



COMPARISON OF ANT+ AND BLUETOOTH

SIT374 – Team Project (A) – Project Management
and Practices

Abstract

This report compares ANT+ and Bluetooth for sensor communication. The report highlights the advantages, disadvantages, similarities, differences and availability of libraries.

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Introduction

This report is about the practicality, similarities, differences, advantages and disadvantages of ANT+ and Bluetooth. As we all know ANT+ is a managed network that can collect, transfer and store data. ANT+ systems are mainly used in sensors, heart rate monitors as well as speed sensors. On the other hand, Bluetooth is a short-range wireless technology used for exchanging data between land and mobile devices. Bluetooth can be used to wirelessly play audio from your mobile phone to other Bluetooth systems such as the stereo in your car, Bluetooth speakers and Bluetooth headphones.

Advantages & Disadvantages of ANT+

Advantages	Disadvantages
ANT+ requires lower amounts of power to function.	ANT+ is roughly 16× slower when compared to Bluetooth.
It also doesn't cost a lot to function.	It is mainly used for low bit-rate information.
It supports various network configurations.	ANT+ is a closed system which means both devices need to be linked to function.
ANT+ can connect to many systems at once.	ANT+ can be slower when compared to Bluetooth.

Advantages & Disadvantages of Bluetooth

Advantages	Disadvantages
Doesn't cost a lot to function.	Connection might hinder in certain weather conditions.
Highly compatible with other devices.	Bluetooth can be used to hack into other devices.
Easily upgradable as there are many updates.	Has a low bandwidth.
Bluetooth devices are readily available.	Uses a lot of power to function.

Similarities

Even though the advantages and disadvantages show a few traits in similar they don't have much in common besides, the fact they both transfer data and both use 2.4 GHZ to transfer information and data.

Differences

The main differences are that Bluetooth is a one-to-one system, which means it will only be able to transfer data to one device, even though your able to connect to a speaker as well as a controller through Bluetooth you aren't able to transfer audio samples, images and videos to more than one device. Whereas ANT+ is a one-to-many system, which can transfer data to many devices, such as heart rate as well as speed and many more, ANT+ can share multiple sets of information at the same time.

ANT+ is also usually connected through and dongle, which means a dongle must be connected in certain circumstances to transfer data, on the other hand Bluetooth is fully automated if both devices have Bluetooth.

Availability of Libraries

When it comes to libraries, Bluetooth appears to be the more ideal choice due to the sheer number of libraries compared to ANT+. On GitHub, Bluetooth has over 3300 public GitHub repositories for various purposes whereas ANT+ has only 14 public GitHub repositories. However, ANT+ hosts a number of software libraries, tools and API's themselves that can be found on their website which appear to be quite useful. I also looked at libraries for Wahoo Fitness because we are using their sensors. I found that Wahoo Fitness currently has 47 public repositories on GitHub. Through my research, I have found that both Bluetooth and ANT+ have a good selection of libraries which will benefit the Smart Bike project whichever way we lean. Bluetooth has more available libraries overall, however, ANT+ is still a solid choice. One thing to consider is that Wahoo Fitness (n.d.) states that Bluetooth is the superior option for connecting to Smartphones and ANT+ is better for connecting to Windows and Mac when it comes to their sensors.

Bluetooth Libraries: <https://github.com/topics/bluetooth>

ANT+ Libraries: <https://github.com/topics/ant-plus>

ANT+ Libraries on their website: <https://www.thisisant.com/developer/resources/downloads/>

Wahoo Fitness Libraries: <https://github.com/WahooFitness>

Conclusion

In conclusion with all the factors considered, the most efficient way of exchanging data would be Bluetooth, but it can only pair with one device. Although ANT+ could be slower we are able to transfer live feed of multiple systems of data at the same time. For cyclists that want to track speed, distance and many other information, it is better to use ANT+ as it tends to be more reliable when compared to Bluetooth, if there is an instance where you have both options and you are facing issues your able to switch from either protocol.

References

Wahoo Fitness (n.d.) RPM Speed Information and Setup, Wahoo Fitness, accessed 31 July 2022.
<https://support.wahoofitness.com/hc/en-us/articles/115000336744-Wahoo-RPM-Speed-Product-Instructions> and <https://support.wahoofitness.com/hc/en-us/articles/115000320290-Wahoo-TICKR-TICKR-RUN-Product-Instructions>