



# The CityPoker Designer: A Tool for Geogame Relocation in the Classroom

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# Geogames in Education (1)

- Location-based games are known to be quite effective at supporting a broad variety of learning processes (Klopfer 2008, Schaal et al. 2012)
- In education practice, we see little variation in the underlying game mechanics



## Geogames in Education (2)

- Location-based games have started to become part of the media and entertainment environment of teenagers



<https://www.ingress.com/>



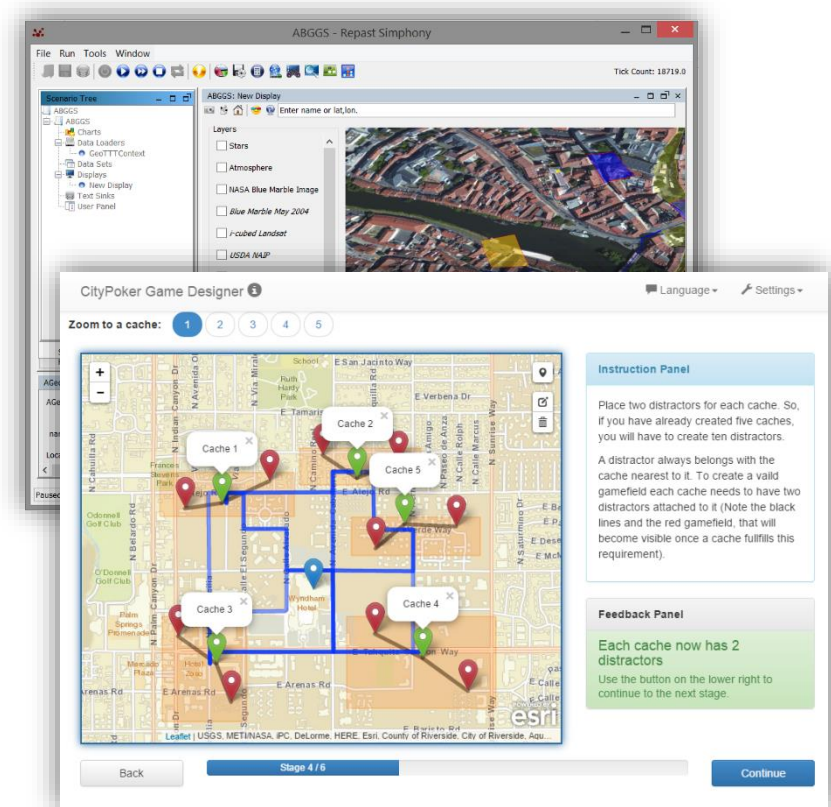
<https://www.geocaching.com>



<http://pokemongo.nianticlabs.com/>

## Geogames in Education (3)

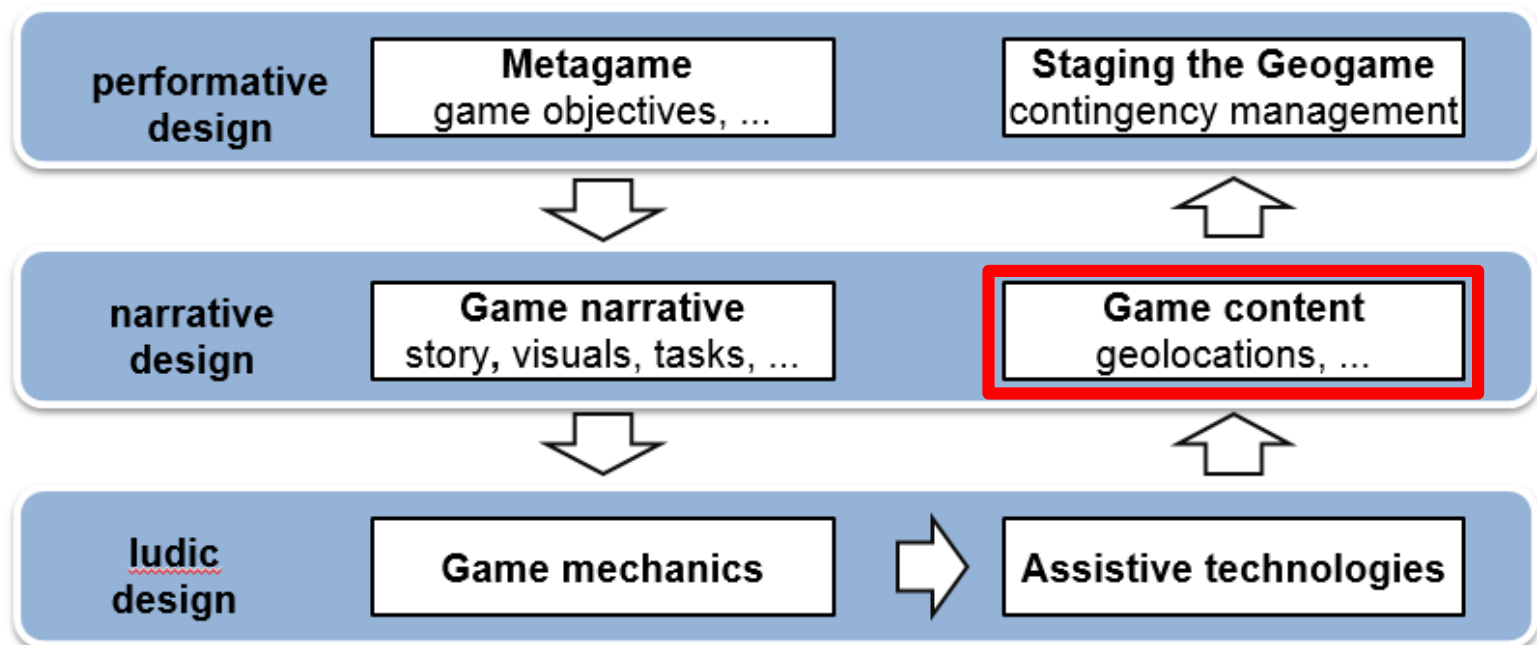
