A guide to using iRAP’s analysis and reporting tool
About iRAP

The International Road Assessment Programme (iRAP) is a registered charity dedicated to saving lives through safer roads.

iRAP works in partnership with government and non-government organisations to:

- inspect high-risk roads and develop Star Ratings and Safer Roads Investment Plans
- provide training, technology and support that will build and sustain national, regional and local capability
- track road safety performance so that funding agencies can assess the benefits of their investments.

The programme is the umbrella organisation for EuroRAP, AusRAP, usRAP and KiwiRAP. Road Assessment Programmes (RAP) are now active in more than 70 countries throughout Europe, Asia Pacific, North, Central and South America and Africa.

iRAP is financially supported by the FIA Foundation for the Automobile and Society and the Road Safety Fund. Projects receive support from the Global Road Safety Facility, automobile associations, regional development banks and donors.

National governments, automobile clubs and associations, charities, the motor industry and institutions such as the European Commission also support RAPs in the developed world and encourage the transfer of research and technology to iRAP. In addition, many individuals donate their time and expertise to support iRAP.

For more information

For general enquiries, contact us at:
International Road Assessment Programme (iRAP)
Worting House, Basingstoke
Hampshire, UK, RG23 8PX
Telephone: +44 (0) 1256 345598
Email: icanhelp@irap.org

To find out more about the programme, visit www.irap.org.
You can also subscribe to 'WrapUp', the iRAP e-newsletter, by sending a message to icanhelp@irap.org.

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1 Introduction

This is the first document in a series that has been prepared to introduce ViDA, iRAP’s online analysis and reporting tool. This edition focuses on accessing ViDA, creating an account and accessing results.

ViDA is a suite of online tools for calculating, managing, analysing and presenting RAP Star Ratings and Safer Roads Investment Plans. By using state-of-the-art cloud-computing technology, ViDA provides tools, services and workflows to manage the RAP data lifecycle, from initial dataset pre-processing to on-screen and downloadable reports. ViDA also takes a new approach to reporting by allowing users to drill down through and analyse assessments using a flexible filter and search tool.

Advice: to experience ViDA to its full potential iRAP recommend that Google Chrome or Mozilla Firefox internet browsers are used.

A video tour or ViDA can be found at: http://capacity.irap.org/navigation/vida-tour

2 Accessing ViDA

ViDA can be found at the following web address:

http://vida.irap.org

After you have loaded ViDA you will arrive at the welcome page, see Figure 1.

Figure 1. ViDA’s home page
2.1 Creating an account

If you are a new ViDA user you will need to register an account.

To register a new account select the “Register” button, see Figure 2.

**Figure 2. Register button on home page**

After selecting the “Register” button you will be presented with the register page, on this page you will need to provide:

- **Name** - this is the name the system will refer to you by
- **Email address** - this is your email address, it will also be used as your username
- **Confirm email address** - your email is confirmed to make sure it is correct
- **Password** - this will be your password for ViDA
- **Confirm password** - your password is confirmed to make sure it is correct

After you have completed the form you will need to agree to the terms and conditions of using ViDA (by selecting the check box), then select “Register”, see Figure 3
After selecting the “Register” button an email will sent to the email account you registered.

If an email does not arrive within a few minutes check if has been put in your spam or junk folder.

Select the link within the email.

**Figure 3. Register page**

**Figure 4. Register**
After selecting the link in the email you will be redirected to the welcome to ViDA page, see Figure 5. The welcome video provides a quick introduction to ViDA.

Once you have watched the video select the “No thanks, take me to the dashboard” button.

Figure 5. Welcome to ViDA page

2.2 Logging in

If you have registered an account on ViDA you can log back into the site by entering your email address and ViDA password, then selecting the “Login” button, see Figure 6

To access the ViDA you will need to log in to the site. The login form can be found at the top right of the window.

Figure 6. Login into ViDA
3 Navigating ViDA

3.1 Access levels

Within ViDA there are three access levels:

- **Reader Account** - is for those who want to look at high-level reports (e.g. public, project stakeholder). This account allows you to view Final Published reports and request access to Final Unpublished reports. You can filter Road Data, Star Rating and Investment Plans reports to the Dataset level.

- **Analyst Account** - is for those who want to look at detailed reports (e.g. researcher, road authority engineer, project partner). This account is the same as the Reader Account, but adds the ability to filter Road Data, Star Rating and Investment Plans reports to the Road and Section levels. You can also access download files.

