

Semantic Search

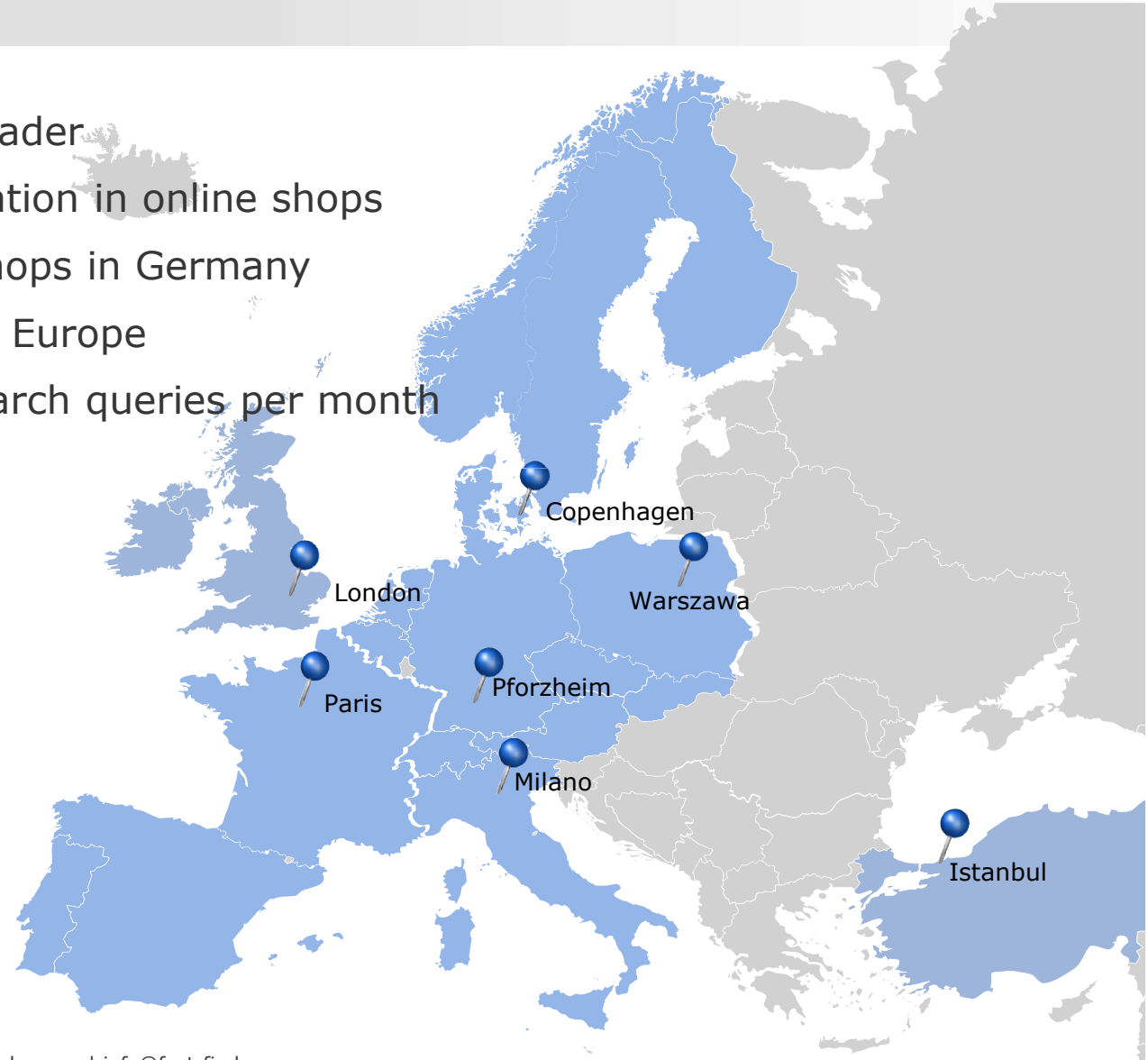
Carsten Kraus

Founder & CEO Omikron.net and FACT-Finder.com

Facts about FACT-Finder

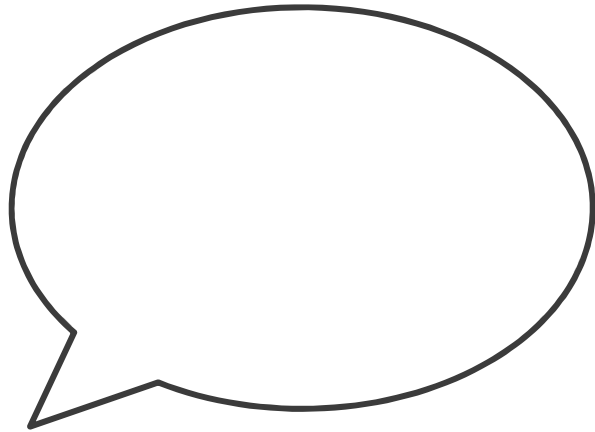
FACT-Finder®

- European market leader for Search & Navigation in online shops
- 53 of Top100 webshops in Germany
- >1000 webshops in Europe
- Over 300 Million search queries per month



Semantic Search

what's the difference?



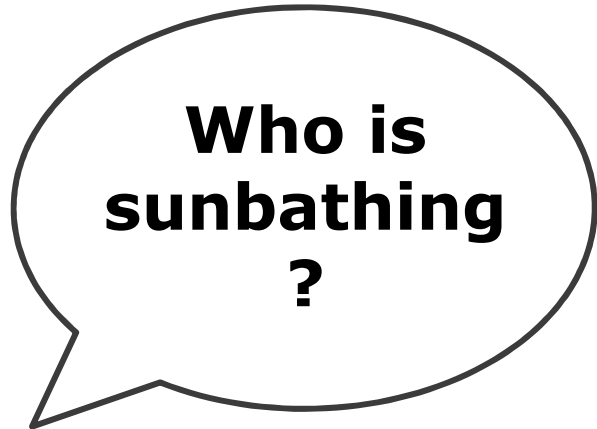
برای تبدیل انرژی الکتریکی را به صدا تبدیل می‌کند. واژه بلندگو ممکن است تنها به یک ترانسدیوسر (که به آن درایور گویند) و یا به سیستمی شامل چندین درایور و همچنین دیگر قطعات الکترونیکی

**Escape
vehicle?**

...who are commonly referred to as „the pink panthers“ – because of their robberies to jewelry stores in glamorous and exposed places such as in the legendary movie. In Saint-Tropez, they walked into a jewelry store dressed in flowered shirts, brandished their weapons, stole the most expensive, and rushed away in an open Ferrari. According to the investigators, ...

**“understand and respond”
rather than “find words”**

Humans know so much...



Anne is at home

Ben is at work

Cindy is at Cala Millor

Dan is at his limit

Edward is at least 1m90

RDF-(N3)-Definition



```
:Beach rdfs:subClass :Object .  
:Person rdfs:subClass :Object .  
:Home a :Object .  
:Calla Millor :name „Calla Millor“; a :beach .
```

```
[ :name „Anne“; a :Person; :isAt :home]  
[ :name „Cindy“; a :Person; :isAt :Calla Millor]
```

```
