



Microsoft Azure Workflows,
A prediction

Nice to meet you



Sam VANHOUTTE
CTO

6 year - BizTalk V-TSP
1st year - Integration MVP



sam.vanhoutte@codit.eu



+32 474 849 993



@SamVanhoutte



be.linkedin.com/in/samvanhoutte/



2000 Belgium
2004 France
2013 Portugal



Microsoft®
BizTalk® Server



Windows® Azure™

Focused on integration solutions

2012 & 2013

Partner of the Year

Award Finalist
Application Integration



International Focus -
HQ in BE



> 60 Active integration customers



e-news + SoMe



60 employees
> 50 consultants BizTalk certified

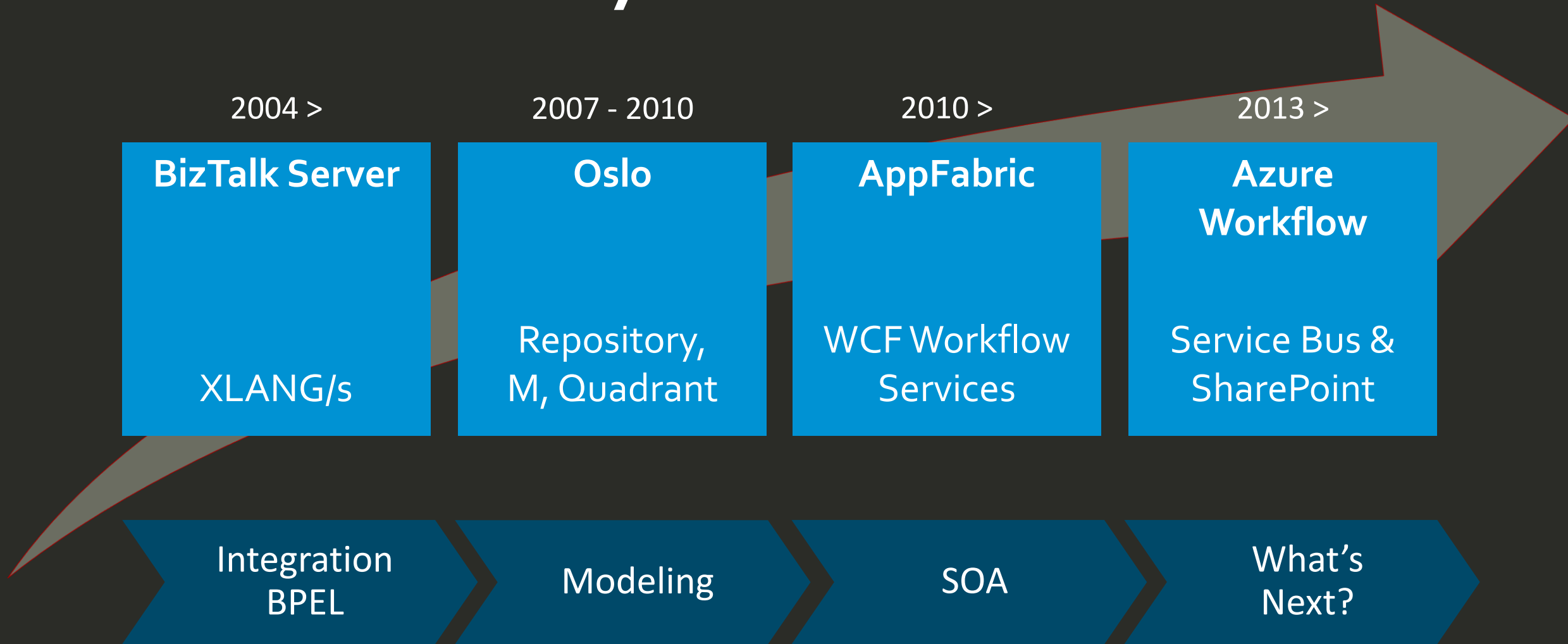
Agenda

- Microsoft & Workflow – a long history
 - Workflow designer, activities
- Workflow Manager
 - Architecture
 - Multi-tenancy & isolation
 - Pub / sub
 - State machines
- Conclusions & future

