



NEXT-CSP

High Temperature Concentrated solar thermal power plant with particle receiver and direct thermal storage

European funded project - Grant Agreement number 727762

Deliverable D10.1

WP10 – Project Management

Deliverable 10.1 Project Quality Assurance Plan and Project Handbook

Date of Delivery: 05 April 2017

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Document identifier: NEXT-CSP-WP10-D10.1

Deliverable leader	CNRS
Deliverable contributors	CNRS - Euronovia
Related work package	WP10
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Due date of deliverable	01 January 2017
Actual submission date	05 April 2017
Approved by	Coordinator
Dissemination level	CO
Website	www.next-csp.eu
Call	H2020-LCE-07-2016 Developing the next generation technologies of renewable electricity and heating/cooling Specific Challenge: Concentrated Solar Power
Project number	727762
Instrument	Research & Innovation Actions
Start date of project	01/10/2016
Duration	48 months

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1. Introduction and objectives

This deliverable D10.1 is planned in the framework of the WP10 (Project Management) of the NEXT-CSP project.

The Quality Assurance (QA) Plan and Project handbook of the NEXT-CSP project outlines standards and procedures for ensuring the quality of project communication, project documentation, project activities, project deliverables, and project change management.

The plan is effective throughout the project duration (4 years). Moreover, to ensure the highest relevance and quality of the plan it will be updated whenever necessary. In this event, subsequent versions will be issued, and named accordingly (e.g. V02, V03, V04, etc.). This version, and all those that may follow will be distributed to the project partners and uploaded on the intranet area of the website.

2. Quality of project communication

2.1 Email distribution lists

Specific email distribution lists have been created to facilitate appropriate and efficient email correspondence. All project Partners are able to send email correspondence to each distribution list. If a new contact needs to be added to an existing distribution list, the Partner requesting the addition should contact the coordinator.

The email distribution lists currently in use for the NEXT-CSP project are listed below:

contact@next-csp.eu that gathers the emails of the coordinator and of the person in charge of the website and communication activities;

consortium@next-csp.eu that gathers the emails of all involved partners in the project;

2.2 Online collaborative environment: document storage

The online document storage of the NEXT-CSP project is an intranet tool integrated to the website and which allows storing project documents in a single online location, facilitating document exchange without having to exchange emails. By default, all Partners are given access rights to the project document repository. Extra contacts may be added at the request of Partners. This repository contains all documents (public and private) created in the framework of the project. The link is as follows: <http://next-csp.eu/intranet/>

2.3 Video conferencing

The video and tele-conferencing tool that will be used for NEXT-CSP is Webex or gotomeeting. There are no software download requirements; however, plug-ins are automatically downloaded. Partners are expected to check if they have any browser restrictions and ensure that they make the necessary checks before the meetings. When a meeting is scheduled, invitees will receive an email invitation with instructions on how to join the meeting, listed as 'Action Items'. The link appearing in the first 'Action Item' will bring invitees to the corresponding meeting webpage, where they will be prompted to enter their name, email address, and password (if required).

Important considerations for the proper use of the tool:

- All meetings are convened by the coordinator ;
- If a WP leader requires a meeting, he/she should request the coordinator to create the meeting, and will then be able to use the tool for WP internal work ;
- Voice: It is important to note that when logging into a meeting in the tool it is necessary to activate the Voice Conference button at the beginning of each meeting. To ensure the best sound quality during the meeting it is requested that all attendees mute their microphones when not speaking ;
- Webcam: There is a video icon that activates the user's webcam. This will be used as far as internet resources allow it ;
- Screen-sharing: the tool allows for screen-sharing. This function is given to the host by default, but can be passed over to any attendee.

2.4 Meeting scheduling

To schedule meetings the NEXT-CSP project will use Doodle. Doodle polls allow for meeting invitees to indicate their preferred dates and availability, avoiding the use of emails when scheduling a meeting with a large number of invitees. When a meeting is scheduled, invitees will receive an email invitation from Doodle with a link to the poll.

2.5 Mailing documents to the coordinator

Partners are advised to use a courier service to mail any legal or signed documents to the following address:

Gilles Flamant
 CNRS-PROMES
 7 rue du four solaire
 66120 Font-Romeu
 FRANCE

Partners must keep copies of all out-going documents for their own records. This should include a signed version in the event of the documentation going missing at a future date. Partners are also required to provide at least 2 signed versions to the Coordinating Entity, CNRS, for all documentation and claims.

2.6 Partner Contact Details

The table 1 below provides the main contact for each beneficiary. However, there is usually more than one contact per partner.

