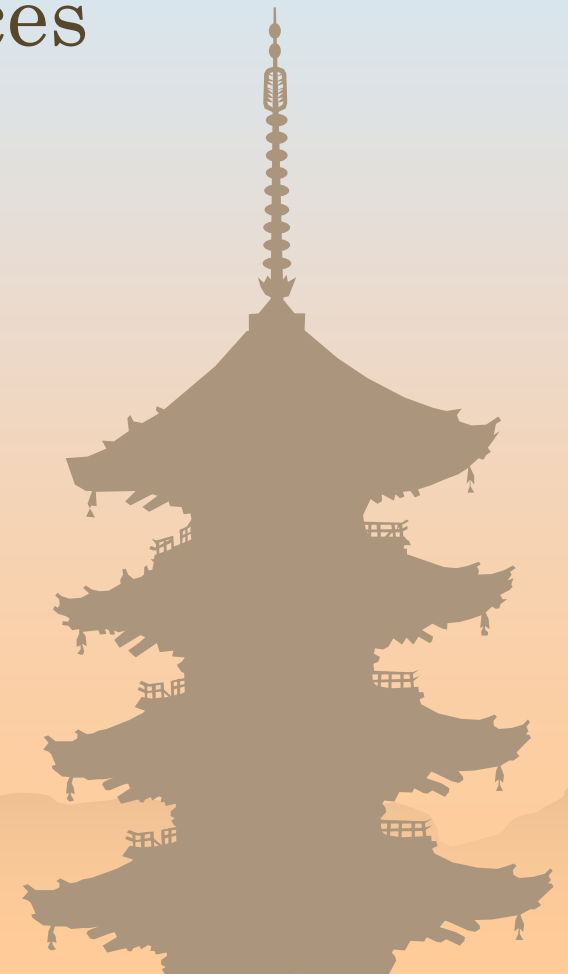


Collaborative or Competitive Relation between Public Wireless LAN and existing Mobile Services

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NTT Access Service Systems
Laboratories



Public Wireless LAN is very young

- ❁ Public Wireless LAN systems just started its evolution towards its universal development.
- ❁ Service operators are also striving to establish business model for Public Wireless LAN (this presentation is to introduce these effort)
 - Don't have to be pessimistic; Wireless LAN can provide very very cheap infrastructure

