



# 混合式學習的要素： 建設無線網絡和善用網上平台

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## 內容

- 建設無線網絡
  - 建議中的無線網絡架構
  - 無線網絡招標文件
- 善用網上平台
  - 學與教
  - 考評與數據分析



## 建設無線網絡 . 建議中的無線網絡架構

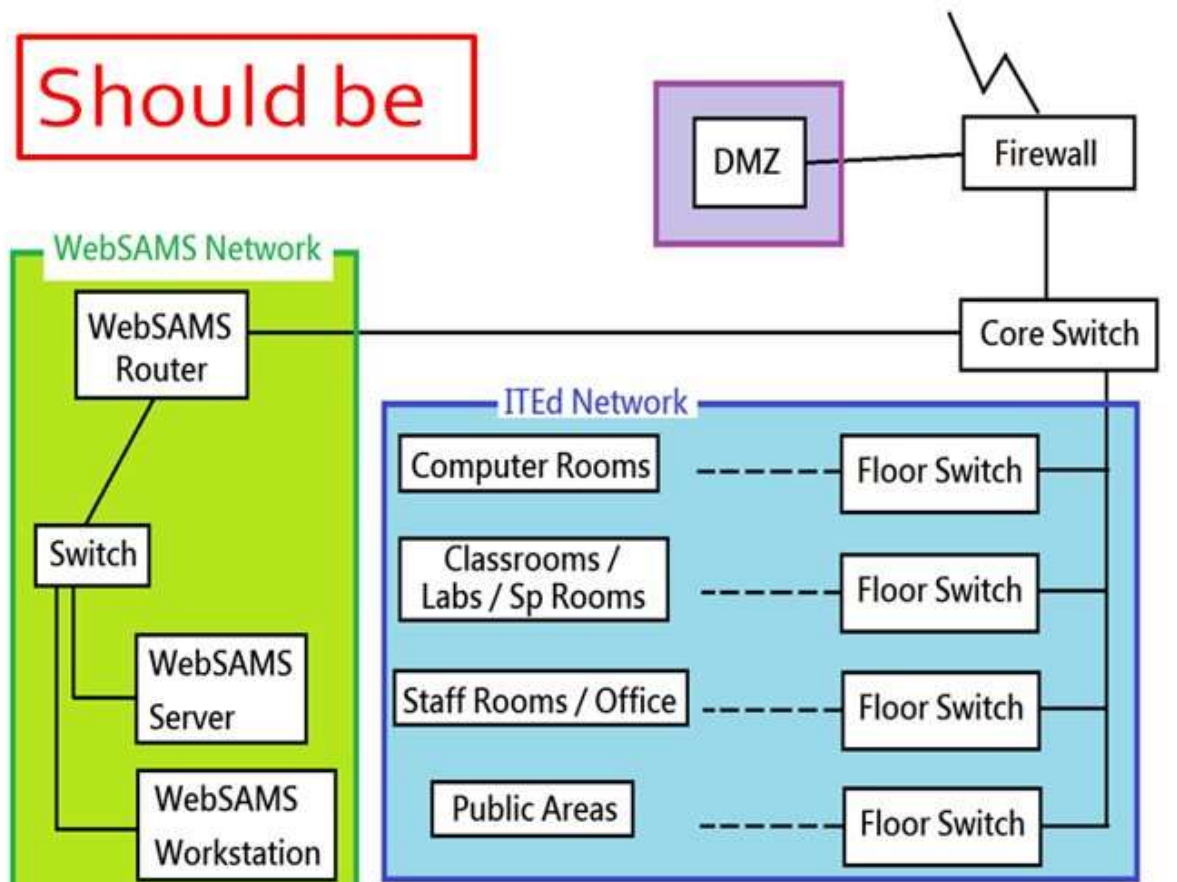
- 設計源起：
  - 安全考慮
  - 架設考慮
  - 管理考慮
  - 習慣考慮