- The design process of a location-based game involves a considerable amount of spatial analysis.
- Most GIS supported analysis tasks like distance measurements would fit very well into a curriculum on spatial thinking (Sinton and Lund 2008)



# Our Approach

- Bring more complex game mechanics to the classroom
- Avoid much of the complexity of the design process by applying three basic principles:
  - (1) Start with a rule set known to produce a well-balanced game
  - (2) Proceed with visiting the geographic environment, which acts as the game field.
  - (3) Challenge the students to optimize the game flow by applying spatial analysis

# Geogame Design Process Model

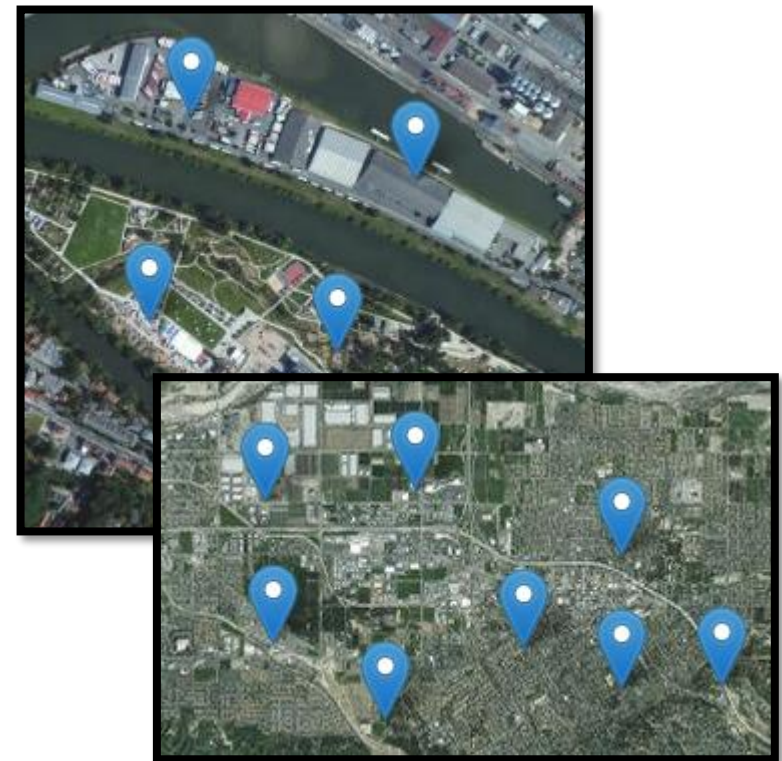


Adapted from Schlieder (2014)



