Rijkswaterstaat
Ministerie van Infrastructuur en Waterstaat

Derde Werelddreef 1
2622 HA Delft
Postbus 2232
3500 GE Utrecht
T 088 - 797 28 00
F 088 - 797 29 09
hans.kramer@rws.nl
www.rijkswaterstaat.nl

Contactpersoon
Hans Kramer
Omgevingsmanager Smart Mobility

T +31 6 52354173
hans.kramer@rws.nl

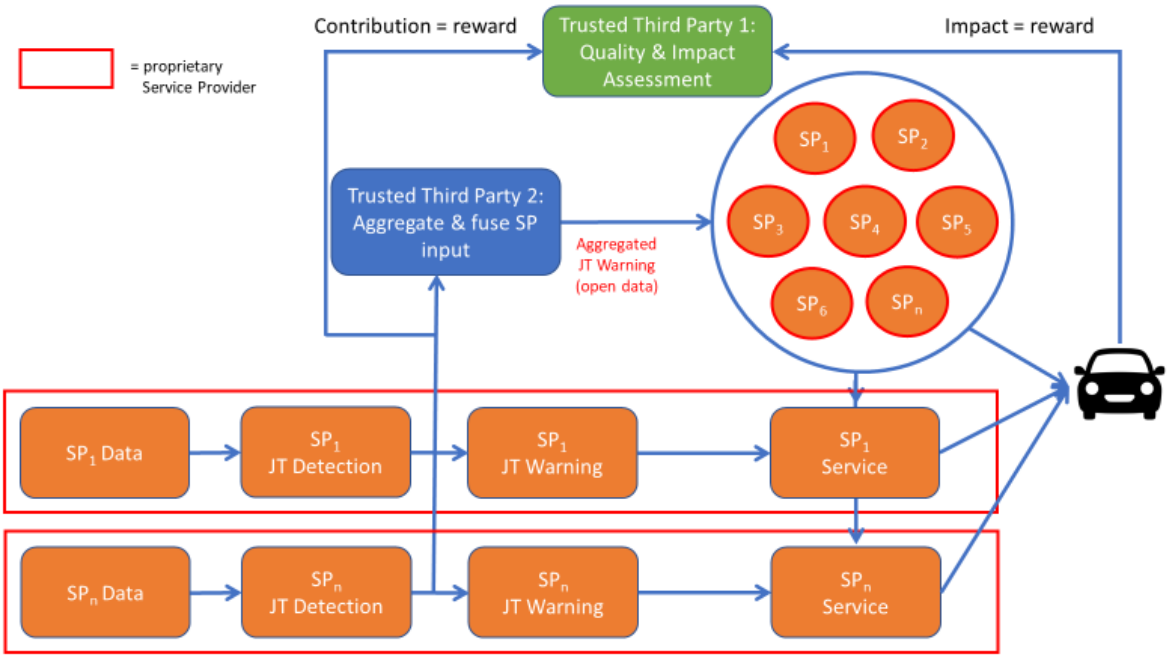
Datum
21 oktober 2020

Memo Jam Tail Warning Market Consultation 2020

This memo provides an update on the Market Consultation Filestaart Beveiliging:`Buiten Gesignaleerd Gebied In-Car(Jam Tail Warning) which started with the TenderNed publication on July 2, 2020. A plenary meeting was held in Delft on September 15 attended by interested parties. Following this meeting most participant organizations sent in a proposal, either individually or together with partners, which outlined how the parties may work together to accomplish the goal of providing quality JTW services in car across non signalized areas of the Netherlands. RWS/Connekt subsequently met with all parties which submitted proposals to discuss the proposals and identify issues in need of further attention.

RWS/Connekt have observed an emerging consensus across participants of the JTW market consultation following the mid October 2020 meetings. We hope this consensus provides a productive point of departure for the further development of the architecture and a next round discussions in early November.

JTW Architecture:
This following image appeared in different variations in proposals and serves to distinguish a variety of roles and responsibilities which need to be addressed in order to achieve the objectives of a reliable JTW service available to >75% of roadusers (in non signalized areas of the country), which is expected to elevate road safety measurably.



RWS believes this model could be effective in addressing the various areas to accomplish the stated JTW project goals.

