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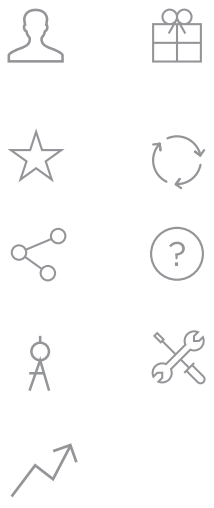*annual*

STATE OF AGILE™
REPORT

EXECUTIVE SUMMARY
AGILE IS SUCCEEDING AT SCALE

The 10th annual State of Agile™ survey makes it clear that agile software development has grown increasingly popular over the last decade. Participation in the survey has grown more than three-fold. In 2006, there were fewer than a thousand respondents to the survey, while the latest survey had 3,880.

Agile methodologies are no longer solely the domain of startups and small development shops. In 2006, nearly two-thirds of the survey respondents said they worked in software organizations with *fewer* than 100 people. By 2015, nearly two-thirds of the respondents said they worked for software organizations with *more* than 100 people, and 31% said they worked for software organizations with more than 1,000 people.

The number of large enterprises that are embracing agile continues to increase each year. More than 24% of the respondents worked for organizations with over 20,000 employees, compared to 21% last year.

Agile is going global as the number of enterprises around the world adopt agile. The number of respondents that worked for organizations in Europe increased from 21% to 26%. In addition, 18% of the respondents worked in Asia, South America, Oceania, and Africa.

The pool of talent and agile experience continues to grow annually. Once again there was an increase in the number of respondents who said they were 'very' to 'extremely' knowledgeable about agile, an increase from 58% in 2014 to 63% in 2015.

While 95% of the respondents said their organizations practice agile, only 1% of the 3,880 respondents said that their agile implementation was unsuccessful.

AGILE DRIVES ENTERPRISE SUCCESS

Why are increasing numbers of enterprises adopting agile? The top reasons for the third year in a row are: accelerating product delivery (62%) and enhancing their ability to manage changing priorities (56%), which is not a surprise as organizations respond to increasing market demands and customer expectations.

By all indications, agile is helping enterprises around the world succeed. For the past five years, the top three cited benefits of agile include: manage changing priorities (87%), team productivity (85%), and project visibility (84%).

BARRIERS TO ADOPTION AND SUCCESS

While agile adoption is increasing, there are still obstacles to overcome. The key barriers to further adoption usually hinge around culture, including the ability to change, general resistance to change, and management support. Interestingly, the majority of respondents pointed toward company culture as the reason for failed agile projects as well. Once these barriers are overcome, the limiting factor most often cited has been availability of personnel with the necessary agile experience.

TOP 3 TIPS FOR SUCCESS WITH SCALING AGILE

Now that momentum around scaling agile is growing, what are the key factors for success? The respondents said the top three tips for successfully scaling agile are consistent process and practices (43%), implementation of a common tool across teams (40%), and agile consultants or trainers (40%).

HOW AGILE SUCCESS IS MEASURED

As agile grabs the attention of larger organizations and the C-suite, there is an increased interest in measuring agile success at the overall initiative level. For several years now the top three measures of successful agile initiatives has been on-time delivery of projects (58%), product quality (48%), and customer/user satisfaction(46%).

AGILE METHODS AND PRACTICES

While Scrum continues to dominate at the team level with 70% of respondents saying they practice Scrum or Scrum/XP hybrid, the Scaled Agile Framework® (SAFe®) made a significant jump to become the second most popular scaling methodology from 19% in 2014 to 27% in 2015.

Kanban is spreading too, as more organizations transition to more flow-based methods. From 2014 to 2015, the percentage of respondents who practiced Kanban techniques jumped from 31% to 39%. As Kanban popularity has increased, the number of people using work-In-progress and cycle time as measurements of agile success has grown as well.

RECOMMENDED AGILE PROJECT MANAGEMENT TOOLS

While the majority of respondents continue to use spreadsheets as one of their agile project management tools, the top three most recommended project management solutions were VersionOne (94%), LeanKit (89%), and Atlassian/JIRA (86%).

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ABOUT THE SURVEY

The 10th annual State of Agile survey was conducted between July and November, 2015.

Sponsored by VersionOne, the survey invited individuals from a broad range of industries in the global software development community and was promoted far beyond VersionOne's customer base through multiple digital marketing channels and campaigns, as well as community events and tradeshows.

A total of 3,880 completed responses were collected, analyzed and prepared into a summary report by Analysis. Net Research, an independent survey consultancy. Only 28% of the 3,880 respondents were VersionOne customers, further adding to the range and diversity of respondents.

RESPONDENT DEMOGRAPHICS

The number of respondents in very large organizations with more than 20,000 people, continues to rise. Respondents from very large organizations increased from 20% last year to 24% this year. Compare that to 2006 when nearly two-thirds of the survey respondents said they worked in software organizations of fewer than 100 people.

Size of Organization

Respondents who worked for organizations with:

44% < 1,000 people

17% 1,001-5,000 people

15% 5,001-20,000 people

24% 20,001+ people
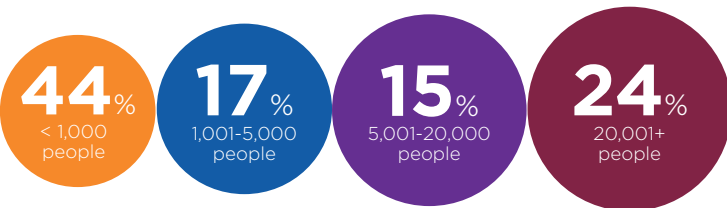
Size of Software Organization

Respondents who worked for software organizations with:

38% < 100 people

31% 101-1,000 people

15% 1,001-5,000 people

16% 5,001+ people
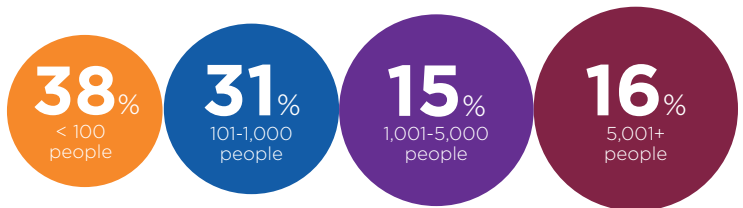
Location of Organization

More people responded from outside of North America than ever before. 26% of respondents worked in organizations from Europe, up from 21% in 2014. In addition, a significant number of respondents were from Asia (11%).

