

RAD Studio 10.2

產品發表會

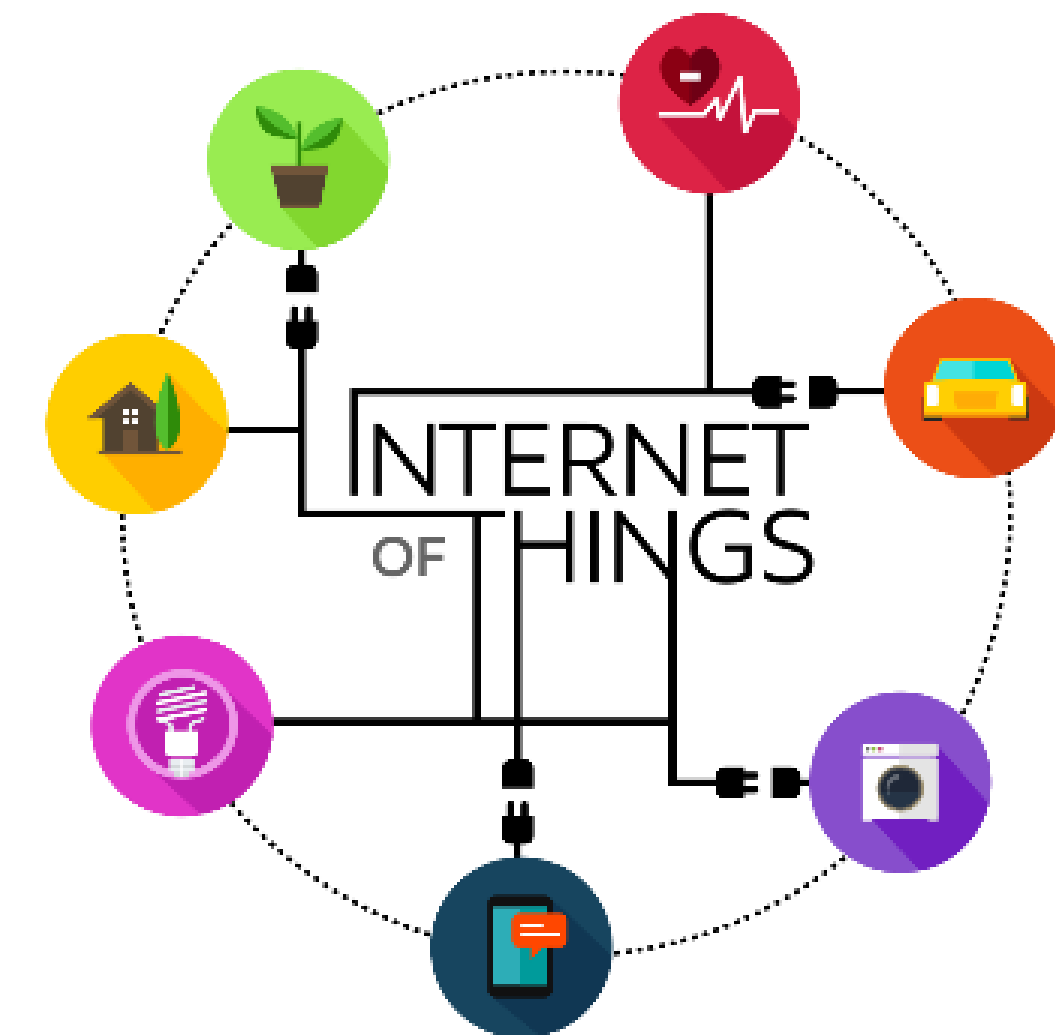
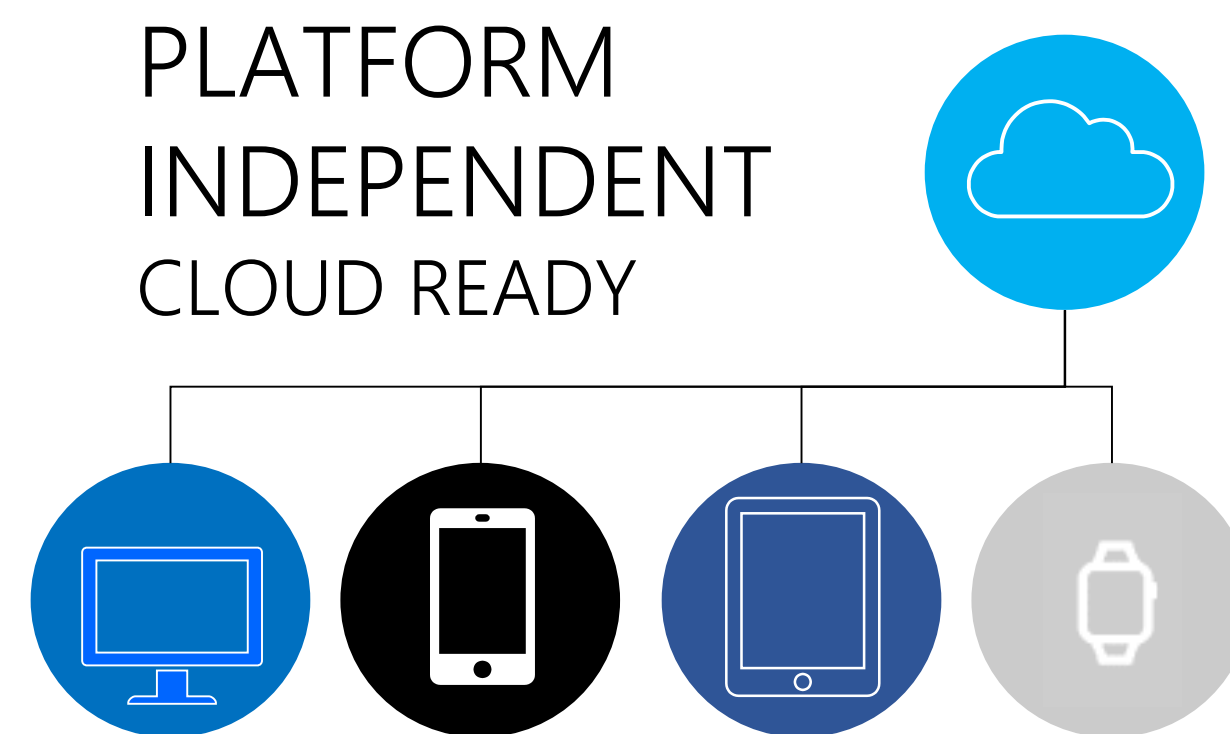


Agenda

- 為您介紹RAD Studio
- RAD Studio 10.2新功能
- Delphi For Linux
- 中場休息
- 物聯網開發趨勢和實作
- 結論和Q&A

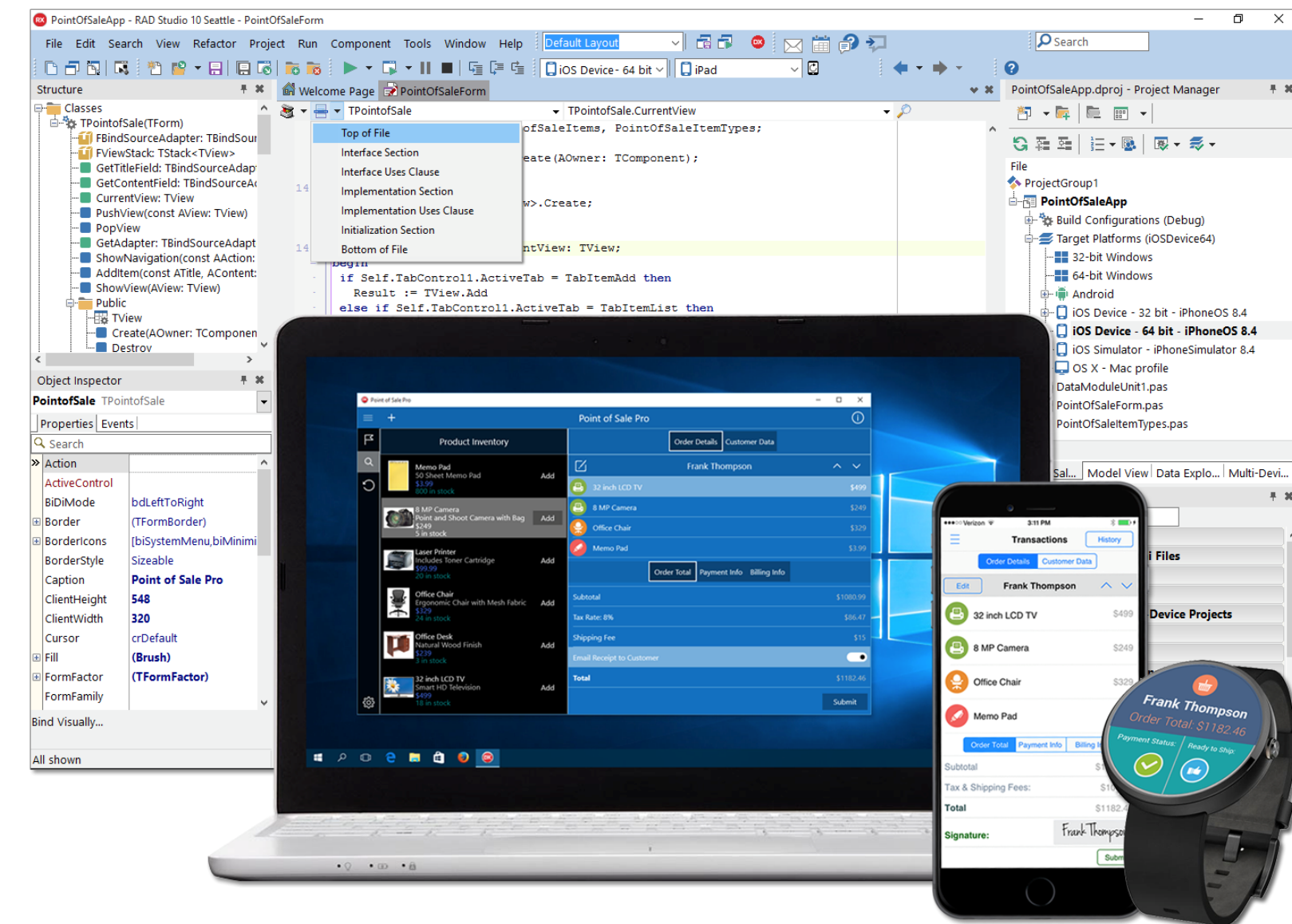
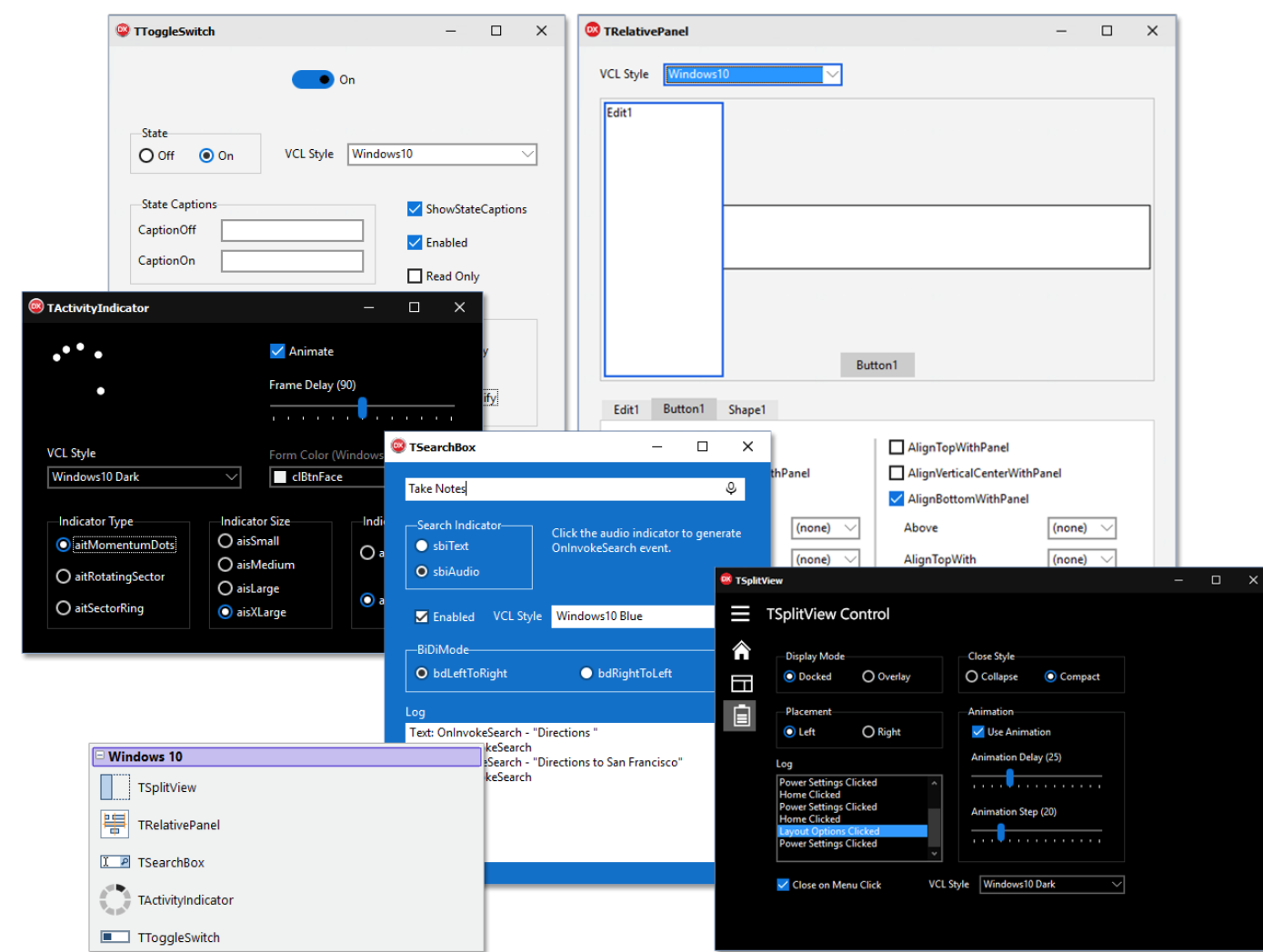
What is RAD Studio?

