SharePoint Framework (SPFx) Developer Preview

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envision IT

Leaders in SharePoint Solutions

Peter Carson

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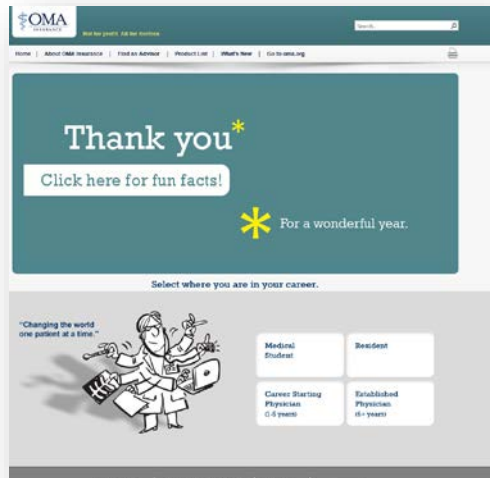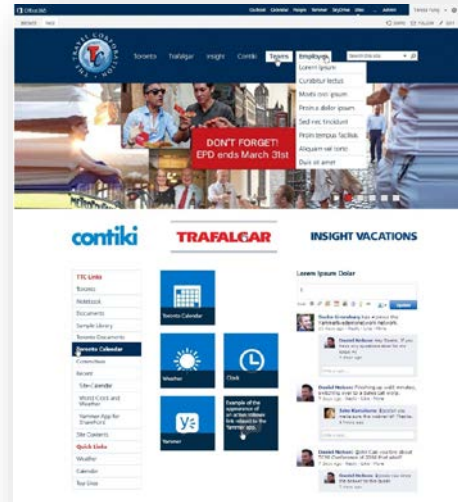- Twitter @carsonpeter
- VP Toronto SharePoint User Group

Agenda

- Introductions
- Overview of Envision IT
- SharePoint Development Background
- Alternative App Models
- Client-Side Code Only
- Visual Studio WebAPI Projects
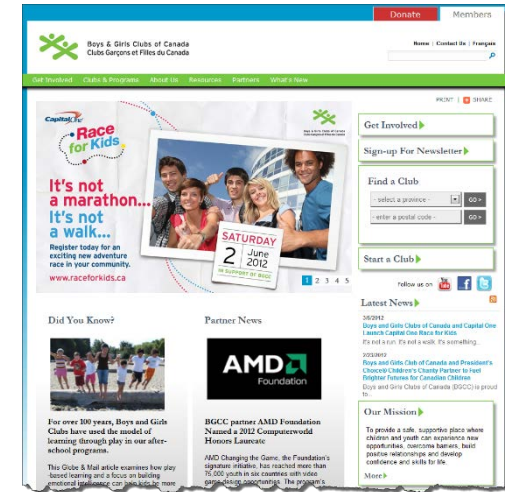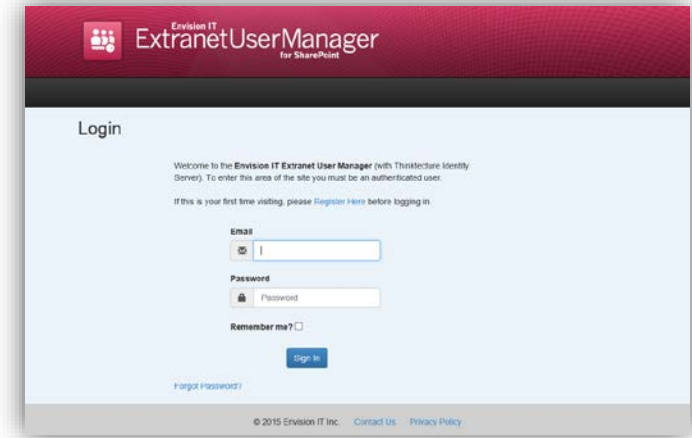- Questions / Next Steps

