

Building React Components for SharePoint

SharePoint Engage Conference
November 2-3, 2016

Steve Pietrek



**SharePoint Application Architect
Front End Developer**

**Cardinal Solutions
App Dev Practice Manager
Raleigh/Durham**

Contact

@spietrek
spietrek@cardinalsolutions.com

Presentation References

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

Agenda

SharePoint
Development

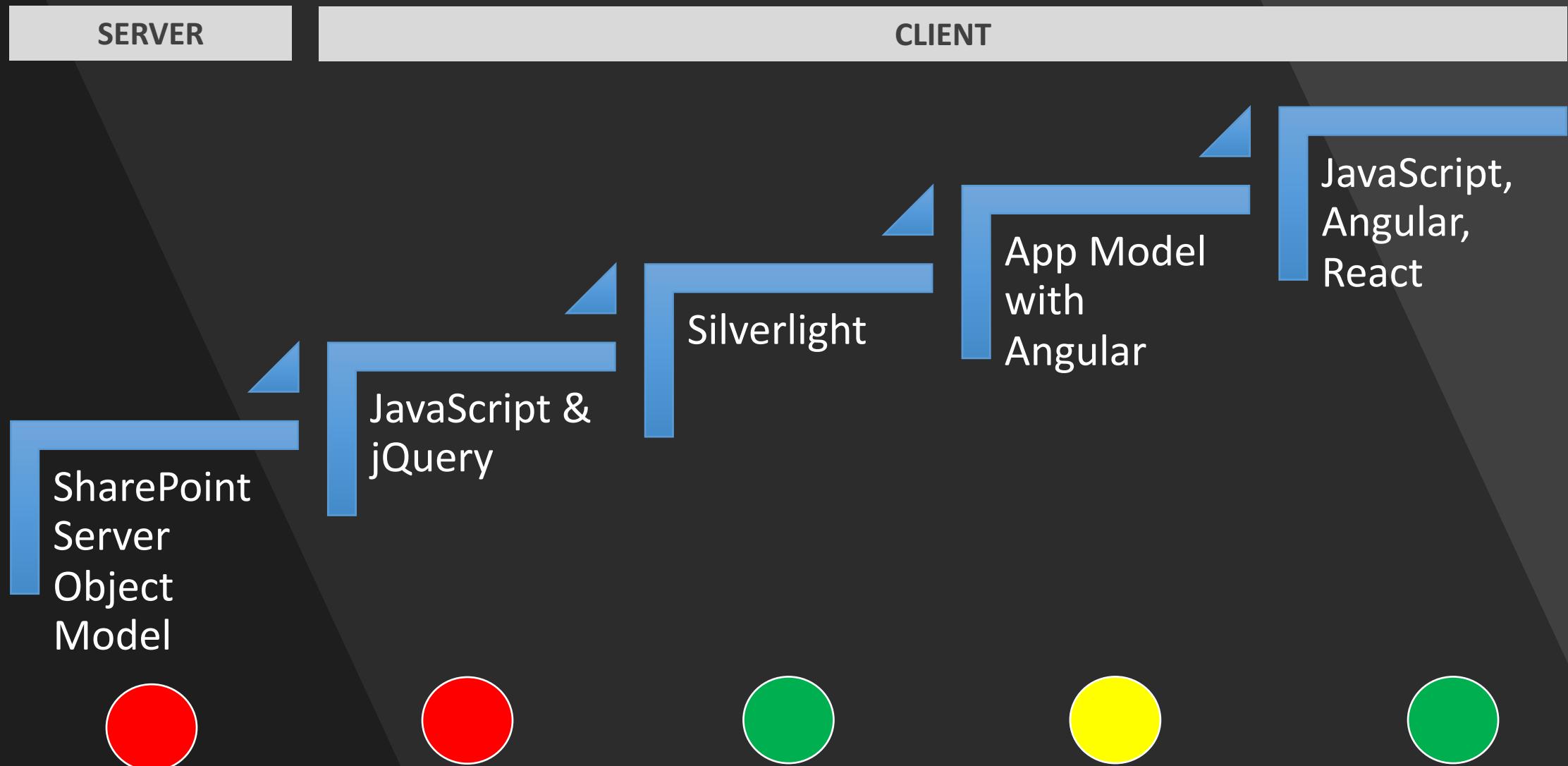
React
Overview

SharePoint
Framework

Office Fabric

SharePoint Development

My SharePoint Development Journey



Client-Side Development Approach



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)

