



“NETWORK OF DANUBE WATERWAY ADMINISTRATIONS”
South-East European Transnational Cooperation Programme

USER GUIDE FOR WLAN ACCESS

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1 LIST OF ABBREVIATIONS

Act.	Activity (sub work package)
RSS	Received Signal Strength
WLAN	Wireless Local Area Network

2 SCOPE OF DOCUMENT

The aim of this document to support the users to access the network easier at the new NEWADA WLAN sites. In the Annex a short infopage can be found, which can be distributed at the sites for the users.

3 RECEIVER TEST EXPERIENCES

The main conclusions are that it is important to have the line of sight with the access point and to avoid interferences with other equipments or networks. Of course it is not easy on the Danube to see the antenna due to trees and other objects and it is also not possible to avoid network interferences in urban or industrial areas where many networks operate within the same 2,4GHz frequency range.

The following experiences, conclusions were collected during the NEWADA Act.5.5 receiver tests:

- Outdoor antenna receiver (omni or directional) have relevant advantage comparing to 'integrated laptop in the wheelhouse'
- 5 dBi gain outdoor magnet antenna lose its gain through its cable if it is not properly shielded
- external antennas have significant gain if used outside shadowed areas (e.g. top of wheelhouse) in order to have sight of line
- Great difference of laptop's integrated WLAN receiver was detected. E.g. Laptop1 could identify 35 networks while Laptop2 could detect at the same place only 23 networks.
- There was not significant difference detected between integrated and external (USB) receivers.
- Differences between receiver laptops' measurement results were almost constant, so coverage data is suitable for processing.
- Location of the notebook/internal WLAN receiver – The notebook should be located on an appropriate place not close to metal constructions or other electronic devices using the 2,4 GHz frequency band (e.g. such as a microwave or Bluetooth devices). Shadowing affects should be excluded or minimized by means of a proper location of the notebook during the connection to the WLAN network at a lock.
- The construction of the notebook, meaning whether the WLAN receiver respectively the antenna is located in the display or in the case. The pre-tests on lock Freudenu showed that notebooks in which the antennas are installed in the display have a better reception quality than the others. Note that the antennas of state-of-the-art notebooks as well as the last generations are usually installed in the display.

4 EXPERIENCES WITH MOBILE DEVICES

The following findings and experiences were collected during the tests with HTC Desire with Android OS:

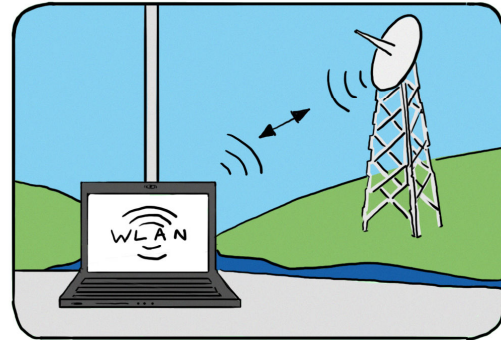
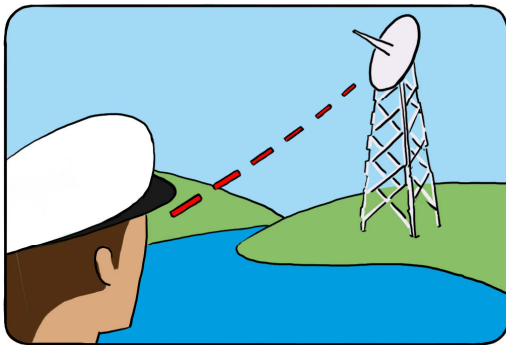
- The signal strength of the mobile devices was always below the measured signal strength (RSS) of the test equipment.
- The average signal strength for 20 spot tests was about around -75 dBm, whereas the best value for the signal strength was -66 dBm which is only category 2 in the NEWADA coverage category.
- Even minor movements of the mobile device can increase or decrease the reception quality.
- The provided network can be used problem-free by mobile devices although the average RSS of the mobile devices is usually below those of internal WLAN receivers of notebooks, which means that a signal strength of -85 dBm or even higher can be still used for browsing at accessible websites. As for the internal receivers the reception quality strongly depends on the location of the mobile device as well as the basic conditions with respect to shadowing effects, etc.

