The State of Scrum: Benchmarks and Guidelines

How the world is successfully applying the most popular Agile approach to projects

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EXECUTIVE SUMMARY

There has been an explosive change within the last two decades in how software is developed and deployed. Agile methods and practices have led this charge and continue to gain momentum. Scrum, which is an iterative and incremental Agile software development framework, is leading the way and has been the most visible of these practices—to the point where it is now considered mainstream within IT circles.

That is only part of the story, however. In today's challenging economic times, executives and organizations are faced with fiercely competitive and challenging market forces that require them to continuously adapt and stay flexible while increasing products and services with fewer resources and less time to market. Agile practices, such as Scrum, are uniquely positioned to allow businesses to take methods that have been wildly successful in the difficult field of software development and apply them to the general business environment at large.

This report, based on an extensive survey of nearly 500 participants from more than 70 countries, will share data points as well as benchmarks and guidelines critical for Scrum's successful adoption and future growth. The goal of the survey was to understand the current "State of Scrum" using the 800,000+ members of Scrum Alliance, ProjectManagement.com and ProjectsAtWork communities. The majority of the participants were from the IT field (as expected), but many came from other industries—which is in line with the direction in which Agile and Scrum are currently heading.

This report will explore and discuss:

- Baseline metrics: Participant demographics and organizational background

- Key facilitating factors for successful projects:

  - Scrum challenges and success factors

  - Participants' current practices and insights that have made all the difference

  - Coverage of development and testing tools in place to enable Scrum

- Insights: What are the key insights we can take away from the results?

- Outlook: What is the future of Scrum?

By exploring the items above in detail, we can better understand both the barriers and the facilitating factors of Scrum. We can also leverage the global user base of the survey's contributing communities to help Scrum become more widely understood and efficiently deployed in the software development community and beyond.

Methodology and Participants Overview

- In February and March of 2013, Scrum Alliance, ProjectManagement.com and ProjectsAtWork surveyed their readership on use, knowledge and views of Scrum.

- The extensive survey of nearly 500 participants included in-depth interviews and a literature review.

- Participants from more than 70 countries responded to the survey, with the United States leading at 35% and India second at 12%. The United Kingdom, Canada and Australia accounted for 4% each, with Germany at 3% and South Korea, Mexico, Belgium, Brazil, Malaysia and New Zealand comprising 2%.

- The participants' roles were comprised of mostly project managers (31%) and ScrumMasters (18%), with the Project Management Professional (PMP) and Certified ScrumMaster certifications taking up a combined 56% of the participants' certifications. Almost half of these respondents have worked on 1-4 Agile projects.

- For participants running Scrum projects, 41% have a dedicated ScrumMaster role. 24% of our participants have a Product Owner role that is in alignment with Scrum best practices, with that individual having the authority to set business priorities for the project and directly interfacing with the customer. 38% have a Product Owner who juggles priorities for multiple stakeholders and is acting in more of a liaison role. 20% of their teams were co-located, while 24% were distributed across sites or geography. Practices such as daily meetings were held by 59% of the respondents, and 62% held retrospectives after each Sprint.

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- The majority of the participants are from the IT industry (41%), but a good representation came from Finance (12%), Government (6%), Healthcare (6%) and Telecommunications (5%), indicating the growing interest in Scrum outside IT. 53% of the participants were from organizations with 1,000 or fewer employees, yet 44% were with companies with annual revenues of $50M to $1B+. 28% were from organizations with ISO 9001 certification, but nearly half (48%) did not have any.

Key Findings

- While 41% of organizations are jumping into Agile waters without requiring a specific certification of their employees, 54% either agree or strongly agree that a certification such as the Certified Scrum Professional (CSP) improves their chances of sustained success.

- Culture is king in the Agile world—and according to a majority of respondents, organizations must create cultures that encourage collaboration in order to deliver value to their customers. This includes fostering self-organized teams and active support from management. Scrum facilitates all of these success factors.

- Scrum is the overwhelmingly preferred Agile method, used by 40% of respondents. The second-most popular method is Kanban, often using many elements of Scrum,

a noteworthy trend as organizations seek to find for themselves what works for their specific domains and needs.

How Often and Why They Use Scrum

- In terms of current Agile approaches, Scrum leads the way: 40% of those sampled claimed to be adherents. It was followed by Kanban (15%) and Lean (11%). 19% of the participants used Scrum for up to a quarter of their projects that fall outside of IT, the majority (38%) of which are in R&D, operations or production.

- 60% of the survey participants used Scrum regularly. 39% used Scrum more broadly throughout their business as one of their project management practices, while 16% used it exclusively for software development projects. 46% of the participants are deploying and managing Scrum projects within a Project Management Office (PMO), and 24% feel that managing and deploying Scrum projects this way is effective and successful.

- In terms of business priorities for Scrum projects, 41% feel that fulfilling customer needs is highest, while meeting budget, time and scope constraints as well as engaging in projects that drive innovation and market share followed with 36%. In terms of providing customer satisfaction while using Scrum, 27% feel having active senior management support is vital,

and 22% say a clear set of business goals for what gets achieved is necessary. That is why over half felt that cultural influences such as an open and collaborative environment—and empowered/self-organizing Scrum teams—are vital for facilitating Scrum; that can only be achieved through active support of management and clear business vision.

- 32% of the respondents felt that delivering customer value was most valued by their organization's executives for the delivery of Scrum-based projects. 34% of the participants felt that Scrum was successful on at least 75% of the projects for which it was deployed, and half feel that they will very likely use Scrum further in their organizations.

Scrum Adoption Factors
- The common belief that the vast majority of organizations adopting and integrating Scrum come from a Waterfall-like background was supported by the survey. 24% use Scrum for some projects while using Waterfall for the rest. 13% use Scrum exclusively, while 31% indicate no use of Waterfall. 23% felt it was a difficult transition from a Waterfall-based method to Scrum. Another perception, stated by 25% of respondents, was that there were no clearly identified metrics to identify and measure the successful delivery of Scrum projects.
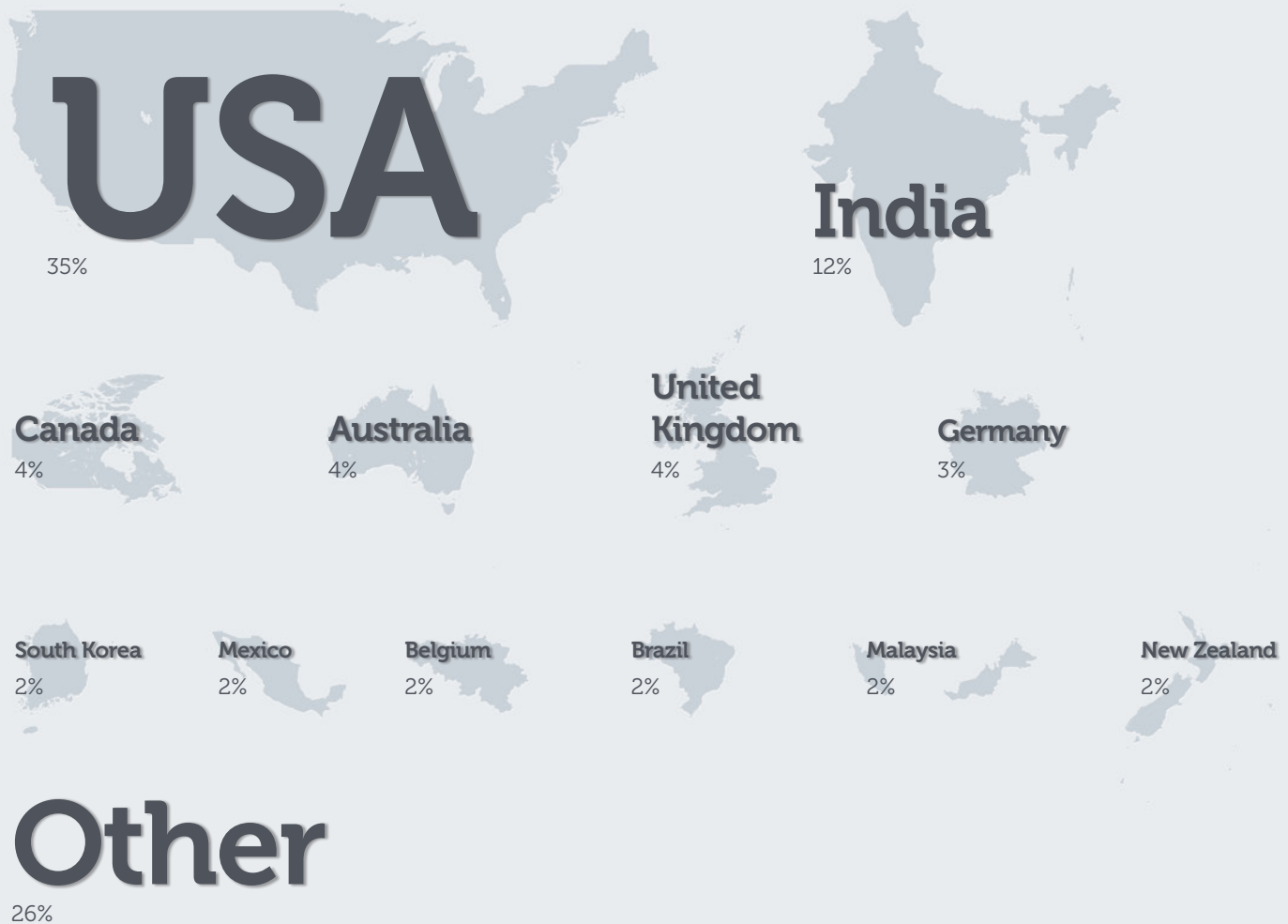
This report will not only present the data but take you beyond the numbers with insights and recommendations you can apply to your projects now. It will also provide an outlook for the future direction of Scrum. We hope you will find this report valuable and that it furthers your exploration of how Scrum can be useful to you.

SURVEY RESULTS

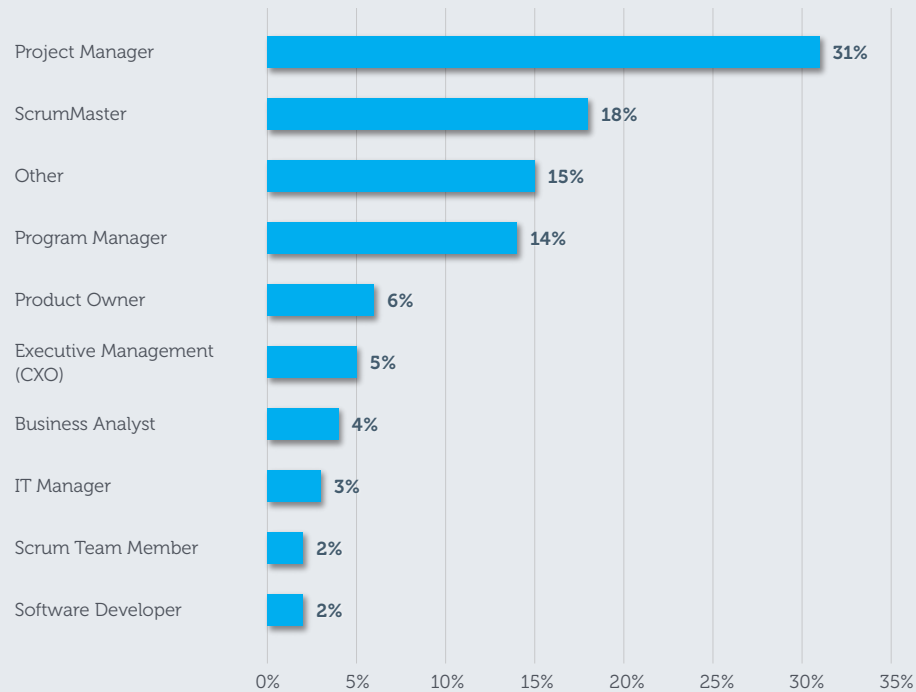## SECTION ONE: PARTICIPANT DEMOGRAPHICS AND ORGANIZATIONAL BACKGROUND

1. Country

499 participants from more than 70 countries responded to the survey and the majority were from English-speaking countries, though the survey was truly global with Europe, Asia, Africa and North, Central and South America being represented:

