

優質體驗的智慧校園環境

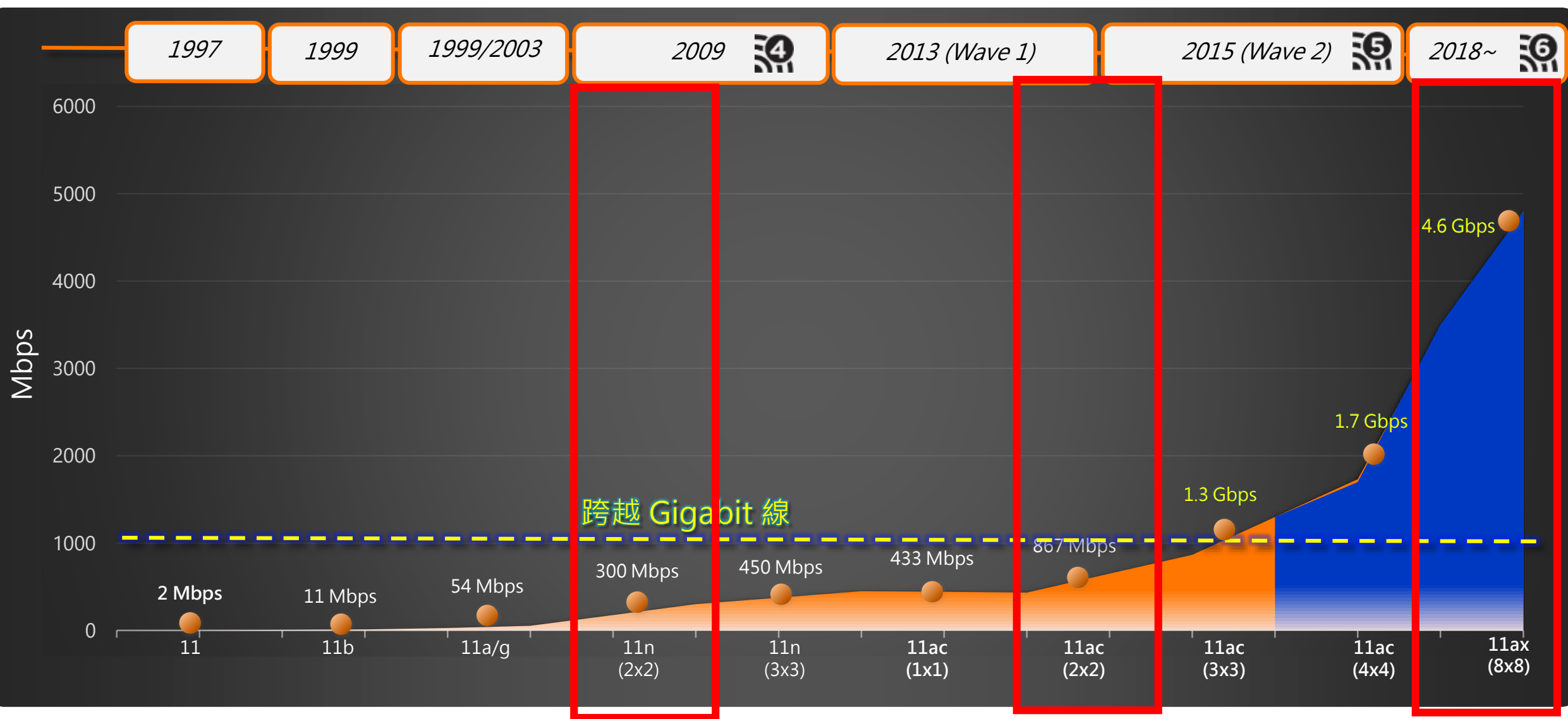
無線技術新趨勢

David Chen

陳大為

Ruckus - Technical Manager

Wi-Fi 6 – 越來越快的無線傳輸速度



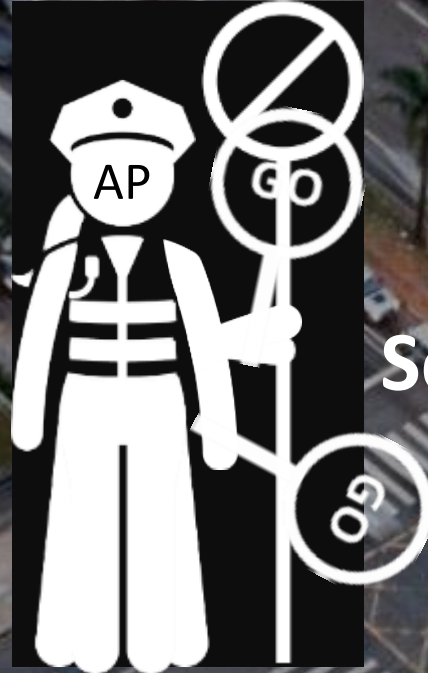
802.11ax – 不僅是速度的提升 專為高效能、高密度及大量IoT連線設備所設計



How is efficiency achieved?

Contention Based
(CSMA/CA)

Wi-Fi 5 (11ac)



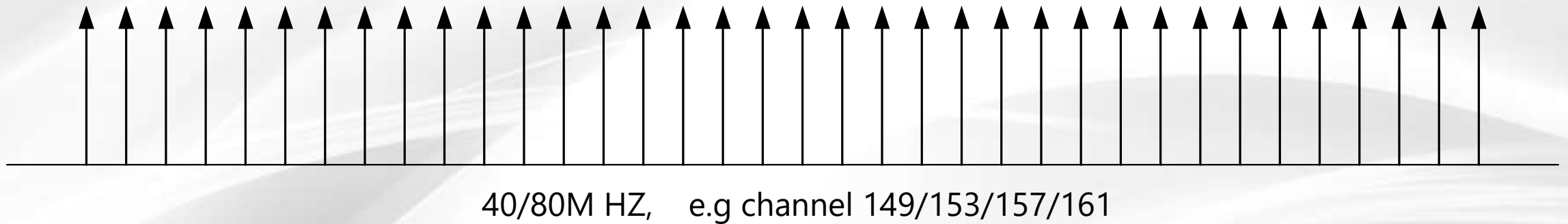
Scheduling Based

Wi-Fi 6 (11ax)

