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## 1 Introduction

### Proposed Software Solution - Flexware™ Mobile Computing Platform:

By using Avon's Flexware™ mobile computing Server the target could offer the following value propositions to their customers:

1. Flexware™ MC Platform can enable anytime/anywhere access to key enterprise information and processes, increasing productivity, decreasing costs and increasing profitability.
2. Our mobile solution is built on modular and componentized architecture that creates a dynamic, wireless-enabled environment that automatically scales applications to meet fluctuating needs, balances loads to prevent performance degradation, and manages transactions across the entire mobile architecture.
3. Changes to business rules, user templates, and handheld devices are handled by Flexware™ Server.
4. Flexware™ supports disconnected computing so users can take full advantage of handheld functionality and not be dependent on a persistent data connection.
5. Flexware™ support cradle-based, as well as wireless-based, synchronization with between your handhelds and backend enterprise servers.

### 1.2 Product Overview

Avon's Flexware™ Platform merges our world-class J2EE Environment with new services specially designed for developing and deploying mobile applications. With these services, businesses can extend their e-business and Enterprise Applications to mobile devices and in addition, maximize the new business opportunities that wireless computing offers.

### 1.3 Meeting the challenges of mobile computing

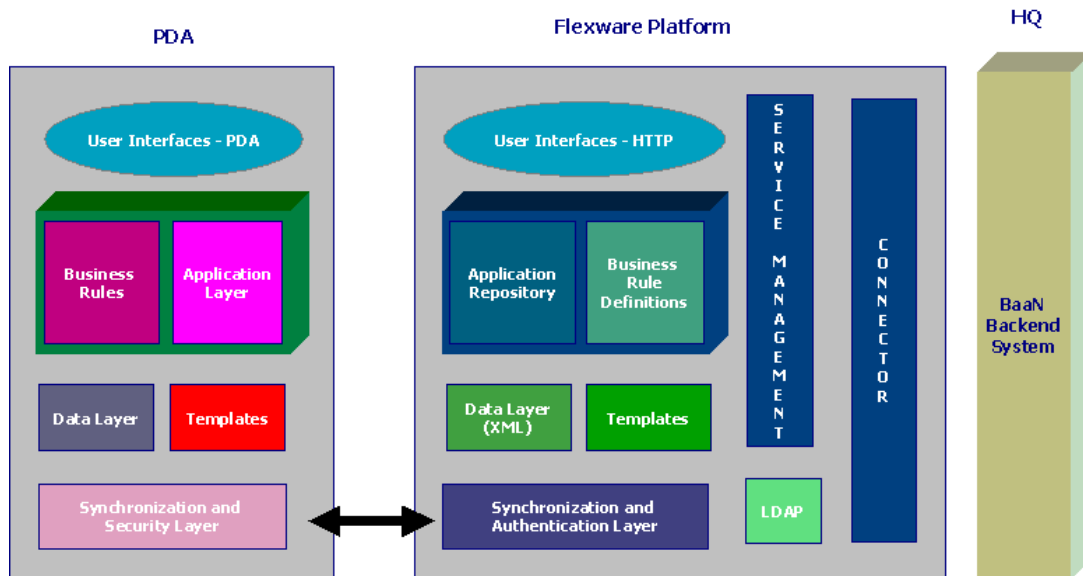
Avon by building Flexware™ on top of the J2EE and XML standards, Avon strives to protect your investment, as well as providing a solid foundation for future business-critical applications and third party integration.

Other salient features of our Flexware™ Server platform are:

- Multi Application Support
- Multi Device Support
- Platform Independence
- Multi Protocol Support - Supports offline (Cable and Internet Synch) and online (GSM, IRDA, Wi-Fi etc) transactions.
- Interfacing with existing backend Applications (e.g. BaaN)
- Session Management
- System Administrative Interfaces

- Device management
- Alerts & Notification management

## 1.4 High Level Architecture Diagram



## 1.5 Flexware™ Application Components:

1. **Server Component:** The Flexware™ server component consists of the following components.
  - a. **Business Rules Definition:** This component allows for storing the business rules like validations, calculations, references to data objects, data access privileges, the hierarchy in the organization etc. The business rules definition in the Flexware™ server component takes care of changing business rules which is automatically synchronized with the handheld device.
  - b. **Application Repository:** This component allows for changes in the templates and to generate the user interfaces as per the requirements. For example after the system has been implemented, there is some change in the user requirement in terms of forms, data capture etc. This can be easily done through this component. This component is also responsible to apply the business rules to the application.
  - c. **Templates:** These are the forms or templates through which data capture will take place and the presentation of the same to the user.
  - d. **Synchronization Layer:** This layer establishes contact with the PDA counter layer, does authentication and allows for data transfer. Data transfer can happen bi directional.