Envision IT
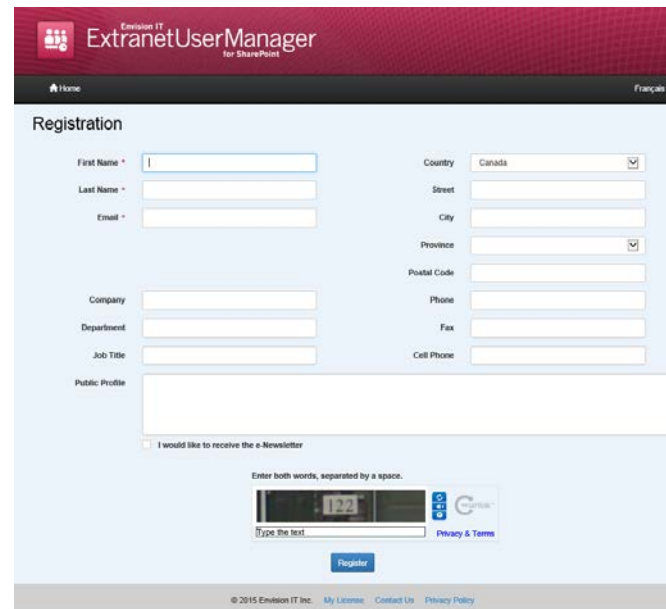
Public Websites

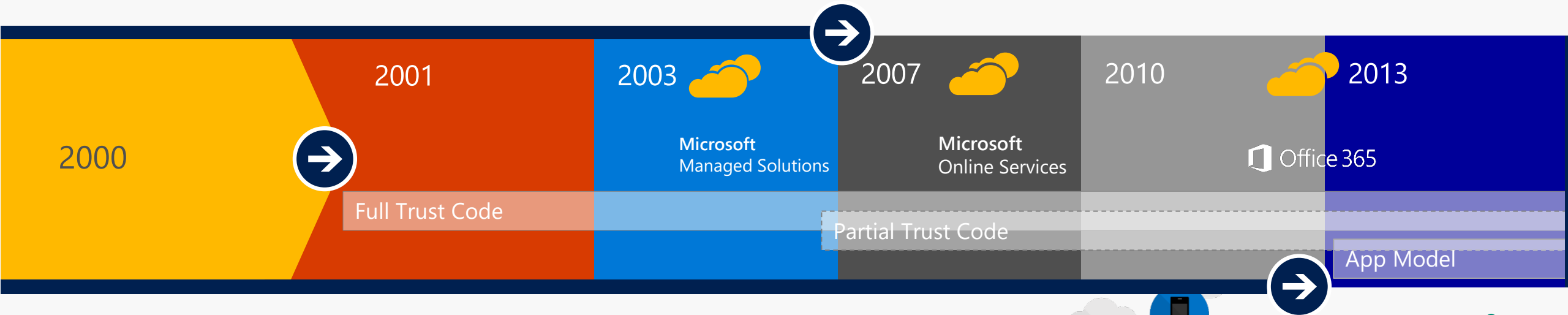## Intranets / Staff Portals

Extranets / Member Portals

Extranet User Manager

- Easy delegation of user management to business
- Self-registration, approvals, forgotten password reset
- Simplified login for both internal and external users

SharePoint Development Background

Accelerating web development

2000	2001	2003	2007	2010	2013
		Microsoft Managed Solutions	**Microsoft** Online Services	Office 365	

Full Trust Code

Partial Trust Code

App Model

Sources:
1. 451 Research, Hosting and Cloud Study, 2014

72%
of customers are leveraging cloud for their applications—from pilots to production apps[1]
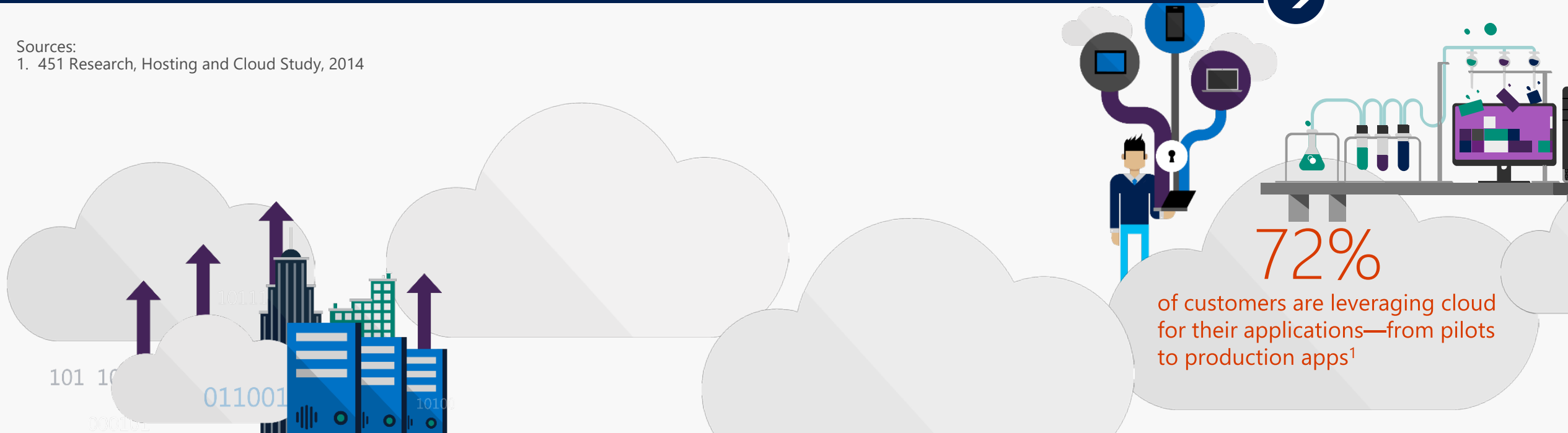
Full Trust Solutions

- Code runs on the SharePoint server

- Access to the full server API

- Code can run in with elevated permissions

- Not supported on Office 365

- Can raise challenges when upgrading SharePoint

Sandbox Solutions

- Code is uploaded into SharePoint
- Runs in a restricted sandbox
- Limited set of API methods available
- Supported on premises and in Office 365
- Deprecated by Microsoft and not recommended

Apps Model – SharePoint Hosted

- Client side code runs in the browser
- Uses CSOM or REST APIs to communicate with SharePoint
- User needs permissions for anything that is being done
  - No ability to run with elevated permissions

Apps Model – Provider Hosted

- Apps run in a separate server or IIS site from SharePoint
- Gets code off the SharePoint server
- Supports on premises and Office 365
- UI runs in an iFrame in the SharePoint window

App Model Challenges

- Setting up the App store is complicated
- Separate wildcard app domain is needed
- Certificates
- Complex to move between environments – dev, test, prod
- Apps intended to be added to sites by end users

Why are Apps Complex?

- Intended for functions that will be added multiple times to sites
- End users can discover Apps in the public store or company store
- Reality is most business apps don't require this
- Custom Apps typically need to exist in one or a few places

Alternative App Models

Checklist for an Ideal App Model

- No iFrames

- No wildcard DNS domains

- No code on the SharePoint Server

- Great user experience

- Standard development model

- Ability to run with elevated permissions

- Integrate with more than just SharePoint

The SharePoint Framework

Why did we need SPFx?
New Tech? Another thing?