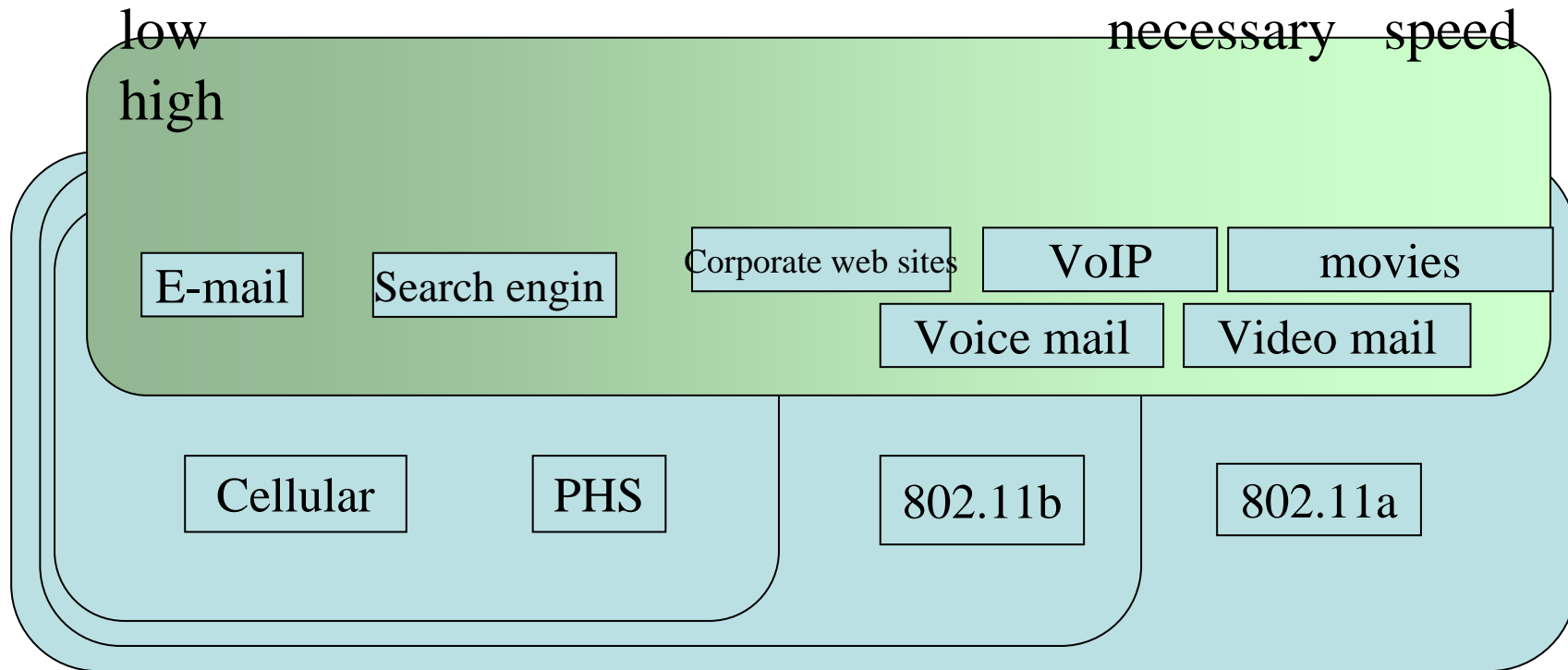


What is “Public Wireless LAN” service?

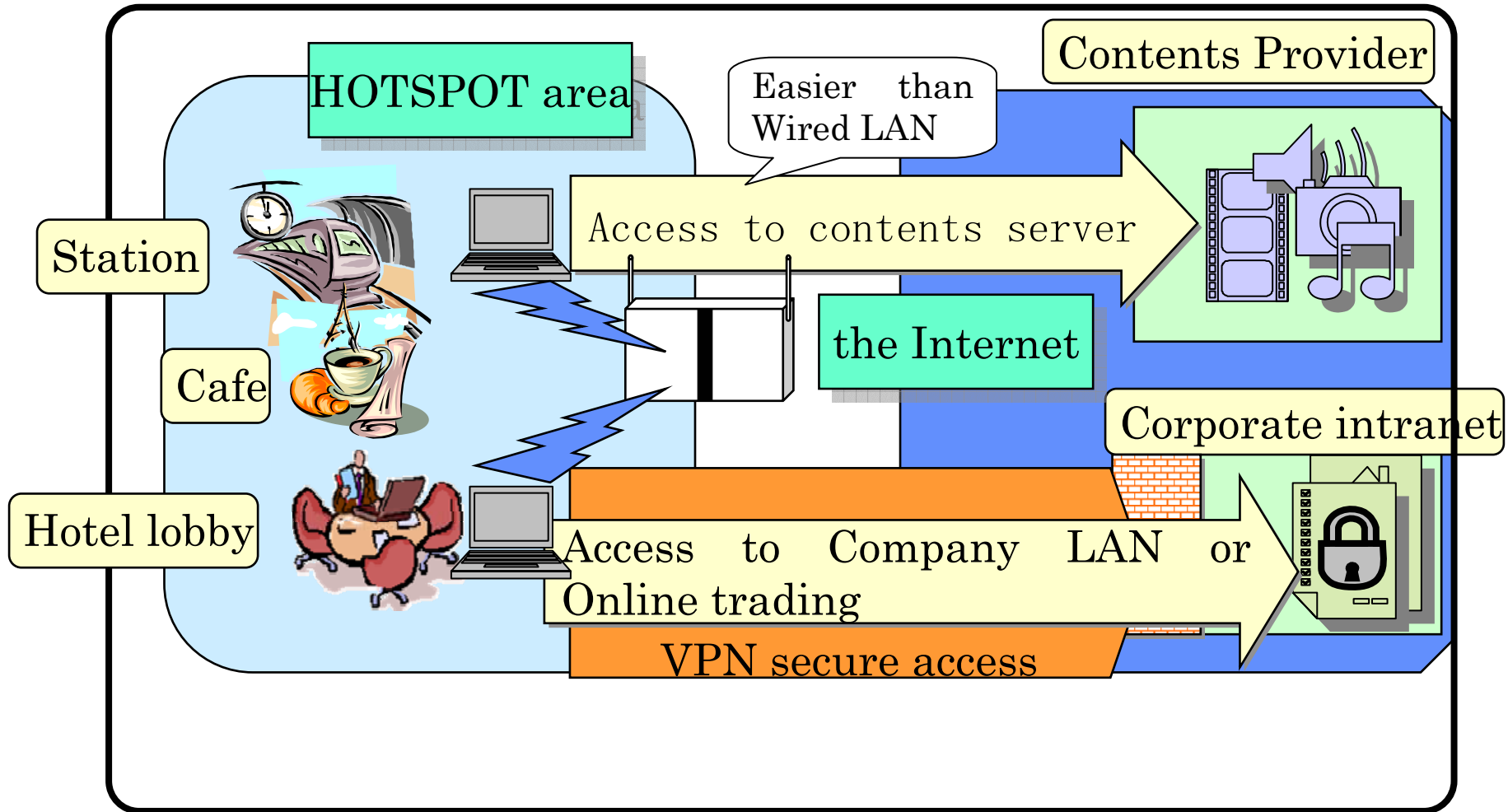
- ❁ Internet access service provided by Wireless LAN
 - originally developed for private usage.
 - Management procedure can be completed between AP and STA
- ❁ Service area
 - Airport, Coffee shop, Hotel Lobby, Long distance train(e.g. Shinkan-sen)
- ❁ Speed
 - IEEE802.11b (most popular standard) 11Mbps
 - IEEE802.11a 54Mbps