SharePoint Client-Side Data Access

SOAP Web
Services

SharePoint
2010 REST

SharePoint
2013 REST

Office
Graph



HOME

HUMAN RESOURCES

DEPARTMENTS

PROJECTS

FORMS & 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

 107
TOTAL PROJECTS 18
RED PROJECTS 48
YELLOW PROJECTS 41
GREEN PROJECTS

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



theName

Corporate

Departments

Training

Applications

Human Resources

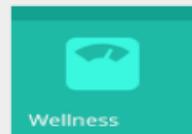
home > this would be the breadcrumb on secondary pages

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
L'Pellentesque 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

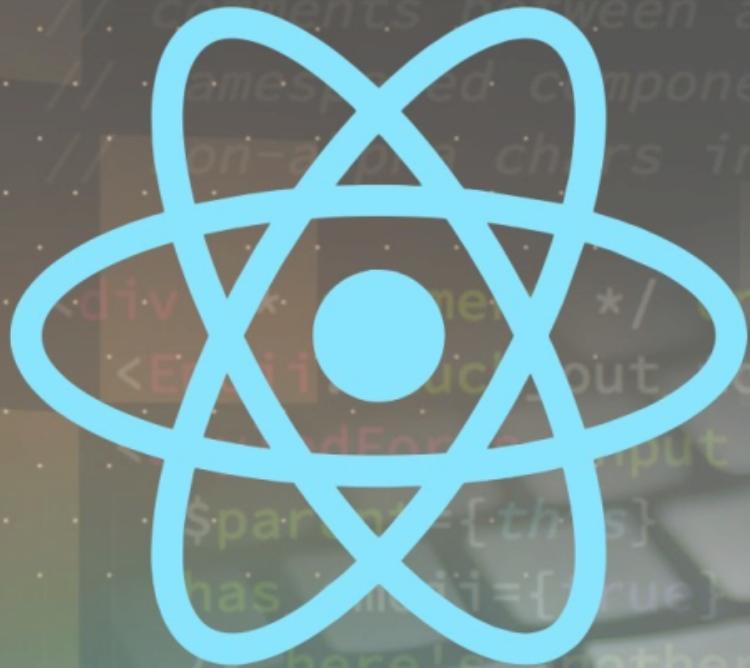
 Write a reply...

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

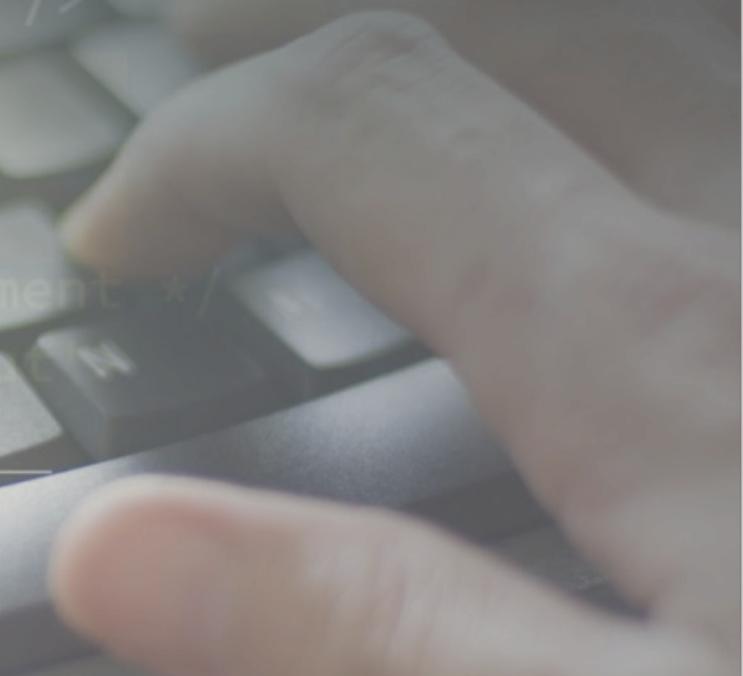
React Overview

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,
Not Templates

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



Annual Employee Appreciation Celebration Planning is Underway!

