

A Movers and Shakers Interview with

Tom Clay
CEO
Z Corp

By S.Vidyasankar, Senior Research Analyst

Z Corporation is one of the leaders in the 3D printing market. The company manufactures, and markets low cost, high speed 3D color printers that are used for concept modeling, prototyping, and rapid manufacturing applications across a wide range of end user industries spanning architecture, automotive, education, footwear, appliances, and packaging industries among others. The company has strong brand recognition, and a widely installed customer base.

Here in discussion with S.Vidyasankar, Senior Research Analyst with Frost & Sullivan is Tom Clay, CEO of Z Corp. He joined the company in January of 1998 and was appointed President in May of that year. Subsequently, he was elected to the Board of Directors in the year 2000 and he was named CEO in 2005. Prior to joining Z Corp., Tom had experience as a management consultant and a case study researcher and writer for the Harvard Business School. He has also served as a Captain in the United States Army, where he was an Airborne Ranger and commanded a Long Range Reconnaissance Platoon for the XVIII Airborne Corps, based in Fort Bragg, North Carolina.

Z Corporation's revenues have grown by a factor of 20, since 1998 and today it has more than 3000 customers in 60 countries. Through this rapid growth, the company has led the industry in rapid product development, with over 70% of revenue coming from products introduced in the past 12 months.

Frost & Sullivan is honored to feature Z Corp as part of its Movers & Shakers program and thanks to Mr. Tom Clay, who agreed to share his views on the state of the industry as well as highlight the opportunities that lie ahead for vendors and Z Corp in this space.

S.Vidyasankar (SV): Could you share with our readers a brief on the genesis of Z Corp and the vision for its formation?

Tom Clay (TC): The core technology that Z Corporation uses was invented at MIT. Several of the inventors joined forces with several experienced investors and managers and Z Corporation was born. Our mandate from the beginning was to make 3D printing an accessible and widespread technology and a printer to the expanding world of 3D data. This remains our mission today: to introduce high speed, low cost, full color 3D printing to all users of 3D data.

Since our founding we have shipped more than 3000 3D Printers to design leaders, education leaders and cutting edge architects. We are very proud of our customer list, which includes companies like Nike, Sony, Daimler and Harvard University.



Tom Clay, CEO, Z Corp

SV: Z Corp is one of the leading vendors in the rapid prototyping market and more specifically in the 3D printers market. From this vantage point, what do you consider as the growing/emerging opportunities in this space for 2007?

TC: Our market is driven by the emergence of 3D data, by the expanding application fit of our technology and the expanding awareness that our tool is real and accessible. We are fortunate to have significant growth in all three areas.

3D data is rapidly growing in the product design space, but also in education, architecture, healthcare, entertainment, and geospatial applications. Our application base continues to grow and high definition color parts are increasingly used to fuel key product and process decisions. Awareness is growing as our installed base grows, friends and co-workers share their experiences and we are reported on in more main stream media.

SV: In your opinion, what are some of the key technology trends in the industry?

TC: Our customers know that to fully harness the power of 3D printing, a 3D printer has to be more and more like a 2D printer: fast, inexpensive, full color and easy to use. The key technology trends address these needs in the customer base.

In recent years the speed of our 3D printers has increased, the total cost of ownership has declined and we've made significant breakthroughs in color part quality. Our most recent product introduction, the ZPrinter 450, adds automation to the part production process for the first time, making 3D printing much like operating an ordinary printer.

SV: How does Z Corp approach technology innovation and product development within your company especially considering these technology trends?

TC: We work closely with customers. They identify where they find the most value and the greatest obstacles in buying and using 3D printers. They help us form a vision of how they will use 3D printers in the coming years, and expect our systems to operate like a printer and deliver perfect 3D models every time.

We take this input to help guide our research group and cast a wide net of relevant technologies and chemistries to look for the right combinations to bring to customers. We are aided in our search because we can piggyback on important shared goals with other industries. The market wants fast, inexpensive color performance from 2D printing and we benefit from developments there. The market also wants safe, effective, environmentally friendly adhesives, so we are able to use many of these innovations in our material technologies as well. Our technology has an enormous amount of head room to grow.

SV: What are some of the key changes that Z Corp has witnessed over the past 12 months? How has the company changed to reflect this evolving marketplace?

