



# License to win - with CAD

Opportunities in AEC and Product Development

Sean Young / December 16<sup>th</sup>, 2014

# What you'll learn in this session

- Industry overview
- Value prompters
- Segment strategy
- ISV landscape
- System and config recommendations

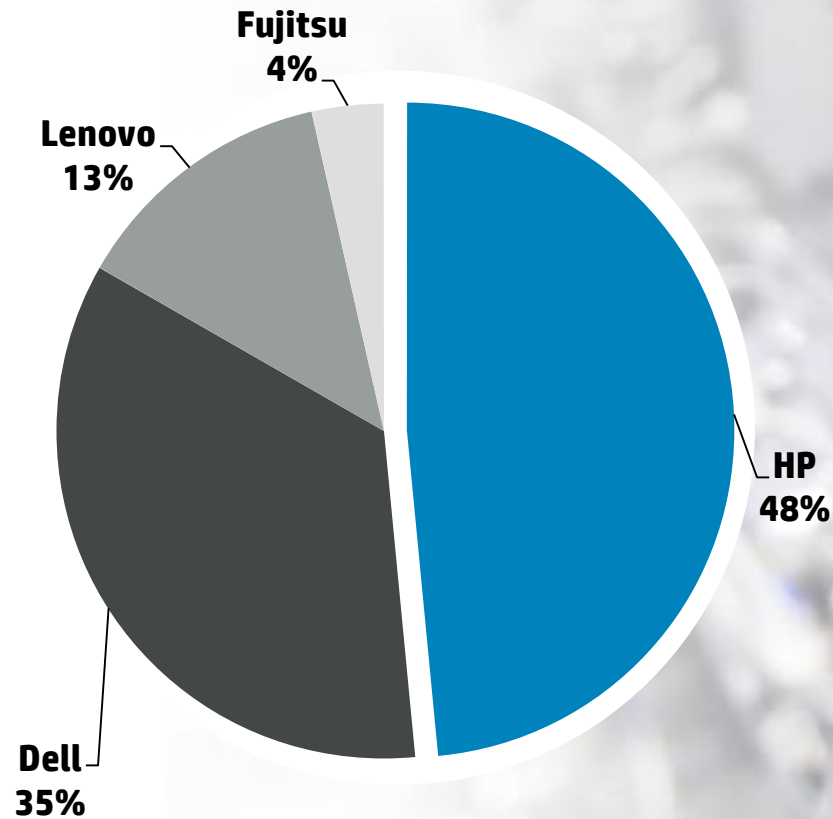


# HP's Leadership in AEC and Product Development

## WW Engineering Segment Market Share

IDC Q3'14 WW WS Tracker, Q3'14 WW Units, Desktop & Mobile Workstations, Engineering segment

- HP leads the Engineering Segment worldwide by 13% over Dell and 35% over Lenovo



# AEC/PD market nomenclature

- Transportation
- Aerospace & Defense
- Automotive
- Industrial Machinery
- High Tech
- Medical Devices
- Consumer Products
- Factories
- Energy & Process



Digital-Prototyping  
 CAE **Product-Development**  
 Simulation CAM Manufacturing Digital-Manufacturing  
 Analysis MCAD  
 3D-CAD  
 Engineering  
 Product-Design

- Architecture
- Engineering
- Construction
- Real Estate
- Utilities
- Infrastructure (Civil)
- Retail
- Building Products
- Government



**AEC** Building-Products  
 Construction MEP-Engineering  
 Civil-Engineering Structural-Engineering Resources-Management  
 Infrastructure-Management Architecture  
 Facilities-Management  
 Factory-Design Real-Estate

\*Source: Calculations based on estimated ASP and upgrade cycle, and Cambashi 2013 revenue projections for CAD software, used with permission.



# The evolution of CAD: 2D to 3D

2D to 3D 

2D (yesterday)



3D (today)



# Workstation benefits for AEC & Product Development

**TOP  
SECRET**



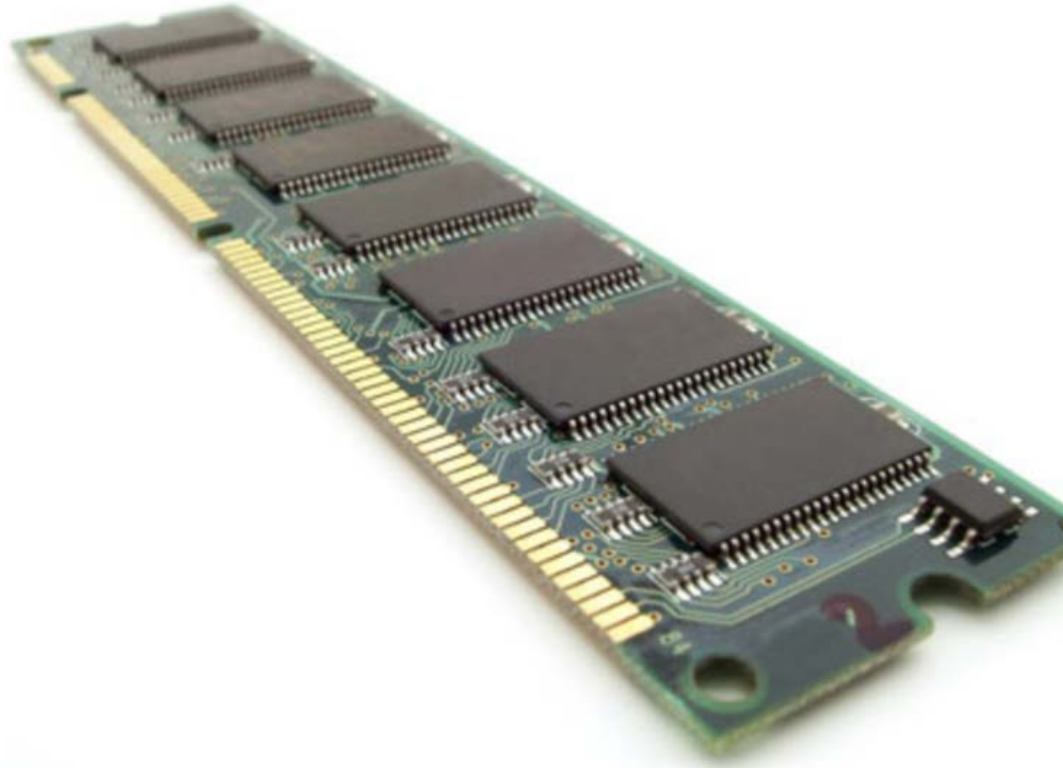
# Processor



## **Processor (CPU)**

Clock speed is a top priority for CAD. Multiple CPU cores boosts multi-threaded processes such as rendering and simulation.

