Mobile multiplayer gaming: TagAttack

A mobile multiplayer game with location-based real-world interaction

motivation: technology trend

- mobile gaming gaining market share
- shift of gaming perception from a waste of time to gaming on full purpose
  (people gathering at the Cubix cinema a full weekend!)
- gamer‘s shift from (male) geeks to common behaviour
  (already 40% of US online players are female)

motivation: research issues

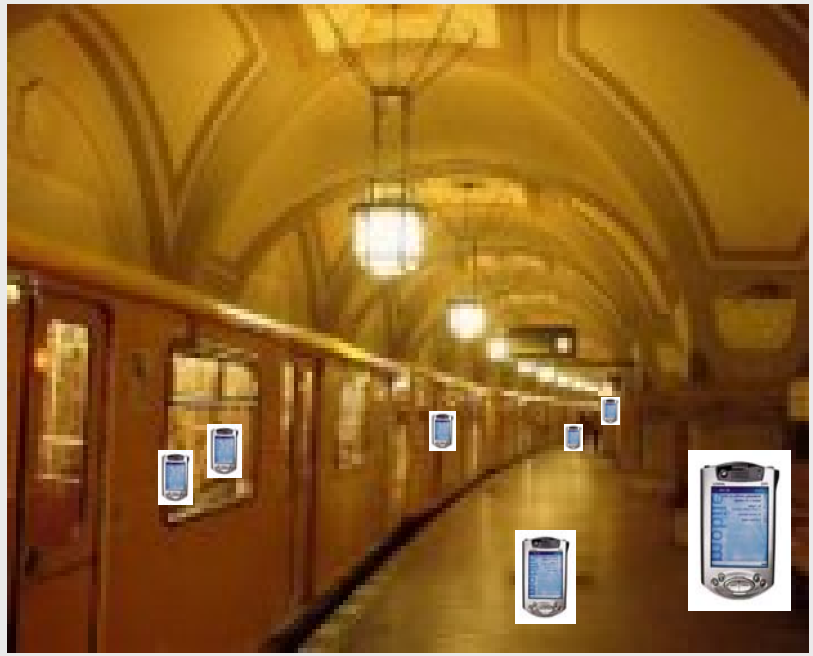
- extremely ad-hoc networks
  - autoconfiguration
  - peer-to-peer
  - participants leaving and (re-)joining
- security and privacy issues
  - want to interact, but in a secured way
- heterogeneous networks
  - GSM
  - Bluetooth
  - WLAN
  - Windows Smartphone, Java phones, Symbian phones

location-based system

- mobile multiplayer games can be more than just a small version of a well-known online (PC) game
- location-based gaming:
  - different game situations depending on the physical location
  - move in the real world in order to change location on the game map
- stronger interweaving: context-based system
  - sensors provide additional context elements: temperature, luminosity, noise level
  - sensor history
  - bi-direction interaction: leave messages at a location, virtually enhance a real location