N°	Partner	Country	Contact person	E-mail
1	CNRS	FR	Gilles Flamant	gilles.flamant@promes.cnrs.fr
2	EDF	FR	Frédéric Siros	frederic.siros@edf.fr
3	SBP SONNE GMGH	GE	Thomas Keck	t.keck@sbp.de
4	IMDEA Energia	SP	Manuel Romero	manuel.romero@imdea.org
5	COMESSA SA	FR	Frédéric Pron	fpron@comessa.fr
6	WHITTAKER ENGINEERING	UK	Ken Whittaker	ken@whittakereng.com
7	EPPT	BE	Jan Baeyens	baeyens.j@gmail.com
8	KU Leuven	BE	Raf Dewil	raf.dewil@cit.kuleuven.be
9	INPT	FR	Renaud Ansart	ransart@ensiacet.fr
10	Euronovia	FR	Virginie Robin	v.robin@euronovia-conseil.eu

Table 1 – Contact details of the NEXT-CSP partners

2.7 Monitoring of project communication

Concerning the communication activities and to be able to control and monitor the activities of each partner, each partner implementing a communication activity will be asked to fill in a communication report describing each action before it is implemented on behalf of NEXT-CSP. This will be the occasion to check that the action does not create Intellectual Property Rights conflicts.

Each action will have to be validated by the WP9 Leader (dealing with communication activities) 45 days before any communication activity.

WHY? Purpose & expected impact	TO WHOM? Recipient of communication	WHAT? Content of communication	HOW? Media of communication	WHEN? Timing and frequency of communication	BY WHOM? Responsibility of communication
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Further to that, an evaluation of the impact of the communication action will have to be reported to monitor the success of the activities. Key Performance Indicators (KPIs) will be created to monitor the success of the activities. For each communication action, the leader of the action will have to report the impact of the action. Depending on these reports, and if the impact has not been reached as expected, the dissemination plan will be updated if necessary.

For reports on the events, the template below could be used to evaluate the impact. Also, a questionnaire could be filled in by the participants in order to gather as much information as possible on the NEXT-CSP community (important information to collect would be on the participant profile interested in NEXT-CSP and the field of work).

Before the event	
Name of event	
Date	
Location	
Event organizer	
Event website	
Description of the event (objective, target audience, etc.)	
(Draft) Agenda (external link, or in annex)	
NEXT-CSP partner(s) attending the event: name, entity, role (speaker, participant), etc.	
Communication / dissemination material needed (type of material and estimated quantities).	
After the event	
Brief description of activities, conclusions, next steps, recommendations, etc.	
Estimated number of participants, if possible	
List of annexes	Annex 1:
E.g.: agenda, participants list, power point presentations, conclusion, pictures, etc.	Annex 2 :
Other	

3. Quality of project documentation

To assure the quality of project documentation in the submission and/or exchange of any written work, the NEXT-CSP Consortium should observe the following guidelines and procedures that have been established to ensure consistency, standardization, and adherence to protocol in document production and elaboration, in file naming, and in the use of project logos.

3.1 Use of standardized document templates

Templates for PowerPoint presentations and Word documents have been produced to ensure proper branding of the NEXT-CSP project. Partners should ensure that they use them for any official document submission and circulation. These templates are available on the intranet tool (NEXT-CSP>Dissemination>Templates and logos).

3.2 Use of official project logos and statement of EC financial support

All NEXT-CSP project-related documents should incorporate two official logos. These logos are presented below.

- NEXT-CSP logo



- European Union logo



Rules of the EU flag <http://publications.europa.eu/code/en/en-5000100.htm>

Downloading: http://europa.eu/about-eu/basic-information/symbols/flag/index_en.htm

The standardized document templates for the NEXT-CSP project already comply with the protocol for use of each logo.

For any documentation produced beyond the scope of the templates, and which requires the use of the project logos (for example in dissemination and outreach activities, and related documentation, which are part of WP9), the official protocol for use must be adhered to. Accordingly, the EU provides a graphic manual intended to help users reproduce the European emblems correctly. This manual is available at <http://publications.europa.eu/code/en/en-5000100.htm>

Furthermore, the EC requires that all project-related activities, and resulting documentation, to clearly indicate and reflect the EC's co-funding of the NEXT-CSP project. As such, all publications or any other dissemination related to any type of publication (reports, dissemination materials, scientific papers, etc.) should include the following statement to indicate that it was generated with financial support from the EC:

“This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 727762, project acronym NEXT-CSP.”

Failure to comply with the publicity requirements of the EU could result in the non-payment of the person-months and any other costs claimed to produce the work.

3.3 File-naming standardization

In order to ensure consistency in file naming and effective archiving processes, the NEXT-CSP project will use a standardized file-naming convention. The convention has been established based on specific identifiers, which represent characteristics of the file. The identifiers and corresponding rules for use are indicated below. The identifiers have been numbered to reflect the corresponding order of appearance. All identifiers are to be separated by a dash ('-').

