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« DOCUMENTATION DEVELOPPEUR API 1.2 [FR].pdf »

Developer documentation

OpenData Tisséo API version 1.2

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API HISTORY

Version	Date mm /dd /yyyy	Author	Modification
V0.1	05/09/2012	Xavier Raffin	First version
V0.2	08/07/2012	Xavier Raffin	XSD changes and new functionnalities
V0.3	10/02/2012	Xavier Raffin	Add "color" in stops_schedules and "expiration date" everywhere
V0.4	02/04/2013	Xavier Raffin	Add parameters in "places" service Add filter on stop_points, change date format and ID linked with Trident et GTFS
V0.5	07/02/2013	Xavier Raffin	Add messages services and disrupted information
V0.6	07/19/2013	Xavier Raffin	Minor fixes
V1.0	10/15/2014	Xavier Raffin	Major update, API is now RestFULL - URL changes and technicals improvements - Add services : route planning, service density, networks, … - Add features on stops_schedules
V1.1	07/23/2015	Xavier Raffin	**First English version developer documentation** Add by bounding box requests on "places" Add parameters on "stop_areas" Add datetime parameter on "stop_schedules" Add handicappedCompliance information on "stop_points"
V1.2	01/15/2016	Xavier Raffin	Add limitation information on number of journey result Add maxDays and firstAndLastDay parameter on stops_schedules

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1. INTRODUCTION

1.1 API PURPOSE

Tisséo OpenData API exposes public transport real time data on Tisséo operations and offer advanced services.

By example, Tisseo API can :

- show you next buses departures at a given stop
- calculate a journey with public transport services
- display trafic information
- give you raw data object (lines, stops, public places, street, …) explore and filter them
- do more specific calculations

See chapter 4 to see complete list of services.

1.2 DOCUMENT ORGANISATION

Chapter 2 explains API use rules, resources and limitations.

Chapter 3 describes data perimeter and general concepts relevant for all services

Chapter 4 explains data mode, details each services operations and gives examples

2. API USAGE

2.1 IMPLEMENTATION AND URLS FORMAT

Tisseo API is a **REST** « read only » API. Only GET http requests are supported.

API entry point is : **api.tisseo.fr**
API have versions, current one is **v1** (all 1.x documentations are valid for this API version).

API calls looks like :

https://api.tisseo.fr/v1/<service name>.<format>?<parameters>&key=<your_key>

Communication **protocol** could be **http** ou **https**. **Tisséo highly recommand https** for security reasons.

List of available **services** and their **parameters** in chapter 4**Erreur ! Source du renvoi introuvable.**.
Output formats are : **XML** or **JSON**, mime type is returned accordingly.
You must give a « **key** » at each call (see following section.)

Encoding is **UTF-8** .

2.2 ACCESS KEYS

An access key is needed to use the API.
Each user must ask for his personnal one (it's free).
To obtain a key, please mail to opendata@tisseo.fr providing these informations :
- your name and/or company
- email for receiving API updates and maintenance information
- intented uses (project objectives, application name, …)

For more simplicity, examples provided in this documentation does not indicate the key parameter, yet you must add it systematically.

2.3 USAGE QUOTAS AND RESSOURCE SHARING

OpenData Tisséo API experiencing a growing success.
Delivered services are provided by Tisséo IT infrastructure.
In order to maintain a good service level, Tisséo monitors ressource usage for each API key.

If it becomes necessary to increase significantly the capacity of the infrastructure due to increased stress, Tisséo may need to implement a system of limiting free usage, involving a financial contribution beyond certain thresholds.

Usage will be checked by key and period.

2.4 LICENCE

Our API is licensed ODBL :

- http://opendatacommons.org/licenses/odbl/1-0/ [EN]
- https://data.toulouse-metropole.fr/la-licence [FR]

2.5 INTELLECTUAL PROPERTY AND TISSÉO BRAND USAGE

The french intellectual property code « Code de la propriété intellectuelle » (articles L.335-2) and Tisséo imprints (http://www.tisseo.fr/mentions-legales) must be met by API users.

Particulary usage of word « Tisséo» in application name, is forbiden.
"Tisséo" is a registered trademark.

2.6 OPENSTREETMAP CREDIT

Roads network information (street names, street numbers, ...) provided by the API TISSEO comes from the OpenStreetMap Project (https://www.openstreetmap.org/).

Some streets, street numbers could be not found by our API because they are not yet known OpenStreetMap.
That is why we strongly encourage API users to contribute to the enrichment of OpenStreetMap data.
We update daily from OSM, therefore your contributions should appear quickly in API results.

Technically, street numbers are imported from nodes (addr: housenumber) and the relationship between a node and a street (associatedStreet) and not on buildings.

Data available via our API are under ODbL (https://data.toulouse-metropole.fr/la-licence)

2.7 WEB & INTRANET INTEGRATION

You can use the API on our own website making API calls from the browser in Javascript.

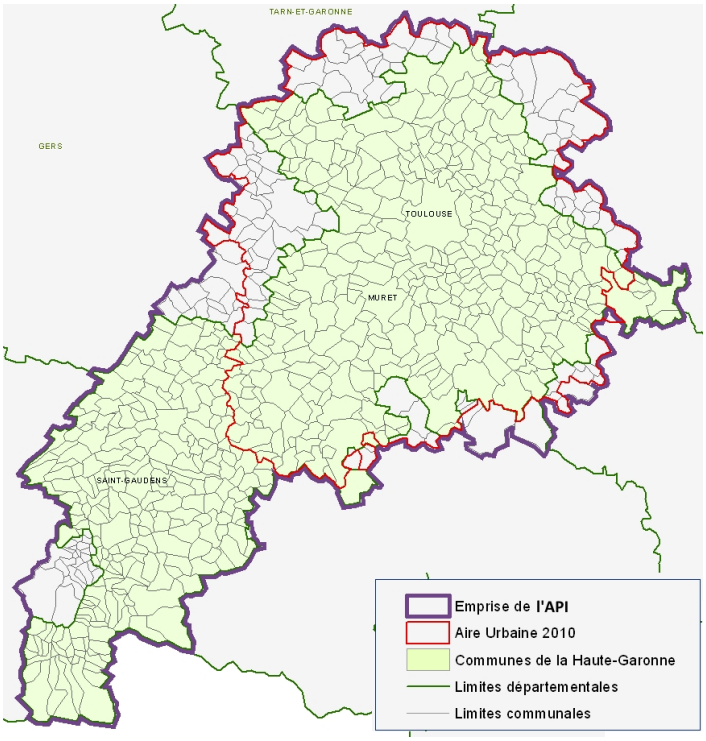
These "cross-domain" request are allowed by **CORS** headers sent back by Tisséo API.

In this case your API key will be exposed to the public.
We are ready to give you a new key quickly if a third party stole your key and do bad things with it.

3. GENERAL CONCEPTS

3.1 GEOGRAPHIC PERIMETER

API data cover “aire urbaine” perimeter in its definition INSEE 2010 and Haute-Garonne:



3.2 TEMPORAL DATA SCOPE

Tisséo datas are updated every day and forecast are next 30 days.
However, we recommend to show a maximum of 15 days in advance to final users.