USA
35%

India
12%

Canada
4%

Australia
4%

United Kingdom
4%

Germany
3%

South Korea
2%

Mexico
2%

Belgium
2%

Brazil
2%

Malaysia
2%

New Zealand
2%

Other
26%

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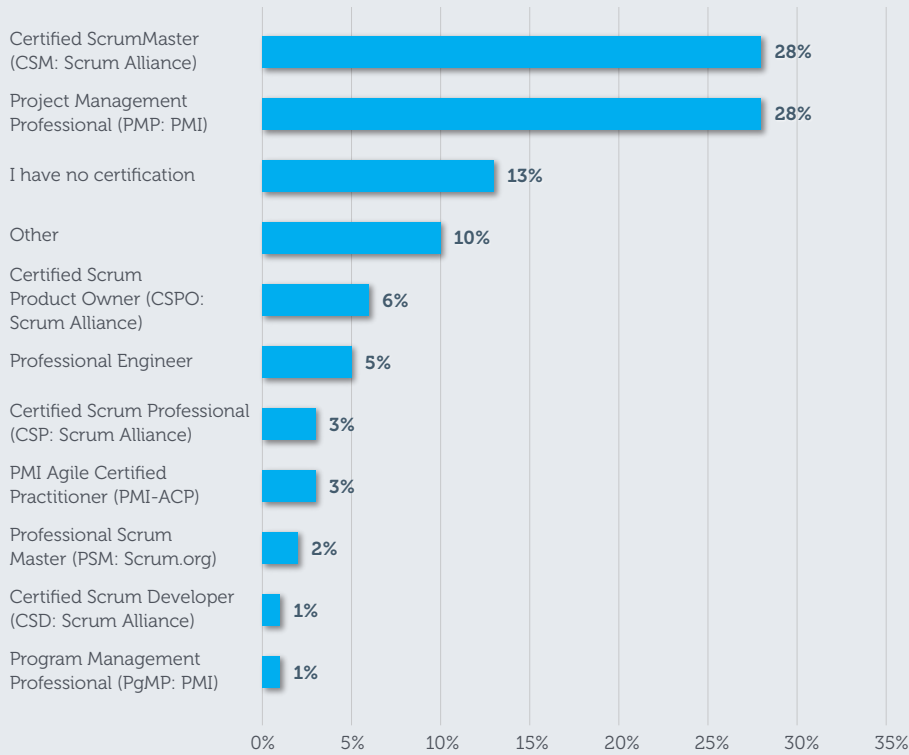
2. What is your role in the organization?

Project managers led the way at 31%, followed by ScrumMasters at 18%. Other roles included PMO directors and IT executives, coaches, consultants and advisors.

Role	Percentage
Project Manager	31%
ScrumMaster	18%
Other	15%
Program Manager	14%
Product Owner	6%
Executive Management (CXO)	5%
Business Analyst	4%
IT Manager	3%
Scrum Team Member	2%
Software Developer	2%

*Project managers led the way at 31%, followed by ScrumMasters at 18%.*

3. What certifications do you have (select all that apply)?

Some of the "other" certifications not listed were ITIL, Six Sigma and advanced academic degrees in IT management.

| Certification	Percentage
Certified ScrumMaster (CSM: Scrum Alliance)	28%
Project Management Professional (PMP: PMI)	28%
I have no certification	13%
Other	10%
Certified Scrum Product Owner (CSPO: Scrum Alliance)	6%
Professional Engineer	5%
Certified Scrum Professional (CSP: Scrum Alliance)	3%
PMI Agile Certified Practitioner (PMI-ACP)	3%
Professional Scrum Master (PSM: Scrum.org)	2%
Certified Scrum Developer (CSD: Scrum Alliance)	1%
Program Management Professional (PgMP: PMI)	1%

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4. How many Agile projects have you worked on?

81% of the participants have worked on at least one or more Agile projects, and the fact that the participants come from a broad range of project management backgrounds indicates the growth of Agile throughout organizations.
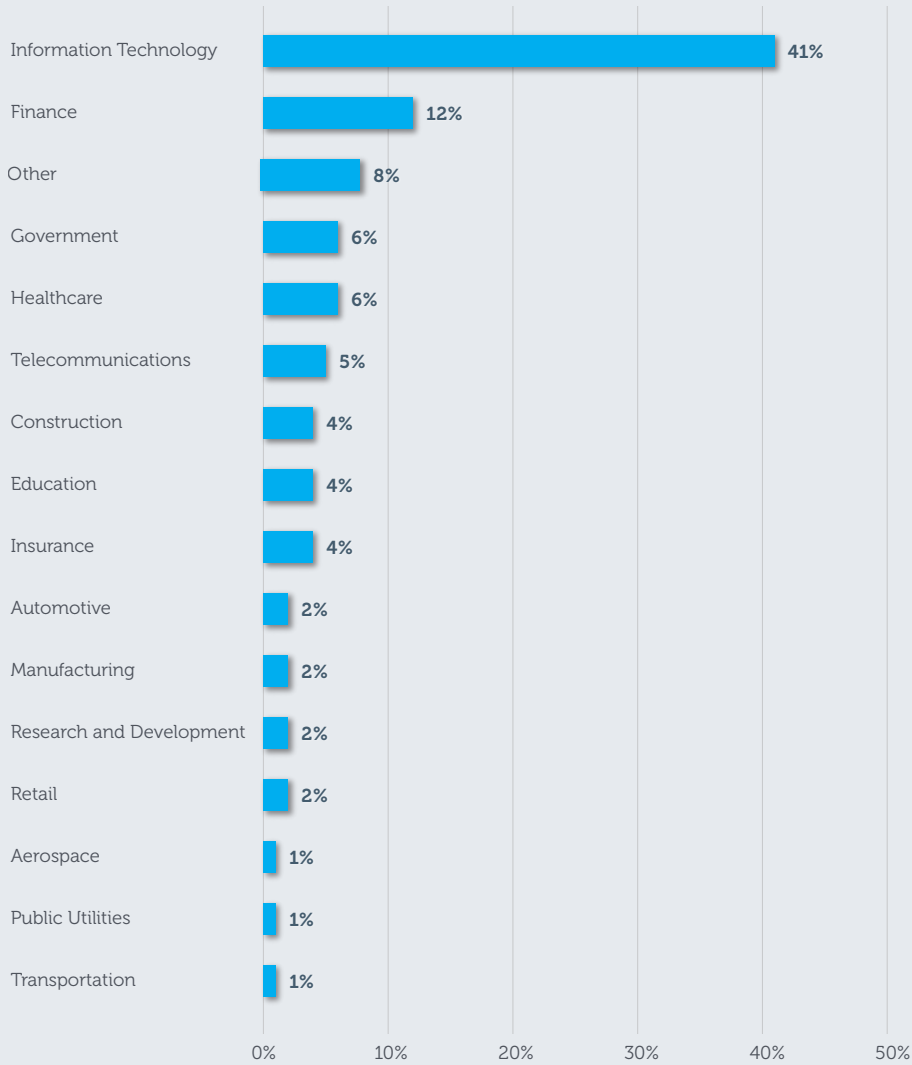

5–10 — 15%

None — 18%

Over 10 — 19%

1–4 — 47%
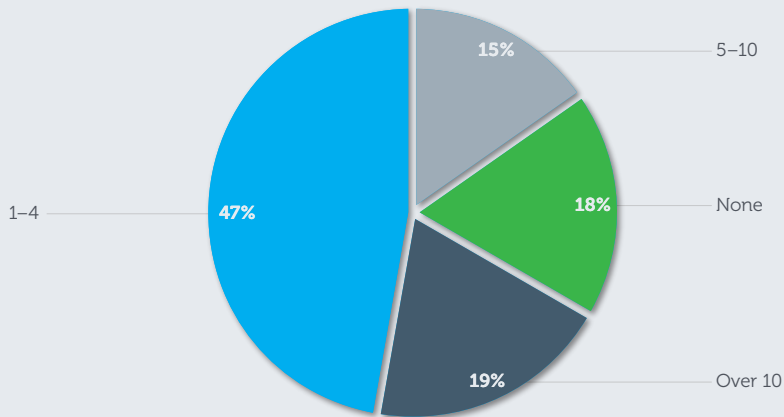
Note: Individual results were rounded up and down; actual data totals 100%.

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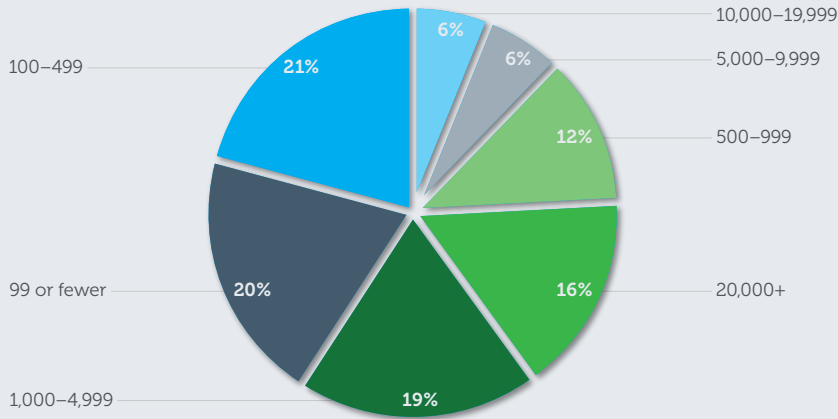Transforming the World of Work
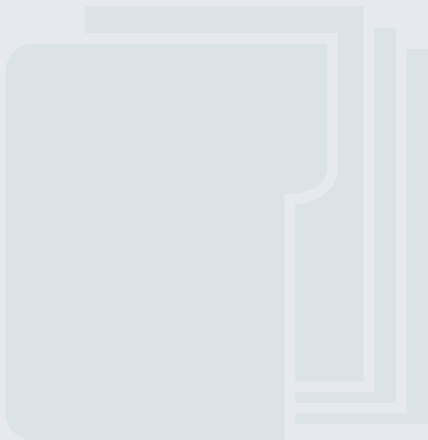
5. Industry

Not surprisingly, IT leads the way at 41%, but other industries noted were law enforcement, agriculture, oil & gas, equipment rental and arts & entertainment. This indicates a growing interest in Agile/Scrum outside of the traditional IT industry, no doubt due to its ability to deliver high-quality solutions quickly.
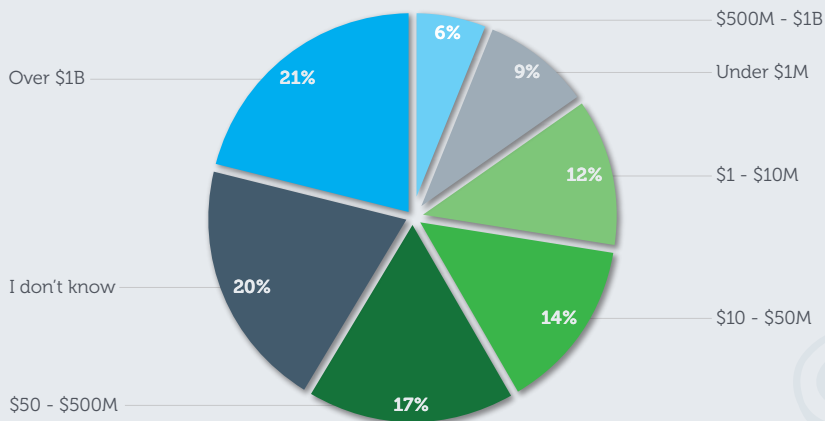
This indicates a growing interest in Agile/Scrum outside of the traditional IT industry.

Industry	Percentage
Information Technology	41%
Finance	12%
Other	8%
Government	6%
Healthcare	6%
Telecommunications	5%
Construction	4%
Education	4%
Insurance	4%
Automotive	2%
Manufacturing	2%
Research and Development	2%
Retail	2%
Aerospace	1%
Public Utilities	1%
Transportation	1%

Note: Individual results were rounded up and down; actual data totals 100%.