- We saw what developers where doing in SharePoint

- We knew we needed to refresh the UI

- Responsive Design is now expected
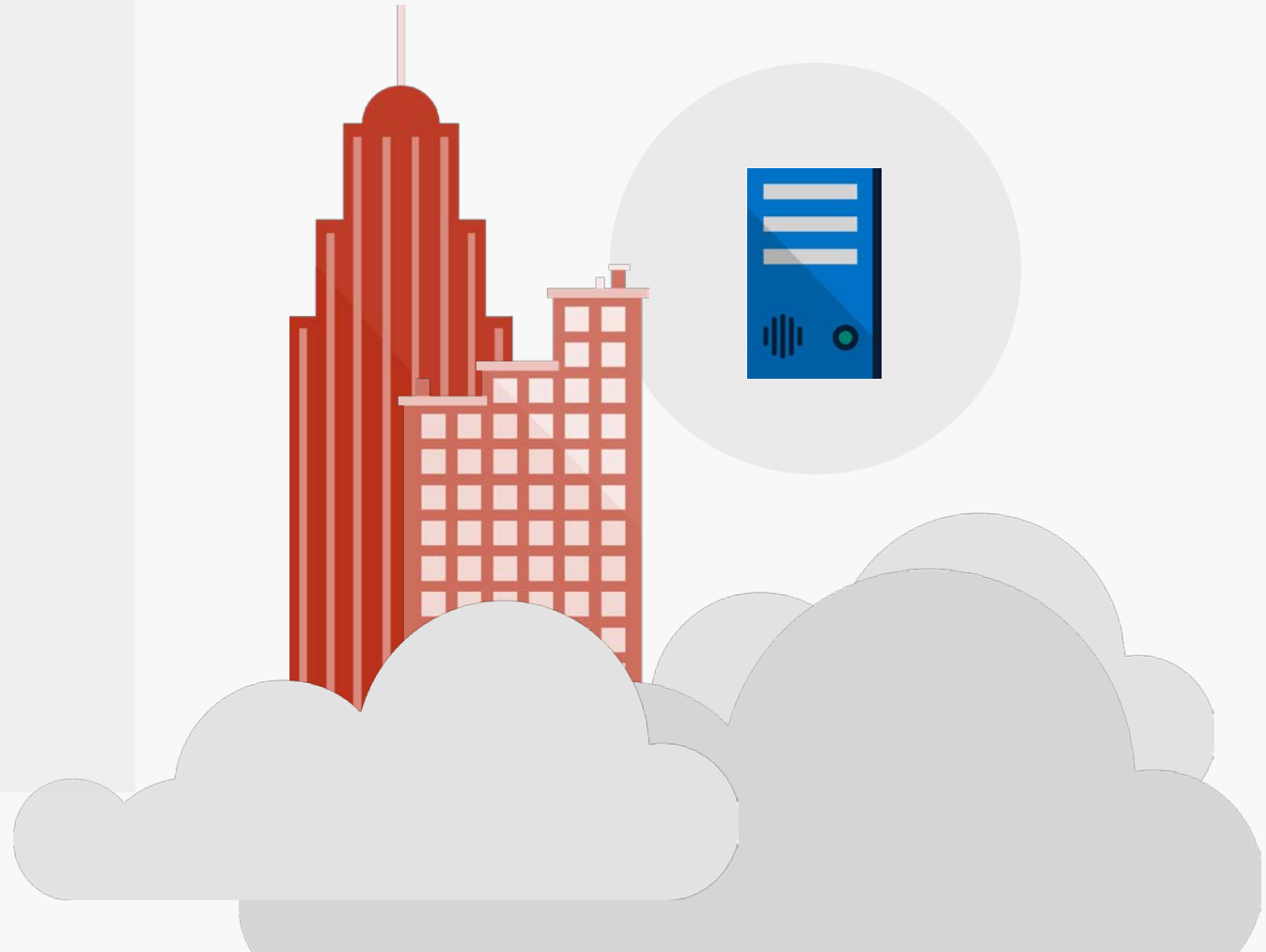
- iFrame ... love it or hate it
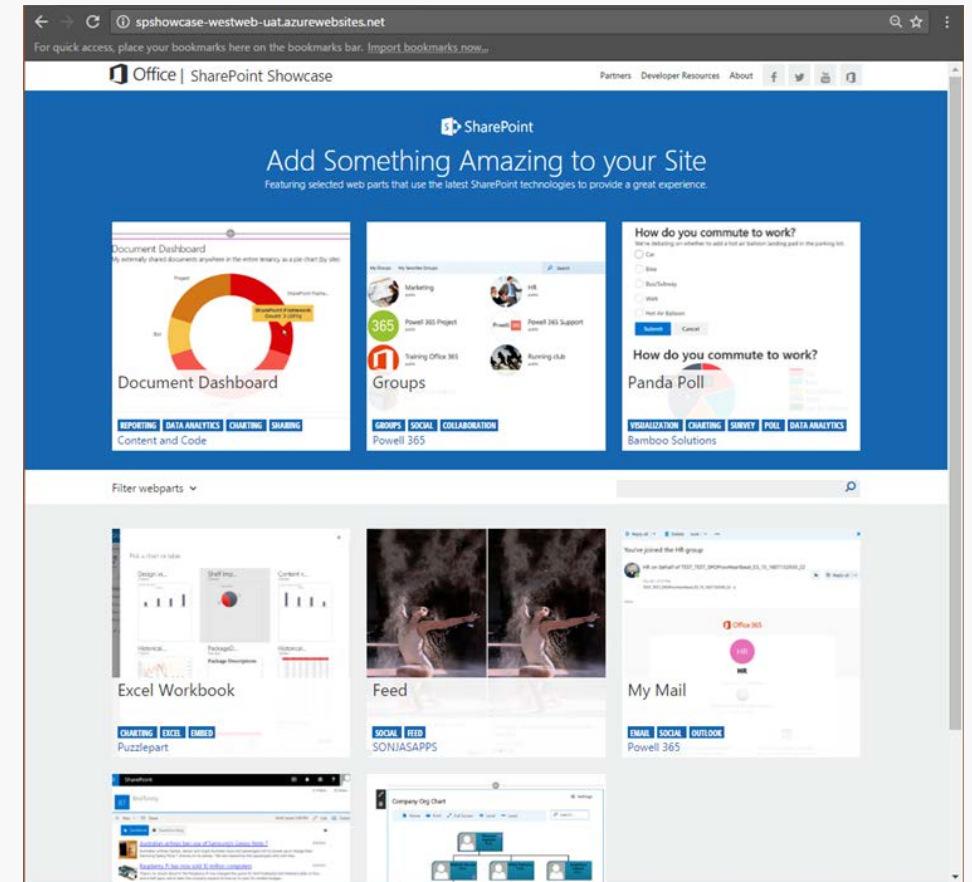
SharePoint extensibility principles
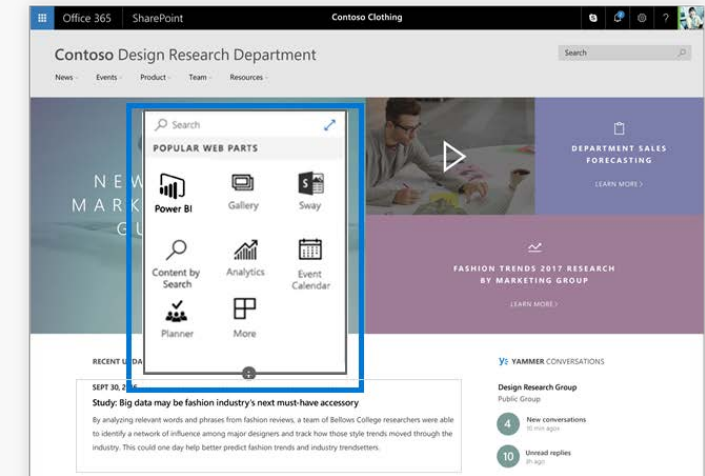Build long-term, value-added services

