Request for proposals for the development and validation of a skeleton DVB-I-Central Service List Registry (CSR)

The DVB Project invites proposals (the **"Proposals"**) from potential suppliers (**"Suppliers"**) for the development and validation of a skeleton Central Service List Registry (CSR) implementation for use with the DVB-I specification as specified in the attached Request for Proposals (the **"RfP"**). A CSR is a centralized registry of DVB-I Service Lists, hosted on an internet server, that is operated for the benefit of all global client devices implementing the DVB-I client, providing information on a wide set of service lists known to that registry.

The content and structure of the Proposal shall follow the guidance given in the RfP. Details of how to submit your Proposal and the deadline for submission are given in the RfP.

Suppliers should note the requirement to submit Proposals in the format set out in Annex 1 of the RfP.

The DVB Project reserves the right to appoint any number of Suppliers or may decide to appoint no Suppliers at all in respect of this RfP. Where necessary, DVB may enter into several agreements with the same Supplier in respect of different features or options or phases.

Interested organizations that are not members of DVB should contact the DVB Project Office (dvb@dvb.org) in order to obtain the latest copy of the DVB-I specification.

Dated this 11th June 2021

Signed by

Peter MacAvock
(no signature – electronic delivery)
For and on behalf of the DVB Project
Attachment: RfP for skeleton CSR for DVB-I

Request for proposals for the development and validation of skeleton Central Service List Registry (CSR) implementation for use with DVB-I

Phases 1 and 2

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1. <u>Scope of the RfP</u>

Proposals are invited for the supply of a skeleton Central Service List Registry (CSR) for use within a DVB-I ecosystem as referred to in [1] and further specified in Annex 2 to this RfP.

Proposals shall include:

- the creation of a publically available skeleton CSR implementation, including a high-level outline and justification of the technical approach to be taken, including initial and ongoing operational requirements and costs.
- the validation of the CSR with the DVB-I reference application, and on a selection of other DVB-I client implementations, including Android mobile phones and tablets, a selection of HbbTV TV sets and on a PC browser (for development only),
- the creation of documentation showing how all or part of the "code" in the delivered CSR implementation can be re-used by another party in a separate final implementation, including how such code might be expanded.
- the reporting of issues where the DVB-I specification is felt to be incomplete or insufficiently detailed or contradictory and participating in the resolution of those issues within the DVB process,
- the maintenance and support of the delivered skeleton CSR during acceptance, during the warranty period and subsequently.

The deliverables shall be completed in phases. This RfP outlines the preferred phases for the DVB Project, however suppliers are free to suggest alternative phased variations on the basis of improved efficiency and effectiveness, however the supplier must include a response based on the phases defined in this RfP.

The target delivery dates are:

Phase 1 – 1st November 2021, for IBC on 3/12/21 (**event 1**)

Phase 2 – 1st February 2022, for DVB World in March 2022 (**event 2**)

The CSR must be licensed under an open source license such as the MIT license.

This RfP replaces any previous RfP referring to the same or similar subject.

1.1 Deliverables

The package of deliverables shall comprise the following. Phase 1 is predominantly focused on delivering the core functionality to enable DVB-I service providers and their client devices to test their implementations. Phase 2 is focused on all other requirements to deliver a fully secure and operational 24/7 implementation. It is expected that internet connectivity at the events will be more than sufficient to provide a full "live" demonstration, however the supplier must provide an offline standalone

backup alternative demonstration capability. More detailed functional information is provided in the Annexes:

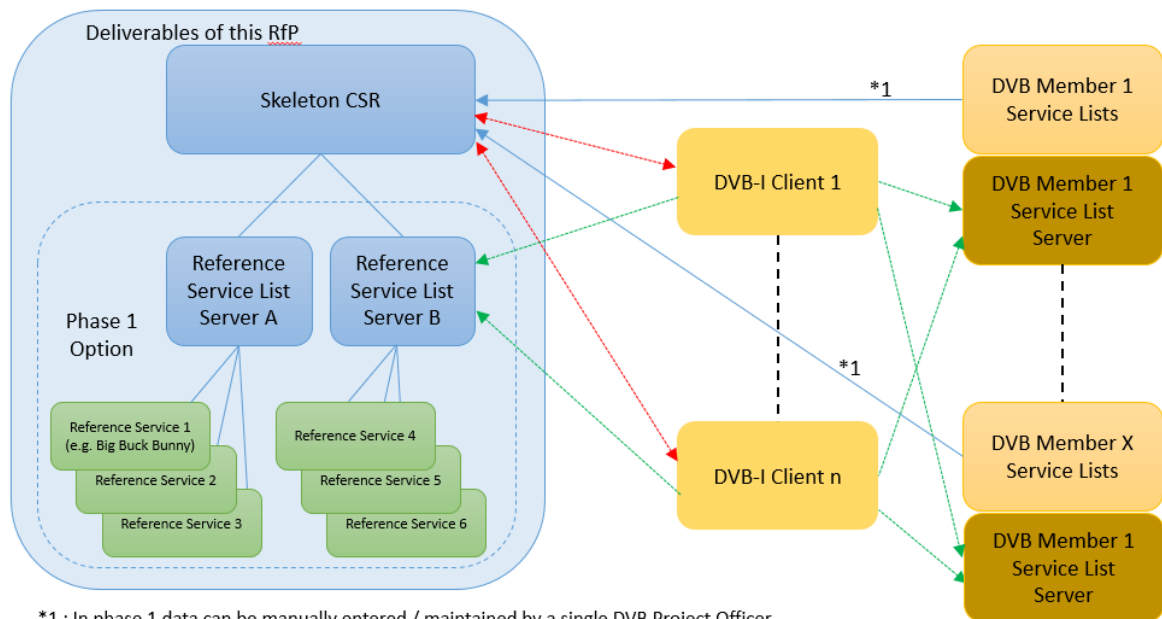**Phase 1**

Phase 1 is the initial basic testing phase

The purpose of Phase 1 is to demonstrate that the concept of a CSR works in practice.

The supplier shall deliver a basic functional working CSR that meets the sizing parameters set out in Annex 2.

The Supplier shall provide an option to seed the skeleton CSR with at least two separate lists for separate test reference Service List Servers, each comprising a minimum of three Services in each list. Each Stream behind these services shall contain at minimum one video track and one audio track. There is no requirement for these reference services to provide or adhere to any schedule of events (programmes) although such provision is not prevented if available. A repeating loop of any licence free, non geo-restricted content will be sufficient (e.g. Big Buck Bunny or similar). It must be possible to edit the parameters of these lists (e.g. LCNs, TargetCountry etc) in order to facilitate client testing. Responses must clearly quote for this as a separate item within Phase1 such that DVB has the option to include or disregard it.

The Skeleton CSR shall enable Service Lists to be submitted by external organisations (initially friendly DVB Members), according to the sizing models defined in Annex 2. The Phase 1 CSR may be "manually" operated in nature – i.e. new Lists/URLs may be managed by a single user administrator (e.g. a technically competent officer from the DVB Project Office) who has the ability to configure the implementation as necessary, add/update/delete Lists/URLs etc.

The deliverables of this RfP are depicted in the following diagram:

Deliverables of this RfP

Skeleton CSR

Phase 1 Option

Reference Service List Server A

Reference Service List Server B

Reference Service 1 (e.g. Big Buck Bunny)
Reference Service 2
Reference Service 3

Reference Service 4
Reference Service 5
Reference Service 6

DVB-I Client 1

DVB-I Client n

DVB Member 1 Service Lists

DVB Member 1 Service List Server

DVB Member X Service Lists

DVB Member 1 Service List Server

*1 : In phase 1 data can be manually entered / maintained by a single DVB Project Officer
In phase 2 this must be performed remotely by the external organisations

The phase 1 implementation shall be sufficiently convincing, stable, robust and responsive to give, in the opinion of the DVB Project a good impression of the working capability of a CSR.

The implementation shall be publically and globally available for any DVB-I client to connect to from any global location (initially known DVB friendly members). It will not be necessary to register a new domain, the skeleton CSR can piggy back on an existing suitable domain. Supplier to make recommendations.

The CSR shall include a basic level of system performance monitoring and other metrics for proper performance monitoring, including responsiveness, availability, peak loading, historic usage and utilisation, that will provide the necessary and relevant information to enable the system to be scaled up in the future.

The Phase1 (rolling over into Phase 2) implementation will be required to be kept live for 12 months and the supplier will be required to support the CSR for the entirety of this period. 24/7 support is not required in phase 1, regular office hour support will be sufficient.

Responses must also provide a quote (per month) to cover an extended period beyond this initial period should DVB elect to make such an extension. DVB would provide the supplier at least one month's notice should it wish to make such an extension.

The Phase 1 implementation does not need to achieve 24/7 availability, planned downtime is acceptable, however a high degree of availability is expected according to parameters in Annex 2. Any downtimes must be agreed and notified in advance.

