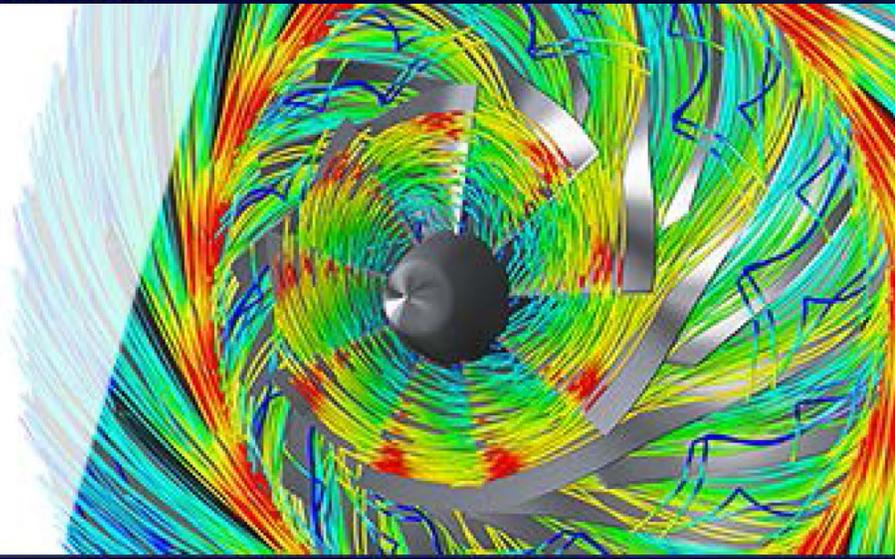




# INVESTOR DAY 2016

June 1-2 • Pittsburgh, PA • NASDAQ:ANSS



## Executive Summary

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# Key Themes

## Overview

ANSYS performed well in 2015 along all key metrics—including revenue, earnings, cash flow, margins, recurring revenue, and deferred revenue and backlog. ANSYS is off to a good start in 2016 and is well positioned for continued market leadership and long-term growth.

Product design and development is increasingly complex and sophisticated, as smart products now add electronics and software components to mechanical systems. Companies in all industries are under increasing pressure to innovate more rapidly and less expensively, and avoid failure. These factors are driving increased use of and reliance on simulation—particularly simulation of entire systems—to get to market faster with innovations that can boost the top line.

Also, because of the growth of embedded sensors in products as part of the Internet of Things, data can be provided in real time showing how products are operating in various real-world environments. It is now possible to create a “digital twin” and use real-world data to run new types of simulations. This has the potential to dramatically expand the use of simulation from beyond engineering and product development into the realm of operations.

This expanded opportunity for simulation, combined with ANSYS’ talented people, market-leading products, technological capabilities, and financial strength, positions ANSYS extremely well for the future.

## Context

ANSYS 2016 Investor Day was held on June 1-2, 2016, in Pittsburgh, Pennsylvania. CEO Jim Cashman and members of the ANSYS management team reviewed results from 2015, discussed the performance thus far and outlook for 2016, assessed the long-term opportunity for simulation in engineering and beyond, and highlighted key aspects of the company’s product and marketing strategy. An industry analyst and major customers shared their perspectives on simulation and the value that ANSYS provides.

## Key Themes

### ANSYS continued to perform well in 2015 and anticipates continued growth in 2016.

In 2015, ANSYS’ revenue, earnings per share, and cash flow all showed strong growth. Margins and recurring revenue remained strong, and deferred revenue and backlog continue to grow. For 2016, ANSYS anticipates continued revenue growth and expects operating margins of 47-48%, non-GAAP EPS of \$3.48 to \$3.62, and operating cash flow of \$350M to \$375M.

The Company will continue to drive organic growth by investing in R&D, adding outstanding technical and sales talent, building on the company’s global presence, and strengthening and leveraging relationships with channel partners. ANSYS will also continue to look to deploy capital through strategic acquisitions.

The results from 2015 and the expected results from 2016 and beyond are consistent with ANSYS’ 20-year history as a public company, where significant stockholder value has been created.

### ANSYS continues to see a huge opportunity for growth.

With smart, connected products that have electronics and software, product design and development has become increasingly complex. But this complexity has not diminished the pressure to avoid product failures, mitigate risks, increase the pace of innovation, and decrease the costs. All of these factors are driving increased use of simulation, pushing simulation earlier in the product development process, and increasing the number of simulation users within organizations.

A leading industry analyst and customers from major corporations described how the adoption of simulation is increasing because compared to physical testing, simulation increases the speed of product design and development, lowers development costs, enables predicting failure modes and designing out failure, and enables engaging in more experimentation and learning. Simulation provides companies in all industries with bottom-line business benefits.

In addition, smart products connected to the Internet of Things have embedded sensors that are able to provide real-time data from different environments in the field. This operational data can be used to run simulations using a “digital twin,” which is a virtual representation of a physical product. These simulations based on data from real-world operating conditions will be fed into the product development process to further improve products. In addition, this operational data and simulations from it will provide companies the ability to generate entirely new revenue streams. New revenues can come from monitoring equipment in the field, identifying anomalies, recommending preventive maintenance, and more. This use of simulation will expand the market far beyond just engineers in product development to operations personnel using simulation for multiple purposes.

### ANSYS is extremely well positioned to capitalize on these new opportunities.

As the simulation market is poised to enter a new era, ANSYS is continually transforming itself. The Company has:

- **A proven product strategy** that is based on the Workbench platform, builds on the concept of multiphysics, and incorporates simulations of complete systems, including software. ANSYS has recently introduced the industry’s first combination of big data and machine learning applied to physics-based simulation. Over the next 20 years ANSYS’ proven product strategy will continue to evolve.

- **A clear go-to-market strategy** that involves selling the entire portfolio, building a more powerful digital foundation, and offering enterprise license agreements. Channel partners are being incented to drive more license growth, and ANSYS is launching new consulting offerings. Key marketing initiatives include evolving from product-specific campaigns to platform and portfolio campaigns; investing in new digital infrastructure; and making simulation tools common for the next generation of engineers and startups.
- **A solid financial foundation.** ANSYS has a successful business model with high margins, significant cash flow, and high levels of recurring revenue. This translates into a strong balance sheet. As of March 31, 2016, ANSYS had cash and short-term investments of more than \$800 million, with no debt, low DSO (less than 40 days), and deferred revenue and backlog of more than \$500 million. This provides the ability to invest in future growth and great funding flexibility.

ANSYS' proven product strategy and future product roadmap, talented workforce, exciting go-to-market strategy, and solid financial foundation position ANSYS extremely well for the foreseeable future.

## ANSYS is also helping prepare the next generation of engineers.

Preparing future engineers by focusing on engineering schools has been a successful strategy for many years. But ANSYS is taking this a step further through a unique collaborative partnership with the Carnegie Mellon College of Engineering.

In partnership, Carnegie Mellon and ANSYS are creating a new paradigm for engineering education, with simulation embedded in students' learning experience. This new paradigm will take shape at Carnegie Mellon in a new facility, made possible by a gift from ANSYS, that fosters multidisciplinary collaboration and includes a simulation lab. This partnership aims to take simulation from an engineering specialty and make it part of the core curriculum across disciplines.

# ANSYS' Next 20 Years

Jim Cashman, President and CEO

## Overview

ANSYS has created significant shareholder value over the past 20 years and is extremely well positioned to deliver even more value over the next 20 years. ANSYS is uniquely positioned to continue to grow and lead the simulation market. The Company has a solid and increasing opportunity, delivers quantifiable benefits, has a unique, proven strategy that delivers what customers need, has demonstrated long-term performance, and has a solid financial foundation.

## Context

ANSYS CEO Jim Cashman described ANSYS' evolution, vision, and plans for the 20 years ahead.

## Key Takeaways

### ANSYS has evolved from a startup to a market leader.

ANSYS was a pure startup, became a public company 20 years ago, and has consistently created value for shareholders during that time, constantly evolving and growing to become the undisputed market leader in a growing space.

ANSYS — 20 Years of Creating Stockholder Value



### ANSYS' opportunity is solid and increasing.

As product development becomes increasingly complex and sophisticated, and the risks and consequences of failure become increasingly great, the use of simulation will continue to grow. Customers will require the ability to use multiple physics and perform complete system simulations more and more. In addition, the ability to create a "digital twin" and use real-world operational data from sensors to run simulations based on live environments will expand the uses of simulation beyond engineers. The amount of simulation being done today just scratches the surface of the future opportunity.

### ANSYS delivers quantifiable benefits.

Third-party sources and customers reiterate that ANSYS provides quantifiable benefits. Simulation helps avoid product failures and do so earlier in the development process, when it is easier and less expensive to make changes. Products can be designed faster and at lower cost. In some instances, simulations create new product designs that simply could not have been done any other way. ANSYS also helps companies innovate better and more rapidly and drive top-line revenue—all quantifiable benefits.

#### ANSYS Complete Virtual Prototype

HOLISTIC DEVELOPMENT vs SILOED DEVELOPMENT  
Holistic Development Experiences:

- Length of Development Time ▼ **7x** reduction
- Overall Product Cost ▼ **2.5x** reduction
- Warranty Costs ▼ **53%** more likely to decrease
- Number of Change Orders After Release to Manufacturing ▼ **123%** more likely to decrease
- Percent Successful New Product Introduction (NPI) Rate ▲ **33%** more likely to achieve

### ANSYS has a proven product strategy.

The Company's consistent and sustained growth has been driven through a proven product strategy. The core strategy hasn't changed much since 1999. It started with advanced technologies and has progressed to enable collaboration among people and connections with millions of devices as part of the Internet of Things. ANSYS' strategy and success has been based on creating and harnessing the Workbench platform.

#### Based on a Proven Strategy



ANSYS' growth over the past 20 years has been due to building on the concept of multiphysics. At the time, no one was talking about multiphysics. It has now become more common, and customers see it as the key to being able to solve otherwise unsolvable problems. And, as customers adopted multiphysics simulation, they wanted everything to work together and didn't want to have to be a system integrator. ANSYS' platform has provided value in supporting multiphysics.