## 建設無線網絡 . 建議中的無線網絡架構

安全考慮

Should be

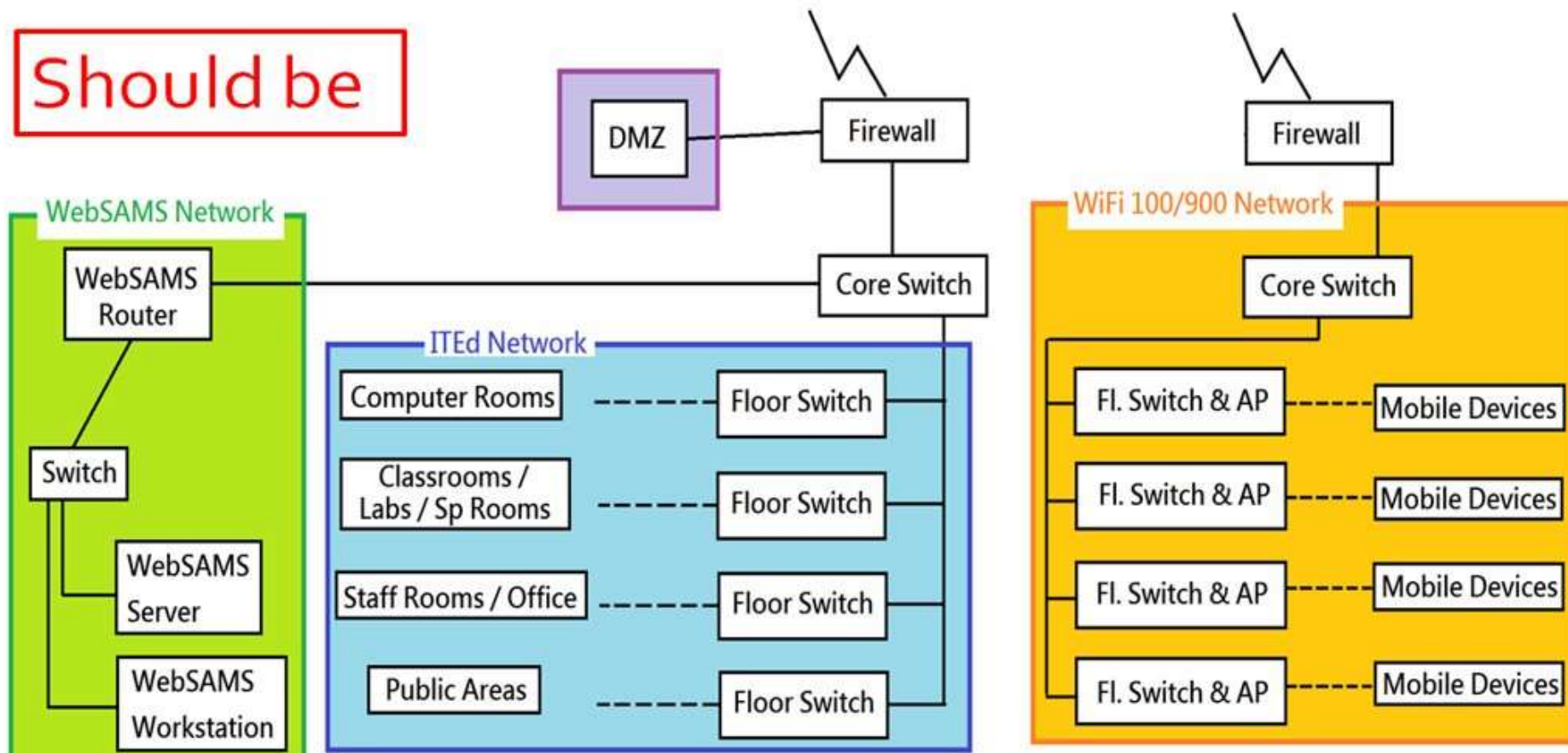




# 建設無線網絡 . 建議中的無線網絡架構

安全考慮

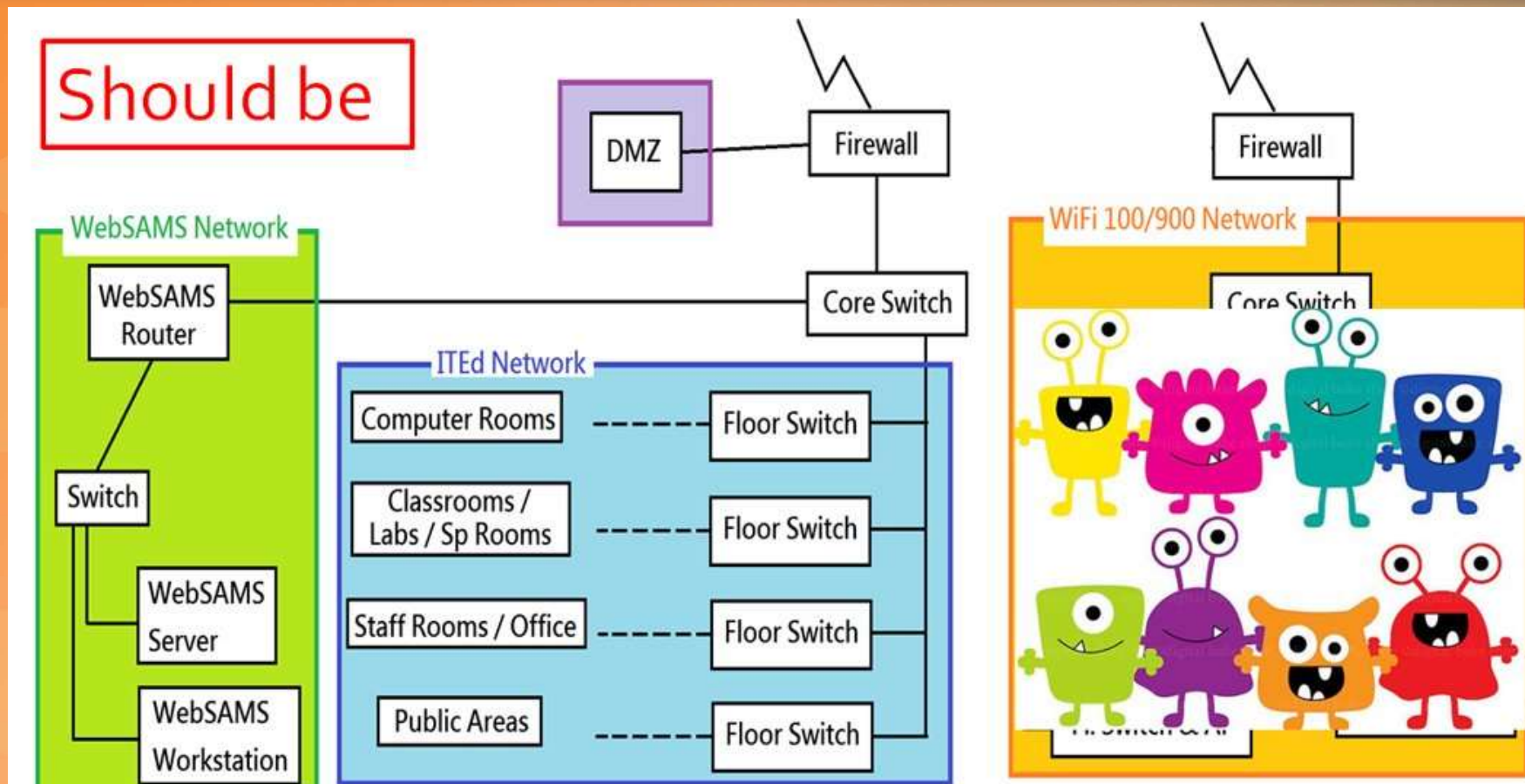
Should be





## 建設無線網絡 . 建議中的無線網絡架構

安全考慮

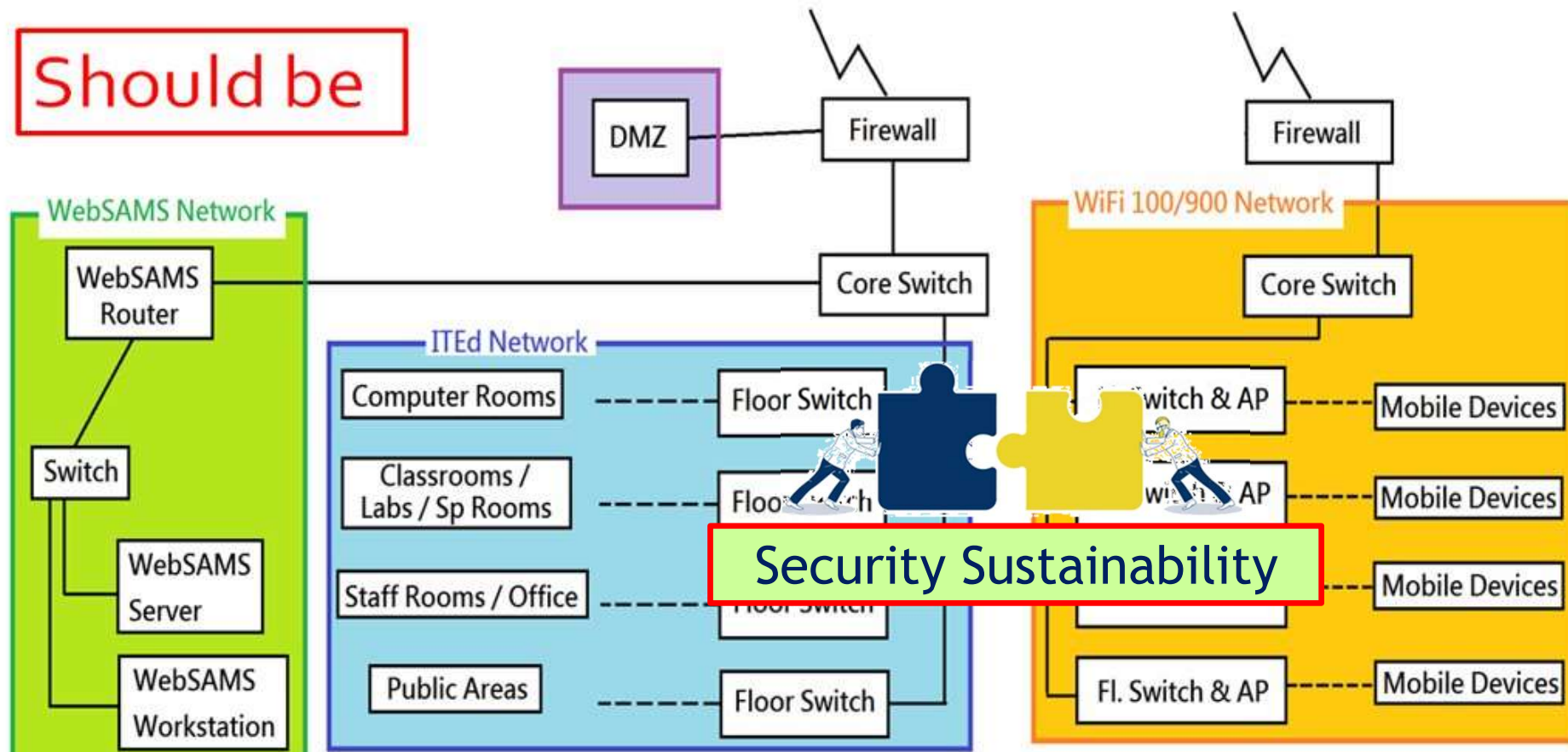




# 建設無線網絡 . 建議中的無線網絡架構

安全考慮

Should be





# 建設無線網絡 . 建議中的無線網絡架構

架設考慮



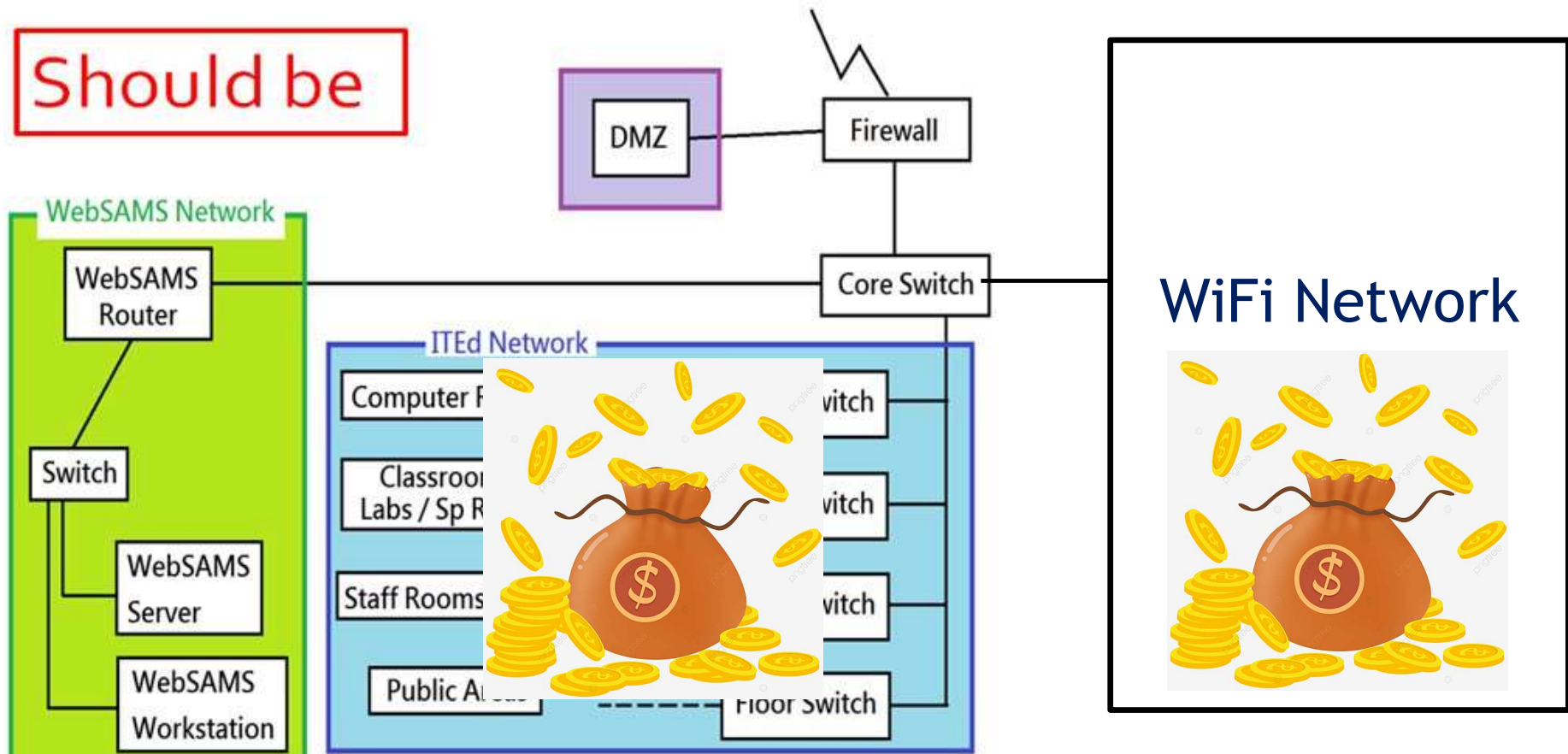
<https://image.shutterstock.com/image-photo/chaotic-interlacing-wires-between-modems-260nw-792792049.jpg> /  
[https://cdn11.bigcommerce.com/s-hyvuk5yhxp/images/stencil/1280x1280/products/776/2269/intel-express-689164-005-510t-1000sx-module-for-500-series-switch-w\\_\\_83739.1582318042.jpg?c=2](https://cdn11.bigcommerce.com/s-hyvuk5yhxp/images/stencil/1280x1280/products/776/2269/intel-express-689164-005-510t-1000sx-module-for-500-series-switch-w__83739.1582318042.jpg?c=2) /  
<https://jsmcomputersolutions.com/wp-content/uploads/2020/08/501852831759-1-1.jpg>



# 建設無線網絡 . 建議中的無線網絡架構

## 架設考慮

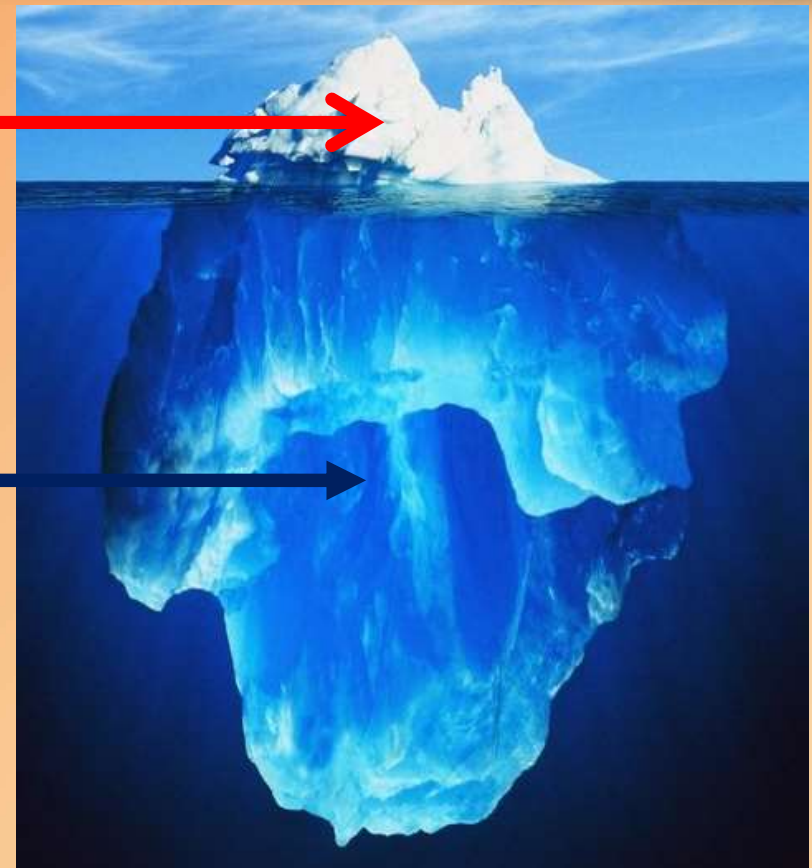
Should be





# 建設無線網絡 . 建議中的無線網絡架構

管理考慮





## 建設無線網絡．建議中的無線網絡架構

習慣考慮



<https://capway-storage.s3.us-west-1.amazonaws.com/any/704fcc4c83e86c49b4f14faf13b5f806/704fcc4c83e86c49b4f14faf13b5f806.png>



# 建設無線網絡．建議中的無線網絡架構

習慣考慮

About EdCity Teacher Student (Sec) Student (Pri) Parent Partner Search Login/Register | 中 | 家

## WaaSchool

Single Sign-on School WiFi Network Account Management WaaSchool

Home About WaaSchool WaaSchool Services Partners Activities Technical Support FAQ

### Home

#### WiFi WaaSchool

The Fourth Strategy on IT in Education announced by the Education Bureau highlighted the importance of eLearning schools' IT infrastructure and equipping all classrooms with WiFi access.

<https://www.edcity.hk/waaschool/en>

