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**EUREL – The Federation of Electrical and
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**Improving water business with advanced
monitoring technology**

Singapore International Water Week 2009

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- ❑ Monitoring water resources allows to improve the value of this primary good.
 - ❑ Monitoring technology provides added value to the water business.
 - ❑ Significant increase in the water quality guarantee better development of business life.



Water monitoring technology is the result of many new advanced techniques:

- ❖ Integrated sensor devices
- ❖ Wireless communication
- ❖ Energy harvesting
- ❖ Energy storage



- Monitor the **temperature** and the **lightness** at different depths
- Deployment area: 2800 m^2
- Moreton Bay, Queensland, AUS

Network topology

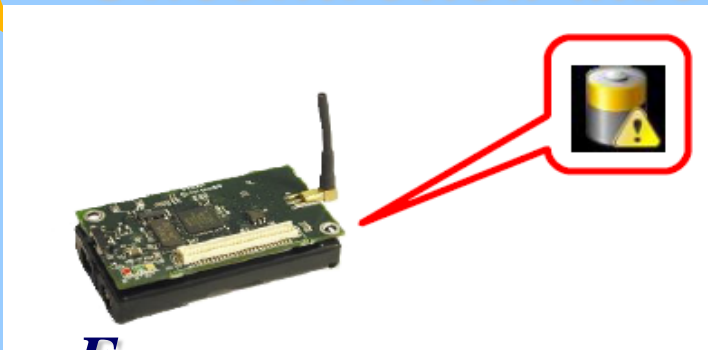
- Node Unit
- Gateway





Local transmission protocol: ADAPTIVITY

- ★ *Uncontrolled disconnection of nodes in the WSN*

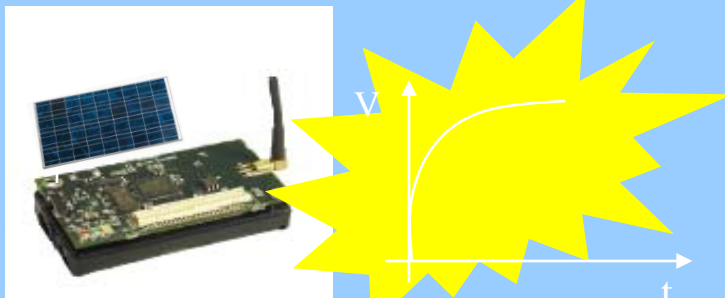


Energy fall

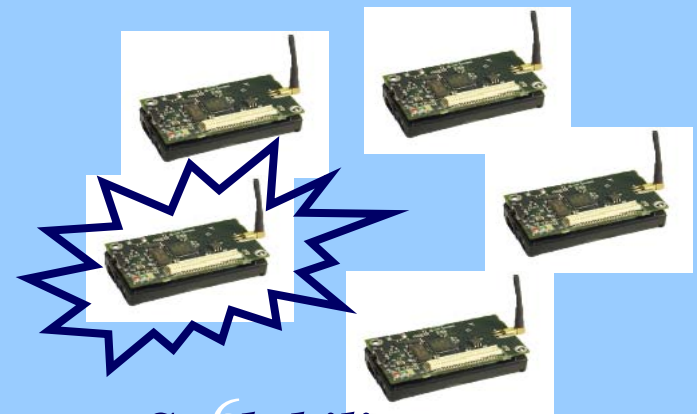


Transmission errors

- *Reconnection of nodes*



Energy harvesting



Scalability

Energy harvesting



Solar panels

Energy storage



Energy



ADVANCED MONITORING ADVANTAGES TO BUSINESS:

- Better dynamical understanding of water condition (i.e. is it good for my purpose?)
- Reduction of reaction times (i.e. emergencies are solved in due time)



ADVANCED MONITORING ADVANTAGES TO BUSINESS:

- Improvement of applications
- Control procedure cheaper



**ADVANCED MONITORING
ADVANTAGES TO BUSINESS:
CONCLUSIONS**

- Cost for implementing advanced monitoring: + 20% max initial cost
- Reduction of operative expenses in the management of water resources: up to 80% the total annual cost



**ADVANCED MONITORING
ADVANTAGES TO BUSINESS:
CONCLUSIONS**

- Long term advantages clearly shown in the quality of the service delivered
- Customer satisfaction increases significantly