trackmatic

Trackmatic

Route Builder Integration Requirements Specification Document

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What we do

In short, Trackmatic provides unique tailor-made software solutions to fleet operators and fleet management of On-Road Execution™ regardless of the fleet size.

We offer a holistic business solution to our clients, meeting their unique and complex requirements. We work together with them to provide insight into the finer workings of their operations, thereby increasing efficiencies and enabling greater levels of satisfaction among their customers.

Resource optimisation and service excellence are key outcomes of the solution, resulting in higher profits and driving down costs. This is where the true value of the solution is gained.

The table following summarises our solutions.

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Types of services we offer

On-Road Execution™	Planning	Bureau	Insight	Mobility
Live Visibility	**Backend Integration**	**On Road Execution Control Room**	**KPI Management**	**Turn by Turn Voice Guided Navigation**
Historical Tracking	**Route Builder**	**Full Audit**	**Planned vs Actual**	**Voice Calls**
Advanced Delivery Notifications	**Route Updates**	**DECO Management**	**Trending**	**Sign-on Glass Confirmation**
Live Dashboards	**Licensed Planning Algorithms**	**Voice Recordings**	**Driver Alignment**	
Risk Management	**Third Party Planning Tools**	**Exception Based Alerts**	**Customised Automated Reporting**	
Speed Management	**Data Integrity**			

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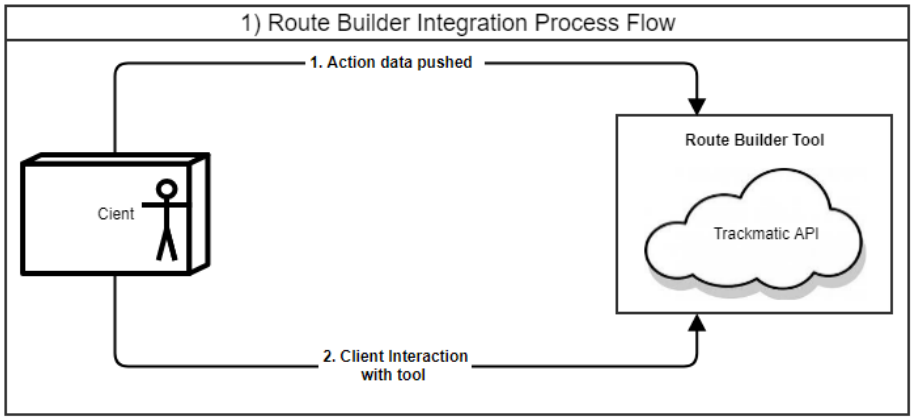
How to integrate into Route Builder?

Below are two diagrams which show the flow of integrating with our planning tool:



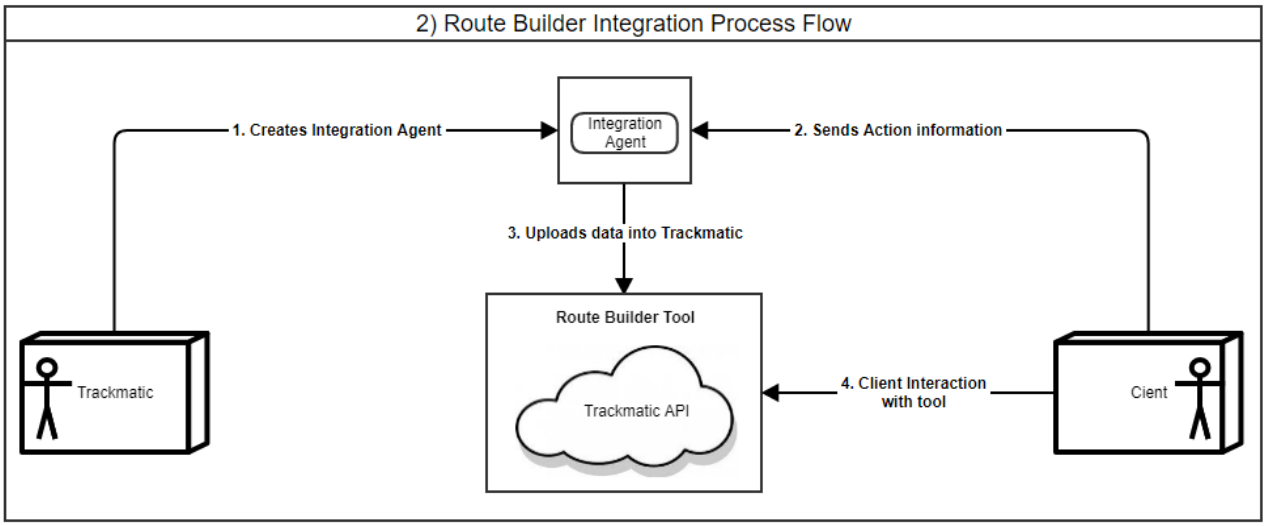


Diagram 1 – This depicts the flow of the processes, if you have chosen to develop your own integration with Trackmatic.

