TENDER SPECIFICATIONS

ATTACHED TO

THE INVITATION TO TENDER

Nr. FCH/STUDIES/2011/OP/01

STUDIES ON THE COMMERCIALISATION OF FUEL CELLS AND HYDROGEN TECHNOLOGIES AND RELATED SERVICES

FOR

THE FCH JOINT UNDERTAKING

Introduction: FCH JU's objectives and activities

Part one: Tender Specifications for the Framework Contract

Part Two: Terms of references for the first specific contract (first study)

Part three: Assessment and content of tenders

Introduction: FCH JU's objectives and activities

The Fuel Cells and Hydrogen Joint Undertaking (**FCH JU)** represents a public-private research partnership at the European level. Its members are the EU represented by the Commission as public representative, the 'Industry Grouping' and the 'Research Grouping'. FCH JU brings public and private interests together in a new, industry-led implementation structure, ensuring that the jointly defined research programme better matches industry's needs and expectations, and accelerates hydrogen and fuel cell technology acquisition and deployment processes. Carried out with the involvement and cooperation of stakeholders from industry (including SMEs), research centres, universities, Member States and regions, the Joint Undertaking builds on the achievements of the European Hydrogen and Fuel Cell Technology Platform and on the results of completed and ongoing EU funded activities. The FCH JU is a Joint Technology Initiative (JTI) within the Seventh Framework Programme 2007 – 2013 (FP7) and has a total budget of approx. EUR 1 billion, with an EU contribution of approx. € 0.5 billion.

Beyond its support to R&D activities, the FCH JU aims at placing Europe at the forefront of fuel cell and hydrogen technologies worldwide and enabling the market breakthrough of fuel cell and hydrogen technologies, thereby allowing market forces to drive the substantial potential public benefits. It does this by

- Evaluating the energy, environmental, economic and social sustainability of technological solutions by means of horizontal activities at programme and project level.
- Monitoring progress in relation to competing and complementary technologies to assess sustainability and economic competitiveness.
- Encouraging increased public and private RTD investment in fuel cells and hydrogen technologies in the Member States and Associated countries.
- Promoting public awareness and understanding of these technologies and the contributions they can make to address energy, environment and transport policies.

In order to achieve the FCH JU objectives, as well as manage and implement the programme of RTD activities in an efficient manner, its activities are focused on five main application areas (AA):

1. Transport & Refuelling Infrastructure: The main objective of this application area is the development and testing of competitive hydrogen-fuelled road vehicles and corresponding hydrogen refuelling infrastructure, and the full range of supporting elements for market deployment and increased industrial capacity.

2. Hydrogen Production & Distribution: this application area aims to develop a portfolio of cost-competitive, high energy efficient and sustainable hydrogen production, storage and distribution processes and to test them under real market conditions.

3. Stationary Power Generation & Combined Heat & Power (CHP): The goal of this application area is to achieve the principal technical and economic specifications necessary for stationary fuel cell systems to compete with existing and future energy conversion technologies. For example: electrical efficiencies should be>45% for power only units and >80% for CHP units, combined with lower emissions and use of multiple fuels. In addition, substantial effort is needed to address lifetime requirements of 40,000 hours for cell and stack, as well as competitive costs, depending on the type of application.

4. Early Markets: Early markets are considered strategically important to build up and sustain a manufacturing and supply base for fuel cells products and systems. The main goal is to show the technology readiness of (i)specialty and industrial vehicles (e.g. forklifts) including related hydrogen refuelling infrastructure ; (ii) portable generators, back-up power and UPS-systems; (iii) portable and micro fuel cells for applications in education, industrial tools, recreational, sub-micro CHP, etc.

5. Cross-cutting Issues: The cross-cutting activities aim at supporting and enabling the other application areas at programme level. The main goals are to evaluate the socio-economic, environmental and energy impact of FCH technologies, monitor the RTD programme implementation and support the growth of the European industry, particularly SMEs. These activities mainly include: RCS and PNR ; socio-economic research; technology monitoring; sustainability assessment; education and public awareness; development of financial instruments and logistic support schemes.

For more information see http://www.fch-ju.eu/

Part one: Tender Specifications for the Framework Contract

1. Overview of the tender

Fuel Cell and Hydrogen technologies show substantial promise in contributing to Europe's energy and emissions challenges through their use in a range of applications including transportation and stationary power and heat generation. These technologies have demonstrated significant technical progress in recent years, but there remains a general lack of understanding about their potential, poor transparency about how they compare with other technologies and insufficient general market awareness.

In order to address these shortcomings fact-based studies undertaking comparisons of hydrogen and fuel cells against competing technologies for specific applications are seen as a necessary step in the road ahead for these technologies. Where fuel cell and hydrogen technologies can be shown to have substantial benefits for Europe further steps are also required to prepare the case for commercialisation, with amongst, other issues, identification of the market opportunities, the investment requirements and financing gaps, and means of addressing these, including the role of the public sector at EU, national and regional levels.

Where there is a proven requirement these studies will be implemented by the FCH JU using external contractors. Such external contractors will be contracted using a procurement process. To begin this process the FCH JU would like to enter into framework contracts with several contractors, subject to an evaluation process following submission rules and procedures laid out in this document.

1.1 General objective of the studies

As explained briefly above, these studies will likely comprise several steps or phases, the most critical being the following:

Phase A: to develop objective and fact-based evaluations of the fuel cell and hydrogen value chain (production, transport, supply/distribution, fuel cell technology) on multiple dimensions (cost, emissions, energy efficiency, performance, safety) and over time 2015, 2020, 2030, and 2050), compared to other clean technologies.

Phase B: to develop a commercialisation plan at EU level based on the outcome of Phase A. This should entail development of a business case, including but not limited to: outlook of potential supply and demand (representative financial assessments and analysis, e.g. Accumulative Annual Growth Rate (AAGR), Return On Investment (ROI), Internal Rate of Return (IIR) for relevant market actors), production pathways for clean hydrogen and how they may differ among various Member States, presence/absence of supply chains, environmental impacts (CO2 abatement, Life Cycle Analysis aspects), potential economic impact (job growth, wealth creation, competitiveness), investment gaps and potential solutions.

One key aspect of this phase is likely to be the need to engage relevant stakeholders early in the process, so that a good flow of communication is established with the actors that are likely to implement the proposed changes. These stakeholders will vary in each Member

State; however, the need for their commitment is seen as crucial if major investment and political decisions are needed.

