

Bern University of Applied Sciences

# ROSEWOOD4.0 Best Practices and Innovations

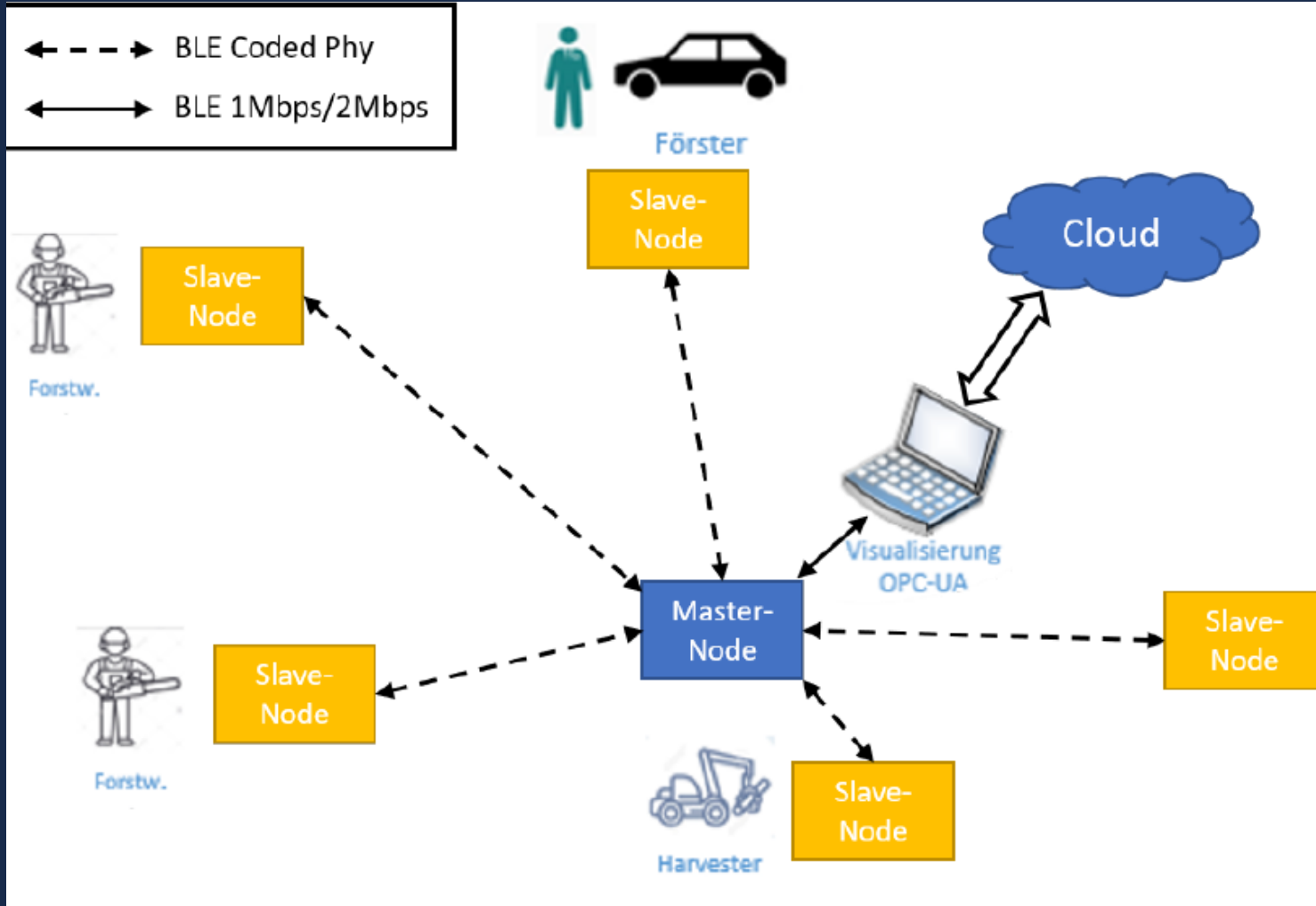
## “Kollegenschutz4.0” Co-worker safety 4.0



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CWE HUB Workshop, 03.03.2021

