



**Workshop Premium**



# **Power Apps Component Framework**



**Jose Daniel Montiel Paredes**

Dynamics 365 CE Consultant &  
Power Platform Developer

# ¡Hola a todos!

## Daniel Montiel

- 6+ experiencia proyectos Dynamics 365 CE / CRM
- Consultor funcional Dynamics CRM & Power Platform Developer
- Miembro de comunidades desde 2017:
  - ComunidadCRM - D365UG
  - 365Saturday Monterrey
  - Power Platform World Tour
  - howtoDyn365.com
  - D365latam.com



# Objetivo de la sesión

- Al finalizar vas a comprender que es el **Power Apps Component Framework PCF** y los beneficios de usar componentes personalizados **PCFs** en tus **Power Apps**.
- Conocer el software, habilidades y algunos tips para comenzar a desarrollar tus propios componentes **PCFs**





# Agenda

## Modulo 0: Introducción al Power Apps Component Framework

- Que son los componentes personalizados?
- Tipos de componentes personalizados
- Ventajas/Desventajas

## Modulo 1: Preparando el ambiente de desarrollo

- Pre requisitos
- Software
- Skills

## Modulo 2: React, Redux & Microsoft Fluent UI

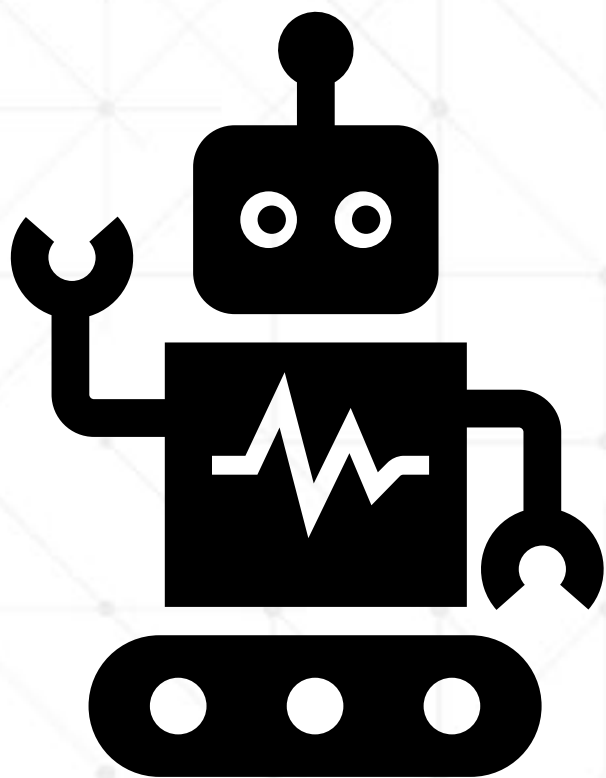
- React + Redux + Typescript + JSX
- Microsoft Fluent UI

## Modulo 3: Manos a la obra.

- Diseño antes de código
- Ciclo de desarrollo
  - Debugging
  - Testing
- Ciclo de Deployment

## Modulo 4: Deployment

- Empaquetar soluciones
- Probar en Power Apps Model-Driven / Canvas



# Modulo 0: Introducción al Power Apps Component Framework



# ¿Que son los componentes personalizados?

- Componentes **visuales** que permiten a los **creadores de Power Apps** mejorar la experiencia de usuario reemplazando los controles estándar con **controles personalizados “PCFs”**.
- Pueden reemplazar elementos estándar dentro de nuestras aplicaciones para mejorar la **interacción y/o visualización** en formularios, subgrids, vistas, etc.
- Se crean haciendo uso del “**Power Apps Component Framework**”

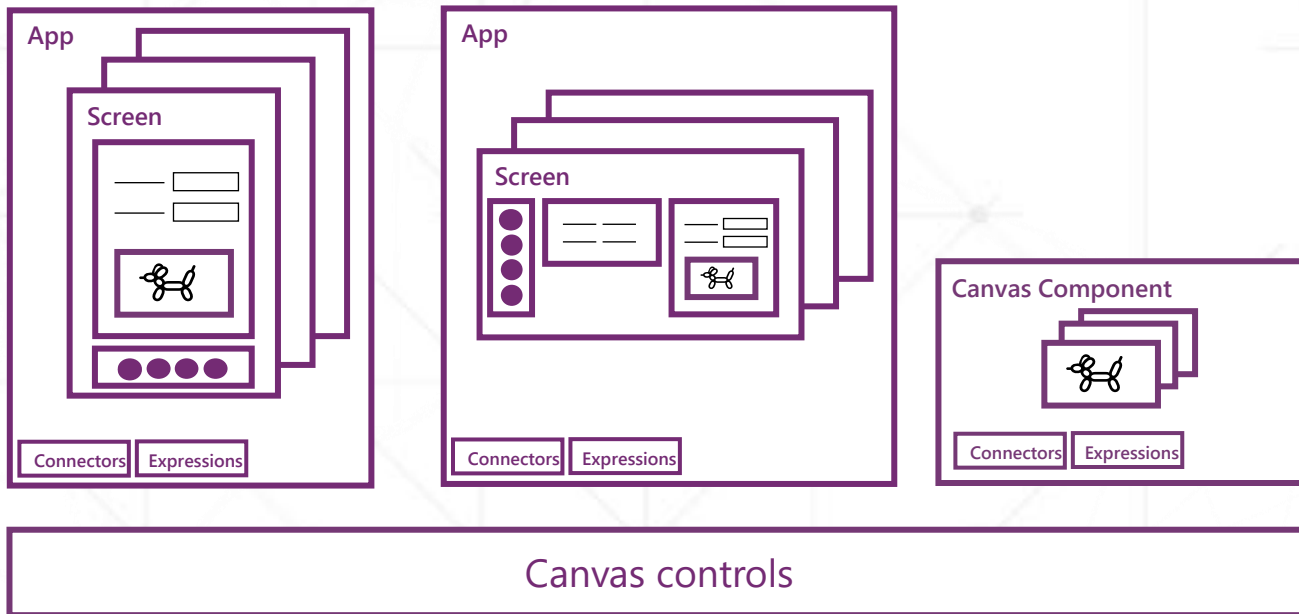
The screenshot displays a Power Apps interface with several custom components (PCFs) integrated into a form:

- RECENT OPPORTUNITIES:** A section containing three progress bars. Each bar has two segments labeled 'Qualify' (green) and 'Develop' (blue). The first bar is labeled 'Interested to' and has a blue circle on the 'Develop' segment. The second is labeled 'I really need to' and the third 'Let me tell you once more:'.
- Seleccionar Color:** A color picker dialog with a large color selection area and a 'Seleccionar Color' button.
- maestro:** A blue card-like component displaying the number '2643 8453' and a date '02/2022'.
- rating:** Three different rating systems are shown, each with a label 'rating' and a 'Qui' indicator:
  - Stars: Five yellow stars, with the first three filled and the last two outlined.
  - Hearts: Five red hearts, with the first three filled and the last two outlined.
  - Diamonds: Five purple diamonds, with the first three filled and the last two outlined.

