



Wireless Sensor Networking & Professional Services

Survey Results: August 2005

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Executive Summary

This survey was conducted to assess the role of professional services in wireless sensor networking development projects currently and in the future. Overall, the results indicate that the role of professional services will shift as the adoption of wireless sensor networking increases. In every area the survey covered except one – spending – there was a fairly distinct difference in the trends between those who had already implemented wireless sensor networking and those who are planning future projects. This is not surprising; those in the former group are very early users of a new technology (“innovators”) and will have a different set of needs than those who are currently in the planning stages (“early adopters”).

Following are highlights of the survey results:

- Wireless sensor networking implementations are on the rise.
- There is a growing need for professional services for wireless sensor networking projects.
- Top reasons for using professional services are changing. In addition to faster time to market and acquiring expertise – which have been up to now the primary reasons – companies are also looking to use professional services to reduce risk, save costs, and add resources to their development teams.
- Sources for professional services have thus far been primary application vendors and platform/system vendors; chip vendors are also emerging as desired sources for professional services. Other, non-traditional, sources have been used in the past but as the industry matures, will no longer be needed.
- For the most part, companies are looking to spending less than \$50,000 on professional services; however, many organizations are not really sure how much to spend.
- The scope of specific services organizations are looking for is expanding. In the past, organizations turned to professional services primarily for RF design, connectivity/electrical interface engineering, and sensor/gateway integration. Companies are beginning to seek out more services, including prototype development and compliance and regulatory testing management.
- Overall, the most important factors contributing to a successful wireless sensor networking professional services engagement are wireless sensor networking experience and cost. The least important factor is vertical market experience.
- There is a very high satisfaction rate among those companies who have used professional services for wireless sensor networking projects.

Overall, it's clear that professional services will be an important component of the wireless sensor networking industry; users will be looking to hire organizations to help implement the technology effectively and quickly.

Methodology

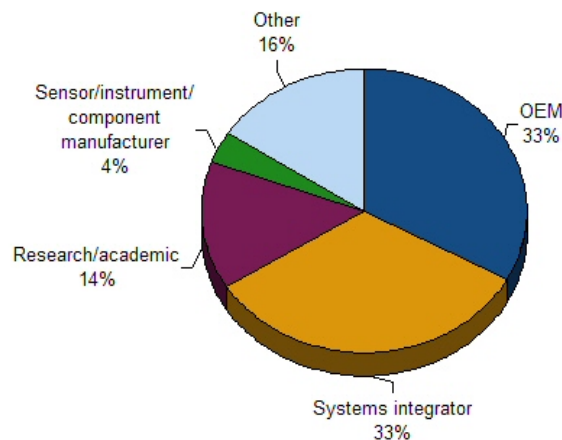
Invitations to participate in the online survey were e-mailed to approximately 1,500 individuals who have indicated some level of interest in wireless sensor networking. A link to the survey was also available from the home page of the Millennial Net Web site. 136 surveys were completed. Responses were analyzed and the results are contained in this report.

Survey Respondents

By Company

One-third of respondents represented OEMs, one-third systems integrators, and the final one-third consisted of other company types including sensor/instrument/component manufacturers and research/academic institutions.

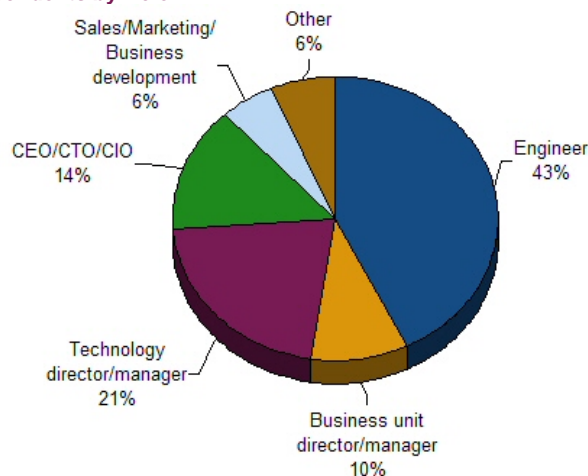
Respondents by Company



By Role

Two-thirds of the survey respondents have technical roles; two-thirds of those are engineers, the remaining one-third are in technology-focused management roles.

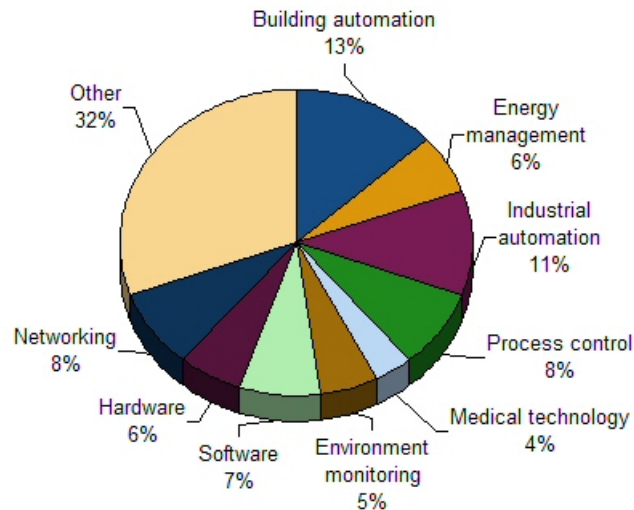
Respondents by Role



By Industry

One-fifth of the respondents are in commercial building industries; one-fifth are in industrial and process industries, and one-fourth provide horizontal technologies. The “other” category represents 32% of the respondents and covers a wide range of industries including security, government, aerospace, automotive, among others.