# Memory



## Memory (RAM)

16 GB of memory is recommended for CAD, and 32 GB is recommended for complex datasets. ECC (**Error Correcting Code**) memory is important for precision



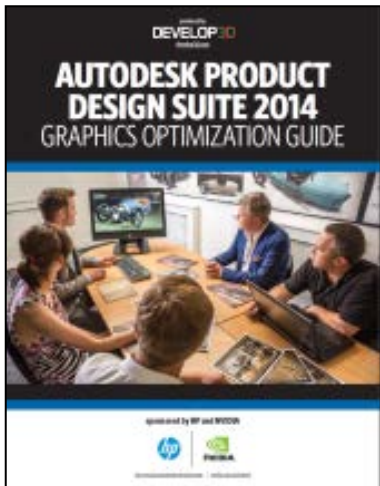
# Storage



## **Storage (Hard Drives)**

Z Turbo Drive dramatically accelerates read/write processes, particularly with large datasets such as point clouds and animations.

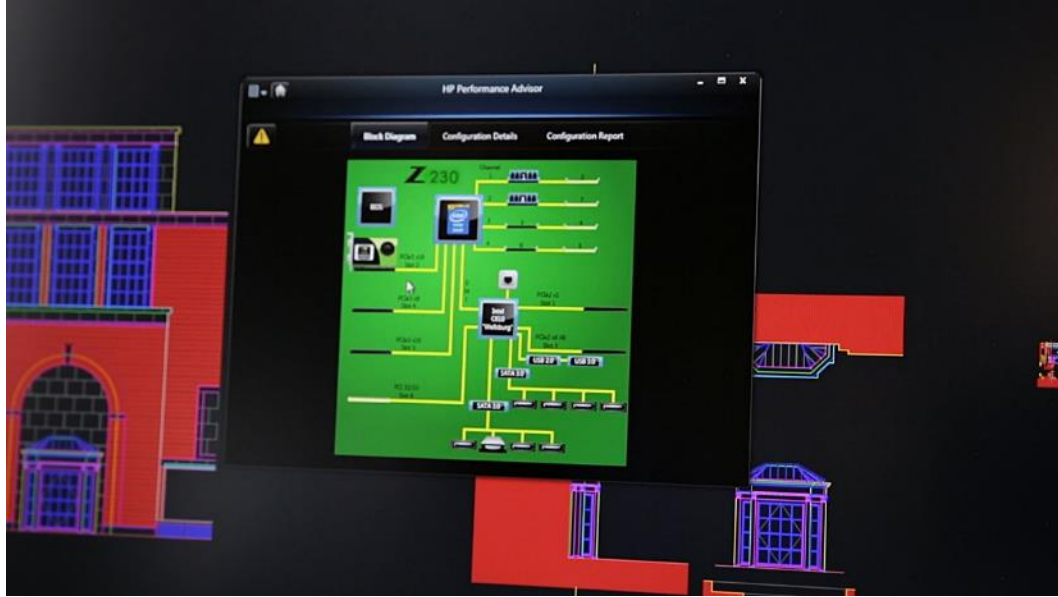
# Graphics



## Graphics Processing Unit (GPU)

A professional GPU is required for 3D modeling interactivity, realistic reflections, shadows and complex lighting. For complex datasets and real-time visualization consider a with more video memory. GPU compute can be an option for simulation and rendering.

# Why an HP Z Workstation?



## HP Performance Advisor



### Identify performance bottlenecks

Ensure top performance throughout the entire life of your workstation with quick and easy performance analysis.



### Top performer. Tuned for AutoCAD

Maximize your entire workstation environment with HP Performance Advisor.



### Complete system view at your fingertips

Gain a quick and accurate understanding of your entire system in one simple, intelligent interface.

## HP Remote Graphics Software



### Workstation class mobility even on a tablet

Get complete remote access to the full power of your workstation and your professional workstation-class applications when off-site,<sup>3</sup> even when using a tablet.<sup>4</sup>



### Remote workers

Professionals can connect to their HP Z Workstations from remote computers at any location.



### Real-time collaboration

Share your workstation screen with multiple users simultaneously—grant view-only or full interactive access.

# Recommended configurations (and US Smart Buys)



	Z230 SFF	HP Z440	HP Z840	HP Z1	HP ZBOOK 15	HP ZBOOK 17
Processor	Intel® Xeon® E3-1241 v3 (3.5GHz, 4 Core)	Intel® Xeon® E3-1630 v3 (3.7GHz, 4 Core)	2X Intel® Xeon® E5-2687 v3 (3.1GHz, 10 Core)	Intel® Xeon® E3-1281 v3 (3.7GHz, 4 Core)	Intel® Core™ i7-4910 (2.9GHz, 4 Core)	Intel® Core™ i7-4910 (2.9GHz, 4 Core)
Memory	16GB DDR3 1600MHz ECC RAM	32GB DDR4 2133MHz ECC RAM	128GB DDR4 2133MHz ECC RAM	16GB DDR3 1866MHz ECC RAM	16GB DDR3 1866MHz SDRAM	16GB DDR3 1866MHz SDRAM
GPU	NVIDIA® Quadro® K620 (2GB)	NVIDIA® Quadro® K4200 (4GB)	NVIDIA® Quadro® K6000 (12GB)	NVIDIA® Quadro® K4100M (4GB)	NVIDIA® Quadro® K2100M (2GB)	NVIDIA® Quadro® K4100M (4GB)
Storage	Z Turbo Drive 256GB	Z Turbo Drive 256GB + 1TB SATA	Z Turbo Drive 512GB + 1TB SATA	Z Turbo Drive 256GB + 1TB SATA	Z Turbo Drive 256GB + 1TB SATA	Z Turbo Drive 256GB + 1TB SATA



