EMC
APPLICATION INFORMATION

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1.1 Table of Contents

1.2

Applications

1.2.1 Introduction

The following section deals with the applications available for EMC for launch. By no means is the list of applications all that is recommended for EMC, however the applications included are considered among those that are key for a successful platform.

Some of the applications listed in this section are done so on the basis that they are provided as a standalone content proposition, eg News or Weather, while others are provided on an enabling basis eg Chat and SMS. The concept of enabling platform-enabling applications is relatively recent however OpenTV feels that it is the only way common applications components should be implemented. By treating certain applications as enabling technologies, the power of those applications is unlocked and available to all applications and applications developers.

Of notable absence within this section of the proposal is any mention or reference of EPG's or IPPV applications. Due to the complex nature of the agreements required to provide these applications, information can be provided in a separate proposal.

All applications included in this section would be customized by OpenTV professional services to confirm to EMC branding and marketing requirements. OpenTV has a proven track record of completing applications on time, on budget and in a seamless integrated fashion.

The following applications are included in this proposal:
- EMC Portal
- News
- Weather
- Enhanced Sport
- Financial Services
- SMS
- Email
- Chat
- Betting
- Customer Care

1.2.2 EMC Portal

With successful platforms, network branding and identity is very important. One of the ways of achieving brand recognition and also providing a single place for the access of interactive applications is through the use of a portal.
Portals are custom developments to meet the exact requirements of every network. The diagram below shows the Jupiter Network portal.

The main page of a network portal generally contains the following:
- Links to major categories of applications or third party providers
- Promotional information
- The option for live video or a Barker loop
- Links to commerce sites
- Links to set up and account information
- Links to Customer Care applications

The OpenTV Professional Services applications development process will be used to complete this development:
- Definition of requirements
- Functional specifications
- Media Design document
- Applications development
- Integration with content or data sources
- Integration with head-end
- Quality assurance
- Application acceptance

The intellectual property obtained from the development will reside with OpenTV.

1.2.3 News

Without waiting until the Evening News broadcast, tune to the radio or log-on to the Internet to get up to the minute news, OpenTV's Interactive News is a virtual channel service that provides viewers with the latest Headlines, National, International News and sports News. Viewers can scan headline updates and select stories to get more information on events that are happening around the globe in News, Business, Sports and Entertainment. Using content provided by news organizations selected by EMC, OpenTV's Interactive News is highly flexible and will provide EMC with options to brand the application to meet their own look and branding needs. Programmable banner advertisement placements and room for sponsorship logos allow multiple opportunities for additional revenue generation. OpenTV News will be integrated with OpenTV Account.

Figure 1: Sample NEWS Application screen shots

- OpenTV's Interactive News service is easy to use, easy to navigate and read.
- Local, National and International stories along with specialist categories such a Business, Sports and Entertainment
- OpenTV Interactive Television services are localized for each network to ensure they are branded and meet the needs of that network.
- The virtual channel service may be launched from the Electronic Program Guide (EPG) or from the initial Set Top Unit screen. The service is downloaded via the broadcast stream using OpenTV's industry leading technology.

1.2.3.1 Features and Functionality

Open TV News will be branded to meet EMC's needs. Networks can elect to use their own news sources provided the data is prepared using the specified XML format. News categories are customizable dependent on needs, market and location.

- Up to Six customizable Categories
- Up to Seven Stories per Category
- Multiple paragraphs of text including Graphic / Photo inclusion
- Customizable Background audio track options
- Easy to use Menu options for rapid navigation
- Customizable Banner Advertisements
- Logo and Branding opportunities
- On-Screen Help Facilities
- Multiple Language support

1.2.3.2 Functional Requirements

- OpenTV's Core 1.1 Set Top Unit Middleware or higher
- Content is to be provided by EMC in a specified XML Format
- Based on OpenTV Publisher