Microsoft & Workflow

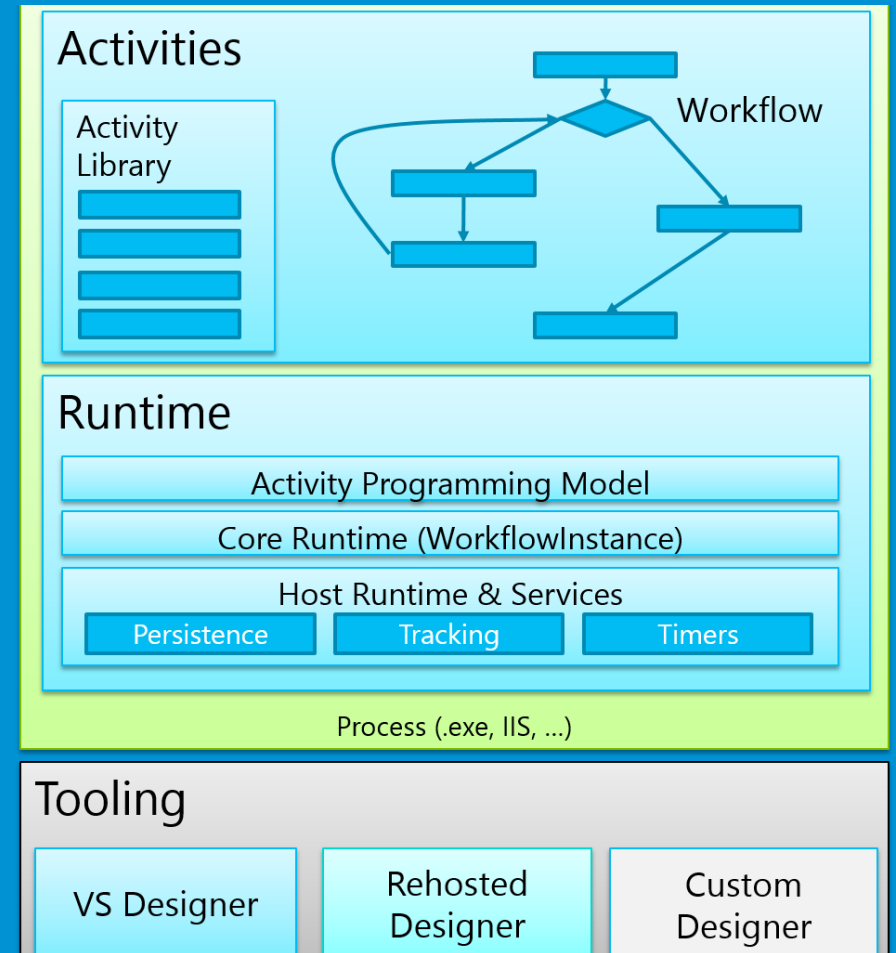
A bit of history

Workflow history



The ART of Workflow*

- Declarative authoring of programs that coordinate work, using:
 - Activities
 - Runtime
 - Tooling