The CSR shall be built on widely accepted / globally available underlying technology (i.e. obscure or proprietary technology from the supplier will not be considered). Widely implemented commercial solutions such as AWS, Azure, Google Cloud etc. are acceptable and would be considered. Response must be completely explicit on all technology and protocols to be used. Responses must fully include the costs of any/all such third-party services.

The supplier shall provide documentation of the design and implementation of the CSR code showing how broadcasters, network / platform operators and their suppliers may re-use all or part of the code as part of their own offerings and how it may be extended.

Phase 2

Phase 2 is the extended testing phase where all operational functionality is delivered, but the CSR is still restrained to skeleton list sizing levels.

Phase 2 is gated by the success of Phase 1. There is no guarantee that Phase 2 will happen. The DVB Project will decide whether or work on Phase 2 can start, no later than 2 months after the delivery of Phase 1.

Phase 2 extends Phase 1 to provide a fully secure operational system including complete (external) multi-user and admin security, secure user management, frameworks for mitigation against malicious actions, denial of service attacks and other common threats.

Authorized DVB-I Service Providers will be able to securely access the skeleton CSR remotely via a user-friendly functional front end and fully configure lists that they have the authority to maintain.

The Phase 2 CSR should include a mechanism for new Service List Providers to register and apply to become an authorized provider. Authorization would be granted by a party to be defined by the DVB project

Phase 2 shall include full operational system monitoring including fully featured automatic metric tracking.

The monitoring system shall include advanced notification of the need to expand to a larger system.

Phase 2 will require full 24/7 operational availability and support, including the automated provision of appropriate reports.

Documentation of the design and implementation of the CSR code showing how broadcasters, network / platform operators and their suppliers may re-use all or part of the code as part of their own offerings and how it may be extended.

At the end of Phase 2 the supplier shall also provide an end of project report, summarizing lessons learned, advice and recommendations for the DVB project

to consider should it wish to consider continuing with a further Phase 3, including potential improvements to the DVB-I specification [1].

Phase 3

Phase 3 is a further future phase, not part of this RfP, whereby the CSR becomes fully operational and "live". Whether or not this Phase actually happens will be decided at a later stage after the completion of phases 1 & 2. This would be expected to occur within 24 months of the completion of Phase 2.

The actual sizing of an initial live system implementation would be reviewed and determined / re-evaluated after the completion of Phase 2.

Nothing delivered by the supplier in Phases 1 or 2 shall prevent the up-scaling and implementation of a fully sized operational CSR. Initial high-level sizing parameters are provided in Annex 3 for information.

The supplier of phases 1 and 2 will not be required to continue (operationally) supporting this and any subsequent Phases and the DVB project reserves all rights on all possible options as to how it may wish to further deploy a live CSR.

There may be additional features to be added to enable a fully live CSR, based on lessons learnt during Phases 1 and 2, subsequent potential changes to the DVB-I specifications, and other aspects such as Full Domain Registration, Disaster Recovery, Contract Engagement & Payment Capability, but these would be subject to a further RfP if required.

1.2   Common deliverables for both phases

The reporting of issues related to the DVB-I CSR where the DVB-I specification is felt to be incomplete or insufficiently detailed or contradictory and participating in the resolution of those reports within the DVB process.

The supplier must agree to make small / reasonable changes to the development environment to reflect any such small amendments to the DVB-I specifications without additional charges to the DVB Project. If the supplier deems any changes to be significant, warranting significant additional work and additional charges then these must be separately identified, justified and submitted in writing to the DVB Project for consideration as additional costs for approval. The DVB Project makes no guarantees that such additional costs would be accepted or approved.

2.   <u>Guidance for submission</u>

2.1   Period of validity

The Proposal shall be valid for a period of six months from the date of the Proposal.

2.2 Delivery of Proposal

The deadline for submitting a Proposal shall be 9am CEST on 30th July 2021.

The Proposal shall be submitted by the deadline by email to the <dvb@dvb.org> email address. A signed copy of the Proposal shall also be provided by mail as soon after this date as possible to the following address:

> DVB Project
> L'Ancienne-Route 17A
> CH-1218 Grand-Saconnex
> Suisse

2.3 Further information

Contract, administrative and technical queries should be sent to the <dvb@dvb.org> email address.

Queries should be clearly marked as confidential if the Supplier wishes them to be treated as such. Suppliers are allowed to send in questions related to RfP subjects until 9am CET on 24th June 2021. Anonymized responses to these questions will be provided by DVB to all Suppliers by 2nd July 2021.

2.4 Potential dependencies on the DVB project

The DVB Project and its members expect to be responsible for the following dependencies for the CSR. However, Suppliers are invited to make proposals to supplement these activities instead of DVB.