Phase C: development of frameworks, investment guidelines and communication tools. The outcome should be political commitment from public authorities (if applicable), a clear picture of the regulatory landscape (regulations, codes and standards with concrete feasible actions to overcome the identified gaps, and appropriate communication tools to reach out to stakeholder groups.

The objective of the FCH JU is to commission studies combining (1) unique and confidential information owned by sectoral coalitions of the major industrial actors and (2) one or several independent consultants of impeccable global reputation delivering independent fact-based reports and presentations.

The rationales for using a consultant are six-fold:

- A verifiably independent party to collect confidential and anti-trust sensitive information via an 'independent clean team', aggregate this and feedback the average results using a well-constructed and documented process which will be strictly followed;
- A party with administrative and analytical capability providing a fast turn around and pragmatic analysis employing consistent methodologies;
- An unbiased facilitator for group discussions to assist consensus forming amongst participants;
- A party with an informed, high quality external perspective able to use their own analysis and understanding of the issues, and therefore be capable of challenging the outcomes and engaging in discussions and debate;
- An organisation with access to senior management of non-participating companies and to major government stakeholders as well as credibility and reputation in stakeholder discussions;
- A party capable of supporting the creation of high value added and impact communication materials.

The reports will target a wide global industrial and governmental stakeholders group potentially not yet convinced of the technology, the economics, the timeline and the benefit.

1.2 Envisaged studies

1.2.1 Different sectors

FCH JU envisages commissioning studies in different sectors where fuel cells and hydrogen technologies are the most promising:

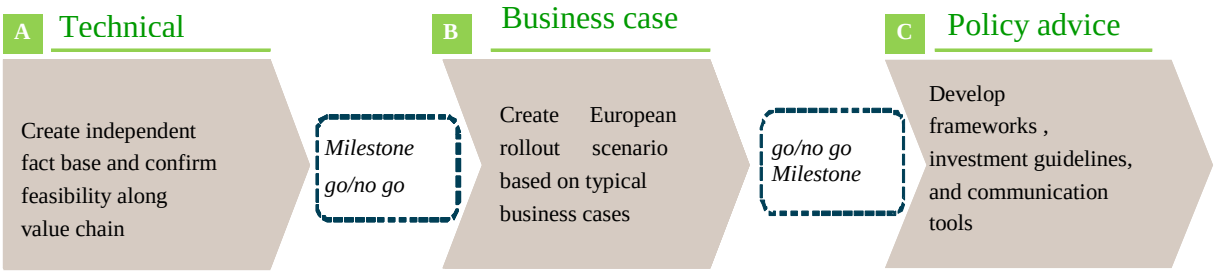
- Passenger cars, including EU-wide roll-out of infrastructure
- Urban buses
- Stationary applications
- Early markets (see potential applications mentioned in section 1 above)

In the car sector, phase A has already taken place (see section 1.6 and)

The FCH JU expects to launch this year phase A for the bus sector (the terms of reference are available in the second part of this document). The exact calendar for the other studies has yet to be determined. In addition to these studies, the FCH JU may need further more limited market studies. The exact requirements for each study will be defined in each specific contract.

1.2.2 Successive steps

The FCH JU may choose to undertake one or more successive studies, the latter separated by decision gates (go/no go) based on the outcome of the preceding phase. Each study should be the subject of a specific contract under the umbrella of the framework contracts with the contractors selected through this procedure.



2 step approach

- 1st step – rough evaluation of FCH and different competing technologies to select most promising ones for the next steps of the study
- 2nd step – detailed analysis of selected technologies including a feasibility analysis of the overall value chain

- Based on the data input of phase A business cases shall be developed, including a market analysis, scenarios across EU taking into account different supply/demand curves, hydrogen production pathways, financial assessment and analysis, e.g. AAGR, ROI

- Development of a framework that facilitates the investment in fuel cells and hydrogen technology and the respective infrastructure in Europe
- Preparation of investment guidelines
- Preparation of communication tools and tailoring them for the different target groups

1.3 Deliverables

Precise deliverables will be detailed in each specific contract. They will typically consist of

- Reports and other written products
- Presentation of studies/reports: In addition to the above mentioned reports and planned deliverables, the Contractor will be requested to provide the FCH JU and its three members with ad-hoc presentations of specific subjects addressed in the studies.
- Support: Upon request by the FCH JU, the Contractor may be requested to provide specialised support within the FCH JU premises or other premises agreed upon, normally through the participation in internal meetings or meetings with third-parties.

1.4 Working Practices

The success and the relevance of such studies are highly dependent on close cooperation between the contractor and the industrial actors and relevant stakeholders who hold unique and confidential information.

To enable such cooperation, for each of the sectors in which the FCH JU intends to procure studies, a coalition of the industrial actors and other relevant stakeholders (hereafter "the industrial coalition" has been or will be established.

The industrial coalition will require a coalition manager appointed either by the coalition itself or by the FCH JU under a separate contract.

The members of the sectoral coalition will provide the contractor with sensitive and confidential data. This requires a specific mechanism to deal with these data.

Based on the experience of the car study *A portfolio of power-trains for Europe: a fact-based analysis. The Role of Battery Electric Vehicles, Plug-in-Hybrids and Fuel Cell Electric Vehicles*,[1] the FCH JU will require the contractor to adopt the following organisation:

- The contractor will set up a *Clean Team* comprising selected consultants working separately (and subject to a separate confidentiality agreement) to handle confidential data. As and when Coalition members provide confidential or commercially sensitive data, it will be sent to the Clean Team only. The Clean Team will ensure that the data is aggregated and anonymised, so that no separate company/business data can be identified or traced back to a specific Coalition member, prior to sharing this data (hereinafter "Sanitized Data") with the technical team, the FCH JU, the coalition or other third parties. In addition, the Clean Team will ensure that data is comparable on a 'like-for-like unit of measurement' basis. To ensure the reliability of the data and in order to prevent traceability: for each data point there should be at least 3, preferably 4 data inputs

[1] The study can be downloaded at http://www.fch-ju.eu/page/publications

- The contractor will set up *a Technical team* consisting of the remaining consultants who will carry out the study and who will only have access to Sanitized Data coming from the Clean Team and any other data that is publicly available.
- To carry out a study, the contractor may also be requested to constitute one or several *Working Groups* comprising the contractor *Technical team* and several representatives of the coalition members. This (these) Working Group will be informed periodically of the latest results and progress of the study. They may also contribute to the study?
- The progress of the study will be monitored by the FCH JU staff. To ensure an optimal steering of the studies, the FCH JU will be assisted by experts (some of them representatives of the coalition members). The FCH JU staff and these experts will together constitute the study *Steering Committee.*
- The contractor will be required to sign a confidentiality agreement (see Annex K) with the coalition members. Under the terms of the confidentiality agreement, the data shall remain the property of the coalition member who provides it while the "sanitized data" shall belong to the FCH JU.

