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# Tracking inland fishery catch with NFC application

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# Traceability and availability of inland fishery catches

Improving the quality control, traceability and availability of fresh water fish catches by exploiting the RFID-technology (2013)

- Executed by:
  - Mikkeli University of Applied Sciences/ Department of tourism and hospitality management and Department of electrical engineering and information technology
  - University of Helsinki/ Ruralia-institute
- Funding:
  - Ministry of Agriculture and Forestry/ Quality chain plus executers
- More information:

[www.mamk.fi/jarvikala](http://www.mamk.fi/jarvikala) and [www.jarvikala.fi](http://www.jarvikala.fi) (in Finnish)

# Main actions and roles

## Traceability and quality control

- A tracking system which utilizes rfid- technology with temperature logging and mobile technology is developed, tested and evaluated by pilot users and different parties of fish supply chain
  - Inland fishery, Eastern Finland
  - Mikkeli University of Applied Sciences

## Availability

- There are lot of second home owners in Eastern Finland
  - There is a wish and real need to buy more local fresh fish and fish products
  - New ways of selling and buying local fish is needed
    - Qualitative research, interviews, Helsinki University/ Ruralia -institute

# Inland fishery

## Commercial inland fishery (2010)

- Total catch 4 500 tonnes
- Main catch species : vendace
  - After vendace pikeperch, signal crayfish, european whitefish, perch
- Value of catch 8.8 million €
  - Value of vendace 5.6 million €
- Number of fishermen 340
- Marine fishery (2012)
  - Total catch 133 000 tonnes
  - Value of catch 36 million €
  - Number of fishermen 2155



# Challenges

- Easy to use is important
- Affordable – no expensive special equipment
- Versatile data to be transferred across the whole supply chain
- Track the whole supply chain
- Fish catches can branch out to different channels

