

# Building React Components for SharePoint

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Steve Pietrek

SharePoint Engage Conference

November 2-3, 2016

# Steve Pietrek



**App Dev Practice Manager  
SharePoint Application Architect  
Front End Developer**

**Cardinal Solutions  
Raleigh/Durham**

## Contact

@spietrek  
spietrek@cardinalsolutions.com

## Presentation References

<https://github.com/spietrek/spengage2016>  
<https://github.com/spietrek/sharepoint.react.components>

# Agenda

SharePoint  
Development

React  
Overview

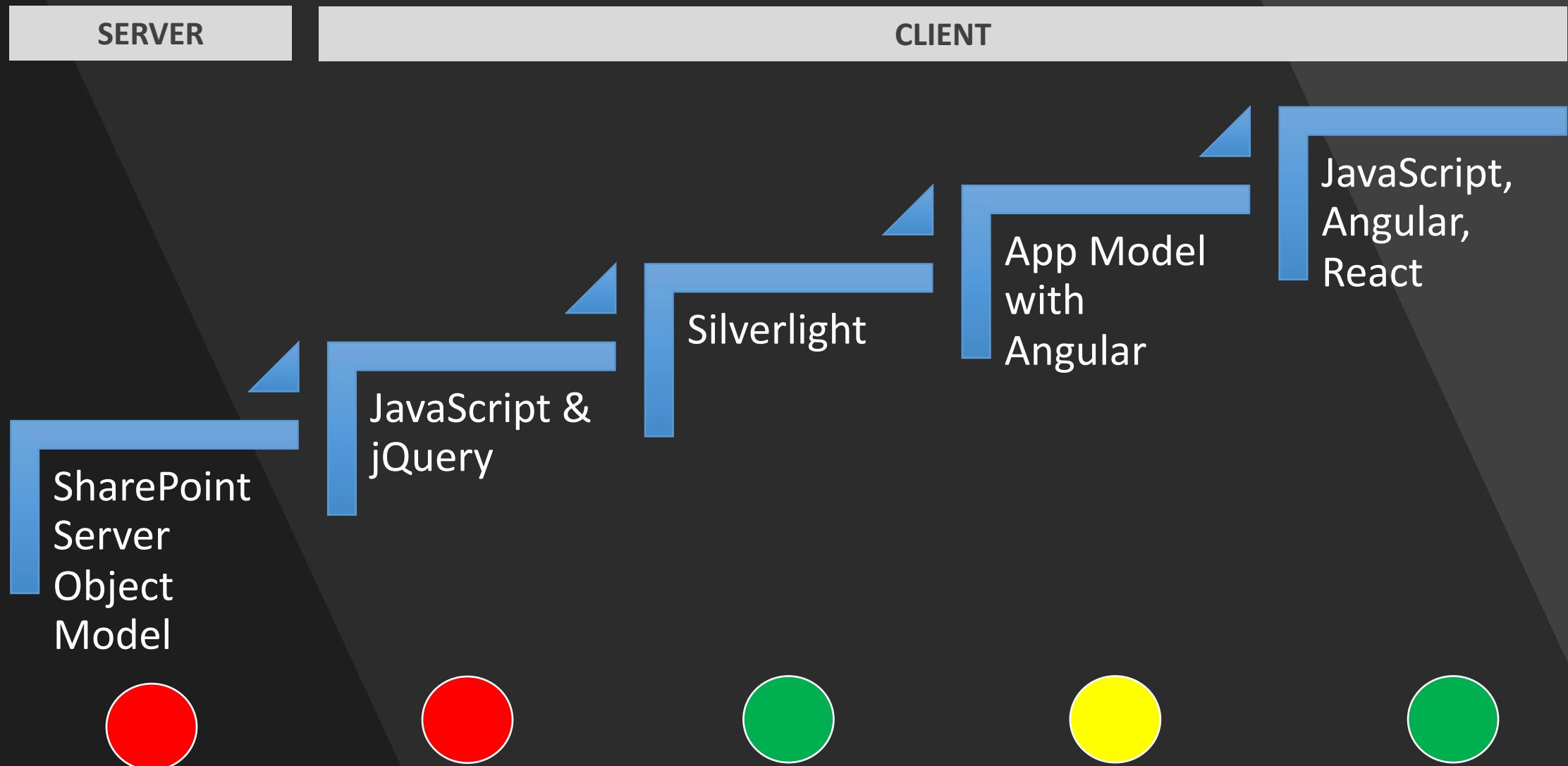
SharePoint  
Framework

Office Fabric

# SharePoint Development

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# My SharePoint Development Journey



