I E T F®

Statement of Work #2
AUTOMATIC SCHEDULE BUILDER TOOL

This Statement of Work #2 ("SOW") is entered into effective as of this 13th day of November, 2019 (the "Effective Date") by and between DashCare B.V. ("**Developer**") and IETF Administration LLC ("**IETF LLC**"). This SOW is incorporated into, and forms a part of, the Contracted Services Agreement, dated July 2nd, 2019 by and between the parties (the "**Agreement**"). Any term not defined herein shall have the meaning ascribed to it in the Agreement. This SOW must be signed by both parties to be effective.

Executive summary

Developer agrees to perform the following Services under this SOW: update the IETF meeting application to support the future development of an Automatic Schedule Builder for IETF meetings as set forth in the IETF LLC RFP dated September 13, 2019 (the "**RFP**") available at https://www.ietf.org/media/documents/IETF_Automatic_Schedule_Builder_RFP_v2-12Sept19.pdf

The Automatic Schedule Builder will automatically produce one or more possible schedules for the IETF Secretariat. These schedules will ensure that the resources required exist in the location into which each session is scheduled. The schedules will also minimize the declared conflicts between groups scheduled at the same time. The relative weights of the conflicts must be configurable, with the initial configuration prioritizing 1st priority conflicts higher than 2nd priority conflicts, and 2nd priority conflicts higher than 3rd priority, and 3rd priority conflicts higher than the people who must be present. This project will be agnostic to that, simply working with the conflict types, with the initial configuration listed above. When the new conflict types are added, the configuration this project provides will allow their relative priorities to be configured.

The Automatic Schedule Builder will also provide a mechanism for the IETF Secretariat to capture the constraints mentioned above that are not yet modeled. These constraints will initially have a priority configuration stronger than 1st priority conflicts. Each produced schedule should show a computed value that indicates the severity of the set of remaining conflicts.

Project approach

Developer plans to take the following steps in performing the Services and creating the Work Product described in this SOW.

1. Create an inventory of constraints currently handled manually, and how they could be processed automatically. This includes verifying which metadata is available in the data model already.

2. Extend the existing constraint data model to support the new constraints, and extend user interfaces and tests to support them.
3. Extend the existing schedule editing and constraint viewing interface to support the new constraints. The existing front-end interface will be reused, because it already provides a good workflow to make adjustments to an automatically generated schedule. The existing front-end is well known to staff. The implemented architecture may change depending on its current state and the complexity of integrating new constraints.
4. Translate all manually handled requirements for a particular meeting to the constraint data model, so that a typical real-world set of constraints can be used to support algorithm development.

The delivered Work Product code will be compatible with Python 2.7 and Python 3.6 and newer. The cost and schedule depend on the current code, including tests, being entirely compatible with these versions. (Having compatibility with Python 2.7 and Python 3.7 and newer only, i.e. having no support for 3.6, has no cost or schedule impact.) The result of this project should provide the foundation for the development of an Automatic Schedule Builder for IETF meetings, as described in the RFP.

Notes:

- It is possible that in the course of the development of the Automatic Schedule Builder algorithm, Developer discovers that some additional adjustments will be necessary to its Work Product, but those are expected to be minor and not affect the scope or fees set forth in this SOW.
- Developer does not guarantee that all currently used free text constraints (currently manually processed) can be translated into the automatic schedule builder data model. Therefore, some manual adjustment may still be needed after the schedule has been generated. It is recommended that users be encouraged to use the free text special requests as little as possible, as each will still require manual processing by staff.

Schedule

The Services can begin on December 1, 2019, and the Work Product described in this SOW will be delivered for IETF LLC's review on or before January 31, 2020.

This schedule of Services and delivery of Work Product assumes that an appropriate branch/access in the SVN repository for the datatracker will be available to Developer by the date of the commencement of the Services. Parts of the Work Product are expected to be delivered earlier than January 31, 2020. However, the delivery dates for those components are not individually planned at this time, as their exact prioritization has not yet been agreed to by the parties, and some Services may take place in parallel when that is mutually determined to be a more optimal path for all parties.

Developer agrees to provide weekly reports regarding the progress of the project to Robert Sparks – IETF Tools Project Manager.

<u>Note:</u>

- The delivery dates set forth in this SOW assumes that the IETF LLC will answer Developer questions within a reasonable time. The tasks of creating an inventory of the current manually handled requirements and translating the manual constraints from at least one meeting to the data model, will require support from IETF LLC staff (or its designees) as they have the domain knowledge of how they handle these constraints currently. Particularly as some of the free text constraint entries are not entirely clear without this domain knowledge. The schedule therefore depends on IETF LLC's reasonably timely responses on these questions.

Test plan

Developer will adhere to the instructions regarding testing in the Instructions for IETF Software contractors document set forth at https://trac.tools.ietf.org/tools/ietfdb/wiki/ContractorInstructions?version=26. The included tests will also be reviewed by each party to ensure all significant requirements are actually tested. These include the requirements listed in this SOW and the RFP. This particularly applies to those requirements that are more complex, or edge cases.

In addition to automated tests, the scenarios will be tested manually as well when the Work Product is nearly ready to be delivered.