Application field of Public Wireless LAN and existing mobile service



Architecture of Public Wireless LAN



Problems to overcome

- ❁ Network providing authentication and accounting
- ❁ Smaller terminals necessary
- ❁ Access Points are hard to find
 - Numbers of APs should be increased
 - Roaming function is necessary
 - Operators should form alliance
 - Community network approach
 - Seamless roaming with existing public mobile network
- ❁ Killer application
 - Difficult to earn enough money only from internet access service
 - VoIP
 - Long distance express train or Airplanes

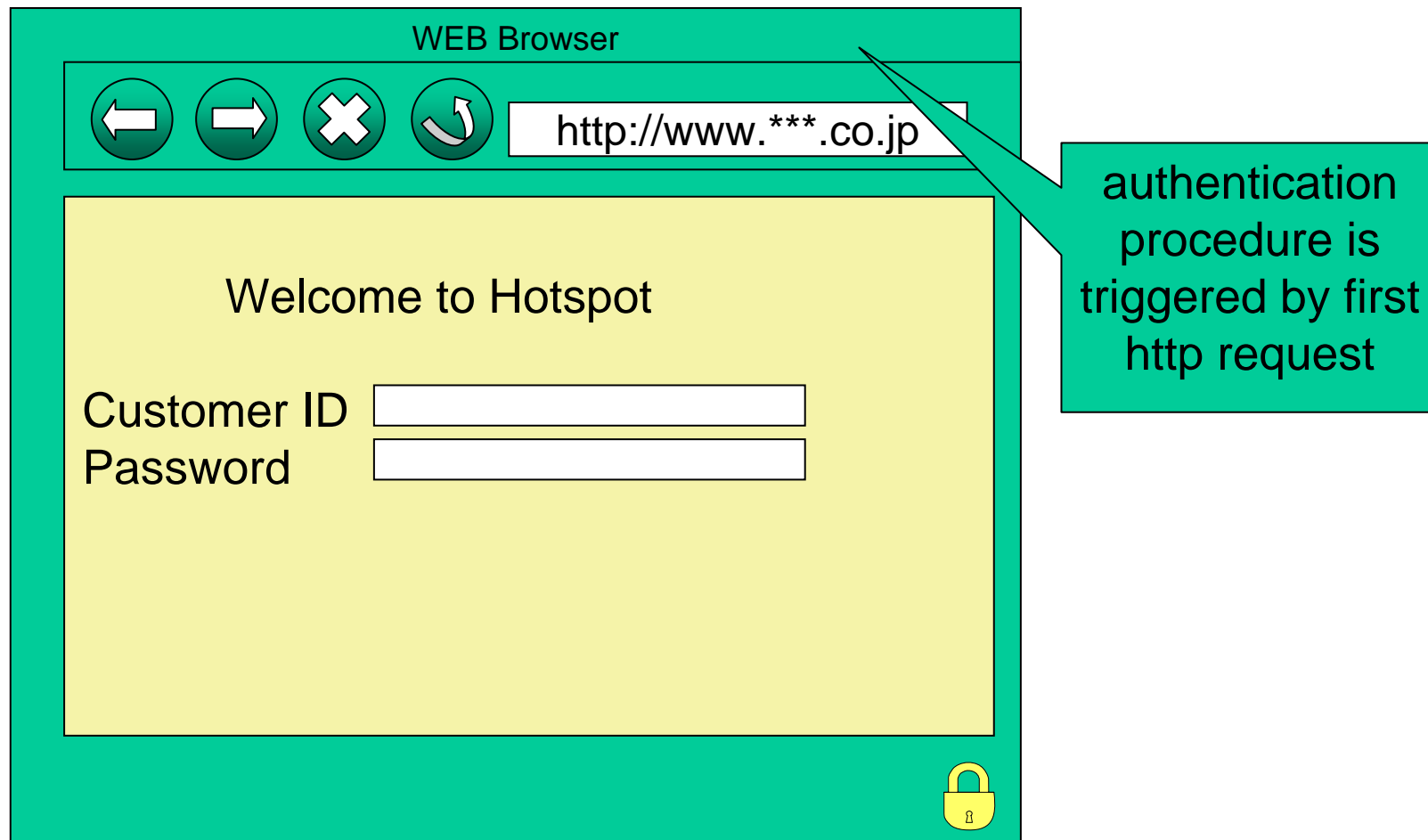


Authentication: Improvement is necessary

- ❁ Reason: As mentioned, original authentication procedure is completed between APs and STAs
- ❁ Authentication server can be reached from public places
- ❁ IEEE 802.11i standardization is ongoing and finishing its work
- ❁ Some operators introduced non-standardized procedure and started its service
- ❁ Improvement is done