- The fastest way to develop cross-platform native apps with flexible cloud services and broad IoT connectivity



Fast, Visual Development

- RAD Studio provides powerful VCL controls for Windows 10 and enables FMX development for Windows, Mac, iOS and Android

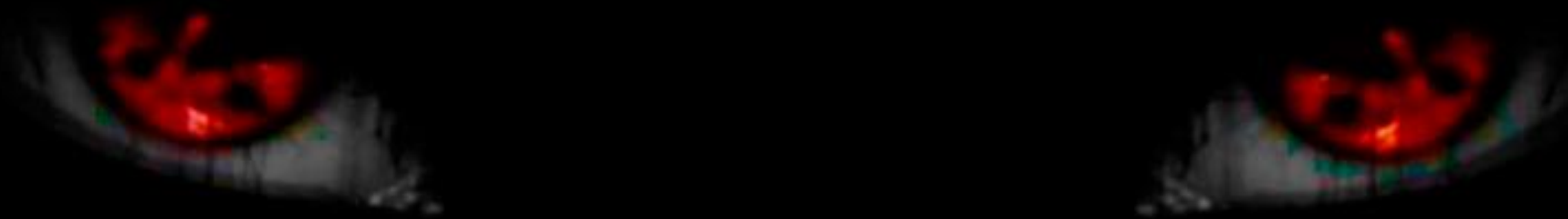


RAD Studio Platform Support

- Target the latest versions of major operating systems with one codebase!
- Officially supporting
 - Windows 10 Anniversary Update
 - macOS Sierra
 - iOS 10
 - Android N (Nougat)
 - **Linux 64-bit (Ubuntu and Red Hat Enterprise)**

LINUX Development in RAD Studio

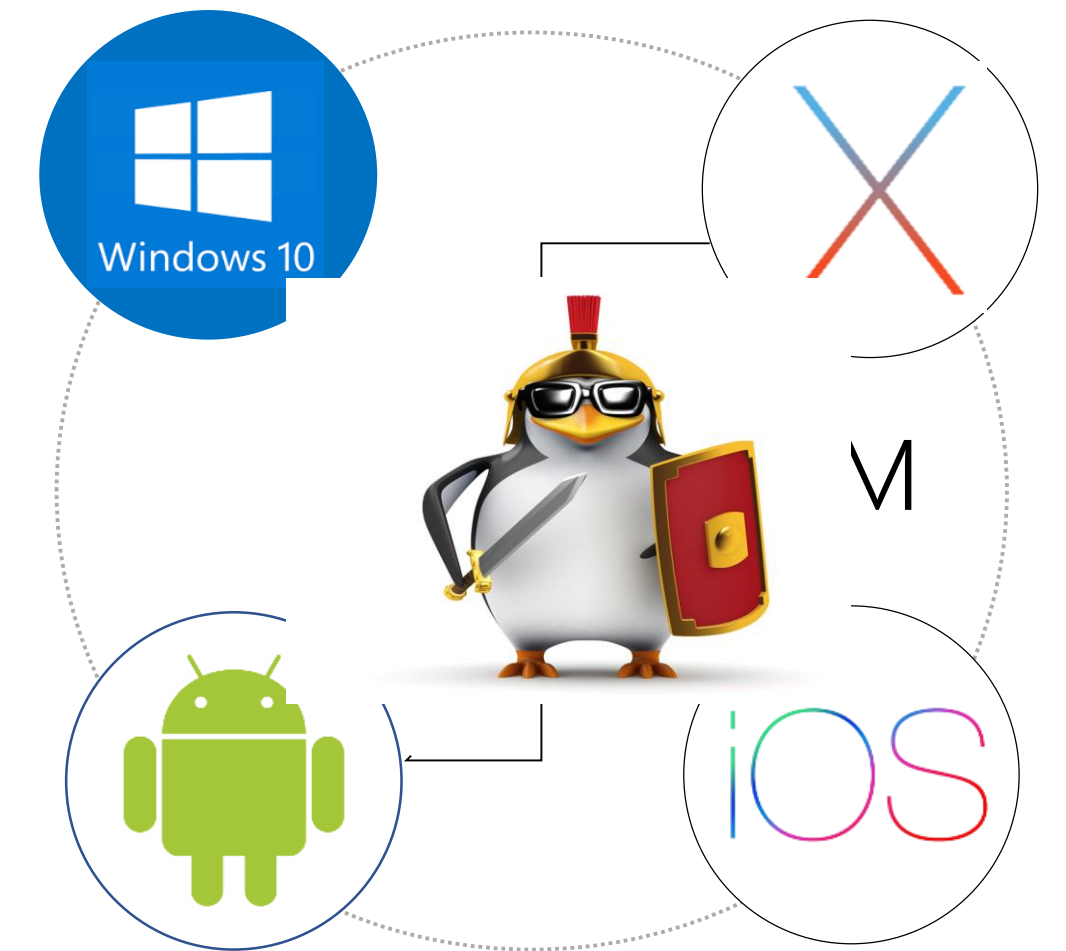
- Delphi Linux compiler, toolchain and libraries



Linux is coming...

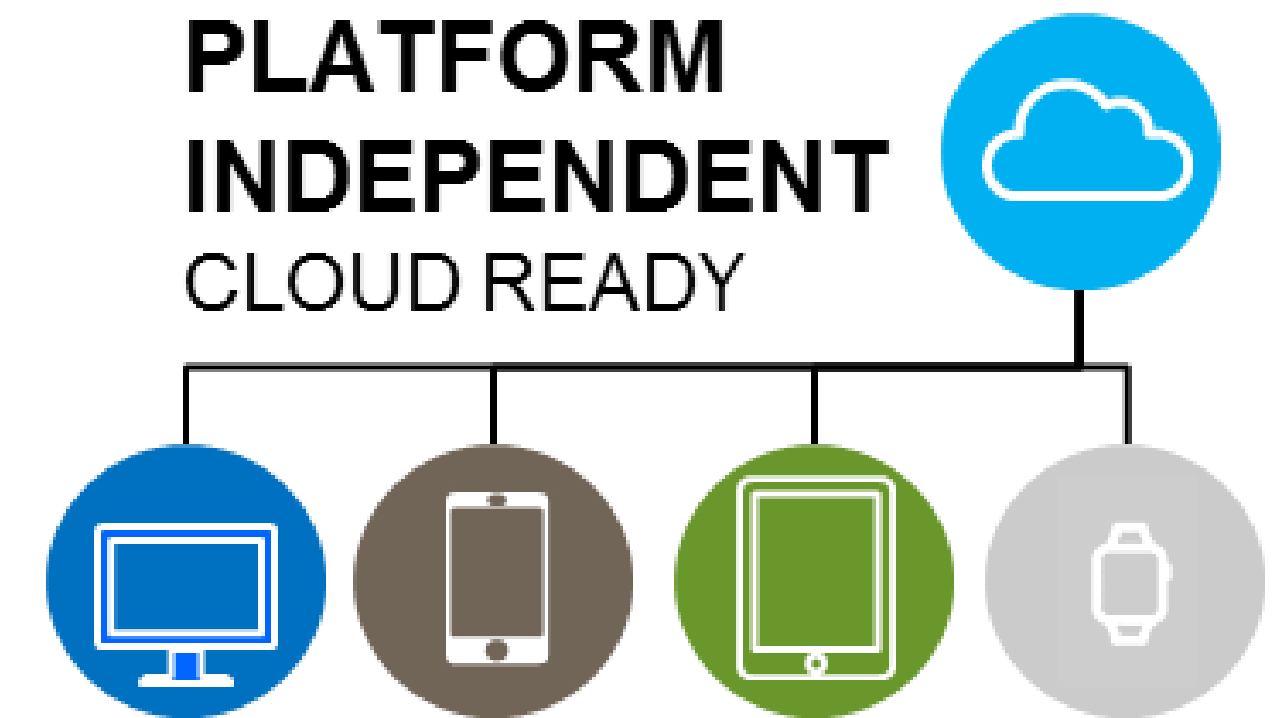
Cross-platform, native apps

- Native platforms compilers for 5 operating systems, 32bit and 64bit CPUs, Intel and ARM CPUs
 - For maximum performance and security
- Cross platform runtime library and database access
 - Memory, file system, threading, exceptions, data tables, XML, JSON, HTTP and REST clients...
- FireMonkey visual component library
 - Flexible designers, styling, platform components
 - Write your UI once, customize at design time, deploy everywhere



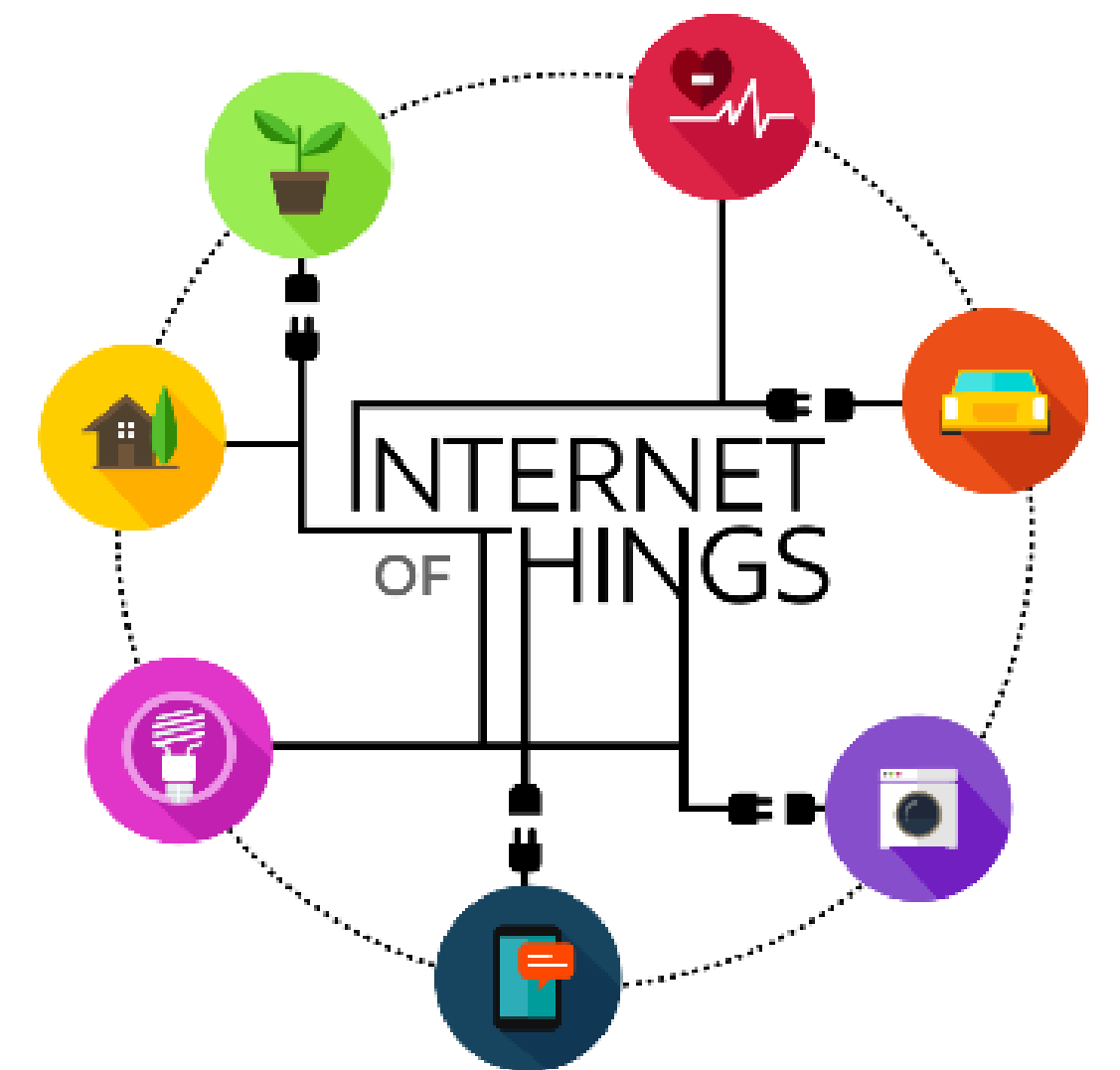
Cloud Services

- AWS and Azure support
 - Access to storage, tables, queuing
- BaaS providers
 - Including Parse, Kinvey
- REST and HTTP client libraries for direct access
 - Based on platform libraries and including native HTTPS support
- NoSQL database components
 - Full support for MongoDB



Broad IoT Connectivity

- Extend desktop and mobile apps with Internet of Things capabilities
 - Bluetooth, Bluetooth LE, and Wifi
 - Ready-to-use IoT components
 - Proximity awareness, BeaconFence
 - Sensors data collection
 - Distributed device monitoring with ThingPoints



C++ Builder

- C++11 language support for Windows and Mobile
 - CLANG-enhanced compilers, with RAD model support
- C++11: "Almost feels like a new language"
 - Lambdas
 - Move semantics
 - Automatic type deduction
 - Native concurrency
 - Better Smart Pointers
 - Range-for



Delphi



- Based on Modern Object Pascal programming language
 - High-performance native compilers for all supported platforms
 - Best easy-to-use, complete, OOP, RAD language
- Leverage a large community of Delphi developers
 - In all industries and at all latitudes
- Large-Memory enabled Delphi stand-alone compilers

InterBase 2017



- Embed. Deploy. Relax
- Self-tuning, high performance, low footprint SQL- 92 Relational Database Management System
- Windows, Linux, Android, iOS and Mac support
- New hot features:
 - Changed Views
 - Derived tables
 - Server-wide performance monitoring
 - Common table expressions
 - ... and more