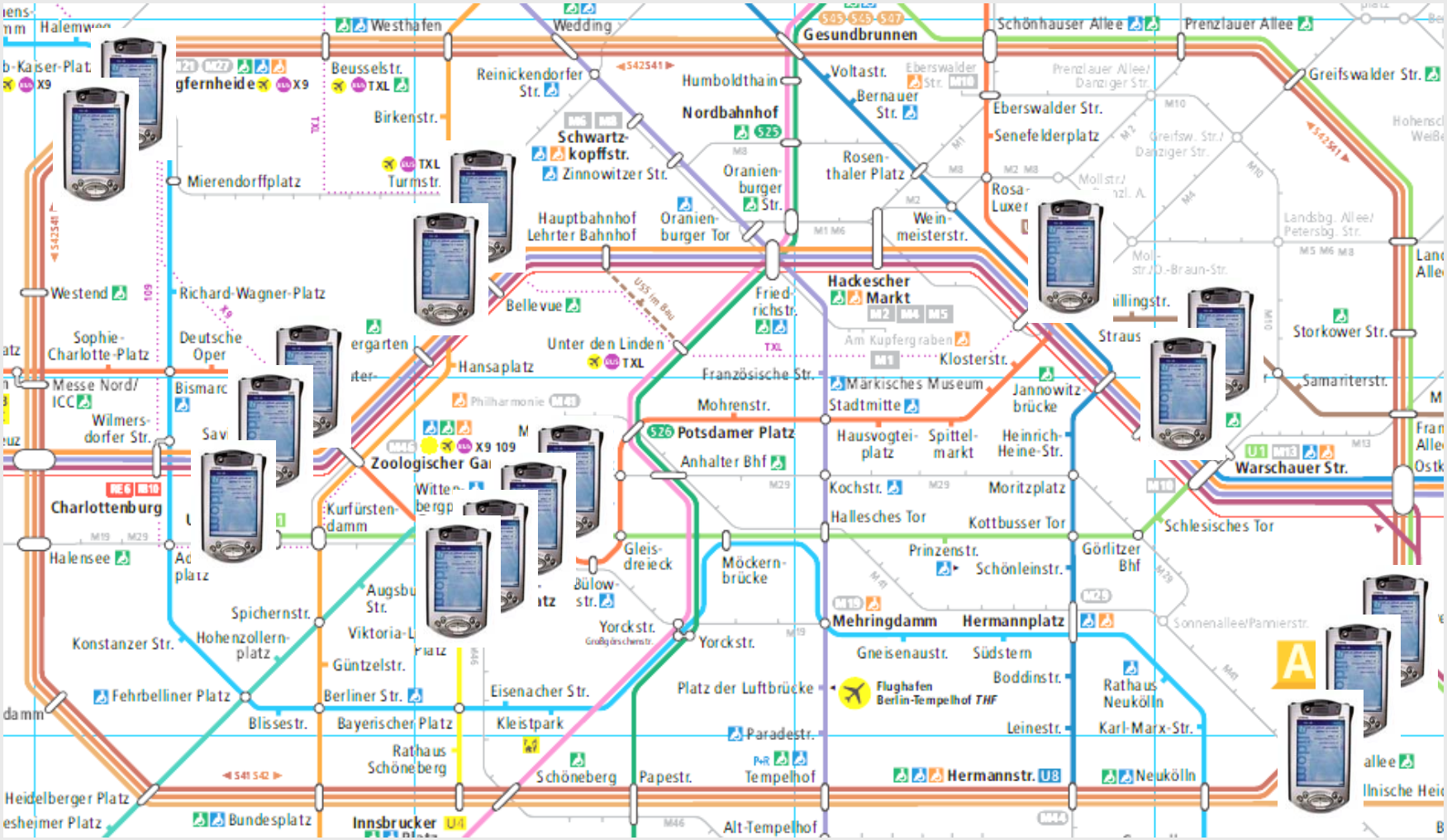
scenario

- Gamers entering a subway station
- Discovering other gamers and games
- Direct and multihop communication
- Leaving high-scores and gamer tags



