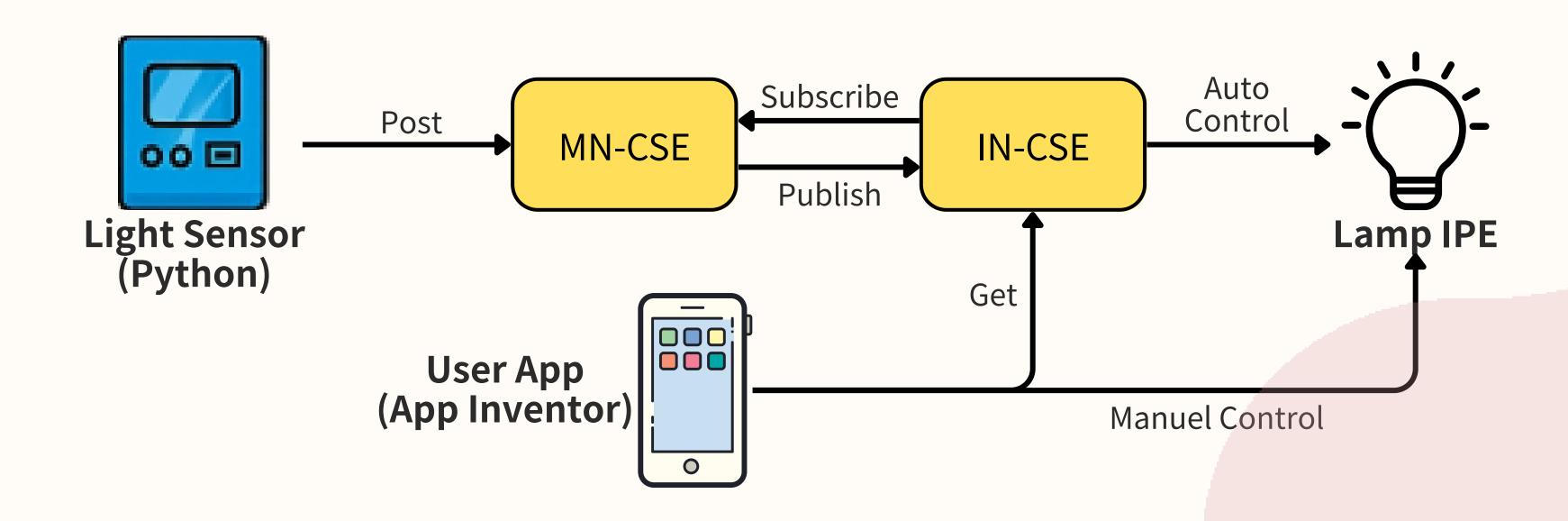
智慧電燈系統

王郁誠

Architecture



APP Inventor

- 分為 Auto、Manuel mode。使用者可以隨時切換模式。
- Auto mode:使用者無法自行控制電 燈開關,系統會根據偵測到的光強度 來自動控制電燈開關。
- Manuel mode:使用者可以自行控制 電燈開關。



Auto mode



Manuel mode

Resource Tree

- MN的Lamp有DATA/STATUS/MODE 三個 container。
- IN的Lamp僅有DATA/MODE 兩個container,皆為訂閱MN而來。



```
Lamp
DATA
cin_218984332
cin_30438807
MODE
cin_418248947
```

IN-CSE

Resource Tree

Container instance內容

- STATUS:

燈泡的狀態,e.g. on、off

- MODE: 燈泡的模式, e.g. manuel、auto
- DATA: 光感測器收到的光強度, e.g. 88 lux

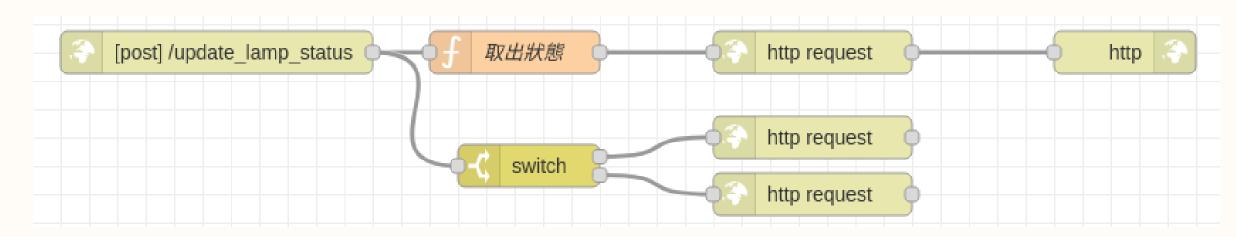
Attribute	Value
status	on

Attribute	Value
mode	manuel

Attribute	Value
light	88

MN-CSE 更新流程

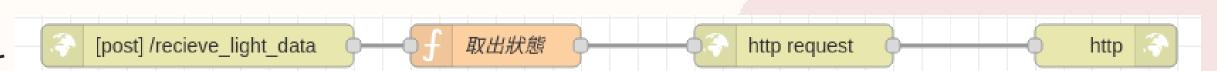
手動模式中,更新 Lamp 狀態 (on,off),並在IPE上反映。



更新 Lamp 模式(manuel, auto)