@forall :x, :y . { :x :isAt :y . :y a :beach } => { :x :is sunbathing true }
```

```
SELECT ?name WHERE { :x a :Person; :name ?name; :is sunbathing true . }
```

Challenges



- People are extraordinarily gifted -they know a lot!
- Information with probability <100%
 - A person who is on the beach does not have to sunbath
 - Maybe this person plays beach valleball?
- Inconsistent information
- As long as the website in most cases is not able to do what the user expects, it will not be used



best beach in france



Examples Random





So no semantics

Limited Domain
=
feasibility



Semantic Search

what`s the use?

- beach holiday over Christmas
- Shopping with my wife next weekend
- Berlin cheap hotel with free WiFi

Usability study with 80 users

the decisive user



the indecisive user



„Booking online is complicated“

„why can't OTAs be as easy as Google?“

Users selection criteria are different

Example Example

„I don't care for the destination ... should just be warm“

YOUR TRIP

- Flight + Hotel
- Flight + Car
- Flight + Hotel + Car
- Eurostar + Hotel

BOOK A FLIGHT HOTEL TOGETHER!
SAVE 16%
*Average savings 2011

Flight + Hotel

Leaving from:

Departing: Time:

Going to:

Returning: Time:

Direct flights only

I only need a hotel for part of my trip

Rooms: Room 1

Adults (18-64)	Seniors (65+)	Children (0-17)
<input type="text" value="2"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

SEARCH FOR FLIGHT + HOTEL

„Hotel with WiFi ... how can I select that?“

Keyword Search does not suffice ...



