Engineering-on-the-Go (EOTG)

Unmatched Power

A White Paper

Eurocom's Engineering-on-the-Go

Capacity, mobility, and portability

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Introduction

Thank you for your interest in Eurocom's Engineering-on-the-Go. In this white paper, you will find information about EOTG.

This white paper will provide you with all the information regarding this novel strategy, the new business opportunities it creates for companies in the engineering industry, and the Mobile Solutions needed to implement this strategy. It will also give you some examples of how pioneering companies are utilizing Engineering-on-the-Go deployment.

If you have any questions after reading this white paper, feel free to contact us. We hope to hear from you soon!

With kind regards,

The Eurocom Team

Executive Summary

Since its foundation in 1989, Eurocom Corporation has served its customers with the philosophy that the workplace PC, home computer, and laptop can all be replaced by a single, portable solution – Mobile Workstations. Most laptops are designed to complement conventional purchase, but Eurocom Mobile Workstations make conventional systems redundant by offering all the amenities of high-end computers in a portable package. Highlights range from 17.3-inch widescreen displays, the fastest processors (i.e., Intel i7 or Xeon E3-1200 series) and graphics processing units (NVIDIA GeForce or Quadro) to wireless communication, internal web cameras, TV tuners, multiple hard drives and optical drives, DVD Burners, Dual-Channel memory drives, etc.

The company's most recent triumph has been the release of the fully CPU- and GPU-upgradeable and fully customizable Eurocom Sky X9W model, the fastest Mobile Workstation on the market.

In this white paper, you will find information on one of the usages of our Mobile Workstation technology: Engineering-on-the-Go (EOTG).

Engineering-on-the-Go (EOTG)

Traditionally, engineers are used to working from their office designing, developing, and creating with the help of their desktop computers. Engineering-on-the-Go is defined by Eurocom as “having the ability to perform engineering activities anywhere in the world, made available by capable mobile hardware solutions that allows engineers to receive and process feedback while being face-to-face with customers, co-developers, final users, and other third parties.”

The advantages of EOTG are:

- Being able to design new products, or address production problems anywhere in the world
- Offering customers engineering capacity onsite, anywhere
- Being able to receive feedback and adjusting face-to-face with final users, customers, co-developers, and other third parties
- Reduced time to market, downtime, and development costs of projects
- Increased company profitability and market share

Challenges & Overview

The reason EOTG activities are not widely used in the industry is often the lack of understanding of the hardware capabilities; often companies aren’t aware of the features of Mobile Workstations. A Mobile Workstation is a laptop form-factor system that offers all the capabilities of a high-performance desktop workstation. Eurocom Mobile Workstations can run software used by engineers, such as AutoCAD, SolidWorks, CATIA, and many other Computer Aided Design software programs.

With Eurocom Mobile Workstations, engineers can adjust their designs in the field directly when they receive the feedback. Engineering-on-the-Go activities can be applied in various intensities; from a single engineer visiting the customer for a consulting session to a complete engineering team being deployed at customer site for the full length of the project. Eurocom Mobile Workstations provide engineers with capacity, mobility, and portability that allow them to provide superior service to their customers and increase project productivity and profitability.

Mobile Workstation and Mobile Server Platforms

As mentioned before, Eurocom Mobile Workstations are equipped to meet the capabilities of professional desktop workstations. It is the hardware that allows companies to deploy Engineering-on-the-Go. Eurocom Mobile Solutions are fully CPU- and GPU-upgradeable and can be used as a single technology platform with different functionalities. Eurocom Mobile Solutions can be equipped to function as Mobile Workstations and/or as Mobile Servers. Mobile Workstations, as mentioned, contain the same capabilities as the desktop workstations used by engineers to run their intense engineering software while providing the additional advantage of performing engineering activities anywhere in the world. The Eurocom Mobile Server is a category of laptop designed with a professional user in mind. Teams of engineers who must travel frequently, yet need access to powerful computing, can use Eurocom Mobile Servers to store the master file set, back up data, and connect the engineers while being on the go.