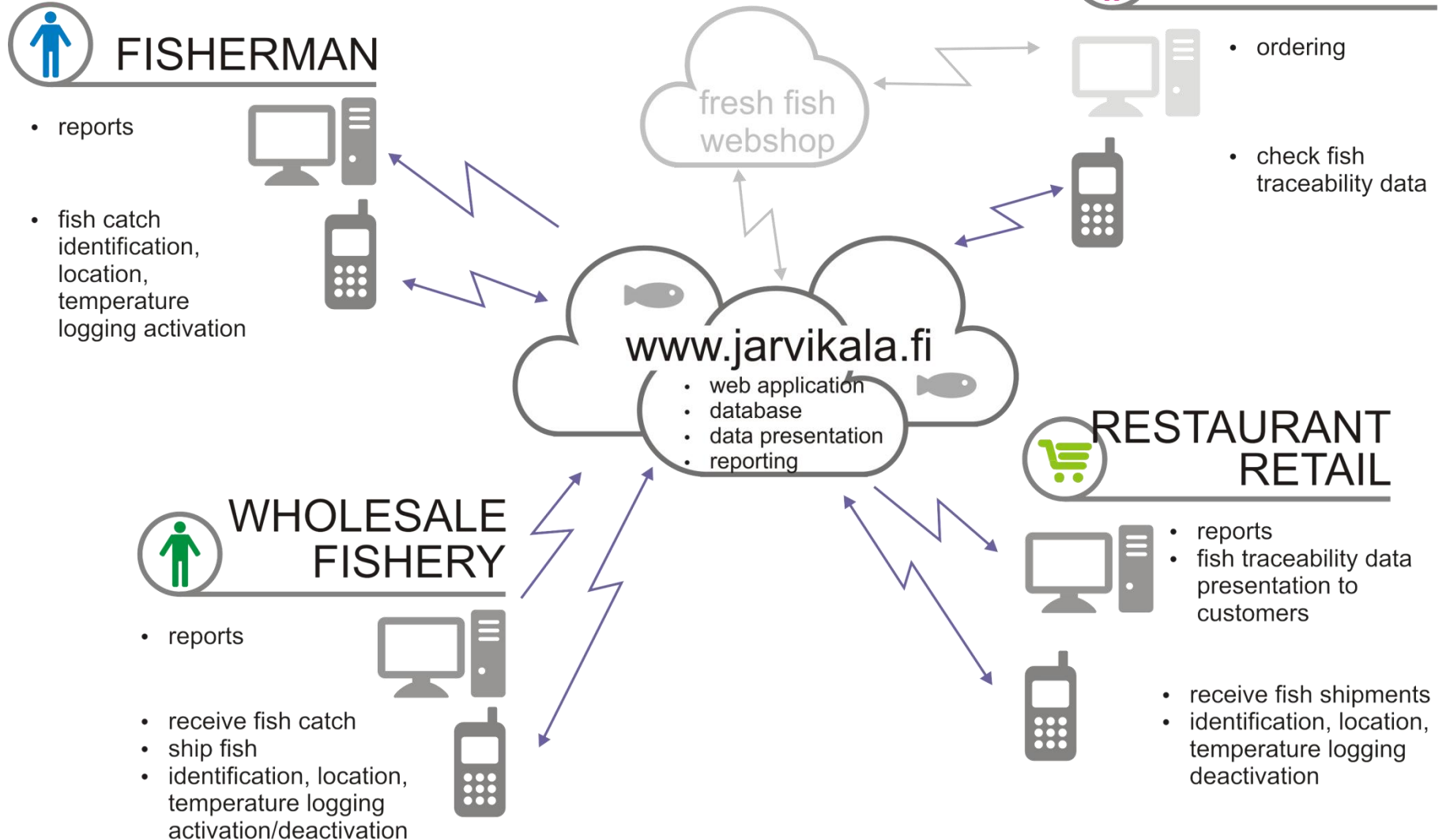


# Why NFC

- No specific reader equipment – only NFC enabled mobile phone
- Mobile phone allows easy application development, location services and data transfers
- Affordable NFC-sticker can be used when only traceability is needed (no temperature logging)
- Contactless identification and temperature data transfer



# Main actors/roles





# Main components



## NFC-datalogger

- unique identification
- temperature logging

## Mobile application

- identification
- location
- temperature data
- data transmit

## Web application

- database
- event chaining
- reports
- data presentation

## Web browser

- fish traceability data
- mobile access also via NFC-sticker at store counter

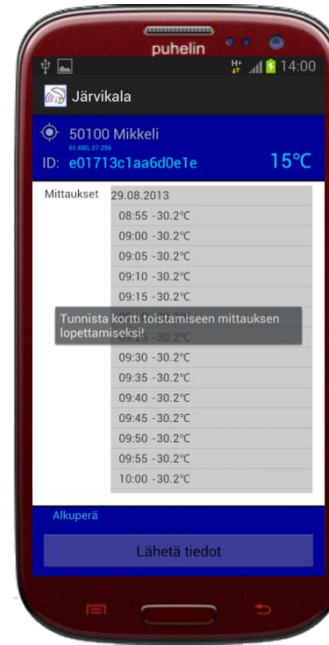
# Creating traceability data

- Traceability data created in every turning point of the supply chain
- Data created and transmitted to cloud service by mobile phone app



## Shipping fish

- Tag UID
- Location coordinates
- Actor id
- Fish species (requires user input)
- Amount of fish (requires user input)
- Origin of fish (lake or previous received fish catch)
- Outside temperature
- Activate temperature logging

