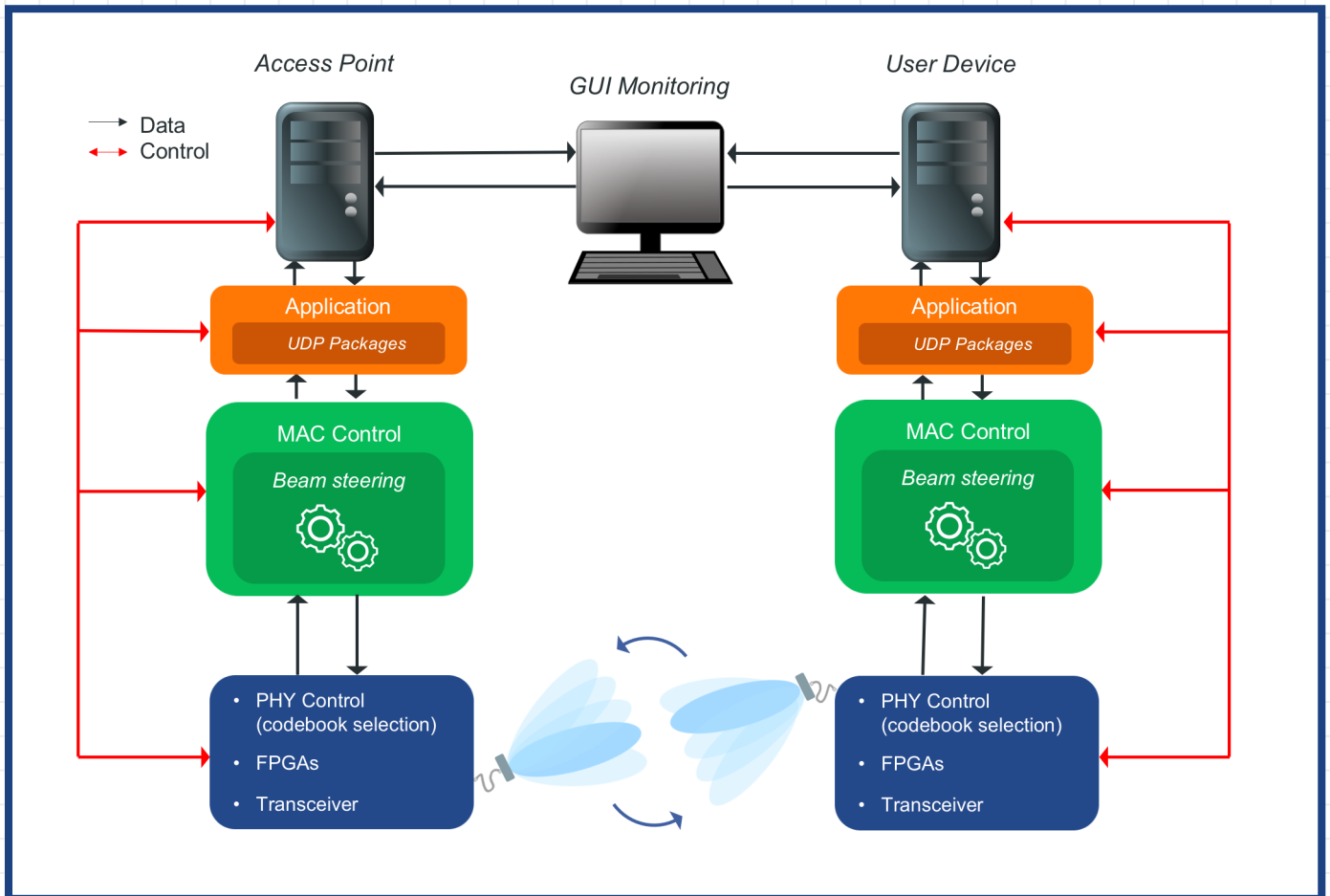


ADVANCED SDR CONTROL AND MANAGEMENT FUNCTIONALITY

Advanced reconfiguration and modular design: Runtime reconfiguration of beam steering algorithms



→ Selection of beam steering codebook at initialization time.

→ Change of beam steering algorithm at runtime.

→ Change of beam steering algorithm parameters at runtime, including manual index assignment.



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**Advanced reconfiguration and modular design:
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CONTEXT

The capability of adapting to new environments in dynamic situations is desirable for the next wireless technologies. This capability allows the deployment of flexible networks in a way that the physical layer resources can be exploited in the best way.

With respect to mmWave technologies, choosing a beam steering pattern that guarantees a reasonable SNR is crucial. If the environment is changing, e.g. the mobile user is going from LOS (Line-of-sight) to NLOS (Non-line-of-sight) propagation channel or its velocity is changing, the beamforming algorithm may need to adapt its parameters.

UNIQUE SELLING POINT

The ORCA's mmWave platform will allow the reconfiguration of beam steering algorithm at run-time. This feature allows the development of flexible networks, in which physical functionalities are adaptable to user needs. It is also worth mentioning that this capability saves time in the experiment when different beam steering algorithms are compared, since it avoids the need of restarting the system when a new algorithm is evaluated. Additionally, the runtime reconfiguration feature also allows A-B comparison of different beam steering algorithms.

OPPORTUNITIES

The ORCA's mmWave platform will make possible:

- Selection of beam steering codebook at initialization time.
- Change of beam steering algorithm at run-time, which saves a lot of time for setting up the system and enables fast testing of multiple algorithms.
- Change of beam steering algorithm parameters at runtime, including manual index assignment.

REFERENCES

The setup employs a Sibeam V band transceiver with integrated phase array antennas. At the base band processing level, the setup makes use of a PXI system from NI [1, 2].