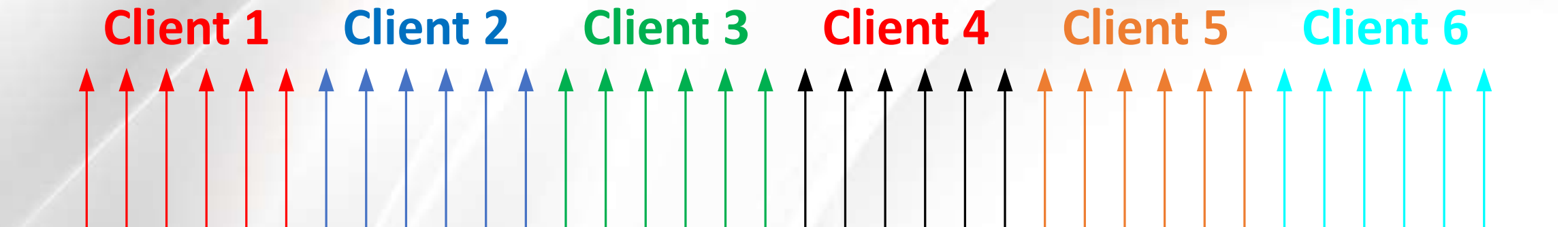
OFDM vs. OFDMA (802.11ax) – 較佳的頻譜利用率

Wi-Fi 5 OFDM in 802.11ac

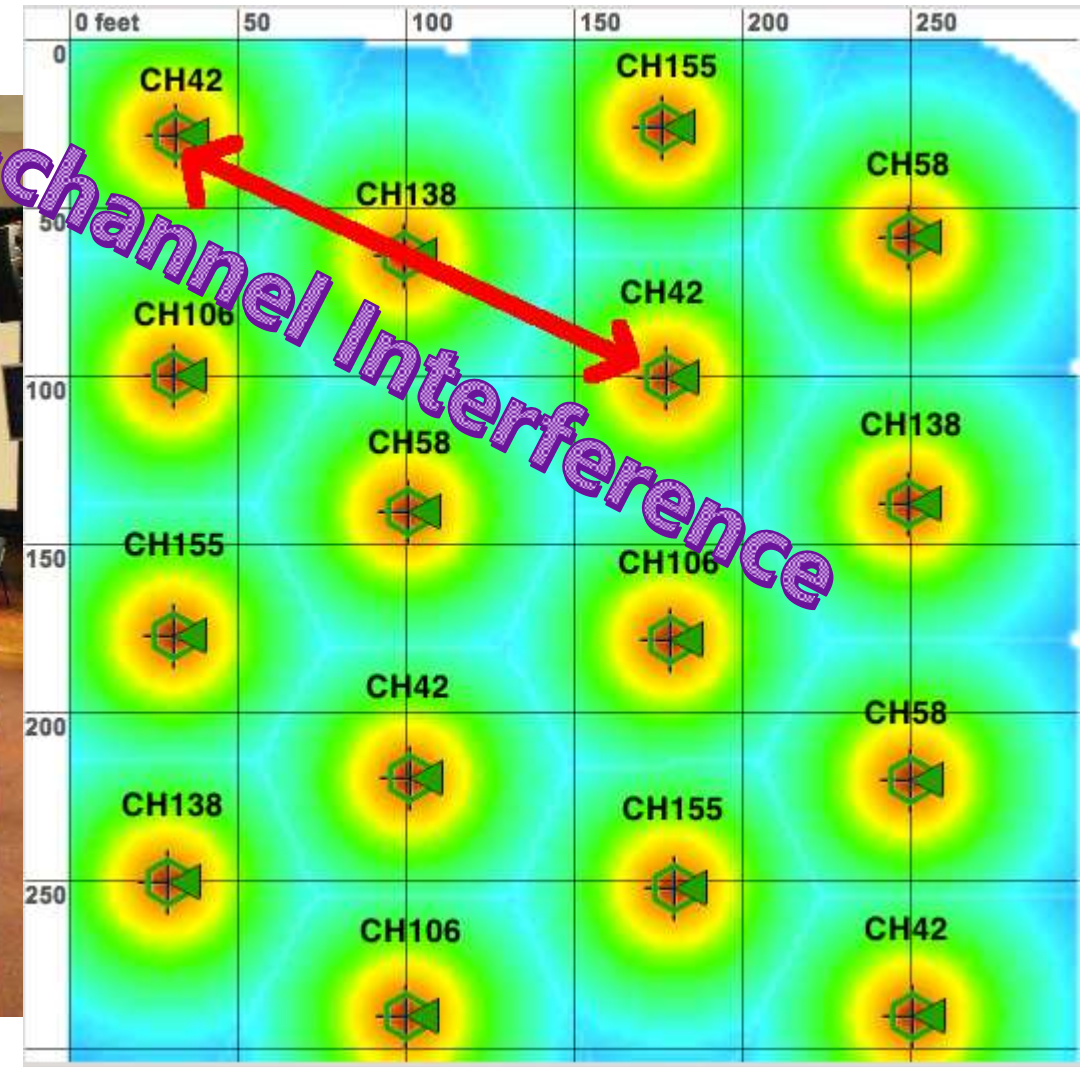