6. Size of company (number of employees)

Pie chart data:
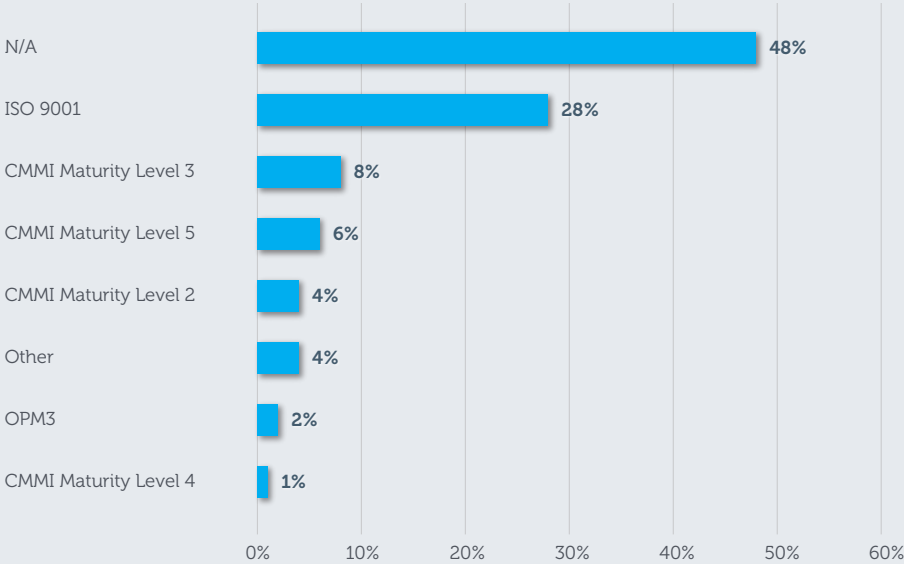- 10,000–19,999: 6%
- 5,000–9,999: 6%
- 500–999: 12%
- 20,000+: 16%
- 1,000–4,999: 19%
- 99 or fewer: 20%
- 100–499: 21%

7. Approximate annual revenue (U.S. dollars)

Pie chart data:
- $500M - $1B: 6%
- Under $1M: 9%
- $1 - $10M: 12%
- $10 - $50M: 14%
- $50 - $500M: 17%
- I don't know: 20%
- Over $1B: 21%

Note: Individual results were rounded up and down; actual data totals 100%.

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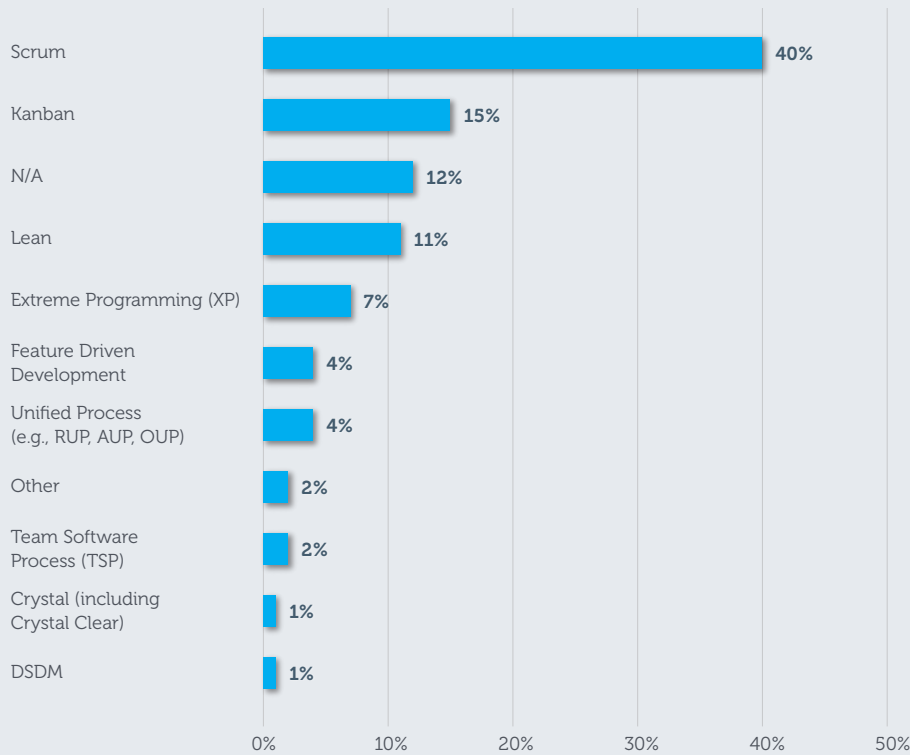# 8. Organizational certifications (select all that apply)?

Nearly half of our participants do not have organizational certifications. ISO 9001, which focuses on quality and process, is the most common certification (at 28%). Certifications that focus on maturity assessment are all in the single digits. This may be significant in that one of the common barriers to the successful organizational adoption of Scrum is the lack of maturity with regard to processes, standards and governance within an organization. Organizations with a higher maturity assessment may be better equipped to adopt a new practice such as Scrum.

Category	Percentage
N/A	48%
ISO 9001	28%
CMMI Maturity Level 3	8%
CMMI Maturity Level 5	6%
CMMI Maturity Level 2	4%
Other	4%
OPM3	2%
CMMI Maturity Level 4	1%

Note: Individual results were rounded up and down; actual data totals 100%.

# 9. What Agile approach is your organization using (select all that apply)?

Scrum led the way with 40%, followed by Kanban at 15% and Lean at 11%. 12% note that no Agile approach is used, indicating that a sizable percentage of our participants are not using Agile but want to learn more.

Approach	Percentage
Scrum	40%
Kanban	15%
N/A	12%
Lean	11%
Extreme Programming (XP)	7%
Feature Driven Development	4%
Unified Process (e.g., RUP, AUP, OUP)	4%
Other	2%
Team Software Process (TSP)	2%
Crystal (including Crystal Clear)	1%
DSDM	1%

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SECTION TWO: SCRUM ADOPTION

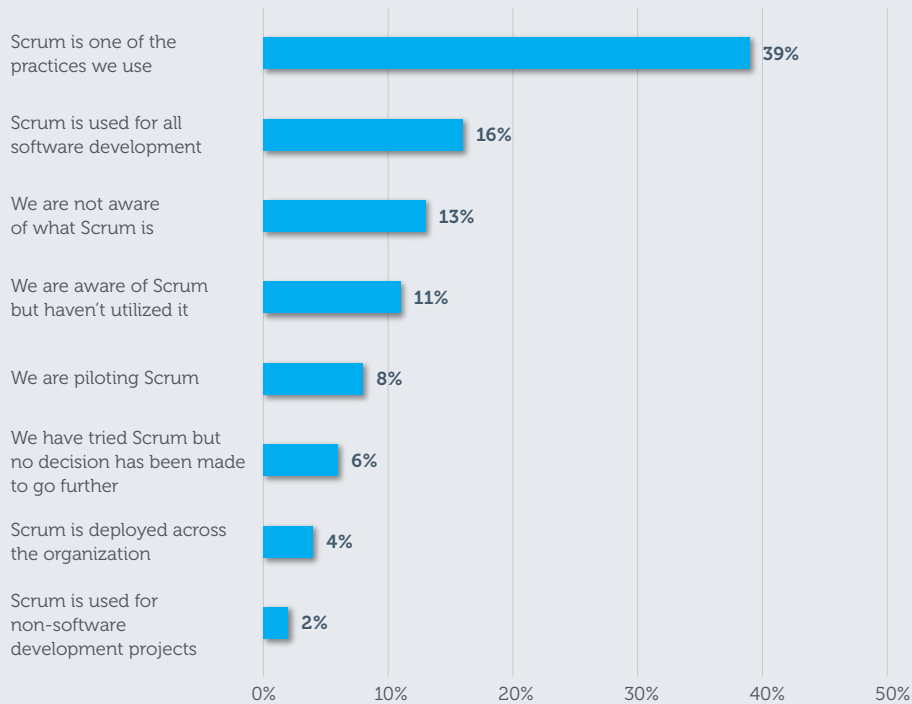## 10. How often is Scrum used in your organization?

As indicated in question #4, since more than 80% of our participants have been involved in at least one or more Agile projects, it is no surprise that a majority use Scrum regularly.

Frequently 27%

Usually 13%

Rarely 15%

Sometimes 25%
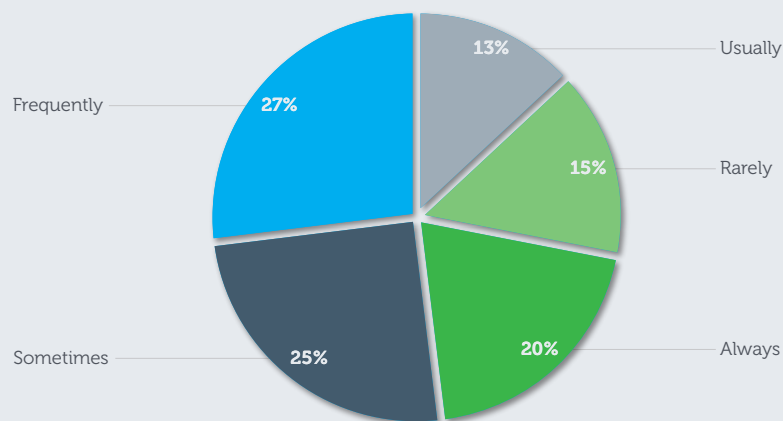
Always 20%

Almost half of survey participants are using Scrum frequently or always.

11. How would you describe the state of Scrum in your organization?

61% of our participants are using Scrum, while 14% are testing it, and 13% are in organizations that are not aware of what Scrum is. This indicates that there's still a level of awareness and interest that can be nurtured for Scrum adoption throughout industries.

Category	Percentage
Scrum is one of the practices we use	39%
Scrum is used for all software development	16%
We are not aware of what Scrum is	13%
We are aware of Scrum but haven't utilized it	11%
We are piloting Scrum	8%
We have tried Scrum but no decision has been made to go further	6%
Scrum is deployed across the organization	4%
Scrum is used for non-software development projects	2%

Note: Individual results were rounded up and down; actual data totals 100%.

This indicates that there's still a level of awareness and interest that can be nurtured for Scrum adoption throughout industries.

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12. If your organization and/or department has a PMO, are Scrum projects deployed and managed through it?

About an equal number of Scrum projects are being done through and outside a PMO. Traditional projects are typically managed by PMOs, and the fact that 46% of Scrum projects engaged in by our participants are being deployed and managed by a PMO indicates that Scrum may be used in conjunction with an existing Waterfall-like method, or alongside it.

Scrum projects are deployed and managed through the PMO — **46%**

54% — Scrum projects are deployed and managed outside the PMO
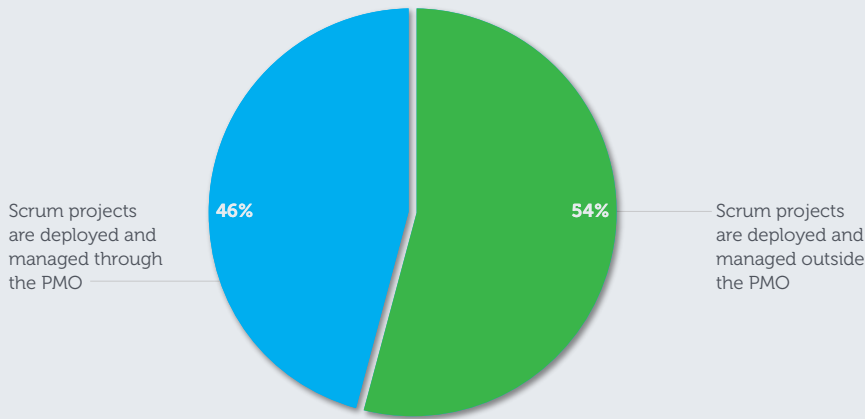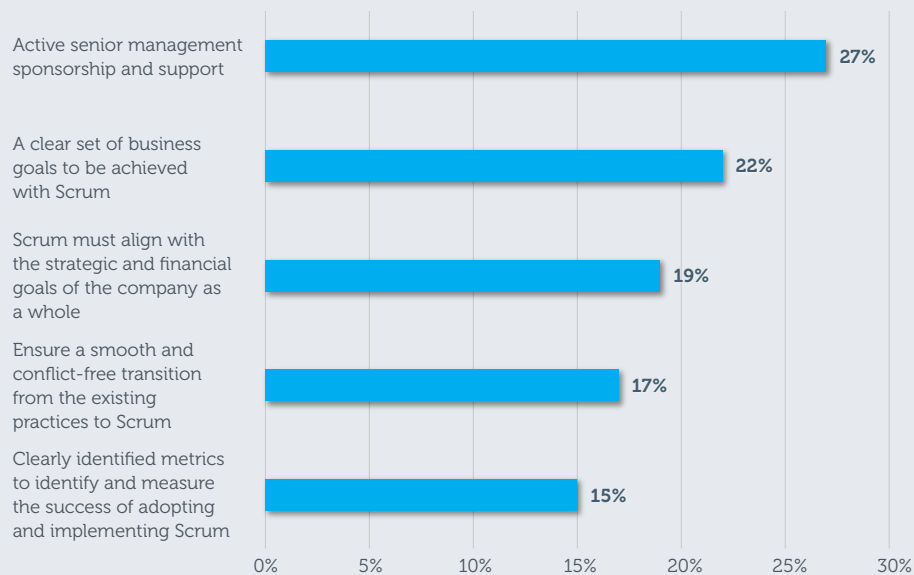
13. If your Scrum projects were deployed and managed through a PMO, how effective and successful were they?

At least half felt that their PMOs did a somewhat effective or effective job of deploying and managing Scrum projects. 29% do not know, and this can be attributable to a lack of metrics and benchmarks for defining the success of Scrum projects.

