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Plantenna: towards a network of vegetation-integrated sensors for plant and environmental monitoring

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The aim of PLANTENNA is to develop vegetation-integrated, energy harvesting, autonomous sensors that measure in-plant and environmental parameters at high resolution and low cost. Sensor information will be used to develop methods for early detection of plant-stress and environmental strain. This in turn will enable optimising water and nutrient application schemes for agriculture, improve drought protection and support decision making for environmental protection and climate resilience.
Plantenna is a strongly multi-disciplinary research program that brings together sensor technology, electronics & communication research groups with plant and environmental scientists. New sensor technology and electronics will be developed using innovative techniques and materials for miniaturization, energy harvesting, wireless communication to enable sensor integration in and on plants with the goal to address these key scientific questions:
- How to use the physical, chemical and biological processes in plants for improved sensing of environmentally and agriculturally relevant parameters?
- How can plant energy be converted efficiently to drive integrated sensors & electronics?
- How to realize a fully autonomous, self-sustaining and low-cost cyberplant?
- Can an autonomous communication network be established between plants, in order to realize an Internet Of Plants?
- How to utilize such an Internet Of Plants for monitoring and predicting our environment: air, water, soil, flora, weather, climate, health of plants and food quality?