All Tones Assigned to Single Client



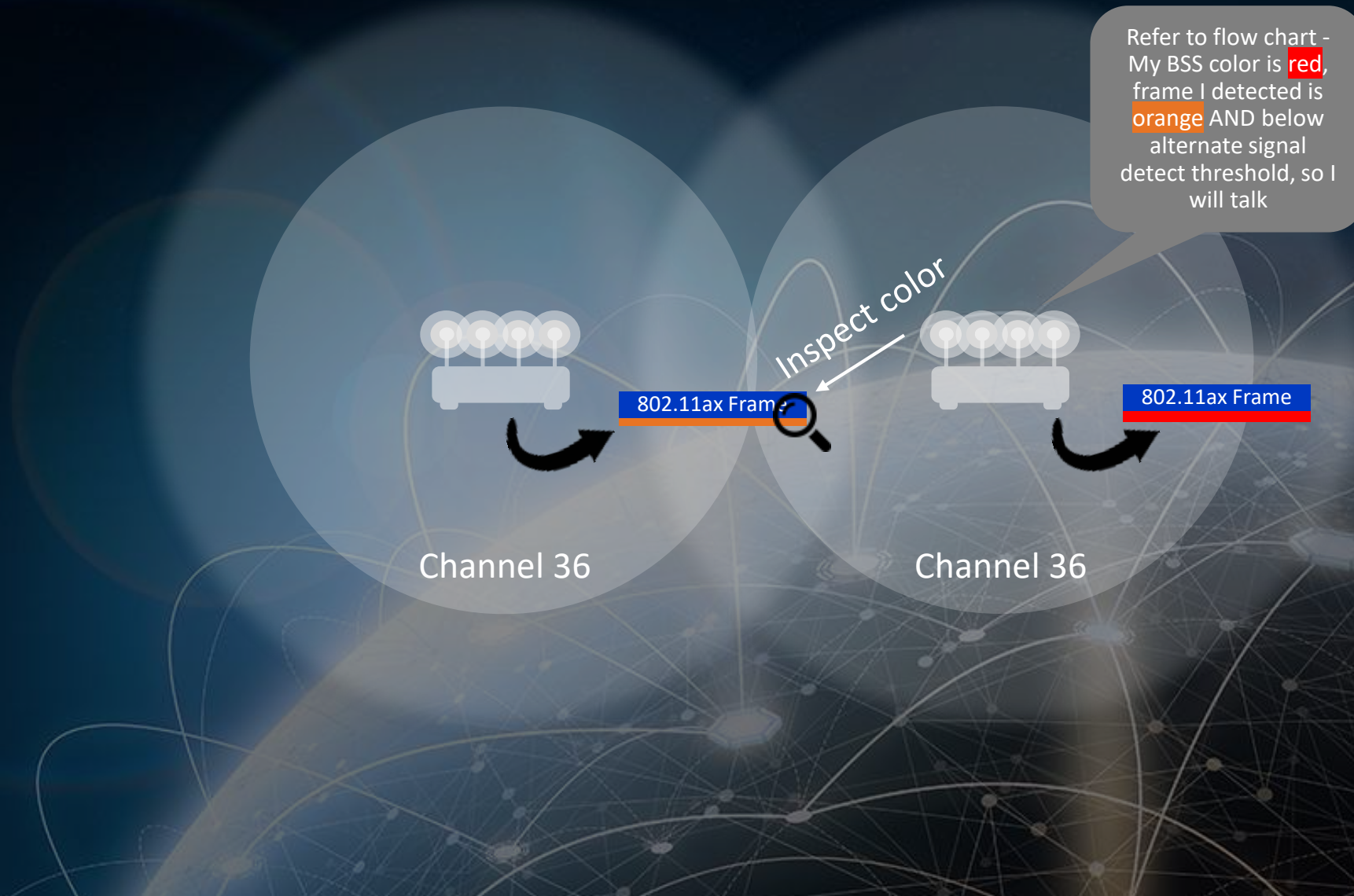
Wi-Fi 6 OFDMA (Resource Units RU)