All API responses contains an "**expirationDate**" value which indicates how long collected information remains valid.
this value is strongly recommended to manage cache duration of your applications.

3.3 AVAILABLE TISSEO LINES

All Tisséo lines are available except :

- school shuttles
- sport shuttles (Wallon and Stadium)

However, these lines could be affected by « Messages » (see chapter 4.10)

3.4 SRID

Spatial Reference Identifier **SRID** is a unique value used to identify a spatial coordinate system.
(More information : https://en.wikipedia.org/wiki/SRID)

Default Tisséo API SRID is 4326 witch rely to WGS84, the GPS coordinate system.

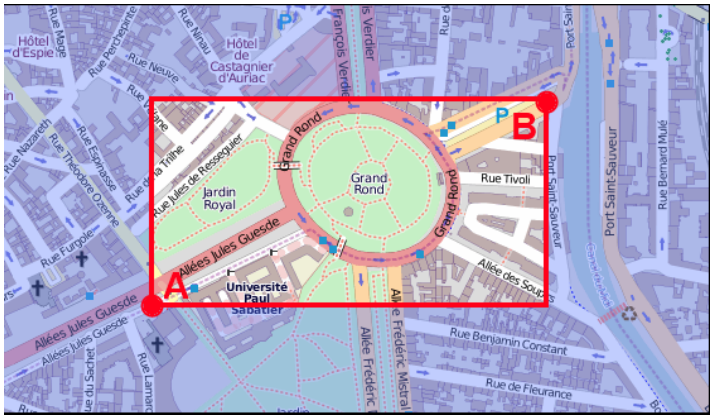
Tisséo API supports almost all widespread coordinates systems : Lambert 2, Google Spherical Mercator, …

If you give an SRID to the API, it will be use for both request and answer.

3.5 BOUNDING BOX

Several services have the ability to return object of a « bounding box ».

Expected « **bbox** » format is : « longitude pt A, latitude pt A, longitude pt B, latitude pt B », where A and B are positioned as in the following diagram:



Representation of a bbox on a basemap

Bbox coordinates must be provided in the coordinate system corresponding to the choosen SRID (see 3.4).

WGS84 example (SRID 4326) :
bbox=1.4338121,43.5944292,1.4538121,43.6144292
Google Spherical Mercator example (SRID 900913) :
bbox=138755.178369,5395670.788034,181368.821631,5413060.211966

3.6 WKT GEOMETRIES

Geographical trace returned by API services (lines, journeys, …) are expressed in Well Know Text (**WKT**).
They are expressed in the given SRID (see section 3.4)
WGS84 example (SRID 4326) :
LINESTRING (1.44210 43.57988, 1.44250 43.58040, 1.44265 43.5805)

3.7 ACCESSIBILITY

Disabled access applies for stops, vehicules and underground station entrances (elevators) :

- on StopPoints there is an “handicappedCompliance” field (see 4.3)
- on journeys, with « roadMode=wheelchair »

Jounrey planner knows elevator availability in real time and adapt journeys for wheelchairs.

Stop accessibility is also available in our GTFS file on Toulouse Métropole OpenData portal.

3.8 DATE & TIME

API Time is Paris Time

Accepted date format are :

YYYY-MM-DD

« datetime » must have the following format :

YYYY-MM-DD hh:mm

You can optionnaly add seconds :

YYYY-MM-DD hh:mm:ss

Example :

« 2018-12-16 14:25 »

3.9 IDs

3.9.1 Uniqueness and type

IDs are unique strings designating all data model objects.
IDs are also unique between different object types (a line and a stop could not have the same ID).

WARNING : Today IDs are 64bits unsigned integer, but **you must consider IDs as strings** and not has numbers because ID system could change in the future.
Be careful with that in your apps

3.9.2 ID durability

IDs doesn't change with time.
Examples :

- Stop area « Esquirol » will be « 1970324837184892 » forever
- line « T1 » will always be « 13792273858822588 »

This durability will help you to sync apps with a backend. (see next section)

3.9.3 ID consistency with OpenData files

In addition to the API, Tisséo provides several files on Toulouse Métropole OpenData portal.
This files are available in two standard formats : **Trident** and **GTFS** under the same ODBL licence (see paragraph 1.6).
URLs to get theses files are :

- GTFS :
  https://data.toulouse-metropole.fr/les-donnees/-/opendata/card/16271-reseau-tisseo-metro-bus-tram-gtfs
- Trident :
  https://data.toulouse-metropole.fr/les-donnees/-/opendata/card/14114-reseau-tisseo-metro-bus-tram-

Files are automaticaly updated every monday

In order to extend API possibilities, **GTFS, Trident and API identifiers are identical.**

For example, you can retrieve lines shapes in GTFS file and make a map display with real-time API information.
Another example, you can load all theoretical schedules in your application cache, API make possible real-time schedules corrections.

3.10 COMPRESSED DATA

In order to reduce API payload, some fields are abreviated.

At this time only **place** service use that compression, but other services will follow.

3.10.1 Public place types

This is the public place type correspondence table :

typeCompressed	type
a	administration
b	mail
c	learning
d	hospital
e	police station
fd	church
fe	mosque
ff	synagogue
g	cemetery
h	bus station
i	train station
j	airport
k	VélôToulouse
l	parking
m	park and ride
n	Tisséo agency
o	retail partners
p	university
qa	football stadium
qb	rugby stadium
qc	sport place
r	hobbies
s	public garden
t	Citiz
u	bike station
v	carpool station

3.11 LANGUAGES

Some services accept a "lang" parameter.
It provides final user text in English, Spanish, or French.
However **Tisséo does not translate network information messages**.
"Messages" will always be in French.

The default lang value is "fr" (French language).

If you want English please send lang=en in your requests.

3.12 NAMEABLE OBJECTS

To identify and object (stop, road, public place, …) you can give his name (and city name), or his XY.

By example, you can start a journey from a place named « Capitole TOULOUSE ».

The correlation mechanism between a name (or an XY) and an object is the same in all API services.
Place service allow you to see correlation mechanism results (see 4.4).