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

News & 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.](#)

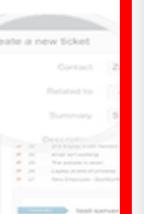


June 17, 2015

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 make it easier for you to...

[Read More.](#)

12 Projects	
Red Projects	
!	Firetruck →
!	Irongate →
All Projects	
	Bladerunner →
▲	Constantine →
▲	Excalibur →
!	Firetruck →
!	Irongate →
	Kryptonite →
	Mad Hatter →
▲	Moonshine →
	Orion →
▲	Revolution →
▲	Sputnik →
	Zircon →

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

```
    );
    return (
      <div className="component-container">
        <div className={styles.slider}>
          <Slider {...settings}>
            {this
              .props
              .announcements
              .map(function (announcement, index) {
                return (
                  <div key={'announcement-' + index}>
                    <AnnouncementsItem item={announcement}/>
                  </div>
                );
              })
            }
          </Slider>
        </div>
      </div>
    );
  }
}
```

JSX

- Syntax extension to JavaScript
- Combines templates with 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

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

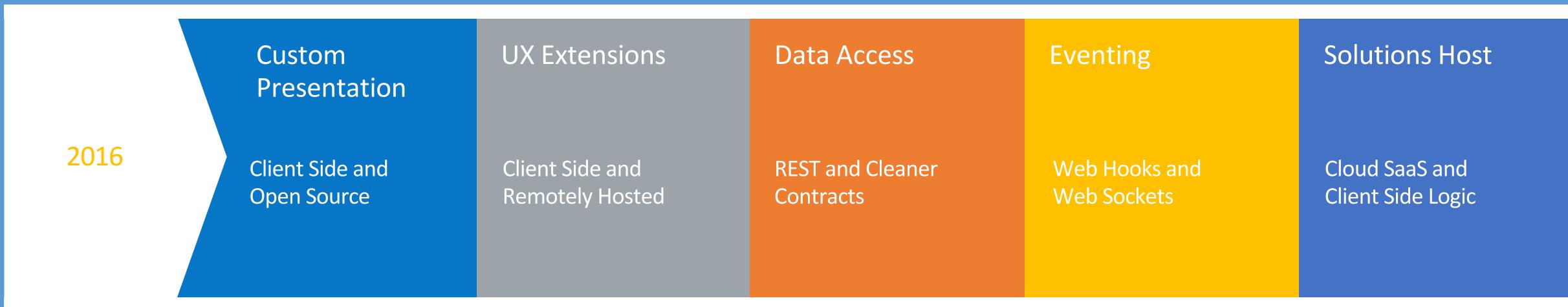
- Add Script Editor web part to Page
- Add markup
- Functional testing