大型演講廳 – High density and high ceiling



BSS Coloring - 高密度環境優化



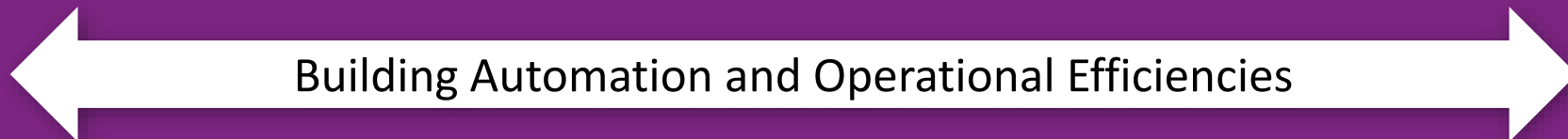
什麼是師生所在意的校園？

**Combining the Experiences of Smart Home
With the Scalable Solutions for Safety and Efficiency of Smart Cities**

Smart Living
智慧生活

Smart Learning
智慧學習

Smart Security
智慧安全



Smart Living 智慧生活

Smart ID cards



In-building LTE



Smart lighting



Smart parking / transit



Wayfinding



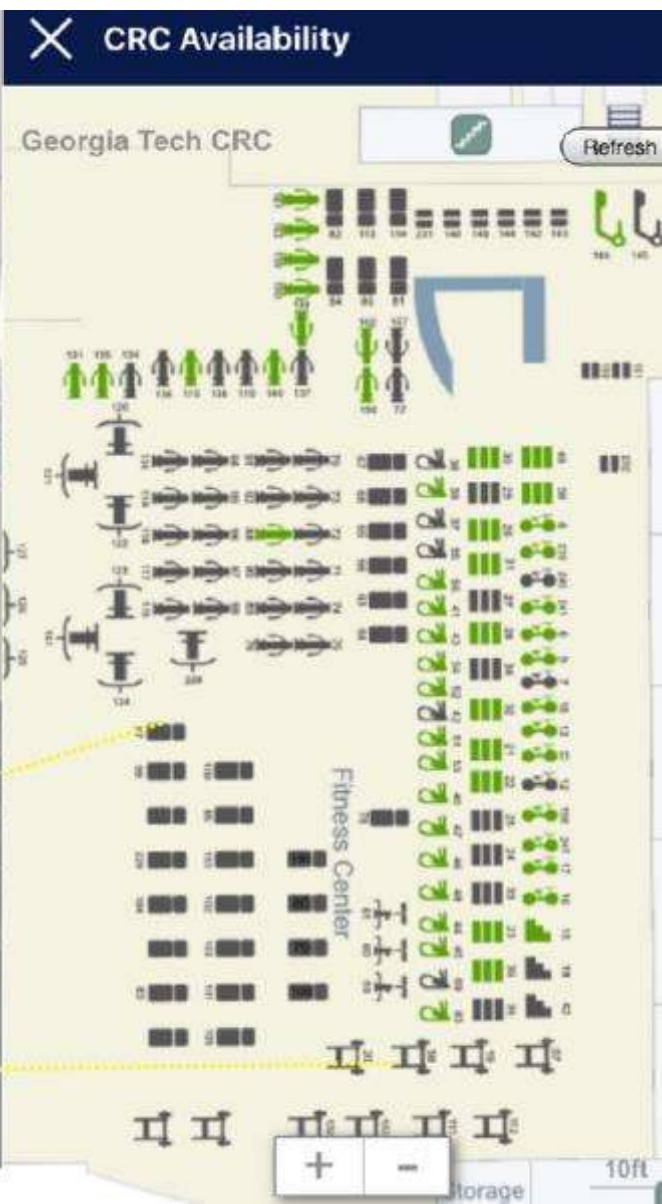
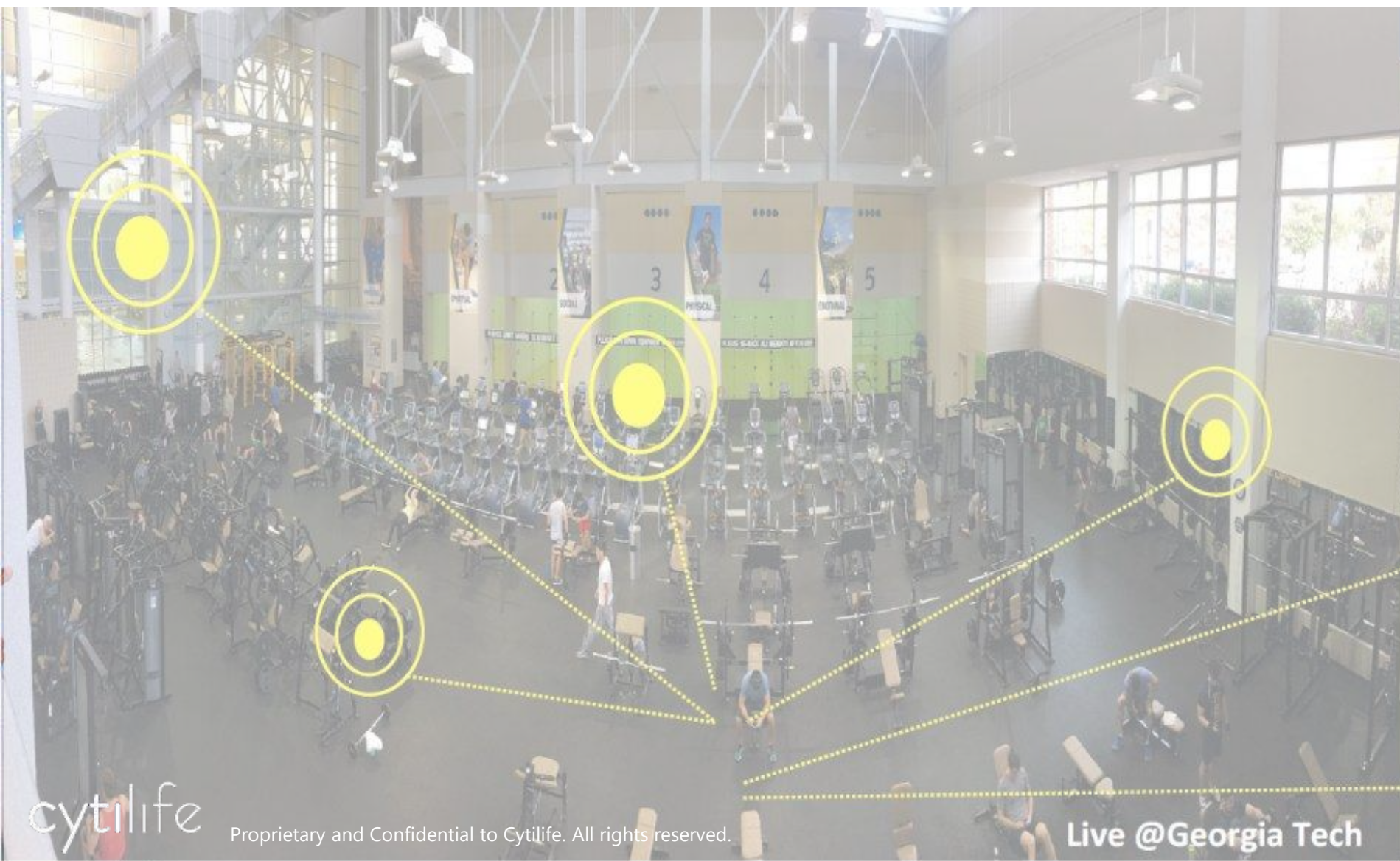
Personal networks



