



Saving Lives through Innovation - European Road Assessment Programme

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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.

<http://vida.irap.org>

Star Rating Demonstrator ?

Score: 16.9 Score: 305.1



Major Donors in Europe and Internationally



RAP Global Programmes & Projects

WHY
To save lives
and reduce
injuries

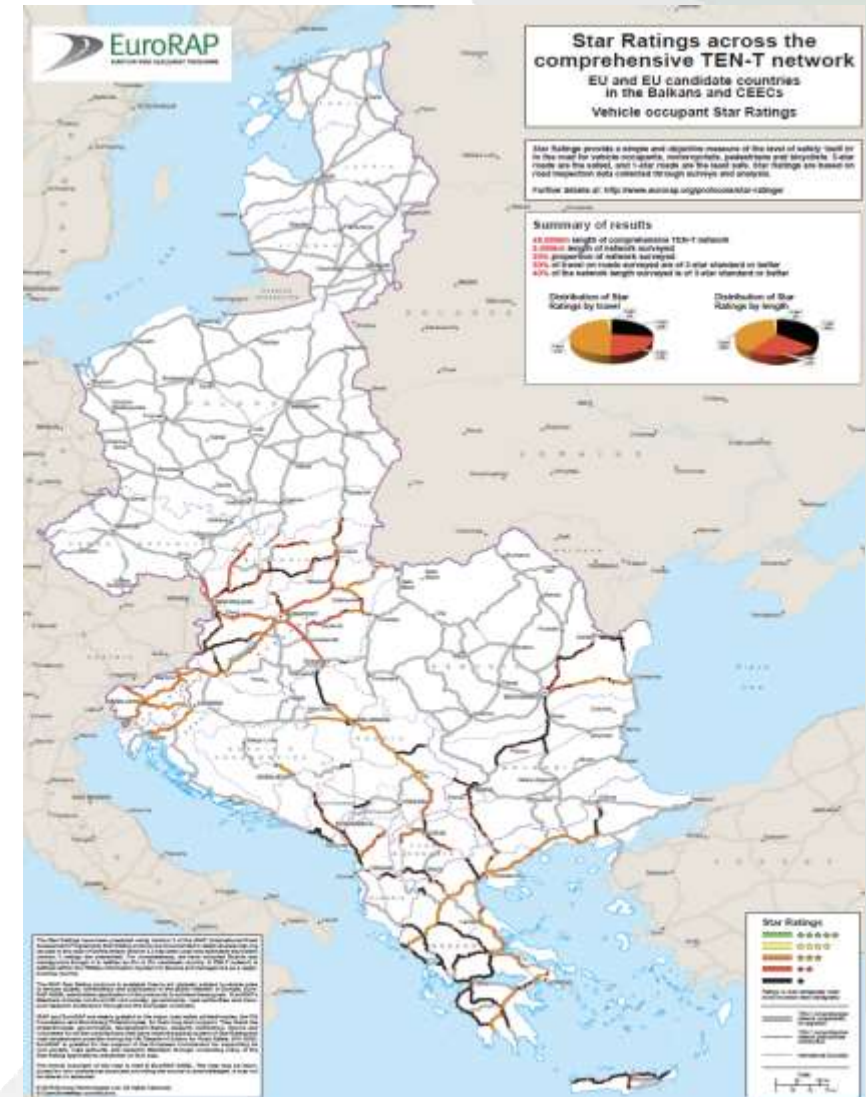
HOW
Create a world free
of high-risk roads

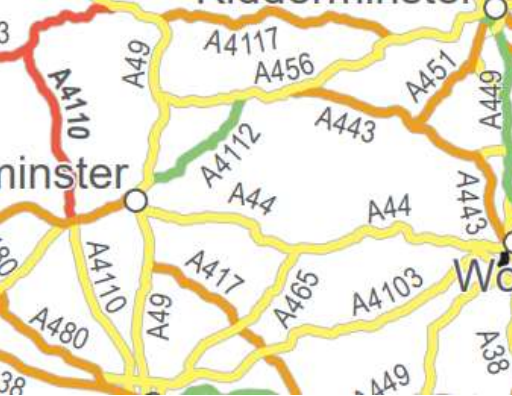
WHAT
Star Rating, Risk
Mapping, Investment
Plans & Policies



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.