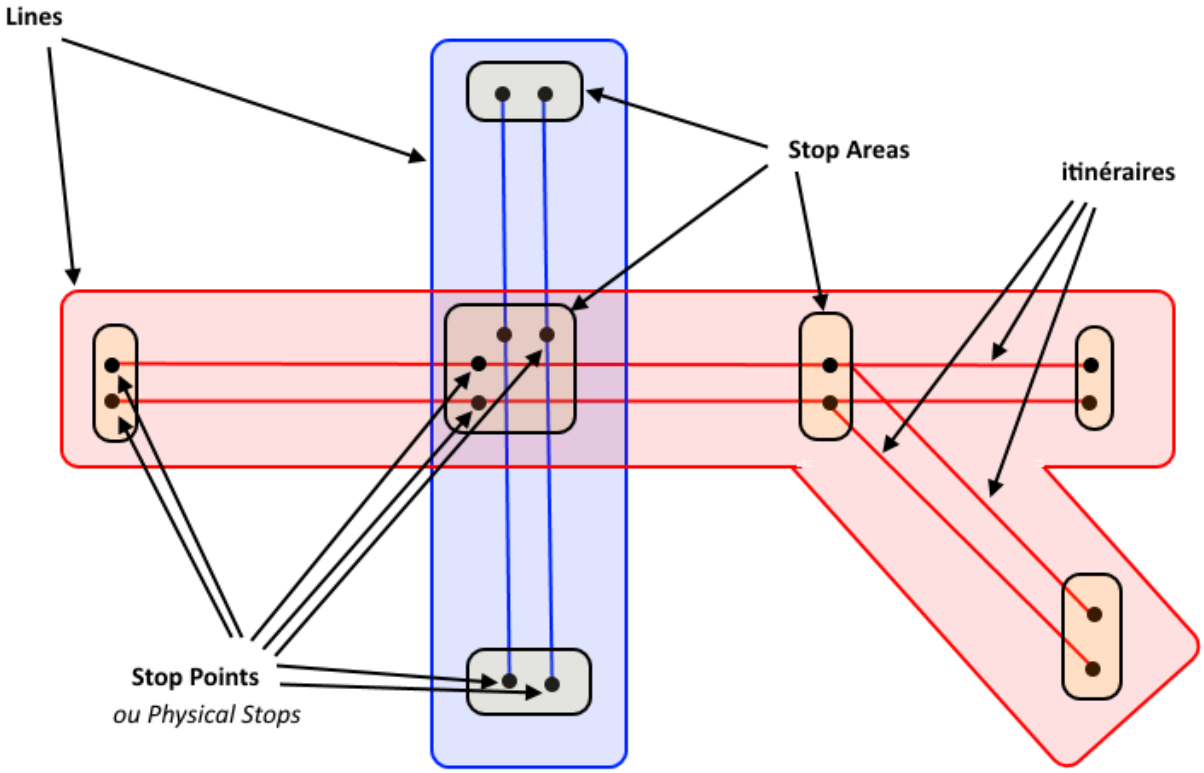
By example if « esquir » is given as journey origin (or as center in service_density), then the object used as a the "real" origin will be the StopArea Esquirol.
The same if a XY a little far from the road is given as origin then it will be internaly transformed as the closest object of the data model by place service before launching journey calculation.

Sometimes an object name will not be unique (ex : « Voie dans nom », parking, …) in this case behaviour is unpredictable.
If you want to start a journey from this sort of place you must provide a XY.

4. OBJECTS AND SERVICES

4.1 DATA MODEL

This is a simplified public transport data model :



On the diagram, you can see Lines, Routes ("*itinéraires*"), StopPoints and StopArea.

Lines represents commercial lines (example : T1 line, 2 line, A line …).
A **Line** belongs to a **network.** In the API the network will always be « Tisséo ». But some network could be added in the future.

A **Line** does have a **transportMode** (or **RollingStock)** : bus, metro, tramway, DRT (on demand buses).

Each **Line** is composed by one or several Route. Generaly there is only two routes, but sometimes it will be more complicated (on fourch lines by example).

A Route serves **StopPoints (or PhysicalStops)** which are real stop posts.

In general case there is two **StopPoints** side by side of the road on each sidewalk grouped in a **Stop Area** (or Logical Stop).
A **Stop Area** does have a commercial name and is a "nameable object" (see 3.12).
Travelers will think of a stop area (and not a particular stop point) when saying "I start from Esquirol"

Transfers between **StopPoints** of a same **Stop Area** are always possible.

Trafic information **messages** could concern **Lines** or be global (see 4.10)
Other API objects :
Road : example « Rue de Metz (TOULOUSE)»
Address : a road name and a number, example « 4 impasse Paul Mesplé (TOULOUSE)»
Public Place : examples « Zénith (TOULOUSE)», « Ecole Lamartine (TOULOUSE)»

4.2 STOP_AREAS

4.2.1 Principle

Return stop areas from a given network or a given line, or a given geographic area.

A stop area is a group of stop points under a unique name.

4.2.2 URLs and parameters

URL : https://api.tisseo.fr/v1/stop_areas.<format>?...parameters...

Name	Parameter description	Required	Default value
network	transport operator	No	Tisséo
srid	spatial reference projection.(see 3.4)	No	4326
bbox	Filters stops included in bounding box (see 3.5)	No	
displayLines	Adds lines of each stop	No	0 : No lines
displayCoordXY	Adds centroid coordonate lines of each stop	No	0 : No coordonnate
lineId	Filters stops by line	No	
terminusId	Filters on stop areas arriving and departing from this terminal only	No	
timeFrame	Number of days to calculate which lines pass through a given point	No	1
ignoreUnservedStops	Ignore unserved stop in the given timeframe	No	0
displayArrivalOnlyLines	Filters only lines which arrive to stops (and which do not start from) No effect displayLines is 0	No	0
displayStopPoints	Display stop point of stop areas	No	0

4.2.3 Management rules

- lineId and terminusId combined retrieve all routes of the line containing the terminusId.

  Note: XY of a stop area is generaly his stop points gravity center

4.2.4 Response : Stop_area

Stop_area, description

Field name	Type	Description	Always displayed ?
name	string	Stop name	yes
id	string	Unique ID (see 3.9)	yes
cityName	string	Stop city name	yes
x	double	« latitude » in the given SRID (see section 3.4)	yes
y	double	« longitude » in the given SRID (see section 3.4)	Yes
stops	liste	Stop point list of the stop area	No

Stop_area, JSON

```
{
    "cityName": "BEAUZELLE",
    "id": "1970324837190628",
    "name": "Aéroconstellation",
    "x": "1.362642",
    "y": "43.663088"
}
```

4.2.5 Examples

1. All stop areas in xml
   https://api.tisseo.fr/v1/stop_areas.xml
2. All stop areas in json
   https://api.tisseo.fr/v1/stop_areas.json
3. All Tisséo stop areas with lines deserving them
   https://api.tisseo.fr/v1/stop_areas.xml?displayLines=1
4. Tisséo stop areas of the lines which does have a given terminus
   https://api.tisseo.fr/v1/stop_areas.xml?displayLines=1&terminusId=1970324837184808
5. Stop Areas contained in a given bbox
   https://api.tisseo.fr/v1/stop_areas.json?srid=900913&bbox=158019.352839%2C5403458.895141%2C163077.902207%2C5404988.302709

4.3 STOP_POINTS

4.3.1 Principle

Returns stop points (physical stops) of a given network, or geographic area or stop area
A stop point have a name, position, handicappedCompliance, stop area, and lines.

4.3.2 URLs and parameters

URL : https://api.tisseo.fr/v1/stop_points.<format>?...parameters...