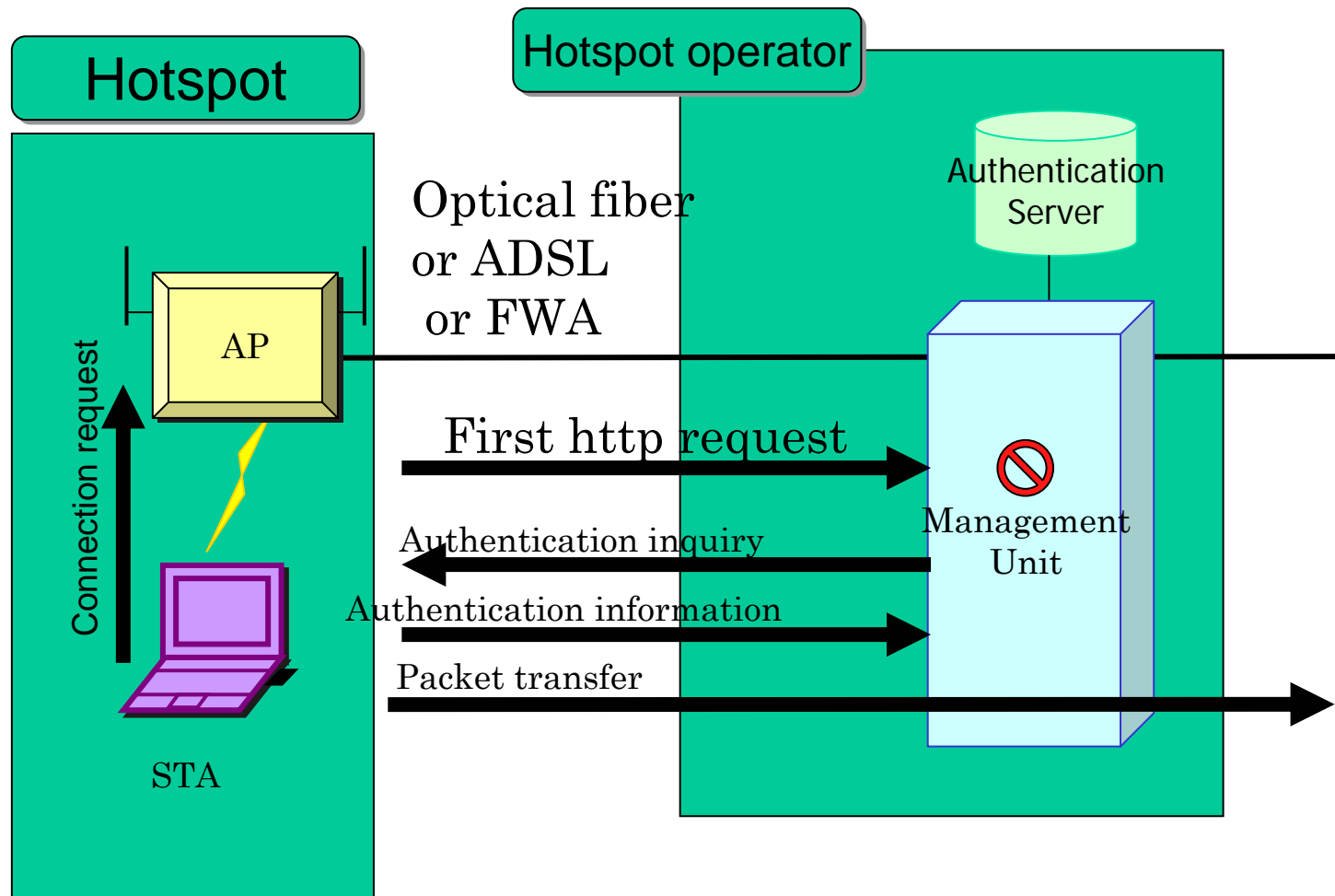


The initial screen of WEB browsing authentication

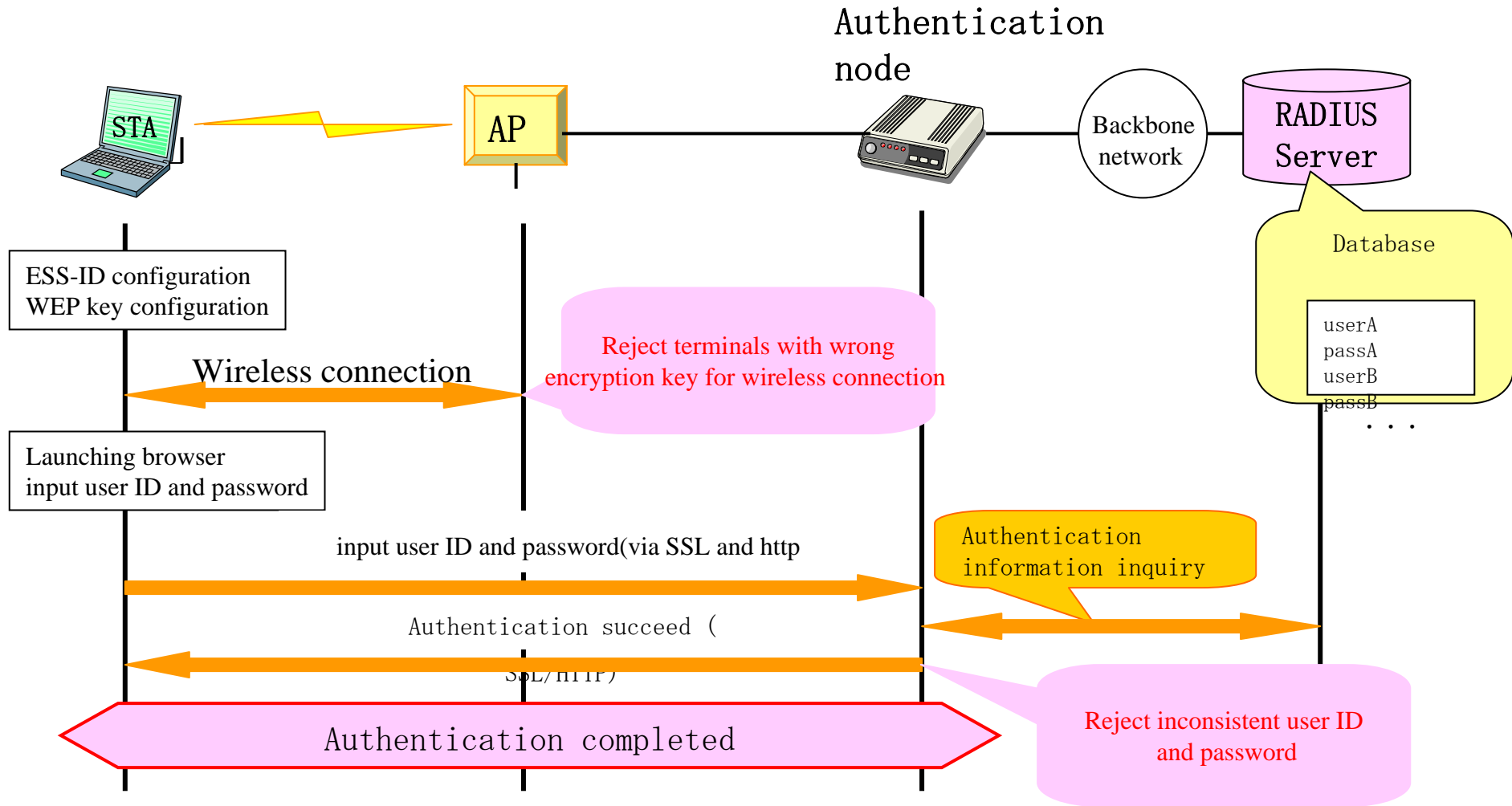


Web browser authentication (from different perspective)

- Capture http request and sends authentication information to authentication server
- Transfer packet to internet only after authentication succeeds.



Web browser authentication



Accounting

- ❁ Most obvious difference between public service and private network, which does not have accounting function
