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Findings from the Advanced Technology Program's Survey of Joint Ventures

Jennifer O'Brien • Andrew Wang • Stephanie Shipp • Kathleen McTigue • July 2006

NIST
National Institute of Standards and Technology
Technology Administration, U.S. Department of Commerce

ATP
ADVANCED TECHNOLOGY PROGRAM

About the ATP's Economic Assessment Office

The Advanced Technology Program (ATP) is a partnership between government and private industry to conduct high-risk research to develop enabling technologies that promise significant commercial payoffs and widespread benefits for the economy.

Since the inception of ATP in 1990, ATP's Economic Assessment Office (EAO) has performed rigorous and multifaceted evaluations to assess the impact of the program and estimate the returns to the taxpayer. To evaluate whether the program is meeting its stated objectives, EAO employs statistical analyses and other methodological approaches to measure program effectiveness in terms of:

- Inputs (program funding and staffing)
- Outputs (research outputs from ATP supported projects)
- Outcomes (innovation in products, processes, and services from ATP supported projects)
- Impacts (long term impacts on U.S. industry, society, and economy)

Key features of ATP's evaluation program include:

- Business Reporting System, a unique online survey of ATP project participants, that gathers regular data on indicators of business progress and future economic impact of ATP projects
- Special Surveys, including the Survey of Applicants and the Survey of Joint Ventures
- Status Reports, mini case studies that assess ATP projects several years after project completion, and rate projects on a scale of zero to four stars to represent a range of project outcomes.
- Benefit-cost analysis studies, which identify and quantify the private, public, and social returns and benefits from ATP projects
- Economic and policy studies that assess the role and impact of the program in the U.S. innovation system

EAO measures against ATP's mission. The findings from ATP surveys and reports demonstrate that ATP is meeting its mission:

- Nine out of 10 organizations indicate that ATP funding accelerated their R&D cycle.
- There is a "Halo Effect." EAO surveys show that an ATP award establishes or enhances the expected value of a project in the eyes of potential investors.
- ATP stresses the importance of partnerships and collaborations in its projects. About 85 percent of project participants collaborated with others in research on their ATP projects.

Contact ATP's Economic Assessment Office for more information:

- On the Internet: ***www.atp.nist.gov/eao/eao_main.htm***
- By e-mail: ***atp-eao@nist.gov***
- By phone: **301-975-8978, Stephanie Shipp, Director, Economic Assessment Office, Advanced Technology Program**
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Abstract

The Advanced Technology Program (ATP) conducted a survey of all joint ventures that received an ATP award between 1991 and 2001. The survey was conducted to understand the motivations and impacts of joint venture collaborations. The findings show that the most important motivation for participants to form a joint venture was to benefit from the complementary R&D expertise of their partners. In fact, most ATP joint ventures would not have formed without an ATP award. The majority of respondents reported that the joint venture undertook research that represented a new direction for both the company and the industry. ATP-funded joint ventures are more ambitious than other research in their industry and more technically challenging than typical company projects. These joint venture projects have higher technical risk and longer time horizons for realizing revenues or cost savings than typical projects at their companies.

About one-third of all joint venture participants reported that their ATP projects are based on university research with over half of the largest joint venture participants (in terms of number of partners) reporting that their research is based on university research. An ATP award fosters collaboration and trust among joint venture partners, and ensures stability of company funding for the project. The joint venture partners reported that the exchange of technical know-how was critical in achieving research success.

ATP awards funding to companies to undertake high-risk and innovative research that has the potential to create broad-based benefits for the U.S. economy and society. The ATP funds both single applicant companies and joint ventures, which must have at least two for-profit companies, but can also include universities, other companies, and non-profit research organizations. The funding for a joint venture is structured to encourage these collaborations. ATP funds joint ventures for up to five years, with no limit on the funding amount other than the availability of funds. Joint venture participants contribute at least 50 percent of total project costs. In contrast, single applicant companies may receive up to $2 million over three years for direct costs. Large, single applicant companies must share at least 60 percent of total project costs.

Acknowledgements

The genesis for the Advanced Technology Program's (ATP) Joint Venture Survey was a study conducted by Jeffrey Dyer and Benjamin Powell, under contract to ATP. They interviewed companies in 18 automotive ATP joint ventures to research collaborations and to determine what factors contributed to successful joint ventures. Their findings are published in the study, *Determinants of Success in ATP-Funded R&D Joint Ventures: A Preliminary Analysis Based on 18 Automobile Manufacturing Projects,* GCR 00-803, Gaithersburg, MD, December 2001.

Andrew Wang, an economist in the ATP's Economic Assessment Office (EAO), contracted with Jeff Dyer and Westat, a survey research organization, to develop a survey of all ATP joint ventures. Andrew worked with Jennifer O'Brien at Westat, who oversaw the design, coordination, collection, and analysis of data from the *Survey of ATP Joint Ventures*. Stephen Campbell, an economist in EAO, assisted with the work. A forthcoming study using the results from the survey is expected to be published in 2006. The study, *Determinants of Success in ATP-Funded Research Joint Ventures,* is co-authored by Jeffrey H. Dyer, Benjamin C. Powell, Mariko Sakakibara, and Andrew J. Wang.

Jennifer O'Brien wrote the factsheets in this report. Stephanie Shipp, Director, EAO, and Kathleen McTigue, an economist in EAO, reviewed all versions of the factsheets. Brian Belanger, former ATP Deputy Director, and Lorel Wisniewski, current ATP Deputy Director, reviewed the final version of the factsheets.

1

Motivations for Forming an ATP-supported Joint Venture

The Advanced Technology Program (ATP) fosters collaboration among companies, universities, research laboratories, and nonprofit organizations through the co-funding of research joint ventures in all technology areas. The *Survey of ATP Joint Ventures* explores factors that motivate participants in joint ventures to collaborate in high-risk, innovative research projects that lead to broad-based economic benefits.

Survey Questions

Rank the importance of possible motivations for forming a joint venture on a scale ranging from "not at all important" to "extremely important". Motivations include:

a) Pool resources with other firms in order to reduce the cost of R&D or achieve a greater scale of effort

b) Benefit from complementary R&D expertise and capabilities of different firms

c) Gain knowledge and learn from other firms

d) Address a technical problem that is common to the industry

e) Access commercialization capabilities of other firms

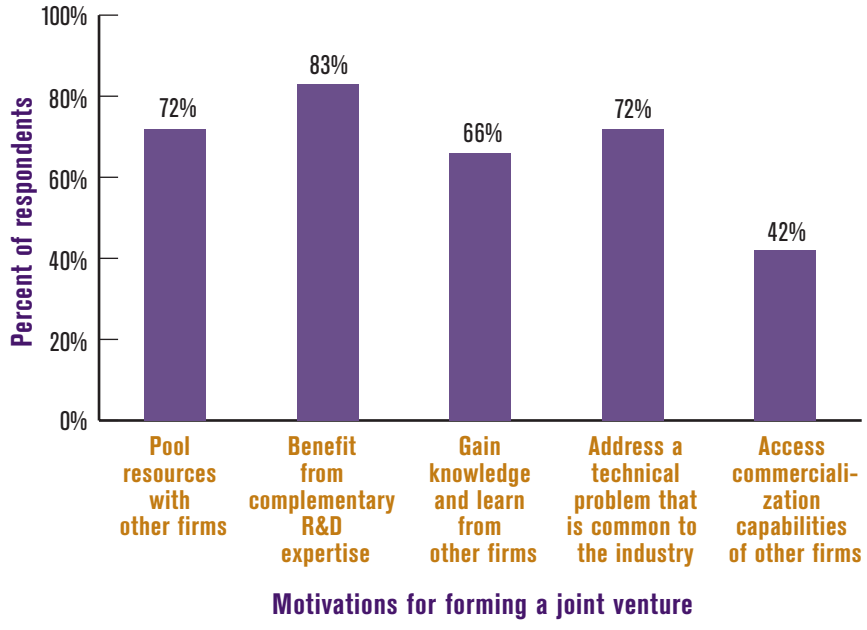
Note: Only statistically significant results are reported in this publication.

Benefiting from complementary R&D expertise of other firms was the most frequently cited motivation for forming a joint venture (see Figure 1.1).[1]

- More than four out of five respondents said that benefiting from complementary R&D expertise and the capabilities of different firms was an important reason to partner with other companies to implement the ATP-funded project.[2]
- Nearly three-quarters of the respondents indicated that pooling resources with other firms and addressing a technical problem in their industries were important reasons in their company's decision to partner with other firms.
- Two-thirds of the respondents reported that their motivation for joining the joint venture was to gain knowledge and learn from other firms.
- Almost three-quarters of the respondents reported that addressing a technical problem that is common to the industry was an important reason to form a joint venture.
- Two out of five respondents reported that forming a joint venture to access commercialization capabilities of other firms was an important reason to form a joint venture.

Figure 1.1

Percent of companies that reported that these motivations for forming a joint venture were important



[1] Please note that, unless otherwise specified, all analyses presented in this publication include only responses from for-profit companies.

[2] We have combined the response categories "extremely important" and "very important" for ease of reporting.

Motivations for forming a joint venture vary by joint venture size (see Table 1.1).

- Respondents in joint ventures with 2 partners were more likely than respondents in larger joint ventures to view the benefits of complementary expertise as an important reason in their decision to form a joint venture.
- Respondents in joint ventures with 6 to 10 partners were more likely than respondents in joint ventures with 11 or more partners to view the need to pool resources with other firms as important in their decision to form a joint venture.
- Respondents in joint ventures with 11 or more partners were more likely than respondents in joint ventures with 5 or fewer partners to view the opportunity to gain knowledge and learn from other firms as an important reason for forming a joint venture.
- Respondents in joint ventures with 6 to 10 partners were more likely than respondents in joint ventures with 2 partners to view the opportunity to address a technological problem that is common to the industry as an important reason for forming a joint venture.

Table 1.1

Important motivations for forming a joint venture, by number of joint venture partners

Number of joint venture partners	Pool resources with other firms	Benefit from complementary R&D expertise	Gain knowledge and learn from other firms	Address a technological problem that is common to the industry	Access commercialization capabilities of other firms
2 partners	67%	93%	59 %	61%	48%
3 to 5 partners	74%	81%	58%	71%	44%
6 to 10 partners	79%	82%	72%	78%	43%
11+ partners	61%	73%	77%	77%	30%

Motivations for forming a joint venture do not differ by respondent's ATP technology area (see Table 1.2).

- Respondents in different ATP technology areas did not differ significantly in their stated motivations for forming a joint venture.
- One exception was that respondents representing projects in Manufacturing were more likely than those in Electronics & Photonics projects to indicate that gaining knowledge and learning from other firms was an important reason for forming a joint venture.

Table 1.2

Important motivations for forming a joint venture, by project technology area

Technology Area	Pool resources with other firms	Benefit from complementary R&D expertise	Gain knowledge and learn from other firms	Address a technological problem that is common to the industry	Access commercialization capabilities of other firms
Chemistry & Materials	74%	88%	68%	71%	44%
Biotechnology	59%	89%	52%	56%	41%
Electronics & Photonics	73%	83%	59%	72%	49%
Information Technology	74%	82%	60%	76%	32%
Manufacturing	71%	77%	75%	74%	38%

2

ATP Support Encourages Joint Venture Formation, Ensures the Stability of Company Funding, and Fosters Trust among Joint Venture Partners

The Advanced Technology Program (ATP) funds high-risk, innovative research projects to accelerate the development of technology that will create broad-based economic and social benefits. By supporting collaboration among researchers in companies, universities, and nonprofit organizations, ATP makes possible the creation of research joint ventures that might not otherwise form. Once the joint venture has formed, important components of project success include each company's initial and continued financial support for the project and trust and cooperation among the joint venture partners. The *Survey of ATP Joint Ventures* explores the influence of ATP on the creation of joint ventures, the importance of ATP support for ensuring the stability of company funding and commitment to the project, and the importance of ATP involvement in helping to foster trust and cooperation among the joint venture partners.

Survey Questions

How likely is it that the joint venture would have formed without resources from ATP?

How important is ATP support for ensuring stability of company funding and commitment to the project?

How important is ATP involvement in helping to foster trust and cooperation among joint venture partners?

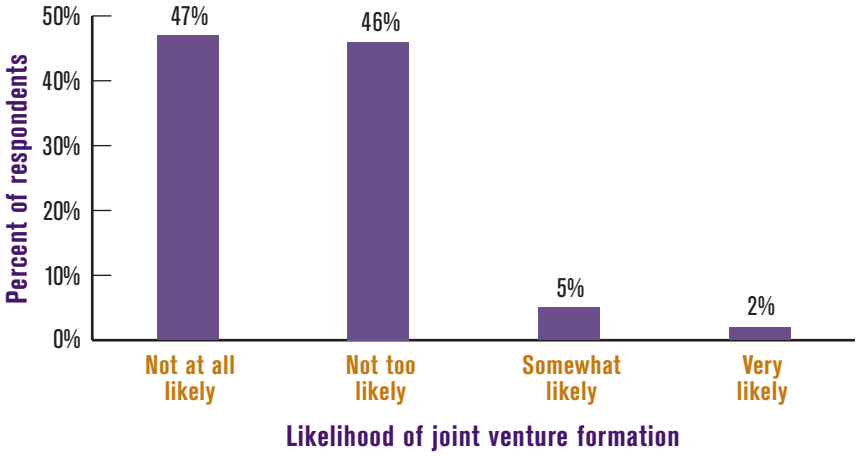
Note: Only statistically significant results are reported in this publication.

ATP influences support for joint venture formation.

- More than nine in ten respondents indicated that without ATP resources, it is not likely that the joint venture would have formed (see Figure 2.1).

Figure 2.1

Likelihood that the joint venture would have formed without support from ATP



Most respondents from different size companies said it was unlikely the joint venture would have formed without ATP support.

- Respondents from different size companies expressed little difference in their perceptions of the likelihood of joint venture formation without ATP support (see Table 2.1).

Table 2.1

Percent of respondents indicating that without ATP support, the joint venture likely would not have formed, by company size[1]

Company Size	Percent of respondents who indicated that without ATP support, the joint venture likely would not have formed
Small	95%
Medium	93%
Large	90%

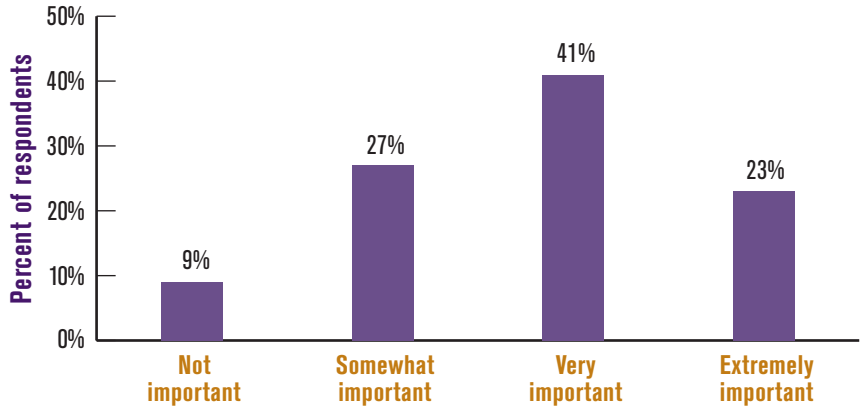
[1] For ATP, small companies have fewer than 500 employees, large companies are Fortune 500 companies, and medium size companies are all others.