Principles

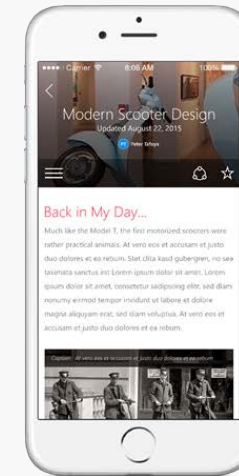- Modern client-side development

- Lightweight web and mobile

- Powers our own experiences

- Backward compatible

- Supports open source tools
  and JavaScript web frameworks

Scenarios

- Building custom Web Parts
  - Building vertical focused applications
  - Integrating with external systems

- Enhancing the out of the box experience
  - Branding custom portals
  - Building custom Intranet Portals

Supporting Frameworks

	Node.js® is a JavaScript runtime	https://nodejs.org
	Node.js' package ecosystem, npm, is the largest ecosystem of open source libraries in the world	https://www.npmjs.com/
	The web's scaffolding tool for modern webapps Used to generate webpart projects	http://yeoman.io/
	JavaScript task runner to automate build tasks	http://gulpjs.com/
	Typed superset of JavaScript that compiles to plain JavaScript. Any browser. Any host. Any OS. Open source.	https://www.typescriptlang.org/

Additional Frameworks

React	Open source JavaScript library created by Facebook for building user interfaces	https://facebook.github.io/react/
Bootstrap	Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile first projects on the web	http://getbootstrap.com/
{less}	Less is a CSS pre-processor. It extends the CSS language, adding features to make it more maintainable, themeable and extendable	http://lesscss.org/
jQuery	Write less, do more. jQuery is a fast, small, and feature-rich JavaScript library	https://jquery.com/
handlebars	Handlebars is a templating engine to convert datasets into HTML	http://handlebarsjs.com/

