# Saving Lives through Innovation - European Road Assessment Programme

Lina Konstantinopoulou, Secretary General, EuroRAP

EuroRAP
EUROPEAN ROAD ASSESSMENT PROGRAMME

www.eurorap.org

# RAP Vision

EuroRAP is a charity with the vision for a Europe free of high-risk roads.

Major Donors in Europe and Internationally

# RAP Global Programmes & Projects

**WHY**
**To save lives and reduce injuries**

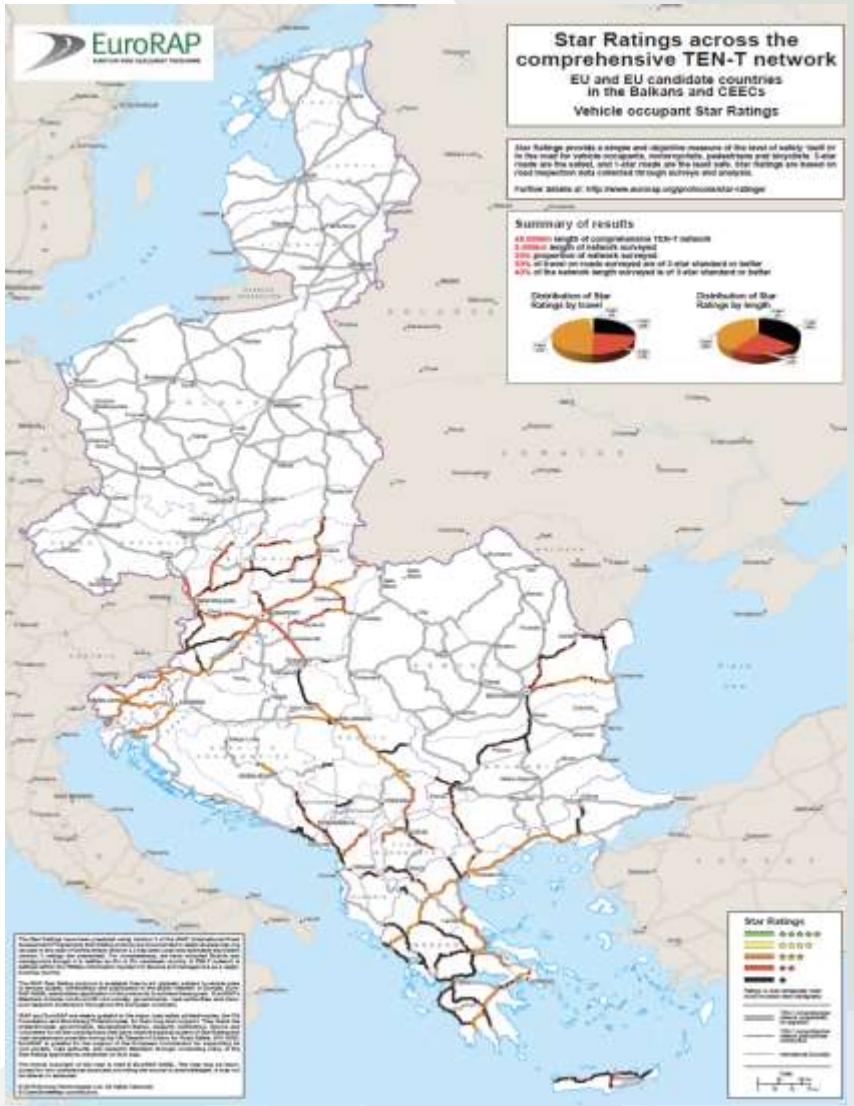
**HOW**
**Create a world free of high-risk roads**

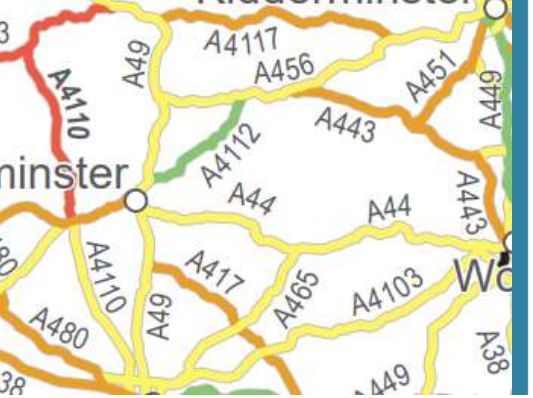
**WHAT**
**Star Rating, Risk Mapping, Investment Plans & Policies**

iRAP
EuroRAP AusRAP usRAP KiwiRAP ChinaRAP
IndiaRAP SARAP SgRAP BrazilRAP KoRAP

# EuroRAP’s protocols

- The programme is based on four protocols that, together, provide consistent safety ratings of roads across European borders, increasing recognition and understanding of the sources of risk and indicating priorities for network improvement.
- Nationally, EuroRAP protocols enable the identification of the most dangerous roads, the ability to track performance over time, and therefore where action is appropriate.
- Internationally, they enable comparisons between road safety performance within and between countries.






