

... Books must follow sciences, and not sciences books...

[Francis Bacon, Proposition touching Amendment of Laws]

*... Young men are fitter to invent than to judge, fitter for execution than for counsel,
and fitter for new projects than for settled business...*

[Francis Bacon, Of Youth and Age.]

Appendixes

CORPORATE GRAPHICS AND COMMUNICATIONS

Appendixes

© **CaribCAD – TUD partner**

Ir. P. M. C. Scheers, Dott. Valerio Curti, Elisa Pandolfi

Delft University of Technology
Faculty of Civil Engineering and Geosciences
Section Building Engineering
Stevinweg, 1 • Kamer 4.22
2628 CN Delft • The Netherlands
Phone +31 (0) 15.278.3384 • Fax +31 (0) 15.278.1560

Table of Contents

Introduction i

CHAPTER A - STANDARDS

How To Customize This Manual 1
 About the "Picture" Icons 1
 Section Breaks are Key 2
 About Pictures and Captions 2
 How To Generate a Table of Contents 3
 How To Create an Index 3
 How To Change Headers and Footers 3
 How To Save Time in the Future 4
 How To Create a Document 4
 More Template Tips 4

CHAPTER B - QA PROCED

How To Customize This Manual 1
 About the "Picture" Icons 1
 Section Breaks are Key 2
 About Pictures and Captions 2
 How To Generate a Table of Contents 3
 How To Create an Index 3
 How To Change Headers and Footers 3
 How To Save Time in the Future 4
 How To Create a Document 4
 More Template Tips 4

CHAPTER C - TRAINING P

SUB 1 - Administrative style-sheet g
 How to Customize This Manual 3
 About the "Picture" Icons 3
 Section Breaks are Key 3
 About Pictures and Captions 2
 How to Generate a Table of Contents 3
 How to Create an Index 3
 How to Change the Headers and Footers 3
 How To Save Time in the Future 3
 How to Create a Document 4
 More Template Tips 4

CHAPTER D - PROPOSED T

Communication 6
 CAD file / Document Management 9
 Collaboration and Workflow 14
 Workflow Enactment Service: 15
 Enactment Service 16
 Process Engineering Component 17
 Baseline Implementation 19
 Definition of the Data and Process Models 19
 Process Models 21
 Identification and configuration of software tools 23
 FUNREDES Comments on "Feasibility Study and Baseline..." 24
 A reaction to Funredes's comments 29



1. Set up drawing in AutoCAD.doc

Act as you like to draw what you are asked for e.g. print tiffs as large as you can, overlay on the original tiffs, draw on a new drawing looking to the tiffs only for measures, etc. [Be aware that: the quality assurance checks will be done according to the precise measures and the drawing tolerance is very low]

A- to make a work drawing

- Open a new CAD session
- Draw in model space tiled
- Create the new layer/s you are proposed to
- Give them the Dutch name according to the [Carib Layers](#)
- Assign them line-type - colour- thickness
- Draw the object you have to, as represented in the scanned file/draw you have

B- To make a drawing made by X-refs

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05 - A	Revision: 06 - 01 - 00
Issue #: 01 VC	Date: 03 - 05 - 99
	Page: 2 OF 4

APPENDIXES - STANDARDS

- Define the draw you made as a block (1.)
- Save it as a block (2.) according to the naming conventions as contained in the [Naming Conventions.doc](#). Composed by X-refs

C- To make a complete drawing

- Open a new CAD session
- Import as X-refs all the elements you need to make a complete drawing
- Set up the complete drawing
- Save it according to Naming Conventions. Complete drawings

1. To define a block in AutoCAD 14 you have to:

- Freeze all the X-refs you don't need any more
- Go to MAKE A BLOCK
- Type a BLOCK NAME
- Click on SELECT OBJECT and select the drawing you want to become a block
- Click on SELECT POINT and choose a point on your drawing that seems easy to you to insert your block later; so prefer, as possible, the same point to make all the other block you will.
- Click OK
- The next step is to insert the block you made:
- Go to INSERT BLOCK
- Click on BLOCK and select the block name you just made, OK
- Click OK
- Place the block on the screen where you want
- Now you can delete the drawing you made first

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05 - A	Revision: 06 - 01 - 00
Issue #: 01 VC	Date: 03 - 05 - 99
	Page: 3 OF 5

APPENDIXES - STANDARDS

2. To save the block you just made in AutoCAD 14 you have to:

- Go to EXPORT DATA
- Type in FILE NAME a name according to the Naming Conventions. Doc
- You have to choose BLOCK in SAVE AS TYPE
- Click OK
- Now you will be asked to type the SELECT OBJECT, so type the BLOCK NAME you have given.