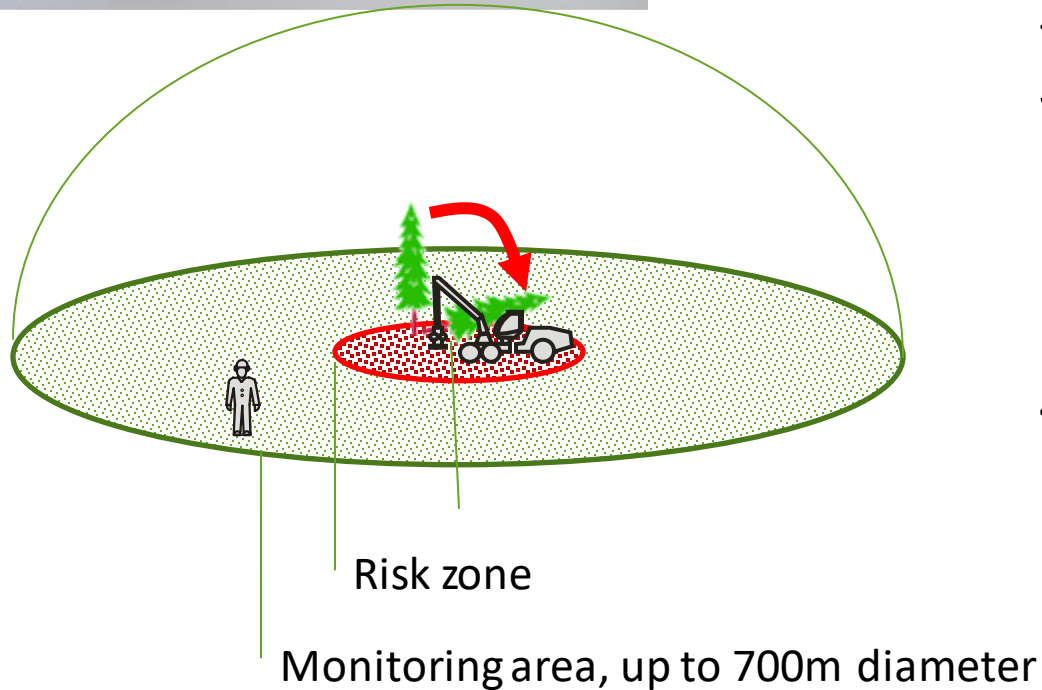
# Co-worker safety 4.0 / “Kollegenschutz4.0” (system for forest operations)



- Can be applied in any kind of forest operation (with typical risk zones)
- Development in Switzerland ongoing till mid of 2021, cloud and web interfaces under development (current configuration is usable and can get adapted to other regions)



# Approach

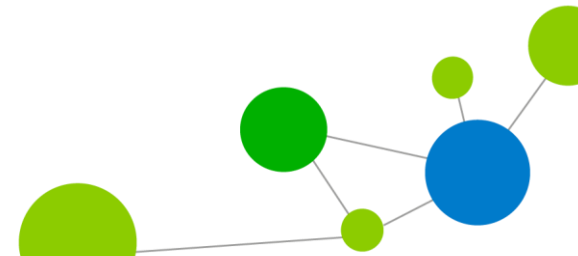


Work safety improvement by using a **sensor node network** using **bluetooth low energy (BLE)**. **No GSM necessary.**