56% North America

26% Europe

11% Asia

4% South America

1% Africa

2% Oceania

the 10th annual STATE OF AGILE REPORT

Who Responded

Role	%
Project/Program Manager	24%
Development Staff	18%
Development Leadership	14%
Other (ScrumMaster or Internal Coach)	16%
Consultant/Trainer	10%
Product Owner	7%
Business Analyst	5%
IT Staff	3%
C-Level	3%
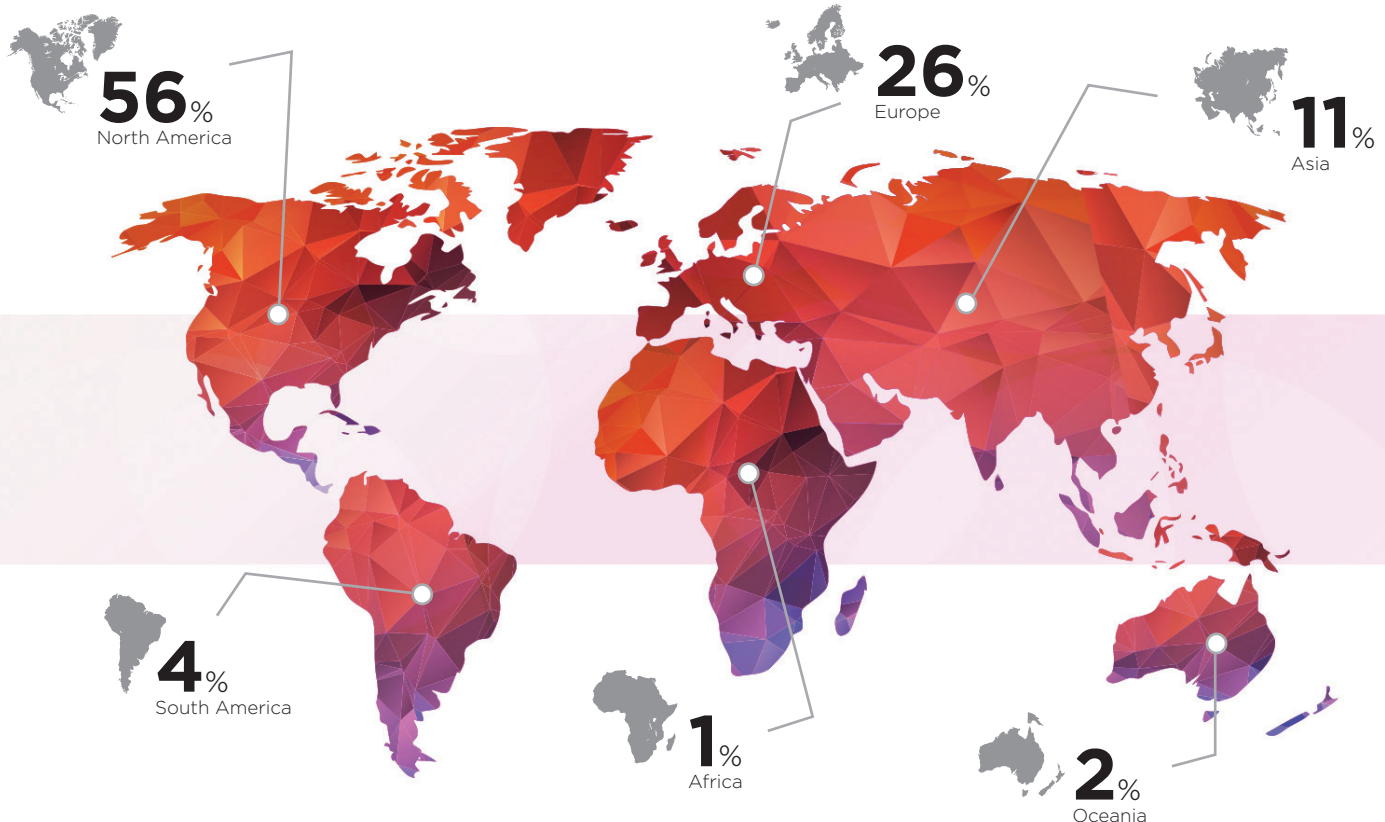
Industries

Most respondents worked for software/ISV companies (26%). In addition, a significant number of respondents worked for financial services (14%) and professional services (11%) organizations.

Industry	%
Software (ISV)	26%
Financial Services	14%
Professional Services	11%
Healthcare	6%
Government	6%
Insurance	4%
Telecom	4%
Retail	3%
Manufacturing	3%
Media & Entertainment	3%
Internet Services	3%
Transportation	2%
Consumer Products	2%
Utilities	2%
Public Services	1%
Other*	10%
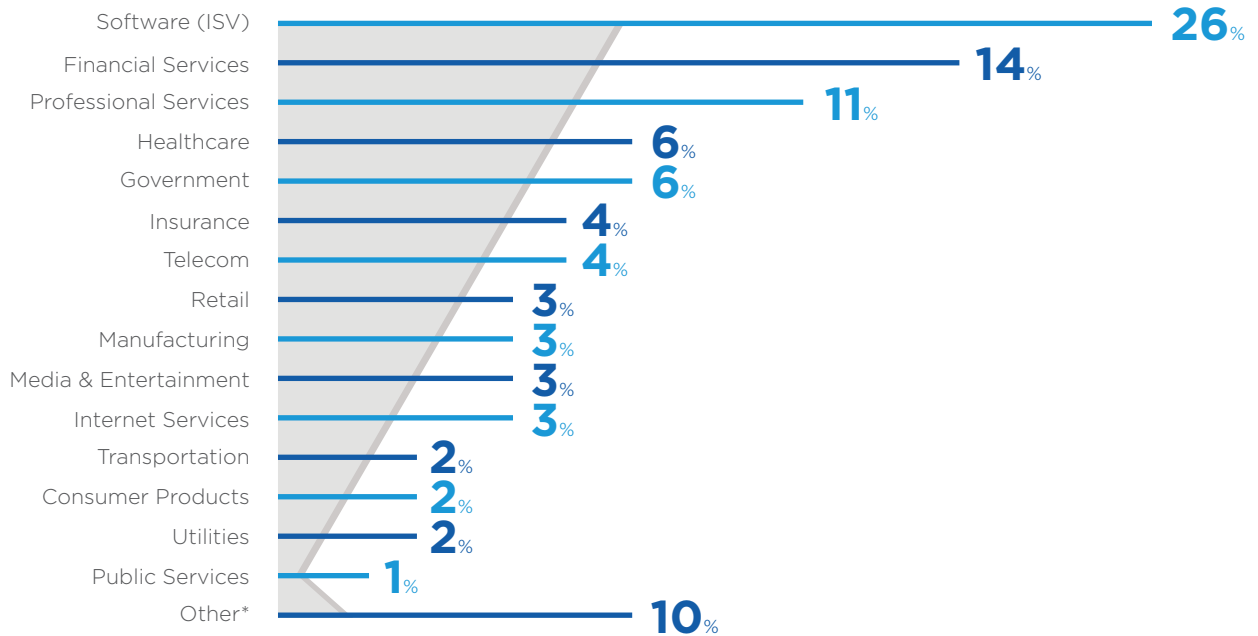
*Write-in responses were commonly Education, Consulting, Aerospace, Automotive, Hospitality, and Non-Profit.