3. To import X-refs in AutoCAD 14 you have to:

- Go to INSERT-EXTERNAL REFERENCE
- Click on ATTACH and select the file you need
- Click OK
- You can insert only one X-ref. a time

CaribCAD - TUD Partner		Title:	APPENDIXES
		Revision:	06-01-00
Reference:	05-A	Date:	03-05-99
Issue #:	01 VC	Page:	4 OF 6

2. Task definition

1. Draw Gridlines

Draw gridlines as represented on the given drawings in scale 1:50, by using the following conventions:

Naming of files

For this test we will be using the system L, C, A: where L stands for Location, C for Component and A for Assemblage.¹ The present task will lead to the production of file/s named as follows:

###N(##)## ## ## ## etc.

Where ### stands for the scale of the paper drawing: in this case 1:50, so the ### will be 050.

N is one of the letter L, C and A: in this case, the N will be L.

(##) is a code representing the kind of element according to the Dutch standardisation system: in this case it will be 00, being the gridlines the base of every drawings.

are the element represented in the drawing itself, their numbers are progressive, and in this case, being the gridlines the first drawing to be done, and the drawing containing just them there will be only a ## being 00.

The name will then be **050L(00)00.dwg**

¹ L= Location, these drawings are normally plans, sections, facades; the L represents the “scene of the action”, the stage, the “location” and it is used to orient into the project.

C= Component, these drawings are normally complete representations of elements. Their names refer to the Dutch standardisation system and point to a specific element/material. They can also be imagined as “abaci” of elements in a building object.

A= Assemblage, these drawings are details and they normally refer to L and C drawings.

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05 - A	Revision: 06 - 01 - 00
Issue #: 01 VC	Date: 03 - 05 - 99
	Page: 5 OF 7

APPENDIXES - STANDARDS

Drawing conventions:

For the representation of the Gridlines of these paper drawings use the following conventions:

Gridlines	Elements	Line-type	Colour	Line weight	Scale	Y/N
	Gridlines	Dash-dot	Green	ByBlock	Visible	Yes
	Dimensions	Continuous	Red	ByBlock	"	Yes
	Arrowheads	Origin Indicator	Yellow	ByBlock	175 d.u.	Yes
	Extension lines					No
	3,5 Texts	Standard	Yellow		175 d.u.	Yes
	10,0 Texts ²	Standard	Purple		500 d.u.	Yes

The grey-shadowed boxes refer to the main element composing the x-refs.

Y/N refers to the element being drawn or not.

² The letters referring to an intersection of gridlines, should be drawn to a distance, centre to centre with the crossing point, of 1.000 drawing units.

2. Draw concrete elements

raw **D** concrete elements one by one as x-refs, and as represented on the given drawings in scale 1:50, by using the following conventions:

Naming of files

For this test we will be using the system L, C, A: where L stands for Location, C for Component and A for Assemblage. The present task will lead to the production of file/s named as follows:

###N(##)## ## ## ## etc.

Where ### stands for the scale of the paper drawing: in this case 1:50, so the ### will be 050.

N is one of the letter L, C and A: in this case, the N will be C.

(##) is a code representing the kind of element according to the Dutch standardisation system: in this case it will be 28, being the number 28 the code for Frame (columns, concrete elements, etc.) refer to layer conventions.

are the element represented in the drawing itself, their numbers are progressive, and in this case, the drawing process should lead to the production of different DWG files with only a ## being 01, 02, 03, 04, etc. depending on the number of different concrete elements.

The names will then be **050C(28)01.dwg, 050C(28)02.dwg, 050C(28)03.dwg, 050C(28)04.dwg**, etc.

CaribCAD - TUD Partner		Title:	APPENDIXES
		Revision:	06-01-00
Reference:	05-A	Date:	03-05-99
Issue #:	01 VC	Page:	7 OF 9

APPENDIXES - STANDARDS

Drawing conventions:

For the representation of the Concrete elements of these paper drawings use the following conventions:

Concrete elements	Elements	Line-type	Colour	Line weight	Scale	Y/N
	Concrete elements	Continuous	Cyan	ByBlock	Visible	Yes
	Hatching	Continuous 45°	White	ByBlock	Visible	Yes
	Dimensions	Continuous	Red	ByBlock	“	Yes
	Arrowheads	Origin Indicator	Yellow	ByBlock	175 d.u.	Yes
	Extension lines					No
	3,5 Texts	Standard	Yellow		175 d.u.	Yes

The grey-shadowed boxes refer to the main element composing the x-refs.

Y/N refers to the element being drawn or not.

3. Draw concrete elements by floor at height $\pm 0,00$

Compose plan at level $\pm 0,00$ as represented on the given drawings in scale 1:50, by using the following conventions and by placing the previously created x-refs at their right position in one x-ref.:

Naming of files

For this test we will be using the system L, C, A: where L stands for Location, C for Component and A for Assemblage. The present task will lead to the production of file/s named as follows:

###N(##)##

Where ### stands for the scale of the paper drawing: in this case 1:50, so the ### will be 050.

N is one of the letter L, C and A: in this case, the N will be L.

