

Procurement of real-time traffic data

Danish Road Directorate

About this Best Practice Case

Main learning aspect is how the Danish Road Directorate (DRD) used the competitive dialogue procedure to procure real-time traffic data and why. This was the first real-time traffic data procurement project in Denmark, especially designed as a first pilot to learn about the procedure to collect RTT data from a private company. The description of the current case provides a summary of the procurement background, process, key learnings and results.

Title: Procurement of real-time traffic data
Cluster Topic: Intelligent Transport Systems
Country: Denmark
Procuring Authority: Danish Road Directorate
Procedure: Competitive Dialogue
Directive: 2004/18/EC
TED: 2014/S 127-227110

Danish Road Directorate: Procuring Real-Time Traffic Data Using the Competitive Dialogue

Key Points

- **First real-time traffic data procurement project in Denmark (a pilot) – designed as a first pilot to learn about the procedure to externalise the collection of RTT data to a private company.**
- **Collecting real-time traffic data is vital to obtain a more comprehensive picture of the traffic, and one of the best methods was to obtain this is by gathering GPS-based RTT data from private and commercial vehicles. Traditional ICT standard contracts are not well suited for this kind of data procurement. A new data procurement contract had to be made prior to the tender.**
- **The participation of the suppliers in the dialogue and the provision of test data by each of them, proved to be efficient.**

The Procurement Objectives

Brief description

In the last years Intelligent Transport Systems (ITS) are becoming more and more an important tool for cities, regions and transport authorities to achieve a more sustainable, secure and efficient transport system for the citizens. City populations are growing and traffic is increasing; this requires significant improvements in traffic management. To ensure a high quality traffic management the methods to collect high quality traffic information in real-time have changed. The data collection via traditional on-road sensors is expensive (mainly because of the maintenance) and it has proved to be inefficient (because of a lack in coverage). Other data sources are or will come available, like data based on the location of vehicles also called “Floating Car Data (FCD)”. This data is collected from mobile phones and/or GPS devices. Efficient traffic management can only be achieved via real-time traffic (RTT) data that is “accurate, reliable, timely and as complete as possible”.¹⁵

For many years, the Danish Road Directorate (DRD) has collected traffic information and traffic counts via roadside systems, and has – before tendering the contract described in this best practice case – over 10 years of experience with the collection and processing of real-time GPS-based data. The data was processed and used in planning tools as well as being displayed on various platforms for motorists.

However, due to the increasing traffic and a desire to enhance the quantity and quality of data available, and due to organisational considerations - like the personal resources

¹⁵ European Commission 2008, Guillaume Leduc, Road Traffic Data: Collection Methods and Applications, Working Paper on Energy, Transport and Climate Change N.1. p.2. URL: <http://ftp.jrc.es/EURdoc/JRC47967.TN.pdf>

required when the quantity of data is increasing rapidly - the DRD decided to tender a new type of data procurement contract, aimed solely at the procurement of real-time traffic data from private and commercial vehicles.

The real-time data has to provide:

- i) overview of traffic status on the state road network;
- ii) attention to extraordinary queuing;
- iii) detection of incidents – quicker response – faster clearance;
- iv) more statistical data – better planning tools.

Reasons for this procurement

The aim of the DRD was to offer better traffic information to drivers on the most busy and congested roads in Denmark: taking a strategic road network perspective by focusing on the roads with the greatest socio-economic importance. The tender documentation (Appendix 2) contained the following considerations:

Being able to issue early warnings of extraordinary queuing is a priority for DRD. The DRD is working to improve its traffic incident management efforts in connection with traffic accidents, for example, where up-to-date traffic information is vital in order to detect and handle incidents efficiently. Collecting real-time traffic data is vital in gaining a more comprehensive picture of the traffic, and one of the best ways to obtain this is by gathering GPS-based real-time traffic data from private and commercial vehicles. The use of real-time traffic data from GPS data is part of the DRD's development of better traffic information to road users. Therefore, the DRD is interested in a supplier who will supply data for this development and support the Customer with expertise of real-time traffic data.