In case the FCH JU requires a more classic market study, the organisation described above may not be required. The exact requirements for each study will be defined in each specific contract.

1.5 Definition of success

The studies will have to meet the following success criteria:

- Meet study objectives providing high quality results at each milestone gate. The consultant shall ensure that at the end of each phase interim deliverables are signed off by the FCH JU.
- Facilitate decisions in favour of clean technology alternatives in accordance with the results of the study.
- Be sufficiently detailed and easy to understand on all relevant elements of the analysis.
- Strong level of engagement with stakeholders from private and public sectors during study so that implementation can continue after conclusion.
- Strong alignment among the main stakeholders on the outcome of the report.
- Consideration of external views, dealing with and addressing of existing or potential obstacles and/or concerns.
- Development of concrete and well-structured proposals for the required political framework and action.
- Convincing rationale and hands on communication tools for policy makers and transit companies.
- Delivery of assessment tools for economic operators and public authorities to support investment decisions in clean alternative technologies.

As the long-term success of Fuel Cells and Hydrogen technologies and alternative technologies will be strongly influenced by the reports, their intrinsic qualities, i.e. the objectivity of the results must be beyond question.

1.6 Prior experience

This series of studies has already been initiated and the working practices described have been experimented with success with a first study in the car sector, corresponding to phase A.

This first experience was realised at the initiative of a coalition of thirty of the largest global car manufacturers, oil and gas companies, utilities, equipment manufacturers, NGOs, governmental and clean energy organisations, with the collaboration of the FCH JU. This previously mentioned cars study, *A portfolio of power-trains for Europe: a fact-based analysis. The Role of Battery Electric Vehicles, Plug-in-Hybrids and Fuel Cell Electric Vehicles*, compares the economics, sustainability and performance of the vehicles and infrastructures needed to reach the 80% decarbonisation goal by 2050 set by the European Union and is an unprecedented effort from industry and other stakeholders to analyse the role of the various new car-types in meeting this objective, on the basis of proprietary industrial data. The FCH JU was a signatory to the study and participated in its successful implementation. As a result, the FCH JU intends to use a similar approach for its perceived needs together with the support from industry. The level of detail of input data and deliverables will vary across the various sectors under study.

As an industry-led partnership, the FCH JU clearly sees a need to proceed systematically in all sectors and with the support of public funds which justifies this procurement procedure.

1.7 Working Language

English will be the working language.

2. Contractual arrangements

2.1 Types of contracts

FCH JU will conclude multiple framework contracts (MFC) with reopening of competition with 3 economic operators. If there were only 1 or 2 tenders the FCH JU may decide to award the contract to the 1 or 2 successful tenderers.

For each specific requirement (e.g. one or several dedicated studies) the FCH JU will send a service request to all contractors without any priority amongst them. A specific contract will be signed with the awarded contractor after evaluation of the best offer according to the award criteria.

This procedure shall be applied for all service requests but the first one. Exceptionally, the first specific contract (i.e. the first study corresponding to phase A in the bus sector) will be awarded at the same time as the framework contract to the applicant with the tender offering the best value for money (see infra).

Each specific contract can be prolonged without renewed service request.

Attached models for framework contract as well as specific contracts may be found in Annex A and B.

2.2 Nature of the contract

Tenderers' attention is drawn to the fact that the framework contract does not constitute the placement of an order but is merely designed to set the legal, financial, technical and administrative terms governing relations between the contracting parties during the contract term.

Signature of the framework contract does not commit the FCH JU to place orders and does not give the Contractor any exclusive rights to the services covered by the framework contract. In any case, the FCH JU reserves the right, at any time during the duration of the framework contract, to cease placing orders without the Contractor thereby having the right to any compensation.

2.3 Ordering processes

Except for the first study, the ordering process is initiated by the FCH JU via a request for services sent to the awarded contractors describing the required service. On receipt, each Contractor must, within a given time period, either decline the request or make a proposal to the FCH JU for the execution of the request. FCH JU will evaluate the offers, undertake a selection process based on this evaluation, with the best evaluated offer culminating in the signature of a Specific Contract or in the withdrawal of the request. The chosen Contractor must have the capacity to carry out in parallel several individual specific contracts. The Contractor must be capable of providing the services ordered efficiently to the highest possible quality.

2.4 Contractual issues

When preparing their tender, the tenderers' attention is particularly drawn to the provisions of the framework contract in Annex A applicable to this procedure and which forms part of these tender specifications, especially those on prices (Art. I.3), payment periods (Art. I.5), conflict of interests (Art. II.3), implementation of liquidated damages (Art. II 16) and confidentiality (Art. II.9).

The Contractor shall be bound by the provisions of Regulation (EC) No 45/2001 of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data[2].

The Contractor must perform the framework contract and each specific contract to the highest possible professional standards.

The Contractor will have sole responsibility for complying with all legal obligations incumbent on him, notably those arising from employment law, tax law and social legislation.

The Contractor must inform third parties that it does not belong to the European public service, nor is entrusted with any delegated tasks, affiliation or mandate, but is exercising the tasks on behalf of the FCH JU.

2 OJ L 8, 12.1.2001, p. 1–22

The Contractor will be solely responsible for the staff carrying out the work, the latter may not be placed in a position of dependency in relation to the JUs.

Claims against the FCH JU are not transferable.

2.5 Is Subcontracting Allowed?

Subcontracting is permitted except for the work of the Clean Team. The latter may not be subcontracted nor include person that are not part of the contractor staff.

Certain tasks provided for in the contract may be entrusted to subcontractors, but the main contractor retains full responsibility and liability towards FCH JU for the performance of the contract as a whole. Accordingly, FCH JU will treat all contractual matters (e.g. payment) exclusively with the main contractor, whether or not the tasks are performed by a subcontractor. Under no circumstances can the main contractor avoid liability towards the FCH JU on the grounds that the subcontractor is at fault.