# RAP Risk Mapping

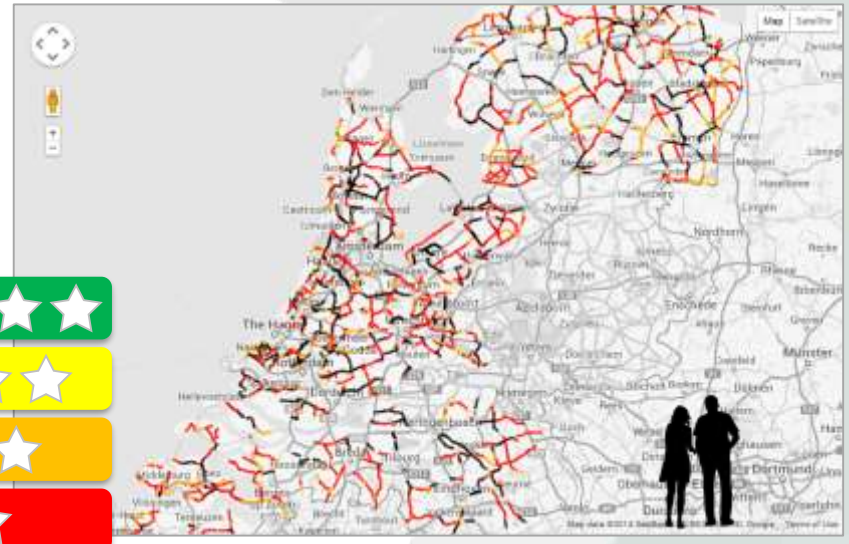
ROAD SAFETY FOUNDATION

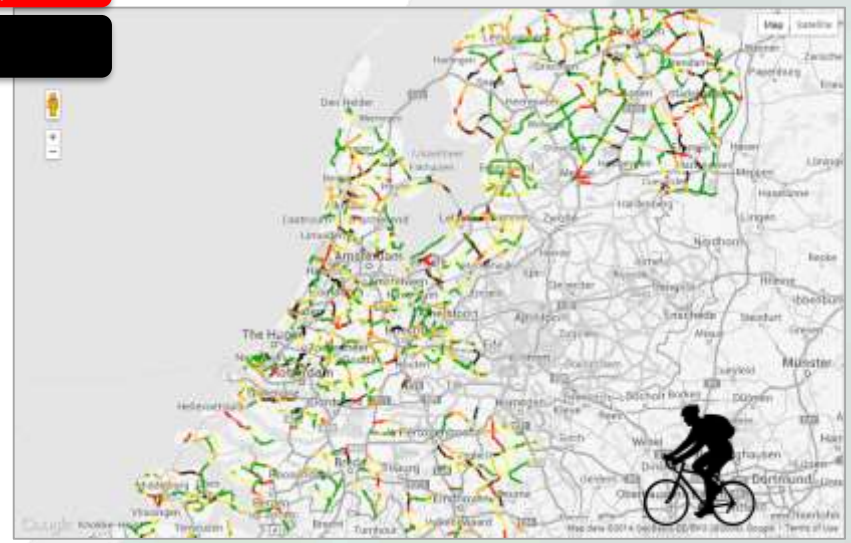
EuroRAP
EUROPEAN ROAD ASSESSMENT PROGRAMME

## CRASH RATE RISK MAPPING

- Crash Mapping to a Global Standard
- Crash Risk per user
- Crash Risk per km
- Safest Route Selection
- Performance Tracking