ATP involvement is important in helping to foster trust and cooperation among joint venture partners.

- More than six in ten respondents indicated that ATP involvement is very/extremely important in helping foster trust and cooperation among joint venture partners (see Figure 2.2).

Figure 2.2

Importance of ATP involvement in fostering trust and cooperation among joint venture partners



Across joint ventures of varying sizes, respondents consistently reported that ATP involvement was important in helping to foster trust and cooperation among joint venture partners (see Table 2.2).

- Respondents representing joint ventures of different sizes did not differ in their perceptions of the importance of ATP involvement in fostering trust and cooperation among joint venture partners.

Table 2.2

Percent of respondents who indicated that ATP involvement fosters trust and cooperation among joint venture partners, by number of joint venture partners

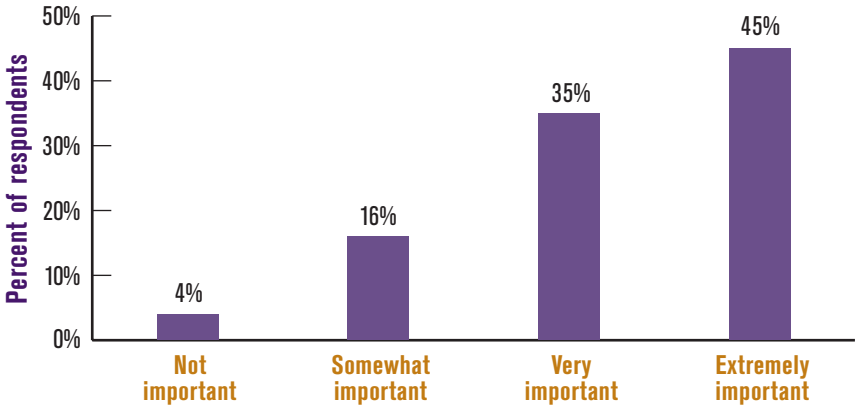
Number of joint venture partners	Percent of respondents who indicated that ATP involvement is important for fostering trust and cooperation among joint venture partners
2 partners	63%
3 to 5 partners	60%
6 to 10 partners	72%
11+ partners	61%

ATP involvement is important in ensuring stability of company funding and commitment.

- Eight in ten respondents indicated that ATP support is very/extremely important to ensuring stability of company funding and commitment to the project (see Figure 2.3).

Figure 2.3

Importance of ATP support for ensuring stability of company funding and commitment to the Joint Venture project



Respondents representing joint venture projects with two partners were more likely to view ATP support as important for ensuring stability in company funding and commitment to the joint venture project[2] (see Table 2.3).

- Respondents representing joint ventures consisting of 2 partners were more likely than those representing joint venture projects with 3 to 5 partners and those representing joint ventures with 11 or more partners to view ATP support as important for ensuring stability of company funding and commitment to the project.
- Regardless of the size of the joint venture teams, at least seven in ten of the respondents indicated that ATP support was important for ensuring the stability of company funding and commitment to the joint venture project.

Table 2.3

Percent of respondents who indicated that ATP support is important for ensuring stability of company funding and commitment to the joint venture project, by number of joint venture partners

Number of joint venture partners	Percent of respondents who indicated that ATP support is important for ensuring stability of company funding and commitment to the joint venture project
2 partners	89%
3 to 5 partners	76%
6 to 10 partners	84%
11+ partners	70%

[2] We have combined the response categories "extremely important" and "very important" for ease of reporting.

3

ATP-supported Joint Venture Projects Represent New R&D Directions for Companies and Industries

The Advanced Technology Program (ATP) funds high-risk, innovative research projects that will foster new R&D directions for companies as well as industries. The *Survey of ATP Joint Ventures* explores the extent to which respondents perceive their joint venture projects as representing new R&D directions for their companies and their industries.

Survey Questions

To what extent would you say your Joint Venture project represented a new R&D direction for your company?

To what extent would you say your Joint Venture project represented a new R&D direction for your industry or technology field?

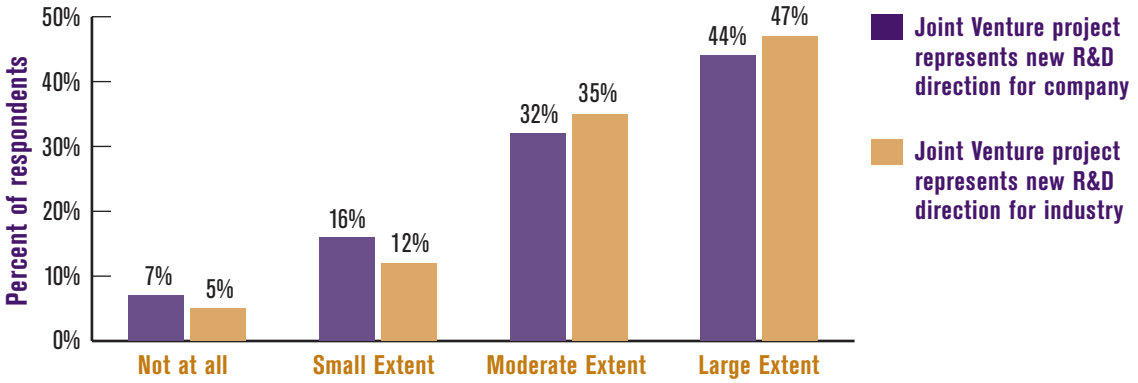
Note: Only statistically significant results are reported in this publication.

The majority of respondents reported that the joint venture project represented a new direction for their company and industry.

- More than three-quarters of respondents indicated that their ATP joint venture project represents a new R&D direction for both their company and respective industries to a moderate or large extent (see Figure 3.1).

Figure 3.1

Percent of respondents who indicated that the joint venture project represents a new R&D direction for their company and industry



The smallest joint ventures were more likely than the largest joint ventures to report that their projects represented a new R&D direction for both their companies and their industries[1] (see Table 3.1).

- Respondents representing joint ventures with 2 partners were more likely than those representing joint ventures with 11 or more partners to view their projects as a new R&D direction for their companies.
- Respondents representing joint ventures with 2 partners were more likely than those representing joint ventures with 11 or more partners to view their projects as a new R&D direction for their companies.

[1] We have combined the response categories "to a moderate extent" and "to a large extent" for ease of reporting.

Table 3.1

Percent of respondents who indicated that their ATP-funded projects represented a new R&D direction for their companies and industries

Number of joint venture partners	Percent of respondents who indicated that their joint venture projects represent a new R&D direction for their companies to a moderate or large extent	Percent of respondents who indicated that their joint venture projects represent a new R&D direction for their industries to a moderate or large extent
2 partners	84%	84%
3 to 5 partners	75%	86%
6 to 10 partners	78%	87%
11+ partners	67%	70%

Respondents across ATP technology areas reported that their projects represented a new R&D direction (see Table 3.2).

- Regardless of technology area, the majority of respondents viewed their ATP-funded projects as representing a new R&D direction for their companies.
- Respondents representing projects in Chemistry and Materials were more likely than those in Manufacturing to regard their projects as a new R&D direction for their industries.

Table 3.2

Percent of respondents who indicated that their ATP-funded joint ventures represent new R&D directions for their companies and industries

Technology area	Percent of respondents who indicated that their joint venture projects represent a new R&D direction for their companies to a moderate or large extent	Percent of respondents who indicated that their joint venture projects represent a new R&D direction for their industries to a moderate or large extent
Chemistry & Materials	82%	89%
Biotechnology	82%	85%
Electronics & Photonics	76%	86%
Information Technology	78%	79%
Manufacturing	71%	76%

4

ATP-supported Joint Venture Projects Stimulate New Ideas for Research at the Company and Boost Other R&D Projects

By supporting innovative research, ATP creates an opportunity for companies to build on and enhance other R&D projects at the company. Another potential benefit of ATP-funded joint venture projects is the possibility of stimulating new ideas for products, processes, or future research at the company. The *Survey of ATP Joint Ventures* explores these potential benefits of participation in an ATP-funded joint venture.

Survey Questions

To what extent would you say your joint venture project built on previous R&D work at your company?

To what extent would you say your joint venture project enhanced the value of previous R&D work by your company?

To what extent would you say your joint venture project stimulated new ideas for products, processes, or future research at your company?

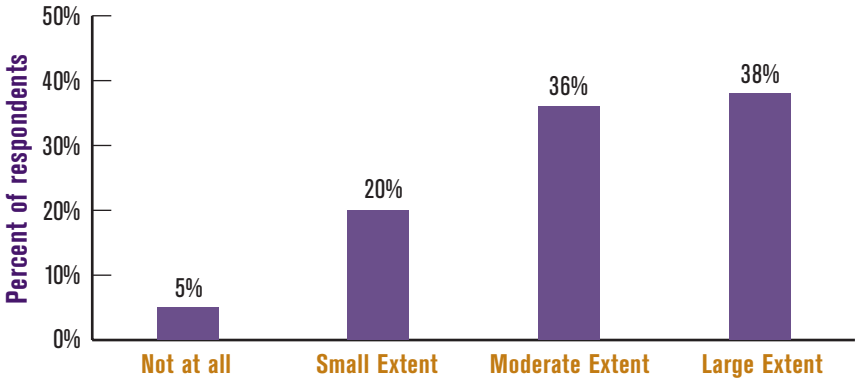
Note: Only statistically significant results are reported in this publication.

ATP-funded joint venture projects build on previous R&D work at the company.

- Nearly three quarters of respondents indicated that their joint venture projects built on previous R&D work at the company to a moderate or large extent (see Figure 4.1[1]).

Figure 4.1

Extent to which the joint venture project built on previous R&D work at the company



Respondents across different ATP technology areas expressed divergent views on whether the ATP-funded joint venture project built on previous R&D work at the company.

- Respondents representing Biotechnology projects were more likely than those representing Information Technology projects and Manufacturing projects to state that their joint venture projects built on previous R&D work at the company (see Table 4.1).
- Similarly, respondents representing Electronics and Photonics projects were more likely than those representing Information Technology projects and Manufacturing projects to state that their joint venture projects built on previous R&D work at the company (see Table 4.1).

Table 4.1

Percent of respondents who indicated that their ATP-funded joint venture projects built on previous R&D work at the company, by technology area

Technology area	Percent of respondents who indicated that their joint venture projects built on previous R&D work at the company
Chemistry & Materials	78%
Biotechnology	93%
Electronics & Photonics	82%
Information Technology	63%
Manufacturing	65%

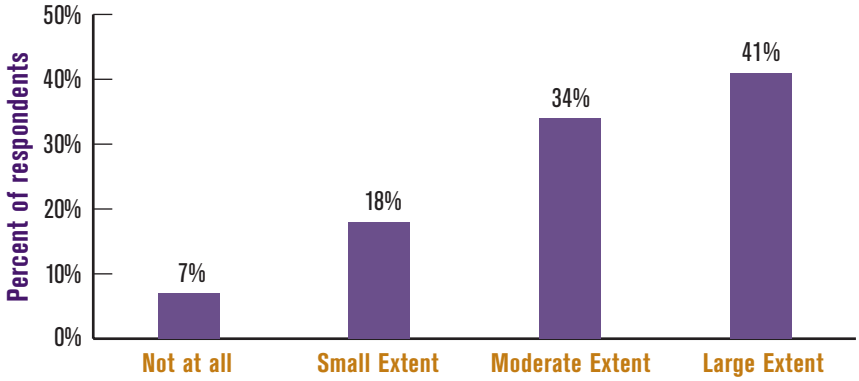
[1] Values do not add up to 100% due to 1% of respondents selecting the "not applicable" response option.

ATP-funded joint venture projects enhance the value of previous R&D work at the company.

- Three quarters of respondents indicated that their joint venture projects enhanced the value of previous R&D work by the company (see Figure 4.2).

Figure 4.2

Extent to which the joint venture project enhanced the value of previous R&D work at the company



Respondents across different ATP technology areas expressed divergent views on whether the ATP-funded joint venture project enhanced the value of previous R&D work at the company.

- Respondents representing projects in Chemistry & Materials, Biotechnology, and Electronics & Photonics were more likely than those representing Manufacturing projects to state that their joint venture projects enhanced the value of previous R&D work at the company to a moderate or large extent (see Table 4.2).
- Respondents representing Biotechnology projects were also more likely than those representing Information Technology projects to state that their joint venture projects enhanced the value of previous R&D work at the company to a moderate or large extent (see Table 4.2).

Table 4.2

Percent of respondents who indicated that their ATP-funded joint venture projects enhanced the value of previous R&D work at the company, by technology area

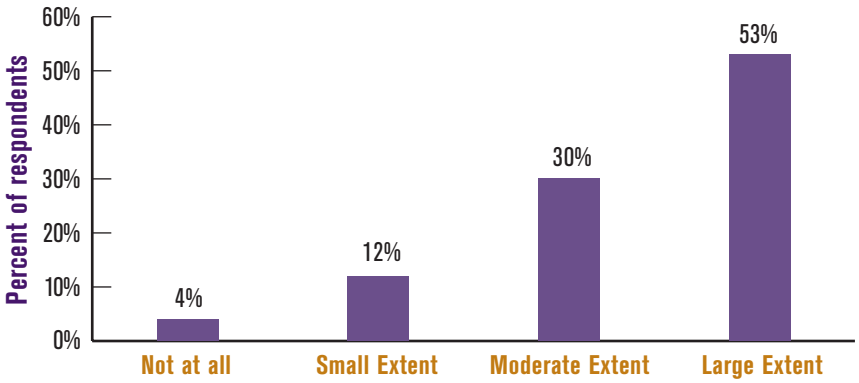
Technology area	Percent of respondents who indicated that their joint venture projects enhanced the value of previous R&D work at the company
Chemistry & Materials	80%
Biotechnology	89%
Electronics & Photonics	81%
Information Technology	63%
Manufacturing	66%

ATP-funded joint venture projects stimulate new ideas for products, processes, or future research

- More than eight in ten respondents indicated that their joint venture projects stimulated new ideas for products, processes, or future research at their companies to a moderate or large extent (see Figure 4.3[2]).