# Virtualization benefits

## • IT Manager

- Resource management
- Increased security and control
- Deployment

## • End-User

- Mobility
- Data transfer speed
- Performance

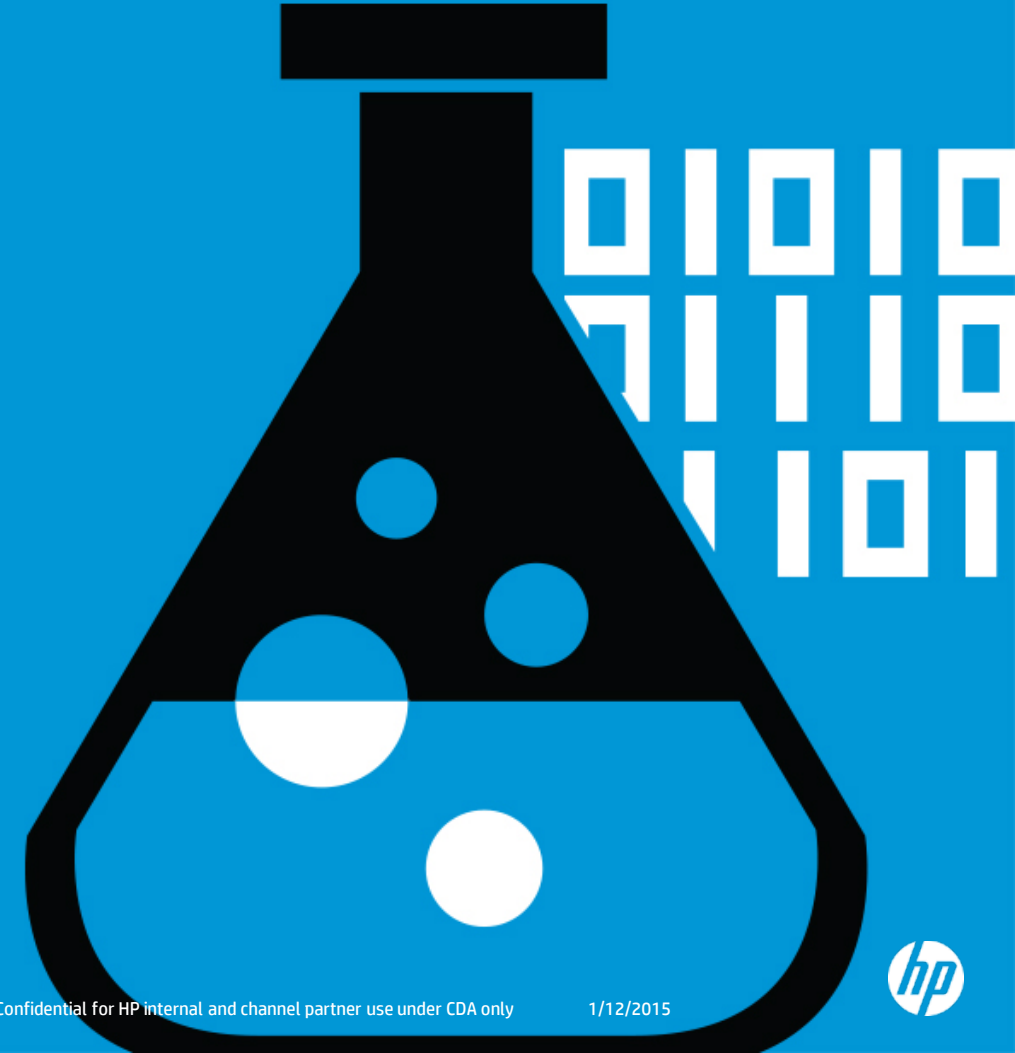


POWERED BY  
**NVIDIA GRID™**

## DL380Z certifications

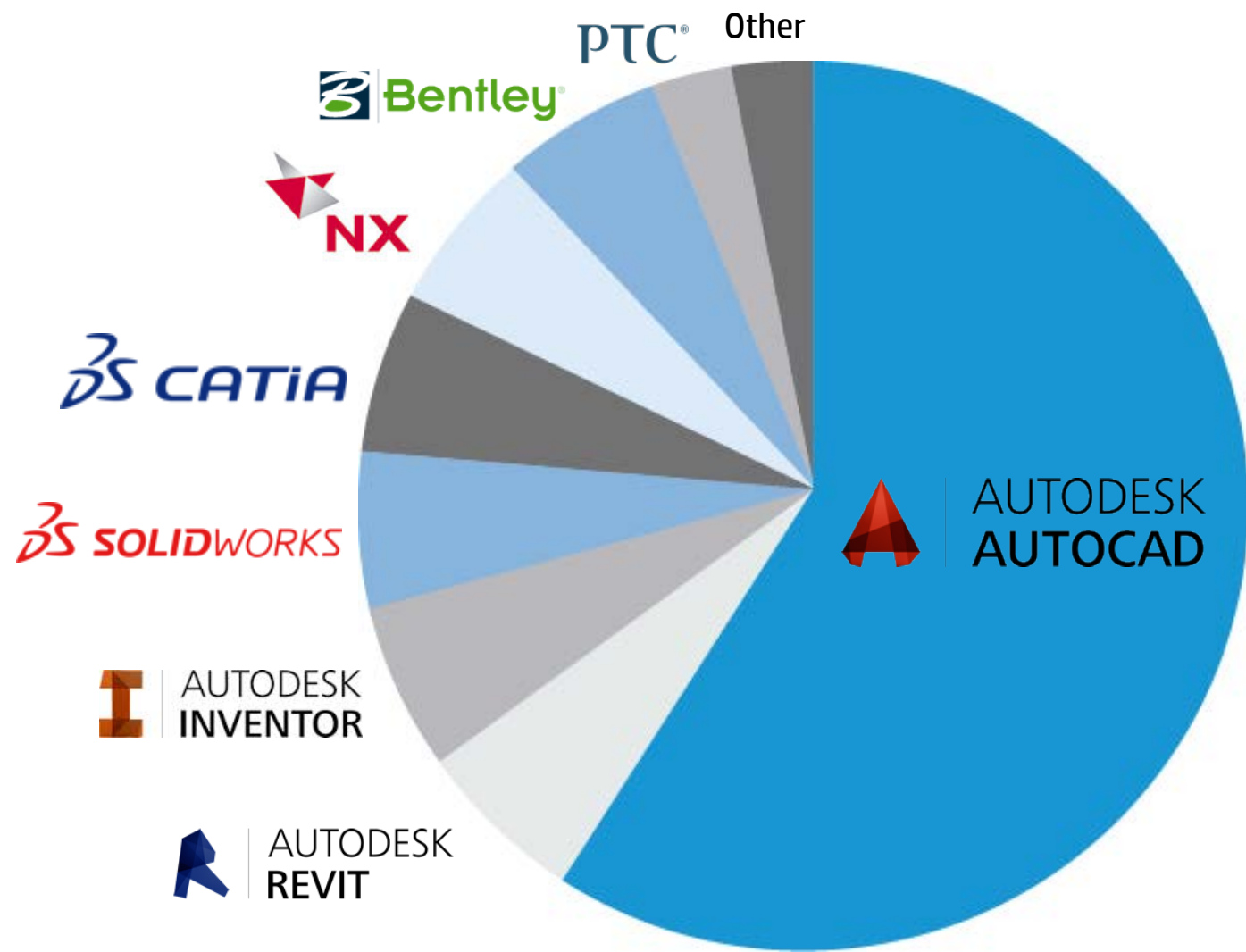


# AEC & Product Development ISV Landscape / Strategy



# Business opportunity – by the numbers

**11M**  
Million  
Users\*



80% of AutoCAD on PC  
>> **PC upsell**

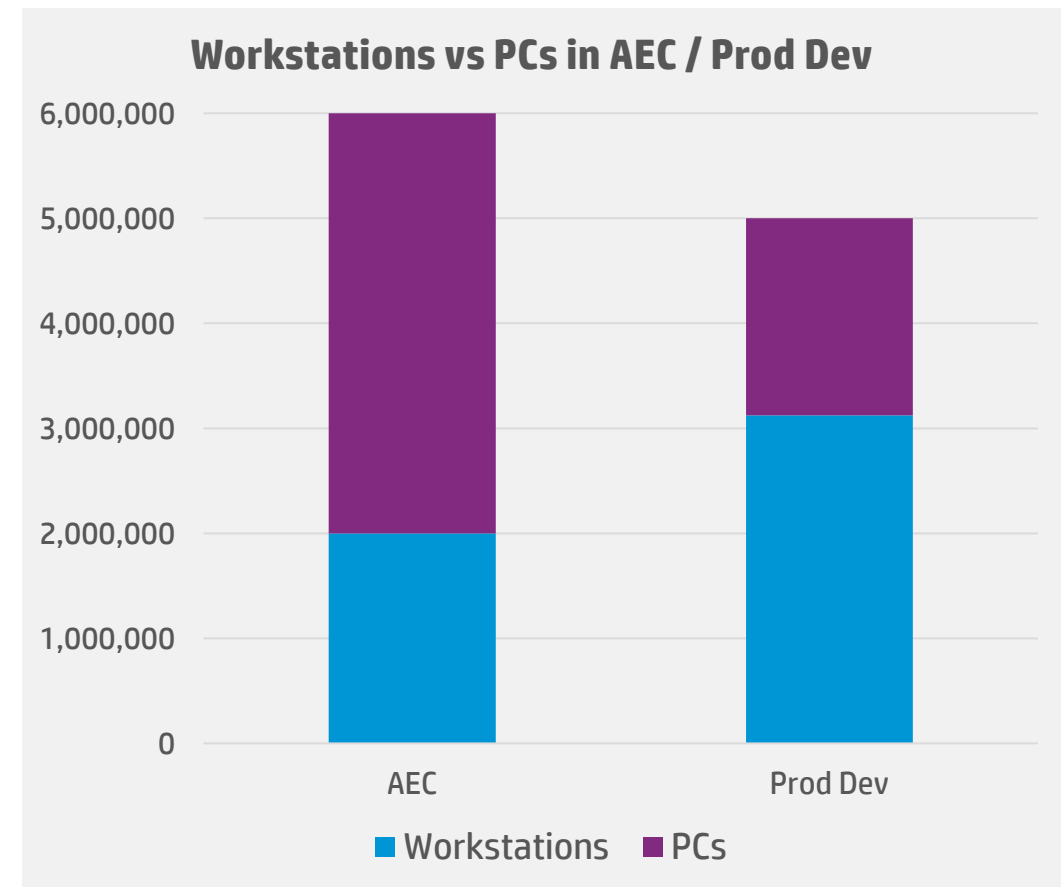
\*Source: Multiple sources. "Other" is actually larger than it appears on this slide, but it is not a 'market' we can address presently.  
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# AEC + Product Development = 5M TAM, 11M TPM

- SOURCE: IDC WW WORKSTATION SALES IN ENGINEERING, 2010, 2011, 2012 = 5M

Vertical	Application	Total Seats	% WKS	WW-WKS	WW-PC
AEC	AutoCAD	3,500,000	20%	700,000	2,800,000
	Revit	500,000	75%	375,000	125,000
	Bentley	500,000	80%	400,000	100,000
	Others	1,500,000	35%	525,000	975,000
Product Development	AutoCAD	1,500,000	20%	300,000	1,200,000
	Inventor	500,000	75%	375,000	125,000
	SOLIDWORKS	500,000	75%	375,000	125,000
	CATIA	500,000	90%	450,000	50,000
	Creo	500,000	75%	375,000	125,000
	Siemens NX	500,000	90%	450,000	50,000
	Others	1,000,000	80%	800,000	200,000
	<b>Total AEC</b>	<b>6,000,000</b>	<b>33%</b>	<b>2,000,000</b>	<b>4,000,000</b>
	<b>Total PD</b>	<b>5,000,000</b>	<b>63%</b>	<b>3,125,000</b>	<b>1,875,000</b>
<b>Total</b>		<b>11,000,000</b>	<b>47%</b>	<b>5,125,000</b>	<b>5,875,000</b>



\*Source: Calculations based on estimated ASP and upgrade cycle, and Cambashi 2013 revenue projections for CAD software, used with permission. Assuming a 3-yr refresh rate.





# Product Development segment



# HP in Automotive



**75 years**

HP has more than 75 years experience in the manufacturing industry



**10**

HP serves 10 of the world's top automotive OEMs