- **NEXT-CSP**

Description: 'NEXT-CSP' is the project acronym for file-naming.

Rules: 'NEXT-CSP' is a mandatory identifier for all NEXT-CSP related documentation. This file-naming acronym applies to all NEXT-CSP official files (e.g. documents, images, videos, audio-recordings), and is the first identifier that must appear in all such file names. All letters must be capitalized.

- **WPX**

Description: 'WP' identified the WP to which the file belongs; where the 'W' is replaced by the WP number.

Rules: 'WP' is an optional identifier, as not all files produced or created throughout the project will relate to a specific WP. If the file being named does not relate to a WP, the next identifier in this series will follow, if applicable. All letters must be capitalized.

- **PC | GA | WPL | IAB**

Description: 'PC | GA | WPL | IAB' identifies, where applicable, the organism to which the file belongs or is targeted towards: PC (Project Coordinator), GA (General Assembly), WPL (Work Package Leader), IAB (Innovation Advisory Board). The '|' symbol separating each identifier means 'or', indicating identifier options, and is used here, and henceforth, only to distinguish identifier options. This symbol is not to appear in file names.

Additionally, 1 | 2 | 3 | 4... are specific meeting identifiers. They reflect the meeting number and the organism to which they relate.

Rules: 'PC | GA | WPL | IAB' is an optional identifier, and is used only to identify files that relate specifically to one of the corresponding organisms. If the file being named does not relate to the PC, GA, WPL or IAB the next identifier in this series will follow, if applicable. All letters must be capitalized.

Examples:

- NEXT-CSP-GA1-Minutes-Final = Final meeting minutes of the first GA meeting
- NEXT-CSP-IAB2-Agenda-draft = Draft agenda of the 2nd IAB meeting
- NEXT-CSP-WPL-Email-List = WPL email list

- **DX | MSX**

Description: 'DX | MSX' identifies the file type, where 'D' refers to an external deliverable and 'MS' to a milestone. The 'X' is replaced by the official deliverable (external deliverable and milestone) number, as it appears in the DoW.

Rules: 'DX | MSX' is an optional identifier, and is used only for deliverables (internal and external, and milestones). The deliverable identifier is directly followed by the official deliverable code. Please note that there is no full stop ('.') following a 'D', an 'ID', or an 'MS'. Examples follow of all deliverable file-naming procedures. If the file being named does not relate to a deliverable, the next identifier in this series will follow, if applicable. All letters must be capitalized.

Examples:

- NEXT-CSP-WP10-D10.1-Final = final version of deliverable 10.1 of WP10.

- **FileName**

Description: FileName identifies the name of a file.

Rules: FileName is an optional identifier, and only applies when a file is not identifiable by an official code related to a specific project result (e.g. deliverables). Examples are listed below. Names of more than one word are not separated, and the first letter of each word must be capitalized. If the file being named does not relate to a FileName, the next identifier in this series will follow, if applicable.

Examples:

- NEXT-CSP-WP10-DetailedWorkPlan = Detailed work plan of WP10
- NEXT-CSP-IAB-NominationList_final = final version of the IAB nomination list.
- **Final-draft | final**

Description: 'pre-final | final-draft | final' identifies the status of the file.

Rules:

- 'final-draft' is used only for deliverables, when the deliverable has not still been approved by the coordinator and other related partners to the WP. In this instance, the 'final-draft' version (01) is submitted to the coordinator for comments and approval.
- 'final' is used for two types of files:

Deliverables: when they have been approved by the coordinator and submitted (to the EC for deliverables), and uploaded to the intranet for deliverables and milestones.

Meeting minutes and agendas: where no further amendments, revisions, changes are to be made to the file.

- **V01 | V02 | V03...**

Description: 'V01 | V02 | V03...' identifies the version of a file.

Rules: This identifier is optional, and is used only in cases where the file is a live document (or a document that will progressively be elaborated, updated, amended, revised, until it becomes a final version), such as deliverables, meeting minutes, and meeting agendas. Additionally, this can be succeeded by a dash and the name of the partner can be added as a sequential identifier, and is used only when a version of a file has been revised. If the file being named does not relate to a version, the next identifier in this series will follow, if applicable.

Examples:

- NEXT-CSP-WP8-D8.1-final-draft-V01-CNRS = Final-draft version 1 of deliverable 8.1 of WP8 revised by CNRS.

3.4 Contractual and management documentation

Key contractual and management documentation (e.g. GA and CA, correspondence with EC) and their corresponding amendments, if any, are stored in the relevant intranet file (NEXT-CSP>Official Documentation>Formal Agreements). The tracking of amendments and updating of contractual documentation are the responsibility of the coordinator.