# Client-Side Development Advantages



## Infrastructure

- Isolation & multitenant
- Runs in client browsers
- Reduces risk to farm
- Simplifies SharePoint upgrades
- Cloud ready

## Developers

- Larger developer reach
- Use industry standards
- Use non-SharePoint technologies
- Lifecycle management  
(development, deployment,  
versioning, upgrades)



HOME

HUMAN RESOURCES

DEPARTMENTS

PROJECTS

FORMS &amp; POLICIES

SUPPORT

Enterprise Search



## Meals To Go!

This past weekend, several families of our company joined together with 3,000 other volunteers to pack 600,000 meals that will be shipped to our friends and partners at the Topsy Foundation in South Africa.

[more >](#)

## Events

**Oct. 6****Q1 FY' 15 Earnings**

Cintas will conduct a live Webcast for Q1 FY' 15 Earnings

**Oct. 20****Humanitarian Hall of Fame**

Humanitarian Hall of Fame. Honor

**Nov. 2****IT Learning Center**

Neque porro quisquam est, qui dolorem ipsum

**Nov. 17****HR Workways**

Ut enim ad minima veniam, quis nostrum poris

[more >](#)

## Give Feedback

We need feedback on the new SharePoint Intranet! Please take this quick survey.

[take survey >](#)

## Quick Links

[Employee Directory](#)[IT Requests](#)[Desktop Support](#)[Admin Requests](#)[HR Workways](#)[IT Learning Center](#)[Talent Management System](#)[Corporate Travel](#)

## Weather

Tuesday, May 12, 2015  
Cincinnati, OH



66° F



All Projects

Red Projects

Yellow Projects

Green Projects

Create Project

Admin



## All Projects

 Filter results

Name	Overall	Budget	Resource	Schedule	Project Manager	Modified	Edit
alpha-chi	✗	⚠	✗	⚠	Maddie Pietrek	Jan 8, 2016 7:51:40 AM	
alpha-beta-omega	✗	✓	✗	✗	Laura Pietrek	Oct 19, 2015 1:59:14 PM	
alpha-omega	✗	✗	✗	⚠	Laura Pietrek	Jun 13, 2015 12:59:45 PM	
alpha-zeta	✗	✗	✓	✓	Laura Pietrek	Jun 13, 2015 11:10:06 AM	
alphas-violet	✗	⚠	✗	⚠	Pietrek	Jun 5, 2015 10:48:27 PM	
alpha-psi	✗	✗	✓	✗	Maddie Pietrek	Jun 5, 2015 10:32:54 PM	
Omega	✗	✓	✗	⚠	Steve Pietrek	Apr 14, 2015 12:44:37 PM	
zalir	✓	✓	✓	✓	Lenora Lula Owen	Apr 14, 2015 8:39:25 AM	
za	✓	✓	✓	✓	Harriett Elizabeth Fleming	Apr 14, 2015 8:39:25 AM	
valabiaza	✓	✓	✓	✓	Anne Emilie Mendoza	Apr 14, 2015 8:39:25 AM	

[5](#) [10](#) [25](#) [50](#)[«](#) [1](#) [2](#) [3](#) [4](#) [5](#) [»](#)

Page 1 of 11, of 107 entries



home &gt; this would be the breadcrumb on secondary pages

search

people



My Training



Wellness



Yammer



Delve



Calendar



Weather



Video



One Drive

**GPT Launches New Training Portal**  
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed facilisis leo ac venenatis more

**Fidelity Plans**  
Fusce dapibus lorem eu lacus scelerisque, sed. more

**Tools You Can Use**  
Etiam fermentum accumsan, ante et interdum consequa more

**Holiday Schedule**  
Consectetur adipiscing elit. Sed facilisis leo ac venenatis more



view all news

## My Teams



### Learning and Development

Phasellus sed malesuada odio, at vehicula diam. Nam quis ex gravida, accumsan diam vel, cursus nibh.