Figure 4.3

Extent to which the joint venture project stimulated new ideas for products, processes or future research at the company



[2] Values do not add up to 100% due to 0.5% of respondents selecting the "not applicable" response option.

Respondents representing Electronics & Photonics projects were more likely than those in other ATP technology areas to state that their ATP projects stimulated new ideas for products, processes or future research at the company to a moderate or large extent.

- Respondents representing projects in Electronics & Photonics were more likely than those representing Chemistry & Materials projects, Biotechnology projects, and Manufacturing projects to state that their joint venture projects stimulated new ideas for products, processes, or future research at the company to a moderate or large extent (see Table 4.3).

Table 4.3

Percent of respondents who indicated that their ATP-funded joint venture projects stimulated new ideas for products, processes, or future research at the company, by technology area

Technology area	Percent of respondents who indicated that their joint venture projects stimulated new ideas for products, processes, or future research at the company
Chemistry & Materials	82%
Biotechnology	78%
Electronics & Photonics	93%
Information Technology	82%
Manufacturing	78%

5

ATP-supported Joint Venture Projects are Connected to University Researchers and Their Work

ATP-funded joint ventures create an opportunity for companies to make use of research originating from universities and/or pursue research that relies on technology licensed from universities. Furthermore, the unique nature of joint venture projects also provides an opportunity for significant interaction between private sector researchers and university researchers. The *Survey of ATP Joint Ventures* explores the degree to which ATP-funded joint venture projects are related to university research, rely on university research, and involve university researchers.

Survey Questions

To what extent was your joint venture project based on university research?

To what extent did your joint venture project depend on technology licensed from universities?

How much interaction did your joint venture team have with researchers based at universities or other research organizations during the course of the joint venture project?[1]

Note: Only statistically significant results are reported in this publication.

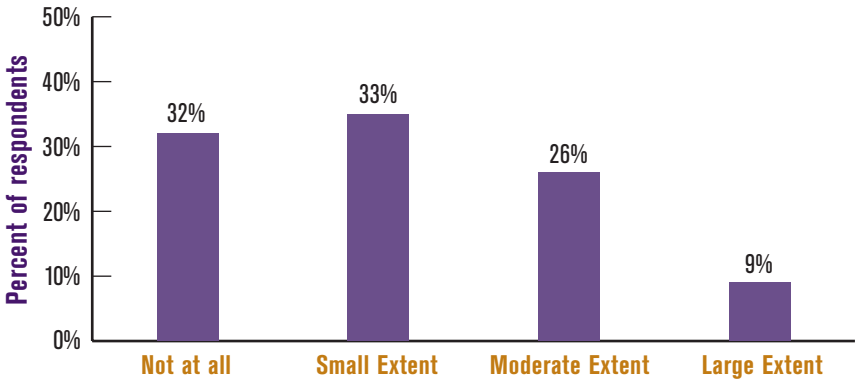
[1] Respondents were instructed to include interactions with other members of their joint venture as well as others outside the joint venture when responding to this item.

More than half of ATP-funded joint venture projects are based to some degree on university research.

- More than a third of respondents indicated that their joint venture projects were based on university research to a moderate or large extent (See Figure 5.1).

Figure 5.1

Extent to which the joint venture project was based on university research



The largest joint ventures were more likely than the smallest joint ventures to report that their projects were based on university research.[2]

- Respondents representing joint ventures with 11 or more partners were more likely than those representing joint ventures with 2 partners to state that their ATP-funded projects were based on university research to a moderate or large extent (see Table 5.1).

Table 5.1

Percent of respondents who indicated that their ATP-funded projects were based on university research, by number of joint venture partners

Number of joint venture partners	Percent of respondents who indicated that their joint venture projects were based on university research to a moderate or large extent
2 partners	18%
3 to 5 partners	30%
6 to 10 partners	44%
11+ partners	51%

[2] We have combined the response categories "to a moderate extent" and "to a large extent" for ease of reporting.

Respondents across different ATP technology areas differed in the extent to which their ATP-funded joint venture projects were based on university research.

- Respondents representing Manufacturing projects were more likely than those representing Electronics & Photonics projects and Chemistry & Materials projects to state that their joint venture projects were based on university research to a moderate or large extent (see Table 5.2).

Table 5.2

Percent of respondents who indicated that their ATP-funded joint venture projects were based on university research, by technology area

Technology area	Percent of respondents who indicated that their joint venture projects were based on university research to a moderate or large extent
Chemistry & Materials	22%
Biotechnology	41%
Electronics & Photonics	28%
Information Technology	32%
Manufacturing	52%

Few ATP-funded joint venture projects depend on technology licensed from universities.

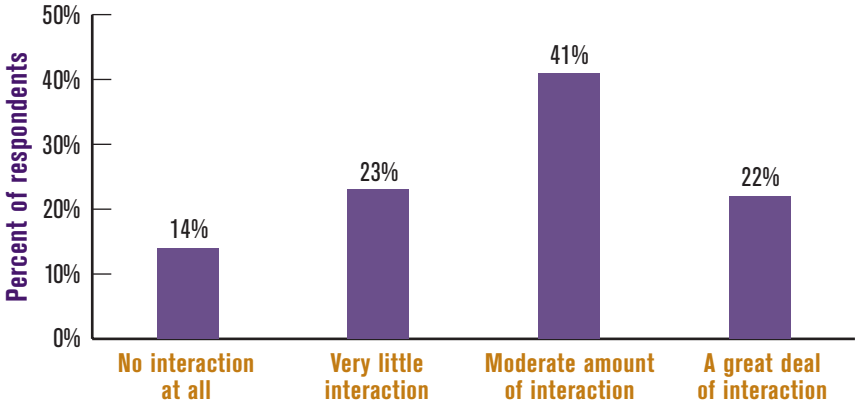
- One in 10 respondents indicated that their joint venture projects depended on technology licensed from universities.

ATP-funded joint venture projects foster interaction between private sector researchers and university researchers.

- More than six in ten respondents indicated a moderate or greater degree of interaction between their joint venture team members and researchers based at universities (or other research organizations) (see Figure 5.2).

Figure 5.2

Degree of interaction between the members of the joint venture team and researchers based at universities



The larger joint ventures were more likely than the smallest joint ventures to report moderate or greater degrees of interaction with researchers based at universities or other research organizations during the course of the joint venture project.[3]

- Respondents representing joint ventures with 6 or more partners were more likely than those representing joint ventures with 2 partners to state that their ATP-funded projects involved a moderate or high degree of interaction with researchers at universities or other research organizations during the course of the joint venture project (see Table 5.3).

[3] We have combined the response categories "a moderate amount of interaction" and "a great deal of interaction" for ease of reporting.

Table 5.3

Percent of respondents who indicated moderate or greater degrees of interaction with researchers based at universities or other research organizations during the course of the joint venture project, by number of joint venture partners

Number of joint venture partners	Percent of respondents who indicated moderate or greater degrees of interaction with researchers based at universities or other research organizations during the course of the joint venture project
2 partners	52%
3 to 5 partners	59%
6 to 10 partners	79%
11+ partners	72%

Respondents across different ATP technology areas differed in the degree of interaction with researchers based at universities or other research organizations during the course of the joint venture project.

- Respondents representing Manufacturing projects were more likely than those representing Chemistry & Materials projects to state that there were moderate or greater degrees of interaction with researchers based at universities or other research organizations during the course of the joint venture project (see Table 5.4).

Table 5.4

Percent of respondents who indicated moderate or greater degrees of interaction with researchers based at universities or other research organizations during the course of the joint venture project, by technology area

Technology area	Percent of respondents who indicated moderate or greater degrees of interaction with researchers based at universities or other research organizations during the course of the joint venture project
Chemistry & Materials	53%
Biotechnology	74%
Electronics & Photonics	61%
Information Technology	63%
Manufacturing	71%

6

ATP-supported Joint Venture Projects Are More Ambitious than Other Industry R&D Initiatives and Technically More Difficult than Typical Company R&D Projects

For a proposed ATP project to receive funding, it must demonstrate a high degree of innovation and technical risk. The *Survey of ATP Joint Ventures* explores the degree to which ATP-funded joint venture projects are more ambitious relative to other R&D initiatives in the industry and more technically difficult relative to typical R&D projects at the company.

Survey Questions

Relative to other R&D initiatives in your industry, how ambitious would you say were the goals identified for the joint venture project overall?

Consider the technical difficulty of your company's part in the joint venture project, how does this project compare to a typical R&D project at your company?

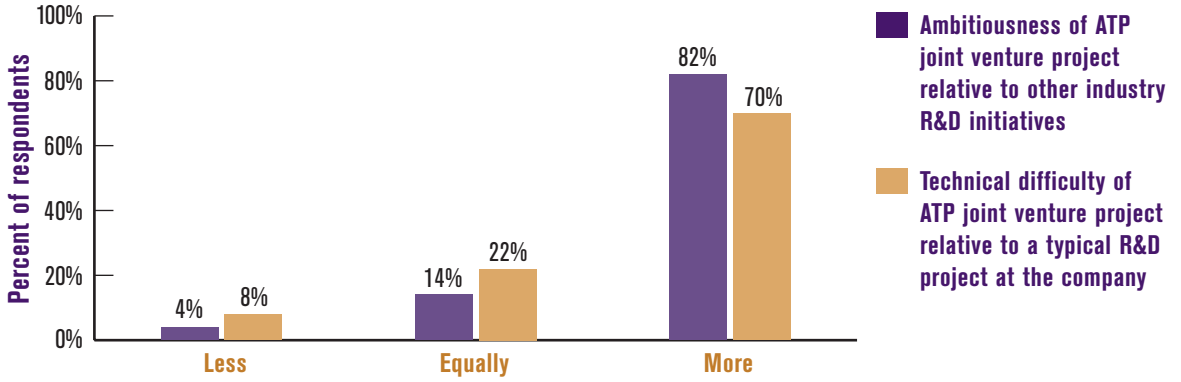
Note: Only statistically significant results are reported in this publication.

ATP-funded joint venture projects are more ambitious than other industry R&D initiatives and more technically difficult than typical company projects (see Figure 6.1).

- More than eight in ten respondents stated that their ATP joint venture projects were more ambitious relative to other R&D initiatives in their industry.
- Seven in ten respondents stated that their ATP joint venture projects were more technically difficult relative to other R&D projects in their company.

Figure 6.1

Comparison of the amibitiousness of the ATP-funded project relative to other industry R&D initiatives and comparison of technical difficulty of ATP-funded project relative to a typical R&D project at the company



Smaller joint ventures were more likely than larger joint ventures to report that their projects were more ambitious than other R&D initiatives in their industry.

- Respondents representing joint ventures with 2 partners as well as those representing joint ventures with 6 to 10 partners were more likely than those representing joint ventures with 11 or more to view their ATP-funded projects as more ambitious than other R&D initiatives in their industry (see Table 6.1).

Table 6.1

Percent of respondents who indicated that their ATP-funded projects were more ambitious than other R&D projects in their industry

Number of joint venture partners	Percent of respondents who indicated that their joint venture projects were more ambitious than other R&D projects in their industry
2 partners	90%
3 to 5 partners	80%
6 to 10 partners	86%
11+ partners	69%

The majority of small, medium, and large companies reported that their projects were more ambitious than other R&D initiatives in their industry.[1]

- The majority of all groups of respondents representing small, medium, and large companies reported that their ATP-funded projects were more ambitious than other R&D initiatives in their industry, with small companies reporting the lowest percentage (see Table 6.2).

Table 6.2

Percent of respondents who indicated that their ATP-funded projects were more ambitious than other R&D projects in their industry, by company size.

Size of company	Percent of respondents who indicated that their joint venture projects were more ambitious than other R&D projects in their industry
Small Companies	72%
Medium-sized companies	86%
Large companies	88%

Respondents across different ATP technology areas differed in their reports of how ambitious their ATP-funded joint venture projects were relative to other R&D initiatives in their industry.

- Respondents representing Chemistry & Materials projects were more likely than those representing Manufacturing projects to state that their joint venture projects were more ambitious than other R&D initiatives in their industry (see Table 6.3).

Table 6.3

Percent of respondents who indicated that their ATP-funded projects were more ambitious than other R&D projects in their industry, by technology area.

Technology area	Percent of respondents who indicated that their joint venture projects were more ambitious than other R&D projects in their industry
Chemistry & Materials	88%
Biotechnology	89%
Electronics & Photonics	83%
Information Technology	76%
Manufacturing	76%

[1] For ATP, small companies have fewer than 500 employees, large companies are Fortune 500 companies, and medium size companies are all others.

Smaller joint ventures were more likely than larger joint ventures to report that their projects were technically more difficult than typical R&D projects at their company.

- Respondents representing joint ventures with 2 partners were more likely than those representing joint ventures with 3 or more partners to view their ATP-funded projects as more technically difficult than typical R&D projects at their company (see Table 6.4).

Table 6.4

Percent of respondents who indicated that their ATP-funded projects were technically more difficult than typical R&D projects at their company

Number of joint venture partners	Percent of respondents who indicated that their joint venture projects were technically more difficult than typical R&D projects at their company
2 partners	85%
3 to 5 partners	72%
6 to 10 partners	70%
11+ partners	44%

7

ATP-supported Joint Venture Projects Have Greater Technical Risk and Longer Time Horizons Than Typical Company R&D Projects

Projects funded by the Advanced Technology Program (ATP) must demonstrate a high degree of technical risk. Given the risks inherent in these innovative projects, it is also expected that the time horizon to realize results is longer. The *Survey of ATP Joint Ventures* explores the degree to which ATP-funded joint venture projects are more technically risky relative to typical R&D projects at the company and have longer time horizons relative to typical R&D projects at the company.

Survey Questions

Consider technical risk. At the start of the project, what would you say was the approximate probability, from 0% to 100%, that your company could fully achieve the technical goals defined for your part of the ATP joint venture project?

What is the approximate probability, from 0% to 100%, that a typical R&D project at your company could fully achieve its technical goals?

Consider the expected impact of the joint venture project on your company. Approximately how many years after the start of your ATP joint venture project could you expect results to first have an impact on company revenues or costs?

Approximately how many years after the start of a typical R&D project could you expect results to first have an impact on company revenues or costs?

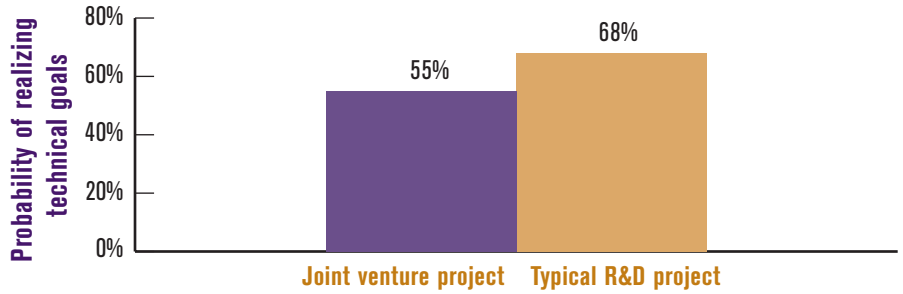
Note: Only statistically significant results are reported in this publication.