4. Quality of project activities

To ensure that project activities are carried out punctually, effectively, and according to the project scope and objectives, the NEXT-CSP project will undergo internal monitoring procedures that relate to monitoring of work progress, work schedule, and general budget, through periodic progress reports from WPL to the Coordinator. Additionally, the Consortium will report on its project activities to the EC, via the Coordinator, in the form of Periodic Project Reports. These procedures are outlined below.

4.1 Internal periodic progress monitoring

The work plan is broken down into a number of Work Packages and tasks. The WPL will monitor the status of deliverables, milestones and financials of their respective Work Packages and will inform the Management Support Team (MST) regularly (every 3 months) and on the occasion of the regular General Assembly (GA) meetings (every 6 months).

- On a three-monthly basis, a simple table to fill will be provided by the WPL to the MST in order to ensure a high quality monitoring process. This will take the form as presented below:

NEXT-CSP – TRIMESTRIAL TASK MONITORING SHEET			
WP number & title			
WP Leader Acronym	Entity		
Person responsible			
Email address			

Legend	
Done	✓
On-going	✓
Delayed	✓

TASK TITLE				Status of implementation		
Task number	Start date (Project Month)	End date (Project Month)	Done	On-going	Delayed	
Workplan						
Deliverable						
Comments						

The MST will be in charge every 3 months to remind the WPL to send this table.

- Every six months a summary progress update will be undertaken by WP Leaders at the GA meeting, outlining both technical and financial development within each WP, identifying and justifying any deviation from the work plan, and proposing corrective measures where applicable.

Each partner has the obligation to notify possible deviations and/or unexpected events immediately to the WP Leaders. Every deviation will be discussed internally between the WPL and the MST. If required, adjustments will be made in terms of scheduling of deliverables or the distribution of the remaining tasks to other partners. Changes in the work plan may be proposed depending on the current progress and the results achieved and if this has consequences on other tasks.

Further to this internal monitoring process, official reports (as part of the periodic reports) will be submitted to the EC according to the required schedule as set in the GA. The WPL will elaborate these reports and transmit them to the MST who will be responsible for the assessment and submission of these reports. Prior to the elaboration, the MST will make sure that the partners are informed about the reporting requirements of the European Commission.

4.2 External project periodic reports to EC

The Consortium reports to the EC, via the Coordinator, through Project Periodic Reports, which outline project achievements and resources used per WP, as well as per Partner. The project is divided into reporting periods of the following duration:

- Period 1: from month 1 to month 18
- Period 2: from month 19 to month 36
- Period 3: from month 37 to month 48 (the last month of the project)

The periodic reports can be submitted 60 days after the end of the period. Partners are required to submit their respective Project Periodic Report documentation to the MST at least one month before the official submission deadline to the EC.

The template for the periodic reports can be found hereafter:

http://ec.europa.eu/research/participants/data/ref/h2020/gm/reporting/h2020-tmpl-periodic-rep_en.pdf

5. Quality of project deliverables

Validation and verification checks to ensure the quality of deliverables for the duration of the NEXT-CSP project involve the WPL and the partners of the WP and the coordinator.

Given deliverables are a result of the work carried out by experts within Partner organizations, this in itself represents the basis of the scientific and technical quality of the deliverable. The WP Leaders will perform deliverable validation and verification checks to ensure that deliverables meet the established quality requirements before being accepted as a final-draft version to be submitted to the coordinator.

The coordinator fulfils the role of appraising the technical quality of a deliverable, with the objective of reaching consensus on its quality prior to being submitted as the final version to the EC.

5.1 Deliverable submission and review procedures

The NEXT-CSP project undergoes a 2-phased review process for deliverables, outlined below. All deliverables should be submitted following the procedure, and using the deliverable template. Each phase has a corresponding submission procedure that reflects the established standards and procedures related to achieving quality in project documentation and communication. Given the variation in importance and complexity of each deliverable, the review process duration will be established with each WP Leader accordingly, to reflect the timeframe necessities of each individual deliverable. As submission of deliverables is a contractual obligation, it is of utmost importance that the submission due date is respected.

As aforementioned, the quality of the technical and scientific content of a deliverable will be assured by the participating Partners to the deliverable, and assessed and evaluated by the corresponding WP Leader (as a first review) based on their technical expertise and capacities.

The Coordinator, assisted by the MST, conducts a second and final review process, prior to submitting the deliverable to the EC. This will be based on content and format, the criteria of which follows:

Content:

- Achieves the intended purpose/objective
- Fulfills the depth and scope of the corresponding WP/Task objective
- Meets the technical quality standards

Format:

- Adheres to standardized document template
- Includes appropriate numbering, titles, and captions for tables and figures
- Spell-checks and grammar-checks
- References consistently (in-text or footnoting) and includes a complete reference list
- Permission obtained for use of copyrighted material from other sources
- Defines abbreviations or acronyms in a List of abbreviations and definitions table in an Appendix
- Adheres to the file-naming convention

As a general rule, the review process undergoes the following two phases. The timeframe of the process, and the duration of each phase, will vary depending on the importance and complexity of the deliverable:

First review by the WPL: Submission of the deliverable draft by the deliverable responsible to the WP Leader and subsequent discussion between the WP Leader and the deliverable responsible.