[view the site](#)

### Team Mason

Phasellus sed malesuada odio, at vehicula diam. Nam quis ex gravida, accumsan diam vel, cursus nibh.

[view the site](#)

### 3PI

Phasellus sed malesuada odio, at vehicula diam. Nam quis ex gravida, accumsan diam vel, cursus nibh.

[view the site](#)

## My Projects



### Learning and Development

Project is in red zone. Visit project site for all updates

[go to portal](#)[View latest documents](#)

## yammer time

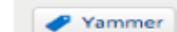


What are you working on?

**Nick Peters**

To All company and Shelly Smith

Ok Mac users time for some testing. OneDrive for Business in preview <http://blogs.office.com/2015/01/28/onedrive-business-comes-m...> Shelly Smith #collaboration #storage

[Like](#) • [Reply](#) • [View Conversation](#) • 20 hours ago

Show 6 older replies (6 unread)



It works! Thanks for the solution. Class aptent taciti sociosqu ad litora torquent per conubia nostra.

[Like](#) • [Reply](#) • [View Conversation](#) • 20 hours ago

Write a reply...

**Nick Peters**

To All company and Shelly Smith

Ok Mac users time for some testing. OneDrive for Business in preview <http://blogs.office.com/2015/01/28/onedrive-business-comes-m...> Shelly Smith #collaboration #storage

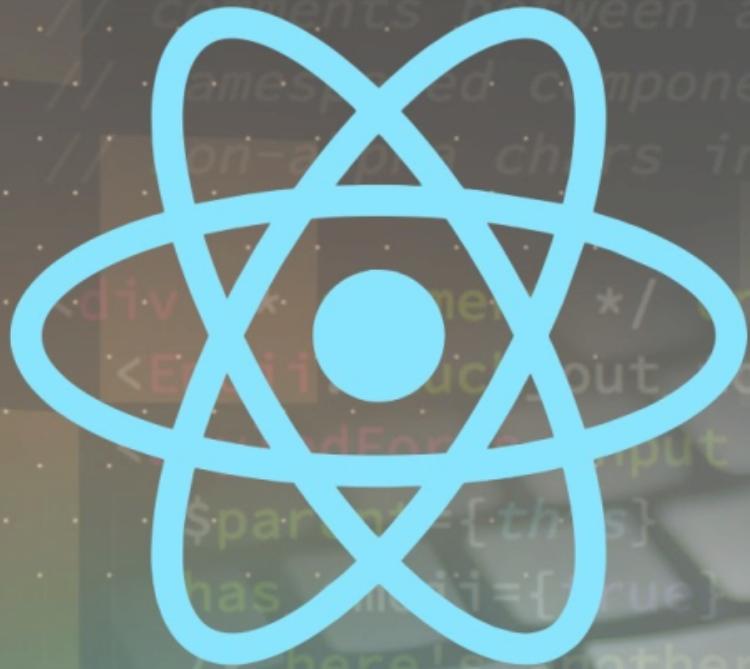
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# React Overview

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# A JAVASCRIPT LIBRARY FOR BUILDING USER INTERFACES

FOCUSES ON  
THE “VIEW” IN  
MODEL VIEW  
CONTROLLER



```
// comments between attributes,  
// namespaced components, and  
// non-alpha chars in tag/attribute name  
  
onClick>  
<div><!-- * --> onClick={this.onClick}  
<Editor></Editor><input  
$parent={this}  
hasError={true}>  
/* here's another comment */  
className='styled-input'  
</StyledForms.Input>  
</div>
```



