

Naples, December 10th 2018



# IoT and Cloud for Digital Signage

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Microsoft MVP



@MarcoDalPino



redhat®



UNIVERSITÀ DEGLI STUDI DI NAPOLI  
FEDERICO II



Konfx.



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iOS

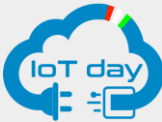


Android



# Digital Signage

What is











# SILENT STUDY SPACE

7<sup>TH</sup> FLOOR



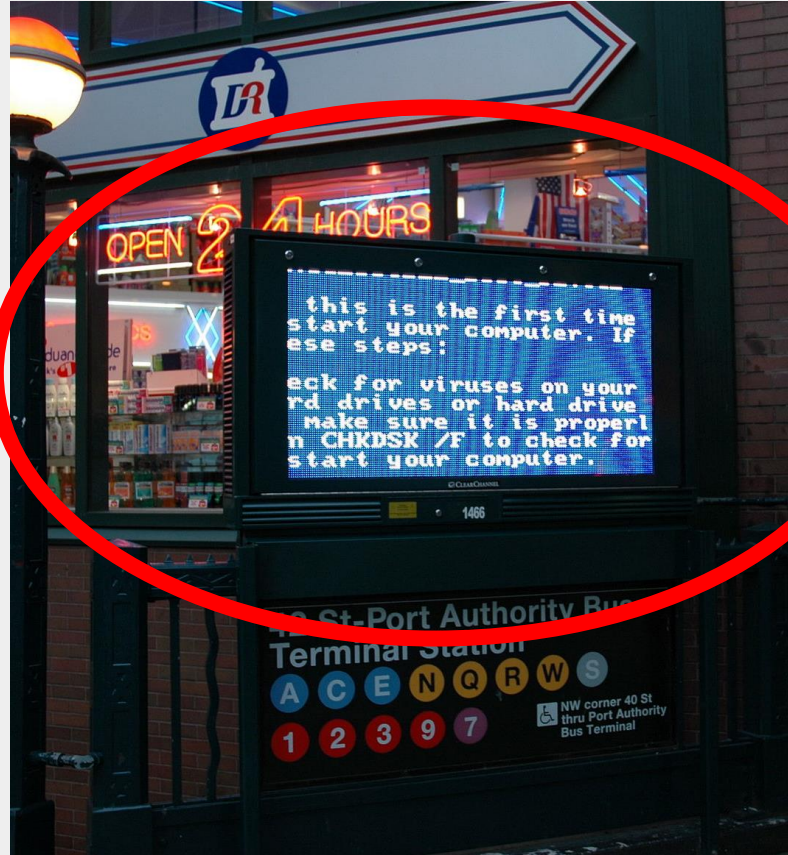
## MEETING ROOM SIGNS THE GATEWAY DRUG OF DIGITAL SIGNAGE

DAVE HAYNES  
SIXTEEN•NINE

But...