The Customer intends to use the real-time traffic data for various real-time applications in its traffic information services such as:

- *Display of average travel time for certain sections of the road network and as a basis for establishing the traffic conditions relative to actual normal conditions*
- *Display of traffic conditions for certain parts of the road network*
- *Detection of incidents defined as extraordinary queuing and display of extraordinary queuing on certain parts of the road network*
- *Display of short term traffic forecasts, so that the DRD and the road users are better informed of expected travel time and are provided a better basis for selecting the right route. This may include short-term forecasts for travel time of certain road sections.*

Innovative Aspects

Within this Best Practice Case two kinds of very different innovative aspects can be identified by SPICE:

What was procured is innovative:

The first innovative aspect relates to the way the RTT data is collected. Moving away from

non-efficient collection methods like collection via one-road sensors to GPS-based RTT data collection is improving the data quality and therefore the quality of the traffic management itself, while saving resources at the same time and achieving higher safety and better information on the roads for citizens/drivers.

The procurement process itself is innovative:

As procuring innovative technologies is often not possible via standard contracts, that allow you to buy on-the-shelf solutions an innovative procurement procedure has been chosen. Testing the data that could be provided by the suppliers was one of these aspects. Each supplier was asked to deliver a week's data on a particular stretch of road. This was a part of the tender requirements and allowed the public procurer to test the data. (read more about the process in the subchapter "procurement process" below).

The Procurement Process

In preparation for the tender the DRD carried out several peer consultations at comparable public authorities in the Netherlands, the UK and Finland. DRD realised that none of these well-known authorities had neither the same technical set-up nor needs as DRD, nor, as a consequence, had tendered a similar procurement contract for real-time traffic data. As a consequence, DRD had to draft the technical specifications from scratch. Likewise, a new procurement contract had to be drafted, as the standard ICT contracts available were not sufficient as these focusses on the delivery of systems – not on data.

DRD did not carry out specific preliminary market consultations as the authority, due to its own knowledge of the product, was relatively clear on how to specify the requirements and the conditions hereof, and due to the fact that any amendments of the requirements or contract provisions could be changed during the dialogue phase.

DRD did however publish parts of the technical requirements to the market before publishing the tender, but not many reactions were received from the supplier side.

Procurement Procedure

Key Reasons for using the Competitive Dialogue in this Procurement

Denmark did not have a standard agreement for buying data. A new data procurement contract had to be made prior to the tender. The participation in the competitive dialogue included the delivery, test and evaluation of test data. Each supplier had to provide test data. This proved to be efficient, because in this way DRD was able to check in advanced if the supplier could provide the data needed to fulfil the expectations.

The **Competitive Dialogue** was chosen as the procurement procedure for this technological highly complex contract. However, also the fact that the new contract and the object of the contract in itself had not previously been tendered in the present form in Europe required a procedure containing the possibilities of a dialogue.

Notwithstanding that the conditions for using Competitive Dialogue in Denmark under the previous procurement directive 2004/18/EC was very restricted, the complexity of the technical requirements and the legal conditions and last but not least conditions on the right of usage of data, were considered as sufficient to justify the use of a Competitive Dialogue.

The procurement process was conducted from June 2014 (contract notice 2014/S/ 127-227110 of 05/07/2014) until June 2015 (contract award notice 2015/S 134-248264 of 15/07/2015). The process consisted of a pre-qualification phase, resulting in the pre-qualification of three suppliers, followed by a two-step dialogue phase and a final tendering phase. Each of the three candidates participating in the whole tendering phase was paid DKK 100.000 (≈ EUR 13,500) for their participation.

The contract and requirements were amended and fine-tuned during the dialogue phase according to the specific needs of DRD. The dialogue phase was a great tool for the public procurer to talk with suppliers and to design a tender that led to the expected results. Often public procurers are not aware of all the technical and/or functional requirements needed to write the tender documents, especially when dealing with innovative technologies.

“Thanks to the competitive dialogue, we could really get to the bottom with some questions and we could identify the cost-drivers involved.”

