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Extreme Search

Product Overview

Distribution Delivery
Instant Search Consultancy
June 2014

Agenda

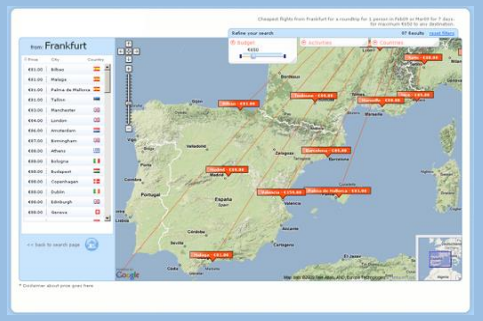
1. What is Extreme Search?
2. Computation inputs
3. Web service inputs
4. Web Service outputs
5. Data refreshes

Appendices

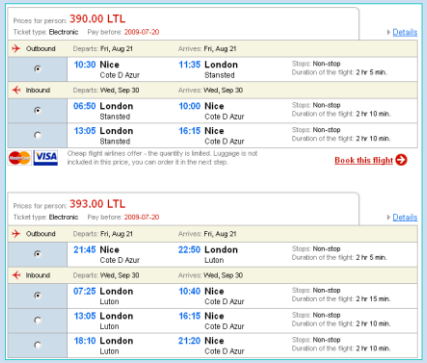
A. Use cases
B. Web service details

1 What is Extreme search ?

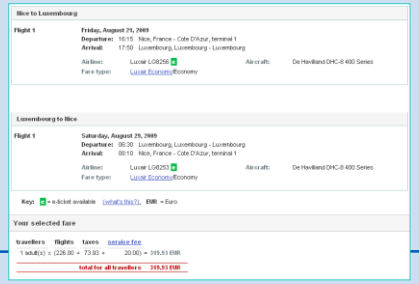
Extreme Search in overall booking flow



Search
Extreme Search



Shopping
Master Pricer



Booking & Pricing
Core GDS functionality

Scope:
- Dedicated to search

Benefits:
- Inspire customers looking for ideas
- Advertise attractive deals
- Help turn ideas into buying opportunities

Specificities: Search users have different expectations than shopping users:
- Search drivers (inspiration vs. precision)
- Selection criteria
  - Less price sensitive
  - Originality or exotic offers can be more exciting than slightly cheaper destinations
- Accuracy/diversity trade-off:
  - Customers just want to have an idea
  - Width of offer takes precedence over high accuracy

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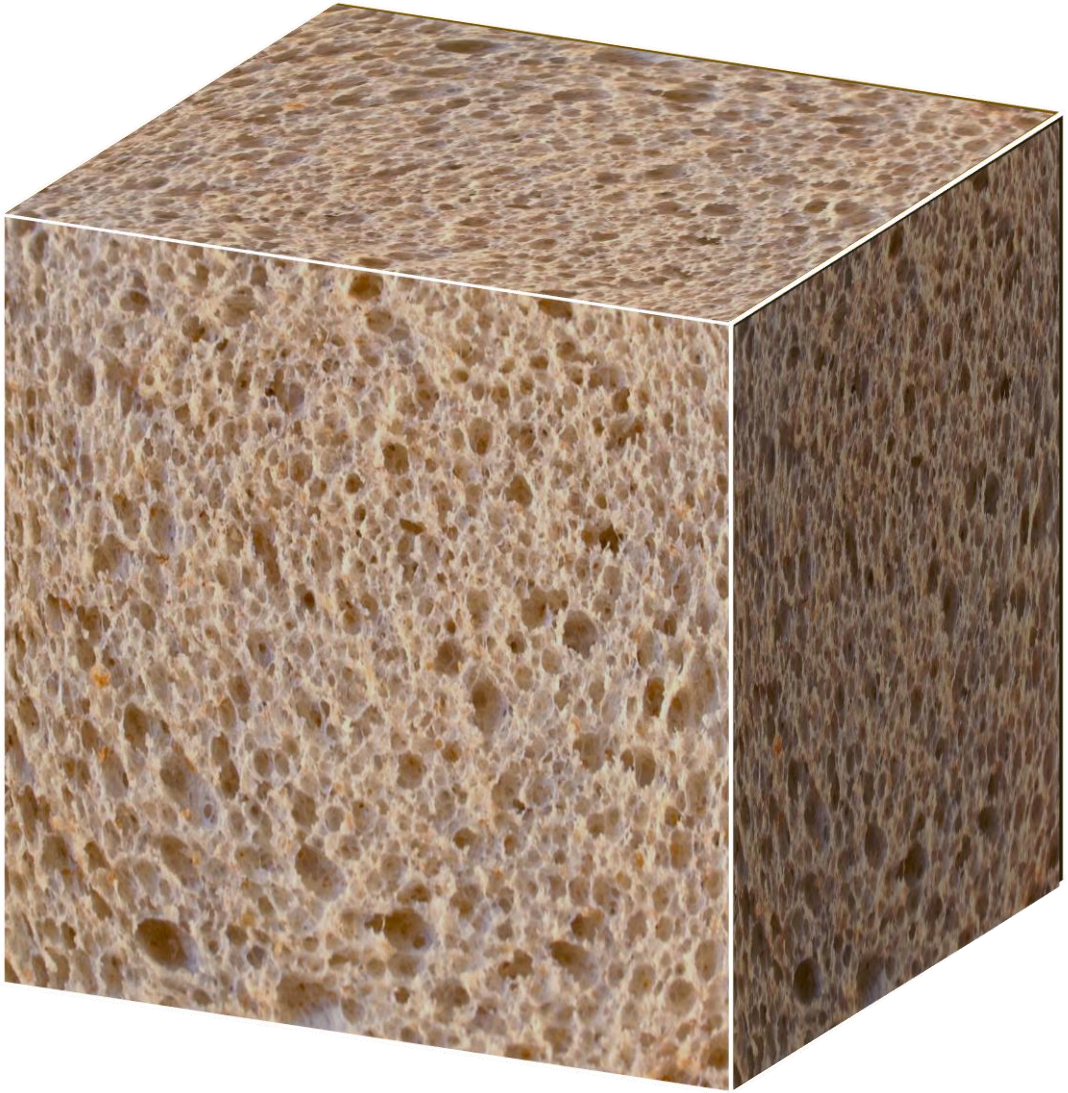
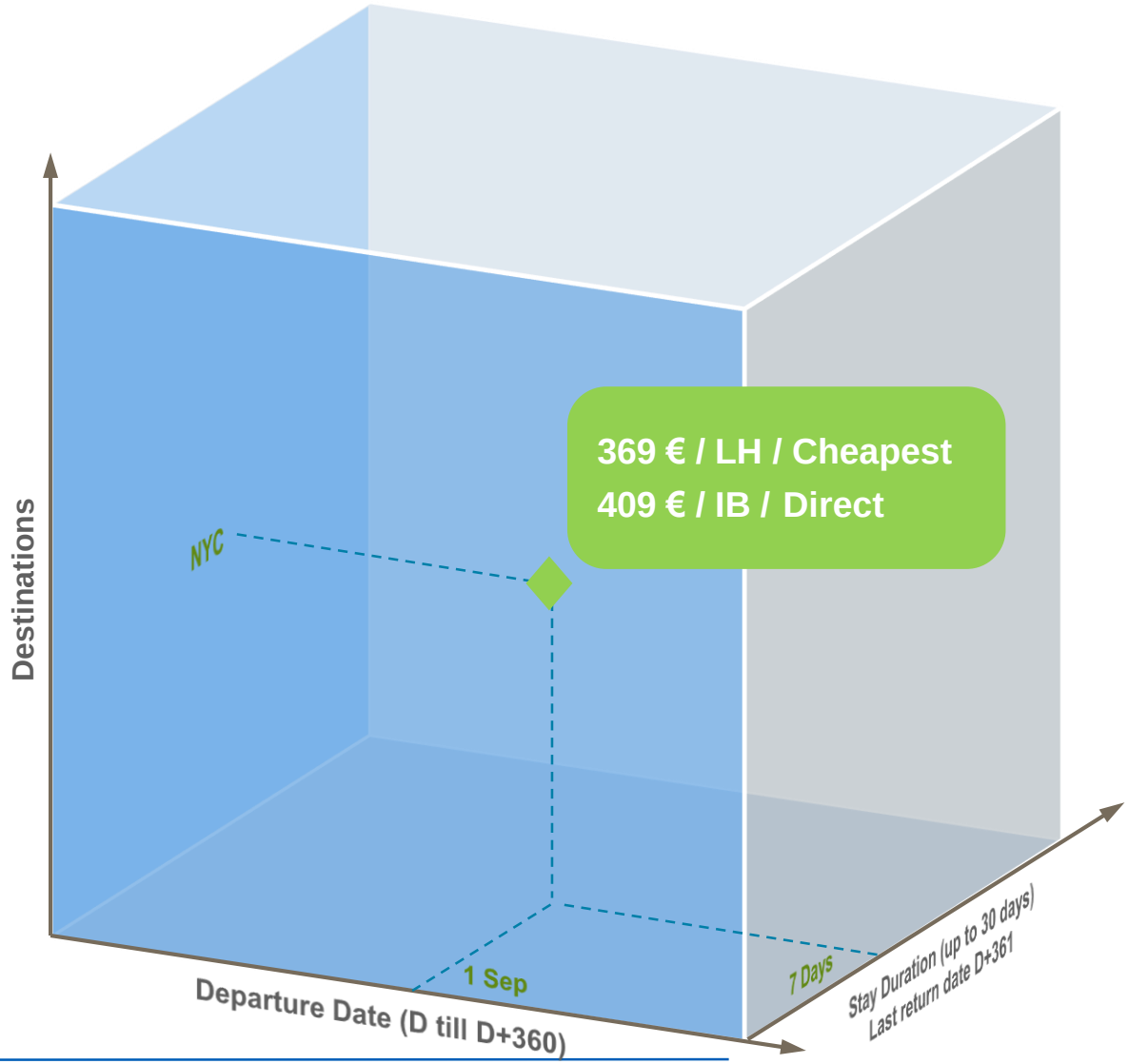
Not cache of customer production traffic…