Name	Parameter description	Required	Default value
network	transport operator	No	Tisséo
srid	spatial reference identifier (see 3.4)	No	4326
bbox	filters stops included in bounding box (see 3.5)	No	
sortByDistance	sorting results by distance from the center of the bounding box (0.1)	No	0
number	limit number of results to return		Returns all results
displayDestinations	Adds line destinations (0/1)		0: No destinations
displayLines	Adds lines serving each stop point (0/1)	No	0: No lines
displayCoordXY	Adds coordinates details of each stop (stop and logical stopping post) (0/1)	No	0 : No coordinate
lineId	Filters stops by ID line	No	
stopAreaId	Filters only on the id stop zone	No	
timeframe	Number of days covering research, the day time interval is a single day by default.	No	1
displayStopsWithoutDeparture	Filters only stops for which there is no departure (and lines / if destinations is requested). For example, without this setting no line is returned.	No	0

4.3.3 Management rules

This service is not made to request all Tisséo stop points.
If you need that, please use the GTFS file, and read stops.txt.

If you call stop_points service without a valid bbox, or lineId, or StopAreaId you will get a **403 Forbidden HTTP response**.

sortByDistance only works if a bbox is provided

4.3.4 Réponse : Stop_point

Stop_point, description

Field name	Type	Description	Always displayed ?
name	string	Stop name	yes
id	string	Unique ID (see section 3.9)	yes
handicappedCompliance	bool (0/1)	Accessibility (see section 3.7)	yes
x	double	« latitude » in the given SRID (see section 3.4)	yes
y	double	« longitude » in the given SRID (see section 3.4)	yes
operatorCodes	list	Tisséo stop code*	no
stopArea	object	Stop area containing the stop point	no

** this code are visible at the top of stop post.*

Stop_point, JSON

```
{
    "id": "3377699720883138",
    "name": "Dugay Trouin",
    "handicappedCompliance": "1",
    "x": "1.460312004773155",
    "y": "43.572806000022744",
    "operatorCodes": [
        {
            "operatorCode": {
                "value": "2070",
                "network": "Tisséo"
            }
        }
    ],
    "stopArea": { … }
}
```

4.3.5 Examples

1. All stop points in XML
   https://api.tisseo.fr/v1/stop_points.xml

2. Stop point of a given stop area
   https://api.tisseo.fr/v1/stop_points.xml?stopAreaId=1970329131943016&network=Tisséo

3. Stop points of a given stop area also served by a given line
   https://api.tisseo.fr/v1/stop_points.json?stopAreaId=1970324837184808&displayLines=1&lineId=11821949021891652

4. All stop points and destination from them
   https://api.tisseo.fr/v1/stop_points.json?displayDestinations=1

5. Stop points with destinations of a given 900913 bounding box (Google Spherical Mercator)
   https://api.tisseo.fr/v1/stop_points.json?displayDestinations=1&srid=900913&bbox=158019.352839%2C5403458.895141%2C163077.902207%2C5404988.302709

4.4 PLACES : LOCATION SEARCH & GEOCODING

4.4.1 Principle

This service provides places that may match with a text (or X, Y or a bounding box).
Streets, stops, public places or municipalities known by our system can be returned.

"places" service does not just look for the exact string given, but performs a wider search : for example proximate word prononciations is included.

It can effectively be used:

- for an autocomplete purpose on a location type field
- for geolocation

4.4.2 URL and parameters

URL : https://api.tisseo.fr/v1/places.<format>?...parameters...

Name	Parameter description	Required	Default value
term	text string (3 characters minimum)	No	
network	transport operator	No	Tisséo
coordinatesXY	Returns nearest adresses from given x,y coordinates sorted by distance	No	
maxDistance	max search around distance	No	300m
srid	spatial reference ID (see 3.4)	No	4326
bbox	Filters places included in bounding box (see 3.5)	No	
number	Filters the results return max number by type of place.	No	Returns all results
displayBestPlace	Returns the best result (0/1)	No	0
displayOnlyStopAreas	Returns only object of className "stop" (0/1)	No	0: No restriction
displayOnlyRoads	Returns only object of className "road" (0/1)	No	0: No restriction
displayOnlyAddresses	Returns only object of className "adress" (0/1)	No	0: No restriction
displayOnlyPublicPlaces	Returns only object of className "public_places" (0/1)	No	0: No restriction
displayOnlyCities	Returns only object of className "city" (0/1)	No	0: No restriction
lang	Choice of language (fr / en / es)	No	fr
simple	Formatting the json output for jquery	No	0
publicPlaceFilter	list of public places to explose	No	

4.4.3 Management rules

Keep in mind in your implementation: autocomplete queries (parameter "term") with less than 3 characters are banned.

Term and coordinatesXY parameters must be provided exclusively. otherwise only the coordinatesXY option is taken into account.

displayBestPlace option always displays the best results first.

displayOnlyStopAreas, displayOnlyRoads, displayOnlyAddresses, displayOnlyPublicPlaces, displayOnlyCities options are to be used exclusively: they can not combined beings together.

If coordinatesXY is used then only Roads or Address will be returned. (For information on around stops an XY StopAreasList use the service with a bbox).

- **Possible Values**

  lang: fr, en, es
  simple : 1, 0
  "simple=1" eliminates json headers to get a native format for JQuery autocomplete (or other libraries like Dojo, for example) with the categories: # https://jqueryui.com/demos/autocomplete/#categories

Warning: If bbox is provided, only « road », « stop » and « public_places » objects will be returned

publicPlaceFilter : public place type designated by their ***typeCompressed*** separated by pipes '|'. Relation between "typeCompressed" and real life types is explained in **section 3.10.**

Examples :
- **publicPlaceFilter=a|p|s** will return only administration, universities and public garden
- **publicPlaceFilter=d** will return only hospitals

4.4.4 Response

Response are provided in this order : best result (which can be of any category), stops, address, roads, public places, cities. Each object category could contain several result sorted by matching score.

The rank just display the order number.

Stop, description
See 4.2.4

Road, description

Field name	Type	Description	Always displayed ?
label	string	Object name for human readers	yes
category	string	category "road" in the target language	yes
key	string	Full string which designate the object (see section 3.12)	yes
className	string	Road	yes
x	double	« latitude » in the given SRID (see section 3.4)	yes
y	double	« longitude » in the given SRID (see section 3.4)	yes
rank	integer	Position in the answer	yes

Public_place, description

Field name	Type	Description	Always displayed ?
label	string	Object name for human readers	Yes
cityName	string	City name	No
postcode	string	postcode	No
address	string	Number and road name	No
key	string	Full string which designate the object (see section 3.12)	yes
category	string	category " public_place" in the target language	yes
className	string	public_place	yes
x	double	« latitude » in the given SRID (see section 3.4)	yes
y	double	« longitude » in the given SRID (see section 3.4)	yes
typeCompressed	string	Public place type in compressed format (voir section 3.10)	yes
type	string	Human readable public place type*	No
veloStation	int	JCDecaux API ID of vélôToulouse station**	No

***** *this field is translated (see 3.11)*

****** *allow to interogate JCDecaux real time API for knowing bike availability*

Public_place, JSON

```
{
    "label": "LOIS ESQUILE (TOULOUSE)",
    "key": "LOIS ESQUILE TOULOUSE",
    "x": "1.441331",
    "y": "43.606213",
    "typeCompressed": "k",
    "type": "VélôToulouse",
    "cityName": "TOULOUSE",
    "veloStation": "13"
}
```