TC: One of the key changes is the spread of 3D data from the domain of product development to architecture, medicine, education and entertainment. 3D data is proliferating quickly and we are seeing an interest and application for 3D printing following close behind. We are investing in these important areas as they grow.

We are also seeing customers expect more and more from 3D printers as they integrate the devices into their work flow. Customers won't be satisfied until 3D printers are as affordable, easy to use and office friendly as their 2D printer. We intend to stay ahead of customer expectations in these key areas.

SV: Can you give me some examples of how Z Corp is showing value to customers who are still under pressure to cut expenses?

TC: Most of our customers invest in our technology to communicate more effectively, save money in product development, produce better products, and get those products to market faster.

There are a strong series of applications, however, that reduce cost by shortening a cycle or eliminating a

mistake. Many of our customers, for example, 3D print a part to send along with a request for quotation from a potential vendor. Having the 3D part will reduce uncertainties and allow the vendor to provide a more accurate quotation, often at a lower price because some uncertainty has been removed. Customers also use our technology to develop fixtures for manufacturing to help ensure quality during the production process, thereby reducing costs.

Ramboll, a \$577 million Nordic engineering consultancy, uses our printers to improve communication. It employs physical models to bridge the gap between architectural designers who think in spatial terms and the engineers charged with bringing those designs to reality. Models enable engineers to see concepts in concrete terms greatly reducing the likelihood of implementation errors. Plus Ramboll uses the printer for competitive advantage, employing color models to demonstrate innovation in ways only possible in physical form.

Advanced Bionics, a global leader in implantable neurostimulation devices, used a Spectrum Z510 printer to reduce prototype production time from four weeks to one night, and the associated costs from \$15,000 per prototype to a few hundred dollars. The cost savings meant it could evaluate many more iterations of product designs to “get it right the first time,” ultimately delivering more ergonomic products to market months earlier.

Timberland, a global leader in premium-quality footwear and apparel, uses its 3D printer to meet the needs of customers demanding both fashion and performance. That challenging mix meant building a lot of prototypes in short design cycles, so prototypes had to be inexpensive, colorful, and quickly produced. Using a Z Corp. 3D printer Timberland reduced the cost per prototype from \$1,200 to \$35 and production time from one week to 90 minutes, contributing to development of cutting-edge products at the core of Timberland’s \$1.5 billion business.

SV: What markets do you consider to be primary markets for the company and what international markets do you consider as key for both present and future growth?

TC: From an applications perspective, our primary markets are engineering product development, education and architecture. These markets have a high need for 3D data with the accompanying need to communicate ideas to others. These disciplines have adopted 3D printing as an everyday tool.

Geographically our customers are wherever people are developing new products, teaching and learning, and designing buildings and physical spaces. The main clusters are in the larger manufacturing economies, and our customers are approximately 45% in the Americas, 30% in Europe and 25% in Asia Pacific. We are seeing the highest growth in Asia Pacific as product design and development has moved in along side the strong manufacturing base in this market.

SV: Does Z Corp offer both products and services, and if so have you seen demand for services growing?

TC: We offer 3D printers and the consumable materials they use. Many of our customers have established service bureaus where they sell 3D printed parts on a per piece basis. We have chosen to support our service bureau customers rather than compete with them.

Our service bureau customers are showing strong growth; particularly where they are serving markets that value styling and color in product development or have a strong architecture presence.

SV: What is your view on opportunities from emerging markets such as Asia Pacific, Eastern Europe and Latin America?

TC: Asia Pacific is a strong growth market for us as more and more product design is performed in these markets. We are also strong believers in Eastern Europe and Latin America and are seeing more product development emerging in these markets as their manufacturing economies mature. We continue to

expand our sales distribution channel and technical support services in these markets accordingly.

SV: What about some of the major challenges for Z Corp in the industry today and how do you overcome them?

TC: Our principal challenge continues to be awareness, not only that tools exist that can create a 3D model from digital data, but that these tools are fast, full color and inexpensive. Many potential customers aren't aware that our technology can deliver a 3D model in a few hours. And few are aware that the cost is affordable and comparable to other common technology purchases. Today you can purchase a monochrome 3D printer for under \$20,000 or a full color 3D printer for just \$40,000. Many customers recoup that cost in a matter of months.

SV: What are Z Corp's key strengths and core competencies that have allowed it to remain successful in the market place?

