with premium properties in many European, Asian, and North and South American countries. The upscale chain has always prided itself on providing personalized service and making its guests feel Welcome, wherever they travel. No detail is overlooked for guests' comfort-from a friendly morning wake-up call and fresh-squeezed orange juice with breakfast, to on site gym and spa service, to fluffy towels and robes, to the mints on the down pillows in the evening. But Worldwide Host employees' travel experiences haven't always run as smoothly as its guests. In fact, the chain's travel division needed upgrading, as its chief information officer, Michael Lloyd, knew all too well.

As Worldwide Host's CIO, Michael Lloyd often traveled to the hotel chain's properties throughout the globe, overseeing its reservations and other information systems. When he needed to make travel arrangements, Michael used the corporate travel division, composed of approximately ninety fulltime employees. Those staff members worked with airlines and rental-car companies-as well as Worldwide's individual hotel staff-to arrange the business travel for all of Worldwide Host's employees; When Michael needed to travel to London, Tokyo, Sao Paulo, or anyplace in the United States, he would call or email the travel division with details of his trip. Travel staff would arrange the flights, stays at hotel properties, and. rental cars, and then send him the information. But despite everyone's best efforts, he'd had miscommunications on dates, repeated calls and e-mails for clarification and, on more than one occasion a missed airline connection because of a change in the airline schedule that didn't get passed along to him. If he was just one of the company's business travelers, what was happening with his coworkers? There were hundreds of them scattered across the globe. The travel system always frustrated Michael because it was inefficient. It had been around for decades and was no longer meeting Worldwide's needs.

One day while traveling, Michael had an idea: what if Worldwide Host moved its travel services exclusively to the Web? Allowing employees to enter their travel needs directly into a Web-based system would streamline the reservation process and eliminate errors. Such a system could save the company thousands of dollars in lost time. Michael took his idea a step further. Other hotel chains were creating alliances and opening their services to the public via the Web. As a leading hotel chain, Worldwide Host could do the same to remain competitive-revamping its corporate travel division into a full-fledged, e-commerce site, which employees and the general public could use. To accomplish that goal, the company would need to tie its existing travel reservation system into a Web-based interface-that much was certain. But it would also need to ensure any new system was compatible with its airline and rental-car partners' systems. That would be a monumental effort because of the size of the companies. Each one logged thousands of reservations a day.

Still, the idea had many positive points. The higher public profile could generate additional revenues for Worldwide Host, the airlines, and rental car companies. Currently, any unoccupied rooms, unsold plane seats, or unrented cars at the end of the day were lost revenue that couldn't be recouped. All companies needed to run their operations as close to full capacity as possible. So, offering the public access to those unfilled rooms, seats, and cars in a combined Web site could boost reservations, generating additional, much-needed revenue. He also knew the amount of time it took to arrange his own business travel, with many calls and e-mails to the travel division. Scheduling vacations through a travel agent meant additional time for the public, too. With today's fast-paced lifestyles, streamlining the process and putting control in the traveler's hands made sense.

reasoned that with an e-commerce site, the travel division's employees could now serve the general public, spreading the cost of the division over a broader revenue base. Maybe Worldwide Host could move them into a separate subsidiary. The revenues from the subsidiary could also help offset the cost of developing the new system. Michael took stock of the pros and cons of the Web site in his notebook. The prospect excited him. As soon as he reached his hotel room, he called the chief executive officer, Nathan Plummer, to discuss his idea. The new system would need top executive backing to become a reality.

Nathan Plummer was no newcomer to the hospitality field. His grandfather had started Worldwide Host in the 1930s, and Nathan had grown up in the business, along with his sister and brother. He and Michael met several times to map out a strategy for the proposed Web site. After lengthy internal discussions with Worldwide Host's management staff, Nathan decided to proceed with the e-commerce effort.

To gather initial support for the e-commerce site, Nathan and Michael began negotiating with World-wide's current airline and rental-car business partners. All of the companies had a depth of experience in reservations systems, but they had never linked them into one all-encompassing system.

Despite the difficulties that establishing a unified system could entail, the promise of increased bookings was very tempting. The partners were willing to listen. Nathan and Michael presented additional arguments: the companies could trim the transaction fees they now paid to travel agents for each reservation, saving out-of-pocket expenses. Customers could go online at their convenience to arrange their travel plans. The final point that persuaded the companies to participate was the advantage of partnering to develop the site. Each of the companies had been considering developing its own e-commerce site, but the cost to a single company was a major hurdle. A new combined site would allow each company to share the cost of setup with its partners, plus draw more Web traffic than single sites. Also, down the road, other travel organizations could join the alliance.

Meetings were long and involved, but eventually the partners struck a deal- the new Web site development effort, TripExpert.com, were born. To gather even more support for TripExpert, Nathan assured his partners that he planned to meet with other travel companies, such as additional airlines and hotel chains, cruise lines, and theme parks, to enlist their participation in the site once it was up and running.

Information Systems: A critical link:

With the agreement of the travel companies to participate, Michael now turned to the big issue of the Web site itself. Key to TripExpert's development was the underlying information technologies. He jotted down some notes from his earlier meetings and brainstorming sessions and set up a meeting with General Data Systems (GDS), Worldwide Host's IS consulting firm. The firm had developed Worldwide Host's computerized reservation system and regularly assisted the hotel chain with upgrades and maintenance. Over the years, Worldwide Host had established a sterling relationship with GDS and relied on its staff's expertise in system development, network administration, and troubleshooting. Investigating development the new Web site would require even closer collaboration between Worldwide and GDS.