IOTA

INTERNET OF THINGS AWARDS

WINNER

**Most Innovative
Use of Data**

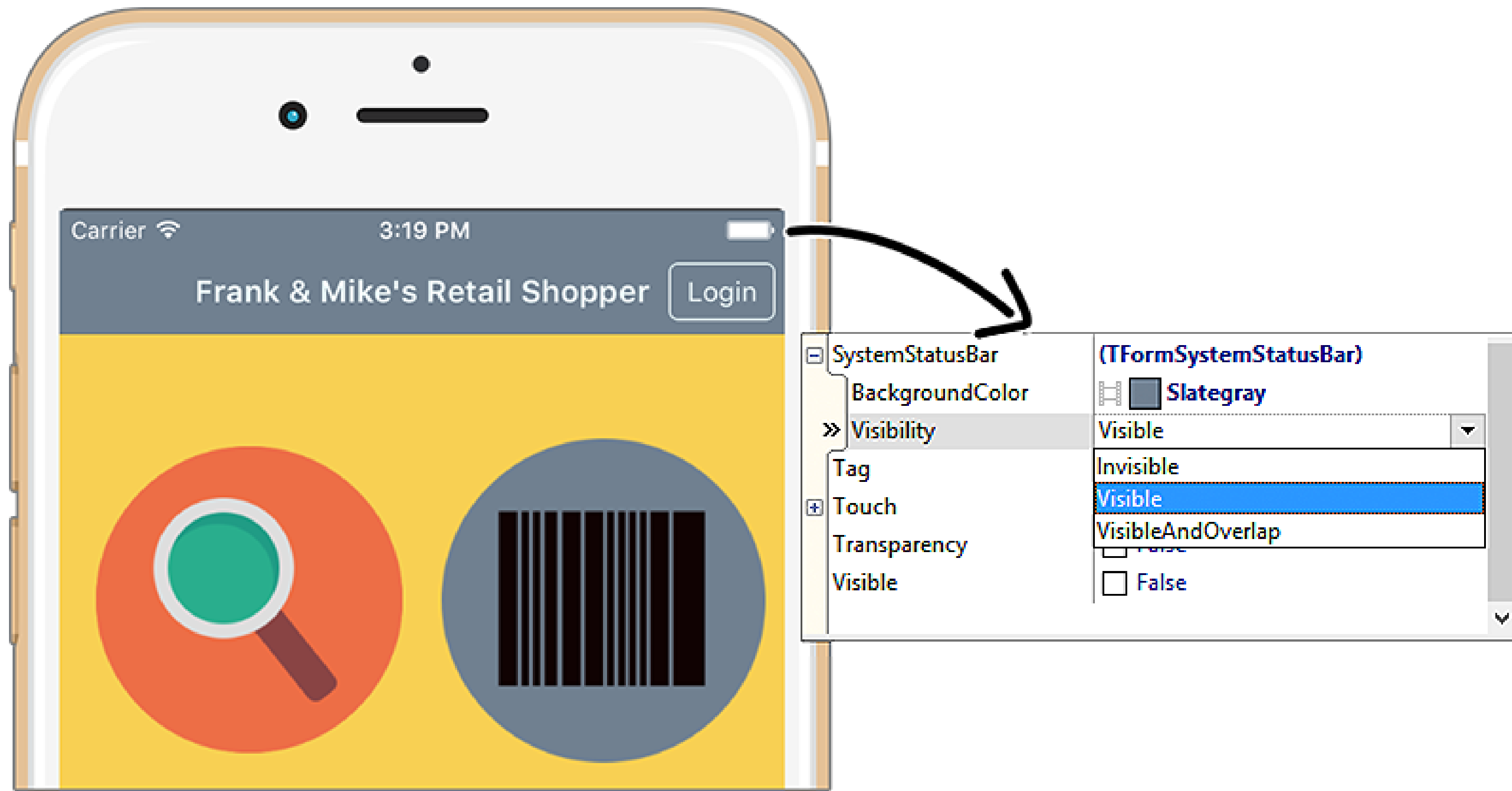
10.2 New Library Features



FMX Architectural / Android Changes

- Removed “Purgatory” (forms and controls delayed destruction)
 - TPurgatory class was removed
 - Calls to TFmxObject.Release (purgatory invocation) replaced with plain old TFmxObject.Free
- Multithreading graphics: support for TBitmap, TCanvas, TContext3D
 - All Platform (particularly important on mobile)
- Unification of Delphi and Java threads on Android
- Preparation work for Android zOrder and native controls support
- All code is running in Java UI Thread
- CallInUIThread deprecated, no more need for thread synchronization

New „SystemStatusBar“ FireMonkey property



RTL Library Changes

- Improved Azure and AWS support with updated APIs
- Improved async support in HTTP client
- New MD5 and SHA1 function support for files and streams
- System.Hash support for calculating MD5 and SHA1 hashes for streams and files (i.e. THashMD5.GetHashBytesFromFile)
- AppTethering Log Filtering and SynchronizeEvents for smooth main thread synchronization
 - New SynchronizeEvents property for TTetheringManager and TTetheringProfile to control the event synchronization with the main thread

Publishing to Windows 10 Store



Windows 10 Store support

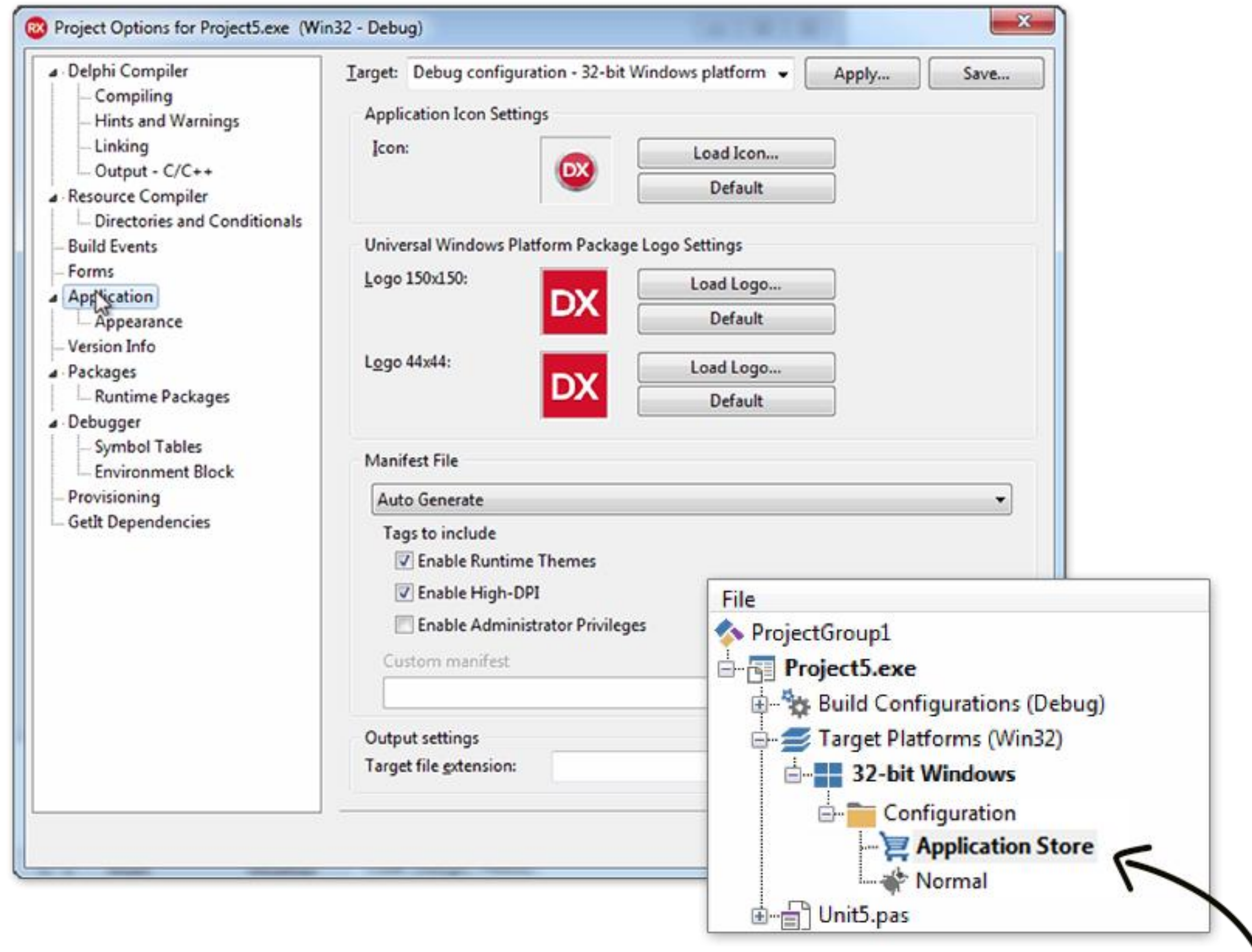
- Sell existing and new Win32/64 apps through the Windows 10 store
- Win 10 store introduced as part of Microsoft's Windows 10 Anniversary Update
- Leverages the Desktop Bridge technology, also known as Centennial Bridge to package Win32/Win64 applications as Universal Windows Platform apps
- IDE-based Windows Store deployment support
- Windows 10 Store currently open in preview mode for selected developers
- Reach millions of potential customers with your applications via the Windows 10 Store

VCL & FMX

Building and Running an APPX Package

- Hooking the Windows SDK tools to the IDE
- Creating and installing a local certificate
- Building and Deploying the project

Windows 10 Store Support



RAD Studio: The 1st IDE to Support Desktop Bridge!

“With the Desktop Bridge in Windows 10, Microsoft is bringing a tool that enables software built on the Windows desktop to use the modern Windows app packaging format. This brings benefits of cleaner installs, uninstalls and updates, new distribution opportunities through the Windows Store and Windows Store for Business and the software can also be enhanced with Universal Windows Platform capabilities such as notifications. We are excited that developers can now use RAD Studio to directly build applications that utilize the Desktop Bridge. RAD Studio is the first developer IDE to support the Desktop Bridge and enables a fast migration route for existing applications without a major rewrite.”

Kevin Gallo, corporate vice president for the Windows developer platform at Microsoft

Linux Development with Delphi



Linux Support

- Focus on Linux 64-bit Servers
- Officially supporting
 - Ubuntu 16.x LTS
 - RedHat Enterprise 7
 - Expected to work on most distributions
- Server side technologies only
 - RTL, DB RTL, IOUtils and file system access, FireDAC, HTTP, REST, Cloud, WebBroker, Apache integration, DataSnap, EMS/RAD Server, JSON, XML, SOAP, Indy, IoT, and more



Delphi Linux compiler

- Targets 64-bit Intel Linux
- Based on LLVM technology
 - ARC-enabled
 - ZBS off by default
- Need Linux box to import SDK (via PAServer)
 - Not for compiling
- Use PAServer for deployment and remote debugging
 - You can deploy directly, might have to adjust file permissions

Linux RTL Features

- All core RTL is/will be available
 - System, Exceptions, Kernel, POSIX headers, File System, IOUtils, RTTI, Unicode, Threading and Parallel Library...
 - Native HTTP client library (libCurl)
 - XML DOM and JSON processing
 - DUnitX

Linux Database Access Features

- FireDAC drivers for all Linux-capable DBMS
- MySQL (and MariaDB), InterBase, FireBird, Oracle, MS SQL Server
- Sybase ASA, DB2, MongoDB, PostgreSQL, SQLite, Teradata
- Only exception is Informix
- Drivers not available: MS Access, DataSnap, DBX

Linux Internet Client and Server Support

- Indy Clients and Servers
- WebBroker + DataSnap + RAD Server modules (EMS)
 - Apache integration
 - Standalone servers
- Client libraries
 - HTTP and REST client libraries
 - Cloud and BaaS clients
 - SOAP clients

Configure Linux machine or VM

- Ubuntu or RedHat recommended
 - Ubuntu Server 16.04 LTS is free
 - <https://www.ubuntu.com/download/server>
 - RedHat
 - <https://developers.redhat.com/blog/2016/03/31/no-cost-rhel-developer-subscription-now-available/>
- Configuring Ubuntu
 - `sudo apt-get install joe wget p7zip-full curl openssh-server`
 - `sudo apt-get install build-essential zlib1g-dev libcurl4-gnutls-dev`
 - Copy PAServer and extract from tar.gz in any folder

Delphi For Linux

- Demos
 - Console Application
 - WebBroker Application
 - DataSnap Linux Server
 - RAD Server Application

Making Database Apps With FireDAC



FireDAC

- High-performance, easy-to-use, enterprise database connectivity
- Universal data access, but with many database specific features
- No drivers required and full source code provided
- Compatibility with the BDE means easy migration of legacy applications with "reFind" utility



FireDAC Selected Features



FireDAC

- Metadata
- Batch Move components
- Local SQL
- Live Data Window
- Options System
- Monitoring
- Cached Updates
- Array DML
- Data Type Mapping
- Recovering Connections
- Autoinc Fields
- ... and more

FireDAC Changes

- New - MariaDB support (v5.5 and later)
- MySQL support for v5.7
- Firebird support for Direct I/O
- TFDMemTable design time dataset editor to create data for runtime use
- TFDDataMove component removed. Use TFDBatchMove instead

DB RTL Changes

- New AsGUID property for TField
- Reduce client side memory usage with blobs streaming
- VCL TDBImage direct support for JPEG and PNG graphic formats
- Support for display options for BlobFields used by DBGrid

Building Scalable REST API for Mobile and IoT



RAD Server



- The Perfect Backend for Delphi and C++Builder Apps!
- Implement RAD Server services in Delphi or C++Builder
 - Easy REST API End-Point Publishing
 - Server Metadata Publishing based on Swagger.io
 - Mobile Push Notifications
 - User/Group Management
 - API Usage Analytics
 - User Location/Proximity and BeaconFence
 - IoT Edge Modules and ThingPoints

RAD Server Architecture

System Database



EMS Server

- Version
- API
- Users
- Groups
- Installations
- Push
- Edgemodules

- Resource A1
- Resource A2

- Resource B1

- ...