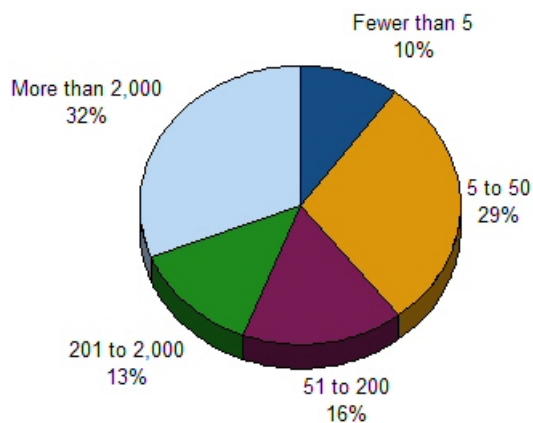
Respondents by Industry



By Size

Companies of all sizes were represented in the survey. Approximately one-third have more than 2,000 employees, one-third have between 51 and 2,000 employees, and one-third have between 5 and 50 employees.

Respondents by Company Size (# of Employees)

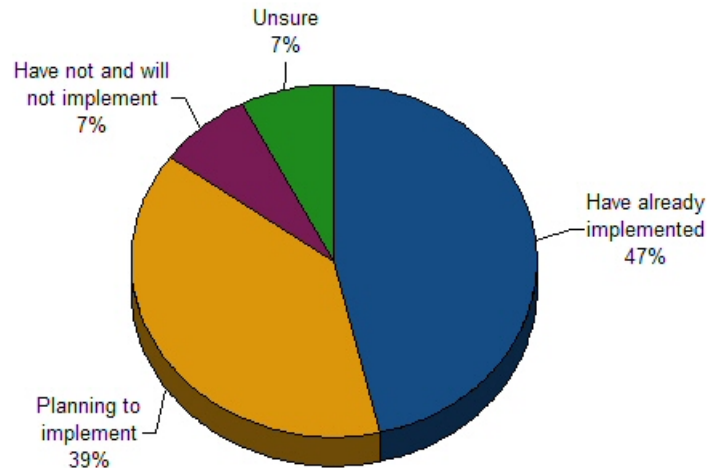


Survey Results

Increasing Implementation of Wireless Sensor Networks

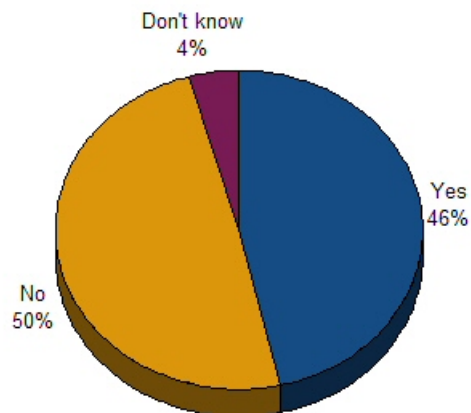
Overall, 86% of respondents have already implemented or plan to implement wireless sensor networks.

Overview of Past and Planned Wireless Sensor Networking Implementation



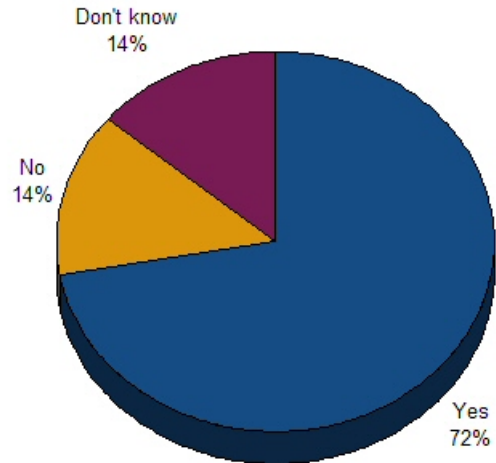
The respondents are fairly evenly split between those who have already implemented wireless sensor networks and those who have not.

Past Wireless Sensor Networking Implementation



Of all the respondents who have not yet done any wireless sensor networking, almost three-quarters have plans for future projects.