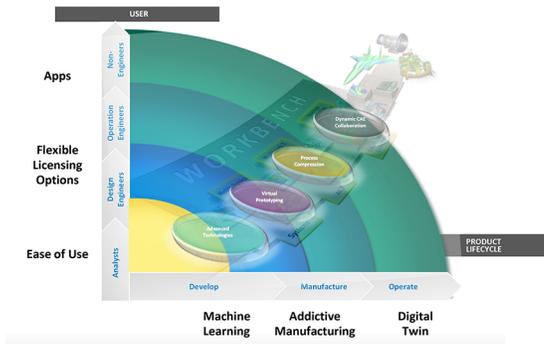
Further evolution has involved software—which is now critical in smart products—being able to work in conjunction with mechanics and electronics, and being able to perform simulations of complete systems.

### ANSYS is well positioned for the future.

Going forward, the next 20 years will be even more interesting. Machine learning, additive manufacturing, and digital twins will make simulation even more important in product development and operations. Simulation is becoming part of every engineer's education, but the use of simulation is poised to expand to operations people or even doctors.

New apps are being developed to run on ANSYS' platforms, with about 2,000 apps in just the first year, with little promotion or fanfare.

#### The Next 20 Years



Beyond the evolution in ANSYS products, ANSYS' sales and marketing capabilities also position the company well for the next 20 years. This includes engaging with customers through digital and social, strengthening channel partnerships, launching new enterprise agreements, and providing new consulting offerings.

### ANSYS has demonstrated sustained long-term performance.

Regardless of economic cycles and external events, ANSYS' technical excellence, talented people, and disciplined product strategy has resulted in demonstrating sustained performance over the long term.

### ANSYS has a solid financial foundation.

Achieving ANSYS' vision and continuing to deliver strong performance requires ongoing investment. This investment is possible because ANSYS has built a solid financial foundation.

**“As ambitious as we are technologically, we are very disciplined financially, which has served us well through the years.”**

– Jim Cashman

# Preparing the Next Generation of Students

## *A New Partnership between ANSYS and Carnegie Mellon University*

Jim Cashman, President and CEO

James H. Garrett, Jr., Dean, College of Engineering, Carnegie Mellon University

### Overview

In partnership, Carnegie Mellon University and ANSYS are engaged in creating a new paradigm for engineering education, with simulation embedded in students' learning experience. At Carnegie Mellon's College of Engineering this new paradigm will take shape in a new facility that fosters multi-disciplinary collaboration and includes a simulation lab. College of Engineering Dean James Garrett foresees a "beehive" of collaborative activity as part of Carnegie Mellon's "maker ecosystem." He sees this partnership elevating the skills of engineering students through greater use and application of simulation.

### Context

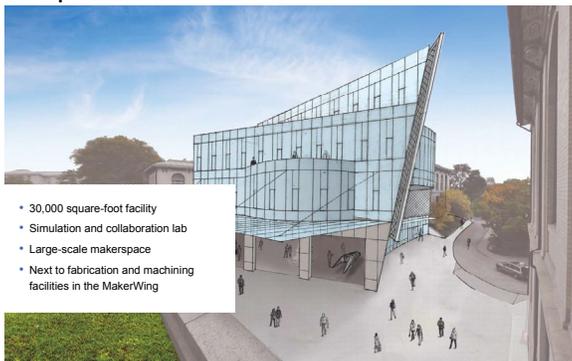
ANSYS CEO Jim Cashman and Dean of the College of Engineering at Carnegie Mellon University James Garrett announced a major gift from ANSYS, a new partnership, and a new facility at Carnegie Mellon.

### Key Takeaways

#### **ANSYS' gift to Carnegie Mellon will create a beehive of activity.**

ANSYS' gift will result in creation a new 30,000-square-foot building (shown below) that will include a simulation and collaboration lab. It will provide open space for collaborative projects—like working on a Formula One race car—and will bring together students, faculty, and industry partners. The facility will also have dedicated staff. It will provide space for sharing of ideas, simulation, and fabrication. It will have a "maker" ecosystem, and will be a catalyst in attracting undergraduates, graduate students, and faculty.

#### Conceptual Sketch



This new facility will be in a central location at the engineering school, next to the fabrication and machining facilities in the Maker Wing, and in close proximity to courses for disciplines such as mechanical and electrical engineering.

#### **This partnership will help create a new generation of more skilled engineering students.**

As part of this partnership, ANSYS simulation tools will be broadly available throughout the engineering school and simulation will be increasingly embedded in the experience of engineering students.

**“This is changing how education takes place and embedding simulation as part of engineering.”**

– Jim Cashman

Carnegie Mellon's goals include fostering a culture of multidisciplinary collaboration, exposing students to a broad range of technologies (including simulation), and elevating the skills and capabilities of all engineering students in being able to apply and use simulation in engineering in a natural way.

**“Our goal is to elevate the skills of all engineering students in applying and using simulation in engineering.”**

– James Garrett

# Simulation & Academia: How Advanced Biomanufacturing Will Transform Drug Development . . . Medical Therapies . . . and Beyond

Adam Feinberg, Associate Professor of Material Science and Biomedical Engineering, Carnegie Mellon University

## Overview

Astounding scientific work is underway with the potential to reinvent how life is built. This work includes creating heart tissues from single molecules, used to repair or regenerate damaged heart tissues. Such transformations are only possible because of simulation, 3D computer modeling, and technological advances like additive manufacturing. Simulation is the foundation and is the only way to address many of the challenges that exist to realize the transformative benefits of 3D printing.

Because of its power, simulation is being integrated by academia in areas like sophisticated tissue engineering lab courses. Use of simulation is poised to spread more broadly in academia, could change drug development and clinical trials, and could become common in clinical practice in determining the optimal therapy.

## Context

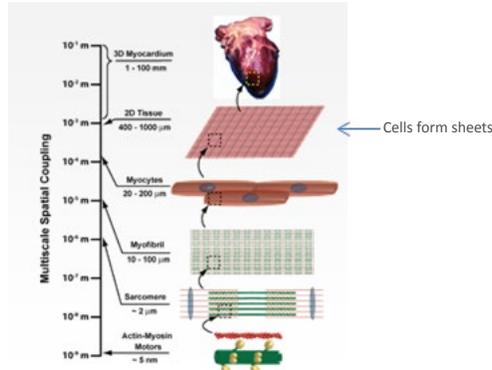
Professor Feinberg described work underway in the scientific community and at Carnegie Mellon to build human heart tissue. He explained the critical role that simulation plays and how simulation will be used in academia and beyond.

## Key Takeaways

**Creating soft living tissue is a process of additive manufacturing.**

Human tissue, like the heart, is composed of billions of cells and trillions of molecules. Cells in the heart are in sheets, which is an amazing process of bottom-up additive manufacturing. But heart cells do not regenerate, and heart disease is the leading cause of death in the world.

### Hierarchical Structure-Function in the Heart



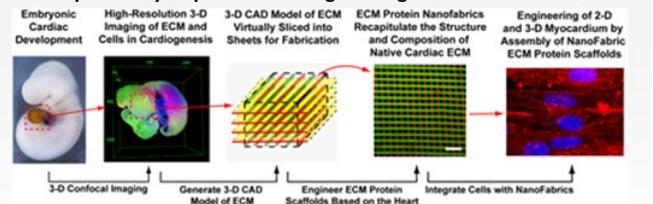
The biomaterial of the body is termed the extracellular matrix (ECM). ECM is more than just “material”; it is information. ECM sends signals between cells using physics, chemistry, and mechanics. Professor Feinberg asked, “What if we could build ECM the same way that cells do, from single molecules into complex 3D fiber networks with tissue-specific structure and function?” The long-term hope is to make and transplant tissue.

## Simulation and modeling are essential to building tissue.

In taking the radical and transformative step towards heart repair and regeneration, using the embryonic heart is an instructive template for scaffold design. The process for tissue creation, shown below, involves:

- 3D imaging an embryonic heart
- Generating a 3D CAD computer model of ECM sheets
- Engineering and fabricating ECM protein scaffolds
- Building heart muscle by assembling protein scaffolds

### Developmentally Inspired Tissue Engineering



“Simulation is the only way to model and ultimately understand these multiphysics biological problems.”

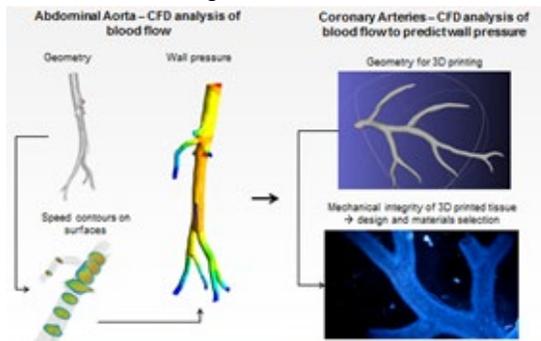
– Adam Feinberg

**3D bioprinting holds the potential to reinvent how life is built. Simulation is a key.**

Using simulation and computer modeling, 3D bioprinting merges materials science, advanced manufacturing, and cell biology to reinvent how life is built. 3D printing is already making a transformative impact in surgical planning and medical devices, such as in custom printing of medical devices. For efforts focused on living tissue and complex

multiphysics systems, simulation is the foundation that will drive the field. For example, simulation and 3D printing are being used for blood vessels and tissues.

#### Simulation for the Design of 3D Printed Tissues



**“Simulation is the foundation. We can model multiple systems in the human body and their complex interactions.”**

– Adam Feinberg

Among the work taking place in labs:

- Engineering human heart muscle to replace animal models in drug development
- Enabling personalized medicine using patient-specific heart surrogates
- Creating anatomically accurate engineered cardiac tissues for heart repair, and eventually the entire heart (which might be 15-30 years out)
- Extending the technology to other areas of critical need including:
  - Blood vessels for coronary artery bypass
  - Skeletal tissue for trauma repair
  - Cornea for vision restoration

Further, simulation will:

- Allow patient-specific geometry from MRI/CT to be optimized
- Enable surgical planning to guide placement
- Predict how implementation will affect surrounding tissues and organ function, and minimize adverse effects
- Provide an in silico “clinical trial” to validate that one-off 3D bio-printed tissues are safe and effective and eliminate the need for large-scale human trials

**“Simulation is the only way to address the challenges in order to realize the transformative benefits of 3D bioprinting.”**

– Adam Feinberg

#### ANSYS simulation is being used in academia to model complex human systems.

At Carnegie Mellon, tissue engineering lab courses require the integration of diverse training, including cell and molecular biology, materials science, engineering, and medicine. Professor Feinberg envisions integrating ANSYS simulation technology into these courses. With simulation, students could:

- Design and print 3D scaffolds
- Simulate fluid flow-through and degradation of material
- Compare simulation to experimental results
- Create defects to demonstrate where tissue engineering scaffolds could be used for tissue repair

Also exciting is the potential of moving simulation from specialized labs into everyday research workflows, and expanding the use of simulation beyond highly trained engineers to make it a common tool for scientific problem solving. In addition, the possibility exists of integrating simulation into everyday clinical practice, making clinicians and doctors into simulation power users.