Demo – SharePoint & React

SharePoint Framework

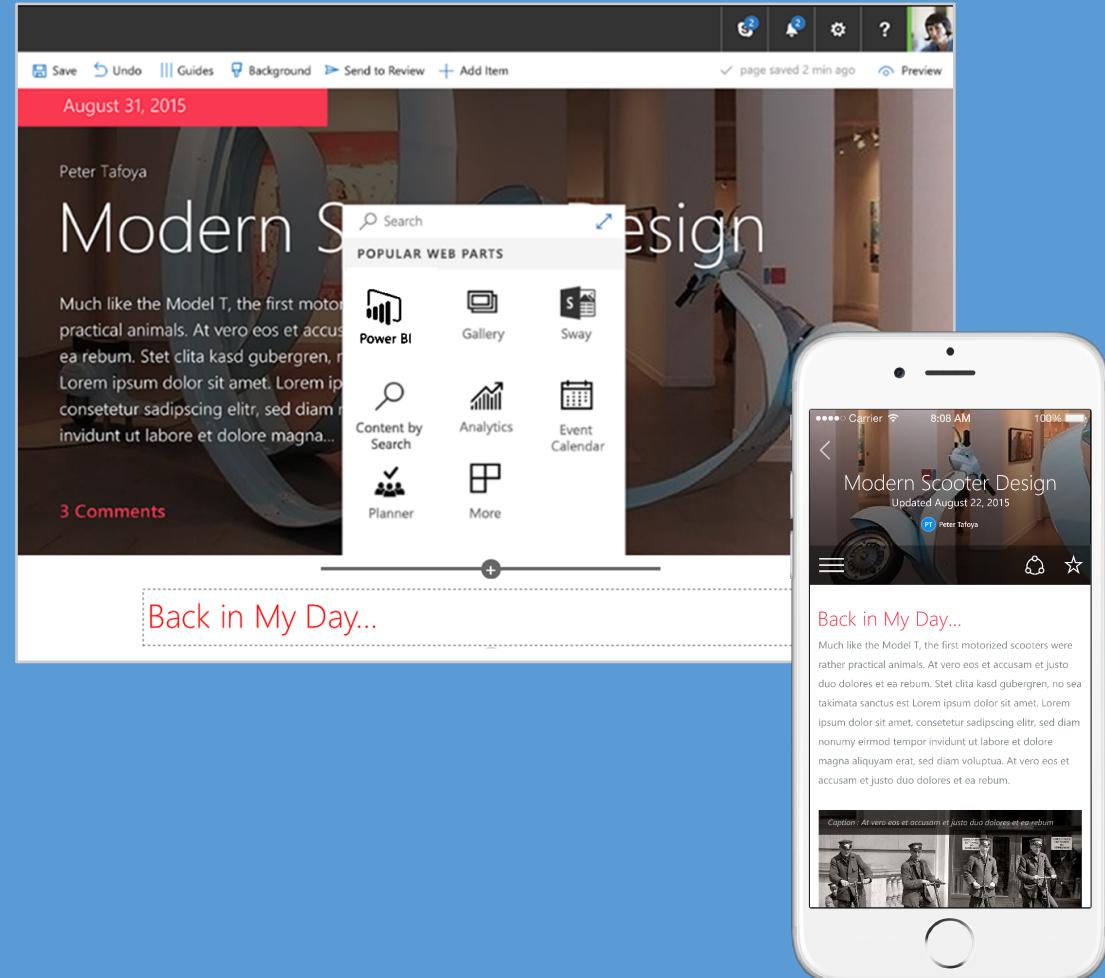
SharePoint Framework

- 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

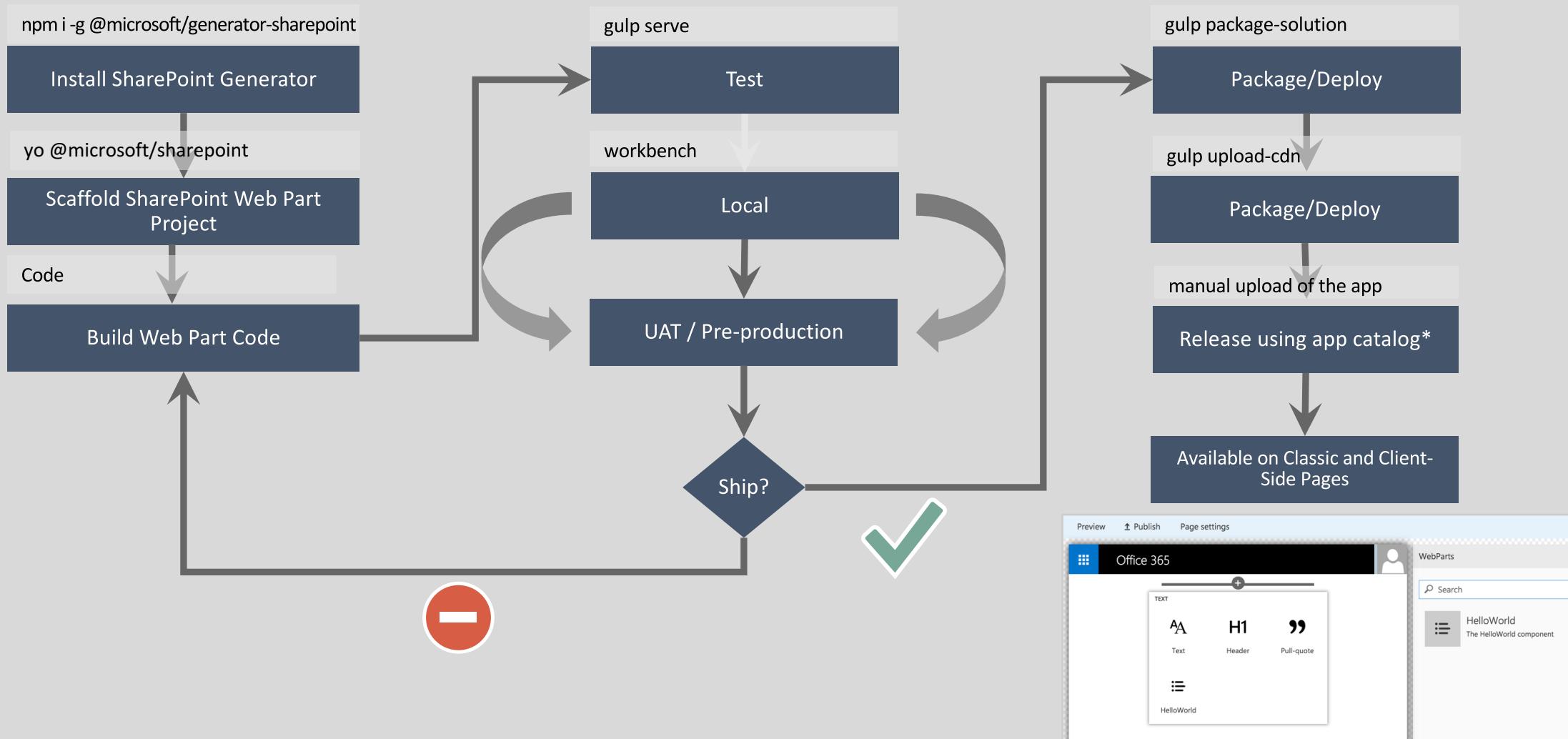


Scenarios

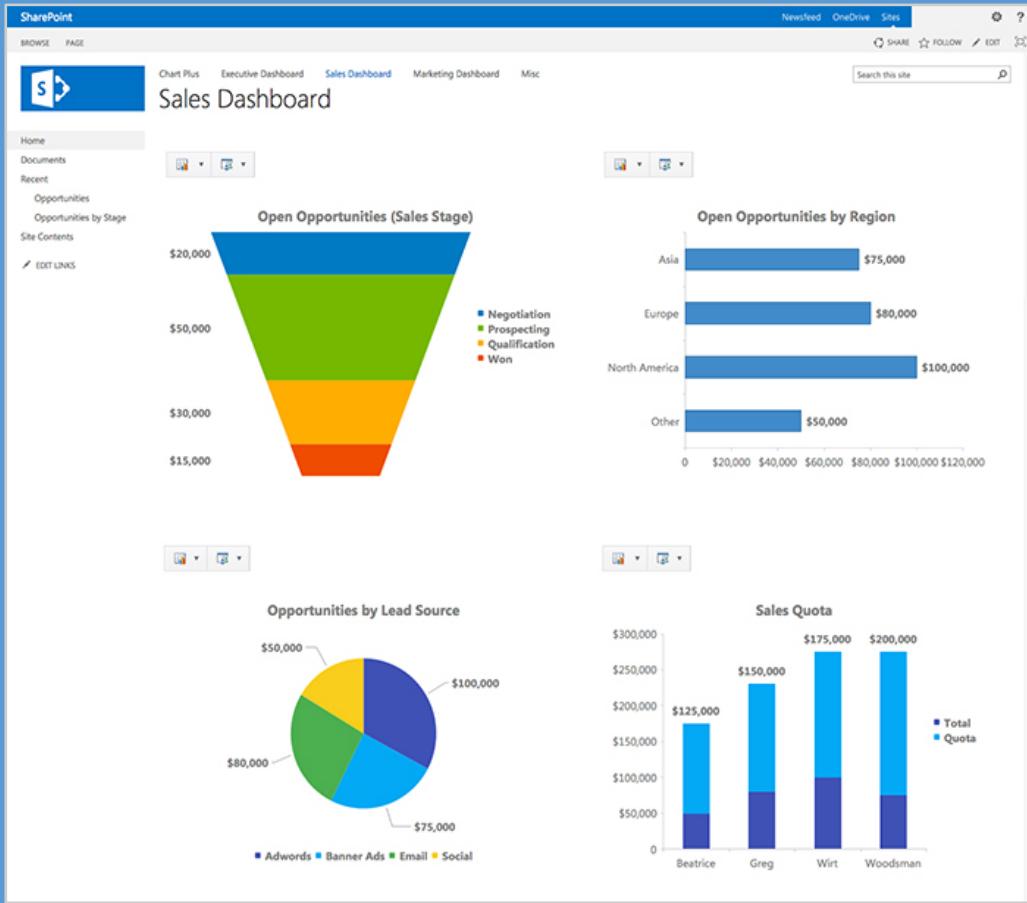
- Enhancing the out of the box experience
- Branding custom portals
- Building custom Intranet Portals
- Building custom Web Parts
- Building line of business applications
- Integrating with external systems



Client-side Web Part Build Flow



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

Demo – SharePoint Framework

Office Fabric

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 sections of the Fabric design system. The first section, 'Styles', features a purple background with white text and icons. It includes a large 'Aa' font, a color palette, and a responsive grid icon. The second section, 'Icons', shows circular icons for globe, document, and compass. The third section, 'Components', shows a screenshot of a user interface with navigation, commands, containers, and content.