# Everything is OK?




<https://bit.ly/2EmTEY3>

Blog Post by Valter Minute



Opportunity | Risk





**What happens when you connect  
a device to the internet?**

**“Ransomware attacks will target more IoT devices in 2018”**

**“Huge IoT botnet may be used for Ukraine attack”**

**“When smart gadgets spy on you: Your home life is less private than you think”**

**“Industrial IoT to equip new era of corporate intruders coming in through devices”**

**“Security experts warn of dangers of connected home devices”**

**“Hacking these IoT baby monitors is child’s play, researchers reveal”**

**“Hackers infect 500,000 consumer routers all over the world with malware”**

**“Your smart fridge may kill you: The dark side of IoT”**

**“The Lurking Danger of Medical Device Hackers”**

**“Why the KRACK Wi-Fi mess will take decades to clean up”**

**“Hacking critical infrastructure via a vending machine? The IOT reality”**

**“Protecting Your Family: The Internet of Things Gives Hackers Creepy New Options”**



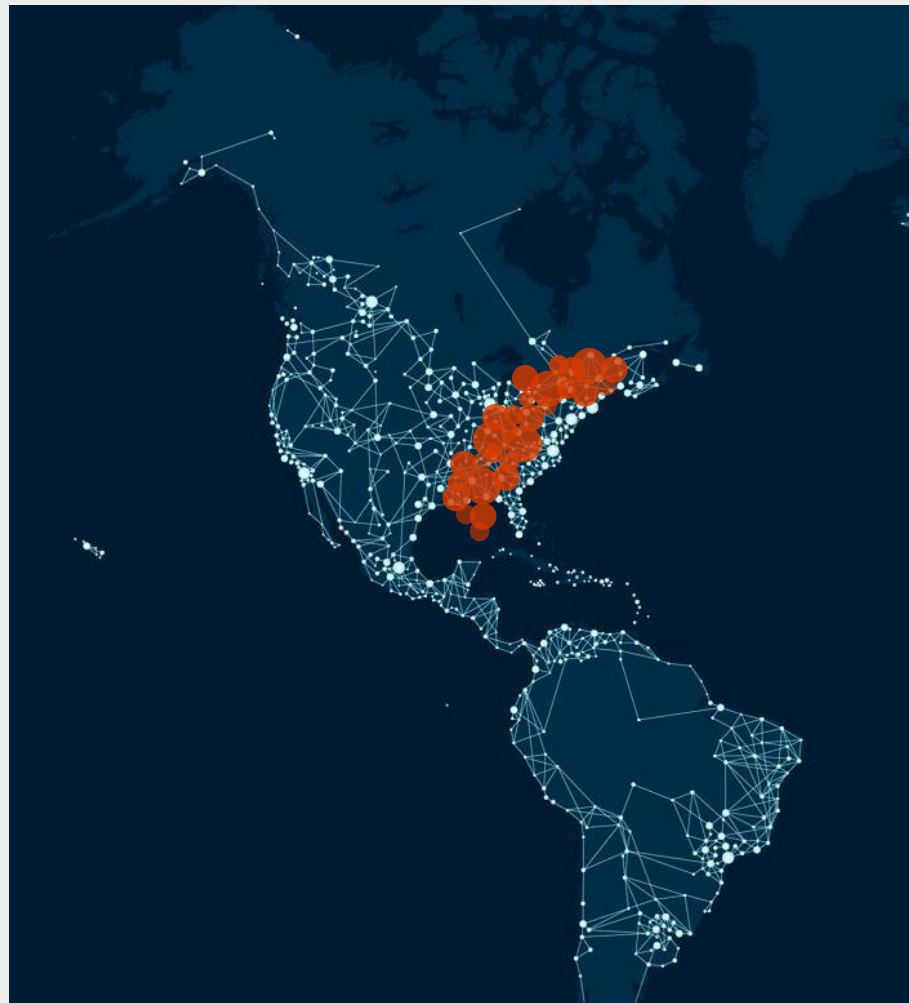
Everyday devices are used to launch an attack that takes down the internet for a day

100k devices

Exploited a well known weakness

No early detection, no remote update

# Mirai Botnet attack





# Hackers attack casino

Attackers gain access to casino database  
through fish tank

Entry point was a connected thermometer

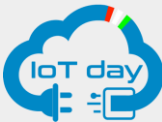
Once in, other vulnerabilities were exploited

