re-BUILD 2017 Roadshow

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WIFI: msevent66hl

Today…

BUILD 2017 Highlights

Serverless with Azure Functions

Mobile Center

Hackfest & Pizza

Some Housekeeping…

Please set all cell phones to silent

Sign-in sheet

Evaluations are important

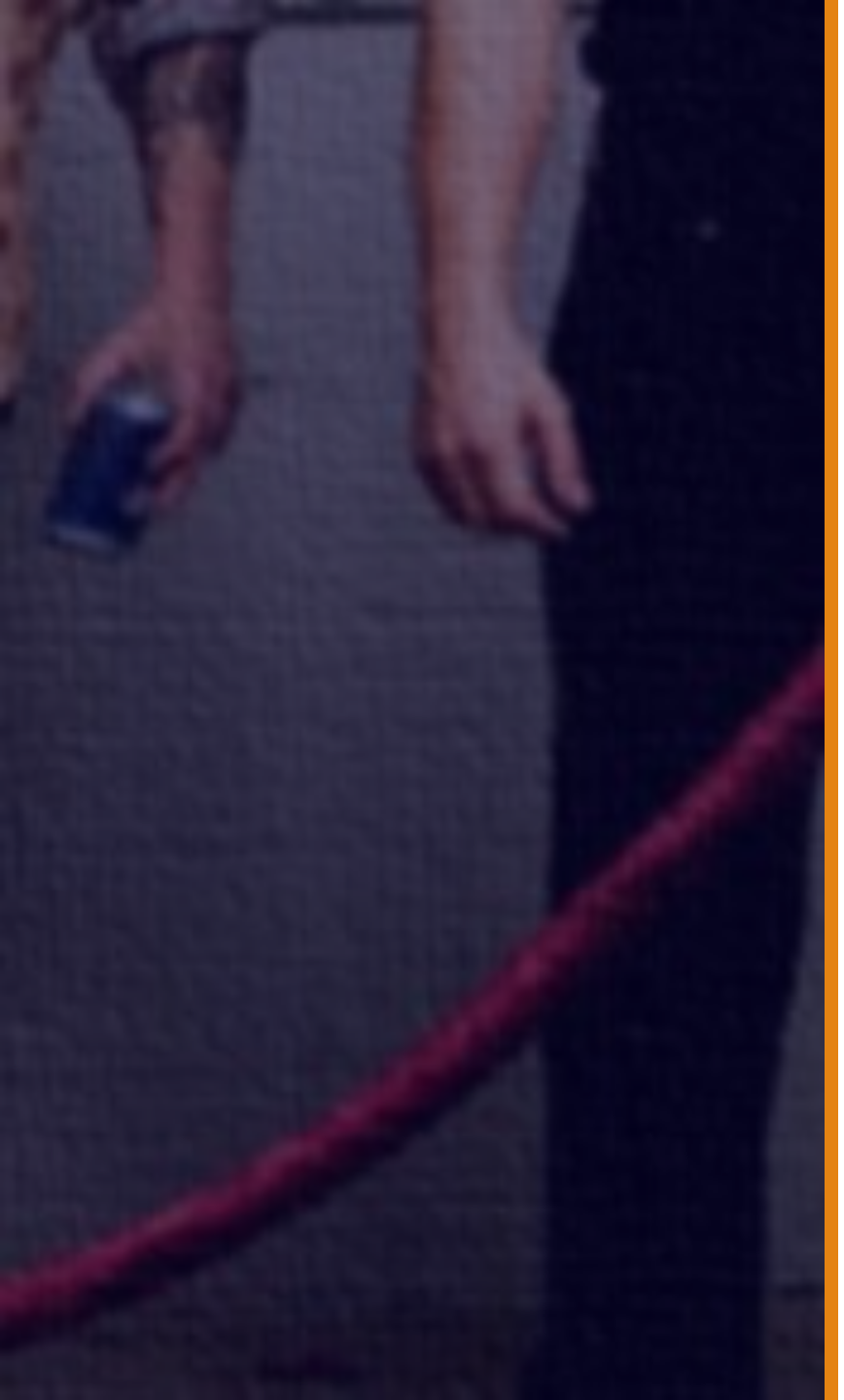
Giveaways!!

Now, a word from our sponsors…

A word from our sponsors

- To activate your Visual Studio Subscription contact:
  Jose Quiroga:
  VS3VLNA@microsoft.com
  855-425-6748 | Available 6:30am - 3:30pm PST (M-F)

- Microsoft has a lot of great offers in market, to take advantage of them by June 30 send email to:
  Microsoft US App Dev Team
  msusappdev@microsoft.com



<shameless plugs … />

//Build 2017 highlight reel

Main themes

Artificial Intelligence & Cognition are Here!

Intelligent Cloud and Intelligent Edge

Microsoft loves OSS, Linux and Developers Everywhere

Mobile First, Cloud First, Developers First

Windows 10 Fall Creators Update

Project Rome and Microsoft Graph & Mixed Reality

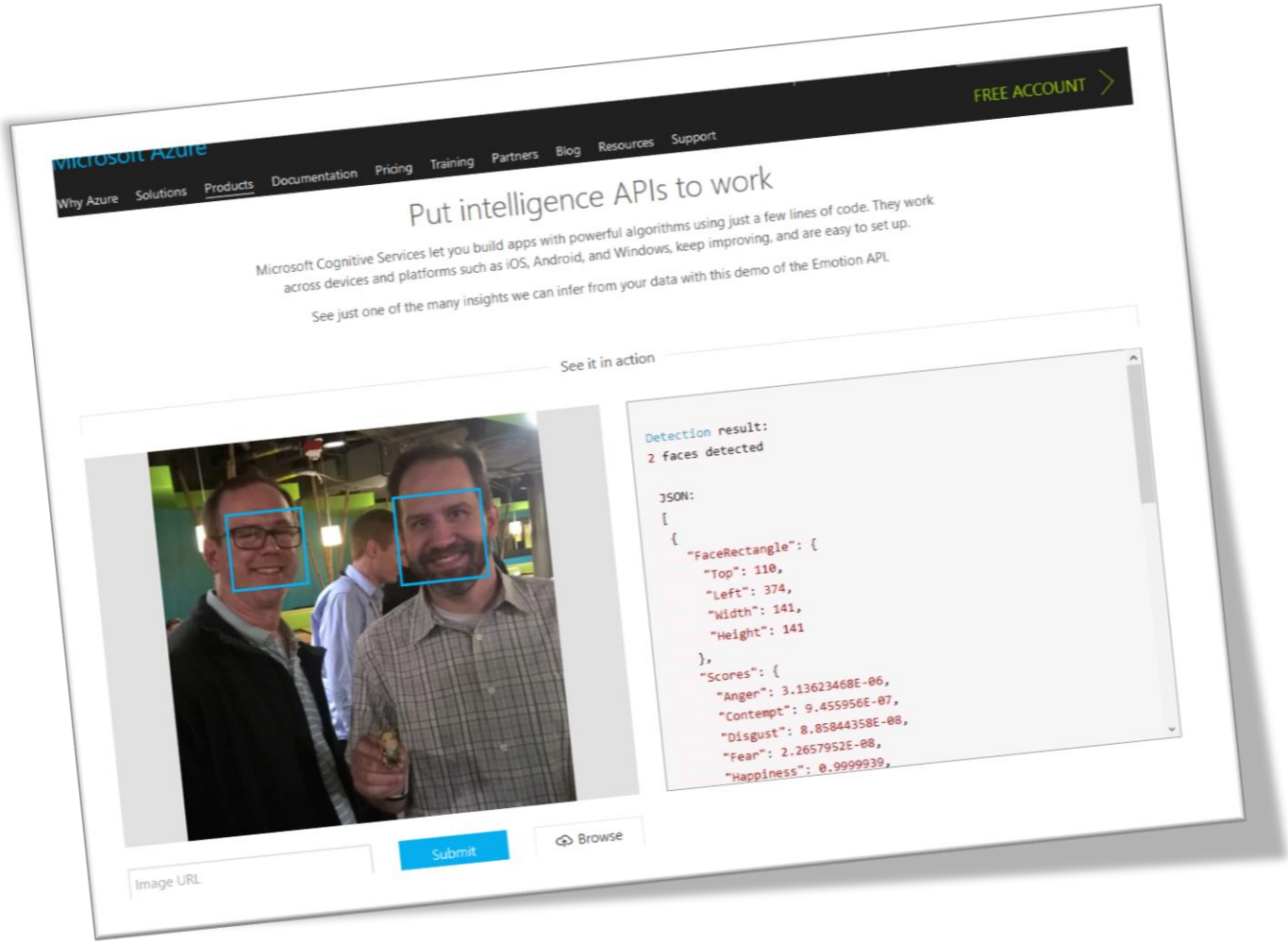
How old do I look?

www.how-old.net

(it lies…)

DEMO

Microsoft Cognitive Services



Cognitive Services APIs

Vision

- Computer Vision API
- Face API
- Content Moderator
- Emotion API PREVIEW
- Video API PREVIEW
- Custom Vision Service PREVIEW
- Video Indexer PREVIEW

Knowledge

- Recommendations API PREVIEW
- Knowledge Exploration Service PREVIEW
- Entity Linking Intelligence Service API PREVIEW
- Academic Knowledge API
- QnA Maker API PREVIEW
- Custom Decision Service PREVIEW

Speech

- Custom Speech Service PREVIEW
- Speaker Recognition API PREVIEW
- Translator Speech API
- Bing Speech API

Search

- Bing Autosuggest API
- Bing Image Search API
- Bing News Search API
- Bing Video Search API
- Bing Web Search API
- Bing Custom Search

Language

- Language Understanding Intelligent Service PREVIEW
- Web Language Model API PREVIEW
- Translator Text API
- Bing Spell Check API
- Text Analytics API PREVIEW
- Linguistic Analysis API PREVIEW

Labs

- Project Prague
- Project Johannesburg
- Project Abu Dhabi
- Nanjing Project
- Project Cuzco
- Project Wollongong

Windows 10 Fall Creators Update

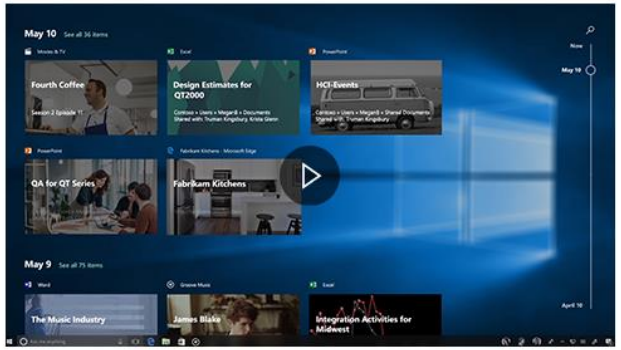
Session: Keynote

Story Remix

https://www.bing.com/videos/search?q=youtube+build+story+remix&view=detail&mid=C851A750F5CD697C14E5C851A750F5CD697C14E5&FORM=VIRE

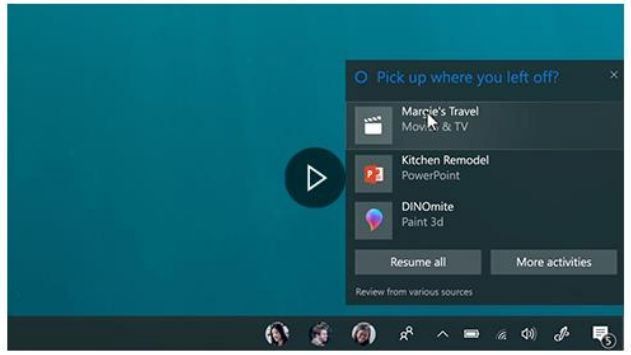
Windows 10 Fall Creators Update

Project Rome – Microsoft Graph – Cross Device



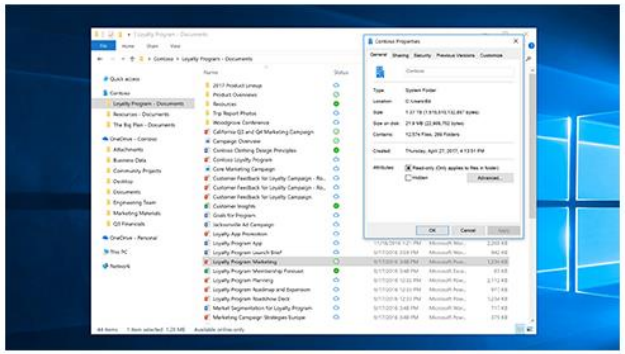
Travel back in time

Timeline lets you jump back in time to find what you were working on, whether it was 2 hours or 2 months ago. Easily hop back into your files, apps and sites as if you never left.



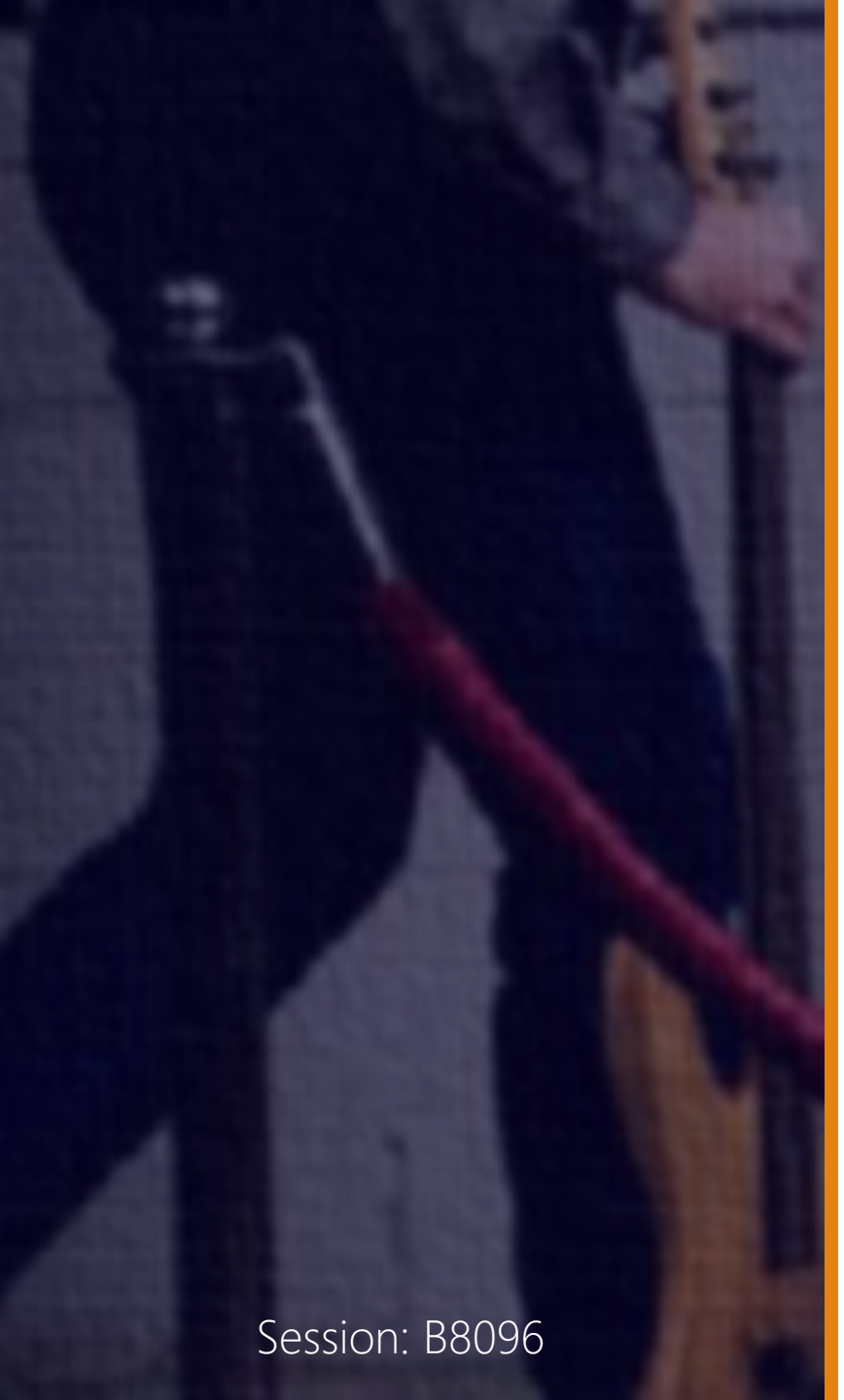
Pick up where you left off

Log out of one device and Cortana asks if you want to continue working in your app, doc or website on your next device. Plus, you can copy and paste between connected devices from your clipboard.



Save your disk space

Access your files in the cloud without using storage space on your device with OneDrive Files On-Demand. All your files can be seen in File Explorer and accessed on-demand whenever they are needed.



