



EoPlex Technologies, Inc.: Recipient of the  
2007 North American Specialized Manufacturing  
Technology Innovation of the Year Award



*“Partnering with clients to create innovative growth strategies”*

## 2007 North American Specialized Manufacturing Technology Innovation of the Year Award

### Award Description

Frost & Sullivan's Technology Innovation of the Year Award is bestowed upon a company (or individual) that has carried out new research, which has resulted in innovation(s) that have or are expected to bring significant contributions to the industry in terms of adoption, change, and competitive posture. This award recognizes the quality and depth of a company's research and development program as well as the vision and risk-taking that enabled it to undertake such an endeavor.

### Research Methodology

To choose a recipient of this Award, the analyst team tracks all new products launches R&D spending, products in development, and new product features and modifications. This is accomplished through interviews with the market participants and extensive secondary and technology research. All new product launches and new products in development in each company are compared and evaluated based on degree of innovation and customer satisfaction. Companies are then ranked by number of new product launches and new products in development.

### Measurement Criteria

In addition to the methodology described above, there are specific criteria used to determine the final rankings. The recipient of this award has excelled based on one or more of the following criteria:

- Significance of the innovation(s) in the industry, and across industries (if applicable)
- Potential of the products of innovation(s) to become industry standard(s)
- Competitive advantage of innovation vis-à-vis other related innovations
- Impact (or potential impact) of innovation(s) on company or industry mind share and/or company bottom line
- Breadth of intellectual property related to the innovation(s), that is, patents, scientific publications, papers in peer-reviewed journals.



The 2007 Frost & Sullivan North American Technology Innovation of the Year Award in specialized manufacturing goes to EoPlex Technologies, Inc. in recognition of its development of the High Volume Print-Forming (HVPFTM) manufacturing process. The EoPlex process represents a significant advancement in manufacturing techniques for complex, components on a small, customizable scale. EoPlex's technology enables manufacturing of any number of custom mechanical, electronic, fluidic, and chemical components without regard to the complexity of the design or the number of substrate materials that go into a single finished component. That this can be accomplished seamlessly in large production quantities is another noteworthy feature of EoPlex's process.

## Introduction

EoPlex is a privately-held company based in Redwood City, California. The company specializes in new processes for component manufacturing. In a testament to the company's business strategy and technology, EoPlex is backed by prominent Silicon Valley VC firms such as ATA Ventures, Draper Fisher Jurvetson, Labrador Ventures, and Draper-Richards. With the company's High Volume Print-Forming process manufacturers can build components and sub-components from different materials in any scale without the need for dedicated tooling.

EoPlex has an experienced management team led by CEO Arthur Chait. Mr. Chait is a Rutgers Graduate in Advanced Materials Engineering who worked in research, marketing and management positions in industry. After graduate school, he worked in consulting, specializing in high technology at Booz Allen & Hamilton and Stanford Research Institute. Mr. Chait then moved back to industry as an officer with Zitel Corporation and then as a Senior Vice President at Solectron. Along with Charles Taylor, he was one of the two founders of EoPlex. Charles Taylor is well known in Silicon Valley, having founded CardioThoracis Systems which went public and was later acquired by Guidant Corporation. Other key members of the management team include Phil Rogren, VP of Sales & Marketing, who was formerly with Alcoa Electronics and Shellcase; Dr. Justin Gaynor, the company's senior scientist, who leads the R&D efforts and has had significant experience at leading firms like Texas Instruments and Novellus; and Ron Sorisho, the company's CFO, who held senior financial management positions at Solectron, NatSteel and Smart Modular.

## Technology Overview

Specialized processes like three-dimensional printing with rapid prototyping can produce manufacture prototypes. Prototypes from these processes are normally used for getting a quick visualization of what an actual part will look like. However, parts produced by these methods are typically not functional and can usually only be made with a single material, to circumvent this limitation, the prototypes are used to create tooling for actual production. While being conceptually similar to rapid prototyping processes, EoPlex's method has fundamental differences. Rapid prototyping is focused on one-off prototypes from a single material, while EoPlex can manufacture actual functional components with multiple materials in the same part. Using EoPlex technology, manufacturers can produce thousands of complex components with the parts containing circuits, chambers, channels, sensors, reactors, energy scavengers, and other design elements. There is also flexibility with material selection and these components can be made of a combination of metals, ceramics, glasses, and polymers.

The EoPlex process begins with a computer-aided design (CAD) file. The CAD image is sliced into a number of layers similar to 3D printing and computerized tomography scans. The component is then built as a series of layers printed one on top of another with proprietary "inks". These inks react initially to bond each layer to the next and then react again in the post-processing steps to leave behind conductors, metals, ceramics, glasses, alloys and dielectrics. Cavities are built by using sacrificial "inks" that are also removed in post processing. Once the various layers are built, and the component achieves its final shape, it is heat treated to meet various requirements and then fired. The sacrificial materials are removed at this stage and the ceramic and metal powders are sintered and fused together.

## Innovative Features

Among the key highlights of the EoPlex technology is the fact that it is a true platform technology. It can be used in a huge number of applications and across a variety of sectors. The flexibility in material choice is largely responsible for this diversity in applications. A broad variety of materials including metals, ceramics, polymers and composites, can be employed. The ability to form detailed 2-D images that are layered precisely into 3-D parts makes it possible to design and fabricate

components that were previously impossible to produce. Additionally, since parts are built layer-by-layer, internal complexity is not a major issue, and it is just as easy to print a complex part as it is to print a simple part. The EoPlex approach could help transform the area of specialized manufacturing as we know it. It is already being used to manufacture a variety of devices from hydrogen reformers to microreactors and tire pressure sensors.

What EoPlex has created is the ability to mass manufacture parts that were previously impossible to manufacture in huge quantities. In some cases, products that were not manufacturable can now be brought to the market in a cost effective manner. EoPlex technology is protected both by patents and trade secrets. With intellectual property protection in place, the company is poised to reap the benefits of its platform technology in fields as varied as energy harvesters and temperature switches.

In a culture like Silicon Valley, where innovation is prized as much as the commercial success it brings, EoPlex blends in perfectly. The company has innovative products and processes, but these alone are not as important as the culture and the focus of the company. EoPlex comes across as a company that encourages product innovation and “out of the box” thinking but with a focus that ensures that innovation itself does not get in the way of market realities. The products being developed by the company show a clear focus on customer needs and market requirements. EoPlex also considers other elements in its strategic plan, such as regulatory changes, hence its focus on tire pressure monitoring systems that will become mandatory by the end of 2007 on all cars in the US.

EoPlex has succeeded in attracting a number of highly respected venture capital firms such as Draper Fisher Jurvetson, Labrador Ventures, Draper-Richards, and ATA Ventures. Most recently, in February 2007, EoPlex closed an \$8 million Series C investment, which will allow it to further move along its developmental programs.



### About Frost & Sullivan

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Frost & Sullivan • Tauni Odia  
+1 210.477-8439 • tauni.odia@frost.com  
www.awards.frost.com

EoPlex Technologies • Jan Odell  
+1 415.738.2165 • jan@fordodell.com  
www.eoplex.com