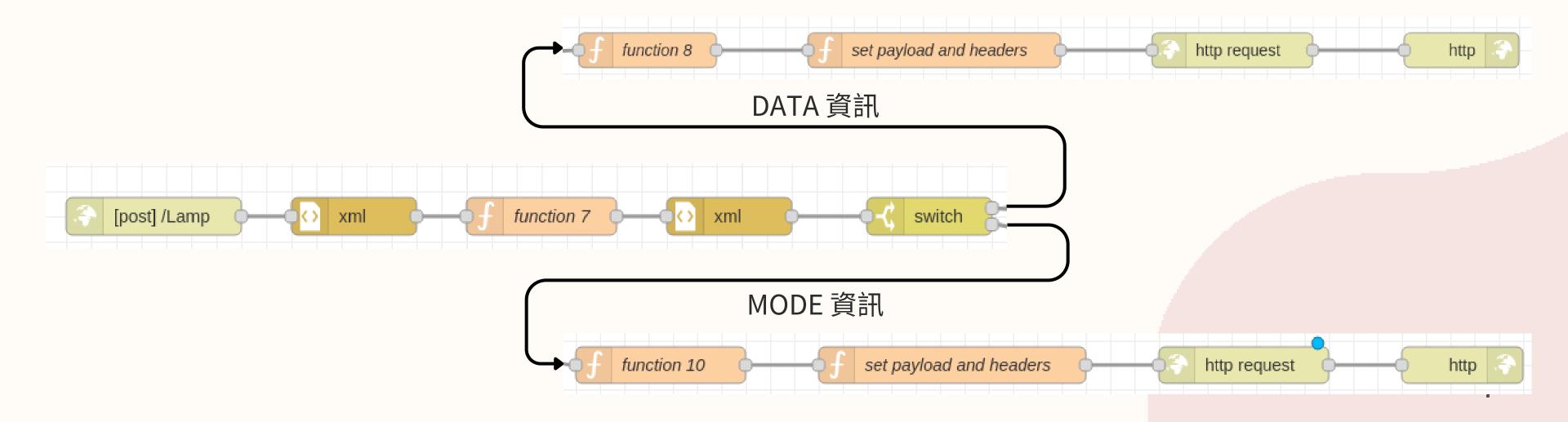


• 接收 Python 模擬的光強度資料



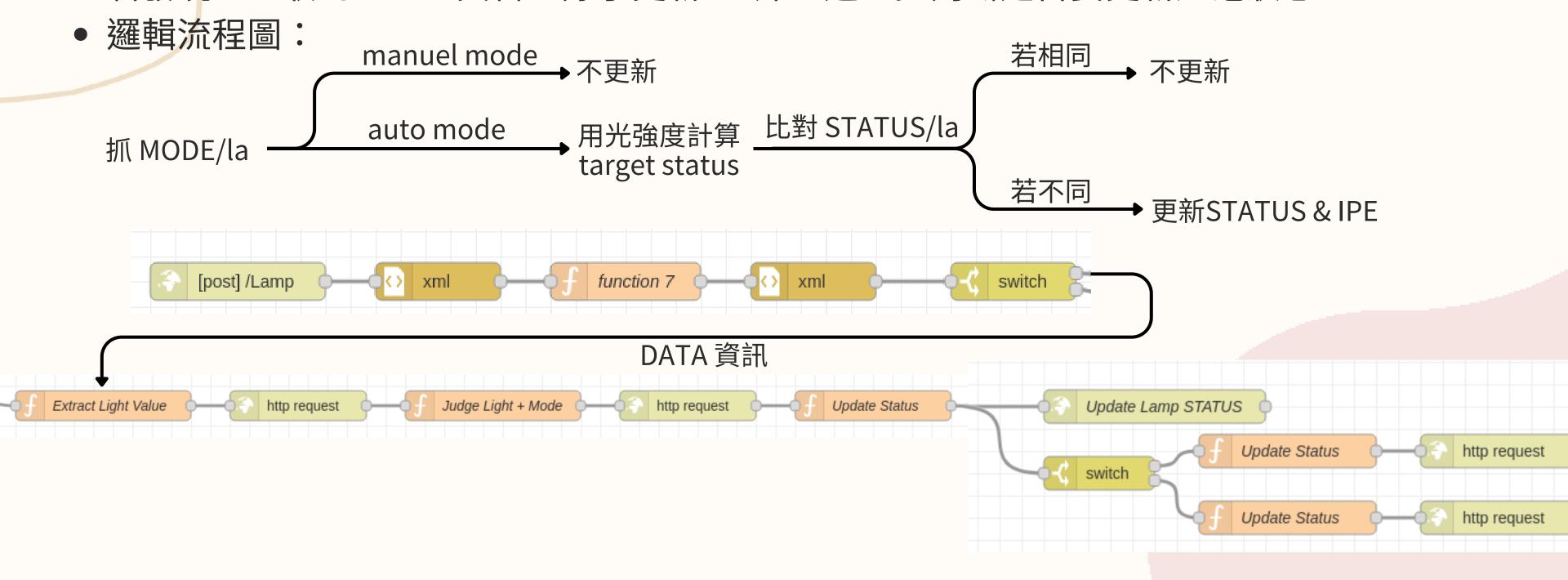
IN-CSE 更新流程

- IN 訂閱 MN 的 Lamp/DATA & Lamp/MODE。
- 當 MN 有新資訊時,會進 nodered 的 /Lamp處理,/Lamp會分辨是 DATA 還是 MODE 更新,並將這些資訊推到 IN 那邊。



Auto Mode 判斷部分

- 同樣在 nodered 的 /Lamp 處理。
- 若發現 MN 收到 DATA 資料,除了更新 IN 外,進一步判斷是否要更新燈泡狀態。



App Inventor 抓資料流程

在Auto mode 中, APP inventor 每秒去 mn 抓一次資料 (DATA、STATUS)

```
when Web3 .GotText
        responseCode
                          responseType
                                         responseContent
                                  call Web1 ... JsonTextDecodeWithDictionaries
do set global statusJson2 to
                                                                                 get responseContent
    set global statusCon2 to get value for key
                                                     m2m:cin
                                                     get global statusJson2 -
                                    or if not found
                                                     not found
     set global statusCon2 v to
                                  replace all text
                                                  replace all text
                                                                   get value for key
                                                                                       con
                                                                                      get global statusCon2 -
                                                                      or if not found
                                                                                       not found
                                                                     \n
                                                                                      initialize global statusJson2 to ( " 0 "
                                                                                      nitialize global (statusCon2) to 🕻 " 🚺 "
                                                                                       initialize global (light) to 🏅 " 🚺 "
     set global templist v to
                                             get global statusCon2
                                            " val=
                                                                                      initialize global templist to
    set global light v to ( split v text ( select list item list ) get global templist v
                                                                                      initialize global light2 to
                                                     index [ 2
                                                                                        when Clock2 .Timer
    set global light2 to select list item list
                                                get global light -
                                                                                       do call Web3 .Get
    set Ibl Current light value . Text to
                                                            Current light val:
                                                           get global light2
                                                             lux
```

```
when Web2 .GotText
                         responseType
        responseCode
                                         responseContent
   set global statusJson v to call Web1 JsonTextDecodeWithDictionaries
                                                                   isonText | get responseContent
    set global statusCon v to
                               get value for key
                                                  m2m:cin
                                   in dictionary
                                                 get global statusJson
                                  or if not found
                                                  not found
    set global statusCon v to
                               replace all text
                                                replace all text
                                                               get value for key
                                                                                   con
                                                                                  get global statusCon
                                                                    in dictionary
                                                                  or if not found
                                                                                   not found
                                                                 \n
                                                     segment
                                                 replacement
                                     segment
                                 replacement
              contains text
                                get global statusCon
                                 on
                          . Picture To In on.png T
           set Image1
         set [mage1 🔻 . Picture 🕶 to 🔰 off.png 🔻
```