# Road user specific maps

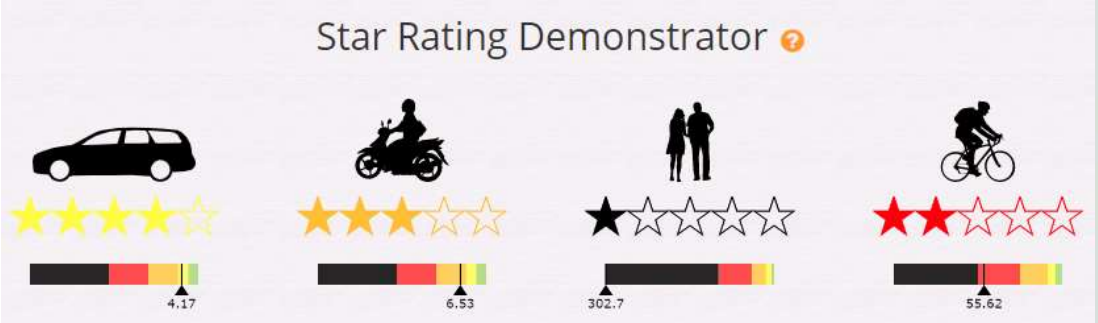


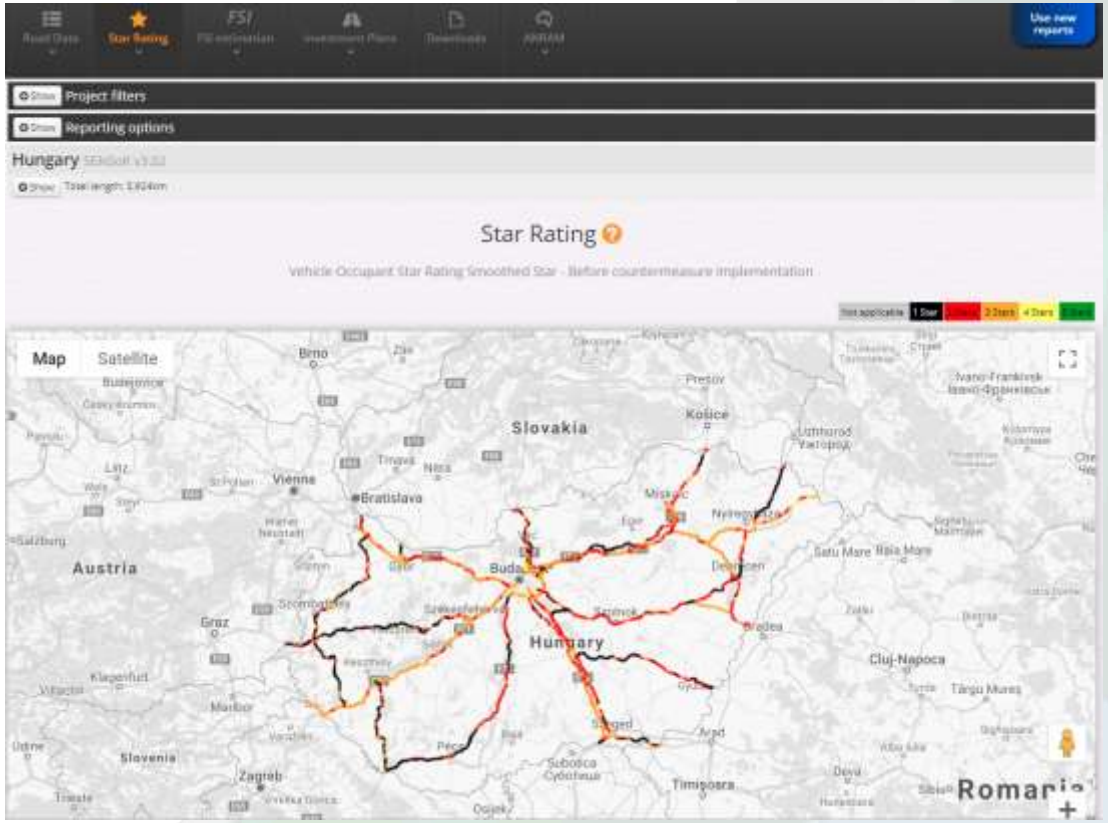


# ViDA – online analysis tools

Central web app for Star Rating and Investment Plans

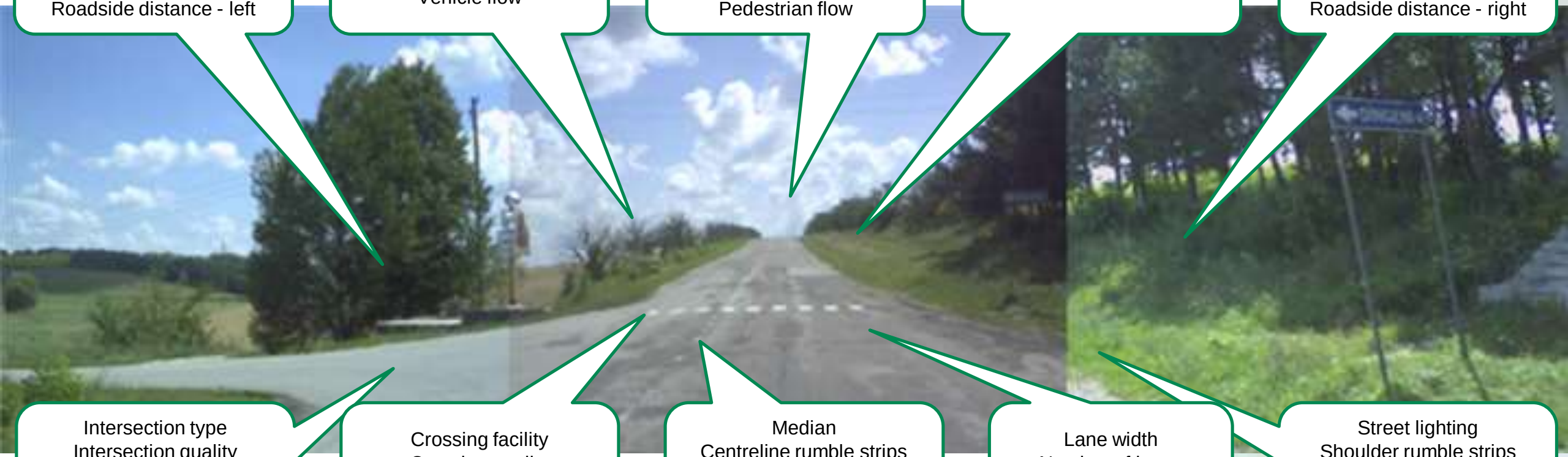
- Sophisticated computation
- Primary and comparative reporting
- Data management and permissions
- **An API – so other systems can interact with it**




http://vida.irap.org

# Road Coding Attributes



Paved shoulder – left
Sidewalk provision – left
Roadside object – left
Roadside distance - left

Area type
Speed
Vehicle flow

Motorcycle facility
Bicycle facility
Bicycles flow
Pedestrian flow

Curvature
Quality of curve

Paved shoulder – right
Sidewalk provision – right
Roadside object – right
Roadside distance - right

Intersection type
Intersection quality
Intersecting volume
Channelisation
Property access point