Additional Frameworks

	Simplified dynamic JavaScript UIs with the Model-View-View Model (MVVM)	http://knockoutjs.com/
	Single page apps built with the Model-View-Controller (MVC)	https://angularjs.org/
Visual Studio	Visual Studio WebAPIs	http://www.asp.net/web-api
swagger	Swagger is to REST as WSDL is to SOAP Define your API in Swagger	http://swagger.io/
	Adds Swagger to a .NET WebAPI project	https://www.nuget.org/packages/Swashbuckle
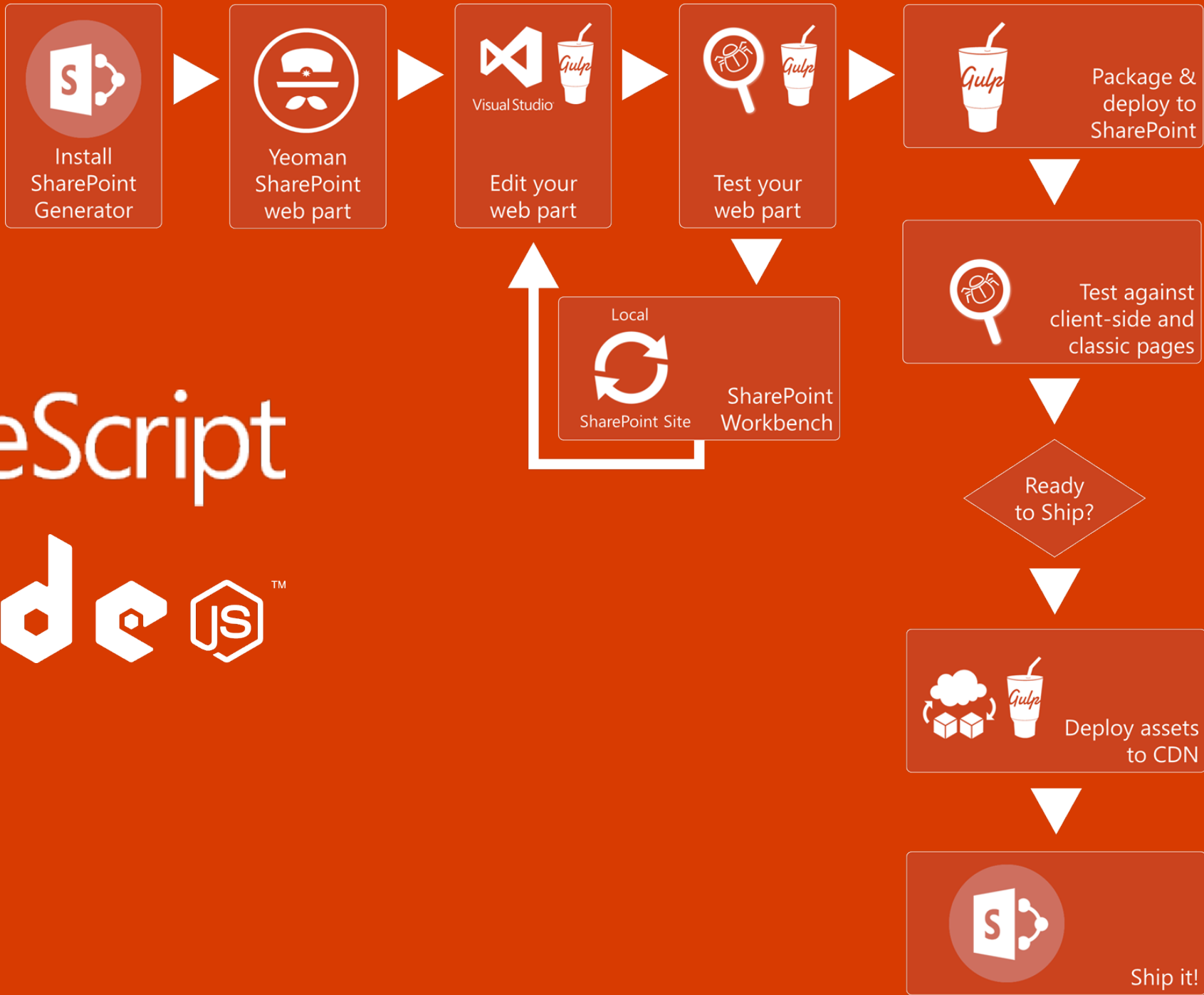
Getting Started with SharePoint Framework

- https://github.com/SharePoint/sp-dev-docs/wiki

- Setup your Office 365 Developer Tenant

- Setup your Machine

- Go build your first web part

Set up your Office 365 developer tenant

1. Sign up for an Office 365 Developer Tenant
2. Create app catalog site
3. Create a new Developer Site collection
4. Set up a document library
5. Upload the SharePoint workbench

Setup Your Machine

1. Install NodeJS

   - https://nodejs.org/en/ (install the LTS version)

2. Install Yeoman and gulp

   - npm i -g yo gulp

3. Install Yeoman SharePoint generator

   - npm i -g @microsoft/generator-sharepoint

Build a Hello World Web Part

1. Create a new web part project

   - yo @microsoft/sharepoint

2. Preview the web part

   - gulp serve

3. Run in the SharePoint Workbench

4. Preview the web part in SharePoint

Run with Elevated Permissions?

- Do users have rights to do everything they need to do in SharePoint?

- Read, add, and edit rights to SharePoint

- Column level security

- Custom business rules

Client-Side Code Only

- Presentation of read-only data
  - Catalog publishing
  - Visualizations
  - Customized user experience
  - Simple forms

SharePoint APIs

- Client Side Object Model (CSOM)
- REST APIs
- REST seems to be the preferred path that Microsoft is investing in

Shakespeare Reference Project

Cross Site Publishing

www.envisionit.com/events
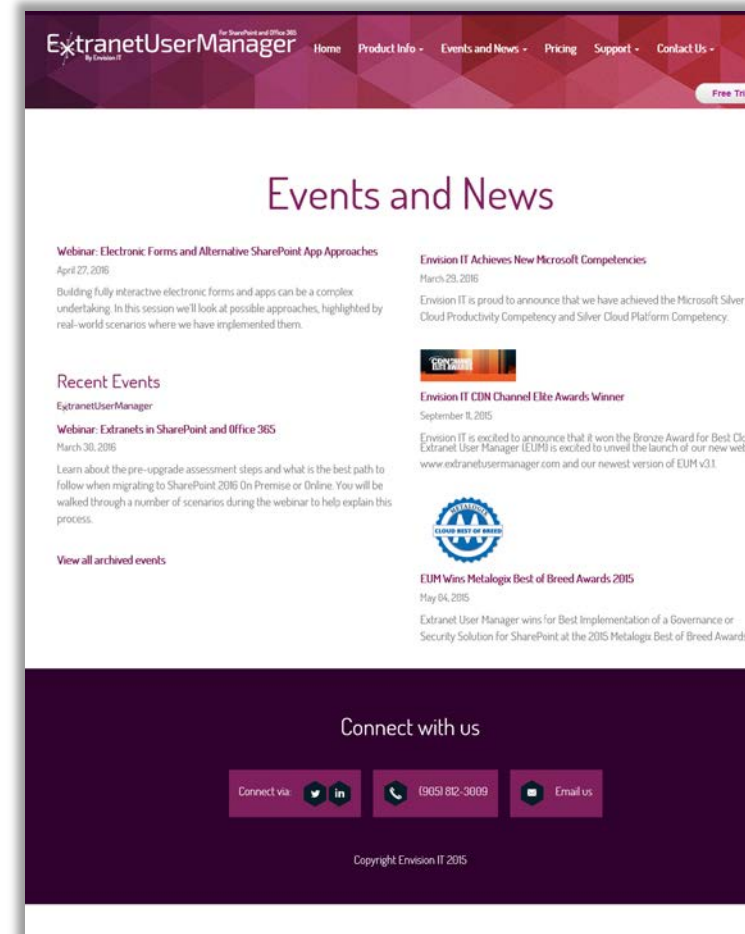
www.extranetusermanager.com/Events-and-News

Custom User Experience

Pentecostal Assembly of Canada Pension Portal

- SharePoint 2013 portal for current and retired staff
- Address and Banking Information update forms
  - Write to SharePoint lists
  - List columns define the form fields
  - Workflow used to secure submissions
  - Built with jQuery and SharePoint REST APIs
- Pension Calculator
  - Calculates annual benefits payable at retirement
  - Knockout model uses values entered by user

Search this site...