GDS's director of new business assigned Judith Kozak, his most experienced systems analyst, to the TripExpert project. She had worked on Worldwide Host's systems many times and knew their capabilities well. Also, Michael respected her abilities, and the two had worked well together in the past.

Michael explained his vision of the new system to Judith. "So what we're talking about is a system based on Internet technology that would handle not only our internal travel needs but extend the reservations capabilities to the general public. Nathan, our CEO, and I spoke with the heads of North Trans and Blue Sky airlines, as well as A-1 and Bargain Rent-a-Car companies. It took some persuading initially, but they realized the advantage of offering a full-service travel site. We'll need GDS's help, Judith, to explore the various options we have. Is a system currently available that we could buy and modify to suit our needs? We need to tie all pour companies' systems together someway. Or do we need to start from scratch and build a customized system?"

Judith replied, "Off the top of my head, I know of pieces that exist-some Web-based reservation systems and databases, and there is a mainframe-based system an airline has used for decades. But I'd need to investigate each of your partners' systems to see what their capabilities are. A speedy search engine is critical-customers don't like to wait more than a few seconds for responses when they shop on the Web.

technology has come a long way since then. We'll whether we can purchase a search engine component. Availability of the system will be key, too. Web ic can spike unexpectedly, so we need to plan for peak demand,"

"I'm also concerned about security. We need to assure the public that their financial information is olutely safe with us or they won't use the site. Trust in our security will be crucial," said Michael.

rming a Development Team:

ince we're on the subject of the needs for the new system, have you discussed setting up a development am to investigate the possibilities?" asked Judith. "We need members from your travel division, hotel anagement and reservations staff, and in-house IS staff, to start with. User input is important to make sure e address all the business functions, and your IS staff can help with technical issues. Anyone else?"

Michael responded, "I think we need to interview staff from the airlines and car companies to get eir perspective as users of the system, too, and we'll need you and some of GDS's best systems analysts n the team."

"Of course-I'll look into our staffing immediately. What about oversight and approval?"

"Nathan will head the executive steering committee, which will also include the chairman of our oard, the chief financial officer, VP of hotel management, your director of new business, your CEO, and me. Our top execs need to know how we're proceeding and what plans we are making. This is such a large ndertaking that we need management's oversight of our progress."

"Sure," Judith said. "We can work essentially the way we did when developing your new eservations system a few years ago. That system was critical to your business, and this new one will be just as important."

"So to start with, we'll need to explore the feasibility of each of the options we have. Can you begin looking at the technical aspects-investigate in detail any existing systems? In the meantime, I'll look into scheduling and staffing. Then we'll need to tackle the big issue-economics. Nathan will need a realistic budget for every option."

"When do you want to meet next?" asked Judith.

"How does your schedule look two weeks from now? Say, on Tuesday morning?"

"Sounds fine. I'll talk with my supervisor to get four of our best analysts lined up for the team. I'll e-mail to let you know."

"Great. We have a lot of work to do to get Trip-Expert off the ground."

QUESTIONS FROM THE CASE STUDY

(i). What was Michael Lloyd's vision of the new system's architectural style?

(ii) Component level design is equivalent to a set of detailed drawings of each room in a house. In that sense, what components were discussed in the case study?

(iii). Michael Lloyd and Nathan Plummer had to undertake high level negotiations with Worldwide's business partners to proceed with the e-commerce effort: Discuss these negotiations.

(iv). What was the key to the proposed website TripExpert.com's development? How did Michael Lloyd handle the issue?

(v). Michael Lloyd's idea for an e-commerce website was based on the perceived shortcomings of the existing travel system. He visualized certain requirements to overcome these shortcomings and to develop a better system. Discuss these requirements.

PART B (10 x 2 = 20 Marks)

2. "Software is both a product and a vehicle for delivering a product": Explain

3. Effective project management focuses on the four P's: Briefly describe these four P's.

4. Celebrated software researcher Dr. Fritz Bauer proposed the following definition of software engineering: "Software engineering is the establishment and use of sound engineering principles in order to obtain economically software that is reliable and works efficiently on real machines."

   What are the **shortcomings** in the above definition in the contemporary context?

5. Explain the variation in emphasis between prescriptive and agile models.

6. Briefly describe the waterfall model of software development. What are its merits and demerits?

7. What is the Unified Process and what was its genesis?

8. What is a use-case and what perspective does it use? Explain "actor" and "role" in this context.

9. What is problem decomposition and what are two commonly used approaches to decomposition? Discuss briefly.

10. What are the steps in analysis modeling and why is analysis modeling important?

11. Discuss the design principles that guide user interface design.

PART C (4 x 15 = 60 Marks)

12. (a) Discuss the incremental model of software development and its main advantages.

(OR)

(b) In software project estimation, to achieve reliable cost and effort estimates, a number of options can be considered: Discuss these options and their respective pros and cons.

13. (a) What is the basic purpose of software metrics? How are **project** metrics different from **process** metrics?

(OR)

(b) Name and explain five types of metrics for object oriented software projects.

14 (a) When risks are analyzed, it is important to quantify the level of uncertainty and the degree of loss associated with each risk. Discuss the different categories of risk to be considered to accomplish the above objective of quantifying loss/uncertainty.

(OR)

(b) Name and discuss five of the basic principles that guide software project scheduling.

15 (a) What is Black-box testing? What kinds of errors does it attempt to find and what questions does it answer?

(OR)

(b) Name and briefly describe any five of the characteristics of software testability.

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