

Invitation for preliminary market consultation

for KIFÜ's procurement procedures
for the supply of QKD and active data networking equipment

1 Contracting entity

Official name: Governmental Agency for IT Development (KIFÜ – Kormányzati Informatikai Fejlesztési Ügynökség)

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2 Purpose of the consultation

Subject of the consultation:

- preparing the public procurement procedure, assessing the market opportunities;
- informing the market participants concerned in advance of the contracting entity's expectations, the intended content of the technical specifications, the purpose and conditions of the procurement, regarding the public procurement procedure to be launched in the above-mentioned subject;
- finding the estimated value of the public procurement to be launched.

All market participants attending the consultation may ask questions and make suggestions for rationalising and clarifying the technical content. Interested market participants may ask questions prior to the consultation in accordance with the rules governing the consultation procedure.

3 Planned procurement

In project QCIHungary, KIFÜ acting as contracting entity intends to procure QKD and data networking equipment. KIFÜ's aim is to build secure point-to-point data communication links. Data networking devices shall encrypt and decrypt data with symmetrical key ciphers at the endpoints, using keying material delivered by QKD (Quantum Key Distribution) devices.

3.1 Data communication links

Data communication links include interurban ones in Hungary, as well as local links within Budapest:

- Budapest – Győr
- Budapest – Szeged and Budapest – Nagykanizsa (using the same QKD devices, only one of the two links operating at a time)
- KIFÜ Victor Hugo street DC (Budapest, XIII. kerület) – KIFÜ Wigner DC (Budapest, XII. kerület, Csillebérc)
- BME (Budapest University of Technology and Economics) campus (between two buildings)

- ELTE (Eötvös Lóránd University of Science) campus (between two buildings)

KIFÜ is planning to procure network encryptor device pairs for four of the above-mentioned links.

3.1.1 Interurban link parameters

Budapest – Győr

Section	Length [km]	Estimated attenuation @ 1550 nm [dB]
Budapest – BG1	48	14
BG1 – BG2	28	8
BG2 – Győr	73	20

Budapest – Szeged

Section	Length [km]	Estimated attenuation @ 1550 nm [dB]
Budapest – BS1	76	21
BS1 – BS2	56	15
BS2 – BS3	28	8
BS3 – Szeged	68	19

Budapest – Nagykanizsa

Section	Length [km]	Estimated attenuation @ 1550 nm [dB]
Budapest – BN1	43	11
BN1 – BN2	61	17
BN2 – BN3	64	18
BN3 – BN4	56	16
BN4 – BN5	32	9
BN5 – Nagykanizsa	63	18

3.2 Requirements

Preliminary requirements set out below are not technical specifications of the call for tenders, but are here to delimit the scope of this market research. Technical specifications in the call will be based on the results of this market research.

3.2.1 Common requirements

- All devices must be commercially available,
 - with technical documentation,
 - and vendor support services.
- All equipment must be rack mountable in 19" telco frames.

3.2.2 QKD requirements

- Encryption key bit sequence generated by the QKD system must be random. The QKD system itself must provide key randomness, without using external equipment.
- Information carried in quantum physical parameters during key distribution must be transmitted using telecommunication optical fibre (ITU-T G.652).
- If the data communication endpoints are too far apart, then a series of several QKD device pairs must be connectable to each other. The resulting QKD system must derive the key bit

sequence to be delivered at the data communication endpoints from the keying material provided by the QKD device pairs operating on each section.

3.2.3 Encryptor requirements

- Encryptor devices encrypt and decrypt telecommunication network data traffic at the endpoints of a data communication link.
- Encryptors use symmetric key ciphers that resist cryptanalysis even by quantum computers, according to state-of-the-art science.
- Encryptor devices use IPsec to encrypt and decrypt IP packets, or MACsec to encrypt and decrypt Ethernet frames, or use other means to encrypt and decrypt Ethernet or lower OSI layer data traffic.
 - KIFÜ intends to purchase all three types, one device pair of each type.
- Encryption keys must be derived from the identical key bit sequence received from the QKD system at the endpoints of the data communication link.

3.3 Information to be provided

3.3.1 QKD devices

Please introduce briefly the proposed QKD devices, including their main technical characteristics.

How is the random bit sequence generated?

How are the keys distributed? How are they derived from physical parameters?

Can the QKD device pair operate on optical fibre which carries other standards-based data traffic (Ethernet or WDM) simultaneously? If so, how does this affect QKD operation?

At what bitrate can a QKD device pair deliver keying material? What characteristics and circumstances limit this bitrate?

How can multiple QKD device pairs be daisy-chained in order to achieve longer range? Is additional equipment needed for this? What are the requirements for the connecting nodes?

How are key bits derived when multiple QKD device pairs are daisy-chained?

Is the key bitrate affected by daisy-chaining multiple QKD device pairs, and if so, how?

What measures does the QKD system use to detect and prevent unauthorized access?

Please introduce the system's ETSI (or other) standards compliant interfaces.

On what interface does the QKD system deliver key bit sequences? What are the main characteristics of that interface or protocol?

Which data network encryptors are interoperable with it, in particular devices belonging to the 3 groups mentioned in the previous chapter? To which of them on what interface can key bit sequences be passed? Which ETSI standards do the solution comply with?

On what interface and how can the components of the QKD system be configured and controlled?

On what interface and how can the system's operating parameters, status and events be queried?

3.3.2 Encryptor devices

Please introduce briefly the proposed network encryptor devices, including their main technical characteristics.

On what interface can the encryptor receive keying material from the QKD system? What are the main characteristics of that interface or protocol?

Which vendors' QKD devices can it interoperate with? From which of them on what interface can key bit sequences be received? Which ETSI standards do the solution comply with?

How does it use encryption keys received from the QKD system?

On what interface and how can the encryptor be configured and controlled?

On what interface and how can the system's operating parameters, status and events be queried?

4 Consultation procedure

Venue: registered office of the contracting entity (1134 Budapest, Váci út 35.), remote online participation is also possible.

Market participants are informed that participation in the preliminary market consultation is subject to registration. Only those delegated by market participants who have indicated their interest as described in the next paragraph and therefore are registered by KIFÜ may participate in the consultation.

Interested market participants may express their interest in participating in the consultation by providing the following information in e-mail to kozbeszerzes@kifu.gov.hu by 14:00 on 19th of May, 2023:

- name of the market participant;
- postal address of the market participant;
- e-mail address of the market participant;
- name of the person(s) representing the market participant attending the consultation.

Until that date, interested market participants may also send questions concerning the planned procurement and the technical specifications to the e-mail address indicated above. The questions asked up to the registration deadline will be answered by the contracting entity during the consultations. The questions asked and the answers given will be made available to all interested parties as part of the minutes of the consultations.

The exact schedule of the market consultation will be communicated by the contracting entity after the registration deadline. The contracting entity intends to consult market participants separately. **The order of consultations will be the same as the order of indications of willingness to participate.**

The contracting entity intends to hold one round of consultations, but reserves the right to hold more consultation rounds if necessary.

The contracting entity will notify market participants that have indicated their intention to participate directly of further consultation round(s) and will publish a notice on its website of any further round(s).

The contracting entity will make the minutes of the consultation available free of charge electronically to anybody after the consultation, on the same platform as the publication of this invitation, and will also send it directly to participants of the consultation.

In order to ensure the accuracy of the minutes, the contracting entity wishes to record the audio of the consultations.

In view of the above, KIFÜ requests market participants to ensure the presence of persons entitled to make statements (authorised or mandated to represent the company) at the consultation.

Date according to the electronic signature.

Sincerely,

Dr. Endre Spaller
president