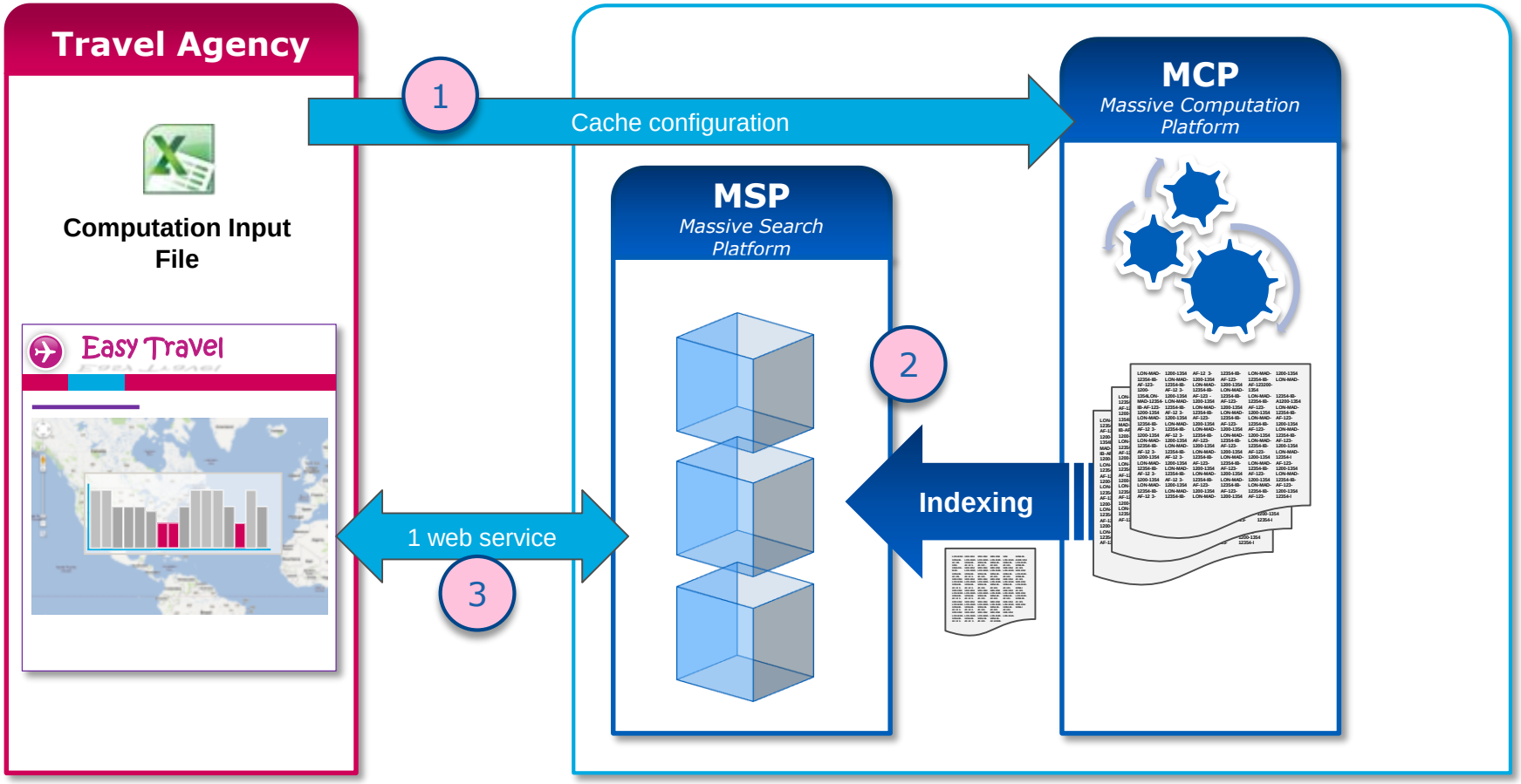


… but on massive computation of all prices in data domain

One “cube” of prices per origin



Architecture Overview



1. Customer builds data domain with Computation input file
2. Amadeus creates private Extreme Search cache for customer
3. Implement and certify Web Services integration

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Extreme Search vs. Master Pricer

Feature	Extreme Search	Master Pricer Calendar	Master Pricer Travelboard
Date domain	360 x 30 (latest return D+361)	7 x 7	1 x 1
Number prices per date combination	1 or 2 (cheapest overall, cheapest direct optional)	1 (cheapest overall)	Up to 250 (cheapest overall plus alternatives, incl. cheapest direct)
Computation method	Pre-computation	Dynamic computation	Dynamic computation
Data versioning used (flights, fares, rules, taxes, availability)	Computation time	Transaction execution time	Transaction execution time
Response time (average)	35 msec + network	7.5 sec + network	4.5 sec + network
Availability sources	AVS and cache (calculator)	AVS, cache, calculator and polling	AVS, cache, calculator and polling
Availability sweeper	No	No	Yes
Availability negotiated space	No	Possible	Possible
Service Fees (SFM)	No	Possible	Possible
Airline Ticketing Fees (OB)	No	Possible	Possible

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Data volatility

Data element	Volatility	Update frequency
Flights	Low	Dynamic / weekly / monthly
Availability	Very High	Polling: Dynamic AVS: Dynamic / daily / weekly
Fares	High	On hourly basis: Hundreds of thousands new fare levels daily
Rules (incl. surcharges)	High	On hourly basis: Hundreds of thousands of rule updates daily
Taxes	Medium	Dynamic, daily updates
Currency conversion rates (fares and taxes)	Medium	From daily to weekly (default)
Fees	Low	Dynamic

- → Extreme Search prices have lower accuracy than Master Pricer at computation time – target is 80% consistency +/- 2%
- → Extreme Search prices have aging phenomena