Roles distinguished:
Participating organizations distinguish 5 roles:

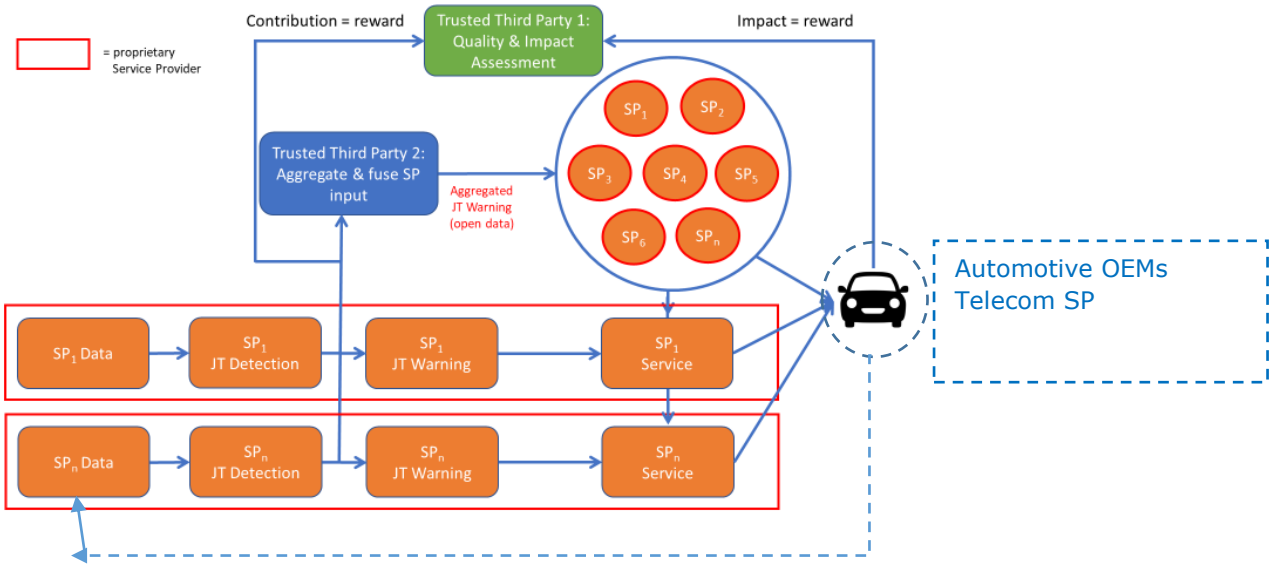
1. Producing floating car data (FCD). This is the raw material fed into algorithms and analysis which produce Traffic Messages, including Jam Tail Warnings. Several of the key producers of FCD made it clear that raw data will not be shared. Reasons include the need to shield consumers from being identified and have their privacy compromised in addition to competitive opportunities to use data to develop additional value for the origination companies. This is not true for all data sources. Many service providers purchase data from various sources.
2. The Analysis of the data to produce Traffic Messages, including JTW. Essentially this function collapses with #1 due the fact that the source data may not be shared. Players process their own data.
3. Serving road users with relevant traffic messages. Looking at the short term this generally occurs through a smart phone app or through integration with the vehicle embedded systems or integration with an aftermarket navigation device. Looking at the long term it might be part of the further development of connected and automated driving,
4. Provision of contextual ecosystem supporting capabilities as a Trusted Third Party. Capabilities include aggregation / fusing of traffic messages, assessing the quality of messages provided and rating the contributions of various parties to the overall body of messages. Maintaining a store of messages for service providers to use, is also part of this functionality.
5. Assessing overall quality as experienced by road users, effectiveness of the overall service, and **assessing the number of road users reached** (by each service provider) can be distinguished as a separate function.

An independent JTW Service Provider covers at least functionality 1, 2 & 3. Roles 4 and 5 represent the TTP (Trusted Third Party) roles and ensure the effective performance and functioning of a JTW ecosystem.

Finally there are other supporting capabilities such as the integration of JTW messages for delivery of OEMs through embedded in-vehicle systems or integration in aftermarket (navigation or route management) devices. Telecom and automotive OEM roles may need to be further clarified.