Crossing facility
Crossing quality
Speed management
Roadworks

Median
Centreline rumble strips
Sight distance
Delineation
Grade

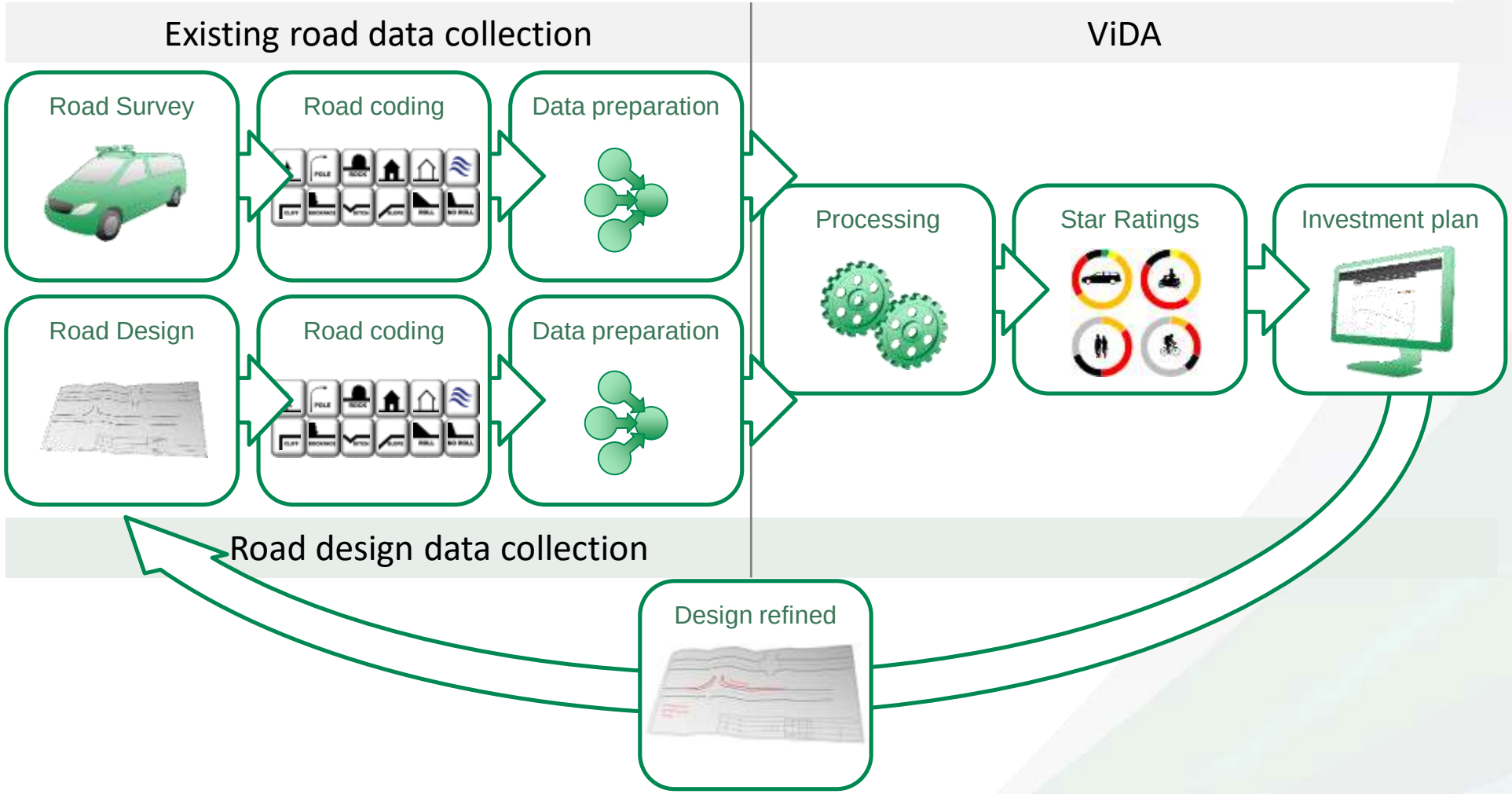
Lane width
Number of lanes
Road condition
Skid resistance

Street lighting
Shoulder rumble strips
Vehicle parking
Service road
Pedestrian fencing

# Road Coding

Distance
VIDEO SPEED:
1.00
GO TO DISTANCE:
Segment:
Active attributes
None active
00:13
A B U "A" "B"
S LOW
S MED
S HIGH
None 1 2-3 4-5 6-7 8+
30 40 50 60 70 80 90 100 110 120 130 140 150
METAL
M/C
DITCH
SLOPE
CLIFF
END