Windows Template Studio

Session: B8096

The Internet of Things (IoT)

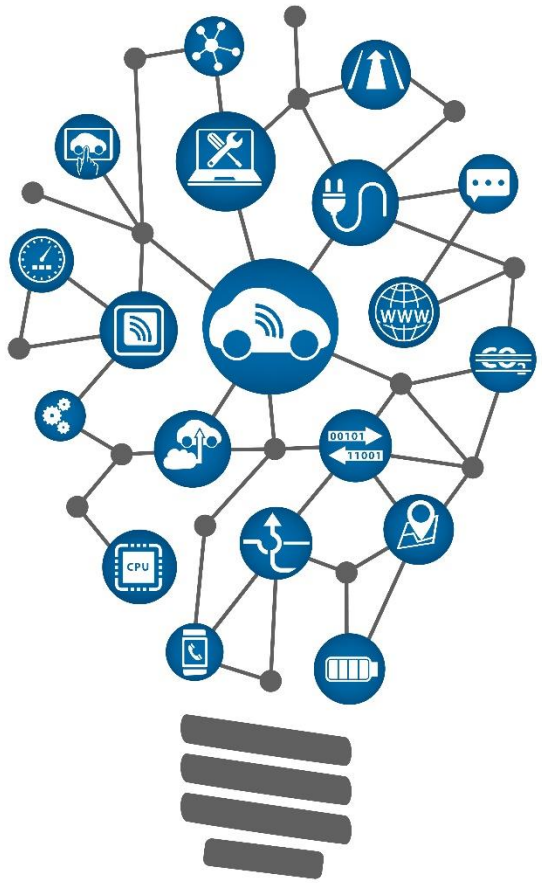
Currently 20 billion devices connected to the Internet

By 2020, expect 50 billion or more

- Health-monitoring devices
- Thermostats, wind turbines, and solar farms
- Cars, trucks, traffic lights, and drones
- EVERYTHING will be connected

How do you process all that data?

How do you process it in real time?



Waves of Innovation

Cloud

Globally available, unlimited compute resources

IoT

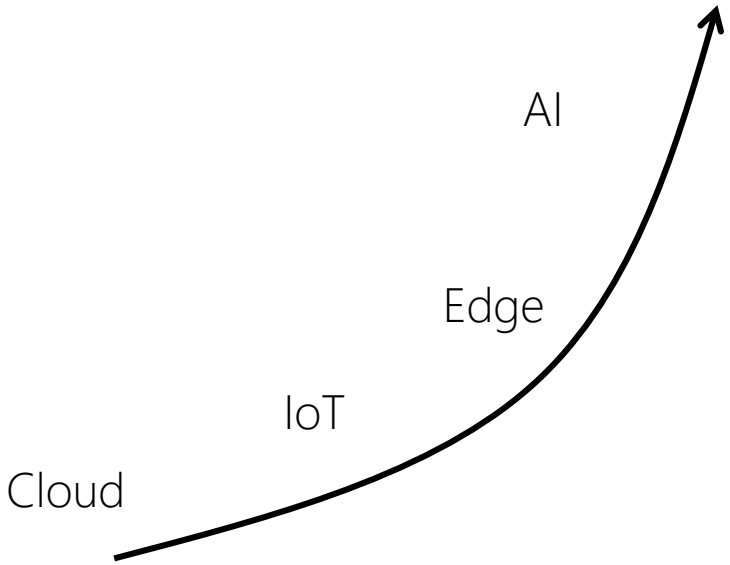
Harnessing signals from sensors and devices, managed centrally by the cloud

Edge

Intelligence offoaded from the cloud to IoT devices

AI

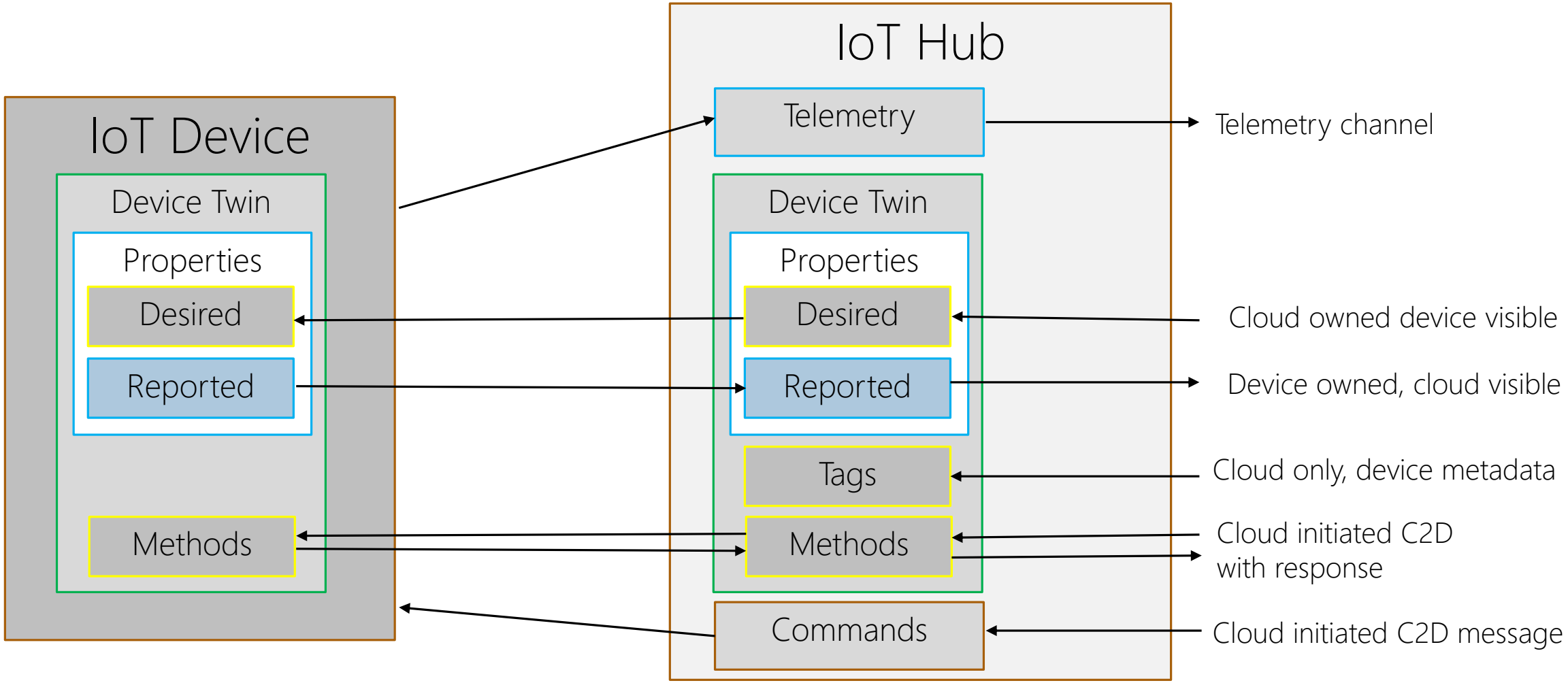
Breakthrough intelligence capabilities



Some data ingestion components

- IoT Hub
- Event Hubs
- Stream Analytics
- Azure Functions
- Data Factories
- Machine Learning

Azure IoT Hub Device Management



DEMO

Session: *Enabling intelligence at the edge with Azure IoT Edge*

http://bit.ly/bqt-B8049

Azure IoT Suite

http://azureiotsuite.com

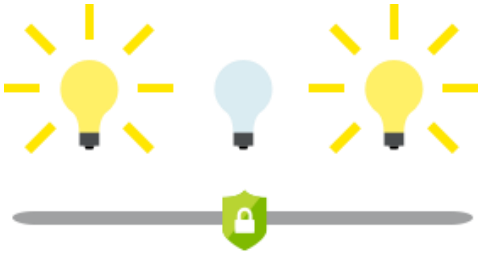
Announcing IoT Edge

Enable artificial intelligence and advanced analytics at the edge

Reduce IoT solution costs

Simplify development

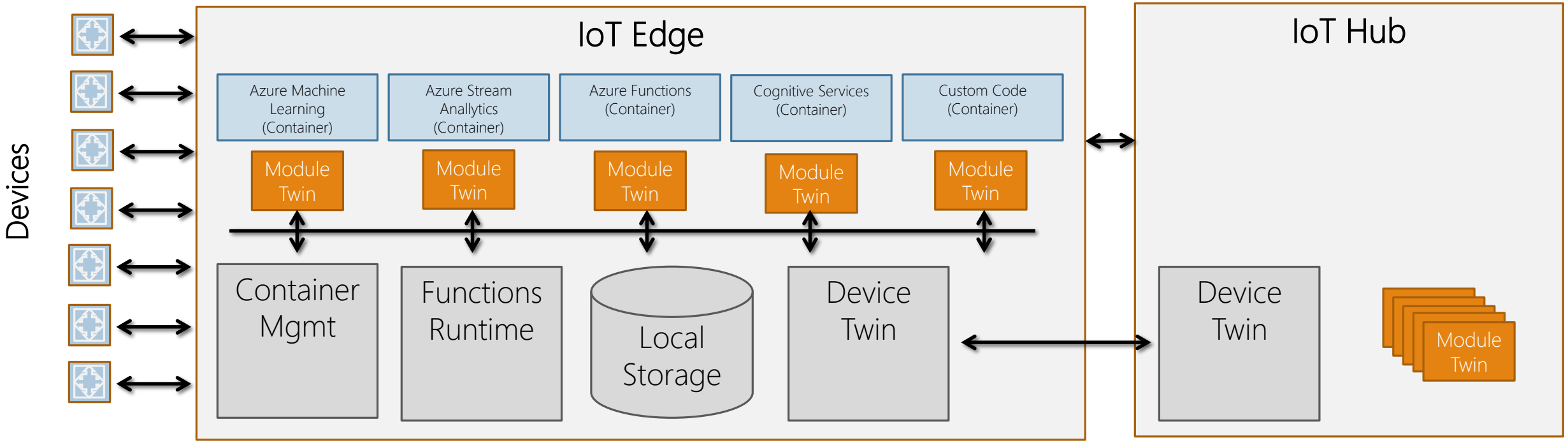
Operate offline or with intermittent connectivity

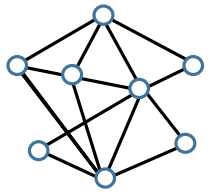


Azure IoT Edge

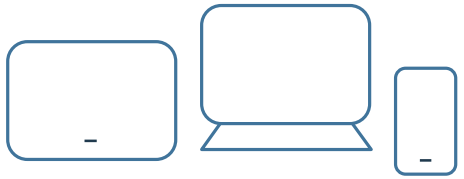
- Container based modules
- Azure Functions
- Azure Stream Analytics
- Azure Machine Learning
- Cognitive Services

- Offline/Synchronized Device Twins
- Local Storage
- Cloud Management & Deployment
- High Availability/Fault Tolerance
- Cloud Dev/Test Support

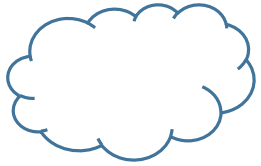




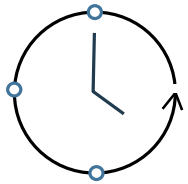
Artificial Intelligence



Mobile-first



Cloud-first



Serverless

Azure diagnostics

Should be simple

No modifications to your app

No republishing of your app

From the Portal

Enable/Disable analytics and diagnostics

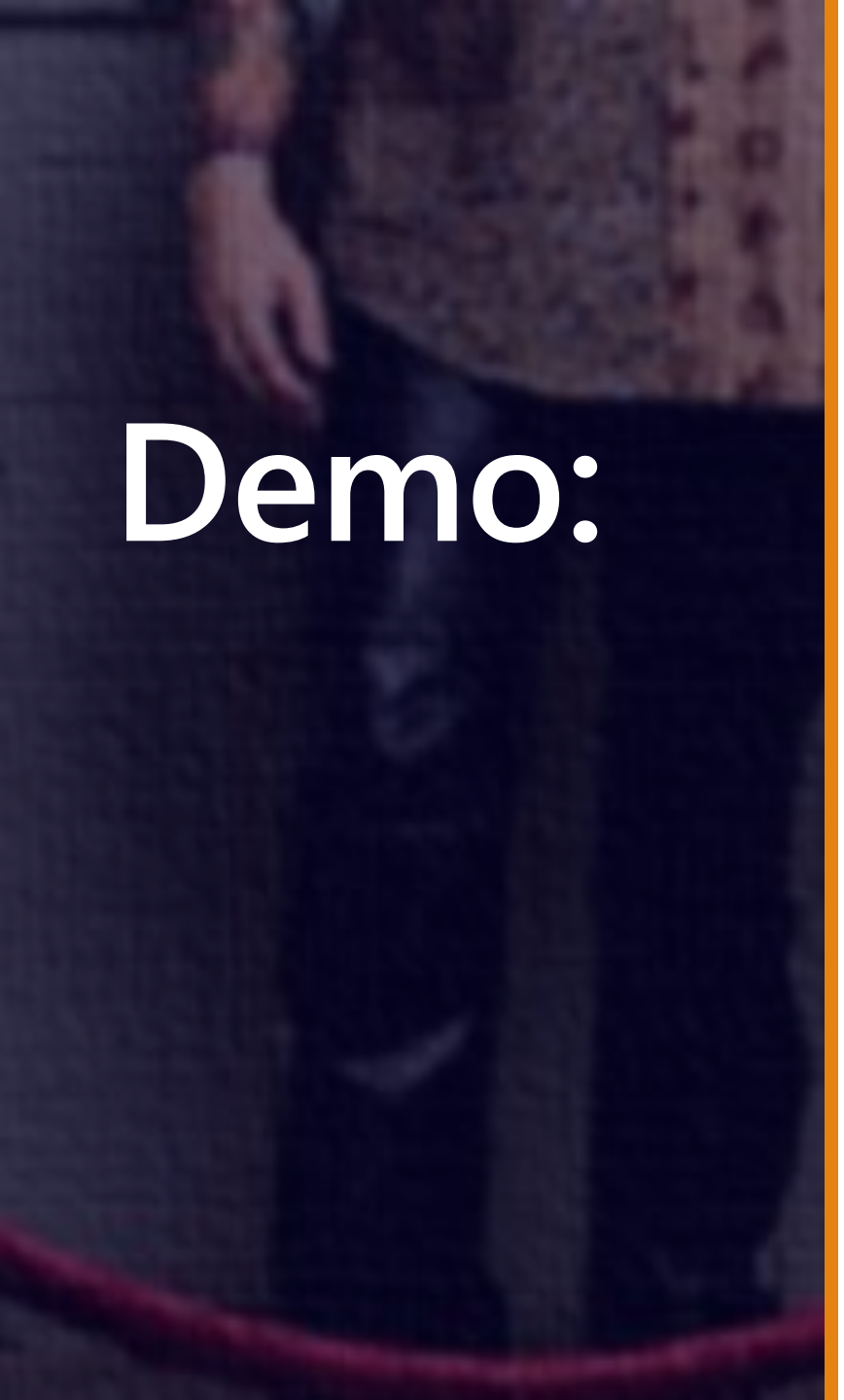
See common crashes and performance problems including seeing code

From Visual Studio

See analytics data from portal in real time

Use "**snap points**" to debug a running application

INTERNAL ONLY



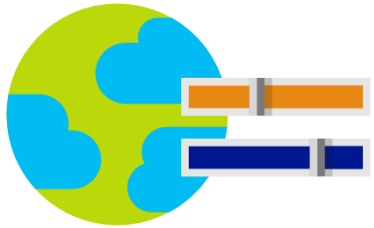
Demo:

Azure diagnostics

Cosmos DB

Turnkey global distribution

Multi-model + Multi-API



Limitless elastic scale around the globe

Multiple well-defined consistency choices

Guaranteed Low Latency In the 99th percentile

Industry-leading, enterprise grade SLAs

.NET everywhere

.NET Standard library

One library to rule them all

Learn one API **across ALL .NET platforms**

Reuse your code **across ALL .NET platforms**

Easily consume third-party/OSS libraries **across ALL .NET platforms**

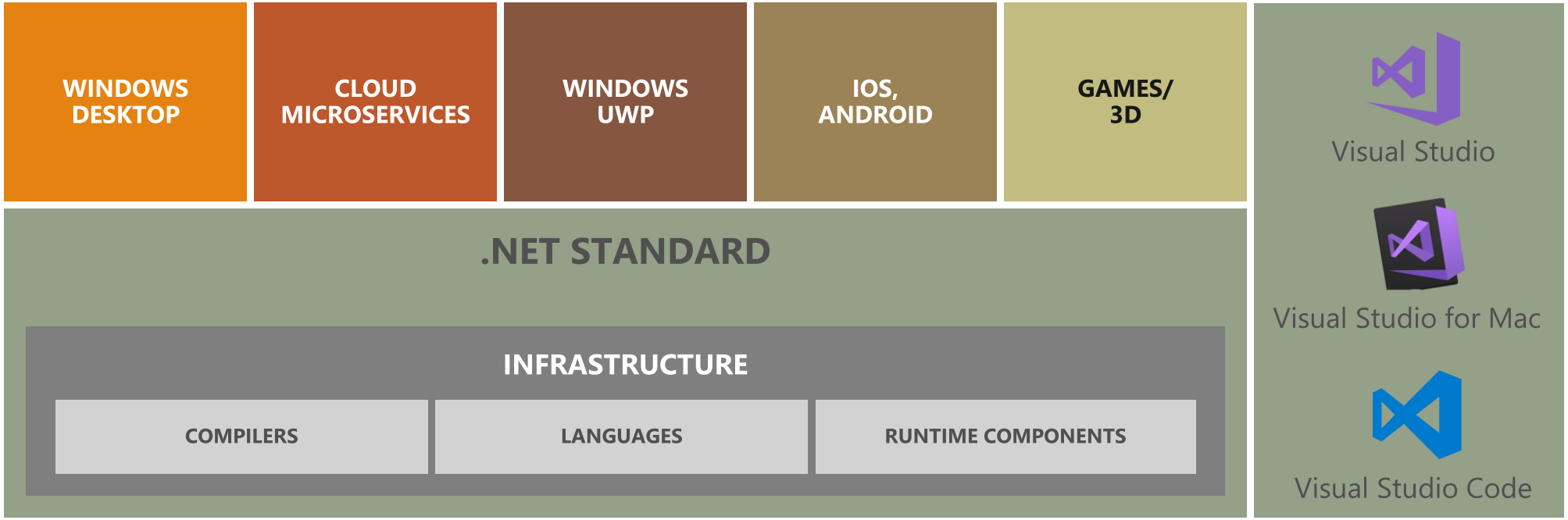
.NET Standard 1.x

Evolution of Portable Class Libraries (PCLs) with a much simpler model

Two constraints:

- API surface relatively small, because .NET Core was small
- Can't reference the vast number of libraries already available for .NET Framework

.NET Standard

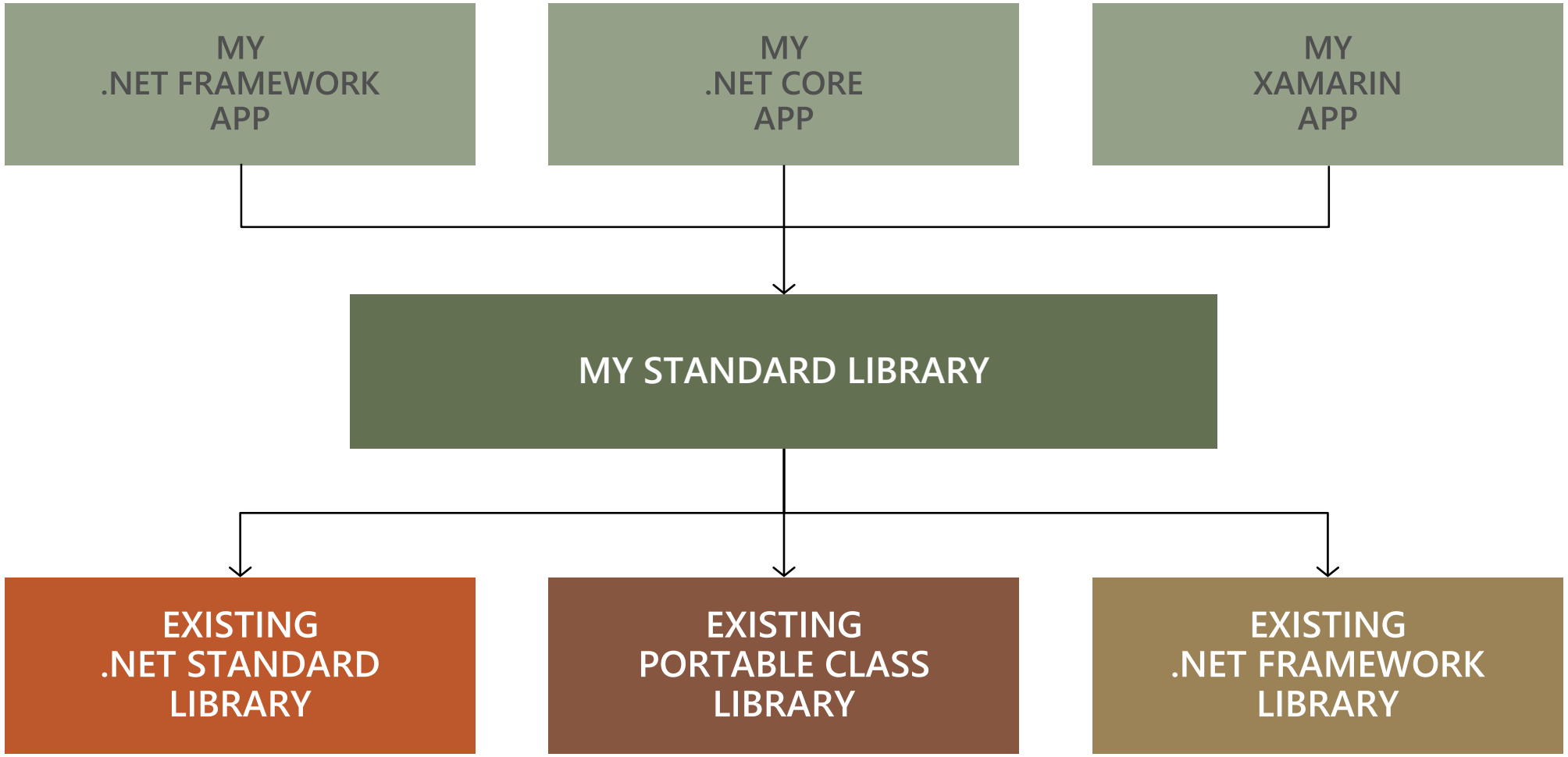


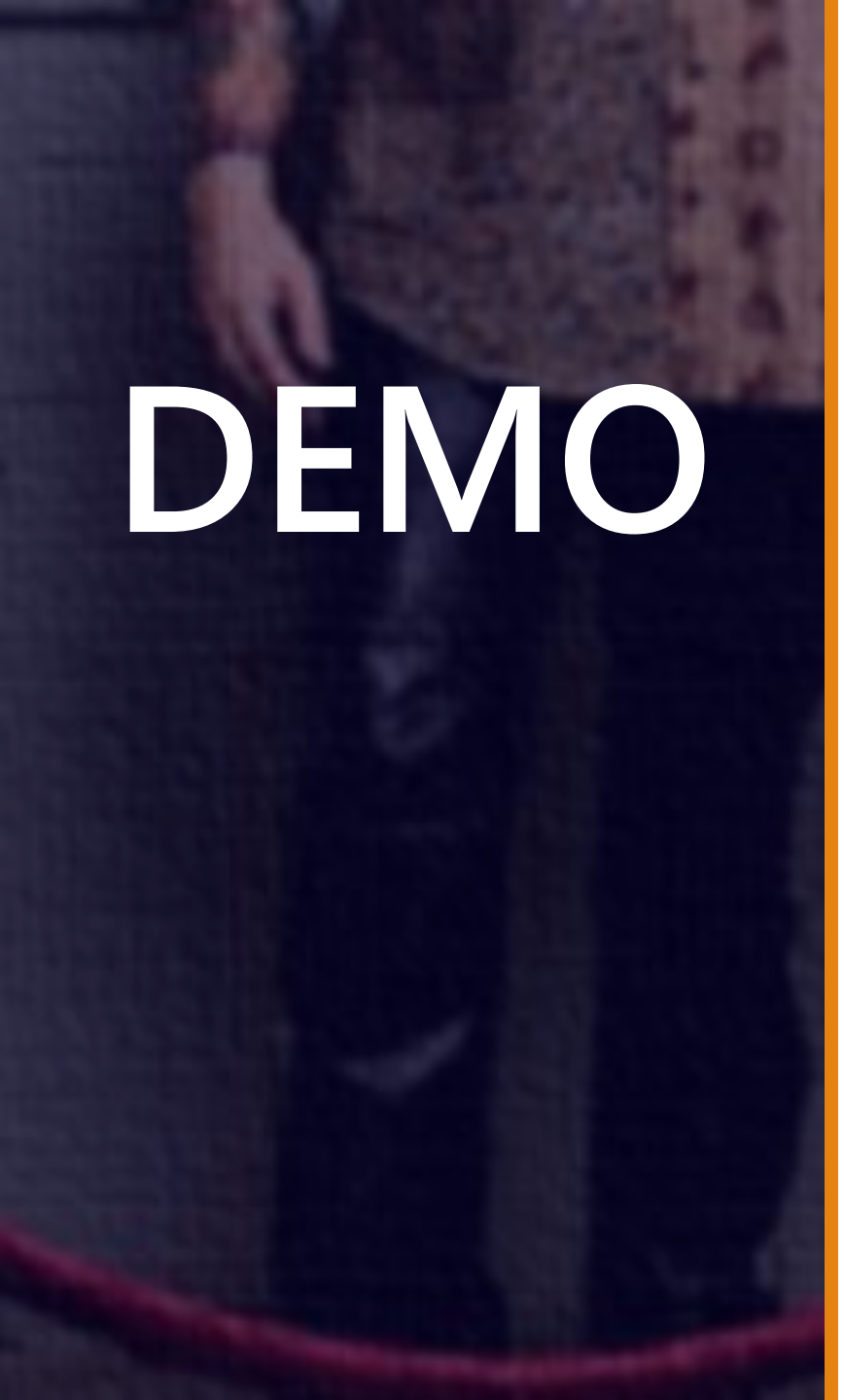
.NET Standard allows sharing code, binaries, and skills between .NET client, server, and all flavors

.NET Standard provides a specification for any platform to implement

All .NET runtimes provided by Microsoft implement the standard

Nothing changes





.NET Standard

Announcing .NET Standard 2.0 (Preview)

Has much bigger API surface

Extended to cover intersection between .NET Framework and Xamarin

Also makes .NET Core 2.0 bigger as it implements .NET Standard 2.0

+20K

More APIs than .NET Standard 1.x

Can reference .NET Framework libraries

Compatibility shim allows referencing existing .NET Framework binaries

No recompile required – also covers existing NuGet packages

Limited to libraries that only use APIs that are available for .NET Standard

~70%

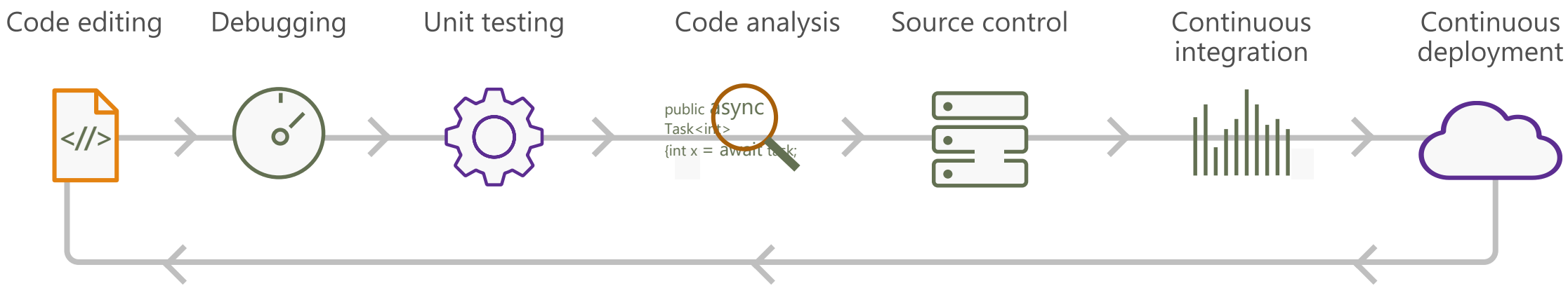
of NuGet packages are API compatible

APIs in .NET Standard 2.0

XML	XLinq • XML Document • XPath • Schema • XSL
SERIALIZATION	BinaryFormatter • Data Contract • XML
NETWORKING	Sockets • HTTP • Mail • WebSockets
IO	Files • Compression • MMF
THREADING	Threads • Thread Pool • Tasks
CORE	Primitives • Collections • Reflection • Interop • Linq

VS Productivity

“Shift left” and ”shift right”



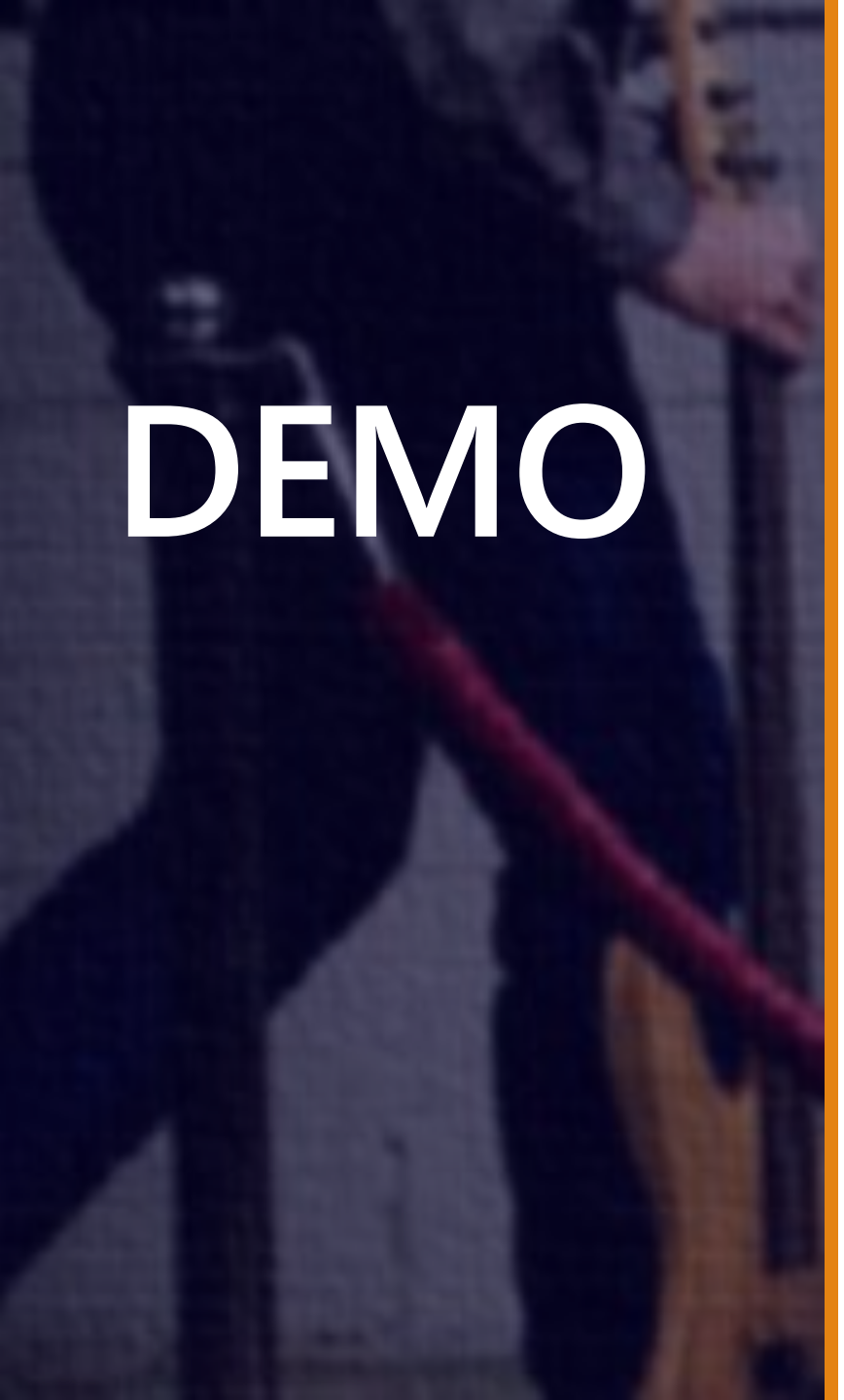
Continuous integration + **real-time experiences** = shift left

Continuous data mining + near real-time data = **shift right**

Visual Studio 2017 New Features

Streamlined installer & workloads
New Start Page
Advanced Intellisense
Faster Code Navigation
Find All References
Live Unit Testing
Enhanced Exception Helper
Run to click debug

Open Folder
Roaming Extensions
Connected Services
Xamarin Profiler
Xamarin Forms Previewer
DevOps
Docker Integration
.NET Core Tooling