**Methods of Synchronization:**

The synchronization is possible in the following ways:

- HTTP based synchronization
- Wireless Synchronization on GSM network and using W-LAN
- Cradle based synchronization over LAN/WAN

**The synchronization of Flexware™ is done by the Flexware™ Synch Manager, which performs the following tasks**

Flexware™ Sync Manager consists of a synchronization component used for all applications. In addition, the architecture supports the creation of custom Application Manager, Data Manager and Data Connector components for each application to handle connectivity, authentication and data formats. Each component has the following API's:

- Data format API as part of the Data Manager
  - XML
  - HTML
  - Generic data format API to be used for adding additional data formats
- Data transport API as part of the Data Connector
  - CORBA
  - SOAP
  - JCA
  - Generic data transport API is used for adding additional data transports such as RMI, HTTP or sockets
- Authentication API as part of the Application Manager
  - LDAP
  - Active Directory
  - No authentication
  - User name/ password
  - Generic data transport API is used for adding additional authentication models such as two-factor authentication.

- e. **Data Layer:** The data thus received will be stored in this layer in xml format .
  - f. **LDAP:** The LDAP maintains users profile information for authentication and access privileges.
  - g. **Service Management:** Takes care of what data needs to be pulled as per the business rules from the various databases and also manages the linking between the dependent components.
  - h. **Connectors:** This is the pre-built BaaN connector to pull or push data into the BaaN system.
  - i. **User Interface - HTTP:** This component allows user to view the interfaces on HTTP browsers and configure the personal information. Ex. What all things to be synchronized and any other specific information.
- 2. PDA Component:** The PDA application has similar components as in the server to communicate and maintain consistency in data at all times.
- a. **Business Rules:** maintains a mirror image of the server component pertaining to the user of the hand held computer. Each user has a log in id , which also doubles as a security measure. The behavior of the PDA application is controlled by the business rules defined.
  - b. **Application Repository:** is again the mirror of the server component, allows the access to the templates. This component is also responsible for generating and presenting the user interfaces to the user.
  - c. **Templates:** are the forms, views of the data as per the users requirement.
  - d. **Synchronization Layer:** This layer sync with the server layer to transfer data both ways.
  - e. **User Interface – Offline Client:** The presentation layer, which will be responsible for the user interactions for both capturing data and presenting the reports.

Avon's Flexware™ Platform delivers significant and demonstrable return on investment (ROI) by enabling TRL to leverage on "One Platform-Deploy All" to deploy any web based, Wireless and Mobile computing applications with minimal or no further IT investment.

Some technical and non-technical descriptions of how the Flexware™ Platform delivers benefits are featured in the table below:

Technical	Non-Technical
<ul style="list-style-type: none"> <li>• Improving efficiency by automating front-end business process through deploying web, mobile computing and wireless application solutions and connecting to BaaN backend.</li> <li>• Enabling real time information flow to remote employees anywhere, anytime</li> <li>• Can use any mobile devices and any wireless networks.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces cost by "<i>One Platform–Deploy All</i>" wherein the Flexware™ platform can be used to deploy further web based or wireless and mobile computing applications with minimal or no further IT investment.               <ul style="list-style-type: none"> <li>• Faster time to deploy additional services.</li> <li>• Keep senior management informed through alerting system</li> <li>• Flexibility to change format</li> </ul> </li> </ul>

**The components covered by this solution will include but are not limited to:**

- Operating Systems (Pocket PC, CE, Palm etc.)

Pocket PC, Win CE, Palm OS

- Application solution

Based on J2ME specifications with a Runtime environment of J2ME

- Any other hardware and software required

There is no specific H/W or Software required. But the PDA should have the necessary Hardware and the drivers for connectivity as per the requirements (GPRS/ GSM etc.)

## **2 FUNCTIONALITY REQUIREMENTS COMPLIANCE**

The proposed solutions would be evaluated on the following aspects:

### **2.2 Device security including integrated access control, encryption and authentication**

The application in the device does have an user authentication and authorization system. The information for the authentication is stored in encrypted format in the device database. The same is synchronized with the Central Web-based Application. As per the user profile, the PDA applications are available to the users.

### **2.3 VPN Support**

The architecture supports VPN support. The PDA application communicates with the Central Web-based Application using HTTP/HTTPS protocol on a TCP/IP network.