Diagram 2 – This depicts the flow of the processes, if Trackmatic is to develop the integration system.

If you already have integrated with us, then process 1 in diagram 2 can be omitted.

How to implement this guide

To integrate and make use of Trackmatic's Route Builder Tool, simply follow through the sections below: Choose Connection and Methods of providing data. To understand the required fields and their types, look at sections Datatypes and Field Legend.

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Choose Connection

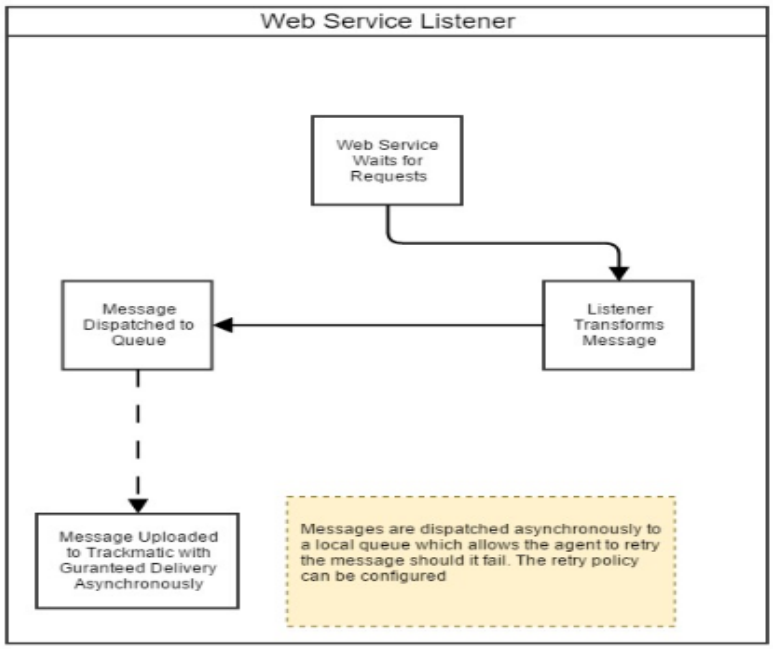
Types of connections

It is vital for the client to pay special attention in the choice you make to connect to us. The client should base their choice primarily on ease of use and efficiency to improve business feasibility as well as maintain data integrity.

There are six main methods of connecting to Trackmatic:

1. *Web service request to Azure*

   The client presents the required data to our web service in XML or JSON. Upon receiving it, it is then mapped and uploaded into Trackmatic. Note this is a cloud hosted service.

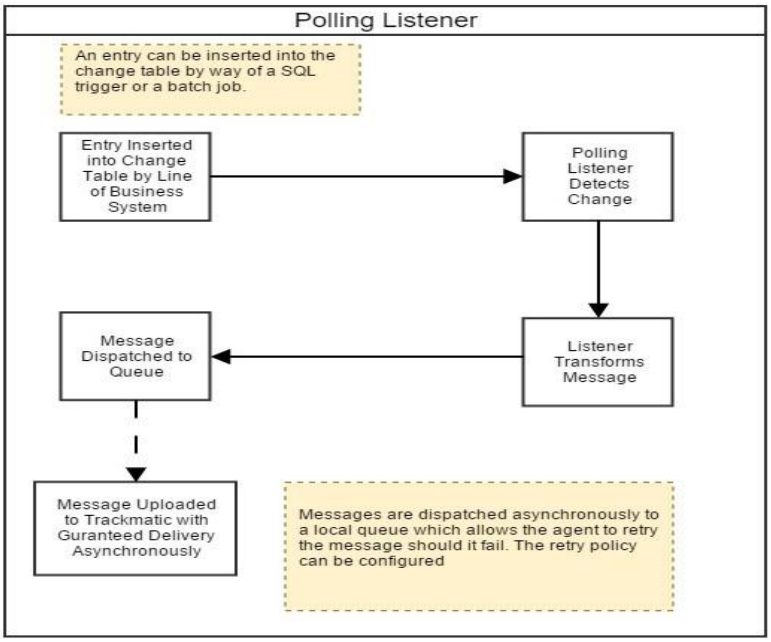


Method of providing data:

- Posting JSON

2. *Polling Listener*

This is installed as a service on the client's local server or machine. It listens to a 'Trackmatic-Changes' table placed within the client's database. This table records all the changes been made to the relevant client's tables needed to use Trackmatic's services. These changes in relation to the tables are then traced, picked up and updated in Trackmatic. Note this is a cloud/server hosted service.

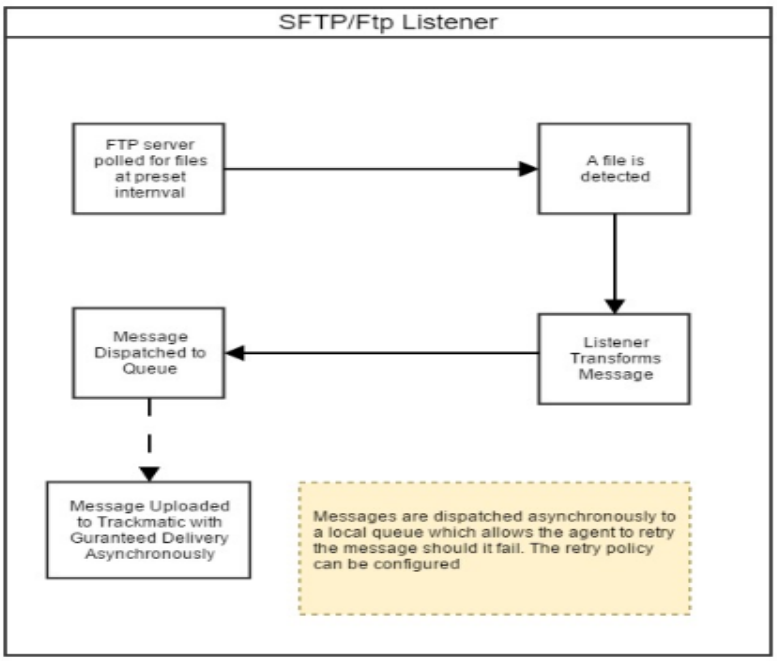


Method of providing data:

- Trackmatic's agent will pull the fields required from the client's database

3. *SFTP/FTP*

The client drops an excel extract (CSV) to the SFTP/FTP server containing all the relevant data to use Trackmatic services. The integration agent polls the directory of the SFTP/FTP for the file. If an extract is picked up, it is then read in and uploaded into Trackmatic. The client can choose to use their own SFTP/FTP server (preferable) or Trackmatics SFTP/FTP server. Note this is a cloud/server hosted service.

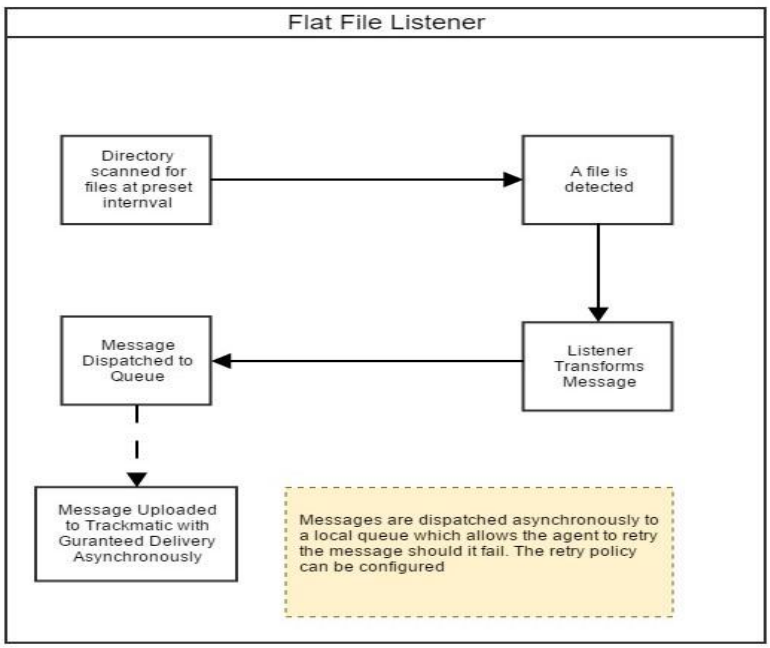


Method of providing data:

- Provide CSV file

4. *Flat file Listener*

Very like SFTP/FTP, the client drops an excel extract (CSV) containing all the relevant data to use Trackmatics services onto a local directory in Trackmatic's server. The integration agent which is running on Trackmatic's server will poll the directory for the file. If an extract is picked up, it is then read in and uploaded into Trackmatic. Note this is a local hosted service.

