Informed Intelligence.

Envisioneering

In-Band Mobile DTV Will Drive Personal Video Receiver Consumer Adoption

MPH Free Over-the-Air Handhelds May Empower
100 Million-plus Portable DTVs in First Five Years
While Complimentary to Cellular Mobile Subscription TV

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Envisioneering's engineers have been keenly involved with the ATSC digital broadcasting and data standards process for a decade. Envisioneering technologists have participated in the evolution of ATSC standards to include multi-channel capabilities, data services, improved quality of service through advances in decoding circuitry and enhancements such as E-VSB.

Envisioneering's market researcher access and dialogues with key New York and Hollywood executives who drive entertainment, sports and news related consumer revenue models – across broadcast, cellular, cable, telco and physical media channels – is both broad and robust. These twin pillars of technology evaluation and content industry awareness – along with sensitivity to future consumer needs – propel Envisioneering's confidence in MPH's technology, product, services and business value to broadcasters, programmers, emergency services providers, receiver makers and, most importantly, consumers.

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Introduction

While other mobile modulation and encoding solutions have been proposed to deliver digital TV services to individuals and vehicles, the MPH in-band mobile DTV system seems to provide the best solution to drive portable digital TV to volumes, services and robustness above and beyond consumers' existing portable (analog) TV expectations.

Three crucial MPH advantages are:

1) Single antenna reception robustness (eliminating dual-antenna cost and clutter).
2) Versatile bandwidth and data economy, enabling single and multi-channel delivery.
3) Compatible integration and migration into the existing ATSC DTV broadcast infrastructure. This will facilitate easy rollout for expanded trials.

It is no surprise that the inventors of VSB (LG Electronics and its Zenith DTV lab) and the company with longest VSB transmission expertise (Harris) have teamed to provide a portable/mobile DTV delivery system whose robustness is believed to be unmatched by any alternative.

Executive Summary

The successful broadcast trial announcement of MPH (Mobile-Pedestrian-Handheld) in-band mobile DTV by Harris, LG Electronics and Zenith marks one of the most significant multi-vendor advances in recent years to address the mobile television wish-lists of a broad audience of consumers. Not just handheld TV replacements for more than 100 million analog battery TV sets in monthly use (168 million in seasonal use), rather

MPH is poised to expand broadcasters' digital services offerings and therefore boost the value and appeal of mobile DTV to tens of millions more viewers outside the reach of Prime Time TV -- and boost viewership ratings in the process.

Envisioneering industry and consumer research supports our conclusions that local television broadcaster-delivered Mobile-Services DTV (MSDTV) offers a larger audience base -- and consequently larger advertising and services revenues -- than the existing, diverse, multi-vendor cellular mobile TV efforts. Further, Envisioneering Delphi group research concludes that MSDTV services are highly complimentary when optimized for mobile cellular subscribers' expectations. Various business scenarios Envisioneering has reviewed indicate a clear Win-Win-Win combination for broadcasters, channel services operators and handset makers alike.

Tower placement for broadcasters is assured, the Harris modulator equipment differential is minimal and broadcasters have all the broadcast rights for expanding the value of their current programming assets to a new, large and ever increasingly mobile audience. Reaching viewers as they commute, play and travel will bring back broadcast viewers now being wooed by handheld video games, media players and expensive cellular video products. TV advertising bases should stabilize and grow, along with a potential for greater national and local program asset re-use, plus higher-shared revenues, delivered by catering to mobile viewer desires for ad response and targeted programming.

Fortunately, peak pedestrian, commuting and lunchtime viewership windows nicely complement TV broadcasters' existing HD and multi-channel SD bit budgets. Put simply, more bits are available to reach MPH audiences during drivetime and lunchtime hours; times when HD needs are at daily minimums. In addition, more than 12 million swing shift and night shift North American viewers are prime candidates for MPH as analog TV reception capability sunsets. Lastly, consumers surveyed by Envisioneering express an expectation of receiving local and national emergency and weather alerts via broadcast TV, preferred over radio, satellite or cell phone alternatives.