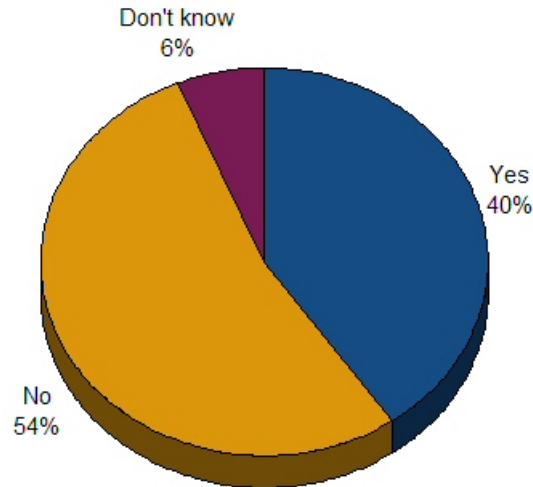
Planned Wireless Sensor Networks



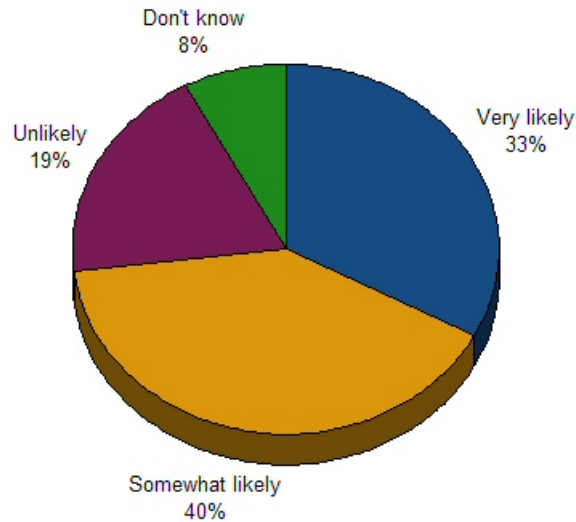
Growing Need for Professional Services

While only 40% of respondents who have already implemented wireless sensor networking used professional services, 73% of those planning future projects are likely to use professional services.

Use of Professional Services in Past Wireless Sensor Networking Projects



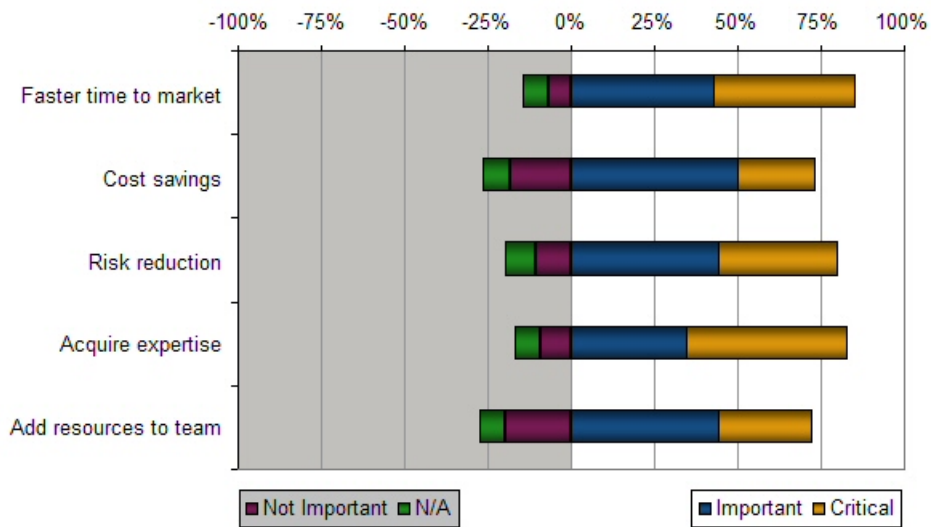
Likelihood of using Professional Services in Planned Wireless Sensor Networking Projects



Reasons to Use Professional Services

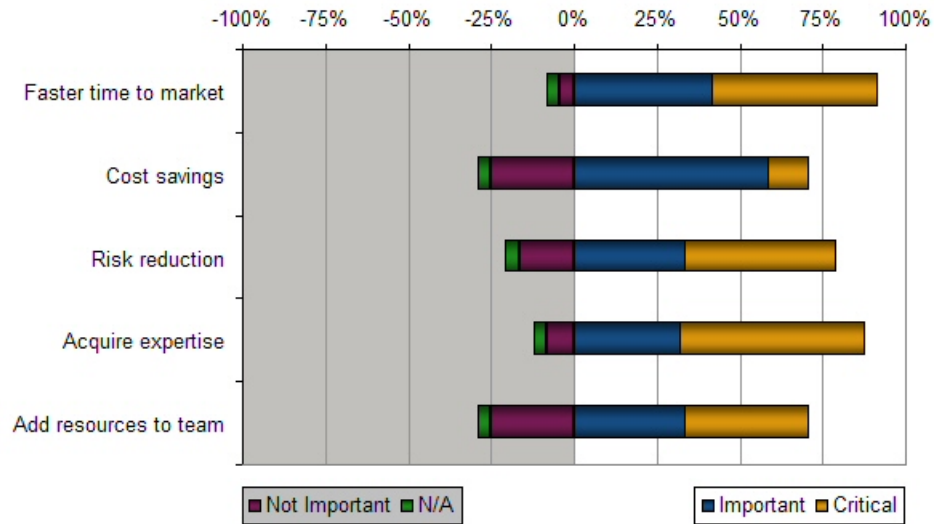
Overall, respondents indicated that adding resources to the team, acquiring expertise, reducing risk, saving costs, and faster time to market are all reasons they look to use professional services for their wireless sensor networking projects.

