



Questions about interest in the contract

A1. *In your opinion, how can you make a better offer by adjusting the desired service?*

- Splitting of data collection (possibly into regions) and central processing.
- Adding detailed high-resolution forecasts in order to be able to plan road de-icing in advance (forecast).
- By having the government (initially) act as a data broker.
- It would be good for both the tenderers and the contracting authority/authorities involved in this tender to draw up an innovation agenda in addition to the requested services. Focusing on both the improvement of current services and the development of new services.
- The implementation of the information in work processes and systems is of crucial importance. By customising information both from a technical and functional perspective. Devote attention to this in the invitation, too.
- Concentrate on advanced vehicle sensor data and actual near-accident information that is systematically detected instead of focusing exclusively on, for example, hard braking events.
- Do not automatically exclude fixed sensor solutions. Define requirements in terms of their function. The ideal solution could comprise a combination of techniques, such as satellite data and data collected by mobile devices.
- Develop visualisation of the information together with the traffic managers and explain how the information is created.
- Split data collection into lots on the basis of functional road classes.
- Display the information in a user-friendly interface.
- Create a link (API) with existing systems within the traffic centres.
- A longer contract term will enable market participants to make a better offer.
- Do not exclusively rely on sensors installed in the cars as other solutions may be cheaper.
- Be aware that much of the (useful) sensor data is immediately deleted within the vehicles; the data are only transmitted if specific events occur.
- In order to be able to make a good offer, it is important to know what the purpose and minimum requirements are.

A2. *What could be reasons for you to participate in the tendering procedure or not?*

- It depends on the final invitation and on whether a partner for the submission of a joint tender is needed and can be found. Participation as a consortium should be permitted.
- It is necessary for the invitation to have clear focus and objectives; an overly broad invitation is not interesting.
- Depends on whether or not a separate data broker is involved. Data processing and data collection split into separate lots.
- Ownership and scalability (to the European level) of data and solution.
- If the invitation involves a development process covering a longer period of time, the likelihood of participation increases.
- Participation depends on 24/7 data provision and system availability.

- Sufficient scope for innovation should remain.
- Instead of raw data from cars, reprocessed data should be requested, as is currently being discussed at the European level.
- There must be long-term prospects.
- The decision of whether or not to participate will be based on a financial risk assessment.
- Depends on whether PVD data is to be used exclusively.
- Depends on the access to various data sources that road managers already have.
- The scope of the invitation must be sufficient (at least covering the country).
- There must be a level playing field.
- A precondition for participation is the scope for added value of our own knowledge and (analytical) models.

Questions about the content of the contract

B1. 1) *What applications/information can you provide for the operational processes of road managers? Examples are (not limited to): shoving, skid resistance, road surface temperature, vegetation ingrowth, hard braking due to unsafe road design, etc.*

- Road friction
- Dangerous driving conditions
- Real-time and accurate forecasts up to 72 hours in advance.
- Dashboard
- Road surface images
- Asphalt quality: shoving, cracks, potholes, ravelling
- Dirt
- Obstacles / stationary vehicle
- Warning for deterioration of familiar situations
- Reduced resistance
- Historical analyses of road surface status
- Reduced grip
- Temperature, solar power, air pressure, (degree of) precipitation, fog, snow, ice
- Registration of (ad-hoc) road signs and comparison with expected road signs
- Road marking quality
- Parking information
- Air quality, registration of particulate matter
- Emergency stop (ABS) and rapid acceleration
- Amount of water on the road and risk of aquaplaning

2) *At what time intervals and after how much time can you provide measured values (data/information)*

- In general, the data are available per minute. Urgent (safety) data are made available more rapidly (1-20 seconds).
- The processing of the data into useful information generally takes between 10 minutes and 1 hour. Some solutions require a processing time of days to weeks.
- Please note that fixed location-specific sensors and special measuring vehicles have not been taken into account.

3) *With what precision in terms of location can you provide measured values (data/information)*

- Most respondents indicate a GPS accuracy of between 5 and 10 metres. All this depends on the information requested/provided.
- Please note that fixed location-specific sensors and special measuring vehicles have not been taken into account.

4) *To what extent can you indicate various quality parameters including, but not limited to, standard deviation of each measured value, position on the road (which roadway, which lane, in and outside the ruts) of each vehicle or average with a standard deviation of each measured value, etc.*

- For the presentation of measured data, each parameter, calculation and necessary filtering can be included. The more measurements available, the more accurate the information to be shown. Validation of the equipment used also plays a role.

- Position can be linked to the Key Register for Large-Scale Topography (*Basisregistratie Grootschalige Topografie*, BGT).
- It is possible to distinguish between roadways and lanes, but this does depend on the technology used.

What challenges do you anticipate in the above?

- Achieving a national network that provides sufficient measurement results 24/7.
- Information overload of user and systems.
- Dependence on the quality and accuracy of the raw data / in-car sensors, such as GPS position. Sensors in vehicles have been primarily produced for this purpose.
- The information generated will never be 100% accurate; that is impossible.
- Ruts are very difficult to measure, if at all.
- Raw data tend to disappear quickly and are not stored and/or transmitted.

B2 To what extent is it possible to adjust the analyses provided by the information if the application in practice gives cause to do so? And are the underlying data available for this?

- Adjustment is generally possible, also at different levels, if the facts or users give cause to do so.
- In view of the ongoing developments with regard to collection, adjustment will always need to be possible.

