

TransAccount Detailed Workplan (DRAFT)

Eurosource
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Overview

The system offers to the user the following functions:

1. Enter a document (consolidated annual accounts or financial statements) to be translated in the system, using one of the three input systems:
 - a. Enter manually the document using a form-based interface
 - b. Use the reformatting utility to put the document (e.g. RTF) into the format used by the system
 - c. Scan the document and convert it into the internal formatOnce entered, the document can be visualized using the system document browser which provides seamless access to the knowledge-base through hyperlinks.
2. Run the financial statements translation system (FST) on the document and display the resulting translation. The display is done using the document browser of the system that provides information on the level of confidence and alternative translations. The user can store the source and the translation in the user document database for future reference. The translated document can be exported to a word processing format.
3. Browse the Accounting Knowledge-Base (AKB). The knowledge-base browser provides a unified view of three separate components:
 - a. A terminological dictionary that gives definitions and translations from US English to French and vice-versa.
 - c. A document database of reference documents (legal, definitional, etc.) on accounting.
 - b. A knowledge-base that provides a detailed description of accounting concepts in the two systems and the rules to translate one concept from one framework (e.g. French) to the other (US).

The user interface will be accessible through the Internet using an HTML/XML browser. The various documents in the Knowledge-Base and the User Document Database will be stored in HTML/XML format. Document editing (including updating of the various components of the knowledge-base and the user document database, except perhaps for the scanning option) will also be done using an HTML/XML browser.

The MT system proper includes four major components:

1. A document parser that identifies the various structural elements of an accounting document and divides the document into free text elements and structured accounting items (tables).
2. Free text elements are sent to the Text Machine Translation (TMT) system. This system integrates a Translation Memory (TM; for frozen text elements) and a general machine translation system for elements that cannot be translated using the TM.
3. The (structured) set of accounting items are translated using the Account Translator (AT).
4. The translated document is reconstructed from the various translated elements and saved into the user document database.

The project development is structured using two baselines:

1. The *development corpus baseline*. The development of the various components will be based on the use of a development corpus: a set of translated documents (consolidated annual accounts) will be provided to all

participants for their developments at the start of the project. A sub-set of this corpus will be set aside for the final evaluation of the system.

2. The *system demonstration baseline*. Progress in the development of the various elements of the system will be demonstrated by setting a permanent web site where the system will be accessible for demonstration and test at any time during the project. The initial demonstrator will be a GUI mock-up that allows a complete walk through all elements of the system. As some of the system components are developed or upgraded, they will be incorporated in this demonstrator.

Critical deliverables will undergo a review and acceptance process involving *all partners*. This process could include substantial revisions of a deliverable: some deliverables will have to be submitted in two versions. Deliverables (including interim deliverables and drafts) should be submitted to the managing partner (EP) who will distribute them to all partners and store them for future reference.

Summary of WPs

- WP0: Requirements and Specifications (AM)
- WP1: Accounting Knowledge Base (EU)
- WP2: Financial Statement Translator (EP)
- WP3: Text Translator (SY)
- WP4: System Integration and Validation (SY)
- WP5: Management, exploitation plan and dissemination (EP)

1 WP0: Requirements and Specifications (AM)

The objectives of this WP are to:

1. Define the user requirements and specify the graphical user interface.
2. Build a corpus of reference and terminological material and translated documents that will be used to develop the knowledge-base and the MT system.
3. Analyze the consolidated annual accounts and provide a specification of their translation.
4. Define the validation procedure and build a validation suite.

There are no pre-requisite for WP0.

Milestones

- 1 January 00: Start
- 31 March 00: The User Requirements provides the user interface specifications
- 30 June 00: Development corpus delivered to all partners; User Group Workshop validates the GUI mock-up.
- 30 September 00: The Comparative Analysis provides the Account Translator specification
- 31 December 00: Corpus of reference and report
- 30 June 01: Validation Plan & Validation Suite

WP0.1 – User Requirements: The first task is the definition of the user requirements and the specification of the user interface (a report) that will be implemented as an HTML mock-up which will allow a complete walk-through using a set of manually prepared translated texts and elements (in WP5) and validated against the requirements by the partners.

Deliverables

- User requirements, report.