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1.2.4 Weather

OpenTV Weather allows viewers to immediately see weather conditions in any one of thousands of locations around the world without having to tune to the radio or Log-on to the Internet. OpenTV's Interactive Weather is a virtual channel service that provides viewers with the very latest weather, satellite images and the weather forecast up to five days into the future. OpenTV's Interactive Weather is highly flexible and provides Networks with options to brand the application to meet their own look and branding needs. Programmable banner advertisement placements and room for sponsorship logos allow multiple opportunities for additional revenue generation. The Weather application will be integrated with OpenTV Account.
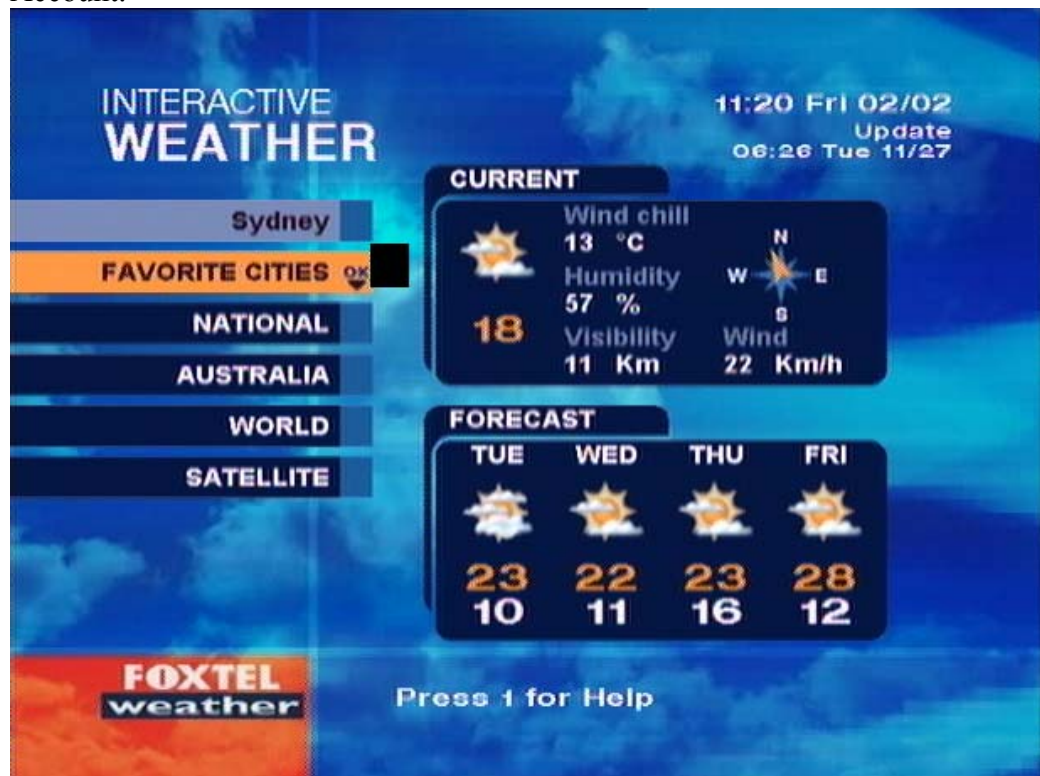

Figure 2: Sample Weather Application screen shot

- OpenTV's Interactive Weather service is easy to use, easy to navigate and read.
- Local, National and International weather along with satellite leisure information.
- AuccuWeather supplied content from over 30, 000 cities around the world.
- OpenTV Interactive Television services are localized for each network to ensure they are branded and meet the needs of that network.
- The virtual channel service may be launched from the Electronic Program Guide (EPG) or from the EMC portal.

1.2.4.1 Features and Functionality

Open TV Weather service can be branded to meet the Network needs.

- Graphic / Photo inclusion.
- Customizable Background audio track options
- Easy to use Menu options for rapid navigation
- Customizable Banner Advertisements
- Logo and Branding opportunities
- On-Screen Help Facilities
- Multiple Language support

1.2.4.2 Functional Requirements

- OpenTV's Core 1.1 Set Top Unit Middleware or higher
- Version 3 Boot loader or higher
- Based on OpenTV Publisher

1.2.5   Sport

Real-time interactive sport services are very popular among networks around the world.
Using OpenTV Sport, the viewer has access to real-time information, such as statistics and scores.
Another popular feature is the ability to switch between a range of camera angles, giving a fresh perspective for sports fans.