(##) is a code representing the kind of element according to the Dutch standardisation system: in this case it will be 28, being the number 28 the code for Frame (columns, concrete elements, etc.) refer to layer conventions.

is the number representing in the drawing itself, the specific floor-plan and it is progressive, normally the Dutch architects start considering the Ground Floor as level number 1, so in this case, the drawing representing different elements of the same kind at Ground floor [Frame (columns, concrete elements, etc.) refer to layer conventions] thus the process should lead to the production of a DWG file containing just a ##.

The name will then be for example 050L(28)01.dwg,

It can also be represented as an interval: 050L(28)01.dwg

CaribCAD - TUD Partner		Title:	APPENDIXES
		Revision:	06-01-00
Reference:	05-A	Date:	03-05-99
Issue #:	01 VC	Page:	9 OF 11

APPENDIXES - STANDARDS

Drawing conventions:

For the representation of the Concrete elements by floor of these paper drawings the conventions previously mentioned for concrete elements apply:

Concrete elements	Elements	Line-type	Colour	Line weight	Scale	Y/N
	Concrete elements	Continuous	Cyan	ByBlock	Visible	Yes
	Hatching	Continuous 45°	White	ByBlock	Visible	Yes
	Dimensions	Continuous	Red	ByBlock	“	Yes
	Arrowheads	Origin Indicator	Yellow	ByBlock	175 d.u.	Yes
	Extension lines					No
	3,5 Texts	Standard	Yellow		175 d.u.	Yes

The grey-shadowed boxes refer to the main element composing the x-refs.

Y/N refers to the element being drawn or not.

4. Other procedures to be defined:

- Draw external walls by floor at height $\pm X, XX$
- Hatch external walls
- Draw internal walls by floor at height $\pm X, XX$
- Hatch internal walls
- Draw external frames
- Draw dimensions
- Draw sanitary fittings
- Etc.

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 11 OF 13

3. Conventions definition

The following conventions have to be defined:

Folder 1

FORMATS AND PLYINGS

Font: ISO 5457-1980
NEN 2302

In this folder will be collected all the general rules for the presentation of information on architectonic drawings. These rules are useful for all the kind of architectural drawings an office is involved in: projects, landscape architecture, construction engineering, building technologies, housing and interior architecture. All the given measures are intended in millimetres, except if expressly said the contrary.

DRAWING FORMATS

The standard format of drawings will be inserted in the standardised A Series. Starting from format A0, with a surface of 1 square meter and sides in rapport 1: square root 2, it is possible to obtain by successive bisections the normalised

formats with the same rapport between sides. Let us use formats A0 and A1 at least.

A0 841 x 1.189
A1 594 x 841

MARGINS AND PLYING SIMBOLS

The preceding dimensions will be used as a margin for the cutting line of plotted sheets. The title is located normally in the right lower corner of plans (the used positions are marked with a T in the following Figures). In order to allow the reproduction on microfilms it is necessary to mark, on the borders, the centring references (Figure 1.1).

PLYING

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 12 OF 14

APPENDIXES - STANDARDS

Folder 2.

TITOLS

Font: ISO

DIMENSIONS AND POSITION

A principal space and eventual supplementary spaces compose the title of a plan. The title can be in one of the following dimensions:

- Small: 180/60 mm
- Medium: 180/100 mm
- Large: 180/180 mm

The supplementary spaces are 180 mm large no matter the height. But it is strongly recommended not to exceed the total dimensions (included those spaces) of 180x285 mm.

Normally speaking, the title is located in the right lower corner, located 5-mm far from the right and lower cutting lines. The supplementary spaces must be added over the principal one.

CONTENT

Principal space:

The title should almost tell the following information on owner, plan contents, project author and plan identifications:

- Owner: - Name
- Content: - Project name
- Name of the represented part (articulation)
- Plan title (constructive element, kind of work etc.)
- Scale
- Author: - Office name
- Address
- Identific.: - Number of the plan
- Modifications identification
- Date

It is also possible to give information about:

- Owner: - Address
- Content: - Modifications content
- Author: - Progressive office number
- Drawer's name
- Identific.: - Format

Supplementary spaces:

Can be useful to indicate location plans, north arrows, graphical scales, legends or in case of overlaying techniques, for naming the single plans and their authors.

DISPOSITION

It is not supposed to follow any particular rule. Practically it has been reasonable and rational to use the following disposition (drawing). The used surface of each one of the four groups must be determined case by case according to the amount of information to be shown.

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05 - A	Revision: 06 - 01 - 00
Issue #: 01 VC	Date: 03 - 05 - 99
	Page: 13 OF 15

APPENDIXES - STANDARDS

Folder 3

SCALES

Font: ISO 5455 - 1979

THE USED SCALE MUST APPEAR IN THE TITLE OF EACH PLAN.

In the architectonic field, the following scales are used:

1:1	1:10	1:100	1:1000	1:10000
-	1:20	1:200	1:2000	-
1:5	1:50	1:500	1:5000	-

Due to the normal office practise of reducing plans, it is strongly recommended to draw on each plan a graphical scale, which allows retrieving the approximate measures of a reduced drawing. Reductions and enlargements must be always indicated.

