NRK

Contract for HD Vision Switchers

**Appendix 1
Customer requirement specification**

Reference no.: NRK MA2822/15E

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1 The overall objective

The overall objective for this tender is to acquire a new large format vision switcher suitable for use in RK7 and a second unit, NRK's production facility bound for Studio 7 - located at Marienlyst in Oslo.

NRK's plan within the next few years is to renew all the switchers in the news area. This Tender shall therefore also include an option for NRK to acquire switchers for the main News studios, Studio 5 and Studio 6, based on the same concept, but with different configurations, within 36 months after signing of the contract.

RK7 is NRK's daytime news production facility. Great focus will be put on Mosart automation including switcher- and robotic camera-control.

Apart from renewing NRK's news production an essential part of the project is to save labour costs by implementing more automation in the studio environment.

The switcher must be able to deliver a separate output based on the same input resources to feed a second TV channel or internet stream. This second output will be 100% Mosart automated with no or a small sized dedicated user panel.

NRK's news production workflow is still not pure HD. The new switcher will mainly receive standard HD 1080i 25 formatted sources, but there will also be a need to upconvert SD sources.

The studio design will be based on the use of large video screens. We therefore see the need for colour correction on the auxillary outputs which will feed the screens in studio.

To achieve a smooth workflow between the studios, NRK will look at the possibilities to interconnect the swithers within a network for easy sharing of switcher content like config files, graphics, macros etc.

Necessary user training, maintenance training, software upgrades, support and spare parts (list) should be a part of the tender.

NRK see that maintenance costs increases due to the need of Support Agreements. NRK will now therefore put an increased focus on the complete cost of the equipment during lifetime including support and maintenance. (Lifetime is estimated to ten years).

NRK expects delivery of a complete tested and operational vision switcher for TV productions and relevant use.

Furthermore NRK expects that The Contractor conducts its business in a professional and skilful manner.

2 General technical specifications

2.1 Product specification and documentation

The Tender must contain product specification/documentation giving complete and detailed information about the product including technical specification, physical specification and power consumption.

Please note – fill in your reply Appendix 2: Contractor solution specification – not in this document.

<Contractors reply>

2.2 Descriptions and specifications

This chapter describes the basic functionality of the vision switcher.

The Studio production switcher will be mainly controlled by NRK's Mosart automation system, but also manned and controlled by traditional skilled broadcast personnel with substantial experience in multi-camera production.

2.2.1 General concept description for Studio production switcher

The switcher will be used in NRK's main news room. Redundancy and high reliability is therefore essential.

Formats to be supported		
The switcher shall support the HD 1080i/25 format and should support the 720/50p format. Please clarify support for 1080p/50, Level A and B and 4K.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

HDSDI 1,485 Gbit/s support		
The switcher shall comply with the HDSDI SMPTE 292M - 1,485Gbit/s standard		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

2.2.2 Minimum requirements

The table below describes what NRK consider as minimum requirements for the switcher. The Contractor is asked to fill in answers on all points and comment on these:

Control surface		
The switcher control panel shall include minimum 16 source buttons, physically 2 ME rows, (including PP row) controlling 4 ME rows.		
Due to Mosart automation control and restricted space, we are aiming at a smaller control panel than the actual number of ME's in the main frame. Please describe the flexibility regarding the size of the control panel compared to the size of the mainframe.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Remote control panels		
The switcher shall include one external GUI panel. It should be possible to control the colour correctors from the GUI panel. If not, please clarify.		
The switcher should also include 1 auxiliary bus control panel - preferably in 1RU 19" size. Please describe whether the buttons on the panels are freely configurable to all sources in the switcher.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

HDSDI input capacity		
The switcher hardware shall include minimum 32 HDSDI inputs		
<description>		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Program and M/E HDSDI outputs		
The following HDSDI outputs are minimum requirements: 4 outputs per ME		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

M/E capacity		
The switcher shall include minimum 4 full MEs.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Auxiliary outputs		
The switcher shall include a minimum of 16 auxiliary outputs (HDSDI)		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Colour correction		
The switcher should include colour correction capabilities on inputs and auxillary outputs. Please clarify the number of inputs and outputs with colour correction possibilities.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

SD/HD Up conversion

The switcher should include SD/HD up conversion capabilities on inputs.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Format conversion

The switcher should include format conversion capabilities. Please describe supported conversion formats and the number of converters available on the input and output side.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Keyers

The switcher should include minimum 4 keyers including resizers on all MEs.		
Please describe the quality of down stream keyers regarding the handling of linear, luminance and chroma key signals.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Internal DVE

The switcher should include a twin channel internal 3D DVE.		
Please specify the delay which is introduced by the DVE.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Internal RAM recorder		
The switcher shall include an internal RAM with audio capabilities.		
Please describe available memory in GB and available recording time in supported video formats.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

E-MEM/Macro		
The switcher shall include Effects Memory (snapshot) and Macro functionality.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Tally/GPI interface		
The switcher shall include a Tally/GPI interface. Please describe physical interface and functionality.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Label transfer		
The switcher shall be able to import labels from NRK's router control system. Please describe supported protocols.		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Mosart automation support

Mosart shall be able to control

- Source selection on all MEs and keyers
- Transitions on all MEs
- Triggering of DVE effects
- Global memory (G-MEM/snapshot/etc) recalls
- Individual bank memory (D-MEM/snapshot/etc) recalls
- Aux bus output control
- 4 ports for Mosart controlling two different simultaneous outputs

Would you comply with this requirement?	Yes	No

Please describe how you comply:

<description>

Second control unit

The switcher shall have a second unit functionality, not necessarily a physical panel. This second control is 100% Mosart automated. Up to two ME's shall be reserved for this.