DEMO

Noteworthy extensions

Github Extension for Visual Studio

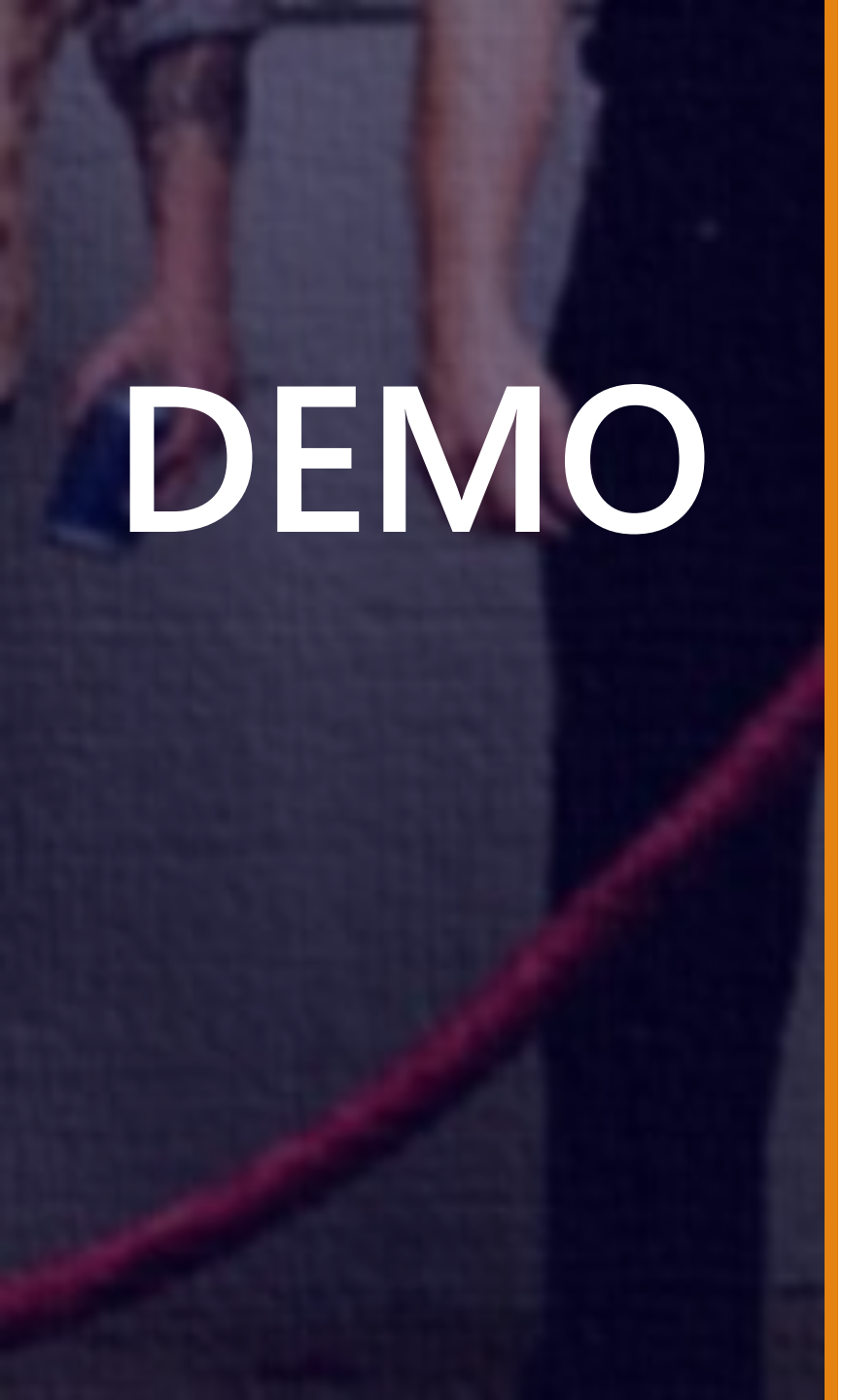
Windows Template Studio

UWP Visual Assets Generator

Azure Function Tools

Logic App Tools

Azure Snapshot Debugger



DEMO

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Mobile first

Build five star apps

Deliver apps that keep users coming back for more

Visual Studio Tools for Xamarin

- Inspector
- Connected services
- Profiler
- New templates
- Forms previewer
- Workbooks
- iOS simulator
- Test recorder

Xamarin Futures

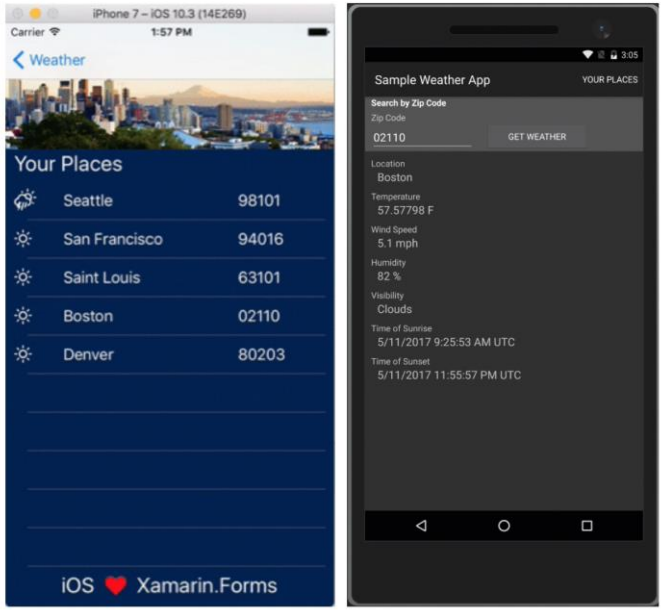
Xamarin.Forms Embedding

More platforms

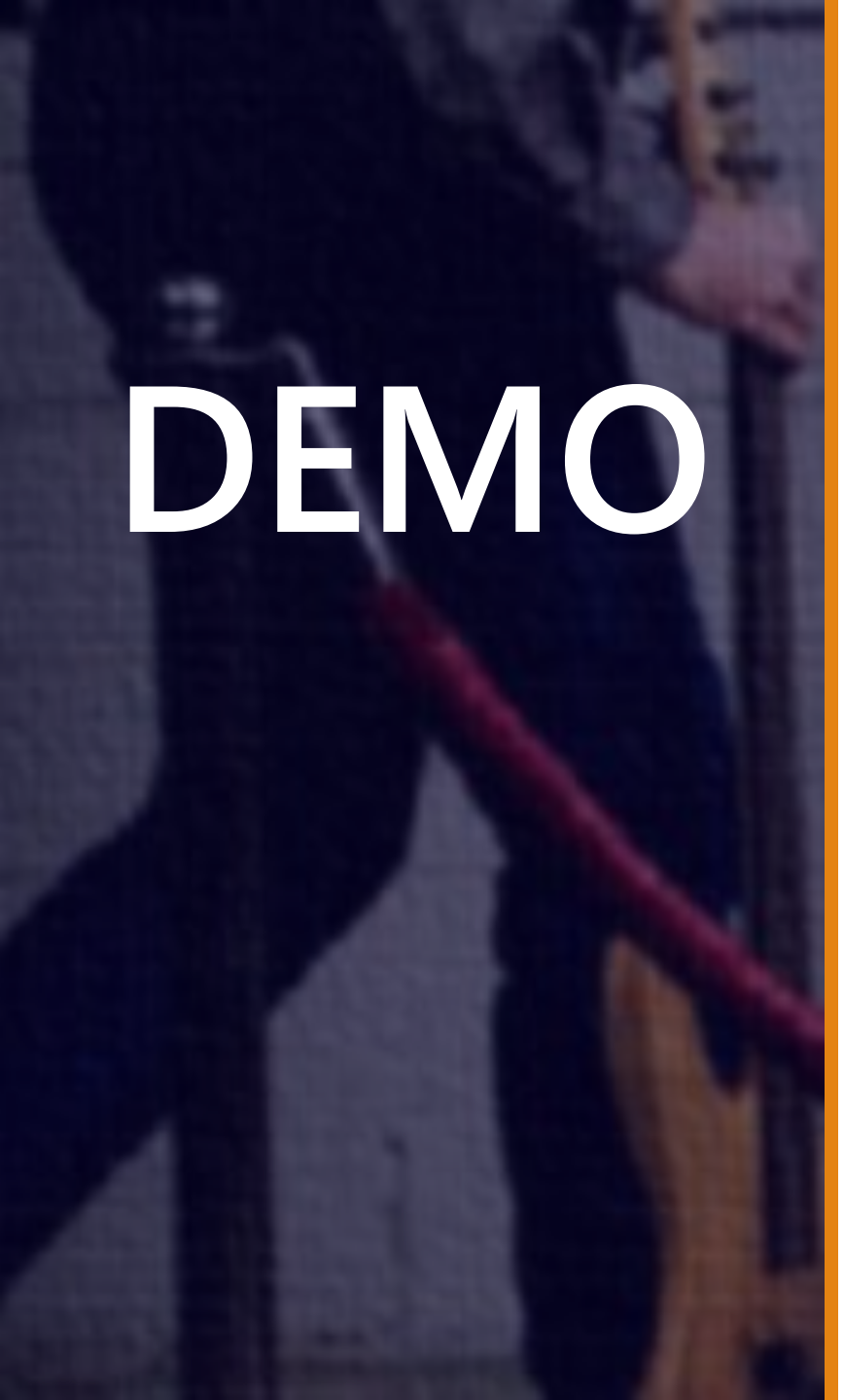
- macOS
- Linux
- WPF

Speed enhancements

XAML Standard

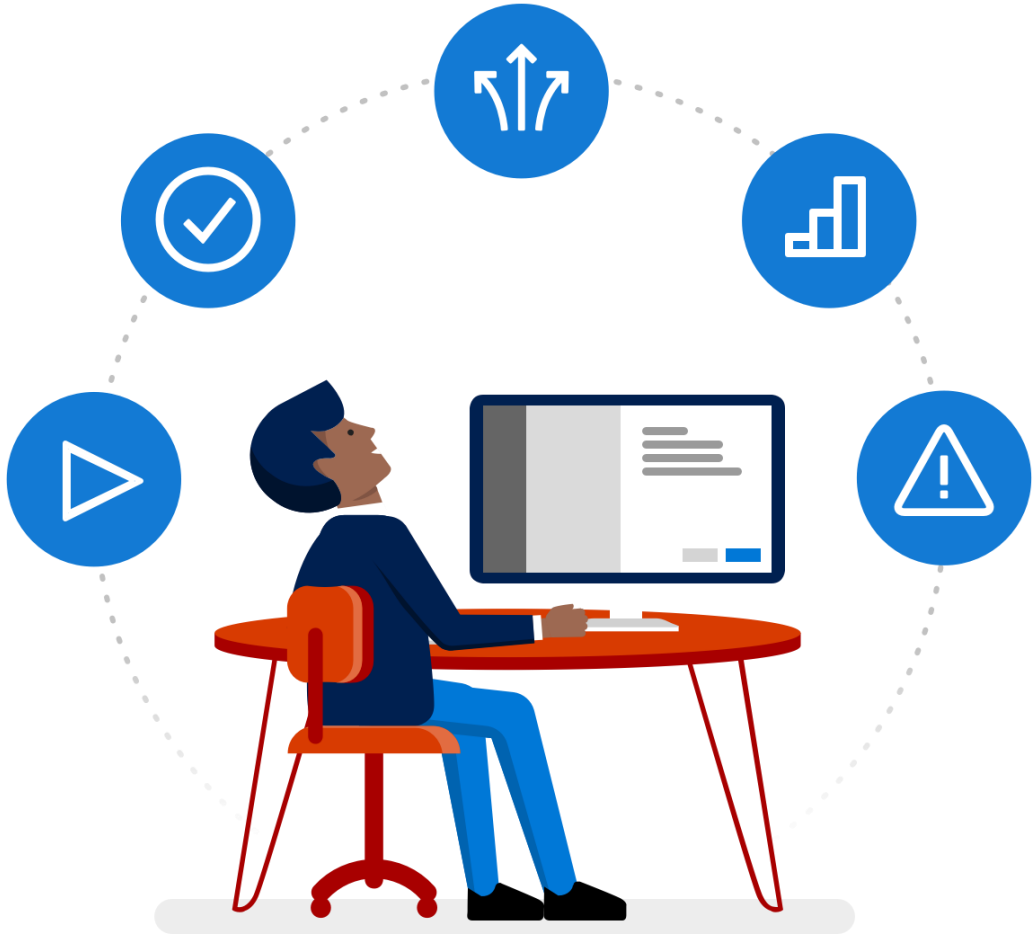


macOS Linux Windows Presentation Foundation



Building an app with Xamarin

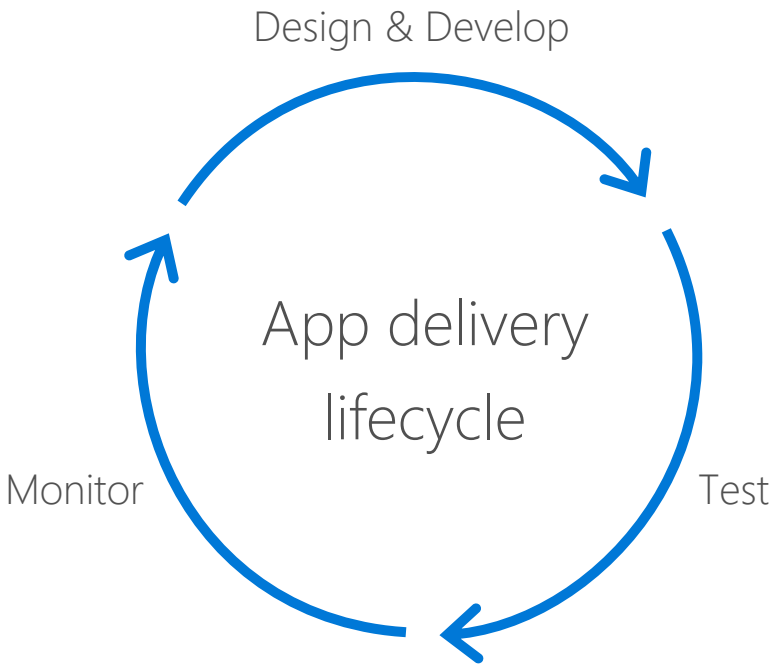
Implement Continuous Everything



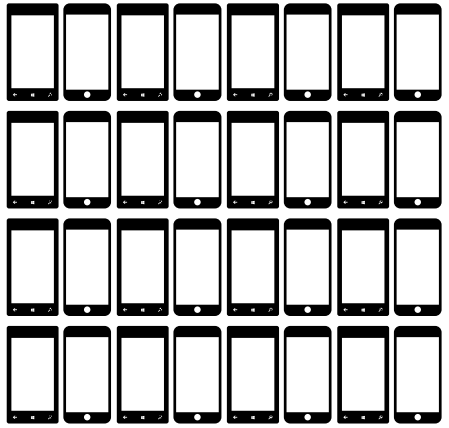
Automate your entire mobile app lifecycle in a few easy steps

Mobile development challenges

100+ apps



1000+ devices



CONFIDENTIAL – INTERNAL ONLY

Retain Flexibility & Choice

Move faster and increase quality with the tools you already use.

Test

Analytics

Build

Distribute

Live Update

Crash Reporting

Storage

Push Notifications

Identity

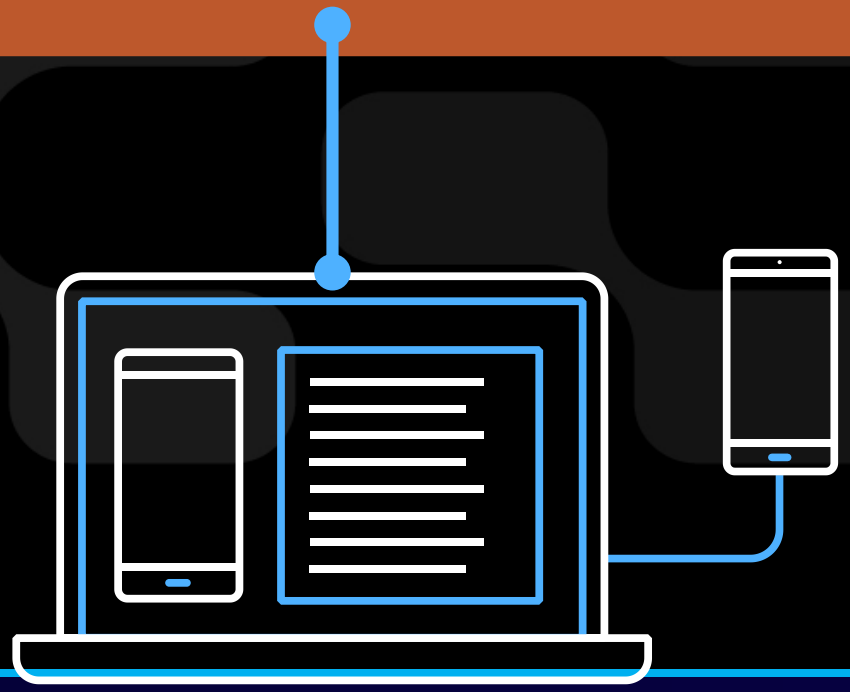
Tables

Build Test Analytics Push Notifications Distribute

Visual Studio Mobile Center

Mission control for mobile apps

Crash Reporting Tables Live Update Identity Storage



Delivering continuously means learning continuously

What's new at //build?