Workflow improvements in .NET 4.5



Authoring Improvements

Be more efficient when authoring your workflows

C# Expressions,
Designer Improvements,
State Machine,
Contract-First



Versioning

Basic building blocks to enable building a versioning story

Workflow Identity,
Side by Side Versioning,
Dynamic Update



Runtime Enhancements

Improve runtime performance and extensibility

VB Expressions
Performance,
Expressions Extensibility,
Partial Trust

Improvements across
Activities, Runtime, and Tooling

Workflow Manager

An overview

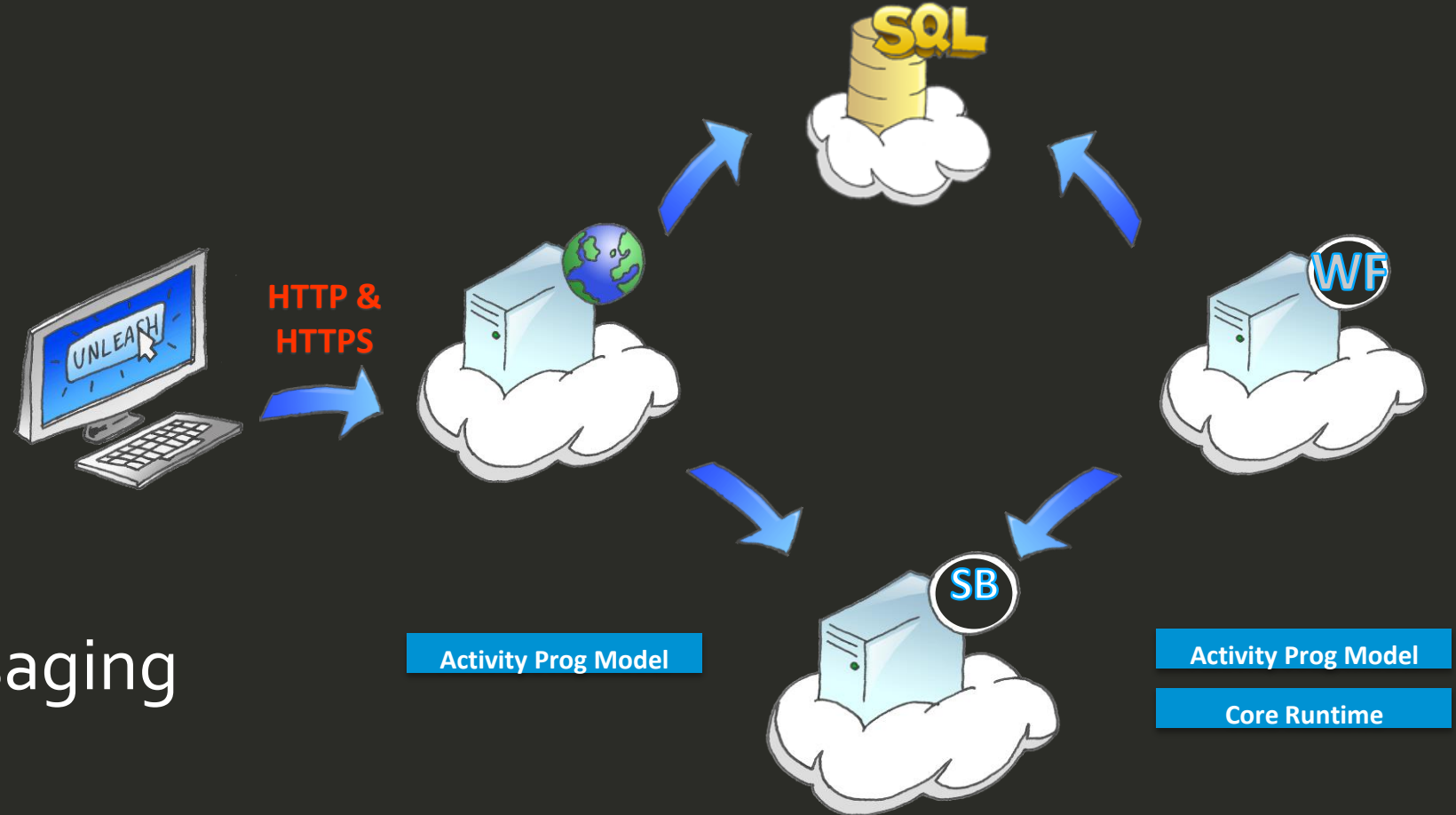
Workflow Manager

Design goals

- Multi-tenancy
 - High-density
 - Isolation & security
-
- Biggest customer ?

