TRENDS IN WEB TECHNOLOGIES
A SURVEY OF DEVELOPMENT PROFESSIONALS

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dimensional research

Introduction

In the blink of an eye, web application development has evolved — from building simple HTML websites to deploying sophisticated, data-intensive web apps that support every aspect of modern business strategy. But the web's rapid advancement is not slamming on the brakes.

With the growing adoption of tablets and smartphones, companies are continually seeking new web technologies that support multiple mobile device types in addition to traditional desktops. Furthermore, they are continually adding new capabilities to their web applications that enable users to better visualize and analyze data regardless of the platform or device used.

It's no easy task for organizations to deliver these complex applications quickly, with high quality, and yet find ways to maximize their investment in these apps over the long haul. So, where do web technologies fit into current development priorities? Are companies planning to invest more or less in this technology next year? How is the steady rise of mobile impacting the need for desktop applications? Are apps becoming more disposable or requiring longer shelf lives? What role does data visualization play in web app development?

The following report, sponsored by Sencha, is based on a global survey of 1,345 web technology professionals with responsibility for application development. Questions were asked on a wide range of subjects including challenges, browsers, mobile, and the use of development technologies. Certain questions were repeated from a similar survey fielded a year ago to analyze trends. Participants were incentivized to participate with a copy of the final report.
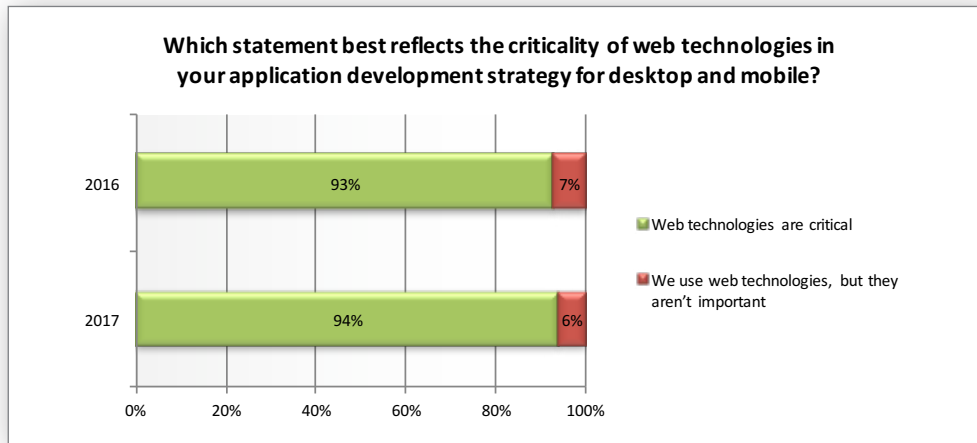
Key Findings

- **Web technologies remain critical to business**
  - 94% say web technologies are critical
  - 74% believe the criticality of web technologies has increased in the past year
  - 79% expect to increase investment in web technologies in the coming year
  - 39% view application complexity as their top challenge
- **Mobile is increasing rapidly, but desktop as an application platform remains vital**
  - 79% say desktop apps are absolutely essential, down slightly from 81% last year
  - 41% say smartphone apps are absolutely essential, up from 37% last year
  - There has been a 20% increase in the number of smartphone and tablet apps with an expected lifespan of more than five years
- **The need for data visualization continues to grow dramatically**
  - 78% say the need to visualize and analyze complex datasets is expanding
  - Both D3 and Pivot Grids have seen a 25% increase in use within the past year
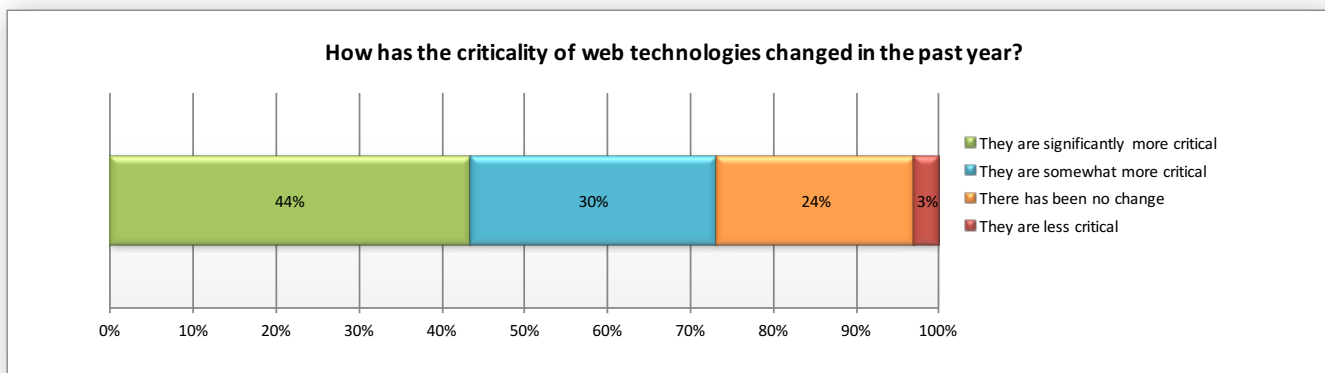 - Demand for data visualization is shifting from back end issues to user issues

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Detailed Findings: Web technologies remain critical
Web technologies continue to drive desktop and mobile strategy

To deliver the sophisticated, cross-platform web applications that users demand, developers continue to rely heavily on web technologies, such as HTML5, CSS, and JavaScript. According to those surveyed, 94% reported web technologies are critical to their development process. This response maps similarly to the results from our previous 2016 survey with 93% of respondents indicating that web technologies are critical to their business.

Which statement best reflects the criticality of web technologies in your application development strategy for desktop and mobile?