Phase description: the deliverable responsible will submit a draft of the deliverable to the WPL to gain preliminary validation by the WPL. Should there be any changes to be made and asked by the WPL, the deliverable responsible will update the deliverable and resubmit it again to the WPL until approval by the WPL.

Second review by the Coordinator: Submission of the deliverable final draft by the WPL to the coordinator and subsequent discussion between the coordinator and the WPL.

Phase description: Further to the WPL approval of the deliverable, the WPL will submit the final draft of the deliverable to the coordinator to gain the final approval by the coordinator before submission to the EC. Should there be any changes to be made and asked by the coordinator, the WPL will update the deliverable or, if the changes asked are too technical, the WPL will ask the deliverable responsible to make the changes. The WPL will resubmit it again to the coordinator. This procedure will be continued until the deliverable is deemed ready as a final version for submission to the EC.

If, during the coordinator review phase, the coordinator considers that the deliverable contains information that would require to be approved by other partners of the consortium (i.e. partners which are not part of the WP and did not take part in the writing and first review of the deliverable), the coordinator can decide to also ask for the approval of these partners before the submission to the EC. The WPL can also inform the coordinator if the WPL also considers that information should be checked by other partners before submission to the EC.

The coordinator is the responsible for submitting the deliverables on the participant portal. While submitting it on the participant portal, the coordinator will also distribute it to the whole consortium.

6. Quality in managing project changes

The following procedure has been established to manage any changes to the project, to minimize the impact on the broader project schedule and results.

Proposed changes require a written explanation and justification to be sent to the Coordinator, by the WP Leader, including an explanation of what consequences are foreseen as affecting the work schedule and/or broader aspects of the project. The written explanation will be subsequently sent to the GA for approval. The change request, where it implies an amendment of contract to the GA, will be forwarded to the EC, by the Coordinator, following the EC protocol of a formal amendment request.

Minor proposed changes such as decrease or increase of the duration of a sub-task (where neither the WP schedule nor the Partner's budget is affected) will be dealt with in the GA meetings.

Project changes will be recorded in the Project Change Logbook found in the intranet. The Logbook is a database within which all requests for changes are registered and tracked, from submission through review, approval, implementation and closure. The Coordinator, assisted by the MST, will track and manage all project changes via the Logbook.

7. Project description

7.1 NEXT-CSP objectives

The main objective of the Next-CSP project is to improve the reliability and performance of Concentrated Solar Power (CSP) plants through the development and integration of a new technology based on the use of high temperature (800°C) particles as heat transfer fluid and storage medium. To achieve this objective, the project will demonstrate the technology in a relevant environment (TRL5) and at a significant size (4 MWth).

7.2 NEXT-CSP Activities

Work package	Expected results
WP1. Assessment of particle suspension as heat transfer fluid and storage material	<ul style="list-style-type: none"> • Selection of particles to be used as HTF and TES material • Modeling and experimentation of 2-phase flow stability • Wall-to-particle suspension heat transfer coefficient improvement • Solutions for particle handling at large scale
WP2. Assessment of solar fields for high temperature solar power tower	<ul style="list-style-type: none"> • Characterization of the existing solar field at Themis for the pilot loop testing • Design of a heliostat suitable for high flux and high temperature power tower • Heliostat field layout for commercial size solar power plant and aiming strategy
WP3. Detailed design of the 4 MWth high temperature solar loop and of the heat conversion loop	<ul style="list-style-type: none"> • Detailed engineering design of all the pilot loop components, solar receiver, • thermal energy storage system, particle-to-air heat exchanger • Design of on-site (atop Themis tower) installation
WP4. Construction and commissioning of the complete solar and heat conversion loops at Themis solar tower	<ul style="list-style-type: none"> • Manufacturing of the pilot loop components (according to WP3) • Assembly of the components and commissioning of the solar pilot
WP5. Testing of the complete high temperature solar and heat conversion loops including a gas turbine	<ul style="list-style-type: none"> • Performances of the key components of the solar pilot: solar receiver, heat • storage system and fluidized particle-to-air heat exchanger • Performances of the solar-to-electricity conversion using the gas turbine in hybrid mode
WP6. Assessment of the highly efficient thermodynamic cycles that can be combined with the high temperature solar loop	<ul style="list-style-type: none"> • Model for thermodynamic cycles • Assessment of high efficiency thermodynamic cycles • Dynamic simulation of solar power plants
WP7. Scale-up to a 150 MW solar power plant – Preliminary design, risk analysis, cost and value assessment	<ul style="list-style-type: none"> • Component sizing and plant layout • Risks associated to the particle-in-tube technology • Cost analysis, LCOE of the new technology
WP8. Environmental assessment of the technology	<ul style="list-style-type: none"> • LCA of the Next-CSP concept • Assessment of the Next-CSP technology with respect to current CSP technologies
WP9. Exploitation, Communication and Dissemination of results	<ul style="list-style-type: none"> • Exploitation plan • Communication and dissemination strategy
WP10. Project Management	<ul style="list-style-type: none"> • Project objectives achievement

