Questions and answers

Q1: *I would like to ask about the estimated budget of the contract – nettfart.no mobile broadband measurement solution, development of mobile applications (…). (…) there is no information including the value of this project. (…) what is the value of the project?*

A1: Nkom has not determined an estimated budget for this procurement, due to the complexity of the project. The tenders must include a price of the project based on the requirement specification and information in the tender notice.

Q2: *In section 2.2.8.1 of Appendix 1 - Requirement Specification it states: "Source code will be delivered to Nkom throughout the project".*
Our company has invested a lot into research over the last couple of years in this space and our source code is a company asset. We can agree to release some parts of the source code but not some of the components that we feel are important business assets.
Do you require full source code to be opened or would opening some parts of the source code satisfy your requirements?

A2: The bidders are not required to open full source code to be considered in this tender. However, we require that the source code that is utilized in front end web development, such as the heatmap, is open.

The extent of the delivered source code may be a factor in the evaluation and selection phase of the tender process. We advise the bidder to specify which components they consider important business assets.

In the even where the application and its intellectual property is owned and kept by the bidder, the bidder must ensure long-term service availability. It should also be noted that in the event of a licensing scheme for the whole or parts of the solution, a predictable long term (2, 4 and 8 year minimum) calculated cost of ownership will be required as a part of the offer.

Q3: *In section 3.4 of the Tender Notice it states that a statement is required confirming that "the bidder does not have any ongoing assignments that may create a conflict of interest".*
We do not feel there is conflict of interest but we would like to disclose that our company has existing speed test mobile apps available in mobile app stores. Is this an issue?

A3: We do not consider this a conflict of interest, as long as the assignments do not affect the bidder's delivery to Nkom. We encourage the bidders to include information regarding any measurement applications in their portfolio.

Nasjonal
kommunikasjonsmyndighet
Besøksadresse:
Nygård 1, Lillesand

Postadresse:
Postboks 93
4791 LILLESAND

Tel: 22 82 46 00
Fax: 22 82 46 40
firmapost@nkom.no

NO 974 446 871
www.nkom.no

Q4: In section 3.3 of the Tender Notice there is a requirement for 2 years accounts. We can provide those for [Company name 1] however we are in the process of moving the company from [Country 1] to [Country 2] and renaming it [Company name 2]. The (new) company was set up only few months ago and therefore does not have 2 years' of accounts.
The company directors, company secretary and all other key personnel for [Company Name 2] will be the same as our existing company [Company Name 1]. The irony is we decided to rebrand because [Company Name 2] is a better description of our company direction than [Company Name 1] and this also matches your requirements.
We would prefer to deliver the contract from new company but if it's an issue, we can still bid from [Company Name 1] which has been operational since 2010 and can remain operational if required. However, we assume that if we are successful in our bid then we will be in business together for some years and it makes sense to establish the relationship with the new company name: [Company Name 2].

A4: The bidder is allowed to provide annual accounts from the new company. We encourage the company to give a detailed description of the two companies' organizational structure. If the bidder is referring to the old company, the bidder must also ensure that they hold a high level of competence and expertise in the new company.

Q5: What do you consider as experience from similar assignments (cf. tender notice, pt. 3.4)? Are development of iOS and Android-applications considered as experience, or do you exclusively consider experience on measurement of broadband access speed?

A5: This project will naturally place special emphasis on any experience with the technical aspects of mobile applications that make capacity measurements. Being able to demonstrate experience and understanding of the complexities associated with the correct measurement methodology for mobile network accesses, will be considered important. Following this, one should then be able to demonstrate good understanding of not only what happens in the terminal, but also in the network. That being said, also proposals on how to price a good user interface, etc. are important. Prior experience with development of mobile applications will obviously be taken into account when assessing any answers to the tender.

Q6: Which language should the tender offer and all required documents be delivered in? Can it be delivered in English language?

A6: The tender offer and all the required documents regarding this tender can either be delivered in English or Norwegian. However, we prefer English.