15% — Ineffective and unsuccessful

Somewhat effective and successful — **32%**

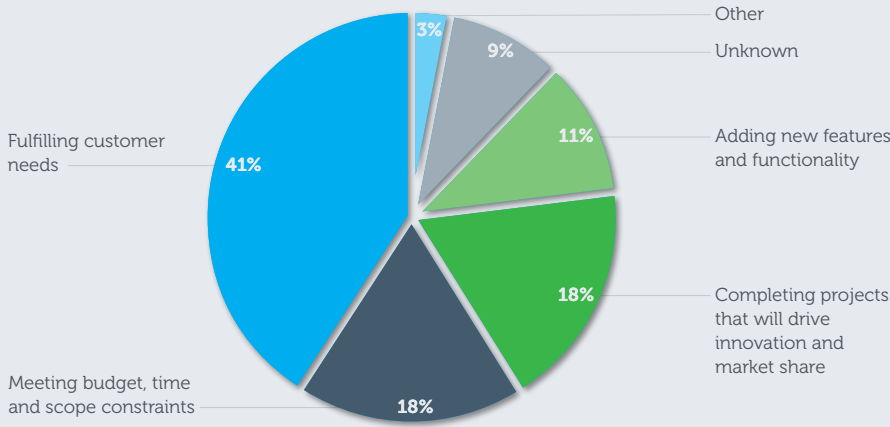**24%** — Effective and successful

I don't know — **29%**
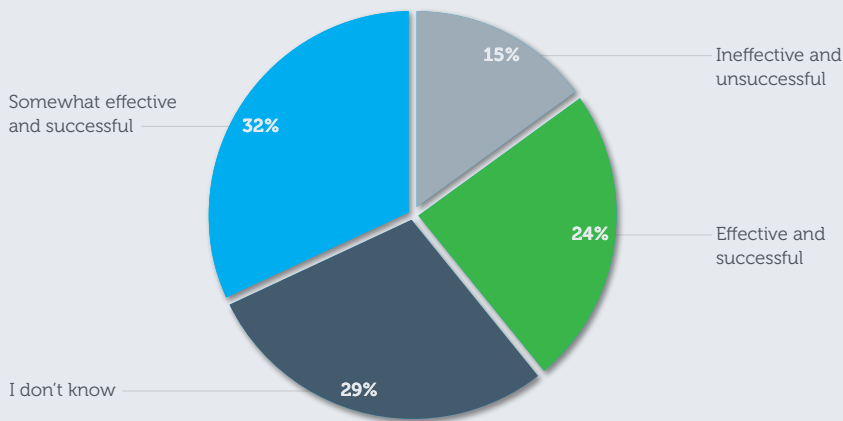
14. When your organization was adopting Scrum, which of the following were important (select all that apply)?

What's usually cited as a reason why practices such as Scrum succeed is having active executive support as well as having those senior leaders provide a clear set of business goals to be achieved with Scrum. 49% of our participants are in agreement with this, citing other important adoption measures such as alignment with financial goals, a smooth transitioning process and clear metrics to quantify success.

Category	Percentage
Active senior management sponsorship and support	27%
A clear set of business goals to be achieved with Scrum	22%
Scrum must align with the strategic and financial goals of the company as a whole	19%
Ensure a smooth and conflict-free transition from the existing practices to Scrum	17%
Clearly identified metrics to identify and measure the success of adopting and implementing Scrum	15%

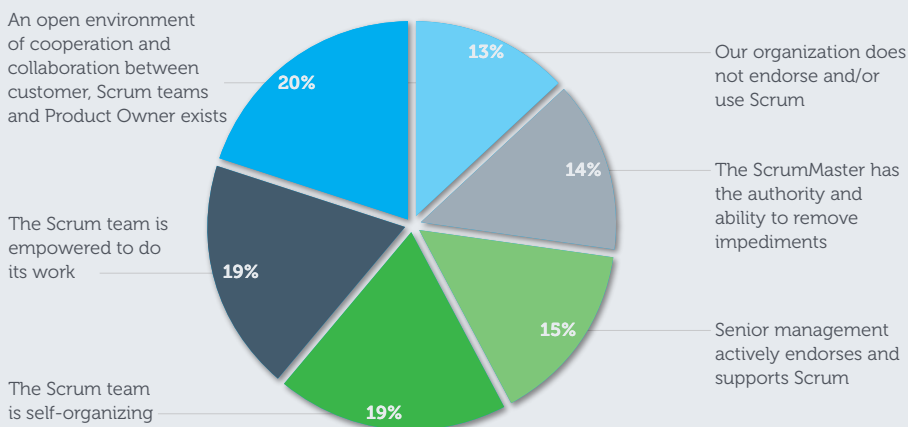**Scrum**Alliance®
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15. The highest business priorities for Scrum projects are:

Customer satisfaction is the highest business priority in Scrum, with 41% of respondents agreeing. Some other notable priorities are speed to market and managing stakeholders' change requests.

- Other — 3%
- Unknown — 9%
- Adding new features and functionality — 11%
- Completing projects that will drive innovation and market share — 18%
- Meeting budget, time and scope constraints — 18%
- Fulfilling customer needs — 41%

16. How would you describe the culture of your organization to facilitate Scrum (select all that apply)?
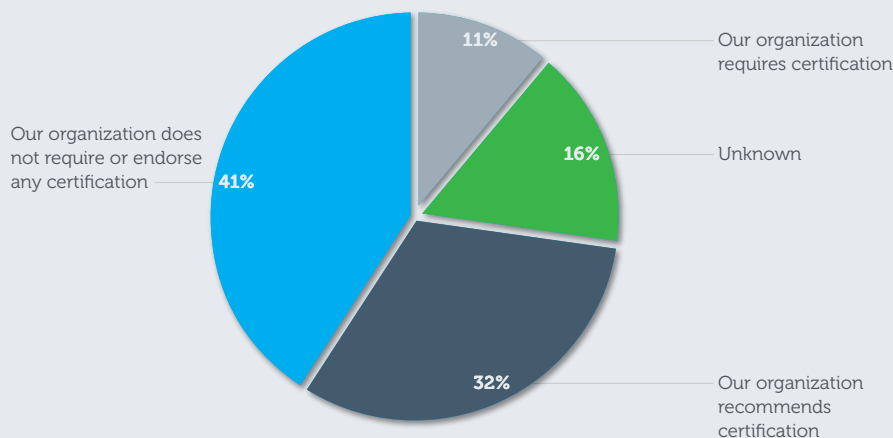
The facilitating factor for the success of Scrum boils down to the team: Allowing the team to collaborate in an open environment with all stakeholders and being empowered to do its work and self-organize is what seems most important for our participants.

- An open environment of cooperation and collaboration between customer, Scrum teams and Product Owner exists — 20%
- Our organization does not endorse and/or use Scrum — 13%
- The ScrumMaster has the authority and ability to remove impediments — 14%
- Senior management actively endorses and supports Scrum — 15%
- The Scrum team is self-organizing — 19%
- The Scrum team is empowered to do its work — 19%

The facilitating factor for the success of Scrum boils down to the team.
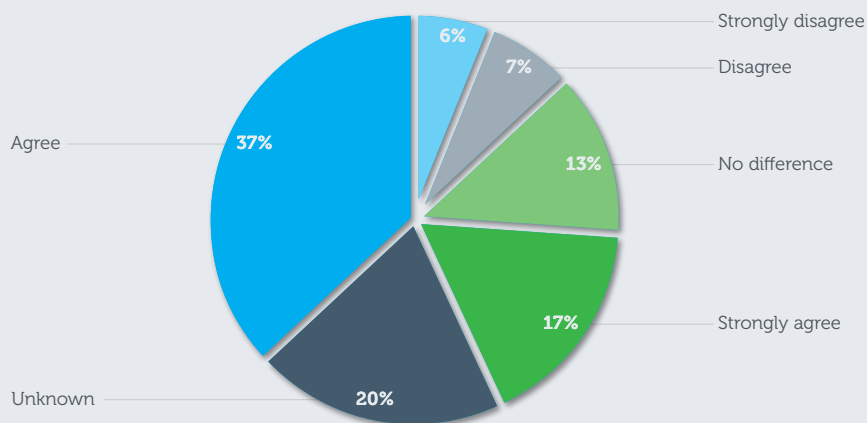
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17. Does your organization require Scrum or other project management certification?

With 11% of the participants' organizations requiring certification and 32% recommending it, there is growing visibility of the benefits of certification and training for the successful implementation of Scrum.
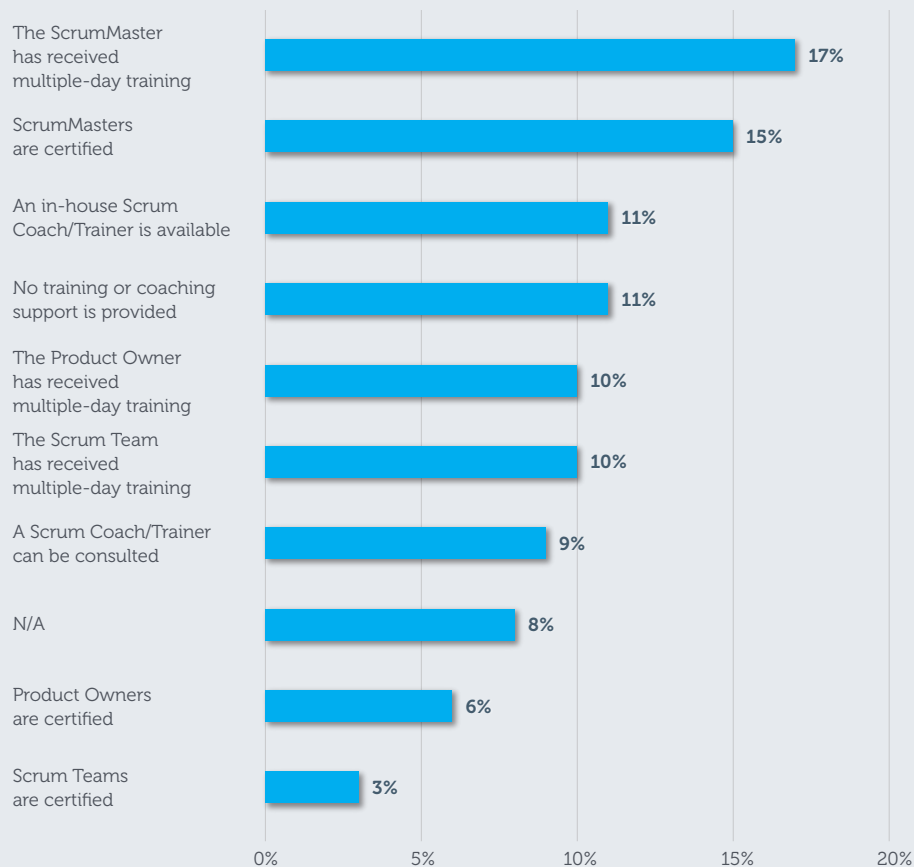

- 11% — Our organization requires certification
- 16% — Unknown
- 41% — Our organization does not require or endorse any certification
- 32% — Our organization recommends certification

18. Has obtaining certification improved the process and practices of Scrum?

In question #17, 41% of our participants said they are in an organization that does not require Scrum or other project management certification, yet 54% felt that having it improved the process and practices of Scrum.

- 6% — Strongly disagree
- 7% — Disagree
- 13% — No difference
- 37% — Agree
- 17% — Strongly agree
- 20% — Unknown

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19. Does your organization seek training and coaching (select all that apply)?

In line with the conclusions from the prior questions, more than half of our participants are in organizations that provide training and coaching support for their staff involved with Scrum projects.