Christmas beach holiday 1 week with our little daughter

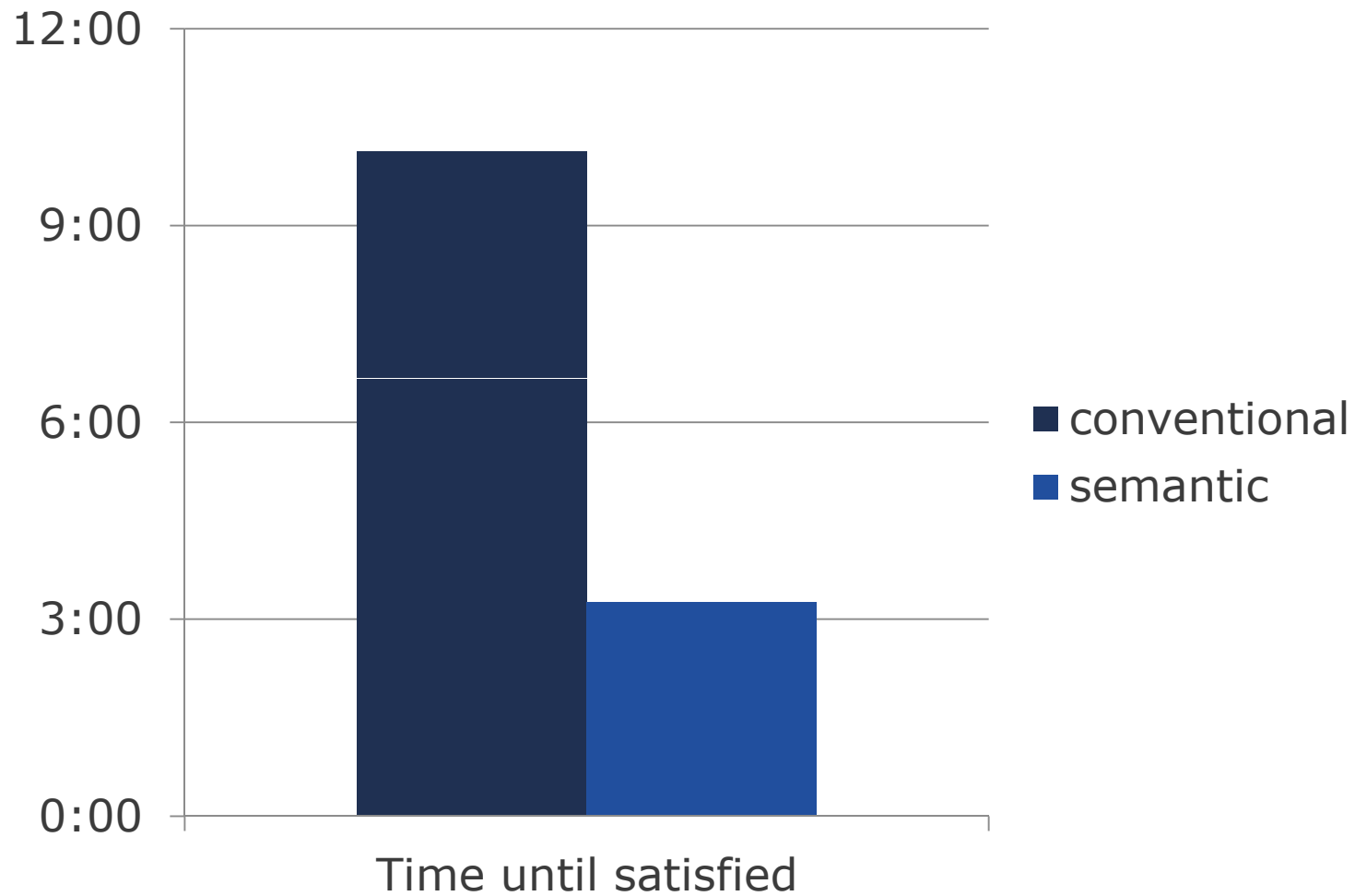


Suchen

Travel search in customers own words **requires** understanding:

- „Christmas“ means: 24. to 26. Dezember
- „beach“ means: warm enough for swimming, shallow sandy beach (for toddler)
- „1 week“ means: ~7 days, between 19.Dec und 31.Dec
- „with our daughter“ means: probably 2 adults
- „little daughter“ could mean: family room, cot bed, child friendly hotel, childcare or babysitter available, childrens pool, sandy beach, ...