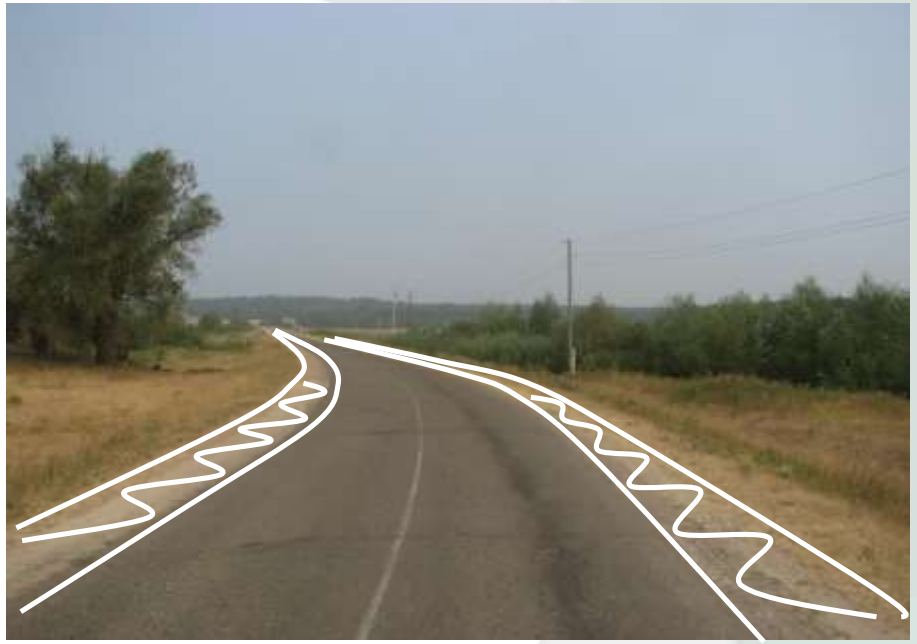
# iRAP Star Rating Process



# Safer Roads Investment Plans

Safer roads investment plans builds on the road attributes coded for star rating.

- 90 proven countermeasures
- 300+ engineering trigger sets
- Calculate potential lives saved
- Minimum BCR criteria set



# RAP Safer Roads Investment Plans

# Measuring to Manage

Sweden - 75% of travel on safe (3 or 4-star) roads by 2020

Australia - 90% of travel on national roads 3-star or better

Netherlands - minimum 3-star for national roads by 2020

Highways England - 90% of travel on 3-star or better by 2020

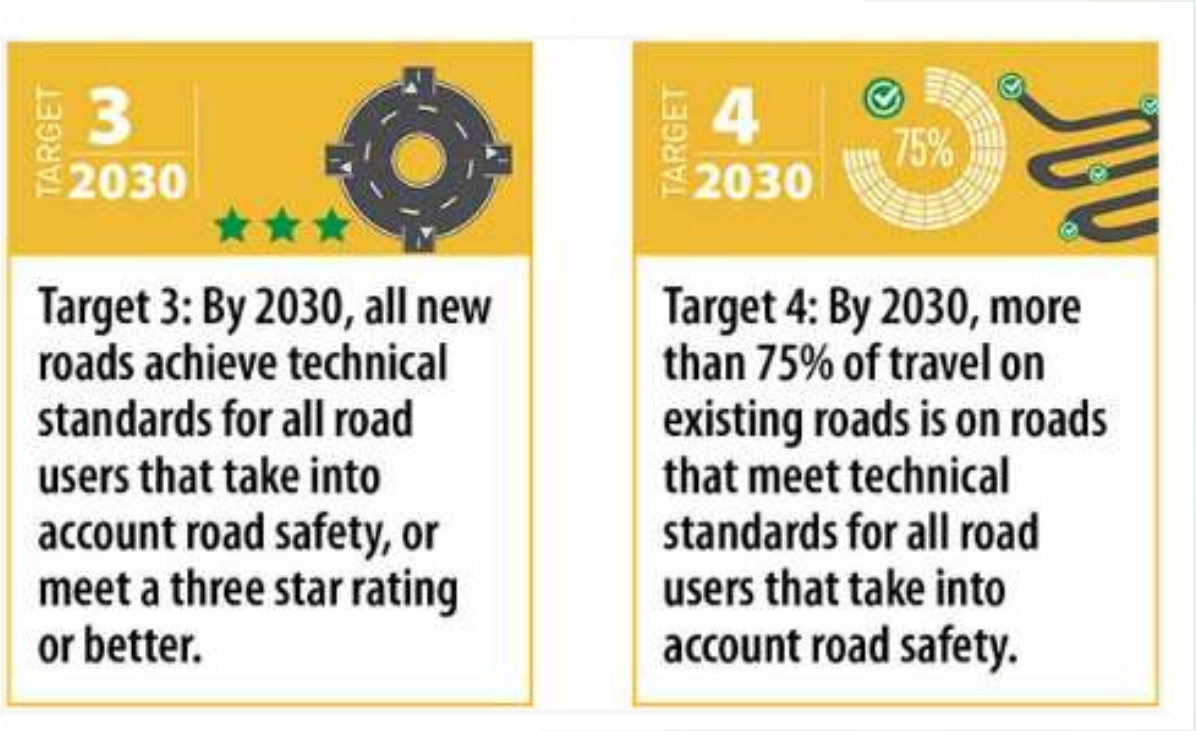
New Zealand - 4-star for “roads of national significance”

Malaysia - 75% of high-volume road network 3-star or better by 2020

# The Business Case for Safer Roads

https://www.vaccinesforroads.org/business-case-for-safer-roads/

Targeted safe roads investment by all countries of **0.1-0.2% GDP** per year through to 2030 will unlock this incredible outcome with **$8** of benefits for every **$1** invested.