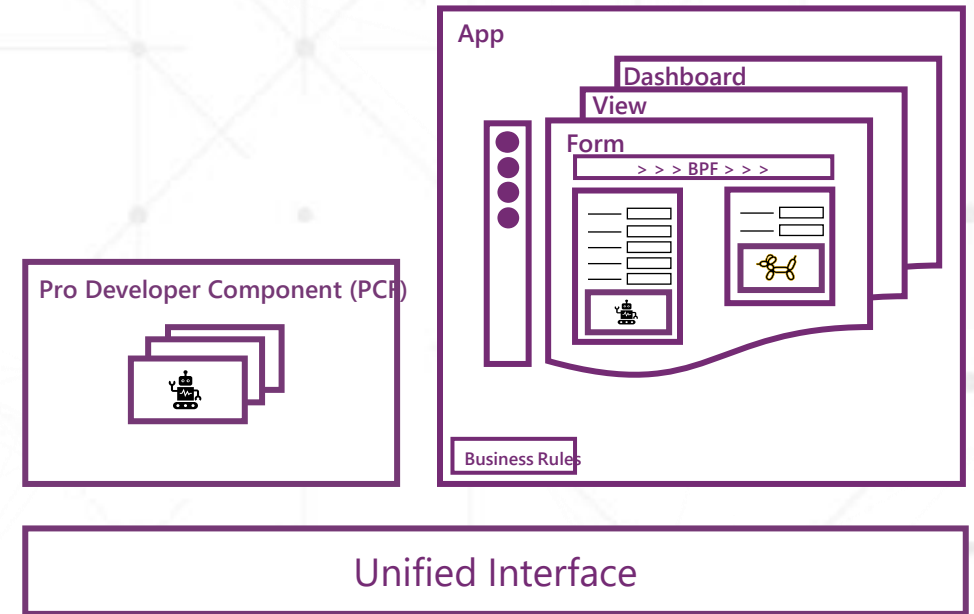
At the bottom, there are two buttons: 'Seleccionar Color' (blue) and 'Cancelar' (white).

# ¿Componentes personalizados?

## Canvas Apps



## Model Driven Apps



# Tipos de componentes

- Control de campo **Field**
- Vistas / Subgrids **dataset**
- Mostrar datos externos
- Consultar servicios externos

Radial Knob  
Arc Knob  
Linear Gauge  
Linear Slider  
Star Rating  
Flip Switch  
Option Set  
Bullet Graph  
Number Input  
Input Mask



Auto Complete

Country  
Slovakia  
Slovenia

Website Preview



Multimedia Control



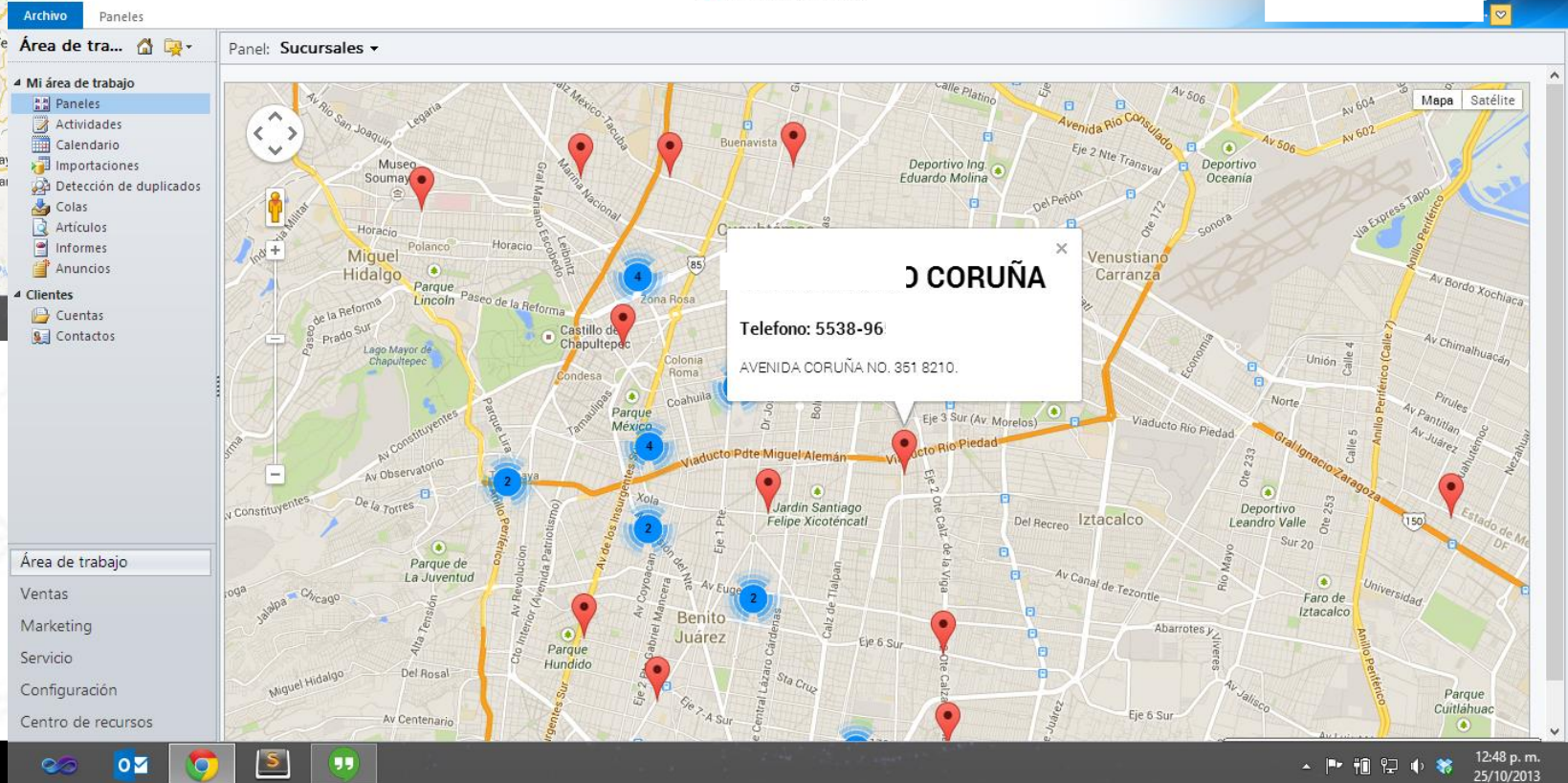
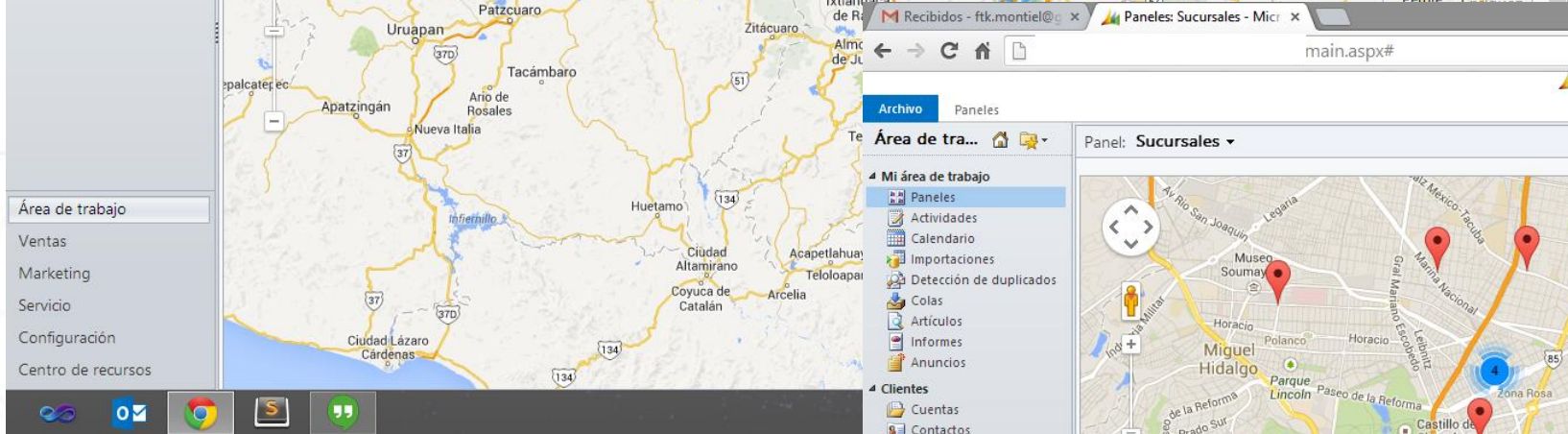
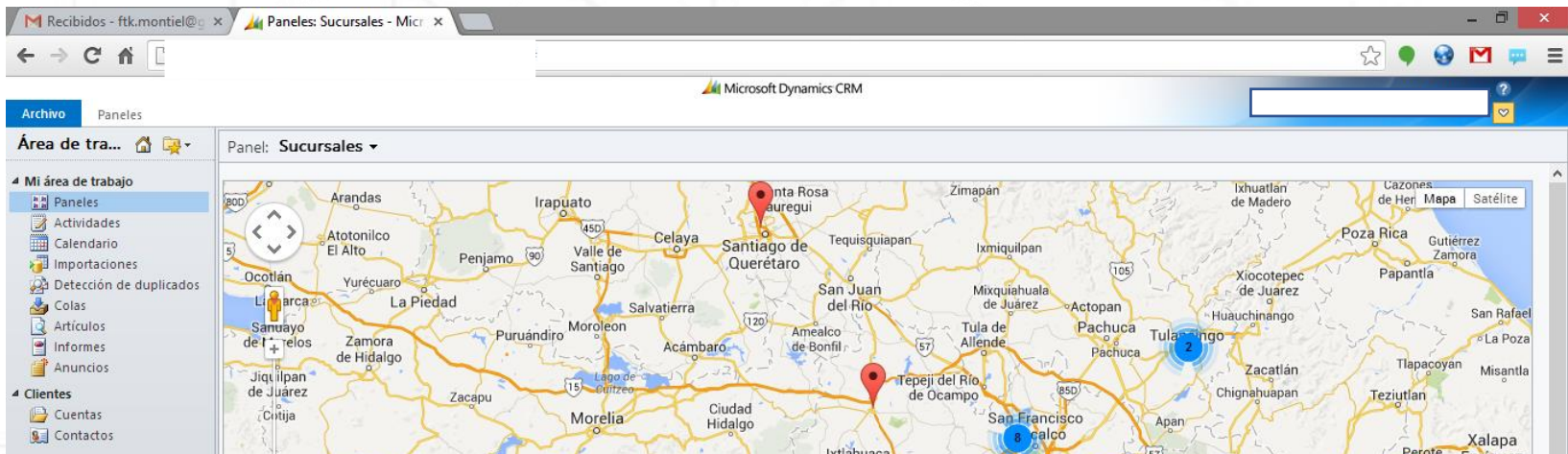
Barcode Scanner