Semantic search makes booking 3 times quicker...



...and increases booking rates

FACT-Finder®



„we see an uplift of meanwhile 12% - even though the majority of customers is still not yet using the semantic search“

Timo Beyer, weg.de, August 2012

- Lots of research since before 2000
- Still very difficult
- Now on the verge of coming into our lives
- Specific domains only until 2014/2015
- Broader appearance from 2016
- Standard in 2020
- Already here in the travel industry! 😊



The semantic travel search engine!



Questions?



Search

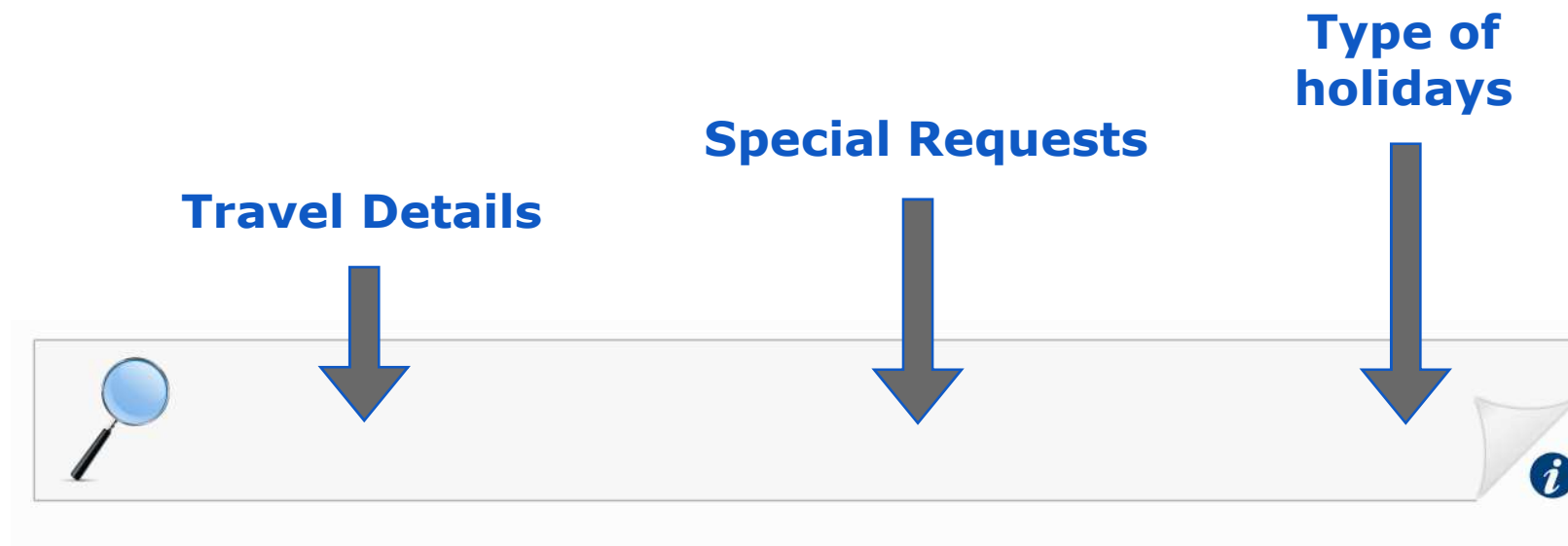
The world remains fascinating!

ckraus@fact-finder.de

And this is how FACT-Finder Travel looks like...