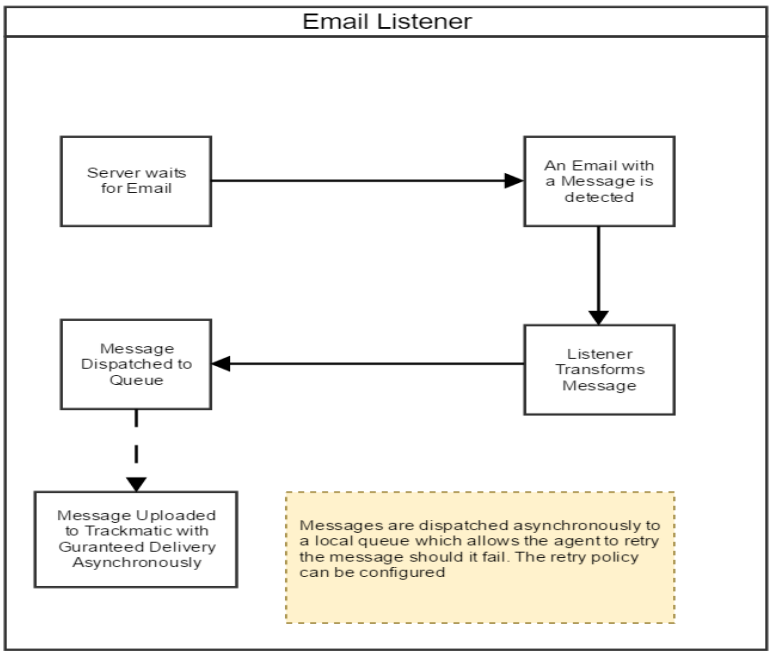


Method of providing data:

- Provide CSV file

5. *Email Listener*

The client emails an excel extract (CSV) containing all the relevant data to use Trackmatic's services to an email address provided by Trackmatic. The integration agent which is running on Trackmatic's server will then pick up this email. If an extract is picked up within the email, it will then be read in and uploaded into Trackmatic. Note this is a cloud hosted service.

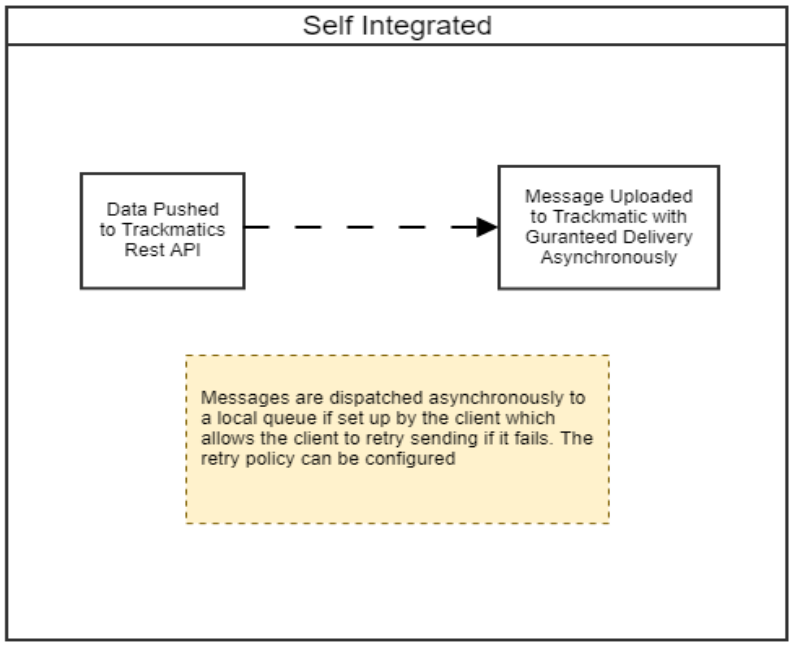


Method of providing data:

- Provide CSV file

6. *Self Integrated*

The client pushers all the relevant data to use Trackmatic's services to the API directly using the credentials provided by Trackmatic. The client can send data they at their own time and this process is completely under their control.