Address, description

Field name	Type	Description	Always displayed ?
label	string	Object name for human readers	yes
category	string	category "address" in the target language	yes
key	string	Full string which designate the object (see section 3.12)	yes
className	string	address	yes
x	double	« latitude » in the given SRID (see section 3.4)	yes
y	double	« longitude » in the given SRID (see section 3.4)	yes
rank	integer	Position in the answer	yes

City, description

Field name	Type	Description	Always displayed ?
label	string	Object name for human readers	yes
category	string	category "city" in the target language	yes
key	string	Full string which designate the object (see section 3.12)	yes
className	string	city	yes
x	double	« latitude » in the given SRID (see section 3.4)	yes
y	double	« longitude » in the given SRID (see section 3.4)	yes
rank	integer	Position in the answer	yes

4.4.5 Examples

1. Places in XML format containing string ‘’**cav** ‘’
   https://api.tisseo.fr/v1/places.xml?term=cav

2. 5 closest places
   https://api.tisseo.fr/v1/places.json?srid=900913&coordinatesXY=161710.27873%2C5401135.68964&number=5

3. Places in json format containing string ‘’**cav”**
   https://api.tisseo.fr/v1/places.json?term=cav

4. Roads only in XML format containing string ‘’**cav** ‘’
   https://api.tisseo.fr/v1/places.xml?term=cav&displayOnlyRoads=1

4.5 NETWORKS : TRANSPORT NETWORKS

4.5.1 Principle

Returns list of available transport networks.
The obtained network IDs can be use in networkList parameter in some other services .
Only Tisséo network is available now, it is possible that other transport networks will be added later.

4.5.2 URL and parameters

URL : https://api.tisseo.fr/v1/networks.<format>?...parameters...

Name	Parameter description	Required ?	Default value
This service does not require parameters			

4.5.3 Response

Network, description

Field name	Type	Description	Always displayed ?
name	string	Network name	yes
id	string	Unique ID (see section 3.9)	yes

Network, XML

```
<networks    expirationDate="2013-12-27    03:45"    xmlns:xsi="https://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="https://api.tisseo.fr/xsd/networks.xsd">
   <network name="Tisséo" id="6192449487677451" />
</networks>
```

Network, JSON

```
{
{
     expirationDate: "2014-12-27 03:45",
     networks:
     [
          {
               name: "Tisséo",
               id: "6192449487677451"
          }
     ]
}
```

4.6 LINES

4.6.1 Principle

Returns public transport lines.
Could return disturbations associated to lines, or return only disturbed lines.
Lines have a name, a color, a geometry, a number and several terminus.

4.6.2 URLs and parameters

URL :
https://api.tisseo.fr/v1/lines.<format>?...parameters...
or
https://api.tisseo.fr/v1/lines/<id>.<format>?...parameters...

Name	Parameter description	Required	Default value
network	Transport operator	No	Tisséo
lineId *	Filter on a single line by its ID	No	
shortName	Filter on a single line by line number	No	
displayTerminus	Returns in extra logical stops terminus of each line (0/1)	No	0
displayMessages	geographic coordinates Returns in extra messages of line disturbance (for the lines which are disturbed)	No	0
displayOnlyDisrupted	Only returns lines with disturbance (for the lines which are disturbed)	No	0
displayGeometry	Return geometries in WKT	No	0
contentFormat	Format of message content	No	text

** It is also possible to use the RESTFULL syntax:*
https://api.tisseo.fr/v1/lines/11821949021891694.json
instead of :
https://api.tisseo.fr/v1/lines.json?lineId=11821949021891694

4.6.3 Management rules

- **Possibles values**
  shortName : A, 8, 34, T1, …
  contentFormat: text, html

If displayOnlyDisrupted=1 then only disturbed lines will be returned.

If displayMessages=1, you will see message related to this line (see 4.10).

4.6.4 Response

Line, description

Field name	Type	Description	Always displayed ?
id	String	Unique ID (see section 3.9)	Yes
shortName	String	Line number (21, A, T1, L16, …)	Yes
name	String	Line name	Yes
network	String	Network name (Tisséo)	Yes
Color	String	RGB decimal line color value	Yes
bgXmlColor	String	RGB hexadecimal line color value (Web format)	Yes
fgXmlColor	String	RGB hexadecimal line text color value*	Yes
transportMode	Object	bus, métro, tramway, Transport à la demande	Yes
terminus	List	StopArea destination of each line route	No
messages	List	Messages related to this line	No
geometry	string	WKT geometrical trace (see section 3.6)	No

** some line with a light color (ex : line B) have a black text instead of a white one for lisibility*

Line, JSON


```
{
    "color": "(0,198,45)",
    "bgXmlColor": "#00c62d",
    "fgXmlColor": "#FFFFFF",
    "id": "11821949022509040",
    "name": "Basso Cambo / Colomiers Airbus",
    "shortName": "21",
    "network": "Tisséo",
    "transportMode": {
        "id": "13792273858822585",
        "article": "le",
        "name": "bus"
    },
    "terminus": [
        {
            "id": "1970324837184808",
            "cityName": "TOULOUSE",
            "name": "Basso Cambo"
        },
        {
            "id": "1970324837185136",
            "cityName": "COLOMIERS",
            "name": "Colomiers Relais Bus"
        },
        {
            "id": "1970324837189829",
            "cityName": "COLOMIERS",
            "name": "Colomiers Airbus"
        }
    ],
    "messages": […],
    "geometry": [
        {
            "wkt": "GEOMETRYCOLLECTION(LINESTRING(1.39204 43.5693, … "
        }
    ]
}
```

4.6.5 Examples

1. All lines in XML (only Tisséo network today)
   https://api.tisseo.fr/v1/lines.xml

2. All Tisséo lines in json
   https://api.tisseo.fr/v1/lines.json?network=Tisséo

3. All Tisséo lines with terminus
   https://api.tisseo.fr/v1/lines.json?displayTerminus=1

4.7 STOPS_SCHEDULES : NEXT DEPARTURES

4.7.1 Principle

Returns next passing of the transportation system for a multi stop pole or a stop zone **in real time**.

Real time stops schedules are re-estimated schedules according to traffic conditions and vehicule position.

A field "realtime" indicates if the schedules is real time or not.

Real time applies only to buses and trams not subway.
No information will be returned for DRT (vehicules with reservation).

4.7.2 URLs and parameters

URL :
https://api.tisseo.fr/v1/stops_schedules.<format>?...parameters...