Overall Reasons to Use Professional Services for Wireless Sensor Networking



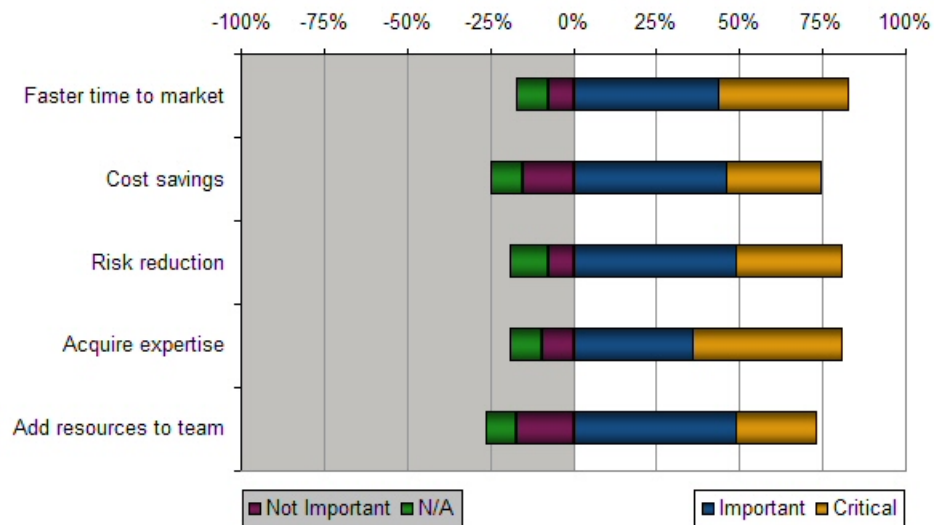
There is, however, a shift in the reasons professional services are being used for wireless sensor networking projects when comparing past use and future plans. For past projects, the most important reason was faster time to market with 92% of the respondents ranking it “important” or “critical”. Adding resources to the team and saving costs were the two reasons that were least important with 71% ranking them “important” or “critical” and 29% ranking them “not important” or “N/A” for both categories.

Reasons Professional Services Were Used in Past Wireless Sensor Networking Projects



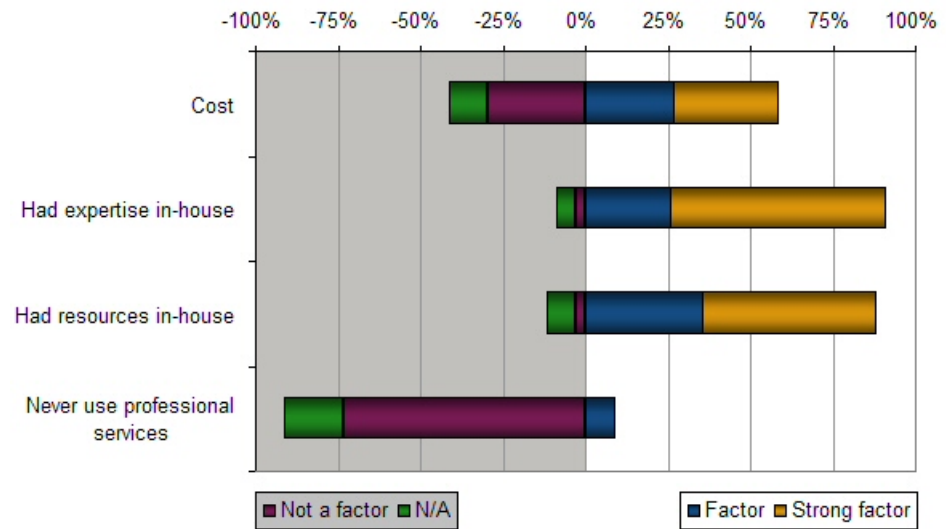
Respondents planning to implement future wireless sensor networking projects, however, found all of these factors to be important reasons for using professional services. All of the factors were rated “Important” or “Critical” by 74% to 83% of respondents.

Reasons to Use Professional Services in Planned Wireless Sensor Networking Projects



Respondents who have implemented wireless sensor networks but did not use professional services cited adequate expertise and resources in-house as the primary reasons (91% and 88% respectively).

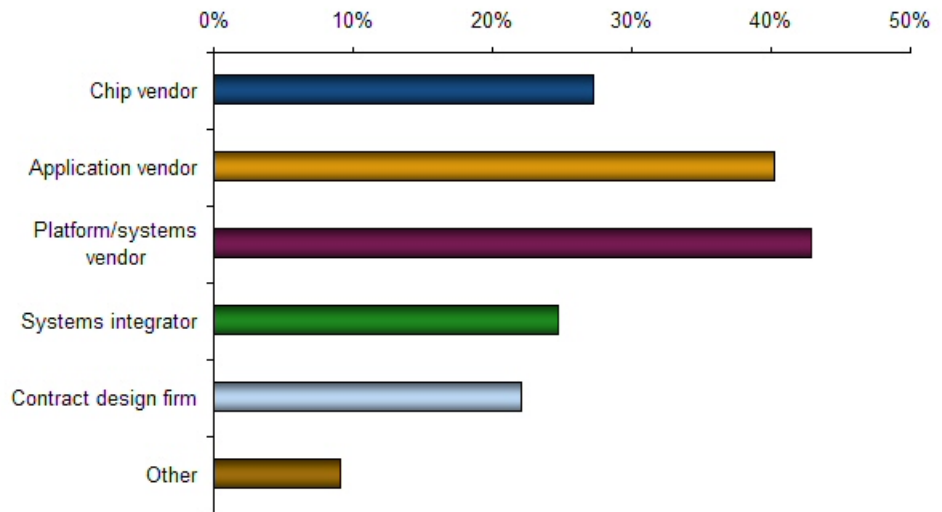
Reasons Professional Services Were Not Used in Past Wireless Sensor Networking Projects