- **Creator Account** - is for those who want to create reports (e.g. RAP project manager, road designer, road safety auditor). This account is the same as the Analyst Account, but adds the ability to create and edit Datasets and produce reports. Note that the creation of a dataset requires the permission of the Project Manager, and the creation of a Project requires the permission of the Region Manager.

Requests for account upgrades are considered by iRAP.

3.2 Dashboard

The dashboard is the primary page within ViDA, see Figure 7. It provides access to the different tools and along with user specific notifications and system announcements.

**Figure 7. ViDA dashboard**
3.2.1 Dashboard – ViDA tools

The ViDA tools area provides buttons for each of the tools within ViDA.
The buttons available to the user are dependent upon the level of access the user has.

Figure 8. ViDA tools - Reader accounts

How to use ViDA is a series of instructional videos and accompanying pdf to help you learn how to use ViDA.

Results enables you to view Star Ratings and Investment Plans

Request Access to Results enables you to request access to further datasets

Upgrade Account enables you to request access to more detailed data or the ability to create/edit data

Specifications links to the iRAP protocol specifications page

My Profile enables you to edit your profile and change your password
3.2.2 Dashboard – Activity feed and News

On the right side of the dashboard are the Activity feed and News areas.

Activity feed is where notifications specific to you will be shown, this can include data request, download files or data processing notifications, see Figure 9.

New notifications appear in the activity feed with an unread icon to the left of the title, in addition a new notification icon is provided on the menu bar, see Figure 10. Selecting the title of a notification will open the notification, see Figure 11. Notifications can be deleted by either selecting the “Delete” link at the end of the notification or the “Delete” link under the notification title in the activity feed.

Figure 9. Activity feed

Figure 10. New notification indicator

Figure 11. Activity feed notification
News is where notifications to all ViDA users are shown, this can include new features, new data being published or system maintenance notifications. News notifications can be open in the same way as activity feed notifications. News notifications cannot be deleted since they are available to all users.

**Figure 12. News**

### 3.3 Navigation Ribbon

The primary method of navigation within ViDA is via the navigation ribbon. The top level of the navigation ribbon is shown in Figure 4, the navigation ribbon expands to a second level for some of the features, this is shown in Figure 5.

**Figure 4**  Navigation ribbon.

**Figure 5**  Navigation ribbon – second level

### 3.4 Language selection

The language ViDA is displayed in can be changed by selecting ‘Language’ from the right of the ribbon, as shown in Figure 6.

**Figure 6**  Language selection
Accessing Results Using ViDA
4 Reports

Within ViDA results can be accessed through the reporting tool, select ‘Reports’ on the left of the ribbon (see Figure 7) to display the report types as shown in Figure 8.

Reports within ViDA are split into four different report types:

- **Maps** – shows a map of the results
- **Tables** – shows a table of the results
- **Charts** – shows a chart of the results
- **Download files** – provides links to detailed downloadable data files

The different reports within each report group are accessed by clicking on the icon for the report type in the navigation ribbon, shown in Figure 9.
4.1 Filter tool

A filter tool is provided within ViDA to support analysis of the results, on the right side of the Reports page, this can be seen in Figure 10.

Figure 10  Filter tool

Results can be filtered to the following levels:

- RAP programme / region – i.e. EuroRAP Netherlands
- Project – i.e. Provincial roads
- Datasets – i.e. Utrecht (a province with in the Netherlands)
- Road – i.e. N199
- Section – i.e. Amersfoort to Bunschoten-Spakenburg

The filter tool is active across all the reports, this means that when you change between reports the selected filter remains active.

To filter data click on each on the required section to expand it, then select the desired results filter. A single RAP programme / region and project can be selected, but multiple datasets, roads and sections can also be selected for analysis.
4.2 Maps

Within ViDA the following maps are available:

- **Star Rating** – provides a map of the Star Rating for different road user groups, see figure 11. This enables the user to see the change in risk along the road network. Star Ratings provide a simple and objective measure of the relative level of risk associated with road infrastructure for an individual road user.

- **Predicted Casualty Reduction** – shows a map of the predicted number of fatal and serious injuries that could be prevented if the complete Safer Roads Investment Plan was implemented, see figure 12. This map can help to prioritise the implementation of countermeasures by identifying specific locations or road sections where the potential to save lives is greatest.

**Figure 11  Star Rating map**

**Data Summary**

The data summary at the top of the page provides details of the RAP programme, region and project selected along with the length results displayed on the map in km. The summary can be shown at the dataset level by clicking on ‘Show’ on the right of the summary area.