7.3 Project details

Full title: High Temperature concentrated solar thermal power plant with particle receiver and direct thermal storage

Duration: 48 months

Start date: 01-10-2016

End date: 30-09-2019

Budget: EUR 4,947,420.00

EU contribution: EUR 4,947,420.00

Website: www.next-csp.eu

Logo:



8. Project consortium and organizational structure

8.1 Project Coordinator

Gilles Flamant

gilles.flamant@promes.cnrs.fr

Tel: 0033 4 68 30 77 58

Organization: CNRS

Laboratory: PROMES

7 rue du four solaire

66120 Font-Romeu

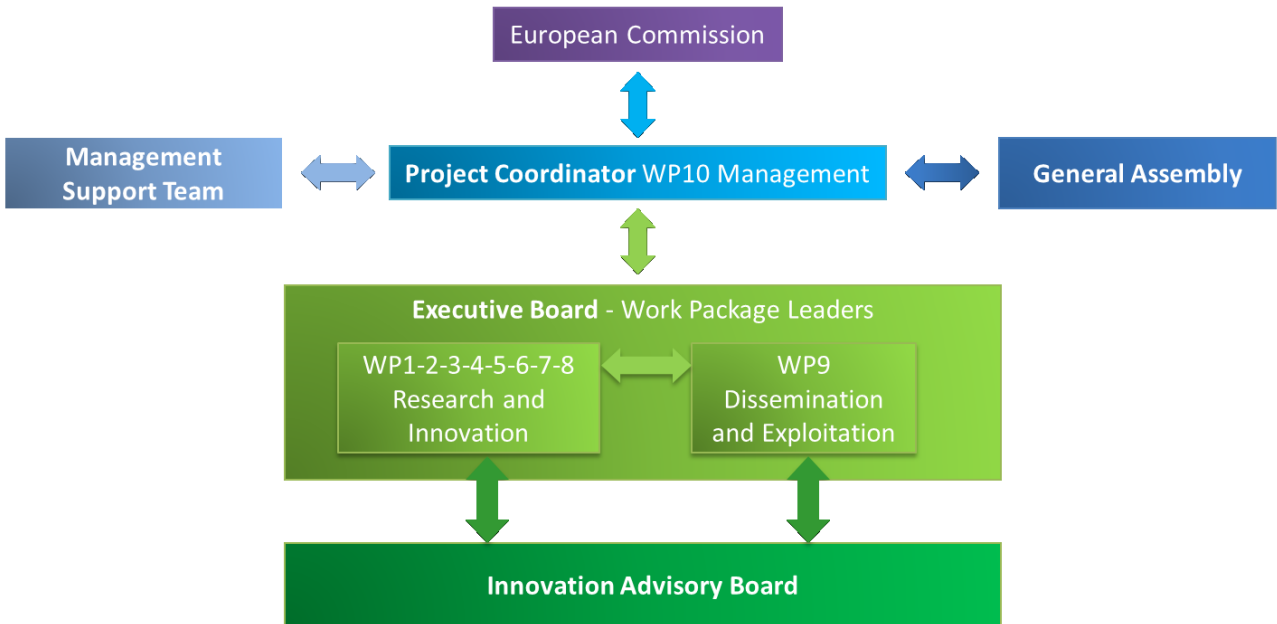
France

8.2 Consortium

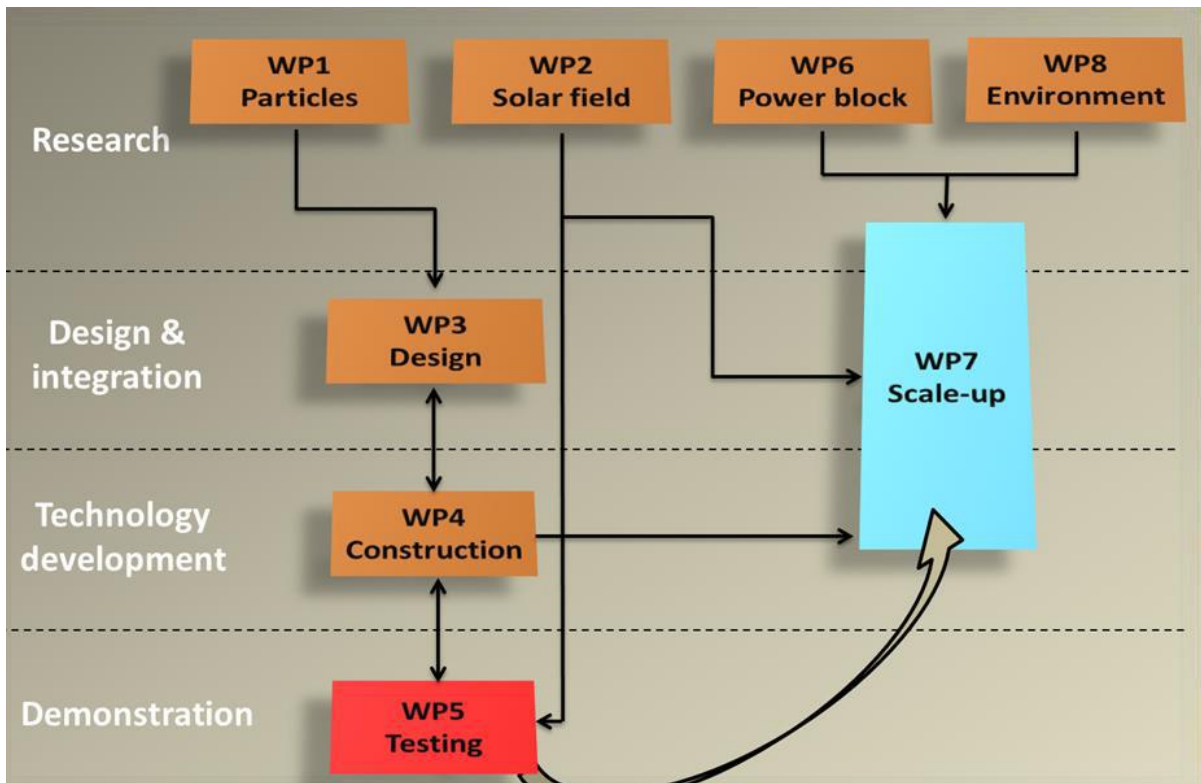
Participant N°	Participant organization name	Short name	Organization type	Country
1	Centre National de la recherche Scientifique	CNRS	Public research organisation	FR
2	Electricité de France	EDF	Company	FR
3	Schlaich Bergermann Partner sonne Gmbh	SBP SONNE GMBH	Limited liability company	DE
4	Fundación IMDEA Energía	IMDEA Energia	Non Profit Research Organization	SP
5	COstructions MEcaniques de Schiltigheim-Strasbourg SA	COMESSA SA	SME	FR
6	Whittaker Engineering Limited	WHITTAKER ENGINEERING	Limited Company	UK
7	European Powder and Process Technology	EPPT	Company	BE
8	Katholieke Univerisiteit Leuven	KU Leuven	University	BE
9	Institut National Polytechnique de Toulouse	INPT	Higher education school	FR
10	EURONOVIA	Euronovia	SME	FR

8.3 Organizational structure

Management structure



Technical organization



9. Project planning

9.1 Deliverables

Deliverable N°	Deliverable name	Work package number	Short name of lead participant	Type	Dissemination level	Delivery date
D1.1	Report on particle selection for solar heat capture and storage	WP1	7 - EPPT	Report	Public	9