Scale	Usual Architects' Application	
1:10000 1: 5000 1: 2000	General Plans (e.g. Zones plans)	
1: 1000 1: 500	Situation Plans, Cadastral Plans	
1: 200	Situation Plans in Urban Zones Contest Projects Preliminary Projects	
1: 100	Final Projects	
1: 50	Constructive Plans	Executive
1: 20 1: 10 1: 5 1: 1	Detailing	

Figure 3.1 Usual Architectonic Scales

A P P E N D I X E S - S T A N D A R D S

Folder 4.

STANDARDISED TEXTES

Font: ISO

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 1 OF 17

APPENDIXES - STANDARDS

Folder 5.

LINES

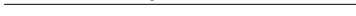






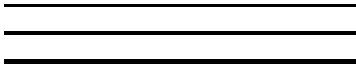
Font: ISO 128 - 1982
NEN 2302

LINE THICKNESS



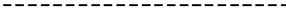

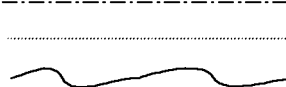
It is common practice not to use more than three different line thickness in the same drawing. It is advised to strongly differentiate the line thickness, choosing for example a combination 0,25-0,5-1,0 mm instead of the 0,25-0,35-0,5 mm combination. Please consider the final plan format, the scale and the reduction factor for the choice of lines.

stronger or thinner lines to give emphasis to some special elements. A fourth kind of line (very thick) can be used in showing the sectioned ground.

Usual thickness of Rapido lines:

0,18	
0,25	
0,35	
0,50	
0,70	
1,00	
1,40	
2,00	

KIND OF LINES

Continue	
Hatched	
Dash-dot	
Dotted	
Free hand	

All the other kinds are only used as conventional symbols (Sheet 9).

APPLICATION

The principal application cases are indicated in the following table. Use

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05 - A	Revision: 06 - 01 - 00
Issue #: 01 VC	Date: 03 - 05 - 99
	Page: 2 OF 18

APPENDIXES - STANDARDS

TABLE OF LINES

Folder 6.

AXES AND CO-ORDINATES

Font: ISO

AXES

The axial network allows an easier way of drawing and the analysis of the project in sectors of circa the same dimensions. The main axes can be subdivided into secondary ones.

COORDINATES

When representing big and large situations or plans, it is possible to use a local system of co-ordinates for a better orientation, in the drawing itself. It is good practice to give different starting values to the x and y co-ordinates.

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 2 OF 19

A P P E N D I X E S - S T A N D A R D S

Folder 7.

PROJECTIONS

Font: ISO/R 128 - 1959, ISO 2594 - 1972

REPRESENTATION PRINCIPLES

Drawings

PROSPECTICAL REPRESENTATIONS

Drawings

Axonometric

Perspectives

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 1 OF 20

Notes about the Quality Assurance processes and testing

1. Precision of paper based drawings depends on:

- The kind of drawing: details, plans, sections, façades, axonometrics, perspectives, and sketches.
- The kind of support on which originally it has been represented.
- The number and kind of reproduction processes, the final copies are the result of.

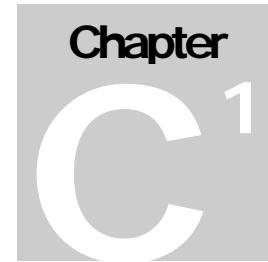
2. CaribCAD meaning for Quality-Assurance, it is:

- In Task 1 phase, the very detailed checking of every single element composing a drawing with reference to agreed procedure/manual/standards.
- In Task 2 phase, a less detailed checking for macroscopic mistakes.
- In Task 3 phase, a relationship of mutual understanding and co-operation, should already be the background in which the entire process takes place, thus not needing very detailed QA.

CaribCAD - TUD Partner	Title: APPENDICES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 1 OF 21

3. Accepted quality with respect to the starting media's precision:

- It is clear that it is not possible to expect any more quality than the one represented on the original drawings.
- Still, it is possible to expect as in the normal practice that some limited and reasonable approximations will be done with respect to some very standardised elements.
- It was proposed that a tolerance could be accepted, but as everyone involved in building processes/field can easily understand, a copy of a drawing is precise or not, and the cases in which a copy being not precise can be tolerated are really not worth to talk about.
- The proposed way is to draw just the elements for which a precise measure is given or those that can be easily calculated out of measured ones.







Seven Keys to Creating a Professional Manual

Like the Chapter Title Style above, and the Chapter Subtitle you're reading, Word's pre-set Styles are just a few clicks away.

To save time in the future, print a copy of this document. Choose Print from the File menu, and press Enter to receive all 8 pages of examples and instructions. With the printed document in hand, position yourself in Normal View to see the Style names next to each paragraph. Scroll through the document and write the Style names next to the paragraphs (press Ctrl-Home to reposition yourself at the beginning of the document).