Name	Parameter description	Required	Default value
operatorCode	operator code (id used by transport operator)	No	
stopPointId	Is the number of physical stop point	No	
stopAreaId	Is the number of logical stop point (zone)	No	
stopsList	a list of stop areas or stop points (or both) separated by commas. Allows you to filter them in each argument by business line or direction.	No	
network	transport operator	No	Tisséo
number	max returned results number **WARNING: THIS ARGUMENT DOES NOT HAVE THE SAME MEANING NEXT VALUE "timetableByArea" ***	No	10
lineId	Filters schedules of a specific line	No	Returns all results
displayRealTime	Allows specify « theoritical » or « real time » passages time	No	1 : real-time
timetableByArea	Groups the results by stop areas then couples (line, destination) ordered by time of next departure **WARNING: THIS ARGUMENT TRANSFORMS RADICALY OUTPUT FORMAT ***	No	0
datetime	date and time at which we request the schedules (YYYY-MM-DD HH:MM)	No	current date and time
maxDays	number of days used to get "number" departures	No	7
firstAndLastOfDay	Will return only first and last departure of the day	No	0

** see 4.7.4*

4.7.3 Management rules

4.7.3.1 Number of results

Number : is the number of results to return* (see 4.7.4)
maxDays : (work only with timeTableByArea=1) defines a period between *datetime* and *datetime* + *maxDays* * days used to search departures. By example if a line run only the Sunday, if you ask for 5 results the Saturday with maxDays=1 you won't receive any results, but with maxDays=2 you will receive 5 results on Sunday.
firstAndLastOfDay : API will return only first and last departure of a activity day (which start from 3:30 day 1 to fini at 3:30 day 2). This parameter will override *maxDays* to 1

4.7.3.2 Public transport object filters

Operator code is stop number visible on the top cover of the stop. If given, the network parameter must be also specified.
One and only one of the four parameters can be provided : operatorCode (and network), stopPointId, stopAreaId or stopsList

stopList format:

Parameter format is a comma separated "elements" list :
ELEMENT, ELEMENT, ELEMENT, …

Each « element » could be :

ID_STOP

Could be a stop point id or a stop area id.

or

ID_STOP|ID_COMMERCIAL_LINE

Filters results of a given line with separator : « | »

or

ID_STOP|ID_COMMERCIAL_LINE|ID_STOP_AREA_DESTINATION,

Filters results of a given line for a given destination

Examples :

« 1970324837184892,3377699720882831 » = next departures from Esquirol stop area (two directions), and next departures from one of the « Ateliers métro » stop points

« 1970324837184892|11821949021891621,3377699720882831 » = next departures from Esquirol stop area (two directions) but only for line 12, and next departures from one of the « Ateliers métro » stop points

« 1970324837184892|11821949021891621|1970324837184808 » = next departures from Esquirol stop area (two directions) but only for line 12 direction "Basso Cambo"
In that case this is equivalent to give a stop point :
« 3377699720881174|11821949021891621|197032483718480 »

4.7.4 Response

If timeTableByArea=0 (default value), then you obtain N (N=number) next departures at a given stop point for all lignes in chronological order.

If timeTableByArea=1, then the next departures are shown grouped by line / destination with each "number" results

The main difference will be that in the first case there is no assurance that all lignes deserving the stop will have a result.
Indeed, imagine that you ask 5 results at a stop with 10 lines.

In the second case, result aren't chronologicaly sorted, but firstly sorted by line..

WARNING : If timetableByArea=1 then the "realTime" field could be 0 or 1, else field "realTime" could be "yes" or "no". We won't correct this behaviour for compatibility reasons.

4.7.4.1 When timeTableByArea = 0

Most important section is « departure » which contains next departures with information on the line and destination.

JSON example:

```
"departure": [
      {
          "dateTime": "2014-06-29 12:38:49",
          "realTime": "yes",
          "line": {
              "name": "Empalot / Gleyze-Vieille",
              "shortName": "54",
              "network": "Tisséo",
              "color": "(255,94,22)"
          },
          "destination": [
              {
                  "name": "Empalot Métro",
                  "cityName": "TOULOUSE"
              }
          ]
      },
      {
          "dateTime": "2014-06-29 13:08:49",
          …
      },
      …
  ]
```

4.7.4.2 When timeTableByArea = 1

Grouped on each stopArea (you can request several stop area in one request), you will have « schedules » which shows for each couple « line/destination » « number » next departures.

JSON example:

```
"stopAreas": [
        {"name": "Météo",
        "id": "1970324837185955",
        "cityName": "TOULOUSE",
        "cityId": "1688849860531491",
        "schedules": [
                {"stop": {
                "id": "3377699720882841",
                "name": "Météo",
                "operatorCode": "4601"},
                "line":
                        {"id": "11821949021891618",
                        "shortName": "8",
                        "color": "(255,94,22)",
                        "bgXmlColor": "#ff5e16",
                        "fgXmlColor": "#FFFFFF",
                        "style": "orange",
                        "name": "Basso Cambo / Lycée Polyvalent"},
                        "network": "Tisséo"
                "destination":
                        {"id": "1970324837184900",
                        "name": "Lycée Polyvalent",
                        "cityName": "TOULOUSE",
                        "cityId": "1688849860531491"},
                "journeys": [
                  {"dateTime": "2014-06-29 16:36:00",
                   "realTime": "1",
                   "waiting_time": "00:03:05"},
                  {"dateTime": "2014-06-29 16:46:00",
                   "realTime": "1",
                   "waiting_time": "00:13:20"}]
                },…
        ]
  },…
]
```

4.7.5 Examples

1. Stops schedules at stop point of operator code 3431
   https://api.tisseo.fr/v1/stops_schedules.xml?operatorCode=3431

2. Stops schedules at stop point 3377699720883436
   https://api.tisseo.fr/v1/stops_schedules.xml?stopPointId=3377699720883436

3. Stops schedules at stop point of operator code 3431 in JSON
   https://api.tisseo.fr/v1/stops_schedules.json?operatorCode=3431

4. Next two depratures at « Météo France » and « Ateliers métro » stop areas grouped by stop area
   https://api.tisseo.fr/v1/stops_schedules.json?
   &stopsList=1970324837185951,1970324837185955&timetableByArea=1&number=2

4.8 ROLLING_STOPS : TRANSPORT MODES

4.8.1 Principle

Returns transport modes available in the API and their ids

4.8.2 URLs and parameters

URL : https://api.tisseo.fr/v1/rolling_stocks.<format>?...parameters...

This service does not require parameters

4.8.3 Réponse : Rolling_stock

https://api.tisseo.fr/v1/rolling_stocks.json

Rolling_stock, description

Field name	Type	Description	Always displayed ?
name	string	Transport mode name	yes
id	string	Unique ID (voir section 3.9)	yes

Rolling_stock, JSON

Response :


```
{
  expirationDate: "2014-01-10 03:45",
  rollingStocks: [
    {
      id: "13792273858822585",
      name: "bus"
    },
    {
      id: "13792273858822586",
      name: "métro"
    },
    {
      id: "13792273858822588",
      name: "tramway"
    },
    {
      id: "13792273858822589",
      name: "transport à la demande"
    }
  ]
}
```

4.9 JOURNEYS : ROUTE PLANNING

4.9.1 Principle

This service calculates a route to get from point A to point B.
The resulting journeys are the fastest and ordered by next departures.

4.9.2 URLs and parameters

URL : https://api.tisseo.fr/v1/jouneys.<format>?...parameters...