**AiTLE** 資訊科技教育領袖協會  
Association of I.T. Leaders in Education

首頁 最新消息 本會資料 本會項目 (Projects) 會員專區 常用連結 IT in Ed · eL

## AiTLE & HKEdCity Project : WaaSchool Project (WiFi as a Service School Partnership Project)

Dates: 08/03/2013

3 - 11 - 2013 WiFi as a Services (WaaS), 本會活動 - Edit

Organised by **AiTLE** 香港教育城 **HKEdCity**

### WiFi as a Service School Partners WaaSchool 伙伴學校

Supported by **HGC** **HKT Education**

<https://www.aitle.org.hk/?p=1482>



## 建設無線網絡 . 建議中的無線網絡架構

習慣考慮



[https://cdn.cheapism.com/images/191-20160429-050635-3348-012015\\_rent\\_or\\_buy\\_.max-784x410.jpg](https://cdn.cheapism.com/images/191-20160429-050635-3348-012015_rent_or_buy_.max-784x410.jpg)



# 建設無線網絡．無線網絡招標文件



香港特別行政區政府  
教育局



字型大小



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## 第四個資訊科技教育策略 - 加強學校的無線網絡基礎設施

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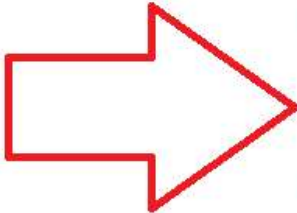
技術顧問服務

<https://www.edb.gov.hk/tc/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/WiFi900/technicaladvisory.html>



# 建設無線網絡．無線網絡招標文件

參考文件 (只有英文版 · 2016年12月2日更新)

- 
- 服務申請表
  - 用戶要求檢查清單 (Information Note) (2016年12月2日)
  - 用戶要求範本 (2016年11月24日)
  - 用戶測試範本
  - 系統測試範本 (2016年11月24日)
  - 學校資訊保安-建議措施
  - WiFi900 用戶測試流動裝置借用申請

<https://www.edb.gov.hk/tc/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/WiFi900/technicaladvisory.html>



# 建設無線網絡．無線網絡招標文件

Draft

## PART X –An example on WiFi REQUIREMENTS SPECIFICATION

**This sample is provided for schools' reference in conducting the WiFi 900 project. Schools are advised to adapt the content according to their school context.**

### 1. Introduction

The Contractor is invited to

- Build up a WiFi network in **<school>** (The School); and
- Provide and maintain a WiFi service through subscription mode.