Gained access to high-roller database

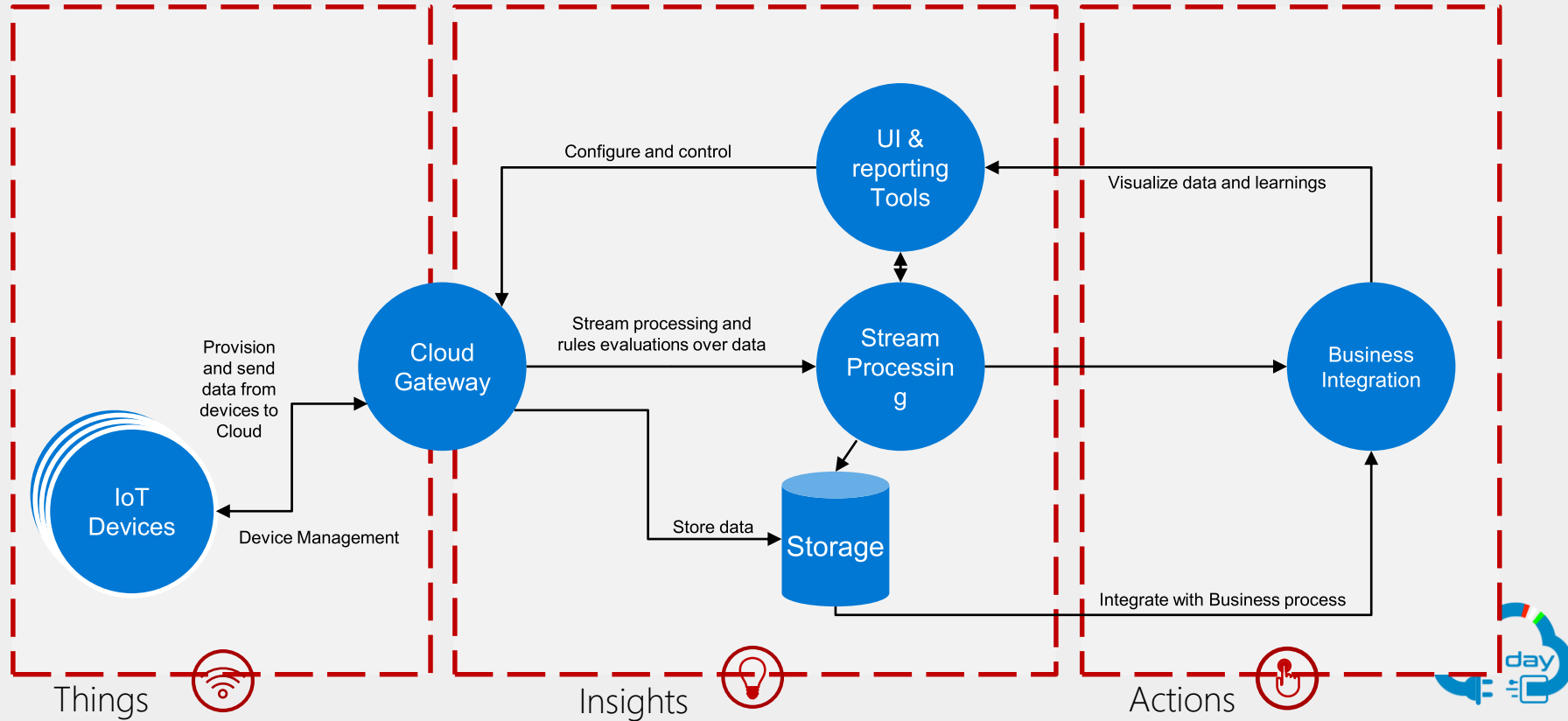


# IoT System Architecture

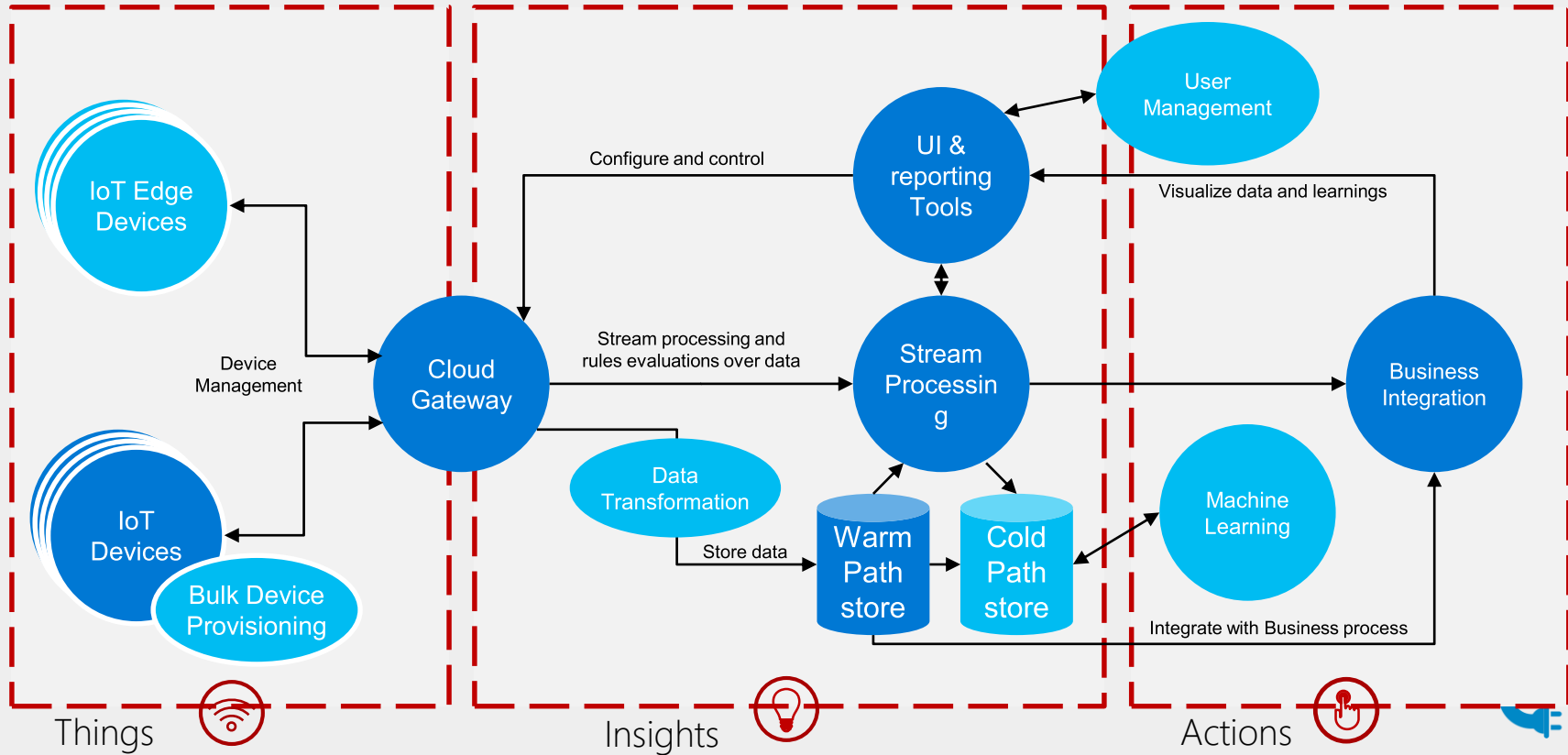
Description



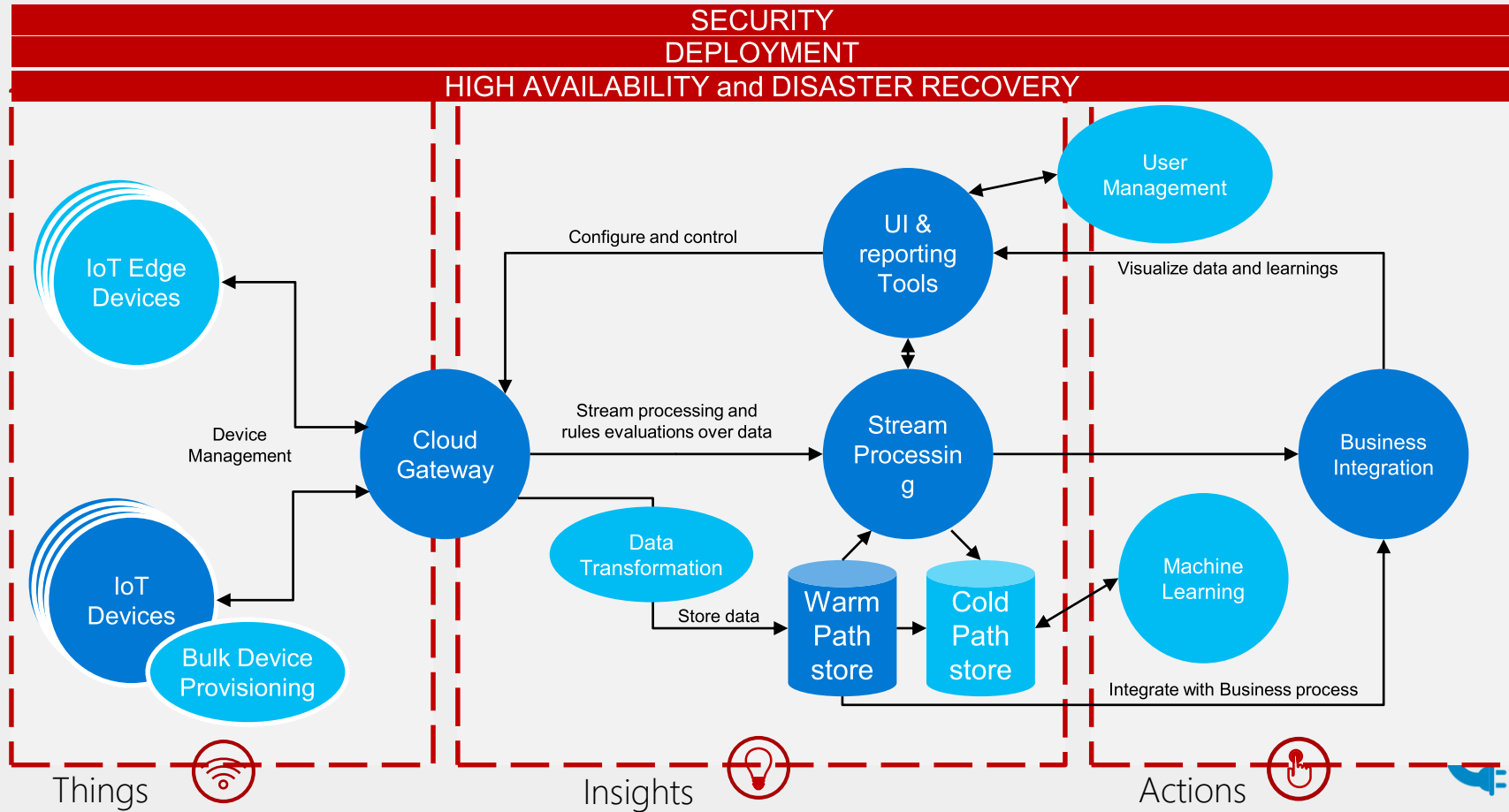
# Core Subsystems



# All Subsystems

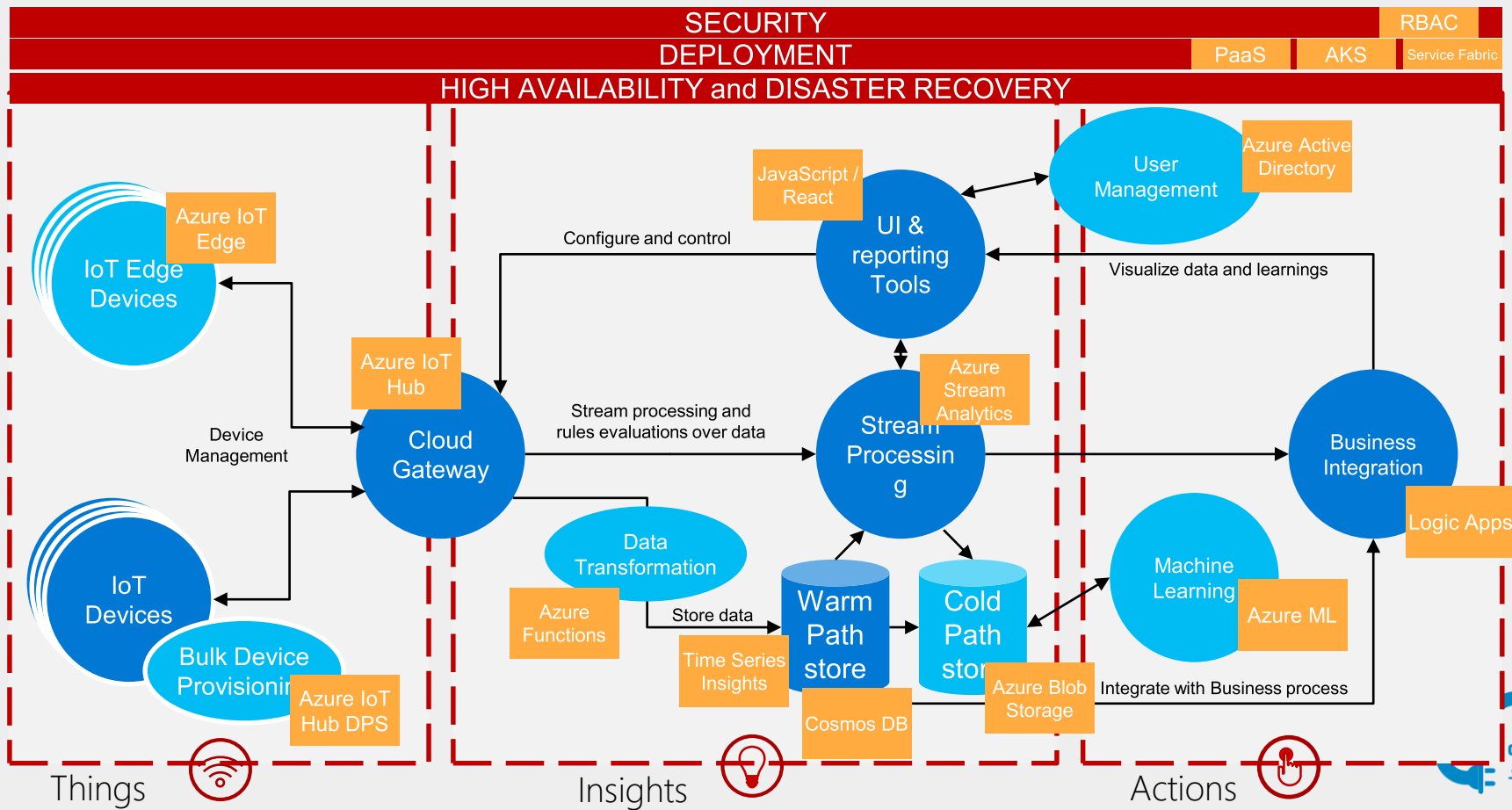


# All Subsystems & Cross Cutting Needs





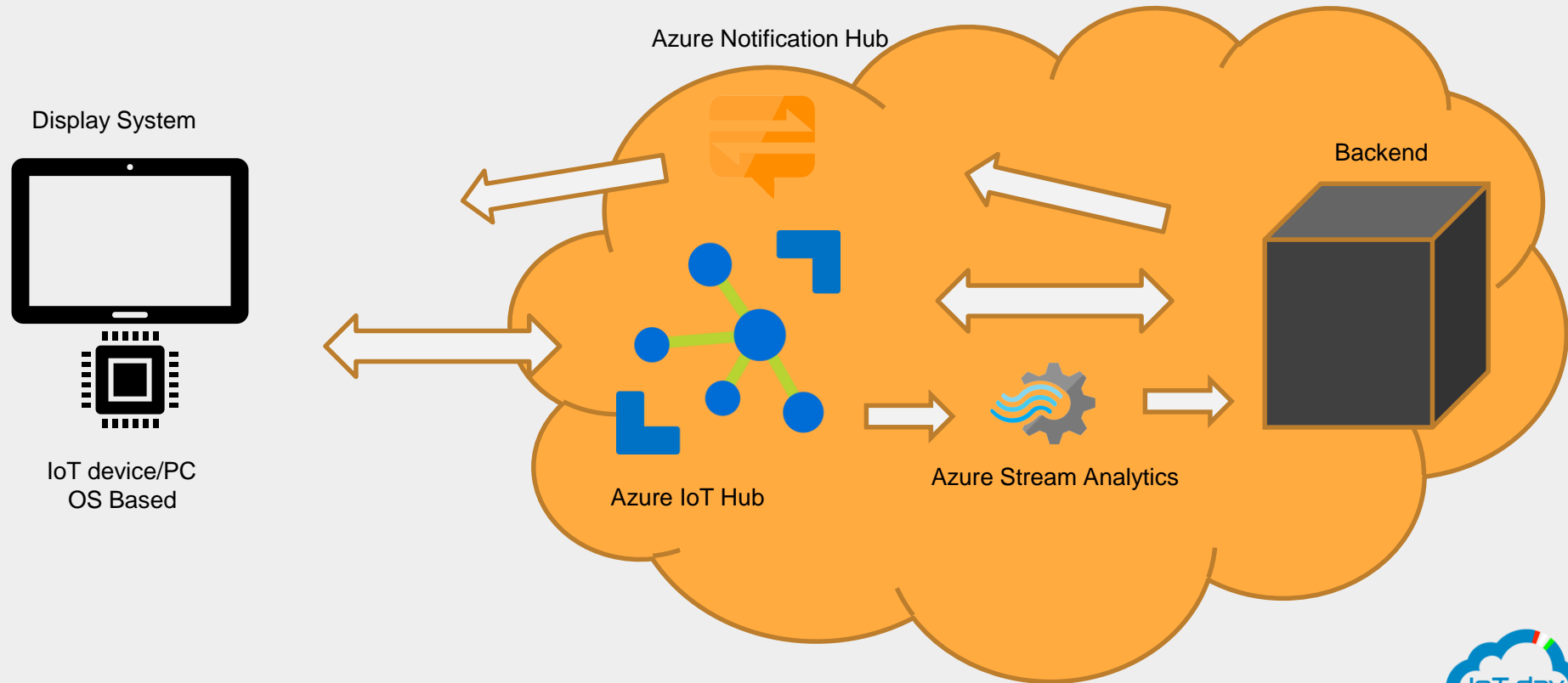
# Tech choices



# Digital Signage

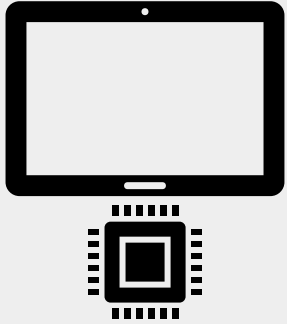
MultiPurpouse System Architecture