With OpenTV Sports, OpenTV offers all these capabilities as a one service turnkey solution.
The examples include the real-time sport service running in Via Digital's network (Spain) and BSkyB (UK).
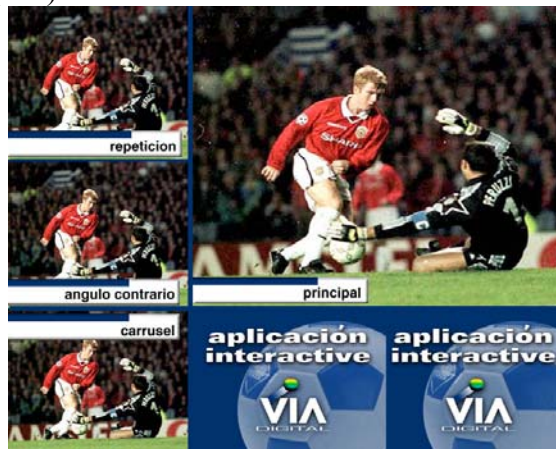
The OpenTV Sports application is flexible enough to be used for multiple sports. Team and individual sports are supported. The data for game statistics is loaded from a database located at the head-end. The database can be populated either from OpenTV provided client tools, third party tools or existing data providers.

1.2.5.1   Features and Functionality

- Browse though a "walled garden" set of news magazines
- Mosaic of available camera angles
- Can include up-to-the-second update
- Offers advertising and merchandising revenue opportunities
- Provides the client tools to collate and integrate statistics

1.2.5.2   Functional Requirements

- OpenTV's Core 1.1 Set Top Unit Middleware or higher
- Based on OpenTV Publisher

1.2.6   Financial Services

OpenTV Stock is a virtual channel service that allows the viewer to access investment information.
OpenTV Stock allows the viewer to Access account/portfolio information, obtain up-to-the-second stock quotes, research companies and financial information, read the latest financial news and obtain analyst opinions

1.2.6.1   Features and Functionality

- Stores Portfolio information on the Set Top Unit.
- Live Stock Ticker
- Financial News
- Multiple exchange support
- Data sources are included with the application or can be provided by EMC
- Provides opportunities for additional advertising revenue.

1.2.6.2   Functional Requirements

- OpenTV's Core 1.1 Set Top Unit Middleware or higher
- Flash File System
  - Based on OpenTV Publisher

1.2.7 Short Messaging Service

OpenTV SMS is a ready-to-use application linked with SMS transport service for any country in the world. Based on OpenTV Publisher, it can be cost-effectively customized to any network's individual and branding requirements, the services can be deployed as full screen virtual channel or as an overlay to a TV program.   The use of Publisher also allows EMC to re-use the feature in any application to deploy creative added-value services, bringing new revenue streams to these applications. Examples include the sending of scores from within an enhanced TV sports application and the sending of program schedules from within an Electronic Program Guide (EPG)