All your apps from HockeyApp now in Mobile Center

Xamarin Test Cloud is now Mobile Center Test with added support for XCUITest and Espresso frameworks

Support for UWP

Build, Distribute, Analytics, and Push available now

Crashes and Test later this year

Build your apps from your git repository in:

Visual Studio Team Services, Bitbucket, and GitHub

Push service for iOS, Android, and Windows

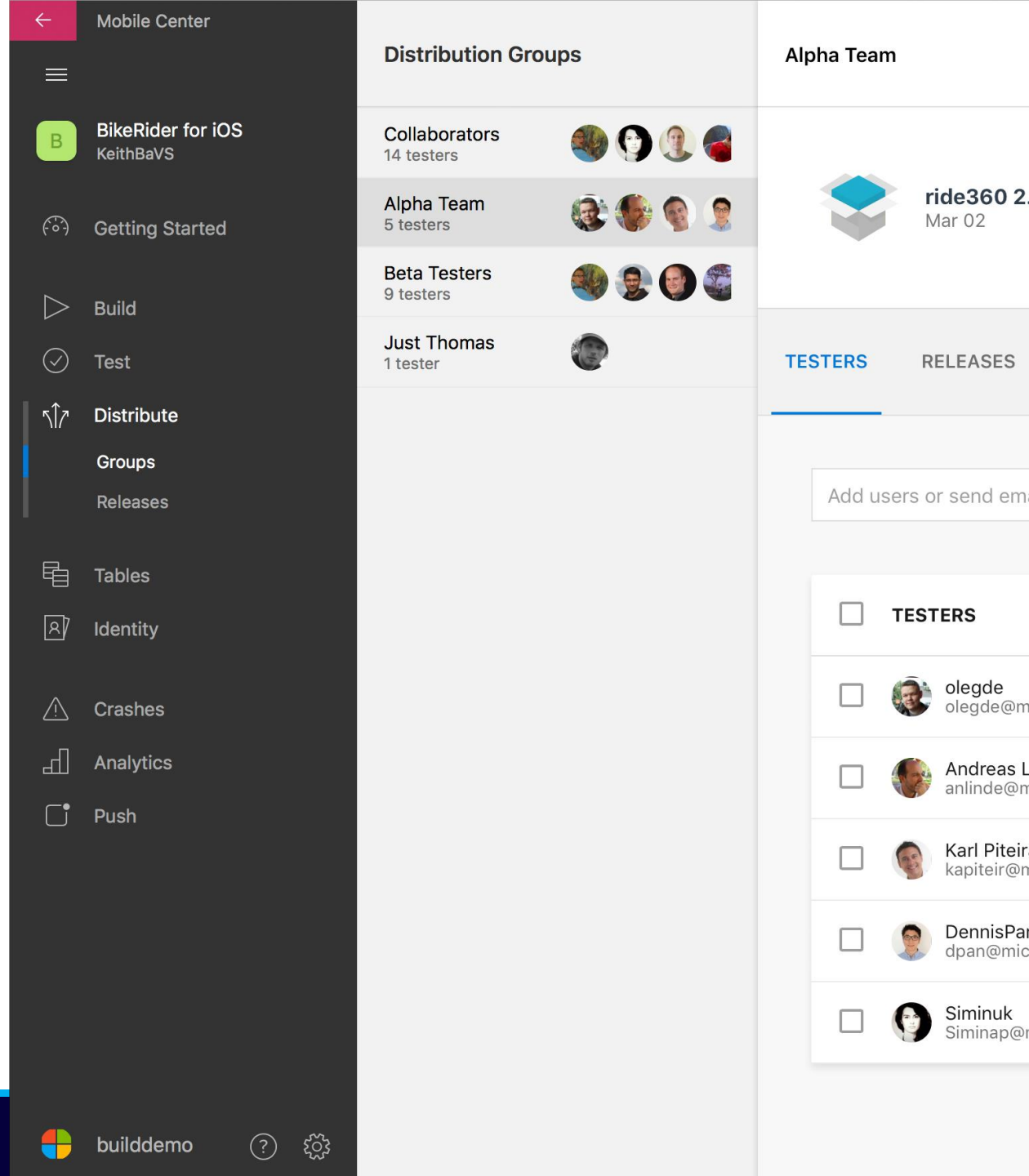
Send notifications to all devices and a user segment

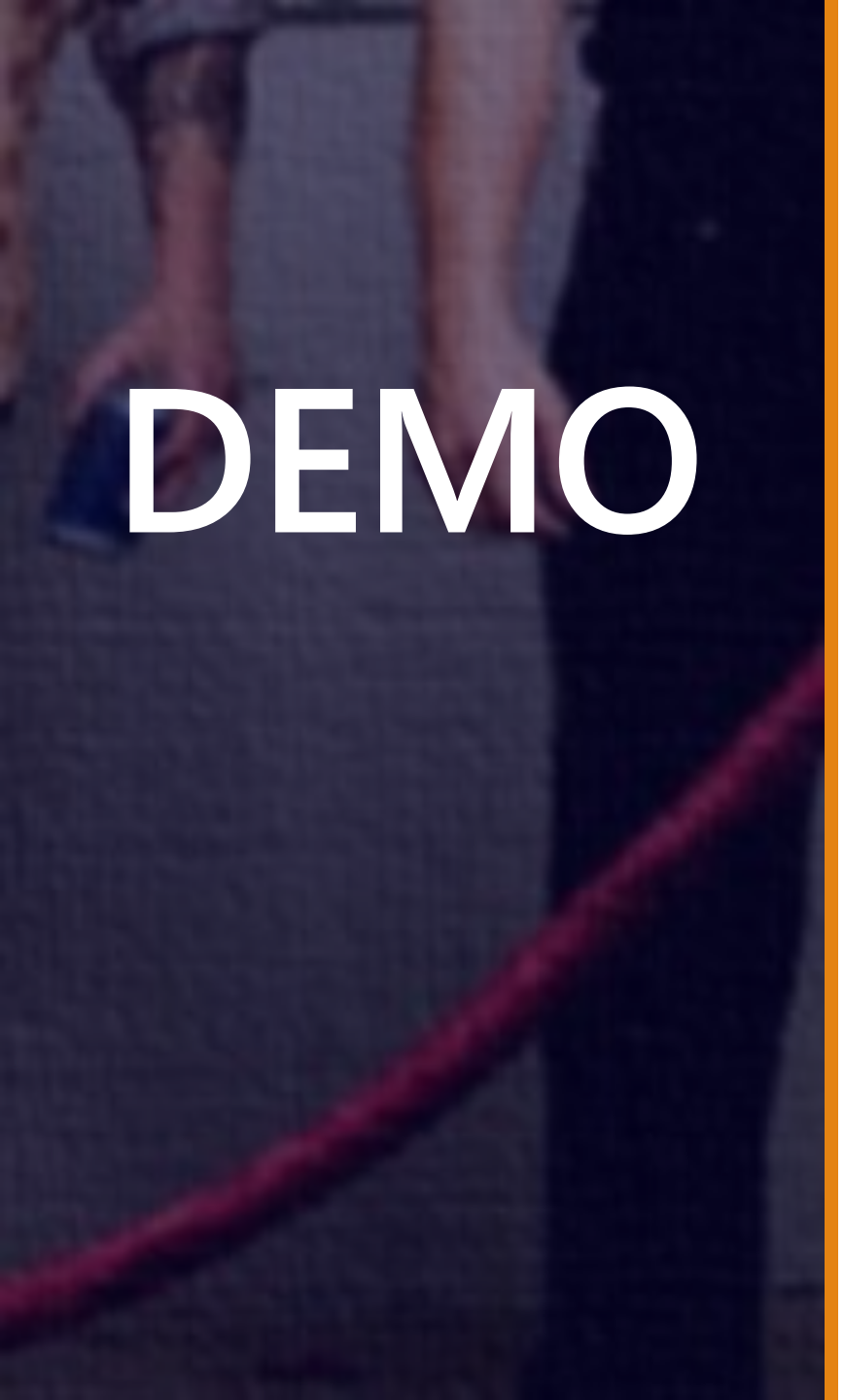
Visual Studio Mobile Center

Automate your entire mobile app lifecycle in a few easy steps

Deliver high-quality apps that keep users coming back for more

Move faster and increase quality with the tools you already use—we support a wide variety of platforms





Build

Test

Distribute

Identity

Data

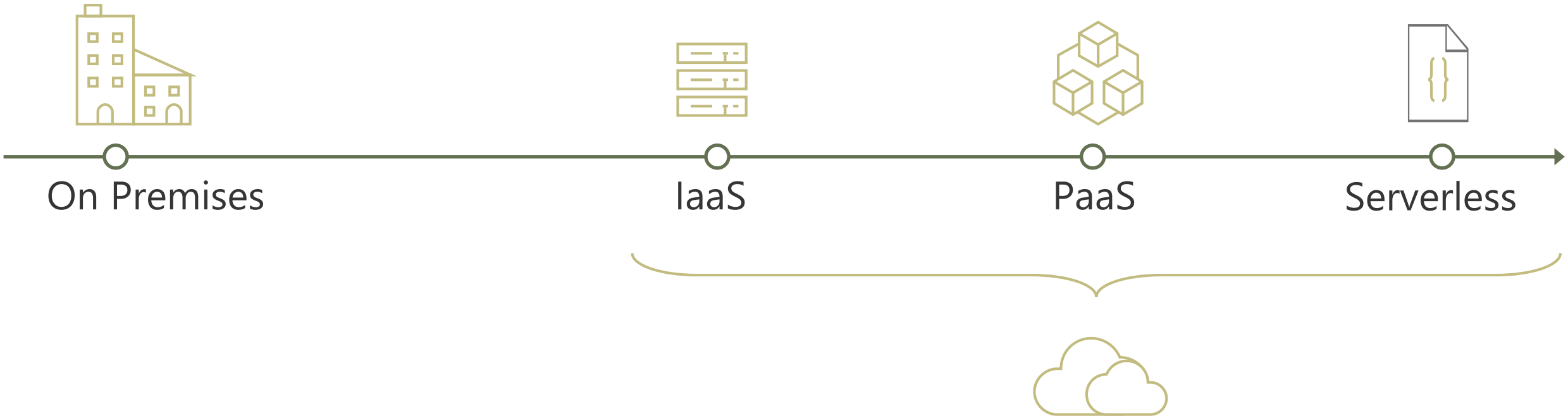
Crash

Analyze

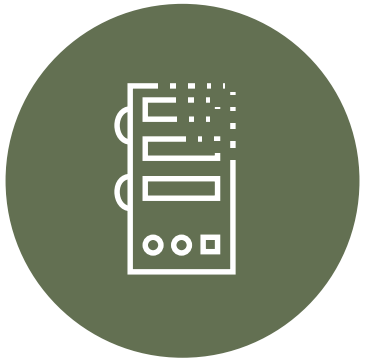
Push

Serverless

The “Evolution” of Application Platforms

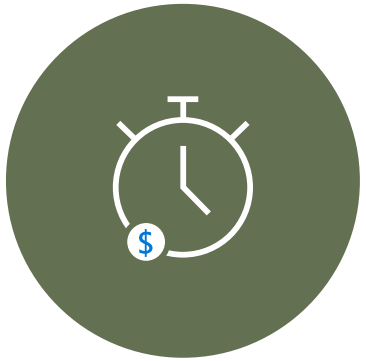


What is Serverless?



Abstraction of servers

Event-driven/ instant scale

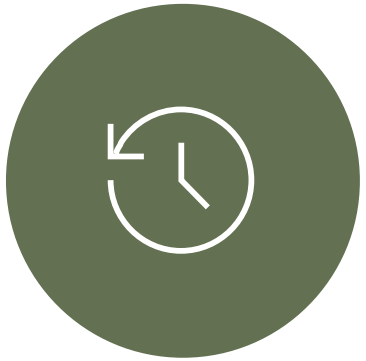


Micro-billing

Serverless is Great!