**30 years**

HP has more than 30 years of industry experience in PLM and Manufacturing Execution Systems (MES)



**85,000+**

HP manages 85,000+ Product Lifecycle Management (PLM) seats globally



## Unmatched industry expertise



**5M**

HP responds to more than five million automotive help desk calls annually including roadside services, vehicle diagnostics, repair and programming support



**\$1B**

HP helped a large automotive OEM save \$1 billion with a PLM solution



**1,150**

More than 1,150 engineering and manufacturing application professionals work for HP, averaging over a decade of hands-on experience each



# EMEA: Small Spaces Hackathon and Launchbox



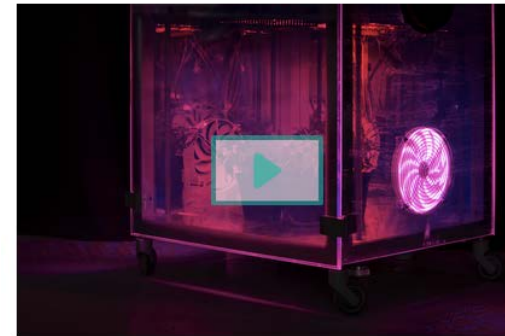
Gallery How It Works Login / Sign Up



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BOUGHT TO YOU BY HP & INTEL



GRAND PRIZE

4.13/5  
RATING

28  
FOLLOWERS

Voting took place 9 June - 11 July 2014.  
[Learn more.](#)

FOLLOW PROJECT

PROJECT FUNDING GOAL

€50,000

## MEG, Micro Experimental Growing

MEG is the World's first social and automated greenhouse. Part machine part community. Support MEG and be a home-growing game changer!

We hope to meet with nature halfway, so we developed MEG, which stands for Micro-Experimental-Growing. MEG is an indoor, open-source, LED based and automated greenhouse, which allows you to precisely control all the key parameters for growing your plants, such as Light-cycles (wavelengths, intensity, durations), Ventilation, Temperature, Irrigation, Soil PH.

Thanks to a dedicated online platform, to which it is directly connected, you can share or acquire the information about the efficacy of your settings over the plant's

YRADIA  
MILAN, ITALY



PROJECT CATEGORIES

Consumer Electronics  
Internet of Things

SHARE THIS PROJECT



# Product Development in a nutshell





## CAD: CATIA

- Z440
- Quadro K5200
- FirePro W7100
- 32GB
- Z Turbo Drive



## Simulation: SIMULIA

- Z840, dual processor
- Dual Tesla K40
- Dual FirePro W9100
- 128GB
- Z Turbo Drive