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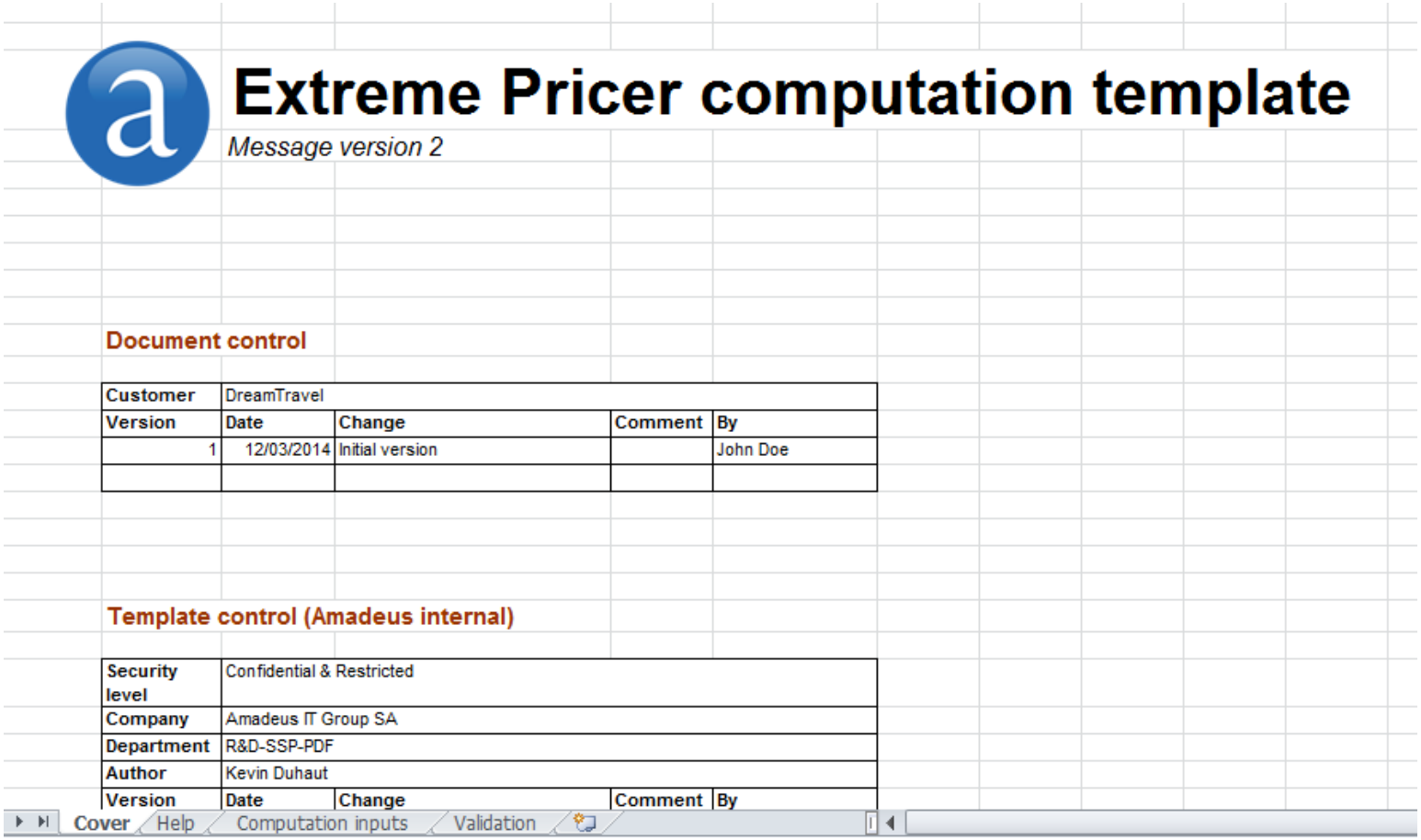
2 Computation inputs

Computation input file: Cover

The "Cover" worksheet is used to **track the evolution of data domain**



Extreme Pricer computation template

Message version 2

Document control

Customer	DreamTravel			
Version	**Date**	**Change**	**Comment**	**By**
1	12/03/2014	Initial version		John Doe

Template control (Amadeus internal)

Security level	Confidential & Restricted			
Company	Amadeus IT Group SA			
Department	R&D-SSP-PDF			
Author	Kevin Duhaut			
Version	**Date**	**Change**	**Comment**	**By**

Cover | Help | Computation inputs | Validation

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Computation input file: Help

The "Help" worksheet provides **guidelines** for defining your data domain

	A	B	C
10	NB: Some columns are hidden. They contain fields pre-filled or not applicable. Please do not override them.		
11			
12			
13	**Product code**		Status: Mandatory
14			Description: Code identifying Xtreme Pricer
15			Accepted value: XSP
16	**Customer Query ID**		Status: Mandatory
17			Description: ID of the query (row). Should be unique
18			Format: Numerical
19			Example: 12
20	**Comp. Oid**		Status: Mandatory
21			Description: The Office ID to be used for the computation
22			Example: NCE1A0950
23	**Passenger group 1 to 10**		*Usage restriction: Only one group of passengers can be specified for a*
			Search Web Service product
24			*No restriction for any other usage (customer cache feed, cache to anot*
			like Instant Calendar, etc…)
25		**Grp name**	Status: Optional
26			Description: String identifying the group
27			Accepted values: char[12]
28			Example: 2ADT1CH
29		**AVL check**	Status: Optional

Cove | **Help** | Computation inputs | Validation

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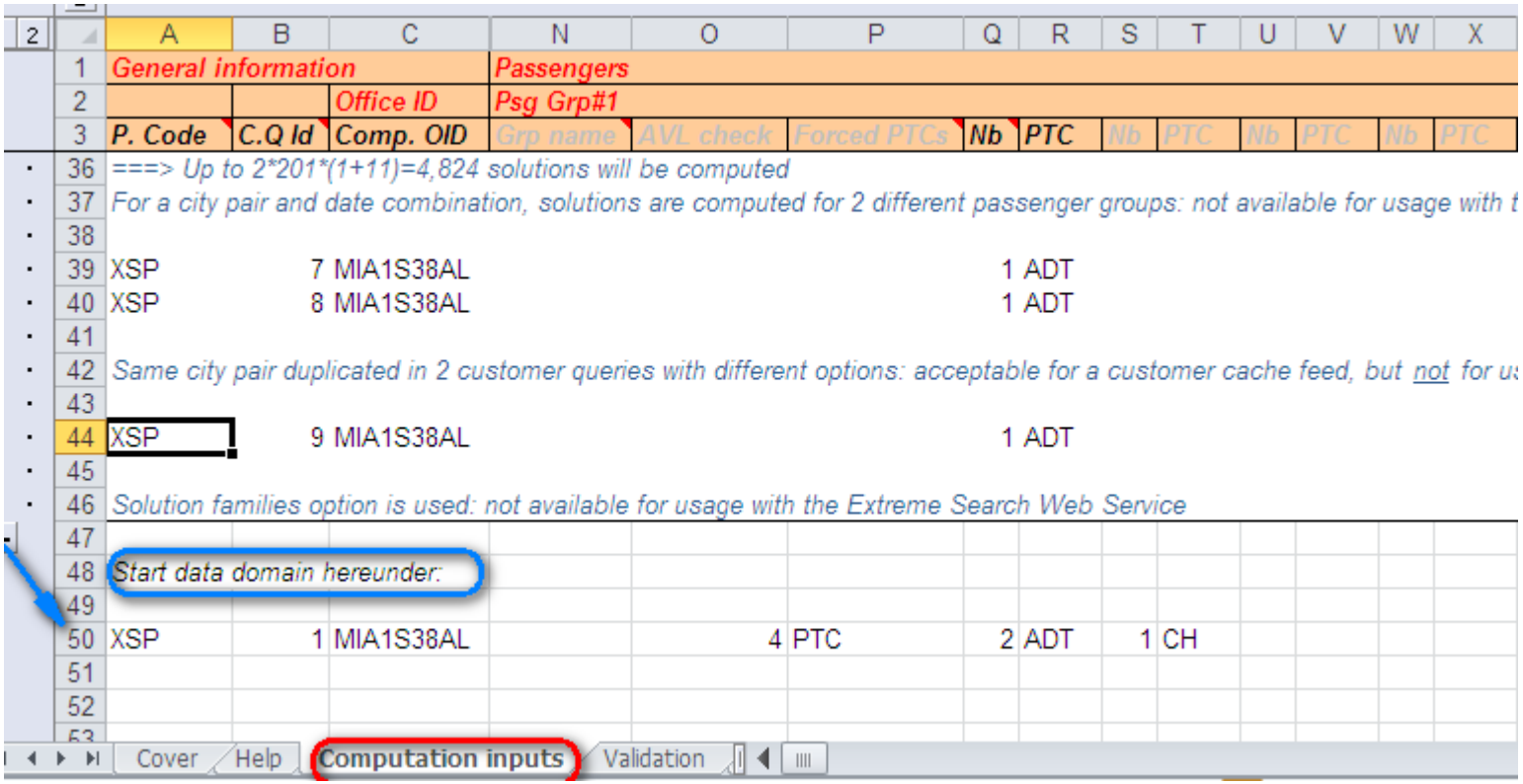
Computation input file: Computation inputs

"Computation inputs" worksheet is where you **define your data domain**, as from line #50. Prior lines contains examples and must not be removed.