# Infrastructure Star Ratings for the Self-Driving Car

# Project SLAIN
## (**S**aving **L**ives **A**ssessing and **I**mproving TEN-T Road **N**etwork Safety)

- 9 beneficiaries, 4 (Croatia, Greece, Italy, Spain) countries of activity, administered through Belgium
- EUR 1.9m
- 2 Years, 2019-2021
- “Eight activities to support and encourage the proposed changes to Directive 2008/96/EC”
  - 4 x Crash Risk Maps – both years (8,000km)
  - 4,000 carriageway kilometres of Star Rating maps
- Preparing for automation

# “Roads that cars can read IV”

- Project SLAIN includes planning for automated vehicles
  - 2,000km survey of quality of road markings in four Mediterranean countries
  - consultation on definition of a good vertical sign for automated vehicles
  - review of crash analysis requirements
- a review of automatic coding of network for network-wide road assessment

# iRAP Innovation Partnerships

## Product Innovation

### Star Rating for Schools
**Status**: In use

### Star Rating for Designs

**Status**: Beta Testing

### User Defined Investment Plans

**Status**: In progress

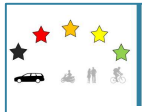
### Road Safety Big Data

**Status**: In progress

### Star Rating Demonstrator

**Status**: Live

## Model Innovation

### Light Star Rating Model

**Status**: In progress

### iRAP Urban CycleRAP

**Status**: In progress

### iRAP Urban Pedestrians

**Status**: In progress

### iRAP Urban Intersections

**Status**: In progress

### Modelling Shunt Crashes

**Status**: In progress

### ITS Enhanced Model

**Status**: In progress

### Speed Management

**Status**: Concept

### Infrastructure for Autonomous Vehicles

**Status**: In progress

### Decimal Star Rating

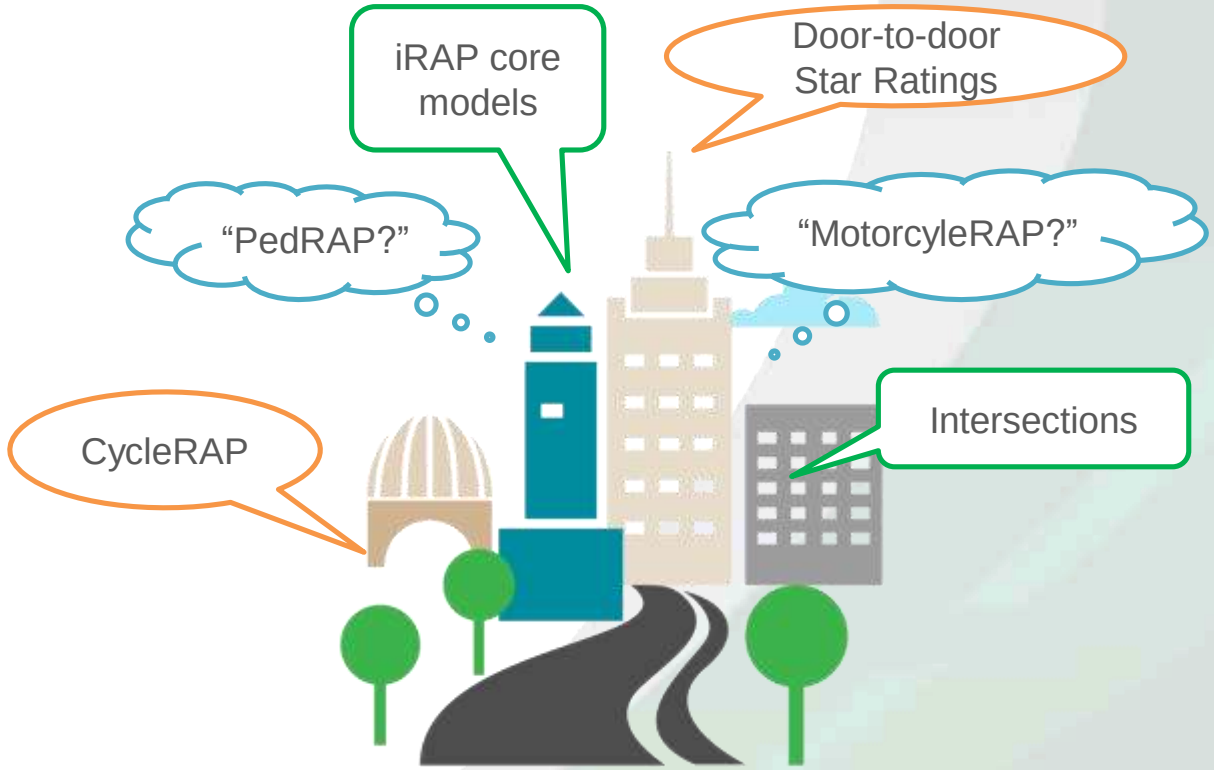
**Status**: Technical Review

### Safe System Star Rating Module

**Status** Concept

# “iRAP Urban” R&D

- Refers to a range of ideas and initiatives in varying stages of development.
- Seeing strong interest and support for enhanced products, *but*…
  - Differing focus, demands and needs on types/functionality of products.
  - Difficult to attract necessary financial support for development activities.
- iRAP to undertake market research to determine what urban products could best support cities and be financially viable long-term.
- Need for good governance and coordination (under the iRAP Innovation Framework)
- Long term goal: Safe Cities Consortium