Sources of Professional Services

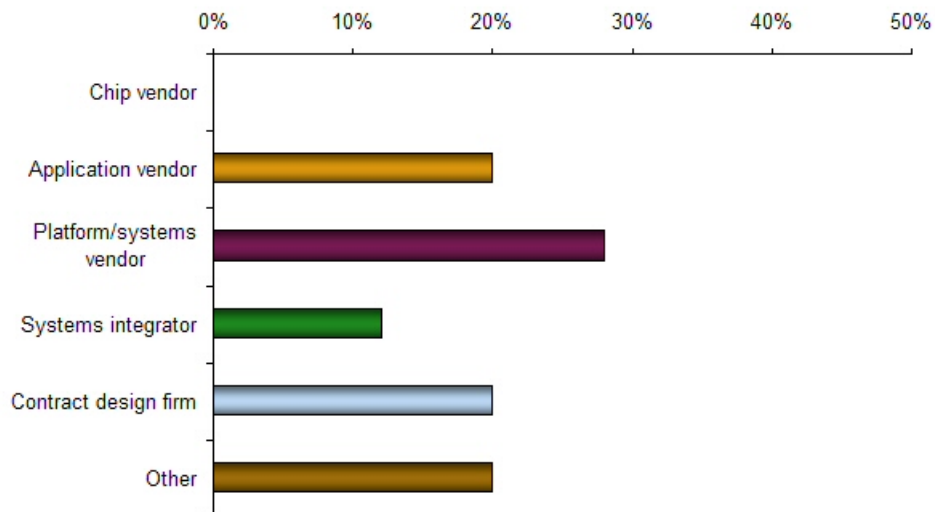
Overall, respondents are looking primarily to platform/system vendors and application vendors to provide professional services and this reflects the general trend going forward.

Overall Sources for Wireless Sensor Networking Professional Services



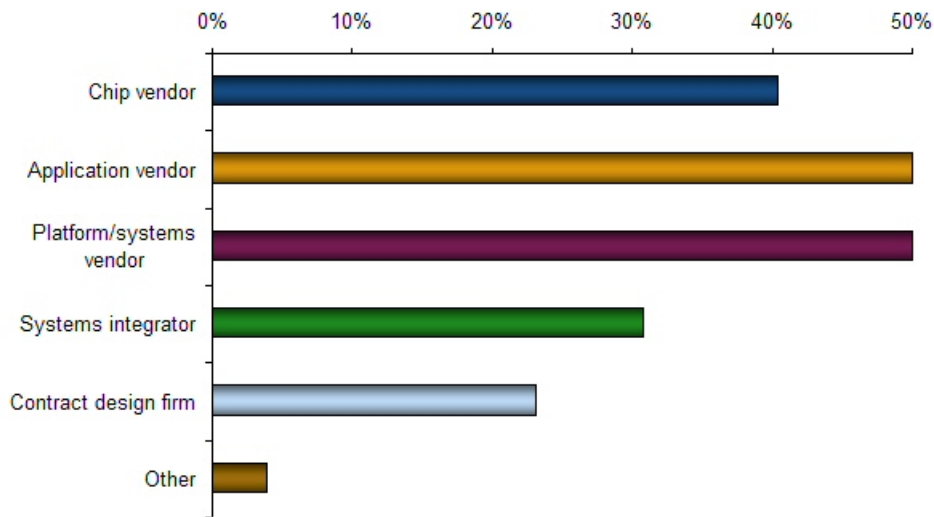
Respondents who used professional services for past projects used primarily platform/systems vendors. Other sources included application vendors and contract design firms. These organizations also turned to other, non-traditional sources for wireless sensor networking professional services. This likely reflects a lack of formal professional services available to the industry in its early phases.

Sources for Past Wireless Sensor Networking Professional Services



For respondents planning future wireless sensor networking projects, application vendors and platform/system vendors will be the primary source for professional services. Many will also look to chip vendors to provide services.

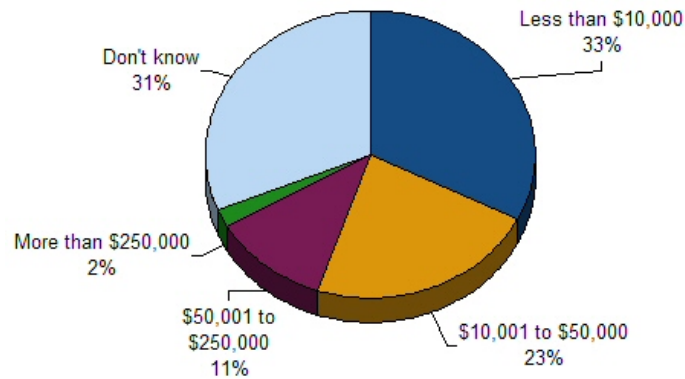
Sources for Planned Wireless Sensor Networking Professional Services



