

## Outsourcing SMEs Exacerbate Mechatronic Integration Issues

### Market Segment

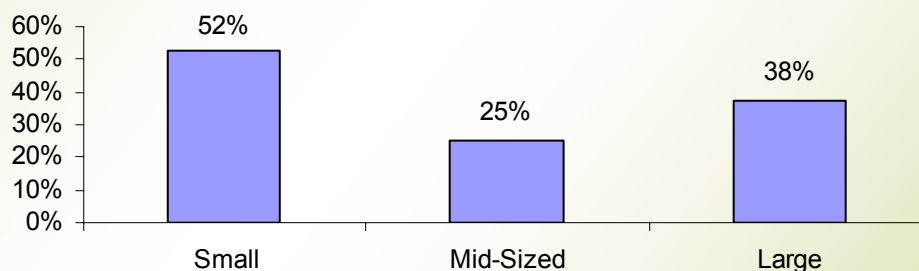
Aberdeen Group's [Mechatronics System Design Benchmark Report](#) finds that 52% of small manufacturers lack the discipline-specific and system-level expertise necessary for mechatronics development. As a result, nearly half of them are turning to outsourcing to fill the gap. In turn, 38% of small manufacturers and 29% of mid-sized ones face engineering coordination and collaboration problems exacerbated by outsourcing. Manufacturers pursuing outsourcing strategies in support of mechatronics development should utilize collaboration technologies and other tactics suggested in the [Global Product Design Benchmark Report](#) and the [Product Lifecycle Collaboration Benchmark Report](#), such as design sharing and change notification.

### Small and Mid-Sized Enterprises

#### Small Manufacturers Lack Discipline-Specific and System Expertise

Aberdeen Group's [Mechatronics System Design Benchmark Report](#) indicates that over half of small manufacturers, those with revenues less than \$50 million, lack expertise either in system engineering or in discipline-specific domains such as mechanical, electrical, and software engineering (Figure 1).

**Figure 1: Small Manufacturers Lack Discipline-Specific and System Engineering Expertise**



Source: AberdeenGroup, September 2006

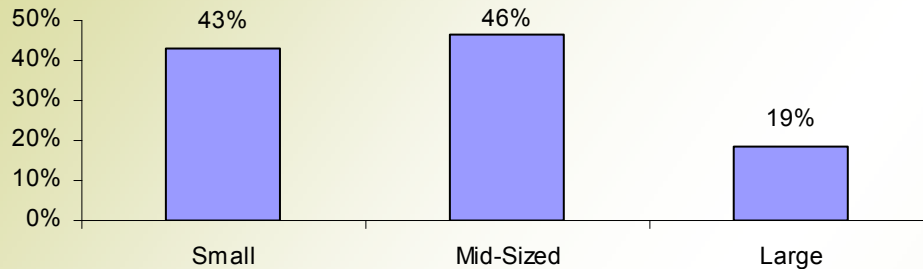
This comes as no surprise as the small manufacturers in the supply chain often specialize in components or sub-systems. However, the recent trend of large OEMs pushing responsibility for systems down into the supply chain places new pressures on these manufacturers to expand their responsibility and, thus, their expertise. Small OEMs are simply experiencing the overall trend as competitive and customer pressures to deliver products with features enabled by electronics and software. They must expand their expertise to support mechatronic products in response.

#### SMEs Are Outsourcing While Ramping Up Core Competencies

Interestingly enough, from a range of strategic options manufacturers could pursue given their lack of discipline-specific or system engineering expertise, nearly half of small and mid-sized

manufacturers are choosing to outsource some portion of product development to partners that have these capabilities (Figure 2).

**Figure 2: Nearly of Half Small, Mid-Sized Manufacturers Pursuing Design Outsourcing**



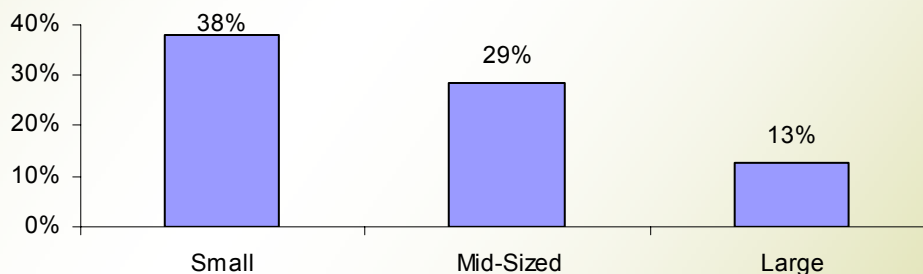
Source: AberdeenGroup, September 2006

In addition to seeking partners with this expertise, they plan to ramp up their own competencies rapidly. Fully 69% of small manufacturers and 84% of mid-sized manufacturers plan to increase internal engineering competencies. However, hiring and training engineers is not a strategy easily implemented overnight. These two strategies, outsourcing to partners with expertise while ramping up internal engineering competencies, are complementary in nature for the short and long term.

### Cause and Effect: Outsourcing Exacerbates Coordination Issues

According to Aberdeen's *Mechatronic System Design Benchmark Report*, a common theme in most of the challenges of mechatronic development is getting different engineering disciplines to work together. Report findings also indicate that these issues are only exacerbated by the outsourcing strategies pursued by small and mid-sized manufacturers (Figure 3).

**Figure 3: Design Outsourcing Results in Collaboration and Coordination Issues**



Source: AberdeenGroup, September 2006

If getting system, mechanical, electrical, and software engineers within the same company to work together is challenging, having one of those engineering disciplines working for a different company only amplifies the issues.

### Conclusion

Small and mid-sized manufacturers are outsourcing aspects of mechatronic product development due to a lack of discipline-specific and system engineering expertise – intensifying the collaboration and coordination issues typically experienced in mechatronic development.

Accordingly, to address these issues small and mid-sized manufacturers in this situation should consider the following recommendations made by Aberdeen Group in the [Global Product Design Benchmark Report](#) and the [Product Lifecycle Collaboration Benchmark Report](#).

- Clearly and concisely document your data management approach and process for coordination and collaboration purposes with your suppliers and vendors.
- Use lightweight and secure forms of design collaboration – such as design sharing and change notification for communication purposes, especially during design reviews and project status meetings.

## Related Research

[The Mechatronics System Design Benchmark Report](#), August 2006.

[The Global Product Design Benchmark Report](#); December 2005

[The Product Lifecycle Collaboration Benchmark Report](#); June 2006

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