5 ANNEX - USER GUIDE LEAFLET

USER GUIDE FOR WLAN ACCESS

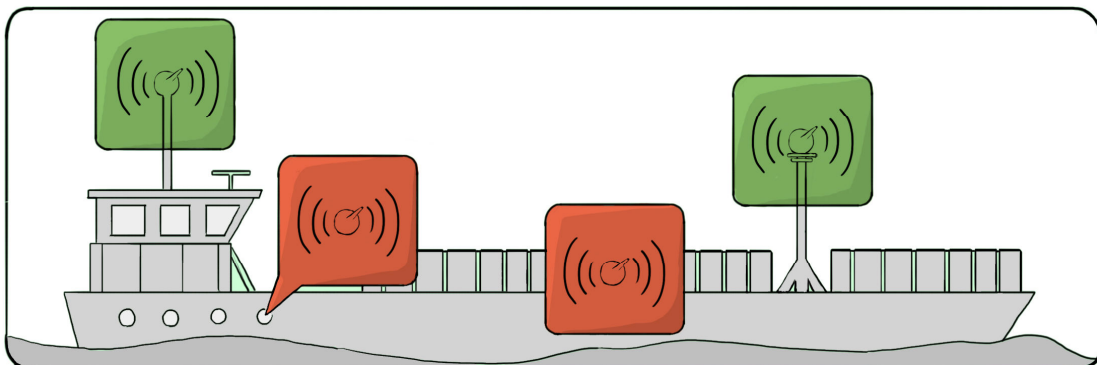
In order to achieve a better and reliable access to the Danube WLAN services, the following suggestions were elaborated.

1. Aim for a clear line of sight with the access point!



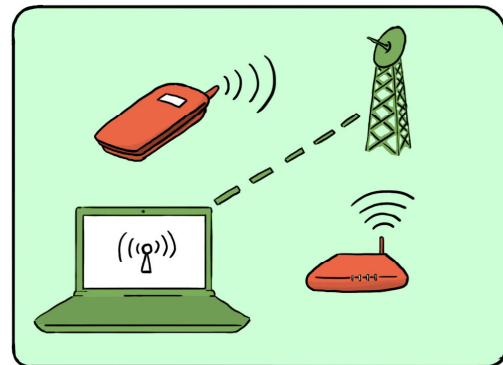
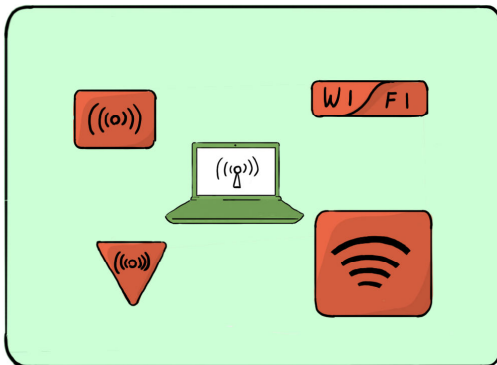
- Get as close to the window as possible with your laptop or go outside for a better access!
- Try to arrange your internal/external antenna into the direction of the access point's antenna!

2. Use external antenna for better access!



- - Put an external WLAN antenna outside on a high position of your ship!
- - Use appropriate cables and adapters to avoid signal loss!

3. Try to avoid interferences with other networks!



- If possible, try to find places for WLAN connection where not many networks can be detected.
- If you have own WLAN network on-board, check that it is not interfering with the network that you would like to connect to.

4. Avoid using similar frequency equipments nearby!



- e.g. microwave oven, bluetooth devices or 2,4GHz video transmitter

- End of document -