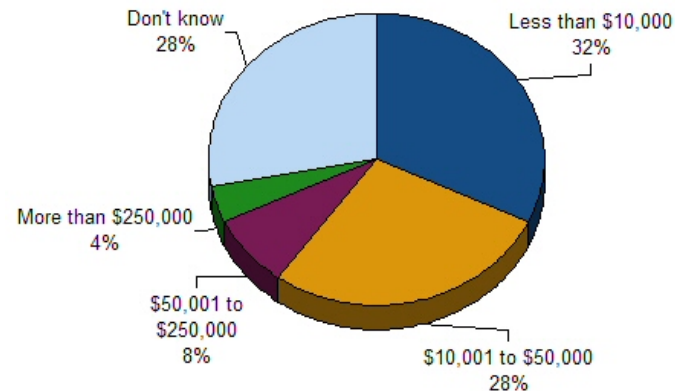
Spending on Professional Services

Overall, the past trend and future expectation of dollars spent on professional services is somewhat consistent. While one-third of the respondents didn't know how much was or would be spent, over one-half the respondents were, in general, looking at an average per-engagement cost of up to \$50,000, with around one-third of all respondents looking to cap the engagement cost at \$10,000.

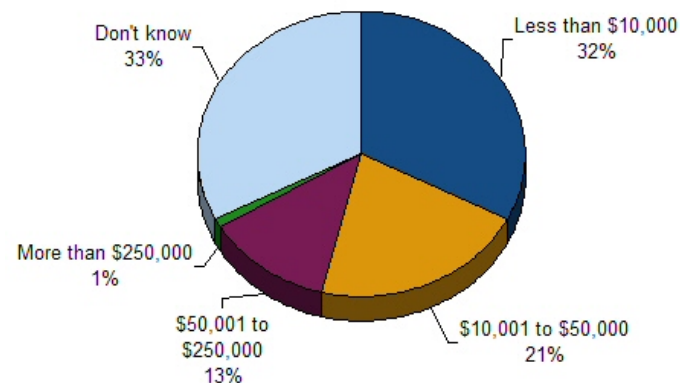
Overall Spending on Wireless Sensor Networking Professional Services



Spending on Past Wireless Sensor Networking Professional Services



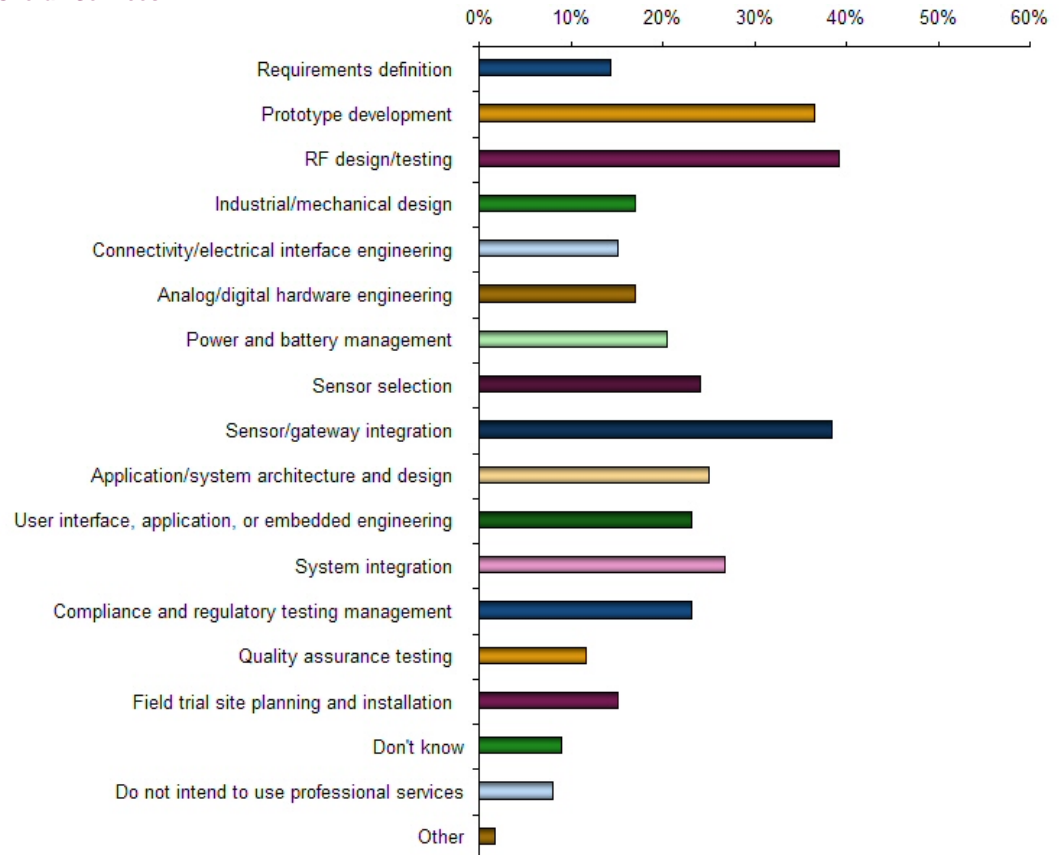
Spending on Planned Wireless Sensor Networking Professional Services