# Geogame relocation

- Places of game play
  - Symbolic places having a meaning in the Geogame
  - E.g. 5 caches in CityPoker
- Places of interest
  - Places of interest to the serious game narrative
- Relocation
  - A mapping from the POG to selected POI

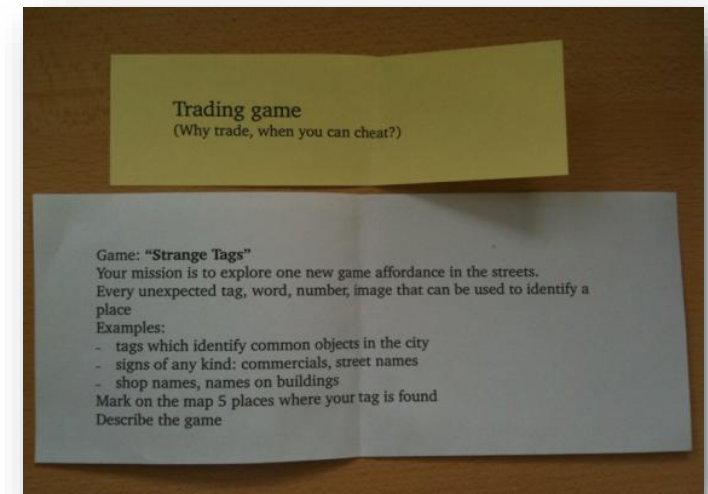


# Place Storming

- Exploration & Finding places
  - Get ideas and check the feasibility of tasks
  - Combine a topic, a task and a place.
- Empirical Study

In comparison to Web-Cartography

  - Hard-to-find places: More results
  - Easy-to-find places: Higher validity



Method of in-situ association  
places and affordances  
Christiansen (2010)



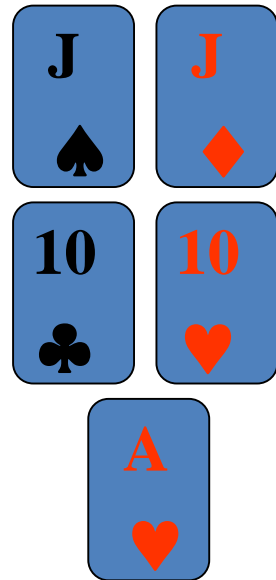
# Example Geogame: CityPoker

- Two teams are looking for hidden game cards
- The team with the better poker hand wins
- Real cards are hidden at the caches
- Exchange cards at each location