Q7: In case the required legal documents – such as tax certificate, VAT registration certificate, etc. – are issued in a language different from Norwegian, is it a requirement to translate these documents? If yes, which language should it be translated to? In addition to that, is a translation of a court certified interpreter needed?

A7: For bidders abroad, required legal documents must be translated into English. The bidders are not required to use a translation from a court certified interpreter, but offer must contain the original document as well as the translation.

Q8: In the Agreement in clause 3.4 "Wages and Working Conditions" it says: "Performance of the Consultant's obligation as mentioned above shall be documented in Appendix 6 by means of either a self-declaration or a third-party declaration showing conformity between the relevant collective wage agreement and the actual wages and working conditions relating to compliance with the Consultant's and any subcontractors' obligations."

As far as we understand, Appendix 6 "Changes to the general contractual wording" is designed for stating any replacements.

If the wages and working conditions of our company is in line with the Generalised Collective Wage Agreements, is it still needed to state the performance of our respective obligations in Appendix 6 as a <u>replacement</u> request?

A8: You do not need to state the performance of your obligations as a replacement request. However, we want you to send documentation that confirms that you are in line with the Generalised Collective Wage Agreements with your offer.

Q9: Referring to Appendix 5: The Agreement, clause 6.2 Invoicing. In case the Consultant prefers to send invoices by post instead of sending electronic invoices, which is the correct receiving address? And if applicable, is it for the attention of a specific person?

A9: We urge our suppliers to use electronic invoices. However, if the suppliers prefer to send invoices by post, the invoice must be send to the following address:

Norwegian Communications Authority
att. Johan Foldøy
Postbox 93
7491 Lillesand
Norway

Q10: The tender notice document in its part 2.7 that "bidders must stand by his offer for the time specified in clause 1.6 above". Clause 1.6 refers to two locations of the tender announcement while clause 1.7 does specify period of validity – 15.03.2016.

A10: The bidders must stand by their offer to 15.03.2016.

Q11: How many assignments should we include/present within the Letter of Tender?

"Description of the bidder's relevant assignments:

- *Project value*
- *Point in time*
- *Recipient (including name, phone number and email address)"*

A11: We have intentionally avoided setting a certain number of relevant assignments. However, we wish that you limit yourself to five assignments.

Q12: *As [we] have a signed a Non-Disclosure Agreement (NDA), we are bound by its still valid contents. Some of those NDAs do forbid us from providing even the contact person, etc. We'd be happy to provide Nkom with relevant information once Nkom signs simplified versions of the NDA – allowing us to provide relevant information and coordinates. Would that be acceptable to Nkom?*

A12: If it is required for Nkom to sign a NDA to obtain information in this tender, we will oblige to the request.

We would like to remind the bidders to submit a version of the tender in which information considered to be trade secrets or confidential information has been blacked out.

Q13: *Is there any specific format of CVs comfortable for Nkom?*

A13: We do not have any specific standard for CVs. The bidder must ensure that the CVs are clear and organized.

Q14: *Is there any alternative preferred by Nkom for preparation of price and pricing provisions?*

A14: Nkom has not prepared any fixed format for pricing. It is however expected that a fixed price be given for development of the minimum solution (all necessary elements from the requirements document), as well as a price including options where appropriate based on the bidders solution. Support pricing should be given for the minimum timeframe of 2 years, as well as the yearly extensions. It would also be advisable to also list hourly prices per resource/resource type for future change requests. Pricing should also include any license costs for third party products used in the solution.

Q15: *Are connectionless protocols to be tested (UDP)? These may usually behave quite differently, depending on the local service type (e.g. 3G vs. LTE). On the other hand, most streaming protocols use connectionless traffic, so this could be indicative for streaming services quality.*

A15: To our knowledge connectionless protocols are mostly used for delay sensitive real-time-data, i.e. RTP and traditional MPEG/H.234 used for video or voice services. For delay tolerant streaming, it seems that bit-rate adaptive connection-oriented protocols are more widely used,

e.g. TCP/HTTP and MPEG-DASH or HLS as used by content producers such as Netflix, Youtube and Apple.