- ❁ Hotspot service (NTT Com)
 - Share the same accounting ID with PHS (Personal handyphone system) or OCN
 - Necessary to integrate services
 - ¥350/day for @nifty user
 - Prepaid card
 - ¥500 for 1 day passport(4 Euro)
 - Quite effective to promote the service (¥500 may be acceptable to the customers)
- ❁ HP transat software



PDA

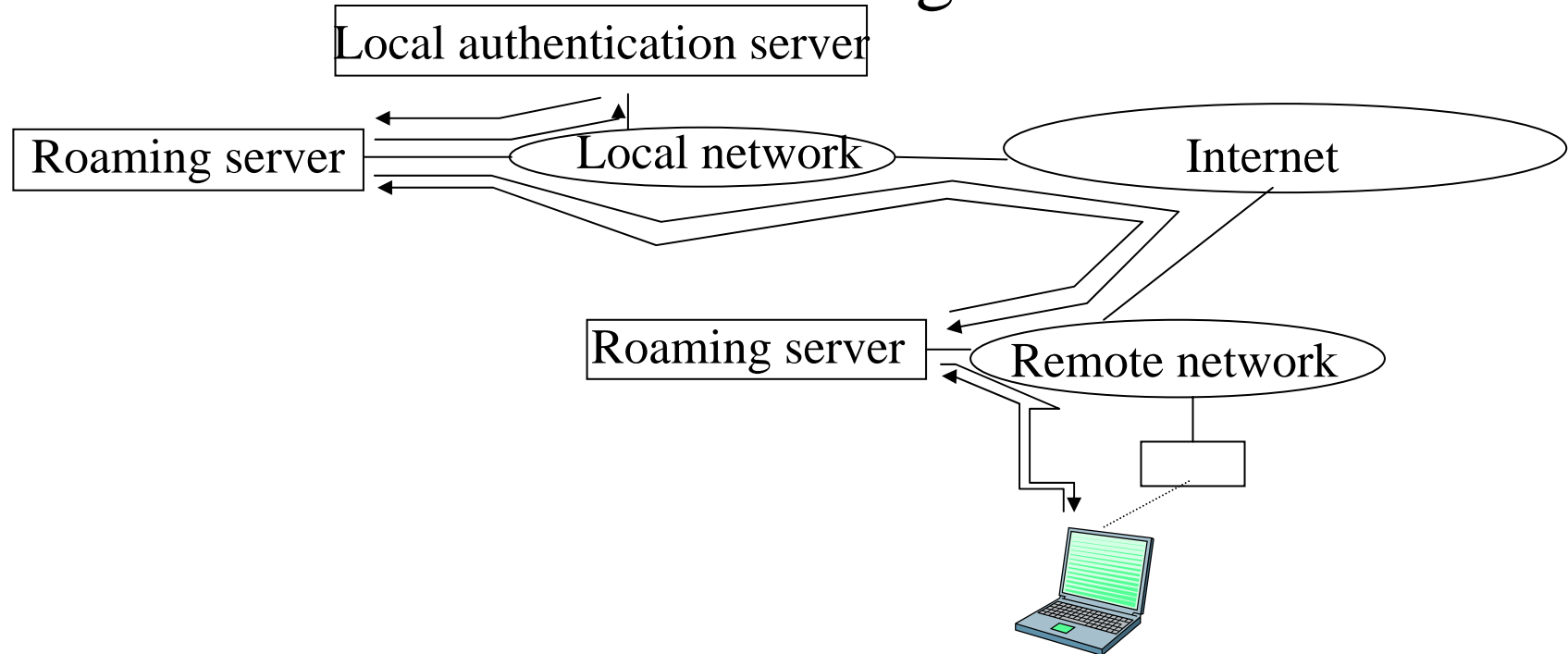
❁ Flets spot (NTT West)

