

# QRDC (QR-code Distance Client)

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# What is QRDC?

2

- QRDC is a system prototype for a location-based application
- Uses the server-client model
- Retrieves information about a Point of Interest
- Estimates the distance of the user from this Point of Interest
- Specified for the Android OS
  - ▣ Can be installed in every Android mobile device

# Retrieve information about a Point of Interest

3

- A QR Code is a two-dimensional barcode which is registered trademark of DENSO WAVE INCORPORATED
- A QR Code contains information in both the vertical and horizontal directions and holds a considerably greater volume of information than an ordinary bar code
- Codes are designed in order to be readable from any direction in 360 degrees. Each QR Code contains three position detection patterns, located at the three corners of the symbol, that guarantee stable high-speed reading from any direction



# Retrieve information about a Point of Interest

4

## Basic Procedure

- A QR-Code is attached to every Point Of Interest.
- The user “scans” the QR-Code with the camera of his mobile device
- The client’s application decoded the Point Of Interest’s id from the QR-Code and sends it to the server
- A database on the server-side stores information about each Point of Interest.
- According to the id the server receives, it replies back to the client with information about the Point Of Interest.



# Distance estimation

5

- Using techniques from computer vision:
  - Image Analysis
  - Image Feature Detection
  - Camera Calibration
- The QR-Code is used as “pattern” for camera calibration

# Triggering activities

6

## Activity QR-Codes

- QR-Codes that trigger specific activities are also deployed. (We name these QR-Codes as “Activity QR-Codes”)

## The system supports the “Printing Activity”

- A QR-Code is attached to a printer
- The user can take a photo of this QR-Code, and print information about a Point Of Interest

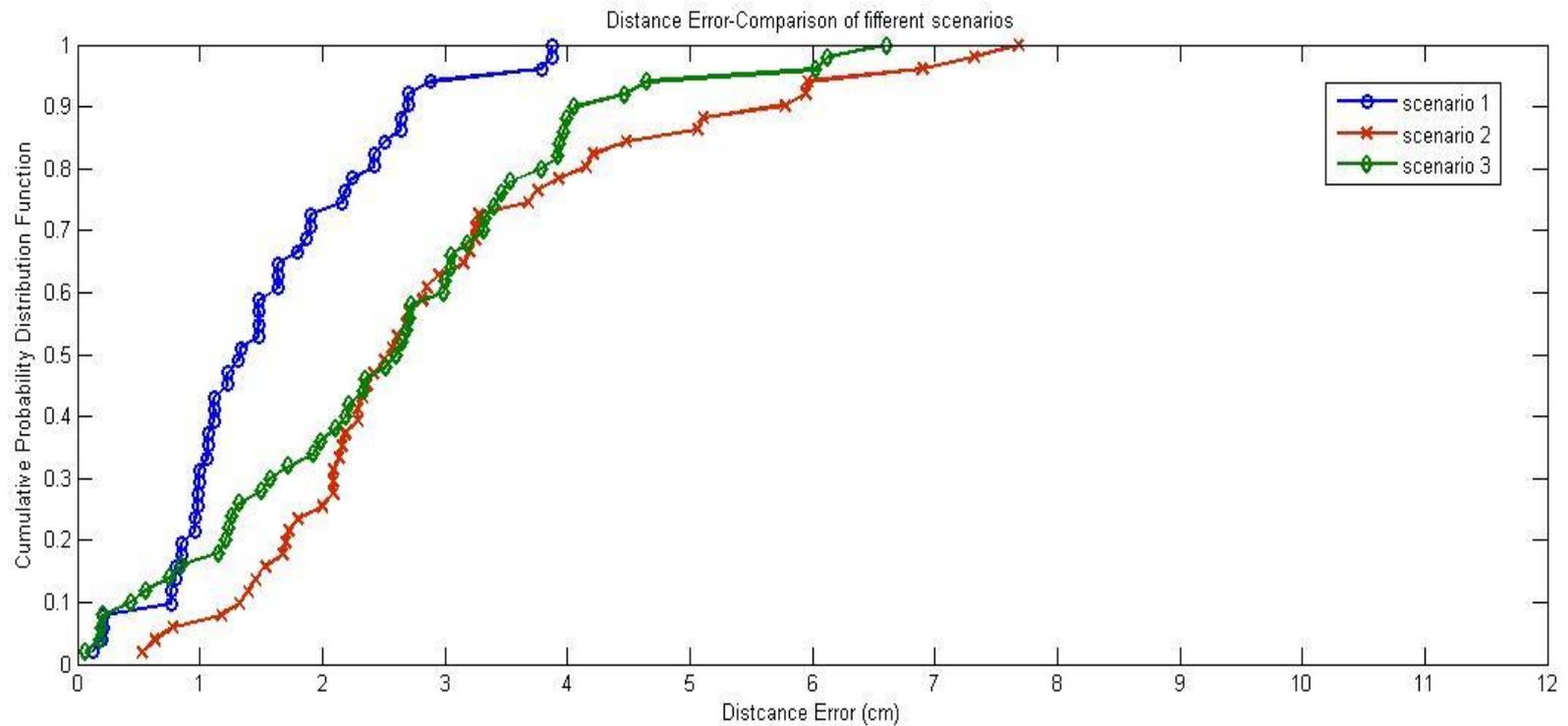
# User's feedback

7

- The feedback required from the user must be kept to its minimum amount
- The user needs only to take a picture of the QR-Code
- In the case of “Activity QR-Codes”, more user feedback may be required

# Distance Estimation Error

8



# System's improvements

9

- Serve more than one client simultaneously
- Automatic server discovery
- Use of the estimated distance (How?)
- Storing and sharing information
  - ▣ Construct a “personal journal” (tag photos and information in the floor plan of the building you are visiting)
  - ▣ Publish information in a social network (Facebook)
- Support more activities
  - ▣ Display content (such as the retrieved information) in a large screen
  - ▣ Any other ideas?
- Comments from users
  - ▣ User are able to leave comments about a Point of Interest