



EngineWare™ Executive Whitepaper

Executive Summary:

EngineWare™ comprises software modules that are required in cable set-tops in order for the platform to perform the functions necessary to process MPEG audio and video along with the necessary communication, conditional access and data presentation.

Although EngineWare™ has a long list of technology goals it has achieved (refer to Technical Whitepaper), it's the relationship of these technical achievements with the business goals that allow EngineWare™ to stand heads-above competitors' solutions. This summary will highlight the business advantages of EngineWare™.

Portability - Any Platform, Any Network, Any CA!

EngineWare™, unlike existing software solutions, is not monolithic and hence not burdened by a large amount of code written to a specific type of set-top platform which makes these type of solutions hard to port to different silicon, platforms, networks, and conditional accesses. Rather, EngineWare™ is modular by design incorporating high-performance abstraction software layers, which isolate it from silicon, platforms, etc. The end-result is that EngineWare™ can run on any platform. As proof of this, Pace to date has ported and executed EngineWare™ on the following platforms:

1. DC 755 HD ("Daytona") running VxWorks (EW v2.0)
2. TDC 775 HD DVR ("Tahoe") running Linux v2.4 (EW v2.1)
3. Personal Computer, x86 running RedHat Linux (EW v2.1 in Pace's Simulator executing DCT APIs)

Flexibility - Legacy API or OCAP, take your pick!

With EngineWare™'s modular design also comes the benefit of being able to change the application interface. At its top most layer (SDK skin layer), EngineWare™ was architected and designed from day one to implement both Motorola's DCT API as well as a complete OCAP 1.0 stack and associated API. Other software solutions, frankly cannot offer this class of flexibility.



Scalability - Low end, mid tier, or all the bells and whistles!

Here again the modular design pays huge dividends by allowing the platform software image to be tailored for only the feature-sets of that specific platform. So whether a SD All-Digital set-top is the target or a full-blown multi-tuner HD DVR media center set-top is the goal, EngineWare™ modular components are designed to scale with the target platform. This not only reduces development time and effort, but also helps the Operators keeping image sizes on the carousel at a minimum.

Cost of Ownership - Reduced Development, Support, & Maintenance \$\$\$

Faster development time due to re-usable software modules that scale across platforms along with PC-based simulation environment to reduce debugging time yields direct measurable savings in development dollars. Furthermore, the exploitation modern operating system technologies (thread-safe multithreaded modules) versus 10+ year old competitor's solutions (message queue-based), yield less downtime, call center calls, and truck rolls due to higher stability (less system halts, crashes, reboots). Maintenance is also much easier and faster due to EngineWare™ completely eliminating years of legacy retrofitting and bug fixes. In all, the bottom line dollar cost-of-ownership is significantly reduced.

Faster Time-to-Market - Meeting the ROI goals

If you're not deploying, you're not meeting revenue objectives, period. EngineWare™ has the proper architecture and implementation that allows for a diversity of hardware platforms, networks, CAs, and APIs to get to deployment faster than any other solution available today. Why? It is Modular, Hardware agnostic, CA agnostic, Network agnostic, API agnostic (DCT or OCAP), OS agnostic, File System agnostic, Leverages Open-Standards, Test harnesses & Simulation.



More Revenue Potential via More Services - Drop the legacy, move towards OCAP

For argument's sake, it's true that competing solutions have a large installed base today, yet have they delivered the full potential? Are they able to have ISVs develop robust interactive applications that not only offer high reoccurring revenue streams, but deliver those applications to market in record time utilizing Open-Standards and proven technologies as is the case with moving towards OCAP? EngineWare™ delivers on this approach by architecting for OCAP from day one. Pace has been engaged with the lead OCAP developer for the past two years and of course, actively involved with Cable Labs for over 5 years.

Pace's strategy has been clear in achieving common architectures across both hardware and software. The need came about initially to reduce development time and effort, hence get to market faster. In carrying out this mission, Pace took further steps to address the need for a modern software environment that offered flexibility and portability across silicon selections, cable networks, conditional accesses, and Application Support APIs (DCT, OCAP). The outcome was the creation of EngineWare™. It leveraged the years of experience learned from developing, integrating, testing, and deploying set-tops around the world and most importantly to the two predominate network environments in the US: Scientific-Atlanta and Motorola. With this breadth of knowledge and experience, Pace has set the bar for others.