If subcontracting is proposed, the file must include a document mentioning the reasons why subcontracting is proposed; stating clearly the roles, activities and responsibilities of subcontractor(s) and a letter of intent by each subcontractor stating their intention to collaborate with the tenderer if he wins the contract.

During execution of the contract, the contractor will need the FCH JU's express authorisation to replace a subcontractor with another and/or to subcontract tasks for which subcontracting was not envisaged in the original tender.

Please note that if subcontractors are proposed, the declaration relating to the exclusion criteria and the documents relating to the selection criteria must be provided by each of them.

Remark: The framework contracts will cover studies in different sectors (bus, cars, stationary applications, material handling, etc.). Therefore, beyond the possibility to include a subcontractor in their tender for the whole framework contract, the contractors will keep the possibility to propose a subcontractor with a sector specific expertise when submitting a tender for a specific contract (a specific study on one of the sectors).

2.6 Can A Consortium Of Companies/Organisations Submit A Tender?

Joint tenders from consortia of economic operators are permitted provided that conditions for adequate competition are observed.

A consortium can be a permanent, legally established grouping or a grouping which has been constituted for this tender procedure.

Partners in a joint tender assume **joint and several liability** towards the FCH JU for the performance of the contract as a whole. Statements saying, for instance:

- *that one of the partners of the joint tender will be responsible for part of the contract and another one for the rest, or*
- *that more than one contract should be signed if the joint offer is successful,*

are thus incompatible with the principle of joint and several liability. The FCH JU will disregard any such statement contained in a joint tender, and reserves the right to reject such

offers without further evaluation on the grounds that they do not comply with the tendering specifications.

If a joint tender is proposed with one or several partners and the organisation has already set up a consortium or similar entity to that end, this fact should be mentioned in the tender, together with any other relevant information in this connection. If this step is not yet taken, the entity should be aware that, if the contract is awarded to this entity, the FCH JU will require it to give a formal status to its collaboration before the contract is signed. This can take the form of:

- an entity with legal personality recognised by a Member State;
- an entity without legal personality but offering sufficient protection of the FCH JU's financial interests (depending on the Member State concerned, this may be, for example, a consortium or a temporary association);
- or the signature by all the partners of a "power of attorney" (see Annex E).

Please note that if a joint tender is submitted, the declaration relating to the exclusion criteria and the documents relating to the selection criteria must be provided by each of partner.

2.7 Applicable law and jurisdiction

The Contract shall be governed by the EU law, complemented, where necessary, by the national substantive law of Belgium.

Any conflict between the parties resulting from the interpretation or application of the contract which cannot be settled amicably will be brought before the Brussels courts.

3. Calendar of the procedure [3]

Summary timetable	Date	Comments
Launch Date	Tuesday 11 October 2011	
Deadline for request for clarifications from the FCH JU	Thursday 10 November 2011	
Last date on which the FCH JU issues clarifications	Thursday 17 November 2011	
Deadline for submission of tenders	**Friday 2 December 2011**	Tenders delivered by hand shall be submitted not later than **16:00h Brussels Time**

[3] This information does not constitute a commitment on the part of the FCH JU and cannot give rise to any right or legitimate expectation by the tenderers.

Public Opening of tenders received	Friday 09 December 2011 14:00.	White Atrium Building Avenue de la Toison d'Or 56 1060 Brussels
Completion date for evaluation of tenders	January 2011	Estimate
Signature of contracts	End of January or February 2011	Estimate

4. Duration of the contract

The duration of the framework contract will be 3 years from the date of signature by the last of the contracting parties, with the option of extending it by one year on one occasion (3+1), in accordance with the provisions set out in the model framework contract attached in Annex A.

The FCH JU explicitly reserves the right not to renew the framework contract.

5. Volume of the contract

The total value of the framework contract for duration of maximum 4 years is estimated at €5.000.000 (5 million Euros)

Part Two: Terms of reference for the first specific contract (first study)

1. Background

Road traffic has been steadily increasing in recent years and vehicle ownership is expected to grow across the world. Without action, air pollution and CO_2 emissions from transport will grow as well. Therefore, an increased emphasis on low and zero emission vehicles and an increase in overall CO_2 reduction goals is expected. Over the last decade, governments, OEMs, the energy sector and several public transport providers have given special attention to the introduction of hydrogen as a fuel for road transport as an option to reach several goals associated with emission management and CO_2 reduction. Together with Battery Electric Vehicles, which are complementary to FCVs from a technical and environmental perspective, the objective of sustainable mobility will be closer in reach.

Fuel cell vehicles (FCVs) have developed significantly over the last 5 years and several car manufacturers[4], anticipate strongly that from 2015 onwards a quite significant number of them could be produced. This number is aimed at a few hundred thousand units over its life cycle on a worldwide basis.

At the same time, infrastructure companies involved in providing retail facilities will need to prepare major investments in refuelling infrastructure, which will require confidence in the future development of the market. To stimulate this development and to ensure manageable risk levels government support will be needed through regulations (e.g., emission standards) and subsidies (e.g., for early infrastructure investments).

An independent and broadly shared view on the (future) economic and performance of Fuel Cell vehicles will be necessary for private players to invest and for governments to decide on support. To achieve this, a coalition of companies led by members of the European Industry Grouping for Fuel Cells and Hydrogen (JTI) has worked on a study that investigates in detail the current and future economics, the environmental performance and the feasibility of hydrogen FC cars compared to alternatives. The results of this "A portfolio of power-trains for Europe: a fact based analysis" (see also section 2.6), were published in November 2010. It concluded that a portfolio of power trains (FCEV, BEV, PHEV) will be needed to address customer expectations and meet environmental targets. The respective cost of ownership for all alternatives will converge in the 2025 time frame. Their deployment will however require a concerted effort of stakeholders and political commitment.

Infrastructure is a significant initial challenge for a successful roll-out of hydrogen based transport. In the long term, with substantial penetration of hydrogen vehicles, the cost of infrastructure can be economically acceptable and will generally not be substantially higher than alternative or current infrastructure options.