On the EMC Platform, SMS will be implemented as a gadget. While this will result in an SMS service, more importantly it will make available the SMS functionality to all applications whether they are provided by OpenTV, NDS or other third parties.
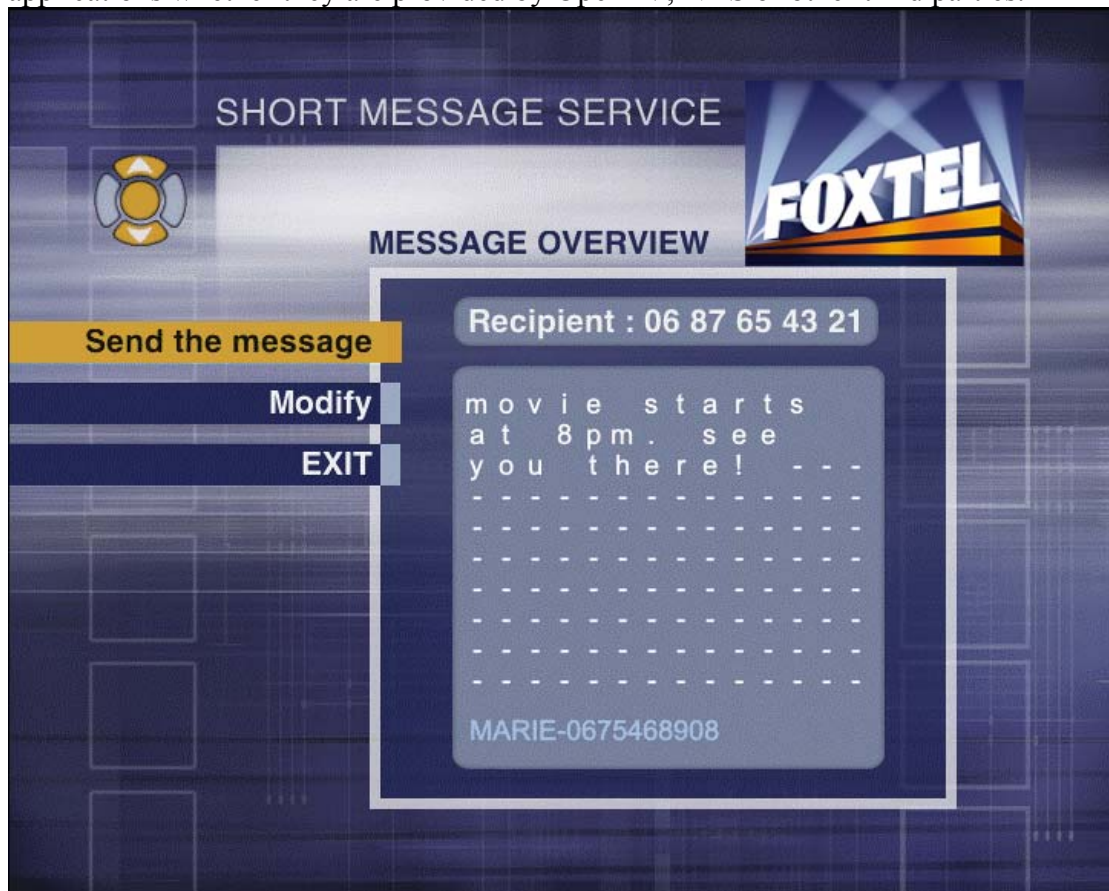
Sample SMS Application screen shot

1.2.7.1 OpenTV SMS Features and Functionality

Supported Features:
- Sends SMS messages to any mobile phone in the region or country
- Support for both full screen virtual channel and enhanced TV overlays
- Insertion of EMC signatures, messages or advertising into SMS messages
- Banner advertisement management – using OpenTV Advertise
- Runs on TCP/IP and non-TCP/IP networks
- Bundled SMS transport

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SMS Functionality:
- Infrared and virtual keyboard support including choice of two virtual keyboards (1D or 2D)
- Memory of phone numbers previously called
- Management and automatic insertion of personalized signatures

The following Diagram shows the OpenTV SMS implementation:
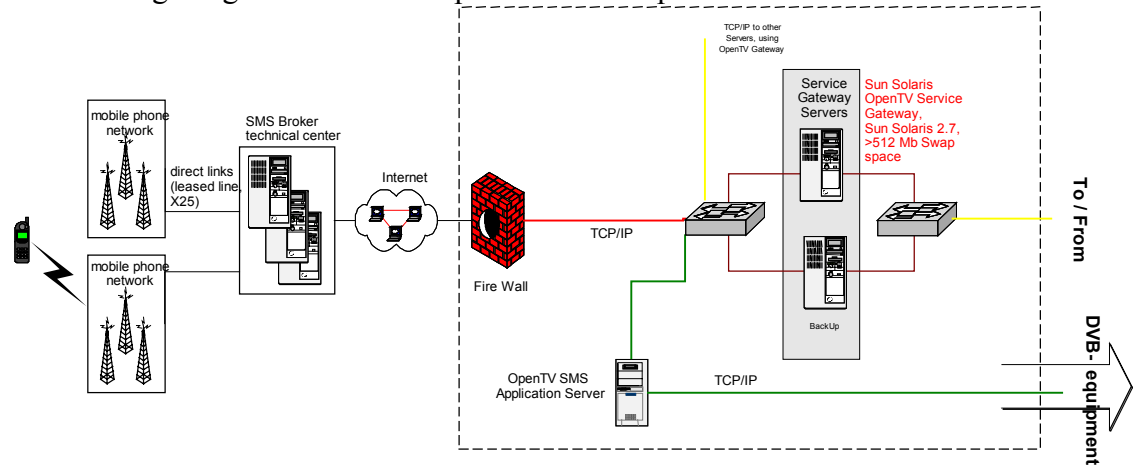
1.2.7.2 Technical Requirements