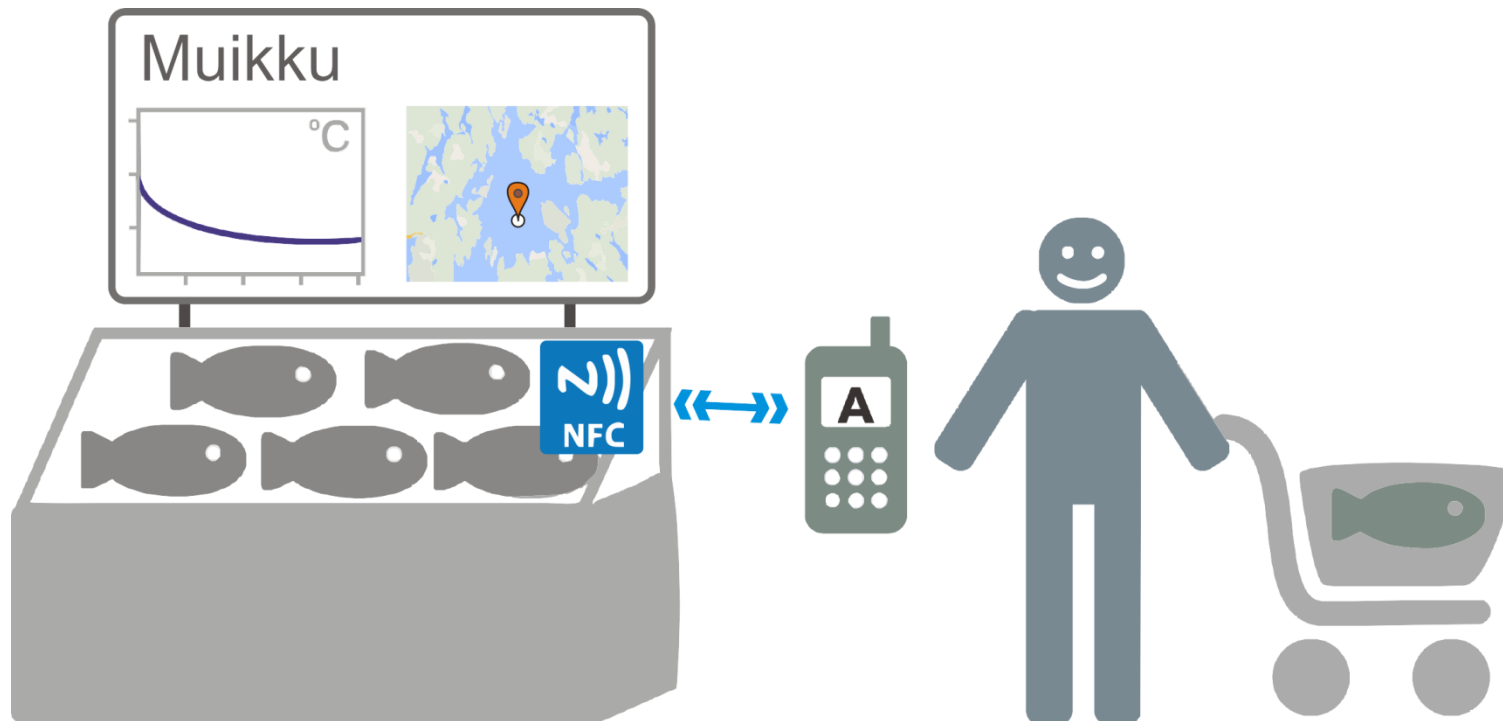


## Receiving fish

- Tag UID
- Location coordinates
- Actor id
- Read temperature log
- Outside temperature
- Deactivate temperature logging