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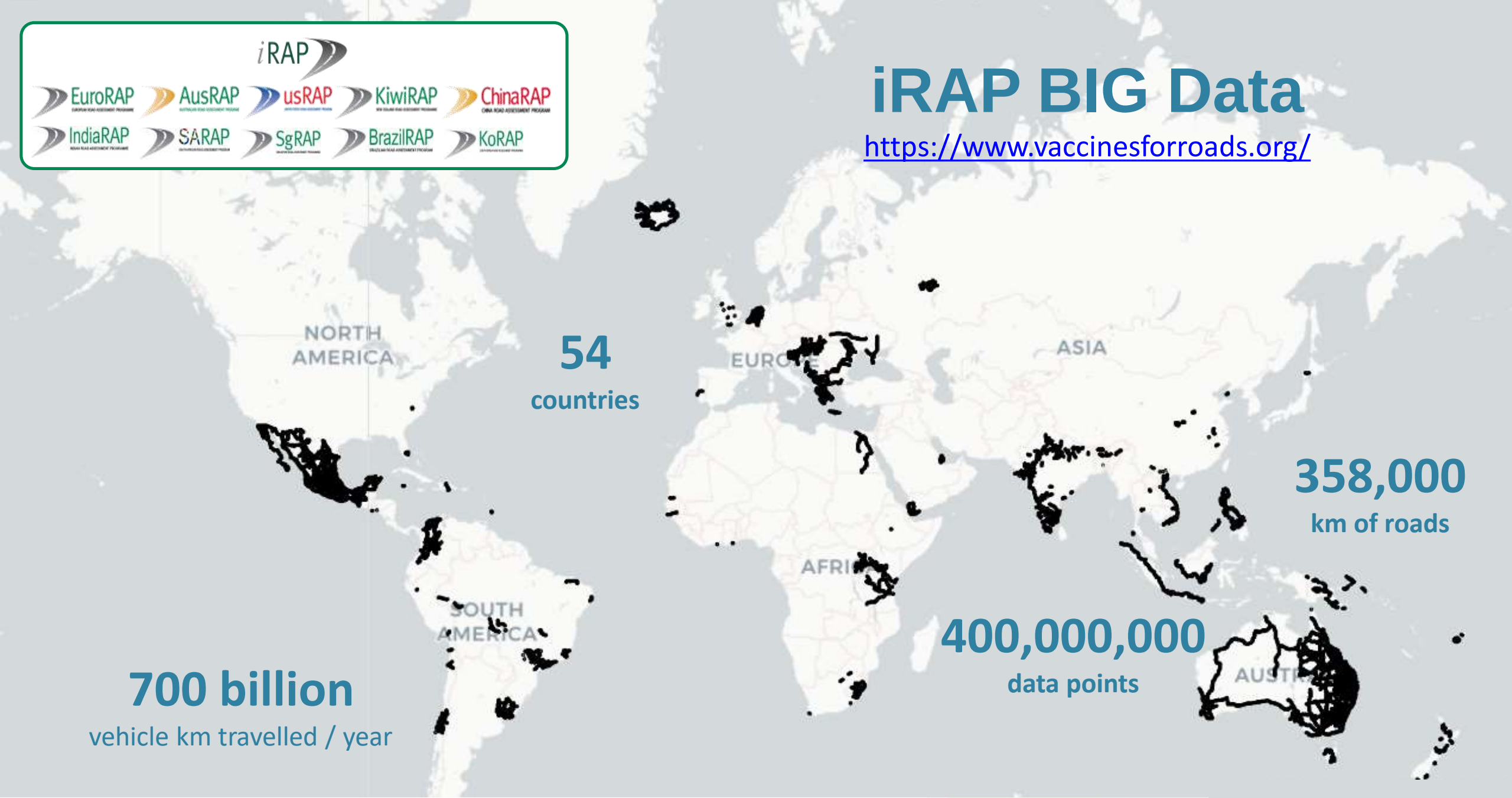
# iRAP BIG Data