Year	Web technologies are critical	We use web technologies, but they aren't important
2016	93%	7%
2017	94%	6%

But when compared to last year, did this level of importance rise or fall? When asked how criticality changed from 2016, 74% cited web technologies are more critical, including 44% that characterized the evolution as "significantly more critical." From this strong response, it's easy to deduce that web technology is the backbone of application development for most companies.

How has the criticality of web technologies changed in the past year?

They are significantly more critical	They are somewhat more critical	There has been no change	They are less critical
44%	30%	24%	3%

Web technologies continue strong growth trends

While certain aspects of web technology may change with time, it's clear the demand for it is not going away in the near future. This need is directly reflected in how companies invest in web technologies to compete today and expand further in the future. It is the way forward.
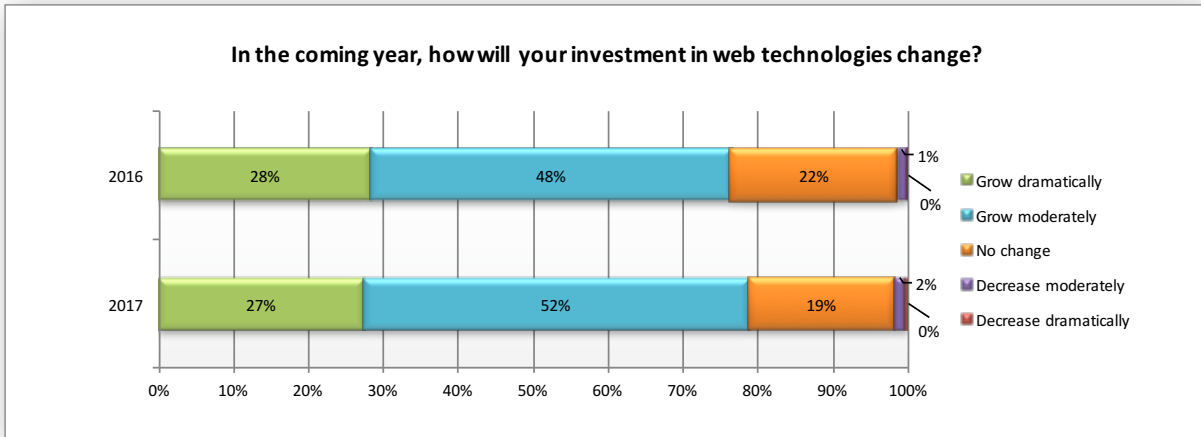
When asked about how their investments in web technologies will change in the coming year, 79% of respondents said they expect it to grow, including 27% that characterized the growth as dramatic. This response tracks closely with last year's response of 76% expected growth for 2016.

The reasons why web technology remains an important aspect of application development strategy are interconnected with business pressures. Often, web technologies provide a valid conduit for resolving business issues and helping to overcome competitive threats.

The top reason reported in this survey was that web technologies allow developers to support multiple browsers and screen sizes (72%). This response is similar to last year's survey response of 68%, as even more organizations are under increased pressure by their users to deliver cross-platform web applications.