- To provide client implementations (including the DVB Reference Application) that will make requests to the CSR
- To arrange for the provision and hosting of (live) Service Lists, including their URLs for use in testing and demonstrating the CSR. The Supplier will not be responsible for ensuring that (live) streams exist behind those advertised Service Lists.
- Proposals based on Supplier's existing business relationships are preferred; however, DVB would be prepared to distribute requests from the Supplier to its members collectively and to contact individual members who are known to be active in a particular field.
- To provide "DVB CSR Test and Acceptance Document" (**TAD**). This will be developed and shared for information with all potential suppliers ASAP but with a target date no later than 31st August 2021.
  - It is not expected that this document materially impacts the content of any Responses and there must be no dependency of deliverables on the contents of the TAD
- To create and arrange for the hosting of the following (due to the Covid situation these events may be virtual and/or face-to-face depending on circumstances at these times);

- o DVB-I service lists suitable for developing and testing the phase 1 application
- o A DVB-I-CSR demonstrating the phase 1 application at IBC, 3rd December 2021 (event 1)
  - ▪ There will also be a possibility to demonstrate at DVB Demos 2021 Event at the end of September 2021 and/or the HD Forum Event Italy in November 2021. It is not a requirement that these events are supported as part of this RfP and slots at these events also cannot be guaranteed to be available. Mutual cooperation and agreement between Supplier, The DVB Project and the organisers of these events will be managed and negotiated separately.
- o A DVB-I-CSR demonstrating the phase 2 application at DVB World, March 2022. (event 2)

All of the above would be subject to technical review and approval by the participants in the DVB TM-IPI group.

3. Requirements

The Suppliers and the Proposals must fulfil the following requirements:

3.1 Proposal structure and contents

Proposals shall follow the proposal structure and provide the contents specified in Annex 1.

3.2 Pricing

The preferred model for the creation of the reference CSR, content, tools and documentation is a fixed payment to the Supplier alone, although DVB Project is open to other payment models as well.

Supplier shall provide prices for the following;
- o For phase 1 only,
  - ▪ Including separately itemised "seeding" option.
- o For both phase 1 and phase 2,
  - ▪ Including separately itemised "seeding" option.

Phase 1 gathers the minimum requirements, but if the supplier views that adding feature of Phase 2 in Phase 1 would not affect the time and price, then it should additionally be specifically suggested to bring those forward in the response.

Pricing must include ALL third-party services such that DVB has no other costs, except those in the response in order to complete this project.

Prices quoted shall include coverage for warranty as well as appropriate (remote) technical support for demonstrating the deliverables at the two events.

Supplier shall provide separate pricing and terms for extended support and maintenance (see "Maintenance").

Suppliers may provide separate pricing for supporting either or both of the two events listed under "Potential dependencies on the DVB project" above.

All pricing must be in Euros including all applicable fees and taxes.

3.3 Schedule

The following major milestones are defined;

Milestones	Commentary	Acceptance Period	Payment after initial acceptance
1. Initial delivery of phase 1 CSR	A delivery suitable for interested DVB members to review including testing from their own facilities.	Delivery Date + 4 weeks	20%
2. Final delivery of Phase 1 CSR for event 1	A delivery suitable for showing at event 1.	From delivery until date of event 1.	20%
3. Initial delivery of phase 2 reference CSR	A delivery suitable for interested DVB members to review including testing from their own facilities.	Delivery Date + 4 weeks	20%
4. Final delivery of Phase 2 CSR for event 2	A delivery suitable for showing at event 2.	From delivery until date of event 2	20%
5. Final delivery including documentation.	Full and Complete Check of all Project Deliverables	12 weeks	20%

Suppliers should provide a schedule including at least these milestones together with an approximate schedule for any potential intermediate deliveries. It is noted that there may be some overlap or merging of the individual items of the above schedule. (For example, DVB Project agreeing to demonstrate at events does not necessarily imply formal acceptance of that delivery) For milestones #2 and #4 DVB requires the deliveries to be at least 4 weeks ahead of the relevant events. Dates for Milestones #1 and #3 are to be provided by Suppliers

For each of the milestones identified above, DVB Project will carry out acceptance testing within the acceptance period (as indicated in the table above) starting from the actual date of each delivery. If DVB Project rejects the delivery, it shall notify Supplier of such rejection and Supplier must fix any errors notified to it and re-submit what was rejected. Upon re-submission DVB Project will recommence acceptance testing which it will carry out within the acceptance period (as indicated in the table above) starting from the actual date of re-submission. Acceptance of any delivery shall be notified to Supplier by DVB Project once DVB Project has completed acceptance testing. In the event that no notice of rejection is made to Supplier within the acceptance period (as indicated in the table above) following the delivery or re-submission of the delivery, then acceptance of the delivery shall be deemed to have taken place.