ATP-funded joint venture projects have more technical risk than typical R&D projects at the company.

- Respondents to the *Survey of ATP Joint Ventures* estimated the probability of fully achieving the technical goals of the ATP joint venture project at 55% as compared to 68% for typical R&D projects at the company (see Figure 7.1).

Figure 7.1

Mean estimate of the probability that the ATP joint venture project will achieve its technical goals as compared to a typical R&D project at the company



Small companies reported higher probability estimates of the joint venture project's success in fully achieving its technical goals.[1]

- Respondents representing small companies reported higher probability estimates of the joint venture project's success in achieving its technical goals than large companies (see Table 7.1).

Table 7.1

Mean estimate of the probability that the ATP joint venture project will achieve its technical goals, by size of company

Size of company	Mean estimate of the probability that the ATP joint venture project will achieve its technical goals
Small Companies	59%
Medium-sized companies	55%
Large companies	51%

[1] For ATP, small companies have fewer than 500 employees, large companies are Fortune 500 companies, and medium size companies are all others.

Larger joint ventures reported higher probability estimates of the joint venture project's success in fully achieving its technical goals.

- Respondents representing joint ventures with 6 or more partners reported higher probability estimates of the joint venture project's success in fully achieving its technical goals than joint ventures with 2 partners (see Table 7.2).

Table 7.2

Mean estimate of the probability that the ATP joint venture project will achieve its technical goals, by number of joint venture partners

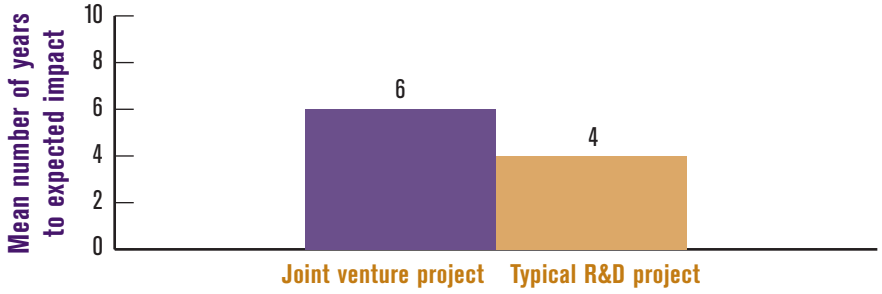
Number of joint venture partners	Mean estimate of the probability that the ATP joint venture project will achieve its technical goals
2 partners	46%
3 to 5 partners	55%
6 to 10 partners	61%
11+ partners	56%

ATP-funded joint venture projects have longer time horizons for realizing revenue and/or cost savings than typical R&D projects at the company.

- On average, the respondents to the *Survey of ATP Joint Ventures* estimated the number of years until the results of the ATP joint venture project could first have an impact on company revenues or costs at 6 years as compared to 4 years for typical R&D projects at the company (see Figure 7.2).

Figure 7.2

Mean number of years to expected impact of the ATP joint venture project on company revenue or costs as compared to a typical R&D project at the company



- Respondents' estimates of the number of years until the results of the ATP joint venture project could first have an impact on company revenues or costs was not influenced by the size of the company, the number of partners in the joint venture, or the ATP technology area of the joint venture project.

8

ATP-supported Joint Venture Projects Successfully Exchange Technical Know-How to Accomplish Project Objectives

A unique aspect of joint venture projects is the potential for exchange of technical know-how between the joint venture partners to achieve the project objectives. The *Survey of ATP Joint Ventures* explores the degree to which ATP-funded joint venture projects successfully exchange technical know-how among the partners.

Survey Questions

To what extent was exchange of technical know-how among JV partners critical to achieving research success in your JV?

Those respondents stating "large," "moderate," or "small extent" to the above question were asked the following question:

How successful were you in exchanging technical know-how with your JV partners to meet the objectives of the project?

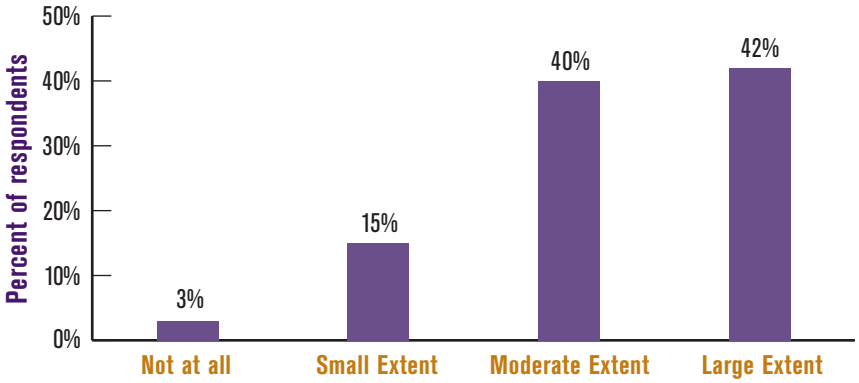
Note: Only statistically significant results are reported in this publication.

The exchange of technical know-how among the joint venture partners is critical to achieving research success (see Figure 8.1).

- More than eight in ten respondents stated that exchange of technical know-how among the joint venture partners was critical to achieving research success in the joint venture.

Figure 8.1

Extent to which exchange of technical know-how among joint venture partners is critical to achieving project success

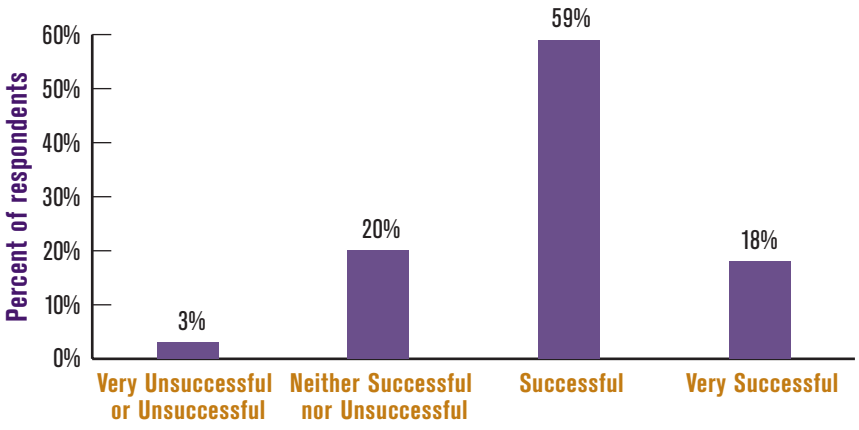


The exchange of technical know-how among joint venture partners was successful in meeting research objectives (see Figure 8.2).

- Of the 97% of respondents who stated that exchange of technical knowledge was critical to project success to a small, moderate, or large extent, nearly eight in ten stated that the exchange of technical know-how among the joint venture partners was conducted successfully or very successfully.

Figure 8.2

Degree of success of exchange of technical know-how among joint venture partners to meet the objectives of the project



The majority of respondents representing small, medium, and large companies reported that the exchange of technical know-how among the joint venture partners was successful or very successful.

- Respondents representing large companies were more likely than those representing small companies to view the exchange of technical know-how among the joint venture partners as successful or very successful (see Table 8.1).

Table 8.1

Percent of respondents who indicated that the exchange of technical knowledge among their joint venture partners was successful or very successful, by company size

Size of company[1]	Percent of respondents who indicated that the exchange of technical knowledge among their joint venture partners was successful or very successful
Small Companies	68%
Medium-sized companies	79%
Large companies	82%

Respondents across different ATP technology areas differed in their reports of the success of the exchange of technical know-how among the joint venture partners.

- Respondents representing Chemistry & Materials projects and Manufacturing projects were more likely than those representing Biotechnology projects to state that the exchange of technical knowledge among their joint venture partners was successful or very successful (see Table 8.2).

Table 8.2

Percent of respondents who indicated that the exchange of technical knowledge among their joint venture partners was successful or very successful, by technology area

Technology area	Percent of respondents who indicated that the exchange of technical knowledge among their joint venture partners was successful or very successful
Chemistry & Materials	83%
Biotechnology	52%
Electronics & Photonics	77%
Information Technology	65%
Manufacturing	79%

[1] For ATP, small companies have fewer than 500 employees, large companies are Fortune 500 companies, and medium size companies are all others.

9

ATP-supported Joint Venture Projects Successfully Coordinate Efforts to Accomplish Project Objectives

The participants in a joint venture project, almost by definition, must coordinate efforts to achieve the project objectives. The *Survey of ATP Joint Ventures* explores the degree to which ATP-funded joint venture projects successfully coordinate efforts among the partners.

Survey Questions

To what extent was work on the joint venture project highly interdependent (i.e., demanded a high degree of coordination among the joint venture partners)?

Respondents stating "large," "moderate," or "small extent" to the above question were asked the following question:

How successful were you in achieving coordination with your joint venture partners to meet the objectives of the project?

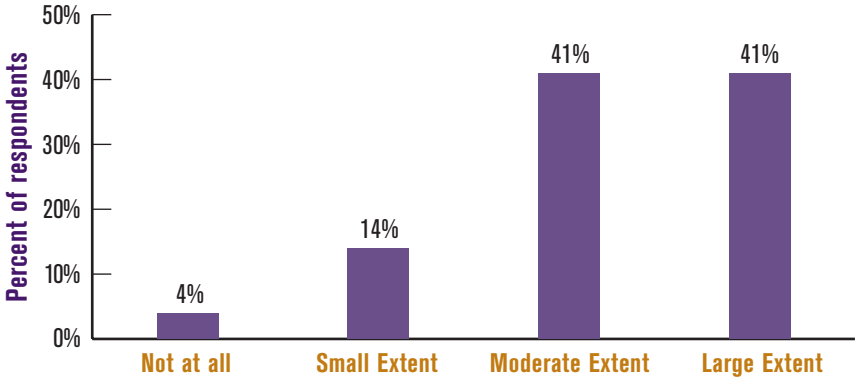
Note: Only statistically significant results are reported in this publication.

Work on ATP-supported joint venture projects is highly interdependent and demands a high degree of coordination among the joint venture partners (see Figure 9.1).

- More than eight in ten respondents stated that work on the ATP-funded joint venture projects is highly interdependent and demands a high degree of coordination among the joint venture partners.

Figure 9.1

Extent to which work on the joint venture project was highly interdependent and demanded a high degree of coordination among the joint venture partners

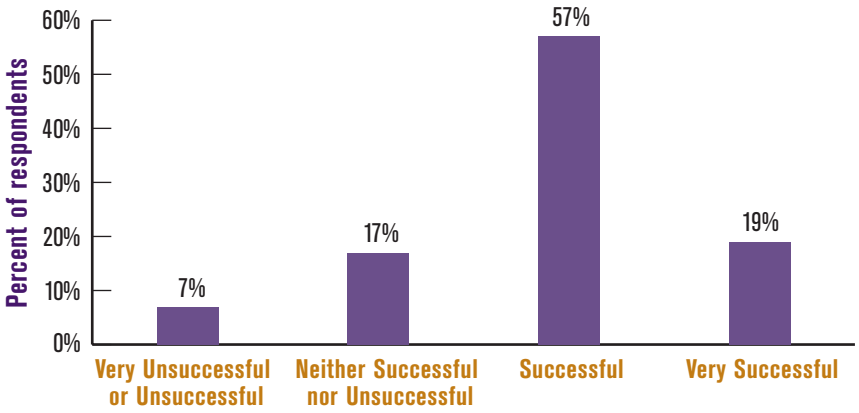


The coordination of efforts among joint venture partners to achieve the project's objectives was conducted successfully (see Figure 9.2).

- Of the 96% of respondents who stated that work on the ATP-supported joint venture project is highly interdependent to a small, moderate, or large extent, more than seven in ten stated that the coordination of efforts among joint venture partners to achieve the project's objectives was conducted successfully or very successfully.

Figure 9.2

Degree of success of coordination of effort among the joint venture partners to meet the objectives of the project



The majority of respondents representing small, medium, and large companies reported that the coordination of efforts to achieve project objectives was successful or very successful.

- Respondents representing large companies and medium-sized companies were more likely than those representing small companies to view the coordination of efforts among joint venture partners to achieve the project's objectives as successful or very successfsul (see Table 9.1).

Table 9.1

Percent of respondents who indicated that the coordination of efforts to achieve project objectives was successful or very successful, by company size

Size of company	Percent of respondents who indicated that the coordination of efforts to achieve project objectives was successful or very successful
Small Companies	67%
Medium-sized companies	82%
Large companies	81%

Respondents across different ATP technology areas differed in their reports of the success of the coordination of efforts among the joint venture partners.

- Respondents representing Electronics & Photonics projects were more likely than those representing Biotechnology projects and Information Technology projects to state that the coordination of efforts among their joint venture partners to achieve project objectives was successful or very successful (see Table 9.2).

Table 9.2

Percent of respondents who indicated that the coordination of efforts to achieve project objectives was successful or very successful, by technology area.

Technology area	Percent of respondents who indicated that the coordination of efforts to achieve project objectives was successful or very successful
Chemistry & Materials	79%
Biotechnology	60%
Electronics & Photonics	83%
Information Technology	61%
Manufacturing	78%

10

The Structure and Governance of ATP-supported Joint Venture Projects

Joint venture projects can be structured and governed in a variety of ways and the balance of power among the members of the joint venture can also vary in significant ways. The *Survey of ATP Joint Ventures* explores the structure of ATP-supported joint venture projects, the formal and informal balance of power among the members of the joint venture, and partners' satisfaction with various aspects of governance in the joint venture.

Survey Questions

Which of the following best characterizes the structure of your joint venture?

- One project leader; other partners have supporting roles
- Some partners are principal participants, other partners have supporting roles
- All partners have equally important roles, there are no supporting roles

In terms of the *formal* agreement among joint venture partners, to what extent did some partners have more power than other partners in areas such as decision-making and rights over the joint venture's output?

In terms of the *informal* agreement among joint venture partners, to what extent did some partners have more power than other partners?