- OpenTV's Middleware software
- Return path
- SUN Solaris 2.7 for OpenTV Gateway
- Robust connection to the Internet
- Based on OpenTV Publisher

1.2.8 Email

OpenTV E-Mail is a virtual channel service that will provide EMC with a highly scalable, robust, easy to use E-Mail service. OpenTV E-Mail offers the television viewer the E-Mail functionality normally associated with a PC environment. E-Mail is the "killer app" of the PC / Internet and one of the core communications functions for interactive television. It will be a fundamental requirement of e-commerce (notification, confirmation, service inquiries, etc.) and Customer Service. OpenTV's E-Mail supports banner advertisement placement and is part of the OpenTV communications suite of applications, which includes Messenger, Center Point and Chat.

Figure 7: Sample E-Mail Application screen shot

OpenTV E-Mail is easy to use. It supports multiple E-mail addresses for family use (up to 5) for each viewer account.
The service may be launched from the Electronic Program Guide (EPG) or from the EMC PORTAL. The service is downloaded via the broadcast stream, while the application requests to the Server are handled through the back channel modem or cable return path.
OpenTV will be customized for EMC to ensure they are branded and maintain a common platform look and feel.

1.2.8.1 OpenTV E-Mail Features and Functionality:

- **Registration**
  - Add/ Delete / Modify additional Family Members
  - Alternative E-Mail Addresses

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- o Preferences Set Up / Change
- o Password Set Up / Change
- o Folder Management
- o On Line Help
- **Supported Features**
  - o Infra-red or virtual keyboard support
  - o Banner Advertising
  - o Independent ISP support
- **E-Mail Functionality**
  - o Read / Display E-Mail from Folder
  - o Scroll with current E-Mail
  - o Read Next E-Mail
  - o Delete current E-Mail
  - o Forward current E-Mail
  - o Reply to sender
  - o Reply to all Addressees
  - o Write / Compose new E-Mail
  - o Display Text Attachments
  - o Strip un-viewable attachments

1.2.8.2 Functional Requirements

- OpenTV's Core 1.1 Middleware or higher
- Set-Top Unit with minimum 10K FLASH memory and 600K RAM
- Set-Top Unit with Modem or Cable Return Path
- Infrared Keyboard (recommended) - virtual on-screen keyboard available.
- OpenTV E-Mail is designed to work with IMAP E-Mail servers, customization for proprietary E-Mail servers possible on request.