Name	Parameter description	Required	Default value
departurePlace	Departure address or stop name	no	
departurePlaceXY	Departure coordinates	no	
arrivalPlace	Arrival address or stop name	no	
arrivalPlaceXY	Arrival coordinates	no	
srid	spatial reference number projection see https://en.wikipedia.org/wiki/SRID	no	4326
networkList	Network Transport operators number	no	6192449487677451 (=Tisséo)
firstDepartureDatetime	first date time of departure (YYYY-MM-DD HH: MM)	no	
lastDepartureDatetime	last date time of departure (YYYY-MM-DD HH: MM)	no	
maxTransferDuration	Is the maximum travel time	no	60min
maxTransferNumber	Specifies the maximum number of matches to use	no	5
roadMode	Specifies the mode in which the portions are made of any path "Transit" at the beginning (unless a "startRoadMode" different is specified) or at the end of the journey	no	walk
roadSpeed	velocity (meter by seconds) of selected roadMode	no	1.111 m/s by walk 0.556 m/s by wheelchair 4.167 m/s bike
roadMaxDistance	Maximum distance of all road sections (unless a different startRoadMaxDistance specified) including the begining and the end of the journey	no	2000 m
startRoadMode	Conveyance with which to perform the portion of the road path at the beginning of the journey	no	walk
startRoadSpeed	Speed (meter by seconds) of selected roadMode	no	1.111 m/s by walk 0.556 m/s by wheelchair 4.167 m/s by bike
startRoadMaxDistance	maximum distance for departure road section	no	2000 m
rollingStockList	rolling Stock List (Bus, Metro, Tram, ...) to take into account in the calculation		
number	max number of results	no	3
displayResultTable	Add routes summary in table form	no	
displayWording	Returns human description for each section of the course (0/1)	no	0: No comments
displayMessages	Returns in extra id, service disruption messages	no	
maxApproachDistance	Maximum walking distance	no	1000m

4.9.3 Management rules

Possible values

networkList : 6192449487677451 (it will be possible to specify more later)

number : maximum supported value is 8

firstDepartureDatetime : 2014-10-21 17:24
If you don't provide this parameter, the departure time will be current time.

WARNING : lastDepartureDatetime parameter could not be use alone but could be optionnaly added when passing **firstDepartureDatetime** to define a time window.

departurePlaceXY : 1.43697,43.5849 *(value in 4326 = WGS84 = système GPS)*

walkspeed : 8.355 (3km/h), (any numeric value-realistic –réaliste-)

rollingStockList is composed of transport modes separated by commas.
Example :
13792273858822586,13792273858822585,13792273858822588 = subway + bus + tramway
13792273858822585,13792273858822589 = bus + DRT
*(See **rolling_stocks** section in chapter 2.6* for the transport modes available*)*
If this parameter is not passed, all modes of transport are taken into account

RoadMode and / or **startRoadMode**: walk / wheelchair / bike / car
WARNING : if RoadMode=wheelchair then the public transport sections will use only accessible stops and lines. It will also avoid disturbed elevators in our subway stations.

roadSpeed : 8333 (= 3 km / h)
BE CAREFULL: This setting does not work for the car: API respects the speed limits!

roadMaxDistance et/ou **startRoadMaxDistance :** 3000
example:
roadMode=walk&startRoadMode=car&roadSpeed=8.333&roadMaxDistance=2000&startRoadMaxDistance=20000

Corresponds to a journey that begins with maximum 20km car and transit and finish with maximum 2km walking at 3km / h.

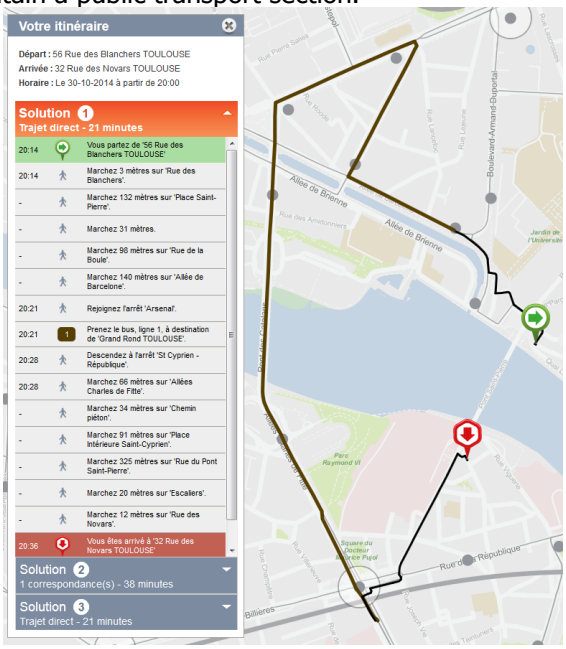
Note: The choice of a RoadMode, not only changes the speed, it changes authorized channels (bypasses, no entry, pedestrian, cycle track, ...) and respect the Highway Code (prohibition turn left ...)

4.9.4 Response

4.9.4.1 Principle

Tisséo website and apps use the same route planner than this one.
So you could play with it on our interactive map http://www.tisseo.fr/en/interactive-map/ or our website https://www.tisseo.fr/en or with our Android/IOS mobile app.

Note 1 : API will return no result for too close origin/destination couples.
All resulting journeys will contain a public transport section.



In that case it would have been faster to walk but we don't provide foot only solutions

Remarque 2 : The shape of DRT section will be straight.
These vehicules does not follow a predictable path :

Black stroke is a DRT section

More information about DRT : http://www.tisseo.fr/se-deplacer/bien-voyager/en-tad [FR]

4.9.4.2 Format de réponse

Journeys answers contains :

- a « **query** » section : which resume your parameters and selected origin/departure (indeed you can provide an incomplete string or a XY as origin/departure point : see section 3.12)
- a « **journeys** » section: which contains journey results sorted chronologicaly

Each « **journey** » does have :

- a duration
- a datetime of departure and arrival
- a CO2 quantity in grams
- journey sections « **chunks** »
- A text about the arrival

Each **chunck** could be :

- **street** : a walking (or wheelchair) section
- **stop** : a stop to down or up
- **service** : a transport public section

All these objects does have a geometry for map representation.

Roadmap redaction :
Each elements contains a text section describing it in order to help you writing a user friendly roadmap
These text element will be translated in a future API release.