Personal Experience with Agile Development Practices

Respondents who said they are 'very' to 'extremely' knowledgeable about agile continued to increase from 58% in 2014 to 63% in 2015.

Very little/no knowledge	Moderately knowledgeable	Very knowledgeable	Extremely knowledgeable
16%	21%	30%	33%
< 1 year	1-2 years	3-4 years	5+ years

COMPANY EXPERIENCE AND ADOPTION

Company Experience

HOW MANY?

2015 95%

The percentage of respondents' organizations that practice agile

&

HOW LONG?

While 33% of respondents said they had 5+ years of agile experience, they reported that the organizations within which they worked had less experience – only 25% of organizations had been using agile for five or more years.

	2015	2014
< 1 year	19%	15%
1-2 years	24%	29%
3-5 years	32%	32%
5+ years	25%	24%

34%
More than ½ of our teams are agile

4%
None of our teams are agile

9%
All of our teams are agile

53%
Less than ½ of our teams are agile
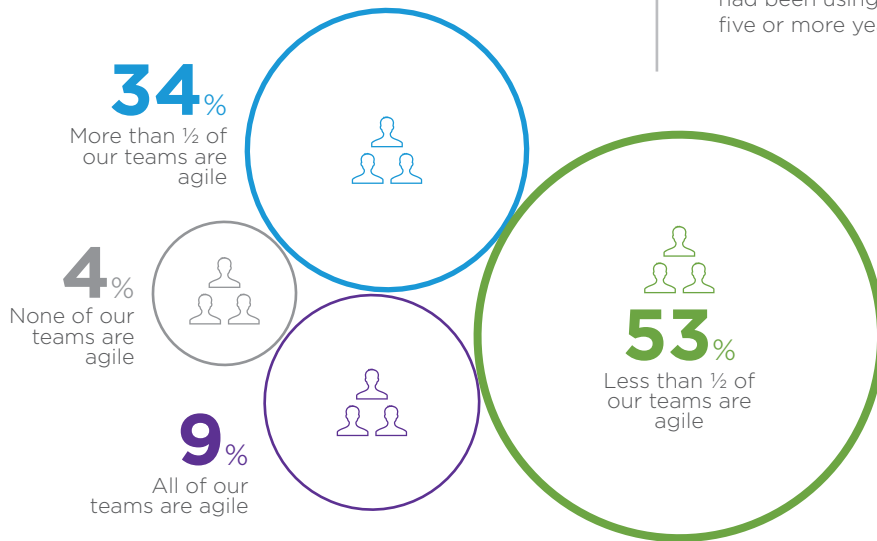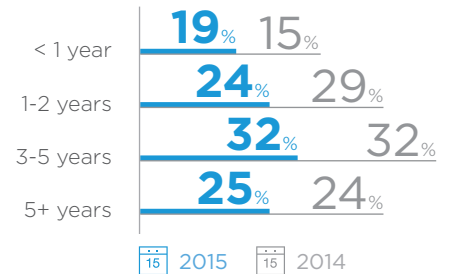
Percentage of Teams Using Agile

A total of 43% of respondents worked in development organizations where the majority of their teams are agile. Only 4% of respondents work in a completely traditional/non-agile development organization. Contrast this with the 2009 report, in which (31%) of the respondents worked where there were two teams or less practicing agile!

Accelerate product delivery	**62**%
Enhance ability to manage changing priorities	**56**%
Increase productivity	**55**%
Enhance software quality	**47**%
Enhance delivery predictability	**44**%
Improve business/IT alignment	**44**%
Improve project visibility	**40**%
Reduce project risk	**40**%
Improve team morale	**29**%
Improve engineering discipline	**24**%
Reduce project cost	**23**%
Increase software maintainability	**22**%
Better manage distributed teams	**21**%

Reasons for Adopting Agile

The top two reasons for adopting agile for the last three years has been to accelerate product delivery (62%) and enhance their ability to manage changing priorities (56%).

*Respondents were able to make multiple selections.
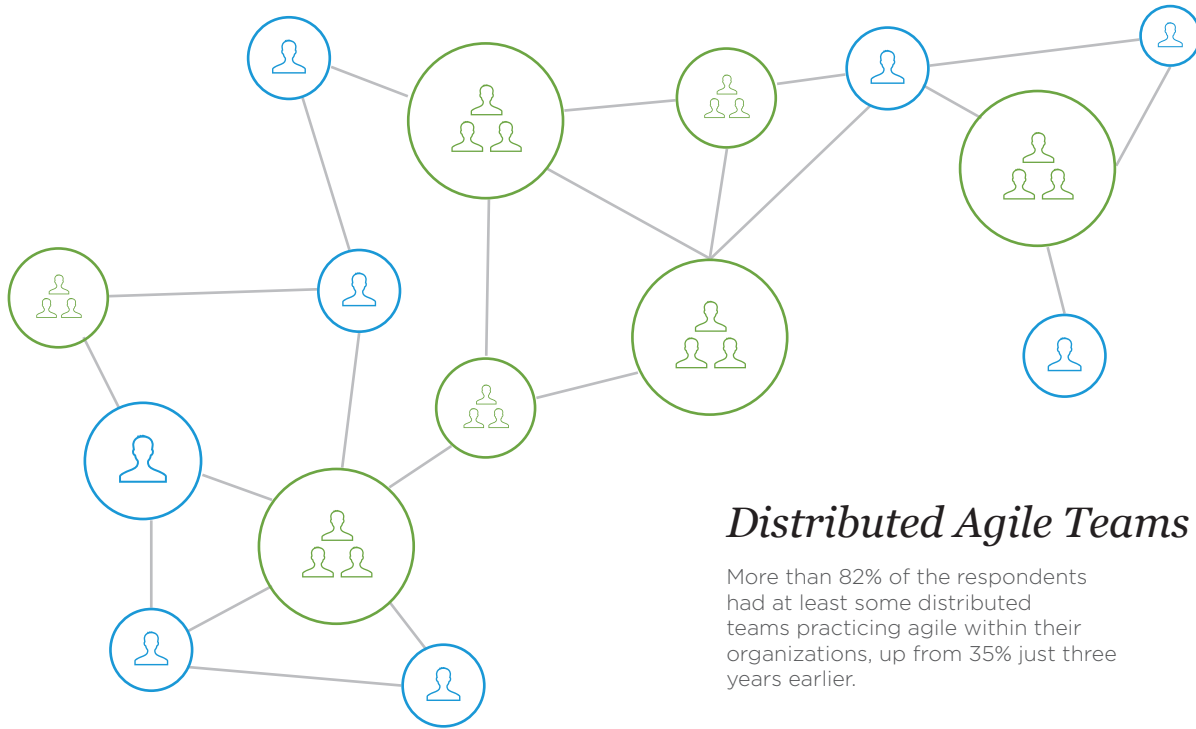
Distributed Agile Teams

More than 82% of the respondents had at least some distributed teams practicing agile within their organizations, up from 35% just three years earlier.