# CIMdata Market Overview

Don Tolle, Director, Simulation-Driven Systems Development Practice, CIMdata

## Overview

Simulation and analysis software is a \$5 billion market segment projected to grow 8% per year over the next five years. Revenue growth may accelerate as simulation use grows and technologies improve.

Simulation use will grow because innovation-focused companies are rapidly developing complex new products and simulation is critical to innovation. It increases the speed of innovation and decreases the cost and risk. Simulation will be used earlier in the development process, by more people in the enterprise, and in new application areas. And, with sensors embedded in devices in the Internet of Things environment, a constant stream of real-world data will be available throughout the product lifecycle that can be used to simulate and improve product performance.

Effective engineering simulation must be cross-domain (including mechanical, electrical, and software), and must be easy to use, scalable, open, and interoperable.

## Context

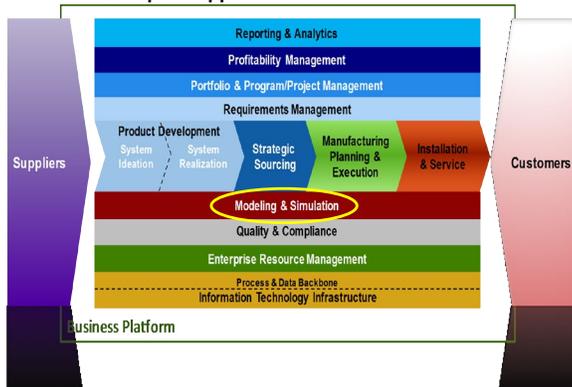
Two leaders from diverse global companies described how their organizations are using simulation and the benefits of doing so.

## Key Takeaways

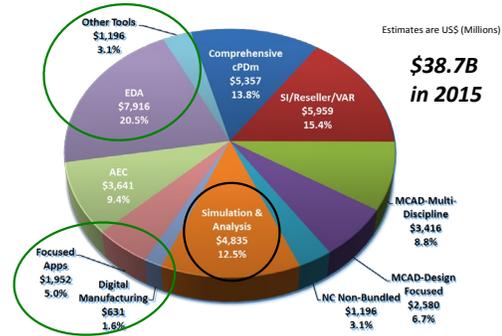
**ANSYS is the undisputed leader in the simulation and analysis segment of the PLM market.**

CIMdata is a management consulting firm focused on the product lifecycle management (PLM) market. The firm's enterprise application model (shown below) looks at PLM tools used in building, maintaining, and servicing products. CIMdata estimates the PLM market to be about \$39 billion, with simulation and analysis representing 12.5% of this market at \$4.8 billion.

CIMdata's Enterprise Application Model



PLM Industry Investments by Segment — 2015

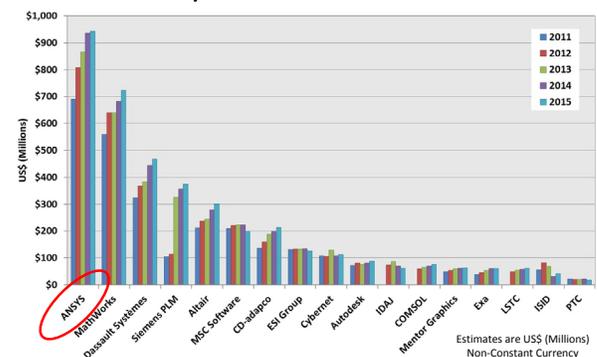


Simulation and analysis is projected to grow at a compound annual growth rate of about 8% over the next five years, reaching around \$7 billion in 2020. Based on organic growth and acquisitions, ANSYS is the undisputed market leader in this segment, and is starting to move into other areas of PLM.

“ANSYS is the market leader in the simulation and analysis segment and has started to move into other areas. There is lots of available market here for the solutions that ANSYS is providing.”

– Don Tolle

Simulation and Analysis Revenue Leaders



## Trends and challenges in the product lifecycle demand simulation of systems.

The major trends in the consumer space are coming to the engineering world. These include big data, social and mobile, analytics, the cloud, and the Internet of Things (IoT). Incorporating these game changers into engineering presents the opportunity to make engineering much better.

Specific trends include:

- Increasingly complex new products that bring new types of risk.
- New products with significant electronics and software content. High-end vehicles, for example, now have more than 100 processors and 100 million lines of code. The complex software to make such products work is the “weak spot under the hood” and needs to be verified.
- New materials are lighter and stronger, and new manufacturing processes—particularly additive manufacturing—can be used to meet the demand for mass customized products.
- Shorter product lifecycles mean continuous product innovation.
- The IoT environment provides constant market feedback and product iteration.

These trends increase the complexity of innovating and developing new products. They require thinking across boundaries about entire systems, as opposed to optimizing along just one dimension.

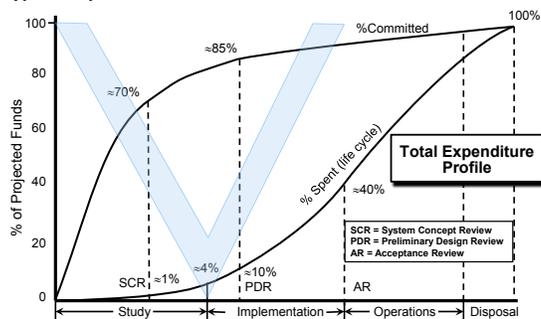
“Product innovation will require a simulation-driven systems engineering approach. . . . Increasingly complex market requirements demand more upfront cross-domain engineering.”

– Don Tolle

### Trends are driving the use of simulation earlier in the development process and throughout the lifecycle.

The traditional product development process has involved creating a product concept and jumping directly to a detailed design using 3D CAD. However, in this process, about 75-80% of cost commitments are made early, in just the first 5% of the product lifecycle, meaning that lifecycle cost is determined by early decisions. And, simulation has been used late in the development process to verify and validate.

Typical Expenditure Profile



Adapted from: Forsberg, Kevin, Hal Mooz, and Howard Cotterman. “Visualizing Project Management” 2nd Ed. John Wiley & Sons, NY, 2000.

A change that can dramatically improve the development process is to use simulation much earlier in the process, and to use higher-fidelity, multi-domain, multiphysics simulation tools. Simulation systems need to be multi-scale and open, using open APIs, and easy to use. Other capabilities that are desired include automated reporting, results visualization, web collaboration, and topology optimization. Also, as the amount of data grows, the ability to manage this data and use it for simulation grows in importance. Cloud, SaaS, and open source are additional areas to which vendors in the market are responding.

“The simulation and analysis industry is responding to market needs by leveraging better software and vast increases in computing capability.”

– Don Tolle

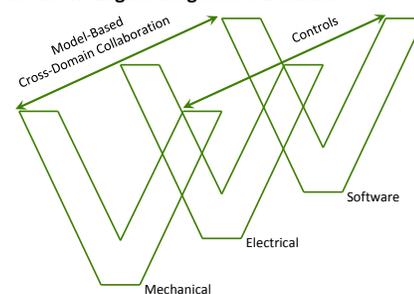
In addition, with embedded sensors and the IoT, data and feedback from a product in use can now be provided throughout the product lifecycle—and simulations run continually, in real time, using this data. This fundamentally changes the role of simulation and the product lifecycle.

### Engineering is evolving to become more model based and integrated.

Traditionally, engineering has been very document based, with specifications, Excel spreadsheets, and numerous other types of documents. But the engineering world is rapidly evolving from document centric to digital and model centric. Organizations want representations that are traceable, updateable, shareable, and live throughout the product lifecycle.

In addition, engineering increasingly needs to be concurrent and work across the domains of mechanical, electrical, and software.

Concurrent Engineering Across Domains



“We need solutions that do something well in their space but are interoperable.”

– Don Tolle

# Simulation: The Key to Productive Innovation

Wayne Eckerle, Vice President, Research and Technology, Cummins

## Overview

Large global enterprises such as Cummins use simulation to innovate in increasingly competitive businesses. Compared to physical testing, simulation increases their speed of product design and development, lowers development costs, enables predicting failure modes and designing out failure, and enables engaging in more experimentation and learning. Cummins is increasing the use and the role of simulation, as simulation provides bottom-line business benefits.

## Context

Wayne Eckerle described how Cummins is using simulation and the benefits of doing so.

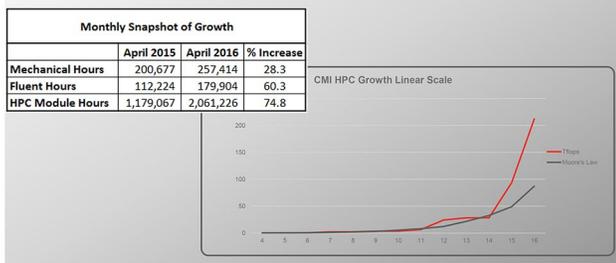
## Key Takeaways

Cummins is a \$19 billion global power leader in the engine, components, distribution, and power generation businesses. Cummins is engaged in constant innovation in producing new engines for global markets.

### Cummins is a major simulation user.

Cummins has been an ANSYS customer for more than 30 years and now has more than 600 users. ANSYS is Cummins' largest simulation/analysis vendor. ANSYS is used by Cummins in multiple global locations across the product life cycle. In the past year, use of ANSYS simulation has grown dramatically.

#### ANSYS Usage Growth



Reasons for this growth include:

- **Expanded use of simulation.** Customers want products even faster, causing simulation to play a more important, more prominent role and be embedded in the design and development process. Also, while Cummins still runs physical tests, the number of repetitive, expensive tests has been decreased.

“It is how we do work.”