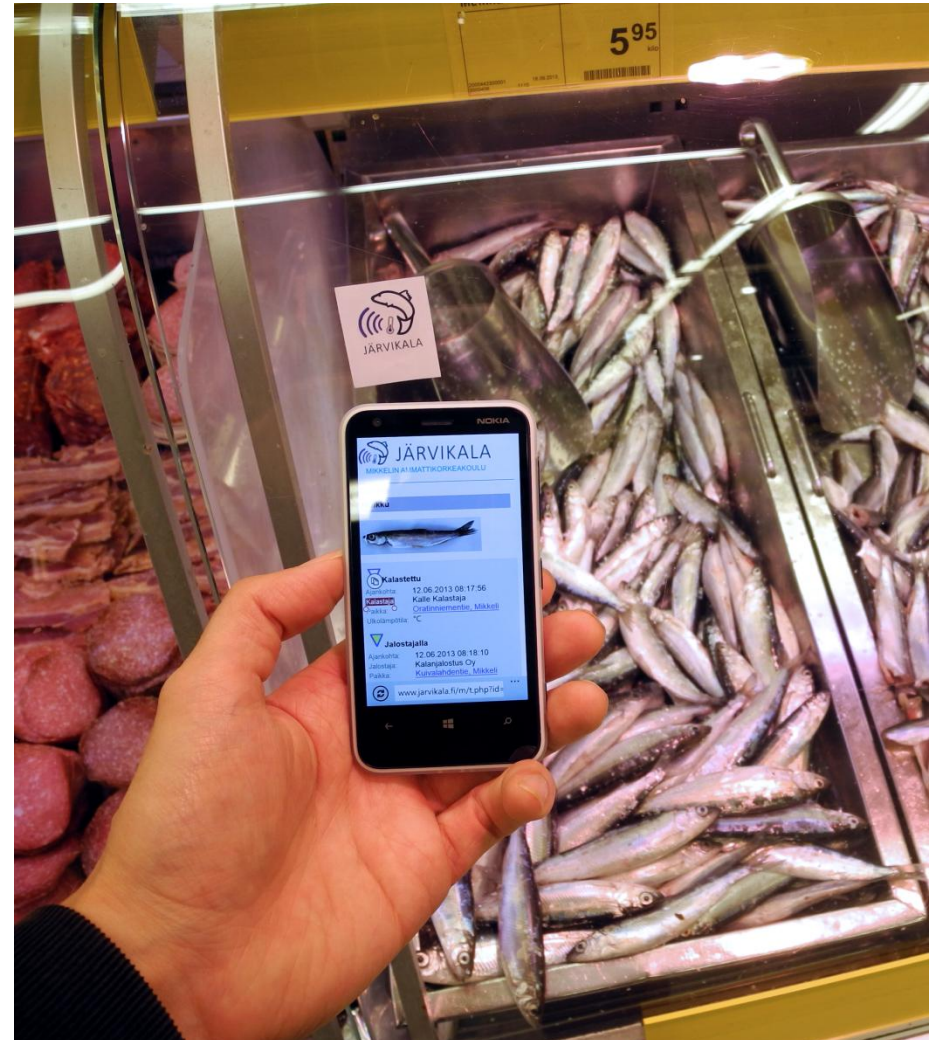
# Retail store

- Traceability data available to customer
  - Windows 8 application running on monitor next to fish counter
  - Customers mobile phone via NFC-sticker



# NFC-sticker / Retail store

- Consumer can read NFC-sticker at fresh fish counter
- All NFC enabled mobile phones, for example new Lumias 620, 720, 820 ...
- Phones browser shows data concerning that particular fish catch
  - Fish species
  - When and where caught
  - When and where fish is handled (fishery/wholesaler)
  - Temperatures during transports
  - When fish have arrived to store



# Monitor app / Retail store



# Benefits

- Fishermen
  - 'Quality stamp'
  - Automatic catch reports
  - Customer base expansion
- Fisheries, wholesale
  - Quality control of received and shipped catch
  - In-house-control-reports
  - Improved quality assurance to customer is an advantage
  - Received fish catch can be predicted at the time of catch
- Retail stores
  - Quality control
  - Traceability
  - Better customer service
  - Increased sales
- Consumers
  - Assurance of origin and quality

# About project

- First pilot in June, from fisherman to fishery
- Second pilot at October, from fisherman to fishery to retail store
- Pilots test feasibility and acceptance of technology
- Project ends at the end of 2013
- After first pilot positive reception from the field
- Interested commercial operator is looked for
- Ministry of Agriculture and Forestry examines the results and makes a decision about follow-up
- Traceability processes and procedura are examined also in marine fishery in year 2015

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