Pen Control







# Ventajas y desventajas

- Ventajas:

- 100% integrados con Power Apps
- Permiten crear componentes de código REUSABLES y que se pueden distribuir a través del Appsource o por archivos de soluciones (.zip)
- Ayudan a implementar requerimientos específicos de UX/UI en Power Apps

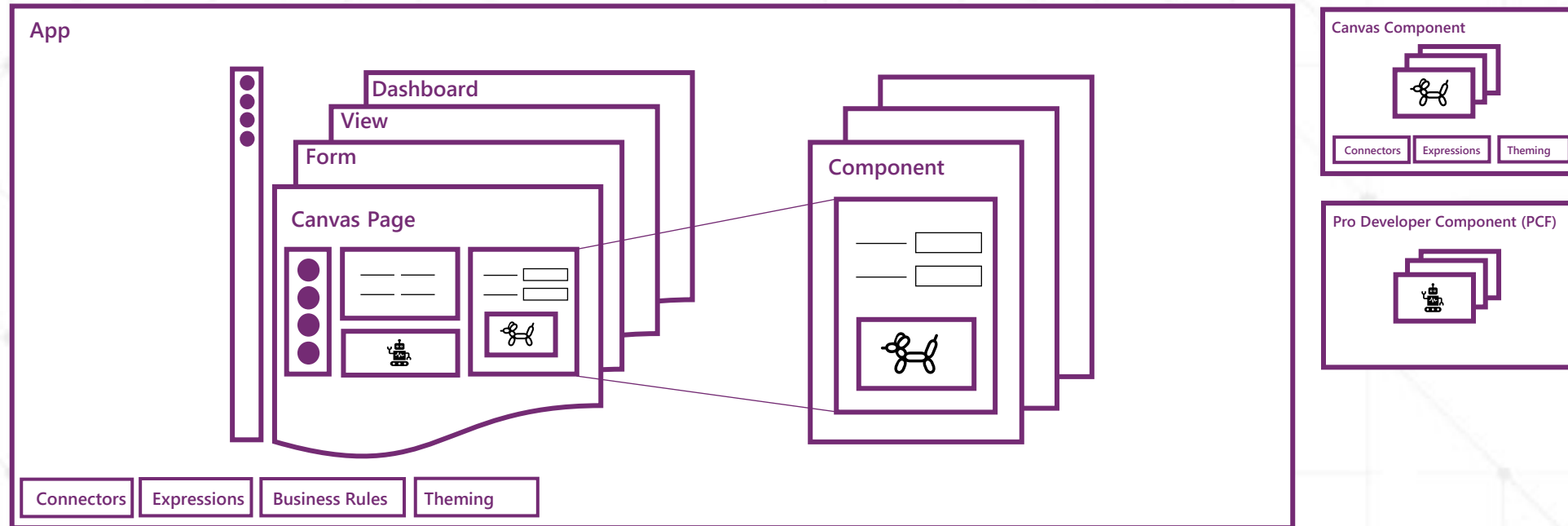
- Desventajas

- Requiere un conocimiento específico previo (web development)
- Dependiendo de la complejidad del componente a desarrollar, aumentara el tiempo de desarrollo/pruebas/reléase.
- Código que se debe mantener con cada actualización.