JSON example:


```
"journeys": [
   {
      "journey": {
         "duration": "00:07:00",
         "departureDateTime": "2014-12-10 18:11:25",
         "arrivalDateTime": "2014-12-10 18:52:16",
         "co2_emissions": "718.85",
         "chunks": [
            {
               "street": {
                  "length": "104",
                  "wkt": "MULTILINESTRING ((1.4478480047797782 43.6050350000280176, 1.4486480047795545
43.6055550000280547, 1.4488080047795100 43.6056650000280897))",
                  "roadMode": "walk",
                  "startAddress": {
                     "connectionPlace": {
                        "latitude": "43.605035000028018",
                        "longitude": "1.4478480047797782"
                     }
                  },
                  "endAddress": {
                     "address": {
                        "latitude": "43.60566500002809",
                        "longitude": "1.44880800477951",
                        "streetName": "ALLÉES DU PRÉSIDENT FRANKLIN ROOSEVELT"
                     }
                  },
                  "text": {
                     "lang": "fr",
                     "text": "Marchez 104 mètres sur 'ALLÉES DU PRÉSIDENT FRANKLIN ROOSEVELT'."
                  }
               }
            },
            {
               "stop": {
                  "firstTime": "15:11",
                  "lastTime": "",
                  "latitude": "43.605279000028013",
                  "longitude": "1.4490520047793991",
                  "name": "Jean Jaurès",
                  "connectionPlace": {
                     "latitude": "43.605623005177243",
```

```
                    "longitude": "1.4487989848427141",
                    "id": "1970324837184810",
                    "city": "TOULOUSE",
                    "x": "1.448799",
                    "y": "43.605623",
                    "name": "Jean Jaurès"
                 },
                 "text": {
                    "lang": "fr",
                    "text": "Rejoignez l'arrêt Jean Jaurès."
                 }
              }
           },
           {
              "service": {
                 "firstDepartureTime": "15:11",
                 "firstArrivalTime": "15:14",
                 "lastDepartureTime": "",
                 "lastArrivalTime": "",
                 "isContinuousService": "0",
                 "maxWaitingTime": "",
                 "wkt": "LINESTRING (1.4491400047793750 43.6053250000280386, 1.4492390047793338
43.6052250000279926, 1.4495490047792070)",
                 "destinationStop": {
                    "id": "11821949021891631",
                    "name": "Gonin TOULOUSE",
                    "line": {
                       "id": "11821949021891631",
                       "color": "(142,74,5)",
                       "name": "Marengo - SNCF / Gonin",
                       "shortName": "22",
                       "style": "beige",
                       "network": "Tisséo",
                       "transportMode": {
                          "id": "13792273858822585",
                          "article": "le",
                          "name": "bus"
                       }
                    }
                 },
                 "text": {
                    "lang": "fr",
                    "text": "Prenez le bus, ligne 22, à destination de Gonin TOULOUSE. "
                 }
              }
           ...
```


4.9.5 Examples

1. Route planning from **Basso Cambo** to **François Verdier** with human readable description for each journey.
   https://api.tisseo.fr/v1/journeys.xml?departurePlace=basso cambo &arrivalPlace=françois verdier toulouse&number=2&displayWording=1&lang=fr

2. Route planning from **Basso Cambo** to **François Verdier** with human readable description for each journey. Json format.
   https://api.tisseo.fr/v1/journeys.json?departurePlace=basso cambo&arrivalPlace=françois verdier toulouse&number=2&displayWording=1&lang=fr

3. Two next fastets result from **Basso Cambo** to **François Verdier** at 3PM the 2014-06-29
   https://api.tisseo.fr/v1/journeys.json?departurePlace=basso cambo &arrivalPlace=françois verdier toulouse&firstDepartureDatetime=2014-06-29 15:00&number=2&displayWording=1&lang=fr

4.10 MESSAGE : TRAFIC INFORMATION

4.10.1 Principle

Provides information trafic messages of transport network (currently Tisséo only).
This information is available from the home page of tisseo.fr.

Informational messages are of type "traffic" (deviations of lines, schedule changes):
https://www.tisseo.fr/infos/reseau

All messages are writen in french and no traduction will be provided by Tisséo.

4.10.2 URLs and parameters

URL : https://api.tisseo.fr/v1/messages.<format>?...parameters...

Name	Parameter description	Required	Default value
network	Transport operator	No	Tisséo
contentFormat	Format message contents	No	text
displayImportantOnly	Displays only important messages (found on the home page tisseo)	No	0

4.10.3 Management rules

Possible values
contentFormat : text, html

WARNING : Some « line » scoped messages does not have any associated line when they are unkonwn by the server : it is the case for school shuttles and sport shuttles (Wallon and Stadium).

4.10.4 Response

Message, Description

Field name	Type	Description	Always displayed ?
id	string	Identifiant	Yes
type	string	Message type	Yes
importanceLevel	string	Importance level : normal or important*	Yes
scope	string	Message scope : line, event or global**	Yes
title	string	Message title	Yes
content	string	Message content*** in html ou text suivant les paramètres	Yes
url	string	Message official webpage URL (on tisseo.fr)	Yes
lines	List	Lines affected by the message	No

** a message « important » will be displayed on www.tisseo.fr homepage (ex : metro disruption, snow, strike)*

*** see examples on tisseo.fr or on Tisséo app : there is a color meaning that you can follow*

**** content will be surrounded by* **<![CDATA[** *and* **]]>** in XML *and* ***on a signle ligne with explicit \|n\|t*** *in JSON*

Message, JSON


```
{
    "message": {
        "type": "trafic",
        "id": "522",
        "importanceLevel": "normal",
        "scope": "line",
        "title": "Ligne 21 - Déviation à Colomiers",
        "content": "Déviation à Colomiers
            En raison de travaux situés avenue Yves Brunaud à Colomiers, du 16
            juin 2014 au 31 décembre 2015, la ligne 21 est déviée.
            Arrêts non desservis : Lautaret, Clément Ader.
            Vous pouvez vous reporter à l'arrêt provisoire à l'angle de
            l'avenue Marcel Dassault et de l'allée de l'Aubrac, à l'arrêt
            Pelvoux (Conseil Général), ainsi qu'aux arrêts de la ligne 64 L.P.
            Colomiers et Fontaine.",
        "url": "http://www.tisseo.fr/node/522"
    },
    "lines": [...]
}
```

4.11 SERVICE_DENSITY

4.11.1 Principle

This service is used to evaluate the density of transport supply around a point with coordinates (X, Y) and for a time slot.

This service returns in practice the number of different services departures in a time period requested. (*A service is a bus, metro ... or vehicule passage*)

4.11.2 URLs and parameters

URL : https://api.tisseo.fr/v1/services_density.<format>?...parameters...

Name	Parameter description	Required	Default value
centerXY	address or place of departure or arrival	yes	
srid	spatial reference ID (see 3.4)	No	4326
serviceNumber	number of distinct transport services we want to reach in the time slot	Yes	10
beginDateTimeSlot	begining date and time of time slot	Yes	
endDateTimeSlot	ending date and time of time slot	No	beginDateTimeSlot + 1 hour
networkList	transport operators list	No	Id de Tisséo
rollingStockList	Transport mode list	No	all modes
displayServices	displays the services found in the area covered (0/1)	No	0

4.11.3 Management rules

Possible values

- networkList : 6192449487677451 (Tisséo)
- rollingStockList : 13792273858822585,13792273858822589
- serviceNumber : 10,12, 20 ,100, …
- beginDateTimeSlot or endDateTimeSlot : 2014-06-29+06:00

4.11.4 Examples

https://api.tisseo.fr/v1/services_density.json?serviceNumber=10&beginDateTimeSlot=2014-06-29+06:00&centerXY=143887.232875+5369123.828587&rollingStockList=13792273858822585,13792273858822589,13792273858822588,13792273858822586,13792273858822584,13792273858822587&networkList=6192449487677451&mad=2000&displayResultTable=1&srid=900913&displayServices=1