Consider the formal Joint Venture agreement and other governance procedures developed by your ATP joint venture. How satisfied were you with the Joint Venture agreement with regard to:

- Protection of intellectual property or proprietary information contributed by joint venture partners
- Ownership of new intellectual property developed by the joint venture
- Resolution of disputes or disagreements among joint venture partners
- Verification of work task performance among joint venture partners

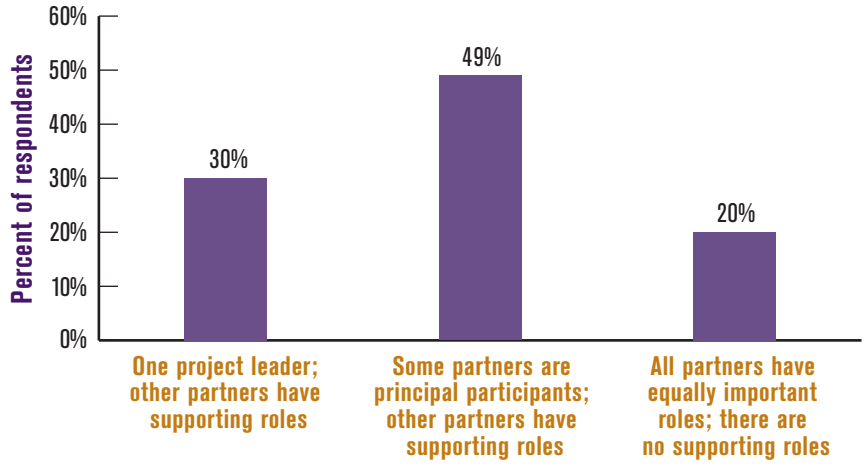
Note: Only statistically significant results are reported in this publication.

Nearly half of the respondents characterized their joint ventures as having principal partners and supporting partners (see Figure 10.1).

- Almost half of the respondents stated that the structure of their ATP-supported joint ventures are best characterized by the statement "Some partners are principal participants, other partners have supporting roles." Relatively few respondents described the partners of their joint venture as having equally important roles.

Figure 10.1

Respondents' characterizations of the structure of their ATP-supported joint venture projects



Larger joint ventures were more likely than smaller joint ventures to describe the structure of their ATP-supported joint ventures as having principal and supporting partners (see Table 10.1).

- Respondents representing joint ventures with 6 or more partners were more likely than those representing joint ventures with 2 partners to describe the structure of their ATP-supported joint ventures as having principal and supporting partners.
- Similarly, respondents representing joint ventures with 6-10 partners were more likely than those representing joint ventures with 3-5 partners to describe the structure of their ATP-supported joint ventures as having principal and supporting partners.

Table 10.1

Percent of respondents who described the structure of their ATP-supported joint ventures as having principal and supporting partners, by joint venture size

Number of joint venture partners	Percent of respondents who described the structure of their ATP-supported joint ventures as having principal and supporting partners
2 partners	30%
3-5 partners	45%
6-10 partners	64%
11+ partners	61%

Respondents across different ATP technology areas differed in their views of the best characterization of the structure of their ATP-supported joint venture projects.

- Respondents representing Manufacturing projects were more likely than projects representing other technology projects to describe the structure of their joint venture projects as having principal and supporting partners (see Table 10.2).

Table 10.2

Percent of respondents who described the structure of their ATP-supported joint ventures as having principal and supporting partners, by technology area

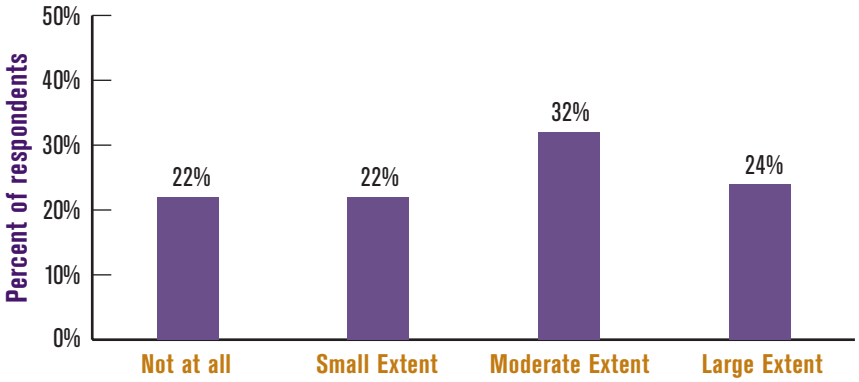
Technology area	Percent of respondents who described the structure of their ATP-supported joint ventures as having principal and supporting partners
Chemistry & Materials	38%
Biotechnology	33%
Electronics & Photonics	46%
Information Technology	42%
Manufacturing	67%

With respect to the formal agreement among the members of the joint venture, most respondents reported that some partners in the ATP-supported joint venture had more power than others in areas such as decision-making and rights over the joint venture's output (see Figure 10.2).

- More than half of the respondents stated that some members of the ATP-supported joint venture had more power than other partners to a moderate or large extent.

Figure 10.2

In terms of the formal agreement among joint venture partners, extent to which some partners had more power than other partners in areas such as decision-making and rights over the joint venture's output



Small companies were more likely to report that some partners in the ATP-supported joint venture had more formal power than others in areas such as decision-making and rights over the joint venture's output.[1]

- Small companies were more likely than large companies to report that, with respect to the formal joint venture agreement, some partners in the ATP-supported joint venture had more power than others in areas such as decision-making and right over the joint venture's output (see Table 10.3).

Table 10.3

Percent of respondents who reported that some members of the ATP-supported joint venture had more formal power than other partners to a moderate or large extent, by company size

Size of company	Percent of respondents who reported that some members of the ATP-supported joint venture had more formal power than other partners to a moderate or large extent
Small Companies	64%
Medium-sized companies	57%
Large companies	49%

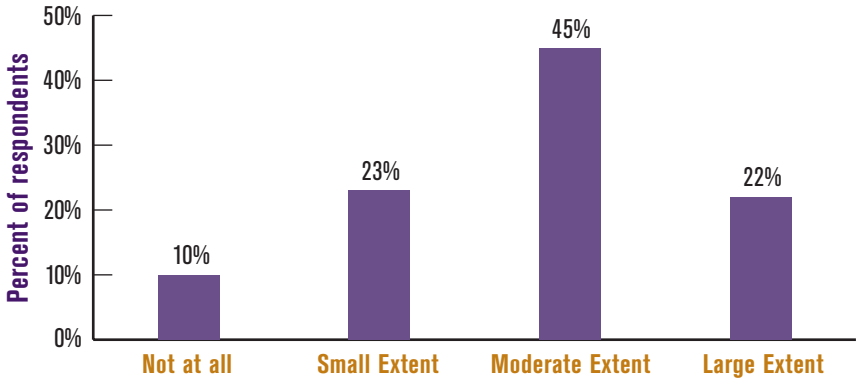
[1] For ATP, small companies have fewer than 500 employees, large companies are Fortune 500 companies, and medium size companies are all others.

With respect to the informal agreement among the members of the joint venture, most respondents reported that some partners in the ATP-supported joint venture had more power than others (see Figure 10.3).

- Two-thirds of the respondents stated that, with respect to the informal agreement among the members of the joint venture, some members of the ATP-supported joint venture had more power than other partners to a moderate or large extent.

Figure 10.3

In terms of the informal agreement among joint venture partners, extent to which some partners had more power than other partners



Respondents representing larger joint venture partnerships were more likely to report that, with regard to informal relations among the joint venture partners, some partners in the ATP-supported joint venture had more informal power than other partners.

- Respondents representing joint venture partnerships with 11 or more partners were more likely than those representing joint venture partnerships with 2 partners to report that some partners in the ATP-supported joint venture had more power than others, with respect to informal relations among the joint venture partners (see Table 10.4).

Table 10.4

Percent of respondents who reported that some members of the ATP-supported joint venture had more informal power than other partners to a moderate or large extent, by number of joint venture partners

Number of joint venture partners	Percent of respondents who reported that some members of the ATP-supported joint venture had more informal power than other partners to a moderate or large extent
2 partners	54%
3-5 partners	69%
6-10 partners	70%
11+ partners	75%

Respondents across different ATP technology areas differed in their views of the informal balance of power among the partners in the joint venture.

- Respondents representing Manufacturing projects were more likely than those representing Electronics & Photonics projects to state that some partners in the ATP-supported joint venture had more power than others, with respect to informal relations among the joint venture partners (see Table 10.5).

Table 10.5

Percent of respondents who reported that some members of the ATP-supported joint venture had more informal power than other partners to a moderate or large extent, by technology area

Technology area	Percent of respondents who reported that some members of the ATP-supported joint venture had more informal power than other partners to a moderate or large extent
Chemistry & Materials	64%
Biotechnology	74%
Electronics & Photonics	58%
Information Technology	66%
Manufacturing	75%

The majority of respondents expressed satisfaction with various areas of governance within their ATP-supported joint ventures

(see Table 10.6).

- When asked to consider various aspects of governance within the ATP-funded partnership, six in ten respondents, or more, indicated that they were either satisfied or very satisfied with these governance areas (see Table 10.6).

Table 10.6

Percent of respondents who reported that that they were satisfied or very satisfied with various aspects of governance within their joint venture partnerships.

Satisfaction with the Joint Venture agreement and governance procedures with regard to:	Percent of respondents who reported that they were satisfied or very satisfied
Protection of intellectual property or proprietary information contributed by JV partners	77%
Ownership of new intellectual property developed by the JV	69%
Resolution of disputes or disagreements among JV partners	60%
Verification of work task performance among JV partners	60%

11

Survey of ATP Joint Ventures: Methodology and Response Rates

Joint ventures have unique characteristics and may differ from single company projects in a number of important ways. Beginning in the Spring of 2003, ATP conducted a survey of all companies and nonprofit organizations that embarked on an ATP-funded joint venture project between 1991 and 2001. The *Survey of ATP Joint Ventures* explores the characteristics of joint ventures and factors leading to project success.

Survey Development

ATP contracted with Westat, a survey services firm, to assist with survey development, implementation, and administration. ATP provided Westat with draft questions that were based partly on prior surveys of ATP-funded companies and partly on research hypotheses of interest to ATP. Two versions of the survey were developed: one for companies and one for nonprofit organizations.[1] Universities and federal laboratories participating in ATP joint ventures were not surveyed.

A small pretest of companies actively participating in ATP-funded projects explored whether items might be interpreted in different ways by different respondents, and whether certain items were especially difficult to accurately comprehend and answer. Respondents were asked to complete a draft copy of the questionnaire prior to the interview. During the interview, respondents were asked a series of specific probes to clarify their interpretation and response to certain questions. No major revisions to the content or form of the survey resulted from the cognitive interviews conducted for the pretest.

Data Collection

The survey used a mixed-mode methodology of web and telephone administration. Although both modes were available, the majority of respondents completed the web version of the survey. Attempts to follow-up with nonrespondents with requests to do a telephone interview typically resulted in the respondent completing the web survey rather than a telephone version of the survey.

All companies and nonprofit organizations that embarked on an ATP-funded joint venture projects between 1991 and 2001, and for whom a respondent could be located, were included in the sample. Initially, 486 companies and 105 organizations were identified as potential members of the survey sample.

Note: Only statistically significant results are reported in this publication.

[1] Given the similarity of the two surveys, they are referred to as a single survey throughout this publication. However, statistical highlights presented in the accompanying factsheets are based on the responses of for-profit companies, except where otherwise specified.

Over the course of the survey fielding, 54 of these companies or organizations were removed from the eligible pool as it became clear that there was no knowledgeable respondent for a particular company due to business closings, staff turnover, or aborted projects. This resulted in a total of 537 eligible respondents representing 142 projects.[2]

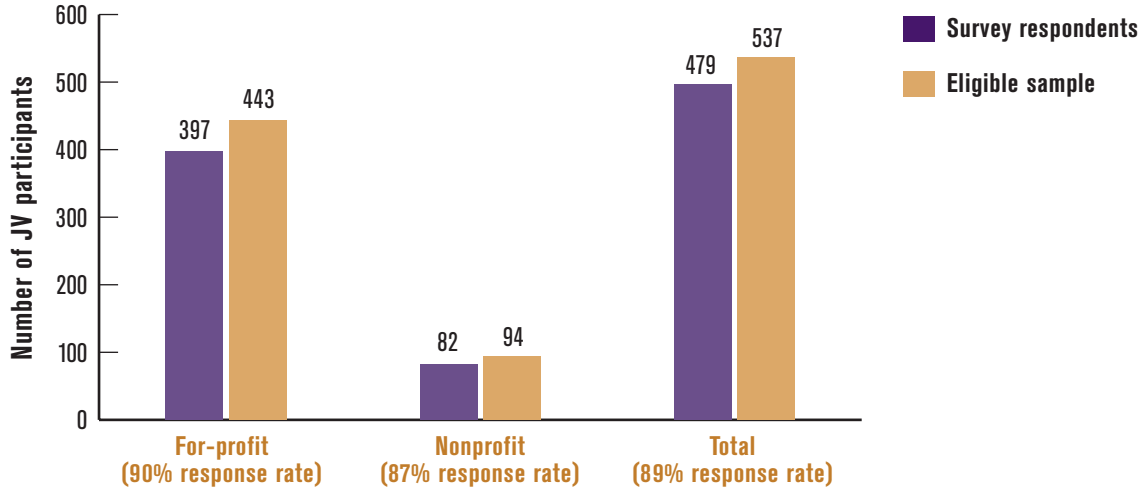
Data collection was carried out from May 1, 2003 through November 15, 2003. Following standard survey procedures, multiple contact attempts were made in order to maximize survey response rates. Advance letters describing the purpose of the survey were mailed to company contact persons associated with each ATP joint venture project. One week later, email letters reiterating the survey's purpose and providing login information were sent to these same contact persons. Three reminder emails were sent to nonrespondents over the course of several weeks. After eight weeks, Westat began contacting nonrespondents by telephone to collect the survey data.

Survey Response Rates

Of the 537 profit and nonprofit companies/organizations eligible to respond, a total of 479 surveys were completed[3], for an overall response rate of 89%. Among 443 eligible for-profit companies, 397 provided responses (including 10 by telephone) yielding a response rate of 90%. These 397 respondents represented all 142 projects funded by ATP during this period. Of the 94 eligible nonprofit organizations, 82 provided responses (including 4 by telephone) yielding a response rate of 87%. The 94 respondents from nonprofit organizations participated in 50 joint venture projects (see Figure 11.1).

Figure 11.1

Comparison of the number of respondents to the *Survey of ATP Joint Ventures* versus the eligible sample (start years 1991-2001)



[2] Organizations may participate in more than one ATP project. For example, a company may be a joint venture lead in one ATP project and a joint venture participant in another ATP project.

[3] It was possible that no eligible member of a particular joint venture would respond to the survey. This possibility, however, did not occur. Thus, of the 537 eligible respondents, the 479 actual respondents still represented 142 joint venture projects.