<https://www.edb.gov.hk/tc/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/WiFi900/technicaladvisory.html>



# 建設無線網絡 . 無線網絡招標文件

## 3.1 Standard Provision

- **WiFi Internet Connectivity** – use IEEE 802.11 a/b/g/n/ac network or above in a standard classroom. The minimum number of classrooms to be covered shall be at least equal to the number of approved classes for the 2017/18 school year, that is **<the number>** classrooms.
- **Number of Concurrent Connection** – commensurate with the maximum number of students, say **<40/expected>**, in a class with at least **<1Mbps/expected>** upload / download bandwidth per connection
- **Number of classrooms using WiFi concurrently.**



# 建設無線網絡 · 無線網絡招標文件

## 3.1 Standard Provision

- **Authentication Method** – use 802.1x standard based authentication and Hong Kong Education City single sign-on services.
- **Session Control** – Hong Kong Education City authentication service can support one device or multiple devices to connect based on user group (student, teachers).
- **Internet Content Filtering Service** – based on filtering profile commonly adopted by most schools and managed by vendors.
- **Existing Network Facilities** – not rely on any existing network facilities and cabling of the School, nor interfere with the existing WiFi network of the School. The Wi-Fi network shall be physically separated from the school network
- **Contract End Arrangement** – All provisions of trunks, conduits, cables, LAN ports and power points shall be considered as fixture of the School and shall become the property of the School. The Contractor shall remove or keep those provisions according to the instruction of the School. Contractor can remove the network equipment such as switch, routers, and access points.

## 3.2 Add-on Service (to be aligned with Part Y)

- **Authentication Method** – user account system being used by school, etc.
- **Session Control** – Other requirements
- **Internet Content Filtering Service** – specific request on content filtering.
- **Integration of networks** – system integration with existing network with secure design.
- **Contract End Arrangement** – Other arrangements

<https://www.edb.gov.hk/tc/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/WiFi900/technicaladvisory.html>



## 建設無線網絡．無線網絡招標文件

# Standard Provision

Vs

# Add-on Service

### 撥款安排

班數	經常性津貼
18班或以下	\$48,530
19至24班	\$66,740
25至30班	\$84,940
31至36班	\$103,140
37班或以上	\$121,340



# 建設無線網絡 · 無線網絡招標文件

Great minds...

IT in Education Technological Series:  
Preparing Specifications for  
Enhancing Wi-Fi Infrastructure in Schools  
Session 1 – Part 1



Prepared on 29 November 2016

Don't think alike...

我的雲端硬碟 > ... > WiFi 900 (III) & WiFi 1

名稱 ↑



Tender Reference



2016-12-06 - 2016 - 2017 Session 1 - Part 1.pdf



2016-12-06 - 2016 - 2017 Session 1 - Part 2.pdf



2016-12-06 - 2016 - 2017 Session 2.pdf



2016-12-06 - Course Assignment - Session 1.pdf



2016-12-06 - Course Assignment - Session 2.pdf


[goo.gl/W77VWC](https://goo.gl/W77VWC)




## 建設無線網絡．無線網絡招標文件

我的雲端硬碟 > ... > Tender Reference > WiFi 900 (II) ▾ 👤

名稱 ↑

 2017-01-03 - Tender Sample from School A.doc 👤

 2019-04-20 - Tender Sample from School A (updated).doc 👤

[goo.gl/W77VWC](https://goo.gl/W77VWC)



# 建設無線網絡 · 無線網絡招標文件

## **PART 4 : Standard Provision**

Specifications of Standard Provision of School Wi-Fi Setup & Subscription Services (36 months)

### a) **Basic / Minimum Specification**

Item	General Description (For details, please refer to Annex 1)	Applicable (Yes / No)	If not, please provide detail
1	<b><i>Wi-Fi services starts</i></b> ☆ XX XXXXXXX, XXXX		
2	<b><i>Wi-Fi subscription period</i></b> ☆ 36 months, starting from XX XXXXXXX, XXXX		
3	<b><i>Wi-Fi Standard and Coverage</i></b> ☆ use IEEE 802.11 a/b/g/n/ac network or above in a XX classroom ☆ Classrooms ◇ Main Building ▲ 1/F. : 103, XXX, XXX, XXX, XXX ▲ 2/F. : 201, XXX, XXX, XXX, XXX ▲ 3/F. : 301, XXX, XXX, XXX, XXX ▲ 4/F. : 402, XXX, XXX, XXX, XXX ▲ 5/F. : 506, XXX, XXX, XXX, XXX ◇ New Wing ▲ 1/F. : N11, XXX, XXX, XXX, XXX		



# 建設無線網絡 · 無線網絡招標文件

Item	General Description (For details, please refer to Annex 1)	Applicable (Yes / No)	If not, please provide detail
4	<p><b><i>Number of Concurrent Connection per classroom</i></b></p> <ul style="list-style-type: none"> <li>☆ commensurate with maximum <b>XX</b> devices in a classroom with at least <b>XXMbps</b> upload / download bandwidth per connection. The contractor shall provide a PoC to prove that the required bandwidth can be supported for <b>XX</b> devices at the same time before tender award</li> </ul>		
5	<p><b><i>Number of classrooms using Wi-Fi concurrently</i></b></p> <ul style="list-style-type: none"> <li>☆ <b>XX</b> classrooms</li> </ul>		
6	<p><b><i>SSID &amp; Authentication Method</i></b></p> <ul style="list-style-type: none"> <li>☆ Support Multiple SSID co-exist through an AP</li> <li>☆ Different SSID can have different authentication method</li> <li>☆ Authentication method : Support MAC address filter (School can have the ability to add / edit / remove MAC address permit / deny to Wi-Fi connection)</li> <li>☆ Authentication method : use 802.1x standard based authentication and Hong Kong Education City single sign-on services</li> </ul>		
7	<p><b><i>Session Control</i></b></p> <ul style="list-style-type: none"> <li>☆ Hong Kong Education City authentication service can support one device or multiple devices to connect based on user group (student, teachers)</li> </ul>		



## 建設無線網絡 . 無線網絡招標文件

8	<b><i>Internet Content Filtering Service</i></b> ☆ based on filtering profile commonly adopted by most schools and managed by vendors		
9	<b><i>Relationship with Existing Network Infrastructure and Facilities</i></b> ☆ not rely on any existing network facilities and cabling of the School, nor interfere with the existing Wi-Fi network of the School. The Wi-Fi network shall be physically separated from the school network ☆ if school existing trunks / conduits do not have enough space, new trunks / conduits are required to install for the connection ☆ if school existing floor cabinets (racks) do not have enough space, new racks are required to install for the network connecting devices and related equipments ☆ All new trunks, conduits and cabinets are required to compromise with school re the installation / mounting before actual installation / mounting		



# 建設無線網絡 · 無線網絡招標文件

Item	General Description (For details, please refer to Annex 1)	Applicable (Yes / No)	If not, please provide detail
10	<p><b>Broadband Network</b></p> <ul style="list-style-type: none"> <li>☆ use separate broadband for the Wi-Fi service</li> <li>☆ provide at least <u>XXMbps</u> Internet connection at school for the Wi-Fi service and allowing upgrade to <u>XGbps</u></li> </ul> <p><i>if counter-propose other Internet connection method instead of providing independent Broadband, please specify clearly</i></p>		
11	<p><b>Managed Service</b></p> <ul style="list-style-type: none"> <li>☆ operate the Wi-Fi network and the dedicated broadband line, using managed service model, by a self-owned network operation centre with international quality management, IT service management and information security certification grant, provide end-to-end service with single point of contact including configuration, provisioning of service, proactive monitoring, maintenance and regular reporting</li> </ul>		
12	<p><b>Service Level Agreement</b></p> <ul style="list-style-type: none"> <li>☆ ensure at least 99.7% availability of the Wi-Fi services</li> <li>☆ support four-hour response time and four-hour service recovery with active monitoring, helpdesk support</li> <li>☆ support hours from Mon to Sat <u>XX:00</u> am to <u>XX:00</u> pm</li> <li>☆ provide monthly monitoring reports for the School</li> </ul>		