By targeting early adoption segments with localized infrastructure, investments can be made step by step while early usage can be stimulated or potentially guaranteed through

[4] Press release LoU September 8 '09 Daimler AG, Ford, GM/Opel, Honda, Hyundai/Kia, the Alliance Renault Nissan, Toyota

agreements with the early adopter segment. A segmented approach will be financially more attractive (usage and investments are better matched), and create lower risk (more opportunity for optimization, utilization and testing). **The public bus networks** have been identified as a segment that is particularly suitable for such early adoption for a number of reasons:

- City bus fleets cover a limited geographical area and are centrally refuelled, therefore the refuelling infrastructure cost per vehicle can be reduced and utilization be increased.
- The city bus system is a professional system, typically controlled by one or a few companies making coordination and decision taking straightforward.
- City pollution is of significant concern and in many cases municipalities are striving to improve city air quality and reduce citywide CO_2 emissions and noise, including local zero emission targets.
- City bus companies typically possess sites which are suitable for building and operating hydrogen refuelling infrastructure.
- Fleet operation allows gaining faster experience on new technologies compared to other fields
- Visibility and public experience of new technologies can facilitate acceptance of new technologies in general
- Several cities are relatively close to industrial areas or infrastructure, in some cases even hydrogen pipelines, providing easy access to clean hydrogen.

The hydrogen bus technology has been tested successfully in various instances e.g., in the European CUTE, ECTOS and HyFLEET:CUTE projects and in various local projects all over the world, including the U.S., Canada, China and Japan.

When assessing concrete next steps towards investing in fuel cell buses and infrastructure companies and governments are however still faced with several uncertainties regarding:

- Independent comparison across propulsion system alternatives to create a data base for investment decisions.
- Technical status and cost of propulsion systems and their potential to improving energy efficiency.
- Future well-to-wheel cost of a hydrogen fuel cell city bus network.
- Local conditions benefitting the business case for hydrogen buses.
- Lack of coordination across stakeholders to address some of the information gaps together and to speak with one voice to governments and regulators.

To address the above-mentioned uncertainties, **a coalition** was established by members of the New Energy World Industry Grouping (NEW-IG), HyRaMP and other stakeholders to assess the critical parameters and accelerate the commercialization of fuel cell city buses by creating a shared understanding on the economics, the environmental benefits, the infrastructure requirements and the obstacles of regional roll-outs across Europe.

2. Scope of the study

In order to achieve this, the phases A, B, C (shown in Part One, section 1.2.2) are envisioned. **This study will focus on Phase A** and will involve a 2-step approach. In the first step an exhaustive evaluation of the different drive train options will be carried out at a high level.

This will allow a selection of most promising propulsion system types for analysis in the second Step. The criteria for evaluation of step 1 should be developed by the consultant and agreed with the FCH JU and the coalition. Two time periods - 2015 and 2025 - are suggested. The consultant is required to balance the weighting of each criterion to reflect the views of the coalition members (see below).

As explained in Part One, Section 1.4, the fact base generated has to be sanitized (aggregated and anonymised). A proposal for a simple and lean approach for step 1 shall be included in the proposal by the consultant (e.g. the proposal should also detail the consultant's approach to anonymising data, particularly given that the number of data points available to the consultant could be limited.

In the second step of Phase A, the short list of the most relevant system types shall be analysed to create an independent fact base for technology options for European buses. Here, a detailed assessment of the performance of the drive trains will be carried out, through in depth work with bus OEMs, component suppliers and fuelling system providers. The consultant should work with the coalition and bus operators to understand the key factors affecting bus procurement decisions and then use these to analyse the future for each of the selected drivetrains. At a minimum, these should include:

- The Total Cost of Ownership of the different drivetrains (using bus operator TCO metrics)
- Capital and operating costs expected for the vehicles
- Overall well to wheel emissions – local and global pollutants
- Noise
- Fuel reliability metrics
- Other issues determined in discussion with operators

The consultant should produce the assessment for buses of different sizes and operating requirements. Here, it is likely the consultant will need to agree a set of representative bus types and operating cycles with the **coalition** and through consultation with operators.

It is expected that, at the end of this study (phase A), the FCH JU, in consultation with the industrial coalition, will launch studies for phases B and C, define detailed terms of reference and invite the three contractors to submit a tender. In phase B, assumptions and typical business cases for hydrogen bus rollout will be developed based on the fact base developed in Phase A. This should include an additional market analysis in order to reach a reliable indication of the future market for *clean*[5] *buses* and the timing of that market.

Phase C will focus on the development of proposals for a consistent long-term framework facilitating investment in hydrogen buses and respective infrastructure in Europe, prepare investment guidelines, establish communication tools and tailor them for the different target groups.

The entire process requires strong coordination and communication between the consultant and the coalition members.

[5] Clean means as close as possible to zero emission (at the tailpipe)

3. Objectives

The objectives of the study are to benchmark and compare the alternative options diesel, diesel-hybrid, biofuels (e.g. CNG, bio-ethanol), battery, trolley, hydrogen combustion and fuel cell hybrid for clean public transport with city buses, including:

- To substantiate the rationale for introducing *clean buses* with alternative propulsion concepts and the respective infrastructure
- To describe operational characteristics (incl. topography, climate zones etc.) and the potential benefits of the different technology options associated with them

The study will have to deliver a strong market perspective and focus on the required mechanisms and drivers to achieve market success. The results will need to address the relevant information requirements of public transit agencies and local/regional politicians when investing in clean public transport and develop an overall concept to facilitate such decisions. It needs to be based on and foster consensus and coordination among the consortium stakeholders and create buy-in of policy makers.

The required deliverables are specifically described in section 6 below.

4. Methodology

Investigation of the above elements will require strong coordination between the various stakeholders along the value chain. The approach needs to ensure that the requirements and interests of public transport markets will be in the focus of the assessment, critical assumptions will be properly identified and instruments will be developed addressing the practical needs of the stakeholders.

The consultant should propose a methodology which ensures that:

- Methodologies are aligned and consistent with the objectives of the study.
- Integrated scenarios can be constructed and general conclusions can be formulated.
- Cost estimates will be based on transparent criteria and uniform assumptions consistent across the companies and build on international best-practice. Interfaces with previous and ongoing projects and studies will be observed and properly managed.
- Assessment will be supported by individual consultations and workshops with the coalition members or other stakeholders to generate best possible quality of the required input data and analysis.
- The provision of confidential data and their treatment will be ensured by a clean team and be protected by strict confidentiality rules as specified in the tender specifications for the framework contract (see Part One Section 1.4).
- Findings will be monitored and regular reviews/workshops will be held with the core group and relevant other stakeholders to ensure proper consolidation and agreement on results.
- Consistency of the methodology will be observed and quality of the results will be ensured by regular review and analysis.