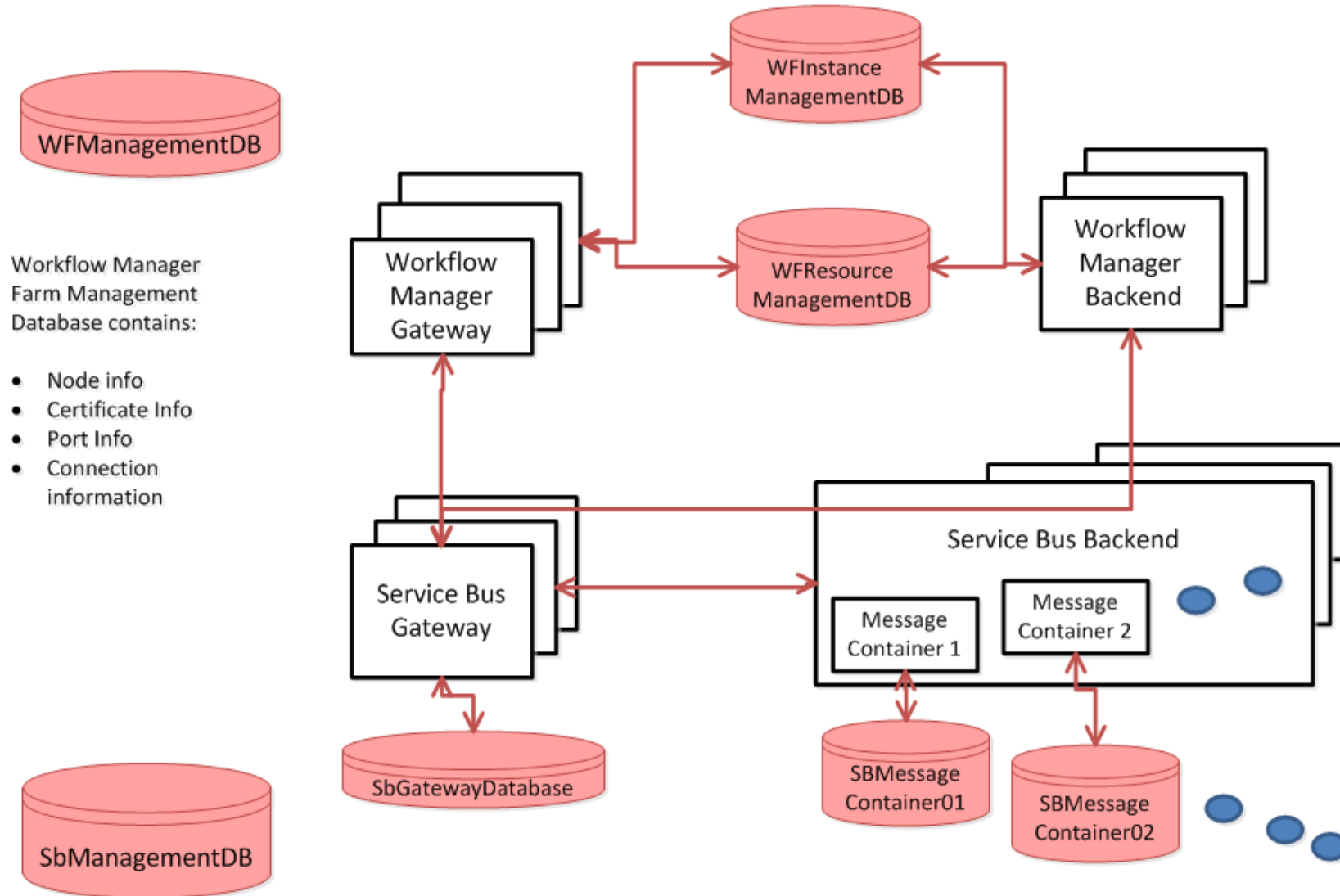
What is Workflow Manager?

- Scale & Reliability
- Multi-tenancy
- Cloud-based Messaging
- WF₄ Prog Model



Architecture

Deployment diagram



Workflow Manager Infrastructure

IIS

One App Pool:
WorkflowMgmtPool

One site:
Workflow Management Site

Windows Services

WorkflowService Backend
ServiceBus Backend
ServiceBus Gateway
FabricHostSvc

SQL

Workflow Databases

- WFManagementDB
- WFInstanceManagementDB
- WFResourceManagementDB

Service Bus Databases

- SBManagementDB
- SBGatewayDatabase
- SBMessageContainerxx

Installing WF Manager

→ Install

- Using WEB Platform Installer (or download center)
- Supported on Windows Server 2012, Windows 8, Azure VMs

→ Configure

- Using configuration wizard or PowerShell
- Create / Join a Farm (high availability / scale-out)

→ Supported back-ends

- SQL Server (Express + higher) & SQL Azure
- Service Bus 1.0 for Windows Server (not service!)