# ¿Componentes personalizados?



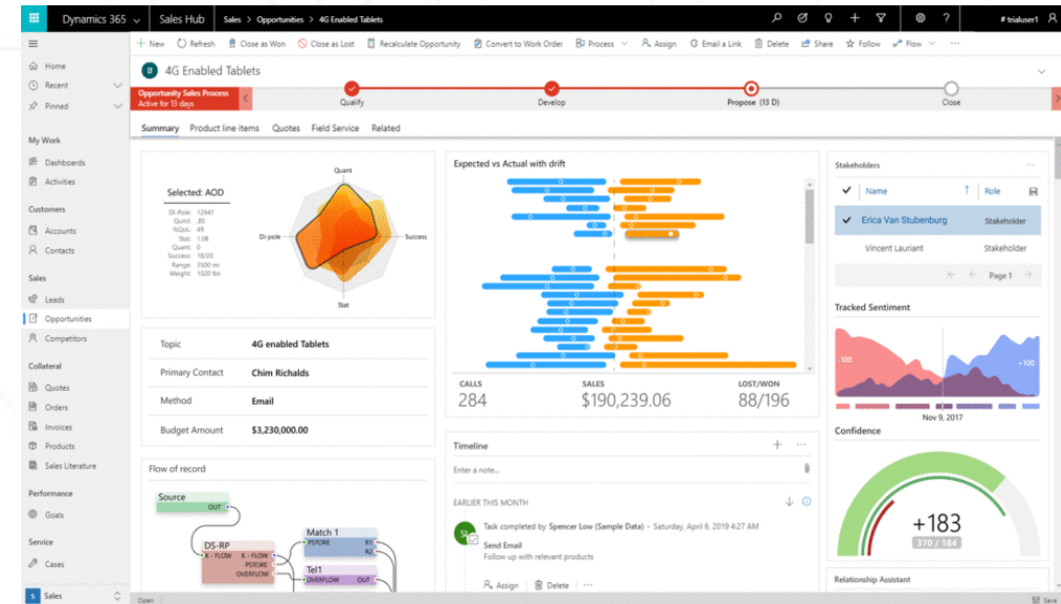
## PowerApps





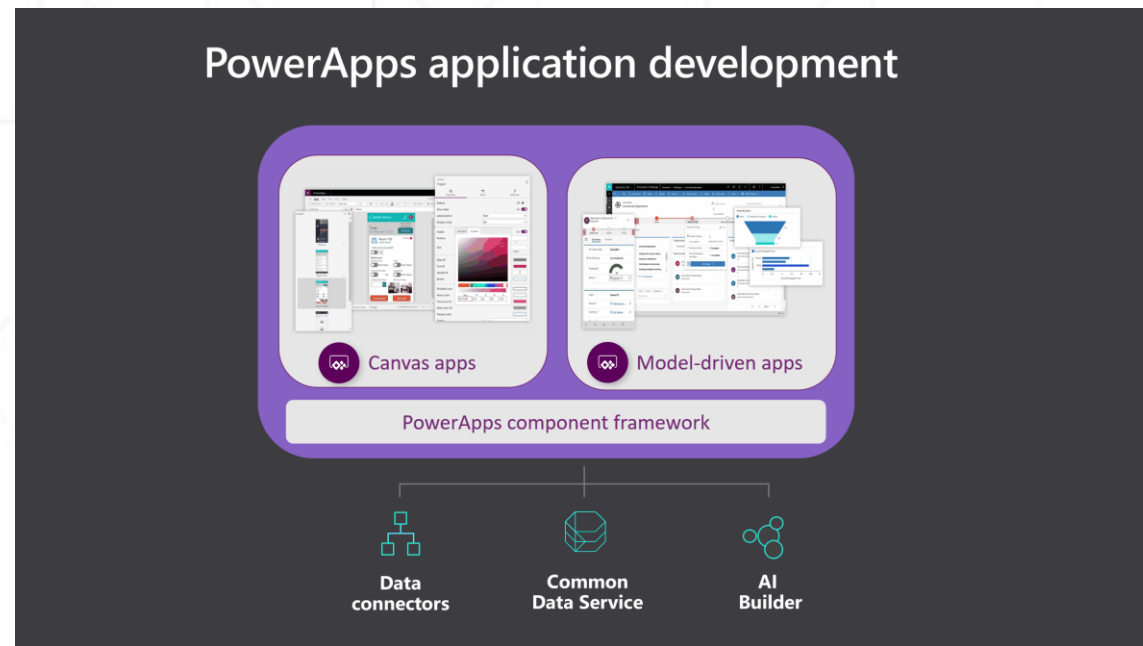
# PCF – Disponible para Model-Driven Apps

- Podemos desarrollar y usar Componentes personalizados (PCFs) y usarlos en ambientes productivos
- ¡Hoy mismo puedes comenzar a utilizarlos!
- Puedes usar tus habilidades actuales de JavaScript/HTML/CSS o usar algún framework como React/Office Fabric.



# PCF – Public Preview para Canvas Apps

- Public Preview a partir de Septiembre 2019.
- Un mismo framework.
- Primer paso hacia un solo tipo de aplicación.





# PCF – Public Preview para Portales

- Public Preview a partir de Diciembre 2020.
- Un mismo framework.



## Power Apps component framework control support in Power Apps portals

06/02/2020 • 2 minutes to read •

### Important

**Some of the functionality described in this release plan has not been released.** Delivery timelines may change and projected functionality may not be released (see [Microsoft policy](#)). Learn more: [What's new and planned](#)

| Enabled for                                | Public preview | Early access | General availability |
|--|----------------|--------------|----------------------|
| Admins, makers, or analysts, automatically | Dec 2020       | -            | -                    |

## Feature details

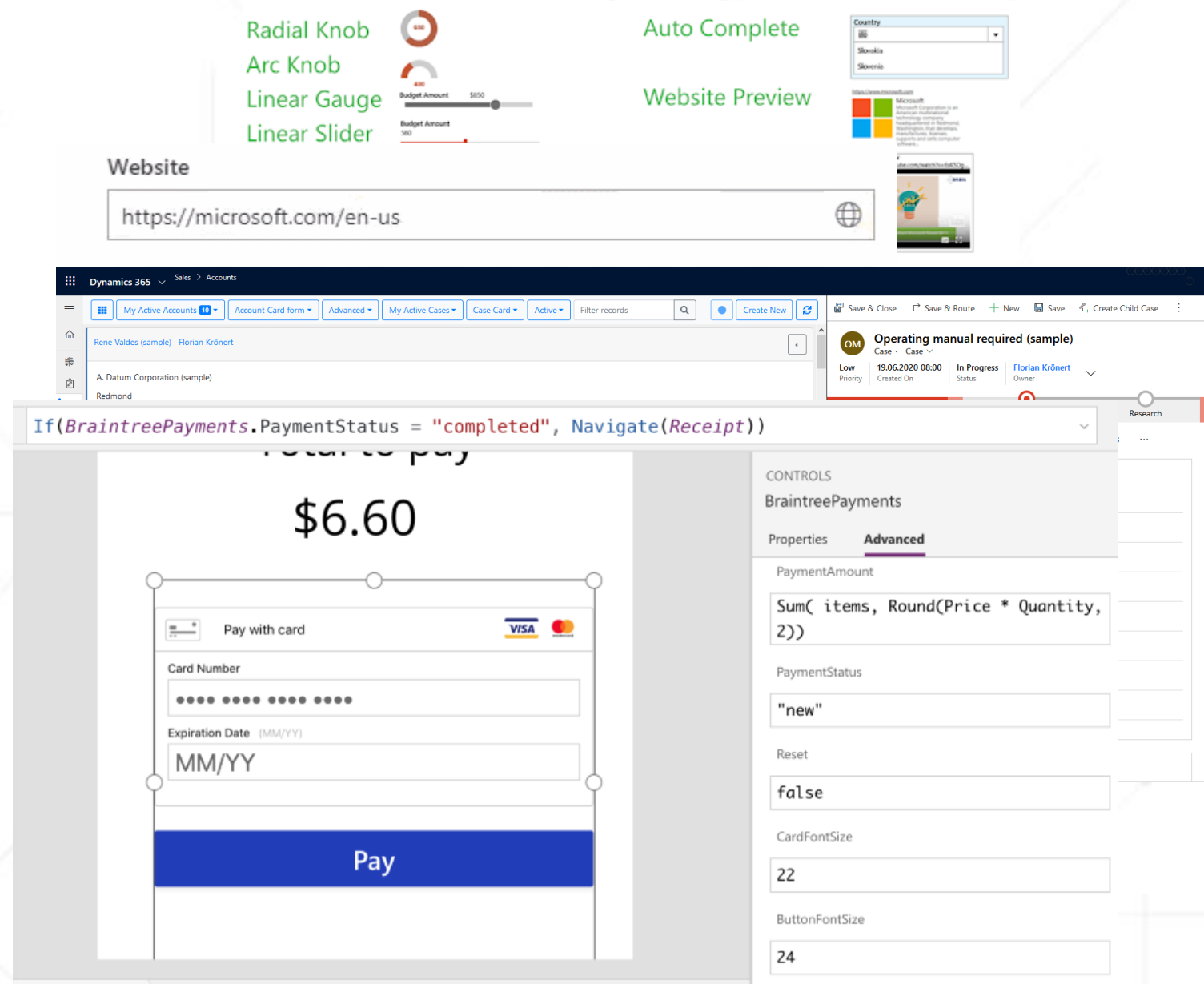
Power Apps component framework enables app makers to create code components to use across apps. As part of this release, we'll support code components created using Power Apps component framework inside Power Apps portals.



Recapitulando...

# Power Apps Component Framework

- Componentes de código (TS/JS/HTML/CSS) reutilizables que se integran 100% con Power Apps.
- Se crean utilizando el Power Apps Component Framework.
- Enfocado a desarrolladores profesionales de Power Apps.
- Ayudan a implementar controles personalizados para
  - Mejorar la experiencia de usuario mejorando la interacción.
  - Cumplir requerimientos de UX/UI específicos.