# IoT Device

Display System



IoT device/PC  
OS Based

Embedded system OS Based (Win10IoT Core,  
Linux, etc)

Display (with or without Touch support, optional  
input devices like Keyboard, trackpad, 3D  
cameras, etc

# IoT Hub

Connect with the remote devices (authorize and recognize them)

Provide in/out message interface between Azure and device

Device Twin

Manage deploy of OS and App Updates





# Stream Analytics



Get data from device and manage some realtime operation (depending on message content)  
We can define what to do and where to send data

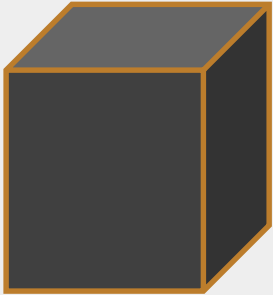
# Azure Notification Hub

Permit to trigger notification on the remote device  
Notification can be used change configuration,  
parameter, reconfigure system or simply notify  
info to be shown



# Backend (blackbox)

Manage type and schedule of the information  
to show/Operations to do  
Could be based on different  
environment/ecosystem  
I'm not interested to have/use a specific one



<div> <div>RIX</div> <div>ARRIVALS</div> <div>10:55</div> </div>					
TIME	FLIGHT	FROM	EXPECTED	TERMINAL	REMARKS
06:40	BT350	VILNIUS	06:32	E	Arrived at 06:38
06:40	BT362	TALLINN	06:41	E	Arrived at 06:40
06:45	BT032	PALANGA	06:34	E	Arrived at 06:32
06:45	BT427	MOSCOW/SHEREMETYEVO	06:59	C	Arrived at 07:01
08:55	B2841	MINSK-2	08:47	C	Arrived at 08:49
10:05	SU2682	MOSCOW/SHEREMETYEVO	10:29	C	Arrived at 10:31
10:40	AY123	HELSINKI	10:36	E	Arrived at 10:37
10:40	SK1762	STOCKHOLM/ARLANDA	10:30	E	Arrived at 10:27
11:00	FR2642	LONDON/STANSTED	10:48	C	Approaching
11:20	BT443	ST.PETERSBURG/PULKOVO	11:09	C	Approaching
11:25	BT342	VILNIUS	11:16	E	Estimated
11:25	BT462	WARSAW	11:03	E	Approaching
11:25	BT302	HELSINKI	11:20	E	Estimated
11:25	BT312	TALLINN	11:17	E	Estimated
11:45	BT401	KIEV/BORISPOL	11:42	C	Estimated
11:45	BT425	MOSCOW/SHEREMETYEVO	11:24	C	Estimated