Home   About the Pension Plan ▾   Pension Member ▾   Pension Employer ▾

Home / Pension Member / Address Update

Pension Member

Annual Benefits Statement

Contribution History

T4As

Address Update

Banking Information Update

Retirement Options

Pension Calculator

Address Update

Fields marked with an asterisk (*) are required. If a required field is not applicable to you, enter "n/a".

Full Name *	Peter Carson
Employee ID *	pcclimited\pcarson
Effective Date *	MM/DD/YYYY
Address 1 *	
Address 2	
City *	
Province *	
Postal Code *	
Country *	
Email Address	
Telephone Number	

Submit

The Pension Fund (1969) of The Pentecostal Assemblies of Canada

Contact Information   Privacy Statement   Mission Statement

Search this site...

Home   About the Pension Plan ▾   Pension Member ▾   Pension Employer ▾

Home / Pension Member / Banking Information Update

Pension Member

Annual Benefits Statement

Contribution History

T4As

Address Update

Banking Information Update

Retirement Options

Pension Calculator

Banking Information Update

Fields marked with an asterisk (*) are required.

Full Name *   Peter Carson

Employee ID *   pcclimited\pcarson

Name of Financial Institution *

Branch Transit Number *

Institution Number *

Account Number *

Submit

Home   About the Pension Plan ▾   Pension Member ▾   Pension Employer ▾

Home / Pension Member / Pension Calculator

Pension Member

Annual Benefits Statement

Contribution History

T4As

Address Update

Banking Information Update

Retirement Options

Pension Calculator

Pension Calculator

Annual Benefit Statement Contributions

Please refer to the Annual Accrued Pension to Date section on your most recent Annual Benefit Statement

Pension from Contributions

Pension from Enhancements (All Years)

Start Contribution Year — 2015

Member Contributions per Year

Employer Contributions per Year

Projected Annual Pension

Payable at Age — 65

Number of Years to Age

Month of birth — 1 ▾

Total Projected Annual Benefit Payable at age 65:
Monthly Pension:

Note: For pension calculations below age 65, annual benefit payable is reduced by 0.5% for every month prior to age 65.

Elevated Permissions

- Code that needs to run in a different context than the user
- Can't run in JavaScript in the browser
- No code allowed on SharePoint server
- Need somewhere else to run

Visual Studio WebAPI Projects

- Part of ASP.NET 4.5
- Full .NET functionality – typically C#
- Can deploy on premises or in Azure
- Can cheat and deploy to SharePoint WFEs
- Makes authentication easier
- Some work to move to another environment

WebAPI Authentication

- Can be anonymous
  - Very useful for anonymous form submits
  - Simplifies permissions in SharePoint
- Leverage SharePoint or Windows authentication
  - Deploy as an IIS application under SharePoint, or on an internal IIS server
  - Can access the user's SharePoint or Windows identity
  - Use that to access SharePoint, or can still run with elevated permissions
- Leverage Windows authentication
  - Deploy as an IIS application on an internal IIS server
  - Can access the user's Windows identity
- Azure Active Directory
  - Ideal for Office 365
  - Register your API as an Azure App
  - Call from Office 365 and have access to the user identity

Milton District High School

- www.mdhsreads.ca
- Technological Resources Calendar
- Teachers can request resources
- Form is anonymously available
- Teachers confirm requests through an email link
- SharePoint library has approvals turned on
- Librarian approves to publish to site
- Mobile friendly

Home   MD Reads ▾   Resources ▾   Calendars ▾   Contact Us

Home / Calendars

Calendars

Events

Technological Resources

Daily Schedule

Technological Resources Request Form

Teacher Name

Email

Requested Items
- ☐ Chromebook Cart A (20)
- ☐ Chromebook Cart B (20)
- ☐ Chromebook Cart B (20)
- ☐ iPad Box (8)
- ☐ 23 Desktop Computers
- ☐ Conference room with overhead projector
- ☐ Library space
- ☐ Teacher-Librarian

Date   mm/dd/yyyy

Period   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Notes

Submit

Library Links

MDHS Website
MDHS Scene and Herd
Halton District School Board Website

Contact

Milton District High School Library
396 Williams Avenue, Milton, ON L9T 2G4
905-87802839 x236

Library Hours

Monday through Friday
7:30 AM to 3:30 PM

Connect

Twitter

College of Early Childhood Educators

- Launched a new mobile-friendly SharePoint 2013 site
- Complain and Mandatory Employer Report forms next
- Anonymously submitted to a Visual Studio REST API
- Document attachments
- Creates a document set with metadata set from the form
- Generates a Word version of the report
- Uploads all attached documents

cece
college of early childhood educators

Text Size: a a a

Search...

Home / About Us / History

About Us

History
Purpose and Mandate
Act and Regulations
By-laws and Policies
Council and Committees
Annual Reports
Fair Registration Practices Report
Staff Directory
Career Opportunities
Accessibility
Contact Us

Mandatory Employer Report

I wish to submit a mandatory employer report to the College of Early Childhood Educators

Employer's name	Employer's name
Position with the workplace	Position with the workplace
Workplace name	Workplace name
Workplace address	Workplace address
Confidential e-mail	Confidential e-mail
Workplace telephone	Workplace telephone
Supervisor's name (if applicable)	Supervisor's name (if applicable)
Owner's name (if applicable)	Owner's name (if applicable)
Parent organization (if applicable)	Parent organization (if applicable)

Member Information

If your report relates to more than one RECE, please fill out separate forms for each.