Agile Maturity

While 95% of the respondents said their organizations practice agile, only 1% of the 3,880 respondents said their agile implementation was unsuccessful.

MATURITY

17% had teams with mature adoption

44% had teams ranging from very early to mature adoption

33% had teams that are in the early adoption phase with agile

1% had unsuccessful adoptions

5% not practicing agile
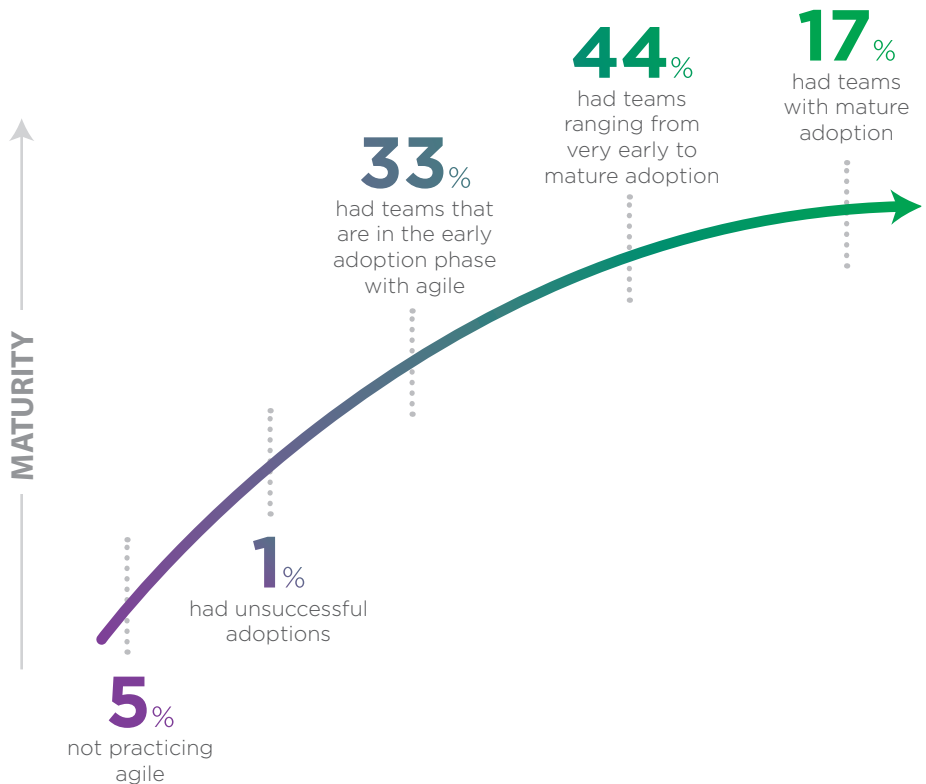
BENEFITS OF AGILE

Top 3 Benefits of Agile

87%
Ability to manage
changing priorities

85%
Increased team
productivity

84%
Improved project
visibility
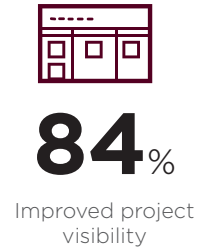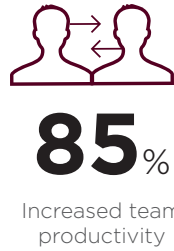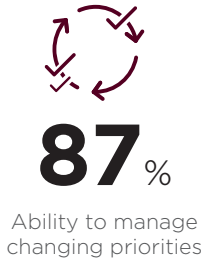
Actual Improvements
from Implementing Agile

The top three benefits of adopting agile have remained steady for the
past five years: manage changing priorities (87%), team productivity
(85%), and project visibility (84%).

BENEFIT	GOT BETTER	NO CHANGE	GOT WORSE	DON'T KNOW
Ability to manage changing priorities	87%	3%	1%	9%
Increased team productivity	85%	3%	1%	11%
Improved project visibility	84%	3%	1%	12%
Increased team morale/motivation	81%	5%	3%	11%
Better delivery predictability	81%	6%	2%	11%
Faster time to market	80%	7%	1%	13%
Enhanced software quality	79%	6%	2%	14%
Reduced project risk	78%	6%	1%	15%
Improved business/IT alignment	77%	6%	1%	16%
Improved engineering discipline	73%	7%	2%	19%
Enhanced software maintainability	70%	8%	2%	21%
Better manage distributed teams	62%	11%	2%	25%

*Respondents were able to make multiple selections.

AGILE METHODS AND PRACTICES

1% DSDM/Atern
1% Feature-Driven Development (FDD)
1% Agile Modeling
2% Lean Development
3% Other
3% Iterative Development
5% Kanban
7% Scrumban
8% Custom Hybrid (multiple methodologies)
10% Scrum/XP Hybrid