Testing & Debugging

Microsoft.Workflow.TestServiceHost

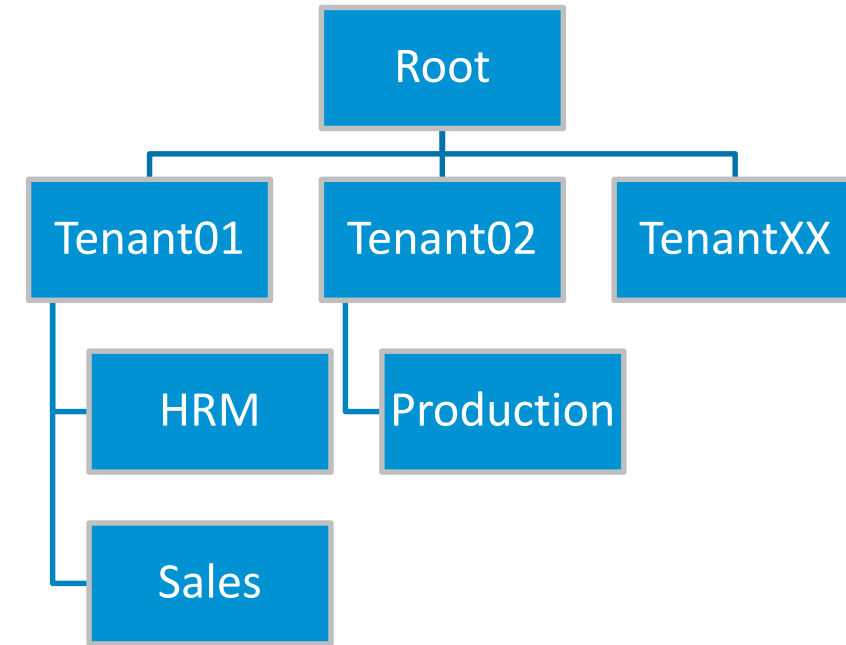
- Part of Workflow Manager Tools for Visual Studio (2012 only!)
- TestService (console app)
 - Deploy & run workflows in it
 - Attach Visual Studio to the process
 - Update exe.config
- Some limitations

Multi-tenancy

Through scopes & isolation

Scopes

- Workflow manager scope
 - Dedicated service bus topic
 - Gets created at deployment of first workflow
- “A scope is a named and securable container for Activities, Workflows, Instances, configuration and child Scopes.”



Sandboxing

Workflow Manager 1.0 Trusted Surface

- Set of trusted types & activities
- Fully declarative authoring
 - Composite custom activities possible
- Whitelisting custom activities possible
 - AllowedTypes.xml (WFWebRoot\bin & Artifacts folder)
 - Disable sandboxing
 - `Set-WFServiceConfiguration`
 - `-ServiceUri:https://server:12290`
 - `-Name:WorkflowServiceAllowUnsafeTypes`
 - `-Value:true`

Sandboxing

Workflow Manager 1.0 Trusted Surface

.NET Data Types

- String
- DateTime & TimeSpan
- Int32 & Double
- Boolean
- Guid
- ICollection & IList
- IDictionary & KeyValuePair
- DynamicValue
- Exception
- Uri

WF Manager activities

- Dynamic Value
- Http Activities
- Pub/Sub Activities
- Time Activities
- Configuration & External variables
- Data Type functions

System.Activities, except:

- InvokeMethod
- New
- Cast
- VisualBasicValue, VisualBasicReference
- LambdaValue, LambdaReference
- TransactionScope
- Persist

Using complex data structures

DynamicValues

- Recursive key-value pairs
- Address, using paths
 - Customer/FirstName > John
 - Company > Contoso
 - Regions(2) > LA

Name	Value	
Customer	Name	Value
	FirstName	John
	LastName	Doe
	Age	42
Company	Contoso	
Regions	EU	
	US	
	LA	

External communication

Pub/Sub & Http activities

Http activities

- No 'HttpReceive' activities
 - Use REST api
 - or Pub/Sub activities
 - or WorkflowClient
- Support for security tokens, REST services ...