Other widespread reasons why web technologies are important include faster time to market (61%) and improved development efficiency (59%). Again, these key reasons mirror those cited most frequently by developers in 2016.
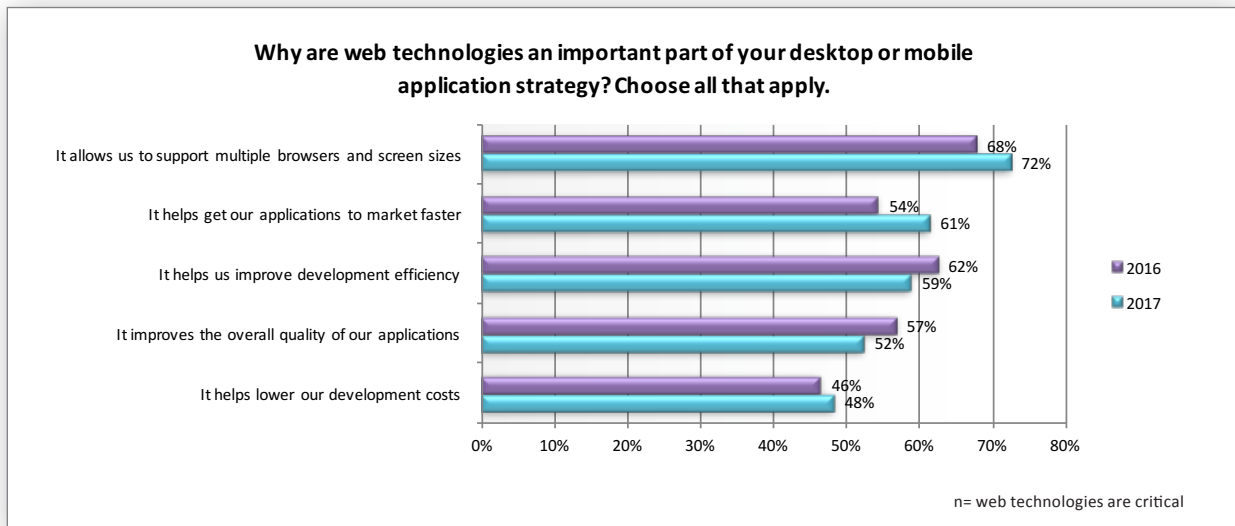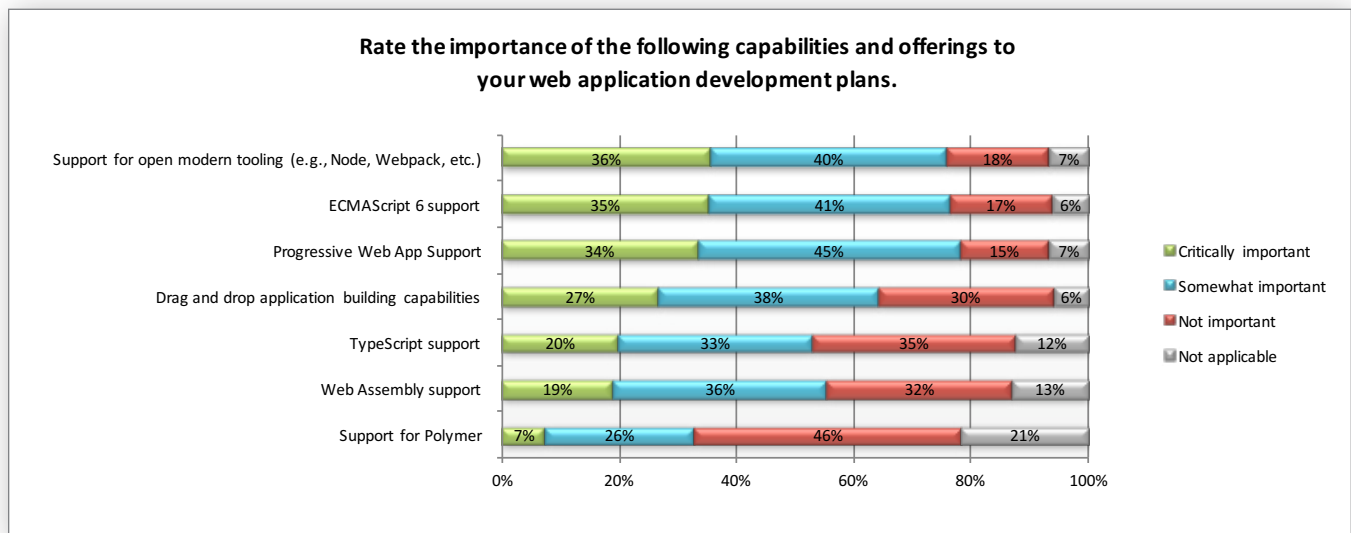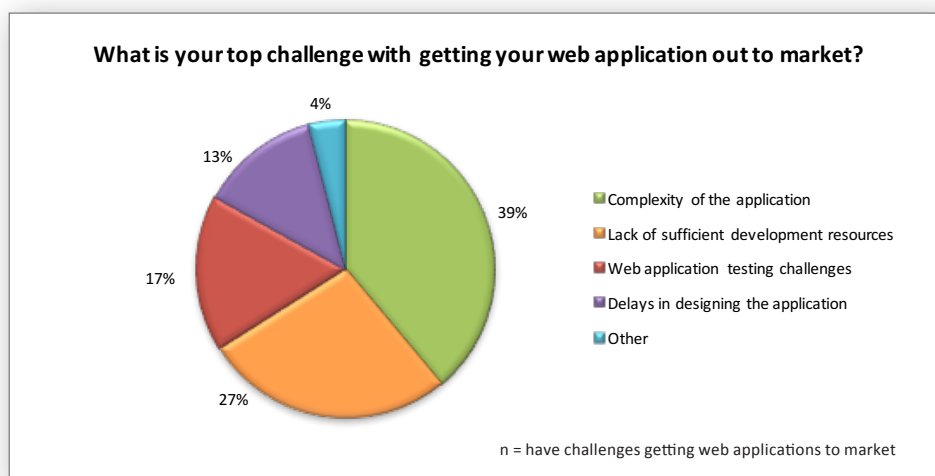
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When considering what is important for future technology growth and investments, development groups may want to consider capabilities that not only make their teams more efficient but also help to improve the overall customer experience.

A good starting point for application strategy planning is to review the ranking of the most important capabilities and offerings. According to development stakeholders, support for open modern tooling (e.g., Node, Webpack, etc.), 36%, ECMAScript 6, 35%, and Progressive Web App support, 34%, top the list of critically important capabilities.

Rate the importance of the following capabilities and offerings to your web application development plans.

	Critically important	Somewhat important	Not important	Not applicable
Support for open modern tooling (e.g., Node, Webpack, etc.)	36%	40%	18%	7%
ECMAScript 6 support	35%	41%	17%	6%
Progressive Web App Support	34%	45%	15%	7%
Drag and drop application building capabilities	27%	38%	30%	6%
TypeScript support	20%	33%	35%	12%
Web Assembly support	19%	36%	32%	13%
Support for Polymer	7%	26%	46%	21%

Application complexity is #1 challenge

Challenges are ubiquitous to application development — 95% reported they experienced challenges in getting web apps to market. Among those challenges, the greatest is application complexity (39%) followed by lack of sufficient development resources (27%), web application testing issues (17%), and design delays (13%).

What is your top challenge with getting your web application out to market?