Core Technology

Eurocom's Mobile Solutions are designed as single technology platforms with different functionalities; they can be equipped to function as a Mobile Workstation and/or as a Mobile Server. Within those functionalities, the products can be configured to fulfill the needs of each professional – storage capacity, graphical performance, processing power, data reading and writing speed, etc.

Mobile Workstation Specifications

- High-performance processors: Intel i7 Core or Xeon; up to 4 cores/8 treads; upgradeable, socket-based
- Choice of different form-factors from 15.6" up to 17.3" with different weight parameters to support a variety of operational and mobility preferences/requirements
- Modular, workstation-class GPU technology; MXM 3.1 slot; single and/or dual GPU operation; Quadro up to M5500 with 16GB DDR5X ECC
- Large internal displays up to 17.3", from FHD (1920x1080), QHD (2560x1440) up to UltraHD (3840x2160), and from 60Hz up to 120Hz
- Up to 64 GB of high-performance DDR4 dual-channel memory
- 64-bit hardware and multiple operating systems support (Windows 10, Windows 7 Pro, Linux)
- Up to 16TB of storage with up to 6 high-performance Solid State Drives/HDD
- RAID 0/1/5/10 for enhanced performance, redundancy or both
- High performance Ethernet LAN on-board
- 102-key desktop-like full-size keyboard with separate numeric keypad
- Multiple I/O Ports: up to 6 USB 3.0 ports, Thunderbolt 3.0, HDMI 2.0, DP 2.0 for multiple external monitors
- Excellent cooling to optimally distribute and vent generated heat and ensure long lifespan
- Heavy-duty mechanical design

Mobile Server Specifications

- High-performance processors: Intel Xeon; scalable; socket based; up to 4 cores/8 treads
- Choice of different form-factors from 15.6" up to 17.3" with different weight parameters to meet variety of mobility requirements
- Up to 64 GB of high-performance DDR4 ECC dual-channel memory
- 64-bit hardware and multiple operating systems support (Microsoft Server 2012R2, Linux, VMware)
- Up to 16TB of storage with up to 6 high-performance Solid State Drives/HDD including NVMe SSDs
- RAID 0/1/5/10
- High-performance Ethernet LAN on-board
- 102-key desktop-like full-size keyboards with separate numeric keypad
- Internal battery pack/UPS to ensure uninterrupted operation in case of power failure

- Excellent cooling to optimally distribute and vent generated heat and ensure long lifespan
- Heavy-duty mechanical design

Power Categories

The power of a Mobile Workstation is largely dependent on the CPU. Regarding this power, Eurocom differentiates in three levels: Entry, Middle, and Professional. For the Entry-level Mobile Workstations, Eurocom recommends to use processors from the Intel® Core™ i7 CPU series. For Medium-level and Professional-level Mobile Workstations, Eurocom recommends CPUs from the Intel® Xeon® 1200 processor series. Many customers are surprised to see these CPUs offered in Mobile Workstations since they are designed to be desktop workstation processors. Eurocom is the only Mobile Workstation manufacturer that can install these superior CPUs in our Mobile Workstations along with the heat sinks, ventilators, and copper necessary to distribute and vent the heat generated.

Hardware Benefits

- Capabilities of Mobile Workstations meet those of professional desktop workstations with the clear advantage of mobility and portability
- Scalable (add more EOTG members seamlessly) and upgradeable technology
- Full computing solutions can be hand-carried on planes
- Multiple hard drives and large storage capacity (up to 6 physical hard drives)
- Configurable with RAID 0/1/5/10 for reliability and speed (unique for laptop technology)
- High-performance, desktop CPUs, VGA cards, storage, redundancy, memory, etc.
- All notebooks can be configured to tailor the needs of individual users
- Different functionalities offered on one technology platform

Deployment Scenarios

EOTG can be applied by engineering companies in different intensities. Eurocom has defined three levels of EOTG implementations:

- EOTG Consulting
- EOTG Project-based
- EOTG Organization-wide

EOTG Consulting

This form of Engineering-on-the-Go can be applied by any size of engineering company and only requires a relatively small investment. The only investment this form of EOTG deployment requires is the acquisition of a Mobile Workstation for the engineer. This piece of equipment allows the individual engineer to perform on-the-go consulting activities or test draft designs with final users in the field.