	A	B	C	N	O	P	Q	R	S	T	U	V	W	X
1	General information			Passengers										
2			Office ID	Psg Grp#1										
3	P. Code	C.Q Id	Comp. OID	Grp name	AVL check	Forced PTCs	Nb	PTC	Nb	PTC	Nb	PTC	Nb	PTC
36	===> Up to 2*201*(1+11)=4,824 solutions will be computed													
37	For a city pair and date combination, solutions are computed for 2 different passenger groups: not available for usage with t													
38														
39	XSP	7	MIA1S38AL				1	ADT						
40	XSP	8	MIA1S38AL				1	ADT						
41														
42	Same city pair duplicated in 2 customer queries with different options: acceptable for a customer cache feed, but not for us													
43														
44	XSP	9	MIA1S38AL				1	ADT						
45														
46	Solution families option is used: not available for usage with the Extreme Search Web Service													
47														
48	Start data domain hereunder:													
49														
50	XSP	1	MIA1S38AL		4	PTC	2	ADT	1	CH				
51														
52														

Cover | Help | Computation inputs | Validation

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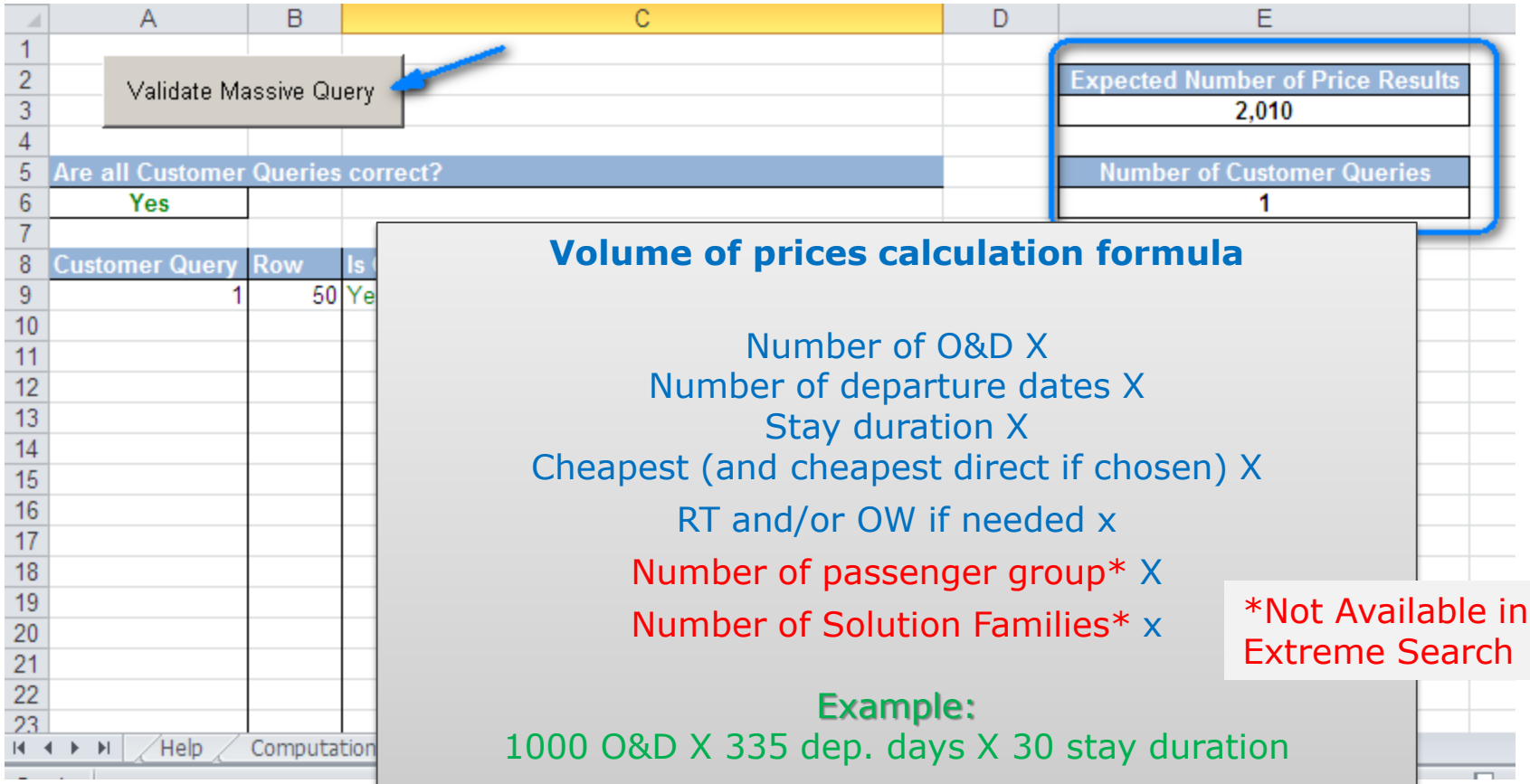
Computation input file: Validation

The "Validation" worksheet contains a button that will trigger a macro. The macro will do some **syntax checks** and catch some mistakes (but not all) and will **calculate the exact volume of prices** to be computed.



Volume of prices calculation formula

Number of O&D X
Number of departure dates X
Stay duration X
Cheapest (and cheapest direct if chosen) X
RT and/or OW if needed x
Number of passenger group* X
Number of Solution Families* x

*Not Available in Extreme Search

Example:
1000 O&D X 335 dep. days X 30 stay duration
X 2 (cheapest and cheapest Direct)
X 1 (only 1 passenger group) X 1 (for only RT)

Computation input file: Q&A

Question	Answer
How many office IDs can I use for pre-computation?	1 or more. For each office ID the list of O&Ds and travel dates must be defined.
Can I repeat the same O&D for one Office ID?	No. If prices with different flight or fare options are needed for the same O&D, different Office IDs must be used
In what currency are prices computed?	In the default currency for the Office ID (override not possible) of that O&D
What is the maximum range of outbound travel dates?	From 1 to 335 days into the future
What is the maximum range of stay durations?	From 1 to 30 days
What type of fares can be targeted?	Public, private and corporate fares (including corporate codes)

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Computation input file: Q&A cont'd

Question	Answer
What type of flights can be targeted?	Per default up to 3 flights per travel solution per bound. Can be reduced to 2, or non-stop flights only.
Are travel solutions with intra-city connections considered?	Yes
For one outbound and inbound travel date, how many prices are computed per default?	Per default one single price is computed: The cheapest across all types of travel solutions (non-stop and indirect).
Can I have more than one price per outbound and inbound travel date computed?	Yes. The cheapest price using non-stop flights only can also be computed if it exists (optional)

→ Let's take a closer look at the computation input file

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Computation input file: More hints

- Airport tag (A) is only needed to disambiguate between city and airport with same 3-letter code, e.g. HOU or IST. Not needed on e.g. JFK or LHR.
- Possible to specify both city (e.g. LON) and airport of that city (LHR) on two lines.
- Same OnD cannot be repeated for the same office ID. If same OnD is needed more than once it could be pre-computed in another office id.
  - Example: Customer needs to pre-compute AMS to NYC with no airline preference and also on KL.

3 Extreme Search web service inputs

Extreme Search web service inputs

Question	Answer
How many origins can be indicated in a single query?	1 mandatory origin
How many destinations can be indicated in a single query?	Up to 200 nominative, or none (in that case all computed destinations are returned)
How are outbound departure dates specified in the query?	Only consecutive ranges of outbound dates can be requested
Can specific departure days be specified in the query?	Yes (optional). Only consecutive ranges of departure days within a week (Mon-Sun) can be specified • consecutive range (Mon, Tue, Wed)
How are stay durations specified in the query?	Only consecutive ranges of stay durations can be sent in the query • consecutive range: 1-14
Can a maximum budget (i.e. price) be specified in the query?	Yes (optional). In that case only prices within the budget are returned
What price result grouping options can be used in the Extreme Search query	• Grouping per country • Grouping per city • Grouping per week • Grouping per departure day • Grouping per stay duration

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4 Extreme Search web service outputs

Extreme Search web service outputs

Question	Answer
What information is always returned for each price result?	• Origin • Destination • Total price • Outbound departure date • Inbound departure date • Indicator if outbound and inbound flights are non-stop

What extra optional information can be returned for each price result?	• One airline code, one of
	  • Validating carrier
	  • Majority carrier of outbound or inbound travel solution
	  • Marketing carrier of first of outbound or inbound flight
	  • Operating carrier of first of outbound or inbound flight
	• Public/Nego indicator
	• Total amount of taxes

How many price results can be returned in a single Extreme Search output message ?	Up to 1500, but less if optional output fields are required

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5 Data refreshes

Data refreshes

Cache Manager (born out of the "Blue Box" project)

Before Cache Manager

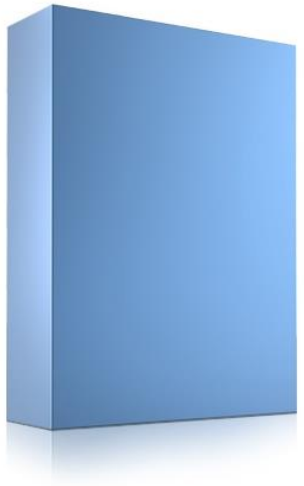
- All prices in data domain refreshed once per day
- Refreshes running over all 24 hours

Current Cache Manager process

- Some data more volatile than other
  - Let's refresh them more often
- Some data more popular than other
  - Let's refresh them more often