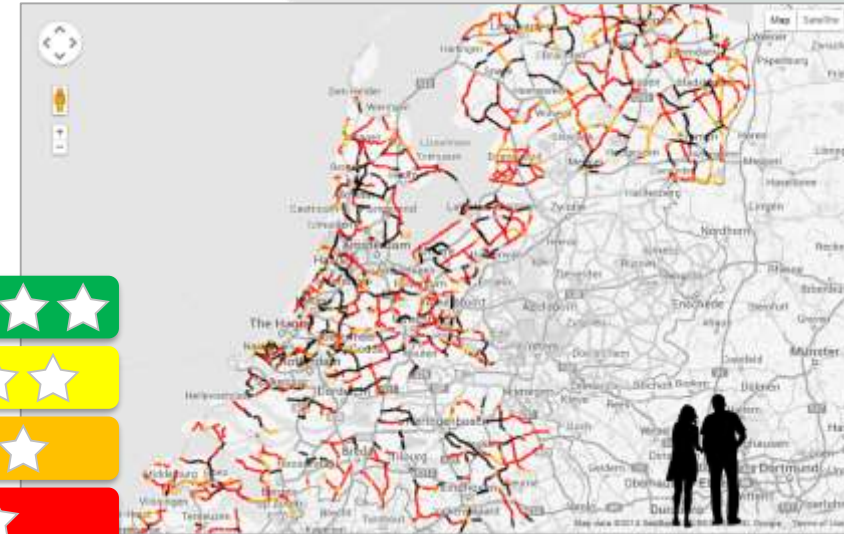
RAP Risk Mapping



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

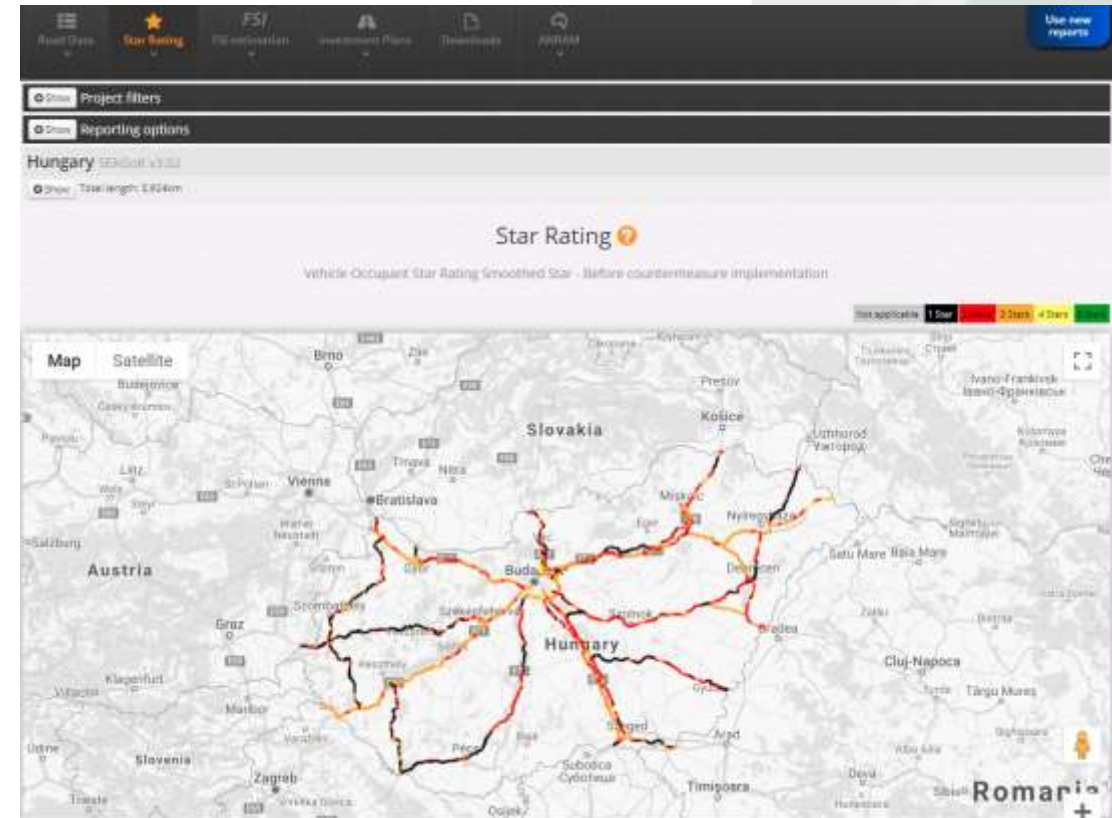


ViDA – online analysis tools

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

The screenshot displays a road coding software interface. At the top left, there is a 'Distance' label and a map inset showing a blue route on a road network. The main view is a first-person perspective from a car's dashboard, looking down a two-lane road with palm trees and a white fence on the left. In the top right corner, there is a control panel with 'VIDEO SPEED' set to 1.00, 'GO TO DISTANCE' with a target icon, and 'Active attributes' set to 'None active'. Below the road view is a toolbar containing various icons for road coding, including lane types (A, B, U, A, B), speed limits (LOW, MED, HIGH), vehicle types (None, 1, 2-3, 4-5, 6-7, 8+), and various road signs (None, 1, 2-3, 4-5, 6-7, 8+).