## 建設無線網絡．無線網絡招標文件

13	<p><b><i>Contract End Arrangement</i></b></p> <ul style="list-style-type: none"><li>☆ All provisions of trunks, conduits, cables, LAN ports and power points shall be considered as fixture of the School and shall become the property of the School, the Contractor shall remove or keep those provisions according to the instruction of the School</li><li>☆ Contractor can remove the network equipment such as switch, routers, and access points</li></ul>		
14	<p><b><i>Delay of Schedule</i></b></p> <ul style="list-style-type: none"><li>☆ If the Contractor fails to provide any part of the WiFi service which shall be ready for use in the School within 60 days after the target Ending then notwithstanding anything else contained in this Contract the School shall be entitled to terminate this Contract with forthwith by giving written notice to the Contractor and to recover from the Contractor the amount of all damages and loss suffered by the School resulting from such failure, including without limitation to any damages and loss resulting from the termination of related service orders.</li><li>☆ Within one (1) week of the termination of this Contract, the Contractor shall collect its own Hardware and Software at his own cost after the contractor has removed the School Data in the Hardware.</li><li>☆ The Contractor shall reinstate and make good the concerned area of the School to the satisfaction of the</li></ul>		



# 建設無線網絡 · 無線網絡招標文件

## **PART 5 : Add-on Provision**

Specifications of Add-On Provision of School Wi-Fi Setup & Subscription Services (36 months)

### a) **Basic / Minimum Specification**

<b>Item</b>	<b>General Description</b> (For details, please refer to Annex 1)	<b>Applicable</b> (Yes / No)	<b>If not, please provide detail</b>
<b>1</b>	<p><b><i>Additional Wi-Fi Coverage &amp; Number of Concurrent Connection</i></b></p> <ul style="list-style-type: none"> <li>☆ Special Rooms               <ul style="list-style-type: none"> <li>◇ Main Building                   <ul style="list-style-type: none"> <li>▲ G/F. : General Office (XX connections)</li> <li>▲ G/F. : Hall (XX connections)</li> <li>▲ 1/F. : Library (XX connections)</li> <li>▲ 3/F. : XXX (10 connections)</li> <li>▲ 4/F. : Staff Room (XX connections)</li> <li>▲ 5/F. : XXX (XX connections)</li> <li>▲ 5/F. : XXX (XX connections)</li> <li>▲ 6/F. : XXX (XX connections)</li> <li>▲ 6/F. : XXX (XX connections)</li> </ul> </li> <li>◇ New Wing                   <ul style="list-style-type: none"> <li>▲ 1/F. : XXX (XX connections)</li> <li>▲ 1/F. : XXX (XX connections)</li> <li>▲ 2/F. : XXX (XX connections)</li> <li>▲ 3/F. : XXX (XX connections)</li> <li>▲ 4/F. : XXX (XX connections)</li> </ul> </li> </ul> </li> </ul>	<input type="checkbox"/>	
<b>2</b>	<b><i>Others are same as Part 4</i></b>		



# 建設無線網絡．無線網絡招標文件

## Part 6 : Pricing Scheme, Site Visits, related information

### Pricing Scheme

School is looking for a financial scheme for

<b>Part</b>	<b>Pricing (HKD)</b>	<b>Remark</b> (like any deviation of your provided system from school specification expectation)
<b>Part 4 : Standard Provision</b>		
<b>Part 5 : Add-on Provision</b>		



# 建設無線網絡 . 無線網絡招標文件

## Information to be provided by Service Provider

The Service Provider is required to submit the following information and document

- A Statement of Compliance to provide response that the quotation complies with all requirements stated in this Specification.
- No upfront cost or one off cost schools shall be paid throughout the entire subscription period.
- Proposed AP location mark on the Floor plan.
- Proposed Network infrastructure show on the Network Diagram.
- Implementation Plan.
- WiFi Access Point certificates issued by OFCA.
- Quantity and Model of the following equipments and devices by filling in the table below :

<b>Equipments and devices</b>	<b>Quantity</b>	<b>Model</b>
WiFi Controllers		
Access Points		
Router/Firewall		
Core Switch		
Access PoE Switches		
LAN Cables		
Others (please specify)		

- Product information including technical and descriptive literature and catalogues. Information provided by the



## 建設無線網絡．無線網絡招標文件

- |  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|
- Will the new Wi-Fi System establishment use school existing Wi-Fi equipments (as stated in Part 2 ~ 10 AP + 1 Controller set owned by School) :

Will the new Wi-Fi System establishment use school existing Wi-Fi equipments (Y / N) ?	
--	--

### Site Visit(s):

- Two identical site visits will be arranged at **XXXX-XX-XX (XXX) PM from XX:XX – XX:XX & XXXX-XX-XX (XXX) PM from XX:XX – XX:XX**. Interested parties please registered at <https://goo.gl/XXXXXXXX> for the site visit(s).
- Q&A raised at the site visits will not be posted out for others reference



# 建設無線網絡．無線網絡招標文件

## **PART 3 : Background, Objective and the Whole Design**

### a) *Background & Objective*

- 1) The School will enhance / top up the IT infrastructure so as to set up the necessary Wi-Fi environment in the school premises (full Wi-Fi coverage in required classrooms, see appendix for details) for supporting e-learning in class.

### b) *The Whole Design*

- 1) A contractor will be hired to design, build, operate and maintain the whole Wi-Fi infrastructure; and to pay for the service by subscription thereafter, through a subscription model, for a period of 36 months.
- 2) The setup need to make good use of school existing Wi-Fi equipments and devices so as to lower the cost and be more environmental friendly. If used, must fully integrate the devices to the newly established Wi-Fi System.  
(Remark : Integrate in terms of connection, AP management and monitoring)

#### i. School Existing Wi-Fi equipments and devices

- ☆ 10 AP + 1 Controller set owned by School
  - ◇ 1 pcs XXXXXXXX Wireless Controller with 10 AP License
  - ◇ 2 pcs XXXXXXXX Access Point
  - ◇ 8 pcs XXXXXXXX Access Point



# 建設無線網絡．無線網絡招標文件

## **Selection criteria**

School is looking for a contractor based on the following criteria

- Proposed pricing fit with school budget
- Solution suitability to school
- Equipment and services level that can offer
- Case reference
- Other useful information

## **Terms of Payment**

The subscription will be paid in arrears of each month during the subscription period.



# 建設無線網絡 . 無線網絡招標文件

## • WiFi 6 / AX

### Part A : School WiFi 900 (3-year contract)

#### Specification :

Item	Descriptions [ WiFi 900 (3-year contract) ]	Comply key requirement (Y/N)	If not, please provide detail, or Remarks (If any)
1	<b>Wi-Fi services starts</b> <ul style="list-style-type: none"><li>XXXX-XX-XX (XXX)</li></ul>		
2	<b>Wi-Fi subscription period</b> <ul style="list-style-type: none"><li>36 months, starting from XXXX-XX-XX (XXX)</li></ul>		
	<b>Wi-Fi Standard and Coverage (1)</b> <ul style="list-style-type: none"><li>use IEEE 802.11 a/b/g/n/ac/ac2 network or above in the following rooms<ul style="list-style-type: none"><li>Ground Floor</li></ul></li></ul>		



# 建設無線網絡 . 無線網絡招標文件

## Wi-Fi Standard and Coverage (1)

- use IEEE 802.11 a/b/g/n/ac/ac2 network or above in the following rooms
  - Ground Floor
    - ◆ Principal & Vice Principal Office
    - ◆ General Office
    - ◆ XXXXXXXX
  - 1st Floor
    - ◆ XXXXXXXX
    - ◆ XXXXXXXX
  - 2nd Floor
    - ◆ XXXXXXXX
    - ◆ XXXXXXXX
  - 3rd Floor
    - ◆ XXXXXXXX
    - ◆ XXXXXXXX
  - 4th Floor
    - ◆ XXXXXXXX
    - ◆ XXXXXXXX

3

Item	Descriptions [ WiFi 900 (3-year contract) ]
4	<h3>Wi-Fi Standard and Coverage (2)</h3> <ul style="list-style-type: none"> <li>• use IEEE 802.11ax network or above in the following rooms               <ul style="list-style-type: none"> <li>• Ground Floor                   <ul style="list-style-type: none"> <li>◆ Covered Playground (80)</li> <li>◆ XXXXXXXX</li> <li>◆ XXXXXXXX</li> </ul> </li> <li>• 1st Floor                   <ul style="list-style-type: none"> <li>◆ XXXXXXXX</li> <li>◆ XXXXXXXX</li> </ul> </li> <li>• 2nd Floor                   <ul style="list-style-type: none"> <li>◆ Hall (250)</li> </ul> </li> <li>• 7th Floor                   <ul style="list-style-type: none"> <li>◆ XXXXXXXX</li> <li>◆ XXXXXXXX</li> </ul> </li> </ul> </li> </ul>