Challenge	Percentage
Complexity of the application	39%
Lack of sufficient development resources	27%
Web application testing challenges	17%
Delays in designing the application	13%
Other	4%

n = have challenges getting web applications to market

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When we drill down on these top challenges by application type, developers responsible for B2B web apps cite complexity as the most frequent challenge (46%). And at the opposite end of the spectrum, application complexity was a challenge for only 29% of those responsible for apps used only by employees or partners.
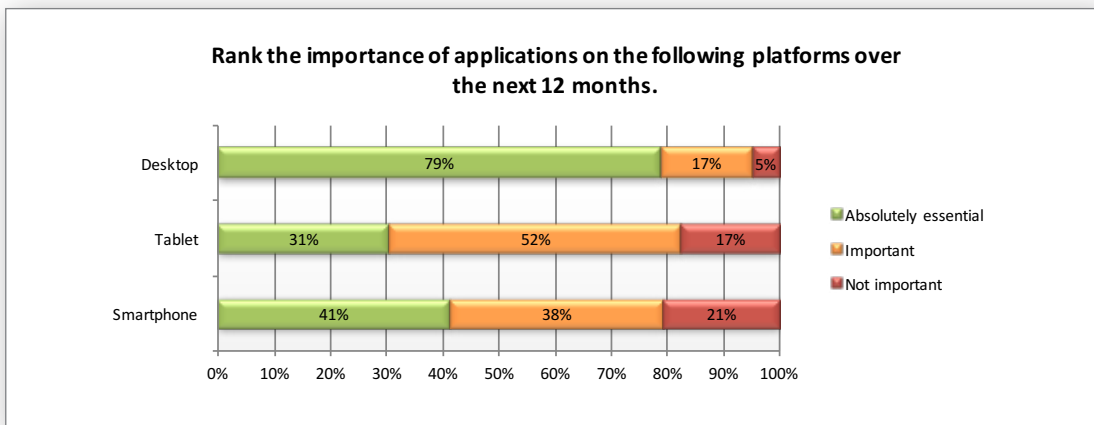
What is your top challenge with getting your web application out to market?
(By type of application)

Legend: B2B/B2C, B2B Only, B2C Only, Internal

- Complexity of the application: 30%, 46%, 35%, 29%
- Lack of sufficient development resources: 29%, 26%, 24%, 29%
- Web application testing challenges: 23%, 14%, 17%, 15%
- Delays in designing the application: 12%, 10%, 13%, 10%
- We have no challenges: 3%, 2%, 7%, 10%
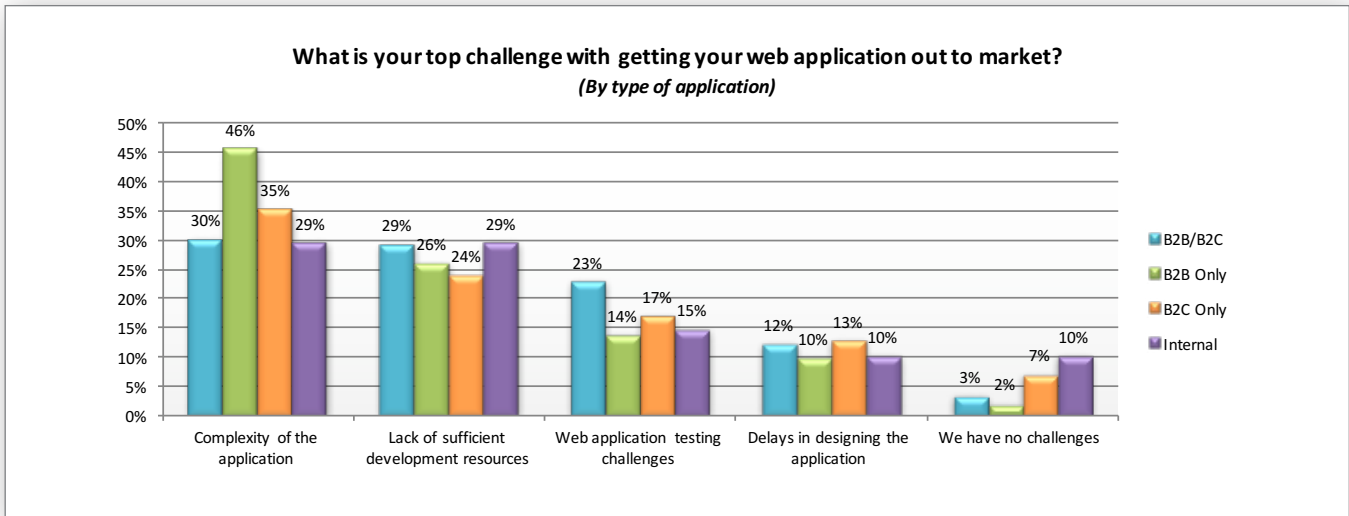
Detailed Findings: Mobile increasing, but desktop vital
Desktop apps remain most important

According to most news headlines, mobile is king and desktop is dead. While this may be the case for some consumers, many business users are multi-screen users, switching between smartphones, tablets, and desktops depending on the business activity.

When respondents were asked about the importance of desktop as an application platform, 79% said desktop apps are absolutely essential to their business — making desktop the top ranked platform in the category. The second highest is smartphone (41%) followed by tablet (31%). It's evident that desktop apps remain absolutely essential to the business, especially for large enterprises.

Rank the importance of applications on the following platforms over the next 12 months.