ICON KEY

-  Valuable information
-  Test your knowledge
-  Keyboard exercise
-  Workbook review

To create a drop cap for the lead paragraph, like the example above, select and highlight the letter T, and type a new letter.

How to Customise This Manual

The “icon key” at left was produced using the Heading 8 Style for the words “icon key,” and the List Bullet 5 Style for the text below which uses a Wingdings symbol for the bullet character. To change the bullet symbol, choose Bullets and Numbering from the Format menu. Click modify, and click the Bullet button. Choose a new symbol, and click OK twice to exit.



About the “Picture” Icons

The “picture” icons are Wingdings typeface symbols formatted in white with a shaded background. To insert a new symbol, highlight the character and choose Symbol from the Insert menu—select a new symbol, choose Insert, and Close. To create new “icons,” format a one-character paragraph as the Icon 1 Style.

To change the shading of the Icon 1 Style, choose Borders and Shading from the Format menu. Select a new shade or colour, and choose OK to accept your choice.

Section Breaks are Key

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 3 OF 23

In this manual, section breaks are the secret to success. Double-click the section break above to activate the Page Set-up menu. Choose the Margins tab. As you can see, this section (page) has margins of 3.17 centimetres top and bottom, 5.5 left, and 2 right—with headers and footers of 1.69 centimetres. Special section margins make it possible for this manual to use framed Styles—such as the Icon 1 Style—which will move with the text.

Using the Breaks
command, you can insert a page, column, or section break.

- Breaks in a Word document appear as “labelled,” dotted double-lines.
- **To insert a section break**, choose Break from the Insert menu. Select one option, and click OK to accept your choice.

About Pictures and Captions

Assuming you see your paragraph marks, you’ll notice a paragraph mark attached to the bottom right corner of the picture. Click on the picture, and notice too, the name of the Style—not surprisingly, the Picture Style. Pictures “attached” to paragraph Styles make it possible for pictures to “act” like paragraphs.



FIGURE 21.1 uses this caption text. In Word, the Caption Style can be automatically numbered and labelled. Choose Caption from the Insert menu to access and control the caption settings. For more information, press the F1 key to search for additional information and help on captions.

This is Heading 5. Like all Styles in this margin, it can flow with the text.

To change the picture, first click on it to select it. Then, point to Picture on the Insert menu and choose From File. Uncheck the Float over Text checkbox. Select a new picture, and click Insert. To change the colour of the picture, double-click on the graphic to activate the drawing layer—where you can group or ungroup picture objects, and re-colour or delete objects. Click on an object, and choose Drawing Object from the Format menu. Choose a new shade, and choose Close. To delete an object, select it, and press Delete. Click the Close Picture button to exit.

To crop the picture, click on the picture. Hold the Shift key down and re-size the picture by moving the picture “handles” with your mouse.

Try this: click your cursor in the framed text at left, and choose Body Text from the Style drop-down list at the top left of your screen. Assuming you did, the headline should now appear as the paragraph below this paragraph. To change the paragraph back to Heading 5, click the Undo button, or choose Heading 5 from the Style list.

CaribCAD - TUD Partner		Title: APPENDIXES	
Reference: 05 - A		Revision: 06 - 01 - 00	
Issue #: 01 VC		Date: 03 - 05 - 99	
		Page: 2 OF 24	

Framed text, like this heading, can be cut, copied and pasted like regular paragraph text.

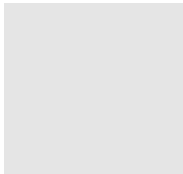
To cut and paste framed text, click on the bounding border of the frame to reveal the frame handles. Press Ctrl-X to cut the frame from the page. Click your cursor before the first letter of the paragraph that you would like the frame to appear next to. Press Ctrl-V to paste the frame next to the paragraph.

How to Generate a Table of Contents

To create a Table of Contents, position your cursor before the word, “introduction.” Holding the Shift key down, drag and select both columns of text up to and including the paragraph mark attached to the “Index” entry (last line, second column). From the Insert menu, choose Index and Tables. Click on the Table of Contents tab. Select the Custom format, and click OK. The Table of Contents will be automatically updated with words contained in Headings 1-3.

Note

The sample TOC text uses the Section Heading Style to create chapter headings. However, the headings must be manually typed and formatted with the Section Heading Style. (“Note” text uses the Block Quotation First Style for the heading, and the Block Quotation Style for the text.)



How to Create an Index

To create index entries for Word’s automatic indexing feature, select the text to be indexed, and choose Index and Tables from the Insert menu. Click the Index tab to receive the Index dialog box with options. (For more information, select Microsoft Word Help from the Help menu, type “index” into the question space, and click the search button. Finally, select the “Create an Index” help topic.)

Written exercise
pages 121 - 123 in your workbook.

How to Change the Headers and Footers

In Page Layout view, double-click on the header or footer to activate it, or choose Header and Footer from the View menu. Once activated, you can change or delete the text just like regular text.

