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## A QUICK AUTHENTICATION MECHANISM BY USING UWB TECHNOLOGY

HP INC

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## ***A quick authentication mechanism by using UWB technology***

In general, platform users need to input ID and Password (authentication purpose) in the system to get the credentials before accessing any non-open resource- such as Wireless Network, secured printer. It's bothering that end users might need to pass the authentication frequently to connect to different resources so we plan to improve this kind of user experience – users can connect to WiFi Network or secured printer easily with a simple, quick but secure method.

UWB (Ultra-WideBand) has very good performance on the range detection, it is also able to do data transmission. So, in this disclosure, we are going to use this kind of design to easily improve user experience.

Here we have few bad user experience examples prior the solution and our solutions for the reference.

### **Example 1:**

#### **User needs to request ID/PW from AP owner when needs to use WiFi and personal printer**

1. Tim is visiting John's new house and would like to share the pictures with friends through the WiFi Network in John's place.
2. Tim asks John whether he can use the NFC" Tap to" feature to connect his WiFi, however, there's no NFC support in John's Wireless AP.
3. John shares the ID/Password of the WiFi Network to Tim so Tim can input manually into his cellphone. --**Pain point#1**
4. After that, Tim wants to print one of the documents from his phone, he can only send the file to John and John needs to power on his NB who has printer connected by USB cable line to print out. --**Pain point#2**

### **Solution:**

Positioning and transmitting the data can be supported by adopting the UWB in both of system (Phone/NB) and Wireless AccessPoint sides.

By ToF/TDoF and/or AoA/AoD tech, the AP and Phone/NB can calculate the distance between each other precisely, this is something that can improve the wireless security as well.

In the **Pain point#1**, by ToF/TDoF and/or AoA/AoD tech, when user takes the NB / Phone to the predefined range, WiFi AP UWB will pass the WiFi credential to the Phone/NB UWB then the credential will be delivered to OS related service to process the Wireless connection.

In the **Pain point#2**, by ToF/TDoF and/or AoA/AoD tech, when user takes the NB / Phone to the predefined range, UWB on personal printer and NB / Phone will connect each other so that the file can be passed to the printer (UWB data Transmission) and print out.

**Example 2:**

**User needs to request ID/PW from IT when needs to use WiFi and Network printer.**

1. Tim is a salesman in ABC company TPE BU but travel to headquarter (HOU) for yearend review meeting.
2. While he arrives the HOU headquarter, he can't connect the WIFI there.
3. Lisa the local employee tells Tim that he needs to request "Wireless Network access" and wait for management approval then he can access HOU network due to the Network security policy.
4. So, Tim fulfills the application form and wait for approval before he can use WiFi Network.  
**--Pain point#3**
5. After network connection, Tim asks Lisa how he can print out the slides before the review meeting.
6. Lisa tells Tim that he needs to install the Network printer to his NB.
7. Tim spends some time to setup the Network printer before he prints out successfully --  
**Pain point#4**

**Solution:**

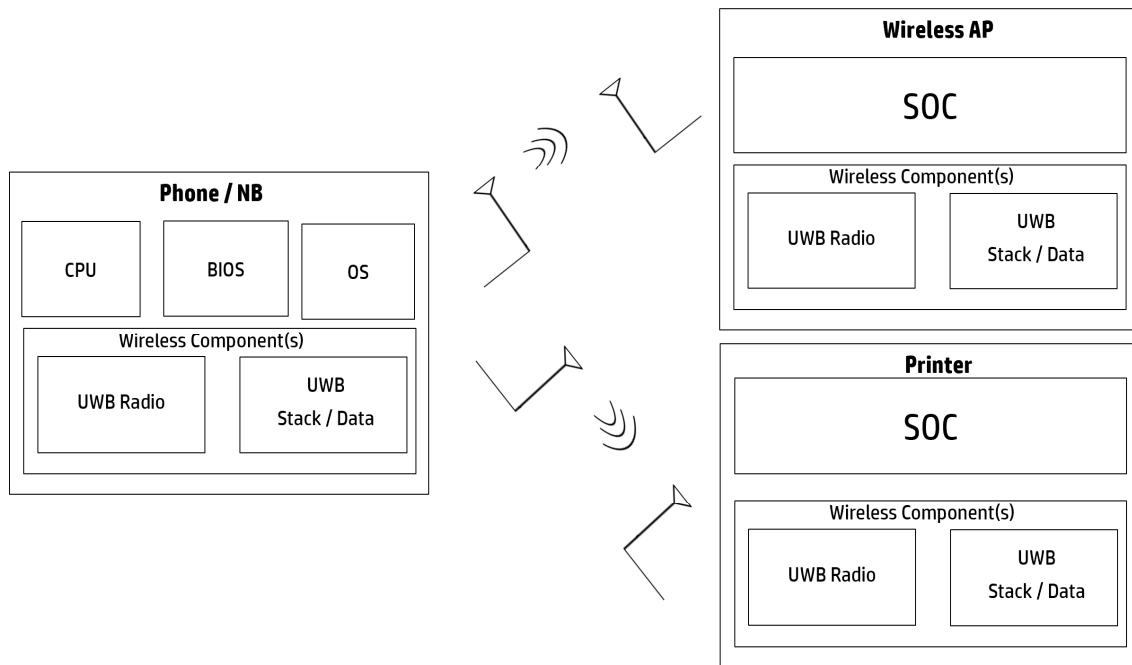
In the **Pain point#3**, by ToF/TDoF and/or AoA/AoD tech, when user takes the NB / Phone to the predefined range, the NB / Phone UWB will inform the daemon and the daemon will get the NB user certificate through HP client security manager for example and pass to the Commercial WiFi AP for the user identity authentication.