Mapping JTW participants to the Roles distinguished:

#	Participants:	Comments:
1. 2. & 3.	BeMobile, Here, Tomtom, Inrix, Waze (TripService), Google (Localyze)	V-Tron may be a data provider as well role 1.
4.	NDW, KPN, Vodafone	KPN and Vodafone to specify.
5.	Triopsys , Goudappel Dat.Mobility, CGI, Technolution, MapTM, Monotch, RHDHV, Siemens	
Automotive	Iveco, VTron	TBD
Telecom	Vodafone, KPN	TBD
	PVT, BeSiteGroup, KeyPoint, TNO	No Proposal/Input to date



Standards & Quality Metrics & Thresholds (KPIs);

Coverage: Current Non Signalized Areas
We are especially interested in contributions from participants in "role 5" to help define structures and thresholds to provide the correct incentives (sticks and carrots) to attain the

Reach: > 75% of Road users
While reaching a large portion of road users remains the goal, it is not evident from the proposals received that this goal is attainable in the near future. Few proposals addressed the target audience and to what degree messages would reach road users. The compensation structure will be designed to reward service providers for their accomplishments in achieving this goal.
TPEG, DATEX 2 en standaarden voor C-ITS berichten.

Quality

In order to achieve our objectives we need to align on the definition and thresholds of quality metrics. Over time the thresholds may be moved to better serve our objectives. As a starting point the following metrics are put forward which align with the metrics used in Germany. We are specifically interested in the participants view of these metrics and thresholds as it relates structure as well as attainability of the levels proposed.

- ***Accuracy*** *of occurrence*
  True positives ≥85% (announced congestion is actually there ≥85%)
  True negatives ≥95%. (announced free flow is correct ≥95% of the time)
- ***Timeliness / Latency:***
  Latency, or time between occurrence on the road and the time it shows up in the message feed is less than 2 minutes in at least 95% of instances. This 2 minute threshold is quite high (slow) compared to the current MTM systems. MTM systems operate with approximately 15 sec latency. Given the nature of FCD based data gathering, a longer latency may be unavoidable in non signalized areas. But what could be the minimum latency level which is for alle Service providers feasible (at the start and later on).
- ***Location accuracy:***
  The location of the incident is reported at the accurate location of occurrence.
  - In >95% of incidents the location accuracy ranges between -200 < L < 700 m.
  - In >50% of incidents the location accuracy is reported within -100 < L < 400 m.
  - A differentiation in thresholds may be necessary for signalized areas vs non signalized areas to reflect technological differences / attainability of values.

The Jam Tail is defined as follows:

In the current systems the following definitions are used. We may need to consider differentiating these definitions for FCD served areas. A "Jam Tail" may need additional definition.

- ***Beginning of a Jam:***
  Location on the road where the speed falls below 35 km/hr. If this condition is satisfied, then the system reports AIDtrigger: ON. If there are multiple lanes of travel on the section of road, then only one lane needs to meet the mentioned threshold to characterize the AIDtrigger: ON for all lanes of travel in the same direction.
- ***End of Jam***
  Location and time where the speed accelerates and exceeds 50 km/hr. At this condition the system will report AID-trigger: OUT. For this message to be reported, ALL lanes need to satisfy this condition.
- ***Jam Tail -*** to be defined?

- ADAS convenant, https://www.adasalliantie.nl/;
- Reference framework HF_FSB NGG Design Monitoring and Evaluating, attachement 2 to the Marketconsultation (dutch language) document "Marktconsultatiedocument Filestaartbeveiliging in niet gesignaleerd gebied";
- Dutch Safety Board report: Who is in control? Road safety and automation in road traffic, https://www.onderzoeksraad.nl/en/page/4729/who-is-in-control-road-safety-and-automation-in-road-traffic;
- Human factor guidelines for the design of safe in-car traffic information services. Rijksuniversiteit Groningen, https://www.rug.nl/research/portal/files/109488305/Human_Factors_Guidelines;

- Design and evaluation according to User Centered Design principes. ISO standard, Human-centred design for interactive systems and What is Human Centred Design?