**User type selection**

The user group selection enables the map to be updated to display the results for each road user type:

- Vehicle occupant
- Motorcyclist
- Pedestrian
- Bicycle
In addition to selecting between the different road user types, you are able to select between the:

- Smoothed Star - Star Rating results for the original inspection data (baseline data)
- Smoothed Star (After) – A projection of the Star Rating results upon implementation of the complete Safer Roads Investment Plan.

Note. ‘Smoothed’ results are the averaged risk scores (Star Rating Scores) generated over a designated length (1km in urban areas and 3km in rural areas), this is done mainly for mapping purposes. Raw or ‘unsmoothed’ data refers to the results as shown for each individual 100m segment of the surveyed network.

Map navigation

The map navigation tools are used to zoom in and out and to pan around the map. These actions can also be performed using the mouse; that is the scroll wheel is used for zooming and the map can be panned by clicking on the map and dragging the mapping image whilst the mouse button is held down.

Base map selection

By default the base map (background map) uses a light grey graphical map, this map is utilised for the good contrast it provides for the results. In addition to this ‘Satellite’ can be selected, this provides an aerial photo based map. The aerial photo base map can be used to compare results to the location of known objects.

Star Rating Map key

The map key is provided underneath the map, this provides a guide to the colours used on the map.

Note, 5-Star (green) is the safest and 1-Star (black) is the least safe. ‘Not applicable’ (grey) is used where no Star Rating results have been generated for a particular road user. This may be because the road user type is not present on the surveyed network (for example, often no pedestrian Star Rating is produced on Expressways and Motorways), or the presence of major roadworks at the time of the road survey has made it difficult to accurately record the infrastructure attributes needed to generate the Star Ratings.

Figure 12 Predicted Casualty Saving map
4.3 Tables

Within ViDA the following tables are available:

- Detailed Conditions – this provides a breakdown of the recorded road attributes and their related categories by length and percentage.
- Star Ratings & Star Ratings (Smoothed) – these provide the total number and percentage split of each Star Rating for each road user type (both unsmoothed and smoothed).
- Safer Roads Investment Plan - this provides a list of the recommended countermeasures and a summary of the economic analysis.
- Strip Plan – used to plot several different countermeasures as proposed in the Safer Roads Investment Plan along a selected road section.

In addition, the Detailed Conditions, Star Ratings and the Star Ratings (Smoothed) tables are available as ‘After’ reports. The ‘After’ reports show the projected Star Ratings and road attributes upon implementation of the complete Safer Roads Investment Plan.

4.3.1 Detailed Road Condition tables

The Detailed Road Condition tables provide the length and percentage of the filtered network for each category of recorded road attribute. For example, in Figure 13 it can be seen that 75.4km is Rural / open area, and this equates to 48% of the filtered network. The Detailed Conditions (After) report provides the schedule of road attributes as they would be if the complete Safer Roads Investment Plan was implemented.

The Detailed Conditions report can be used to compare the infrastructure attributes of different roads or road sections and can help to provide an understanding of the Star Ratings of a given road section and the proposed countermeasures that will potentially alter the road attributes and reduce risk.

Figure 13 Detailed Condition table
4.3.2 Star Rating tables

The Star Rating tables provide the length (in kilometres) and the percentage of each star for each road user type for the filtered network. As shown in Figure 14, the filtered network has 14kms of 4-Star road which makes up 9% of the filtered network. The Star Rating (After) table provides the same information except that the results presented relate to what the Star Ratings would be if the complete Safer Roads Investment Plan was implemented. In addition, the Star Rating (After) table provides the percentage change for each star relative to the original Star Rating, this can be seen in Figure 15 where there is a predicted 34% increase in the amount of 4-Star of the filtered network post implementation.

Figure 14   Star Rating table

![Star Rating table](image)

Figure 15   Star Rating table (After)

![Star Rating table (After)](image)
### 4.3.3 Safer Roads Investment Plan

The Safer Roads Investment Plan table provides a summary of the Safer Roads Investment Plan and the details of the recommended countermeasures for the roads filtered. The summary includes:

- **Total FSI’s Saved** – an estimate of the total number of fatal and serious injuries (FSI’s) that could be prevented over a 20 year period if all the recommended countermeasures were implemented.
- **Total PV of Safety Benefits** – an estimate of the total present value of the economic benefits due to the fatal and serious injuries that could be avoided in the 20 year period.
- **Estimated Cost** – estimated total cost of implementing the countermeasures over a 20 year period. Includes maintenance costs for countermeasures that have a shorter service life than 20 years.
- **Cost per FSI saved** – cost of implementing the countermeasures per fatal and serious injury avoided.
- **Program BCR** – the benefit to cost ratio of the Safer Roads Investment Plan for the roads filtered.