The DVB Project will carry out full acceptance testing of the milestone 5 delivery within 12 weeks of the actual date of delivery. If DVB Project rejects the delivery, it shall notify Supplier of such rejection and Supplier must fix any errors notified to it and re-submit what was rejected. Upon re-submission DVB Project will recommence full acceptance testing which it will carry out within 12 weeks of the actual date of re-submission. Final acceptance of any delivery shall be notified to Supplier by DVB Project once DVB Project has completed final acceptance testing. In the event that no notice of rejection is made to Supplier within a period expiring 12 weeks following the delivery or re-submission of the delivery, then final acceptance of the delivery shall be deemed to have taken place and Supplier may invoice the remainder.

The DVB Project will develop a "DVB CSR Test and Acceptance Document" (TAD) in order to perform acceptance testing. This will be developed and shared for information with all potential suppliers ASAP with a target date no later than 31st August 2021.

For the avoidance of doubt, the requirement of this RfP is for the supplier to fully determine and deliver the requirements of the CSR according to thorough and complete analysis of [1] plus additional requirements identified in this RfP. "Compliance" to the TAD does not necessarily imply full compliance with the deliverables of this RfP. The TAD and its implementation and application remains internal to DVB and results may not necessarily be shared with the Supplier.

3.4   General expertise

Developing this reference demonstration implementation and documentation will require specialised expertise in High Performance, High Availability, Globally Scalable, Cloud based Web Hosting Services, using typical web client technologies (transferable) and understanding in how HTML5 and JavaScript based clients developed for embedded devices will interact with such services. Proposals shall identify what, if any, expertise the Supplier has related to these subjects. If the Supplier does not yet have the needed expertise, then its Proposal shall identify how the Supplier would address this (e.g. hire, sub-contract, partner) including the lead time expected to put those arrangements in place.

DVB Project requires that the primary point of contact for project management and technical issues shall be located in Europe. Proposals shall identify the location from

which these activities will be carried out and the names of those staff involved. There shall be no requirement for DVB Project (or company members representing DVB Project) to travel outside Europe for the purposes of this contract. Indeed, during the Covid situation it is expected all activities will be managed remotely / virtually.

It is important that the Proposals indicate how they will manage continuity of staff and expertise over the period of time covering application creation, testing, warranty and maintenance.

3.5 Warranty

DVB Project requires a 12 months warranty period starting from the submission date of the invoice relating to the final delivery. Suppliers shall provide without delay any updates to the application and/or content and/or documentation if errors are found.

Suppliers shall indicate in their Proposal what is covered by the warranty.

3.6 Way of working

The application should be developed and maintained in a (private) GitHub repository (or similar). The DVB Project, any DVB member and any other interested organisation shall be able to fork the GitHub repository given reasonable / suitable approval from DVB Project.

3.7 Change control

While DVB intends, expects and needs the DVB-I specification to be stable, Supplier must recognise that bugs in the specification will be found and fixed (see also under clause 3.8). Ideally the impact of these on the CSR Implementation will be trivial or at least small but the possibility of a bug being found whose solution has a non-trivial impact cannot be excluded. Supplier will track proposed bug fixes to the DVB-I specification and promptly report to DVB any proposed fixes that will have a significant impact. The skeleton CSR implementation shall be tolerant to such fixes to the DVB-I specification except for those reported to DVB as described.

3.8 Additional duties of Suppliers

Any technology or information that needs to be licensed from third parties in order to develop the CSR is the responsibility of Supplier. It is not practical for DVB Project to be a party to confidentiality agreements with third parties. Any arrangement with a third party shall provide for the use by users of the deliverables without further licence from or payment to the third party.

The process of validating the CSR on Android phones, tablets and HbbTV TV sets may result in Supplier identifying issues with those products. Supplier has no requirement or responsibility for discussing these issues directly with the manufacturer

of the products concerned. Any/All issues shall solely be raised and discussed with the appointed representative of the DVB Project.

Supplier will be invited to attend the two events if they wish. Supplier would be responsible for travel expenses. At minimum supplier must provide remote support for the duration of both events.

3.9 Maintenance

DVB Project requires the Supplier to provide pricing for annual maintenance for a fixed fee. Suppliers will be expected to provide guaranteed response times for fixing issues found with the CSR and supporting documentation. Suppliers will be expected to respond to reasonable questions concerning the package raised as issues in GitHub.