The following list of questions may serve as a guideline / checkpoint for HMI-performance:

- How would you define the JTW service towards the end user?
- Which response behavior should a Jam Tail Warning elicit and how would you prefer to inform a road user of a Jam Tail?
- How would you propose we accomplish the launch of a JTW in NL?
- How does your organization satisfy the HMI design and evaluation principles as expressed in the suggested references?
- How would you propose to evaluate effectiveness and safety aspects of the JTW service specifically?
- Mono is a campaign to avoid driver distraction in NL. Specifically, many employers dictate to their employees that the use of mobile phones while driving is off limits. How does your HMI affect this campaign and how is driver distraction alleviated? (see Further Considerations)
- What are the potential consequences when a JTW is not communicated uniformly?

Business Model

Public sector support may be critical to lift the JTW service to a higher quality level and offer national coverage. Without public support it is unlikely that the industry can accomplish such universal effective service levels. Several Parties mentioned a requirement for a 3 year support period with an proposed budget of €5m/yr. or a total of €15m over the period. The foundation of this number is value based and is loosely based on the current embedded systems which cost approximately €9m/yr to maintain. For about 50% of this cost the remainder 2/3 of the Netherlands territory could be covered by FCD based JTW services delivered in car with a coverage threshold of >75% of road users. It is understood that > 75% road user penetration and said geographic coverage objectives are assumed to be satisfied in order to attain these numbers. Participants are asked to provide additional bottom up justification/logic of the cost.

The proposed distribution across roles roughly follows the following structure:

1. Increase quantity of existing private chains € 3,0 million
2. Public chain, Open Data Jam Tail Warning output € 1,5 million
3. Impact Assessment, measuring impact, calculating incentives € 0,5 million

It was stated and agreed that a long- term business model will unlikely be publicly funded. Parties concur that in the medium to long run, the use of data will achieve funding independent from public funds. Possibly the OEM industry would be adopting the cost as it gets embedded in the cost of a vehicle. If so legislation to compel OEMs to do so may be effective. Alternatives may be feasible as well. As stated JTW is not a uniquely Dutch phenomena. A consistent EU service would further elevate the user experience and possibly improve the prospects for independent commercial monetization by service providers. RWS will evaluate and report on opportunities to elevate this project within EU channels and utilize the findings of this market consultation to seek opportunities to address larger geographic territories and find corresponding funding mechanisms. RWS requests the support of participants to develop strategies which offer assurances / a level of confidence of achieving this goal.

Compensation elements of the business model to be addressed:
How would a remuneration system for the delivery of JTW messages to vehicles be structured?
How would a system of Quality Assessment of the JTW service be structured and operationalized?

1. How do we involve the Telecom sector and the Automotive (OEM) sector? What difference could their involvement and support make to the long term success of JTW service?
2. How do we achieve a leadership position within EU with regards to the JTW service?

Further Considerations:

- Links Strategisch Plan Verkeersveiligheid. Opportunities to align financing?
- Anticipated effect of European legislation with regards to mandatory ADAC features 2022 and 2024. (ISA intelligent speed adaption). How to achieve alignment with automotive OEMs?
- Alternate financing options – to review.
- Research national and international legal implications. In reference to RWS-DG-Mo talks.
- MONO Campaign - Many employers have strict policies for employees NOT to use a phone while on the road. Driver distraction and mobile phone use in the vehicle is an increasing subject of safety concern. Will these policies have implications for the adoption of phone based Jam Tail Warnings? How do we anticipate obstacles?

Activity	Date
Publish Market consultation Doc	*July 3, 2020*
Submission of Questions relating to the doc	*August 25, 2020*
Publish "Nota van Inlichtingen"	*Sept 11, 2020*
Plenary Meeting Delft	*Sept 15, 2020*
Proposals participants due	*Oct 6, 2020*
Value Chain Participants / RWS meetings 1st	*Oct 13, 14, 15*
Participant Proposal Submissions	**Nov 4, 2020**
Value Chain Participants / RWS meetings 2nd	Nov 10, 11, 12 2020
Final Participant Proposal Submissions	Nov 20, 2020
Closing FSB/ JTW Report RWS/Connekt	Nov 27, 2020

For further questions / comments please contact:

Ronald Adams – Ronald.Adams@rws.nl
Hans Kramer – Hans.Kramer@rws.nl
Lukas van der Kroft – Lukas.vanderKroft@Connekt.nl