Planned enhancements

- Availability events
- Fare events



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Thank you

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A Use cases

Extreme Search Use Cases

Two categories

Inspiration

- Map search
- Extreme calendar
- Destination comparator
- Activity driven search

Advertising

- Landing pages
- Fare alerts & newsletters

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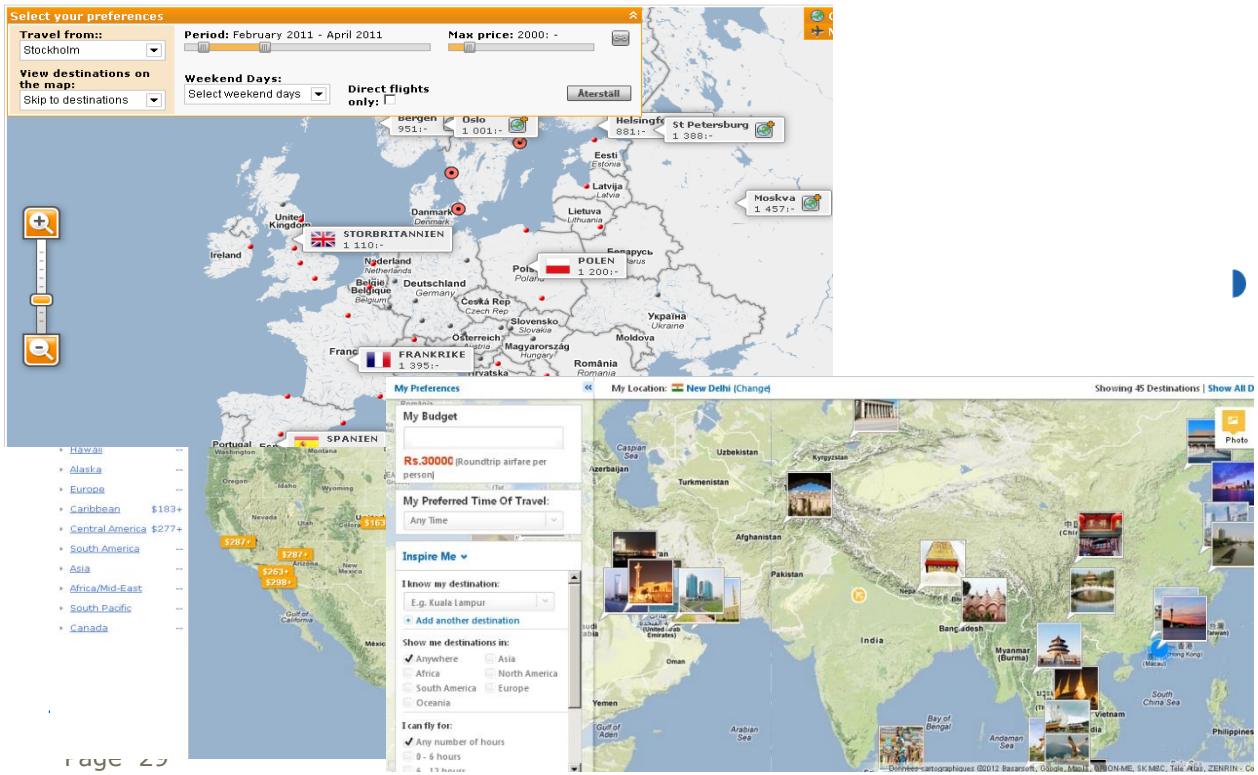
Inspiration focused Use cases
Map search

"I'll treat myself with a travel to a place far away...
Where can I go within my budget of €900?"

In production:

Mapa



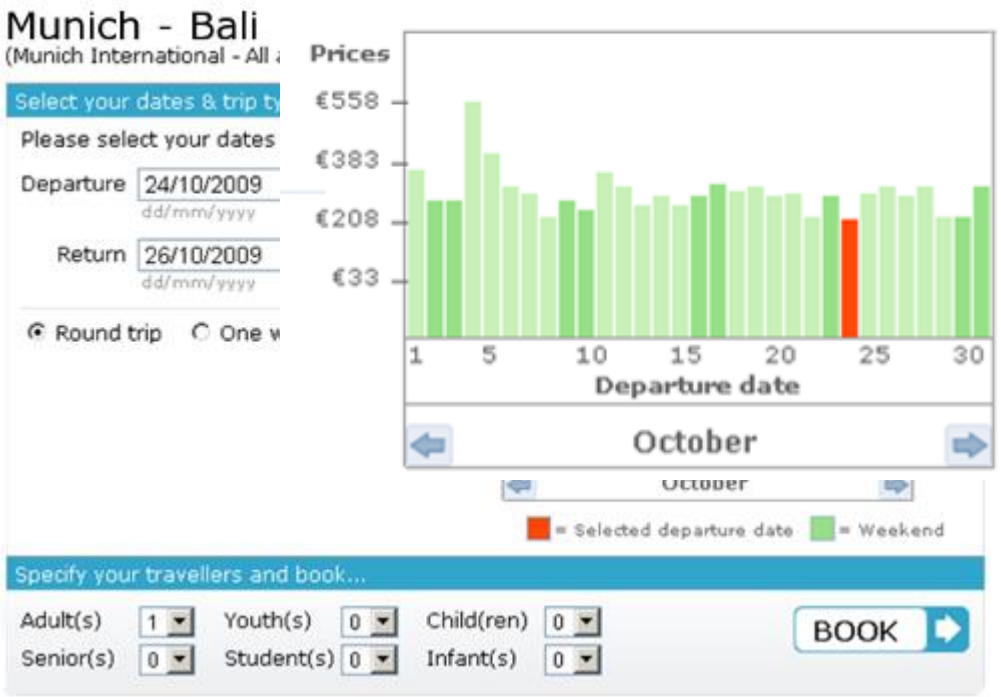
- This is an **open destination search**: the possible destinations are determined based on the specified budget.
- End users can quickly see where their **budget** can take them. They can spot a good deal they wouldn't have thought of.

Inspiration focused Use cases
Extreme calendar

"I want to go on vacation to Bali, but when is the best time of the year to get a cheap price?"

In production:
eTraveli
Make My Trip
eBookers

Monthly best rates



Any size of calendar

- Up to 1 year
- Could be offered in one single display

Ultra-flexible: Low-budget end users

- Will be able to locate low prices
- Be pushed to convert quickly

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Inspiration focused Use cases
Destination Comparison

In production: MMT

"I am hesitating between Nice and Istanbul for a weekend, where and when should I go?

For two or more destinations display cheapest prices for a specific departure date or all the calendar year (cheapest per month, per week, etc…)

- Allowing to compare several destinations at once

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Inspiration focused Use cases:
Activity driven search

In production: MMT

"I want to take a relaxing break in 3 weeks from now, where can I go?"

Our relaxing destinations for the period July 15th-July 22nd:

Phuket – Thailand

Enjoy the ocean and the spas, and recharge your batteries. **From €750**.

Oslo – Norway

Discover the fjords and their soothing atmosphere. **From €350**.

- This is an **open destination search**: the possible destinations are determined based on the specified budget.
- End users can quickly see where their **budget** can take them. They can spot a good deal they wouldn't have thought of.

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Advertising focused Use cases
Landing pages

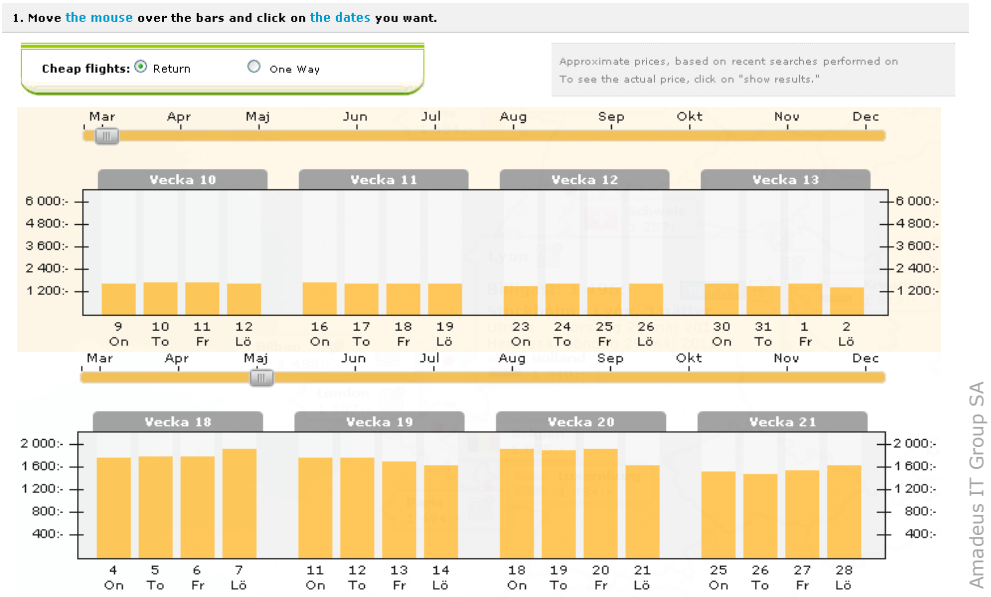
"Cheap flights to discover Spain?
Let's give a try !!!"