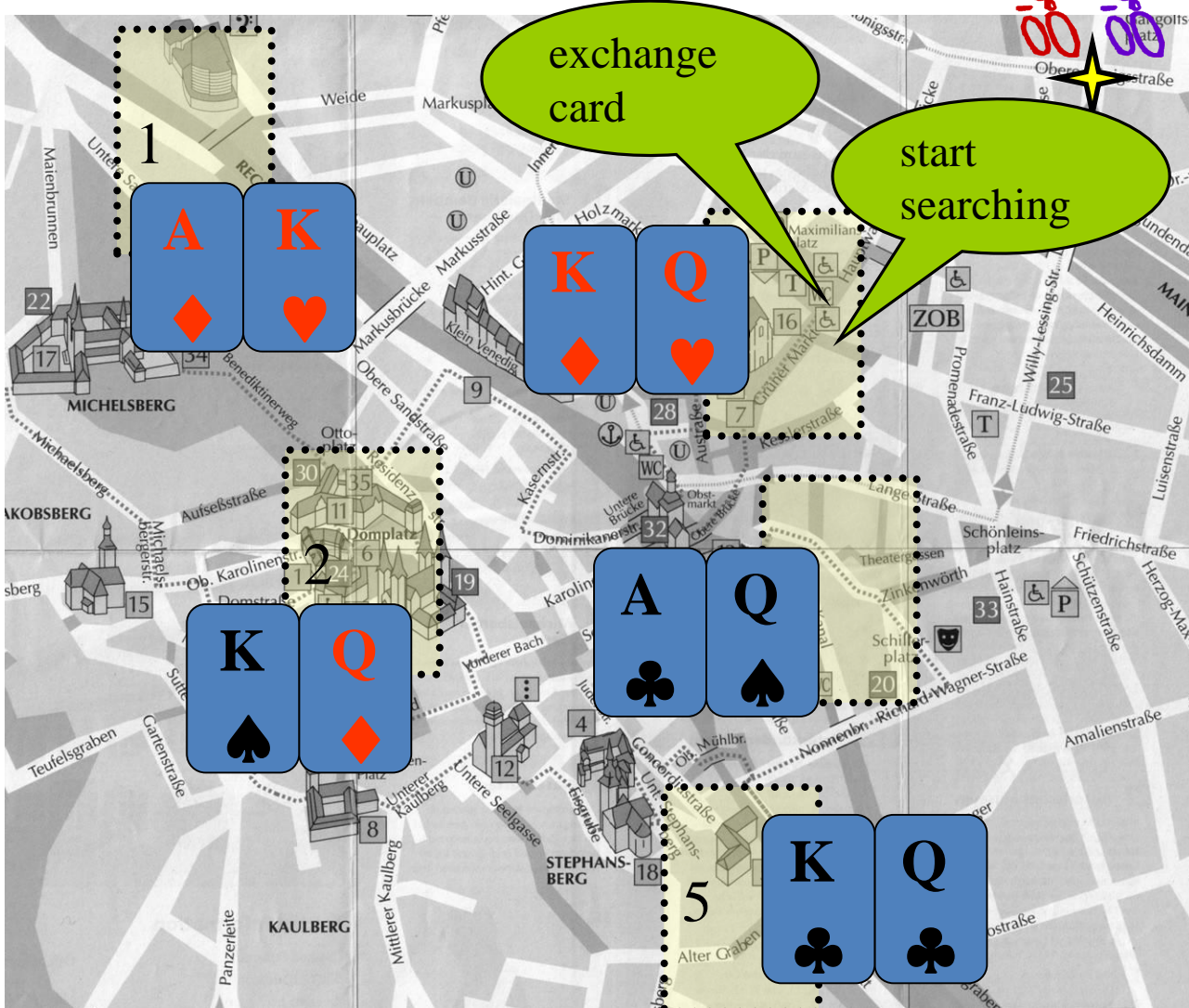


Player B

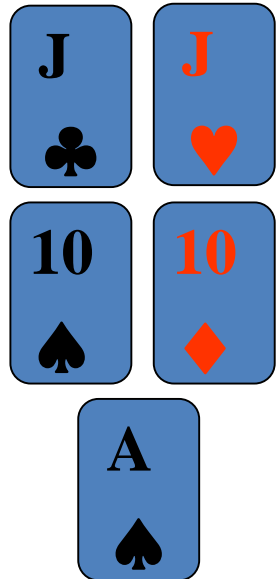


start  
searching

exchange  
card



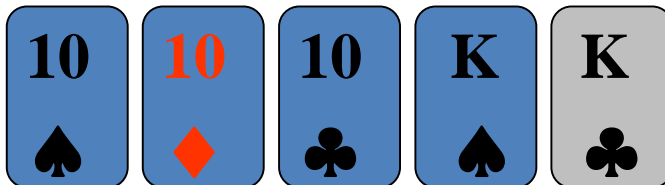
Player A



# CityPoker: End of the Game



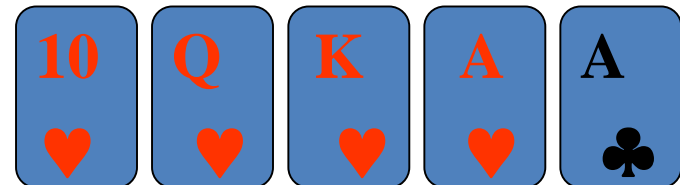
**Team A**



Full House



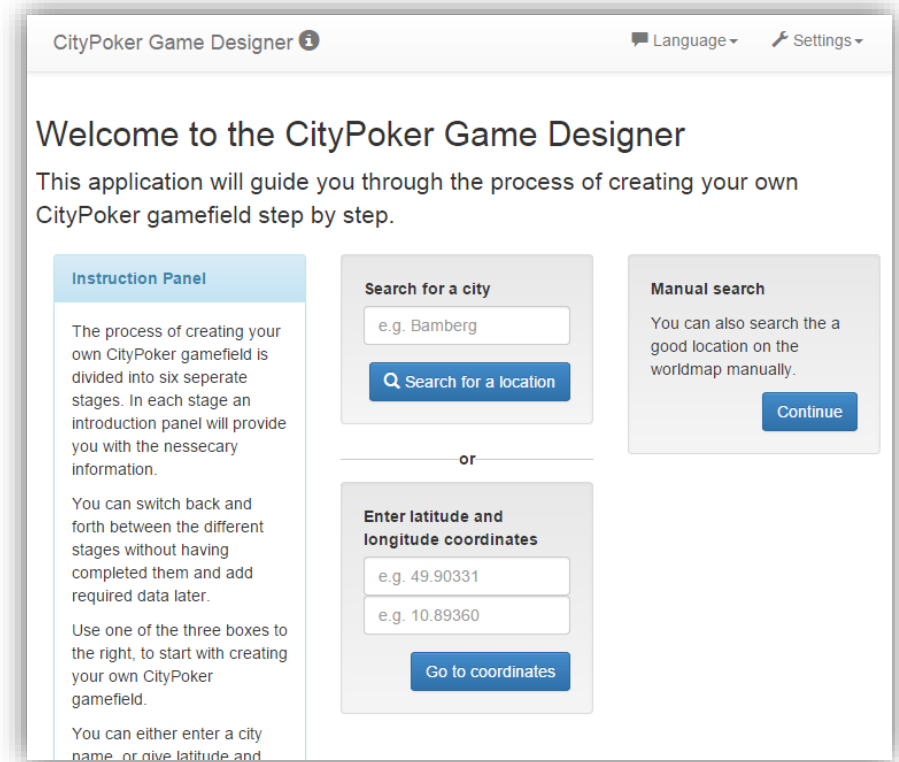
**Team B**



One Pair

# The CityPoker Designer

- A Web-Application for creating CityPoker game fields
- Users are guided through the process of setting up their own game configuration
- Simple spatial analysis metrics help them making



The screenshot shows the 'CityPoker Game Designer' web application. At the top, there's a header with the title 'CityPoker Game Designer' and links for 'Language' and 'Settings'. The main content area starts with a 'Welcome to the CityPoker Game Designer' message, followed by a brief explanation of the application's purpose. Below this, there are three main sections: an 'Instruction Panel' on the left, a 'Search for a city' section in the middle, and a 'Manual search' section on the right. The 'Instruction Panel' provides a step-by-step guide. The 'Search for a