Category	Percentage
The ScrumMaster has received multiple-day training	17%
ScrumMasters are certified	15%
An in-house Scrum Coach/Trainer is available	11%
No training or coaching support is provided	11%
The Product Owner has received multiple-day training	10%
The Scrum Team has received multiple-day training	10%
A Scrum Coach/Trainer can be consulted	9%
N/A	8%
Product Owners are certified	6%
Scrum Teams are certified	3%

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20. If Scrum is being used outside of IT in your organization, in what range of all the projects being run in your organization would you estimate it to be?
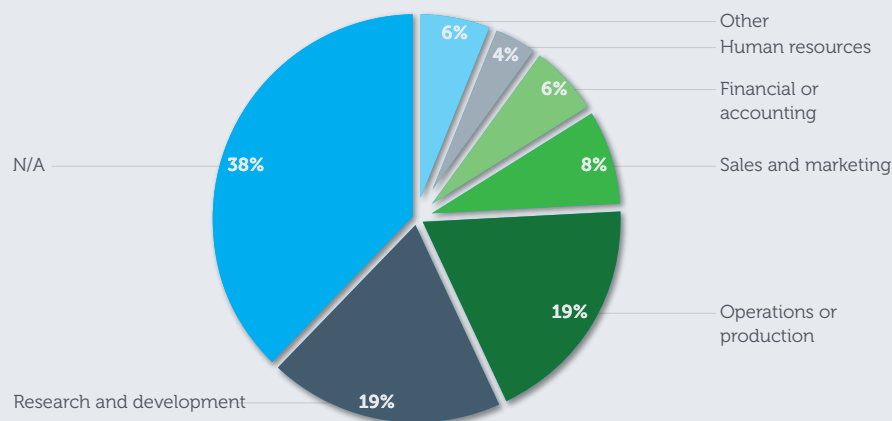
36% of our participants are in organizations that are using Scrum in some capacity on their non-IT projects. This is a good indication of the growth of Scrum outside its software development roots.
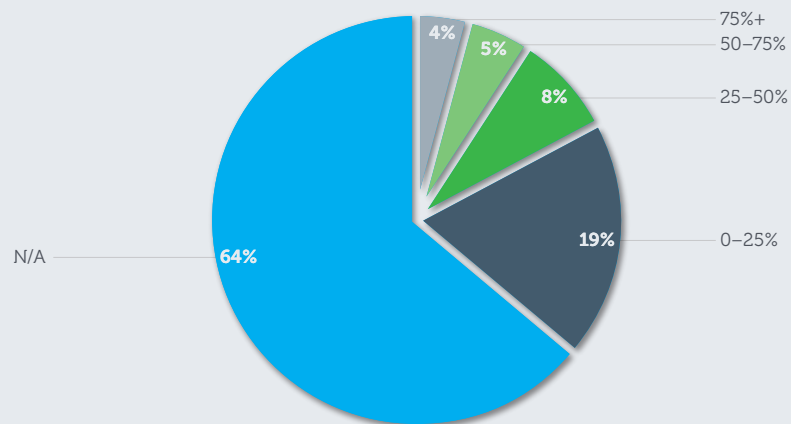
- 4%
- 5% — 75%+ / 50–75%
- 8% — 25–50%
- 19% — 0–25%
- 64% — N/A

36% of our participants are in organizations that are using Scrum in some capacity on their non-IT projects.

21. Which departmental areas are those Scrum projects being run in (select all that apply)?

Many of our participants listed areas such as sales, marketing, HR, finance (and even actuary) and public library management, confirming the conclusions from question #20 that Scrum is being used outside IT.

- 6% — Other
- 4% — Human resources
- 6% — Financial or accounting
- 8% — Sales and marketing
- 19% — Operations or production
- 19% — Research and development
- 38% — N/A

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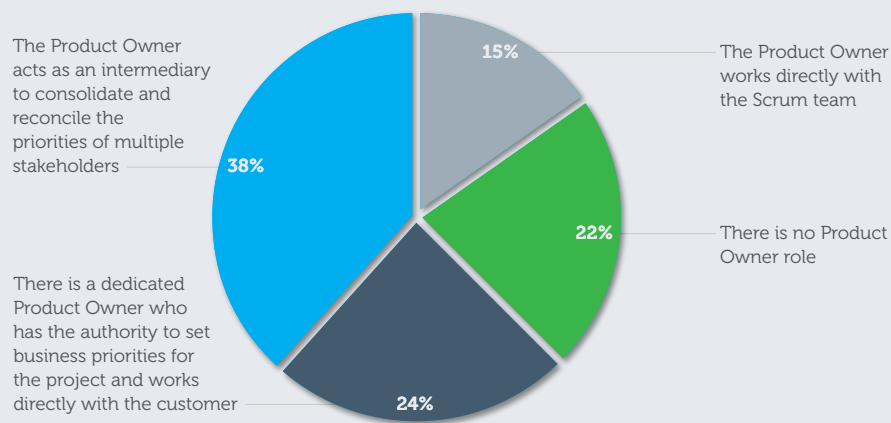# SECTION THREE: SCRUM ROLES AND PRACTICES

22. How would you describe the role of the ScrumMaster on your projects?

41% of our participants are in an organization with a dedicated ScrumMaster role, with 24% having a traditional project manager in addition. Organizations are increasingly embracing the role of ScrumMaster and acknowledging that this role is different from that of the traditional project manager.

24% — There is a project manager in addition to the ScrumMaster

There is a dedicated ScrumMaster role — 41%

35% — A traditional project manager will act in the role of ScrumMaster
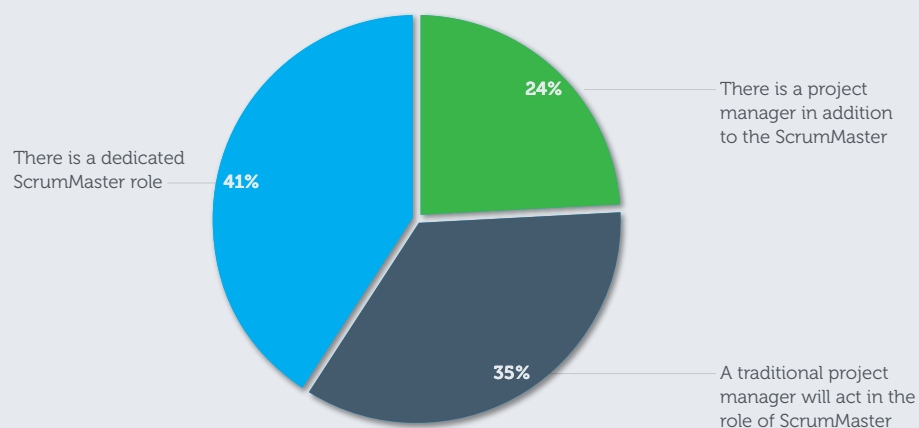
23. How would you describe the role of the Product Owner on your projects?

The Product Owner may represent multiple customers' requirements but has the responsibility and authority to reconcile conflicting requirements and determine the business value. 38% of the participants had a Product Owner working in this capacity. 15% indicate that the Product Owner works directly with the team, when their role should be to motivate the teams with a clear business goal—not be directly involved with the work. Furthermore, 22% indicate no Product Owner role. This may become problematic and indicates that more education and awareness of this role is needed.

The Product Owner acts as an intermediary to consolidate and reconcile the priorities of multiple stakeholders — **38%**

The Product Owner works directly with the Scrum team — **15%**

There is no Product Owner role — **22%**

There is a dedicated Product Owner who has the authority to set business priorities for the project and works directly with the customer — **24%**

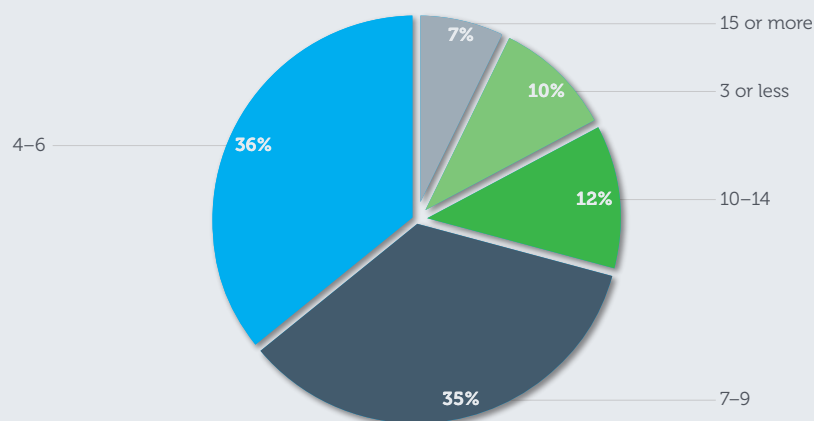*Note: Individual results were rounded up and down; actual data totals 100%.*

24. How would you describe your Scrum Team?

Though co-located teams are the ideal, the increasing globalization of business around the world requires an adjustment in how we manage teams. Our participants who are in engaged in Scrum projects are no exception, with 24% of them working with distributed teams. This will pose challenges for those who desire high-output, self-directed and self-organizing teams due to the latencies in communications and stand-up meetings.
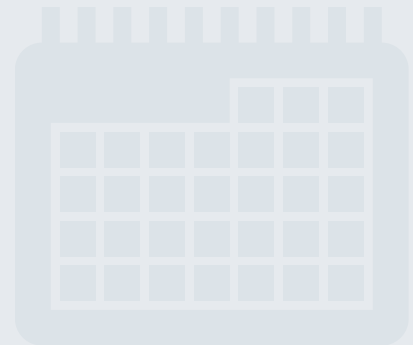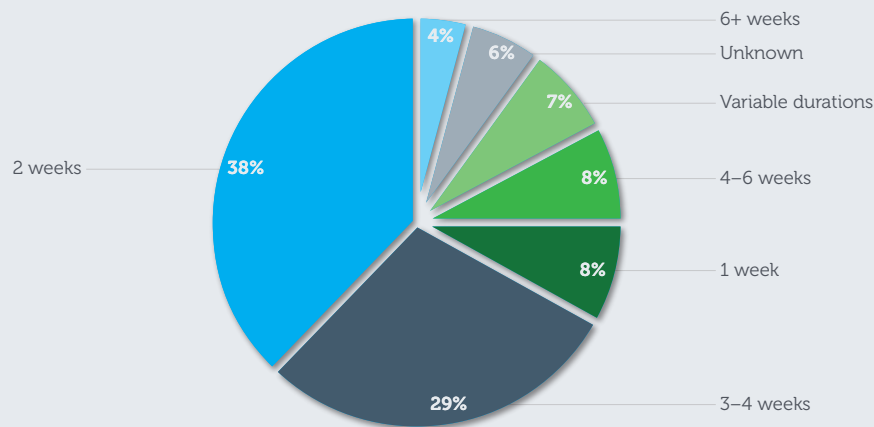
The Scrum Team is distributed across different sites and/or geographic areas — **24%**

The Scrum Team is co-located — **20%**

The Scrum Team is self-directed and self-organizing — **16%**

8% — Unknown or not sure

9% — The ScrumMaster or project manager generally drives the work estimates and team communication

11% — The Scrum Team is cross functional (generalist who can work on most any task)

12% — The Scrum Team is included in work effort estimates and ordering the Product Backlog

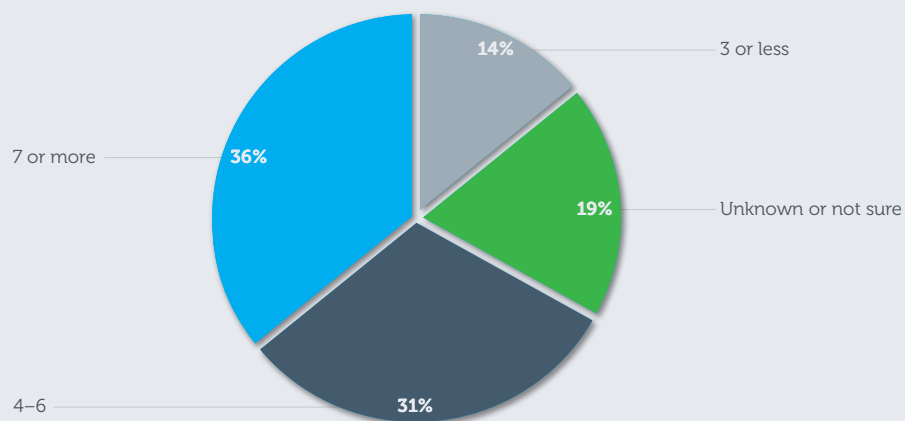# 25. How many people are typically on the Scrum Team?

In Scrum, it is a general recommendation that teams total seven members, plus or minus two. 71% of our participants are within that recommended range.
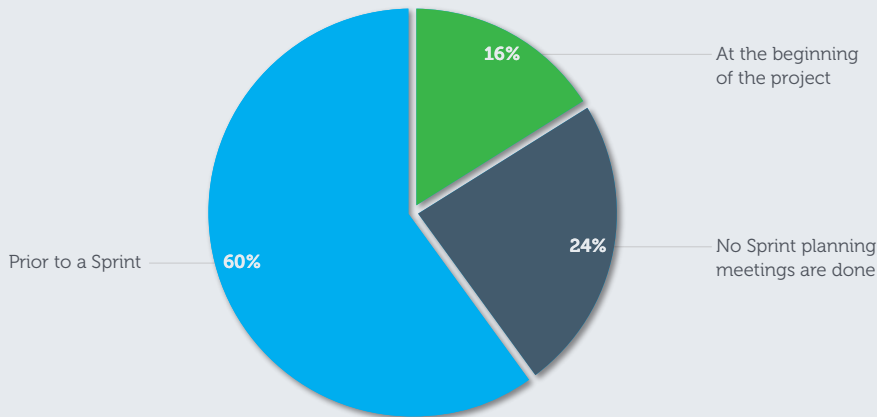
4–6 — **36%**

7% — 15 or more

10% — 3 or less

12% — 10–14

35% — 7–9

26. How long do your Sprints typically run?

- 6+ weeks — 4%
- Unknown — 6%
- Variable durations — 7%
- 4–6 weeks — 8%
- 1 week — 8%
- 3–4 weeks — 29%
- 2 weeks — 38%

27. How may Sprints are typically completed in a Scrum project?

- 3 or less — 14%
- Unknown or not sure — 19%
- 31% — 4–6
- 7 or more — 36%

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28. When does your team hold Sprint planning meetings?