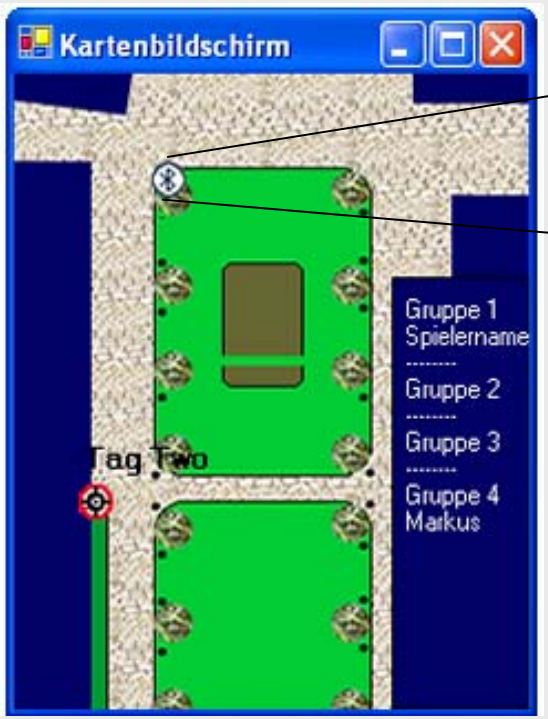
Berlin tube station

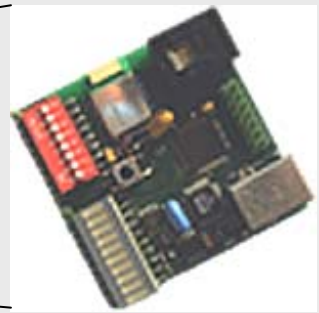
scenario


Westhafen
Wedding
Gesundbrunnen
Schönhauser Allee
Prenzlauer Allee
Reinickendorfer Str.
Humboldthain
Voltastr.
Eberswalder Str.
Bernauer Str.
Greifswalder Str.
Beusselstr.
Birkenstr.
Nordbahnhof
Eberswalder Str.
Senefelderplatz
Schwartz-kopffstr.
Zinnowitzer Str.
Oranien-burger Str.
Rosen-thaler Platz
Mierendorffplatz
Turmstr.
Hauptbahnhof
Lehrter Bahnhof
Oranien-burger Tor
Wein-meisterstr.
Rosa-Luxer
Westend
Richard-Wagner-Platz
Bellevue
Hackescher Markt
Fried-richstr.
Sophie-Charlotte-Platz
Deutsche Oper
Unter den Linden
Hansaplatz
Französische Str.
Märkisches Museum
Storkower Str.
Messe Nord/ ICC
Bismarc
Wilmers-dorfer Str.
Mohrenstr.
Stadtmitte
Jannowitz-brücke
Samariterstr.
Potsdamer Platz
Hausvogtei-platz
Spittel-markt
Heinrich-Heine-Str.
Anhalter Bhf
Zoologischer Ga
Warschauer Str.
Charlottenburg
Kochstr.
Moritzplatz
Kurfürsten-damm
Hallesches Tor
Kottbusser Tor
Schlesisches Tor
Halensee
Gleis-dreieck
Möckern-brücke
Prinzenstr.
Schönleinstr.
Görlitzer Bhf
Augsbu Str.
Spichernstr.
Bülow-str.
Mehringdamm
Hermannplatz
Konstanzer Str.
Hohenzollern-platz
Yorckstr.
Gneisenaustr.
Südstern
Güntzelstr.
Boddinstr.
Fehrbelliner Platz
Berliner Str.
Eisenacher Str.
Platz der Luftbrücke
Flughafen Berlin-Tempelhof THF
Rathaus Neukölln
Blissestr.
Bayerischer Platz
Kleistpark
Leinestr.
Karl-Marx-Str.
Rathaus Schöneberg
Paradestr.
Heidelberger Platz
Schöneberg
Papestr.
P+R Tempelhof
Hermannstr. U8
Neukölln
Bundesplatz
Innsbrucker
Alt-Tempelhof

TagAttack

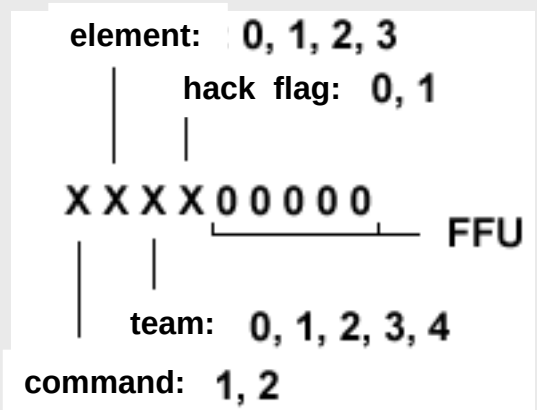
- TagAttack:
  realization for the computer science building of FU Berlin





Bluetooth tag

TagAttack: tag states



states of the tag

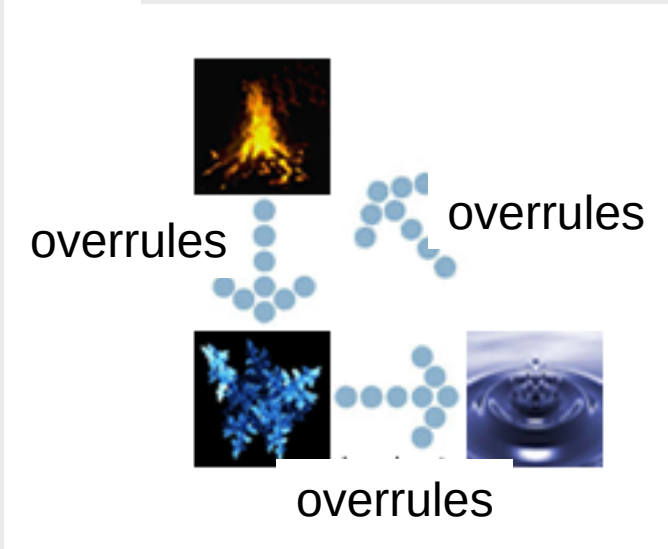
- neutral
- in danger
- friendly
- adversary

TagAttack: rules

elements:

fire water ice

rules:



TagAttack

Initialisierung
Beenden Info
Team Nummer:
1
Spitzname:
Spielername
192.168.0.1
starte Spiel
Kampfbildschirm
Wähle Element zum Kampf
zurück
Kartenbildschirm
Gruppe 1
Spielername
Gruppe 2
Gruppe 3
Gruppe 4
Markus
Tag Two
Aktionsbildschirm
Bildschirmwechsel
erobere
verteidige
lösche Nachrichtenliste
Markus : Übernahmeversuch von Tag Two
Spielername
chat
Message

TagAttack: technical parameters

- networking between players via WLAN and AODV
- communication between player and tag via Bluetooth
- serverless
- pureley C#, same .exe running on PDA and PC

ongoing work

- AODV multicast support
- peer-to-peer structure overlaying the heterogeneous network structure (GSM, WLAN, Bluetooth)
- closer interweaving of reality and virtual world (integrating sensors, pictures of the real world)

sensor module with camera
(www.scatterweb.net)