In the tender we require a solution that is based on a connection oriented transport protocol, i.e. TCP. This is due to the nature of connectionless transport protocols in where they don't lend themselves easily to probe for maximum available bandwidth in a heterogeneous and diverse environment and may have trouble with network elements such as NAT or firewalls. Thus, the use of connectionless protocols in a test scenario would typically be part of an extended test-set where QoS/QoE is measured using a connectionless transport protocol in a CBR configuration. An extended test-set is not part of the tender, where the main focus for network traffic characteristics is measuring capacity and two-way latency.

Q16: If a connectionless traffic is to be measured too, what are the parameters? Apart from the frame drop rate, are there more detailed metrics to be collected?

A16: For a connectionless traffic stream the typical measurement parameters are jitter and droprate along with stream characteristics.

Q17: What is the full set of the measured service characteristics? Is it just ping times and throughput for up/download, or more? (e.g. load response profile)

A17: The base measurement should at minimum measure the mentioned characteristics, see table 15 and 16 in Appendix1.

A solution that is able to measure wider range of attributes and give a better view of the service characteristics would be welcomed but not required. Examples could be an analysis of policing properties, probable packet drop causes or end-to-end connectivity capabilities. Some extended analysis could be achieved by observing the TCP state change while others require additional tests. However, an extended test-set is not part of the tender but would be welcomed.

Please note that the tender also requires additional access link layer properties to be recorded.

Q18: Will the collected results information be submitting to any post processing within the system itself? (in order to create a live map-based visual representation either in the mobile agent, or web front-end, like network throughput heat maps, visual outage maps, etc etc)

A18: Yes, some post-processing will be required in order to fulfill the requirements in Appendix1 (e.g. chapter 2.4.4, 2.5.3 and 2.5.4). Some post-processing may also be required in order to store results in a way that allows the Solution to achieve a scalable and responsive heat-map, but this is implementation specific.

Q19: Does the Geo-IP database provide also the given ISP throughput capacity? Is there a mechanism to limit the load on the network should there are too many measurements ongoing in a certain area?

A19: The Geo-IP database will not contain a given ISPs throughput capacity, but there will be a separate database containing the Norwegian ISPs and their available subscriptions. The Solution will not try to avoid congestion within an ISPs network, but should be aware of cross traffic/additional traffic originating from the measurement agent device during the test, and must include congestion avoidance mechanisms in the part of the topology and server resources controlled by Nkom. (i.e. measurement peer site)

Q20: How the mobile agents will be authenticated by the servers? (to exclude possible abuses)

A20: We require a token-based access to be agreed upon between the Controller and the Measurement Agent during the measurement setup phase (see requirement 2.4.1.14, and 2.5.3.6 in Appendix1). The controller should only allow a single measurement session per measurement client ID to be performed at a time. The controller should only allow valid measurement agent client IDs to enter the system. The measurement configuration setup communication should run over TCP. The valid access tokens generated per measurement session should be non-deterministic and shared between the controller and measurement peer in order to avoid spoofing. Furthermore, the controller should utilize sane connection timeout variables in order to minimize vulnerability against timer based resource exhaustion denial of service attacks.

The measurement agents client ID is considered a shared secret that allows the measurement client to authenticate itself in the Solution. Steps should be taken to inform the users of the risks of exposing this ID to others. Further protection measurements to guard against the ability to spoof client ID should be part of the Solution development cycle.

Q21: The documents of the offer are all that is specified in chapter 5 [of the tender notice] or do we also have to present a draft of the agreement and all of its appendices together with the offer?

A21: The bidder is expected to follow the design specified in chapter 5. The bidder does not need to present a draft of the agreement. However, if the bidders have reservations to parts of the tender documents including the agreement and its appendices, they will have to state this in the letter of the tender, cf. 2.6 and 5.2 in the tender notice.