GEMS Field Engineer Mobile Computing Debrief (Store/Forward) Application
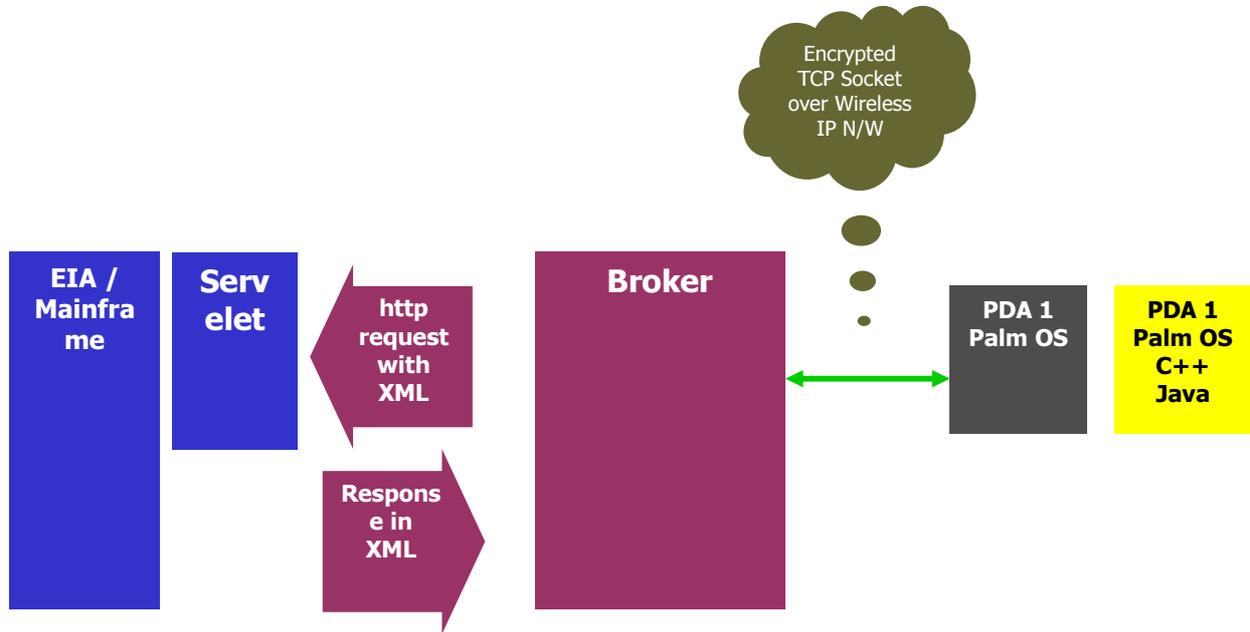
The aims to store and forward application that dispatches request for service (RFS) information from GEMS mainframe systems to GEMS field engineers with PDAs. The application should also be able to upload completed RFS information (called Debriefs) from the PDAs to the Mainframe. Technically, the field engineers should be able to connect to the mainframe via wireless IP network downloads relevant information, make changes offline, and upload the updated records to the mainframe system. The mainframe connectivity will be provided by GEMS EAI (Enterprise Application Integration) software. This EAI software is a Servlets-based engine, accessible via HTTP and XML.
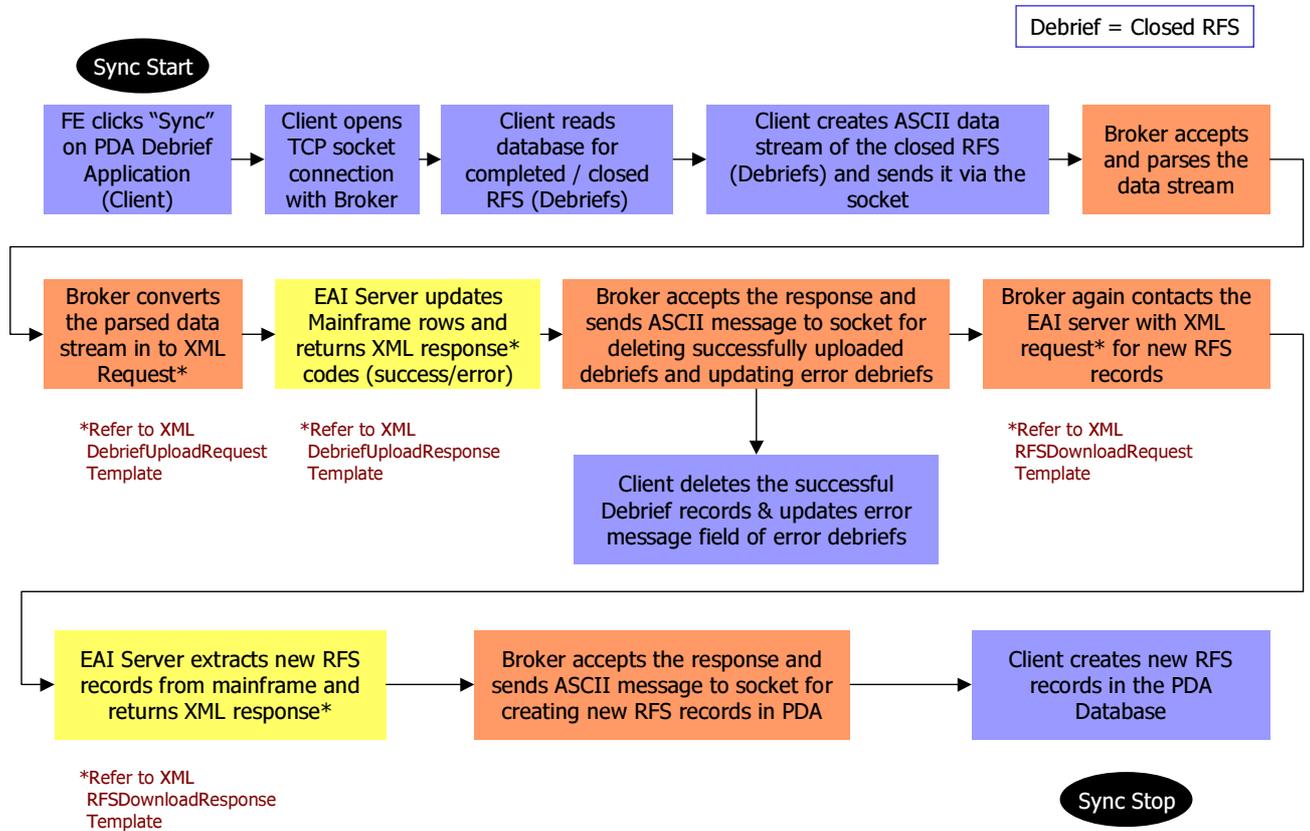
Application integrates following modules:

1. Client side PDA (field engineers use Palm Pilot or Kyocera phones that run on Palm OS), having the following sub modules:

   A) Forms and relevant database/catalog that displays and records RFS and Debrief information on the client (PDA)
   B) Converter that reads the database and converts it into ASCII buffer streams and vice versa
   C) Socket connector that sends and receives ASCII buffer data by opening a TCP / IP socket with the Broker.

2. Server (Broker side) will be created in Java. Completed RFS (Debriefs) need to be uploaded from PDA to EAI and new Request for Service (RFS) need to be downloaded from EAI to PDA. The Broker will do that using following sub modules:

   A) Listener in the predetermined port for TCP/IP socket requests
   B) Converter from ASCII (socket stream) to XML and vice versa.
   C) HTTP requestor from broker to EAI servelet to upload completed Debrief information in XML and download new request for service (RFS) in XML to broker (JAVA).

Application Architecture

Encrypted
TCP Socket
over Wireless
IP N/W

| EIA / Mainframe | Serv elet | | Broker | | PDA 1 Palm OS | PDA 1 Palm OS C++ Java |

http request with XML

Response in XML

Application Workflow

Debrief = Closed RFS

Sync Start

| FE clicks "Sync" on PDA Debrief Application (Client) | → | Client opens TCP socket connection with Broker | → | Client reads database for completed / closed RFS (Debriefs) | → | Client creates ASCII data stream of the closed RFS (Debriefs) and sends it via the socket | → | Broker accepts and parses the data stream |

| Broker converts the parsed data stream in to XML Request* | → | EAI Server updates Mainframe rows and returns XML response* codes (success/error) | → | Broker accepts the response and sends ASCII message to socket for deleting successfully uploaded debriefs and updating error debriefs | → | Broker again contacts the EAI server with XML request* for new RFS records |