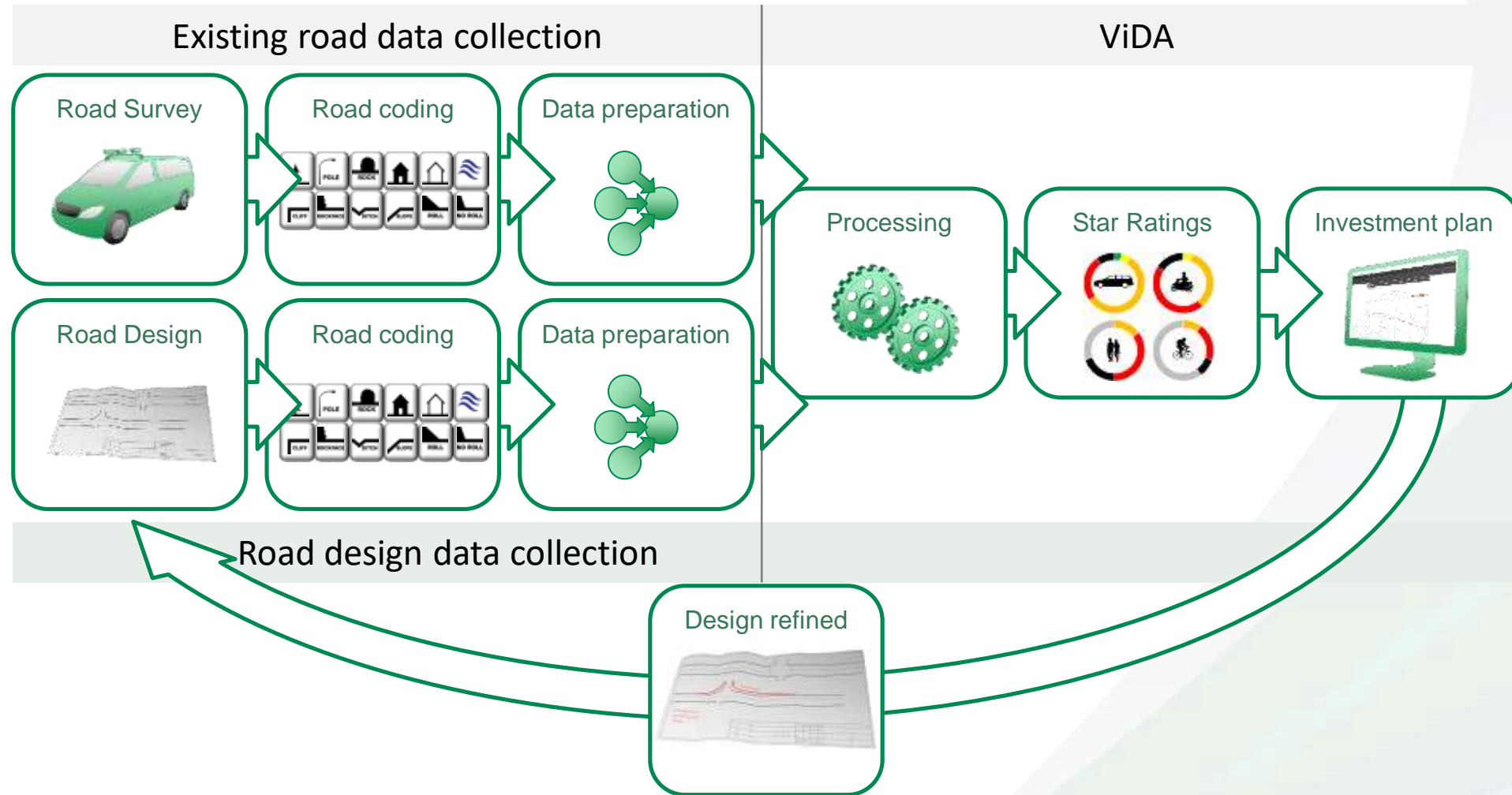


A document titled 'IRAR' (International Road Assessment Board) showing a flowchart and text. The flowchart illustrates the process of road coding, starting from 'Road coding' and branching into 'Road coding' and 'Road coding'. The text below the flowchart discusses the importance of road coding and provides instructions on how to use the software.

A document showing diagrams of road layouts for '4 LANE' and '3 LANE' configurations. The diagrams illustrate the lane markings and coding instructions for each configuration. The '4 LANE' diagram shows a four-lane road with a central divider, and the '3 LANE' diagram shows a three-lane road with a central divider. The text below the diagrams provides detailed instructions on how to code these road types.

A document showing diagrams of road layouts for '6' configurations. The diagrams illustrate the lane markings and coding instructions for each configuration. The '6' diagram shows a road with a central divider and a specific lane configuration. The text below the diagrams provides detailed instructions on how to code these road types.

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

Total FSIs Saved: 1,570

Countermeasure:

- Additional lane (2 + 1)
- Roadside barriers - passenger side**
- Central median barrier
- Shoulder sealing passenger side
- Shoulder rumble strips
- Roadside barriers - driver side
- Footpath provision driver side (>3m from road)
- Footpath provision passenger side (>3m from road)
- Duplication with median
- Footpath provision driver side (>3m from road)
- Footpath provision passenger side (>3m from road)
- Street lighting (mid-block)

Roadside barriers - passenger side [More info](#)

| | | | | | |
|---------|----|-----------|-----------|--------|----|
| 7.0 km | 30 | 7,034,358 | 712,770 | 23,686 | 10 |
| 17.3 km | 29 | 6,900,194 | 2,146,770 | 72,726 | 3 |

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.

TARGET **3**
2030



Target 3: By 2030, all new roads achieve technical standards for all road users that take into account road safety, or meet a three star rating or better.

TARGET **4**
2030



Target 4: By 2030, more than 75% of travel on existing roads is on roads that meet technical standards for all road users that take into account road safety.