HTTP Clients

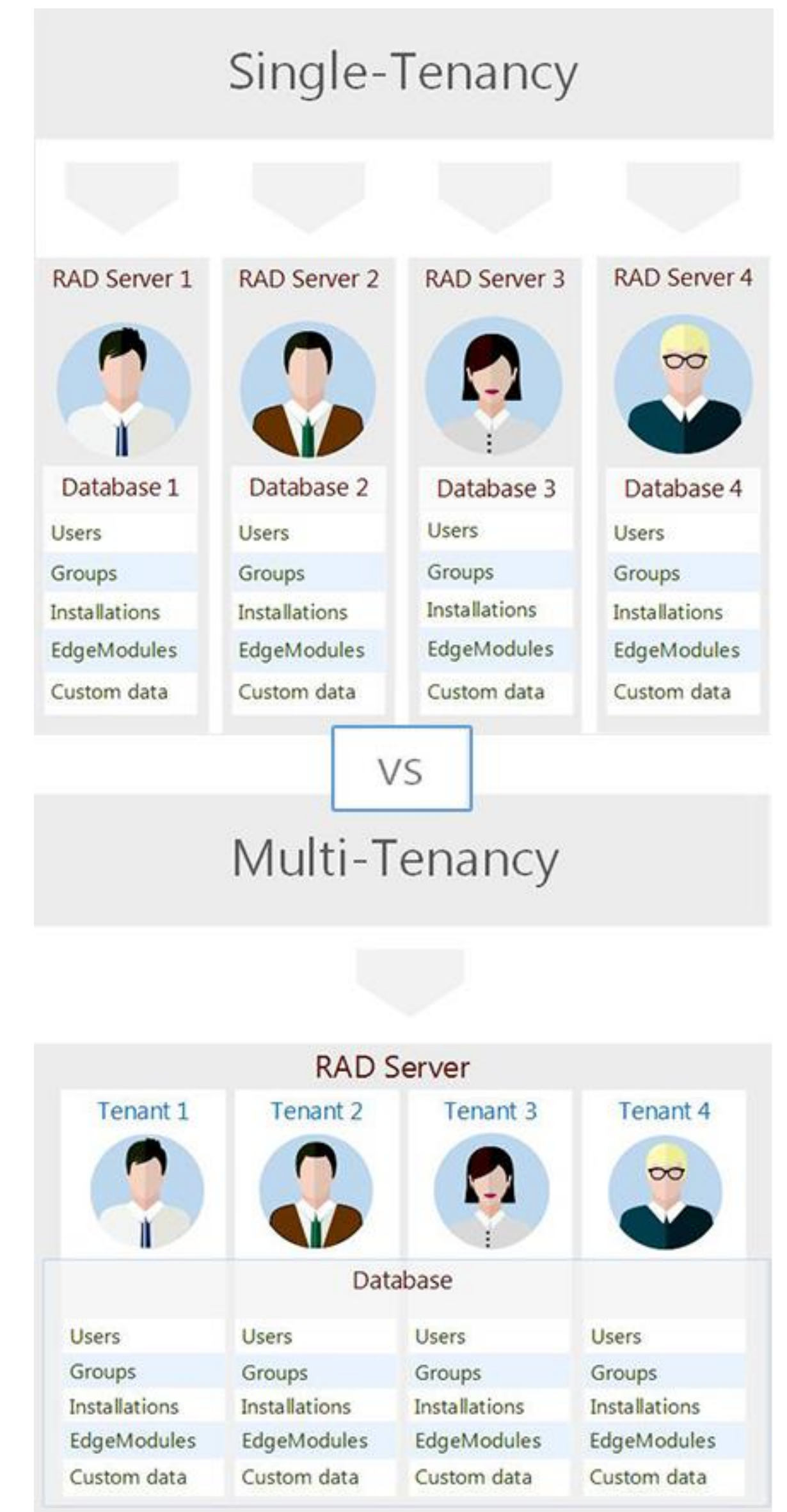


Pluggable EMS packages (*.bpl)

RAD Server Enhancements

Multi-Tenancy Support

- A single RAD Server instance with a single RAD Server database connection can now support multiple isolated tenants
- Each tenant has a unique set of RAD Server resources including Users, Groups, Installations, Edge Modules, and other data
- Tenant Administration: Create new tenants, edit existing ones, add, edit or delete tenants

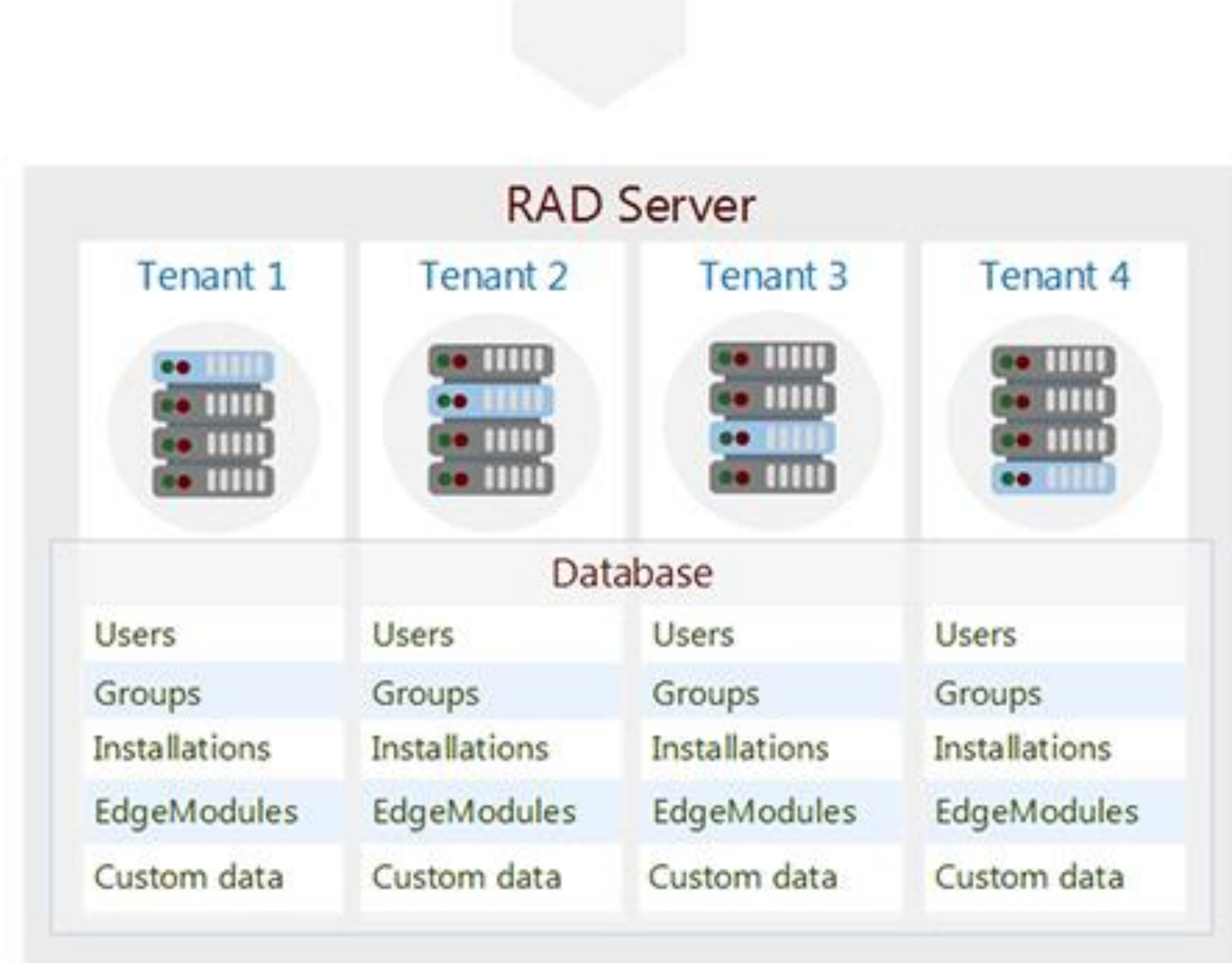
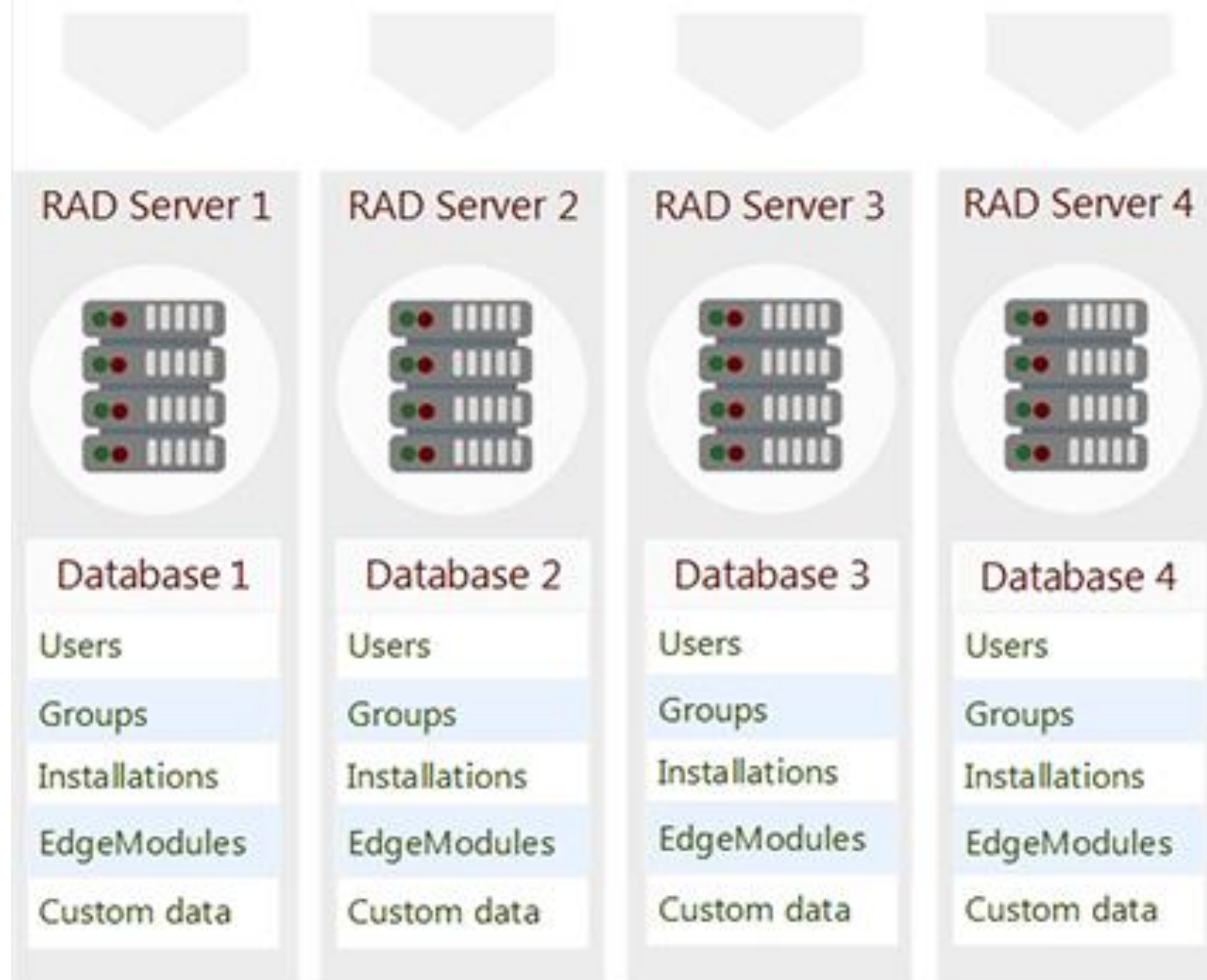


RAD Server

Single-Tenancy

vs

Multi-Tenancy



中場休息

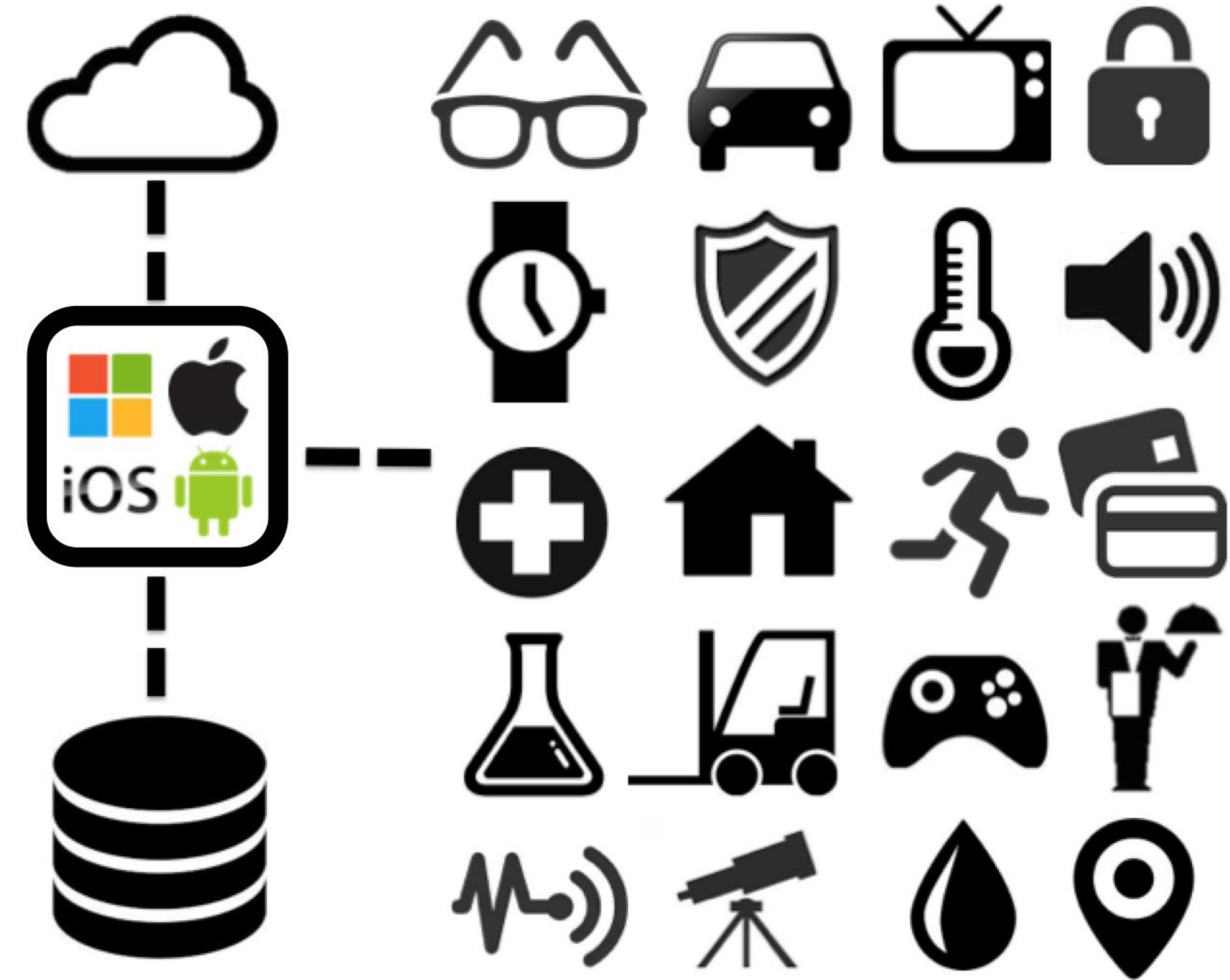


Internet of things



Internet of Things – by Wikipedia

- Physical objects (“things”)
- Electronics
- Software
- Sensors
- Network connectivity
- Collect and exchange data.