# 建設無線網絡 · 無線網絡招標文件

5	<p><b>Number of Concurrent Connection per classroom</b></p> <ul style="list-style-type: none"> <li>For those room under item 3 above [<b>Wi-Fi Standard and Coverage (1)</b>], commensurate with maximum <b>XX</b> devices in a room with at least <u>XXMbps</u> upload / download bandwidth per connection. The contractor shall provide a PoC to prove that the required bandwidth can be supported for <b>XX</b> devices at the same time before tender award</li> <li>For those room under item 4 above [<b>Wi-Fi Standard and Coverage (2)</b>], commensurate with maximum number of said device as specified in the bracket after the room number/name in that room with at least <u>XXMbps</u> upload / download bandwidth per connection. The contractor shall provide a PoC to prove that the required bandwidth can be supported for said number of devices at the same time before tender award</li> </ul>	7	<p><b>SSID &amp; Authentication Method</b></p> <ul style="list-style-type: none"> <li>Support Multiple SSID co-exist through an AP</li> <li>Different SSID can have different authentication method</li> <li>Authentication <u>method</u> : Support MAC address filter (School can have the ability to add / edit / remove MAC address permit / deny to Wi-Fi connection)</li> <li>Authentication <u>method</u> : use 802.1x standard based authentication and Hong Kong Education City single sign-on services</li> </ul>
		8	<p><b>Session Control</b></p> <ul style="list-style-type: none"> <li>Hong Kong Education City authentication service can support one device or multiple devices to connect based on user group (student, teachers)</li> </ul>
6	<p><b>Number of classrooms using Wi-Fi concurrently</b></p> <ul style="list-style-type: none"> <li><b>XX</b> rooms</li> </ul>	9	<p><b>Internet Content Filtering Service</b></p> <ul style="list-style-type: none"> <li>based on filtering profile commonly adopted by most schools and managed by vendors</li> </ul>



# 建設無線網絡 · 無線網絡招標文件

## ***Relationship with Existing Network Infrastructure and Facilities***

10

- not rely on any existing ITED network facilities and ITED cabling of the School, nor interfere with the existing Wi-Fi network of the School. The Wi-Fi network shall be physically separated from the school network
- if trunks / conduits for existing School WiFi900 do not have enough space, new trunks / conduits are required to install for the connection
- if floor cabinets (racks) for existing School WiFi900 do not have enough space, new racks are required to install for the network connecting devices and related equipment
- if cables for existing School WiFi900 are not enough, new cables are required to install
- All new trunks, conduits, cabinets and cables are required to compromise with school re the installation / mounting before actual installation / mounting

## ***Broadband Network***

11

- use separate broadband for the Wi-Fi service
- provide at least XXXXbps Internet connection at school for the Wi-Fi service and allowing upgrade to XXXXbps if counter-propose other Internet connection method instead of providing independent Broadband, please specify clearly

## ***Managed Service***

12

- operate the Wi-Fi network and the dedicated broadband line, using managed service model, by a self-owned network operation centre with international quality management, IT service management and information security certification grant, provide end-to-end service with single point of contact including configuration, provisioning of service, proactive monitoring, maintenance and regular reporting



# 建設無線網絡 · 無線網絡招標文件

13	<p><b>Service Level Agreement</b></p> <ul style="list-style-type: none"> <li>ensure at least 99.7% availability of the Wi-Fi services</li> <li>support four-hour response time and four-hour service recovery with active monitoring, helpdesk support</li> <li>support hours from Mon to Sat <b>XX:00</b> am to <b>XX:00</b> pm</li> <li>provide monthly monitoring reports for the <u>School</u></li> </ul>
14	<p><b>Contract End Arrangement</b></p> <ul style="list-style-type: none"> <li>All newly added / provided trunks, conduits, cables, LAN ports and power points, if has/have, shall be considered as fixture of the <u>School</u> and shall become the property of the School, the Contractor shall remove or keep those provisions according to the instruction of the School</li> <li>Contractor can remove the network equipment such as switch, routers, and access points</li> </ul>

15	<p><b>Delay of Schedule</b></p> <ul style="list-style-type: none"> <li>If the Contractor fails to provide any part of the <u>WiFi</u> service which shall be ready for use in the School within 60 days after the target Ending then notwithstanding anything else contained in this Contract the School shall be entitled to terminate this Contract with forthwith by giving written notice to the Contractor and to recover from the Contractor the amount of all damages and loss suffered by the School resulting from such failure, including without limitation to any damages and loss resulting from the termination of related service orders.</li> <li>Within one (1) week of the termination of this Contract, the Contractor shall collect its own Hardware and Software at his own cost after the contractor has removed the School Data in the Hardware.</li> <li>The Contractor shall reinstate and make good the concerned area of the <u>School</u> to the satisfaction of the School after removal of the hardware.</li> </ul>
16	<p><b>Technical Detail</b></p> <ul style="list-style-type: none"> <li>Please refer to the information below.</li> </ul>



## 建設無線網絡 . 無線網絡招標文件

interruption.

- 1.3. The thin client WLAN Access Point (AP) shall be a high-performance wireless network access device, which shall be connected with the Power over Ethernet (PoE) Access Switches via Structured Cabling System. Appropriate type of connection cables between WLAN APs and the antenna shall be provided.
- 1.4. The WLAN APs shall be compatible with IEEE 802.11a/b/g/n/ac/ac2/ax standard or above (according to the rooms specified at item 3 and 4 in the specification table above), support dual band of 2x2:2 in 2.4GHz and 5GHz. For WiFi AX, support dual band of 2x2:2 in 2.4GHz and 4x4: 4 in 5GHz as well as OFDMA, MU-MIMO and Internal antennas.
- 1.5. The Contractor shall design the WLAN System to provide the coverage for the required wireless coverage place. The received signal strength measurement from the Wi-Fi Service at the Wi-Fi client device (such as tablet PC or notebook computer) is no worse than -68 dBm. The Contractor shall



# 建設無線網絡．無線網絡招標文件

## 11. Wi-Fi Project Reference

11.1. The Contractor shall list out **XX** Wi-Fi 100/900 reference cases with compliment letters.

11.2. The compliment letters shall be provided during the tender submission

11.3. To prove that the Contractor has the capability on Wi-Fi system design and maintenance, The Contractor shall list out **XX** reference cases in non-subscription model which uses the same wireless solution vendor as the proposed brand in last **XX** years while the cases in a single year shall not be less than **XX**.

11.4. The project references shall be provided during tender submission.



## 建設無線網絡 . 無線網絡招標文件

- Implementation Plan.
- WiFi Access Point certificates issued by OFCA.
- Quantity and Model of the following equipments and devices and devices by filling in the table below :

<u>Equipments and devices</u>	Quantity	Model	Brand New (Y/N)?
<u>WiFi</u> Controllers			
Access Points			
Router/Firewall			
Core Switch			
Access PoE Switches			
LAN Cables			
Others (please specify)			

- Product information including technical and descriptive literature and catalogues. Information



## 建設無線網絡．無線網絡招標文件

- **Workflow experience :**
  - **Before Tender issue**
    - Invite different partners to come and provide quotation / tender sample
    - → budget / tender information reference
  - **Tender Drafting**
    - → getting HCF / LCM



## 建設無線網絡．無線網絡招標文件

- **Workflow experience :**
  - **During tendering**
    - Treat all fairly
  - **Tender Comparison**
    - Organize the facts (provision
  - **Tender Approval**
    - Tender Approval Committee



## 建設無線網絡．無線網絡招標文件

- **Led to experience in Tenders for**
  - WiFi
  - School PA, sound system
  - Printing (Photocopier) system
  - CCTV
  - Teacher Desk
  - TSS
  - STEM Room
  - Overseas Tour



