

# ENABLING THE CONVERGENT BROADBAND CONTENT OF THE FUTURE



## ADDRESSED AREAS

- ◆ Advanced Services on Basic Set Top Boxes
- ◆ Fast Development and Testing Cycles
- ◆ Easy User Interface Customisation: Look & Feel, Languages, Advertising...

## KEY FEATURES

- ◆ Low resources: 20 MIPS CPU, 2MB Memory
- ◆ Hardware-independent Applications
- ◆ Dynamic Linking of Applications
- ◆ User-friendly Software Development Kit

# IMAGINE MIDDLEWARE PLATFORM™

## IMP BUSINESS OBJECTIVES

It is now well understood that one of the most problematic areas for delivery and operations of DTV and interactive TV platforms is the delivery and stability of the STB environment. This will become increasingly problematic when migrating to broadband mobile devices that are able to present multimedia content. In order to meet these challenges, Imagine Broadband has developed an advanced middleware platform, which allows operators to achieve the following highly important business objectives:

- ◆ Deliver the same look & feel EPG on different specification STBs and STBs from different vendors. This will allow both low-end and high-end STBs to offer an identical look & feel to customers
- ◆ To enable rapid and (more importantly) STABLE delivery of interactive TV platforms on any STB. This will allow interactive EPG and interactive services to be delivered quickly and in a way that is stable from the outset.
- ◆ To enable arcade quality 2D and 3D single and multi-player games, to be delivered over existing and future STBs as a new source of revenue.
- ◆ To enable the customisation of EPG look, feel and functionality on the fly without STB reboot. This will enable the fast delivery of one-to-one marketing as well as other more advanced STB features.
- ◆ Together with our STB Management agent IMP will allow all information relating to STBs, in-box cable modems and interactive services usage to be continuously monitored and captured!
- ◆ Significant cost savings can be achieved as operators can achieve short development and delivery time-scales, lower churn due to box stability, as well as having multiple specification STBs to suit different customer segments.
- ◆ To enable a unified software platform to make convergent content available to other devices (such as PDAs,) so as to deliver advanced broadband services to mobile devices.
- ◆ To allow the immediate use of the IB web browser or any other browser the operator chooses!

## HOW IMP ACHIEVES THIS

- ◆ **Optimisation of STB CPU/Memory Resources:**  
Applications are compiled into an extremely low footprint and optimised machine code.
- ◆ **Object-Oriented Architecture**  
Objects are dynamically linked within the application itself and can be downloaded on demand.
- ◆ **Optimisation of STB Graphical Capabilities:**  
Graphical resources (images, fonts, shapes) are compiled to a format optimised for the hardware platform. This enables complex animations to run on low footprint STBs
- ◆ **Portability to Multiple Devices via high-level APIs:**  
Hardware resources are abstracted using hardware independent libraries.
- ◆ **Rapid Application Development:**  
Tools can be provided to enable rapid user interface development or customisation.
- ◆ **Dynamically modifiable Look & Feel in real time**  
Non technical people can re-skin the STB Look and Feel using a simple tool. These looks & feel packages can be stored on the Internet and retrieved individually for customer profiles.

The EPG in this architecture is similar to an embedded application that will present EPG data locally cached using two sources:

- ◆ The DVB SI information coming from the in-band transport stream (Home Transport Stream or other Transport Streams carrying EIT). (This information is accessed through the middleware platform.)
- ◆ Information provided on demand by HTTP servers and also cached locally in the STB.



IMPEPG

## IMAGINE MIDDLEWARE PLATFORM IN ACTION

What IMP achieves on very inexpensive Set Top Boxes

- ◆ **Advanced information bar.** Retrieves the status of any programme showing currently or in the future from the Electronic Programme guide. Enables the setting of alerts and customisation of preferences.



- ◆ **Gaming.** Supporting advanced graphical functions and highly interactive features. Dynamic linking capabilities enable collaborative gaming.



- ◆ **Video On Demand.** A comprehensive purchasing and viewing application to deliver turnkey Video on Demand services.

- ◆ **Walled Garden.** Context-sensitive banners and full integration between the applications realise the link between the Broadcast TV and Internet worlds, enabling a new generation of e-commerce applications.



Imagine Broadband was founded on the skills of the first team in the world to deliver broadband interactive digital TV over a broadband platform. Since then IB have established many additional world firsts in multi-service platforms over multiple access technologies.

Imagine Middleware Platform is part of Imagine Broadband Product line. For more information or to contact directly our middleware experts, please address your questions to [info@imaginebroadband.com](mailto:info@imaginebroadband.com).