D1.2	Report on measurement of particle flow characteristics in long tube	WP1	7 - EPPT	Report	Confidential, only for members of the consortium (including the Commission Services)	20
D1.3	Report on particle upward flow modelling using the NEPTUNE_CFD code	WP1	9 - INPT	Report	Confidential, only for members of the consortium (including the Commission Services)	30
D1.4	Report on tube wall to particle suspension heat transfer for various tube geometry and solid flow conditions	WP1	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	24
D1.5	Report on particle handling solutions for large scale facilities	WP1	7 - EPPT	Report	Confidential, only for members of the consortium (including the Commission Services)	24
D2.1	Report on Themis solar field performance	WP2	1 - CNRS	Report	Public	24
D2.2	Report on Heliostat for the commercial plant	WP2	3 - SBP SONNE GMBH	Report	Confidential, only for members of the consortium (including the Commission Services)	30
D2.3	Report on heliostat field layout and aiming strategy	WP2	3 - SBP SONNE GMBH	Report	Confidential, only for members of the consortium (including the Commission Services)	42
D3.1	Report on the solar receiver design	WP3	5 - COMESSA SA	Report	Confidential, only for members of the consortium (including the Commission Services)	10
D3.2	Report on the design of the solar pilot loop component and layout of the assembly atop the Themis tower	WP3	5 - COMESSA SA	Report	Confidential, only for members of the consortium (including the Commission Services)	16
D4.1	Report on the CAM integration in the fabrication	WP4	6 - WEL	Report	Confidential, only for members of the consortium (including the Commission Services)	20
D4.2	Progress report on the construction and preassembly of the solar unit sub-systems	WP4	6 - WEL	Report	Confidential, only for members of the consortium (including the Commission Services)	22