**Figure 16**  
**Safer Roads Investment Plan table**

The countermeasure details include:

- **Countermeasure** – name of the countermeasure, if this is clicked a map of where this countermeasure is recommended is provided, this is shown in Figure 17.
- **Lengths / sites** – the total length or number of sites the countermeasure is recommended for.
- **FSIs saved** – the number of potential number of fatal or serious injuries that could be avoided over a 20 year period if the countermeasure was implemented.
- **PV of safety benefit** - present value of the benefits due to the fatal or serious injuries that could be avoided in the 20 year period if the countermeasure was implemented.
- **Estimated cost** – the cost of implementing the countermeasure over a 20 year period.
- **Cost per FSI saved** - the cost of implementing the countermeasure per fatal or serious injury avoided.
- **Program BCR** – the benefit cost ratio of the countermeasure for the roads filtered.
Details of each individual countermeasure including location description, geo-reference data and economics can be shown by clicking on the individual icon as shown in Figure 18.

Note. The recommended countermeasures listed in the Safer Roads Investment Plan are automatically generated by the software. Each countermeasure proposed in the SRIP is supported by strong evidence that, if implemented, it will prevent deaths and serious injuries in a cost-effective way (i.e. it will have a BCR of greater than 1). Nevertheless, each countermeasure should be subject to additional investigation, prioritisation, concept planning and detailed design before implementation.
4.3.4 Strip Plan

The strip plan is a tool for producing a table that shows the relationship between five countermeasures along a section of road. An example strip plan is shown in Figure 19. A strip plan can be created by filtering the data to a single section of road and then selecting up to five countermeasures. The strip plan produced will show a marker for each 100m of road where each of the countermeasures are recommended. The markers can be clicked to provide a map and details of the countermeasure at that specific 100m length of road, an example is shown in figure 20.

Figure 19   Strip Plan

![Strip Plan](image)

Figure 20   Countermeasure 100m details

![Countermeasure 100m details](image)
4.4 Charts

Within ViDA the following charts are available:

- Risk Worm – this provides a detailed line chart showing the change in risk along the length of a section.
- Star Ratings – this provides a percentage bar chart of the distribution between the Star Ratings for each road user type. This chart shows the raw or ‘unsmoothed’ data.
- Star Ratings (Smoothed) – this provides a percentage bar chart of the distribution between the Smoothed Star Ratings for each road user type.

In addition, all these charts are available as ‘After’ charts, showing the projected Star Ratings based on the recommendations within the Safer Roads Investment Plan.

4.4.1 Risk Worms

The risk worm is a line chart that displays the Star Rating Score (the Star Rating Score or SRS is the numerical score that underpins the Star Ratings) along the length of a section, an example is shown in Figure 21. The risk worm is able to show the SRS for each of the road user types as either the 100m risk (raw data) or the smoothed risk. To generate a risk worm a single section of road must be selected.

Comparison risk worms can be created if two matching datasets are available, this can be used to compare a proposed road design with the current (baseline) road, or between two different road designs.

Figure 21 Risk Worm chart
4.4.2 Star Rating charts

The Star Rating charts display the Star Rating percentages of each of the road user types for the roads filtered.

Figure 22 Star Rating chart
4.5 Downloads

Within ViDA the following download files are available:

- **Core Data** – this file contains the road coding data for each 100m length of road along with the SRS (total and for each of the crash types) and the Star Ratings (raw and smoothed) for each road user type.

- **Fatality Estimation** – this file contains the fatality estimations every 100m for each road user crash type.

- **Countermeasures** – this file contains the details of each 100m countermeasure triggered by the model, whether each of the countermeasures made it through to the Safer Roads Investment Plan and the economics that justify each countermeasure.

- **Star Rating .kml files** – these are mapping files that are compatible with Google Earth and ArcGIS showing the Star Rating for each road user type.

In addition the Core Data and Fatality Estimation files are available as ‘After’ files, showing the projected results based on the recommendations within the Safer Roads Investment Plan.

The download files can be saved to your computer by clicking on the files name.

**Figure 23  Download files**