2: Quote from Interview with project manager Charlotte Neumann Holstrøm and the Engineer Olof Åke Egemalm 31st March 2017

The Competitive Dialogue in short

The competitive dialogue is a procedure that allows discussing with potential suppliers, which is often needed when tendering complex innovative systems, like in the ITS sector. In the current case it was a two-stage process:

In the first stage the public procurer (contracting authority) is advertising the contract opportunity, and the potential suppliers are asked to submit the request to participate and when this is done they submit so-called “pre-qualification and selection stage information”. This information is checked by the public procurer to evaluate if the supplier is qualified to perform the contract. The qualified suppliers are invited to participate in the tender; the public procurer is allowed to limit the number of participants, which is for example necessary if the public procurer pays the suppliers a budget already for participation in the competitive dialogue, like in the case described here. The public procurer draws up a short list of suppliers that will be invited to participate in the next stage which is the Competitive Dialogue itself.

The second stage of the competitive dialogue has the huge advantage that during this stage, all aspects of the project can be discussed with the suppliers and the number of solutions can be reduced as part of the process. Once the public procurer has sufficient confidence that it will receive proposals that will meet its requirements, it declares the competitive

dialogue phase closed and invites tenders. Under this procedure, tenders can only be evaluated on the basis of the most economically advantageous tender.¹⁶

The **contract award criterion** of the final tender was “the most economically advantageous tender” based on the following sub-criteria:

Sub-criterion	Weighting
Price	30 %
Quality	20 %
Extend of delivery	35 %
Organisation and planning including time	15 %

Pro and Cons of the competitive dialogue

The main benefit of the procedure used in this procurement was the fact that a competitive dialogue was possible. This dialogue was crucial, because there was no prior experience with such real-time traffic data procurement.

For the DRD the dialogue was important to learn which components they expected are difficult (for example through data ownership issues and data security), which parts will be expensive and how to formulate the tender requirements in a way to get a solution that is useful and affordable at the same time. On the negative side, the competitive dialogue is very time consuming.

Phases of the Procurement

The contract divided the project in several phases, safeguarding a common understanding of requirements, quality and tests results:

<p>Design phase</p> <p>The objective of the design phase was to provide an insight for the Supplier into the Customer’s needs, business procedures and relevant parts of the IT environment, and to provide the Customer with an insight into the Supplier’s solution proposal with a view to achieving a further specification of the content and purpose of the delivery.</p> <p>Furthermore, the design phase shall include the following activities to be undertaken as separate activities:</p> <ul style="list-style-type: none"> A. A detailed description of the delivery. B. A detailed interface design.

¹⁶ Procurement of Innovation Platform, Guidance for public authorities on Public procurement of Innovation, URL: https://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform_Guide_new-final_download.pdf

<p>Preparation phase</p> <p>Preparation of the collection, processing and delivery of real-time traffic data.</p>
<p>Partial delivery no. 1 (Motorways in the Copenhagen-Capital region included in the strategic road network, excluding ramps)</p> <p>Acceptance test including service level test. The partial delivery is taken into operation after test.</p>
<p>Partial delivery no. 2 (Delivery 1 + the remaining of the strategic road network in Denmark, including ramps)</p> <p>Acceptance test including service level test. The partial delivery is taken into operation after test.</p>
<p>Partial delivery no. 3 (Delivery 1 + 2 + State roads not included in the strategic road network)</p> <p>Acceptance test including service level test. The partial delivery is taken into operation after test.</p>

Key Results

The contract was awarded in June 2015 to: INRIX UK Ltd

Contract tendered

The tender included among others the following conditions:

- Service contract on delivery of real-time traffic data with duration of 32 months with options on renewal of agreement for 2 times 12 months, in total 56 months.
- The supplier acts as broker (intermediary) and is responsible for the collection of GPS-based real-time traffic data from vehicles. The supplier must enter into agreements with data providers for the delivery of real-time traffic data. The data providers may be e.g. fleet owners, motorists with smart phones, providers of GPS-based smartphone navigation, service providers of navigation equipment for vehicles and vehicles manufacturers.
- The main delivery object of the contract covers real-time traffic data on the Danish strategic road network and the remaining state roads for:
 - travel times on segments;
 - traffic conditions;
 - extraordinary queues;
 - predictive traffic.