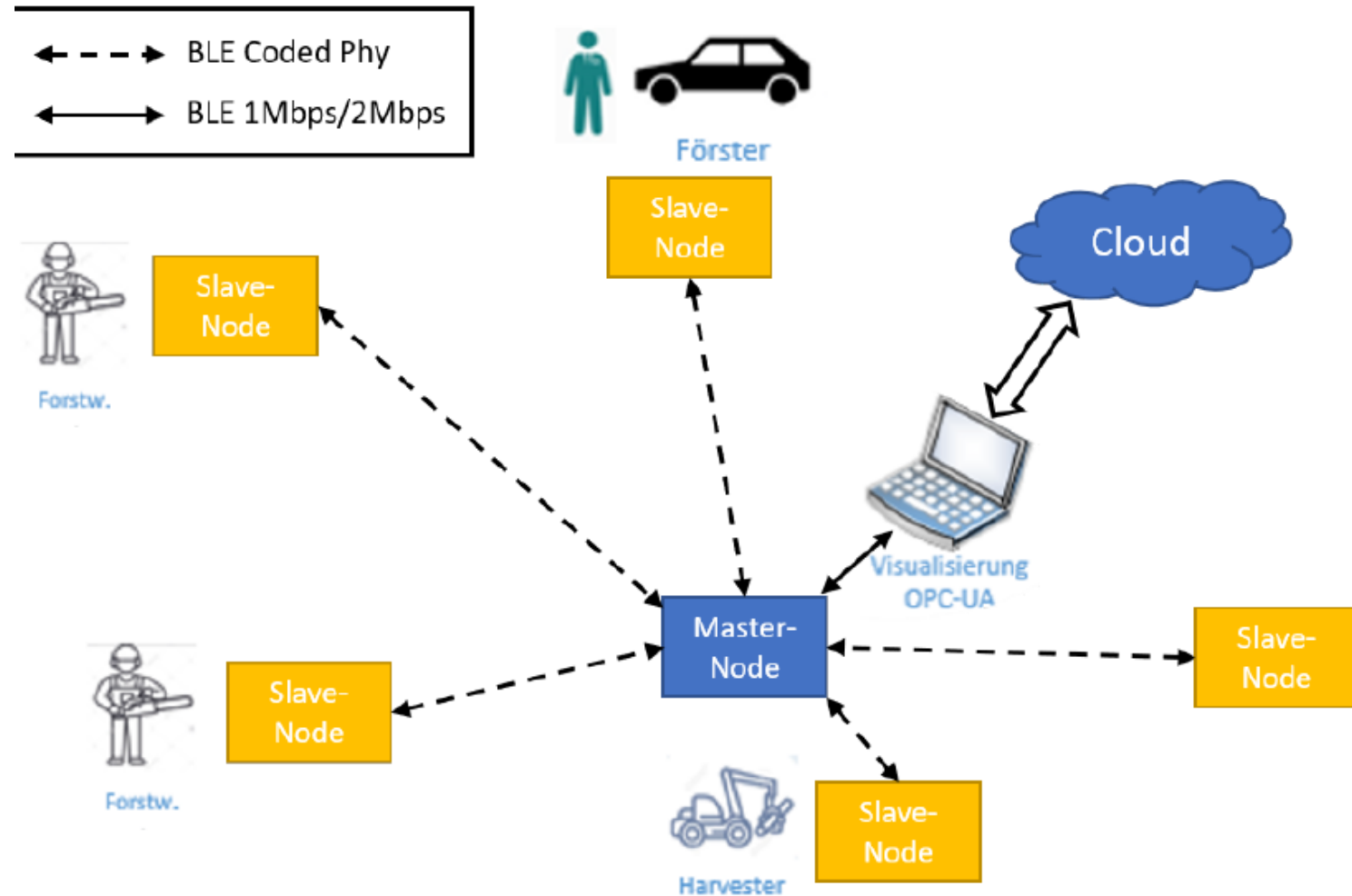
**Risk alert warnings are sent to actors automatically**, risk zones and risk status can be retrieved from actors, offenses of critical overlaps in risk safety zones are identified.

The system is using u-Blox M8N **GPS modules and map visualization on screens**. The information gets translated to a danger situation depending on the individual work-situation (for example larger danger area when the harvester is cutting a tree than while driving).

**The system may connect to a Cloud.** This opens further data processing options, such as inclusion of passers-by via GSM-net or team-oriented data analysis for work-safety education needs.

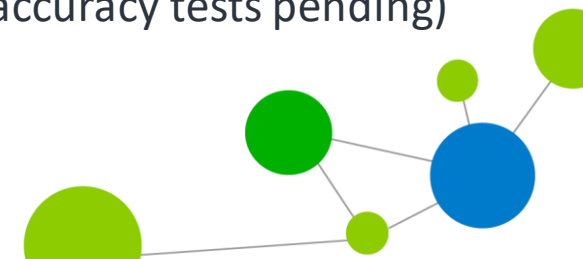


# Results



The system allows a communication under forest conditions of **at least 150m**, up to around 300m under good conditions.

- The provided information reflects **also moving objects** (driving machinery) and people.
- With the current setup a maximum of up to **9 slave nodes** can connect simultaneously to a master node and are defining a work safety zone around a potentially risky operation
- The **battery** of the device has to be recharged approximately after **50h** of usage
- The **accuracy of the GPS position** is around **2.5m** under forest conditions and can be improved using a base-rover-connection (accuracy tests pending)





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