1% XP
<1% Agile Unified Process (AgileUP)
2% I Don't Know

58% Scrum
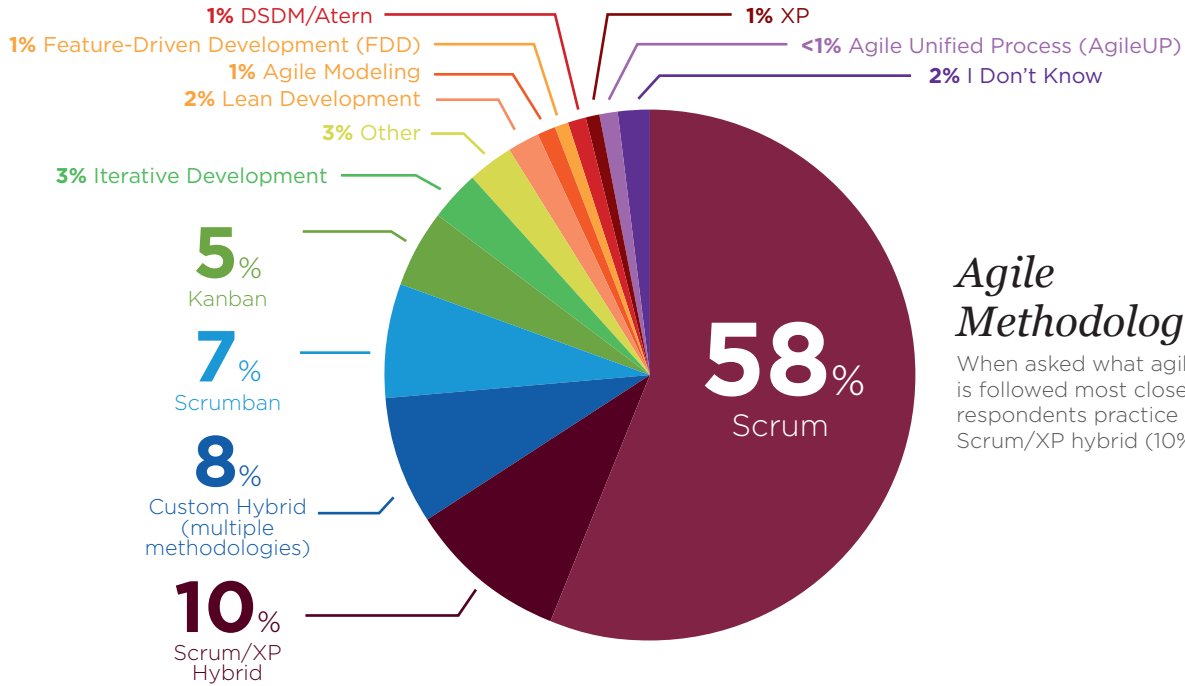
Agile Methodologies Used

When asked what agile methodology is followed most closely, nearly 70% of respondents practice Scrum (58%) or Scrum/XP hybrid (10%).

Agile Techniques Employed

More than 39% of the respondents practiced Kanban within their organizations, up from 31% in 2014. Conversely, iteration planning dropped slightly from 71% in 2014 to 69% in 2015, likely indicating a transition to more flow-based methods such as Lean and Kanban.

TOP 5 AGILE TECHNIQUES

83% DAILY STANDUP
82% PRIORITIZED BACKLOGS
79% SHORT ITERATIONS
74% RETROSPECTIVES
69% ITERATION PLANNING
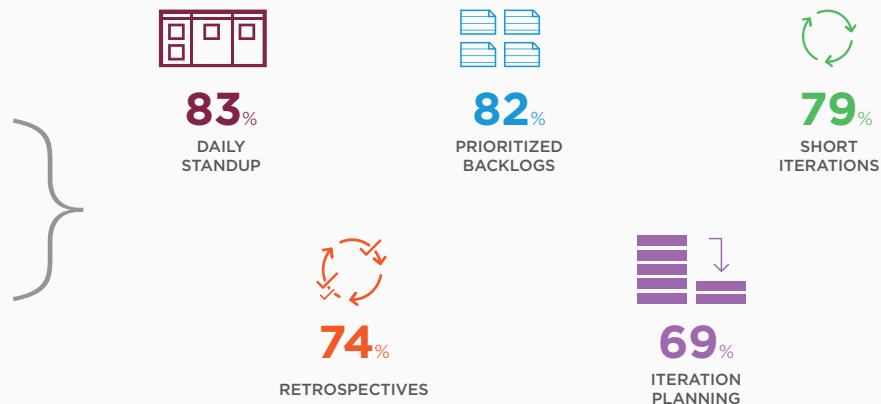
Agile Techniques Employed

Continued...

PERCENT OF 100

Technique	Percent
Daily standup	83%
Prioritized backlogs	82%
Short iterations	79%
Retrospectives	74%
Iteration planning	69%
Release planning	63%
Unit testing	63%
Team-based estimation	59%
Taskboard	55%
Iteration reviews	54%
Continuous integration	50%
Dedicated product owner	49%
Single team (integrated dev & testing)	45%
Coding standards	44%
Kanban	39%
Open work area	38%
Refactoring	37%
Test-Driven Development (TDD)	33%
Story mapping	30%
Automated acceptance testing	28%
Continuous deployment	27%
Collective code ownership	25%
Pair programming	24%
Agile games	16%
Behavior-Driven Development (BDD)	10%

*Respondents were able to make multiple selections.

Agile in Outsourced Dev Projects

Nearly 70% of respondents are outsourcing development projects. Of these, 20% are using agile practices to manage the majority of these outsourced projects.

AGILE SUCCESS AND METRICS

WHAT CAUSES AGILE PROJECTS TO FAIL?

WHAT IMPEDES AGILE ADOPTION?

Leading Causes of Failed Agile Projects

Company culture continues to dominate the top causes of failed agile projects with company philosophy or culture at odds with core agile values at 46%, and lack of management support for cultural transition at 38%.

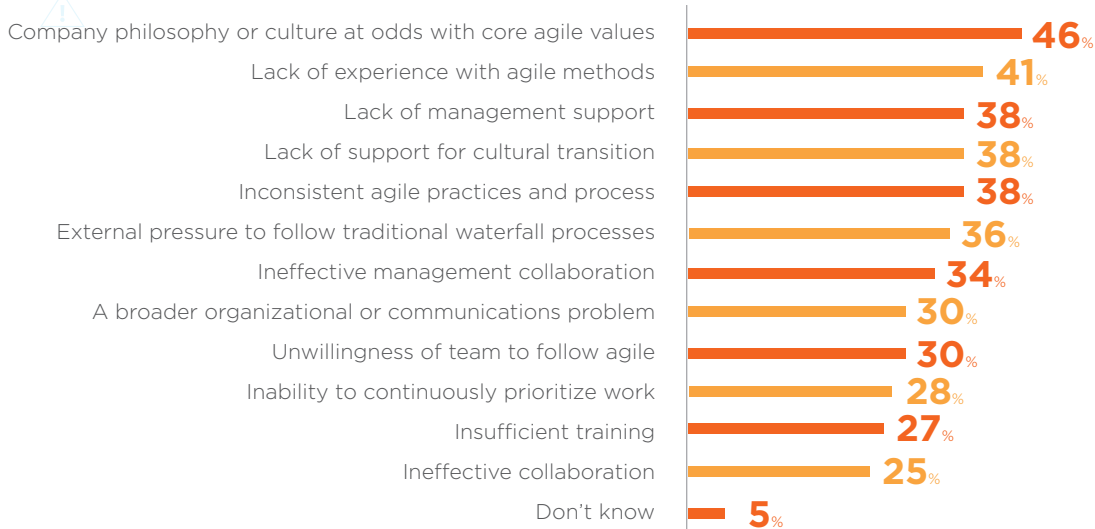| Cause	%
Company philosophy or culture at odds with core agile values	46%
Lack of experience with agile methods	41%
Lack of management support	38%
Lack of support for cultural transition	38%
Inconsistent agile practices and process	38%
External pressure to follow traditional waterfall processes	36%
Ineffective management collaboration	34%
A broader organizational or communications problem	30%
Unwillingness of team to follow agile	30%
Inability to continuously prioritize work	28%
Insufficient training	27%
Ineffective collaboration	25%
Don't know	5%

*Respondents were able to make multiple selections.