EOTG Project implementation

The mid-level of EOTG implementation is applying the strategy on a project basis. By equipping an engineering team with Mobile Workstations for each individual engineer and a Mobile Server to contain the Master file set, back up the data, and provide a network for the EOTG members, the engineering company can provide its customers with the extra service of customer site deployment to increase speed to market and reduce development costs.

EOTG Enterprise

The ultimate form of EOTG implementation is to integrate the EOTG deployment strategy in the competitive strategy of the organization. This requires the organization to provide all the engineers with Mobile Workstations and have Mobile Servers available for every project. The integration of the EOTG advantages in the company's competitive strategy allows the organization to advertise them to the market.

Floater

Another functionality of the Eurocom Mobile Workstation is what Eurocom defines as the Floater. The Floater is a Eurocom Mobile Workstation that will function as a back-up. It can be deployed if one of the workstations in the organization breaks down and allows the engineer to keep on working while the broken workstation is being repaired. Having a Floater in the organization reduces downtime. This Floater can be used both in the office environment and when deploying a team of engineers on site when performing EOTG activities.

Case Studies

The EOTG strategy is currently being deployed by a few innovative companies, such as Siemens, Apple, Microsoft, Tyler Technologies, Erickson, and Lockheed Martin. They have already yielded the benefits of this concept that can be deployed in a wide variety of industries.

Mechanical Engineering

In this design & development process, the engineer of a ground-breaking consumer electronic product manufacturer benefited from the capacity and portability of Eurocom Mobile Workstations to adjust the original design based on the feedback he received face-to-face from clients and end-users worldwide.

Infrastructure

Our customer in the infrastructure engineering industry has deployed a whole team of engineers on a customer site when they were designing, constructing, and servicing a state-of-the-art power generation facility. By using a combination of several types of customized Mobile Workstation and a Mobile Server, they completed the project 30% faster in comparison to their traditional way.

On-site-training

CAD training facilities have the same high demands when it comes to computing hardware as engineers do; they need hardware that can run the intense engineering software. On top of that, customers are also demanding on-site training. A few pioneering companies in this industry are currently using Eurocom Mobile Solutions to facilitate this demand.

Engineering Business Development activities

To create new business, Engineering companies participate in fairs and visit customers and show the capabilities of their organization through a portfolio of previous projects. Many marketing people show this portfolio by copying and pasting the designs of the previous projects from CAD, CAM, CAE, and GIS software into a PowerPoint presentation to show it on an ordinary laptop. Companies working with Eurocom Mobile Workstations have sent engineers along with the marketing team when visiting prospects or fairs to show the actual capabilities of the company with good results.

Milestones

This section includes Eurocom's Mobile Solution history and innovations.

History

The Mobile Workstation category was developed in 2002, when Eurocom launched the 8880 Dream Machine. In 2006, the M590K Emperor became the world's first Mobile Workstation powered by two NVIDIA Quadro FX 2500M GPUs. Today's model, the Sky X9W is the world's first laptop with Ultra HD with Quadro M5000 and Intel's Skylake CPU.

The Mobile Server category was developed in 2003, when Eurocom launched the first-ever server-class laptop, the Eurocom Phantom. In 2007, the Eurocom Phantom X became the first Intel Xeon-based laptop. Eurocom continues to develop, refine, and perfect this technology to this day. The culmination of these efforts is the currently-available Eurocom P5 Pro SE, which continues the tradition of highly-capable, stable, expandable, and upgradeable server-grade hardware from Eurocom.