Name (please include College registration # if known)	Name (please include College registration # if known)
Position in workplace	Position in workplace
Home address (if known)	Home address (if known)
Work address (if different from workplace)	Work address (if different from workplace)
E-mail	E-mail
Home telephone	Home telephone
Work/cell telephone	Work/cell telephone
Start date of employment in the workplace	Start date of employment in the workplace
End date of employment in the workplace (if applicable)	End date of employment in the workplace (if applicable)

Parent Contact Information (if known and applicable)

Parent(s) name(s)	Parent(s) name(s)
Home address	Home address
Work address	Work address
Email	Email
Home telephone	Home telephone
Work/cell telephone	Work/cell telephone

Incident(s) Information

Incident #1

Incident Location

Incident Date

Please describe as clearly and concisely as possible the incident(s) and the conduct that, in your opinion, constitutes professional misconduct, incompetence or incapacity. Attach and label additional sheets if necessary.

[+ Add another incident]

Incident(s) Information (continued)

Please describe what steps if any, were taken at the local level to resolve this matter. What was the outcome of this incident within the Workplace (suspension, termination, internal investigation, etc.)?

Have there been previous concerns about the Member's behaviour or professional abilities? If so, please explain the concern(s) and the steps taken to address the issue(s).

If the police have been contacted regarding this incident, please answer the following:

To your knowledge have criminal charges been laid against the member? ☐ Yes ☐ No

If yes, please provide the following information:

Offences charged	Offences charged
Date charges laid	Date charges laid
Police Service (OPP, municipal force, etc.)	Police Service (OPP, municipal force, etc.)
Contact Name	Contact Name
Address	Address
Telephone	Telephone

Supporting Documentation (please see attached list below)

In order for the College to successfully complete its investigation, it is important that you submit any supporting documentation along with your report. This may include:

- relevant policies
- e-mails
- serious occurrence reports
- employment termination letters
- verbal/written warnings
- pictures, video footage
- witness statements
- any other information you feel may be relevant to the investigation or useful for the Complaints Committee during its deliberation

If the College requires any information you will be contacted.

If you provide any supporting documentation, please ensure it is properly labelled and explain its relevance to your report.

Drop files here to upload

Signature *	Signature	Date	Date

[Submit]

Windows Azure AD and Microsoft OWIN

https://msdn.microsoft.com/en-us/magazine/dn463788.aspx
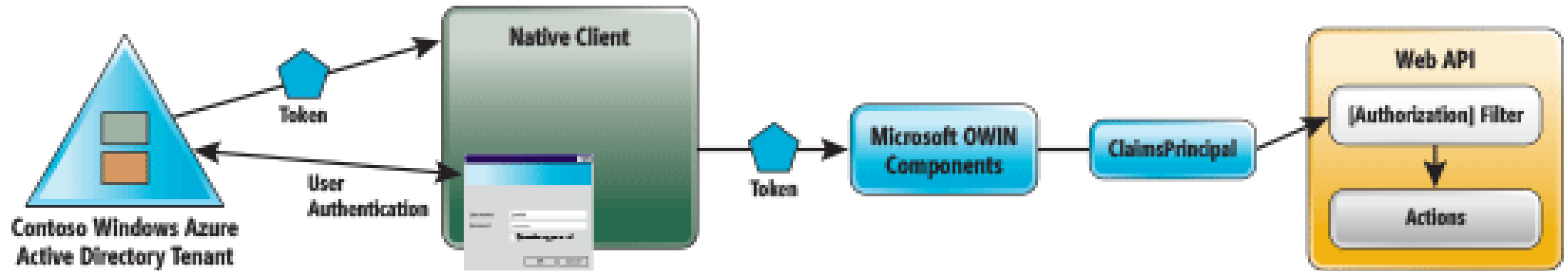
Envision IT Leave Request

- Vacation, sick days, bereavement, jury duty, etc.
- Tracks the allocation and accrual period
- Leverages AD Manager property
- Enforces security
  - Users don't have direct access to SharePoint lists
  - Permissions are managed in the REST API
  - Users can see their requests
  - Managers can see their reports
  - HR Administrators can see all requests
- Supports Office 365

County of Simcoe

- Derived from Envision IT Leave Request
- On premises SharePoint 2013
- Integrated with SAP HRIS
- REST API
    - Allocations from SAP
    - Manager reporting structure
    - Writing requests to SharePoint
    - Pushing approved requests back into SAP
- Nintex workflow
    - Drives the approval process

Employee

Peter Carson

Manager

Choose... ▼

Start Date 04/28/20 📅   **End Date** 04/29/20 📅

Multiple Days

Absence type   Choose... ▼

Only one absence type is allowed per range

Comments

Status

Draft

Available Time Off

Type	Hours
Vacation	20
Float	10
Banked Overtime	0
Sick Carried to Vacation	40
Banked Stat	5.5

Available Hours

Date	Work hours	Notes
04/27/2016	7	VAC
04/28/2016	7	
Total Available Hours	**14**	

Save Request

Request History

Type of Leave	Start Date	End Date	Hours	Status	Manager to Approve	Last Action

|◀ ◀ 0 ▶ ▶| 10 ▼ items per page   No items to display ↻

SharePoint as a platform

User experience

SharePoint Framework (SPFx)

PowerApps

Add-in Parts & Custom Actions

ASP.NET 4.5 Integration

Data and APIs

Graph APIs

Client Object Model (CSOM+JSOM)