FLIGHTS TO SPAIN	
Barcelona - Sevilla	€ 3
Barcelona - Malaga	€ 4
Barcelona - Gran Canaria	€ 14
Gran Canaria - Barcelona	€ 14
Madrid - Barcelona	€ 25
Barcelona - Madrid	€ 26
Gran Canaria - Madrid	€ 32
Lanzarote - Madrid	€ 32
Fuerteventura - Madrid	€ 35
Madrid - Bilbao	€ 38
Barcelona - Tenerife	€ 43

See more offers

INTERNATIONAL FLIGHTS	
Barcelona - New York	€ 318
Madrid - New York	€ 319
Madrid - Caracas	€ 336
Madrid - Miami	€ 387
Madrid - Havana	€ 468
Madrid - Mexico	€ 531
Madrid - Bogotá	€ 532
Madrid - Santo Domingo	€ 600
Madrid - Buenos Aires	€ 611
Barcelona - Buenos Aires	€ 625
Madrid - Lima	€ 650

See more offers



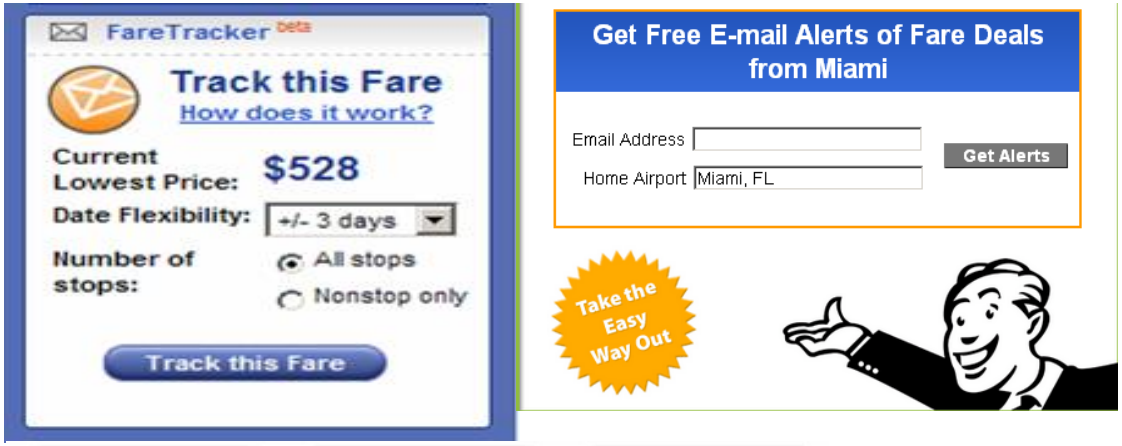
Links on the home page or advertising banners

Attractive and fast landing page (bar chart or calendar) that clearly display choices in date and price to the end user

Advertising focused Use cases
Fare alerts and newsletters

"Can you alert me on cheap fares to Bangkok for next February?"

In production:
cheapair.com



What?

Allowing customers to move from generic newsletters to personalized Price tracking service by mail, RSS…

-Traveler registers preferred departure location, destinations, affinities, travel date ranges, activities…

- Customer alerts all registered customers with best deals on regular basis.

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B Web service details

Extreme Search: Web service

One single web service to access private MSP cache

Name	XML interface
Extreme Search	PriceXplorer_ExtremeSearch

Extreme Search: Web service options

Options to filter the data domain

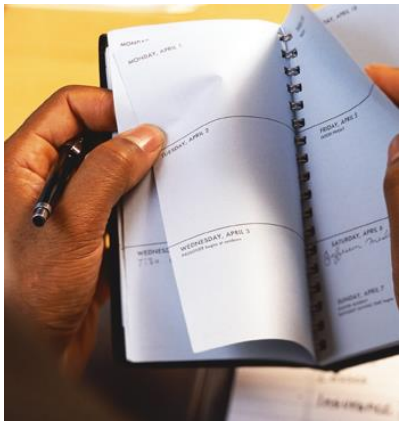
Security

_ Computation office id

Geography

_ Origin
- Airport/City

_ Destination
- One or more Airport/City
- Market qualifier



Date options

_ Departure date range

_ Departure day range

_ Range of stay duration

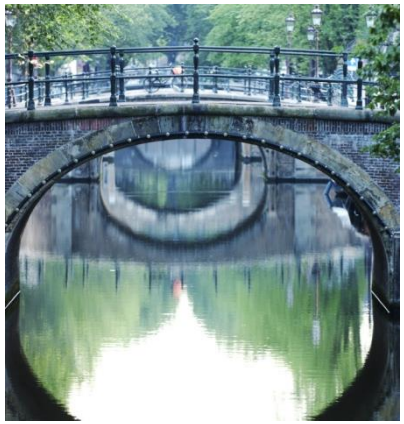
_ Market data set

Flight options

_ Type of flight

Fare options

_ Budget



Grouping/aggregation options

_ Grouping by country

_ .. by Destination

_ ..by destination and departure week

_ .. by destination , dep. week and dep. Date

_ .. by destination , dep. Week, dep. Date and stay duration

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Extreme search: Web service options

Security

- **Computation office id (mandatory)**
  The office id defined at computation time must be used. This way all prices computed under that office will be returned.
-
  Example:
  "I want go get the prices that have been computed in NCE1A0XTR office id "

```
<officeIdInfo>
    <officeId>
        <originIdentification>
            <inHouseIdentification1>NCE1A0XTR</inHouseIdentification1>
        </originIdentification>
    </officeId>
</officeIdInfo>
```


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Extreme search: Web service options

Geography

Origin (mandatory)
An IATA airport/city code must be used.
Airport indicator is an option

By default city code is considered (in case city and airport have the same code). To restricted to the airport code the airport indicator should be used.

Same codes as the ones used during the pre-computation will be considered .
Otherwise the following message will be returned:
"No price result found for requested origin/destination"

Example:
"I want to leave from only HOU airport"

```
<itineraryGrp>
      <itineraryInfo>
            <destination>HOU</destination>
      </itineraryInfo>
      <locationInfo>
            <locationType>A</locationType>
      </locationInfo>
</itineraryGrp>
```


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Extreme search: Web service options

Geography

Destination/List of destinations (optional)
UP to **200** list of IATA airport/city can be requested.
Airport indicator only needed when set in computation input file.

By default city code is considered (in case city and airport have the same code). To restricted to the airport code the airport indicator should be used.

Should **No destination** be requested, all destinations matching the input the data domain will be returned.

Same codes as the ones used during the pre-computation will be considered . Otherwise the following message will be returned:
"No price result found for requested Örigin/destination"

– Example:
"I 'd like to fly from STO to ……anywhere"

```
<itineraryGrp>
        <itineraryInfo>
            <origin>STO</origin>
        </itineraryInfo>
</itineraryGrp>
```

Since no destination is set, computed prices to any destination out of STO will be returned

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Extreme search: Web service options

Geography

Destination/List of country destinations (optional)

UP to **15 list of countries** defined in the computation template via the **market qualifier field** can be used in the destination field.

This list of countries is then converted in a list of destinations (possible destinations within requested countries) as per market qualifier.

– Example:

"I'd like to go to France …….or to Spain"

```
<itineraryGrp>
    <itineraryInfo></itineraryInfo>
    <locationInfo>
        <locationType>26</locationType>
        <locationDescription>
            <code>FR</code>
            <qualifier>D</qualifier>
        </locationDescription>
    </locationInfo>
</itineraryGrp>
<itineraryGrp>
    <itineraryInfo></itineraryInfo>
    <locationInfo>
        <locationType>26</locationType>
        <locationDescription>
            <code>ES</code>
            <qualifier>D</qualifier>
        </locationDescription>
    </locationInfo>
</itineraryGrp>
```


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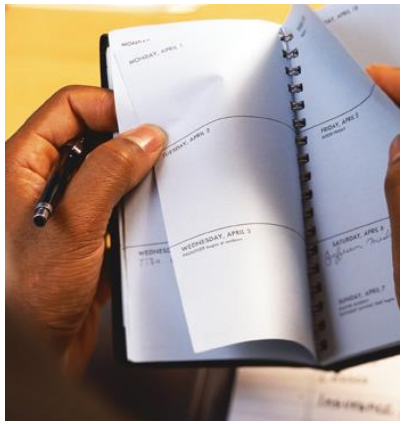
Extreme search: Web service options

Date options



- **Departure date ranges (mandatory)**
  Used to determine the Outbound , Earliest and latest departure date which are considered on the search process.