5. Data sources

The consultant will acquire data on infrastructure, fuel cost and power train cost from the coalition members and other relevant actors along the value chain such as technology providers, transport companies, bus producers, utilities as well as oil and gas companies via a clean room approach (see Part one, section1.4) . Other stakeholders such as universities and research institutions may likely be able to provide additional data or reviews. For buses, these include the technical data to be collected about the selected propulsion system types as well as information about the commonly agreed definition of duty cycles for the consumption data. For the infrastructure, they includes the relevant data points (technically as well as financially) of the selected production, distribution, storage and refuelling pathways.

The consultant must sign a confidentiality agreement as specified in the tender specifications for the framework contract (see Part one, section1.4 and Annex K).

The results of previous and ongoing studies or projects, including HyFLEET:CUTE, CHIC, Next HyLights, the "A Portfolio of Powertrains" study, H2-Mobility... etc. shall be observed and included where relevant. Finally, the European Regions and Municipalities Partnership for Hydrogen and Fuel Cells Activities (HyRaMP) and the Hydrogen Bus Alliance (HBA) have considerable experience and data about hydrogen bus networks which the project team should leverage for the project. Other possible sources for information and data are CNG-Diesel comparisons by TNO, the German VDV studies, the Roland Berger study on heavy-duty vehicles, EUCAR/Concawe as well as various studies on procurement mechanisms.

6. Deliverables

A final written report and presentation in a consistent, fact based, intuitive and convincing manner, providing a summary of the study results. The results of the report shall be presented to the consortium and agreement by all consortium members to the report is essential. It is the task of the consultant to facilitate the process towards achieving such an agreement. The report and presentation shall cover the following major topics:

- **Specific environment and key drivers/sensitivities of public transportation:** Description of typical economics and sensitivities of public transit agencies, influencing factors, local drivers and strategic aspects for urban living conditions, expected progress until 2020 and 2030.
- **Technical, technological and cost assessment of the selected propulsion system types for buses:** Assessment versus other alternative drive train options, technical and cost status (Total Cost of Ownership (TCO) – based on the defined duty cycles - see data sources, specification – definition of base case for this, duty cycle definition necessary, e.g. Standardised On Road Test (SORT) cycles), expected progress until 2020 and 2030, environmental impact assessment, including Well toWheel (WtW) energy efficiency, CO2 and other emissions, underlying assumptions as well as overview and validation of the key sensitivities
- **Technical, technological and cost assessment of fuel production and infrastructure:** Assessment of sustainable fuel production pathways and logistics, technical and cost status of fueling stations and equipment, expected progress until 2020 and 2030, feasibility of bus infrastructure, synergies with other applications, strategic networks.

- **Codes, regulation and standards:** High-level-assessment of status and requirements with regard to vehicle certification, infrastructure safety, permission of fueling stations, fuel specification and consumption.
- **Commercialization framework and business case assessment:** Description of general Total Life Cycle Costs (TLCC) trends, economic framework requirements, and development of assessment tool for public transit agencies.

As already outlined, results of previous and ongoing projects and assessments shall be considered, integrated where relevant and helpful or used as reference to ensure comprehensiveness of the assessment. This applies particularly to the NextHyLights study, which delivers the U.S. perspective.

7. End-products

The main end-product of the study will be a publication on:

- The economics as well as technical and operational feasibility of different drive train concepts.
- Assessment and future outlook in technical and socio-economic terms of the different drive train options

The contractor will have to organise the presentation of the study results in Europe (Brussels), Japan, Korea and potentially the United States (Washington).

The cost of these communication activities must be included in the price submitted by the contractor. In case additional communication activities were requested later by the FCH JU, the additional travel and subsistence expenses will be reimbursed on the basis of the provisions of Article II.7 of the Framework Service Contract.

The consultant may subcontract the communication part to marketing experts to provide for the necessary expertise to fulfil these tasks.

8. Definition of success

The study will have to meet the success criteria defined in the tender specifications for the framework contract (Part One, section 1.5).

9. Proposed participants

The project shall be supported by Bus OEMs, System Integrators, Technology Providers, Infrastructure Companies, Representatives of HyRaMP, Operators and relevant Associations.

The coalition is being established. A list of companies that have already officially agreed to support the study is available on the FCH JU website.

More companies have shown a clear interest and it is expected that they will formally join the coalition before the actual launch of the study. The list of companies will be regularly updated.

In addition, one of the first tasks of the contractor shall be to convince additional companies to join the coalition with the double objective (1) to increase the quantity and quality of the data and (2) to increase the support to the study results.

Part three: Assessment and content of tenders

1. Assessment of tenderers and tenders

The evaluation of tenders will be done by an evaluation committee composed of members of the FCH JU staff. This committee may be supported by external and independent experts.

The assessment of the bids will be carried out in three successive stages. The aim of each of these three stages is:

1) Exclusion stage- to check, on the basis of the exclusion criteria, whether candidates can take part in the tendering procedure;

2) Selection stage- to check, on the basis of the selection criteria, the technical and professional capacity and economic and financial capacity of each candidate;

3) Award stage- to assess, on the basis of the award criteria, each bid that has passed the exclusion and selection stages.

Tenders must meet the requirements of each step in order to be assessed in the next step of the evaluation procedure.

While the verification of the exclusion and selection criteria is only done once for the award of the framework contracts, the evaluation on the basis of the award criteria is done separately for both the award of the framework contracts and for the award of each specific contract. Only the top 3 bids for the framework contracts will undergo the evaluation of the technical award criteria for the first specific study.

1.1 Exclusion of tenderers on the basis of the exclusion criteria

According to the FCH JU financial rules tenderers shall be excluded from participation in the procurement procedure if they:

a) are bankrupt or being wound up, are having their affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities, are the subject of proceedings concerning those matters, or are in any analogous situation arising from a similar procedure provided for in national legislation or regulations;

b) have been convicted of an offence concerning professional conduct by a judgement which has the force of *res judicata*;

c) have been guilty of grave professional misconduct proven by any means which the contracting authority can justify;

d) have not fulfilled obligations relating to the payment of social security contributions or the payment of taxes in accordance with the legal provisions of the country in which they are established or with those of the country of the contracting authority or those of the country where the contract is to be performed;

e) have been the subject of a judgement which has the force of *res judicata* for fraud, corruption, involvement in a criminal organisation or any other illegal activity detrimental to the FCH JU's financial interests;

f) are currently subject to an administrative penalty imposed by the EU institutions as referred to in the general Financial Regulation;

Tenderers are also excluded from the award if, during the procurement procedure, they

g) are subject to a conflict of interests;

h) are guilty of misrepresentation in supplying the information required by the contracting authority as a condition of participation in the contract procedure or fail to supply this information.