Response Rate Comparisons

If respondents from companies and organizations that completed the survey differ in some way from those that did not respond, these differences might create biased survey results. To evaluate the possibility of nonresponse bias, response rates were compared by:

- Company size
- Project age
- Technology area
- Amount of project award
- Joint venture size
- Project duration

Statistical testing on the response rate differences in each of the above comparisons revealed few significant differences. This suggests that there is little nonresponse bias in the survey, at least with respect to these characteristics.

Company size

Response rates are similar across companies, regardless of company size.

- Large companies are Fortune 500[4] companies, small companies are those with fewer than 500 employees, and all other companies were placed in the medium category (see Table 11.1).

Table 11.1

Response rates by respondents'company size

Company Size	Response Rate
Small	91%
Medium	87%
Large	90%

[4] For ATP, small companies have fewer than 500 employees, large companies are Fortune 500 companies, and medium size companies are all others.

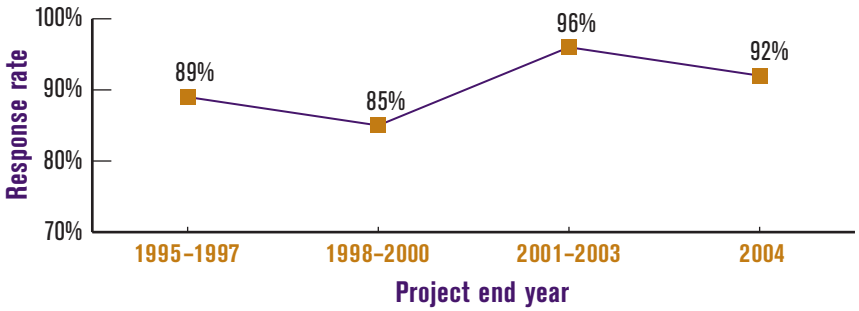
Project age

Company partners on more recently concluded projects were more likely to respond (see Figure 11.2).

- Respondents associated with joint venture projects that ended 4 to 9 years prior to survey administration were less likely to complete the survey than were respondents whose projects ended 1 to 3 years prior to survey administration (89% and 85% vs. 96%, respectively).
- This general pattern, however, did not hold for respondents who represented projects that were due to end in 2004. Respondents in this group were equally likely to respond to the survey as those whose projects ended 1 to 9 years prior to survey administration.

Figure 11.2

Response rates by joint venture project end year



Technology area

Response rates were similar across project technology areas.

- Statistical testing on the differences across technology areas revealed no significant differences, suggesting nonresponse bias does not vary by the project's technology area (see Table 11.2).

Table 11.2

Response rates by joint venture project technology area

Project Technology Area	Response Rate
Chemistry & Materials	89%
Biotechnology	87%
Electronics & Photonics	90%
Information Technology	86%
Manufacturing	90%

Amount of project award

Response rates showed little variation by ATP award size.

- The observed response rates vary by less than 6%, suggesting that the amount of the ATP award had little bearing on a respondent's willingness to complete the survey (see Table 11.3).

Table 11.3

Response rates by amount of ATP award

Amount of ATP Award	Response Rate
$3 million and less	91%
Over $3 million to $5 million	92%
Over $5 million to $8 million	88%
Over $8 million and up	87%

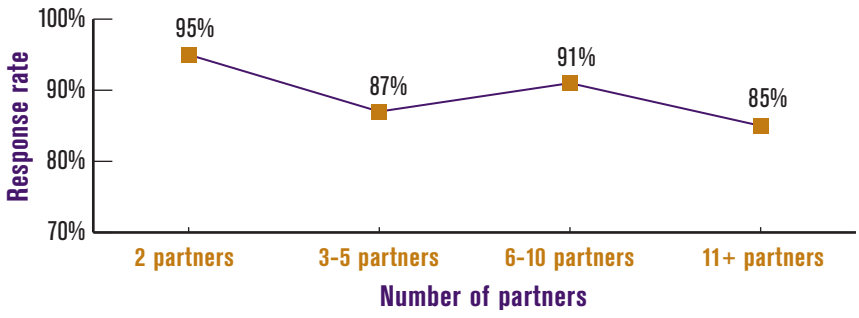
Joint venture size

Company partners in smaller joint ventures were more likely to respond.

- Respondents associated with larger joint venture projects, in general, were less likely to complete the survey than respondents associated with smaller joint venture projects.
- Respondents from joint ventures with 2 partners were significantly more likely to complete the survey than respondents from joint ventures with 3 to 5 partners or with 11 or more partners.
- Statistical testing on the four remaining possible comparisons showed no significant differences (see Figure 11.3).

Figure 11.3

Response rates by number of joint venture partners



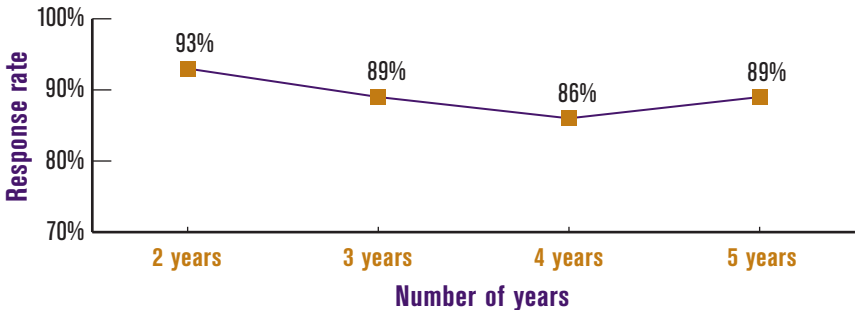
Project duration

Response rates varied little by project duration.

- Statistical testing of the differences in project duration, measured in years, revealed no significant differences, suggesting that respondents were equally willing to complete the survey regardless of project duration (see Figure 11.4).

Figure 11.4

Response rates by joint venture project duration



12

Characteristics of Projects and Companies that Participate in ATP Joint Ventures

Joint ventures funded by the Advanced Technology Program (ATP) differ in size, composition, and focus. ATP funds research joint ventures in all technology areas. As few as two companies may collaborate to form a joint venture, and companies that partner in joint ventures range from tiny start-ups to Fortune 500 corporations. The *Survey of ATP Joint Ventures* explores the characteristics of joint ventures and factors leading to project success. The 397 for-profit companies that responded to this survey represented all 142 ATP-funded joint ventures that began between 1991 and 2001. Whether viewed from a project or company perspective, the survey respondents closely represented the characteristics of all ATP joint ventures.

Note: Only statistically significant results are reported in this publication.

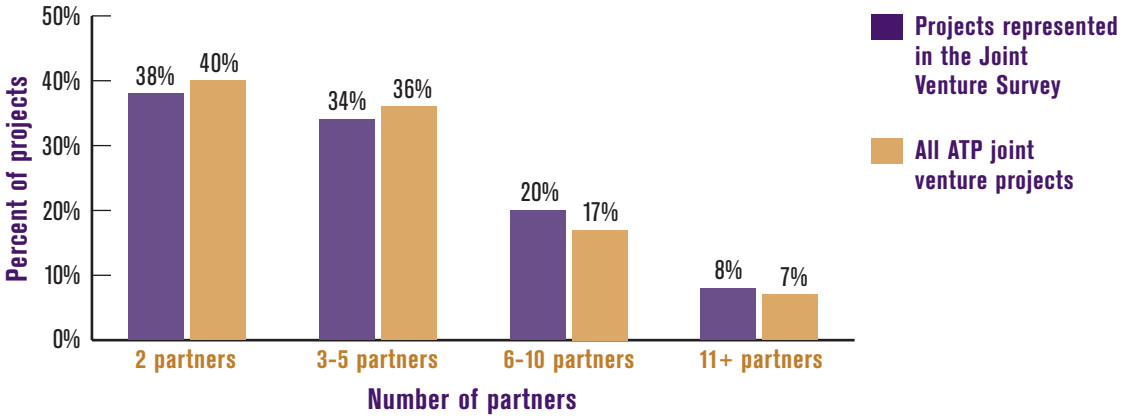
Project Characteristics

Project size: Almost three quarters of the projects represented in the *Survey of ATP Joint Ventures* included between 2 and 5 partners (see Figure 12.1).

- Only 8% of the projects represented in the *Survey of ATP Joint Ventures* included 11 or more partners.
- Universities and nonprofit organizations were included in the overall count of the number of joint venture partners.
- 40% of the projects represented in the *Survey of ATP Joint Ventures* included at least one nonprofit joint venture partner, as compared to 39% for all ATP joint venture projects.

Figure 12.1

Distribution of joint venture projects by number of Joint Venture partners

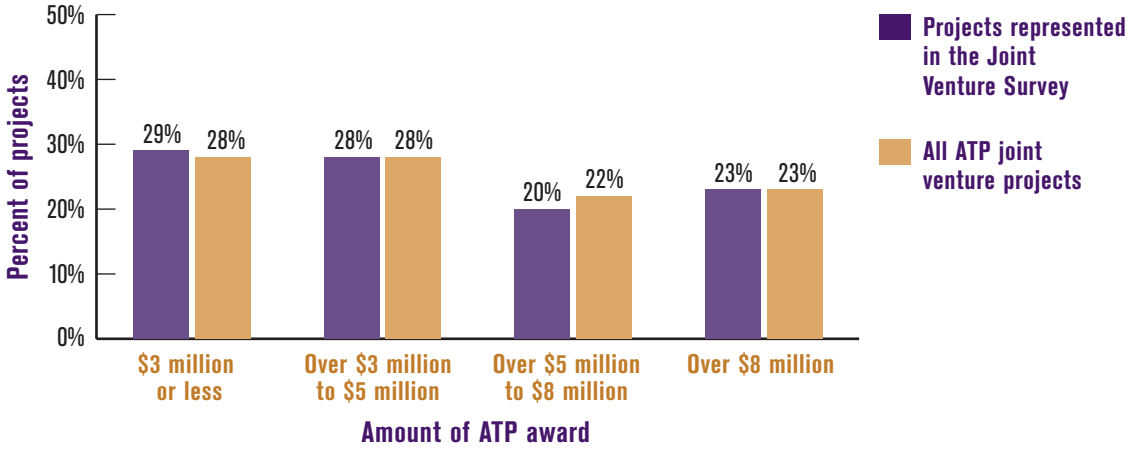


Amount of ATP award: Most Joint Ventures receive $5 million or less (see Figure 12.2).

- Over half of the projects represented in the *Survey of ATP Joint Ventures* received an ATP award of under $5 million.
- The average ATP award for the projects represented in the *Survey of ATP Joint Ventures* was $6.3 million.

Figure 12.2

Distribution of joint venture projects by amount of ATP award



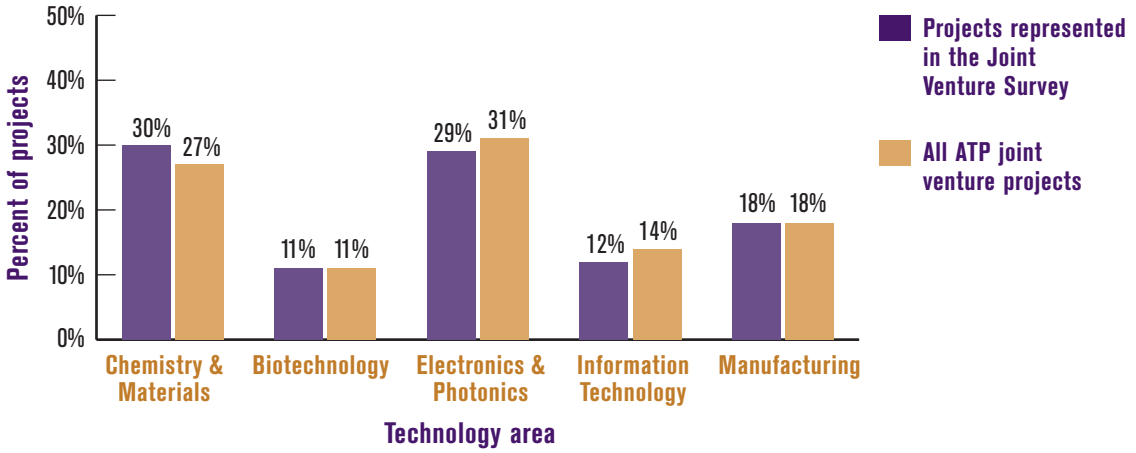
Technology area: Most joint venture projects were either Chemistry & Materials projects or Electronics & Photonics projects

(see Figure 12.3).

- Three in ten of the joint venture projects represented by survey respondents were Chemistry & Materials projects, and another 3 in 10 were Electronics & Photonics projects.
- One in ten joint venture projects was in Biotechnology, and one in eight was in Information Technology.

Figure 12.3

Distribution of joint venture projects across technology areas

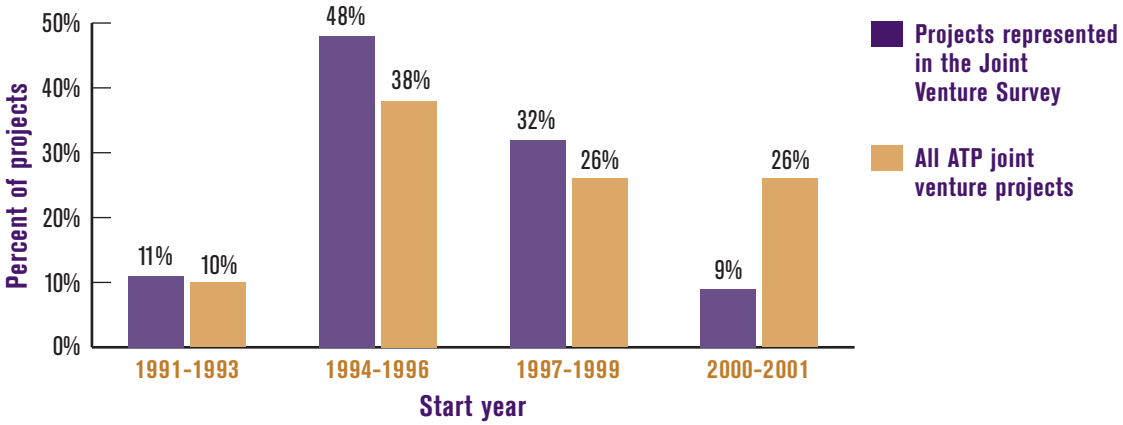


Project age: 80% of projects represented in the *Survey of ATP Joint Ventures* began between 1994 and 1999 (see Figure 12.4).

- Nearly half of the respondents began their joint venture projects between 1994 and 1996.
- Three out of ten of the projects began between 1997 and 1999.