IPTV

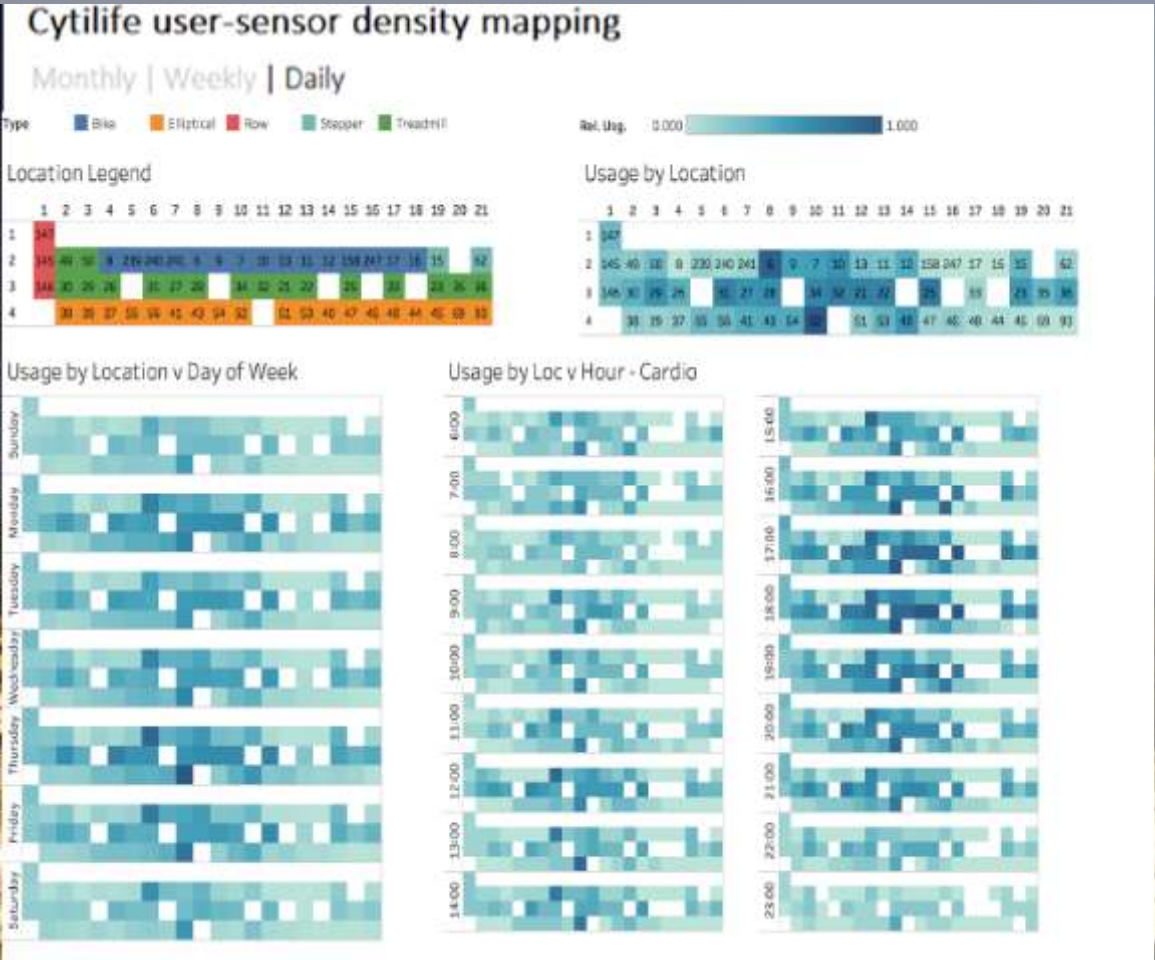
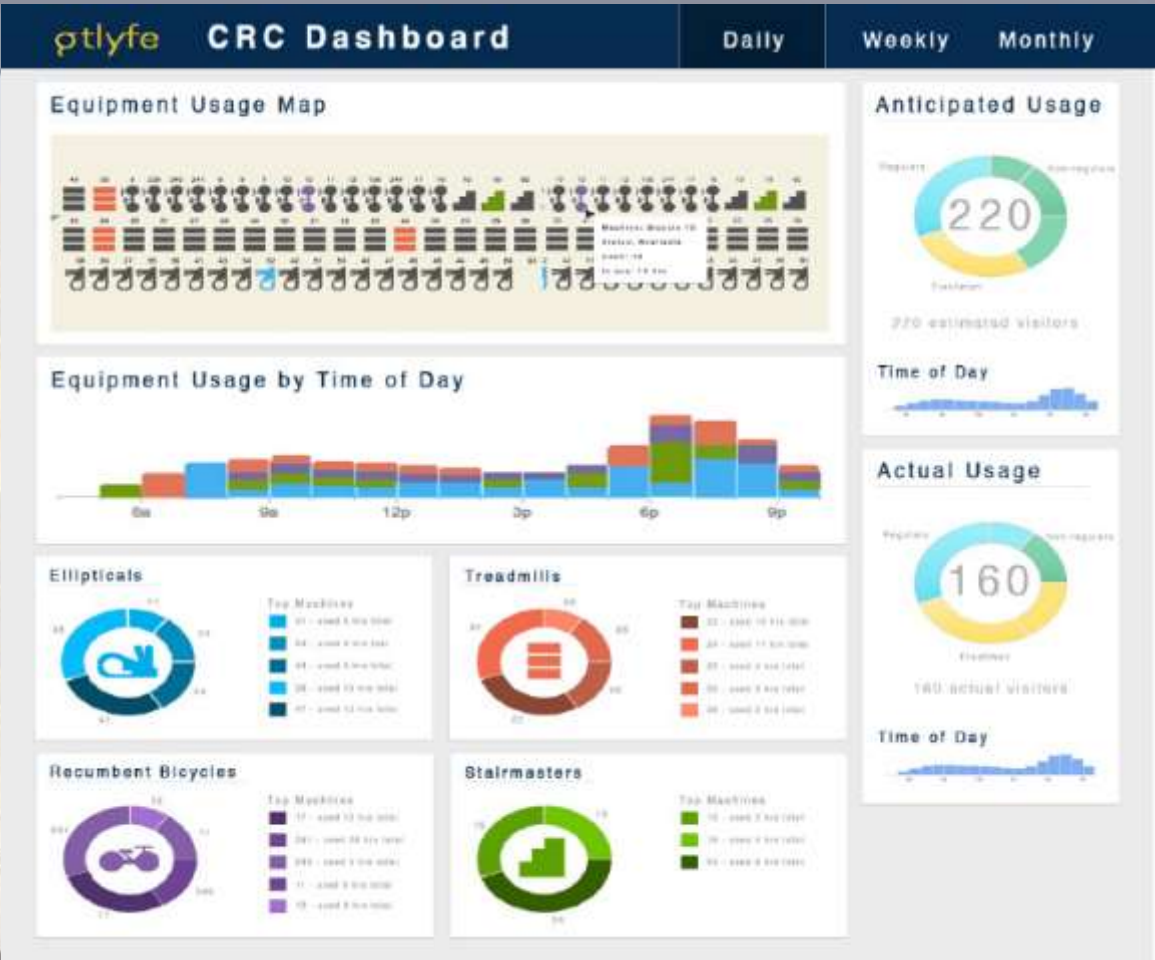