# React Key Concepts

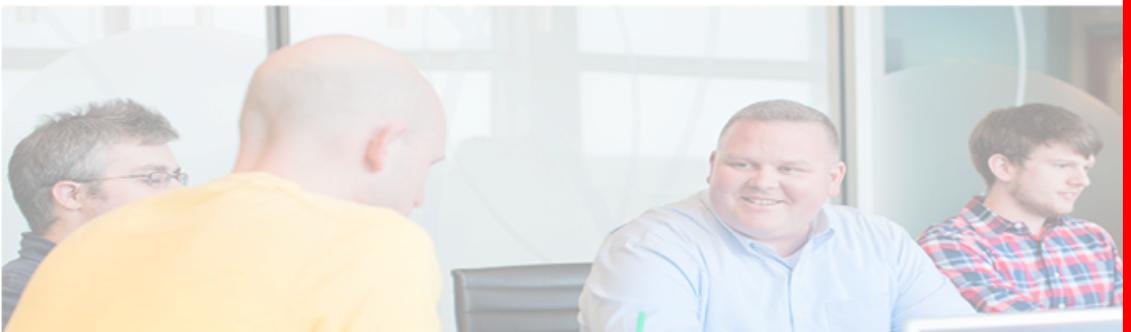
Build  
Components

Re-render,  
Don't Mutate

Fast Virtual  
DOM

# Components

- Small, reusable widgets of your application
- UI layout and the UI logic are tightly coupled
- Can be individual or have a parent/child relationship
- Use state for storing data within the component
- Use props to pass data and events to a child component



## Human Resources

Dep

## Annual Employee Appreciation Celebration Planning is Underway!

Click here to see some of the exciting events we have in store for you!

## News &amp; Announcements



June 7, 2015

**The Benefits of Blogging**

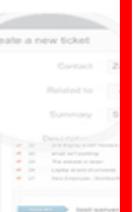
Blogging for business is not a new concept, but for many small businesses, especially service businesses, it can be an...

[Read More.](#)

June 17, 2015

**Flying Pig 5K Marathon**

It's the largest weekend party in town, and you can be part of it! Whether you're a runner or walker, whether you want to...

[Read More.](#)

June 23, 2015

**Automate Your Business**

We are excited to announce a new help desk system that will be available to your...

[Read More.](#)

12 Projects	
Red Projects	
<span style="color: red;">!</span>	Firetruck <a href="#">→</a>
<span style="color: red;">!</span>	Irongate <a href="#">→</a>
All Projects	
<span style="color: green;"></span>	Bladerunner <a href="#">→</a>
<span style="color: yellow;">▲</span>	Constantine <a href="#">→</a>
<span style="color: yellow;">▲</span>	Excalibur <a href="#">→</a>
<span style="color: red;">!</span>	Firetruck <a href="#">→</a>
<span style="color: red;">!</span>	Irongate <a href="#">→</a>
<span style="color: green;"></span>	Kryptonite <a href="#">→</a>
<span style="color: green;"></span>	Mad Hatter <a href="#">→</a>
<span style="color: yellow;">▲</span>	Moonshine <a href="#">→</a>
<span style="color: green;"></span>	Orion <a href="#">→</a>
<span style="color: yellow;">▲</span>	Revolution <a href="#">→</a>
<span style="color: yellow;">▲</span>	Sputnik <a href="#">→</a>
<span style="color: green;"></span>	Zircon <a href="#">→</a>

# Props vs State

	prop	state
Can you use a plain JavaScript object to store data?	Yes	Yes
Can get initial value from parent Component?	Yes	Yes
Can be changed by parent Component?	Yes	No
Can set default values inside Component?	Yes	Yes
Can change inside Component?	No	Yes
Can set initial value for child Components?	Yes	Yes
Can change in child Components?	Yes	No
Does change trigger render event?	Yes	Yes