16% At the beginning of the project

24% No Sprint planning meetings are done

60% Prior to a Sprint

29. How often does your team hold Daily Scrum meetings?

8% As needed

10% Multiple times a week, but not daily

23% Not done

59% Daily
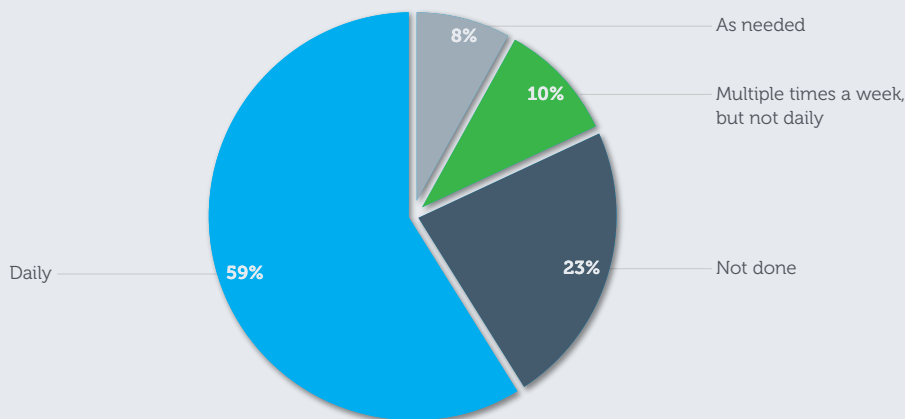
30. When does your team hold retrospectives?

At the end of the project — 13%
No retrospectives are held — 25%
After each Sprint — 62%
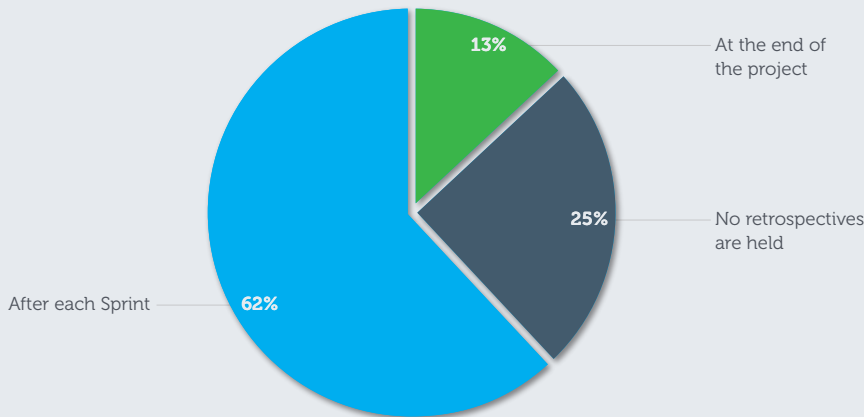
31. How often does your team engage in testing and continuous integration/build?

Though Scrum does not define software engineering practices, it is usually used in conjunction with XP, which recommends that testing and continuous build be done as frequently as feasible. Half of our participants are following this practice.
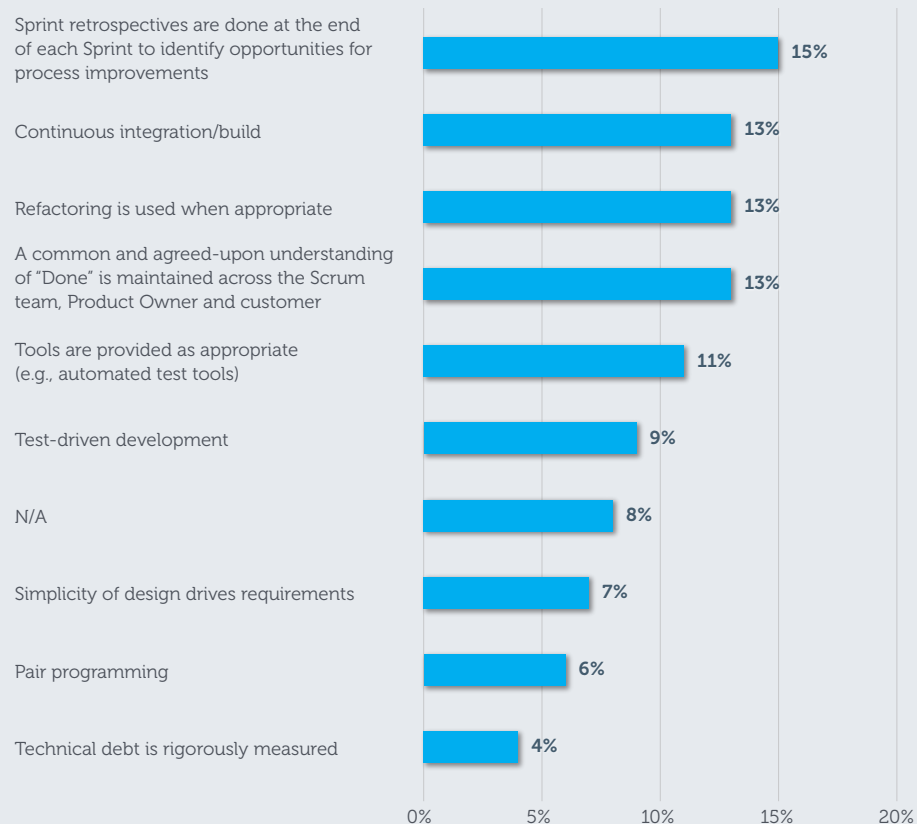

When needed — 28%
Weekly — 13%
Daily — 17%
Not done or unknown — 22%
Multiple times throughout the day — 20%

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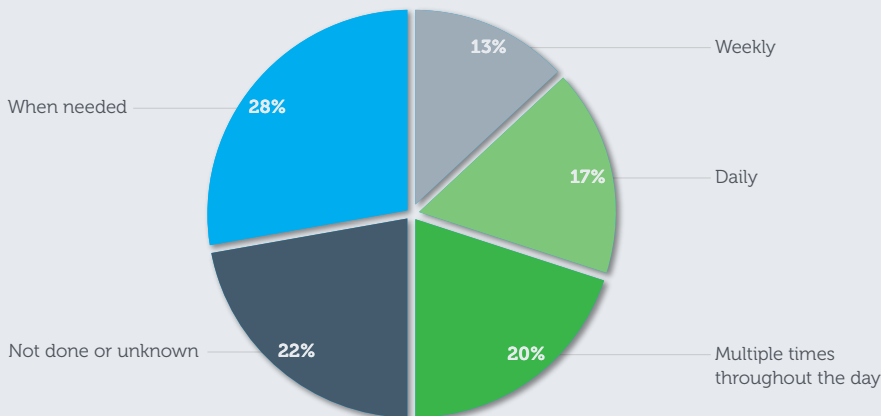
32. How often are Scrum artifacts, such as the Product Backlog, Sprint Backlog and Burn-down Chart, used?

- 5%
- 13% — No formal project documentation is used
- We use our own internal project documents
- Used extensively and in every Scrum project — 38%
- 19% — N/A
- Some are used — 24%
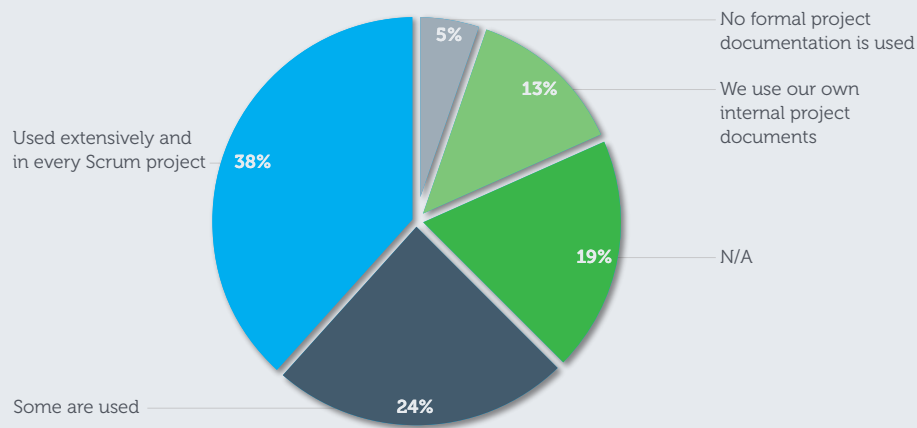
33. Which of the following are followed in your Scrum projects and processes (select all that apply)?

91% are using the recommended tools and practices in conjunction with Scrum; only 8% are not.

Practice	Percentage
Sprint retrospectives are done at the end of each Sprint to identify opportunities for process improvements	15%
Continuous integration/build	13%
Refactoring is used when appropriate	13%
A common and agreed-upon understanding of "Done" is maintained across the Scrum team, Product Owner and customer	13%
Tools are provided as appropriate (e.g., automated test tools)	11%
Test-driven development	9%
N/A	8%
Simplicity of design drives requirements	7%
Pair programming	6%
Technical debt is rigorously measured	4%

0%   5%   10%   15%   20%

34. If your organization has an existing Waterfall method in place, what was your experience when Scrum was introduced?

49% of our participants used Scrum and Waterfall side by side and/or together. This indicates a good portion of our participants did not use Scrum in a "pure" sense and had a need for a strategy to incorporate the practice into and/or alongside their existing Waterfall methods.

> *49% of our participants use Scrum and Waterfall side by side and/or together.*

We do not have an existing Waterfall method in place	31%
Scrum was used for some projects and Waterfall for the rest	24%
Scrum was very successful and that is all that we use now	13%
Scrum was successfully introduced in addition to our Waterfall method	9%
After a thorough evaluation of a project's type, requirements and parameters, a decision is made to use either Scrum or Waterfall	8%
Scrum was introduced and integrated into our Waterfall method	8%
We were not successful in introducing Scrum, so we stuck with our Waterfall method	6%
We attempted an integration of Scrum and Waterfall and it was not successful	2%

Note: Individual results were rounded up and down; actual data totals 100%.

35. Which area would you say was valued most by your organization's executives for delivery of Scrum-based projects (select all that apply)?

Delivering customer value is considered the highest priority in the Agile world, and a third of our participants' responses confirm this notion. The remaining participants' focus rests on the traditional project management's triple constraint of time, quality and cost and confirms what was highlighted in question #34: that a large section of our participants come from a Waterfall background.

- Delivering business value to the customer — 32%
- N/A — 13%
- Cost — 13%
- Quality — 19%
- Schedule deadlines — 24%

Note: Individual results were rounded up and down; actual data totals 100%.

> *Delivering customer value is considered the highest priority in the Agile world.*

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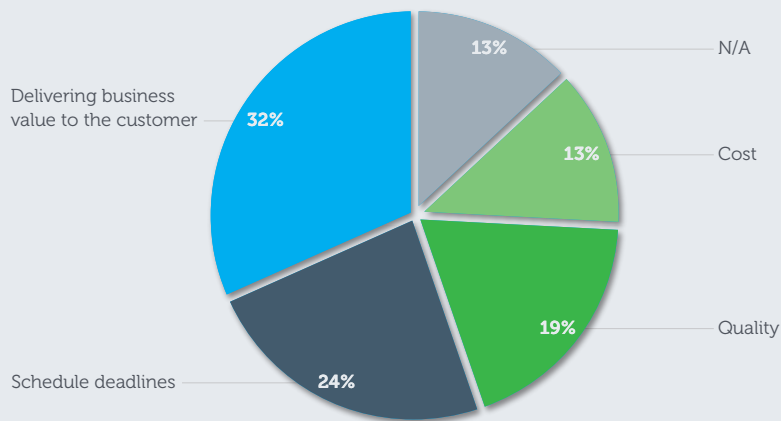
36. What were some of the challenges faced by your organization in achieving those values with Scrum (select all that apply)?