Barriers to Further Agile Adoption

As in previous years, respondents continued to increasingly cite organizational culture and a general resistance to change as their biggest barriers to further agile adoption. Concerns about organizational culture increased from 44% in 2014 to 55% in 2015, and concerns about a general resistance to change increased from 34% in 2014 to 42% in 2015.

%	Barrier
55%	Ability to change organizational culture
42%	General organizational resistance to change
40%	Pre-existing rigid/waterfall framework
39%	Not enough personnel with the necessary agile experience
38%	Management support
28%	Business/user/ customer availability
27%	Concerns about a loss of management control
25%	Management concerns about lack of upfront planning
18%	Confidence in ability to scale agile methodologies
18%	Concerns about the ability to scale agile
17%	No barriers
15%	Perceived time and cost to make the transition
14%	Development team support
13%	Regulatory compliance

*Respondents were able to make multiple selections.

How Is Success Measured...
with Agile Initiatives?

On-time delivery of projects, product quality, and customer/user satisfaction have remained steady as the top three measures of agile initiative success for the past few years.

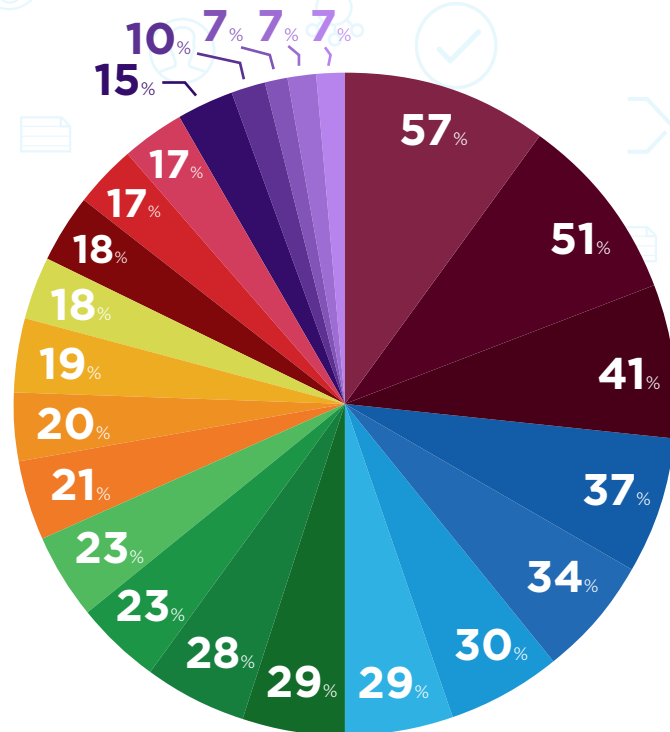| Measure	%
On-time delivery	58%
Product quality	48%
Customer/user satisfaction	46%
Business value	46%
Product scope (features, requirements)	36%
Productivity	31%
Project visibility	30%
Predictability	26%
Process improvement	24%
Don't know	11%
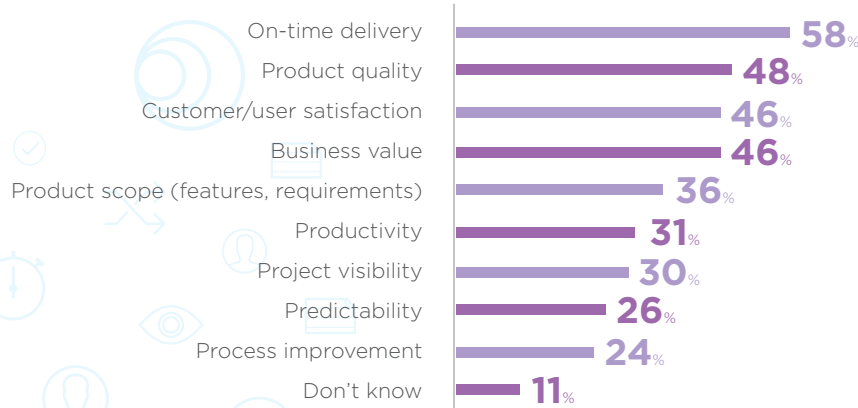
*Respondents were able to make multiple selections.

How Is Success Measured...
on a Day-by-Day Basis?

With more teams using Kanban, as noted in the Agile Techniques Employed section, there was a significant increase in respondents who used work-in-process (WIP) and cycle time as a measure of daily success. WIP increased from 27% in 2014 to 30% in 2015, and cycle time increased from 18% in 2014 to 19% in 2015.

- Velocity
- Iteration burndown
- Release burndown
- Planned vs. actual stories per iteration
- Burn-up chart
- Work-in-Process (WIP)
- Planned vs. actual release dates
- Customer/user satisfaction
- Defects in to production
- Defects over time
- Budget vs. actual cost
- Business value delivered
- Defect resolution
- Cycle time
- Estimation accuracy
- Individual hours per iteration/week
- Test pass/fail over time
- Scope change in a release
- Cumulative flow chart
- Earned value
- Customer retention
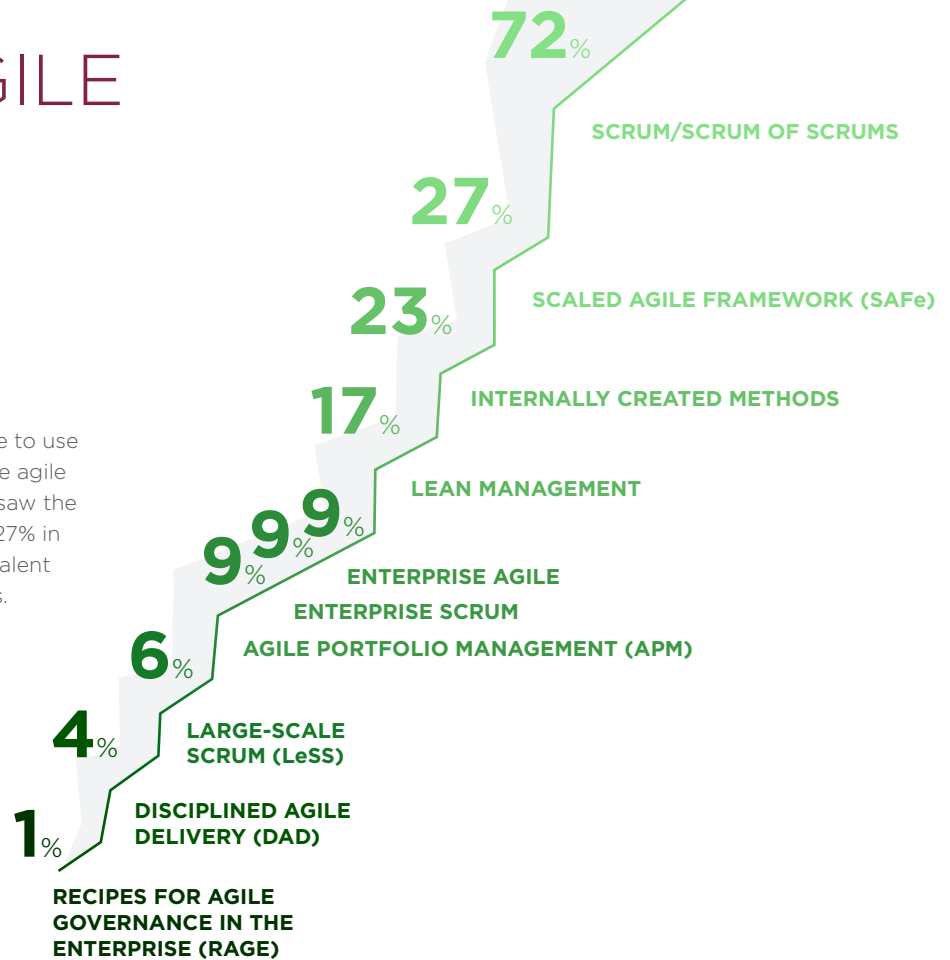- Revenue/sales impact
- Product utilization