# Consideraciones previas...

- ¿Te son familiares los terminos Continuous Integration / Continuous deployment?
- ¿Sabes gestionar el codigo en Git?
- ¿Que tan familiarizado estas con Typescript?
- Tienes nociones de desarrollo web? (HTML, JS, CSS)
- ¿Has trabajado con Azure DevOps?



## **Break time – 10 mins**

momento para relajarte y  
empezar la conversacion...





# Modulo 1: Preparando el ambiente de desarrollo

# Software

NPM &  
Node.js

.Net  
Framework  
4.6.2

.Net  
Core  
2.2

Visual  
Studio

PowerApps  
CLI

GitKraken  
(Optional)

Community

Visual  
Studio  
Code

Git

React

Typescript

HTML

npm

Redux

Fluent  
UI

JavaScript

CSS

# Skills



# Ciclo de desarrollo





# Ciclo de Deployment

## Inicializar solución

- `pac solution init --publisher-name DanielMontiel --publisher-prefix dmp_`



## Referenciar ruta de PCF

- `pac solution add-reference --path RutaDeComponente`



## Restaurar dependencias y empaquetar soluciones

- Primera vez: `msbuild /t:build /restore`
- Después: `msbuild /t:rebuild`



## Obtener zip de solución

- Localizado en `\bin\debug\`



## Importar solución

- Importar en ambiente de pruebas, testing y Producción.



# Azure DevOps



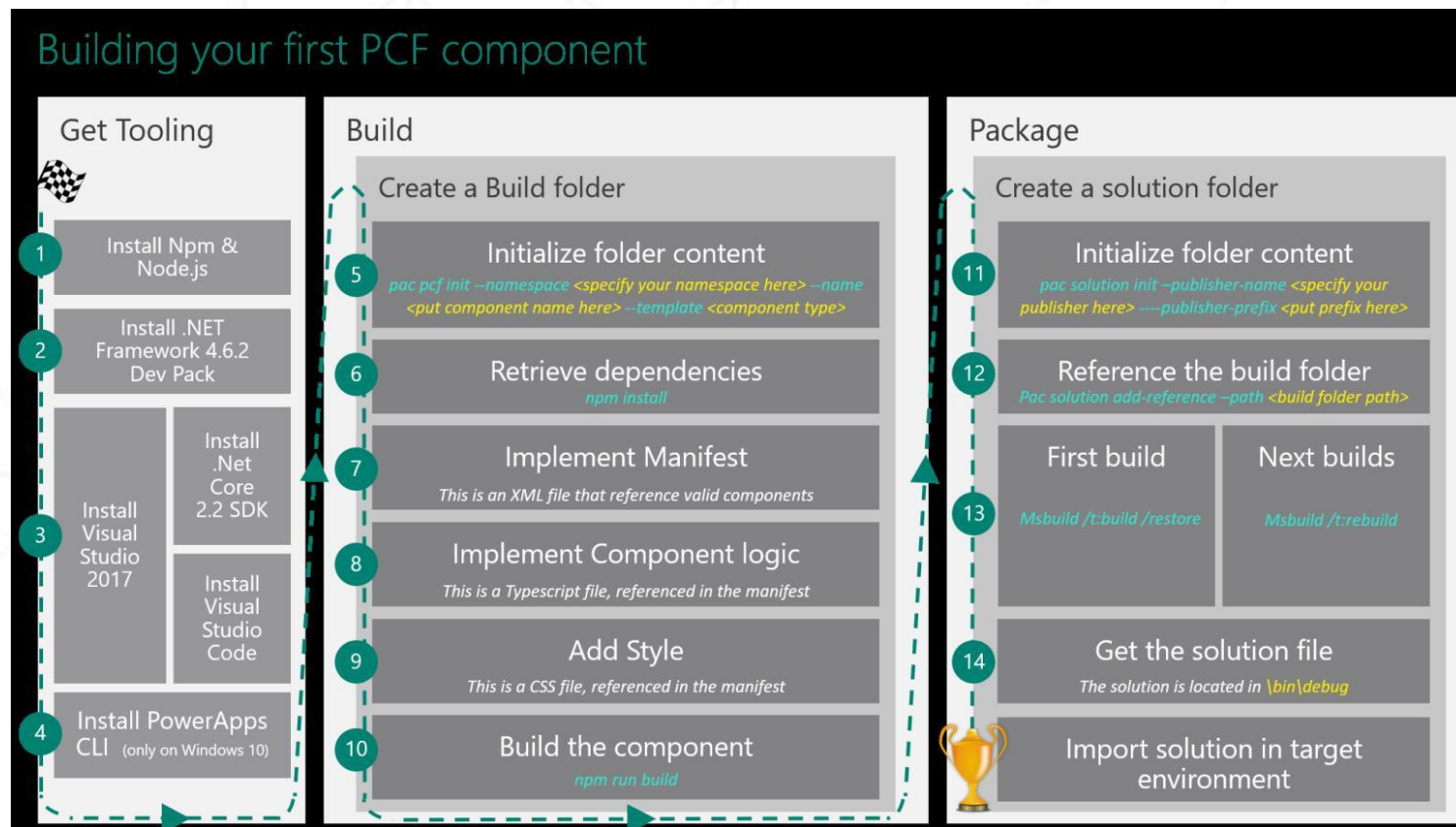


The background features a large, stylized circular graphic composed of multiple concentric rings. The rings on the left are in various shades of blue, while the rings on the right transition into shades of green. The overall effect is a soft, abstract frame around the central text.

Recapitulando...

# Power Apps Component Framework

- Conocimientos de web development en general
  - HTML, JS, CSS
- Es un plus
  - Typescript
  - Algúna librería para front-end
    - React
    - VUE
    - Angular



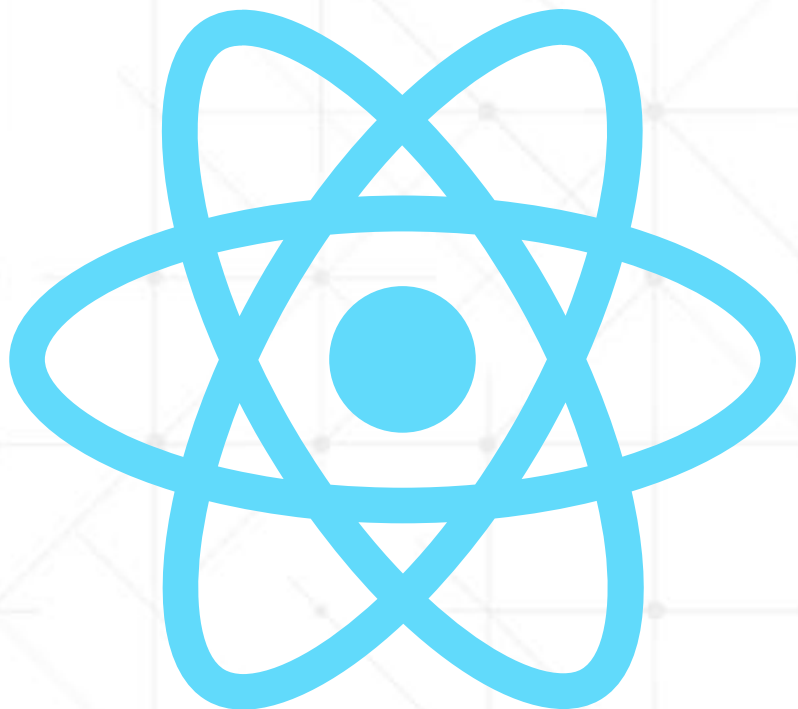


## **Break time – 10 mins**

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## Modulo 2: React, Redux & Microsoft Fluent UI