– Wayne Eckerle

- **Significant expansion of simulation.** Use of HPC grew by almost 75% in the past year.
- **Cost to perform simulations has fallen dramatically.** Cummins has worked with ANSYS to enter into an enterprise license agreement, paid for centrally at Cummins, removing a barrier to using simulation.
- **More people at Cummins are trained on using simulation.**

### Cummins is realizing tremendous value from ANSYS simulation.

Ways in which Cummins is using simulation and deriving value include:

- **Taking a systems approach to product development.** Everything at Cummins these days focuses on systems and multidisciplinary optimization.
- **Modeling electronic systems.** Engines are increasing in complexity, and about one third of all warranty claims in the industry result from electronic systems. To minimize failures Cummins is modeling and simulating.
- **Using simulation to achieve and exceed SuperTruck program goals.** The goals from this Department of Energy program, shown below, dealt with improving engine efficiency.

#### SuperTruck Program Goals



“This [achieving the SuperTruck Program goals] could not have happened without simulation.”

– Wayne Eckerle

### Looking forward, Cummins sees further opportunities to expand the use of simulation.

These opportunities include using simulation to further improve productivity and further expanding the use of simulation tools throughout Cummins. Engaging in Simulation-Driven Product Development and Analysis-Led Design are ongoing journeys with no finish line.

# ANSYS Growth Opportunities Based Upon Real World Applications

Sin Min Yap, Vice President, Global Corporate Strategic Initiatives

## Overview

Faster, more powerful computing has changed the world and will continue to do so. To grow, companies must constantly innovate and take risk, developing more complex products that contain even more electronics and sensors. To avoid product development failures, companies will increasingly engage in system-level simulation using a simulation platform.

Companies will also use data from smart, connected products being operated in the field to create “digital twins,” which are virtual representations of physical products in actual use. These virtual representations allow running simulations based on real-world usage information. A result is that next-generation products will be designed based on reality, not assumptions; design cycles will be compressed; and companies will be able to design better products to drive growth.

## Context

Sin Min Yap discussed how faster, cheaper technology is underpinning companies’ growth and explained how system-level simulation helps companies avoid product development failure and drive growth.

## Key Takeaways

**Faster, cheaper computing power will continue to change the world.**

Over the past 100 years, the speed of computing grew in all situations—during prosperity and economic booms; during wars and recessions. Exponential growth in computing power has underpinned all changes in the world, and there is no reason to believe it won’t continue to do so. Technologies are riding Moore’s Law, which asserts continual exponential improvement of computing performance and price.

Moore’s Law



Among the innovations that exponential improvements in computing power have made possible are:

- **The Internet of Things (IoT).** Smart, connected devices are made possible by an explosion of powerful, inexpensive sensors, which are one billion times better today than three decades ago. Today it is estimated there are 10-12 billion smart, connected devices, and

by 2020 there may be 50 billion smart, connected devices—containing more than one trillion sensors.

- **Cloud computing.** Cloud computing is now the new normal. It surpasses traditional hosting, makes computing resources scalable on demand, and provides access to virtually infinite computing resources.
- **3-D printing.** 3-D printing is disrupting manufacturing by providing the ability to democratize and distribute personalized production around the planet. It provides the ability for mass customization. This will change how engineers think, how products are designed, and how they are manufactured.
- **Robotics and autonomous vehicles.** These are made possible by advances in machine learning and artificial intelligence, which only result from Moore’s Law and exponential growth in computing power.

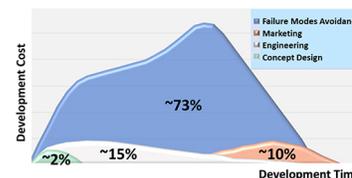
“Exponential growing technologies change how companies operate and how companies grow.”

– Sin Min Yap

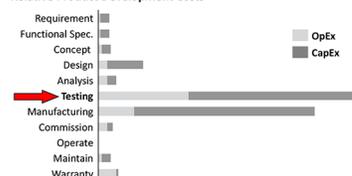
**To avoid failure in developing new products, companies need system-level simulation.**

With all products having more electronics, chips, and sensors, there is more potential for failure in the product development process. Avoiding failure, largely through testing, is the most significant product development expense, accounting for about 73% of product development costs.

Replace Product Development Cost



Relative Product Development Costs



- Design and engineering contributes ~17% of product development costs
- Most costs are spent avoiding failure modes

Product developers have solved most problems related to optimizing the performance of individual components. Failure occurs when components and subsystems are put together in a product. It is for this reason that simulation of entire systems is necessary, using complete system prototypes. And, because failure is often found late in the product development lifecycle, it is important to run simulation up front to identify system-level failures when easier and less expensive to fix.

### Performing system-level simulation requires a simulation platform.

Historically, simulation for individual components has been performed using individual simulation tools. But simulating an entire system requires a simulation platform with system-level simulation capabilities. Per Aberdeen, companies that have consolidated their simulation on one platform have experienced benefits including being:

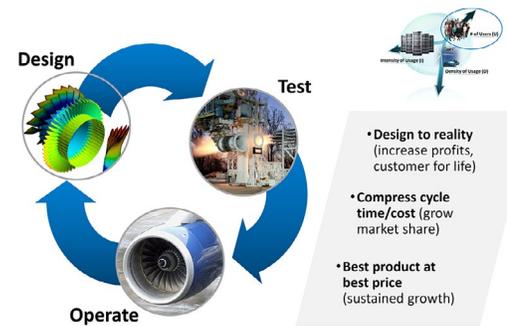
- 24% more likely to meet product launch targets
- 50% more likely to see a decrease in simulation TCO
- 37% more likely to decrease their development time

### Smart, connected products provide data to simulate real-world experiences.

In the past, once products were launched they were never seen again by engineers or product developers. Now, the explosion of the IoT, with embedded sensors, changes that. Products being used in the field can send operational data. Data can be aggregated and analyzed in real time, and virtual models created based on real-world usage.

Using real-world data it is possible to create a “digital twin,” which is a virtual representation of a real physical asset that can be used for multiple purposes. As a GE executive has said, “A digital twin lets you run simulations of all the possible ways in which the asset can be operated.” It also changes how products are designed and brought to market. It is possible to design and redesign products based on how they are actually being used, and not based on assumptions. It is possible to test products in real-world conditions, decreasing cycle times and failure rates, and it is possible to operate products more optimally. This change in how next-generation products are designed, tested, and operated will increase the use of simulation.

### Improve Next-Generation Products and Operations



It is also possible to create entirely new business models. For example, instead of just selling an airplane engine, GE can monitor and analyze data from engines in the field 24x7. Using this data, GE can reduce unplanned downtime and extend an engine’s life, providing the engine’s owner with tremendous value. GE can charge a premium for this product and monetize these services to create new revenue streams. This shows just one example of how exponential improvements in technology will create new growth opportunities for companies.

# Product Roadmap

Walid Abu-Hadba, Chief Product Officer

## Overview

ANSYS is once again about to transform simulation, with a new generation of innovative technologies that are remarkably fast and accurate, allow customers to increase their revenues, and enable users to make real-time decisions based on enormous quantities of data and information, including operational data. Part of the transformation that is underway will dramatically expand the use and user base of simulation, extending ANSYS' competitive advantage.

## Context

In advance of in-depth presentations about the semiconductor and systems business units at ANSYS, Walid Abu-Hadba described the transformation in simulation that is taking place.

## Key Takeaways

### We are at an inflection point that will transform simulation.

Prior to the year 2000, simulation had largely been used to validate a design late in the product development process. ANSYS then ushered in a revolution of simulation-driven product development, which fundamentally changed the paradigm for product development. In this new paradigm, simulation was used at the *beginning* of the design and product development process.

Another major transformation is now underway that will be as big, if not even bigger. It involves simulation being used beyond design and product development throughout the operating model and the entire life cycle of a product

“We’re going to take simulation all the way through the operating model and the entire life cycle of a product that goes beyond just the design and manufacturing, but actually operations in the field.”

– Walid Abu-Hadba

This transformation in how simulation is used will:

- **Allow simulation customers to increase their revenues** by developing new revenue streams.
- **Allow simulation users to make real-time decisions** based on data and information in ways that were previously unthinkable.

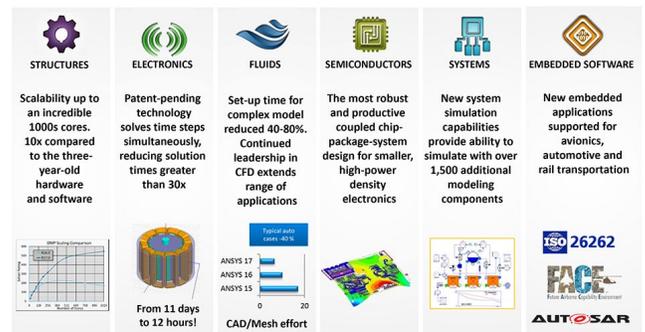
- **Increase the simulation user base** over the next 10 to 15 years by orders of magnitude. In the 1970s, 80s, and early 90s, simulation users could be counted in the hundreds or thousands. From year 2000 until now, there are maybe a few million users of simulation. In 20 years, there will be hundreds of millions of people with access to simulation technology.

“We are going to make the software accessible and available to people who are outside the traditional base of the simulation industry that we have today.”

– Walid Abu-Hadba

### ANSYS is extending its competitive advantage with R17.x.

R17 combines a wave of innovative new products and represents well over \$200 million in R&D investment.



Among all of the amazing innovations in R17, there is a tremendous focus on:

- **Accuracy.** Accuracy is paramount because “good enough is not good enough anymore.”

“Accuracy is absolutely paramount, and we are the undisputed champions of accuracy in the industry.”

– Walid Abu-Hadba

- **Speed.** Accuracy is essential, but it has to be accompanied by speed. ANSYS is the only company to unleash the speed that users need. Three years ago, ANSYS was told there was no way to break the barrier of 64 cores on a structural basis. Now, in R17, ANSYS has scalability up to 1000 cores. In electronics, ANSYS has patent-pending technology that solves time steps simultaneously, reducing solution times by more than 30 times. Something that previously took 30 hours can now take one hour, with the same degree of accuracy.

### **A key area of innovation is in ANSYS' semiconductor business.**

ANSYS is the only company that can provide chip package system simulation in one package, one environment, and one platform—the ANSYS platform. The productivity of this platform is tremendous.

But ANSYS is going further in extending market superiority by focusing on machine learning and big data. ANSYS is announcing a machine learning platform for the engineering world. This platform will take all of the data and information that gets generated and make it accessible to everyone in an organization, including operations, across the entire life cycle of a product. This capability will start with ANSYS semiconductor products but will be extended to other ANSYS product lines.

