

The Costs of MHP

In television receivers

A white paper



PHILIPS

SONY

Panasonic

NOKIA

Executive Summary

MHP receivers will be no more expensive than other interactive solutions by the end of 2003.

Introduction

One of the questions that comes up very often about the DVB Multimedia Home Platform is "*how much does it cost?*"

This question is often asked by pay-TV operators, worried about purchasing set top boxes in a vertical market environment, or regulators trying to decide if the time is right to recommend use of this ETSI standard for interactive television.

This paper should help to answer those questions.

Footprints for current Digital TV Middleware solutions

Using the experience we have with various middleware solutions, we have arrived at a range of publicised footprint figures. All memory figures are in megabytes.

Disclaimers:

All memory sizes depend on size & complexity of resident applications.

Resident applications will probably increase flash size & may increase RAM size. However, MHP has enough flexibility that vertical market operators need resident applications less.

These figures are not intended to be a hard guide. Manufacturers and operators are free to do as they like, regarding the products and services they choose to offer. However, what we have tried to do here is come up with a reasonable list of hardware requirements for a reasonable set of applications. It is always possible to do things with smaller footprints or slower processors, but then more time and effort is required on the applications to ensure that they actually run on such a product.

This table indicates the rough footprint (in megabytes) and processor speed required. Where a range is given, we have taken the higher value for cost comparisons.

Solution	Processor	RAM	FLASH/ROM
Basic Zapper	30MHz+	1-2M	1-2M
MHEG-5	50MHz+	4M	2M
Open TV	50MHz+	4-8M	4M
MediaHighway	50MHz+	4-8M	4M
MHP Enhanced Broadcast profile*	80-130MHz+	8-16M	8M
MHP Interactive Broadcast Profile*	80-130MHz+	8-16M	8M
MHP Internet Access Profile*	150-200MHz+	16-32M	16M

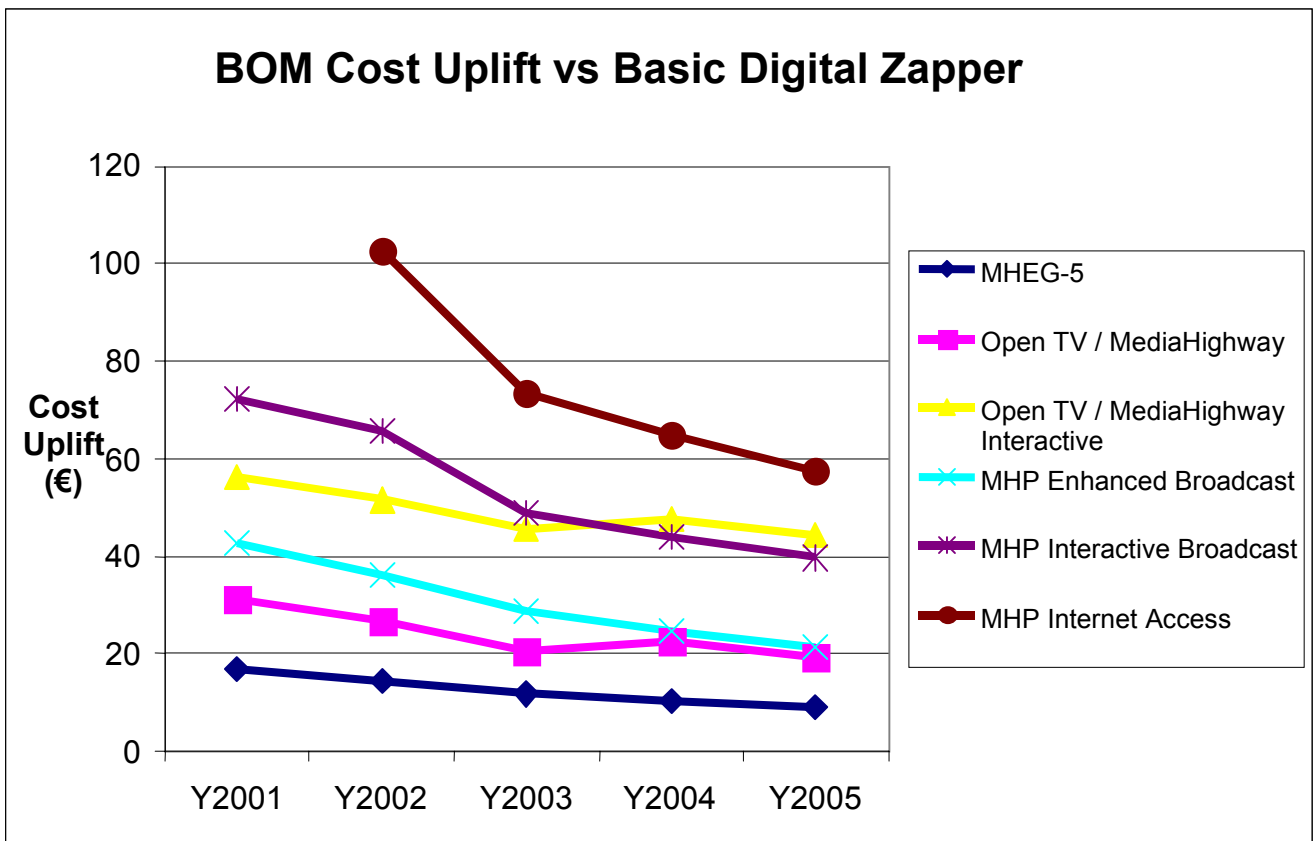
* Not including optional elements, such as DVB-HTML. Use of this option essentially brings the requirements up to the same as the Internet Access profile, as the DVB-HTML option is an extensive specification covering XHTML, style sheets, ECMAScript and more.