**“Una biblioteca de ~~JavaScript~~ Typescript para construir interfaces de usuario”**

**2011** – Creado por Facebook

**2012** – Usado en Instagram

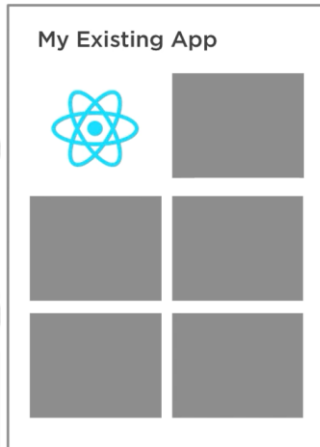
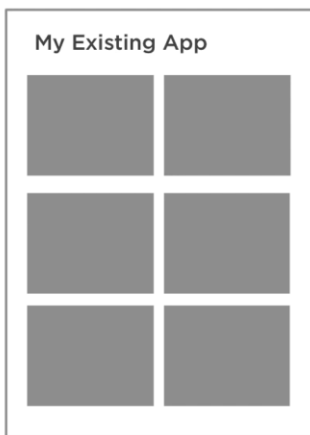
**2013** – Se volvió Open Source

Hoy es usado en mas de 30K componentes en Facebook y en muchas compañías Fortune 500





# React – Razones para elegir React



|                 | React | Angular |
|-----------------|-------|---------|
| Components      | ✓     | ✓       |
| Testing         |       | ✓       |
| HTTP library    |       | ✓       |
| Routing         |       | ✓       |
| I18n            |       | ✓       |
| Animation       |       | ✓       |
| Form validation |       | ✓       |

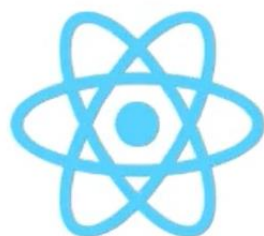


# React



## “JS” in HTML

```
<div *ngFor="let user of users">  
<div v-for="user in users">  
  {{#each user in users}}
```



## “HTML” in JS

```
{users.map(createUser)}
```

# Conceptos clave de React...

- Tipos de componentes
  - Function Components
  - Class Components
- Estado del componente (state)
- Props
- JSX
- JavaScript / Typescript



# Tipos de componentes (React)

- Function Component

- No contienen estado (State) por default\*\*\*
- Fácil de leer/escribir.
- Mejor performance para elementos estáticos.

```
function Welcome(props) {  
  return <h1>Hello, {props.name}</h1>;  
}
```

- Class Component

- Hereda de React.Component
- Crea un estado (State) por default.
- Más código

```
class Welcome extends React.Component {  
  render() {  
    return <h1>Hello, {this.props.name}</h1>;  
  }  
}
```



# Estado del componente (React)

- El estado de los componente es un “almacén de datos” mutable único por cada componente.
- Es usado en elementos dinámicos que requieren actualizarse en el ciclo de vida del componente.
- Permite crear interactividad entre el usuario y la interfaz grafica.

## State (ejemplo)

Propiedad1 = “valor”,  
Propiedad2 = 21,  
Propiedad3 = “Test”





# Props.

- Las propiedades “props” de los componentes son parámetros de entrada que aceptan los componentes de tipo function/class
- Inmutables, un componente no puede escribir/modificar sus props.

```
function Welcome(props) {  
  return <h1>Hello, {props.name}</h1>;  
}
```

```
class Welcome extends React.Component {  
  render() {  
    return <h1>Hello, {this.props.name}</h1>;  
  }  
}
```



# JSX.

- Extensión que permite la creación y uso combinado de HTML/JS para la descripción de nuestros componentes.
- Similar a HTML, ayuda en la legibilidad y composición de componentes:

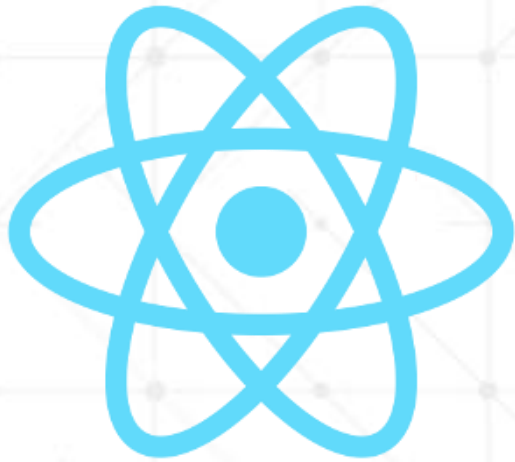
```
function formatName(user) {  
  return user.firstName + ' ' + user.lastName;  
}  
  
const user = {  
  firstName: 'Harper',  
  lastName: 'Perez'  
};  
  
const element = (  
  <h1>  
    Hello, {formatName(user)}!  
  </h1>  
>);  
  
ReactDOM.render(  
  element,  
  document.getElementById('root')  
>);
```



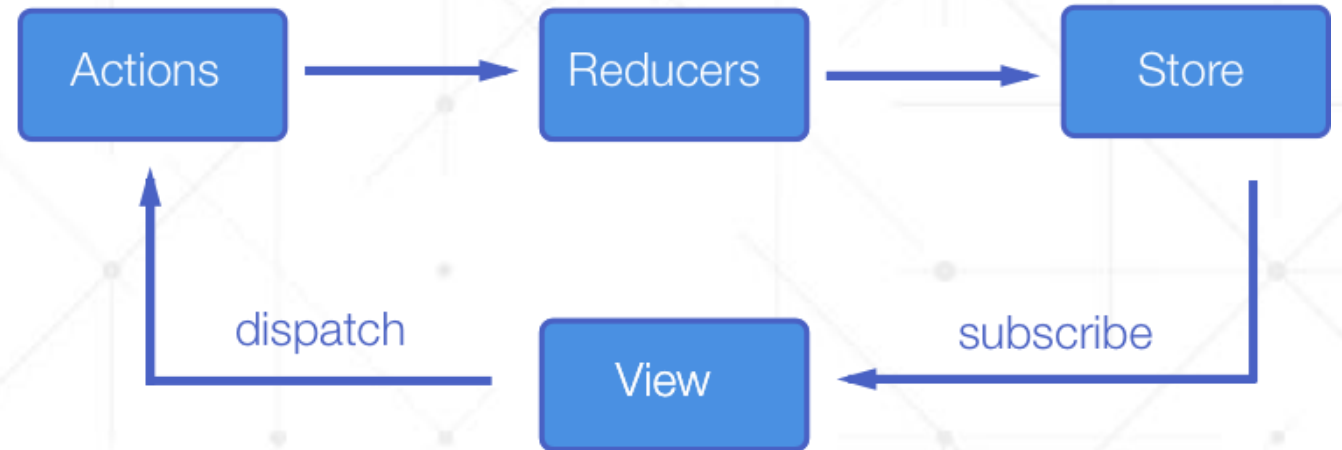
**“Ayuda a escribir aplicaciones que se comportan de manera consistente, corren en distintos ambientes (cliente, servidor y nativo), y son fáciles de probar.”**