  These dates should be included in the customer computation file.

- Example:
  "I'd like to leave between June the 15th and July the 15th"

```
<travelDates>
    <dateAndTimeDetails>
        <qualifier>S</qualifier>
        <date>150614</date>
    </dateAndTimeDetails>
    <dateAndTimeDetails>
        <qualifier>E</qualifier>
        <date>150714</date>
    </dateAndTimeDetails>
</travelDates>
```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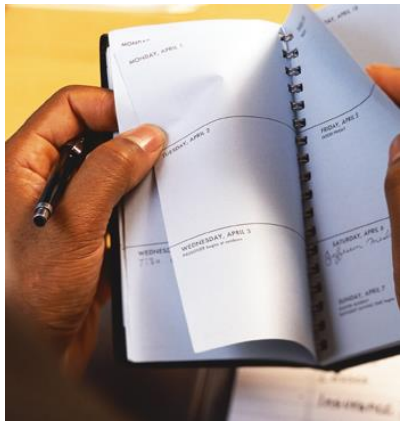
Extreme search: Web service options

Date options



- **Departure day ranges** (optional)
  Used to determine a precise day during the week , which is included in the previously Departure range of dates period.

  Example:
  "I'd like to leave any Friday or Saturday, between June the 15th and July the 15th "

```
<travelDates>
    <dateAndTimeDetails>
        <qualifier>S</qualifier>
        <date>150614</date>
    </dateAndTimeDetails>
    <dateAndTimeDetails>
        <qualifier>E</qualifier>
        <date>150714</date>
    </dateAndTimeDetails>
</travelDates>
<departureDays>
    <daySelection>
        <dayOfWeek>56</dayOfWeek>
    </daySelection>
    <selectionInfo>
        <selectionDetails>
            <option>O</option>
        </selectionDetails>
    </selectionInfo>
</departureDays>
```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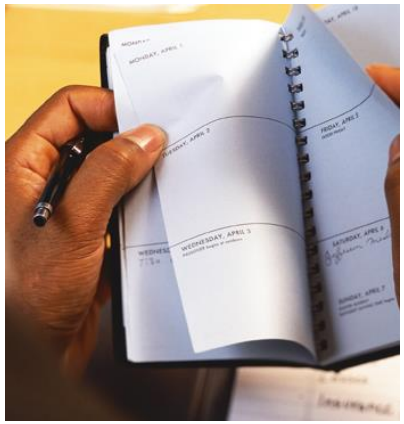
Extreme search: Web service options

Date options



- **Stay duration range (mandatory, only for RT)**
  Not used for OW
- Used to determine the number of days at destination.
  It will calculate all possible return dates.

!! Flexibility option (on +/- days) can also be added to the stay duration period.

-
  Example:
  "I'd like to spend 3 days aboard"

```
<stayDuration>
    <nbOfUnitsInfo>
        <quantityDetails>
            <numberOfUnit>3</numberOfUnit>
                <unitQualifier>DAY</unitQualifier>
        </quantityDetails>
    </nbOfUnitsInfo>
</stayDuration>
```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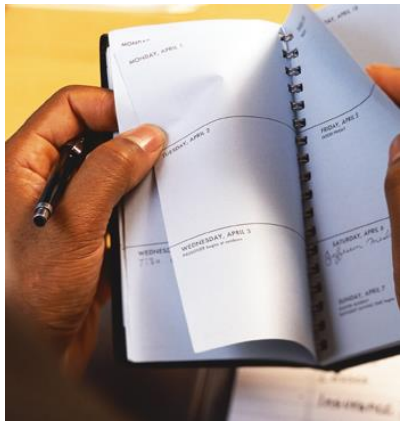
Extreme search: Web service options

Date options



- **Market data set** (optional)
  Weekend data can be requested provided this definition has been asked in the computation file.
  Only specific week-end dates are targeted.

  Only 9 combinations of departure & arrival dates are stored by Massive search platform and will be returned to the End-User through the Extreme search WBS. These combinations are : Wed-Sun; Thu-Sun; Thu –Mon; Fri-Sun; Fri –Mon; Fri –Tue; Sat-Sun; Sat –Mon; Sat -Tue

- Example:
  "I want to go on a long week end travel to visit Amsterdam"

```
<attributeInfo>
      <attributeFunction>MDS</attributeFunction>
      <attributeDetails>
            <attributeType>WE</attributeType>
      </attributeDetails>
</attributeInfo>
```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Extreme search: Web service options

Flight options

- **Type of flight** (optional)
  Default is to retrieve the Cheapest overall flights only.
  Cheapest Non-stop flight option can also be requested .

  In this case both prices will be returned, provided they've been requested at computation time.

Example:
"I'd like to know the cheapest flight ,
but also the one where I don't need make any stop to get there"

```
<selectionDetailsGroup>
    <selectionDetailsInfo>
        <selectionDetails>
            <option>PRD</option>
        </selectionDetails>
    </selectionDetailsInfo>
    <nbOfUnitsInfo>
        <quantityDetails>
            <unitQualifier>COP</unitQualifier>
        </quantityDetails>
            <unitQualifier>CNS</unitQualifier>
    </nbOfUnitsInfo>
</selectionDetailsGroup>
```


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Extreme search: Web service options

Fare options

- **Budget** (optional)
  This option will take the maximum budget specified in the request into account to only retrieve those prices back.

  Total price will include taxes and surcharges.

- Example:
  "I want spent a maximum of 500 euros for my next trip"

```
<budget>
    <monetaryDetails>
        <typeQualifier>MAX</typeQualifier>
        <amount>500</amount>
        <currency>EUR</currency>
    </monetaryDetails>
</budget>
```


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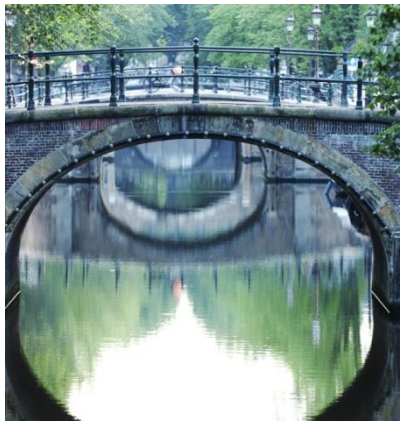
Extreme search: Web service options

Grouping/aggregation options



Type of grouping options:

- Grouping per country
- Grouping per destination
- Grouping per destination & week
- Grouping per destination & week & departure day
- Grouping per destination & week & departure day & stay duration

Order of grouping options

- Step (0) – Grouping per country (OPTIONAL)
- Step (1) – Grouping per destination
- Step (2) - Grouping per destination & week
- Step (3) - Grouping per destination & week & departure day
- Step (4) – Grouping per destination & week & departure day & stay duration

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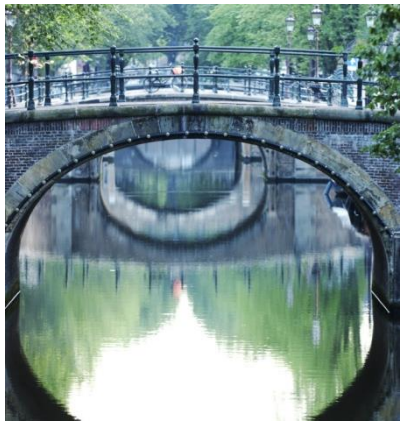
Extreme search: Web service options

Grouping/aggregation options



_ Grouping by country (optional)

Return **the cheapest** price **per country** specified in the data domain (in the "market qualifier" column).

Warning: Grouping per country is not compatible with any other grouping option.

Example:
"From Helsinki, I want the cheapest price **per country** to go to Paris or to Madrid."