Specific Services

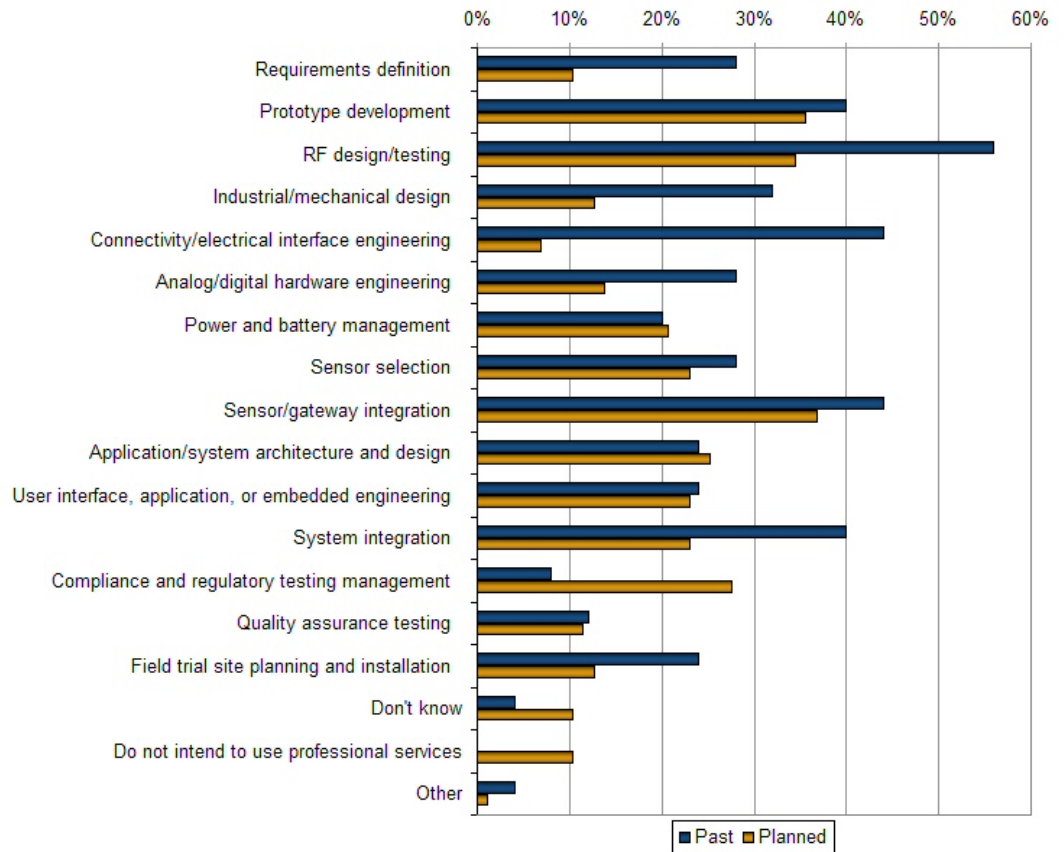
Overall, respondents indicated the top three services they'd look to hire professional services for are RF design and testing, prototype development, and sensor/gateway integration.

Overall Services



There are some differences between the services used in past projects and those that will be needed for planned products. RF design/testing was by far the most utilized service for past projects with connectivity/electrical interface engineering and sensor/gateway integration the next most important. For those organizations planning future projects, however, prototype development and system integration join sensor/gateway integration and RF design/testing among the needed services while connectivity/electrical interface engineering seems to be relatively unimportant for professional services.