# JSX

# JSX

- Syntax extension to JavaScript
- Declarative description of the UI inline in JavaScript code
- Use inside if statements and for loops, assign to variables, accept as arguments, return from functions
- Wrap JavaScript expressions in {} to be used within an element
- Preprocessor translates syntax into plain JavaScript objects

```
render() {
  return (
    <div className="container">
      <Paper zDepth={5}>
        <List>
          <Subheader className="projectSubheading">Red Projects</Subheader>
          {this.props.projects
            .filter( row => row.status === "R")
            .map( (row, index) => (
              <ProjectListItem key={index} project={row} />
            )))
          </List>
          <Divider />
          <List>
            <Subheader className="projectSubheading">All Projects</Subheader>
            {this.props.projects
              .map( (row, index) => (
                <ProjectListItem key={index} project={row} />
              )))
            </List>
          </Paper>
        </div>
      );
}
```

# Deployment Workflow

## Local Test

- Build process
- Disable web security (--disable-web-security) errors in Chrome
- Functional testing

## Upload Source Code to Document library

- Same folder structure as local environment
- Only the build files are needed
- Upload source code

## SharePoint Deployment & Test

- Add Script Editor web part to Page
- Add markup
- Functional testing

# Demo – SharePoint & React

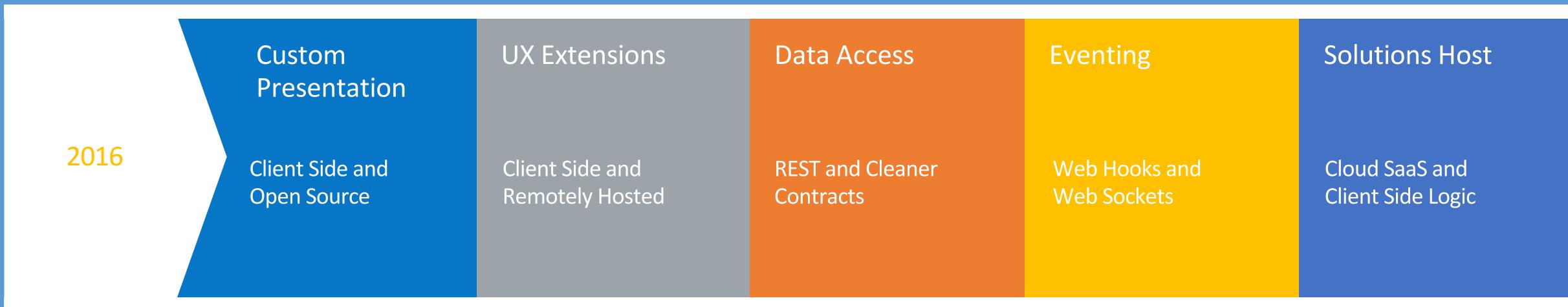
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# SharePoint Framework

