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An Approach to Creation of Smart Space-Based Trip Planning Service

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Background

- Tourism growth every year, long-term trend is 3.8%
- Large part of individual tourism and small groups
- Organized tourism with infrastructure usage
- Recommender systems with mobile devices
- Trip organization and trip support
Trip planning problem

- Goal: provide detailed trip plan

- Tasks:
  - selection of attractions to visit
  - selection of the route
  - definition of timetable
  - selection of stops and places of accommodation
  - selection of recommended attractions

- Hardest problem (NP-complete class)

- Large computation resources and special algorithms
Trip planning algorithm

Steps of algorithm:

- Definition of start and end points and target of the trip;
- Route creation for selected points and transport;
- Conditions including (stops, accommodation, etc.);
- Time planning (attraction schedule, weather conditions, etc.);
- Recommendations.

Usage:

- before the trip (prepare);
- during the trip (update);
- personal and group trip.
Smart Space usage

- Each service presents as a KP and provides a piece of information
- User agent (mobile application) generates trip planning task
- Route planning algorithm implemented as a mediator
- Proactive service: update timeplan without user request
## Service implementations comparison

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Route planning service architecture

Data sources

- weather.com – weather
- geonames.org – binding geo-coordinates and towns
- Foursquare, Wikimapia, Geo2tag etc. – attractions
- Booking services – accommodation
- Openstreetmap + graphhopper – “off-line” navigation service
- Local services – notice, attraction schedule and review
Usage scenario: gathering attractions and events

- Search attraction to visit
- Extension: additional information for attractions and events from review services
Usage scenario: schedule preparation (basic)
Usage scenario: schedule preparation (extended)
Inter-user iterations

- Case: users, who are unwilling to share their plans
- Case: tourists meeting at some of the attractions
- Case: create trip plan for a tourist group
Conclusion

Current state: approach to use of Smart Space technology

- Architecture
- Data sources
- Core scenarios
- Inter-user iterations

Future plans:

- Design data model
- Trip planning ontology
- Implementation
- Evaluation