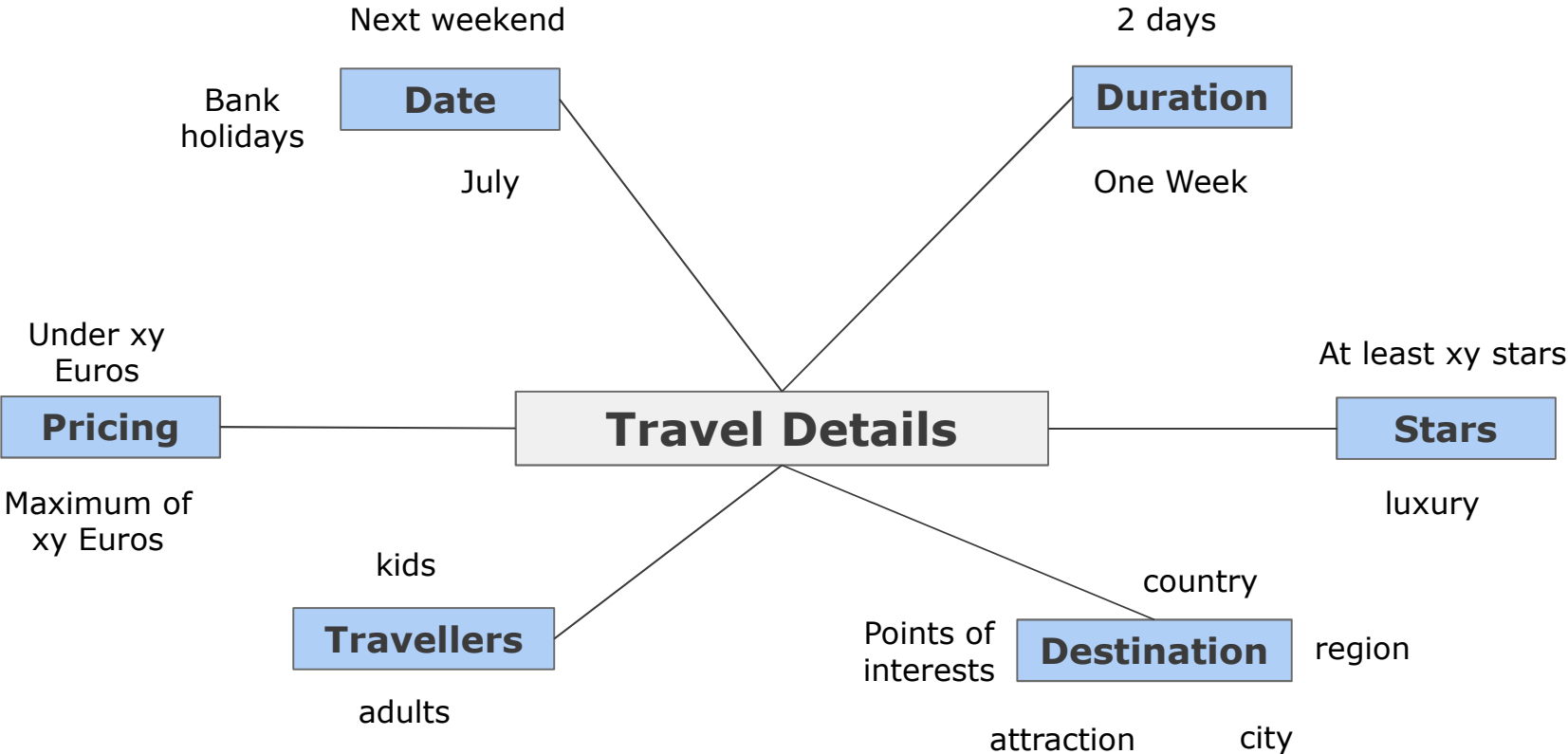


„What can I enter into the semantic single field search?“



... and everything in your own words.