Schedule

1 January 00	Start
29 February 00	Interim Deliverable
15 March 00	Reviews of the Interim Deliverable
31 March 00	Final deliverable

WP0.2 – Corpus. The initial task will be to provide a corpus of translated documents to enable early development of the various components of the system. This corpus will be used in WP1.3 to build the translation memory (and update the terminological database), in WP2.1 to define the document format, build the parser and test the system, in WP3 to develop and test the text machine translation system. The corpus will be delivered preferably in *electronic form*. Half of the corpus will contain US accounts and their French translations and the other half French accounts and their US translations.

Deliverable

- Bilingual development corpus of translated consolidated annual accounts, data files.

Schedule

1 April 00	Start
31 May 00	Interim Deliverable
15 June 00	Reviews of the Interim Deliverable
30 June 00	Final deliverable

WP0.3 – Comparative Analysis. The third task is a comparative analysis between accounting systems: a detailed analysis of the content and format of consolidated annual accounts, including the analysis of the structure of the document, the characterization of each element and the relationships between elements in various parts of the document, a comparative analysis between translated documents, and an analysis of the terminology and terminological domains. The deliverable (a set of reports) will be used as a specification for the translation system and in particular for the translation rules between the tables elements of accounts (WP1.4).

Deliverables

- Comparative analysis between accounting systems, report.

Schedule

1 July 00	Start
31 August 00	Interim Deliverable
15 September 00	Reviews of the Interim Deliverable
30 September 00	Final deliverable

WP0.4 – Reference Corpus. The fourth task is to collect and analyze a collection of reference documents, e.g., annual accounts forms and plans, literature and helps explaining and/or underlying accounts, such as national or sector guidelines, regulations, etc. This task will include a survey and analysis of technical documentation as well as regulatory and legislative materials, for each national accounting system. The deliverable will include a set of reference documents in electronic format that will be used to populate a structured database of reference documents (the Account Document Database, WP1.5) where each document for each national system will be linked to relevant documents in the same system or to corresponding document in the other system.

Deliverables

- Corpus of reference documents, data files.
- Presentation and analysis of references documents, report.

Schedule

1 October 00	Start
30 November 00	Interim Deliverable
15 December 00	Reviews of the Interim Deliverable
31 December 00	Final deliverable

WP0.5 – Validation. The fifth task is the definition of the validation procedure and the construction of a validation suite. The Validation Plan defines measurable criteria for evaluating the project as well as the Validation Procedure. These deliverables will be use for the final validation of the system (WP4.5). The validation suite will include a corpus of translated consolidated annual accounts (a sub-set of WP0.2).

Deliverables

- Validation Procedure, report.

- Validation Suite, data files.

Schedule

1 January 01	Start
28 February 01	Interim Deliverable: Validation Procedure
15 March 01	Reviews of the Interim Validation Procedure
31 March 01	Final deliverable: Validation Procedure
31 May 01	Interim Deliverable: Validation Suite
15 June 01	Reviews of the Interim Validation Suite
30 June 01	Final deliverable: Validation Suite

2 WP1: Accounting Knowledge Base (EU)

The objectives of this WP are to design the Accounting Knowledge Base (AKB), and acquire the knowledge and populate the various sections of the Knowledge Base: the (1) Terminological Database , (2) the Accounting Translation Memory, (3) the Accounting Ontology, and (4) the Accounting Document Database. The design of the Knowledge Base will be coordinated with EP for WP2 (especially for the Translation Memory).

The **pre-requisites** for final deliverables for WP2 are:

- WP0.2 Corpus
- WP0.3 Comparative analysis of accounting systems
- WP0.4 Reference documents

Milestones

- 1 January 00: Start
- 31 March 00: Design of the Accounting Knowledge Base (AKB)
- 30 June 00: AKB V2: Terminological Database
- 30 September 00: AKB V1: Translation Memory
- 31 December 00: AKB V3: Accounting Ontology
- 31 March 01: AKB V4: Accounting Document Database

WP1.1 – Knowledge Base Design. This task includes the design of data storage mechanisms and access format for each section of the knowledge base, relationships between the elements (e.g. for navigation purposes), access methods (API) and index structure, as well as the graphical interface for the browser and the editor which provide an integrated view of all sections of the Knowledge Base. The implementation of the Knowledge Base will be released in several versions corresponding to integration of additional sections, the first version including the Terminological Database (WP1.2).