**“We are the first company and the only company . . . with a machine learning platform for the engineering world.”**

– Walid Abu-Hadba

# ANSYS' Unique Chip-Package-System Opportunities

John Lee, Vice President & General Manager, Electronics Business Unit

## Overview

ANSYS is building off its strong base in semiconductors and furthering its chip-package-system vision by introducing a new platform (SeaScape) and new products. By harvesting big data and using machine learning techniques, ANSYS is able to do things that are unique and revolutionary. This will extend ANSYS' market leadership in semiconductors and electronics.

**“By harvesting big data and machine learning techniques, we’re able to do things that are truly unique and truly revolutionary compared to the previous state-of-the-art.”**

– John Lee

## Context

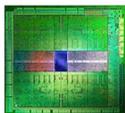
John Lee discussed simulation of semiconductors, challenges ANSYS is addressing, and ANSYS' new big data platform.

## Key Takeaways

**In electronics and semiconductors, there are capabilities that only ANSYS has.**

When ANSYS talks about chip-package-system, the types of chips include processing units, like CPUs or GPUs, networking chips, and memory chips. ANSYS is focused on things that only ANSYS can do. Only ANSYS can deliver chip-package-system simulation for semiconductors, electronics and systems, and fluids and mechanical. Only ANSYS can provide market-leading products for semiconductors, as well as focus on electronics and systems. The Company's market leadership is reflected in that all of the top 20 semiconductor companies at DAC 2015 use ANSYS.

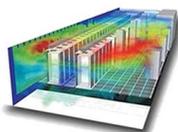
### Only ANSYS: Chip-Package-System Simulation



Semiconductor



Electronics and System



Fluids and Mechanical

## ANSYS is helping companies eliminate the problem of overdesign.

A key challenge in semiconductor design is that there are multiple domains of design, with design data separated in silos. There is a chip team designing the silicon. A package team embeds the silicon in the package, and then everything that has been designed goes onto a board. Each of these groups is a separate team with separate silos of information.

Each of these teams is dealing with multiple physics. They are looking at the timing of the chip, how fast it can run, how much power it will use, will it run hot enough or cool enough, will it emit electromagnetic interference that could affect the operation of other systems, and thermal effects that will affect the mechanical stability of the system.

With multiple domains and multiple physics, the challenge is that silos of information introduce “margins.” Because each team doesn't know the impact of power on time, or the impact of the chip on the package, or the impact of the board on the package, teams overdesign the margin. The result of overdesign is excess power, performance, and cost. This is a classic design problem. Because ANSYS incorporates multiple physics across multiple domains, overdesign can be eliminated.

## ANSYS has developed the first purpose-built big data platform for scientific computing.

In the Google era, new techniques and tools have been developed that have changed the world. A question was could these approaches work for chips and electronic systems? There is much promise because Intel's latest processor has 7.4 billion transistors on it, each of which is represented by 10 geometries.

ANSYS has taken techniques that are useful outside of high-performance computing—such as big data, MapReduce, and Hadoop—and applied them for chip design. The result is a new platform called SeaScape, which is an elastic analysis platform, based on work done outside the simulation industry using MapReduce and distributed data; these are the same techniques used to power Facebook and Google. ANSYS has developed a purpose-built system and added “elastic compute,” which allows scaling essential services that power all of ANSYS' physics-based simulation tools.

### SeaScape

	RedHawk 2.0	Totem 2.0	PowerArtist 2.0	SeaHawk (NEW)	Future Products...
	Python Analytics and Apps				
	Machine Learning Engine				
	Geometry Services	Graph Services	Matrix Services		
	Enhanced Elastic Compute Engine [1000x]				
	MapReduce Distributed Data Service				
Simultaneous Multiphysics	Package + 3D-IC + System				
	Thermal				
	Power				
	Reliability				

The first purpose-built Big Data platform for scientific computing

ANSYS has built on the best stack of big data and machine learning software and integrated it into our Workbench platform. Coupled with an open interface, this gives ANSYS' internal developers, customers, and partners the ability to customize their simulation data and analyze in a way that no one else has been able to do before.

**“The SeaScape architecture allows us to further the vision that we have on the chip-package-system.”**

– John Lee

### **ANSYS will be announcing new products for the semiconductor base.**

The Company plans to introduce a stream of new products for the SeaScape platform. The first new product is Seahawk, which reimagines the way chip producers do design for lower power and performance. Over time more of ANSYS' flagship products will take advantage of the SeaScape platform, increasing their capabilities and speed, and expanding the number of simulations that are done.

**“Stay tuned in 2017 as we plan to announce more physics, more products that we sell into the semiconductor base.”**

– John Lee

# Complete System Simulation; SAAS in Operations

Eric Bantegnie, Vice President and General Manager, Systems Business Unit

## Overview

ANSYS' Systems Business Unit is focused on expanding the usage of simulation beyond components to simulation of complete systems. This capability will enable extending simulation from engineering into operations.

Data from sensors (part of the Internet of Things—IoT) will be fed into a “digital twin,” created from ANSYS 3D physics and system simulation tools. Simulations involving digital twins will allow companies to understand and replicate what is actually happening in the field. Companies will be able to use this data to design improved products for real-world conditions and generate new revenue streams by providing various value-added services. Extending simulation into operations will dramatically increase its usage.

## Context

Eric Bantegnie explained how ANSYS simulation is revolutionizing simulation to go beyond the engineering world into the operations world.

## Key Takeaways

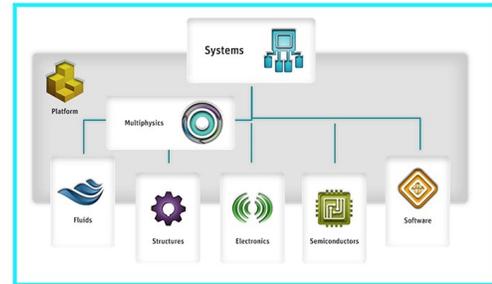
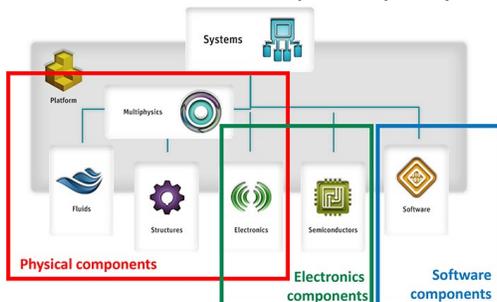
### The ANSYS 17 simulation platform now spans complete systems.

To date, simulation has been used to engineer better products and to reduce costs in the product development process. This has been done by using simulation to get all of the individual components right. However, most failures occur not at the component level, but at the system level. With the release of ANSYS 17 comes the capability to simulate all physical components and multiphysics interactions within a system.

“We now have the ability to have a complete system simulation that’s made of the physical electronics and software components that those systems are made of.”

– Eric Bantegnie

### ANSYS 17 Simulation Platform Now Spans Complete Systems



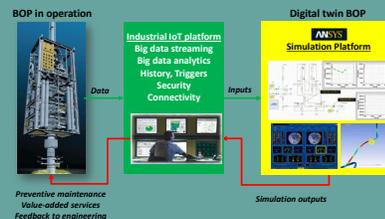
### System simulation coupled with data from the IoT can create a “digital twin.”

For physical products in use in the field, complete system simulation can be used to create a “digital twin” of each product. This is a virtual representation of the product. Then, data from sensors can be provided through the Internet (the Internet of things), aggregated, and analyzed. This provides insights from a product’s actual use in any environment.

System simulation coupled with the IoT infrastructure will be used to better operate products and to generate a wealth of new value-added services and new revenue streams.

### Example 1: ANSYS and GE enable a world of smarter machines

ANSYS and GE have partnered to connect ANSYS’ simulation platform with GE’s industrial Internet infrastructure. Here’s how it works: GE has a wealth of industrial equipment in use in the field. This “smart” equipment has sensors that send data using the IoT. This data is fed into ANSYS’ simulation platform, which analyzes if devices are performing as intended.



This capability gives GE the ability to automatically identify problems, determine if and when to perform preventative maintenance, and offer new revenue-generating value-added services.

An operational usage example involved sensors providing data indicating an abnormal vibration of a piece of equipment in the Gulf of Mexico. Using ANSYS technology, the vibration could be simulated to understand the root cause and decisions could be made about maintenance. In this instance, the conclusion was that the risk was low over the next 600 hours and a team did not need to be urgently dispatched to the Gulf to repair the problem—a decision made based on simulation results.

**Example 2: Flowserve leverages ANSYS to predict product performance in real-world conditions**

Flowserve is a pump manufacturer with about 3 million pumps in operation. These pumps can operate for 10 to 50 years in a variety of harsh conditions. Many of Flowserve’s pumps are smart, with sensors connected to the Internet that monitor the pump and provide information about troubleshooting. Data from each pump is fed in real time into the pump’s digital twin, which has been created using ANSYS 3D physics and system simulation tools.

Based on its real-time monitoring capabilities, and leveraging ANSYS’ system solution, Flowserve is contemplating multiple value-added services including anomaly detection and alerts, diagnostics, failure prediction, data mining, performance optimization, and more. Through these services, Flowserve would be able to identify a pump that wasn’t working properly, understand the problem, and troubleshoot it. Simulation enables reproducing a problem, determining the root cause, and fixing it by verifying the solution on the digital twin.

“No other company has the ability to create a digital twin combining the physical, the electronics, and the software controls of that equipment.”

– Eric Bantegnie

**Deploying simulation in operations will massively increase simulation usage.**

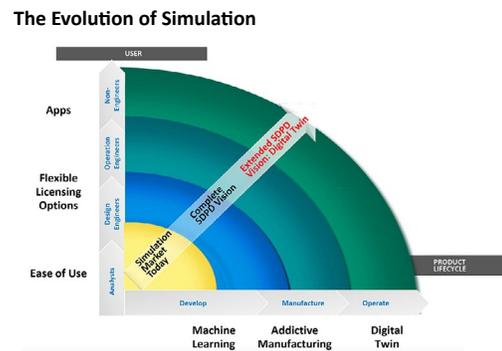
ANSYS is having conversations with virtually all industrial customers about connecting their industrial equipment with ANSYS’ simulation platform. Connecting every physical device, creating a digital twin, and using real-world data to run simulations using digital twins will lead to a step change in the usage of simulation. Simulation will move from the engineering realm into the realm of operations, meaning more HVC and more license usage.