In their tenders, tenderers shall provide a declaration on their honour, duly signed and dated, stating that they are not in one of the situations listed above (see Annex G).

The tenderers to whom a contract is to be awarded shall provide the documents mentioned below before signature of the contract.

The FCH JU may waive the obligation of the winning tenderer to submit the documentary evidence referred to below if such evidence has already been submitted to it for the purposes of another procurement procedure and provided that the issuing date of the documents does not exceed one year and that they are still valid**.**

Evidence:

The following documents will be accepted as proof that the tenderer is not in any of the situations mentioned under points a to h

1. for points a, b and e the production of an extract (delivered less than 90 days before the final date for receipt of offers) from the judicial record or, failing this, an equivalent (delivered less than 90 days before the final date for receipt of offers) document issued by a competent judicial or administrative authority in the country of origin or provenance, showing that the described situations do not apply;

2. in the cases mentioned under point d a certificate delivered (delivered less than 90 days before the final date for receipt of offers) by the competent authority of the country concerned.

Only where the country concerned does not issue the documents or certificates referred to in paragraphs 1 and 2 here above, they may be replaced by a sworn or, failing that, a solemn

statement made by the interested party before a judicial or administrative authority, a notary or a competent professional or trade body, in the country of origin or provenance.

3. in the cases mentioned under points c, f, g, and h tenderers must include in their tender a sworn or, failing that, a solemn statement made by the interested party before a judicial or administrative authority, a notary or a qualified professional body in his country of origin or provenance, based on the model (see declaration in Annex G).

Depending on the national legislation of the country in which the tenderer is established, the documents listed above must relate to legal persons and/or natural persons including company directors, principal partners or any person with powers of representation, decision-making or control in relation to the tenderer.

1.2 Selection of tenderers on the basis of the selection criteria

The selection of the tenderers will assess their technical, professional, financial and economic capacity.

To this end, all tenders submitted must include the following information on the tenderers:

1.2.1 Legal Status

Tenderers are requested to fill the Legal Entities Form provided in Annex I and provide the documents as required in the form.

1.2.2 Economic and financial capacity

Tenderers must provide proof of their financial and economic capacity by means of the following documents:

- the balance sheets or extracts from balance sheets for the last three financial years
- a statement of overall turnover for last three financial years;
- and a statement of turnover relating to the relevant services for the last three financial years.

This rule applies to all service providers, regardless of the percentage of tasks they intend to execute, once they have chosen to submit a tender. However, if the tender includes subcontractors whose tasks represent less than 20% of the contract in economic value, those subcontractors are not obliged to provide evidence of their economic and financial capacity.

1.2.3 Technical and professional capacity

Tenderers must provide evidence of their technical and professional competence by fulfilling the following criteria

1. Experience in business consultancy, market analysis and research experience in highly complex, innovative, high technology and high visibility projects with demonstrated capacity of identifying market specific opportunities, risks, stakeholders and levers;

2. Experience in conducting economic studies and econometric modelling (including for example public benefit, social utility, externalities…);

3. Expertise covering all related industries
    - Automotive
    - Bus
    - Oil & gas (retail & distribution)
    - Chemical/hydrogen production industry
    - Fuel cells production, installation and use
    - Alternative energies
    - Electric mobility
    - Utilities

4. Government/policy experience (the EU and its Member States)

5. Geographic coverage
    - Own offices in all key countries (Germany, UK, France, Italy, Scandinavian countries and Benelux)
    - Nationals of the key countries involved in the team

In order to enable the assessment of their technical and professional capacity, tenderers shall provide

- A list of the principal services provided during the last three years (detailed description of work), with the values, dates and recipients, of the services provided. The services which are directly relevant to the tender being made should be listed separately.

- CV of the staff proposed for this contract with particular reference to the principal person proposed by the tenderer to liaise with FCH JU in the performance of the contract.

- A comprehensive company profile including a list of its offices

If several service providers/subcontractors are involved in the bid, each of them must have and show that they have the professional and technical capacity to perform the specific tasks assigned to them.

1.3 Evaluation of tenderers on the basis of the award criteria

This procedure aims at concluding multiple framework contracts (MFC) with reopening of competition with 3 economic operators.

These framework contracts will be implemented through several specific contracts corresponding to several studies with different characteristics.

The evaluation for awarding the first specific contract (i.e. first study corresponding to phase A in the bus sector) will be done immediately after the evaluation for selecting the three contractors to whom a framework contract will be awarded. Therefore, applicants are requested to submit a technical offer in two parts:

(1) The tenderer technical proposal for the framework contract: the technical proposal should describe the general methodology that the contractor intends to use in order to achieve the goals previously described for each of Phases A, B, and C. It is expected that the explanation of this methodology will be illustrated by examples where the proposer has previously "exploited" this methodology in similar studies. The methodology being proposed should be applicable to all sectors for which a study is foreseen (see Part One, Section 1.2.1) or, wherever applicable, the differences in methodology for different sectors should be duly explained.

(2) The tenderer technical proposal for the specific study should specify the methodology to be used in order to achieve the objectives laid out in the terms of reference (see Part Two, Section 3). In particular, the steps to ensure data confidentiality is maintained and efficient data processing is carried out should be explained in detail.