4. Appointment Process

The process of making any appointments of a Supplier or Suppliers is the following:

4.1 Evaluation and Appointment

Proposals will be opened and reviewed internally at the convenience of DVB Project. By 31st August DVB Project will have completed a comparative assessment of received Proposals in order to decide as to which Proposals, if any, should be selected for further analysis and negotiation.

By 10th September DVB Project will make a provisional appointment (the "**Appointment**"), at its entire discretion, of the Supplier or Suppliers who demonstrate the best ability to meet the requirements set out in this RfP to deliver and validate the CSR implementation.

Proposals will be subject to a technical review and a commercial/business review, including:

- The significant factors for the technical review shall be
  - o the quality of the Proposal,
  - o the technical understanding of the subject area demonstrated by the Proposal
  - o the Supplier's experience relating to live Web Hosting and associated Services
- The significant factors for the commercial/business review are
  - o the perceived ability and track record of the Supplier,
  - o the Supplier's approach to ensuring the schedule for the phase 1 deliverable is met,
  - o other aspects of the proposed delivery schedule,
  - o the price and the maintenance commitments for the CSR implementation after it has been released.
  - o The Supplier's ability to manage continuity of staff and expertise over the period of the contract and subsequent maintenance

None of these factors is dominant and Proposals which score highly on one factor may be rejected due to scoring badly on another. Paramount however is DVB's confidence that supplier can and will achieve a convincing, stable, robust and responsive demonstration that gives a good impression of DVB-I-CSR to the attendees at IBC and DVB World.

If all other factors are equal, DVB has a slight preference for Suppliers who are members of the DVB Project.

4.2   Clarification of Proposals / Changes to process

Notwithstanding any other provision of this RfP, DVB Project reserves, at its entire discretion, the right to:
  a) Conduct discussions with any or all potential Suppliers for the purpose of clarification of Proposals;
  b) Waive, or decline to waive, any defect in any Proposal;
  c) Accept, reject, or negotiate any or all Proposals or the terms of any Proposal for the purpose of obtaining the best and final offer;
  d) Cancel or amend this RfP or issue other requests for proposals (and in doing so will endeavor to communicate transparently and in a timely manner with all Suppliers);
  e) Request Suppliers submitting Proposals to resubmit Proposals with a modified scope;
  f) Provisionally appoint any number of Suppliers and complete more than one agreement with any one Supplier relating to different phases and to complete agreements at different times; and
  g) Select no Proposals at all.

4.3   Negotiation and execution of agreements

In the event that there is negotiation and the appointed Supplier and DVB Project are not able to reach agreement and execute such agreements within 30 days of the Appointment, DVB Project may declare the Appointment void and may provisionally appoint another Supplier or Suppliers or issue a new RfP.

4.4   Rejected Proposals

DVB Project has no duty to provide Suppliers with any explanation or justification of its decisions not to accept a Proposal or to accept a Proposal only in part.

5.   **Intellectual Property**

The reference CSR implementation and documentation must be licensed under an open source license such as the MIT license - https://opensource.org/licenses/MIT.

If any part of the CSR implementation is making use of any third-party intellectual property, it must be clearly identified and must follow that third party's intellectual property licensing requirements.

If the CSR implementation or related tools contain open source components, this must be disclosed in the Proposal.

It is not yet decided by the DVB Project how or who, of even if, or under what commercial terms a final operational CSR may be operated. Proposals must preferably place no restrictions on any future business model that the DVB may wish to implement. Any such restrictions must be explicitly and fully defined.

6. Exclusion of liability / costs

The DVB Project has prepared this RfP in good faith with a particular interest for swift and cooperative progress in the development of the CSR. To the extent permitted by law, the DVB Project excludes any liability (whether in contract, tort, negligence or otherwise) for any incorrect or misleading information contained in this RfP.

Any costs or expenses incurred by any Supplier or other person under the present submission process will not be reimbursed by the DVB Project and neither the DVB Project nor any of its representatives will be liable in any way to any Supplier or other person for any costs, expenses or losses incurred by any Supplier or other person in connection with this RfP.

7. Confidentiality

Sections 1 to 9 of the Proposals may be shared with any member of the DVB Project. Sections 10 to 11 will only be shared with members who have been specifically tasked with considering the Proposals and will not be shared more widely. Please ensure that the latter sections can be separated in order to achieve this.

8. Applicable Law and Dispute Settlement

This present RfP, as well as subsequent negotiations shall in all respects be governed by and construed in accordance with Swiss law.