1. To create a **numbered paragraph** like this, choose the List Number Style. If you choose to format more than one paragraph, Word will automatically number the paragraphs.

How To Save Time in the Future

When you re-save the manual template with your changes, the creation of future documents becomes easier. To customise this manual, select File New to re-open this template as a document.

C a r i b C A D - T U D P a r t n e r	Title: APPENDICES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 3 OF 25

APPENDIXES - STANDARDS

To link a picture to your template, link the picture when you insert it by clicking on the Link to File box.

1. Insert your company information in place of the sample text on the cover page, as well as the inside-cover page. If you plan to use Styles such as the “Icon Key” or Icon 1 Style, set them now (see instructions, page 1).
2. Choose File Save As. In the menu, choose Document Template in the Save File as Type: box. (The filename extension should change from .doc to .dot.) Save the file under a new name to protect the original version, or use the same template name to replace the existing version.

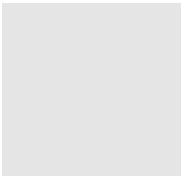
How to Create a Document

To create a manual from your newly saved template, select File New to re-open your template as a document. Assuming you followed the steps above, your company information should appear in place. Now, simply type your manual.

More Template Tips

There are three ways to view the various Style names of the template sample text:

1. In *Normal view*, choose Tools Options. Click the View tab. In the Style Area Width box, dial up a number and click OK; or
2. In Page Layout view, click on any paragraph and view the style name on the Formatting toolbar; or
3. From the Format menu, choose Style Gallery. In the Preview section, click on Style Samples.



C a r i b C A D - T U D P a r t n e r	T i t l e : A P P E N D I X E S
	R e v i s i o n : 0 6 - 0 1 - 0 0
R e f e r e n c e : 0 5 - A	D a t e : 0 3 - 0 5 - 9 9
I s s u e # : 0 1 V C	P a g e : 4 O F 2 6



Proposed tools

This document defines the base line I.T. implementation driven by the requirement analysis from the pilot project 1 and 2 and by testing different I.T. and CAD issues. An analysis is given of the basic features that need to be supported together with a description of the WFM software components that can support these features³.

Foreword:

D

uring CaribCAD 's life, it emerged in many different occasions and with different implications, the urging necessity to relate all of the different aspects as a unique balanced combination of Technical basis,

Human capacities, and Protocols. It can be foreseen this to result in positive outcomes in Outsourcing of Computer Aided Design/Drafting (CAD) workloads from engineering companies in Europe (EU) to specialised companies in Developing Countries (DC).

As expressed in the final documents provided by the Newcastle's team, the objectives of CaribCAD were never "to develop advanced computing solutions to concurrent engineering in construction". Still, the entire testing performed in many different occasions by different and various CaribCAD partners proved in an unmistakable and evident way that failures, lacks or missing decisions on Technical basis, Human capacities, and Protocols results in more or less severe failures in an Outsourcing results.

The following documents must be put in relation with the document contained in 04 Outsourcing Manual.doc defined as GroupWare Practical. The following discussion of tool issues by University of Newcastle and Funredes, as annotated in blue by TUD lets the reader having hopefully a clear image of the situation, of the enormous potentialities as well as the problems to be defined and solved.

³ The present document apart from being the exposition of what has been researched by TUD, it is a modified, commented version of:

- ["Feasibility Study and Baseline Implementation Definition"](#) by S.R.Lockley
- [FUNREDES Comments on "Feasibility Study and Baseline..."](#) by CD-DP (FUNREDES)
- [A reaction to Funredes' comments](#) by S.R. Lockley
- Further documents, discussions

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05 - A	Revision: 06 - 01 - 00
Issue #: 01 VC	Date: 03 - 05 - 99
	PAGE: 5 OF 27

APPENDIXES - PROPOSED TOOLS

The final conclusions are meant to be a sort of reference for future outsourcers on which tool issues to define previously to start outsourcing.

Again and for the moment the advice, then, is to require, previously to any kind of Outsourcing, a neutral advice on the state of the art in Information Technology, specific advice for the particular situation. Finally but not less important extensive instruction on the proper use of the adopted tools, as is the case of CAD programs.

Pilot Projects Analysis

T

he analysis of the pilot projects has been carried out by:

ICON KEY

Communication

§ CAD file / Document Management

👥 Collaboration and Work Flow

- Reviewing the current and desired I.T. environments in the CAD bureaux;
- Analysing the informal models produced in tasks 3.1 and 3.2;
- Considering the state-of-the-art in CAD and WFM in their respective industries.

The analysis is presented by topic,

- Communication
- CAD file / Document Management
- Collaboration and Work Flow

Communication

Building upon the experiences of the project communication to date and the guidelines for project communication it is clear that in order to make e-mail-based communication effective the following actions are required

- Each person must have their own e-mail address
 - E-mail should be delivered to the person's desktop; they should not be required to look for it.
 - Email communications need to be archived where they can be easily reviewed and retrieved.
 - Email targeting is very important. i.e. General list broadcast with each person looking to see what is relevant to them is not desirable, mails should be sent to those who need to read and act upon them only
 - Email formatting / templates are needed to structure information content.