REST

Server Side APIs

Processes

Webhooks

Microsoft Flow

Workflows

Remote Event Receivers

Event Receivers

Packaging, deployment, and store

SPFx Client Side Solutions
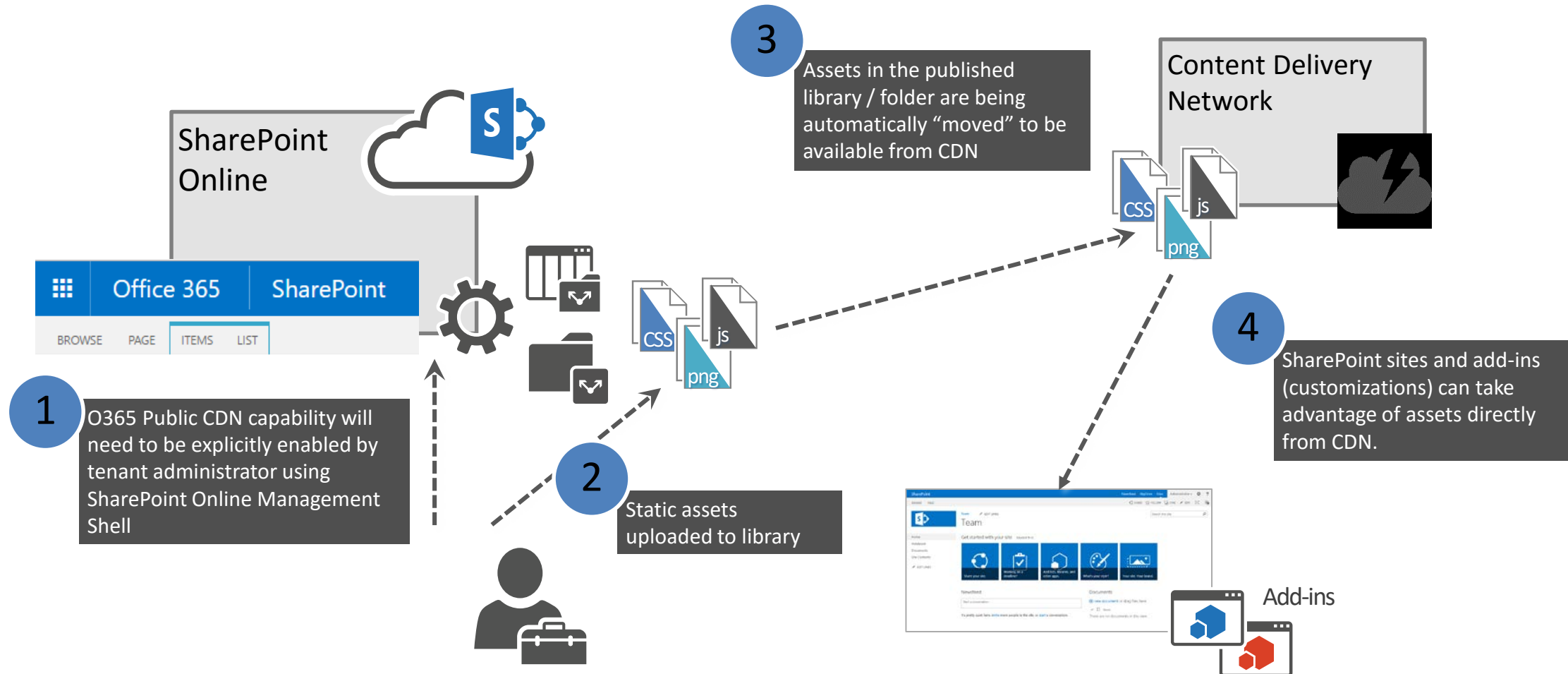
Add-ins and SharePoint Store

Declarative Solutions

Full Trust Solutions

New/in preview

On-premises only

envision IT
Leaders in SharePoint Solutions

ExtranetUserManager

O365 Public CDN – Logical Flow

3 Assets in the published library / folder are being automatically "moved" to be available from CDN

SharePoint Online

Content Delivery Network

CSS js png

Office 365 SharePoint

BROWSE   PAGE   ITEMS   LIST

CSS js png

4 SharePoint sites and add-ins (customizations) can take advantage of assets directly from CDN.

1 O365 Public CDN capability will need to be explicitly enabled by tenant administrator using SharePoint Online Management Shell

2 Static assets uploaded to library

Add-ins

https://dev.office.com/blogs/office-365-public-cdn-developer-preview-release

Ignite SharePoint Framework Sessions

- [BRK2114 – Introduction to the SharePoint Framework](#)
- [BRK4015 – Build client-side web parts](#)
- [BRK2117 - Discover the future of Microsoft SharePoint development](#)
- [BRK2115 – Learn about PnP and the new SharePoint Framework](#)

Recordings and slide decks available for on demand viewing

2013

Internal

Internal initiative in Microsoft to start collecting learnings from add-in model

2014

Going public

Going first public in CodePlex, then moved to GitHub. Concentration on add-in model enterprise scenarios.

2015

Reusability

PnP Provisioning Engine introduced. Reusable components and solutions, like PnP Partner Pack introduced. Weekly webcasts started.

2016

Partnership

PnP ownership moved to engineering, team works with a partnership on aligning roadmap. Work with SP Framework starts.

More than **2000** tenants use PnP Core Component in SharePoint Online. Numerous also on-prem.

More than **280 million** requests using PnP Core Component in September before 13th.

More than **150** samples to learn and take advantage from in your work

More than **11000** unique visitors during past 2 weeks in PnP repositories

More than **300** contributors in the GitHub for the PnP and SP repositories.

envision IT
Leaders in SharePoint Solutions

ExtranetUserManager

SharePoint Patterns & Practices Links

- http://dev.office.com/patterns-and-practices

- https://github.com/sharepoint

- http://aka.ms/SPPnP-Videos

- http://aka.ms/SPPnP-Docs

QUESTIONS & NEXT STEPS