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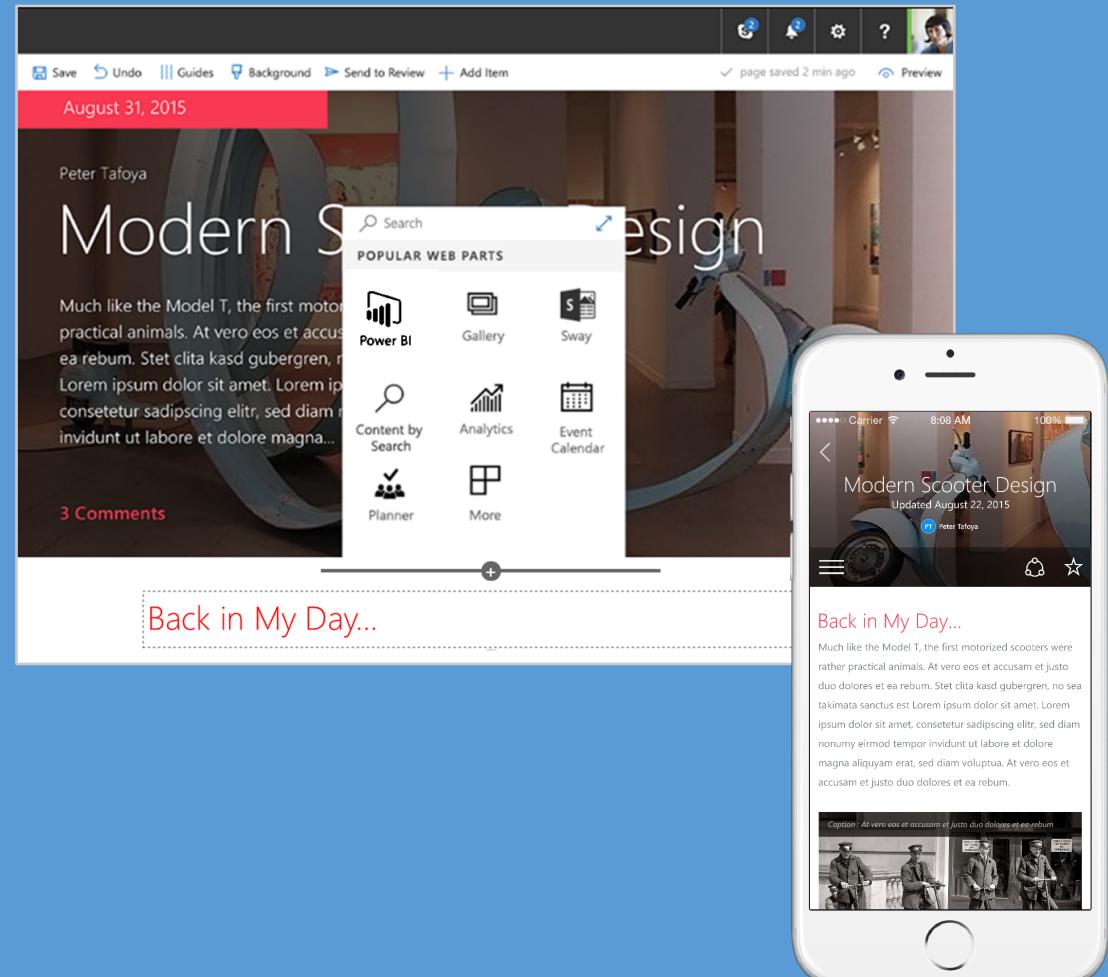
# SharePoint Framework

- New Microsoft-recommended, client-side framework coming to SharePoint Online and SharePoint 2016
- Build applications using the latest JavaScript frameworks including Angular and React
- Use the latest tools: NodeJS, NPM, Gulp, Yeoman, TypeScript