"Each person must have their own e-mail address"

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 6 OF 28

APPENDIXES - PROPOSED TOOLS

Within the scope of general project communication this has been an issue that has been addressed. All those who are part of the project management should now have their own Internet email address, i.e. every staff member within the individual companies has their own email account with an Independent Service Provider (ISP). However, within the remit of the Pilot Projects where we wish to widen the number of people who are communicating between the organisations, there are possible problems with this approach. The problems are

1. Staff Training, how Internet literate do we expect these staff to be?
2. Access, at present most of the CAD partners have to go to a machine that has the modem connected in order to use their mail account
3. Cost, ISP's sometimes charge more for more accounts
4. Security, there is an implicit fear of letting all staff have general access to the internet
5. Control over staff usage of email, fear of time wasting.
6. Maintenance/ Movement of staff, as staff come and go email accounts have to be administered and monitored

There are solutions available to overcome some of these problems.

While these texts were meant to define CaribCAD scopes and necessities, they can also be used together with the comments resulting from the actual application of those ideas, to set up new Outsourcing projects. Moreover it is strongly advised not to limit the field of intervention to e-mails, a media that already at present is rather obsolete compared to different most advanced media that are available all over the Net.

1. For small companies (1-4 internet users), then the modem and dial up connection is probably a simple and suitable solution and the problems above can be controlled by good discipline and training.
2. For medium to large companies (5 internet user plus) a common solution is for the company to register a domain name for their business and then to allocate their own email addresses within that domain. E.g. EGM's may register "@EGM.NL" as their domain and no matter what name precedes this their ISP will forward mail to EGM's server. It is the responsibility of EGM at their server to look at the name preceding the domain and forward it to an internal recipient. This is a very useful mechanism and ideal for medium to large companies who can invest in setting-up and maintaining the infrastructure. It gives them control over the security issues and allows them to monitor and act on time wasting and provides prompts to the recipients that mail has arrived. **Actually this solution seems more and more suitable for small companies and not only for big companies seen the wide diffusion of the Internet, the reductions in costs and the necessity, even for small companies to have an internal network / connection that allows the employees to exchange/share data, programs, etc. with their colleagues.**

CaribCAD - TUD Partner	Title: APPENDIXES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 7 OF 29

APPENDIXES - PROPOSED TOOLS

Either of the above two solutions may work the second is a more extensible solution, however, both effect and impact upon the normal business arrangements of the companies. ...Omissis...⁴

3. A third and more viable approach is to move the setting up of mail accounts from the wider Internet domain and the CAD bureaux to WP2 and in effect to create a CaribCAD Intranet within the Internet. This would entail WP2 hosting the mailboxes for each of the Piloteers. In this way we keep a clear distinction between CaribCAD Pilot work and general business e-mail.

This is just the perfect solution, allowing more freedom to both small and big companies and providing a trustworthy system, seen the legal implications of the Internet contracting. It can provide a solution for mail services as well as Internet specialistic communities and services, shared programs, tools, hard disk space, etc.

"E-mail should be delivered to the persons desktop, they should not be required to look for it."

This is really an issue of discipline/training versus management. In an ideal world, all employees would be self-motivated, proactive individuals who would be disciplined enough to check their mail every hour and respond. In reality we know this is not the case and we have observed that pressures of time and work greatly effect peoples motivation and discipline. There are technical solutions as outlined above but this should be discussed. A possible solution is to appoint an information gatekeeper on each site who receives notification of all messages sent to staff at that site. Their role is not to understand or read the mail merely to bring it to the attention of the recipient (who would then go and retrieve their mail). This gatekeeper could be a secretarial position. NB it is not suggested that this person print out the mails and takes them to the recipient, this would undermine the CaribCAD objective.

"Email communications need to be archived where they can be easily reviewed and retrieved."

This is an issue of robustness (if a mail is lost or accidentally deleted it can be quickly and easily retrieved) and commercial confidence (the CAD file was sent on the 23/5/98). ...Omissis...⁵

⁴ Comments specific for CaribCAD: It was considered that this was not desirable in CaribCAD. Setting up either of these environments has a price for each of the CAD bureaux, which could delay progress on the real issues in hand. We already have some experience of this with the problems that partners have had setting up their mail environment.

⁵ Comments specific for CaribCAD: The initial proposal was to create an archive within the CaribCAD Intranet for each pilot, and to use custom email templates, through which the sender could choose to archive the mail or not. Certain tasks would have special templates where archiving would be mandatory or not. E.G the form for submitting a CAD file to the document repository will automatically notify the archive of the action.

APPENDIXES - PROPOSED TOOLS

"Email targeting and Email formatting / templates are needed to structure information content."