The present RfP must be regarded as a modality of a negotiation subject to the general rules of the Swiss Code of Obligations. Swiss law does not subject requests for proposals in the present context to any specific rules, such as e.g. public procurement rules, and DVB Project is entirely free to enter into contract with whatever Supplier it considers best suited for the awarded work. As a consequence, no claims can be brought against the DVB Project out of the present procedure. For all practical purposes, the following dispute settlement rules shall nevertheless apply:

All disputes arising out of or in connection with the present RfP shall be submitted, in the first instance, to the Dispute Adjudication Board ("**DAB**") in accordance with the Dispute Adjudication Board Rules of the International Chamber of Commerce (the "**DAB Rules**"), which are incorporated herein by reference.

The DAB shall consist of three (3) members to be appointed as follows: when a dispute arises that could not be amicably settled, each of the potential Supplier and DVB Project (each a "**Party**", collectively the "**Parties**") may send a written notice to the other Party requesting the establishment of the DAB. Each Party shall then within 10 business days appoint one independent DAB member who must have the following credentials: (i) be demonstrably experienced in the subject matter of the dispute, and (ii) be an employee or representative of a company that is a member of the DVB Project. The two appointed DAB members shall appoint, within 10 business days, the third independent DAB member, who shall act as chairman of the DAB.

The DAB procedure shall be purely private, and the parties shall not revert to the ICC Dispute Board Center. Problems arising from not having the support of the ICC Dispute Board Center shall be resolved ad hoc by the DAB.

For any given dispute, the DAB shall issue a decision in accordance with the DAB Rules and within a time period of 2 months. The deadlines for the various steps of the procedure shall be set (and if longer deadlines are mentioned in the DAB Rules be systematically reduced) to allow for a swift rendering of the decision of the DAB within the time limit of 2 months.

If (i) any Party fails to comply with a decision when required to do so pursuant to the DAB Rules, (ii) any Party sends a written notice to the other Party and to the DAB expressing its dissatisfaction with a decision, as provided in the DAB Rules, (iii) the DAB does not issue the decision within the time limit of 2 months, or (iv) if the DAB is disbanded pursuant to the DAB Rules, the dispute shall be finally resolved by arbitration in accordance with the Swiss Rules of International Arbitration of the Swiss Chambers of Commerce (the "**Swiss Rules**") in force on the date when the notice of arbitration is submitted in accordance with these Swiss Rules. The number of arbitrators shall be one (1). The applicable procedure shall be the expedite procedure under Article 42 para 1 of the Swiss Rules (in particular: award to be made within six months). The seat of the arbitration shall be Geneva and the arbitral proceedings shall be conducted in English.

Each Party hereby: (i) irrevocably consents to the exclusive jurisdiction of such arbitral tribunal for the resolution of such disputes; (ii) irrevocably waives any objection that it may now or hereafter have to the venue of any such action or proceeding in such arbitral tribunal or to the convenience of conducting or pursuing any action or proceeding in such arbitral tribunal; and (iii) irrevocably waives any right to a trial by jury regarding the resolution of any dispute between the Parties hereto.

Neither the DAB procedure, nor the arbitration under the Swiss Rules oblige the DVB Project to suspend or abort its work relating to DVB-I.

9. References

[1] [Service Discovery and Programme Metadata for DVB-I](); DVB Document 177 Rev.1; July 2020

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10. Payments and terms & conditions
    - 10.1. Prices and terms & conditions relating to Pricing, Pricing models, warranty
    - 10.2. Support and maintenance prices and terms
    - 10.3. Any other costs

11. Supporting confidential information
    - 11.1. Any other information the Supplier wishes to remain confidential.

Each section should start on a new page.

Section 11 should only be used for material that is clearly confidential. Use of section 11 for material that needs to be assessed by the DVB membership outside the small group of volunteers evaluating the responses may damage the chances of the Proposal being accepted.

Responses that do not follow the above structure will be de-prioritised behind those that do and as such may not be considered.