1.3.1 Evaluation for awarding the framework contracts

1.3.1.1 Technical evaluation for awarding the framework contracts

The technical proposal for the framework contract will be evaluated on the basis of the following technical award criteria:

	Criteria	**Points**
1	**General understanding of the global project** • Shows an understanding of the general objectives of the framework contract and of the working practices with the FCH JU and the industrial coalitions. • Shows an understanding of the issues and already defines what success means • Already shows analysis and provides first insights that are used in the approach • Adds own aspects/views - have put in unexpected elements that are meaningful to achieve success	30
2	**Quality of the proposal** • Provides a detailed description of project organisation and management (including the collection and treatment of data) • Clearly defines scope, milestones and deliverables of work packages • Clearly articulates approach/methodology to achieve objectives • Provides communication and stakeholders engagement strategy • Timeline and resource allocation is realistic and at the right level of details	40
3	**Expertise of the team**	30

	• Involvement of one or more of the most senior level staff in the consultancy • Involvement of specialists in key areas: fuel cells and hydrogen and competing technologies • Experience with respect to field of study and reputation within industry	

Only tenders achieving a minimum of 70% of the of the overall score will be further evaluated in relation to price

1.3.2.1 Financial evaluation for the award of the framework contracts

For equal financial evaluation purposes, the price of the bid will be calculated on the basis of the price of defined types of service profiles (Partner, project manager, senior analyst, junior analyst) multiplied by the estimated quantity of the required service for a 500-day project, given as a non-binding indication of workload.

The basis for the financial evaluation will be the cost of a typical project of 500 man days involving all profiles requested:

- 50 man days of Partner/Director
- 150 man days of Project manager
- 150man days of senior analyst/associate
- 150 man days of junior analyst/associate

The Service profiles must correspond to the tenderer internal organisation provided that they comply with the following minimum experience thresholds

- Partner/Director may not have less than 10 years of professional experience
- Project manager may not have less than 8 years professional experience
- Senior analyst/associate may not have less than 5 years of professional experience
- Junior analyst/associate: no minimum

The estimated quantity of the required service is given as a non-binding indication of workload.

For the tender, daily rates must be specified for each of the staff categories as defined here above. The man-day price quotation (the daily rate) for each profile will be binding for the contractor throughout the duration of the framework contract and will serve as a price-list.

1.3.2 Evaluation for awarding the first specific contract

1.3.2.1 Technical evaluation for awarding the first specific contract

The tenderer technical proposal for the specific study will be evaluated on the basis of the same technical award criteria as for the framework contracts.

1.3.2.2 Financial evaluation for awarding of the first specific contract

Tenderers shall indicate the total price they propose for carrying out the first study.

The total price must be detailed in such a way that it is possible (1) to identify the price of the distinct deliverables and (2) to verify the correlation of the man-day price quotation proposed for the whole duration of the framework contracts.

1.4 Prices

The price for the tender must be quoted in euro. Tenderers from countries outside the euro zone have to quote their prices in euro. The price quoted may not be revised in line with exchange rate movements.

Prices should be fixed amounts.

Prices should be quoted free of all duties, taxes and other charges, including VAT, as the FCH JU is exempt from such charges under Articles 3 and 4 of the Protocol on the privileges and immunities of the EU; the amount of VAT should be shown separately.

Prices are indexed according to Article I.3 of the framework contract.

1.5 Contracts award

1.5.1 Award of the framework contracts

In order to guarantee security of supply, multiple framework contracts (with identical terms) will be concluded with the three best tenderers. The framework contract will be awarded to the 3 most economically advantageous tenders, provided that in the technical evaluation the tenders have at least attained 70% of the maximum score.

The best-value-for-money offer is determined by weighting the technical proposal 60% and the financial proposal 40% using the following method:

Tenderers will be **ranked** based on the **total value of points** allocated to each of them, according to the following formula:

$$\textbf{score for tender X} = \frac{\text{cheapest price}}{\text{Price of tender X}} * 40 + \frac{\text{Total quality score (out of 100) for all award criteria of tender X}}{100} * 60$$

1.5.2 Award of the specific contracts

For each specific requirement (including the first study) a specific contract will be signed with the contractor proposing the most economically advantageous offer.

The best-value-for-money offer is determined by the same weighting and the same formula as for the award of the framework contract.

2. Content of the tenders

Tenders must be delivered following the modalities as described in the letter of invitation to submit a tender.

It is recommended to structure information and documents with clearly marked references to each sub-point they refer to.

2.1 Administrative part - Part A - containing:

- A covering letter for the submission of the offer signed by the tenderer or his duly authorised representative confirming the validity of his offer during 12 months from the deadline for the submission of the offer;
- The completed and signed general information sheet (see Annex F);
- Declaration (see Annex G) concerning the exclusion criteria (see section 1.1))
- Commitment to undertake the described tasks if the framework contract is awarded to the tenderer, signed by the tenderer or his authorised representative (join a copy of the notice of appointment of this authorised representative).
- The completed and signed Legal Entity File (see Annex I)
- The completed and signed Bank Account File (see Annex J)

Please note that if a joint tender or subcontracting is proposed, the declarations relating to the exclusion criteria (see section 1.1) and the documents relating to the selection criteria (section 1.2) must be provided by each of the joint partners and subcontractors.

2.2 Technical part – Part B - containing:

(1) Documents needed to prove that the tenderer meets the selection criteria (see section 1.2);
(2) The tenderer technical proposal for the framework contract;
(3) The tenderer technical proposal for the specific study,
(4) If a joint tender or/and subcontracting is proposed, they should describe the cooperation between the partner(s) and with the subcontractor(s). This organisation must cover both technical aspects and administrative/financial issues

2.3 Financial offer – Part C - containing:

The signed and completed form supplied in Annex C.

NB: The form must be completed in full. Any incomplete tender will be excluded from the evaluation procedure. In particular, the lack of prices for one of the assignment types will invalidate the offer.

ANNEXES

ANNEX A	MODEL FRAMEWORK CONTRACT
ANNEX B	MODEL SPECIFIC CONTRACT
ANNEX C	PRICE TABLES TO FILL IN FOR THE FINANCIAL EVALUATION OF THE TENDER.
ANNEX D	DAILY SUBSISTENCE ALLOWANCES
ANNEX E	MODEL POWER OF ATTORNEY
ANNEX F	GENERAL INFORMATION SHEET
ANNEX G	DECLARATION THAT MUST BE INCLUDED IN THE TENDER BY THE TENDERER CONCERNING THE EXCLUSION CRITERIA AND CONFLICT OF INTEREST
ANNEX H	CHECK LIST CONCERNING THE DOCUMENTS TO SUBMIT
ANNEX I	LEGAL ENTITY FILE TO BE COMPLETED AND ANNEXED TO THE TENDER
ANNEX J	BANK ACCOUNT FILE TO BE COMPLETED AND ANNEXED TO THE TENDER
ANNEX K	CONFIDENTIALITY AGREEMENT