https://www.vaccinesforroads.org/




**54**
countries

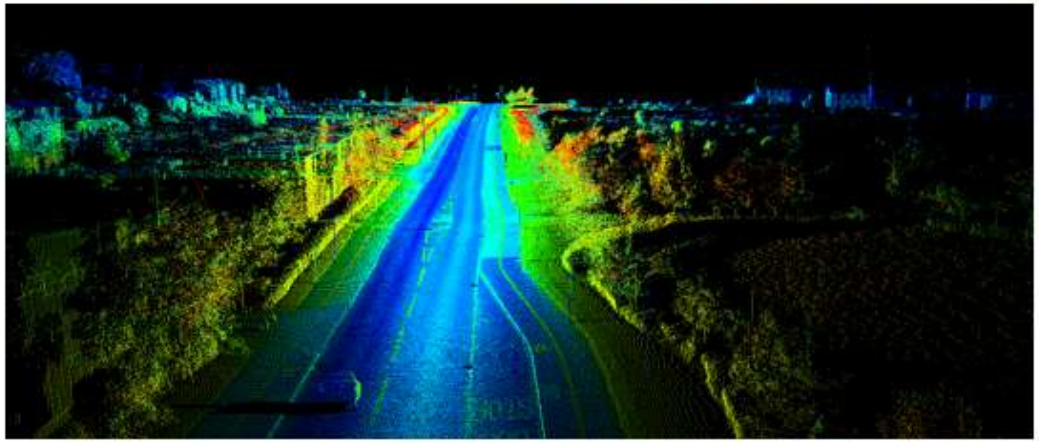
**358,000**
km of roads

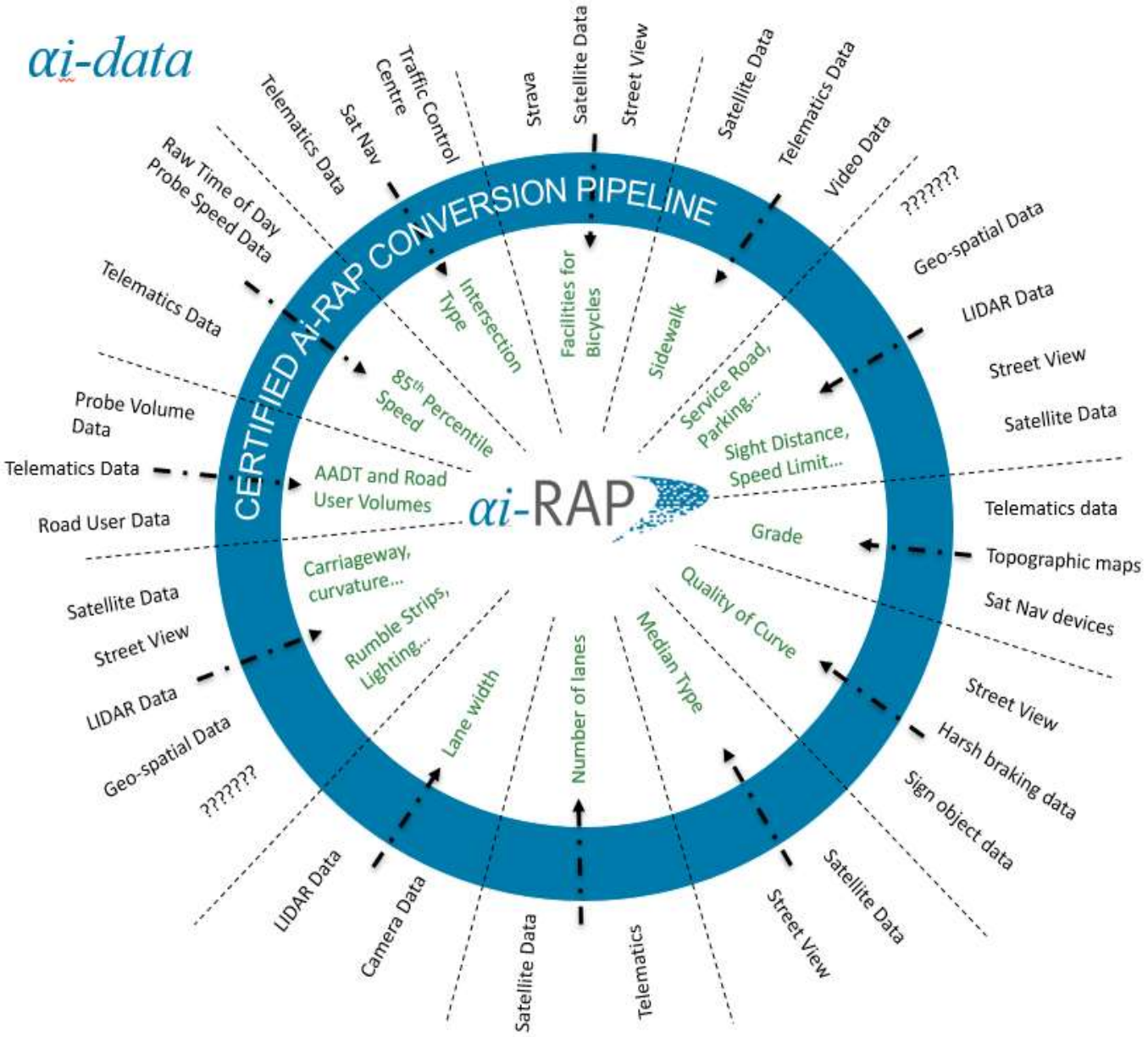
**400,000,000**
data points

**700 billion**
vehicle km travelled / year

# αi-RAP

# Accelerated & Intelligent RAP Assessments






## Ai-RAP Partnership Opportunities

- Ai-RAP Accredited Suppliers
- Provide one attribute…or them all
- Link to the global iRAP Standard
- API Links to ViDA for Star Ratings
- Live Star Rating & risk as you drive
- Safest Route and Mode Choice

# LOOK AT WHAT WE'VE ACHIEVED TOGETHER

## Global roads made safer by June 2019

**101** countries reached

**1.3 MILLION** kms Risk Mapped*

**1 MILLION** kms Star Rating analysis of existing roads*

**US $68+ BILLION** of infrastructure investment made safer

**23.4 MILLION** kms of analysis

**19 THOUSAND** people trained in safer road infrastructure

**6,900** ViDA users

**600** Schools assessed using SR4S

iRAP partners with governments, mobility clubs, funding agencies, development banks, research institutes and NGOs around the world to make roads safer – #3StarorBetter to save lives.

**www.irap.org**

***Because every life counts!***

**Cumulative non-unique kilometres assessed over time*

# For more information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