D4.3	Report on the erection and commissioning at the testing facility at Themis solar tower	WP4	6 - WEL	Report	Confidential, only for members of the consortium (including the Commission Services)	24
D5.1	Report on operating conditions for stable particle flow in the solar loop	WP5	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	30
D5.2	Report on solar receiver efficiency	WP5	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	36
D5.3	Report on the heat conversion loop performances	WP5	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	40
D5.4	Report on the complete loop characteristics and efficiency	WP5	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	48
D5.5	Report on the engineering model	WP5	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	48
D6.1	Report on solar power plant design methodology	WP6	4 - IMDEA Energia	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D6.2	Report on the thermodynamic cycles that are best suited to the solar loop	WP6	4 - IMDEA Energia	Report	Confidential, only for members of the consortium (including the Commission Services)	18
D6.3	Report about high efficiency solar power plant performance	WP6	4 - IMDEA Energia	Report	Confidential, only for members of the consortium (including the Commission Services)	24
D6.4	Report on power plant dynamic modelling	WP6	4 - IMDEA Energia	Report	Confidential, only for members of the consortium (including the Commission Services)	42
D7.1	Report on Preliminary design of the future utility-scale commercial plant	WP7	2 - EDF	Report	Confidential, only for members of the consortium (including the Commission Services)	24
D7.2	Report on scalingup from pilot plant to commercial plant – Risk analysis	WP7	2 - EDF	Report	Confidential, only for members of the consortium (including the Commission Services)	36
D7.3	Report on cost analysis: Capex, Opex, LCOE – Positioning in the global energy mix	WP7	2 - EDF	Report	Confidential, only for members of the consortium (including the Commission Services)	48
D8.1	Report on LCA of the NEXT-CSP system	WP8	8 - KU Leuven	Report	Confidential, only for members of the consortium (including the	42

					Commission Services)	
D8.2	Report on the evaluation of the environmental footprint changes due to Next-CSP system relative to the standard system	WP8	8 - KU Leuven	Report	Confidential, only for members of the consortium (including the Commission Services)	48
D9.1	Plan for dissemination and exploitation of results	WP9	10 - Euronovia	Report	Public	6
D9.2	Report on dissemination and communication activities	WP9	10 - Euronovia	Report	Public	24
D9.3	Final report on the project exploitation initiatives and related impacts on innovation	WP9	10 - Euronovia	Report	Public	46
D9.4	Final report on dissemination and communication activities	WP9	10 - Euronovia	Report	Public	48
D10.1	Project Quality Assurance Plan and Project Handbook	WP10	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	3
D10.2	First Periodic Report	WP10	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	18
D10.3	Second Periodic Report	WP10	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	36
D10.4	Final Report	WP10	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	48
D10.5	Project Management Plan	WP10	1 - CNRS	Report	Confidential, only for members of the consortium (including the Commission Services)	3

9.2 Milestones

Milestone number	Milestone name	Related WPs	Estimated date	Means of verification
MS1	Choice of the particles for the experimental tests at laboratory and pilot scales	WP1	6	Draft of report (D1.1)
MS2	Moving bar and software for solar flux measurement at the Themis solar tower focus ready for operation	WP2	18	Prototypes available
MS3	First complete layout of the pilot solar loop	WP3	12	Drawings

MS4	Pilot solar unit ready for operation at Themis solar infrastructure	WP4	24	Pilot solar loop available
MS5	First set of experimental results on the solar receiver	WP5	34	Pilot loop in operation and experimental data
MS6	Thermodynamic model ready	WP6	12	Example of results for a case study
MS7	First LCOE estimates	WP7	30	Table with cost
MS8	LCA tool ready	WP8	24	Software available
MS9	Project Web site	WP9	3	Connection available
MS10	Exploitation and IPR training course provided by the EC IPR Helpdesk	WP9	14	Agenda of the training course
MS11	Evaluation of the communication actions	WP9	26	KPIs report
MS12	Mid-term review	WP10	24	Report of mid-term review

Appendix 1: List of abbreviations and definitions

CA	Consortium Agreement
DoW	Description of Work
EC	European Commission
GA	General Assembly
GA	Grant Agreement
IAB	Innovation Advisory Board
KPI	Key Performance Indicator
MST	Management Support Team
PC	Project Coordinator
QA	Quality Assurance
WP	Work Package
WPL	Work Package Leader