Once pass the authentication, the Commercial WiFi AP will send the Enterprise WiFi certificate to the user's NB / Phone for Network connection purpose.

In the **Pain point#4**, by ToF/TDoF and/or AoA/AoD tech, when user takes the NB / Phone to the predefined range, the NB / Phone UWB will inform the daemon and the daemon will get the NB user certificate through HP client security manager for example and pass to the secured Printer for the user identity authentication.

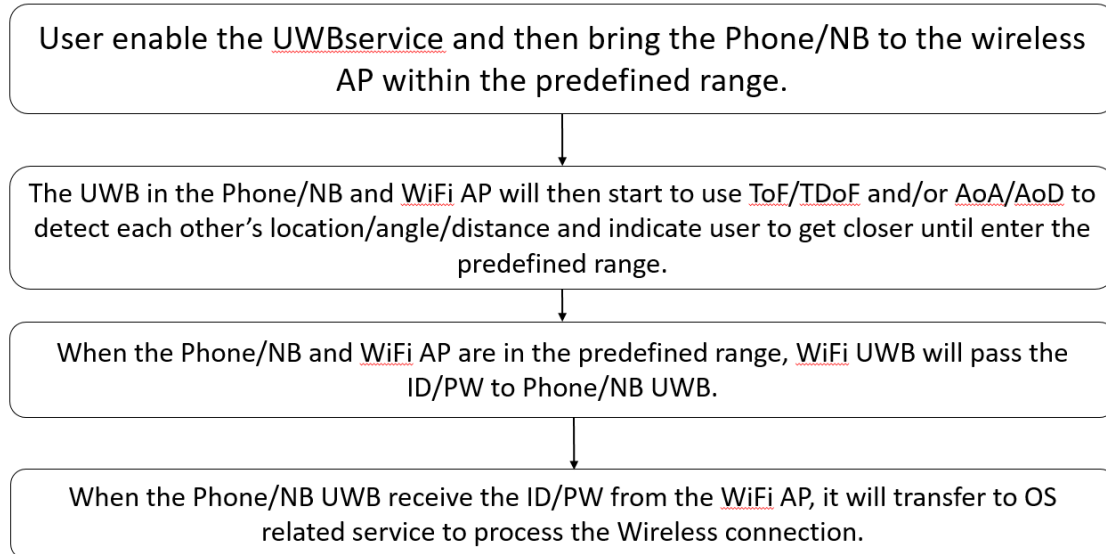
Once pass the authentication, the secured Printer will print the file from the NB / Phone.

