Case Study:

You have been contracted by the MPC Manufacturing Company to develop an integrated and web–enabled computer product that will replace an aging non-integrated computer system.

Business Information

The company, MidlenPart Corporation (MPC), is a manufacturer of generic automobile parts. Their headquarters is in Taipei, Taiwan,   They manufacture a total of 100 different parts for three primary customer types: Auto Manufacturers, Automobile Dealers, and Automobile Parts Supply Houses. They employ a total of 1200 employees of which 100 work in the Corporate Headquarters. They have 4 different manufacturing plants in other countries, all of which have been bought in the past 18 months.

Current System

At this time, they have a semi static web-site that provides general information about the company, but does not provide any B-to-B capabilities.

There is a centralized computer system that resides on a large and aging mainframe system. There is a VPN set up for other remote locations to connect. There is a computerized order system that works like this:

1. Customers call a toll-free number.

2. A Customer Service Representative takes the call.
He/She enters the part numbers being ordered into the system by a prompted computer screen.

3. Based on the Customer # , Part #, and the Quantity, the system responds (slowly – the response time is extremely slow) with the availability and pricing.
(the assumption is that different customers have different pricing based on a variety of variables such as number of orders per year, amount of money paid each year, etc)

4. The information is verbally relayed to the customer over the phone by the Customer Service Representative

5. Verbal negotiations may or may not be entered. – adjustments are based on quantity and by interacting with the Available to Promise (ATP) –> (A Customer Representative can check manufacturing forecast on availability and put lock on future manufacturing lots – this is done manually) .

6. The Customer Representative enters business information: business name, address, contact person, phone number, e-mail contact.

7. Finally, an order # is assigned.

Customers can check on their Order Status the same way – calling Customer Service phone line, providing the order #, and having the Customer Service Representative look up the order # which will show whether the order has been shipped, but not where the order might be in the manufacturing process. There is a simple web interface where customers can enter an order

numbers and find if the order has shipped yet.

The Order Entry system feeds into a manufacturing system that will create the part in the appropriate quantity.

If the items are in stock, the Order Entry System creates a ticket with ordered items (Pic Ticket) which is given to the warehouse to physically pack the product for the customer.

An invoice is generated by Accounts Payable when the Manufacturing system generates and ships the product or the Pic Ticket is released.

Problems of the Current System

1. Customers must go through Customer Service for orders and the web interface has minimal functionality.

2. Every time they want to expand into different countries, they must add Customer Service Representatives with different language skills who understand the cultures and are available for different time zones.

3. The mainframe computer must be replaced. The speed is inadequate, and software maintenance is becoming an increasing piece of the technology budget.

4. There are inefficiencies and inconsistencies in the Order Entry System because there have been many "fixes" done over the years to the system and the data are not integrated. As a result, the response time is slow, customer data are often lost, and part data are sometimes inconsistent.

Many of their competitors have a B-to-B business model on the web. Although MPC has a web presence, it does not have the expertise to implement a dynamic order-tracking system.

Customer Request Changes

Move off the mainframe computer to a distributed client-server environment.

Build a new computerized Order System that has a high level of security, high reliability, and is highly integrated.

Although they will continue to provide Customer Service Representatives for those who wish to continue this approach, a web-enabled order tracking system will allow customers to submit their orders electronically as well as track the order to completion.

Build a computerized infrastructure that allows customers to track their orders through the system.

Technical Requirements

Corporate headquarters – There are 100 office workers, each of which has either a terminal connection to the mainframe or a personal computer connected to the enterprise network. Besides the corporate officers, the enterprise is divided into five units: Corporate Communications, Human Resources, Information Services, Finance and Accounting, and Customer Services. Communication between users is done with a Groupware product. Information Services is divided into Systems, Applications, Desktop Support, and Network Group.

Maintenance on the mainframe computer is outsourced to a local consulting company.

Maintenance on the personal computers is done by the desktop support group. Maintenance on the network is also outsourced.

There is a T-1 connection (1.5 Mbps) to the Internet. There is one member of the applications group who is maintaining the business web-site.

The company expects the change-over and new software to be installed within 18 months.