# 建設無線網絡．無線網絡招標文件



香港特別行政區政府  
教育局



字型大小



最新消息

有關教育局

新聞公報

教育制度及政策

課程發展

學生及家長相關

教師相關

學校行政及管理

公共及行政相關

公開資料

聯絡我們

主頁 > 學校行政及管理 > 財務管理 > 資助學校採購程序的參考資料

## 資助學校採購程序的參考資料

● [教育局通告第4/2013號「資助學校採購程序」](#) PDF

● [《資助學校採購程序指引》\(更新日期:14.10.2019\)](#) PDF

● [教育局通告第4/2013號附件](#) DOC

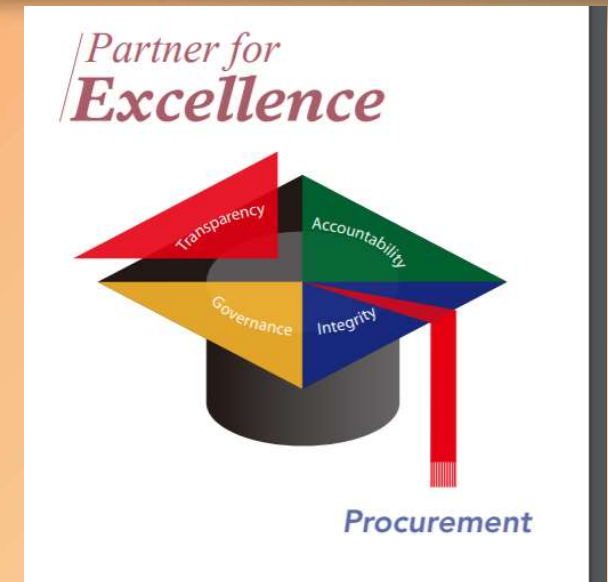
[https://www.edb.gov.hk/tc/sch-admin/fin-management/procurement-procedures-in-aided-schools/procurement\\_procedures\\_in\\_aided\\_schs.html](https://www.edb.gov.hk/tc/sch-admin/fin-management/procurement-procedures-in-aided-schools/procurement_procedures_in_aided_schs.html)



# 建設無線網絡．無線網絡招標文件

## • Procurement Principles

- Value for money
- Accountability
- Transparency
- Open and fair competition
- Avoidance of conflict of interest
- Confidentiality of commercially sensitive information
- Segregation of duties
- Compliance with the law and other requirements



[https://www.icac.org.hk/filemanager/en/content\\_216/m3procurement.pdf](https://www.icac.org.hk/filemanager/en/content_216/m3procurement.pdf)



## 善用網上平台．學與教、考評與數據分析

- Google Classroom
- Microsoft Teams
- EdCity VLE (Canvas)
- Moodle
- Edmodo
- Schoology
- PowerLesson
- iClass
- D2L Brightspace



# 善用網上平台 . 學與教、考評與數據分析

資訊科技教育電子安全系列：  
學校資訊科技設施的管理、保安及  
維護 - 學習管理系統

Centre for Learning Sciences and Technologies (CLST)  
The Chinese University of Hong Kong





# 善用網上平台 . 學與教、考評與數據分析

資訊科技教育電子安全系列：  
學校資訊科技設施的管理、保安及  
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Centre for Learning Sciences and Technologies (CLST)  
The Chinese University of Hong Kong

The screenshot displays the Microsoft PowerPoint 2016 interface in slide sorter view. The title bar shows the file name "2021-04-27 - LMS PPT - fro..." and the user "Wong Kin Wai". The ribbon includes tabs for File, Home, Insert, Design, Transitions, Animations, Slide Show, Review, View, Recording, and Help. The ribbon is currently set to the "Home" tab, showing options for Clipboard, Slides, Font, Paragraph, Drawing, and Editing. The main workspace shows a grid of 251 slide thumbnails, numbered from 120 to 251. The status bar at the bottom indicates "Slide 101 of 251" and "English (Hong Kong SAR)".



## 善用網上平台 . 學與教、考評與數據分析

- 本身一直傾向於使用 LMS 而非 CMS
  - LMS 是專門設計用於託管，管理和交付電子學習的平台，而 CMS 是用於所有形式的在線內容的通用平台。



## 善用網上平台 . 學與教、考評與數據分析

### • LMS 可以

- 上傳在線培訓內容
- 組織課程並將其分配給學習者
- 追蹤學習者的參與和進度
- 分析參與度
- 評估課業或對課業進行評分
- 通過多種學習途徑指導學習者



# 善用網上平台 . 學與教、考評與數據分析



## 建立教材 Build materials

- 單元 Modules、頁面 Page、連結 URL
- 共享資源庫 Commons
- 第三方資源 3<sup>rd</sup> Party Tools
  - e.g. Youtube, Khan Academy, Geogebra
- 鎖定 Lock until、要求 Requirements

## 教學活動 Interactive tasks

- 測驗 Classic and New Quizzes
- 作業 Assignment
- 討論 Discussion、會議 Conference
- 分組 Group Sets、同行檢閱 Peer Review

## 評改+表現分析 Performance Tracking

- 測驗統計資料 Statistics
- 批改工具 SpeedGrader + Docviewer
- 成績 Grades + 評量表 Rubric
- 分析 Analytics



# 善用網上平台 . 學與教、考評與數據分析





# 善用網上平台 . 學與教、考評與數據分析

電腦科、  
英文科、  
數學科、  
AiTLE  
Mock  
Circle

## 上載文件讓學生下載

File Name	Icon	Status
2018-10-15 to 2018-10-21		✓ + ⋮
[Flipped ICT] Network Connecting Devices Video	📄	✓ ⋮
2018-10-16 - Chapter 16 - Networking Basics ~ Hub, Bridge, Switch, Router (Slides 1-105)	📎	✓ ⋮
2018-10-16 - Online Exercise for Chapter 16 - [Hub, Bridge, Switch, Router]	🚀 8 pts	✓ ⋮
=====		✓ ⋮
2018-10-18 - Mr. Wong outside for Meeting - Classwork	📄	✓ ⋮
=====		✓ ⋮
2018-10-19 - Chapter 16 - Networking Basics ~ Wireless Technology ~ IR, Bluetooth & WiFi (Slides 1-117)	📎	✓ ⋮
2018-10-19 - Online Exercise for Chapter 16 - [Wireless Technology ~ IR, Bluetooth & WiFi]	🚀 10 pts	✓ ⋮



# 善用網上平台 . 學與教、考評與數據分析

電腦科、  
英文科、  
數學科、  
AiTLE  
Mock  
Circle

學生繳交作業：使用 SpeedGrader，配合 Rubric 批改

The screenshot displays the SpeedGrader interface with a rubric for a timetable assignment. The rubric is divided into several criteria, each with a rating scale and a corresponding points value. The current ratings are shown as green bars with a peak indicating the score.

Criteria	Ratings	Points
Landscape Orientation	1 pts Full marks 0 pts No marks	1 / 1 pts
All Margin : 1cm	2 pts All Margin : 1cm 1 pts Some Margin : 1cm 0 pts No Margin : 1cm	0 / 2 pts
Text "Ying Wa College (2019-2020)" Largest font size	1 pts Full marks 0 pts No marks	1 / 1 pts
Text "Timetable for 1X" Second Large font size	1 pts Full marks 0 pts No marks	1 / 1 pts
Draw your timetable	5 pts Timetable completely done 4 pts Timetable Mostly Done 3 pts Timetable about halfly Done 2 pts Less than 1/2 of the timetable done 1 pts Only a little bit portion of timetable done 0 pts No marks	5 / 5 pts
make full use of the paper	2 pts make full use of the paper 1 pts More than 3/4 of the paper used for the timetable 0 pts No marks	1 / 2 pts
Cells of Language subjects ==> yellow shaded	2 pts Cells of Language subjects ==> yellow shaded (All) 1 pts Cells of Language subjects ==> yellow shaded (partially) 0 pts No marks	2 / 2 pts

The assignment content shown in the SpeedGrader window is a timetable for Ying Wa College, titled "Timetable of 1B". The timetable is organized by day (Day A to Day F) and time slots (7:50-8:00 to 12:35-13:10). The subjects listed include Role Call, CL, Eng, Chin, L&S, Scj, Math, Geog, Reccess, Math, Chis, E&RE, Eng(Net Chat), D&T, PE, Hist, Pth, VA, and Scj.

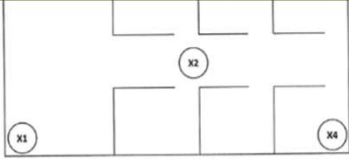


# 善用網上平台 . 學與教、考評與數據分析

電腦科、  
英文科、  
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Mock  
Circle

## 學生繳交作業：使用 SpeedGrader，配合 Rubric 批改

Answers written in the margins will not be marked.



(b) (i) Which position should Mr Wong put the MESH WiFi satellite? (1 mark)

X2

(ii) Explain briefly why the wireless signal becomes stronger after installing the MESH WiFi satellite. (1 mark)

As the signal is received and duplicated then release again as a router spot.