- Linux (embedix terminals)
(Zaurus Schedule management information can be downloaded from the PC in home)
- ¥59800
- 120g
- Battery duration 12h



Roaming mechanism

Information flow of roaming



Roaming

- ❁ WISPr standard
 - Wifi standard
 - Web base authentication mechanism and RADIUS server
 - Does not proceed enough
- ❁ iPass
 - Utilizes existing roaming function for the dial-up internet access service
 - Working together with NTT Com and NTT-ME
- ❁ Passone
- ❁ Operators Alliance (economical approach based on scale merit)
 - Cometa established by intel, AT&T,IBM
 - Cometa and iPass announced to work together
- ❁ Fast roaming(uses Inter Access Point Protocol)
 - IEEE 802.11f
- ❁ Trial service by NTT Com and NTT-BP and NTT-ME
- ❁ Wifi-zone
 - Brand to ensure interoperability
 - NTT-ME



Community network

- ❁ Solution to increase the number of Access Points without investment
- ❁ Access Points are owned by person who wants to earn money and operators will charge for internet connection and accounting function and authentication function
- ❁ Kick-back system and sells accounting server software
- ❁ Examples
 - Mflets (NTT east)
 - ¥700 for 1 access point
 - Sputnik
 - Joltage



Collaboration with mobile phone network

- ❁ Experimental stage
- ❁ M-zone
- ❁ IEEE 802.11 WNG started discussion
- ❁ b-access software realizes seamless switching between PHS data communication service and Hotspot service by NTT Com and some other Public Wireless LAN service



VoIP

- ❁ Obviously attractive.
 - Lower price voice service can be provided
- ❁ Difficulty in mobility support
 - Wireless LANs are not developed to support high mobility
 - PDA only. Change of the concept of the service from origin.
- ❁ Battery duration period is several hours
- ❁ Neo-mobile
 - Trial service completed



Shinkansen (Long distance train)

- ❁ Extremely desired service
 - Customers are isolated from the information (Internet) for several hours.
- ❁ Japan Railway(JR) and NTT-ME are launching Public wireless LAN service for Shinkansen Customers
 - Provided in Platforms where “Nozomi” stops
 - Free trial service starts this april.
- ❁ ISP roaming is provided
 - Same ID can be used



Conclusion

- ❁ There are ongoing work
- ❁ Breakthrough Necessary
 - Portable = small terminal=small screen
 - Broadband = High definition moving picture
= Large screen
- ❁ The demand for the mobility support may be different between Public Wireless LAN and mobile phone
- ❁ It is necessary to create Application other than phone and e-mail and WEB-browsing
- ❁ It is possible to launch Public Wireless LAN service with smaller investment.
 - We can establish business model through the trial and error experience. (Prepaid card is good example)

