

2011

BUSINESS PLAN COMPETITION: CONCEPT PAPER



Serge Sidorov, Ph.D. Nick Sawyer, MD/MBA Candidate Saad Alnahedh, MBA Candidate

Introduction

"It is impossible to imagine modern engineering R&D without finite element analysis (FEA), and the market for FEA Consulting Firms is rapidly growing."

- Dennis Schevtchenko, Siemens Potential FEAsible Solutions Customer

FEA is an integral part in the design and manufacturing of products in a wide array of technology-based industries, including automotive, nuclear, and medical device manufacturing. Specifically, finite element analysis is a computer simulation technique that allows engineers to accurately predict the physical systems' behavior and estimate the physical parameters of the system.

What value does FEA offer to its customers? Imagine a car manufacturer cutting costs by reducing the number of vehicles destroyed in multiple crash-tests, or a medical device R&D team designing an endovascular stent with pinpoint precision, without having to build multiple material prototypes. FEA makes this possible. With FEA, engineers can optimize the product development lifecycle saving enormous labor and material costs.

Proper use of the finite element method requires vast expertise and rather esoteric knowledge. Some companies hire FEA specialists and create FEA teams within their R&D departments, while other firms outsource FEA work to consulting companies. FEAsible Solutions is a consulting firm with dedicated specialists experienced in utilizing state-of-the-art FEA tools to address a broad spectrum of modern technological problems.

Competition

Although there exist many FEA consulting companies in the market, there are no industry giants, and the competitors are largely undifferentiated, all of them sharing similar value propositions. The main players include SimuTech Group, CAE Associates and Ozen Engineering. These companies are small, but growing, employing as many as 75 FEA experts serving customers from various industry sectors. Most of these companies lack coherent and systematic marketing plans, and their marketing efforts rely on personal connections and customer referrals.

Conversely, larger engineering and technology consulting firms employ FEA experts and/or FEA teams as part of their umbrella consulting services. One such company is Altair. Altair specializes in multiple computer aided engineering (CAE) systems, and is not solely dedicated to FEA consulting, which may dilute their appeal when compared to a specialized FEA consulting firm, whose main focus is to deliver high quality analysis in a single dedicated field. This leaves an untapped market segment that may be reached with a well-developed and highly targeted marketing plan.

Customers

We conducted a market survey of potential customers to gauge interest in our offering. Results showed that many large and medium sized engineering firms are actively seeking, and are open to hiring a specialized FEA consulting company to work closely with their mechanical engineers. The survey also revealed that the two main criteria that engineering companies use when selecting one FEA consultancy over another are engineering expertise pertaining to the given industry, and previous experience with the firm. At FEAsible Solutions, we have FEA experts with work experience relevant to manufacturing of *medical devices* and similar high-precision electro-mechanical hardware, *household appliances*, as well as design and analysis of strength and reliability of various elements of *nuclear power plants* and non-nuclear energy power stations. Thus, we will service engineering firms specializing in these three areas.

Strategy

We will attract new customers using a multifaceted marketing strategy highlighting the superior qualifications of our experienced engineers. Given our engineers' extensive experience working with industry leaders in FEA software manufacturing including ANSYS and Simulia, FEAsible Solutions has a unique understanding of simulation techniques, which gives us a competitive advantage over engineers who have simply worked with the software alone. Further, our experts have logged thousands of hours creating FEA solutions for such industry leaders as Western Digital, Siemens, LG Electronics and many others, as well as academic institutions such as University of Pittsburgh, Department of Mechanical Engineering and Material Science.

Our engineers have presented research papers at various FEA specific engineering conferences across the country including ANSYS Conference, LS-DYNA Conference, and World Congress of Computational Mechanics, making them well established in the FEA community. Our engineers' networking efforts will serve as the basis for our entrance into the market as a new consulting firm, and will provide a continuous stream of contacts and potential clientele.

To further develop our brand equity, we intend to initiate an FEA software re-selling center. FEAsible Solutions will offer a broad range of services including consulting, licensing and product support. Our alliance with ANSYS and other FEA software manufacturers will provide a source of credibility that distinguishes our company from other FEA consulting firms.

We always strive to cultivate optimal customer relationships and are easily accessible to our clients. Our sales force is constantly striving to bring in new clientele using various types of marketing strategies including database and email marketing, and advertisement in academic journals such as ANSYS Solutions, and Finite Elements in Analysis and Design. Further, FEAsible Solutions will sponsor and attend national FEA conferences, allowing us to both place our advertisements in conference booklets as well as set up informational booths allowing us the opportunity to speak directly with potential customers.

Our market surveys show that the most common problem engineering companies have with FEA consulting firms is the consultants' lack of expertise in their engineering field. As one of our respondents stated, "The greatest value of an outside consultant is the real world, practical industry knowledge that the analysts can offer my firm." Another respondent commented, "Simply having modeling expertise is just not enough." In order to avoid these pitfalls and differentiate the company from competitors, as stated, FEAsible Solutions will be focusing on three major areas:

- 1. Medical devices and similar high precision electro-mechanical hardware;
- 2. Household appliances;
- 3. Nuclear power plants and non-nuclear energy power stations.

FEA consulting firms operate within a market in which the largest proportion of new business is obtained through customer referrals. In order to build a reputation with new customers, we intend to offer one introductory project for them free of charge. This strategy will enable FEAsible Solutions to foster strategic relationships that will be paramount to our growth prospects.

Management

Our management team features three MBA students from the Paul Merage School of Business at University of California, Irvine.

Our CEO/COO, Serge Sidorov, has been in the FEA business for over ten years. While pursuing a Ph.D. in computational biomechanics at the University of Pittsburgh, he worked for ANSYS, the leading FEA software manufacturer. Serge's Ph.D. dissertation focused on the use of FEA to model the evolution and subsequent rupture of fusiform aneurysms. Later he worked with FEA teams at Western Digital and Siemens. He is currently pursuing an MBA-degree at the Paul Merage School of Business, focusing his studies on entrepreneurship and operations.

Our CMO, Nick Sawyer is currently enrolled in the UC Irvine combined MD/MBA program at the Merage Scool of Business and the UC Irvine School of Medicine. Nick graduated Cum Laude from University of California, Davis, with a Bachelors of Science in Neurobiology, Physiology & Behavior. His interests are in entrepreneurship, marketing, organizational behavior, emergency medicine, public health, and medical business administration.

Our CFO, Saad Alnahedh, holds a Bachelors of Science in Electrical Engineering from University of Kansas with a minor in Business Administrations. After graduating, Saad worked in the Research and Development arm of the Kuwaiti Government, KISR, focusing on the Renewable Energy industry. Specifically, Saad worked with the commercialization team at the Energy Technologies Department. As a result of the research and development done in-house, KISR spun off numerous companies, and Saad was intimately involved with multiple Renewable Energy projects that were commercialized in Kuwait. Saad is currently pursuing an MBA from the Paul Merage School of Business at UC Irvine, with a Private Equity and Venture Capital career focus in Clean Technology and Financial Energy Markets.