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

Resources

- React - <https://facebook.github.io/react/>
- 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>
```

SharePoint 2007 Challenge

- Full Trust applications
- Code affects the whole farm
- Developers build custom solutions
- Administrators can only secure solutions with Code Access Security (CAS)
 - Hard to control what is in custom code (e.g. Elevated Privileges)
- Biggest cause of SharePoint support cases: Custom code

Developer

- Design, build, and test customizations

Administrator

- Install and monitor customizations

Site Collection Owner

- Activate and use customizations

SharePoint 2010 Challenge

- Sandbox solutions applications
- Code affects the site collection
- Developers build custom solutions
- Administrators define quotas and use resource monitors to check site collection usage
- Site collection owners deploy, activate, and implement the customizations
- Missing functionality in Sandbox Solutions

Developer

- Design, build, and test customizations

Administrator

- Set quotas and monitor customizations

Site Collection Owner

- Install customizations
- Activate and use customizations

SharePoint Development Challenges



Performance
and Stability



Lifecycle
Management

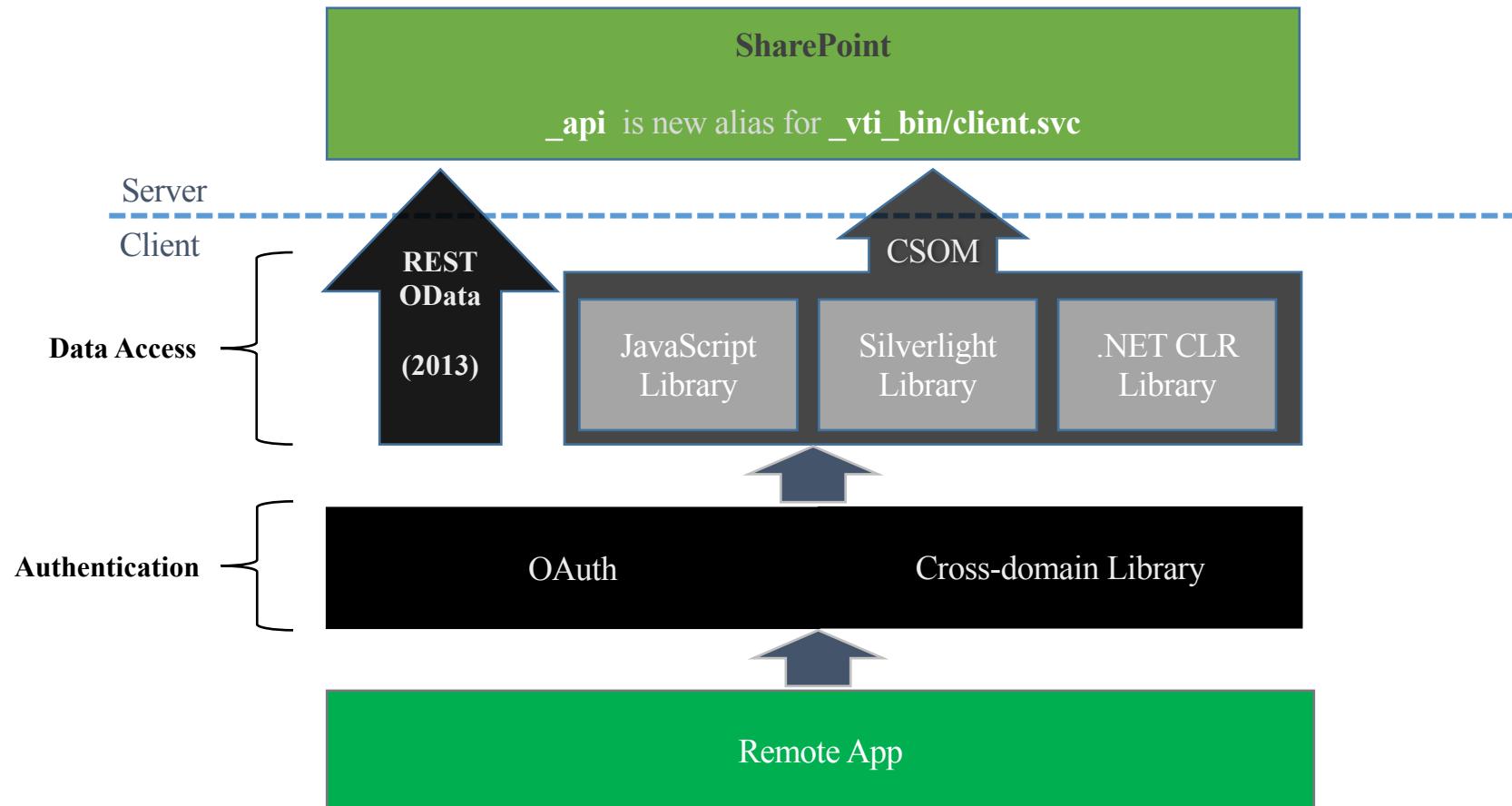


Not Cloud
Ready



Resources

SharePoint 2013 Remote API



Note: ASMX web services have been deprecated

Key Players

- IDE: Visual Studio, VS Code, WebStorm, Brackets, Atom, Sublime Text
- Third-party JavaScript frameworks: jQuery, jQuery UI, Bootstrap, AngularJS, ReactJS, Moment, Font Awesome, SPServices, Lodash
- Browser Plug-ins: Firebug, Postman
- Task Runners: Gulp, Grunt, Webpack
- Package Managers: npm, Yarn
- Source control: Git, Visual Studio Online
- Other tools: Node.js, Fiddler, PhantomJS
- Other areas: ES6, Responsive Design, HTML5, CSS