Figure 12.4

Distribution of joint venture projects across start year

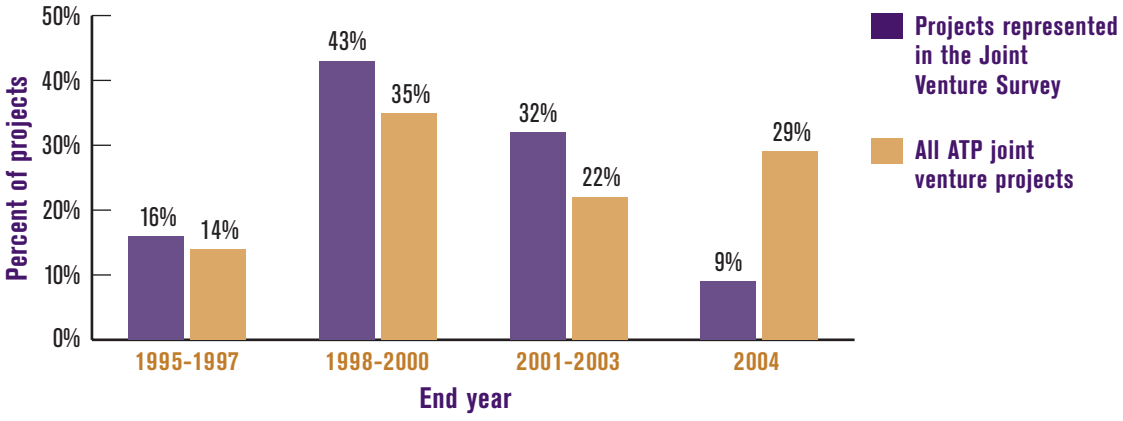


Length of time since the project ended: 75% of the projects represented in the *Survey of ATP Joint Ventures* closed their projects between 1998 and 2003 (see Figure 12.5).

- Three out of four respondents closed their projects between 1998 and 2003.
- One in ten projects was still active, or recently closed, at the time of survey administration.

Figure 12.5

Distribution of joint venture projects by project end year

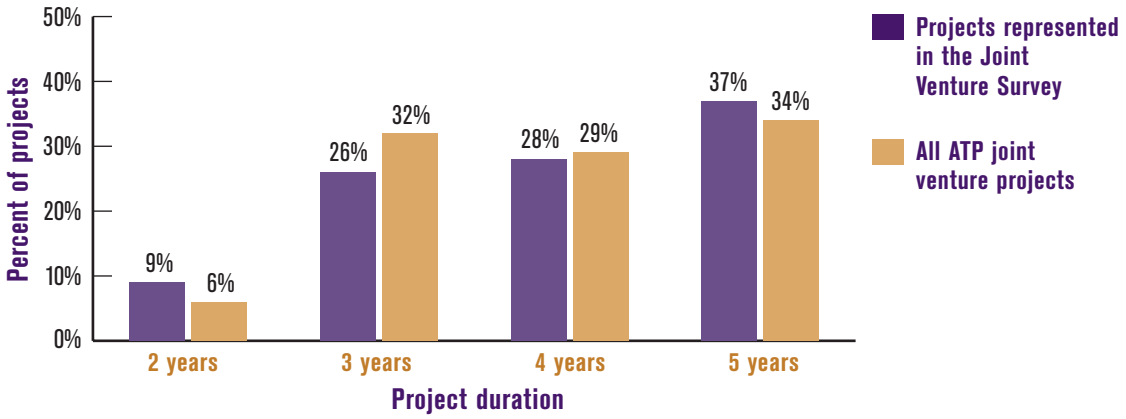


Project duration: The majority of the projects represented by the respondents lasted 4 to 5 years (see Figure 12.6).

- Almost two in three projects represented by the respondents lasted 4 to 5 years.
- More than one in three participated in projects lasting 2 to 3 years.

Figure 12.6

Distribution of joint venture projects by project duration



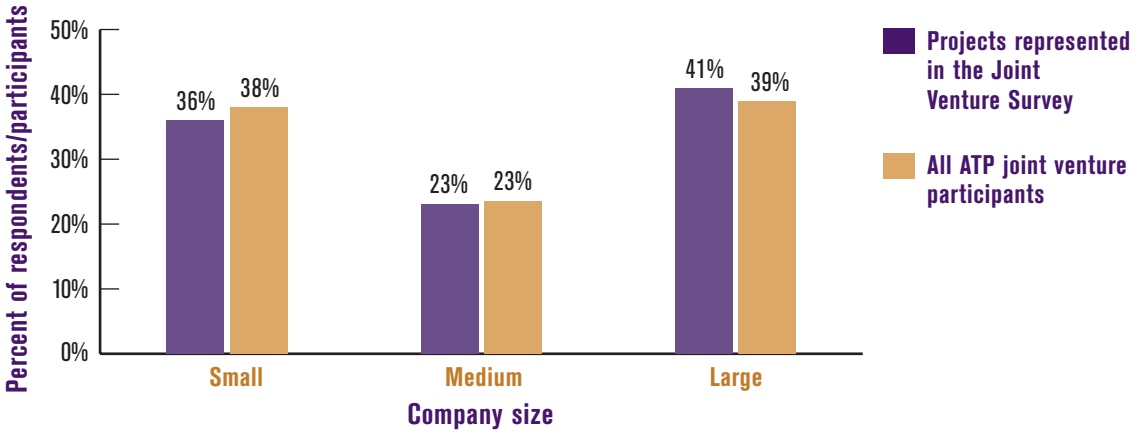
Company Characteristics

Company size: Four in ten respondents to the *Survey of ATP Joint Ventures* represented large companies[1] (see Figure 12.7).

- More than a third of the respondents to the *Survey of ATP Joint Ventures* represented small companies.
- Less than one quarter of the respondents to the *Survey of ATP Joint Ventures* represented medium-size companies.

Figure 12.7

Distribution of respondents by company size



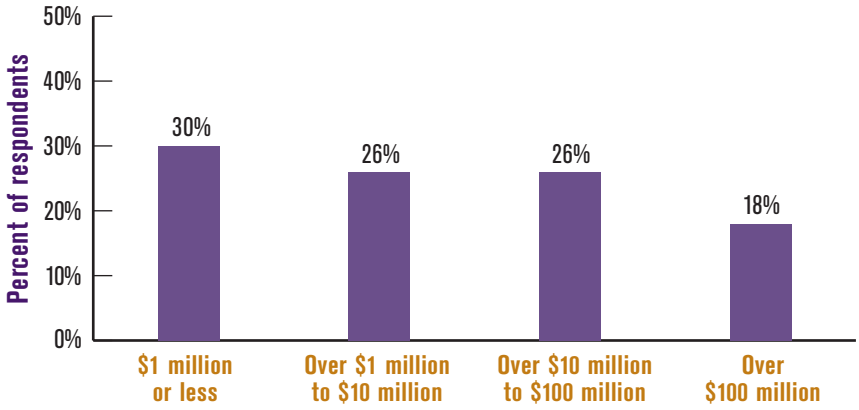
R&D budget: Over half of respondents to the *Survey of ATP Joint Ventures* represented establishments with an R&D budget of $10 million or less (see Figure 12.8).

- The average R&D budget across all company respondents was close to $10.5 million.

[1] For ATP, small companies have fewer than 500 employees, large companies are Fortune 500 companies, and medium size companies are all others.

Figure 12.8

Distribution of joint venture respondents by the size of the R&D budget in the respondent's establishment

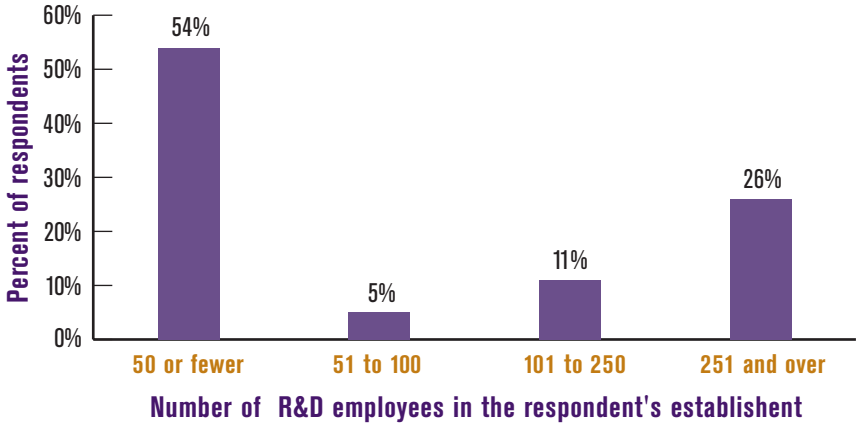


Number of R&D employees: Over half of the respondents to the *Survey of ATP Joint Ventures* represented establishments with 50 or fewer R&D employees (see Figure 12.9).

- The median number of R&D employees for this group was 35.

Figure 12.9

Distribution of joint venture respondents by the number of R&D employees in the respondent's establishment



Appendix

Survey of ATP Joint Ventures

Introduction

We are conducting this survey to help assess various aspects of joint venture projects funded by the Advanced Technology Program. Your responses will provide valuable information about the experiences of joint venture partners and give us insight into the functioning of these research alliances. We urge you to complete this survey so that we might better understand the factors that contribute to outcomes of joint ventures.

Our records show that your company has been a participant in the following ATP Joint Venture project:

Project Title:
Project Performance Period:

The following companies and organizations are involved in the project:

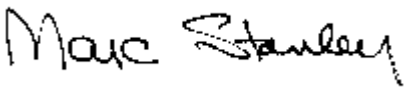
Project Partners:

1. **CompanyName1**
2. **CompanyName2**
3. **CompanyName3**

The questions on this survey refer to this particular joint venture. Be assured that all data you provide is confidential, and will be used for study purposes only.

Thank you for supporting our efforts by taking the time to complete the survey. Your feedback is very important to us and will help shape the future of the Advanced Technology Program.

Sincerely,



Marc Stanley
Acting Director, Advanced Technology Program

[OMB NO.: 0693-0040 Expires 03/31/2006 - This survey is authorized under the Paperwork Reduction Act. Your response is voluntary and all data collected will be considered confidential. Public reportings for this collection of information are estimated to average 30 minutes per response, including the time reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this estimate or any other aspects of this collection of information, including suggestions for reducing the length of this questionnaire, to the National Institute of Standards and Technology, 100 Bureau Drive, Stop 3220, Gaithersburg, MD, 20899 -3220 and the Office of Management and Budget Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.]

Overview

This page provides information about:

- What kinds of questions you'll be asked
- How to navigate through the survey
- When are your answers saved
- How to clear your answers
- The three ways to leave the survey: Exit, Timeout, and Submit
- How to print the survey and/or your responses

What kinds of questions will you be asked?

There are seven sections to the survey:

I. Joint Venture Motivation and Formation
II. JV Project Characteristics
III. JV Structure and Governance
IV. JV Personnel & Company History
V. Outcomes of the Joint Venture
VI. JV Partner Company Profile
VII. Company Characteristics

How to navigate through the survey?
Each page of the survey has two buttons that allow you move forward and backward through the pages of the survey. They are the "Previous Page" and "Next Page" buttons. On most pages, these buttons appear at both the top and the button of the page. You can change your responses as often as you like, and you can re-visit sections of the survey as often as you like.

When are your answers saved?
Your answers are saved each time you move to a new page, go back to an earlier page, or exit the survey by clicking on "Save & Exit". If you click on the X in your browser window to exit the survey, your responses on the current page will not be saved. If you need to leave the survey before you have completed it, always click on the "Save & Exit" button that appears on each page of the survey.

How to clear your answers?
Each question has a question number printed in blue to accompany it. You can click on the question number to clear your answer.

The three ways to leave the survey: Exit, Timeout, and Submit

Exit
You do not have to complete the survey in one sitting. If you wish to exit the survey to return at a later time, all you have to do is click on the "Save & Exit" button and all your responses will be saved. Your survey, however, will not be considered complete until you click on "Submit Survey" (see Submit section below).

Timeout
After 25 minutes of inactivity (that is, you haven't interacted with the survey in 25 minutes), you will be given a "timeout" warning. After you get this warning, you'll have 5 minutes to resume activity or you will be timed out. If you are timed out, new or changed responses to the questions on your current page will not be saved.

Submit
After you have navigated through the end of the survey, you will be taken to a Finish page. If you have left any questions blank, you will be notified of this and you will be given the opportunity to go back and fill in missing answers. If you are satisfied that you are done with the survey, you will be instructed to click on the "Submit Survey" button, and this will complete your participation. Once you have clicked on this button, your survey is considered complete and you will not be able to access the survey online again.

How to print the survey and/or your responses?
To print the entire survey, including any answers you might have already entered, click on the "Print Survey" button which appears at the bottom of most pages of the survey.

I. Joint Venture Motivation and Formation

Q1. Below are several reasons why a company might choose to participate in an R&D joint venture. Please tell us how important each reason was in your company's decision to partner with other companies in an R&D JV.

		Not important	Somewhat important	Very important	Extremely important
Q1a.	To pool resources with other firms in order to reduce the cost of R&D or achieve a greater scale of effort				
Q1b.	To benefit from complementary R&D expertise and capabilities of different firms				
Q1c.	To gain knowledge and learn from other firms				
Q1d.	To address a technological problem that is common to your industry				
Q1e.	To access commercialization capabilities of other firms				

Q2. To what extent was your company actively involved in developing the original JV project proposal? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Q3. How likely is it that the JV would have formed without resources from ATP?

- Very likely
- Somewhat likely
- Not too likely
- Not at all likely

To what extent would you say your JV project:		Not at all	Small extent	Moderate extent	Large extent	Not Applicable
Q4a.	Represents a new R&D direction *for your company*					
Q4b.	Represents a new R&D direction f*or your industry or technology field*					

Consider the relationship between this JV project and previous or subsequent R&D projects at your company.

To what extent would you say your JV project:		Not at all	Small extent	Moderate extent	Large extent	Not Applicable
Q5a.	Builds on previous R&D work at your company					
Q5b.	Enhances the value of previous R&D work by your company					
Q5c.	Stimulates new ideas for products, processes, or future research at your company					

Q6. Prior to this JV project, how much experience with R&D collaborations across companies did your team members have? Would you say.....

- A great deal of experience
- Moderate amount of experience
- Very little experience
- No experience at all

II. JV Project Characteristics

We'd like you to think about the ambitiousness of the JV project overall and the degree of difficulty of your company's part in the JV.

Overall Project

Q7. Relative to other R&D initiatives in your industry, how ambitious would you say are the goals identified for the JV project overall?

Much less ambitious — Equally ambitious — Much more ambitious

Your Company's Part in the Project

We would like you to compare your JV project to typical R&D projects at your company.

Q8. Consider the technical difficulty of your company's part in this JV project. How does this project compare to a typical R&D project at your company?

Much less difficult — About the same — Much more difficult

Q9. Consider technical risk. At the start of the project, what would you say was the approximate probability, from 0% to 100%, that your company could fully achieve the technical goals defined for your part of the JV project?