Innovations

2016		Sky X9W	World's first Ultra HD (4K) 17.3-inch fully upgradeable Mobile Workstation class laptop with Quadro M5000 and with Intel Skylake (desktop) CPU.
2013		Panther 5D	World's first 3D Mobile Supercomputer with Dual MXM 3.0b graphics support and socket-based Desktop/Workstation Xeon processor.
2006		M590K EMPEROR	World's first workstation class notebook powered by NVIDIA nForce4 chipset and by the fastest 64-bit Mobile Turion64 processor with NVIDIA's SLI (Scalable Link Interface) video technology with two NVIDIA GeForce Go7800GTX, Go79x0GTX or Quadro FX 2500M GPUs.
2003		888ES Dream Machine	World's first mobile workstation with 16.1-inch UXGA (1600x1200) display, 3.06 GHz Intel Pentium 4 with Hyper-Threading, and 128 MB DDR Video ATI Radeon Mobility 9000. The most advanced and visually stunning 3D performance for notebooks. Key features: full-sized 102-key keyboard, internal TV tuner, Sony Memory Stick slot and optional internal MP3 player with Panasonic SD slot, 1 GB of 266-MHz DDR SDRAM, 2 optical drives including a DVD Burner, DJ function with a CD player, and 533 MHz system bus. Built-in Wi-Fi standard antenna for 802.11b wireless LAN. Optional internal IP Sharing Module for ADSL.
2002		8880 Dream Machine	World's first notebook with 15.7-inch display, full-size 102-key keyboard, internal TV tuner, internal MP3 player and seven-spindle design. Perfect Mobile Workstation supporting Pentium 4, ATI Mobility Radeon 7500 64 MB of DDR video, 1 GB of 266-MHz DDR SDRAM, 2 optical drives (CD copy factory), DJ function with a CD player, and 400 MHz system bus.

Future

In the short term, on the corporate side, we're going to see Mobile Workstations deployed on a per-user basis, mainly for specific projects. In the long term, we're expecting to see clients migrate to Mobile Workstations on an organizational basis, essentially deploying Mobile Workstations across an entire organization for all users that can utilize the technology. As part of this, organizations must develop new strategies to handle things like It management, and how the Mobile Workstations are being used. One of the key components of this new deployment strategy will be the formation of Rapid Engineering Deployment (RED) Teams. This concept enables engineers to have highly portable, computer-based engineering capability that requires little or no existing infrastructure to operate. RED allows them to deploy anywhere in the world at short notice and get up and running almost immediately upon arrival.

Mobile Workstations are more than a supplement to desktop workstations; they are developed as replacement systems and can be easily integrated into a company's workstation purchasing and usage strategy.

Conclusion

The innovative Eurocom Mobile Solutions allow engineers to perform engineering activities outside the office. Equipped with Mobile Workstations and/or Mobile Servers, engineering teams are no longer office bound and can design, develop, and adjust their project designs on-site with the advantage of receiving feedback face-to-face from final users, customers, co-developers, and other third parties.

If you would like to know more about the EOTG strategy, the business opportunities, Eurocom Mobile Solutions, or have any other inquiries, please feel free to contact us.

Appendix

About Eurocom

Eurocom Corporation was founded in 1989 by President Mark Bialic. Throughout its history, Eurocom has provided high-end, innovative technology. The inventor of Desktop Replacement Notebooks™, Eurocom introduced Mobile Workstations in 2002. This was followed a few years later by the World's First Xeon-based Mobile Server in 2007.