Infrastructure Star Ratings for the Self-Driving Car



This road may be 1-Star for a normal car.....
but 5-Star for the Self-Driving car



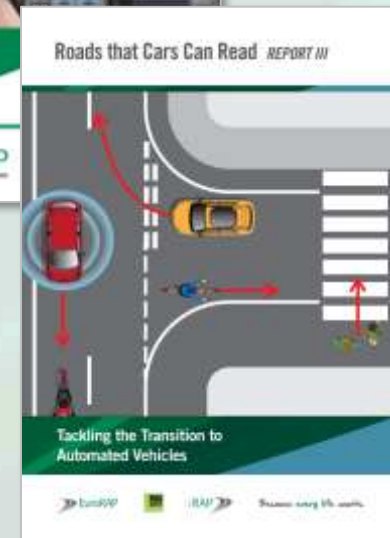
Project SLAIN

(Saving Lives Assessing and Improving TEN-T Road Network 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



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

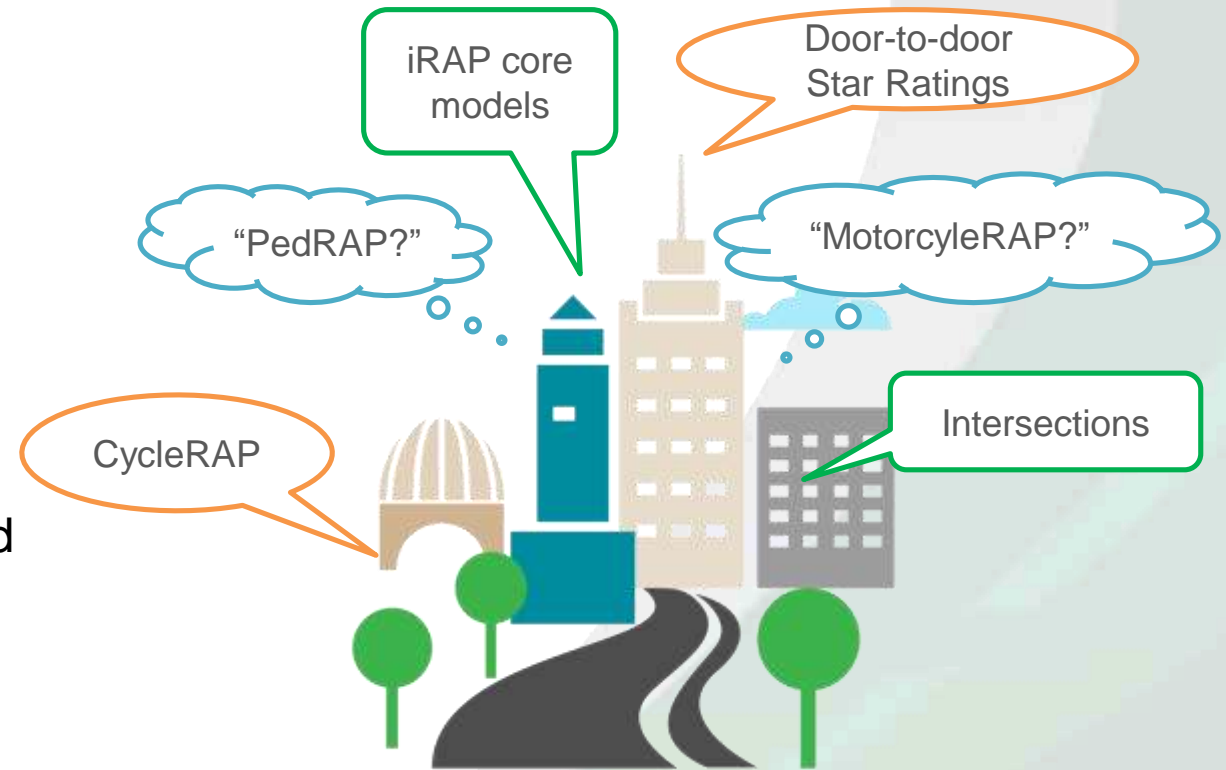
Status: Technical Review

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



iRAP



iRAP BIG Data

<https://www.vaccinesforroads.org/>

NORTH
AMERICA

54
countries

EUROPE

ASIA

358,000
km of roads

AFRICA

400,000,000
data points

SOUTH
AMERICA

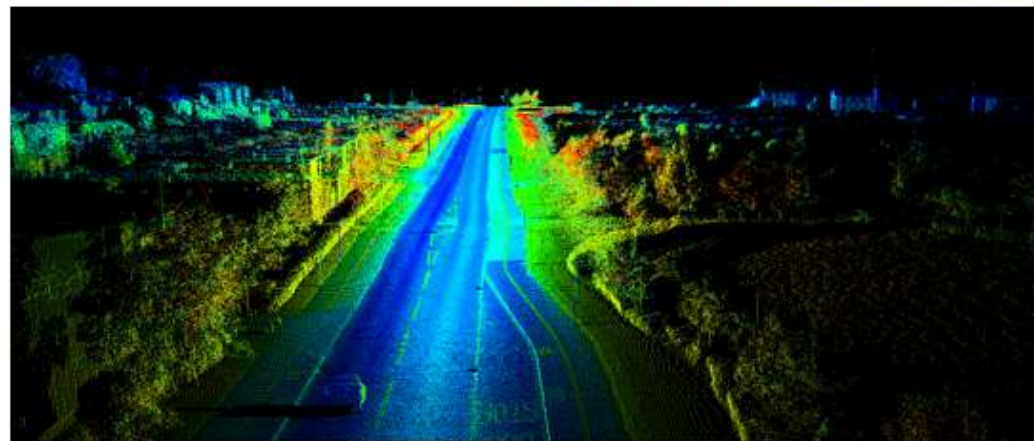
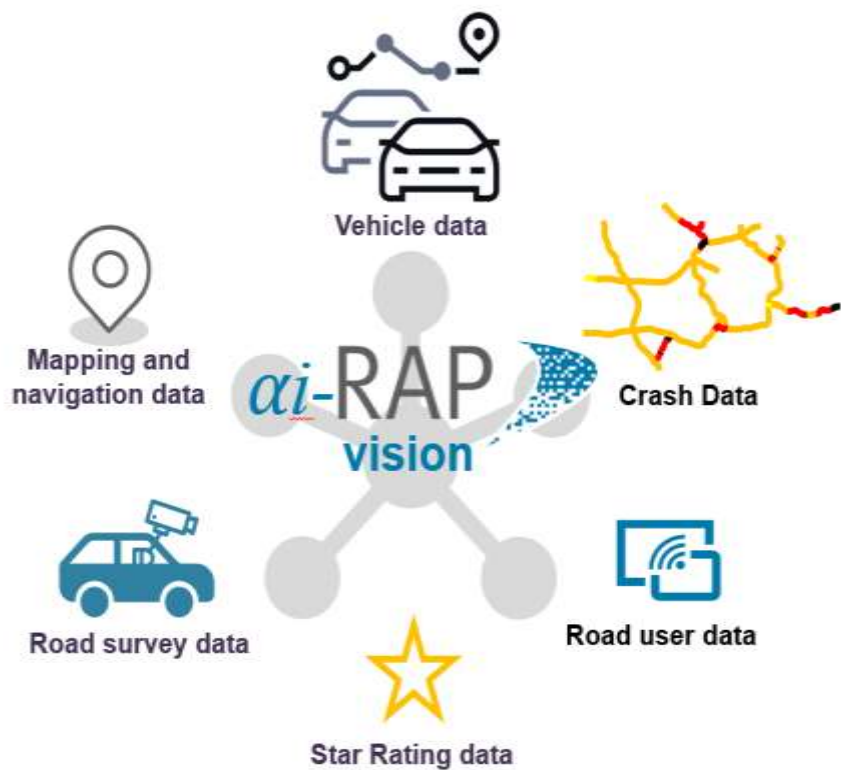
AUSTRALIA