Cost of Interactivity

Due to non-disclosure agreements with our suppliers, it is not possible to show the actual costs of individual components. Assumptions that have been made are shown after the graph. The graph shows the extra cost of hardware components that would be required to support the different existing interactive solutions.

The main driver for the cost downturn is memory costs and processor costs. The costs to create this graph were based on the footprints in the previous section.

To get from BOM costs to actual price difference in an unsubsidised retail market, you can multiply by a factor of three.



Explanations of the graph

The graph shows the relative increase in cost (in euros) compared to a basic zapper digital product without any interactivity or modem. We expect interactive (with modem) products to make up the vast majority of shipments.

MHEG-5

The MHEG-5 line refers to a UK profile implementation without a modem.

OpenTV/Mediahighway

This line refers to an average shipping product without the cost of a modem included.

OpenTV/Mediahighway Interactive

This line refers to an average shipping product with the cost of a 56k modem included.

MHP Enhanced Broadcast

This line refers to the enhanced broadcast profile of MHP without the cost of a modem included.

MHP Interactive Broadcast

This line refers to the interactive broadcast profile of MHP with the cost of a 56k modem included.

MHP Internet Access

This line refers to the internet access profile of MHP with the cost of a 56k modem included.

Assumptions in the cost calculations

We do not include software license fees. It could be argued that MHP, with at least six suppliers, would be less expensive than either Mediahighway or OpenTV. However, given that they all exist in a competitive market, it was decided to ignore this and assume that each software solution costs the same.

The cost differential between systems with a return channel and without is just the cost of the modem. We have shown the costs for a 56k modem, suitable for retrieving interactive content over the return channel. If one required a lower speed modem, the argument would remain the same, only the cost difference between non-interactive and interactive would change.

We have assumed that lower memory footprints become sub-optimal over time. The memory footprints required for MHEG-5 and OpenTV/Mediahighway will, over the next few years, become less economic than higher capacity memories, such as those used in personal computers, digital cameras, mobile phones and personal digital assistants, as well as a host of other digital products. This will lead, by 2004 to higher footprint solutions such as MHP costing less than their lower footprint counterparts. In reality, of course, the lower footprint solutions would use the same memory chips, even if they don't need the extra memory. **The main conclusion is that this will, in a few years, reduce the cost differential between existing interactive TV systems and MHP solutions towards zero.**

We assumed that the exchange rate price of Euro versus the dollar remains stable. The actual rate will of course vary, but this will affect all solutions equally.

Conclusion

After detailed analysis, we can conclude that already in 2003, Digital TV sets with MHP will not be more expensive to the end user than with any other API. In the longer term, one common standard will enable manufacturers to make MHP digital TV sets cost less to the end users than with various non-compatible APIs.

The headline figures we found, when comparing like with like is that today, when comparing MHP with existing solutions, the real "Bill-of-materials" cost difference is **€12-16**.

During 2003, that cost difference should disappear.

If you want to compare MHP with a bare bones "basic zapper", that cost difference goes up to **€43-72** today, reducing to **€21-40** by 2005.

Yes, MHP has a cost associated with it, but the long-term (and even mid-term) economic, social, and competitive benefits of having such a standard for interactive digital television outweigh the short-term costs very quickly.

Compared to existing solutions, MHP is a second generation system with a significant step forward in functionality, enabling a much greater variety of interactive applications and services. This advantage on its own - and there are many more - far outweighs the short-term cost difference with existing APIs.