A pioneer of computing technological standards, Eurocom pushes technology to new limits, including their invention, desktop-replacement laptops: Mobile Workstations, Mobile Servers, and Mobile Supercomputers. Eurocom's leadership and guidance around technology development drives innovation in major technology players, including Intel, NVIDIA, and Micron. Eurocom has released numerous World Firsts, including the Eurocom 2100 in 1989, which exceeded the speed and functionality of top personal computers at the time, and incorporated the first and only 3.5" hard drive.

In 1993, Eurocom astounded the industry again by releasing the EUROCOM 8200, the first notebook to use vesa bus for video. Recently, Eurocom was awarded the Intel Form Factor Solution Innovation Award by outfitting a desktop replacement chassis with the highest quality components, including the Intel® Xeon® processor E5 series and Intel® S3700 solid state drives - chosen for their ability to support both workstation and server-class operations. Known as the EUROCOM Panther 5.0, this new super computer has the performance capabilities of a datacenter server in a portable form factor, complete with workstation tools, such as keyboard and monitor.

Currently, Eurocom offers the unique 15.6" GTX 1080 Tornado 5 laptop, Xeon-based Mobile Servers, and module (MXM) GPU laptops. Eurocom is also credited with releasing products associated with laptop technology, such as the external 780 Watt AC/DC Adapter/Power Supply, released in January 2017, and prides itself on providing solutions for engineering deployment.

One of Eurocom's core competitive advantages is fast, efficient worldwide delivery of highly-customized configurations that exceed standard specification laptop delivery times in many cases. Average order processing time is three to five days. This expedient delivery reduces the chance for lost opportunities and lost revenue. Further contributing to this savings, Eurocom's laptops are fully serviceable – clients can self-service their systems, greatly reducing downtime.

Eurocom's specifications include multiple choices of NVIDIA Quadro-based MXM and GTX GeForce 1080 SLI GPUs, choice of 15.6" and 17.3" 4K UltraHD, QHD, and FHD with up to four active displays housed in a heavy-duty mechanical design (designed for unintentional abuse). With friendly, personal support, Eurocom offers the ultimate amount of choice for clients with several product categories available.

- Desktop Engineering Readers' Choice Award Winner 2004
- PC Plus Performance and Hotlist Award Winner 2007
- Intel Form Factor Solution Innovation Award Winner 2013
- Notebook Review Editors' Choice Award Winner 2014

Mobile Workstation Comparison Chart

	EUROCOM Tornado F5W	EUROCOM PX7 Pro	EUROCOM Sky X9W
Image			
Display Size	15.6"	17.3”	17.3”
Display Resolution	FHD 60Hz UltraHD 4K 60Hz	FHD 60Hz	FHD 60Hz UltraHD 4K 60Hz
CPU	Xeon 1200 v5 series up to E3 1280 v5	E3-1505 v5	Up to i7-6700K
CPU Upgradeable	YES, socket LGA1151	On-board BGA	YES, socket LGA1151
GPU	NVIDIA Quadro P5000 NVIDIA Quadro M5000M NVIDIA Quadro M4000M NVIDIA Quadro M3000M NVIDIA Quadro M1000M	NVIDIA Quadro P5000 NVIDIA Quadro M5500 NVIDIA Quadro M5000M NVIDIA Quadro M4000M NVIDIA Quadro M3000M NVIDIA Quadro M2000M NVIDIA Quadro M1000M	NVIDIA Quadro P5000 NVIDIA Quadro M5000M NVIDIA Quadro M4000M NVIDIA Quadro M3000M NVIDIA Quadro M1000M NVIDIA Quadro K5100M NVIDIA Quadro K3100M
GPU Upgradeable	YES, slot MXM 3.0	YES, slot MXM 3.0	YES, slot MXM 3.0
Storage Bays	3 (2x M.2 NVMe + 1x 2.5")	6 (4x M.2 + 2x 2.5") 2x M.2 NVMe + 2x M.2 SATA	4 (2x M.2 NVMe + 2x 2.5")
Storage Drives	up to 10TB	up to 18TB	up to 20TB
RAID	0/1	0/1	0/1/5/10
Memory	up to 64GB DDR4-3200	up to 64GB DDR4-2133	up to 64GB DDR4-2400
Memory Slots	4x 260-pin SODIMM sockets	4x 260-pin SODIMM sockets	4x 260-pin SODIMM sockets
Displays Supported	4	4	4
Expansion Capability	1x Thunderbolt 3/USB 3.1 type C	1x Thunderbolt 3/USB 3.1 type C	1x Thunderbolt 3/USB 3.1 type C
HDMI 2.0	YES, 1	YES, 1	YES, 1
Display Port	YES, 1	YES, 1	YES, 2
Weight w/battery	2.92kg / 6.45 lbs	3.8kg / 8.4 lbs	4.8kg / 10.5 lbs
Dimensions WxDxH	390x266x39.8mm; 15.60x10.64x1.59”	428x294x48mm; 17.1x11.8x1.9”	428x308x45mm; 17.1x12.3x1.8”
Security: TPM; Security Lock; Fingerprint	NO; NO; NO	NO; YES; NO	TPM 2.0; YES; YES