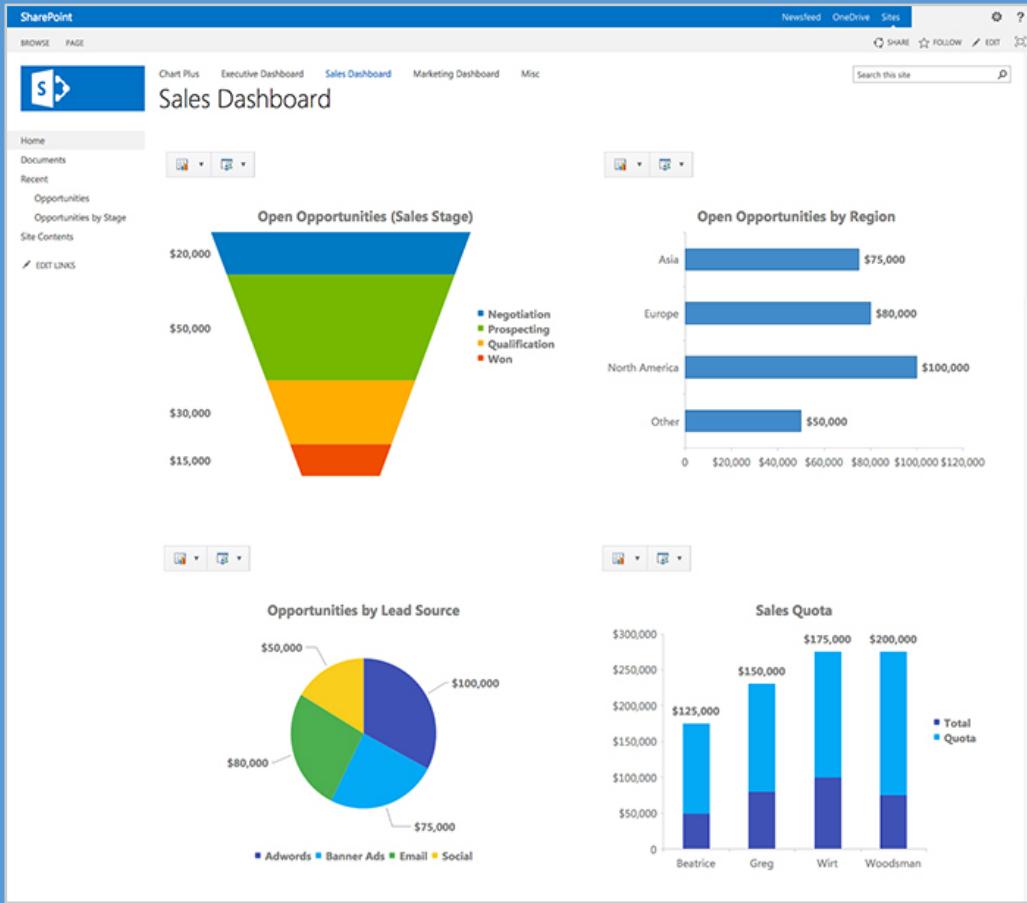


# Scenarios

- Branding custom portals
  - Building custom intranet portals
  - Building custom web parts
  - Building line of business applications