Some things that the company wishes the developers to outline for the company are:

The qualifications of the personnel
Availability of personnel to complete the project
Implementation time frame
What type procedures does the developer have in place for change management
The performance requirements for the software.
The faults for which the developer will assume responsibility
How the developer is managing security of the company network
How the developer is managing and tracking company assets
Level of network support the developer is going to provide and for how long
Level of maintenance the developer will be able to provide after the hand-over

Interviews with key individuals

Mary Hsu – Vice-President of Finance

" The problems we have here are complex. We need to manage our costs more effectively. The computer systems' budget has consistently risen 35% annually in the past 5 years. The projection of maintenance and repair may increase by 50% next year. I want the new system functional in 18 months. I expect to set penalties in place for late project delivery. "

James Chang – Customer Service Manager

" We are not providing the level of service that our competitors are. Our customers want to be able to track their orders throughout the ordering process. There is an expectation that they are able to interact with their order. Our customer representatives do their best, but it is difficult to provide quality service 100% of the time. Furthermore, the possibility of human mistakes exacerbates the problems. We need to computerize these functions. It will reduce costs, increase customer satisfaction, and reduce errors. "

Mark Betts – Application Programmer

" We have several enterprise applications that drive the order entry system. We have an order entry screen into which the customer reps enter information. It is attached to a relational database application. The items that are maintained are:
Name of part
Part #
 Cost
 Manufacturing plant
 Number in Inventory
 Weight
 Shipping information
 Color
 Customer Name
 Customer Address
 Customer Phone
 Customer e-mail

Order Number

Once an order is placed, the Order-Entry System generates a Pic Ticket which is sent over an e-mail system to the shipping department or a request to the manufacturing unit to build the part. The database can be queried if the order # is known. The database is updated by the manufacturing process or the Pic Ticket. "

Thomas Ling, Webmaster of Company Web Site

"We have approximately 50 web pages on the company web site. The pages are primarily static containing information about the company: the type of business, products of the company, how to contact the company. There is a simple web interface to the Order Entry system to query whether an order has been shipped. We have no e-commerce capability.   We want to change our web presence to be interactive where visitors can query company information, generate quotes for orders, check for availability of parts, add an order, and pay on the web site. "

Final Project Notes

1.   Most of the 100 employees at the corporate office are using PCs (each running a version of Windows). The exception is the systems group who is maintaining the obsolete mainframe (10 employees - One of these is the DBA. 2 are computer operators, One manager, one hardware engineer, and 5 in development) and a few programmer/analysts who have both a PC and a Terminal in their offices (5 - A couple of them have MSDE certification. Two of them are responsible for maintaining the network (which is using mostly CISCO hardware) (Serious networking problems are outsourced). No real development is done on the PCs, but they have someone maintaining a groupware product.).

2. Assume that all the systems will be upgraded and replaced. Assume that the conversion has two budgets:
a. *Infrastructure: Computers, Peripherals, upgrade to the Network connections, Other hardware devices such as Routers, RAIDs etc.*

b. *Software System: Includes Order Entry Software Application, Other commercial applications that may be purchased to improve the system (such as new Groupware, etc).*

Other Notes: Space is available and cabling in the buildings is good. The connection to the Internet needs to be upgraded, but you can assume this will be done outside the project. (You can require a minimum for quality access). Cabling is not fibre in each building, but buildings are connected by fibre backbone.

3. The budget should include a training budget. Assume that users to be trained are computer comfortable on PCs, but will need the training on the new system.

4.   What the company contracts to do:
a.   *The company will supply adequate office space, development machines, and test servers for X number of developers (to be determined by the contract)*

b. *The company will agree in the original contract to provide time and resources for testing external to the development team.*

5. Hardware and Software platforms -- Since Windows is now on the PC platforms, assume that the company wants the end-users to see a similar system after the conversion although it may

not be Windows. As for programming language, the company has a legacy system in place and wants to move to OO environment. The Programming Language of the new system is open for negotiation. The only requirement is that it be a language that is significantly supported by the technical community and is Robust.

6. Backup and documentation activities -- Backups are housed off-site in Kaohsiung. Project Documentation will be cataloged in the technical library on-site.

7. No formal requirements have been written, although there has been a list developed with the functional requirements. The company is pretty naive in the area of technical expertise.

8. The company has explored an ERP system and has decided that, although some of the modules might work, they want a total custom system.

8. Cost: I am going to give a stab here (and it is probably not too accurate). Assuming the cost of personpower in the Taiwan, and the cost of implementing a new Computer System, etc. The total cost budgeted for this conversion will be $8 million American Dollars or 250 million TWD (£ 5 million) .   This includes the entire conversion including hardware and initial support.

Final Note: In today's climate, it is somewhat unrealistic that a project of this size would be written from scratch. You should, as part of your approach in completing your executive summary, assume that some COTS programs (SAP, etc) will be part of the final solution and other forms of reuse should be explored.