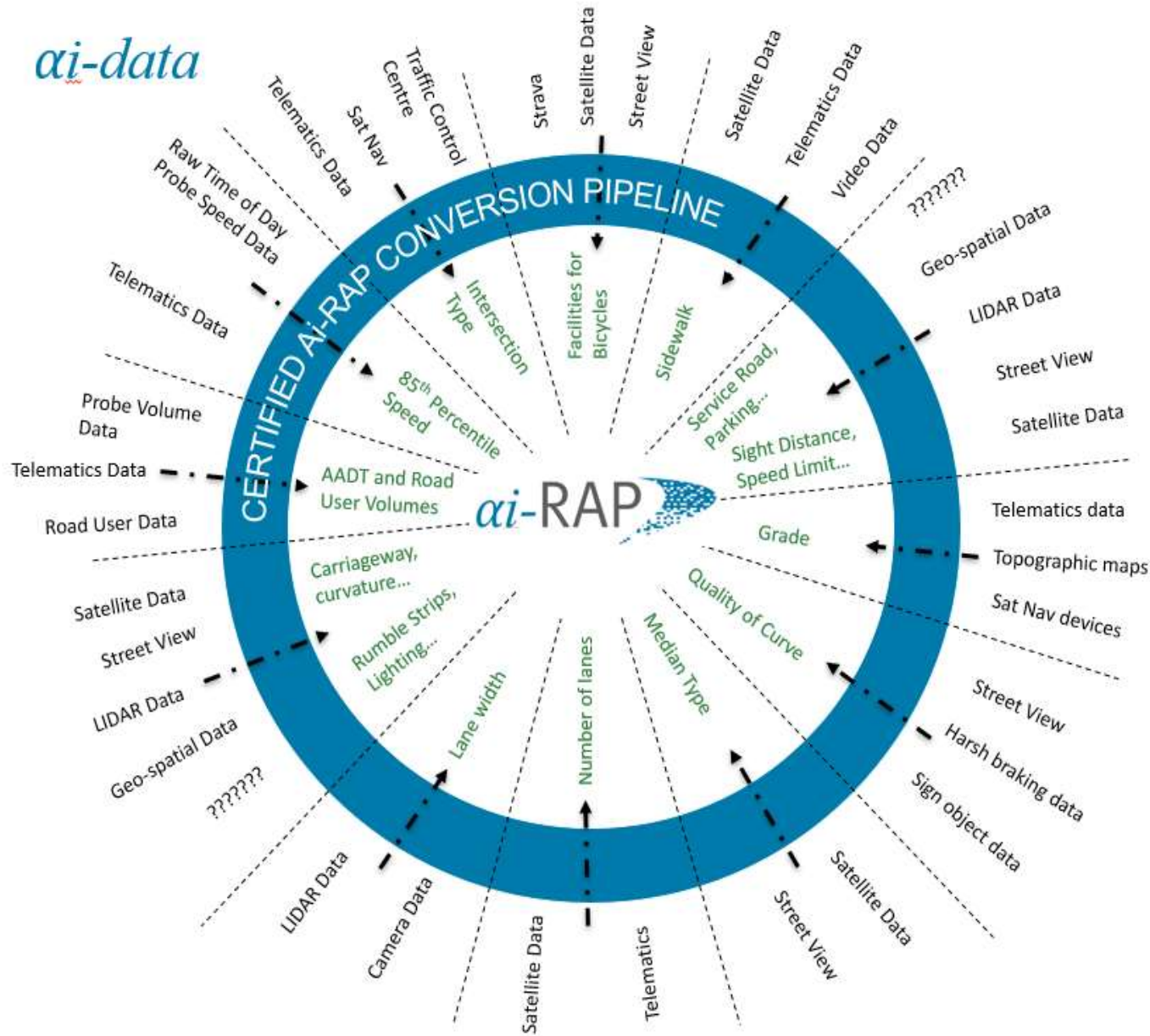
700 billion
vehicle km travelled / year



ai-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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