Method of providing data:

- Posting JSON

NOTE: You will be required to have Authentication to post data into Trackmatic's API. Please see section "How to Authenticate" to see how this can be acquired.

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Methods of providing data

Posting JSON

Skip this step and proceed to “Providing CSV file” or “Pushing XML” if you are not developing your own integration or posting data to Trackmatic’s REST service.

If you are posting data, it should be in the JSON format shown below: Example of data to be posted is on the left while the format of data is shown on the right. Field Datatypes and Legends are shown further in their sections below.

```
//EXAMPLE                                   FORMAT
{
  "Actions": [
    {
      "Id": "70/INV6398",                   ClientId/Unique field to identify the action
      "Reference": "INV6398",               Unique reference to identify the action
      "ClientId": "70",                     ClientId which is a static field provided by Trackmatic
      "CustomerReference": "KZN03",         A reference for a customer e.g KZN area 3
      "InternalReference": "SO6398",        Internal reference for action e.g Sale Order Number
      "ActionTypeId": "70/f18aac8b",        ClientId/Static Guid Generated by trackmatic (unique identifier for each of the action types below)
      "ActionTypeName": "Delivery",         Naming of the action type that will be performed (Delivery, Collection, CTC, Service, Uplift, etc)
      "Entity": {
        "Id": "70/entity/BER35",            ClientId/entity/Unique field to identify the entity
        "Name": "Entity Name",              Name of the entity, company or place deivering to
        "Reference": "BER35",               Unique reference to the customer
        "Mst": "00:30:00",
        "Deco": {
          "Id": "70/BER35",                 ClientId/Enity Reference
          "Name": "Deco Name",              Name of the deco, company or place deivering to
          "Reference": "BER35",             Deco reference/ Entity reference
          "Position": [
            0.0,                            Latitude
            0.0                             Longitude
          ],
          "Address": {
            "UnitNo": null,                 Unit Number
            "BuildingName": null,           Building Name
            "StreetNo": "52 7TH AVE",       Street Number
            "SubDivisionNumber": null,      Sub Division Number
            "Street": "HIGHLANDS NORTH",    Street
            "Suburb": "",                   Suburb
            "City": "",                     City
            "Province": "",                 Province
            "PostalCode": null,             PostalCode
            "MapCode": null                 MapCode
          }
        }
      },
      "Metrics": {
        "Weight": 0.0,                      Weight
        "Pieces": 5,                        Pieces
        "Pallets": 0,                       Pallets
        "VolumetricMass": 0.0,              Volumetric Mass
        "AmountEx": 689.74,                 Amount Excluding Vat
        "AmountIncl": 786.3                 Amount Including Vat
      },
      "ExpectedDelivery": "2016-04-17T22:00:00Z",       Expected Delivery Date
      "ReceivedOn": "2016-04-20T13:11:24.4228918Z",     * Populated when uploaded to API
      "Direction": 0                        0 = Outbound, 1 = Inbound
    }
  ]
}
```

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Pushing XML

Skip this step and proceed to “Providing CSV file” if you are not pushing data to a SOAP service of Trackmatic’s.

Below shows an example of the format of the XML to be pushed to the SOAP service.

```xml
<?xml version="1.0" encoding="UTF-8" ?>
    <Actions>
        <Id>70/INV6398</Id>
        <Reference>INV6398</Reference>
        <ClientId>70</ClientId>
        <CustomerReference />
        <InternalReference />
        <ActionTypeId />
        <ActionTypeName />
        <Entity>
            <Id>70/entity/BER35</Id>
            <Name>Entity Name</Name>
            <Reference>BER35</Reference>
            <Mst>00:30:00</Mst>
            <Deco>
                <Id>70/BER35/-2</Id>
                <Name>Deco Name</Name>
                <Reference>BER35</Reference>
                <Position>
                    <latitude>0</latitude>
                    <longitude>0</longitude>
                </Position>
                <Address>
                    <UnitNo />
                    <BuildingName />
                    <StreetNo>52 7TH AVE</StreetNo>
                    <SubDivisionNumber />
                    <Street>HIGHLANDS NORTH</Street>
                    <Suburb></Suburb>
                    <City></City>
                    <Province></Province>
                    <PostalCode />
                    <MapCode />
                </Address>
            </Deco>
        </Entity>
        <Metrics>
            <Weight>0</Weight>
            <Pieces>5</Pieces>
            <Pallets>0</Pallets>
            <VolumetricMass>0</VolumetricMass>
            <AmountEx>689.74</AmountEx>
            <AmountIncl>786.3</AmountIncl>
        </Metrics>
        <ExpectedDelivery>2016-04-17T22:00:00Z</ExpectedDelivery>
        <ReceivedOn>2016-04-20T13:11:24.4228918Z</ReceivedOn>
        <Direction>0</Direction>
    </Actions>
```