Deliverables

- Design of the Accounting Knowledge Base, reports.

Schedule

1 January 00	Start
31 February 00	Interim Deliverable
15 March 00	Reviews of the Interim Deliverable
31 March 00	Final deliverable

WP1.2 – Terminological Database. Construction of a bilingual Terminological Database of approximately 2,000 concepts, structured as a thesaurus (and linked to other elements of the Knowledge Base as they become available). Implementation of the web-based browser and editor of the Terminological Database.

Deliverables

- Terminological Database

Schedule

1 April 00	Start
31 May 00	Interim Deliverable
15 June 00	Reviews of the Interim Deliverable
30 June 00	Final deliverable

WP1.3 – Translation Memory. Construction of the Translation Memory using the Corpus (WP0.2). The Translation Memory includes a collection of a bilingual aligned corpus of annual consolidated accounts. Implementation of a web-based browser to access the content of the TM.

The **inputs** for this tasks are:

- WP0.2: Bilingual Corpus of Financial Statements

Deliverables

- Accounting Translation Memory

Schedule

1 July 00	Start
31 August 00	Interim Deliverable
15 September 00	Reviews of the Interim Deliverable
30 September 00	Final deliverable

WP1.4 – Ontology. Construction of the Accounting Ontology. This involves the formalization of all elements in the tables of consolidated annual accounts, including relations between elements within a single document and translation relations between the FR and US systems. This Ontology will be accessible through a web-based browser.

The **inputs** for this tasks are:

- WP0.3: Comparative Analysis of Accounting Systems.

Deliverables

- Accounting Ontology

Schedule

1 October 00	Start
30 November 00	Interim Deliverable
15 December 00	Reviews of the Interim Deliverable
31 December 00	Final deliverable

WP1.5 – Reference Database. Construction of the Accounting Document Database using the reference documents provided in WP1.4 and the documentation that is produced as part of the comparative analysis of accounting systems to provide cross-references between different sections of the Knowledge Base. The Document Database will be accessible through a web-based browser.

The **inputs** for this tasks are:

- WP0.4: Corpus of reference documents on accounting systems.

Deliverables

- Accounting Document Database

Schedule

1 January 01	Start
28 February 01	Interim Deliverable
15 March 01	Reviews of the Interim Deliverable
31 March 01	Final deliverable

3 WP2: Financial Statement Translator (EP)

This workpackage is meant to develop the Financial Statement Translator to translate consolidated annual accounts (financial statements: balance sheets, income statements and notes to the balance sheet) between the US and FR accounting systems and vice-versa. The Financial Statement Translator system proper includes four major components:

1. A Document Parser that identifies the various structural elements of an accounting document and divides the document into free text elements and structured accounting items (tables).
2. Free text elements are sent to the Text Machine Translation (TMT) system. This system integrates a Memory-Based Translation System (using the TM for frozen text elements—WP1.2) and a general MT system (WP3) for elements that cannot be translated using the TM.
3. The structured set of accounting items (tables) are translated using the Account Translator (AT) which uses the concepts and rules of the Conceptual Knowledge Base (WP1.4)
4. The translated document is reconstructed from the various translated elements and saved into the user document database.

We use the following terminology to distinguish between the sub-components of the Financial Statement Translator:

- The (Financial) *Text Translator* is the generic MT system provided in WP3 by SY to translate free text elements of a Financial Statement.
- The *MBMT* (Memory-Based Machine Translation) component is the translation system using the Translation Memory to translate frozen segments of text within free text elements of a Financial Statement. One key task for WP2 will be the integration of the Text Translator and the EBMT to translate combination of free and frozen segments of free text elements.
- The (Ontology-based) *Account Translator* component translates the table elements of an account and maps rows and columns from the US system to the French system and vice-versa.

The **pre-requisites** for final deliverables for WP3 are:

- WP0.2 Corpus
- WP0.3 Comparative analysis of accounting systems
- WP1.2 Terminological Database
- WP1.3 Translation Memory
- WP1.4 Accounting Ontology
- WP3 General MT system

Milestones

- 1 January 00: Start
- 30 March 00: Design of the Financial Statement Translator
- 30 June 00: Form-based parsers/generators for US and FR accounts
- 30 September 00: Financial Statement Translator V2: Text Translator
- 31 December 00: Financial Statement Translator V1: MBMT
- 30 April 01: Financial Statement Translator V3: Account Translator

WP2.1 – Translator Design. Design of the Financial Statement Translator, including the specification of the internal document format (input to the document parser and format of translated documents), the design of the Account Translator and the interfaces between the components.