DevOps
Productivity

Focus on
business logic



Faster time to
market

Serverless Application Platform Components

Development

- IDE support
- Visual debug history
- Local development
- Verbose debugging

Platform

Functions

- Developer tooling
- Bindings and triggers
- Open source

Logic apps

- Visual designer
- 100+ connectors
- Functions orchestration

Data/storage

Messaging

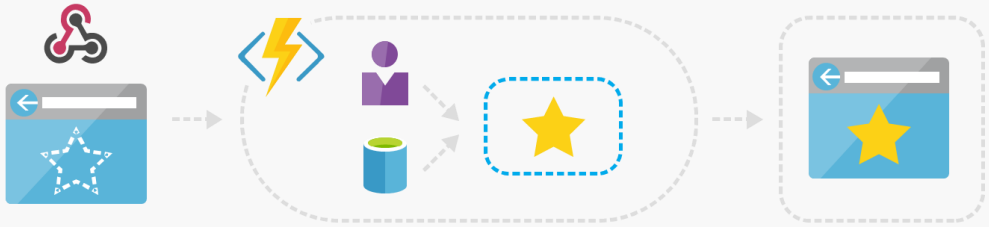
Gateway Connectors

Intelligence

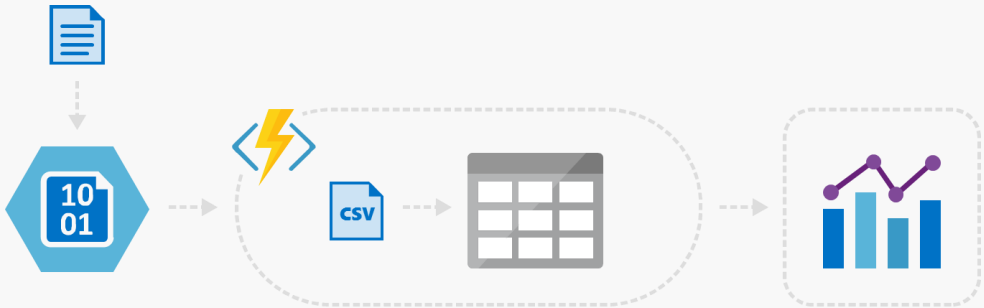
Bots

Common Scenarios

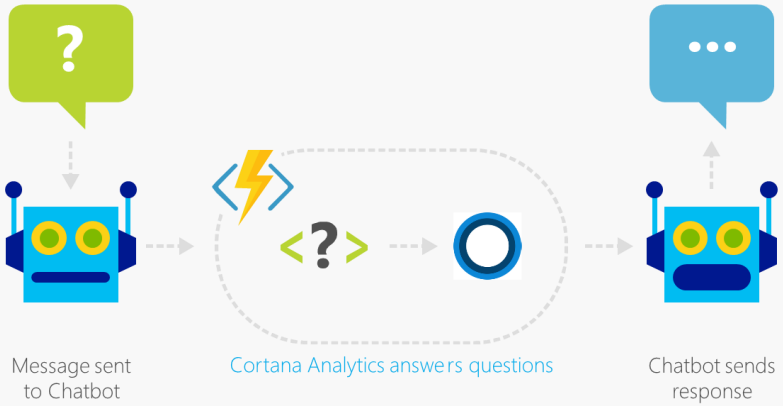
Web



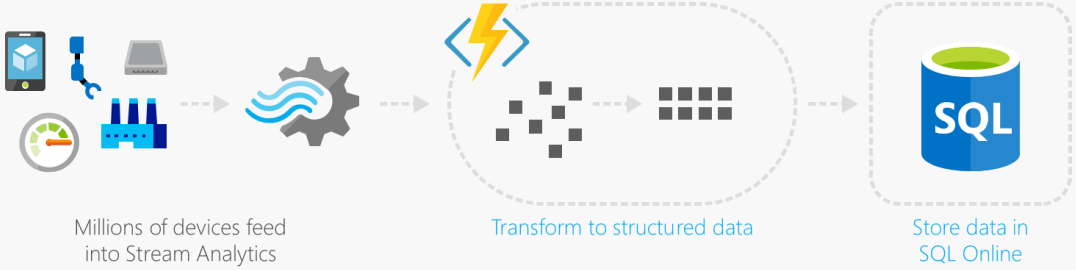
Glue

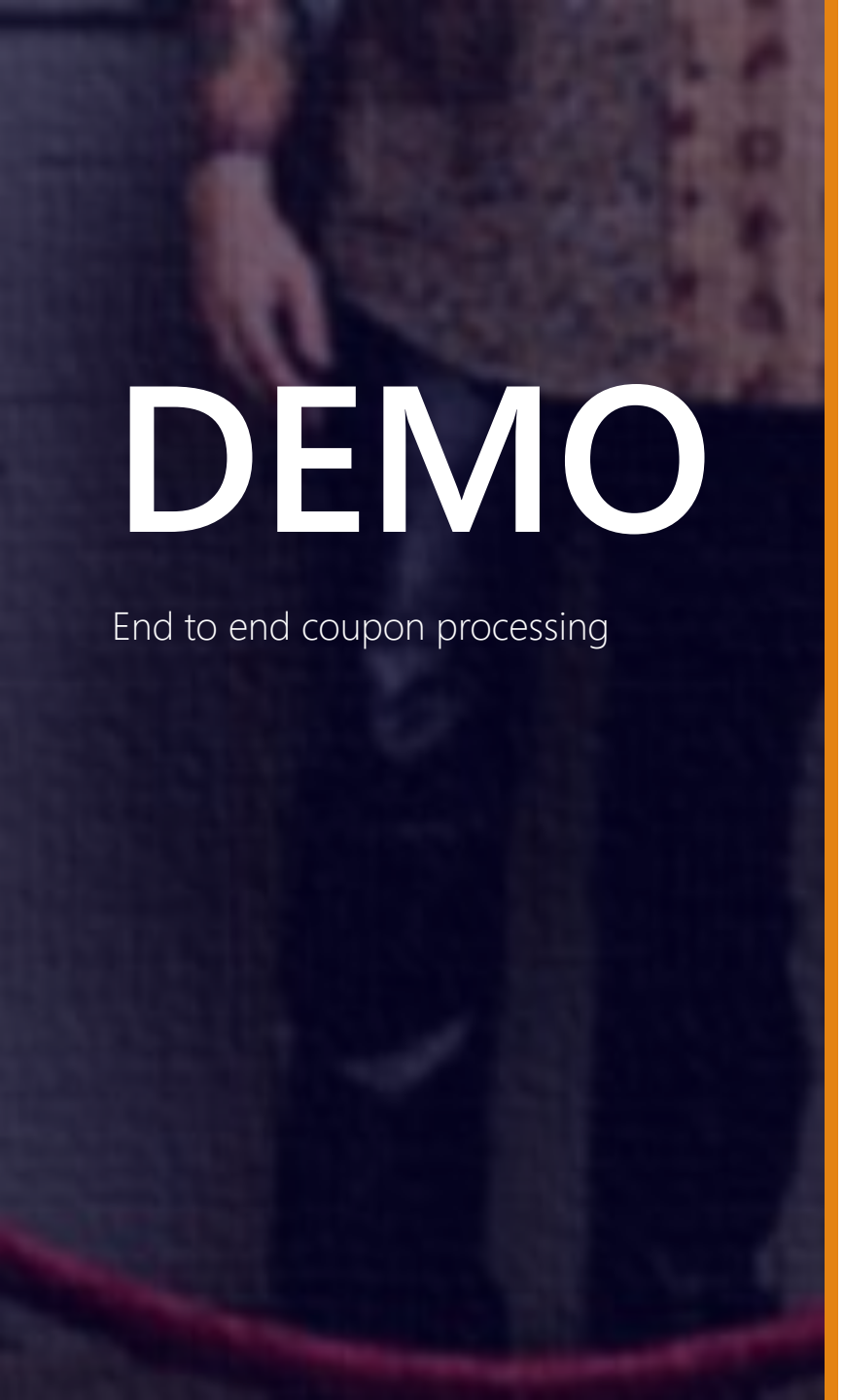


Bots



IoT





DEMO

End to end coupon processing

Function Basics

- timer trigger
- queue trigger
- table storage

Azure Serverless Apps Design

Distributed Architecture

- Design stateless and ASync solutions to enable scaling.
- Connect with other Azure Services via triggers and bindings.
- Leverage proxies for API abstraction and composition.
- Use Logic Apps to orchestrate workflows
- Use managed connectors to abstract calls to cloud and on-premises services.

Cloud DevOps

- Design for automation. Use ARM templates.
- Design DevOps for the cloud: safe deployment with test/development and production environment separation and test on the target platform.
- Monitor the running apps with App Insights and tune for best experience.

Triggers and Bindings

Triggers and Bindings

Type	Service	Trigger	Input	Output
Schedule	Azure Functions	✓		
HTTP (REST or webhook)	Azure Functions	✓		✓*
Blob Storage	Azure Storage	✓	✓	✓
Events	Azure Event Hubs	✓		✓
Queues	Azure Storage	✓		✓
Queues and topics	Azure Service Bus	✓		✓
Tables	Azure Storage		✓	✓
Tables	Azure Mobile Apps		✓	✓
No-SQL DB	Azure DocumentDB		✓	✓
Push Notifications	Azure Notification Hubs			✓
Twilio SMS Text	Twilio			✓

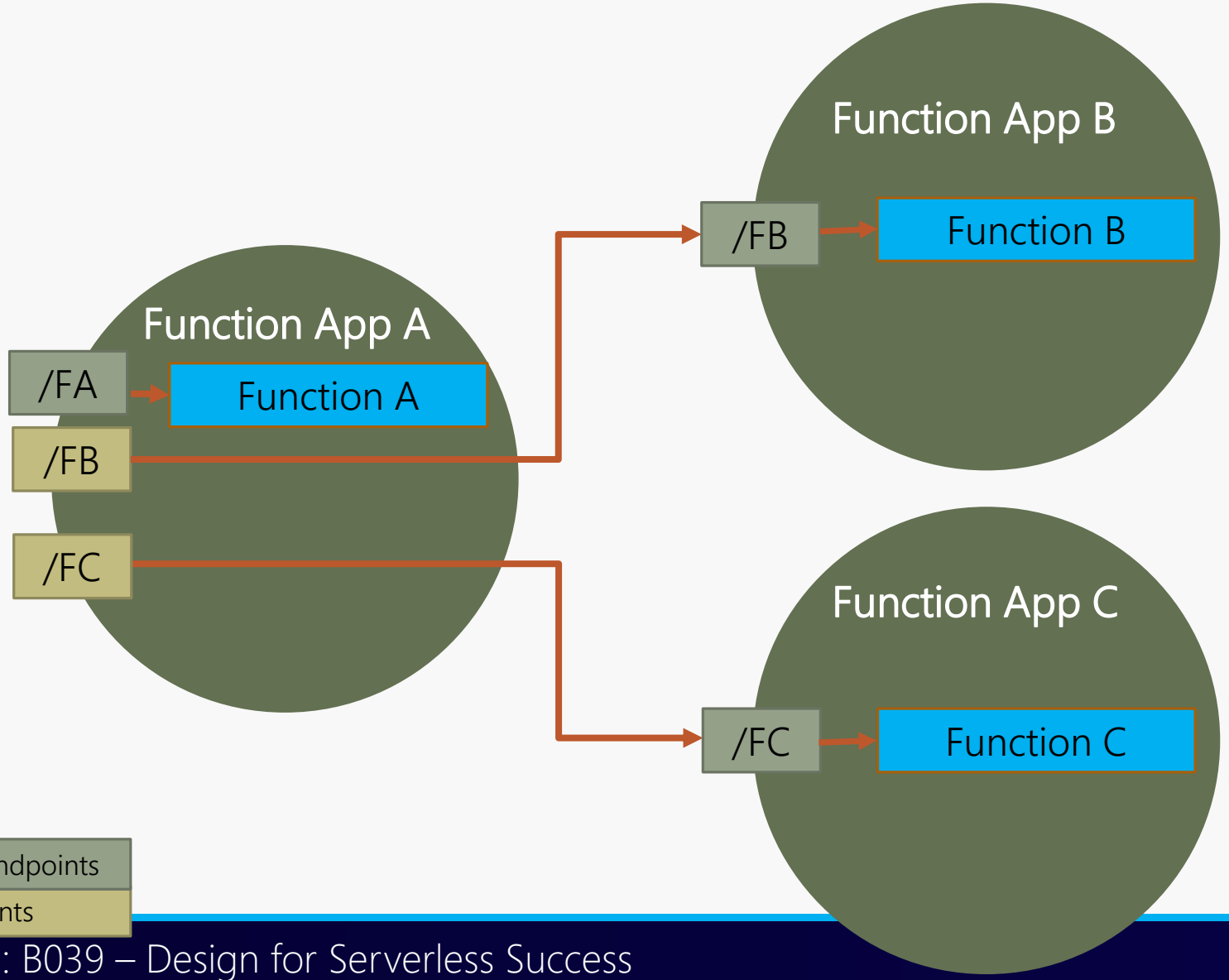
Use Bindings in Your Code

```
public static class OrderHandler
{
    [FunctionName("OrderWebhook")]
    public static async Task<HttpResponseMessage> Run(
        [HttpTrigger] HttpRequestMessage req,
        [Queue("aievents1", Connection = "AiStorageConnection")]
                    IAsyncCollector<String> eventOutput,
           TraceWriter log)
    {
        log.Info($"Webhook was triggered!");

        string jsonContent = await req.Content.ReadAsStringAsync();
        dynamic data = JsonConvert.DeserializeObject(jsonContent);

        await eventOutput.AddAsync(
            JsonConvert.SerializeObject(GetLogData(data)));

        int orderId = PlaceOrder(data);

        return req.CreateResponse(HttpStatusCode.OK,
                                  new {orderNumber = orderId });
    }

. . .
}
```

function.json

```
"bindings": [
    {
      "type": "httpTrigger",
      "direction": "in",
      "webHookType": "genericJson",
      "name": "req"
    },
    {
      "type": "http",
      "direction": "out",
      "name": "res"
    },
    {
      "type": "queue",
      "name": "eventOutput",
      "queueName": "aievents1",
      "connection":"AiStorageConnection",
      "direction": "out"
    }
  ]
```

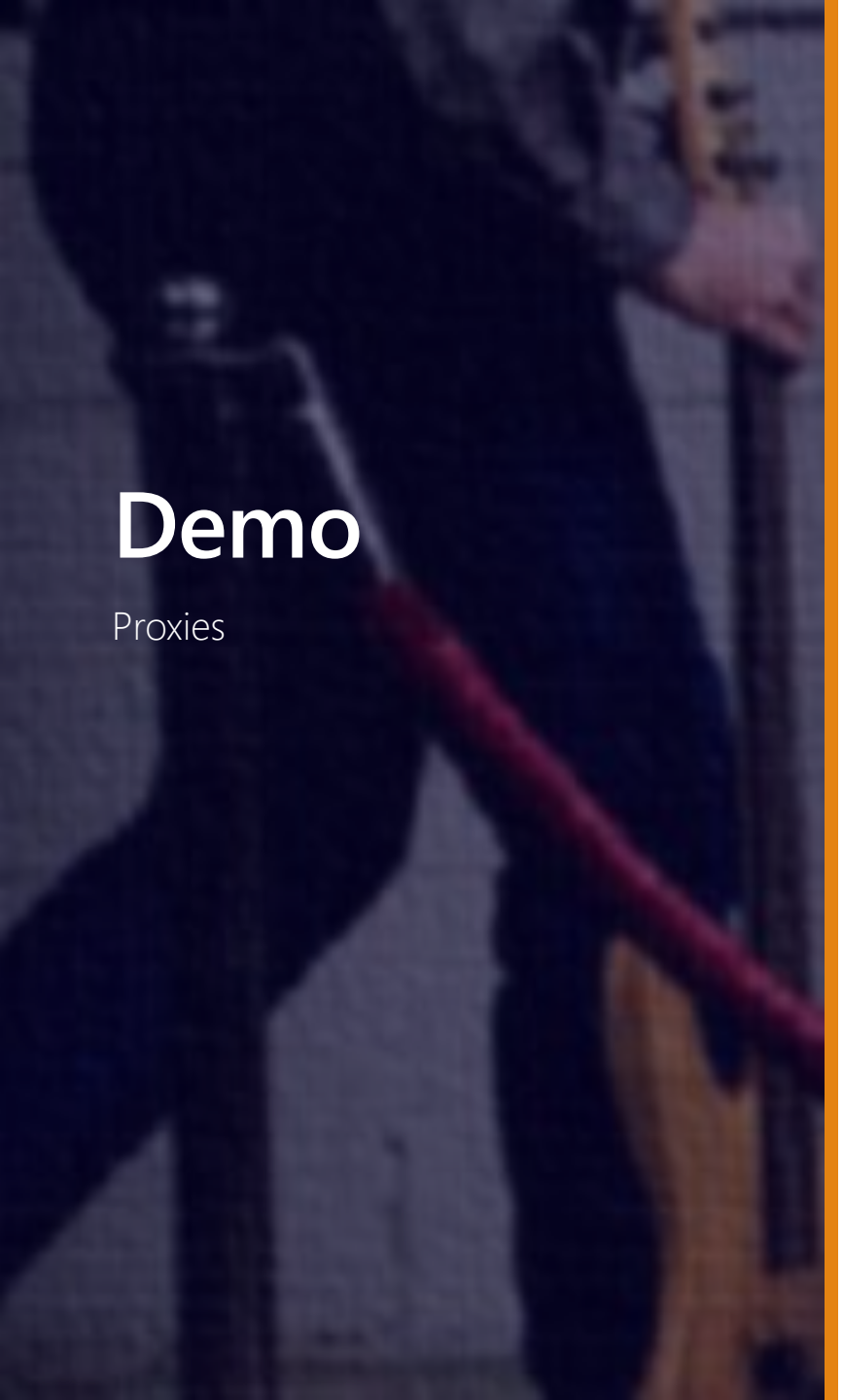
Design: API Abstraction and Composition



Key:

HttpTrigger function endpoints

API proxy endpoints



Proxies

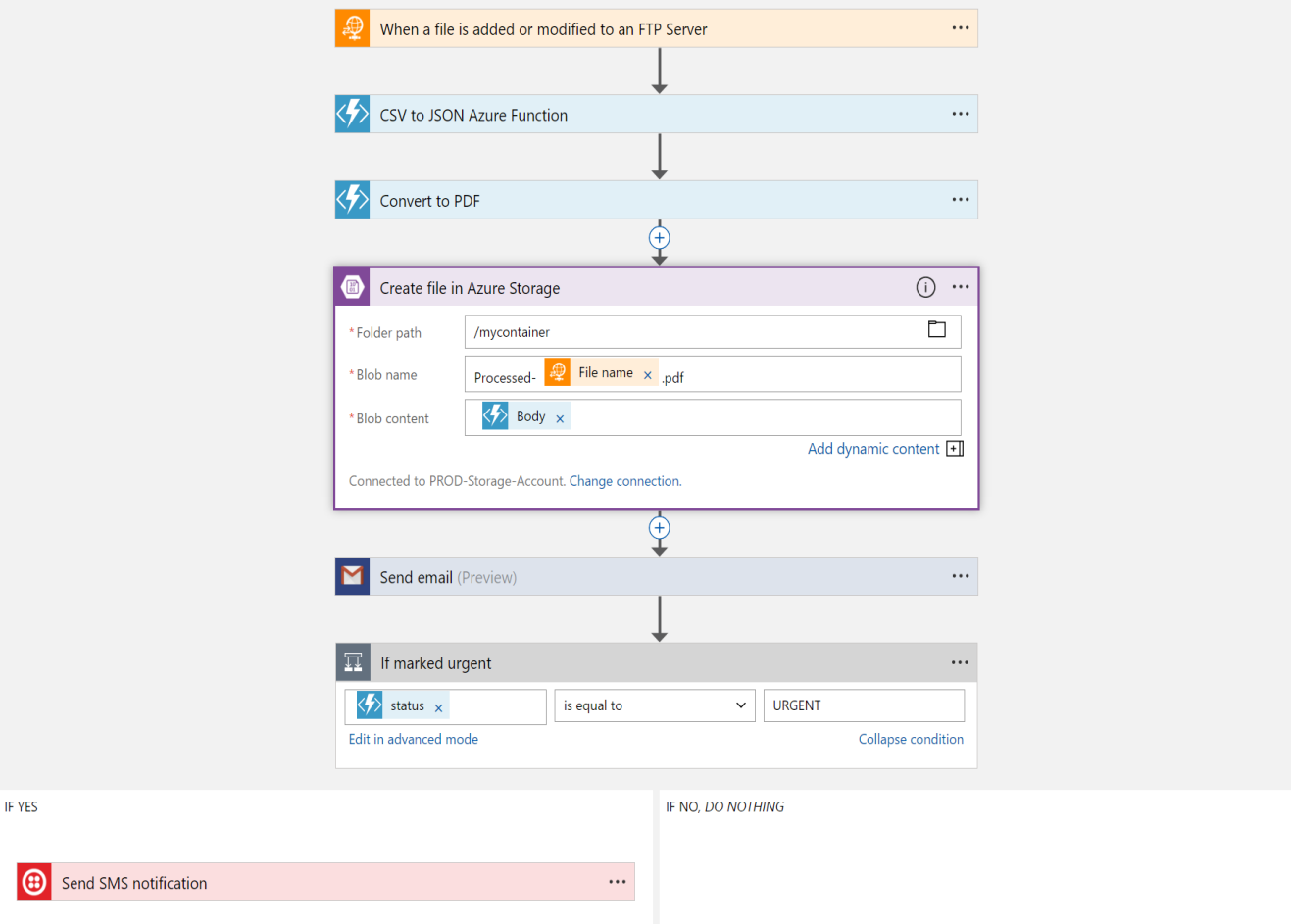
Logic Apps Workflow Designer

Workflow in the cloud

Powerful control flow

Connect functions and APIs

Declarative definition to persist in source control and drive deployments



Logic Apps

Cloud APIs and platform

- Supports over 125 built-in connectors
- Scales to meet your needs
- Enables rapid development
- Extends with custom APIs and Functions