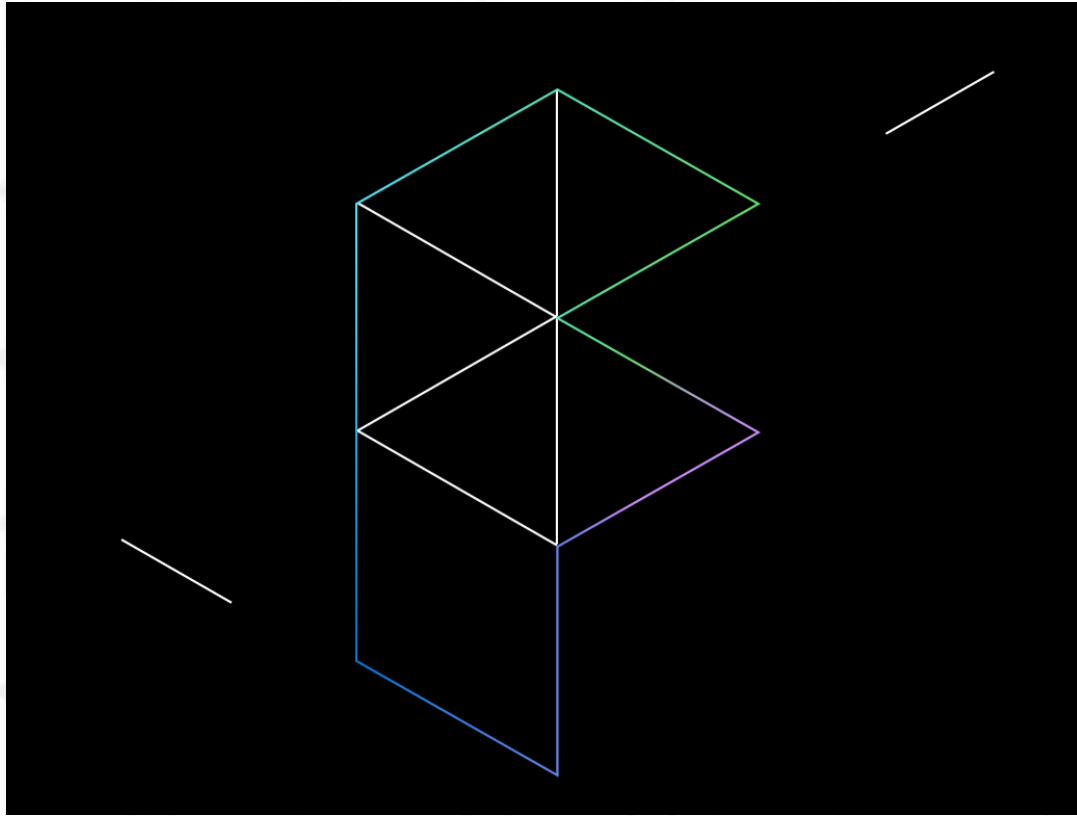
State (ejemplo)

```
Propiedad1 = "valor",  
Propiedad2 = 21,  
Propiedad3 = "Test"
```



# Redux





**“Diseña y construye aplicaciones web o Add-ons (PCFs) con un gran diseño y que se integran perfecto como extensiones de los productos de Microsoft.”**



# Fluent UI



## Web

Create your own web apps and add-ins.

→ [Get started](#)



## Windows

Create and publish your own Windows apps.

→ [Get started](#)



## iOS

Take your custom apps to the mobile market.

→ [Get started](#)



## Android

Take your custom apps to the mobile market.

→ [Get started](#)

The background features a large, stylized circular graphic. It consists of several concentric rings. The left side of the circle is composed of multiple overlapping blue rings of varying shades, ranging from a light sky blue to a deeper cerulean. The right side of the circle is composed of multiple overlapping green rings, ranging from a pale mint green to a slightly darker sage green. The rings are not perfectly circular, giving the graphic a sense of motion or a hand-drawn feel. The text "Recapitulando..." is centered within the white space of the circle.

Recapitulando...

# Power Apps Component Framework

- React
  - Componentes
    - Class components/ function components
    - Estado del componente
- Redux
  - Gestion del estado de los componentes
- Fluent UI
  - Libreria de componentes reutilizables
  - Diseño muy similar a lo existente en productos Microsoft / Dynamics 365

<https://docs.microsoft.com/en-us/powerapps/developer/component-framework/community-resources>



<https://egghead.io/courses/getting-started-with-redux>



<https://app.pluralsight.com/paths/skill/react>



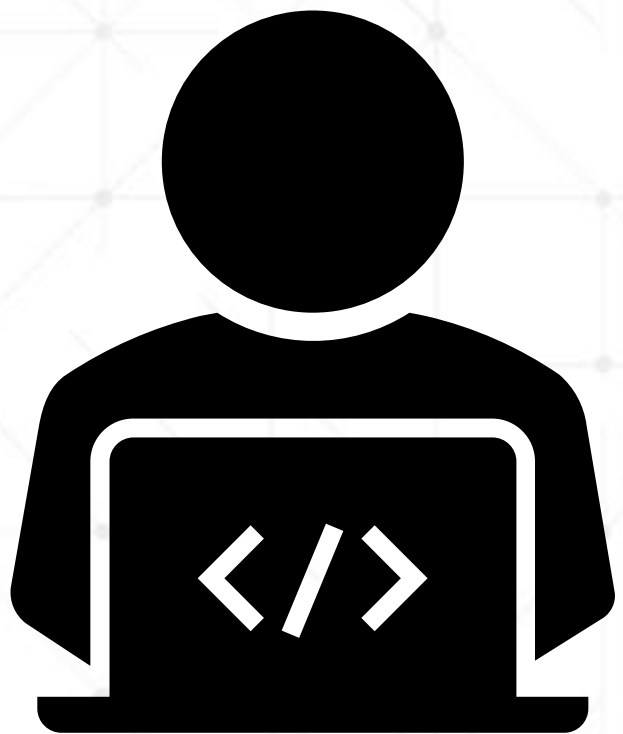
<https://docs.microsoft.com/en-us/learn/paths/use-power-apps-component-framework/>





## **Break time – 10 mins**

momento para relajarte y  
empezar la conversacion...



## Modulo 3: Manos a la obra.



# Ciclo de desarrollo






















Diseño antes que  
Código...

# Diseño antes que código...

Active Cases ▾

Search for records

| <input type="checkbox"/>  | Case Number         | Case Title    | Custo...    | Contact | Priority ↑ | Message Preview                      | Own...    | Created On         | Unread Emails | Case Last Update...  | A.  | Days Open |
|---|---------------------|---------------|-------------|---------|------------|--------------------------------------|-----------|--------------------|---------------|----------------------|-----|-----------|
|    | CAS-2841112-M3S9L7  | [EXT] RE...   | Sean ...    |         | Critical   | *** Please use caution this is ...   | Amb...    | 2/25/2020 9:52 AM  | Yes           | 2/25/2020 6:48 ...   | B.. |           |
|    | CAS-2842038-R1V8Z7  | [EXT] FW:...  | purch...    |         | Critical   | *** Please use caution this is ...   | Amb...    | 2/25/2020 1:03 PM  | Yes           | 2/25/2020 6:24 ...   | B.. |           |
|    | CAS-2844226-X5S7X5  | [EXT] PO ...  | Baase ...   |         | Critical   | *** Please use caution this is ...   | Cryst...  | 2/26/2020 11:05 AM | Yes           | 2/26/2020 12:12...   | D.  |           |
|    | CAS-2844777-C1P9W6  | please up...  | David ...   |         | Critical   | The quote was missing the lock...    | Delila... | 2/26/2020 12:44 PM | No            | 2/26/2020 12:49 P... | A.. |           |
|    | CAS-2802324-M1D7J4  | FW: [EXT]...  | Sham...     |         | Critical   | From: Steve Schans Sent: We...       | Sand...   | 2/5/2020 1:13 PM   | Yes           | 2/6/2020 7:25 AM     | A.. |           |
|    | CAS-2829626-K6J1H8  | FW: [EXT] ... | raymo...    |         | Critical   | From: Raymond Hodge Sent: ...        | Dede...   | 2/19/2020 11:23 AM | No            | 2/26/2020 12:14 P... |     |           |
|    | CAS-2837753-T9Q2J1  | Emtek-Us...   | garim...    |         | Critical   |                                      | Gari...   | 2/24/2020 3:35 AM  | No            | 2/24/2020 4:34 AM    |     |           |
|    | CAS-2837778-X0L9Q4  | New case ...  | Mong...     |         | Critical   | Delivery has failed to these reci... | Gari...   | 2/24/2020 5:40 AM  | No            | 2/24/2020 5:47 AM    |     |           |
|    | CAS-957242-C2B5K4   | Tech Supp...  | Neil H...   |         | Critical   |                                      | Ann J...  | 8/21/2017 6:45 PM  | No            | 9/30/2019 2:03 AM    | D.. |           |
|    | CAS-1935413-P9Q8H6  | Test          | Penny ...   |         | Critical   | We are contacting you regardi...     | Penn...   | 10/26/2018 1:20 PM |               | 6/20/2019 1:43 PM    | A.. |           |
|    | CAS-2094952-N3R9V9  | Weinstein...  | Holly ...   |         | High       | Great thanks PabloJ Thank y...       | Mari...   | 2/4/2019 1:02 PM   | Yes           | 2/5/2019 7:39 AM     | A.. |           |
|    | CAS-2095215-S2D9P1  | PO # 817...   | Chuck...    |         | High       | Harold see below tracking in...      | Lace...   | 2/4/2019 2:18 PM   | Yes           | 2/19/2019 11:45...   | B.. |           |
|  | CAS-2096619-J1S9Q7  | RE: miss d... | Holly ...   |         | High       | They can deliver together, b...      | Mari...   | 2/5/2019 10:29 AM  | Yes           | 2/5/2019 5:31 PM     | A.. |           |
|  | CAS-2099535-M2N7... | TMS 7422...   | cbradl...   |         | High       | The site is telling the carrier ...  | Deeo...   | 2/6/2019 1:15 PM   | Yes           | 2/6/2019 1:58 PM     |     |           |
|  | CAS-2098772-W2G8    | Case Ord...   | bill (bi... |         | High       | Legacy Line 005 Mark: T63 Th...      | Lace...   | 2/6/2019 2:13 PM   | Yes           | 2/6/2019 2:13 PM     |     |           |