The **inputs** for this tasks are:

- WP0.1: Requirements

Deliverables

- Design of the Financial Statement Translator, report

Schedule

1 January 00	Start
31 February 00	Interim Deliverable
15 March 00	Reviews of the Interim Deliverable
30 March 00	Final deliverable

WP2.2 – Document Handling. Implementation of the Document Parser/Translator/Generator. The Account Parser identifies table elements and free textual elements of an account and builds an internal structured representation of an account. The Document generator produces a text file from the internal structured representation of an account. The Document Translator integrates all the various sub-components of the complete MT system.

The **inputs** for this tasks are:

- WP0.1: Requirements

Deliverables

- Account Parser/Generator, Software.

Schedule

1 April 00	Start
31 May 00	Interim Deliverable
15 June 00	Reviews of the Interim Deliverable
30 June 00	Final deliverable

WP2.3 – Text Translation. Implementation of first version the Financial Statement Translator for translating the *textual elements* of accounts by integrating the Text Translator of W3.1 and the Document Handling component.

The **inputs** for this tasks are:

- WP3.1: Text Translator V0

Deliverables

- Account Translator V1, software and manuals

Schedule

1 July 00	Start
31 August 00	Interim Deliverable
15 September 00	Reviews of the Interim Deliverable
30 September 00	Final deliverable

WP2.4 – Memory-Based Translation. Implementation and integration of the MBMT into the Financial Statement Translator. At this point, the implementation of the translation of free text elements is complete. The Translation Memory can be updated using the Accounting Knowledge Based interface and the updated TM will be used in the run-time translation system.

The **inputs** for this tasks are:

- WP1.3: Translation Memory

Deliverables

- Account Translator V2, software and manuals

Schedule

1 October 00	Start
30 November 00	Interim Deliverable
15 December 00	Reviews of the Interim Deliverable
31 December 00	Final deliverable

WP2.5 – Ontology-based Translation. Implementation of the Ontology-based Account Translator to translate table elements. Integration of the Account Translator in the Financial Statement Translator to provide a complete translation system.

The **inputs** for this tasks are:

- WP1.4: Accounting Ontology

Deliverables

- Financial Statement Translator, software and manual.

Schedule

1 January 01	Start
31 March 01	Interim Deliverable
15 April 01	Reviews of the Interim Deliverable
30 April 01	Final deliverable

4 WP3: Financial Text Translator (SY)

This workpackage will provide a machine translation system for the translation of free text elements of financial statements. In particular, this system will be used for translating elements that cannot be translated using the Memory-Based Translation system (WP3).

The **pre-requisites** for final deliverables for WP4 are:

- WP0.1 Corpus
- WP1.2 Terminological Database

The dictionaries of the Text Translator can be updated using the editor of the Terminological Database (WP1): when changing (adding or updating) the user dictionaries, dictionaries for the text translator are compiled and used in the next run of the system.

Milestones

- 30 June 00: Text Translator V0
- 30 September 00: Text Translator V1
- 31 December 00: Text Translator V2

Deliverables

- Text Translator, software and user manual.
- V1: Initial version without any tune-up to financial statements. Includes English-French and French-English.
- V2: Incorporates the financial terminology of WP1.2.
- V3: Incorporates syntactic tune-up to the corpus of WP0.1.

Schedule

1 January 00	Start
30 June 00	V0
30 September 00	V1
31 December 00	V2

5 WP4: System Integration and Validation (SY)

This workpackage will build the integrated system, build the user interface and validate the final system. The system will be constructed incrementally and a pilot system integrating the latest deliverables will be maintained from the beginning of the project. This system will be accessible at any time for demonstration and test from the project test web site. The initial version of the pilot will include a GUI mock-up that allows a complete walk through all elements of the system. As some of the system components are developed or upgraded, they will be incorporated in this demonstrator. The users' group will be involved during the project duration to provide feedback for each major deliverable (as part of the review procedure for WP4.3 and various versions of WP4.4).