# Client-Side Web Parts



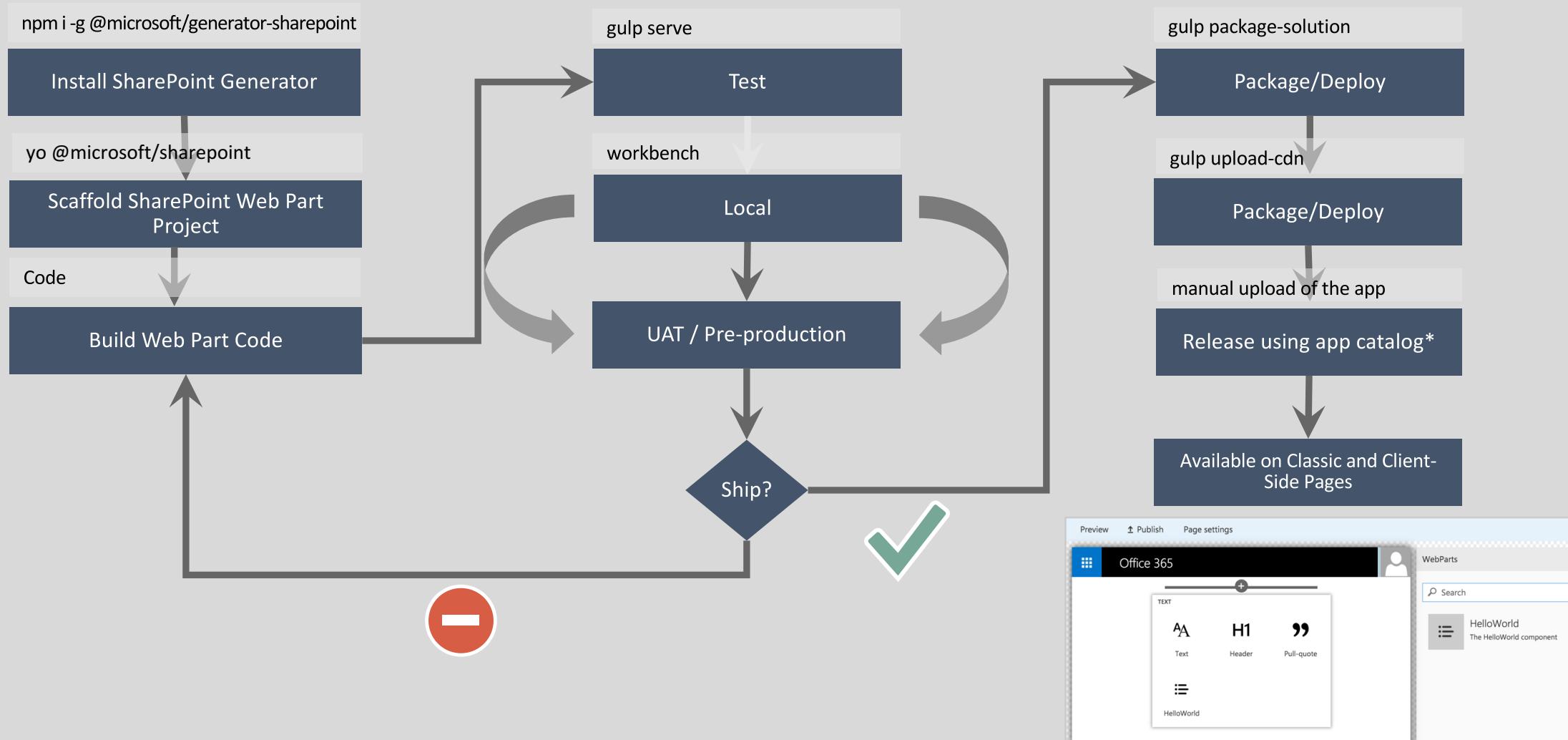
## Web Part Value

- End users add functionality to SharePoint Experiences
- Configurable, reusable, purpose built components built by developers
- Framework for connecting related components
- Context aware

## Client-side Web Parts remain Web Parts

- Built for the modern, JavaScript-driven web
- Can run directly inside a SharePoint page, new and existing
- Web framework agnostic
- Support both on-premises and Office 365

# Client-side Web Part Build Flow



# Demo – SharePoint Framework

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# Office Fabric

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# Office Fabric

- <http://dev.office.com/fabric>
- “The official front-end framework for building experiences that fit seamlessly into Office and Office 365”
- Language options: Vanilla JavaScript, ReactJS, and AngularJS
- Follows Material Design guidelines

The image shows three main sections of the Fabric design system. On the left, under 'Styles', there is a purple background featuring the letters 'Aa' in white, followed by a color palette consisting of four squares in teal, red, yellow, and brown. Below this is a section titled 'Styles' with a description. In the center, under 'Icons', there is a purple background with three circular icons: a globe, a document with the Microsoft logo, and a compass. Below this is a section titled 'Icons' with a description. On the right, under 'Components', there is a purple background showing a screenshot of a user interface with a navigation bar, a content area with a list, and a footer. Below this is a section titled 'Components' with a description.

Styles	Icons	Components
Fabric gives you access to Segoe, Microsoft's official typeface, along with the color palette, type ramp, icons, and responsive grid for Office 365.	Fabric includes Office's official product icons. Fabric also provides a suite of product and document symbols, so you can use the same metaphors we use.	Components are the building blocks of your UI. Fabric has a variety of components, including navigation, commands, containers, and content.

# Demo – Office Fabric

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# Resources

- React - <https://facebook.github.io/react/>
- Create React App -  
<https://github.com/facebookincubator/create-react-app>
- axios - <https://github.com/mzabriskie/axios>
- SharePoint Framework -  
<https://github.com/SharePoint/sp-dev-docs>
- Material-UI - <http://www.material-ui.com/#/>
- Material UI Icons - <https://material.io/icons/>
- Office Fabric - <https://dev.office.com/fabric>

# High Priority Projects Snippet

```
<link href="/sites/projects/SiteCollectionDocuments/css/main.968ec085.css" rel="stylesheet">
<div id="appProjects"></div>
<script type="text/javascript" src="/sites/projects/SiteCollectionDocuments/js/main.f8b604ee.js"></script>
```