Pie chart values: 57%, 51%, 41%, 37%, 34%, 30%, 29%, 29%, 28%, 23%, 23%, 21%, 20%, 19%, 18%, 18%, 17%, 17%, 15%, 10%, 7%, 7%, 7%

*Respondents were able to make multiple selections.

SCALING AGILE

## Scaling Methods and Approaches

The majority of respondents continue to use Scrum/Scrum of Scrums to help scale agile within their organizations, but SAFe saw the largest increase from 19% in 2014 to 27% in 2015 making it the second most prevalent scaling method cited by respondents.

72% SCRUM/SCRUM OF SCRUMS

27% SCALED AGILE FRAMEWORK (SAFe)

23% INTERNALLY CREATED METHODS

17% LEAN MANAGEMENT

9% ENTERPRISE AGILE

9% ENTERPRISE SCRUM

9% AGILE PORTFOLIO MANAGEMENT (APM)

6% LARGE-SCALE SCRUM (LeSS)

4% DISCIPLINED AGILE DELIVERY (DAD)

1% RECIPES FOR AGILE GOVERNANCE IN THE ENTERPRISE (RAGE)

*Respondents were able to make multiple selections.

Top 5 Tips for Success with Scaling Agile

Consistent process and practices (43%), implementation of a common tool across teams (40%), and agile consultants or trainers (40%) were cited as the top three tips for successfully scaling agile.

43% CONSISTENT PROCESS AND PRACTICES

40% IMPLEMENTATION OF A COMMON TOOL ACROSS TEAMS

40% AGILE CONSULTANTS OR TRAINERS

37% EXECUTIVE SPONSORSHIP

35% INTERNAL AGILE SUPPORT TEAM
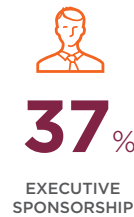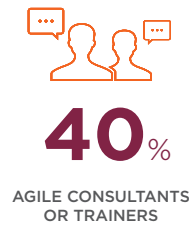
Other important factors included: externally attended classes or workshops, company-provided training program, online training and webinars, and full-time internal coaches.

*Respondents were able to make multiple selections.

PROJECT MANAGEMENT TOOLS

General Tool Uses and Preferences

More than three-quarters of respondents are currently using spreadsheets, taskboards, and bug trackers. The most notable increase in tool use from 2014 to 2015 included agile project management tools (+6% YOY) and Kanban boards (+11% YOY).
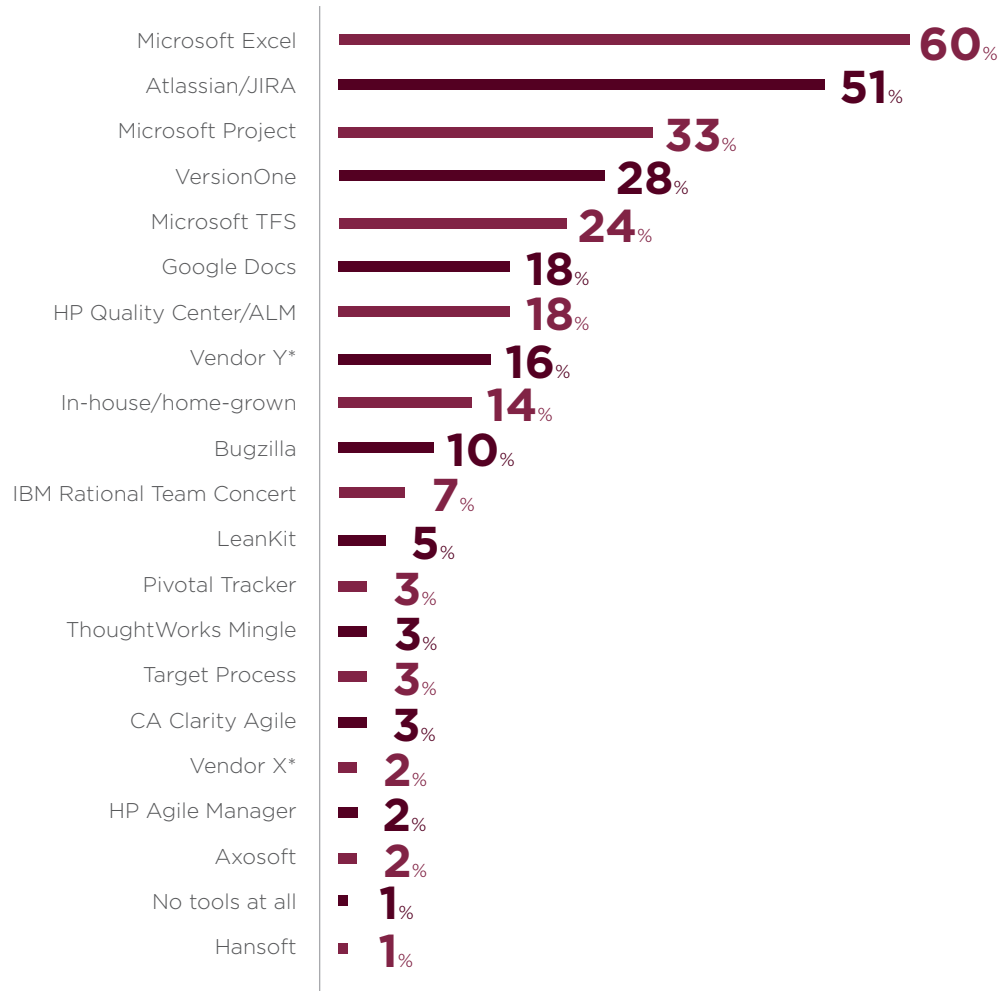
	CURRENT TOOL USAGE		FUTURE PLANS TO USE	
	2015	2014	**2015**	2014
Taskboard	82%	79%	10%	11%
Bug tracker	80%	80%	10%	10%
Spreadsheet	74%	72%	5%	5%
Agile project management tool	71%	65%	17%	20%
Wiki	68%	68%	12%	12%
Unit test tool	66%	65%	23%	21%
Automated build tool	66%	65%	22%	20%
Kanban board	63%	52%	13%	15%
Continuous integration tool	57%	55%	28%	26%
Requirements management tool	51%	50%	22%	22%
Traditional project management tool	51%	51%	7%	7%
Release/deployment automation tool	50%	47%	34%	32%
Index cards	43%	41%	11%	10%
Project & portfolio management (PPM) tool	42%	37%	27%	24%
Automated acceptance tool	38%	35%	41%	39%
Story mapping tool	33%	34%	32%	29%
Refactoring tool	30%	29%	30%	26%
Customer idea management tool	21%	22%	30%	28%

*Respondents were able to make multiple selections.