## Rendering: 3DEXCITE

- Z840
- Quadro K6000
- 64GB
- Z Turbo Drive



## PLM: ENOVIA

- HP Server



# Siemens PLM

# SIEMENS



## CAD: SOLIDEDGE

- Z230
- Quadro K620
- FirePro W2100
- 16GB
- Z Turbo Drive



## CAD: NX

- Z440
- Quadro K5200
- FirePro W7100
- 32GB
- Z Turbo Drive



## Simulation: NX NASTRAN

- Z840, dual processor
- K6000
- FirePro W9100
- 128GB
- Z Turbo Drive



## PLM: TEAMCENTER

- HP Server





## CAD: CREO

- Z230
- Quadro K2200
- FirePro W5100
- 16GB
- Z Turbo Drive



## Simulation: CREO

- Z840
- Quadro K2200
- FirePro W5100
- 64GB
- Z Turbo Drive



## PLM: WINDCHILL

- HP Server



# SOLIDWORKS (Dassault Systèmes)



## CAD: SOLIDWORKS

- Z230
- Quadro K620
- FirePro W2100
- 16GB - 32GB
- Z Turbo Drive



## Simulation: SOLIDWORKS

- Z840, dual processor
- Quadro K2200
- FirePro W5100
- 128GB
- Z Turbo Drive



## Rendering: PHOTOVIEW 360

- Z840, dual processor
- Quadro K2200
- FirePro W5100
- 64GB
- Z Turbo Drive



## PLM: SOLIDWORKS PDM

- HP Server







## CAD: AutoCAD

- Z230
- Quadro K620
- FirePro W2100
- 16GB
- Z Turbo Drive



## CAD: Inventor

- Z440
- Quadro K2200
- FirePro W5100
- 32GB
- Z Turbo Drive



## Rendering: Showcase, 3ds Max, Maya

- Z840, dual processor
- Dual Quadro K6000
- FirePro W9100
- 64GB
- Z Turbo Drive



## PLM: PLM 360

- Autodesk 360 Cloud



## Simulation: MECHANICAL, FLUENT, HFSS...

- Z840, dual processor
- Quadro K6000
- FirePro W7100
- 192GB
- Z Turbo Drive

HPC



- HP Server

# AEC segment



# HP in AEC

Huge accounts you never heard of



这种价值将会因为中国尊项目而赢得全球关注  
Because of China Zun project, these values will draw global attention

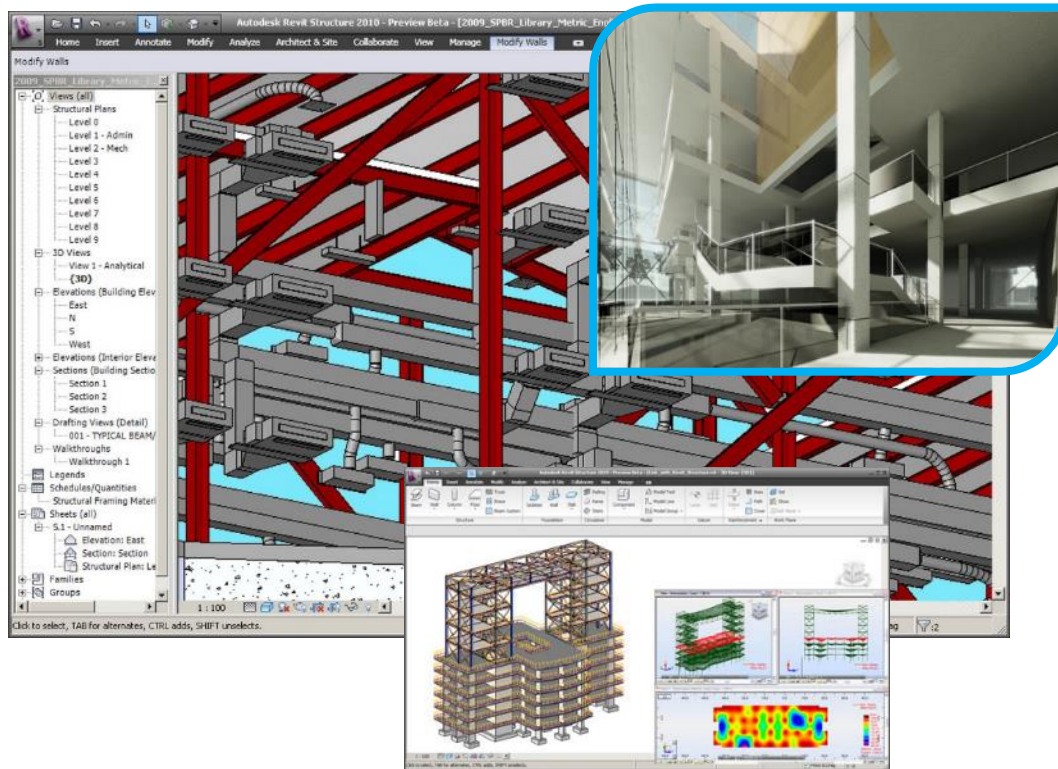


中国尊的最终设计体方案充分考虑了尊形态的优美  
the final design scheme of China Zun has taken elegant shape of wine vessel

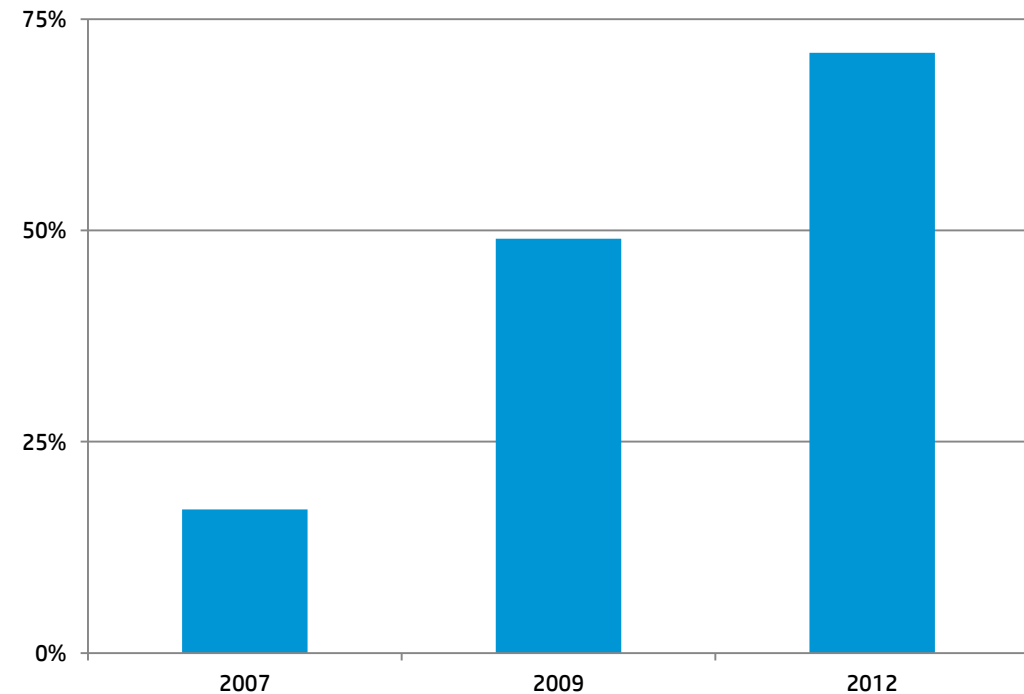


# BIM: Building Information Modeling

## Parametric Models/Data (BIM)



## BIM Adoption



Source: McGraw Hill 2012 Business Value of BIM in North America SmartMarket Report, published at:

[http://images.autodesk.com/adsk/files/mhc\\_business\\_value\\_of\\_bim\\_in\\_north\\_america\\_2007-2012\\_smr.pdf](http://images.autodesk.com/adsk/files/mhc_business_value_of_bim_in_north_america_2007-2012_smr.pdf)

# The transition of CAD to BIM

2D to 3D 

CAD (yesterday)



BIM (today) - Buildings



BIM (today) - Infrastructure



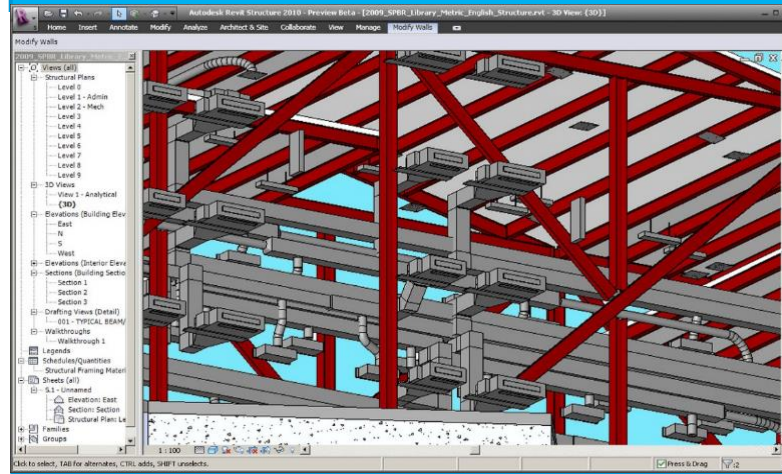
# AEC in a nutshell



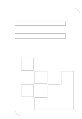
CAD



BIM



RENDERING





## CAD: AutoCAD

- Z230
- Quadro K620
- FirePro W2100
- 16GB
- Z Turbo Drive



## BIM: Revit

- Z440
- Quadro K2200
- FirePro W5100
- 32GB
- Z Turbo Drive



## Rendering: Showcase, 3ds Max

- Z840, dual processor
- Dual Quadro K6000
- FirePro W9100
- 64GB
- Z Turbo Drive



## Project Sharing: Revit Server

- HP Server







## CAD: MicroStation

- Z230
- Quadro K620
- FirePro W2100
- 16GB
- Z Turbo Drive



## BIM: MicroStation

- Z440
- Quadro K2200
- FirePro W5100
- 32GB
- Z Turbo Drive



## Rendering: MicroStation

- Z840, dual processor
- Quadro K2200
- FirePro W5100
- 64GB
- Z Turbo Drive



## Project Sharing: ProjectWise

- HP Server





## CAD/BIM: Vectorworks

- Z230
- Quadro K620
- 16GB
- Z Turbo Drive

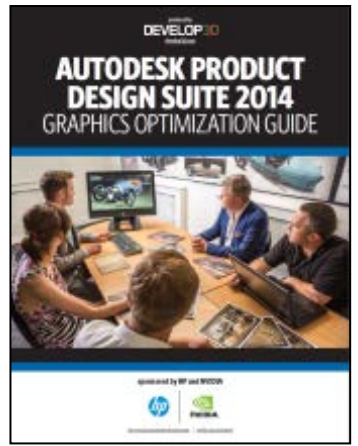


# Product Development FY15 plans



# Autodesk Product Design Suite

## Learn why Lynn Allen recommends HP Z Workstations and NVIDIA



**Morgan motors**  
Customer video

**Lynn Allen and Rex Sellentine**  
Tutorial video series (4 videos)

**DEVELOP3D**  
Graphics optimization guide



# SolidWorks

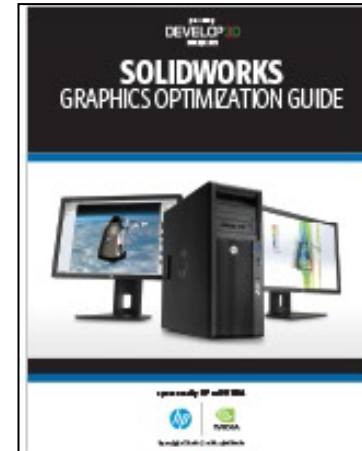
## Tune SOLIDWORKS for performance with HP Z Workstations and NVIDIA



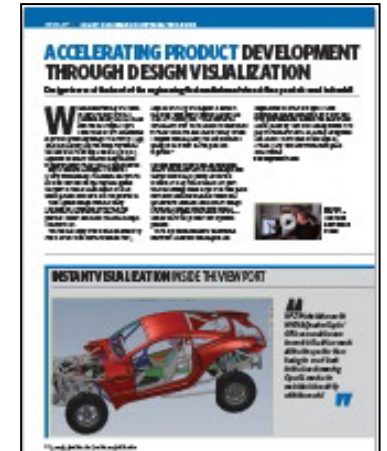
**Sage Cheshire Aerospace**  
Customer video



**Rex Sellentine**  
Tutorial video series (4 videos)



**DEVELOP3D**  
Graphics optimization guide



# AEC FY15 plans



# BIM Campaign

[www.hp.com/go/bim](http://www.hp.com/go/bim)

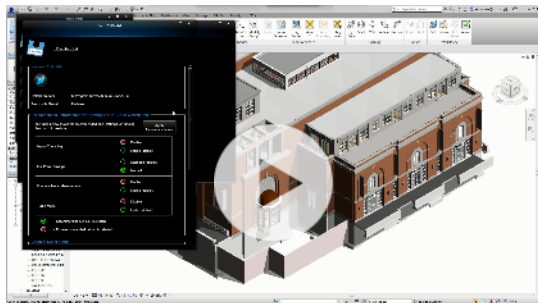


Lynn Allen video



**Michael Quinn**  
President, Chief Executive Officer  
Museum of the American Revolution

RAMSA video and written testimonial



Autodesk demo video

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## AUTODESK BUILDING DESIGN SUITE 2015 GRAPHICS OPTIMIZATION GUIDE

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Autodesk optimization guide

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## REVIT® VIRTUALIZATION GUIDE

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### THE BUSINESS CASE FOR VIRTUALIZATION

Running Revit® on a virtual desktop is big news, but what are the key benefits to AEC firms?

**V**irtualization is one of the hottest topics in the world of BIM. Move the workstation to the data center and access its full power from anywhere, on any device. It's a compelling message for an industry that's extremely mobile but the benefits go far beyond simply running Revit® remotely. Below we look at some of the key business drivers for moving Revit® to a virtualized environment, from the perspective of the BIM manager.

**WORKFLOW & COLLABORATION:** This is one of the most compelling arguments for Revit® virtualization, and there are several examples. As all data is kept in the data center, next to the virtual workstation, there's no need to transfer complex BIM models across the LAN or WAN from server to desktop. "A 1GB Revit® file might take 1.5mins to open in a data center, but on a traditional workstation [where data is copied from the Revit® server] it could take 20mins," says Adam Jull, CEO of IMSCAD, a global specialist in Revit® virtualization. "Virtualization brings with it a big shift in the time taken to open and close files." The challenges of version control can be virtually eliminated as only pixel data is streamed to the endpoint. No BIM data leaves the controlled environment.