設施即時使用狀況



使用狀況統計

ACTUAL DATA DASHBOARDS FOR GEORGIA TECH



Smart Learning 智慧學習

Flexible Learning Spaces



Digital Portals



Virtual Labs



Distance Learning



Lecture Capture



Library of the Future



智慧學習: IoT 使用範例

Research



STEM



Attendance

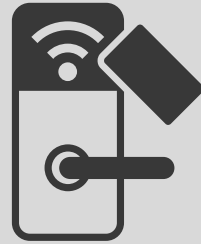


Smart Security 智慧安全

CCTV & VMS



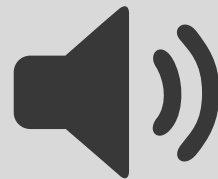
Connected Entry



Tracking Assets



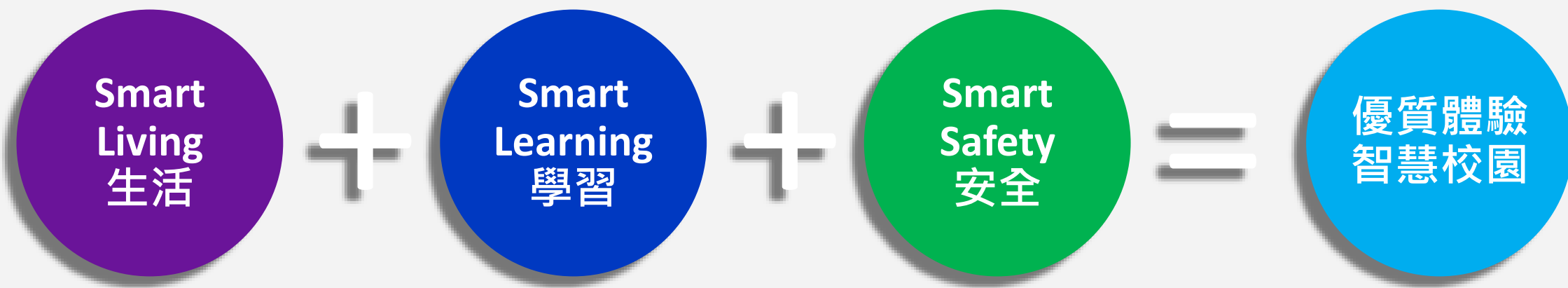
Sound Detection

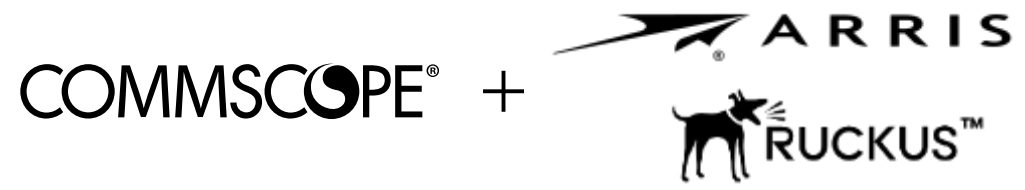


Motion Detection



打造優質體驗的智慧校園





面對建置IoT的挑戰

太多不同的協定

No standard manages **coexistence** of the shared 2.4GHz ISM band



各自獨立架構需要重覆投資設備

- Separate IoT gateways
- More switches
- More cabling
- Separate security
- High costs = questionable ROI

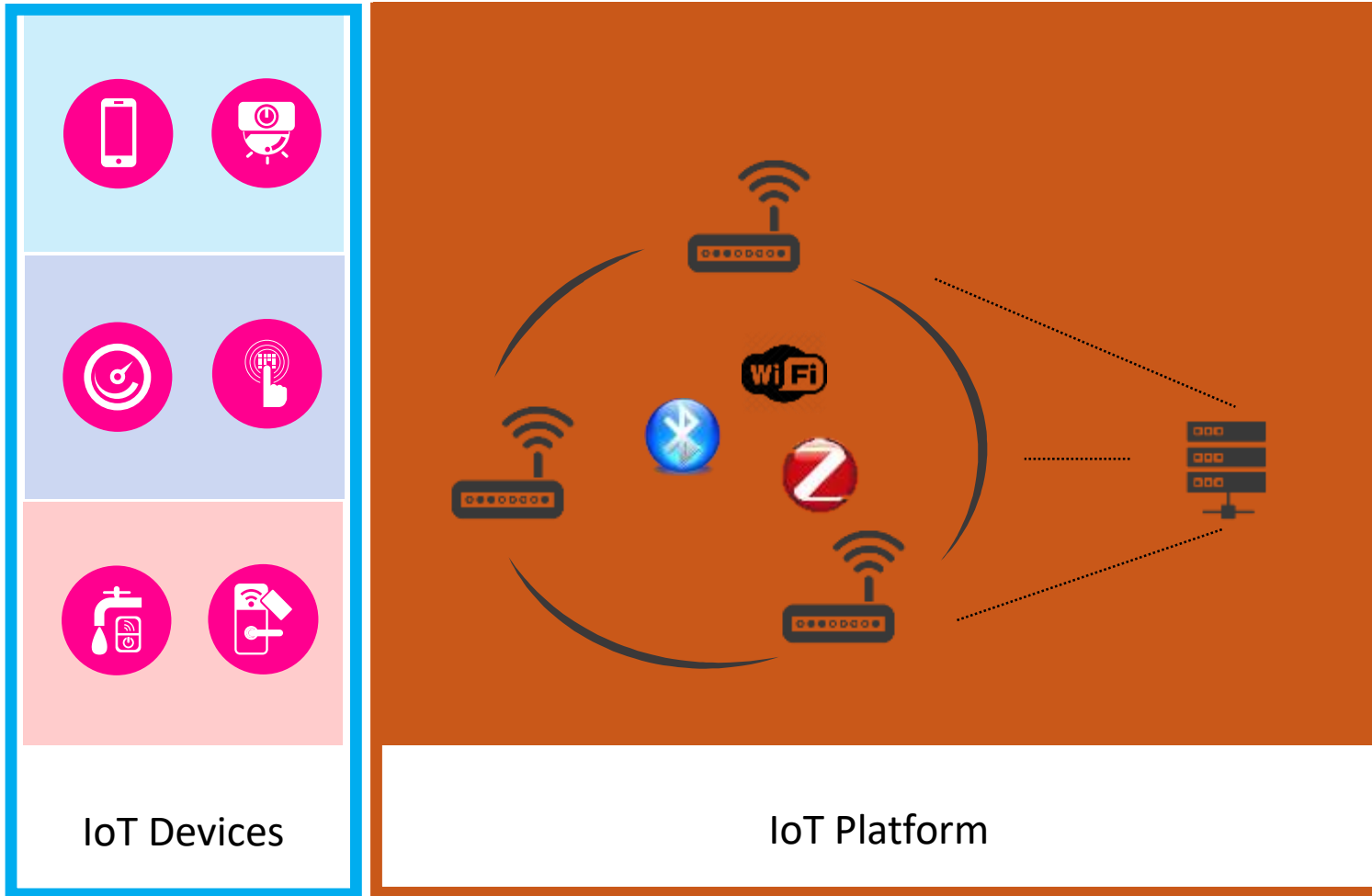


整合IoT存取網路

Ruckus Wi-Fi 6 (802.11ax) Access Point



整合IoT存取網路



- IoT Enabled Wi-Fi Access Points
- Reduced Physical Infrastructure
 - Less switches, switch ports, cables
- Single Network Management