API connections

- Authenticate once and reuse

SaaS

- appFigures
- Asana
- Azure API Management
- Azure App Services
- Azure Automation
- Azure Cognitive Face API
- Azure Cognitive LUIS
- Azure Cognitive Text Analytics
- Azure Cognitive Vision
- Azure Data Lake Store
- Azure Document DB
- Azure Event Hub
- Azure Functions
- Azure Machine Learning
- Azure Resource Manager
- Azure Service Bus
- Azure SQL
- Azure Storage Blob
- Azure Storage Queues
- Basecamp
- Bing Search
- BitBucket
- Bitly
- Blogger
- Box
- Buffer
- Campfire
- Chatter
- Common Data Service
- Disqus
- DocuSign
- Dropbox
- Dynamics AX Online
- Dynamics CRM Online
- Dynamics CRM Service Bus
- Dynamics Financials
- Dynamics Operations
- Easy Redmine
- Eventbrite
- Facebook
- FreshBooks
- Freshdesk
- GitHub
- Gmail
- Google Calendar
- Google Contacts
- Google Drive
- Google Sheets
- Google Tasks
- GoTo Meeting
- GoTo Training
- GoTo Webinar
- Harvest
- HelloSign
- Infusionsoft
- JIRA
- Insightly
- Instagram
- Instapaper
- MailChimp
- Mandrill
- Medium
- Microsoft Project Online
- Microsoft Translator
- MSN Weather
- Muhimbi PDF
- Office 365
- Office 365 Users
- Office 365 Video
- Onedrive
- OneDrive for Business
- OneNote
- Outlook.com
- Outlook Tasks
- PagerDuty
- Pinterest
- Pipedrive
- Pivotal Tracker
- Power BI
- Project Online
- Redmine
- Salesforce
- Salesforce Chatter
- SendGrid
- SharePoint Online
- Slack
- SmartSheet
- SparkPost
- Stripe
- Survey Monkey
- Todoist
- Toodledo
- Trello
- Twilio
- Twitter
- Typeform
- UserVoice
- VS Team Services
- Webmerge
- Wordpress
- Wunderlist
- Yammer
- YouTube
- Zendesk

Protocols/Native

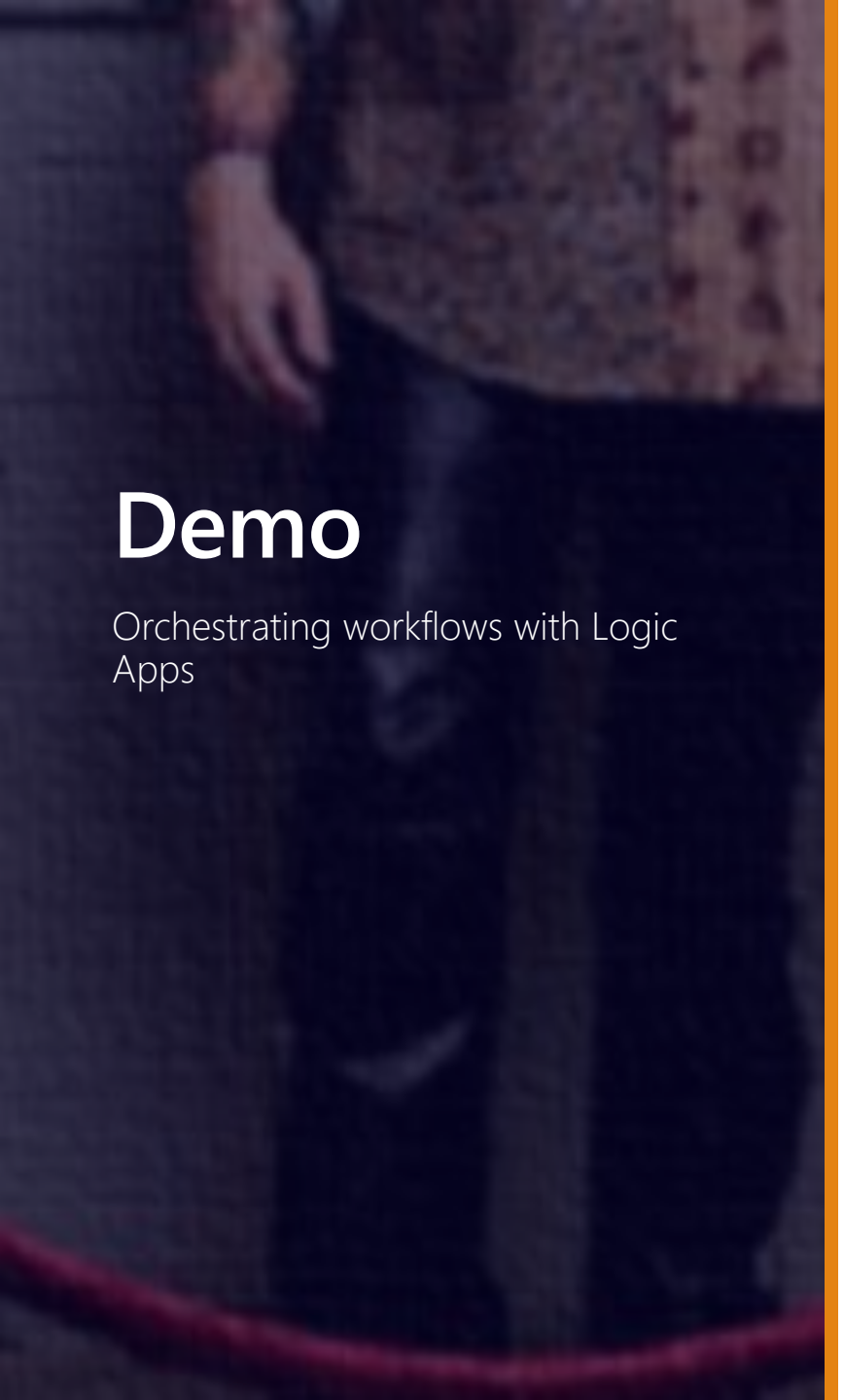
- HTTP, HTTPS
- HTTP Webhook
- FTP, SFTP
- SMTP
- RSS
- Compose, Query, Parse JSON
- Wait
- Terminate
- Workflow

XML and EDI

- XML Validation
- Transform XML (+Mapper)
- Flat File Encode
- Flat File Decode
- X12
- EDIFACT
- AS2
- Integration Account Artifact Lookup

Hybrid

- BizTalk Server
- File System
- IBM DB2
- Informix
- Oracle DB
- SharePoint Server
- SQL Server
- SAP
- Websphere MQ



Demo

Orchestrating workflows with Logic Apps

Orchestrating workflows with Logic Apps

Local Development Tooling Options

Azure Functions Core Tools

- Provides the entire Functions runtime
- Trigger off of Azure events and debug locally

JavaScript

- Use Visual Studio Code or any Node debugger

C#

- Use Visual Studio 2015 or 2017
- Use class libraries with attributes in Visual Studio 2017

C# and Visual Studio

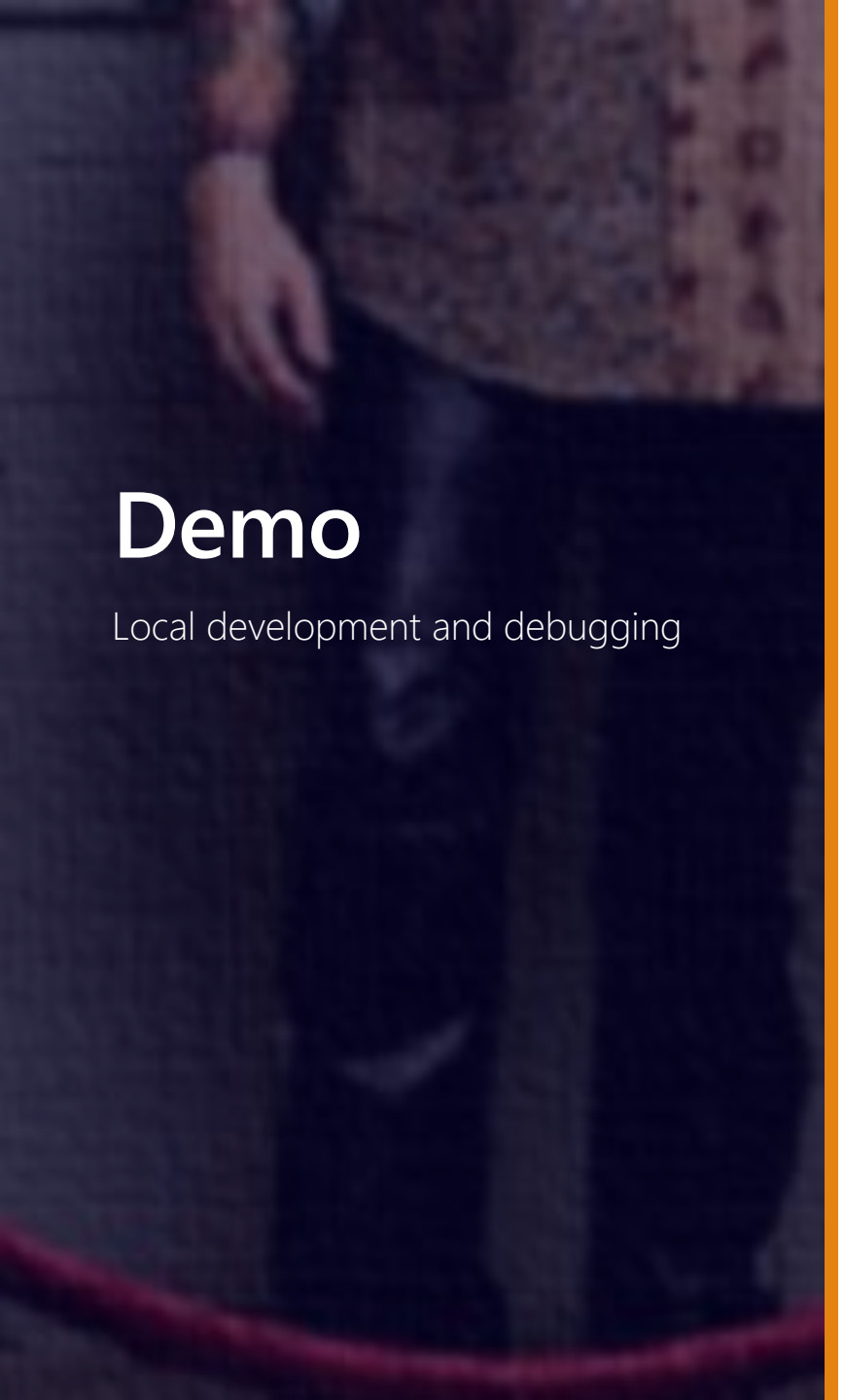
Based on class libraries

Get the full power of IntelliSense, unit testing, and local debugging

Use WebJobs attributes to define triggers and bindings

```
function.json | OrderHandler.cs | GetLatest5Orders.sql
OrderProcessing | BuildOrderProcessor.OrderHandler | Run(HttpRequestMessage req, IAsyncCollector<String> event

0 references
15  public static class OrderHandler
16  {
17      [FunctionName("OrderWebhook")]
        0 references
18      public static async Task<HttpResponseMessage> Run(
19          [HttpTrigger] HttpRequestMessage req,
20          [Queue("aievents1", Connection = "AiStorageConnection")] IAsyncCollector<String> eventOutput,
21          TraceWriter log)
22      {
23          log.Info($"Webhook was triggered!");
24
25          string jsonContent = await req.Content.ReadAsStringAsync();
26          dynamic data = JsonConvert.DeserializeObject(jsonContent);
27
28          await eventOutput.AddAsync(
29              JsonConvert.SerializeObject(GetLogData(data)));
30
31          int orderId = PlaceOrder(data);   ≤ 727ms elapsed
32
33          return req.CreateResponse(HttpStatusCode.OK, new {orderNumber = orderId });
34      }
126 %

Watch 1
Name                                          Value                                                    Type
((dynamic)data).email="builddebug@test.com"   "builddebug@test.com"                                   dynamic
data                                          {{ "time": "2017-05-09T03:26:09.407Z", "email": "builddebug@test.com", "order": [ { "type": "Margerita", "size" object {
```

Learn more at https://aka.ms/vs2017functiontools

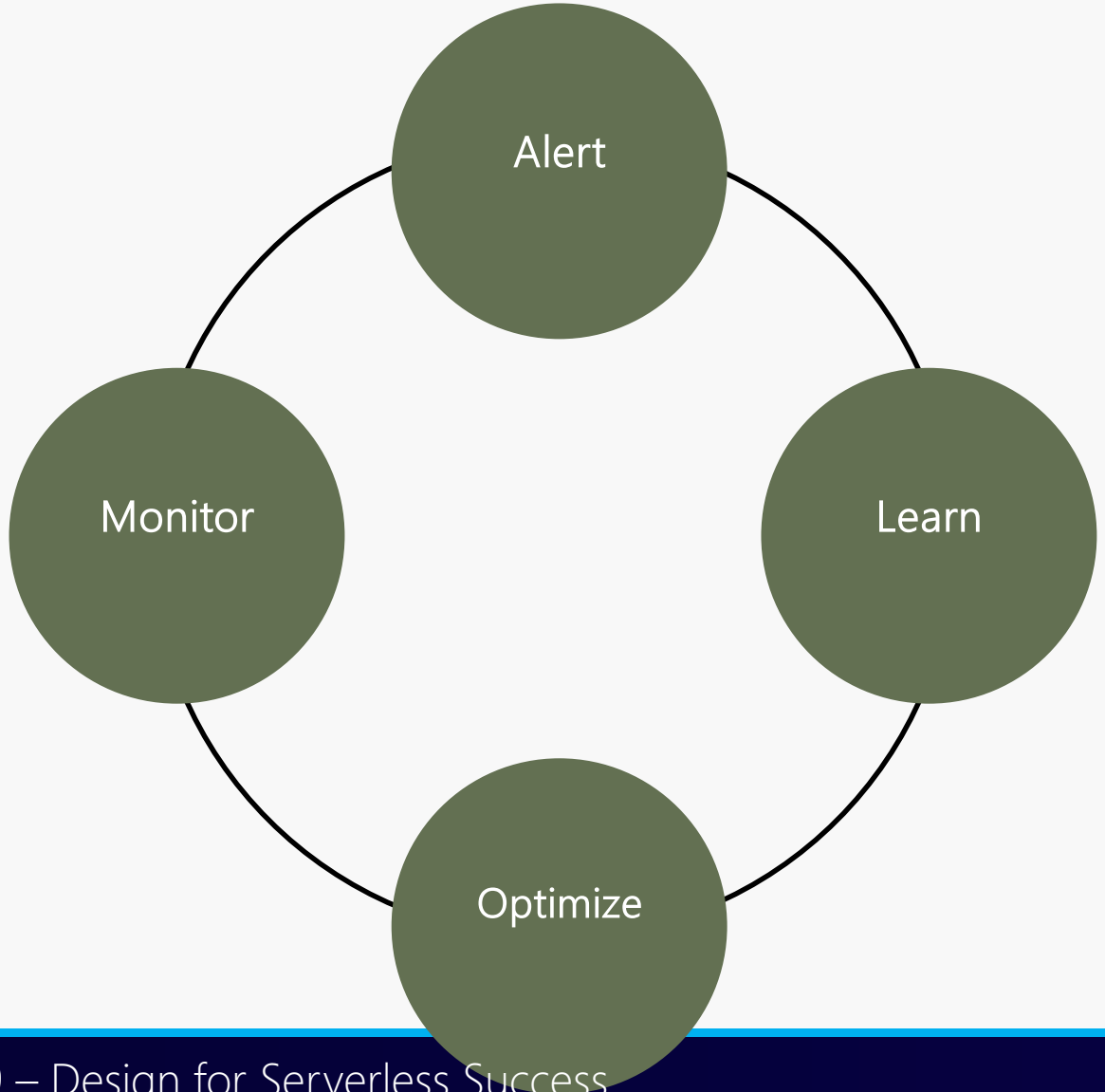


Demo

Local development and debugging

Local Development and debugging with Visual Studio 2017 and the Functions extension