Would you comply with this requirement?	Yes	No

Please describe how you comply:

<description>

Back up and file sharing

It shall be possible to connect at least three switchers together in a network for exchange of config files and other switcher data against a server. Please describe possibilities and limitations.

Would you comply with this requirement?	Yes	No

Please describe how you comply:

<description>

Redundant power supplies		
The switcher shall include redundant power supplies		
Would you comply with this requirement?	Yes	No
Please describe how you comply:		
<description>		

Physical size requirements and power consumption
The description must as a minimum include number of rack units and total power consumption.
Please describe requirements for offered equipment:
<description>

2.2.3 Optional features/components

The table below describes options which are not considered as requirements for the switcher. The Contractor is however asked to comment and offer pricing of options.

HDSDI 2,970 Gbit/s support (3G)
Please clarify whether the switcher complies with the HDSDI SMPTE 424M 2,970 Gbit/s. Please also specify required options to support this standard.

4K SDI and ip video infrastructure support
Please clarify the current situation and future plans for support of 4K/UHD

DVE expansion
Please clarify possible expansion of the 2 ch internal DVE quoted as standard in this bid.
<description>

Optional HDSDI input/output capacity

Please describe the possibility to increase the input and output capacity

<description>

Sharing of resources from multiple control panels

Please describe the possibility to share recourses in the mainframe from multiple switcher control panels

<description>

LAN capabilities

Please describe possibilities for remote configuration and maintenance

<description>

Colour correction

If colour correction on all in and outputs is not offered, please describe the possibility to increase colour correction capabilities on more inputs and outputs.

<description>

SD/HD/4K Up/down conversion

If SD/HD/4K up/down conversion on all inputs is not offered, please describe the possibility to increase up/down conversion capabilities on more inputs.

<description>

Format conversion

Please describe the possibility to increase format conversion capabilities on inputs and outputs in addition to what is offered as standard.

<description>

Framestore capabilities

Please describe the possibility for framestore capabilities on inputs

Control panels
Please describe the possibility for an extra control panel for the 2nd unit.
<description>

2.2.4 Delivery

The switcher must be delivered with standard configuration. (Personnel from NRK will do installation and local configuration). Please describe possible telephone support or on-site support during installation if needed.
<Contractors reply>

The Contractor and the Customer together shall have the opportunity to, prior to transport of the switcher to Marienlyst, Oslo, test major elements of the Vision Switcher (including hardware and software).
<Contractors reply>

2.2.5 Customers involvement

If the Contractor is depending on customers involvement this must be described.

 <Contractors reply>

2.3 Necessary additional service/equipment

2.3.1 Training

NRK will require operational and service training on-site:

- Describe the training that will be provided for NRK personnel intended to supervise and configure the systems (2-3 users)

<Contractors reply>

- Describe the training and assistance that will be provided for NRK personnel intended to configure the Mosart system (2-3 users)

<Contractors reply>

- Describe the training that will be provided for NRK personnel intended to undertake the maintenance of the system and equipment. (6 persons)

<Contractors reply>

2.3.2 Spare parts

The Contractor shall be obligated to:

- Provide a list of recommended spare parts and their prices. Include a statement as to how long you are willing to commit yourself to providing these spare parts. Describe which spare parts that ought to be kept by NRK on site.
<Contractors reply>

- Ensure availability of all spare parts, or compatible equivalents, necessary for the hardware provided under the Contract for a period of 10 years after acceptance of the Contract Work.
<Contractors reply>

- Specify maximum delivery time for all spare parts.
<Contractors reply>

2.3.3 Tools

A list of recommended tools for maintenance (hardware and software) and their prices shall be included.
<Contractors reply>

2.3.4 Service level and Support Maintenance

NRK have currently an in house maintenance department which will be responsible for maintenance of the switcher. NRK's estimated life expectancy of this equipment is 10 years and therefore the total cost of ownership (tco) has to be taken into consideration when evaluating procurement and service level agreement (SLA). To meet this role NRK's maintenance staff will as a minimum need one of the following levels of Support:

2.3.4.1 Level 1:

Mail and phone support from skilled maintenance staff available Monday to Friday between 9:00AM and 5:00PM.

Please describe your standard SLA level offered closest to the above mention requirements. All benefits related to this SLA, including response times, must be described.

<Contractors reply>

2.3.4.2 Level 2:

Mail and phone support from skilled maintenance staff available 24/7.

Please describe your standard SLA level offered closest to the above mention requirements. All benefits related to this SLA, including response times, must be described.

<Contractors reply>

3 Options

This contract includes an option for NRK to acquire two more switchers within 36 months after signing of the contract. These switchers are planned to be installed in Studio 5 and Studio 6.

If NRK chooses to exercise this option the contractor will be asked to submit an offer with an updated Appendix 7 and Appendix 4 for this new switcher. Based on this offer NRK will evaluate if this offer is economically viable compared to issuing a new tender competition.
If NRK decide to use the option, an updated Project plan (Appendix 4) must be agreed upon. Other contractual terms will be the same.
<Contractors reply>

4 Prices

All prices must be listed in a spreadsheet, and be attached Appendix 7, where principal and optional components of the HD-Vision Switcher are listed.