“We believe there is a 1000x opportunity to expand our market leadership and embed the usage of simulation into operations, providing actionable results for customers and the opportunity for customers to create more services.”

– Eric Bantegnie

Further, the evolution of simulation is going to involve incorporating multiple disruptive technologies into simulation, including machine learning and additive manufacturing. ANSYS is aiding this evolution through a user-friendly interface, through apps and the ability to use ANSYS on one’s phone, and through flexible licensing options.

Connecting physical devices via the IoT with a simulation platform that contains a digital twin for each device—bringing simulation into operations—is something that only ANSYS can do.



# Sales & Marketing: Evolution of the Go-to-Market Sales Strategy

Mark Hindsbo, Vice President, Marketing  
 Bob Kocis, Vice President, Worldwide Sales & Customer Excellence

## Overview

ANSYS is transforming its go-to-market by selling the entire portfolio, building a more powerful digital foundation, and expanding the ecosystem. Specific sales initiatives include selling the full platform and enterprise license agreements, incenting channel partners to drive more license growth, and launching new consulting offerings. Key marketing initiatives include evolving from product-specific campaigns to platform and portfolio campaigns, investing in new digital infrastructure, and making simulation tools common for the next generation of engineers and startups.

Progress has been made increasing sales capacity, generating greater awareness and sales leads, and developing new technologies that will lead to greater sales productivity and business results.

## Context

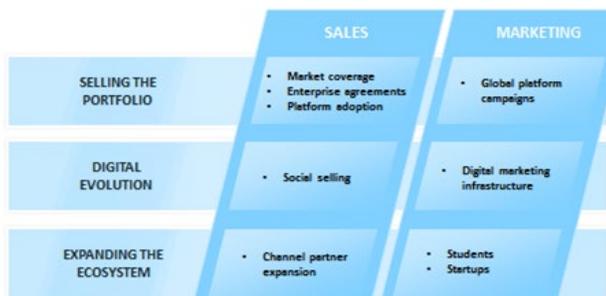
ANSYS' VPs of Sales and Marketing described initiatives to transform the company's go-to-market.

## Key Takeaways

### ANSYS is transforming its go-to-market.

Working in collaboration, sales and marketing are transforming ANSYS' go-to-market by focusing on: 1) selling the portfolio; 2) capitalizing on the digital revolution; and 3) expanding the simulation ecosystem.

#### Transforming the Go-to-Market



### ANSYS is implementing a global sales strategy.

This global sales strategy consists of several components:

- **Greater sales model stability.** In recent years ANSYS has made several changes in its go-to-market strategy. ANSYS is now focused on having a stable sales model for some period.
- **Increased market coverage.** ANSYS has added to its sales force through hiring and has transitioned strong, experienced sales people to named accounts. The Company's direct sales force is focused on selling the full platform into high-value accounts.

#### Global Sales Strategy



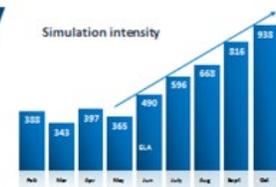
“Our ELA offering is allowing our customers the flexibility to adopt the full ANSYS simulation platform.”

– Bob Kocis

- **Enterprise license agreements.** An area of focus is selling enterprise license agreements. More customers want enterprise agreements because they want one simulation platform and want to maximize their simulation investment, reduce their product development risk, and increase their flexibility. In 2014 and 2015, ANSYS executed 6 enterprise agreements. In 2016 the goal is 15 agreements. Once enterprise agreements are in place, simulation intensity rises dramatically.

#### Enterprise License Agreement

- Why do an enterprise license agreement with ANSYS?
  - Flexibility
  - Reduce risk
  - Adopt one simulation platform
  - Maximize simulation investment



6 Number of Enterprise Agreements In 2014 & 2015

15 Number of Enterprise Agreements Estimated In 2016

- **Channel partner growth.** ANSYS is reinvigorating channel partners to drive growth. Efforts include increasing the number of channel partners, with 15 new channel partners in 2015 and plans for 75 channel partners by the end of 2016. Efforts have been focused on having channel partners sell more products, resulting in a 30% increase in the number of channel partners expanding from single to multiple physics. A new channel partner incentive program is specifically focused on new license growth.
- **Increased social selling.** ANSYS is using LinkedIn's Sales Navigator to increase social selling, create a professional brand, and find the right people. Social selling has involved developing and using thought leadership to engage potential customers and using social tools to build relationships. A result is that ANSYS has been named one of LinkedIn's top social sellers.
- **New consulting offerings.** ANSYS is launching new consulting offerings that support adoption of the ANSYS simulation platform. These are focused, paid, high-value engagements. Types of engagements include:
  - Simulation deployments that leverage ANSYS' expertise and best practices to help organizations deploy simulation.
  - Workflow optimization where ANSYS helps organizations change their R&D processes.
  - Embedded experts where ANSYS places an expert onsite for 2-3 years to help customers adopt ANSYS' full platform and develop simulation expertise.
  - Mentoring experts, which involves placing simulation experts at mid-sized customers for 1 to 4 weeks for expert mentoring.
- **Greater sales productivity.** Along with the other initiatives, ANSYS is working to increase the productivity and effectiveness of its sales organization through tools such as a new CRM system.

## ANSYS is implementing global marketing platform campaigns.

Instead of going to market with individual product campaigns, the Company is going to market as "one ANSYS" with a focus on a global platform and portfolio.

**"Historically we have marketed individual products. We are evolving to global portfolio campaigns that highlight our value proposition."**

– Mark Hindsbo

An example is a global ANSYS platform campaign about engineering the Internet of Things. This campaign is based on products and the environment becoming more complex, limited development resources, more difficulty differentiating products, and lack of tolerance for design flaws. The Company's campaign emphasizes benefits from simulation and from a platform approach, which include reduced product development times, product costs, and warranty costs; decreased change orders after release to manufacturing; and a higher rate of successful new product introductions.

As a result of the shift to platform and portfolio campaigns, as well as increased use of digital marketing, ANSYS' marketing activities have improved dramatically. This includes greater reach, web traffic, new contacts, and quality sales leads. There is also an uptick in people downloading new versions of products.

### Promising Initial Results Compared to Previous Campaigns



## ANSYS is investing in digital marketing infrastructure as a foundation for future growth.

This digital infrastructure includes social media, a new web platform, marketing automation, and enhanced CRM.

- **Social media.** ANSYS is a B2B leader in social media, as witnessed by the LinkedIn award. Currently ANSYS' social media audience is growing 10% per quarter, with a high conversion rate from interest to action.

### Investing in Digital Infrastructure



- **Website.** Investments in a new web platform will provide greater ability to engage, while also providing ecommerce capabilities and a more robust app store.
- **Marketing automation.** ANSYS will leverage new technologies to automate aspects of the marketing process, leading to greater efficiency and effectiveness.
- **CRM.** Enhanced CRM technology will enable ANSYS to follow customers through their lifecycle with customized marketing interactions.

## ANSYS is working to embed simulation in academia and startups.

ANSYS is working actively to empower the next generation of engineers. Efforts have focused on:

- **Getting ANSYS simulation tools used by engineering students.** ANSYS launched ANSYS Student for free in Q3 2015 as a way to reduce barriers to student use. There have been over 100,000 downloads. This is just the beginning, as there are millions of STEM students worldwide. Other efforts focused on students include use of ANSYS at all top 25 U.S. engineering schools and use of ANSYS by most Hyperloop student teams.

“We are seeding the next generation. We are evolving simulation from a specialty to embedding it as part of the student learning experience.”

– Mark Hindsbo

- **Making it easy to learn simulation.** ANSYS has invested in the Carnegie Mellon partnership and launched the world’s largest engineering simulation MOOC with Cornell University and edX, with more than 20,000 students signing up.
- **Supporting next-gen engineering companies.** ANSYS Startup Program is providing startups and incubators with low-cost access to ANSYS. The idea is to embed simulation and ANSYS early in a company’s life, making simulation core to a company’s operations and culture, even when there are just a handful of engineers at an organization.

# Financial Results, 2016 Guidance, and Capital Allocation

Lee Detwiler, Vice President and Global Controller  
 Maria Shields, Vice President and CFO

## Overview

ANSYS had another solid year in 2015, performing well on all major financial metrics, including revenue, cash flow, margins, and earnings. The Company is off to a good start in 2016 and has a positive outlook for the balance of the year. ANSYS' continued growth is based on a well-diversified customer base with revenue distributed across multiple geographies and industries; a hybrid sales model with revenue distributed between direct sales and indirect channels; and diversity of revenue streams, including paid-up licenses, leases, and maintenance.

ANSYS has generated significant value for stockholders over the past 20 years and is well positioned for continued value creation. The Company is the leader in the large and growing simulation market and has outstanding technology and talent, a broad and diverse customer base, a successful strategy, and a proven financial track record with a strong balance sheet.

## Context

ANSYS CFO Maria Shields and VP and Global Controller Lee Detwiler summarized ANSYS' 2015 financial results and explained the key drivers of these results. They shared ANSYS' results to date in 2016 and the outlook for the balance of the year. Maria described the Company's capital deployment plans and explained why ANSYS is so well positioned to continue creating value.

## Key Takeaways

### 2015 was a solid year for ANSYS on all key metrics.

2015 was another year of continued growth of revenue and earnings, with ANSYS performing well on all major metrics. ANSYS had almost \$945 million in non-GAAP revenue, and had solid results in terms of margins, recurring revenue, cash flows from operations, and deferred revenue and backlog. Cash flows from operations were \$367.5 million.

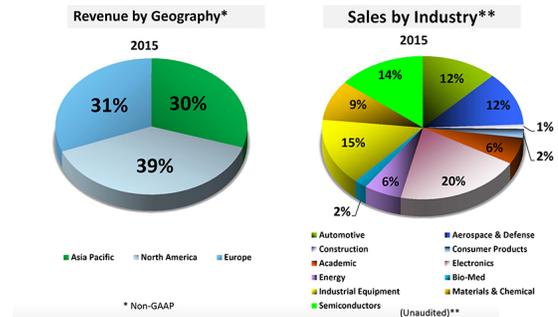
ANSYS FY 2015 Financial Highlights	
Non-GAAP Revenue	\$944.5M
Non-GAAP Diluted EPS	\$3.42/share
Non-GAAP Operating Margin	47%
Recurring Revenue	72%
Cash Flows from Operations	\$367.5M
Deferred Revenue & Backlog	\$504.0M

Important aspects of ANSYS' model that have continued to contribute to this success include:

- **Diversified revenues.** ANSYS' revenue by geography is almost equally divided with 39% coming from North America, 31% from Europe, and 30% from Asia Pacific.