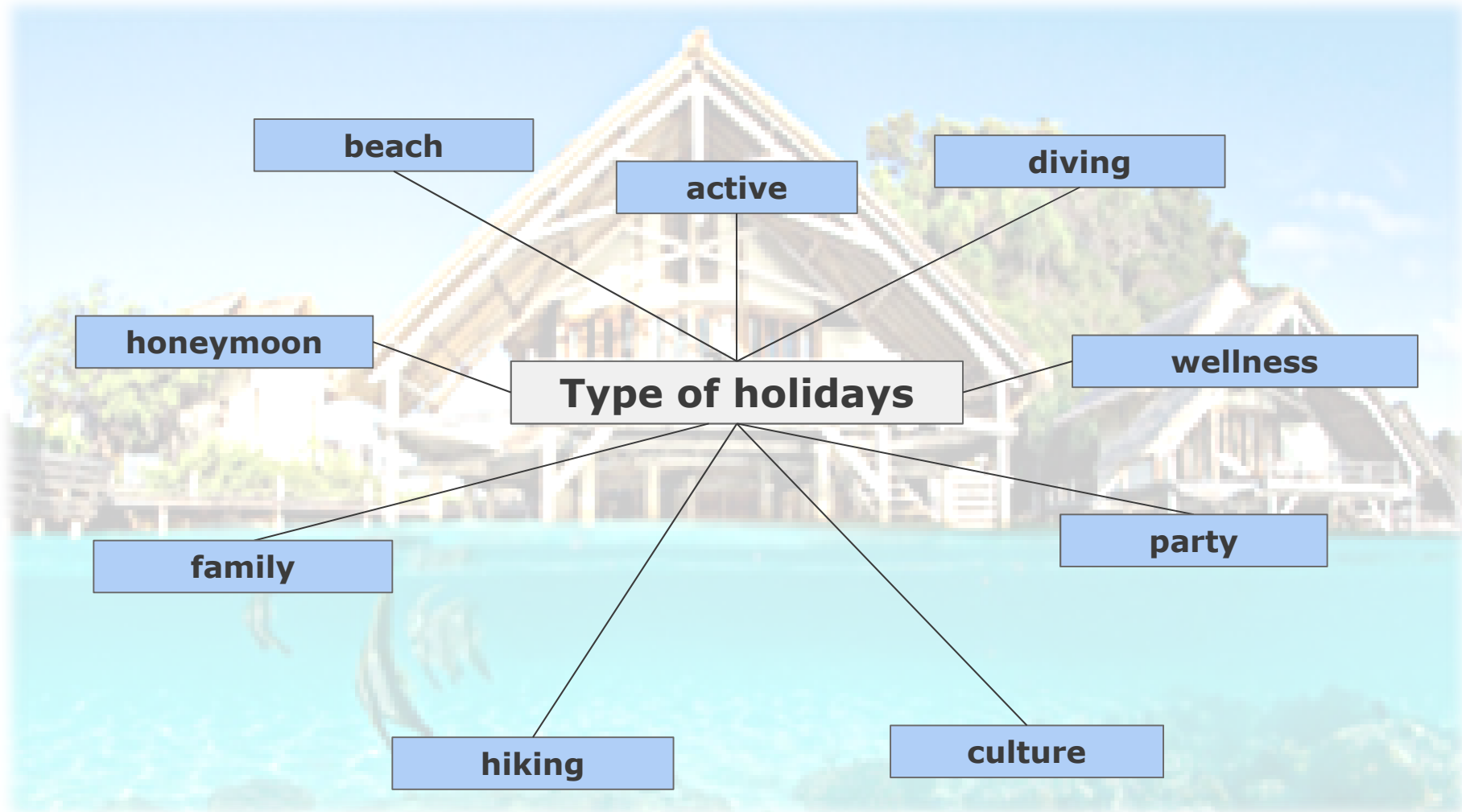
FFT - intelligent single field search



FFT - intelligent single field search



FFT - intelligent single field search



„Easter sun 2 kids“



Interpretation

- 2 kids and at least one adult
- Family room
- Childfriendly hotel
- Special pool for kids
- playground
- Easter = Easter holidays
- Offers just destinations which are warmer than 25°C during Easter

Interprets spelling mistakes and abbreviations correctly



**„2 wks mid-May Hurgada
4 stars 2 persons ai“**

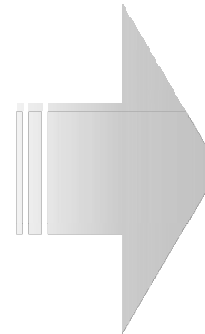


Interpretation

- **Interprets abbreviations correctly!**
2 wks = 2 weeks
- **Interprets spelling mistakes correctly!**
Hurgada = Hurghada
- Hotel at least 4 stars
- catering ai
- 2 persons
- Duration mid-May (f.e. 05/08/12– 05/26/12)

POI's – geographical results selection

"Hotel near Eiffel tower"



FACT-Finder Travel

- Hotels in the vicinity of the Eiffel tower
- Hotels ranking according to the Geo-Code-Differences

What is the Semantic Web?

- Websites can contain not only text but also machine-readable information, e.g. in RDF
- Thus, computers can directly process information
- Instead of e.g. sending data to price comparison portals every day, they can display directly machine-readable prices on the website
- Then the price-comparisons' spider collects the data itself
- Additionally, this information can be analyzed by other services such as statistics portals, Google, Amazon,... - and also for competitive intelligence