*Refer to XML DebriefUploadRequest Template

*Refer to XML DebriefUploadResponse Template

*Refer to XML RFSDownloadRequest Template

Client deletes the successful Debrief records & updates error message field of error debriefs

| EAI Server extracts new RFS records from mainframe and returns XML response* | → | Broker accepts the response and sends ASCII message to socket for creating new RFS records in PDA | → | Client creates new RFS records in the PDA Database |

*Refer to XML RFSDownloadResponse Template

Sync Stop

Debriefs List

GEMS FEMC Debrief Notes

RFSNumber	Status
1111:	A10:
2222:	A15:
3333:	A30:
4444:	A20:
:	:
:	:
:	:

(New)(Edit)(Delete)(Done)

Debrief Entry Screen: Page 1

GEMS FEMC Debrief Page 1

Cr Date 26 Aug 2001 ▼ Status ▼ A10

RFS#   1111   EqSt ▼ 90

Customer Jones | 90 |

SysID   111 | 91 |
ContCls   ▼ 01 | 92 |
                                  | CS |
ContComments: | PL |
111 | UP |

SysClass ▼ 1   ▼ 01

Symptomaaa

(Prev)   (Next)   Pg2 I➡

Debrief Entry Screen: Page 2

GEMS FEMC Debrief Page2

Mod ▼XR Sys ▼X_____ Comp ▼N_____

PL1 ▼H____ PL2 ▼E_____ Corr ▼AC_____

SW version # 7.08.12C_____
Diagnosis and Service Perform
Control circuit replaced_____
FE Follow-Up N/A_____

Hours	Start	End	EqSt
2 Oct 2001:	22:30:	13:45:	90:
2 Jan 2001:	02:30:	15:15:	92:

◀IPg1 (Del) (Edit)(Add Hrs) Pg3I▶

Debrief Entry Screen: Page 3

GEMS FEMC Debrief Page3

Parts Used	Qty	Price
112:	112:	112:
122:	122:	122:

(Del)(Edit)(Add Part)

PO # _____ PM Code 11_____

CT Sys Slice Count 11_____
FMI #   128097_____
Account # 36542_____
Serial #   2364074523_____
Model #   6987412_____
FMI Code   801_____

◀IPg2   Pg4 I▶

Debrief Entry Screen: Page 4

GEMS FEMC Debrief Page4

OLC Feedback – which of the
following suggestions did you use?
- ☐ Clean Detector
- ☑ Reboot SW application
- ☐ FMI Code

Charge Customer to Expedite Onsite
Response

☐ Yes   ☑ No

☐ **Close Call**

◀‖Page3   (Cancel)(Done)

RFS Debrief Hours Entry Page

Add Hours

RFS #   1111
Start   2 Oct 2001   ▼   22:30   ▼
End   5 Nov 2001   ▼   13:45   ▼
End Equipment Status   ▼   90
EqSt   15 Aug 2000   ▼   16:15   ▼

	Total Hrs	Covered	Non Cov
Travel	04:00 ▼	02:00	02:00
Contact	Ravi	Paresh	Renu

Travel Expenses $US 10

(Done)(Prev)(Next)(Cancel)

RFS Debrief Parts Entry Page

AddPart

RFS Number 1111...........   Fixed
Parts Used   Qty   Price   Symptom
112.........   112....   112....   Yes/No/?
Consigment# ▼XO-214... ☐ ☐ ☐
Qty Parts ID Descreption Price Consi#

Charge Customer to Expedite Part
Order   ☐ Yes   ☐ No

(Done) (Prev) (Next) (Cancel)

RFS Debrief Sync via TCP/IP - Data Integration with Main Server using Internet Protocol

Import/Export

IP 127.0.0.1...........   Port 80...........
Send Data

....
....
....

Received Data

....
....
....

(Sync)

RFS Debrief Date Page

SoftCalender

◄ 2001 ►

Jan	Feb	Mar	Apr	May	Jun
Jul	Aug	**Sep**	Oct	Nov	Dec

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	(13)	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

(Cancel)   (Today)

RFS Debrief Time Page

Add Hours

RFS #   2222
Start 5 Mar 2001   ▼   17:10   ▼
End   15 Apr 2001   ▼   12:35   ▼
End Equipment Status   ▼   90
EqSt   22 Feb 2001   ▼   16:15   ▼

SoftTime

4 : 3 0   ▲▼   AM PM

(OK)   (Cancel)