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Providing CSV file

If you are integrating using any other service than REST or SOAP service, then a CSV file should be provided with the following field

Each line can contain an Action item which is specified below:

Field
ActionId
Reference
ClientID
Customer Reference
Internal Reference
ActionTypeId
ActionTypeName
EntityId
EntityName
EntityReference
MST
DecoId
DecoName
DecoReference
Longitude
Latitude
UnitNo
BuildingName
StreetNo
SubDivisionNumber
Street
Suburb
City
Province
PostalCode
MapCode
Weight
Pieces
Pallets
VolumetricMass
Amount Excl
Amount Incl
ReceivedOn
Expected Delivery
Direction

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Field Legend

Field	Legend
ActionId	Unique system generated id prefixed with the provided client id
ClientID	Permanent ID provided by Trackmatic
Reference	Unique reference number associated with the action
Customer Reference	Client supplied reference number
Internal Reference	Internal reference number for workflow i.e. picking slip, sales doc etc
ActionTypeId	Unique identifier for each of the actions been performed below
ActionTypeName	Naming of the type of action that will be performed (Delivery, Collection, CTC, Service, Uplift, etc)
EntityId	A unique reference number associated with the entity
EntityName	The name of the entity
EntityReference	A unique reference number for the entity (Sell-to identifier)
MST	Maximum stop time at an entity
DecoId	A unique reference number associated with the entity
DecoName	The name of the entity
DecoReference	A unique reference number (Ship-to Identifier)
Longitude	Longitude Coordinate
Latitude	Latitude Coordinate
UnitNo	Unit Number
BuildingName	Building Name
StreetNo	Street Number
SubDivisionNumber	SubDivision Number
Street	Street Name
Suburb	Suburb
City	City
Province	Province
PostalCode	Postal Code
MapCode	Map Code
Weight	Weight
Pieces	Pieces
Pallets	Pallets
VolumetricMass	Volumetric Mass
Amount Excl	Amount Excluding Vat
Amount Incl	Amount Including Vat
ReceivedOn	Automatically populated field Date and Time the action is uploaded into trackmatic
Expected Delivery	Date and Time the action is supposed to occur
Direction	Direction of action, Inbound or Outbound

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Datatypes

Field	Legend
ActionId	String
Reference	String
ClientID	String
Customer Reference	String
Internal Reference	String
ActionTypeId	String
ActionTypeName	String
EntityId	String
EntityName	String
EntityReference	String
MST	Timespan
DecoId	String
DecoName	String
DecoReference	String
Longitude	Double
Latitude	Double
UnitNo	String
BuildingName	String
StreetNo	String
SubDivisionNumber	String
Street	String
Suburb	String
City	String
Province	String
PostalCode	String
MapCode	String
Weight	Double
Pieces	Int
Pallets	Int
VolumetricMass	Double
Amount Excl	Double
Amount Incl	Double
ReceivedOn	DateTime
Expected Delivery	DateTime
Direction	Int (0 = Outbound, 1 = Inbound)

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How to Authenticate

1. Upon setting up user access with Trackmatic, you will receive a USERNAME as well as a PASSWORD.
2. Make an API call to the following URL
   - https://rest.trackmatic.co.za/api/v1/core/security/authenticate

   By using the method provided below:

   POST your login details with the following JSON.

   {

   Username: "{USERNAME}",

   Password: "{PASSWORD}"

   }

   You will in turn receive a TOKEN.

3. Use the TOKEN received by doing the above to set a cookie:

   .ASPXFORMSAUTH={TOKEN}

4. You can now start posting data in the required form which can be seen in the example “Posting JSON” in the above section.

   Data should be now posted to the following URL
   - https://rest.trackmatic.co.za/api/v1/planning/actions/upload