*Subset of pre-computed results **

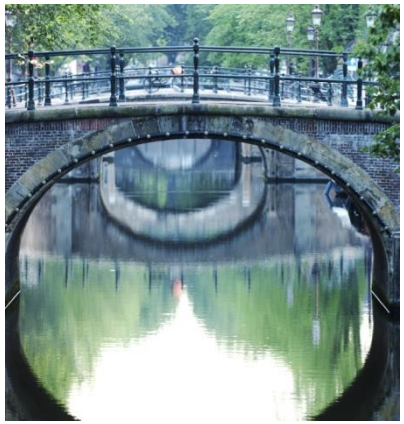
O&D	Dest. country	Travel date				Overall cheapest price
		Month	Week	Dept. day	Stay duration	
HEL-PAR	FR	April	1st week	Thu	3	100 €
HEL-PAR	FR	April	1st week	Thu	4	109 €
HEL-PAR	FR	April	1st week	Fri	3	118 €
HEL-PAR	FR	April	1st week	Fri	4	127 €
HEL-PAR	FR	April	2nd week	Thu	3	136 €
HEL-PAR	FR	April	2nd week	Thu	4	145 €
HEL-PAR	FR	April	2nd week	Fri	3	154 €
HEL-PAR	FR	April	2nd week	Fri	4	163 €
HEL-MAD	ES	April	1st week	Thu	3	239 €
HEL-MAD	ES	April	1st week	Thu	4	230 €
HEL-MAD	ES	April	1st week	Fri	3	221 €
HEL-MAD	ES	April	1st week	Fri	4	212 €
HEL-MAD	ES	April	2nd week	Thu	3	203 €
HEL-MAD	ES	April	2nd week	Thu	4	194 €
HEL-MAD	ES	April	2nd week	Fri	3	185 €
HEL-MAD	ES	April	2nd week	Fri	4	176 €

```
<attributeInfo>
    <attributeFunction>GRP</attributeFunction>
        <attributeDetails>
          <attributeType>CTRY </attributeType>
        </attributeDetails>
</attributeInfo>
```

** For illustration purposes the example considers only 1st week and 2nd week per month instead of all travel dates*

Extreme search: Web service options

Grouping/aggregation options



_ Grouping by destination /city (mandatory)

Return **the cheapest** price **for each city** regardless of the week, departure day and stay duration.

Example:
"From Helsinki, I want the cheapest price to go to Paris."

*Subset of pre-computed results **

O&D	Dest. country	Travel date				Overall cheapest price
		Month	Week	Dept. day	Stay duration	
HEL-PAR	FR	April	1st week	Thu	3	100 €
HEL-PAR	FR	April	1st week	Thu	4	109 €
HEL-PAR	FR	April	1st week	Fri	3	118 €
HEL-PAR	FR	April	1st week	Fri	4	127 €
HEL-PAR	FR	April	2nd week	Thu	3	136 €
HEL-PAR	FR	April	2nd week	Thu	4	145 €
HEL-PAR	FR	April	2nd week	Fri	3	154 €
HEL-PAR	FR	April	2nd week	Fri	4	163 €
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HEL-MAD	ES	April	1st week	Thu	4	230 €
HEL-MAD	ES	April	1st week	Fri	3	221 €
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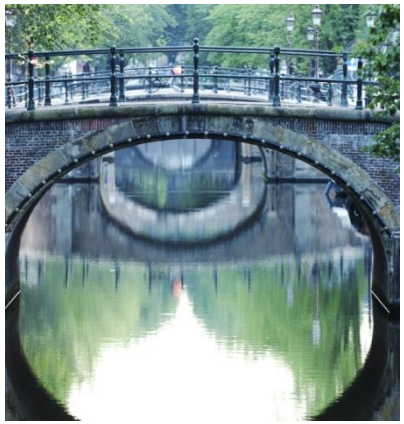
HEL-MAD	ES	April	2nd week	Thu	3	203 €
HEL-MAD	ES	April	2nd week	Thu	4	194 €
HEL-MAD	ES	April	2nd week	Fri	3	185 €
HEL-MAD	ES	April	2nd week	Fri	4	176 €

```
<attributeInfo>
    <attributeFunction>GRP</attributeFunction>
        <attributeDetails>
          <attributeType>DES </attributeType>
        </attributeDetails>
</attributeInfo>
```

** For illustration purposes the example considers only 1st week and 2nd week per month instead of all travel dates*

Extreme search: Web service options

Grouping/aggregation options



_ Grouping by departure week (optional)

Return **the cheapest** price **for each city** and **each week** regardless of the departure day and stay duration.

Warning: To activate grouping per week, it is necessary to preliminary activate the grouping per city.

Example:
"From Helsinki, I want the cheapest price to go to Paris or to Madrid per week."

*Subset of pre-computed results **

O&D	Dest. country	Travel date				Overall cheapest price
		Month	Week	Dept. day	Stay duration	
HEL-PAR	FR	April	1st week	Thu	3	100 €
HEL-PAR	FR	April	1st week	Thu	4	109 €
HEL-PAR	FR	April	1st week	Fri	3	118 €
HEL-PAR	FR	April	1st week	Fri	4	127 €
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HEL-PAR	FR	April	2nd week	Thu	4	145 €
HEL-PAR	FR	April	2nd week	Fri	3	154 €
HEL-PAR	FR	April	2nd week	Fri	4	163 €
HEL-MAD	ES	April	1st week	Thu	3	239 €
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HEL-MAD	ES	April	1st week	Fri	4	212 €
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HEL-MAD	ES	April	2nd week	Thu	4	194 €
HEL-MAD	ES	April	2nd week	Fri	3	185 €
HEL-MAD	ES	April	2nd week	Fri	4	176 €

```
<attributeInfo>
    <attributeFunction>GRP</attributeFunction>
        <attributeDetails>
          <attributeType>DES </attributeType>
        </attributeDetails>
        <attributeDetails>
          < attributeType>WEEK</attributeType>
        </attributeDetails>
</attributeInfo>
```

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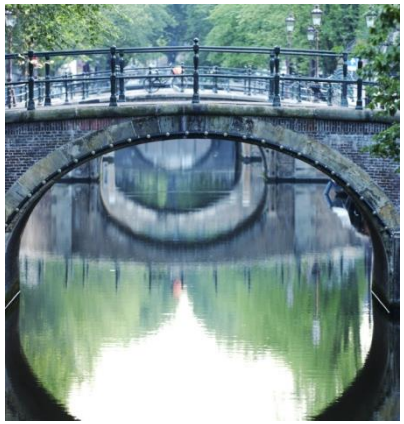
Extreme search: Web service options

Grouping/aggregation options



_ Grouping by departure date (optional)

Return **the cheapest** price **for each city** and **each week** and **each departure day** regardless of the stay duration.

Warning: To activate grouping per departure date, it is necessary to preliminary activate the grouping per city and per week.

Example:

"From Helsinki, I want the cheapest price to go to Paris or to Madrid per week and per day."

*Subset of pre-computed results **

```
<attributeInfo>
    <attributeFunction>GRP</attributeFunction>
        <attributeDetails>
          <attributeType>DES </attributeType>
        </attributeDetails>
        <attributeDetails>
          < attributeType>WEEK</attributeType>
        </attributeDetails>
        <attributeDetails>
          < attributeType>DAY </attributeType>
        </attributeDetails>
</attributeInfo>
```

O&D	Dest. country	Travel date				Overall cheapest price
		Month	Week	Dept. day	Stay duration	
HEL-PAR	FR	April	1st week	Thu	3	100 €
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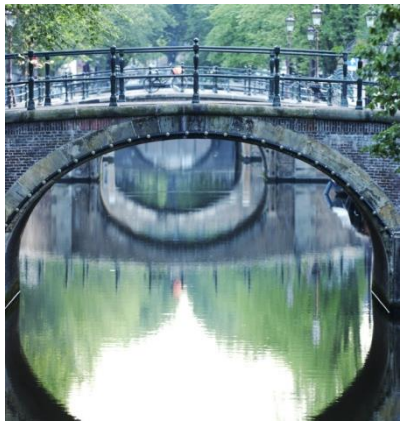
Extreme search: Web service options

Grouping/aggregation options



_ Grouping by stay duration (optional)

Return **the cheapest** price **for each city** and **each week** and **each departure day** and **each stay duration**.

Warning: To activate grouping per stay duration, it is necessary to preliminary activate the grouping per city, per week and per departure day.

Example:

"From Helsinki, I want the cheapest price to go to Paris or to Madrid per week, per day and per stay duration."

```
<attributeInfo>
    <attributeFunction>GRP</attributeFunction>
        <attributeDetails>
          <attributeType>DES </attributeType>
        </attributeDetails>
        <attributeDetails>
          < attributeType>WEEK</attributeType>
        </attributeDetails>
        <attributeDetails>
          < attributeType>DAY </attributeType>
        </attributeDetails>
        <attributeDetails>
          < attributeType>SD </attributeType>
    </attributeDetails>
</attributeInfo>
```

*Subset of pre-computed results **

O&D	Dest. country	Travel date				Overall cheapest price
		Month	Week	Dept. day	Stay duration	
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HEL-PAR	FR	April	2nd week	Fri	3	154 €
HEL-PAR	FR	April	2nd week	Fri	4	163 €
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