Internet of Things – by Wikipedia

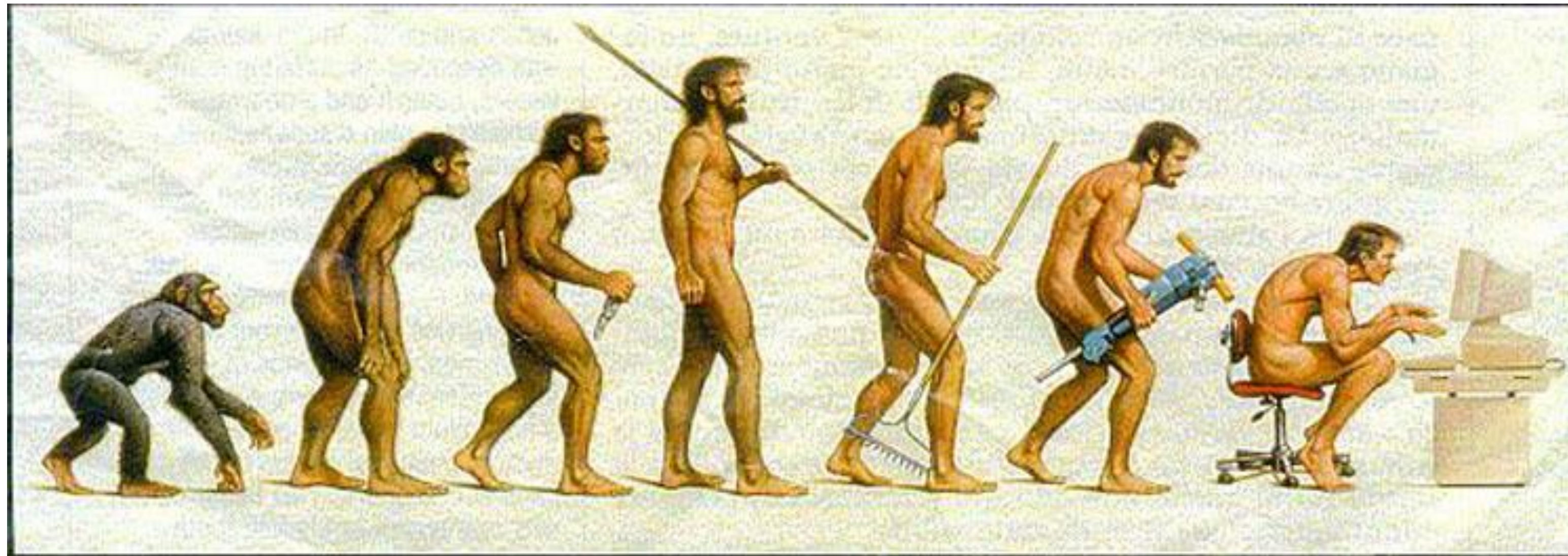


- Objects controlled remotely

物聯網的發展由來

■ 互聯技術的發展

- Desktop : PC begins to connect to general human
- 網路時代 : 計算機相連
- Web時代 : 全世界電腦相連
- 移動時代 : 移動設備相連於人類和計算機
- IoT時代: 硬設備相連於人類和計算機





INTERNET OF THINGS

- 物聯網的發展現況

物聯網的發展現況

■ IoT是目前IT界發展最快的領域

- 因為舊的技術/設備都想連上物聯網而新的技術/設備都想內建物聯網功能 - **軟/硬體的驅動力**
- 物聯網底層技術都已成熟, 夠便宜而且已普及化 – **技術的驅動力**
- 目前的生活模式已進入要求”生活自動化”, “工作自動化” – **商業的驅動力**
- 分散式運算力量已經成熟的支撐物聯網的發展 - **網路/互連的驅動力**

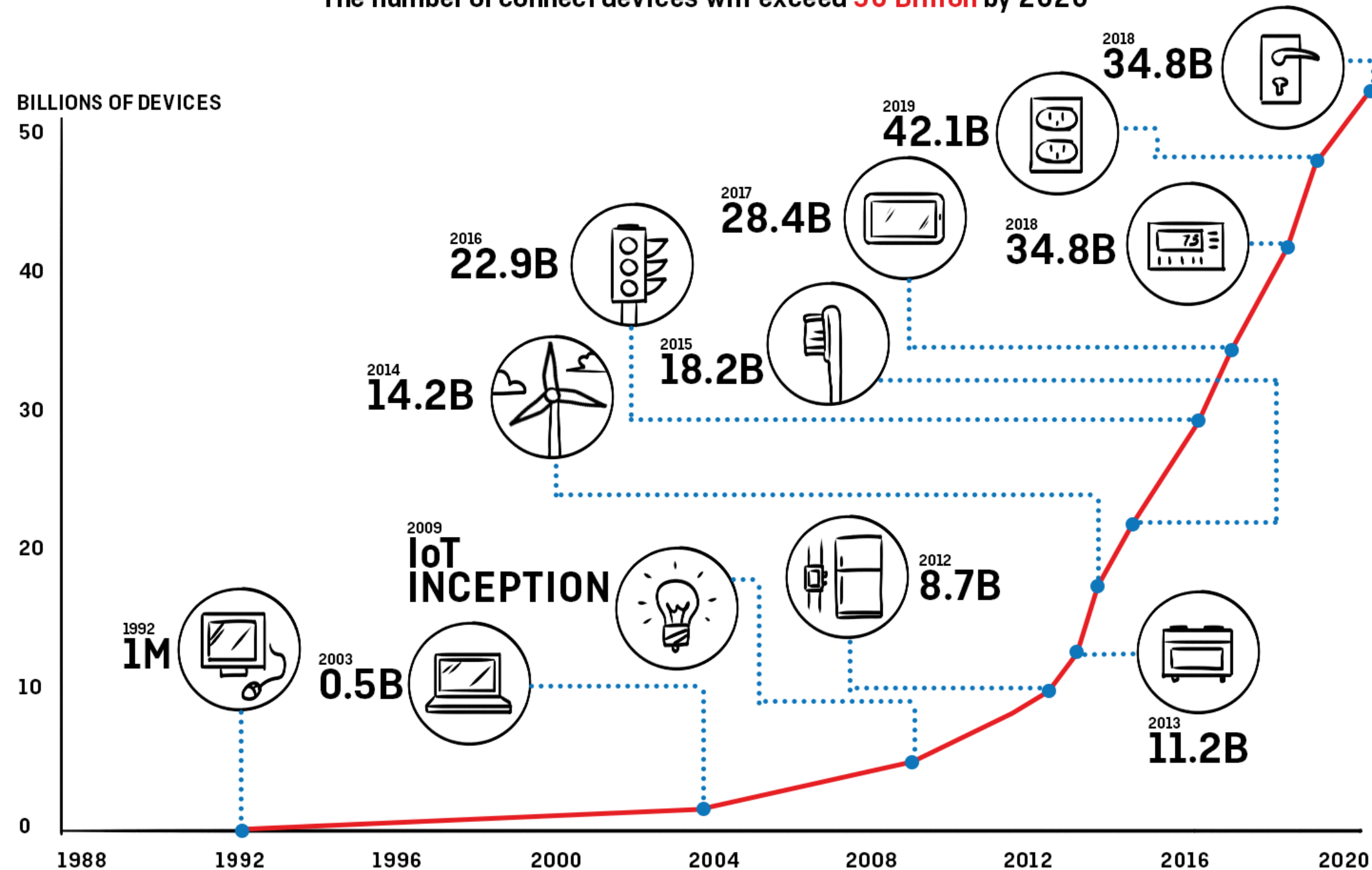
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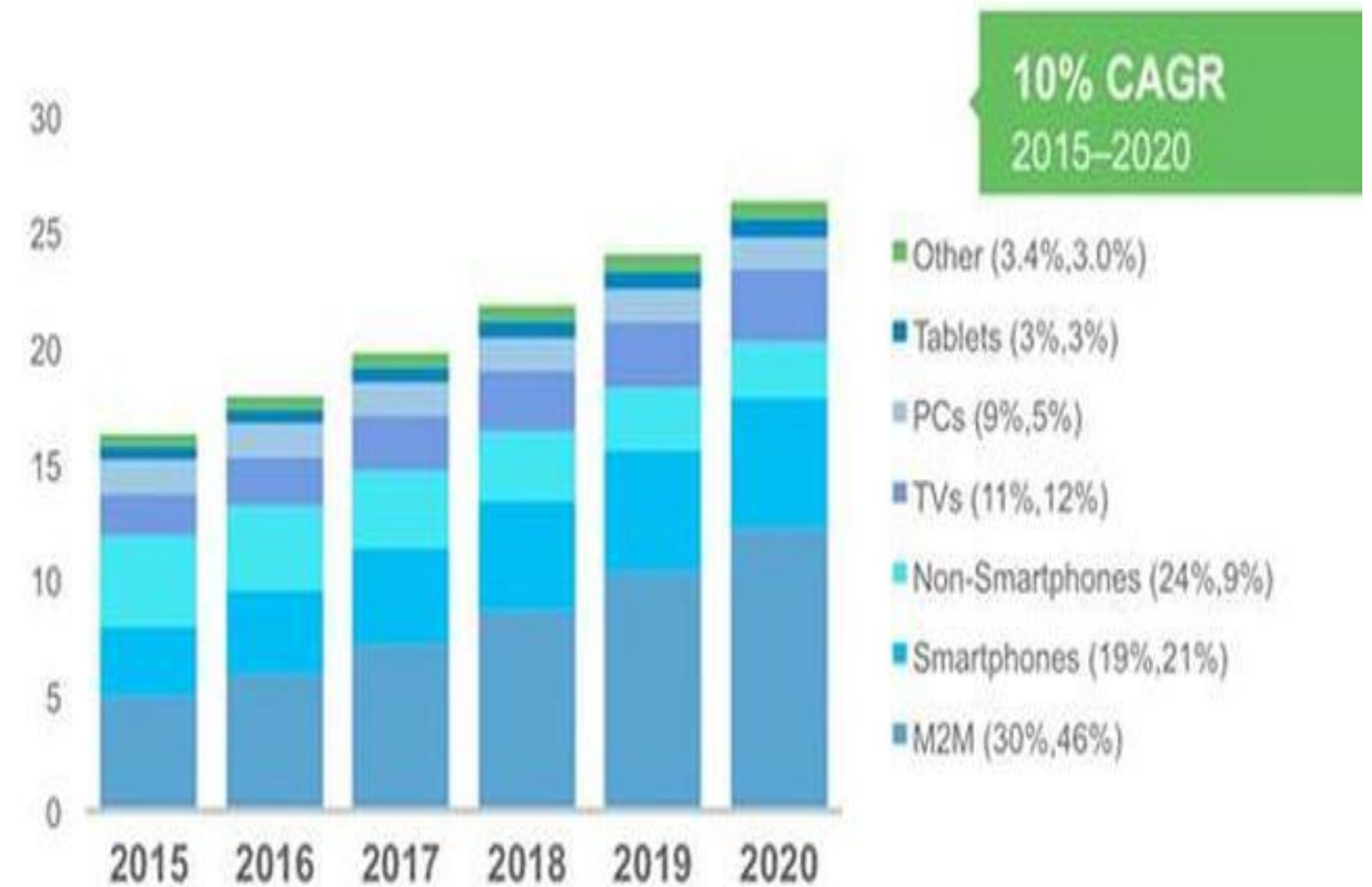
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Growth in the Internet Of Things