TC: We remained focused on delivering the key product attributes of high speed, low cost, color and ease of use. As an organization we focus on the customer's increasing expectations. As long as customers help us see their future needs and we can offer them great parts fast and at low cost, we will have strong growth.

SV: Overall, how would you rate your company's performance in 2006 and what influenced this performance? What do you expect for 2007?

TC: Our company's revenue in 2006 was nearly twice 2004, with great growth in 2006 and very strong performance in 2005. A growing market and revolutionary new products drove this growth.

We have some exciting new products in 2007 and continue to see great trends in the key drivers of our business. We expect 2007 to be a record year on all fronts.

SV: What are the products that you have introduced recently? Can you share some insights as far as future product announcements?

TC: We are very proud to launch the ZPrinter 450, a breakthrough in full color 3D printing, which delivers great parts with unprecedented ease of use and office-friendliness. We believe that this is a product that will change the way our customers use 3D printers. Customers can now press "3D Print" at their desktop and in a few hours approach their 3D printer and grab a great part, using just a few minutes of their time to complete the part.

The ZPrinter 450 is also an excellent citizen in the office, with low noise and clean operation, and unlike competitors', produces great parts with nearly zero waste.

We also are launching two new material sets. The quality of part and user experience is determined both by the printer and the consumable materials that our printers use. One of our new materials delivers increased color performance in terms of gamut and range, as well as increased final strength. A second material delivers great parts with an even shorter cycle time and ease of use than previous powder/binder systems.

In the future we will continue to magnify our strengths by offering improved part performance in color and detail, reduced customer cycle time to get a great part and even further improved ease of use.

SV: Who would you consider as key competitors and how is Z Corp trying to differentiate from them?

TC: In our market we have one principal competitor, which is the Dimension line from Stratasys. Although we frequently compete, our products have very different strengths and solve different kinds of problems in

the customer work flow. Our tool is 5-10 times faster, prints in full color and produces parts at less than half the cost per part. Their tool produces parts from a plastic material and their parts more closely emulate plastic material properties. Our ZPrinters are used in the customer workflow when speed, cosmetic appeal and communication value are most important. The Dimension is most successfully used in later stage testing where specific material property becomes more of an issue.

We believe that both are valid tools, but that ZPrinters address the market opportunity with most long term growth potential.

SV: What do you believe are the competitive factors that will enable Z Corp to emerge as a stronger and more resilient participant going forward? How will you sustain your success in this market?

TC: We will continue to build on both our product and business success. We work with a series of distribution and service partners worldwide, and from the customer's point of view this is really a team approach between Z Corp and our partners. This network of partners is a real strength and our source of future growth.

SV: Would you highlight any specific partnership or alliance made in the past year? What can we expect on this front from Z Corp going forward?

TC: Z Corp is partnering with customers, our sales partners and market partners to develop new applications all the time. This year we are running joint initiatives in the architecture, education and entertainment fields with a number of partners on new business opportunities. I ask that everyone keep their eyes tuned to our website to watch as these exciting partnerships unfold.

SV: What do you think of the market conditions in 2006? How about 2007?

TC: All of the key drivers of our market: use of 3D digital data, successful application range and awareness, are continuing to develop strongly in 2006 and 2007. We expect to continue to have high growth in this environment for the foreseeable future.

SV: How do you envisage the future of the 3D printing market? As a conclusion, what role can we expect Z Corp to play in shaping the future of the market or what does the future hold for Z Corp more specifically?

TC: We believe that the world of 3D data is exploding in size, and 3D printing will naturally follow the availability of 3D data in a wide range of professional and consumer applications. It will be true that nearly all products in one's everyday life will trace their roots in physical space to a Z Corp 3D printer. Plus it won't be long before many people have 3D printed parts in their home as a result of a school project, an interaction with an architect, a communication with their doctor about a medical procedure, or in the form of a custom collectible.

We have the product and company DNA to be the 3D printer to the 3D digital world. It is natural to expect that people will expect a 3D printer to be extremely fast, cost effective and produce parts in beautiful color. Our technology is uniquely able to fully realize this customer expectation.

SV: Do you have any additional comments?

TC: Nothing except to encourage people to visit our website to learn more about this fascinating technology and the impact it is already having on our physical world through supporting product innovation, education and architecture.