# Diseño antes que código...

1.3

Active Cases

Search this view

2.3

1.4

1.5

1.8

1.9

1.6

1.7

| ✓ Created On      | Case Number       | Case Title  | Customer | Priority | Activity in Child Case                  | Message Preview  | Owner |
|-------------------|-------------------|---|----------|----------|---|--|-------|
| 3/18/2020 9:00 AM | CAS-84626-Y9Y6C7  | Test  |          | Normal   | Sort A to Z<br>Sort Z to A<br>Filter by |  |       |
| 2/4/2020 10:01 AM | CAS-84625-W7X1... | Your network password will expire in 8 day(s), p no-replies |          | High     |   | Daniel Montiel Your Network Password ...   |       |
| 2/3/2020 11:01 PM | CAS-84624-S8S0B8  | Daily Summary Repor   |          | Critical |   | To see your C3 Dashboard Click Here Ca...  |       |
| 2/3/2020 3:50 PM  | CAS-84623-X5F7D3  | P4 - Low -- Comments a servicedesk                          |          | Normal   |   | Hi, Incident INC0833678 assigned to you...   |       |
| 2/3/2020 3:34 PM  | CAS-84622-B3P3L3  | P4 - Low - Incident INC0833496 -- Comments a                |          | Normal   |   | Hi, Incident INC0833496 assigned to you...   |       |
| 2/3/2020 3:34 PM  | CAS-84621-N2Y8... | P4 - Low - Incident INC0833496 -- Comments a servicedesk    |          | Critical |   | Hi, Incident INC0833496 assigned to you...   |       |
| 2/3/2020 3:23 PM  | CAS-84620-R8D4B5  | P4 - Low - Incident INC0833496 -- Comments a servicedesk    |          | Critical |   | Hi, Incident INC0833496 assigned to you...   |       |
| 2/3/2020 3:23 PM  | CAS-84619-G2N6... | P4 - Low - Incident INC0833678 -- Comments a servicedesk    |          |          |   | Hi, Incident INC0833678 assigned to your group has been commented. ... State:Assigned ... Caller information: Name:Noel ... Company: ... Division:Americas Division Location:Mexico, ALC/1003 Alvaro P.R. ... Comments and Work notes ... 2020-02-03 21:22:21 GMT ... Additional comments ... reply from: ... Hi Noel, ... |       |
| 2/3/2020 3:07 PM  | CAS-84618-F4C3P2  | P4 - Low - Incident INC0833678 -- Comments a servicedesk    |          |          |   |  |       |
| 2/3/2020 2:51 PM  | CAS-84617-W4F4... | P4 - Low - Incident INC0833678 -- Assigned to servicedesk   |          |          |   |  |       |
| 2/3/2020 12:37 PM | CAS-84616...      | P4 - Low - Incident INC0833622 -- Assigned to servicedesk   |          | Normal   |   | Hi, Incident INC0833622 has been assign...   |       |

All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

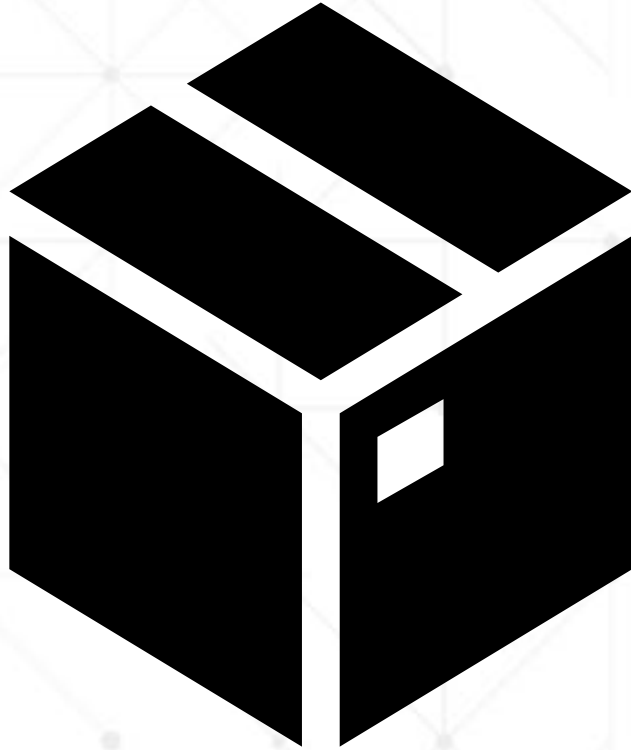
1 - 5000 of 5000+ (0 selected)

Page 1



## **Break time – 10 mins**

momento para relajarte y  
empezar la conversacion...



# Modulo 4: Deployment



# Ciclo de Deployment

## Inicializar solución

- `pac solution init --publisher-name DanielMontiel --publisher-prefix dmp_`



## Referenciar ruta de PCF

- `pac solution add-reference --path RutaDeComponente`



## Restaurar dependencias y empaquetar soluciones

- Primera vez: `msbuild /t:build /restore`
- Después: `msbuild /t:rebuild`



## Obtener zip de solución

- Localizado en `\bin\debug\`

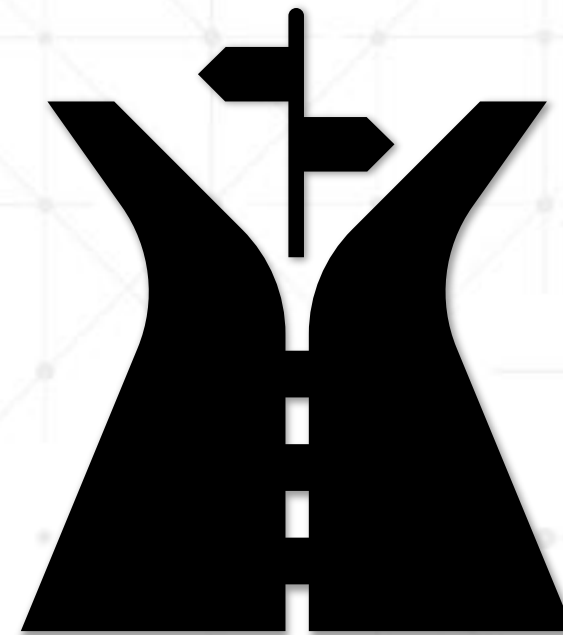


## Importar solución

- Importar en ambiente de pruebas, testing y Producción.



# Preguntas finales y siguientes acciones



# ¡Siganme los DEVs!

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# ¡GRACIAS A TODOS!

¿Alguna pregunta?

Si no tienes ninguna ahora, puedes comunicarte luego:



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