ANSYS is also well diversified in terms of sales by industry as no single industry represents more than 20% of the Company's total sales. This diversity among a wide range of vertical markets helps with year-to-year cyclicalities.

**Diversified Revenue Model**



- **Hybrid sales model.** About 76% of ANSYS' revenue comes from the Company's direct sales force and about 24% come through ANSYS' indirect sales channel. The Company continues to invest in building its direct sales force and expanding the number and capabilities of channel partners.
- **Recurring revenues.** In FY 2015, 72% of ANSYS' revenue came from recurring revenue streams, up from 68% in 2011 and 70% in 2013. In the first quarter of 2016, 78% of revenue was recurring revenue. ANSYS' recurring revenue stream comes from maintenance (39%) and leases (34%). Recurring revenue provides visibility and predictability. Since 2011, annual organic recurring revenue growth has been in the 9% to 12% range.
- **Deferred revenue and backlog.** In 2015, ANSYS built up deferred revenue and backlog to an all-time-high level of more than \$504 million, with momentum continuing into 2016, as the first quarter ended with deferred revenue and backlog at \$506.4 million.

“ANSYS has had nice growth in deferred revenue and backlog in spite of currency headwinds.”

– Lee Detwiler

As a result of its strong financial model, ANSYS has continued to generate consistently strong cash flows from operations, shown below. (Cash flows in 2015 were boosted by a one-time tax refund.)

#### Consistently Strong Cash Flows from Operations



These results translate into a strong balance sheet. As of March 31, 2016, ANSYS had cash and short-term investments of more than \$800 million with no debt, low DSO (less than 40 days), and deferred revenue and backlog of more than \$500 million. This provides great funding flexibility.

#### ANSYS is off to a good start in 2016 and projects continued growth.

ANSYS' solid performance continued in the first quarter of 2016, with non-GAAP revenue of \$226 million, which was the high end of the predicted range, cash flow from operations of \$108.6 million, strong earnings, and margins and other metrics in line with expectations.

#### ANSYS Q1 2016 Financial Highlights

Non-GAAP Revenue	\$226.0M
Non-GAAP Diluted EPS	\$0.77/share
Non-GAAP Operating Margin	47%
Recurring Revenue	78%
Cash Flows from Operations	\$108.6M
Deferred Revenue & Backlog	\$506.4M

For the second quarter of 2016, ANSYS' non-GAAP outlook is revenue in the range of \$240 to \$248 million, with non-GAAP diluted earnings per share in the range of \$0.86 to \$0.90.

ANSYS doesn't anticipate any significant changes in the macro environment in the second half of the year. The current outlook for 2016 is shown below.

#### FY 2016 Current Non-GAAP Outlook

Revenue	\$990M - \$1.02B
Operating Margin	47% - 48%
Tax Rate	33% - 34%
EPS	\$3.48 - \$3.62
Operating Cash Flow	\$350M - \$375M

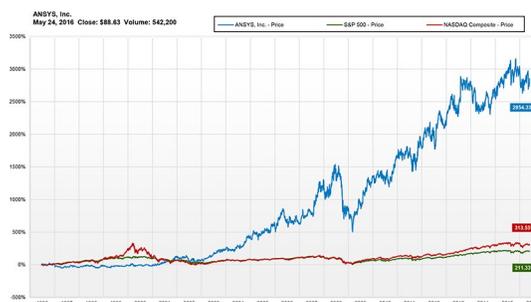
#### ANSYS will continue to allocate capital to drive organic growth and make strategic acquisitions.

Plans for capital allocation in 2016 will remain largely the same. ANSYS will continue to invest in driving the organic growth of the business. In addition, consistent with its strategy, the Company will continue to deploy capital for strategic acquisitions to enhance growth. Common elements of ANSYS' acquisitions have been and will continue to be acquiring incredible technologies that fit well with ANSYS' technologies, customers, and global channel, and supplementing its outstanding talent by acquiring experienced, talented teams. All M&A is expected to be financially accretive within a reasonable time frame. ANSYS will also continue to return excess capital to stockholders through share repurchases.

#### ANSYS is well positioned for continued value creation.

Over the past 20 years, ANSYS has built a great public company that has created significant value for stockholders. The Company had a long-term vision for what simulation could become, knew that the opportunity was tremendous, and focused on solving complex problems for customers. ANSYS knew that bringing value to customers would produce strong financial results and these financial results would result in a stock price that would reflect the value that was created.

#### ANSYS — 20 Years of Creating Stockholder Value



**“Our philosophy has been to bring value to customers. Financial results will follow and the stock price will reflect the value created.”**

— Maria Shields

The past 20 years has created a foundation which positions ANSYS well for continued future growth. ANSYS has great people, great technology, and great relationships with customers. Reasons why ANSYS is well positioned for the future include:

- A large and growing marketing opportunity
- A unique customer value proposition
- A strong position as the market leader focused on engineering simulation
- A strategy focused on investing in future growth through people, sales and marketing initiatives, and technology and infrastructure
- A broad, diverse customer base of leaders in their fields
- A diverse portfolio of solutions across industries and geographies
- A proven financial track record and a strong balance sheet, which provides flexibility and the ability to invest

# Questions & Answers

## Overview

Members of ANSYS' management team responded to questions on a broad range of topics including questions about the Company's products and technology, as well as questions about ANSYS' sales and growth plans, business model, and financials.

## Questions & Answers

### Sales and Growth Questions

*Q: Is the addressable market for simulation in operations going to be larger or smaller than the market in engineering?*

A: The potential addressable market is massive because there are far more people who care about operations than care about engineering. So, there are far more potential users. Also, in addition to more potential users in operations, ANSYS is seeing demand for use of simulation in operations across multiple industries. In addition, operations people cannot wait a day or an hour to get a result. There will be extreme urgency and demand for doing simulations on the spot.

*Q: How do you think your end-market profile might differ in the future?*

A: All industries go through evolutions and adopt simulation at different rates, but a few trends are permeating most industries. These include cost pressures, forcing all companies to rethink their product design and operational practices and business models. There is also a growing convergence of mechanical and electronics. Ten years ago a home appliance was largely mechanical. Today and in the future, home appliances will have extensive electronics and sensors. These factors are increasing the use of simulation in all industries.

*Q: What are the biggest challenges with deploying in the cloud and when will this become a bigger part of ANSYS' revenues?*

A: Right now there is a lot interest in the cloud, because access to on-demand computing is very compelling. So is the concept of not needing a huge IT staff. But the rate of deploying in the cloud will be governed by the customer. ANSYS is not trying to force it. ANSYS' philosophy is to provide multiple avenues to deploy. The version in the cloud is the exact same version of the software.

At the moment, the majority of people using ANSYS via the cloud are existing customers trying to calibrate the economics of cloud implementation versus the traditional on-premise software. ANSYS software is a pretty static element of that. To date, cloud deployments haven't yet been used for massive parallel calculations.

### Financial Questions

*Q: What are thoughts about the long-term CAGR for cash flow?*

A: In the long term the CAGR of cash flow will be similar to net income growth. ANSYS is on a transformation journey right now with its business and with customers' businesses. Over the course of 2016 and 2017, cash flow is anticipated to grow in the high single digits. But based on investments that ANSYS is making— in products, the sales force, the go-to-market, and in customer relationships—the long-term goal is for cash flow to grow in double digits.

*Q: How big is the opportunity for enterprise license agreements (ELAs) and what percentage of revenues could this represent?*

A: ANSYS rolled out kind of a next-level ELA offering in January, which has been adopted and is picking up pace. Customers have demanded it and like it. More of ANSYS' sales force has been trained on how to position it to customers.

This year, ANSYS is targeting having 15 ELAs in place. There is significant opportunity here and the number of customers with ELAs will likely grow. For perspective, currently, the Company's top 100 customers account for about 30% of sales. With multiphysics and other product developments, and with more internal champions in organizations, ELAs will grow.

*Q: How will services change as a percentage of ANSYS' revenue?*

A: ANSYS does not want to become a services company. But over the next five years, services can help accelerate the overall business. For ANSYS, the purpose of offering services is to help companies with adoption.

Companies are asking for help with embedded simulation experts, but also need help with human issues and organizational challenges, like changing and validating processes, and overcoming the status quo.

A benefit of having 45,000 customers, including numerous industry leaders, is an extensive collection of accumulated best practices that transcend industries. Customers ask about these accumulated best practices. By putting them into a service offering, it can help customers remove uncertainty and avoid potholes.

As a result of the demand for assistance, over the next five years services may grow to represent 4% to 5% of ANSYS' revenue, versus being 2% today.

## Product and Technology Questions

*Q: What are the current competitive and demand conditions, particularly in electronics and semiconductors, especially with Cadence and Synopsis trying to embed more power optimization in their tools?*

A: ANSYS is purely a simulation-based company. In semiconductor, the stakes have become even higher for a company like Apple to miss delivery on the iPhone 7, or for Samsung to have a battery life that isn't quite optimal, or for Qualcomm to deliver a chip that has thermal runaway effects. All these are chip-package-system effects.

The fact that ANSYS is focused only on simulation is what differentiates ANSYS very strongly from Cadence and Synopsis. Those two companies are focused on design and are engaging in a customer battle to try to win seats, which is a tough business in the current semiconductor market. But ANSYS remains neutral and is purely simulation based, and its big data platform makes those platforms better. That message has resonated very well.

The roadmap that ANSYS presented and has been sharing with customers privately for the last nine months has been well received, making the company bullish.

*Q: Can you connect your product roadmap strategy with your ultimate business model and specifically your pricing model?*

A: ANSYS is in the middle of a transformation, which involves looking at all types of business models. This includes doing a great deal of work with customers to understand product offerings and price points. ANSYS is in an exploration phase, but recognizes it is necessary to constantly change.