The number of connect devices will exceed **50 Billion** by 2020



Billions of Devices



物聯網的發展現況

■ IoT是目前IT界發展最快的領域

• 物聯網底層技術都已成熟, 夠便宜而且已普及化 – **技術的驅動力**

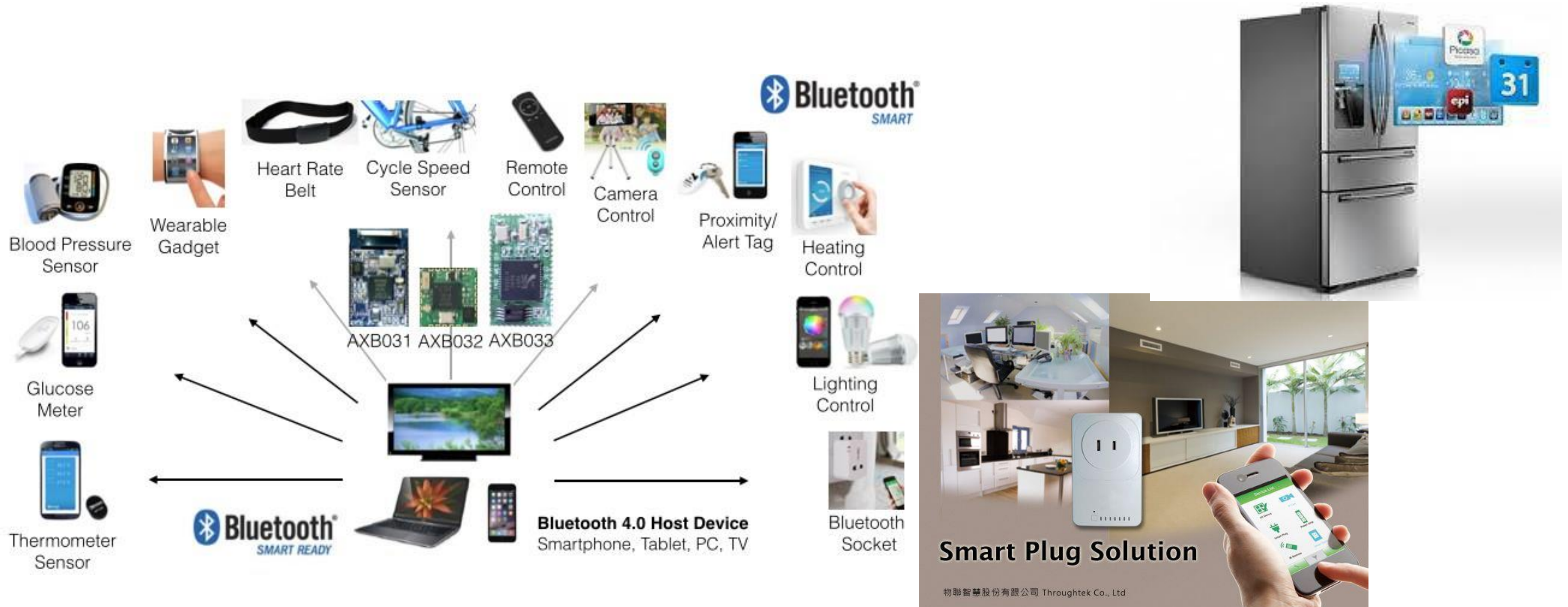
- App Tethering
- WI-FI
- BlueTooth
- BlueTooth Low Energy



物聯網的發展現況

■ IoT是目前IT界發展最快的領域

- 目前的生活模式已進入要求“生活自動化”，“工作自動化” – **商業的驅動力**



物聯網的發展現況

- IoT是目前IT界發展最快的領域

- 分散式運算力量已經成熟的支撐物聯網的發展 - **網路/互連的驅動力**





INTERNET OF THINGS

- 物聯網的應用

物聯網的應用

- Levi's Jeans和Google的合作
 - 導電衣料讓夾克變成任何裝置的觸控介面



物聯網的應用

- Nilox
 - 手錶也能做室內定位搜尋老人、小孩



物聯網的應用

- Google

- 無人汽車將讓盲人、老人、小孩也能開上路



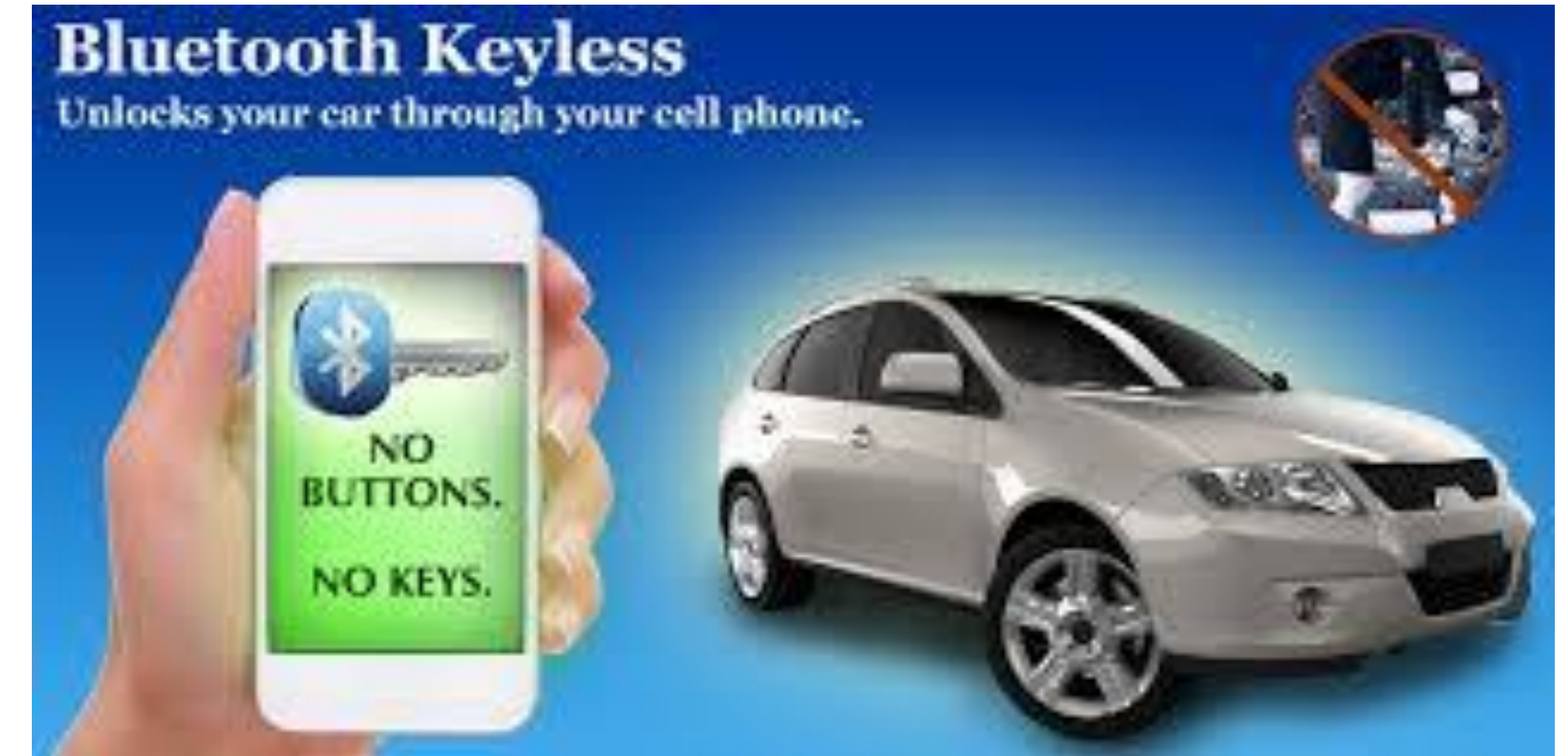
物聯網的應用

- ASUS
 - 物聯網機器人



物聯網的應用

- Volvo, Mercedes



物聯網的應用

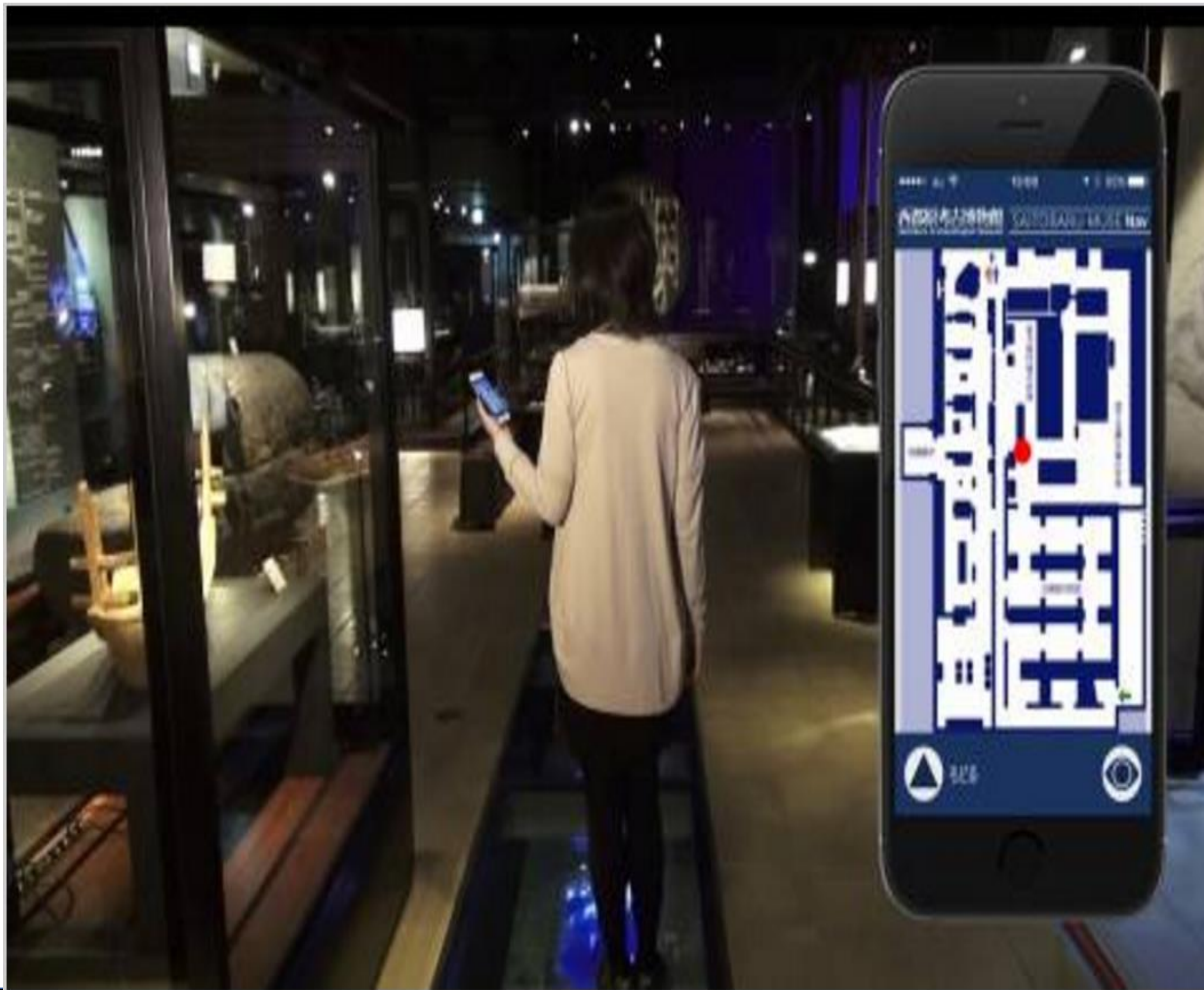
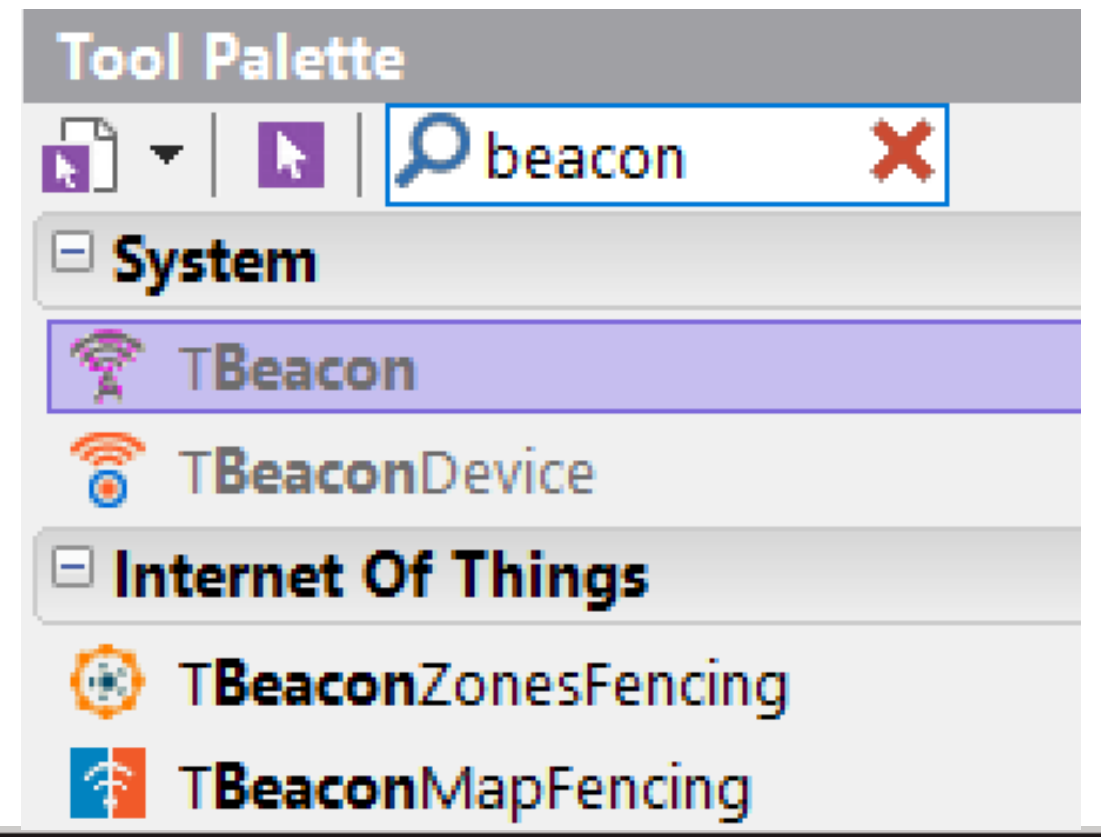
- Macy百貨公司



Reference Image: Macy's Beacon Use
Source: Google Images

物聯網的應用

- 範例：使用Embarcadero的Delphi/C++ Builder開發物聯網室內定位
- <http://ascii.jp/elem/000/001/161/1161367/>



The advertisement features the Embarcadero logo at the top left. It shows a laptop, a tablet, and a smartphone, all displaying the BeaconFence application interface. The interface includes a colorful heatmap of a building's floor plan and a detailed map view. The text is in Japanese and describes the service's capabilities.

屋内での位置検索サービスを提供
GPS が使えない屋内でもナビ機能を提供可能。目的の商品や展示品の検索に対し、エリアまでの誘導が可能です。

ユーザーのルートや滞在時間を集計・分析
位置検出情報は、マーケティング分析にも活用可能。ユーザー行動を可視化することで、商品の陳列や顧客誘導の改善などに役立てることができます。

店舗や美術館などで展示品の情報を提供
ユーザーの現在位置に合わせて、適切なコンテンツをモバイルデバイスに表示できます。移動に追従した表示も可能です。

BeaconFence

ビーコンによる位置検知を容易に活用可能

A small, white, rectangular hardware device is shown in the bottom right corner of the advertisement. It has a small antenna on top and the Embarcadero logo on the front.