Legend: Absolutely essential, Important, Not important

- Desktop: 79%, 17%, 5%
- Tablet: 31%, 52%, 17%
- Smartphone: 41%, 38%, 21%
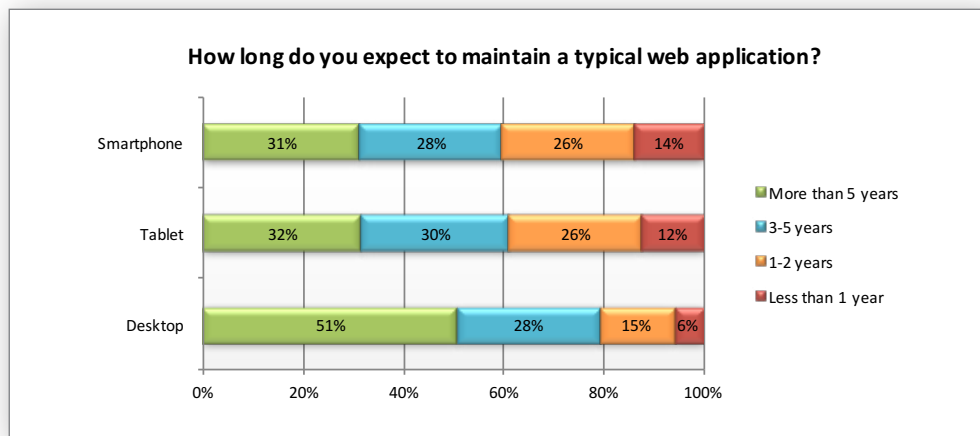
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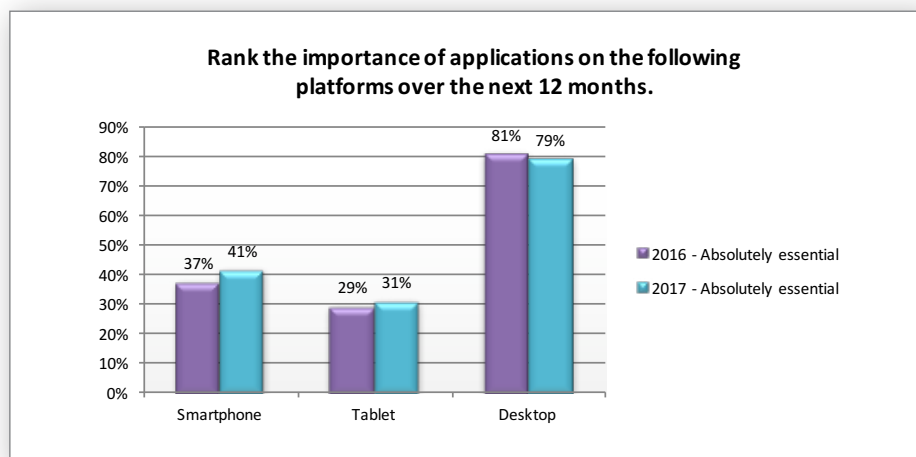## Apps are not disposable — even for mobile

While developers are naturally drawn to trying new tools and cutting-edge technologies, it's important to have the mindset of building business web apps for the long haul. Now more than ever it's critical to invest in an application framework that is high quality and able to endure the test of time with limited maintenance.

One of the most interesting aspects of the survey is 79% of desktop applications are expected to be in use for three years or more, including more than half of desktop apps (51%) that will be around for more than five years. Mobile follows this same trend with 62% of tablet apps and 59% of smartphone apps expected to have a lifespan of more than three years.

How long do you expect to maintain a typical web application?

Platform	More than 5 years	3-5 years	1-2 years	Less than 1 year
Smartphone	31%	28%	26%	14%
Tablet	32%	30%	26%	12%
Desktop	51%	28%	15%	6%

## Mobile increases its rank of importance year over year

While desktop remains the critical business platform, we are starting to see signs that companies are adjusting their priorities to support more mobile usage. This shift toward mobile is slight, but there is clear movement when we compare results from the 2016 and 2017 surveys. The number who characterize smartphone apps as absolutely essential increased from 37% to 41% while the same numbers for tablet apps rose from 29% to 31%. At the same time those that said desktop apps were absolutely essential dropped very slightly from 81% to 79%.

Rank the importance of applications on the following platforms over the next 12 months.

Platform	2016 - Absolutely essential	2017 - Absolutely essential
Smartphone	37%	41%
Tablet	29%	31%
Desktop	81%	79%

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## Mobile application lifespan lengthens dramatically

Similarly, when comparing the research from 2016 to 2017, we see an increase in the number of mobile applications that are expected to be around for more than five years. The number of those reporting that tablet apps will have a lifespan of more than five years and the number reporting a similar expected lifespan for smartphone apps, both increased by 20% in only a year. This is a sizeable jump in mobile application longevity and demonstrates the need for easy maintenance of mobile apps over the long haul.

How long do you expect to maintain a typical web application?
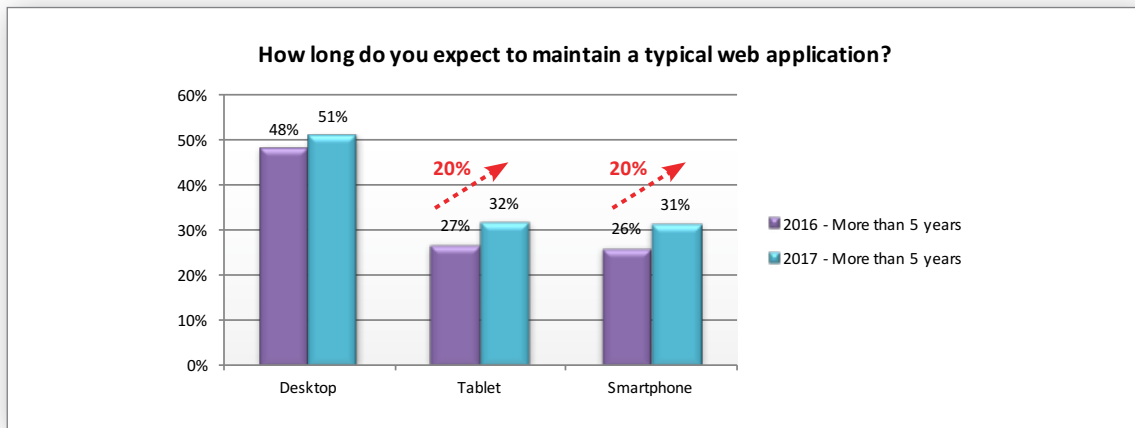
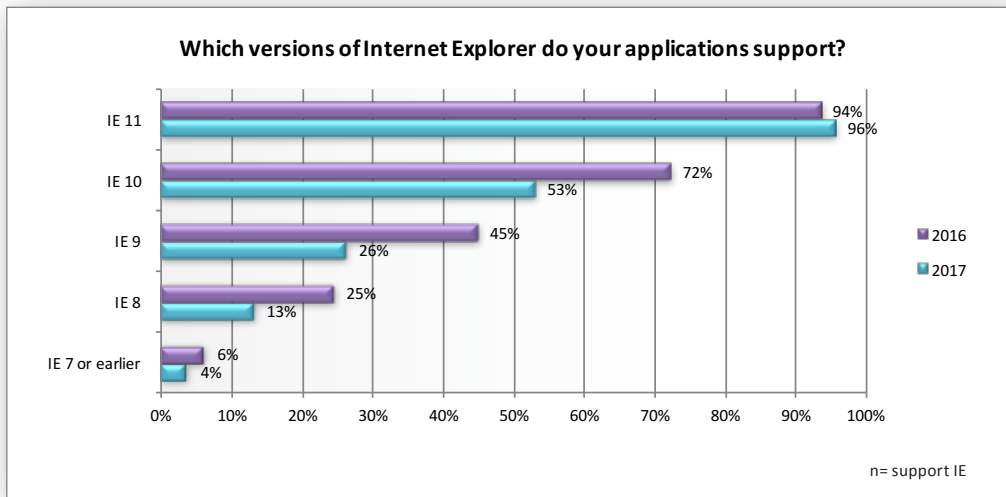## Decrease in IE testing does not match increase in MS Edge testing