B3 Which part of the scope (delivery, installation, management and maintenance) of the project can you deliver independently? Do you use third parties (tender in combination or as a subcontractor) for the scope you can deliver?

- A number of market participants indicate that they can deliver the entire scope. Most market participants cannot provide all components and will therefore need to set up collaborations/partnerships, or have already done so.

B4 What data sources/collection methods (e.g. sensors) form the basis for the information you will provide and do you have them at your disposal?

- Sensors installed in the vehicles
- After-market vehicle sensors
- Existing/future roadside sensors

B5 How can the information you provide (such as API) be integrated into information chains? Should a specific interface be used for this purpose?

- All respondents are able to offer integration via an API; specific APIs mentioned include REST API and JSON (GIS) API.
- A dashboard via a web application is also an option.
- DATEX II

B6 What information can be provided by the sensors you will be reading out?

- Largely corresponds to answers to question B1 1)

B7 What does the requested 'user-friendly way of providing information' look like? (see section 1.4)

- On the basis of a map, the user will be able to see current reports on (selected) roads.
- Users will be able to set their own threshold values.
- Graphs for the purpose of presenting and analysing current situations.
- Integration into existing applications.
- Most of the dashboards are web applications, some include apps for mobile devices.
- Customisation

B8 Can adjustments be made easily after the 'user-friendly way of providing information' has been realised?

- In general, adjustments are easy to implement, either by users themselves or by the supplier.
- In the case of some suppliers, new data sources are easy to add.

B9 What relevant new developments in your product range do you expect during the term of ROMO?

- As the answers to this question are confidential, a summary is not provided.

B10 Would it be possible to give a demonstration (at the 2nd market consultation) of the information you will be providing? Can you indicate how this can be structured?

- N/A

B11 Could you give an indication of TCO (Total Cost of Ownership) of this service for the purpose of a realistic project estimate.

- The answers to this question are treated as confidential.

B12 Can you indicate how you access the data? If personal data are involved, what ground for processing do you apply and how is it regulated (Article 6 of the General Data Protection Regulation Act)? How do you ensure that the privacy of any data generator is protected?

- In general, the personal data will be deleted directly at source or at first processing. Only anonymised data will be included in the end product.
- Data will be used only with the customer's consent.

B13 What are the disadvantages and risks of the current description of the desired services as described in the scope?

- It is unclear whether data collection falls within or outside the scope.
- Long-term prospects are necessary. The two-year scope is too short.
- The scope is too broad and generic.
- The basic principle of using sensors installed in the cars poses a risk for the quality of the end product. Sensors in the cars are not designed for this purpose.
- A level playing field is jeopardised by the small number of providers of sensor data.
- Coverage of the entire road network constitutes a risk.
- Do not focus only on PVD.
- Rapid obsolescence of technology poses a risk for long-term contracts.
- Dependence on multiple data providers.
- The solution requested should be seen as a supplement to existing techniques and not as a replacement.
- Creating a network with 24/7 coverage is a difficult task.
- New data sources and presentations require a different method of use; this needs time.

Questions about effective cooperation

C1 Based on experience, can you describe your ideal principal? What mindset would this ideal principal have?

- The principal is open/transparent and focused on partnership/cooperation.
- The principal accepts solutions developed/devised by the market.
- The principal seeks user-oriented solutions.
- The principal is innovation-oriented and has a vision for the future.
- The principal accepts scrum / agile development methodology.
- The principal accepts the contractor's business objectives.
- The principal gives new parties a chance.
- There is good and frequent communication by the principal during the project.

C2 Do you have any recommendations on how NDW could structure the tendering & services so as to achieve the best possible collaboration with future suppliers? Is it more likely that you would participate in this tendering procedure as a result?

- Make it a restricted procedure, thus starting with a selection phase.
- As regards the solution's price/quality ratio, favour quality over price.
- Start the contract with a dialogue phase.
- Make it a clear contract with a term of several years and options to extend.
- Ensure that sufficient substantive knowledge is guaranteed at the principal, including in management phase.
- Issue functional invitations, without (technical) details.
- Issue invitations in several lots, and award the tender to multiple providers.
- Phase the roll-out.

C3 What is your preferred language for the documentation/correspondence? Dutch or English?

- A few parties indicated that they preferred Dutch, but had no problem with English.
- Other parties expressed a preference for English.

In conclusion

F1 Do you have any other ideas, suggestions or comments or do you see any risks or challenges for us with regard to the proposed tendering procedure?

- Do not focus only on current PVD; direct invitations towards analyses and forecasts as well.
- Make existing data available in order to obtain a better result.
- Ensure that the product will continue to be used after the project phase.
- Ensure proper data protection.
- Bear in mind the need for a level playing field.
- Focus on necessary information.

F2 Would you be willing to explain your answers during an interview? If so, please state your contact details for making an appointment.

- Due to the large number of responses and clear answers received, it was decided not to engage in individual interviews.

F3 Could this tendering procedure result in a reduction of CO2 emissions? How can the principal encourage market participants to reduce energy consumption by means of this tendering procedure?

- This invitation can certainly result in a reduction in CO2 emissions.
- A score should be explicitly awarded to this aspect in the invitation.
- Include a link to the CO2 performance ladder.
- Give due consideration to the minimising of transmitted/used data.
- Good data processing and forecasts will result in less salt being spread, less kilometres being driven by scan cars, faster repairs and less congestion.
- Modern techniques consume less energy.
- By using data 'that already exist anyway', additional collection (regarding CO2 emissions) can be used more efficiently.