Both the data agility and versatility of MPH will permit single, multi-channel and pseudo-channel services for each receiver. For example, weather maps, traffic-jam maps, emergency routes and targeted ads can be multiplexed with MPH services. Further, broadcasters' knowledge of their DMAs will allow these channels to cater to regional and in many cases neighborhood events, including local community, school and sports news.

For example, a broadcaster could elect to simulcast one, two, three or more MPH channels. One might be an H.264 version of the main broadcast HD feed, another channel a news & weather channel, a third could offer H.264 quality rebroadcasts of popular programming – programs whose "second-chance" viewership will delight viewers and boost both ratings and ad revenues.

At the same time, a hi-res, scrollable image of local weather can be sent to the receiving device. As can traffic maps relating to the viewers location or travel route. Emergency weather and disaster information can also be sent in far less bandwidth than a single MPH "live channel" and saved in local memory for later recall. Similarly, advertising pages with high resolution, scrollable (and wrap-around) information can be MPH datacast in a format that allows the viewer to "mark" interesting ads for later recall.

Given recent network and Internet interest in user-pass-along tips for viewing content, a viewer can mark an MPH program link to "share" with friends & family. Using a wireless backchannel (Bluetooth, WiFi or cellular) will allow viewer-permissible links (or ad interest) to be communicated to the broadcaster, advertiser or others in real-time when available, or bursting the data, later.

It should be noted that many satellite and cable MSOs already transcode prime HD Broadcast content to data rates between 6 and 12 Mbps. Taking advantage of MPH's VSB-compatible efficient data coding, broadcasters can deliver much higher quality HD and SD channels to homes while still providing multiple MPH channels and HQ image pages and data to tens of millions of MPH portable receivers.

Multiple MPH Receiver Designs Beckon

MPH handheld DTV set replacements for 168 million battery-hungry analog TVs is obvious. New robust designs (for camping and emergencies) will attract new buyers. Cellular handsets featuring MPH tuners (whether they also accept cellular video or not) will offer combinational value. LCD and OLED screens will enable pocket and purse sized MPH DTVs with much-larger daylight and desk viewable screens; appealing to commuting and backyard patio use alike.

MPH vehicular receivers for automobile headliners and headrests will inform auto, limo, van, taxi and bus passengers while family car MPH designs will deliver more value than satellite alternatives for keeping back-seat peace. PCs, notebook PCs and PDAs may

be MPH enabled with both integrated and add-on tuner sticks. Pocket Media Players (such as iPod or Zen) may feature integrated or add-on MPH capability, perhaps adding PVR like local program storage capabilities. What's more, portable DVD players will likely embed MPH tuners as a new value proposition.

Envisioneering sees a potential standalone MPH receiver market matching or exceeding the 168 million analog battery TVs now in use within a decade. Beyond handheld designs, MPH receivers will also be delivered as paperback book sized and larger portable TVs for home and away. Also, new demand for DTV emergency TVs, tuners for notebook PCs, media players, handheld games and vehicles could well push total receiver demand to over 200 million units by 2017 for the United States and Canada alone.

Conclusion

Envisioneering believes any MPH expanded pilot trials (likely in advance of full ATSC standardization) will not only deliver new value to broadcasters and device makers, but also revenue to cellular and network operators providing back-channels; links facilitating direct ad response and consumer program choices. These should also benefit from consumers proven desire to "pass along" recommended TV shows and clips to friends and associates, boosting broadcaster and advertiser reach.

In summary, the agile multi-channel capabilities and robust signal reception for "Mobile, Pedestrians and Handhelds" makes MPH not only the most viable portable TV solution, but also the one most likely to deliver viewership on a scale of "Millions Per Hour," instead of millions per month, as subscription cellular TV operators now claim.

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