Pub/Sub activities

→ Leveraging Service Bus Topics & Subscriptions

Activities

→ **BuildMatchAllFilter** activity > define filter

→ **Subscribe** activity > create SB subscription behind the scenes

→ **ReceiveNotification**

→ With Filter > temporary subscription, deleted after 1st message

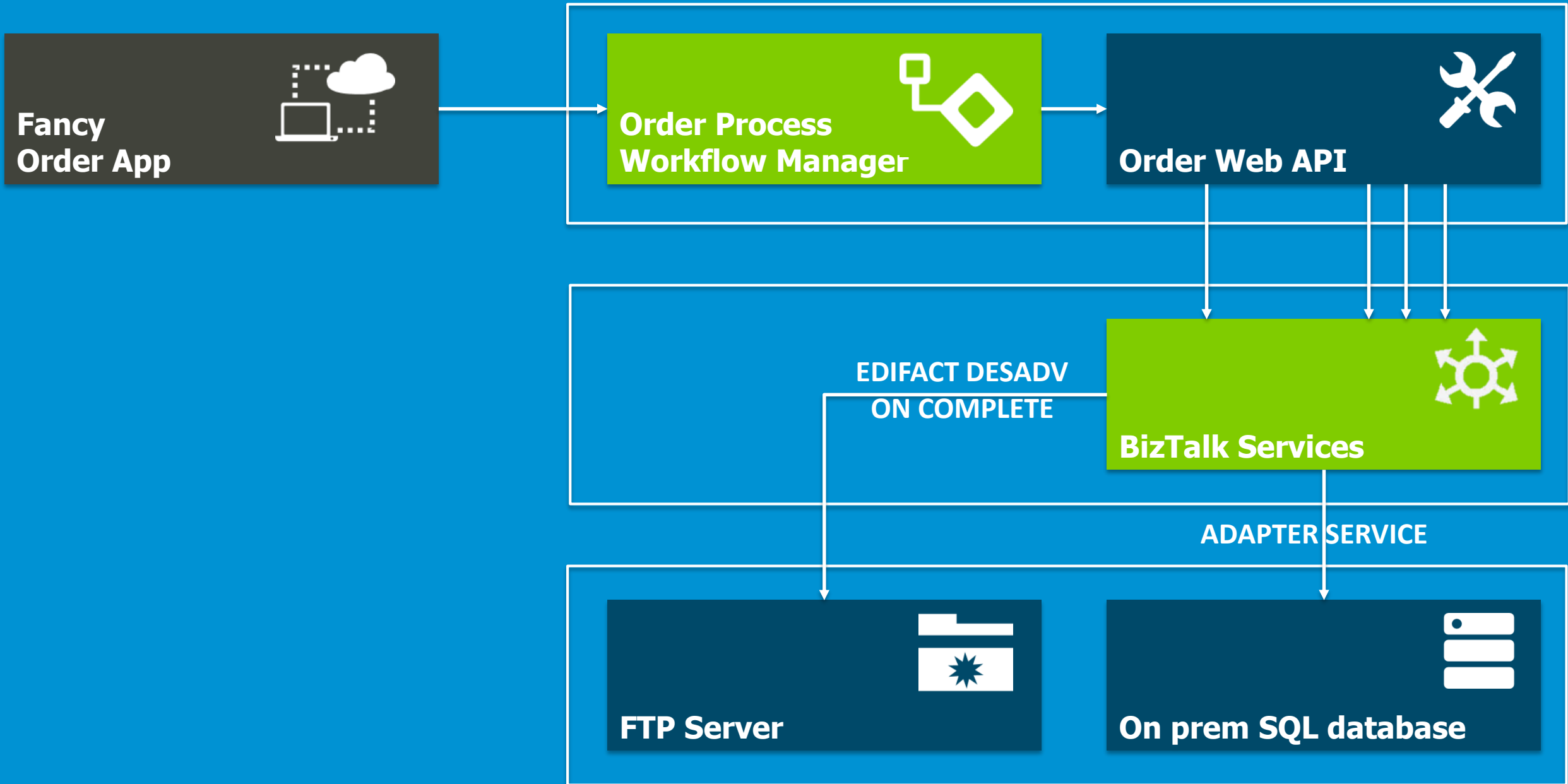
→ Using SubscriptionHandle > subscription remains existing

→ **Unsubscribe** (implicitly when subscriptionhandle out of scope)