## Function Block Diagram

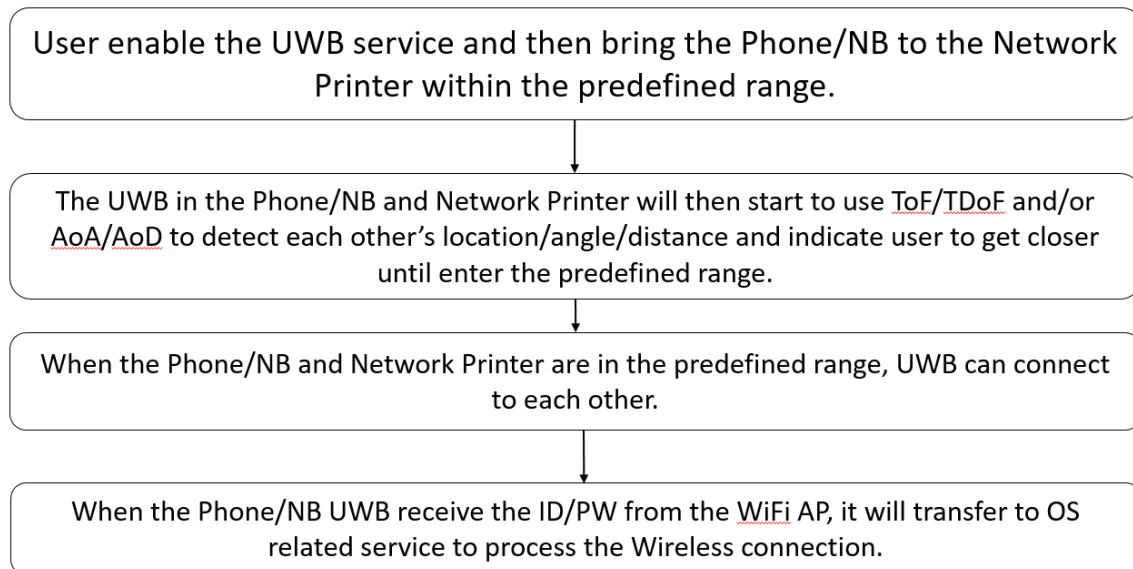


## Workflow / How this works

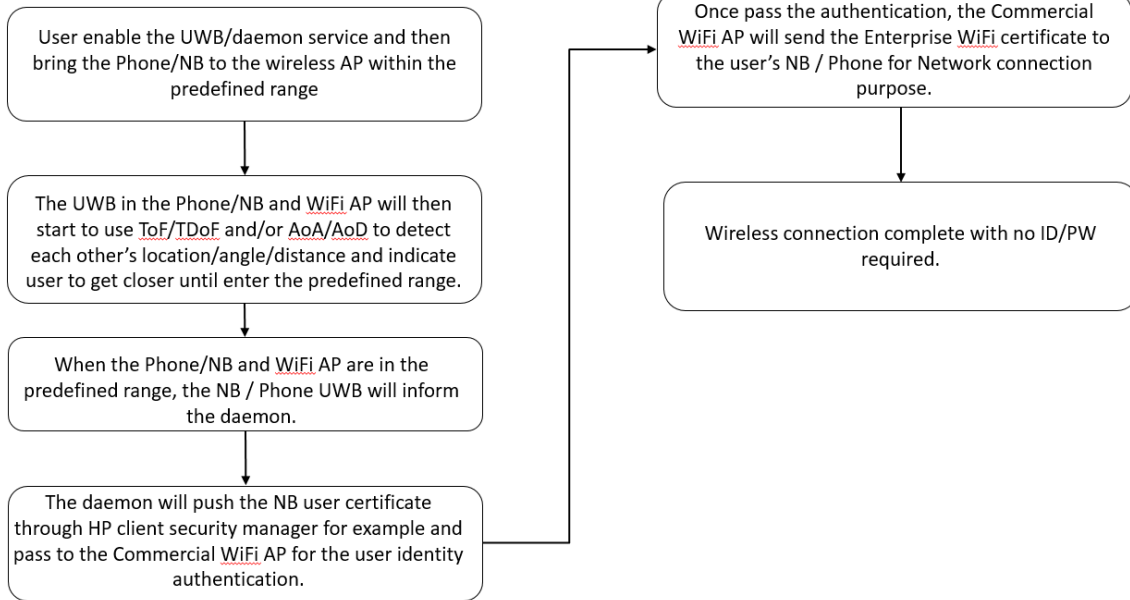
### Pain point#1



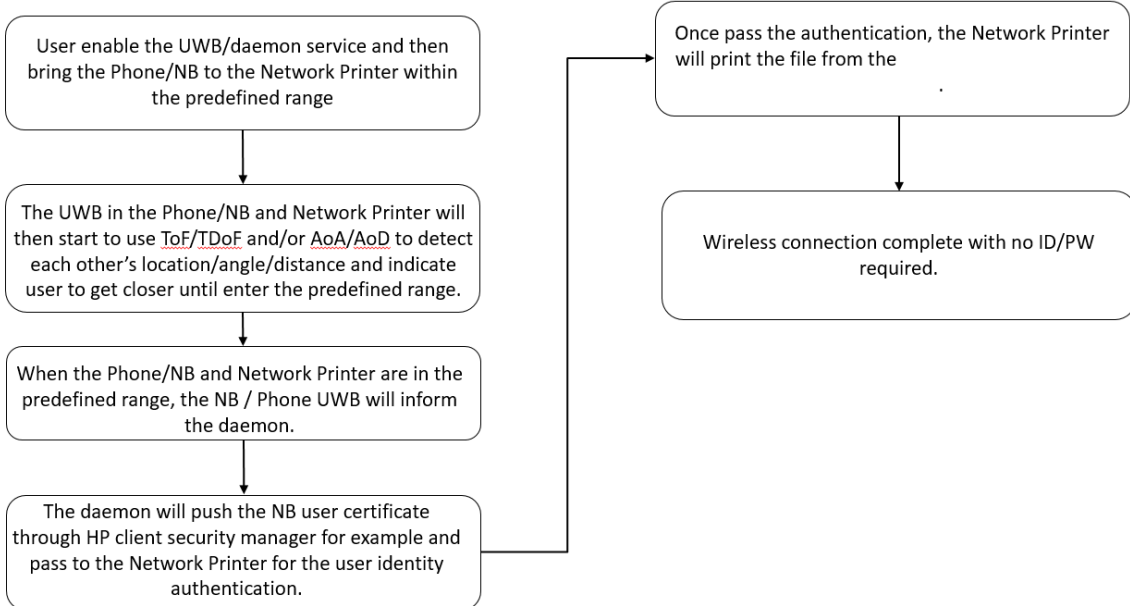
### Pain point#2



**Pain point#3**



**Pain point#4**



*Disclosed by Jocelyn Hsieh, Frank Chen and Andrew Huang, HP Inc.*