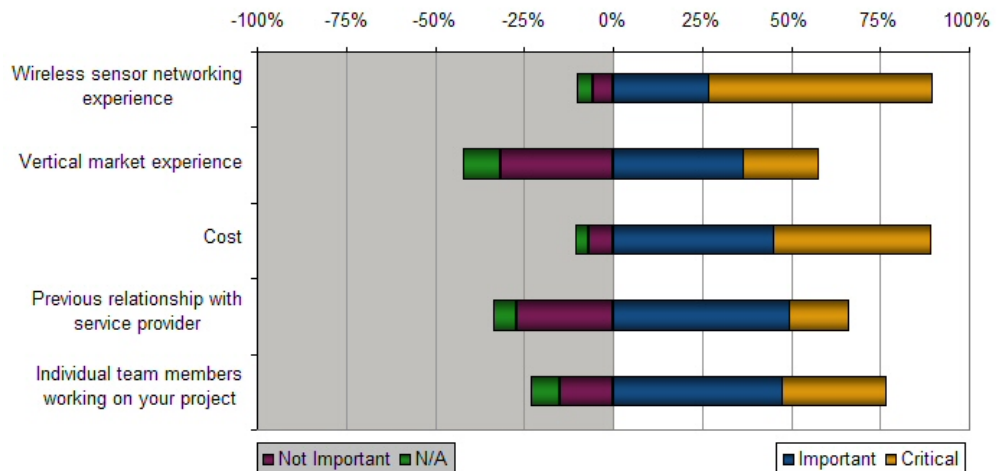
Past and Planned Services



Success Factors

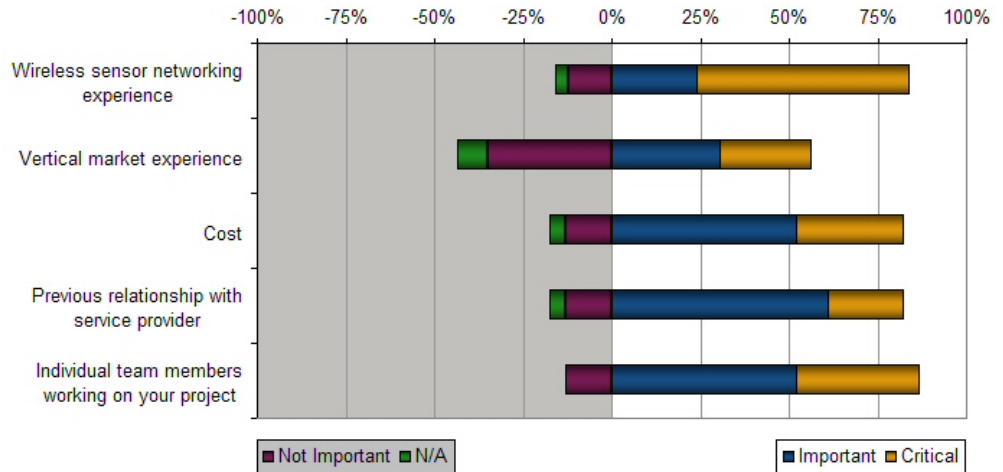
The most important overall success factors are wireless sensor networking experience and cost; 90% of respondents rated these factors “important” or “critical”, with 63% regarding wireless sensor networking experience as “critical” and 45% rating cost as “critical”. The least important factor is vertical market expertise; almost as many respondents rated it “not important” or “N/A” (42%) as those who rated it “important” or “critical” (58%).

Overall Success Factors for Wireless Sensor Networking Professional Services

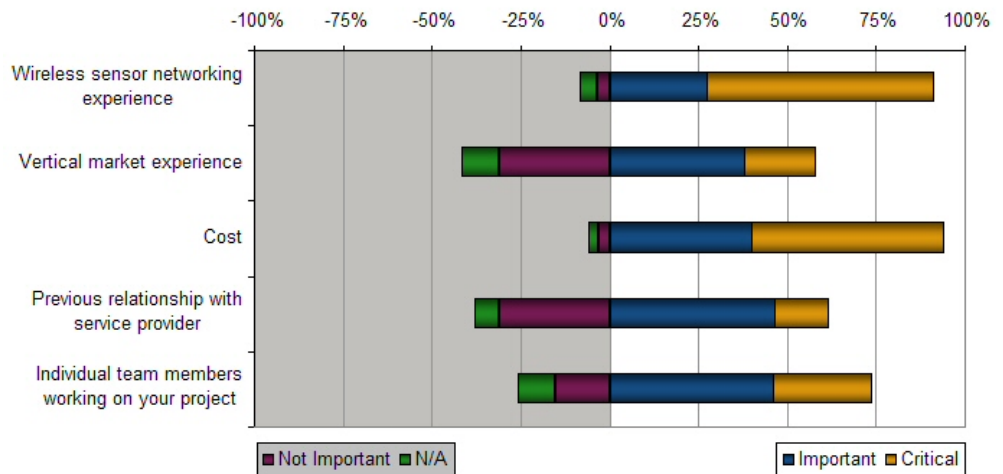


The main difference in success factors between those who have already implemented wireless sensor networking with professional services and those who plan to in the future is cost. This is a significant success factor for future projects for 94% of the respondents (54% labeled it “critical” and only 6% rated it “not important” or “N/A”). 82% of those who have completed projects listing is as important with only 30% listing is as critical and 17% indicating cost is “not important” or “N/A”.

Success Factors for Past Wireless Sensor Networking Professional Services



Success Factors for Planned Wireless Sensor Networking Professional Services

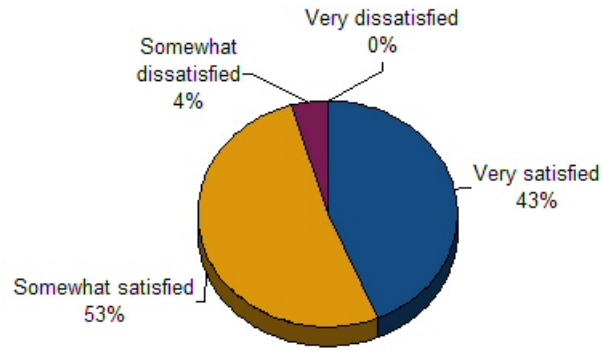


Satisfaction

In general, respondents are satisfied with their decision to either use or not use professional services for their wireless sensor networking projects. Those who did use professional services, however, seem somewhat happier with the decision than those who did not.

96% of the respondents who did use professional services are very or somewhat satisfied with those services.

Satisfaction with Professional Services in Past Wireless Sensor Networking Projects



Almost two-thirds of those who did not use professional services do not regret that decision. One-third aren't sure and one-tenth, in retrospect, wish they had used professional services.

Regret Not using Professional Services in Past Wireless Sensor Networking Projects



About Millennial Net

Millennial Net develops commercial- and industrial-grade wireless sensor networking software, systems, and services that enable OEMs and systems integrators to quickly and cost-effectively implement wireless sensor networks. These networks enable the remote monitoring and management of critical devices while providing data to enable more informed decision-making, better control and increased revenue opportunities. Millennial Net's patented ad hoc, self-organizing wireless sensor networking MeshScape™ system leads the industry in power efficiency, support for dynamic systems and mobile sensors, reliability, and scalability. Millennial Net also leads the industry in real-world deployments with networks installed across commercial building and industrial environments.

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