### **2.4 Data Security, encryption**

The information, which is transacted by the synchronization process (HTTP/HTTPS based), can be encrypted as per the configuration. The information stored in the PDA database can only be accessed using the PDA resident application as per the user privileges. The information at the Central Web-based Application is stored in a RDBMS (Oracle/MS SQL) and the security of the same is as provided by the resident RDBMS server.

## **2.5 Desktop security, secure authenticated synchronization with the desktop**

There is no desktop application, but the Central Web-based application can be accessed by any of the desktops using any Browser thin-client (Internet Explorer etc.). It has got its own Authorization and Authentication Module, which controls the authentication and privileges for various information base and transactions.

## **2.6 Centralized Asset Management**

All the PDA Profiles, device information and the access details are managed at the Central Web-based Application, by which the PDAs are driven after the synchronization. The changes to the same can be done at the central level.

## **2.7 Centralised Intrusion detection**

The application can be integrated to any of the 3<sup>rd</sup> party Centralized Intrusion detection software application, implemented at the Central Level where the Web-Based Application resides.

## **2.8 Centralised Virus Protection**

The application can be integrated to any of the 3<sup>rd</sup> party anti-virus software application, implemented at the Central Level where the Web-Based Application resides.

## **2.9 Firewall**

The application can be integrated to any of the 3<sup>rd</sup> party software based/ hardware based firewall, implemented at the Central Level where the Web-Based Application resides. The firewall can be configured as per the need.

## **2.10 Configuration automation and software distribution capability**

The application provides the facility to configure various transaction capabilities as per the user privileges, connector capabilities for various back-end application systems. The PDA application distribution happens through the synchronization process. Any updates to the application configuration are automatically done during the regular synchronization over (HTTP/ HTTPS)



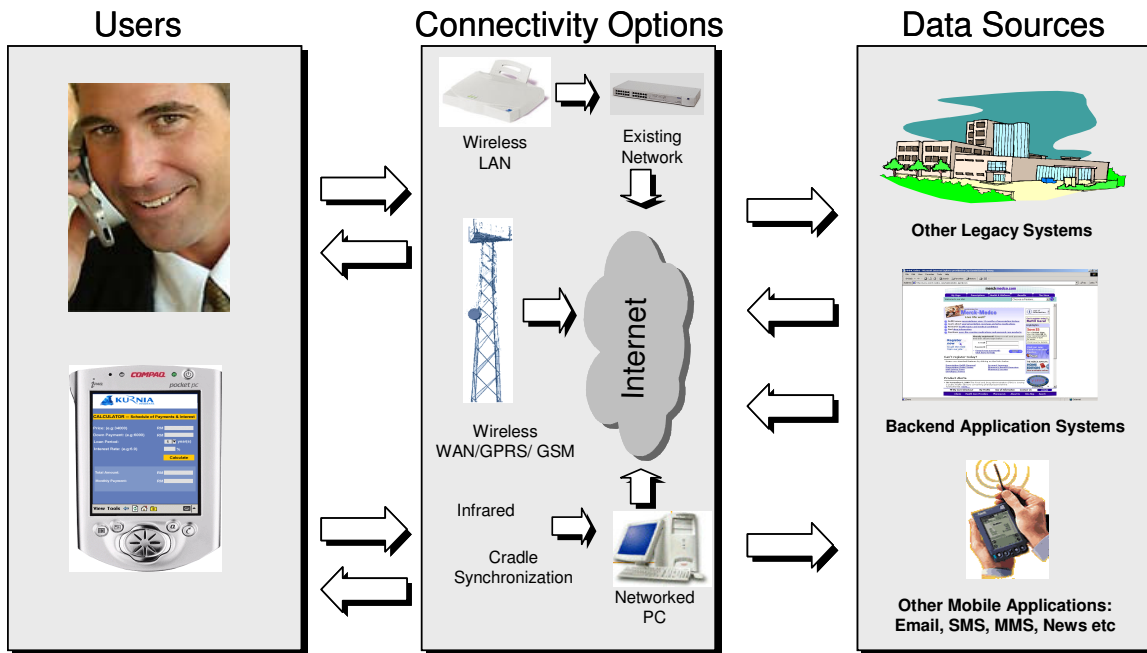
**2.11 Interoperability**

The PDA application on the resident PDAs can be used by any of the users as per the configuration at the Central Web-based Application, hence doesn't restrict the usage of the same.

**2.12 Support for Network Connectivity using 802.11 b/g/a , GSM , GPRS**

The application supports the above mentioned connectivity options, as the PDA application communicates with the central web-based Application on a HTTP/ HTTPS protocol based on TCP/ IP.

**2.13 Support for Device to Device connectivity via Bluetooth, Infrared**



The application supports the above mentioned connectivity options.