The system will run under Solaris. At a suitable stage, the demonstrator will be accessible by the public from the TransAccount public web-site. Technical support will be provided to the partners and the user group and enabled by the creation of a project technical mailing list.

Note: There will be 3 project web sites. The Technical Web Site will be dedicate to system testing and internal demonstration reserved to the project members. The construction and maintenance of this web site is part of this WP. The Public Web Site dedicated to the publication of the results of the project and hosting a public demonstrator is also par of this WP. Finally, the Management Web Site will be dedicated to project management and also reserved to project members: this web site is part of WP5.

The **pre-requisites** for final deliverables for WP5 are:

- WP0.1 User Interface requirements
- WP0.5 Validation Procedure and Validation Suite
- WP1 Accounting Knowledge Base
- WP2 Financial Statements Translator

Milestones

- 1 January 00: Start
- 31 March 00: TransAccount Web Site on-line
- 30 June 00: GUI mock-up on-line; System Architecture Report.
- 30 September 00: Financial Statement Translator V1
- 31 December 00: Financial Statement Translator V2
- 30 April 01: Financial Statement Translator V3
- 31 August 01: Financial Statement Translator V4
- 31 October 01: Validation Report
- 30 November 01: Financial Statement Translator Final Version.

WP4.1 – System Design. Analysis and design of the system's architecture. A preliminary analysis task includes the analysis of the constraints imposed by the various sub-systems as well as the user requirements (WP0.1). The architecture document will identify the interactions between the main sub-systems and their components, and in particular between the four components of the knowledge base (Term DB, TM, Ontology, Reference DB), the four components of the translation system (Document handling component, Text Translator, MBMT, Account Translator) so as to provide a coherent detailed framework that can support the various functions of the user interface.

The **inputs** for this tasks are:

- WP0.1: Requirements

Deliverables

- System Architecture, report.

Schedule

1 January 00	Start
30 April 00	Interim Deliverable
31 May 00	Reviews of the Interim Deliverable
30 June 00	Final deliverable

WP4.2 – Project web sites. The schedule for this task as presented below includes only the set-up of these web sites. The web sites will be maintained and updated for each new deliverable during the life of the project.

Deliverables

- Public Web site. The goal of this web site is to publicize the project. It will offer project publications and demos.
- Technical Web Site: the project internal integration/testing web site. This web-site will run the integrated TransAccount system and will be accessible at any time during the project for reference, testing and internal demonstrations. The initial version will support access to the GUI mock-up (WP4.3).

Schedule

1 January 00	Start
29 February 00	Interim Deliverable
15 March 00	Reviews of the Interim Deliverable
31 March 00	Final deliverable

WP4.3 – Graphical User Interface. This task includes the implementation of the initial version of the user interface that will be implemented as an HTML mock-up which will allow a complete walk-through using a set of manually prepared translated texts and elements. This mock-up will be validated against the requirements (WP0.1) by the partners. The GUI demonstrates all the functionalities of the final system using a set of manually prepared data (fixed input/outputs simulating the various functions of the interface). The data will be prepared with the help of AM. This pilot will be accessible by all partners from the TransAccount web site but can also be installed locally at all sites. As functions of this GUI are implemented in various other WPs, they will be integrated in this GUI.

This GUI mock-up will be reviewed by the partners (15 June 00) and the User Group and recommendations of the reviews will be incorporated in the final version of the mock-up (30 June 00). Any recommendation not incorporated at that point will be included in the initial delivery of WP4.4.

The **inputs** for this tasks are:

- WP0.1: Requirements.

Deliverables

- Initial version of the TransAccount pilot system, software and manuals (including installation and user manuals). The delivery includes a stand-alone version that can be installed independently at each of the partners' sites, and a version that is accessible through the Technical Web Site.

Schedule

1 April 00	Start
31 May 00	Interim Deliverable
15 June 00	Reviews of the Interim Deliverable (validation as per WP0.1)
30 June 00	Final deliverable

WP4.4 – System Integration. Integration of the sub-systems: Graphical User Interface (WP4.3), Accounting Knowledge Base (WP2) and Financial Statements Translator (WP3). This integration task will be performed for each new delivery of the Accounting Knowledge Base (AKB) and the Financial Statements Translator (FST). Each version of the deliverable will be reviewed by the partners and the user group and recommendations of the reviews will be incorporated in the next version.