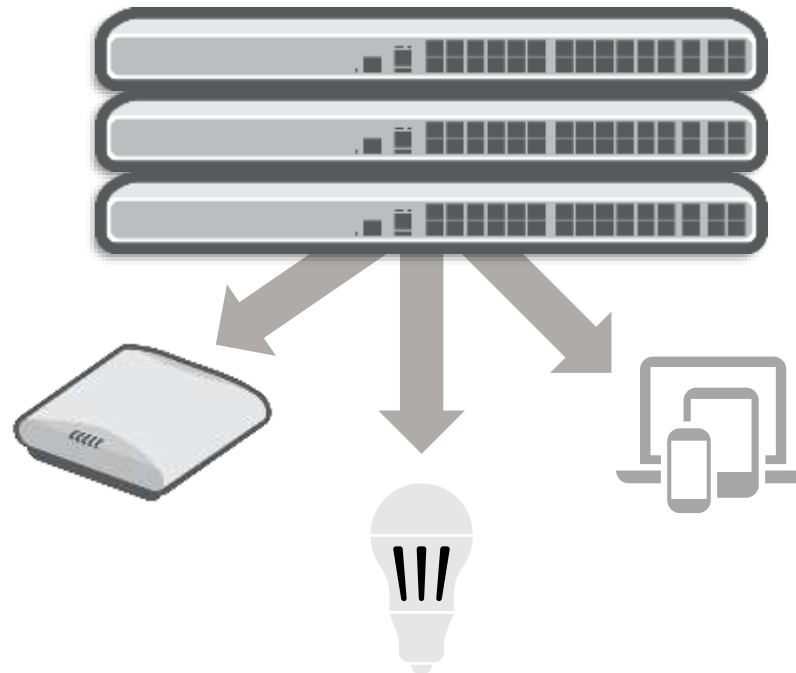


整合的連接

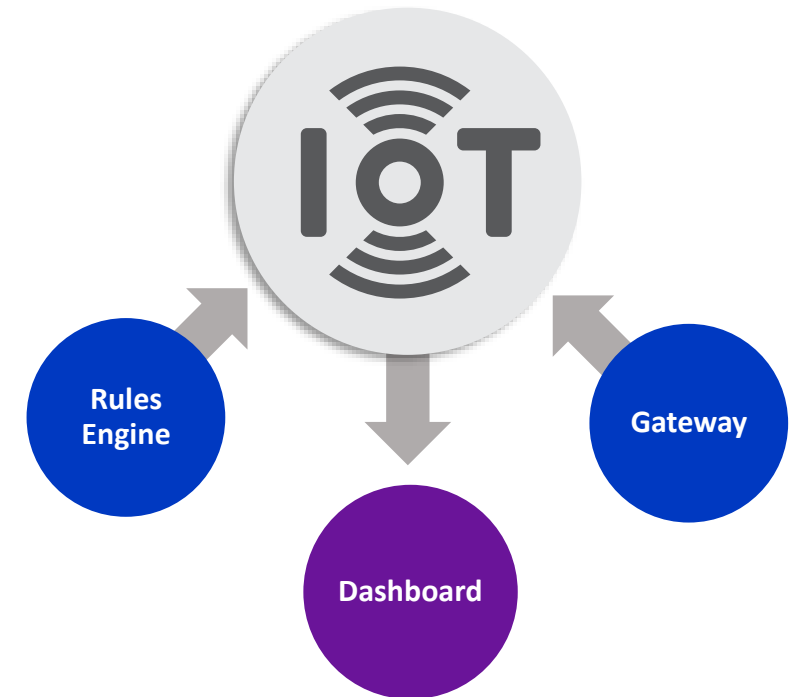
Wireless



Wired



IoT



整合架構簡化網路

- IoT-enabled AP (WiFi + IoT)
- Fewer switches
- Less cabling
- Unified security



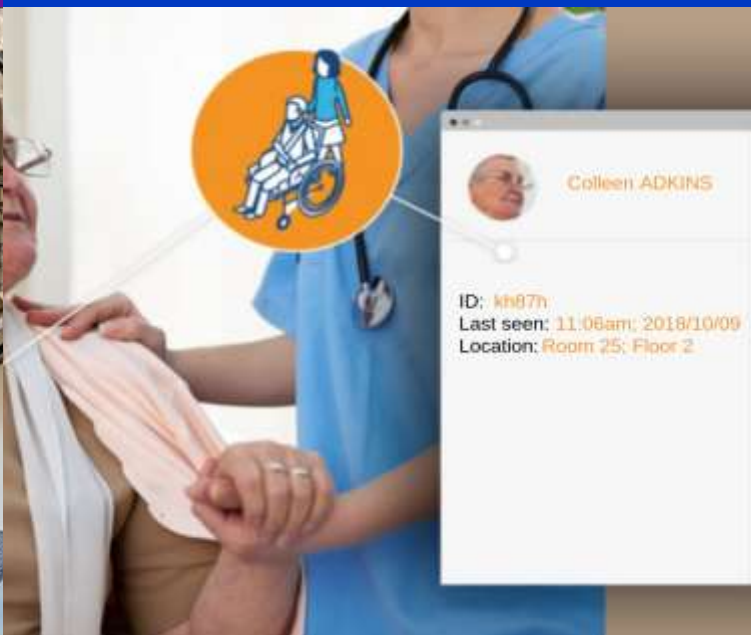
...Enabling a Single, Converged IoT Access Network.