INTERNET OF THINGS

- 發展物聯網的相關技術

發展物聯網的相關技術

■ 伺服器端

- 傳統資料庫
- 公有雲
- 私有雲
- 混合雲
- 或是連到共其他系統的中介軟體

發展物聯網的相關技術

■ 仲介層(Middleware)

- EJB伺服器
- Java伺服器
- COM+伺服器
- RESTful伺服器
- CORBA伺服器
- RPC伺服器
- Web伺服器
- 其他原生伺服器

發展物聯網的相關技術

■ 用戶端

- Windows用戶端
- Web用戶端
- Linux用戶端
- Mac用戶端
- **移動用戶端**
- **智慧型設備用戶端**

發展物聯網的相關技術

■ 移動端

- Android
- iOS
- Windows Phone
- 平板設備
- **穿戴式設備**



發展物聯網的相關技術

- 通訊協定
 - TCP/IP
 - WI-FI
 - BlueTooth
 - BlueTooth Low Energy
 - ZWave



發展物聯網的相關技術

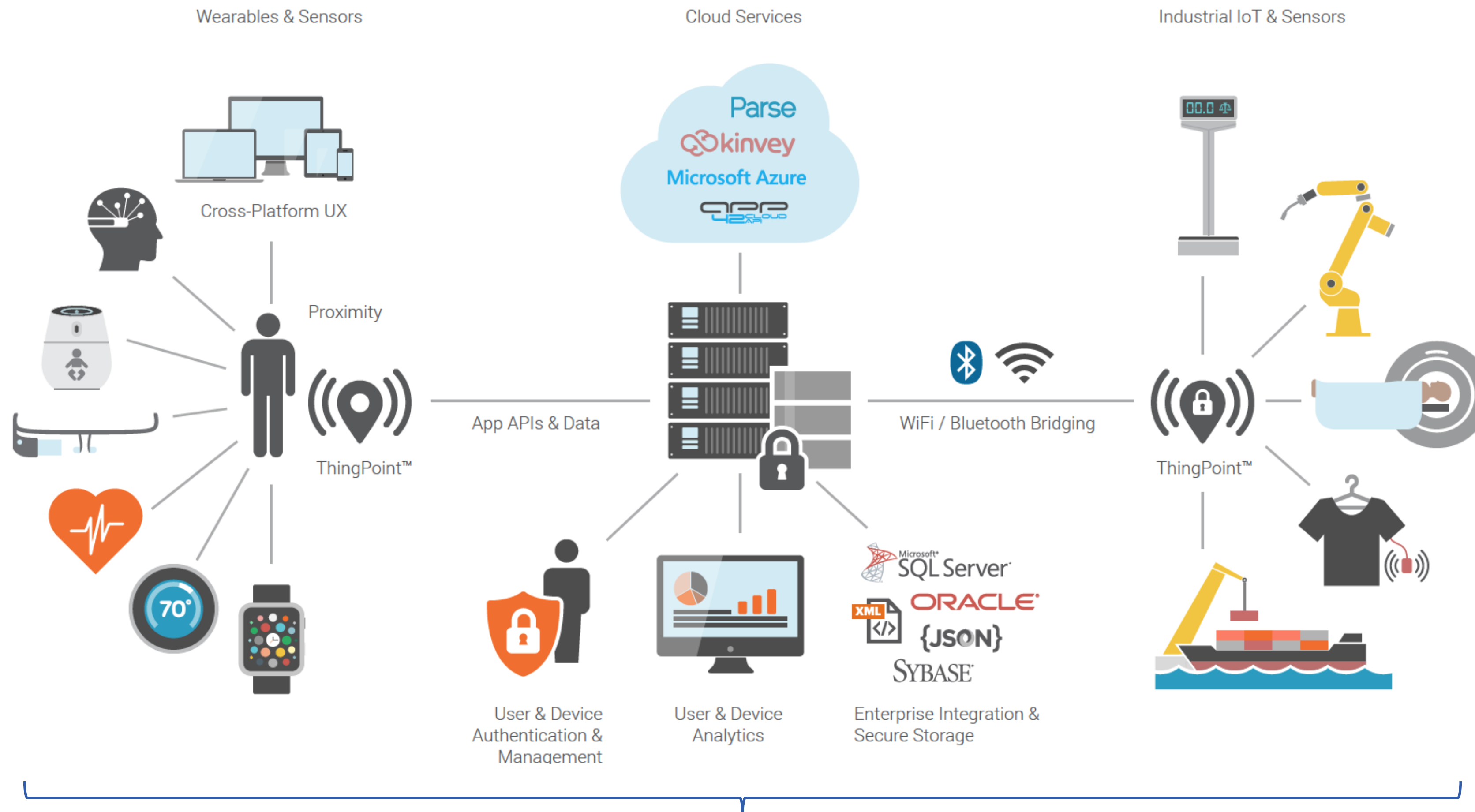
- 軟體連結技術
 - SOAP
 - Web Service
 - RESTful技術



- GET
- POST
- PUT
- DELETE

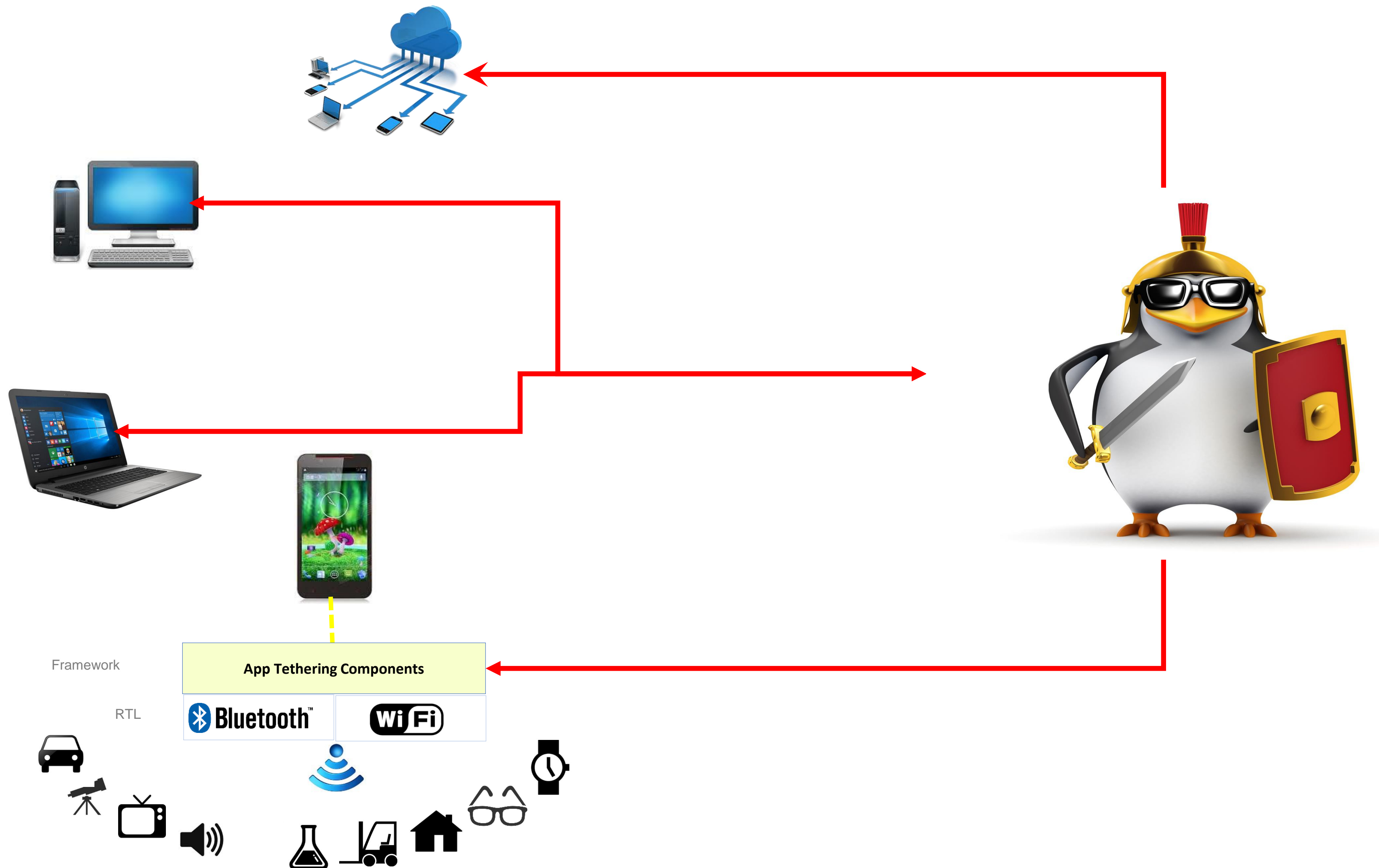
RESTful
Web Services

IoT Enterprise with RAD Server

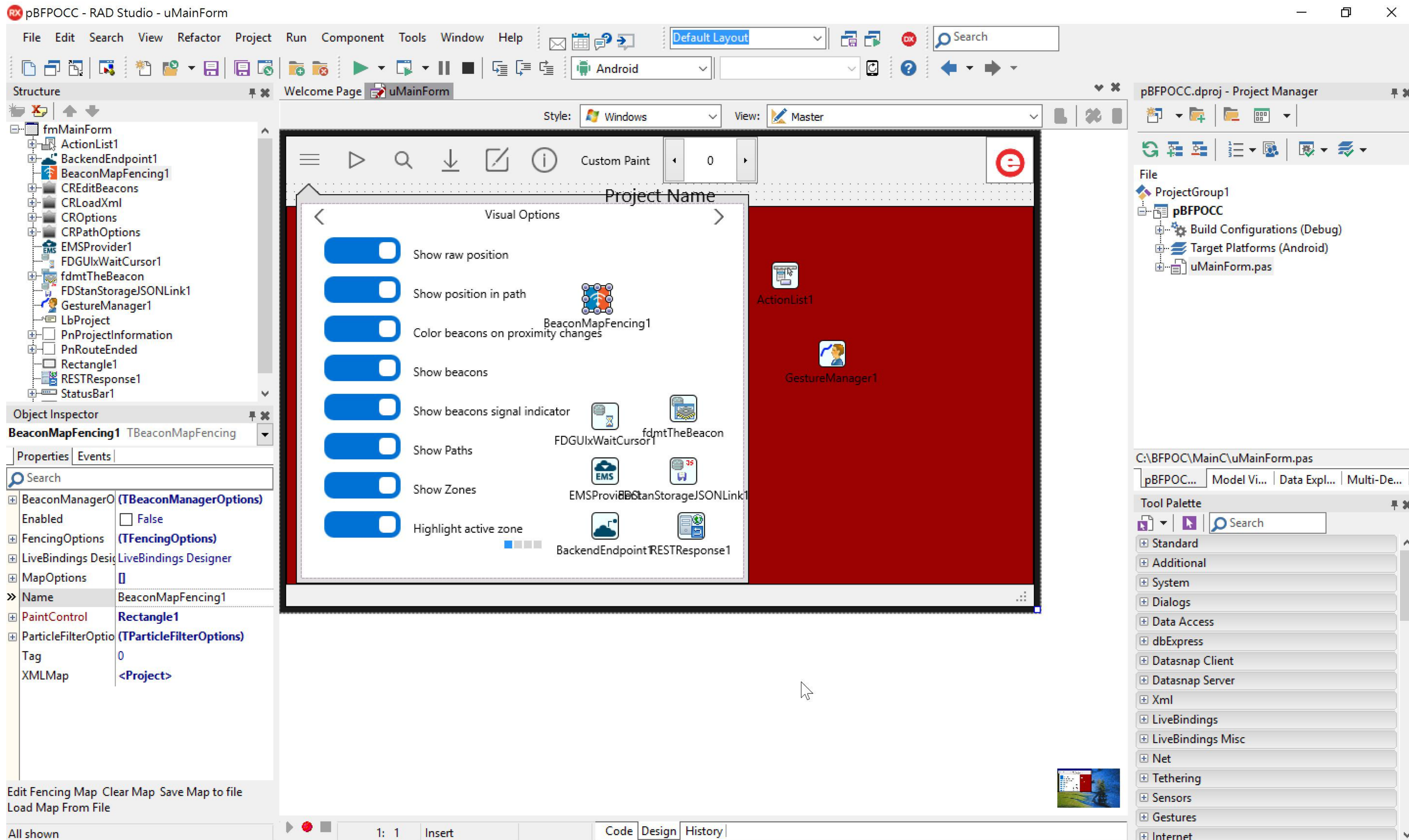


Collect Process Store Publish Analytics

發展物聯網的相關技術



發展物聯網的相關技術



發展物聯網的相關技術

Beacon Fencing Map Editor

File Edit Tools

Gordon House

The screenshot displays the Beacon Fencing Map Editor interface. The main workspace shows a detailed floor plan of 'Gordon House'. A red-shaded area is labeled '書房' (Study) and a blue-shaded area is labeled '客廳' (Living Room). Several circular icons representing beacons are overlaid on the plan, with some having dashed lines indicating their range. The interface includes a menu bar (File, Edit, Tools), a toolbar with various drawing and editing tools, and a right-hand 'Object Properties' panel. The properties panel for a selected 'SRBeacon' includes fields for Name, Filter Properties, KindofBeacon (set to 'iBAltBeacons'), GUID, Major (1), Minor (0), ManufacturerID (-1), EddyNamespace, EddyInstance, DescriptionList (with a 'Set description values' button), Displacement (X: 1006.17, Y: 860.62), FillColor, and Opacity (90.00). A legend at the bottom right lists keyboard shortcuts: ESC - Return to selection tool, Mouse - Scroll - Zoom, and Central Button - Hold to move view.