1.2.9   Chat

The primary function of Chat as with all communications services is to build communities of viewers but also to create a one to one relationship with viewers. Unlike traditional television the communications services allow real time two way contact with viewers. This means content can become part of the broadcast programming e.g. chat sessions associated with video programming.
Community-based interactive TV services are extremely popular and include sports supporters' clubs, viewer groups e.g. chat show viewers, teen groups and other common interest groups.
All of the communications services should be considered more as enabling aspects of the EMC platform and not necessarily services in their own right e.g. a chat service is considerably more powerful in association with video content than on its own.
Chat and Instant messaging services have been successfully implemented on a subscription basis however the most successful uses of chat are ones which use the two way communication to build definable communities maximizing advertising, T-commerce opportunities and brand establishment and network differentiation.
The implementation of OpenTV Chat on the EMC Platform will be done on an enabling basis. While this will result in a chat service being available, more importantly it will allow other applications whether they are developed by OpenTV or third parties to use the OpenTV Chat "Gadget" within their applications. In this way Chat services will always be implemented with common navigation and utilize the same infrastructure.
OpenTV CHAT relies on the industry standard chat protocol, IRC.
The following diagram shows the technical architecture of OpenTV Chat.
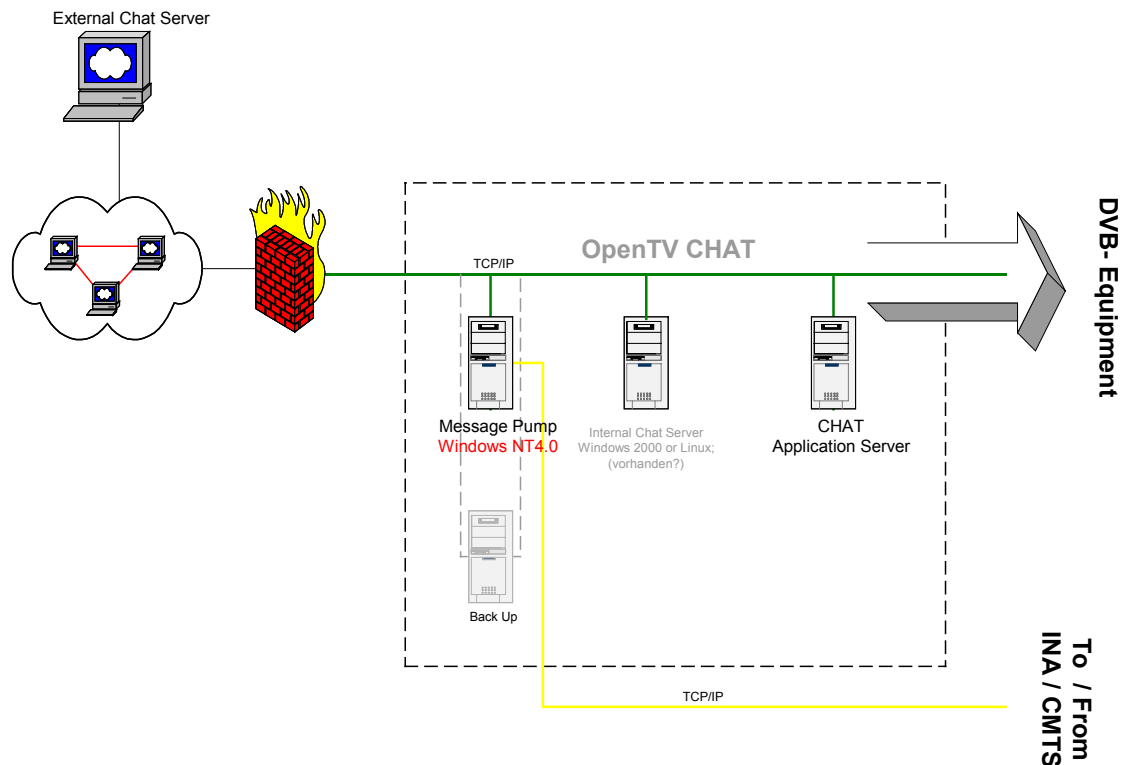
1.2.9.1   Supported Features:

- Allows for the creation of multiple chat rooms
- Support for both full screen virtual channel and enhanced TV overlays
- Insertion of Network Operator signatures, messages or advertising into chat messages
- Banner advertisement management – using OpenTV Advertise
- Runs on TCP/IP and non-TCP/IP networks
- Uses industry standard protocols
- Infrared and virtual keyboard support including choice of two virtual keyboards (1D or 2D)
- Allows non participants to watch chat sessions
- Banned word list support

1.2.9.2   Technical Requirements

- OpenTV's Middleware software Core 1.1 or higher
- Return path -Analog and Cable
- Based on OpenTV Publisher

1.2.10 Betting

The wagering industry is one of the confirmed sources of revenue for EMC. Wagering applications are however, one of the more complicated to implement. Networks around the world have seen differing results from betting applications. The quality of the interface, its ease of use and seamless integration into the platform all affect the level and response from users. The objective of a betting interface is to attract both the experienced punter and novice alike.