定位服務

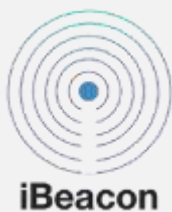
Asset Tracking 資產追蹤



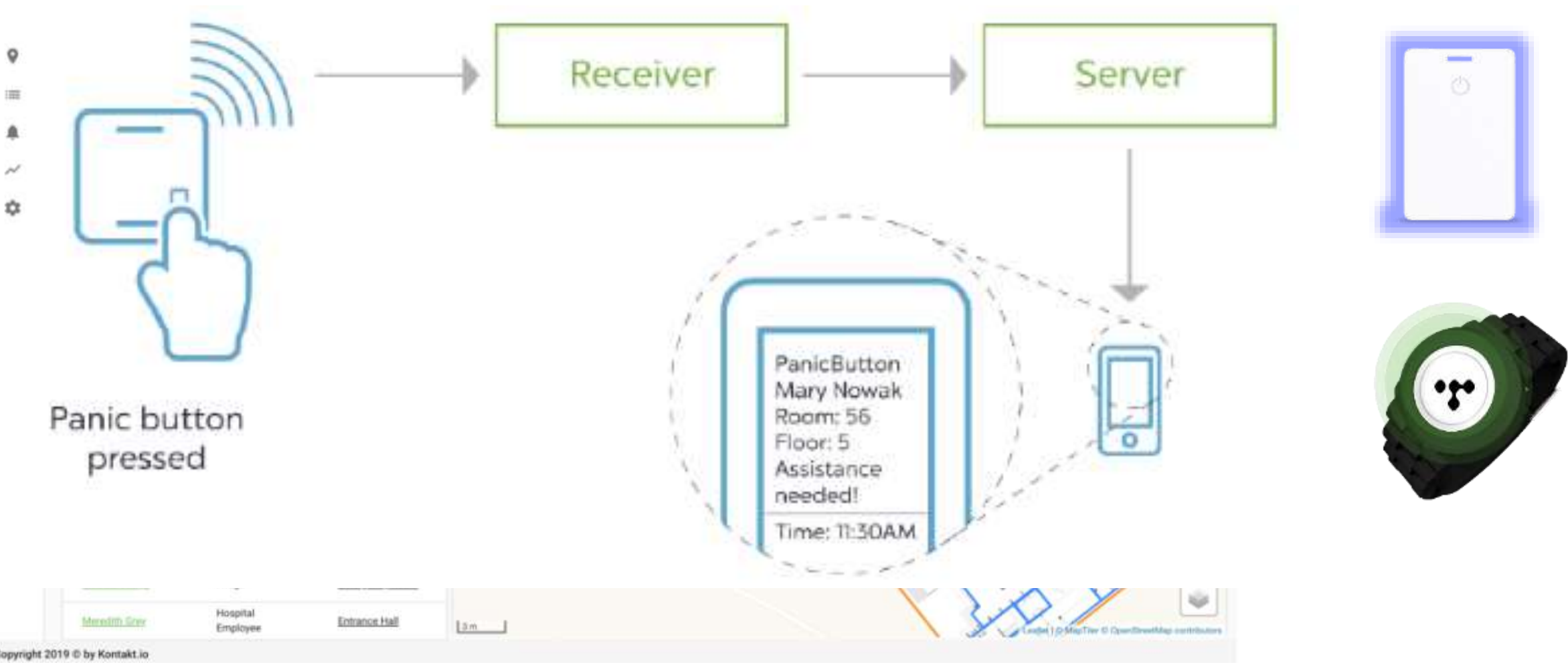
Geofencing 地理圍欄



Condition Monitoring 狀態監測



定位與緊急按鈕



Copyright 2019 © by Kontakt.io

整合平台串連全新智慧校園

Ruckus 無線控制器

網路骨幹

Ruckus IoT 控制器

軟體定義自動化感應與控制



校園安全IoT自動化

Motion

Smart
Locks

LED
Lights

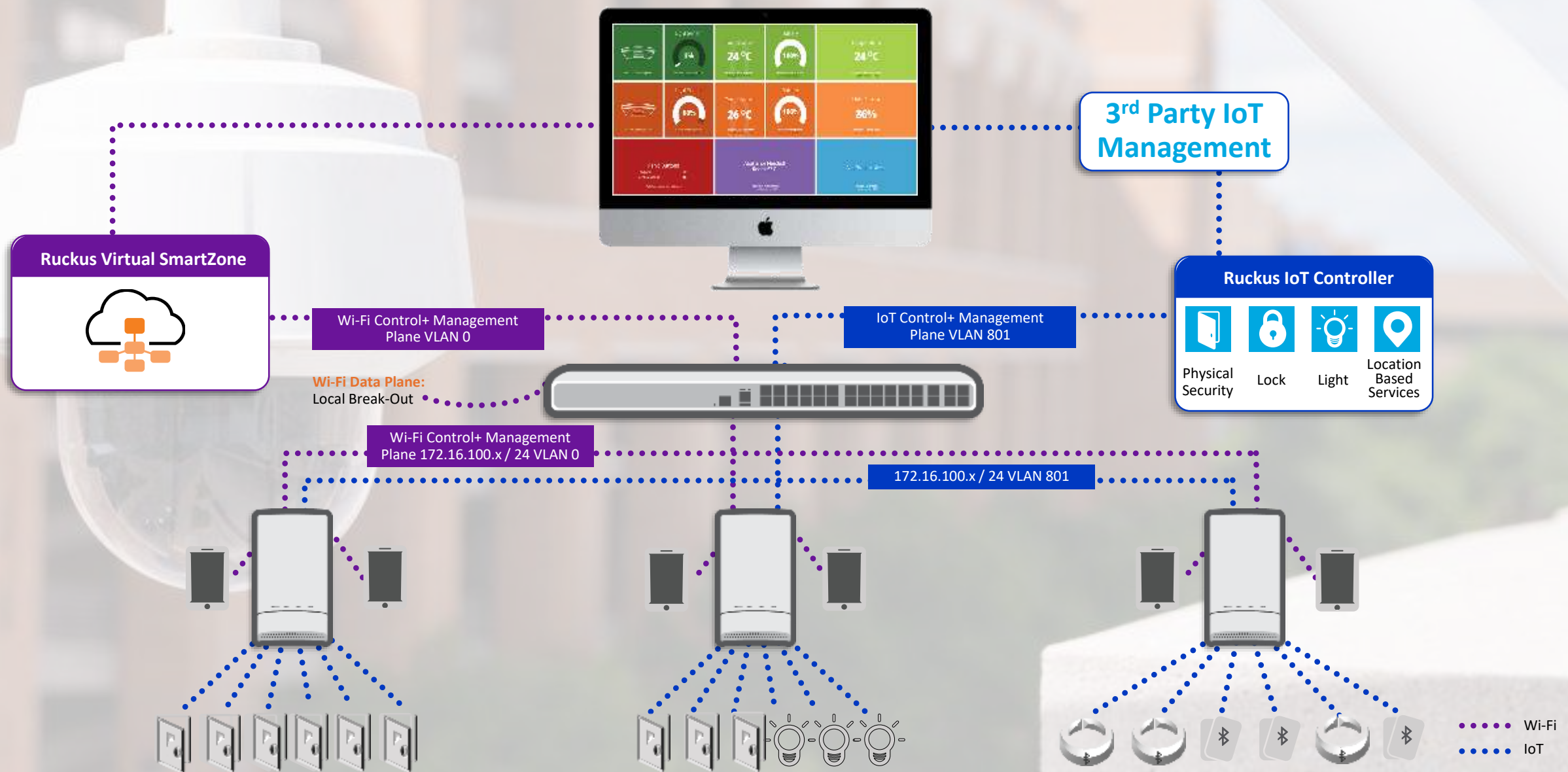
CCTV
Cameras

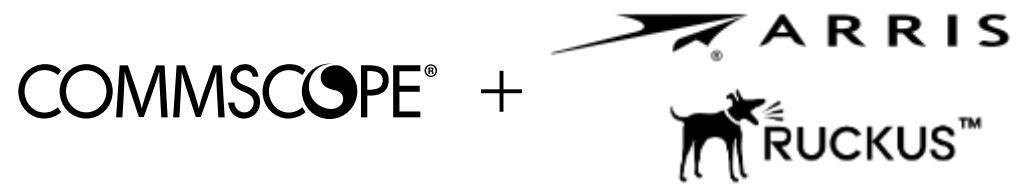


UNIVERSITY



Ruckus IoT解決方案: 整合IT 與 OT





Thank You

David Chen

David.chen2@commscope.com