Demo 01

Pub / Sub & Http activities
Integration with WABS





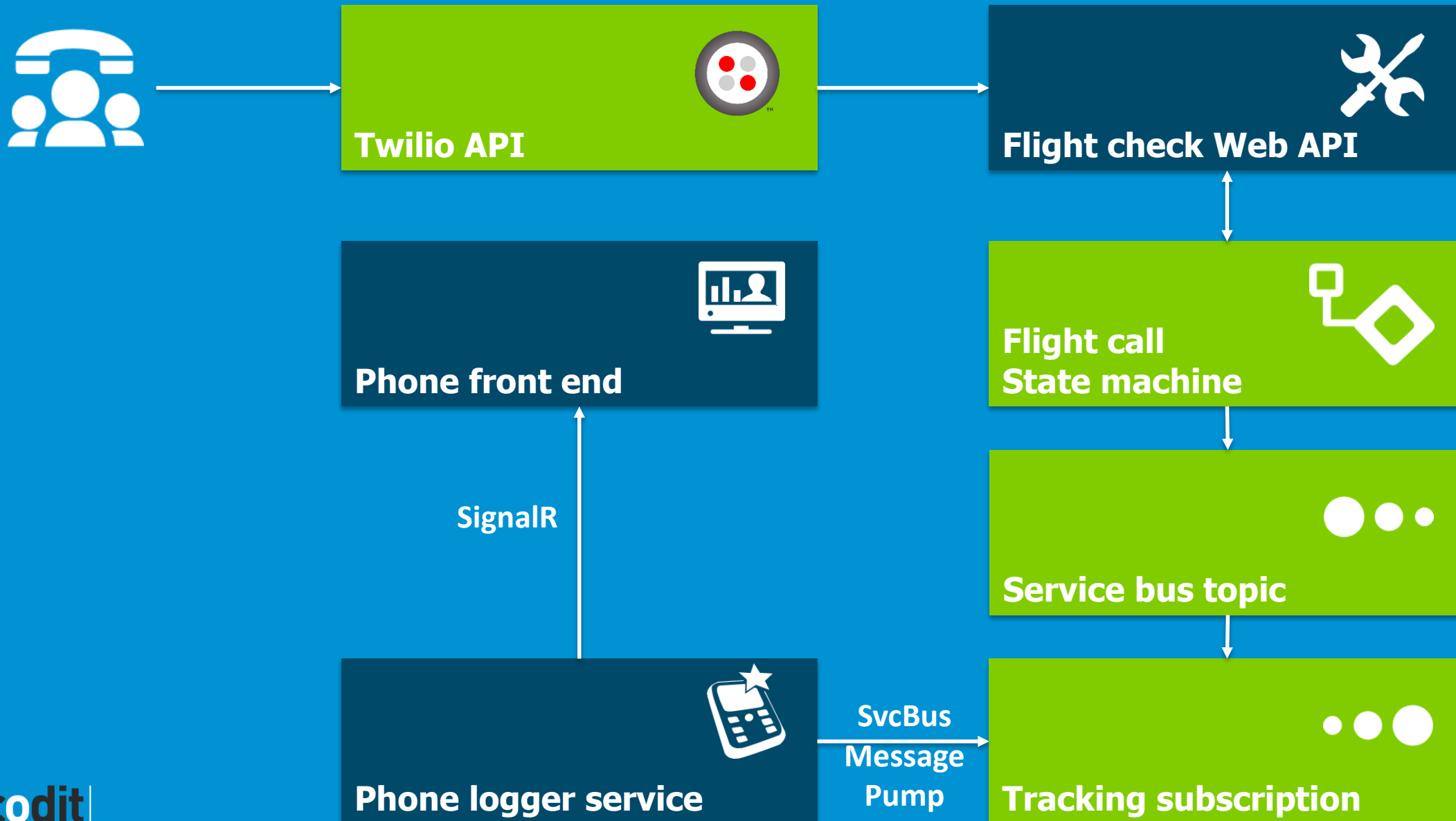
Demo 02

State machines

Twilio phone call orchestrated by WF Manager



Twilio phone call state machine



Contest : call <removed> (toll free)

Level 1

Welcome
message

Level 2

1. Check in

2. Upgrade
flight

Cancel
flight

Level 3

1. With
luggage

2. Without
luggage

1. To
business

2. To 1st
class

1. Confirm

2. Leave

Conclusions

- Workflow manager is multi-tenant & cloud-ready platform
- Look out for upcoming BPM features by the WABS team
 - BPMN Support announced



Thank you!

Keep in touch.



LinkedIn



@Sam
Vanhoutte



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