(1355.07, 701.79)

Object Properties

Name
SRBeacon

Filter Properties
[Icon]

KindofBeacon
iBAltBeacons

GUID
{BB503023-DBF4-44C8-9C0C-2451187}

Major
1

Minor
0

ManufacturerID
-1

EddyNamespace
00000000000000000000

EddyInstance
000000000000

DescriptionList
Set description values

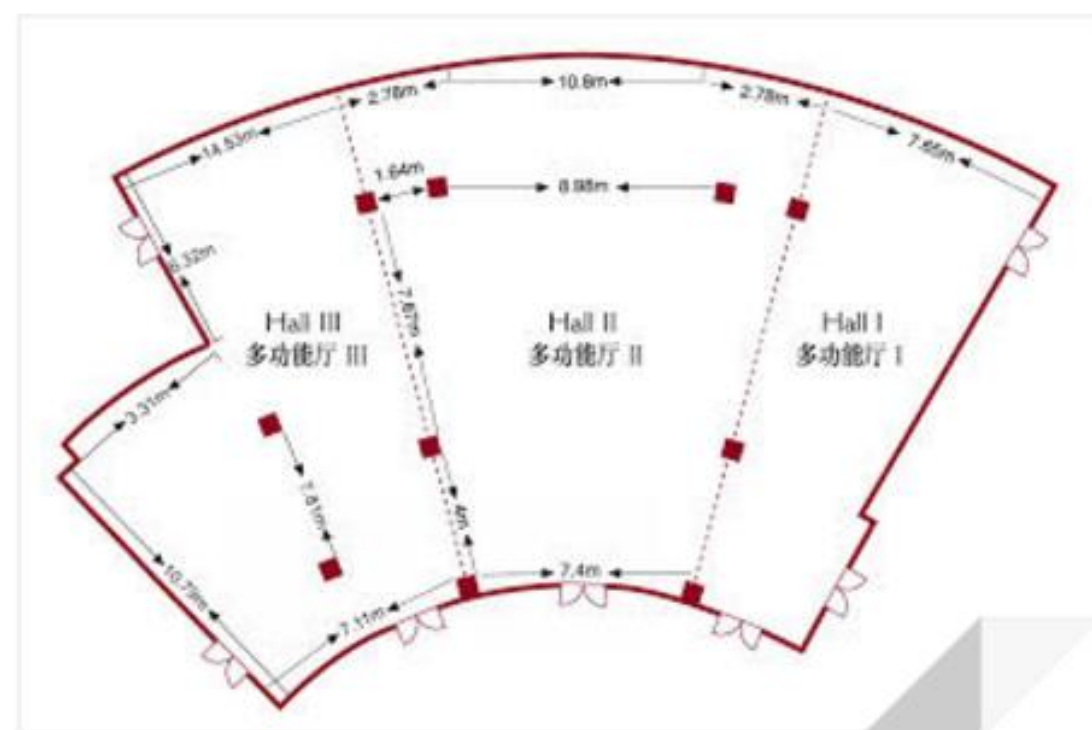
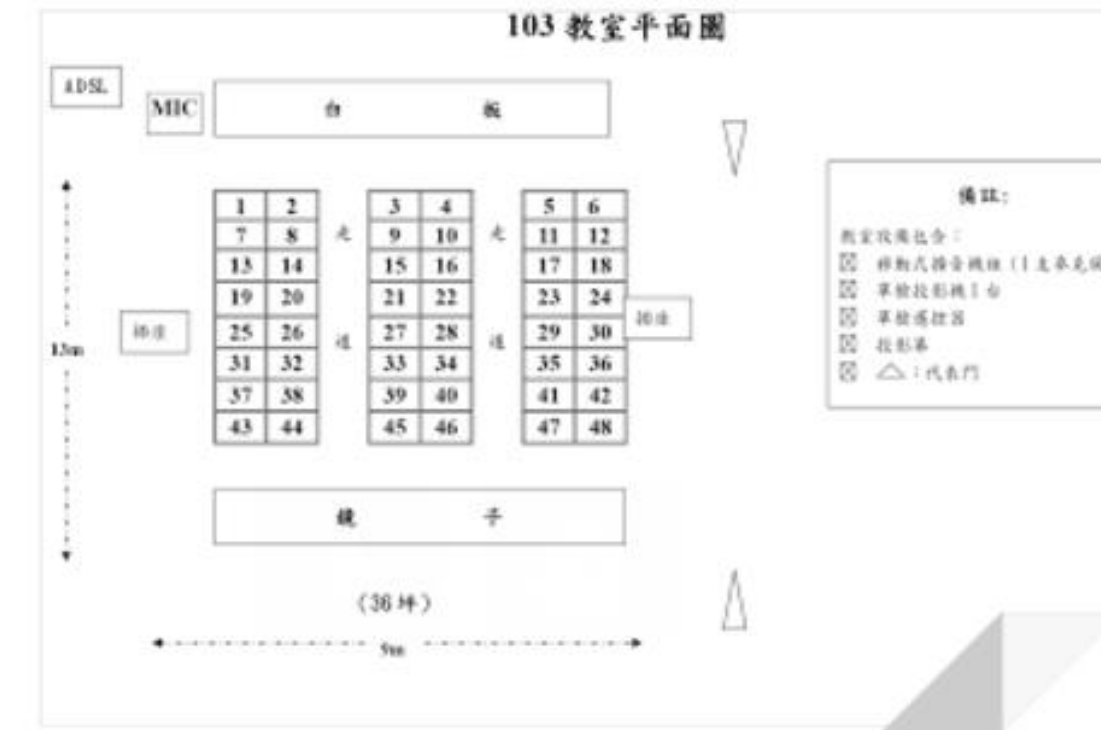
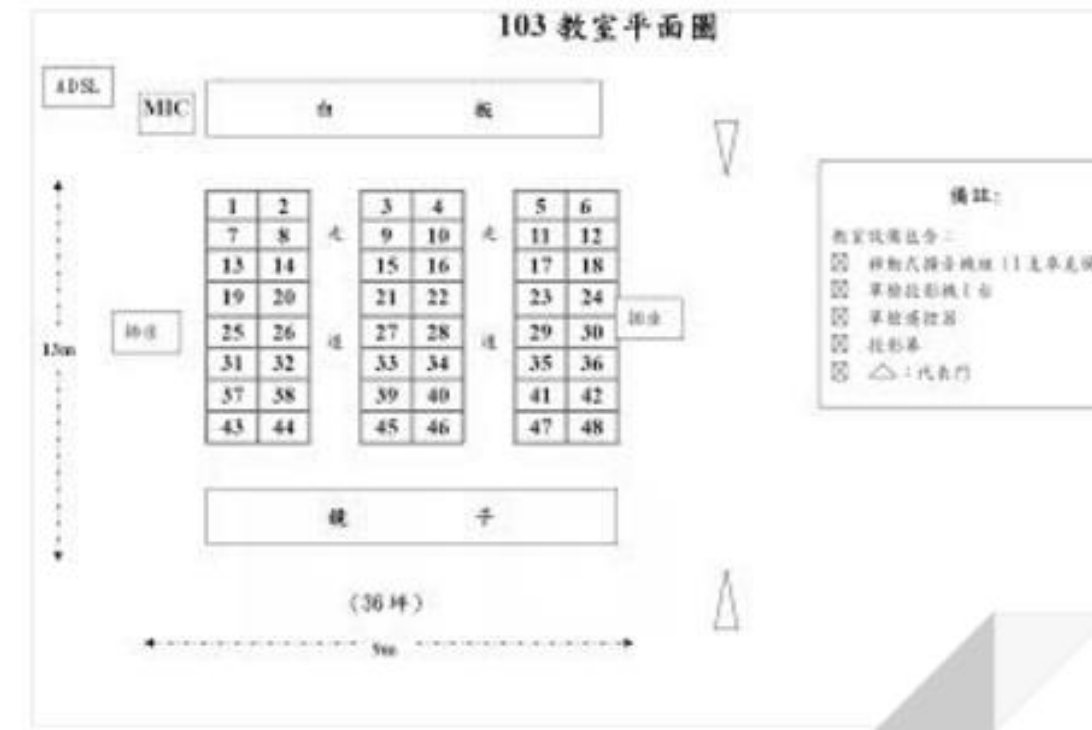
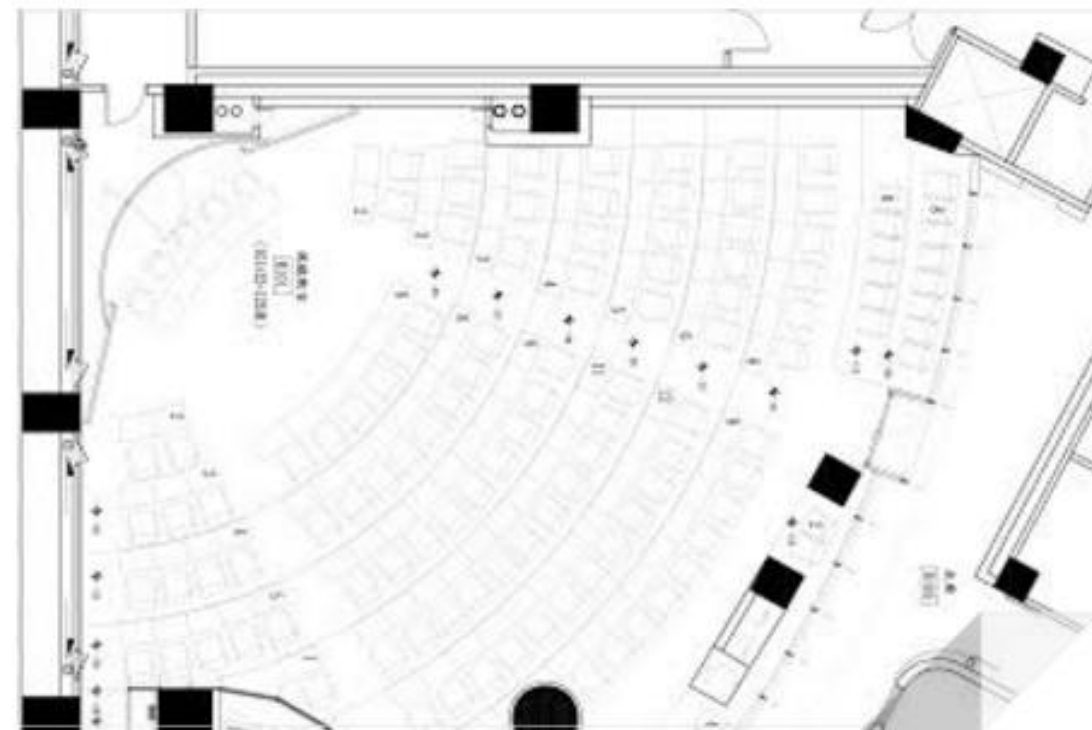
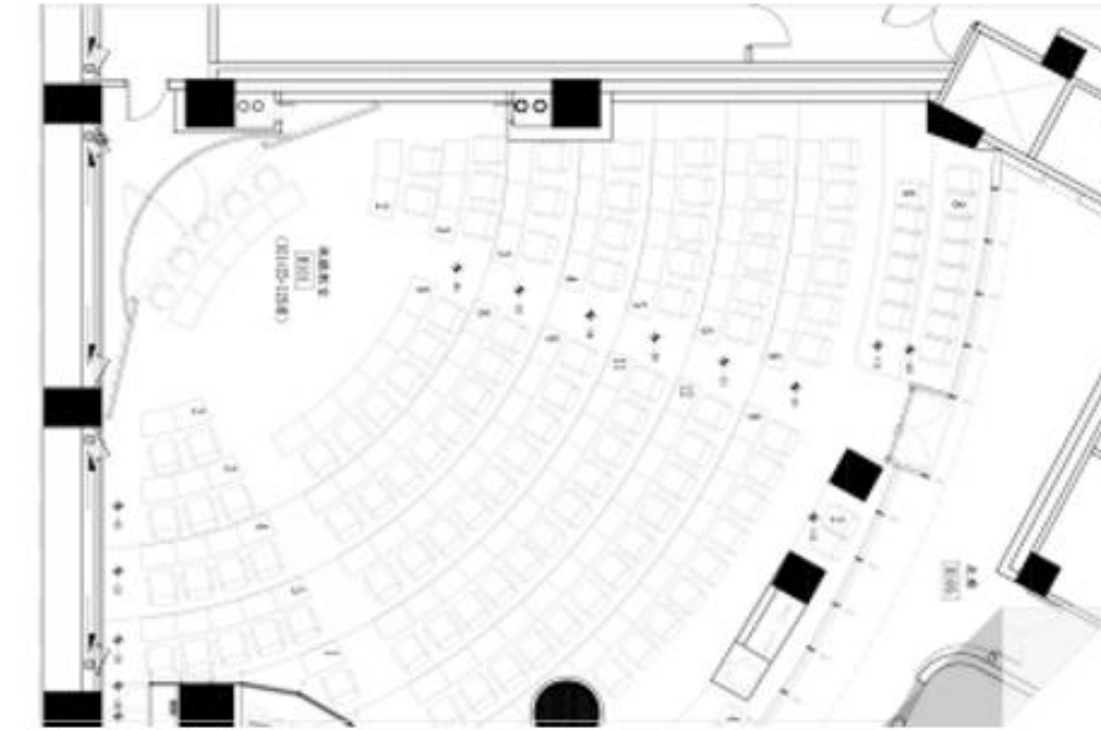
Displacement
X 1006.17
Y 860.62

FillColor
[Color Picker]

Opacity
90.00

ESC - Return to selection tool
Mouse :
Scroll - Zoom
Central Button - Hold to move view

發展物聯網的相關技術



Summary



More Information

- www.embarcadero.com
 - Product details
- <https://community.embarcadero.com>
 - Blogs
 - Events
 - Forums
- <http://docwiki.embarcadero.com/RADStudio/>
 - Latest online documentation

Rad Studio 10.2 Tokyo Editions

- RAD Studio
 - Professional
 - FireDAC AddOn
 - Enterprise
 - Architect
- C++Builder
 - Starter
 - Professional
 - FireDAC AddOn
 - Mobile AddOn
 - Enterprise
 - Architect
- Delphi
 - Starter
 - Professional
 - FireDAC AddOn
 - Mobile AddOn
 - Enterprise
 - Architect