Key Scenarios for Monitoring

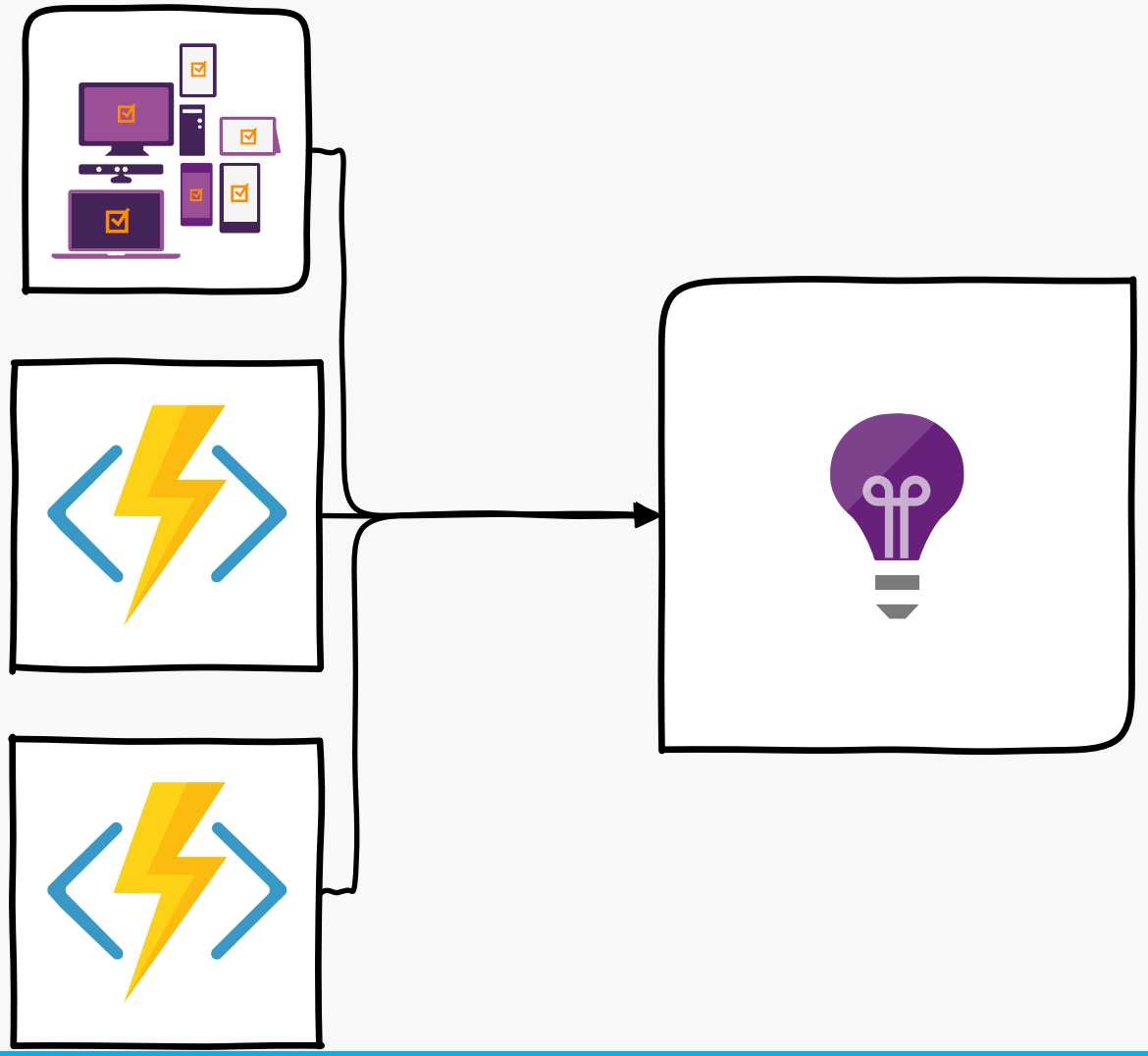


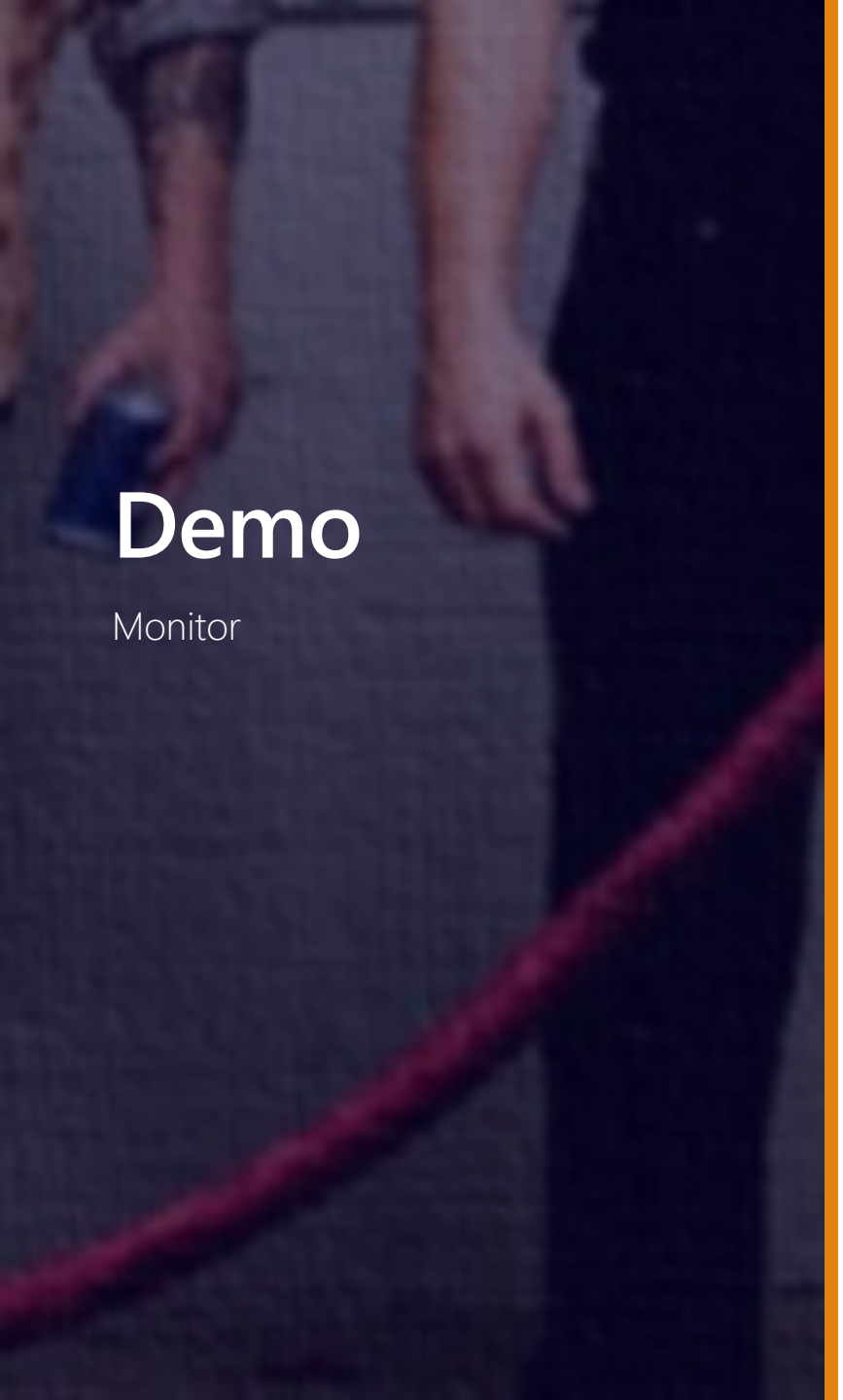
Azure Application Insights

Extensible Application Performance Management (APM)

Rich data: Metrics, Traces, Exception tracking, Dependencies, Page Views, User data, custom events

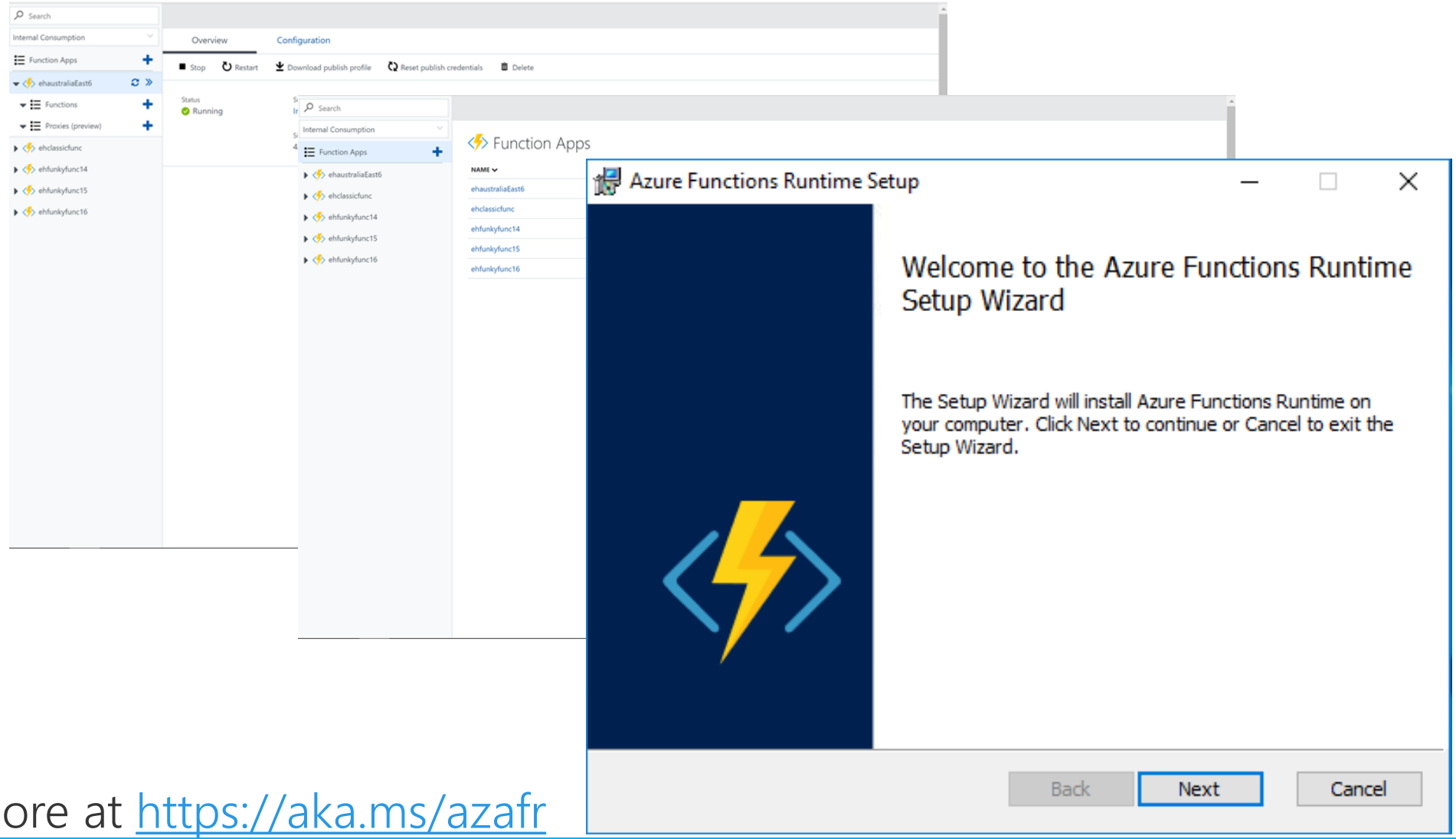
Easy to use graph/alerts, powerful analytics portal, integration with PowerBI and other analytics services





Monitor

Azure Functions Runtime Preview



Learn more at https://aka.ms/azafr

Azure Functions Runtime

Developer experience

Same consistent Programming Model

Same Azure Functions portal

Publish directly from Visual Studio tooling

Leverage triggers: timer trigger and new SQL Service Broker trigger

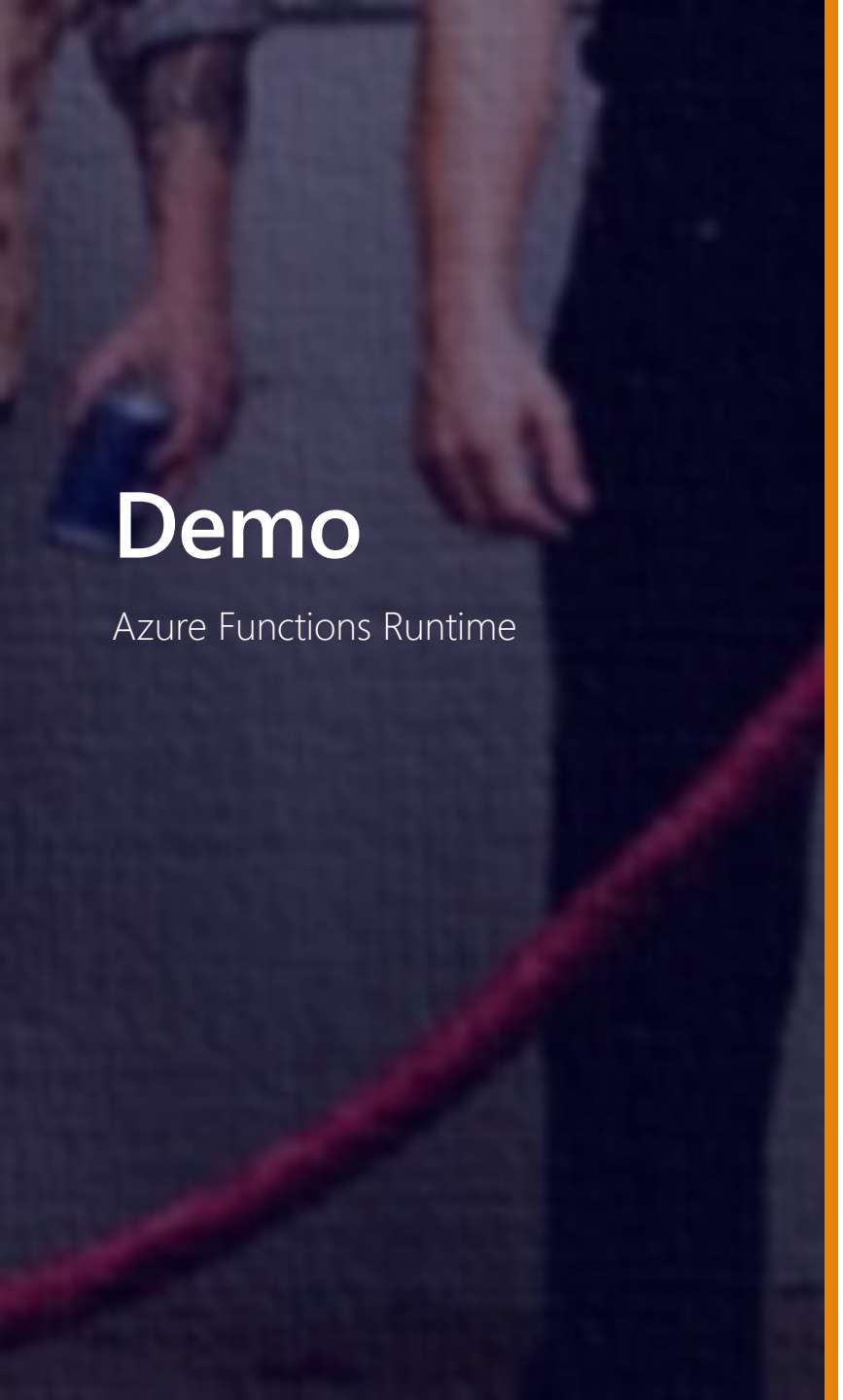
Administrator features

Take advantage of Azure Functions on premises

- Workers can run in spare compute – i.e. desktops left on overnight within orgs

Only provision two types of roles

- Management Role – Hosts Portal, Publishing Endpoint and
- Worker Role – Runs Function in Windows Server Containers



Demo

Azure Functions Runtime

Sessions

https://channel9.msdn.com/Events/Build/2017/{session}

- B8020 – Cognitive Services & Computer Vision Made Easy
- B8049 – Enable intelligence with Azure IoT Edge
- B8096 - Windows Template Studio
- B8001 – Three Runtimes One Standard .NET Standard
- B8048 – Introducing .NET Core 2.0
- B8027 – Azure Debugging & Snappoints
- B8039 – Design for Serverless Success
- B8099 – Xamarin Tools
- B8103 – The Future of Xamarin Development
- B8072 – Overview of Mobile Center

Resources

Mobile Center

- http://azure.com/cognitive
- http://microsoft.com/net/core/preview
- http://visualstudio.com
- http://mobile.azure.com
- http://aka.ms/azafr (functions runtime)

Time to tell me how I did!

Please fill out your eval.

When you are done,
pass them all to the left.

Thank You!