The contract contains the following content related options:

- point based data for statistical use;
- data for a range of municipal roads.

Key Lessons Learnt

As there were no similar tendered contracts in Europe to learn from, this made it difficult for the public procurers to foresee how the market would react to certain contract provisions and minimum requirements. These requirements needed to be very specific to obtain the expected results. Not knowing the possible reactions of the market is a high risk for a public procurer, because they need to avoid that the tender is failing (costs of the process, not getting the expected results, vendor lock in). Therefore a competitive dialogue was chosen as it was possible to talk with the market (the suppliers) about the requirements. As an example, it turned out that the suppliers were much more sensible to provisions on “Rights in data” (contract section 7.4), especially about the reuse or publication of such data, and several amendments had to be made in those provisions during the dialogue phases.

Another example was the knowledge on potential different business models offered by the European suppliers. The Danish Road Directorate did not know which business models existed in the field of the provision of RTT data. This was clarified through the competitive dialogue. This information, which was obtained within the dialogue, helped the public procurers to specify the tender.

The main learning points are:

1. Using **the procurement procedure competitive dialogue is very resource demanding**. It is very important that the resources and time needed are allocated well in advance and that the project management is based on a realistic time plan.
2. **Traditional ICT standard contracts are not well suited for data procurement**; a dialogue is needed. A new data procurement contract had to be made prior to the tender.
3. **Provisions on rights of use of the data are crucial for the suppliers**. Every single purpose for usage has a price and was thus an important cost-driver. The initial contract provisions on “Right in data” (contract section 7.4), giving the Customer unrestricted right of usage, had to be significantly modified during the dialogue phase.
4. Unlike a traditional ICT procurement, it **was not possible in the competitive dialogue to see systems or solutions demonstrated during the dialogue phase**. Instead, test data provided by each supplier proved to be efficient.
5. There was no similar tendered contract existing in Europe to learn from, this made it **difficult to foresee how the market would react to certain contract provisions and minimum requirements**. Not knowing the possible reactions is a high risk for a public procurer, because they need to avoid that the tender is failing (costs of the process, not getting the expected results, vendor lock in).
6. Knowledge on different business models was offered by the European suppliers, which were clarified through the competitive dialogue. This **information helped the public procurers to specify the tender**.

References and Further Information:

References

1. The main reference for this best practice case is the interview done by Lasse Stender (North Denmark Region) with the Danish Road Directorate on the 31st of March 2017. The interviewees have been the project manager Charlotte Neumann Holstrøm and the Engineer Olof Åke Egemalm.
2. European Commission 2008, Guillaume Leduce, Road Traffic Data: Collection Methods and Applications, Working Paper on Energy, Transport and Climate Change N.1. p.2. URL: <http://ftp.jrc.es/EURdoc/JRC47967.TN.pdf>
3. Procurement of Innovation Platform, Guidance for public authorities on Public procurement of Innovation, URL: https://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform_Guide_new-final_download.pdf

Further Information

1. Full tender documentation is available in English at:

http://vejdirektoratet.dk/DA/vejsektor/leverandoeportal/Sider/Afsluttedeudbud.aspx?Paged=TRUE&p_VDLDateOfPublishing=20140819%2022%3a00%3a00&p_ID=857&PageFirstRow=241&&View={D8CAD6C6-0673-4622-8BB5-01ABF5939355}

2. More information on the competitive dialogue procedure can be found here:

http://www.eipa.eu/files/repository/eipascope/20100114121857_Eipascope_2009_2_Article2.pdf

3. Competitive Dialogue step by step:

https://www.google.at/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&ved=0ahUKEwjEhrmItobUAhW_LvRQKHSyDBsYQFghfMAG&url=http%3A%2F%2Fwww.apuc-scot.ac.uk%2Fuploads%2Fdocs%2FSM%2520-%2520Competitive%2520Dialogue%2520Procedure.doc&usq=AFQjCNGp2ZKwOPzBinp8RXs4sgBN2Qlj8Q&cad=rja