[ ] % probability

Q10. What is the approximate probability, from 0% to 100%, that a typical R&D project at your company could fully achieve its technical goals?

[ ] % probability

Q11. Consider the expected impact of the JV project on your company. Approximately how many years after the start of your JV project could you expect results to first have an impact on company revenues or costs?

[ ] years

Q12. Approximately how many years after the start of a typical R&D project could you expect results to first have an impact on company revenues or costs?

[ ] years

Now we would like to ask some questions about the exchange of technical knowledge among the JV partners.

Some knowledge can be written down and easily transferred, while other knowledge is hard to define and not easily communicated. This other kind of knowledge is thought of as "know how" that must be acquired through experience and interaction.

Q13. To what extent is exchange of technical "know-how" among JV partners critical to achieving research success in your JV?

- Large extent
- Moderate extent
- Small extent
- Not at all → **Please continue with Q15**

Q14. How successful have you been in exchanging technical "know-how" with your JV partners to meet the objectives of the project?

- Very successful
- Successful
- Neither successful nor unsuccessful
- Unsuccessful
- Very unsuccessful

Q15. To what extent is work on the JV project highly interdependent (i.e., demand a high degree of coordination among the JV partners)? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all → **Please continue with Q17**

Q16. How successful have you been in achieving coordination with your JV partners to meet the objectives of the project?

- Very successful
- Successful
- Neither successful nor unsuccessful
- Unsuccessful
- Very unsuccessful

Q17. Next we'd like to know about your JV project's links with universities and other research organizations.

		Not at all	Small extent	Moderate extent	Large extent
Q17a.	To what extent is your JV project based on university research?				
Q17b.	To what extent does your JV project depend on technology licensed from universities?				

Q18. How much interaction does your JV team have with researchers based at universities or other research organizations? (Include interactions with JV members as well as others outside the JV.)

- A great deal of interaction
- Moderate amount of interaction
- Very little interaction
- No interaction at all

III. JV Structure and Governance

Q19. Which of the following best characterizes the structure of your JV?

- One project leader; other partners have supporting roles
- Some partners are principal participants; other partners have supporting roles
- All partners have equally important roles; there are no supporting roles

Q20. In terms of the *formal* agreement among JV partners, to what extent do some JV partners have more power than other partners in areas such as decision-making and rights over JV output? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Q21. In terms of the *informal* relations among JV partners, to what extent do some JV partners have more power than other partners? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Q22. Consider the formal JV agreement and other governance procedures developed by your ATP joint venture.

How satisfied are you with the JV agreement and governance procedures with regard to:		Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
Q22a.	Protection of intellectual property or proprietary information contributed by JV partners					
Q22b.	Ownership of new intellectual property developed by the JV					
Q22c.	Resolution of disputes or disagreements among JV partners					
Q22d.	Verification of work task performance among JV partners					

IV. JV Personnel & Company History

Q23. Over the course of the project, on average how many full-time equivalent technical staff per year *from your company* have worked on the project?

☐ Number of full-time staff per year

Q24. Over the course of the project, *on average* how many project review meetings have been held per year where all partners in the JV are represented?

☐ Number of project review meetings per year

Q25. During the project, *on average* about how many days per year have staff from your company met with staff from your JV partners to carry out joint work on project tasks?

☐ Number of days per year

Q26. *On average*, about how many people from your company are involved in these meetings to carry out joint work?

☐ Number of people

Q27. Over the course of the project, *on average*, how frequently have individuals from your company communicated by telephone, email, or video-conference with staff from your JV partners?

- ☐ Several times a week
- ☐ Weekly
- ☐ Biweekly
- ☐ Monthly
- ☐ Quarterly

Q28. To date, have any key personnel at your company stopped working on the JV project due to either internal transfer or leaving your company?

- ☐ Yes
- ☐ No

Q29. To date, have any key personnel at your *JV partners* stopped working on the JV project due to either internal transfer or leaving their company?

- ☐ Yes
- ☐ No

Q30. Have any of the following significant changes occurred at your company during the course of the JV project? (Check all that apply.)

- ☐ Change in company top management
- ☐ Change in strategic direction of the company
- ☐ Change in company ownership
- ☐ Merger and/or acquisition activity
- ☐ Business difficulty and/or downsizing
- ☐ None of the above
- ☐ Other, please specify:

V. Outcomes of the Joint Venture

Consider the technical goals for the *JV project overall*.

Q31. Looking toward the end of the project, would you say the JV will achieve:

- Few, if any, of its technical goals
- Some of its technical goals
- Most of its technical goals
- All of its technical goals
- Beyond its technical goals

In answering the next question, please consider *your company's* technical goals for the project.

Q32. Looking toward the end of the project, would you say *your company* will achieve:

- Few, if any, of its technical goals
- Some of its technical goals
- Most of its technical goals
- All of its technical goals
- Beyond its technical goals

The following questions ask about new revenues and cost savings to your company that resulted from the JV project.

Product Revenues

Q33. What are your company's cumulative revenues *to date* from new or greatly improved products resulting from your JV project?

$ ____

- Thousand
- Million
- Billion

- No revenues to date

Q34. *Over the next five years*, what are your company's expected revenues from new or greatly improved products resulting from the JV project?

$ ☐ ☐ Thousand
☐ Million
☐ Billion

☐ No revenues expected within the next five years
☐ No revenues to date, and none expect → **Please continue with Q37**

Q35. What is the typical gross profit margin on sales in your line of business?

☐ percent

Q36. What is the approximate gross profit margin on sales from your company's products resulting from the JV?

☐ percent

Cost Savings

Q37. What are your company's cumulative cost savings *to date* from process improvements resulting from your JV project?

$ ☐ ☐ Thousand
☐ Million
☐ Billion

☐ No cost savings to date

Q38. *Over the next five years*, what are your company's expected cost savings from process improvements resulting from the JV project?

$ ☐ ☐ Thousand
☐ Million
☐ Billion

☐ No cost savings expected within the next five years

Licensing Revenues

Q39. What are your company's cumulative revenues *to date* from licensing of technology developed from the JV project?

$ ☐ Thousand
☐ Million
☐ Billion

☐ No licensing revenues to date

Q40. *Over the next five years*, what are your company's expected revenues from licensing of technology developed from the JV project?

$ ☐ Thousand
☐ Million
☐ Billion

☐ No licensing revenues expected within the next five years

Now we'd like to ask about additional money, aside from the original cost-share, that your company may have spent on activities related to the JV project. For example, your company may have spent money on additional R&D or commercialization.

Q41. Aside from the original cost-share, how much additional money has your company spent *to date* on JV project related activities?

$ ☐ Thousand
☐ Million
☐ Billion

☐ No additional expenditure to date

Q42. *Over the next five years*, how much additional money do you expect your company will spend on JV project related activities?

$ ☐ Thousand
☐ Million
☐ Billion

☐ No additional expenditure expected within the next five years

---

We would like to know about intellectual property developed from the JV project.

Q43. At your company, how many patent applications and granted patents have resulted from the JV project?

Please provide your best estimate if you don't know the exact number. Enter 0 in both boxes if your company had no patent applications from the JV project.

Number of patent applications: ☐

Number of granted patents: ☐

Now consider the JV as a whole. Think of all patents resulting from the JV, including patents from your company or any other partner in the JV.

Q44. Please describe patents resulting from the JV project that are recognized as extremely valuable in your industry or technology field.

	Patent Assignee (Name of Company)	Title of Patent (or Keywords)	Names of Inventors (Last Name, First Initial)
Click here to add a new patent entry.			

If there are no patents recognized as extremely valuable in your industry or field, please indicate "None" by checking the following box:

☐ None

Q45. Often less measurable benefits, such as skill acquisition or capability development, can come from participation in an R&D joint venture. How valuable are intangible benefits from this JV project for your company?

- Extremely valuable
- Very valuable
- Somewhat valuable
- Not valuable

Q46. Overall, in terms of delivering value to your company, would you consider this JV project to be:

- Very successful
- Successful
- Neither successful nor unsuccessful
- Unsuccessful
- Very unsuccessful

Q47. How important are the following aspects of ATP support for your JV project?

		Not important	Somewhat important	Very important	Extremely important
Q47a.	ATP funding ensures stability of company funding and commitment to the project				
Q47b.	ATP involvement helps foster trust and cooperation among JV partners				

VI. JV Partner Company Profile

The list of companies presented below are involved in your JV project. Please select the two companies from this list that are most important to your company's interest in the JV project.

- [ ] **CompanyName1**
- [x] **CompanyName2**
- [ ] **CompanyName3**
- [x] **CompanyName4**

The next set of questions concern your company's experience with the two companies you have selected above. You will go through the next set of questions twice, once for the first company you have selected, and then again for the second company you have selected.

VI. JV Partner Company Profile

This page asks questions about your company's experience with Company2.

Company Relationship

Q48.1 Which of the following best characterizes **Company2**'s relationship with your company?

- Supplier (partner company provides inputs to your company's products/technologies)
- Customer (partner company purchases your company's products/technologies)
- "Complementor" (partner company's products/technologies are used together with your company's products/technologies)
- Competitor (partner company serves the same product market as your company)
  ↳ **Please continue to Q50.1**
- None of the above

Q49.1 How likely is it that **Company2** *will become* a direct competitor to your company?

- Very likely →
- Somewhat likely →
- Not too likely →
- Not at all likely →

Please continue with Q52.1

Q50.1 How would you characterize the *degree* of product market competition with **Company2** at the start of the JV project?

- Very competitive
- Somewhat competitive
- Not too competitive
- Not at all competitive

Q51.1 How would you characterize the *change* in degree of competition with **Company2** since the start of the JV project?

- Much more competitive
- Somewhat more competitive
- About the same
- Somewhat less competitive
- Much less competitive

Trust

Q52.1 To what extent do you trust **Company2** to show good will and treat your company fairly? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Q53.1 To what extent do you think **Company2** would take unfair advantage of your company if it had the chance (e.g., if you did not have proper legal protections in place)? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Knowledge Sharing

Q54.1 To what extent do you think **Company2** shares whatever relevant knowledge it possessed to help the JV achieve its objectives? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Q55.1 To what extent do you think **Company2** shares proprietary/confidential knowledge in order to help the JV achieve its objectives? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Previous Experience

Q56.1 Prior to the start of your JV project, to what extent did key members of your project team have previous experience working with key members from **Company2**'s JV team? To a...

- Large extent
- Moderate extent
- Small extent
- Not at all

VI. JV Partner Company Profile

This page asks questions about your company's experience with Company4.

Company Relationship

Q48.2 Which of the following best characterizes **Company4**'s relationship with your company?

- Supplier (partner company provides inputs to your company's products/technologies)
- Customer (partner company purchases your company's products/technologies)
- "Complementor" (partner company's products/technologies are used together with your company's products/technologies)
- Competitor (partner company serves the same product market as your company)
  ↳ **Please continue to Q50.2**
- None of the above

Q49.2 How likely is it that **Company4** *will become* a direct competitor to your company?

- Very likely →
- Somewhat likely →
- Not too likely →
- Not at all likely →

Please continue with Q52.2

Q50.2 How would you characterize the *degree* of product market competition with **Company4** at the start of the JV project?

- Very competitive
- Somewhat competitive
- Not too competitive
- Not at all competitive

Q51.2 How would you characterize the *change* in degree of competition with **Company4** since the start of the JV project?

- Much more competitive
- Somewhat more competitive
- About the same
- Somewhat less competitive
- Much less competitive

Trust

Q52.2 To what extent do you trust **Company4** to show good will and treat your company fairly? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Q53.2 To what extent do you think **Company4** would take unfair advantage of your company if it had the chance (e.g., if you did not have proper legal protections in place)? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Knowledge Sharing

Q54.2 To what extent do you think **Company4** shares whatever relevant knowledge it possessed to help the JV achieve its objectives? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Q55.2 To what extent do you think **Company4** shares proprietary/confidential knowledge in order to help the JV achieve its objectives? To a…

- Large extent
- Moderate extent
- Small extent
- Not at all

Previous Experience

Q56.2 Prior to the start of your JV project, to what extent did key members of your project team have previous experience working with key members from **Company4**'s JV team? To a...

- Large extent
- Moderate extent
- Small extent
- Not at all

VII. Company Characteristics

Q57. Does your company have more than one business location?

- Yes
- No

Q58. How many employees work in R&D at your specific location today?

Number of R&D employees

Q59. What is the annual budget, from all funding sources, for R&D at your specific location in the current year?

$
- Thousand
- Million
- Billion

- No funds allocated to R&D in the current year

Finally, please answer a few questions about yourself:

Q60. To what extent have you been personally involved in this JV project?

- Large extent
- Moderate extent
- Small extent
- Not at all

Q61. How many other people did you consult to obtain the information we have asked for in this survey?

Number of people

Q62. Did you consult any company records to answer any of the questions on this survey?

- Yes
- No

About the Advanced Technology Program

The Advanced Technology Program (ATP) is a partnership between government and private industry to conduct high-risk research to develop enabling technologies that promise significant commercial payoffs and widespread benefits for the economy. ATP provides a mechanism for industry to extend its technological reach and accelerate the process of innovation.

Promising future technologies are the domain of ATP:

- Enabling or platform technologies essential to development of future new products, processes, or services across diverse application areas
- Technologies where challenging technical issues stand in the way of success
- Technologies that involve complex "systems" problems requiring a collaborative effort by multiple organizations
- Technologies that will remain undeveloped, or proceed too slowly to be competitive in global markets, in the absence of ATP support

ATP funds technical research, but does not fund product development; that is the responsibility of the company participants. ATP is industry-driven and is grounded in real-world needs. Company participants conceive, propose, co-fund, and execute all of the projects cost-shared by ATP. Most projects also include participation by universities or other nonprofit organizations.

Each project has specific goals, funding allocations, and completion dates established at the outset. All projects are selected in rigorous competitions that use peer review to identify those that score highest on technical and economic criteria. Single-company projects can have duration up to three years; joint venture projects involving two or more companies can have duration up to five years.

Small and medium firms on single-company projects cover at least all indirect costs associated with the project. Large firms on single-company projects cover at least 60 percent of total project costs. Participants in joint venture projects cover at least half of total project costs. Companies of all sizes participate in ATP-funded projects. To date, nearly two out of three ATP project awards have gone to individual small businesses or to joint ventures led by a small business.

Contact ATP for more information:

- On the Internet: ***www.atp.nist.gov***
- By e-mail: ***atp@nist.gov***
- By phone: **1-800-ATP-FUND (1-800-287-3863)**
- By writing: **Advanced Technology Program, National Institute of Standards and Technology, 100 Bureau Drive, Stop 4701, Gaithersburg, MD 20899-4701**

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