## TECHNICAL HIGHLIGHTS

- ◆ Highly Optimised Components
- ◆ Intuitive Development Environment
- ◆ Standards Based Porting Layer

## BENEFITS

- ◆ Works on PCs, STBs & Mobile Devices *without customisation!*
- ◆ Fast Development Cycles
- ◆ Future proofed (DVB-MHP)

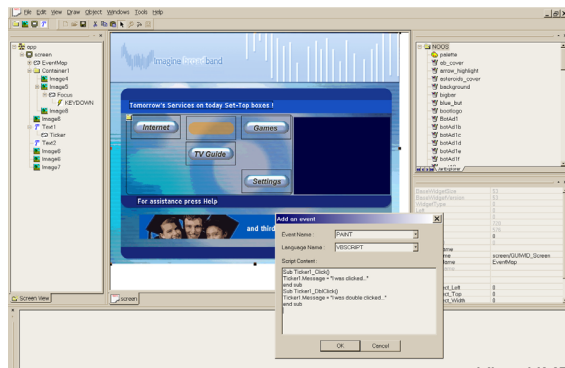
# IMAGINE MIDDLEWARE PLATFORM™

## PLATFORM COMPONENTS

The Imagine Middleware Platform comes with a comprehensive toolkit, enabling development and customisation of highly optimised applications in record timeframes.

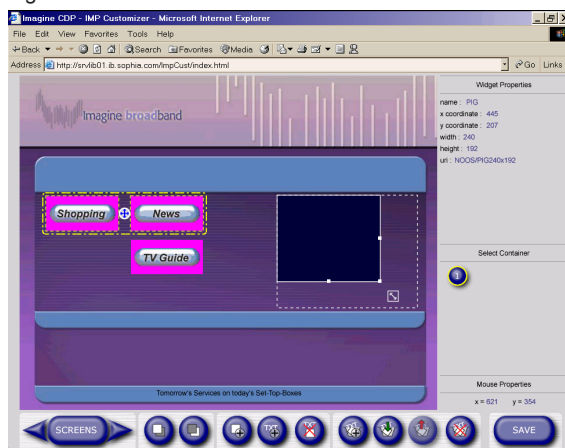
### 1 IMP Software Development Kit

- ◆ Visual IMP is a Rapid Application Development tool enabling fast development and updating of applications. Based on an intuitive graphical interface, this component of IMP SDK significantly reduces development costs.



Visual IMP

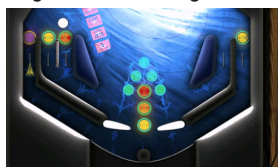
- ◆ IMP Customiser: a quick and easy way for content providers to publish edited content and customised applications for a digital TV network.



IMP Customiser

- ◆ A comprehensive library of components for Electronic Programme Guides, Interactive TV, Games and Communication Applications. These foundation components are able to accelerate the development of applications on top of the Imagine Middleware Platform.

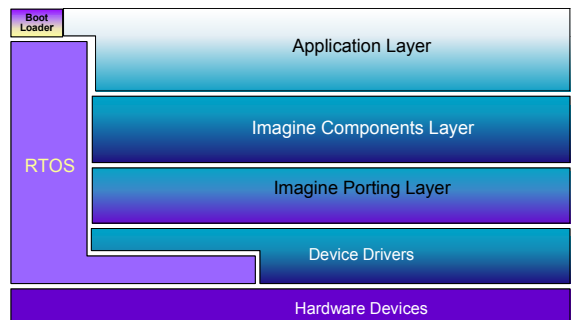
- ◆ IMP Games SDK: a Software Development Kit specifically targeted at arcade games developers. This tool provides a



DirectDraw-like API, producing high quality 2D arcade games in record time. Games developed with IMP Games SDK are native applications that are fully hardware-independent.

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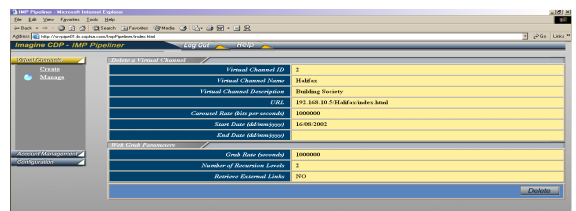
### 2 IMP Client



The Architecture of IMP is divided into 4 main layers. This design enables total optimisation of Set Top Box resources as well as total independence between the application code and the hardware, keeping your development investment intact.

- ◆ Application layer: divided into stand-alone components called widgets that are only activated when needed. A Motion Engine enables efficient execution of complex UI animations.
- ◆ Middleware Services: manage the various devices, widgets, applications and resources; form the core of IMP.
- ◆ Porting Layer: the only layer that needs to be adapted from one STB to another, making all applications reusable.
- ◆ Hardware Device layer: area where drivers access the physical components in Set Top Boxes.

### 3 IMP Servers



IMP Pipeliner

- ◆ IMP Injector: deploying applications, components and data over standard digital broadcast channels
- ◆ IMP Pipeliner: making use of existing and new web-based content without the need of a return path

## KEY DIFFERENTIATORS

FEATURES	SO	WHAT?
◆ Animated User Interfaces	◆ Faster, new service adoption	
◆ Arcade Games enabled	◆ Significant margin increases	
◆ Faster Application execution	◆ No need for STB upgrade	
◆ Presentation/Logic Separation	◆ Much Cheaper development	
◆ Full Multi-tasking	◆ Customer satisfaction	
◆ System services and Middleware services	◆ Lower testing costs	
◆ Object-Oriented Architecture	◆ Standard friendly (DVB-MHP)	

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