To ensure web applications continually work as expected across many different desktop browsers, it's important for companies to test and support the right ones. Chrome continues to outrank the others with 97% supporting this browser, followed by Firefox (74%), Internet Explorer (60%), Safari (47%), MS Edge (46%), and Opera (13%).

Those percentages trend closely to those reported in 2016; however, there is one exception to note. From 2016 to 2017, there is a 12% decline in support of Internet Explorer. The logical assumption is that testing and support for MS Edge would grow by a similar percentage since it replaced IE as the default web browser on desktops running Windows 10. Yet, testing and support for web applications running on MS Edge only increased by 5%.

Which desktop browsers do you test and support for your web applications?

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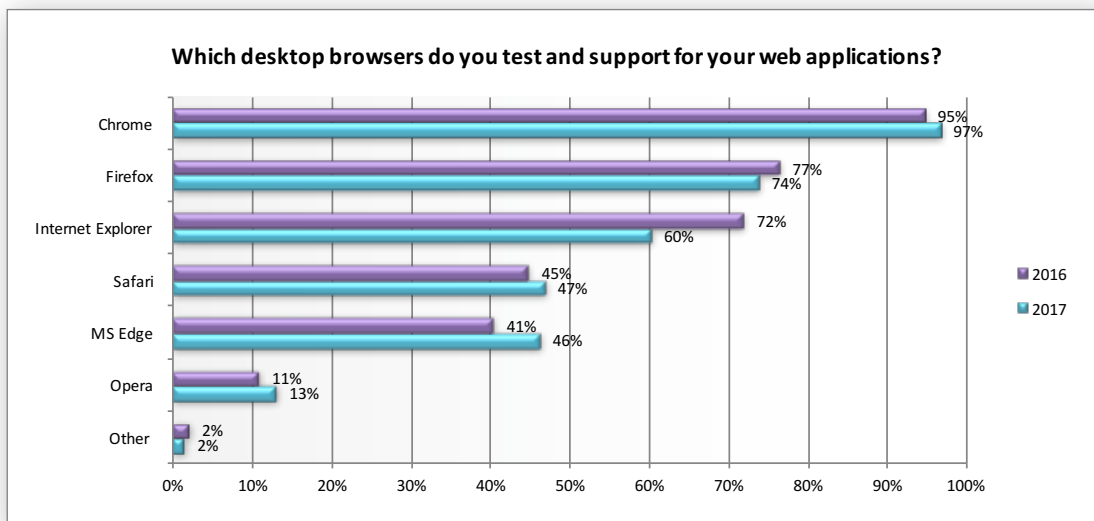
As highlighted in the previous 2016 survey, testing and support for legacy Internet Explorer browsers continues to decline with all versions of Internet Explorer except 11 showing a marked decrease in support.
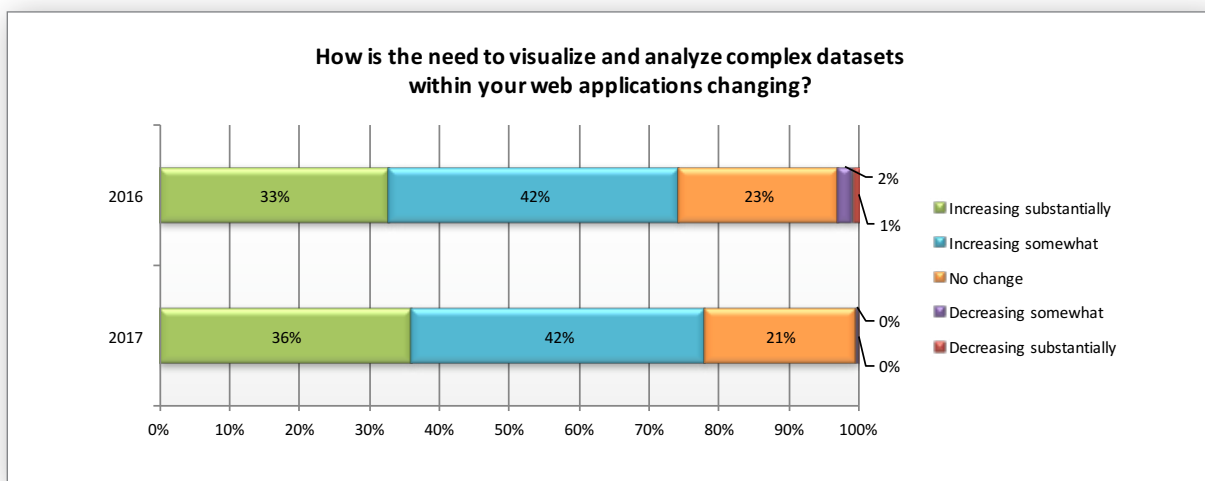
Which versions of Internet Explorer do your applications support?