Consistent with findings in questions #13 and #14, a quarter of our participants do not have metrics and benchmarks in place to clearly identify the success of Scrum projects. Similarly, 49% of our participants are in organizations where Scrum is used alongside and integrated with their Waterfall method, and it seems 23% of them found the transition difficult. Some of the other challenges listed were not having a well-defined Product Owner role and/or getting the wrong person to hold that role. This lack of the understanding of core Scrum concepts can be attributable to a lack of training and coaching support. Ensuring that teams have access to training and support can ensure Scrum is successfully deployed and implemented in your organization.

Ensuring that teams have access to training and coaching support can ensure Scrum is successfully deployed and implemented.

We did not have clearly identified metrics to identify and measure the success of Scrum projects and delivery — **25%**

It was difficult to transition from a Waterfall-based method to one driven by Scrum practices — **23%**

N/A — **18%**

17%

10% — We did not get senior management sponsorship and support

7% — Other

Product Owners and Teams were just not willing and/or enthusiastic about following Scrum best practices (daily stand-up meetings, prioritizing backlog items, ensuring working deliverables at the end of each iteration, etc.)

37. For all the projects in your organization that were managed using Scrum, what range would you estimate were successfully delivered using Scrum?

For our participants, Scrum has been very successful. 34% felt that 75% or more of their projects were successfully delivered using Scrum, while 29% felt 50 to 75% of Scrum projects were successful. This is an encouraging sign that rapid but high-quality delivery through Scrum is resonating with our participants.
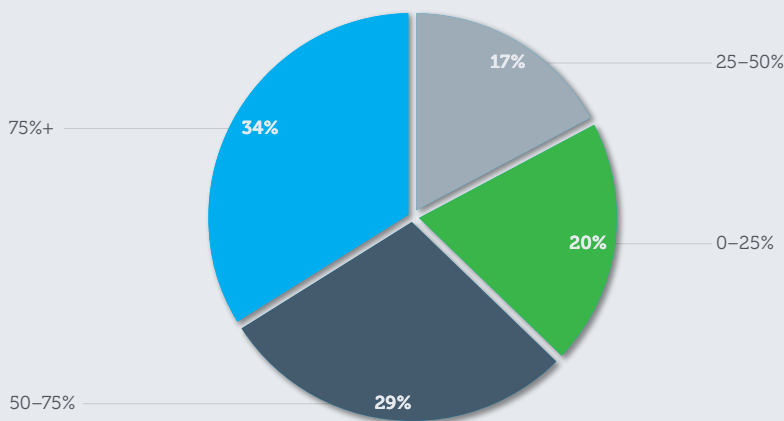
38. Do you think it likely that your organization will use Scrum further?

Our participants are enthusiastic about Scrum, with more than 70% believing they will use it in the future.
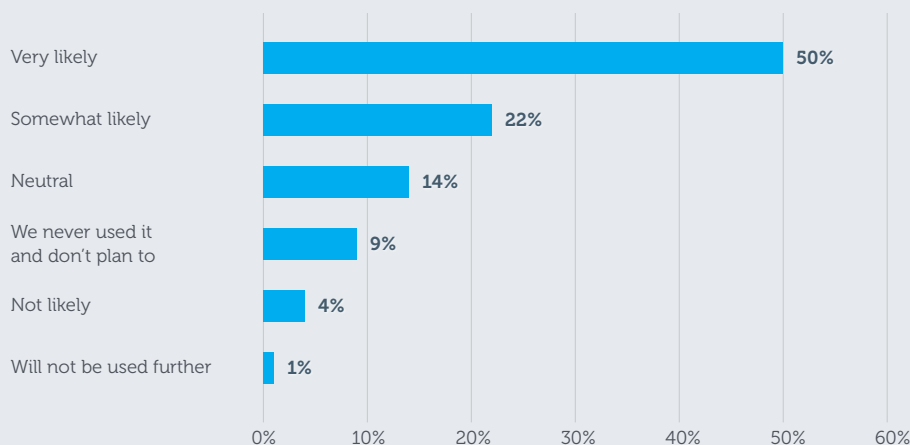
ANALYSIS OF RESULTS

ANALYSIS OF RESULTS

A lot of useful information has been presented to you on the State of Scrum. Now you may be asking yourself, what does this all mean? How do I make use of the data and results? How does this pertain to my own (and my organization's) strategy going forward with Scrum?

Here we'll provide insights that pertain to some of the most pressing topics for those implementing Scrum. Although many topics merit consideration, we believe there are three that are most important:

- Scrum has become very popular, but it is not always "pure."

- The roles and practices of Scrum are simple and well defined, but the practice can be difficult.

- The long-term success of Scrum is about creating a culture and making Scrum principles and practices the "new normal."

We will explore what the survey results mean within the overall landscape of Scrum, and we will draw from similar surveys and studies as well. We will also use direct feedback from participants and leading industry experts based on in-person interviews and/or email correspondence.

Insight #1: Scrum has become very popular, but it is not always "pure."

There's a common belief that the vast majority of organizations adopting and integrating Scrum come from a Waterfall-like background. This was supported by the survey, as 49% of respondents either used Scrum in addition to an existing Waterfall method or used it for some projects while using Waterfall for the rest. 13% use Scrum exclusively, while 31% seem to indicate no use of Waterfall. 23% felt that it was a difficult transition to move from a Waterfall-based method to Scrum, and 25% felt that there were no clearly identified metrics to identify and measure the successful delivery of Scrum projects.

Furthermore, almost half of the participants are deploying and managing Scrum projects within a PMO, and about the same number feel that managing and deploying Scrum projects this way is mostly effective and successful. PMOs are usually tasked with deploying and managing projects, programs and portfolios within a traditional project management method that's often Waterfall-based.

The reality is that organizations that want to incorporate Scrum are usually coming from a Waterfall-based background and need to integrate Scrum alongside or within their existing methods.

A Forrester study titled "Water-Scrum-Fall Is the Reality of Agile for Most Organizations Today," published in June 2011, indicates that:

"Hybrid Agile methods are a reality in most Agile implementations. This happens in part because Agile adoption has been practitioner-led, leading teams to focus on domains they can influence, mainly the team itself. Areas outside of their control, such as business analysis and release management, continue to follow more traditional approaches, meaning that Scrum adoption is limited to the development-team level. Compliance requirements are another factor driving hybrid approaches, as they call for strong governance processes before and after development."

While it would be advantageous to practice Scrum as it is prescribed, many organizations starting from Waterfall will need to look at ways to integrate Scrum either alongside their existing methods or within them. As the Forrester study recommends, you will need to understand the limitation of a hybrid Scrum and Waterfall integration (what they like to refer to as "Water-Scrum-Fall") while also pushing the boundaries to get the most efficient and effective results.

49% of respondents either used Scrum in addition to an existing Waterfall method or used it for some projects while using Waterfall for the rest.

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In addition, incorporating a way to measure progress for the projects your organization is undertaking—whether through Scrum, Waterfall and/or a combination of both—will be helpful in letting you know which is best. As Brian O'Reilly of Accel Solutions Group notes:

"I do believe that some sort of portfolio tool that caters to Agile allows the collection of good metrics for both Agile and traditional project approaches. Using data-driven metrics [would] drive improvements to Agile as issues arise AND [such data could] show management that indeed, Agile is a significant improvement over traditional approaches."

Having a way to identify solid metrics and benchmarks will allow your organization to obsess less about which method or practice is best and instead apply the right mix of practices and techniques to the particular situation at hand.

Recommendation: Understand the constraints and limitations of a hybrid Scrum-Waterfall integration, but keep pushing the boundaries and measure the results. Like the old adage says, "practice makes perfect," the more you practice Scrum as it is prescribed, the better the results you will see.

The more you practice Scrum as it is prescribed, the better the results you will see.

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Insight #2: The roles and practices of Scrum are simple and well defined, but the practice can be difficult.

As we will discuss in the next Insight, although Scrum is about a "mind-set" or adoption of a "culture" with ceremonies designed to make the culture thrive, there are specific roles and practices that are vital to the method. These roles and practices are simple and well understood, but the reality is that our participants follow them to varying degrees.

Scrum Roles

The ScrumMaster is not a "master of Scrum" but a role within the framework, something people may misunderstand, especially as this relates to the Product Owner role as well. The ScrumMaster is tasked with being responsible for ensuring that Scrum values and practices are encouraged and that barriers impeding the progress of the project are removed from the team. This person leads by coaching and facilitating rather than by directing and controlling. The proportion of participants who took the survey and had the official role of ScrumMaster was 18%, while 41% acknowledge having a dedicated role for the ScrumMaster in their organizations.

It is commonly understood that many organizations will have a ScrumMaster and project manager, or will have the project manager act in the capacity of the ScrumMaster. This is reflected in our survey, in which 24% of the participants have a project manager in addition to a ScrumMaster and 35% have a traditional project manager who acts in the role of a ScrumMaster. This strategy is taken by most organizations who are in the beginning stages of incorporating Scrum and/or assume the best-suited role for the traditional project manager is that of the ScrumMaster.

The Product Owner is the specific individual who has the authority to set business priorities for projects, usually through a Product Backlog. This person usually works directly with the customer. 24% of the participants had a dedicated Product Owner who fulfilled this role and responsibility. The Product Owner may represent multiple customers' requirements but has the responsibility and authority to reconcile conflicting requirements. 38% of the participants had a Product Owner working in this capacity.

Unlike the ScrumMaster role, which seems well defined and followed, the Product Owner role seems to give our participants some problems. In the "other" section related to the question on challenges faced with Scrum, several participants noted that individuals assigned this role lacked the proper background and enthusiasm to manage it. Another issue is raised by Jason Davis, a project manager for Victor Community Support:

"One issue that we have come across is that of our team being

very small in numbers. We have found that in the process we have merged the roles of the Product Owner and ScrumMaster, which is not ideal as there are conflicting priorities on both levels. It takes a lot more energy to work through this process in dealing with the backlog and any critical bug fixes that may be identified. We have managed to work through these issues to date, but it hasn't been without some struggle."

Team Sizes and Artifacts

The Scrum team typically numbers 4-9 people, and 71% of the participants in our survey had teams of this size. Scrum teams are usually expected to be cross-functional and self-organizing. In our survey, 11% considered themselves cross-functional and 16% self-organizing.

The use of a Product Backlog, Sprint Backlog, Burn-down Chart, etc., was noted by 38% of the participants. The Sprint Backlog is an output of the Sprint planning meeting. It consists of the tasks for the Sprint derived from the Product Backlog. "Done" defines what the team means when it commits to "doing" a Product Backlog item in a Sprint. The Sprint Backlog Burn-down is a graph of the amount of Sprint Backlog work remaining in a Sprint across the time left in the Sprint. The Release Burn-down graph records the sum of remaining Product Backlog estimated effort across time. 24% of participants use some of these document artifacts.

Sprints | Sprint Planning | Sprint Retrospectives

A Sprint is one iteration of a month or less that is of consistent length throughout a development effort.

Only the Product Owner has the authority to cancel the Sprint. Sutherland and Vodde suggest that Sprints should be 2-6 weeks long. 75% run Sprints within this duration.

The Sprint Planning Meeting is attended by the Product Owner, ScrumMaster, and the entire Scrum team. During the Sprint Planning Meeting, the Product Owner describes the highest-priority features to the team. The team asks enough questions that they can turn a high-level user story of the Product Backlog into the more detailed tasks of the Sprint Backlog. 60% have these conversations prior to a Sprint, while 16% do them right at the beginning of the project.

The Sprint Retrospective meeting is a time-boxed meeting where the team discusses what went well in the last Sprint and what can be improved for the next Sprint. 62% hold these right after each Sprint, whereas 13% wait until the end of the project.

The daily stand-up meeting is a time-boxed, 15-minute meeting used to inspect progress toward the Sprint goal and to make adaptations that optimize the value of the next workday. 59% have these meetings daily, while 18% do them throughout the week as needed.

Scrum does not define a software engineering or development process as that would defeat its philosophy of being as lightweight, flexible and adaptable as possible for a variety of complex situations. Some use Scrum as a "wrapper" around an existing and proven software engineering practice, standard or method. A majority of our participants use at least one or several Extreme Programming

practices in conjunction with Scrum, such as test-driven development, pair programming, continuous building and testing, automation, etc. 37% practice continuous building and integration, daily or multiple times a day.