Annex 2: Skeleton CSR requirements

Phase 1 Functional Requirements
- The skeleton CSR shall support all aspects of [1] relating to a CSR.
- The skeleton CSR should take note of the potential ultimate sizing models considered in Annex 3 as the potential ultimate scale that the CSR will probably need to accommodate. The design of the Phase 1 CSR must be ultimately scalable to manage such scale. The Proposal must outline all (future) steps and aspects necessary to be covered in order to achieve such scale.
- The CSR shall be available at a well-known URL (hidden initially).
- 24/7 skeleton CSR Availability is not required and downtime is allowed according to the following parameters (this guarantees availability in EU working hours, USA mornings and Asia afternoons) ; all times CET/CEST. All downtimes should be scheduled with prior approval from DVB Project Office. (unless in the case of an emergency) with minimum 48 hrs notice:
  - Fully Available 0400-2000 Monday to Friday
  - Window for Downtime
    - 2000-0400 Monday to Friday
    - 1800 Friday to 0400 Monday
- The skeleton CSR shall support the provision of Service List Server URLs as defined in clause 5.1.3 of [1], including filtering such as according to geographic location or language preferences.
- The skeleton Phase 1 CSR shall be capable of hosting a minimum of 100 Service List Server URLs, from a maximum of 20 separate external (DVB Member) organisations.
- The Phase 1 CSR shall respond to any request within 5 secs, (based on best effort over the WWW – i.e. no requirements for CDNs or other performance enhancing technology). The Supplier should be aware that better minimum response requirements will be required for a Phase 3 implementation and should plan accordingly.
- The Phase 1 CSR shall be capable of managing well formed, and tolerant to badly formed, requests for Service List Server URLs from DVB-I clients, according to normal industry practices etc.
- The Phase 1 CSR shall include a basic level of user/admin security.
- Maintenance of the Lists in the phase 1 CSR should be restricted to a single (very small number) user account. This Super-User will have the ability to configure and maintain all available lists from all list providers, including Adding / Updating / Suspending / Deleting etc.
  - It must be possible to make such changes dynamically in real time whilst the system is "live" without impacting the operational functionality of the system, i.e. no more than a few seconds outage period at worst case.
- The Phase 1 CSR will maintain an administrative history of the Lists, including at minimum the following (supplier should use his expertise to suggest additional / full set of items)
  - Owner/Provider of each List

- o Contact Details / Other similar data (see clause 8.4.3.2 of [1] for more information
- o Time Validity / Expiry of Lists
- o History / Event Chronology of all changes to Lists (from initial submission, all changes, through to deletion)
- o Relevant (necessary) Metadata relating to lists (e.g. Geographic Region (Global, National and Sub National), Language, Regulatory List, Genre, Provider Name, etc) (see clauses 5.1.4. & 5.2 & 8.4.3.2 of [1] for further info)
- The CSR will maintain a record of all client requests, including the following information:
  - o To be proposed by Supplier (may be limited due to this being a skeleton system)

Phase 2 Functional Requirements

- o Service List Providers must be able to remotely administer and manage their own lists. They must not be able to edit lists from other providers.

Non-functional requirements – both phases

The CSR will interact with the reference application, run on the following hardware and software platforms;

- Android mobile devices from different manufacturers and using different versions of the Android operating system.
- HbbTV TV sets from different manufacturers.
- For the purposes of development / debugging only, a PC.

See https://dvb.org/specifications/verification-validation/dvb-i/ for more information on the DVB-I reference app. Suppliers are encouraged to make use of such during their development of the skeleton CSR as deemed appropriate, but providing or making any such CSR client implementation is not part of this RfP.

The CSR must be suitable for broadcasters and application developers to use as a starting point for commercial services. DVB's priority is a functional, working application and is not interested in state-of-the-art graphical UI design.

The performance of the CSR must be comparable to applications of a similar scope except for the specific requirements defined in this Annex2. The application must be sufficiently stable, robust and responsive to give a good impression of DVB-I-CSR to DVB Project Members and potential adopters of a later Phase 3.

Non-requirements – all phases

The user interface of the reference application does not need high graphical production value, but logically functional, easy to use, efficient and effective.

In phase 1 and phase 2, there is no requirement to support languages other than English for the text in the CSR itself.

Potential future requirements

The following are potential future requirements largely related to phase 3. When designing and implementing the application, Suppliers should make reasonable best efforts to avoid design or implementation choices that would mean significant re-working should DVB Project choose to commission a phase 3 including some or all of these requirements:

- Scaling to full (or partial) operational scope as suggested in Annex 3.
- The ability to support multiple languages in the UI of the reference application

Annex 3: High Level – Ultimate Sizing Data

The following is a very high-level summary of maximum sizing / growth models that would need to be considered as necessary for Phase 3 as currently estimated. DVB reserves the right to make changes to these figures at any time.

- Circa 1500 Service List Providers after 5 years
  - Size of one SLP entry circa 2.0 Kbytes
- Support for up to 170 Million TV devices after 5 years
  - Many requests the be cached / CDN Served
  - Support for 150 TV CSR requests per second
  - CSR Response within 2 seconds
- Support for up to 500 Million Mobile/Tablet devices after 5 years
  - Many requests the be cached / CDN Served
  - Support for 500 Mobile/Tablet CSR requests per second
  - CSR Response within 2 seconds