Version	2016	2017
IE 11	94%	96%
IE 10	72%	53%
IE 9	45%	26%
IE 8	25%	13%
IE 7 or earlier	6%	4%

n= support IE

Detailed Findings: Data visualization grows dramatically
Visualizing and analyzing complex data continues to increase

For all the data being created each year by people, desktops, mobile devices, and other sources, data doesn't provide value on its own. It must be gathered, organized, and analyzed to provide meaningful value. Data visualization opens new ways to look at complex business and operational data quickly, see the connections, and act faster and more effectively.

When asked about the need to visualize and analyze data, a wide majority (78%) said this need is increasing, including 36% that characterized the growth as substantial. This is even higher than the 75% reported in 2016.

How is the need to visualize and analyze complex datasets within your web applications changing?

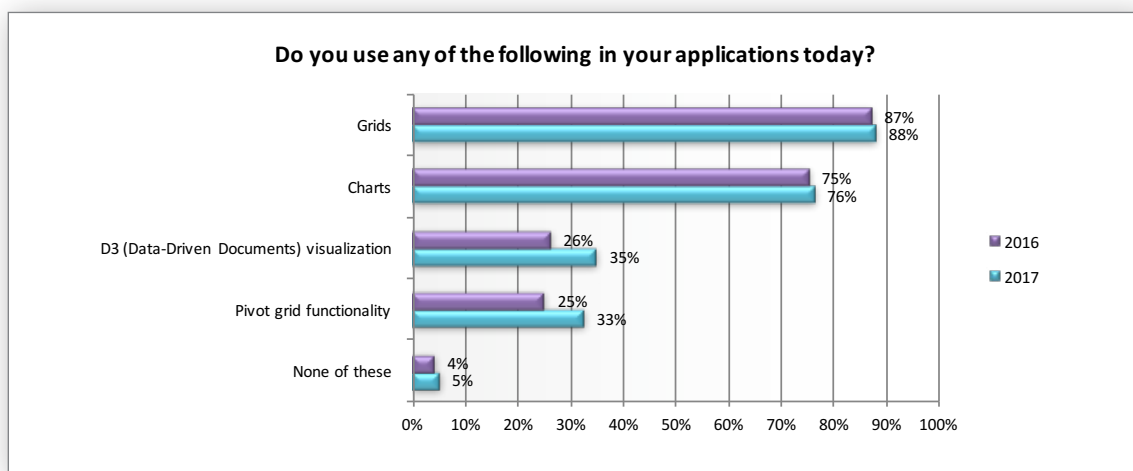| Year	Increasing substantially	Increasing somewhat	No change	Decreasing somewhat	Decreasing substantially
2016	33%	42%	23%	2%	1%
2017	36%	42%	21%	0%	0%

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D3 and Pivot Grid use expands significantly year over year

Just as there are different ways to tell a story, there are many data visualization options available to web applications, from the very basic to more advanced. The most common visualization used by web app developers continues to be grids (88%) and charts (76%).

However, the most significant change in data visualization year over year was the increase in the use of more complex data visualization components including data-driven documents (D3), which increased from 26% to 35%, and pivot grids, up from 25% to 33%.

Do you use any of the following in your applications today?

Category	2016	2017
Grids	87%	88%
Charts	75%	76%
D3 (Data-Driven Documents) visualization	26%	35%
Pivot grid functionality	25%	33%
None of these	4%	5%

Demand for visualizing shifts from back end issues to user issues

To better understand why web development teams are increasing their use of data visualization, it's beneficial to dive deeper into what is driving its demand. In both 2016 and 2017 we asked what the underlying drivers were for data visualization.