Cost & Payment schedule

IETF LLC agrees to pay Developer the following fixed fees for the associated Work Product deliverables.

Work Product Deliverable	Fixed Fee
1. Create an inventory of constraints currently handled manually, and how they could be processed automatically.	€ 4400
2. Extend current constraint data model to support new constraints	€ 5500
3. Extend existing interfaces and tests to support the modified constraint model	€ 4400
4. Extend the schedule editing interface to support the modified constraint model	€ 5500
5. Translate manually handled constraints for one meeting into formalized constraints to support algorithm development on a real-world scenario	€ 3850
TOTAL	**€ 23650**

No VAT is chargeable. The payment term for undisputed invoices is 30 days from the IETF LLC's acceptance of the Work Product associated with the invoice.

25% of the quoted fixed fee will be invoiced upon signing the contract, 50% upon completing half the work (where "half" means IETF LLC's acceptance of Deliverables 1-3 described above), and the final 25% will be invoiced after all Work Product is completed, but no later than January 30, 2020.

If IETF LLC fails to pay an undisputed invoice by the applicable due date, IETF LLC will reimburse Developer for judicial and extra-judicial collection costs actually incurred by Developer to obtain payment from IETF LLC, in addition to the amount payable and any relevant interest due. In such an event, Developer may also suspend further work under this SOW until it has been paid for all undisputed invoices.

Notes:

- The schedule and the costs described in this SOW are based on the expectation that there are no circumstances to the Services and Work Product that could not have been reasonably foreseen by Developer as a professional and experienced developer and which were not included in the RFP. Such circumstances would include but are not limited to: the architecture, style, tests or other components not meeting reasonable standards of a modern Python/Django project; or the RFP or SOW significantly understating the complexity or number of components that are affected by this work.
- The schedule and fee for the Services are based on providing support for current major browsers (including at least Chrome, Firefox, Safari, and Edge), for released versions in the last two years. Any additional work to support non-standard or outdated operating systems, browsers, plug-ins, etc., is not included in the fees or schedule described in this SOW.

Warranty & late delivery

After (a part of) the Work Product is delivered, there will be a three-week acceptance period. During this period, IETF LLC will be able to review the delivered Work Product. If IETF LLC does not reject the delivered work in this period, it shall be deemed to have been accepted. If any part of the Work Product is rejected, Developer will work to eliminate the reason for rejection, which may happen by revising the result or substantiating why the reasons for rejection are not valid. Subsequently, IETF LLC will have 14 days to approve or reject the revision or substantiation. If the Work Product is accepted, it means that IETF LLC and Developer agree that the work meets the agreed specifications. If Developer fails to remedy the error or deficiency within thirty (30) days of initial receipt of a notice of rejection from IETF LLC, IETF LLC may hire a third party to remedy the error or deficiency at Developer's expense.

Any errors, bugs or deficiencies found after acceptance are covered by article 7 of the Agreement.

As the delivered Work Product is expected to be included in an open source project, the Work Product may subsequently be changed or updated by others unrelated to Developer. The warranties in article 7

of the Agreement do not apply in case errors, bugs or deficiencies in the delivered work are caused solely by the additional changes by other parties that are not reasonably necessary for the use of the Work Product as requested by IETF LLC. Developer will be required to substantiate such a claim.

Developer is not liable for late delivery to the extent caused by (i) IETF LLC's failure to meet mutually agreed upon schedule dependencies or (ii) the inaccuracy of assumptions/dependencies/expectations listed under Notes in the "cost & payment schedule" and "project approach" sections of this SOW. To the extent force majeure events beyond either party's reasonable control prevent a party from fulfilling its obligations under the Agreement and this SOW (which may include disruptions or outages of the Internet, telecommunications infrastructure, power failures, domestic uprising, mobilization, war, strikes, fire, floods, import and export obstructions) , performance by the affected party shall be suspended for the duration of the force majeure event. This SOW may be terminated by either party if such a force majeure situation has exceeded a period of 90 days.

Technical support and maintenance

Beyond the conditions specified in this agreement, particularly the "Warranty & late delivery" section, and the Agreement between Developer and IETF LLC, no support or maintenance is included in the scope of this SOW. After the completion of the Services in this SOW, the parties do not anticipate that any additional maintenance services beyond the current datatracker maintenance services that the IETF LLC already receives under a separate SOW will be necessary.

While the Agreement shall generally govern Developer's responsibility and liability, the parties hereby agree that, except for claims, losses, or damages related to Developer's breach of the Agreement or Developer's indemnification obligations in Section 8 of the Agreement, neither party shall be liable to the other party for (a) for any indirect or consequential damages or losses or (b) any amounts that exceed the total amount payable to Developer pursuant to the Agreement.
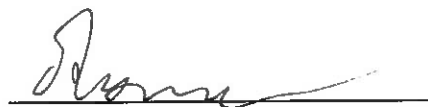
All of the terms, covenants and conditions set forth in the Agreement are incorporated herein by reference as if the same had been set forth herein in full.

IETF ADMINISTRATION LLC

_____

By: Jay Daley
Title: IETF Executive Director
Email: exec-director@ietf.org

DASHCARE B.V.

_____

By: Sasha Romijn
Title: Director
Email: sasha@dashcare.nl