<div> <div>Arrivals</div> <div></div> <div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div> <div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div> </div>						
Arriving From	Flight	Airline	Arrival Time	Gate	Bags	Status
Nice (NCE)	8356	(U2) - EasyJet	5:30 PM			Now 5:07 PM
Nice (NCE)	2625	 BRITISH AIRWAYS	8:20 PM			Now 8:09 PM
Oslo (OSL)	2813	(D8) - Norwegian Air	5:00 PM			Now 5:26 PM
Oslo (OSL)	2807	(D8) - Norwegian Air	7:30 PM			On Time
Palma (PMI)	8628	(U2) - EasyJet	4:55 PM			Now 4:43 PM
Paphos (PFO)	8454	(U2) - EasyJet	5:20 PM			Now 4:59 PM
Paris (CDG)	8324	(U2) - EasyJet	4:50 PM			Now 4:33 PM
Paris (CDG)	8326	(U2) - EasyJet	7:40 PM			On Time
Paris (CDG)	8772	 vueling	8:40 PM			On Time
Pisa (PSA)	8234	(U2) - EasyJet	6:35 PM			Now 6:13 PM
Porto (OPO)	338	 TAP AIR PORTUGAL	8:00 PM			On Time
Porto (OPO)	2783	 BRITISH AIRWAYS	9:15 PM			Now 9:05 PM
Pt Del Rosar (FUE)	1015	 Thomas Cook	6:50 PM			Now 6:27 PM
Reykjavik (KEF)	814	 WOW air	6:55 PM			Now 6:43 PM
Rome (FCO)	2541	 BRITISH AIRWAYS	6:00 PM			Now 5:49 PM
<div> <div>Updated 5:22 PM</div> <div>Monday March 5, 2018</div> </div>						

<div> <div>RIX</div> <div>DEPARTURES</div> <div>11:19</div> </div>					
TIME	FLIGHT	TO	ESTIMATED	TERMINAL	REMARKS
06:30	LH893	FRANKFURT	06:30	E	Departed 06:30
07:05	BT601	BRUSSELS	07:05	E	Departed 07:03
07:15	BT431	VIENNA	07:15	E	Departed 07:23
07:20	SK1747	STOCKHOLM	07:20	E	Departed 07:21
07:30	BT400	KIEV	07:30	E	Departed 07:29
07:30	BT342	PARIS	07:30	E	Departed 07:45
07:35	BT424	MOSCOW	07:35	E	Departed 07:31
07:35	BT617	AMSTERDAM	07:35	E	Departed 07:34
07:40	BT461	WARSAW	07:40	E	Departed 07:43
07:40	BT631	ROME	07:40	E	Departed 08:00
07:45	BT221	MUNICH	07:45	E	Departed 08:01
07:50	BT341	VILNIUS	07:50	E	Departed 07:57
07:50	BT131	HELSINKI	07:50	E	Departed 08:07
07:50	BT311	TALLINN	07:50	E	Departed 08:03
07:50	BT681	BARCELONA	07:50	E	Departed 08:05
08:05	BT151	OSLO	08:05	E	Cancelled
08:15	BT211	BERLIN	08:15	E	Departed 08:23
09:10	6Y271	TENERIFE	09:10	E	Departed 09:15
09:35	B2842	MINSK-2	09:35	E	Departed 09:34
11:05	SU2683	Moscow	11:05	E	Departed 11:10
11:05	AY124	Helsinki	11:05	E	Departed 11:10
11:30	SK1763	STOCKHOLM	11:30	E	Gate closed
12:10	BT241	FRANKFURT	12:10	E	
12:10	BT641	ZURICH	12:10	E	
12:10	BT235	DUSSELDORF	12:10	E	
12:20	BT147	BILLUND	12:20	E	
12:25	BT491	BUDAPEST	12:25	E	
12:45	BT343	VILNIUS	12:45	E	
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# Questions?



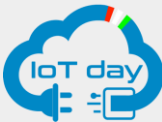
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iOS



Android



# Thanks !

Marco Dal Pino

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