Collaboration with regional offices or third parties can also be seamless with no need to synchronize huge data files. Structural, MEP or general contractors can all work from the same data center, though attribution of software and hardware costs needs to be considered in this case.

**IT MANAGEMENT:** Management of machines is a major benefit of virtualization. IT administrators don't have to worry about maintaining individual workstations, so management costs should drop, particularly for firms with multiple offices. Service packs, fixes and upgrades can all be carried out in one place – inside the data center. "If you want a new computer you just whip one up," says New York-based BIM consultancy, CASE. "If one gets screwed up you just hit a button and it's fixed." Virtualization also offers complete flexibility in terms of users, making the most out of valuable hardware resources. Virtual workstations can be spawned on demand, tailored to the needs of individuals. A part time Revit® user can get access as and when required, rather than having a powerful workstation sit idle under his or her desk. New teams or contract staff can also be brought on-line quickly, regardless of geography or the availability of local, Revit®-ready, high-end workstations.

**WORK ANYWHERE:** Work is not a place, it's a thing you do, so goes the virtualization mantra. Users are not restricted to the design office. An architect can connect to the same high-performance Revit® workstation from pretty much anywhere: from home, at a client's office, in the field, even in a different country. All that's needed is a low powered client and a high-bandwidth, low latency connection. Revit® can be accessed from any device – laptop, desktop, thin client, tablet or smart phone – on a variety of operating systems. Presenting BIM projects on a tablet can be a show stopper for executive presentations.

**DATA SECURITY:** IP security is another key driver for AEC firms. As BIM data never leaves the data center, only encrypted pixels, it's a great way of ensuring sensitive data doesn't fall into the wrong hands. "This is not necessarily being driven by architectural firms, but the clients who could be owners of government buildings or banks," says IMSCAD's Adam Jull. "Clients are becoming much more aware of the benefits of virtualization and certainly understand the risks of memory stick culture – the laptop that's lost on the train. As a result, a lot of firms are now stipulating security on contracts – that no dispersed data should be used on a project."

[hp.com/rev/autodesk/building](http://hp.com/rev/autodesk/building) | [nvidia.com/autodesk](http://nvidia.com/autodesk) 1

Autodesk virtualization guide



# AutoCAD Campaign

[www.hp.com/go/autocad](http://www.hp.com/go/autocad)



Lynn Allen video

### HP Z230 SFF Workstation ROI Calculator

Analyze the return on investment (ROI) of a new workstation over a three-year period.

AutoCAD Operator Rate (\$/hr)

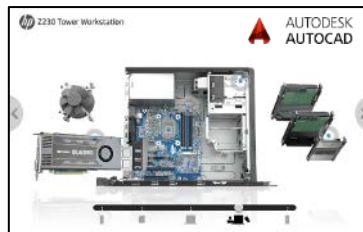
IT/CAD Manager Rate (\$/hr)

Cost of New HP Z230 SFF Workstation plus Peripherals

Item	Qty	Annual Savings	3 Year Savings
Due to speedier workflows	2	\$3,840.00	\$11,520.00
Due to reduced crashing/downtime	2	\$3,040.00	\$11,520.00
IT Time Saved			
Locating/setting/delivers	2	\$100.00	\$300.00
Costs Saved vs. 3 Year Warranty			3 Year Costs
Average PC 3 year repair costs - parts			\$300.00
Average PC 3 year repair - labor			\$300.00
<b>Total 3 Year Savings</b>			<b>\$23,840.00</b>

Measurement Category	ROI / Payback Ratio
3 Year Total ROI	1818%
Annual ROI	607%
Years to pay back	0.2

ROI calculator




Product tour

### Case study

#### Larson & Darby Group

HP Z Workstations enable small company to do big things in AEC



**Industry:** Architecture/Engineering/Construction

**Objective:** Do it well, build it 2D, design and build it 3D, and do it better.

**Approach:** Larson & Darby, has implemented HP Z Workstations for AutoCAD® solutions.

**Key features:**

- The HP Z230 SFF "Tower Configuration" for AutoCAD offers a small footprint, 21.5" diagonal monitor with ECC memory support for improved reliability and performance, 80000+ "Quality" professional graphics card, and the HP Z Turbo Drive SSD.
- HP Z Turbo Drive SSD, offers top performance for essential real-time operations.
- HP Performance Kit, for enables rapid workstation optimization.

**Business outcome:**

- HP Z230 Small Form Factor Workstation, 57% smaller than a comparable tower, delivers top workstation performance in a tiny package.
- HP Z Workstations run computer rendering and 3D architectural rendering, 10 times faster than comparable tower workstation.

**Technology is a major investment for a firm like ours, but the cost we pay for the power we get using HP Z Workstations is quite reasonable. The HP Z230 Small Form Factor Workstation is a great example.**

— Robert Green, CAD Developer, Chicago

**Larson & Darby Group**  
Architectural Engineering/Construction

Larson & Darby, a full-service architectural, engineering, interior and technology design firm based just west of Chicago, has served a wide variety of customers, large and small, since 1963. Larson & Darby uses Autodesk® AutoCAD® with HP Z Workstations, enabling it to compete effectively with larger firms in the tech-heavy Architecture/Engineering/Construction (AEC) industry.

Customer Case Study

### Advertorial

#### HP Z230 Small Form Factor (SFF) Workstation delivers real ROI for AutoCAD® users



HP recommends Windows.

**“Hanging on to outdated, slow computers isn’t really saving you money—it’s costing you! Invest in a professional HP Z230 SFF Workstation that will boost AutoCAD® productivity and deliver an ROI that you can’t afford to ignore.”**

— Robert Green, CAD Developer, Chicago

**The HP Z230 SFF Workstation with dual monitors is an ideal AutoCAD® platform**

During the past several years of economic uncertainty, the trend of using less expensive, slower computers has become a common management strategy. Not only that, but the common practice of purchasing four or five year-old desktop PCs to run AutoCAD makes it a no-brainer when you see the recent introduction of the AutoCAD® 2015 productivity and performance improvements. AutoCAD® 2015 has a lot to offer AutoCAD users, but when the time comes to purchase a new workstation, you need to be on the lookout for the HP Z230 SFF Workstation. It’s a professional and powerful workstation that will boost your productivity and deliver a great return on investment (ROI) compared to other PCs.

**AutoCAD® 2015 New Features**

Anyone who uses a newer version of AutoCAD knows that it’s just for 2D drafting anymore. In fact, with the addition of more 3D commands from other software packages of from 3D scanned point cloud files, AutoCAD is becoming 3D/5D everything. The new version provides many capabilities, making it a good form factor for a high-end workstation. Not only that, but the common practice of purchasing four or five year-old desktop PCs to run AutoCAD makes it a no-brainer when you see the recent introduction of the AutoCAD® 2015 productivity and performance improvements. AutoCAD® 2015 has a lot to offer AutoCAD users, but when the time comes to purchase a new workstation, you need to be on the lookout for the HP Z230 SFF Workstation. It’s a professional and powerful workstation that will boost your productivity and deliver a great return on investment (ROI) compared to other PCs.

