

# Field reconstruction in a WSN through distributed orthogonal projection

Eugenio Celada-Funes, Daniel Alonso-Román, Baltasar Beferull-Lozano and César Asensio-Marco

Group of Information and Communication Systems  
IRTIC, Universidad de Valencia, Spain



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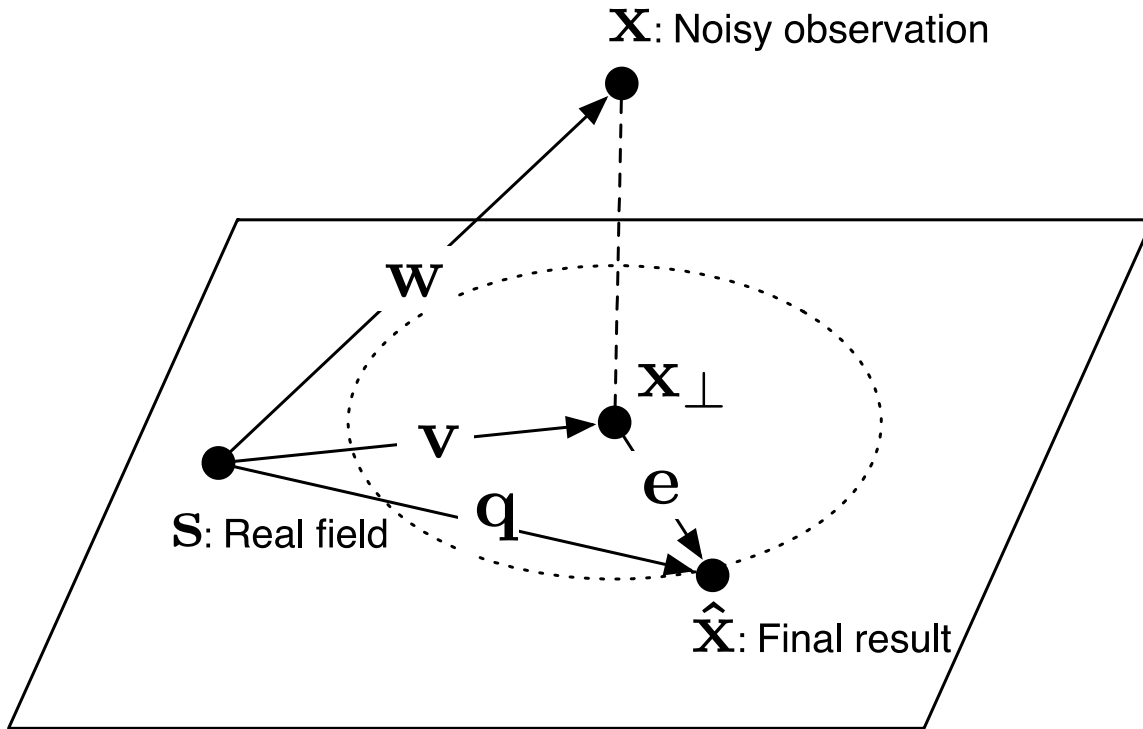
**EWSN 2013, Ghent, Belgium**



**Hydrobionets**



# Problem formulation

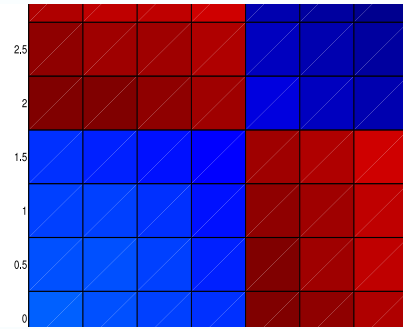


- 1) **Problem due to noise**
- 2) **How to remove it?**
  - Project into a subspace
  - Smaller dimension
  - Less components of error
  - As much signal as possible
- 3) **Limitations due to:**
  - Distributed setting
  - Imperfect channel
- 4) **Implications**
  - Projection error

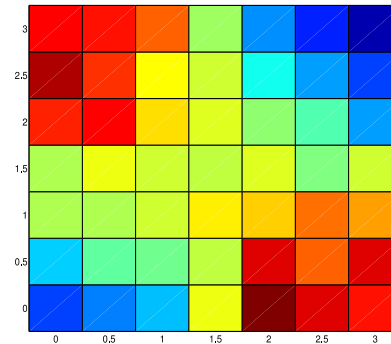
# Adopted solution



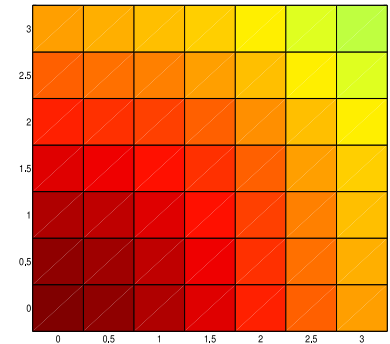
a) Real field



b) Noisy observation



c) After 80 iterations



d) Final result

- Motes start with noisy observation b)
- Server provides component of the subspace basis
- Motes start exchanging information (CONSENSUS)  
... and reducing the error c)
- The field is reconstructed d) with error  $d) - a)$