The main recommendation that we can take away from this is that following Scrum roles and practices, as they are prescribed, will prove to be much more effective. The reality is that many practitioners adapt Scrum, which has led to the term "Scrum-Buts" and in turn, the creation of the "Nokia Test." While other practitioners add practices to the basic Scrum framework as needed— known as "Scrum-And." As Steve Denning's April 2011 article ("Scrum Is a Major Management Discovery") in *Forbes* states:

"Despite the enormous potential that individual teams and departments have shown with Scrum, the overall picture of implementation has been quite mixed.... Most of these implementations with mixed results, which Sutherland derisively calls 'Scrum-but,' are examples of a failure to implement the full array of Scrum practices. When only some of the practices are implemented, such as doing the work in short cycles but interrupting the team during the cycle, the potential gains in productivity don't occur."

In one sense, Scrum can be viewed as a bundle of roles and practices that is best deployed as a whole, rather than piecemeal. For as Brian O'Reilly of Accel Solutions Group noted in an interview, "Agile with some

constraints that provide a consistent approach regardless of team ... [that] involve estimating techniques, time-boxing ... planning days up front [prior to a Sprint] rather than at each Sprint ... may be repetitive, but it assures consistency."

While 41% of organizations are jumping into Agile waters without requiring a specific certification of their employees, more than half think a certification such as the Certified Scrum Professional (CSP) improves their chances of sustained success. As Liz Walsh of G2 Web Services states:

"In terms of moving forward with improving Scrum practices at our company, a few things spring to mind. First, have a trainer come into our environment to help us understand how to address our specific scenarios (and perhaps dysfunctions). Second, find ways— maybe through that trainer, maybe through other resources—to make some of the more abstract objectives of Scrum more concrete and measurable. Like brushing one's teeth is a practice that supports the goal of good dental health, so, too, can structured activities help keep people aligned toward the right goals."

More than half of our participants are in organizations that provide training and consulting support for staff involved with Scrum projects. Increasing these percentages should help with the consistency of roles and practices.

Recommendation: Follow Scrum practices as prescribed and ensure your organization is provided with appropriate support and training.

Scrum can be viewed as a bundle of roles and practices that is best deployed as a whole, rather than piecemeal.

Insight #3: The long-term success of Scrum is about creating a culture and making Scrum principles and practices the "new normal."

In traditional project management, the goal often expressed by practitioners is the well-known idea of fulfilling the obligations of the triple constraints of meeting time, budget and scope. Despite this, most frame this under the common colloquial phrase of getting a project done "on time and under budget." A common misperception with this idea is that meeting time and budget does not necessarily mean fulfilling the requirements of the project. A common complaint is a project that can meet the specifications of delivering on time and under budget often have poor requirements that lead to dissatisfied customers.

This occurrence was common enough, especially in the software development industry, that it prompted the Agile movement. That culminated in the famous Agile Manifesto, which promotes the following principles:

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

As the Manifesto outlines, "While there is value in the items on the right, we value the items on the left more." There are an additional 12 principles that can be viewed online, but, in a nutshell, the value realized in Scrum and Agile are practices that place humans, not processes or techniques, at the center of an organization. Our participants' responses are in line with this notion, since the priorities of the responses highlight the team- and customer-oriented focus.

Business Priorities

In terms of business priorities for Scrum projects, 41% feel that fulfilling customer needs is highest, while meeting budget, time and scope constraints as well as engaging in projects that drive innovation and market share follow, at 18%. Not surprisingly, 27% feel having active senior management sponsorship and support is crucial, and 22% feel a clear set of business goals for what gets achieved with Scrum is vital to fulfill customer satisfaction. That is why more than half felt that cultural influences, such as an open and collaborative environment and empowered/self-organizing Scrum teams, are vital for facilitating Scrum; that can only be achieved through active support of management and clear business vision.

These results are very much in line with the general precepts of Agile, which typically place customer satisfaction and business success as the main priorities. Budget and time constraints become secondary, as reflected by the participants' input, and subordinate to satisfying the

The value realized in Scrum and Agile are practices that place humans, not processes or techniques, at the center of an organization.

customer. Still, having the role of Product Owner ensures that the customer gets to prioritize cost and schedule constraints along with the stakeholders.

In line with participants' focus on delivering customer value, 32% of the respondents felt that this was most valued by their organization's executives for the delivery of Scrum-based projects. 34% of the participants felt that Scrum was successful for at least 75% of the projects for which it was deployed, and half feel that they will very likely use Scrum further in their organizations.

This indicates that adoption is a continuous process of improvement. For our participants, the goals include achieving high customer satisfaction and having an open and collaborative environment, empowered and self-organizing teams, and full upper-management support with clear vision and direction. As Jason Davis, project manager of Victor Community Support, states:

"The use of Scrum on our organization has had tremendous operational benefits that we realized almost immediately.... Within my organization, Scrum has been openly adopted by my executives from the standpoint that we have been able to produce functionality in our software more frequently, which has kept our internal users of the software very happy. I feel that this alone has given us the ability to have such an open adoption of the methodology."

When all this becomes the "new normal," then you know you are on the path to being successful with Scrum. Despite the variations in our participants' current implementation of Scrum, 50% say they will very likely use it in the future, indicating that workplace use of Scrum will continue to grow.

Recommendation: Make adopting Scrum a continuous process of improvement until it becomes the "new normal."

The goals include achieving high customer satisfaction and having an open and collaborative environment, empowered and self-organizing teams, and full upper-management support with clear vision and direction.

SCRUM IS NEEDED MORE THAN EVER

"In today's fast-paced, fiercely competitive world of commercial new development, speed and flexibility are essential. Companies are increasingly realizing that the old, sequential approach to developing new products simply won't get the job done. Instead, companies in Japan and the United States are using a holistic method; as in rugby, the ball gets passed within the team as it moves as a unit up the field."

This quote is from the 1986 *Harvard Business Review* article "The New New Product Development Game" by Hirotaka Takeuchi and Ikujiro Nonaka. This article was largely responsible for providing the roots for the Scrum framework.

In our current business climate, speed and flexibility have become ever more imperative. Despite the current global economic slowdown, management is still confronted with the critical task of analyzing and improving the ability of any organization to change, survive and grow in this complex global economy. This, coupled with accelerated technological advances and ever-changing socioeconomic conditions, spurs organizations to continuously adapt to their environment if they are to survive and prosper. Agile practices are a key adaptation that organizations are making in the face of heightened business complexity, globalization and constant change.

Traditional project management is typically framed within a prescriptive, rationalist perspective in which there is a best, "true" way to manage projects, one that is just a matter of outlining and implementing best practices. Project management should be able to prescribe the best ways to manage projects by planning and documenting all the scope up front, then following and executing the plan to completion.

Agile was a reaction against this notion, since the people involved with it were primarily in the highly dynamic and fast-paced world of software development. The underlying idea that drives them to action is that only observable evidence of project requirements that are satisfactorily validated by stakeholders and team members can be constituted as "best" or true. These truths cannot be known a priori (before the fact) but only a posteriori (after the fact), through project information gained by means of observation, experience or experiment. The empirical process control constitutes a continuous cycle of inspecting the process for correct operation and results, and adapting the process as needed.

The feelings of dissatisfaction and constraint that the software development community felt when trying to deliver software projects under traditional project management methods and

Agile practices are a key adaptation that organizations are making in the face of heightened business complexity, globalization and constant change.

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practices culminated in the 2001 creation of the now-famous Agile Manifesto, which laid out the creed for developing software using Agile principles. Scrum, an iterative and incremental framework, falls under the Agile practices umbrella and is the most popular of Agile methods. Our survey participants validate this idea, which has also been recognized in other surveys and papers, including the well-known annual survey done by VersionOne. Its 2011 study found that Scrum and its variations were used by 66% of respondents.

What does this all mean? It is now time to evaluate what we have discussed and start thinking about Scrum going forward.

Outlook #1: Scrum will continue to expand outside of software development.

There are already indications that Scrum is being adopted outside of the software development community. In the article "Agile, Social, Cheap: The New Way NPR Is Trying to Make Radio" from Nieman Journalism Lab in April 2012, author Andrew Phelps discusses how the new NPR vice president of programming, Eric Nuzum, decided to use Agile to develop programs that gave listeners more of an opportunity for active involvement—while also delivering more quickly and economically. Scrum was the primary method used to model how Nuzum wanted to deploy radio programs faster.

Another adoption of Agile outside of software development presents itself in the article "Agile Reinvents Retail," published by John Hitchcock of SandHill.com on September 2012. The story describes how a California retail outlet called Oddyssea used Agile development principles to deploy its retail operations:

"What's most interesting about the Oddyssea retail experience is it was conceptualized, designed, implemented and continues to operate using Agile. The Agile software engineering model. But Agile is unrelated to the store's point of sale, inventory management or financial systems. Rather, it's completely focused on defining the retail experience ... to build a retail operation that was flexible and open to customers, collaborative with its target market and, most importantly, change ready."

Wikispeed: Where Automobile Manufacturing Meets Scrum

Another recent and famous example of Scrum outside of software development is embodied in a sports car called Wikispeed. Built by Joe Justice, a software engineer by trade, and a team who entered the 2008 X-Prize competition, Wikispeed was deployed using Scrum and crowdsourcing. The team was able to place tenth in a crowded and highly competitive environment.

This was done by getting a working prototype in three months for a car that can go from 0 to 60 mph in less than five seconds, weighs just 1,404 pounds, has a top speed of 149 mph and gets more than 100 mpg—all using Agile practices and techniques.

While our own survey participants are mostly from the IT industry (41%), there is good representation from Finance (12%), Government (6%), Healthcare (6%) and Telecommunications (5%), indicating the growing interest in Scrum outside IT. We anticipate this trend to grow in the future.

Outlook #2: Scrum will continue to grow because it is poised for the "Age of the Customer."

What these real-world examples have in common is that they were able to use Scrum and Agile because the principles and practices are relevant, applicable and transferrable for any organization that needs flexibility and agility to quickly turn around high-quality products and services. For example, Oddyssea was able to leverage the principles and practices of Scrum, taken from software development, and customize it for:

- Quicker **conceptualization** of new retailing ideas

- **Design** implementation based on those ideas

- **Development** of a working prototype

- **Testing** and tweaking of the prototype based on customer feedback

- Creation of a culture of **continuous improvement** that made each iteration better than the last—and delighted customers

It makes sense, then, that other industries have adopted or are starting to adopt Scrum methods and principles. This should not be surprising, since what lies at the heart of Agile is the obsessive focus on service to the customer—the mainstay of almost any business. 31% of our participants felt that this focus is most valued by their organization's executives when it comes to the delivery of Scrum-based projects.

In his book *The Leader's Guide to Radical Management: Reinventing the Workplace for the 21st Century*, management guru Steve Denning writes that the notion of "delighting the customer" is the central focus for Agile wherever it is applied. This background of both technology and business has given rise to a new project management format: one that is more *strategically* focused on satisfying the customer.

Forrester calls this the "Age of the Customer," a management paradigm that goes from a focus on managing things (product and services) to managing the customer experience.

We believe that the growing adoption of Scrum as outlined in this report, and the incorporation of its practices and methods outside of software development, is unlikely to slow down in the foreseeable future. This is because Scrum's principles and practices are well suited to the business environment at large, transforming not only specific projects or processes within a particular industry but entire organizations and even industries. This allows organizations to meet the growing demand for faster project turnaround while also achieving higher quality and business value going forward.

What lies at the heart of Agile is the obsessive focus on service to the customer—the mainstay of almost any business.

FINAL THOUGHTS

We hope you have enjoyed this journey of discovery into the current state of Scrum. The report contains information intended to help you make improvements in your day-to-day use of Scrum, plus a set of benchmark results to use as a guide. More than that, we hope we have provided you with a more meaningful way to view the results in light of the insights that we discovered from the data.

We have looked at the various ways Scrum roles and practices are being used, and identified that creating a culture that supports Scrum is critical. We have also discussed the ways in which practicing core Scrum principles as prescribed, acknowledging incremental success and gaining executive support will lead Scrum to become the "new normal" for your organization. This creates a virtuous cycle of continuous improvement, higher quality and delivery of business value to your customers.

Furthermore, we wanted you to see where Scrum is headed. The adoption of its principles and practices is crossing over the boundaries of its software development roots and into areas such as retail, marketing, manufacturing and government. This is not surprising, given that its principles and practices are highly transferrable and are based on a strong focus on customer service. It appears that Scrum is poised for high growth and transforming the world of work.

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ABOUT SCRUM ALLIANCE

The Scrum Alliance is a nonprofit professional membership organization created to share the Scrum framework and transform the world of work. The Scrum Alliance's mission is to increase awareness and understanding of Scrum, provide resources to individuals and organizations using Scrum, and promote the iterative improvement necessary to succeed with Scrum. The Scrum Alliance hosts Scrum Gatherings and supports Scrum User Groups, providing a forum for interactive learning throughout the world.

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