The survey data shows an interesting shift in the business drivers in just one year. In 2016, we saw more people reporting that their demand for analytics and visualization was driven by back end issues, such as increased amounts of data (down from 67% to 55% this year), complexity of data (from 64% to 51%), and data-focused technology initiatives (from 53% to 40%).
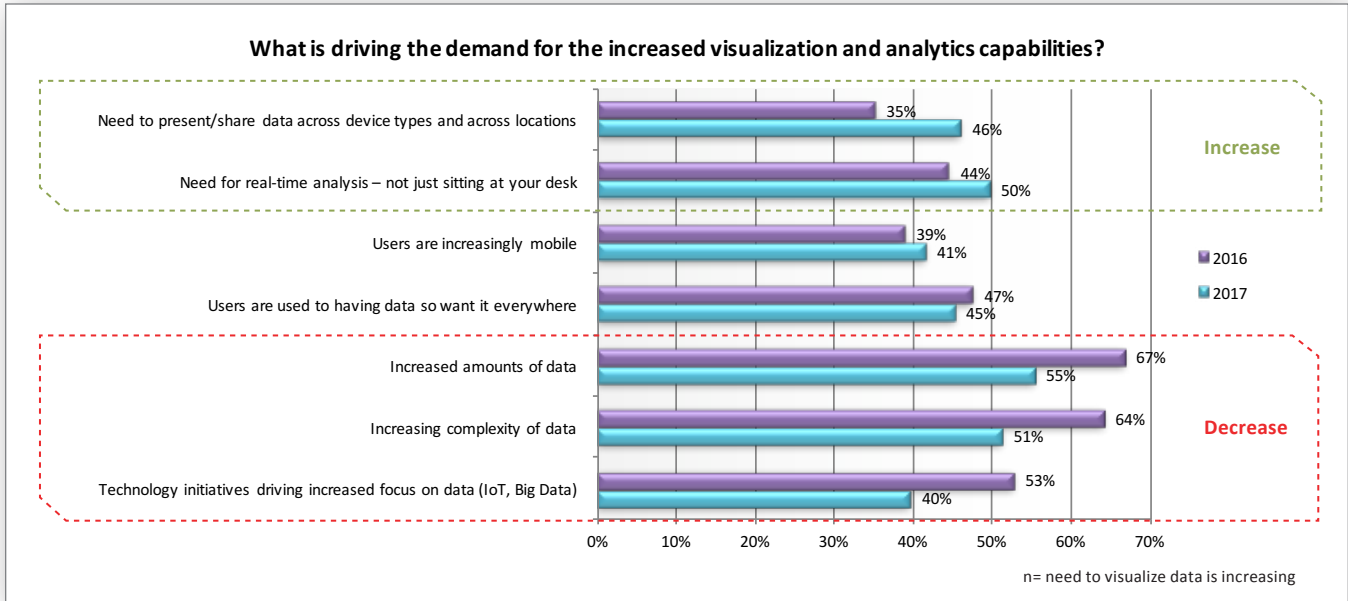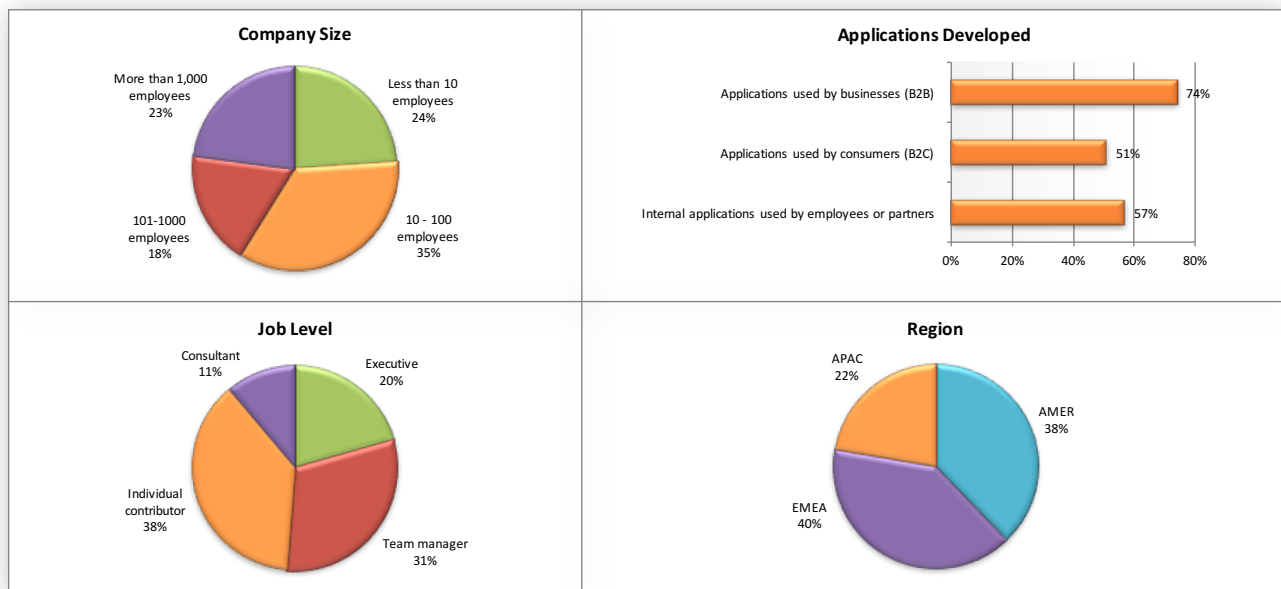
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Conversely, the demand in 2017 saw an increase in factors that impact end users. The need to present and share data across devices types and locations increased to 46% from only 35% just last year. Similarly, those reporting a need for real-time analysis grew from 44% to 50%. It is suggested from these responses that end users are becoming more demanding of their data visualization needs, and development teams need to be prepared to respond.

What is driving the demand for the increased visualization and analytics capabilities?

	2016	2017
Need to present/share data across device types and across locations	35%	46%	*(Increase)*
Need for real-time analysis – not just sitting at your desk	44%	50%	*(Increase)*
Users are increasingly mobile	39%	41%	
Users are used to having data so want it everywhere	47%	45%	
Increased amounts of data	67%	55%	*(Decrease)*
Increasing complexity of data	64%	51%	*(Decrease)*
Technology initiatives driving increased focus on data (IoT, Big Data)	53%	40%	*(Decrease)*

n= need to visualize data is increasing

Survey Methodology and Participant Demographics

A global database of web technology professionals was invited to participate in an online survey. A total of 1,345 individuals participated in the survey. All had responsibility for application development. Participants represented a wide range of roles, geographies, job level, and development experience. A copy of this report was offered as an incentive for participation.

Company Size
- Less than 10 employees: 24%
- 10 - 100 employees: 35%
- 101-1000 employees: 18%
- More than 1,000 employees: 23%

Applications Developed
- Applications used by businesses (B2B): 74%
- Applications used by consumers (B2C): 51%
- Internal applications used by employees or partners: 57%

Job Level
- Executive: 20%
- Team manager: 31%
- Individual contributor: 38%
- Consultant: 11%

Region
- AMER: 38%
- EMEA: 40%
- APAC: 22%

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