Mobile Server Comparison Chart

	EUROCOM P5 Pro SE	EUROCOM P7 Pro SE	EUROCOM Tornado F5 SE
			
Display Size	15.6"	17.3”	15.6"
Weight w/battery	3.4kg / 7.48lbs	3.9kg/ 8.58 lbs	2.92kg/ 6.45 lbs
Dimensions WxDxH	386x262x35mm; 15.4x10.48x1.4-inch	418x282x16-38.7mm; 16.72x11.28x0.64-1.55-inch	390x266x39.8mm; 15.6x10.64x1.59-inch
Chipset	Intel Z97 Express Chipset	Intel Z97 Express Chipset	Intel C236 Server Chipset
CPU-class	Xeon E3-1200 v3 series	Xeon E3-1200 v3 series	Xeon E3-1200 v5 series
CPU Upgradeable	YES, socket LGA1150	YES, socket LGA1150	YES, socket LGA1151
GPU	Modular MXM 3.0	Modular MXM 3.0	Modular MXM 3.0
LAN	1GbE Ethernet on-board; RJ-45 Realtek RT8111G	1GbE Ethernet on-board; RJ-45 Realtek RT8111G	1GbE Ethernet on board; RJ-45 Qualcomm/Atheros E2500
Storage Bays	Supports 4 physical drives (2x M.2 NVMe + 2x 2.5")	Supports 4 physical drives (2x M.2 NVMe + 2x 2.5")	Supports 3 physical drives (2x M.2 NVMe + 1x 2.5")
Storage Drives	up to 12TB	up to 12TB	up to 8TB
RAID	0/1/5/10	0/1/5/10	0/1
Memory	up to 32GB DDR3L-2133	up to 32GB DDR3L-2133	up to 64GB DDR4-3200
Memory Slots	4x 204-pin SODIMM sockets	4x 204-pin SODIMM sockets	4x 260-pin SODIMM sockets
Internal Battery	8 cells Smart Li-Ion; 82WH up to 130 minutes	8 cells Smart Li-Ion; 82WH up to 130 minutes	8 cells Smart Li-Ion; 14.4V; 5225mAh/75.24Wh up to 130 minutes
Expansion Capability	N/A	N/A	Thunderbolt 3/USB 3.1 type C
Keyboard	Internal	Internal	Internal
Power	External 230W AC Adapter	External 230W AC Adapter	External 230W AC Adapter
OS Supported	Microsoft: Server 2012R2, Windows 7, Windows 8.1, Windows 10; Linux/Ubuntu VMware	Microsoft: Server 2012R2, Windows 7, Windows 8.1, Windows 10; Linux/Ubuntu VMware	Microsoft: Server 2012R2, Windows 7, Windows 8.1, Windows 10; Linux/Ubuntu VMware