*Q: In light of challenges—like Moore's law being stretched and smartphone growth plateauing—what will drive growth in the simulation industry?*

A: ANSYS is pushing on simulation tools to deliver actionable results. In the past, customers would run ANSYS simulation tools, but the interpretation of the data and how to make it actionable to improve designs was left to the customer. Now, because of machine learning and the ability to harvest big data, ANSYS' focus on delivering actionable results will drive more simulation usage. It also makes new business models possible.

In regard to Moore's law, physics problems aren't getting easier, and companies are using multiple chips, unified by a package into a system. This plays well for ANSYS.

*Q: What is ANSYS doing to improve usability to make it easier?*

A: Usability is a race with no finish line, and ANSYS will always work on usability. When customers think about usability, they think about: 1) features; 2) user interface (UI), where ANSYS has made significant investments in improvement; and 3) workflow. ANSYS is extremely focused on making the end-to-end workflow easy and clear, and allowing customers to customize their workflow. Also, ANSYS has an app store with over 2,000 apps and more than 20,000 downloads per month.

*Q: What is the status of the cloud and multi-tenant offerings?*

A: The cloud is the future and ANSYS is setting itself up for this future. ANSYS cloud offering will grow as the cloud movement grows. An attitude change is occurring among customers, with more asking about the cloud.

## Biographies

**Walid Abu-Hadba** joined ANSYS in April 2013 in the newly created position of Chief Product Officer. He brings extensive experience to ANSYS, having worked in a variety of progressively challenging management roles within Microsoft for the past twenty-one years, most recently as Corporate Vice President, Developer and Platform Evangelism. In addition, Abu-Hadba spent time at Microsoft as Vice President, Specialist Sales, Enterprise and Partner Group; General Manager, Asia Pacific and Japan Technology Center; General Manager, Global Technical Center; and Practice Manager, Advanced Technology Group. He is a graduate of Arizona State University with a Bachelor of Science Degree in Systems Engineering.

**Eric Bantegnie** joined ANSYS as President & CEO of Esterel Technologies in August 2012 as part of the acquisition of Esterel and is now Vice President and GM, ANSYS Systems Business Unit responsible for System and Embedded Software Simulation activities. Prior to that, Eric, a serial entrepreneur, co-founded Esterel and Distene in 2000, was President & CEO of Simulog, a simulation services company from 1998 to 2001 and created Dyade, an Internet security startup incubator from 1996 to 1998. Eric served 4 years as Deputy Director in the French Ministry of Industry and Telecommunications from 1992 to 1996, and held before several technical and business management positions at France Télécom and Groupe Bull. He graduated from Ecole Polytechnique in 1982, a French major military and scientific College. Eric has been President of the Embedded France professional association that he created from 2013 to 2015, serves as advisor to the “New Industrial France” governmental initiative for Embedded Systems and IoT Strategy and is a board member of two startup companies in many core processors and cybersecurity.

**James E. Cashman III** has been our president since 1999 and our chief executive officer since February 2000. Mr. Cashman served as our senior vice president of operations upon joining the Company in September 1997 until April 1999. Prior to joining the Company, Mr. Cashman was vice president of marketing and international operations at PAR Technology Corporation, a computer software and hardware company involved in transaction processing, from 1995 to September 1997. From 1992 to 1994, he was vice president of product development and marketing at Metaphase Technology, Inc., a product data management company, which was a joint venture of Structural Dynamics Research Corporation and Control Data Systems. Prior to joining Metaphase, Mr. Cashman was employed by Structural Dynamics Research Corporation, a computer aided design company, from 1976 to 1992, in a number of sales and technical positions. Mr. Cashman is also Chairman of the Pittsburgh Technology Council and a past Board member of the Carnegie Museum of Natural History. Mr. Cashman’s experience includes senior responsibilities in technology, product and market strategy management, as well as sales, operational and international functions prior to his general management role with the Company for the past 15 years. His long-standing vision and well-diversified background are key components of the Company’s board structure and effectiveness.

**Lee Detwiler** joined ANSYS as Corporate Controller in 1998. He currently oversees the company’s accounting, tax, treasury, financial reporting and business operations functions. Prior to his time at ANSYS, he held various roles at Deloitte LLP, including that of Audit Manager. Lee is a certified public accountant and holds a B.S. in Accounting from Penn State University, an M.B.A. from Drexel University and a M.S. in Finance from Indiana University.

**W. A. (Wayne) Eckerle** has been Vice President for Corporate Research and Technology at Cummins, Inc. since April 2007. He joined Cummins in 1989 as a Technology Advisor – Corp. Fluids Metrology, and subsequently held positions as Senior Technology Advisor in the same division; Director – Fuels Systems Metrology; Chief Engineer – Fuel Systems Technology; Executive Director – Thermal & Fluids; and Executive Director – Research and Technology. Prior to Cummins, Eckerle was an Associate Professor at Clarkson University and a Research Engineer at United Technologies Research Center. He received his Ph.D. in Fluid Mechanics from the University of Connecticut in 1985, after earning B.S. and M.S. degrees in Aeronautical Engineering from Purdue University.

**Dr. Adam Feinberg** earned a BS in Materials Science and Engineering from Cornell University in 1999, followed by a Masters (2002) and Ph.D. (2004) in Biomedical Engineering from the University of Florida, where his doctoral work was focused on engineering cell-material interactions to prevent and enhance adhesion. He was then a Post-doctoral Fellow at Harvard University from 2005 to 2010, where he developed new biomaterials and cardiac tissue engineering strategies for 3-dimensional myocardial regeneration, with a focus on stem cell-based approaches. Dr. Feinberg joined CMU in the fall of 2010 as an Assistant Professor with joint appointments in Biomedical Engineering and Materials Science and Engineering.

**James Garrett** is the Lord Professor of Civil and Environmental Engineering at Carnegie Mellon University, and served as head of the Department of Civil and Environmental Engineering from 2006 – 2012.

Prior to becoming department head, Dean Garrett served as Associate Dean for Academic and Graduate Affairs from 2000 – 2006 and as a faculty co-director of the Smarter Infrastructure Incubator (SII), a research center aimed at creating and evaluating sensing, data analytics, and intelligent decision support for improving the construction, management, and operation of infrastructure systems.

Dean Garrett joined Carnegie Mellon at the rank of Assistant Professor in 1990, was promoted to Associate Professor in 1993, and promoted to the rank of Full Professor with tenure in 1996. Prior to joining Carnegie Mellon, he served at the rank of Assistant Professor in the Department of Civil Engineering at the University of Illinois at Urbana-Champaign from 1987 – 1990. He received his B.S. in Civil Engineering in 1982, his M.S. in Civil Engineering in 1983, and his Ph.D. in Civil Engineering in 1986, all from the Department of Civil Engineering at Carnegie Mellon University. He worked for Schlumberger Well Services in the Houston Downhole Sensors Division from 1986 – 1987. He is a registered professional engineer in the state of Texas.

**Mark Hindsbo** joined ANSYS as the Vice President of Marketing in June 2015. He brings a broad set of business and technical experiences across sales, marketing, business strategy, software development, and physics. Most recently he was the Sr. Vice President of Customer Success at Parallels. He spent over 10 years at Microsoft in roles ranging from General Manager in the Server and Tools business group, to Vice President of the Developer business in the US. Prior to this he was at The Boston Consulting Group, co-founded an interactive marketing agency, and did scientific computing at Novo Nordisk. He holds a Master of Science from the Technical University of Denmark and has done nuclear research at CERN.

**Robert Kocis** joined ANSYS as Vice President, Worldwide Sales and Support in July, 2014. He brings more than 20 years of experience in global sales leadership and business management. Bob is responsible for providing leadership for the overall strategy and management of the global activities of our sales and technical support units. Prior to joining ANSYS, Bob spent the past 16 years with PTC, Inc., a U.S. based computer software company specializing in 3D design software, product lifecycle management, and service management solutions. Bob holds a Bachelors of Science in Marine Engineering Systems, from the United States Merchant Marine Academy and also graduated from the General Dynamics Nuclear Engineering School.

**John Lee** is GM/VP of the Semiconductor Business Unit. He received his undergraduate and graduate degrees from Carnegie Mellon University. Previously he was CEO of Gear Design Solutions (acquired by ANSYS in 2015) and a co-founder of Performance Signal Integrity (founded in 1992; acquired by Avant! in 1994) which led to Star-RCXT, and Mojave Design which led to Quartz DRC (founded in 2002; acquired by Magma in 2004). Lee held the position of General Manager at Magma Design Automation, and has been a board member for technology and non-profit organizations.

**Maria T. Shields** has been our Chief Financial Officer and Vice President, Finance and Administration since September 1998. Previously, she served as our Corporate Controller since September 1994 and as a Vice President since May 1998. Prior to joining the Company, Ms. Shields held various positions as a CPA with Deloitte and Touche LLP, including that of Audit Manager. Ms. Shields serves as Director of the First National Bank Pittsburgh Community Board and the Washington County Chamber of Commerce, and as a member of the Board of Trustees of the Anglican Diocese of Pittsburgh. Ms. Shields holds a Bachelor of Science degree in Accounting from Pennsylvania State University.

**Donald Tolle** (Don) is the Director, Simulation-Driven Systems Development Practice, for CIMdata—an internationally recognized authority on Product Lifecycle Management (PLM) technology and best practices. Mr. Tolle has more than 35 years of industry experience in the disciplines of virtual product design, development and performance validation working with global manufacturing companies in the automotive, aerospace/defense, industrial equipment, marine, consumer products, medical products and high-tech electronics industries.

His current areas of focus and interest center on the definition and adoption of model-based engineering methodologies and tools to connect the disparate and “loosely connected” disciplines involved with systems engineering and conceptual design (requirements and system architecture definition, mechanical, electrical, software, controls) and the persistent use of robust system models throughout the product development lifecycle.

Mr. Tolle holds a BS in Mechanical Engineering and an MBA from the University of Cincinnati.

**Sin Min Yap** started his career at ANSYS as VP, Industry Strategy & Marketing in 2012. Prior to his work at ANSYS, Yap was the vice president of market strategy at PTC, where he managed the industry marketing team and had oversight for execution of market strategy. He also held positions at McKinsey & Company as a consultant and at Ford Motor Co. as a global product lifecycle management strategist. He once taught at Valparaiso University in the Mechanical Engineering Department. He holds a Ph.D. in mechanical engineering as well as master’s and bachelor’s degrees in operations management and engineering from Michigan Technological University.