The **inputs** for this tasks are:

- WP4.1: System Design
- WP4.3: GUI
- WP2: Accounting Knowledge Base
- WP3: Financial Statements Translator

Deliverables

- TransAccount system, software and user documentation.
- V1: Integrates the 1st version of the AKB (with the Terminological Database).
- V2: Integrates the 1st version of the FST (with the Text Translator) and the 2nd version of the AKB (with the Translation Memory).
- V3: Integrates the 2nd version of the FST (with the TBMT) and the 3rd version of the AKB (with the Ontology).
- V4: Integrates the 3rd version of the FST (with the Account Translator) and the 4th version of the AKB (with the Reference DB).
- The Final Version integrates the conclusions of the validation report (WP4.5).

Schedule

1 July 00	Start
30 September 00	V1
31 December 00	V2
31 April 01	V3
31 August 01	V4
30 November 01	Final Version

WP4.5 –Validation. This task will be done in cooperation with AM. The user group using the validation suite constructed in WP0.5 will validate the integrated system (V4) according to the validation procedure (WP0.5).

The **inputs** for this tasks are:

- WP4.4: TransAccount system V4

Deliverables

- Validation Report

Schedule

1 September 01	Start
30 September 01	Interim Validation Report
31 October 01	Final Validation Report

WP4.6 – Technical Support. This task will provide technical support to partners and members of the user group to install and operate the various versions of the integrated system (WP4.3 and WP4.4). Technical support will be enabled by the creation and the maintenance of a Technical Mailing List where members of the mailing list will be able to post requests for help from SY or notify of problems to SY. All messages of this mailing list will be stored and accessible at the Technical Web Site throughout the duration of the project by the project partners and by the user group.

Schedule

1 January 00	Start
31 December 01	End

6 WP5: Management, exploitation plan and dissemination (EP)

The workpackage provides administration and financial co-ordination for the project. Project records and reports will be accessible by all partners through the project management web site. Communication within the project will be enabled by the creation of a Project Mailing List maintained at the Management Web Site.

Milestones

- 29 February 00: Detailed Workplan
- June 00: Management meeting; User Group Workshop.
- December 00, June 01: Management meetings
- 30 November 01: Final Report
- 31 December 01:
 - Public Annual Report
 - Public TransAccount website; information dissemination plan; exploitation plans; business plan.
 - Final Project Meeting

WP5.1 Financial and contractual administration: Establishing and maintaining financial records; Project administration; Document production and archiving; Administrative guidance; Logistics; Technical co-ordination; Project strategy; Quality control; Reporting; Clustering.

Deliverables

- Reports and minutes of meetings, technical and other reports for the EC (bimonthly, progress, annual, final)

WP5.2 Exploitation Plan and IPR: Study of market aspects and a suitable business case; Preparation on a Technology Implementation Plan (TIP) following the EC format; Analysis of legal issues. A consortium agreement will be prepared, signed at project start and updated following the IPR and exploitation agreements.

Deliverables

- Technology Implementation Plan (TIP)

WP5.3 Elaboration of an information dissemination plan. Information dissemination actions will cover 3 streams: Public: Widespread dissemination of public available material through a WEB server, flyers, press announcements, etc. Sector focussed: Links with external organizations, special interest groups, conferences and relevant programs. Standardization: The experience gained in the project will be formulated as proposals in relevant groups such as those formed around the PAROLE / SIMPLE models. Dissemination plan to demo at Cebit, IJCAI, COLING; Paper writing for EAFT, ELRA, INFOTERM; Workshop(s) on translation of ontologies, IJCAI in 2001, ASLIB 2000.

Deliverables

- Information dissemination plan.

Gantt Chart

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
WP0	User Requirements			Corpus			Comparative Analysis			Reference Corpus			Validation Plan, Suite														
WP1	KB Design			Term DB			TM			Ontology			Reference DB														
WP2	MT Design			MT: Doc Parser			+Text Translator			+MBMT			+Account Translator														
WP3	TT V0						TT V1			TT V2																	
WP4	Web Site			GUI			FTT V1			FTT V2			FTT V3			FTT V4			Validation, FTT								
	System Design																										
WP5	Workplan					Meet					Meet					Meet							F.Rep	P.Rep			