city' section has a text input field with 'e.g. Bamberg' and a 'Search for a location' button. The 'Manual search' section has a 'Continue' button. Below these, there's an 'or' separator and an 'Enter latitude and longitude coordinates' section with two input fields (one with 'e.g. 49.90331' and one with 'e.g. 10.89360') and a 'Go to coordinates' button.

Try it: <http://www.geogames-team.org/designer>

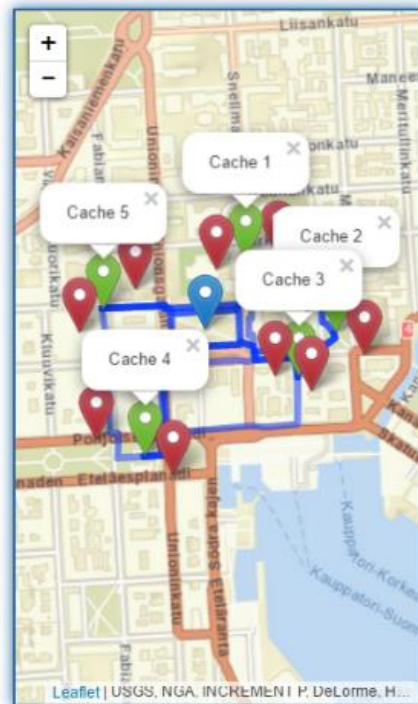
# Spatial Analysis: Estimating a Time Frame

- Calculate all permutations of the fastest traveling routes between the places of gameplay a player has to visit
- Calculate the traveling time for each route
- An estimation for the upper and lower time boundary can be given by using the travel times for the shortest and longest route between all caches



# Game Specific Balancing

## Card Distribution



Cache 1 - Cards:



Cache 2 - Cards:



Cache 3 - Cards:



Cache 4 - Cards:



Cache 5 - Cards:



### Instruction Panel

With the buttons you can adjust the card distributions to your liking.

Different card distributions can lead to unbalanced game fields. Pay attention to the feedback panel.