Use of Agile Management Tools

Over two-thirds of respondents use Microsoft® Excel (60%) as one of the tools they use to manage agile projects. Other commonly used tools were Microsoft Project (33%), Atlassian/JIRA (51%), and VersionOne (28%).*

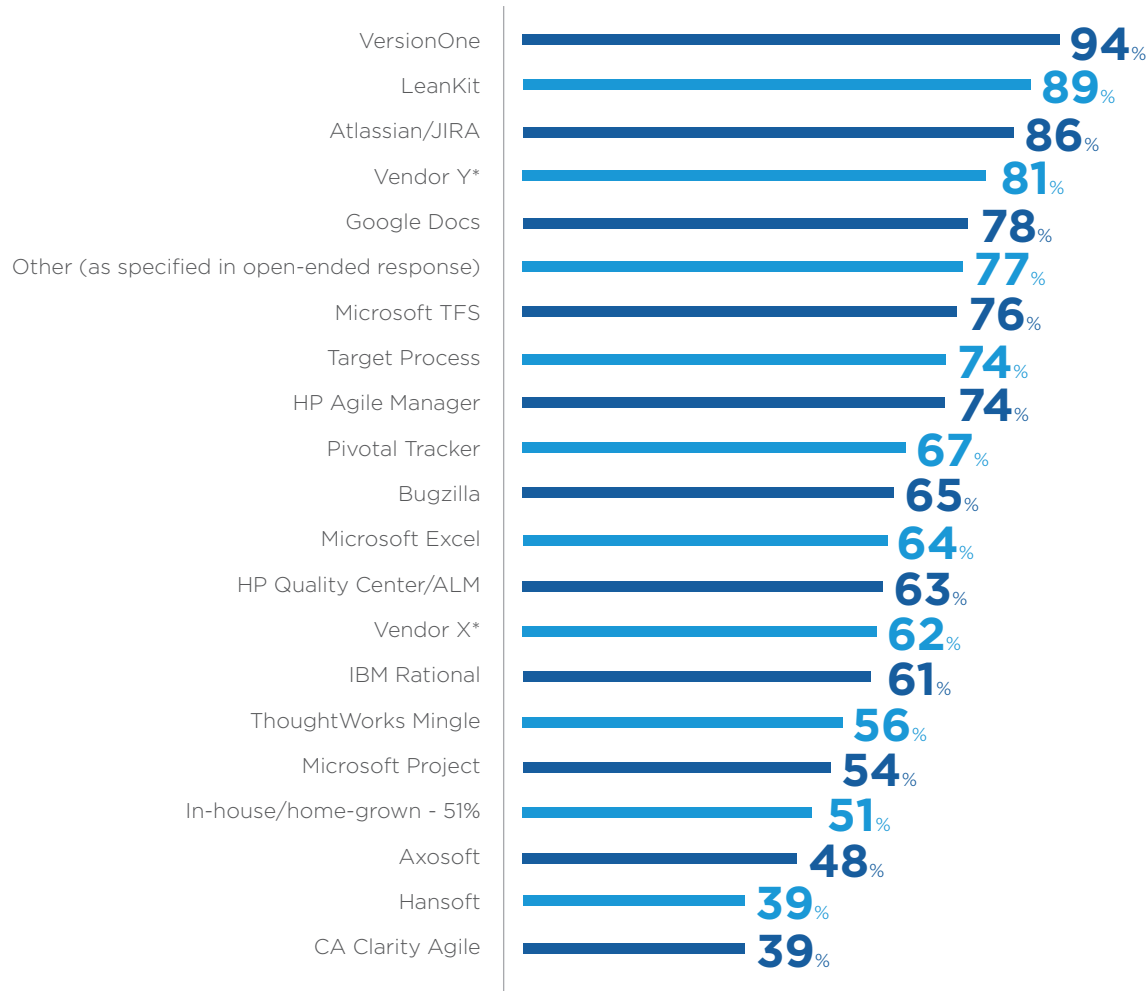| Tool	Percentage
Microsoft Excel	60%
Atlassian/JIRA	51%
Microsoft Project	33%
VersionOne	28%
Microsoft TFS	24%
Google Docs	18%
HP Quality Center/ALM	18%
Vendor Y*	16%
In-house/home-grown	14%
Bugzilla	10%
IBM Rational Team Concert	7%
LeanKit	5%
Pivotal Tracker	3%
ThoughtWorks Mingle	3%
Target Process	3%
CA Clarity Agile	3%
Vendor X*	2%
HP Agile Manager	2%
Axosoft	2%
No tools at all	1%
Hansoft	1%

Several notable "write-in" tools were also cited, including: AgileFant, FogBugz, Mantis, Redmine, SharePoint, Trac, and Trello.

*Notes: Previously vendors "X" and "Y" requested not to be identified in the State of Agile report. Respondents were able to make multiple selections.

Recommended Agile Project Management Tools

In addition to tool use, respondents were asked whether they would recommend the tool(s) they are using based on their past or present use. For the fourth year in a row, VersionOne had the highest satisfaction rate of any other tool evaluated in the survey (94%).

Tool	Percentage
VersionOne	94%
LeanKit	89%
Atlassian/JIRA	86%
Vendor Y*	81%
Google Docs	78%
Other (as specified in open-ended response)	77%
Microsoft TFS	76%
Target Process	74%
HP Agile Manager	74%
Pivotal Tracker	67%
Bugzilla	65%
Microsoft Excel	64%
HP Quality Center/ALM	63%
Vendor X*	62%
IBM Rational	61%
ThoughtWorks Mingle	56%
Microsoft Project	54%
In-house/home-grown - 51%	51%
Axosoft	48%
Hansoft	39%
CA Clarity Agile	39%

*Notes: Previously vendors "X" and "Y" requested not to be identified in the State of Agile report. Respondents were able to make multiple selections.