Of course, the ability to utilize the 3D geometry requires computing resources and a good 3D processing unit (GPU) that can well beyond the capabilities of most desktop PCs. Plus, AutoCAD 2015 also has a lot to offer AutoCAD users, but when the time comes to purchase a new workstation, you need to be on the lookout for the HP Z230 SFF Workstation. It’s a professional and powerful workstation that will boost your productivity and deliver a great return on investment (ROI) compared to other PCs.

AutoCAD® 2015 New Features

Anyone who uses a newer version of AutoCAD knows that it’s just for 2D drafting anymore. In fact, with the addition of more 3D commands from other software packages of from 3D scanned point cloud files, AutoCAD is becoming 3D/5D everything. The new version provides many capabilities, making it a good form factor for a high-end workstation. Not only that, but the common practice of purchasing four or five year-old desktop PCs to run AutoCAD makes it a no-brainer when you see the recent introduction of the AutoCAD® 2015 productivity and performance improvements. AutoCAD® 2015 has a lot to offer AutoCAD users, but when the time comes to purchase a new workstation, you need to be on the lookout for the HP Z230 SFF Workstation. It’s a professional and powerful workstation that will boost your productivity and deliver a great return on investment (ROI) compared to other PCs.



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ROI article by Robert Green

### Technical white paper

#### AutoCAD 2015 performance: HP Z230 Workstations vs PC

Outperforms a PC by up to 95% on the CADalyst AutoCAD® benchmark

**“Productivity improvement when running AutoCAD 2015 on an HP Z230 SFF Workstation was so significant to the PC that most users will find that it easily justifies the investment in a workstation”**

— David Cohn, contributing editor: Desktop Engineering

Performance analysis by David Cohn





# AutoCAD Campaign

www.hp.com/go/autocad

HP recommends Windows.



## Make your AutoCAD® performance more awesome with Z

It's time to move up to an AutoCAD 2015 certified, affordably priced Z Workstation from HP. Featuring next-gen processors and professional graphics technologies, Z Workstations are specifically designed to handle today's most complex modeling and rendering projects. Add in our three-year warranty and experience HP's ultimate combination of performance and value. Find out what makes HP Z Workstations the world's #1 workstation brand.² Learn more at [hp.com/go/autocad](http://hp.com/go/autocad)



**HP can deliver up to:**  
 59% faster modeling  
 40% faster rendering  
 95% better overall performance¹


Make it matter. 

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 ¹The HP Z230 SFF Workstation is certified for AutoCAD 2015. It has a single-based on an Intel Core i7 processor, HP Z230 SFF Workstation. HP PC Autodesk was not involved in testing this claim. ²Certified as an authorized reseller of Autodesk, Inc. (Autodesk, Inc.) and its subsidiaries. Autodesk, the AutoCAD logo and the AutoCAD logo are registered trademarks and trademarks of Autodesk, Inc. in the United States and other countries. All other trademarks are the property of their respective owners.

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## Make your AutoCAD® performance more awesome with Z

### Discover the HP Z230 SFF Workstation

It's time to move up to an AutoCAD 2015 certified, affordably priced Z Workstation from HP.¹ Featuring next-gen processors and professional graphics technology, the HP Z230 SFF is specifically designed to handle today's most complex modeling and rendering projects. No other workstation offers the same performance...for about the same price as a PC.




[Learn more](#)

### You can't argue with the numbers

In head-to-head competition between an HP Z230 SFF and a conventional PC, the HP Z230 SFF always came out ahead, with up to:


- 59% faster modeling
- 40% faster rendering
- 95% better overall performance¹

No wonder more pros are moving to Z every day, making us the world's #1 workstation brand.





[Learn more](#)

For a limited time, get exclusive access to AutoCAD 2015 training for one year when you purchase an HP Z230 SFF Workstation. (\$6K value)



[Learn more](#)

E-mail

HP Home For Work Support


## HP Z Workstations

HP Z230 SFF Workstation Certified for AutoCAD 2015

[View to Buy](#)

### Make your AutoCAD® performance more awesome with Z

Move up to an AutoCAD certified, affordably priced HP Z Workstation.



[Read the whitepaper to find out how you can get:](#)

- 40% faster modeling
- 50% faster rendering
- 95% better overall performance

[AutoCAD Productivity Study](#)  
 HP Z230

### HP Z230 SFF Workstation ROI Calculator

Compare the return on investment (ROI) of a new workstation over a three-year period.

AutoCAD Operator Rate (\$/hr)

AutoCAD Manager Rate (\$/hr)

Cost of New HP Z230 SFF Workstation plus Peripherals

Cost Item Level	Qty/Year	Annual Savings	3 Year Savings
Due to render workfiles	2	\$1,800.00	\$11,520.00
Due to reduced working downtime	2	\$1,800.00	\$11,520.00
3 Year Total			\$23,040.00
Cost of New HP Z230 SFF Workstation plus Peripherals		\$1,200.00	\$3,600.00
Costs Saved After 3 Year Warranty			\$19,440.00
Average PC 3 year repair costs (parts & labor)			\$360.00
<b>Total 3 Year Savings</b>			<b>\$23,040.00</b>

Measurement Category	HP Z230 SFF Workstation	ROI / Payback Period
3 Year Total ROI	193%	
Annual ROI	64%	
Years to pay back	0.8	

**Additional resources**

- HP Z230 SFF Workstation Certified for AutoCAD 2015
- AutoCAD Productivity Study
- AutoCAD 2015 training for one year when you purchase an HP Z230 SFF Workstation.

[View all whitepapers and case studies](#)

The results of this calculator are based on a combination of a variety of factors. Actual results may vary. This calculator is not intended to be used as a substitute for professional advice. The results of this calculator are based on a combination of a variety of factors. Actual results may vary. This calculator is not intended to be used as a substitute for professional advice. The results of this calculator are based on a combination of a variety of factors. Actual results may vary. This calculator is not intended to be used as a substitute for professional advice.

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Landing page with ROI calculator










Banner Ad



# Trends



# Key trends in Product Development



**3D Printing**



**Virtualization**



**Mobility**



**3D Scanning**



**User Interaction**



**Cloud / Infinite Computing**

# Wrap up



# Recap

- 11 million potential workstation users in AEC and Product Development
- Of those, 6 million are currently using PCs (PC Upsell)
- HP is the leader in “Engineering” according to IDC (AEC and Product Development)
- HP Z Workstations are used by the majority of the world’s largest automotive brands
- HP Z Workstations are used to build the biggest construction projects in the world
- FY15 PC Upsell Campaigns will help you build incremental business



**Thank you.**

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**More info:**  
**[csverticalsegments.com](http://csverticalsegments.com)**