### Feedback Panel

Card distribution not well balanced.

The caches containing the cards KQ and QJ are too close together for the cards hidden there.

Back

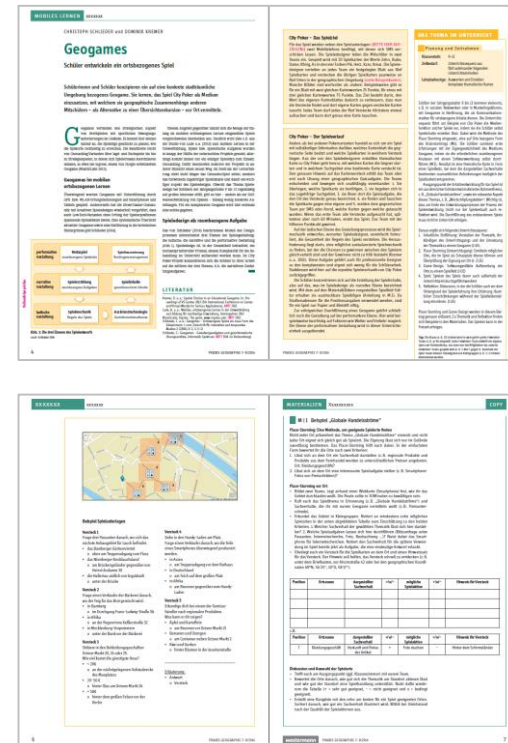
Stage 3 / 6

Continue



# Game relocation in the classroom

- Teaching material
  - CityPoker Geogame
  - Schlieder & Kremer (2014), Geogames, Praxis Geographie, 7, 31-35
  - Upcoming Book

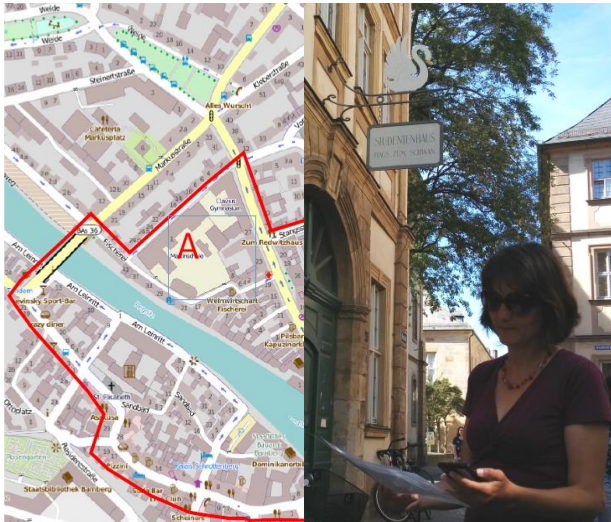


Thank you for your attention.

Questions & Discussion



# Comparing scenarios



## **presence scenario**

Participants explore the environment to identify places and encode them with a mobile app



## **cartography scenario**

Participants use Web GIS to identify and encode places without exploring the environment

# Placestorming: First findings

Place productivity (n = 14)		
	places per participant (median)	total number of places
presence scenario (Smartphone App)	3	77
cartographic scenario (Web GIS)	4	82

Participants were instructed to „find at least 3 places“.  
They had 30 min to complete the task.

# Finding places by Place Storming

Place variability – presence scenario (n = 14)				
	clothing trade	regional food	historic industries	
photo task	4	5	15	24
interview task	11	15	10	36
note taking task	8	2	7	17
	23	22	32	

place is  
hard to find

place is  
easy to find



# Finding places by Web cartography

Place variability – cartography scenario (n = 14)				
	clothing trade	regional food	historic industries	
photo task	4	9	10	<b>23</b>
interview task	12	13	10	<b>35</b>
note taking task	3	3	15	<b>21</b>
	<b>19</b>	<b>25</b>	<b>37</b>	

place seems  
hard to find

place is  
easy to find

# Descriptive differences

Place storming variability – presence vs. cartography scenario (n = 14)				
	clothing trade	regional food	historic industries	
photo task	4 vs. 4		15 vs. 10	
interview task		15 vs. 13		
note taking task	8 vs. 3	2 vs. 3	7 vs. 15	

**hard** in the cartography scenario, but of **medium** difficulty in the presence scenario

**easy** in the cartography scenario, but of **medium** difficulty in the presence scenario