(c) In the real-time online lesson, Peter, who is the student of Mr Wong, says that he can only watch the meeting with a lower resolution. Even though Mr Wong and Peter have a stable and high-speed broadband connection and the web camera of Mr Wong is high quality, Peter still cannot watch high quality real-time video. Apart from hardware problems, explain briefly on this situation and suggest a solution. (2 marks)

The bandwidth of ~~Peter~~<sup>meeting</sup> is not wide enough. X  
The change a new meeting ~~media~~<sup>meeting</sup> with wider bandwidth. X

Answers written in the margins will not be marked.

Grading

AiTLE 2021 Mock - Paper 1B - Q3

Criteria	Ratings			Points
1B Q3 (a) (i)	2 pts Full marks	1 pts 1	0 pts No marks	2 / 2 pts
1B Q3 (a) (ii)	2 pts Full marks	1 pts 1	0 pts No marks	0 / 2 pts
1B Q3 (a) (iii)	2 pts Full marks	1 pts 1	0 pts No marks	0 / 2 pts
1B Q3 (b) (i)	1 pts Full marks		0 pts No marks	1 / 1 pts
1B Q3 (b) (ii)	1 pts Full marks		0 pts No marks	0 / 1 pts
1B Q3 (c)	2 pts Full marks		0 pts No marks	0 / 2 pts

Total points: 3 out of 10

Save Cancel



# 善用網上平台 . 學與教、考評與數據分析

電腦科、  
英文科、  
數學科、  
AiTLE  
Mock  
Circle

## Online Quiz : Auto-grade

Score for this attempt: **4.8** out of 8

Submitted 18 Mar at 23:59

This attempt took 11,825 minutes.

Question 1

1 / 1 pts

What does "I.T." in computer domain represent ?

- Information Table
- Information Tips
- Intelligence Technology
- Internet Tips
- Information Technology

Correct!



# 善用網上平台 . 學與教、考評與數據分析

電腦科、  
英文科、  
數學科、  
AiTLE  
Mock  
Circle

## Online Quiz : Auto-grade

Question 4 0.8 / 1 pts

Which of the following is/are the Pros of increased use of ICT

- Help people to develop ability to identify correctness of information
- People can upload whatever information they want for public to view
- Type of information available is more
- Most of the information are freely available
- Continuous uses of devices
- Can have more up-to-date information
- Vast amount of information
- More easy access

**You Answered**

**Correct!**

**Correct!**

**Correct!**

**Correct!**

**Correct!**

**Correct!**



# 善用網上平台 . 學與教、考評與數據分析

電腦科、  
英文科、  
數學科、  
AiTLE  
Mock  
Circle

## Online Quiz : Auto-grade

Submission to view:

- 10 Mar at 17:08 (grade: 6.24)
- 10 Mar at 17:05 (grade: 3.02)
- 10 Mar at 17:08 (grade: 6.24)

Assessment

Grade out of 8

6.24

Started at Wed Mar 10 2021 17:06:26 GMT+0800 (Hong Kong Standard Time)

Attempt **1** 2

### Action log

- 00:01  Session started
- 00:17  Viewed (and possibly read) question #1
- 00:37  Answered question: #1
- 00:43  Answered question: #2
- 00:44  Viewed (and possibly read) question #2
- 00:51  Answered question: #3
- 00:53  Viewed (and possibly read) question #3
- 00:59  Answered question: #4
- 01:20  Answered question: #5
- 01:21  Viewed (and possibly read) question #5
- 01:25  Answered question: #6
- 01:40  Answered question: #7



# 善用網上平台 . 學與教、考評與數據分析

2020  
S6  
Mock @  
COVID  
19

## 發放試卷

☰ 2019-2020 S6 Mock Assignment > Modules

Home

- ▶ 10 Feb (MON) - English I, II , Chemistry
- ▶ 11 Feb (TUE) - Chinese I,II , Economics
- ▶ 12 Feb (WED) - Liberal Studies & Physics
- ▶ 13 Feb (THUR) - Math Core , Chi History , Geography , ICT



# 善用網上平台 . 學與教、考評與數據分析

2020  
S6  
Mock @  
COVID  
19

## 發放試卷

The screenshot displays a list of modules on the left and a detailed settings panel on the right. The list includes:

- 10 Feb (MON) - English I, II , Chemistry
- 11 Feb (TUE) - Chinese I,II , Economics
- 12 Feb (WED) - Liberal Studies & Physics
- 13 Feb (THUR) - Math Core , Chi History , G
- 14 Feb (FRI) - English III , BAFS (Acct)/(Mgm

The 'Edit module settings' panel for the selected module (11 Feb (TUE) - Chinese I,II , Economics) includes:

- Lock until
- 11 Feb 2020 at 8:00
- Tue, 11 Feb 2020 8:00
- Prerequisites**  
+ Add prerequisite
- Requirements**  
+ Add requirement



# 善用網上平台 . 學與教、考評與數據分析

英文科：  
級層面  
使用

## 全級訊息及工作

✔	S1 English 20/21	2020-21	<input type="radio"/> Wong Kin Wai, Albert <input type="radio"/> CHEUNG, TZE YAN Show more	English	216	+
✔	S2 English 20/21	2020-21	<input type="radio"/> Wong Kin Wai, Albert <input type="radio"/> LEE SHUK WAH, AGNES Show more	English	214	+
✔	S3 English 20/21	2020-21	<input type="radio"/> Wong Kin Wai, Albert <input type="radio"/> CHEUNG, TZE YAN Show more	English	202	+
✔	S4 English 20/21	2020-21	<input type="radio"/> Wong Kin Wai, Albert <input type="radio"/> LEE SHUK WAH, AGNES Show more	Ying Wa College	174	+
✔	S5 English 20/21	2020-21	<input type="radio"/> Wong Kin Wai, Albert <input type="radio"/> CHEUNG, TZE YAN Show more	Ying Wa College	159	+
✔	S6 English 20/21	2020-21	<input type="radio"/> Wong Kin Wai, Albert <input type="radio"/> CHEUNG, TZE YAN	Ying Wa College	158	+



# 善用網上平台 . 學與教、考評與數據分析

英文科：  
級層面  
使用

## 全級訊息及工作

☰ ▼ S3 Mark Allocation

☰ 📎 2020\_21\_ENG\_S3\_Mark\_Allocation.pdf

☰ ▼ Book Review Competition

☰ 📄 Book Review Competition Submission Box  
15 Dec 2020 | 0 pts



# 善用網上平台 . 學與教、考評與數據分析

英文科：  
級層面  
使用

## 全級訊息及工作

Permissions	Student	Teacher	YWC-ENG	TA	Course Designer	Observer
Analytics - view pages	✗	✓	✓	✓	✗	✗
Announcements - view	✓	✓	✓	✓	✓	✓
Assignments and quizzes - add / edit / delete	✗	✓	✗	✓	✓	✗
Conversations - send messages to entire class	✗	✓	✓	✓	✓	✗
Conversations - send messages to individual course members	✓	✓	✓	✓	✓	✗
Course Calendar - add / edit / delete	✗	✓	✗	✓	✓	✗



# 善用網上平台 . 學與教、考評與數據分析

英文科：  
級層面  
使用

## 過關挑戰 ~ Use of Mastery Path

Quizzes		✓	+	⋮
Present Perfect L1	4 pts	Mastery paths	✓	⋮
Present Perfect L2	3 pts	4 pts - 4 pts	✓	⋮
OATA U15 Vocab Quiz	11 pts		✓	⋮

Details	Questions	Mastery paths
100 pts		
+		
70 pts		
+		
40 pts		
+		



# 善用網上平台 . 學與教、考評與數據分析

## 研發中功能：Batch Upload

Canvas API Platform

用戶管理  
用戶信息  
CANVAS  
課程

Canvas  
CANVAS > 課程 > 上載作業檔案

Blk-A/C > Assignments > Testing Student view

Testing Published

Related items  
SpeedGrader™  
Download submissions  
0 out of 18 submissions graded

No additional details were added for this assignment.

Points 0  
Submitting a file upload

Due	For	Available from	Until
30 Jul	Everyone	-	30 Jul at 23:59

Information

- S1101059提交作業成功。
- S1101074提交作業成功。
- S1101105提交作業成功。
- S1101012提交作業成功。
- S1001170提交作業成功。
- S1101101提交作業成功。
- S1303005提交作業成功。
- S1001164提交作業成功。
- S1001145提交作業成功。
- S1001014提交作業成功。
- S0801066提交作業成功。
- S1303001提交作業成功。
- S1101016提交作業成功。



**Thank you !**