OpenTV has staff highly experienced in all aspects of the wagering industry that are building OpenTV Wagering. OpenTV Wagering supports both fixed price and para-mutual betting in an enhanced or virtual environment. OpenTV Wagering is integrated with OpenTV Account and OpenTV Gateway

Along with Banking, wagering has the highest requirement for security. EMC and the Betting Provider will define the security policy for exchange of transaction between the Set Top Unit application and Account and between Account and the Betting Provider's application servers. The following options are available within the application:

- Transaction Security using SSL
- Parental Control
- Set-top box Authentication
- Network Authentication
- Viewer Authentication
- Audit Trails within OpenTV Account
- Account Application Screen
- Terms and Conditions Screen

To facilitate ease of use and speed of Navigation, the application is divided into the following screens:

- Home Screen – automatically after login
- Account Application
- About EMC Wagering
- Help/Support

The Home Screen allows the user to select a betting category and event or to access their account information – such as personal details and past and open bets. Events are displayed in a vertical list and are contextual to the category selected. Upon entry to the Markets screen the user is presented with a list of markets. Selection of a market takes the user to the Bet Types Screen where the user is presented with a list of Bet Types and prices. Having selected a bet type/price the user is presented with the bet entry screen.

The bet confirmation screen displays all details, including payment method, for the bet about to be placed. The payment transaction is handled directly by the betting operator.

The other screens within the application provide supporting functions, for example: the account information screen displays details of the users account and allows the user to enter information to modify information relating to their account, while the support screen acts as a high level help interface.

Wagering applications have a high requirement for management and data updates. OpenTV is happy for third parties to provide this service to EMC or is able to complete the task if required.

1.2.10.1 OpenTV Wagering Features and Functionality:

- High Availability and throughput
- High Security implementation
- Sports Ticker
- Enhanced or Virtual
- Fixed Price Betting
- Para-mutual Betting
- Application Lock out on three failed login attempts
- Form included
    - Sports
        - With sports the following information could be available
        - Past performance
        - Past performance against current opponent
        - Injuries/omissions etc
    - Racing
        - With racing the following information should be available for each horse
        - Past performance (with standard condition/dist etc indicators)
        - Horse Number, Barrier, Weight, Colours
        - Track Information and Rating
        - Jockey and Trainer Information
    - Specials
    - Due to the wide nature of Specials betting a free text area is available for the betting provider to supply any pertinent information.
- Users are able to modify their account details as well as view their bets.

1.2.10.2 Functional Requirements

- OpenTV Core 1.1 or higher
- Return Path
- SSL extension
- The betting provider (understood to be NSWTAB) will be responsible for providing odds data.
- Other data, for example form or price feeds, may come from the betting provider or from third parties.
- The betting provider will supply rules for the service based on regional requirements.

1.2.11 Customer Care

The requirements for Customer Care vary from network to network. Different networks require different services from their Customer Care application and different network designs and implementations modify the technical architecture of any Customer Care application.

For these reasons, Customer Care is developed as a Custom application.

There are a number of reasons for the inclusion of a Customer Care application, including:

- Customer Education and Marketing
- Call Centre Cost Reduction
- Provisioning System Integration
- Bill payment Interface

With any new interactive network or for any new subscriber, there is an education process that must occur. How this initial phase is handled will not only effect the success of the platform but also affect the cost of implementation. The Customer Care application will contain a self help guide for the platform and has the option for including a video tutorial. It is not uncommon for the Set Top Unit to be provisioned to launch Customer Care the first time the box is launched. This is used to show the viewer how to use their new digital service and also to assist in provisioning the Set Top Unit.

An ongoing benefit of customer care is a reduction in call centre calls and a resulting fall in costs. The Customer Care application is able to provide many of the functions traditionally handled by call centers. While the application will not replace the call centre it can reduce the volumes of calls received. The types of functions that the application can provide is:

- Answers to commonly asked questions
- View your outstanding balance
- Pay your account
- Change your tier
- Subscribe to PayPerView or new services
- Self Help Tutorial

To enable the account functions within the Customer Care application, it is integrated with OpenTV account. OpenTV account is then able to transact with the appropriate EMC BSS and OSS systems to achieve the desired result.

It would also be possible to integrate the application to other billing systems such as Telstra, providing the viewer with the ability to review and pay your telephone bill also.

The inclusion of a Customer Care application will not directly generate revenue, however it does substantially add to the overall viewer experience and adds greatly to the perception that the overall platform is tightly and seamlessly intergrated.

The Customer Care application will be developed to meet EMC's needs by OpenTV Professional Services.

The Following applications development process will be used:

- Definition of requirements
- Functional specifications
- Media Design document
- Applications development

- Integration with content or data sources
- Integration with head-end
- Quality assurance
- Application acceptance