Email targeting is very important. I.e. General list broadcast with each person looking to see what is relevant to them is not desirable; mails should be sent to those who need to read and act upon them only.

There are several ways in which email targeting can be made more effective

1. Wrap the sending and subject details up in predefined forms so that there is controlled consistency and meaning in the mails
2. Set up mailing lists of roles rather than people, where a role maps to one or more people. E.g. if you want the scanning department to rescan a drawing, you don't send a mail to the person who did the last one but to the group "scanning department". This then allows the businesses to provide responses in a flexible and well-covered manner. They do not have to worry if "scanner person A" is on holiday that week.
3. Using routing with exception handling to automatically deal with non-response, e.g. if you send a mail that requires a reply, if the reply is not received within say, 24 hours then the supervisor of the department is notified.

All the tests held by CaribCAD proved that not just one, but a well-assorted mixture of the three above mentioned systems is the best solution, thus solving almost all of the different problems with the methodology ad hoc.



CAD file / Document Management

...Omissis...⁶ Actually the esteem done for CaribCAD was quite correct except that Pilot 1 was not more aligned with Document Imaging than Management where documents are exchanged between the two organisations, in fact all failures were due to lack of proper management. In a few occasions, the documents were more than expected, and without an organising system, it would have been a problem to browse into them, the advice is not underestimate the problem, and foresee since the beginning a flexible and adaptable system. For the rest, content search and indexing and searching support will be necessary in case of multiple Outsourcing. What is required though is

⁶ Comments specific for CaribCAD: The two pilots had different document management requirements. At first glance Pilot 1 was more aligned with Document Imaging than Management where documents were exchanged between the two organisations. However, these systems give high levels of support to document retrieval and searching, it was unlikely that within any typical pilot project there would have been so many documents that finding the right one could be a problem. There was no need to search the content of the CAD file for specific words. Therefore we did not need the index and searching support that is a feature of most document management systems. The traditional drawing list approach should have been adequate. In addition the sophisticated features such as "reverse delta change management" did not appear to be necessary.

CaribCAD - TUD Partner	Title: APPENDIXES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 9 OF 31

APPENDIXES - PROPOSED TOOLS

- A project centric document archive held on a server outside both organisations;
- A shadow of this archive held in each organisation containing working versions rather than committed versions;
- The facility to add (upload) a document (CAD file or any document) to the server archiving and to attach meta-information to that document;
- The facility to get a document and for all parties to know the document is in use;
- The facility to request an action on a document and to know when that action has begun and is complete;
- The facility to quickly preview documents over the WEB and print them before retrieving them; [actually this is just necessary if the client wants his own clients to access the projects under construction / development remotely, otherwise, the CAD tools themselves already provides enough easiness of files handling. And moreover are the only ways to perform effective quality checks].
- The ability to review versions and changes/differences visually; [actually this is only possible for macroscopic changes, for small modifications of the CAD drawing, an automated routine/program could be the only possibility].
- Permissions control on who can read, write, create, delete documents in the server archive; [this is a very important issue, especially for legal implications].
- Automate the distribution of documents for approval and comment;
- The facility to maintain relationships between a CAD file and other externally referenced CAD files; [this is also a key point, due to the procedure based on the Depot and the X-ref. System]

“A project centric document archive held on a server outside bot

“A shadow of this archive held in each organisation containing working versions rather than

“The facility to add (upload) a document (CAD file or any document) to the server archiving and to attach meta-information to that document”

“The facility to get a document and for all parties to know the document is in use”

7

⁷ Comments specific for CaribCAD: The pilots needed a relatively simple document archive where a file and its versions could be stored in a simple hierarchical framework. This file needed to be supported by a set of meta-data giving it meaning to the user prior to it being opened. There was only one added complication in pilot 2 where there was a necessity to support CAD documents that were made up from (or reference) other documents, this would have to be coded by WP2. [Actually also pilot 1 had the necessity to support CAD documents that were made up from (or reference) other documents]. Simple “check-in/out” mechanisms were needed with permissions control. It was unlikely that we would need any kind of “reverse delta” or other version storage mechanisms. This had the advantage of reducing disk space requirements and allowing the differences in versions to be viewed. Commercial applications that do this are available but we could easily work around this by investing in a bit of extra disk space and using a simple and inexpensive CAD differencing software tool. [Practically the problems were solved by naming the files according to the sequential order they were produced, but resulted in human mistakes, where the

CaribCAD - TUD Partner		Title: APPENDIXES	
		Revision: 06-01-00	
Reference:	05-A	Date:	03-05-99
Issue #:	01 VC	Page:	10 OF 32

APPENDIXES - PROPOSED TOOLS

To summarise we can support the document management needs [of the pilots] by using the basic GroupWare facilities and excepting that we may not be making efficient use of inexpensive disk space.

"The facility to request an action on a document and to know when that action has begun and is complete."

Several tools that support this have been reviewed they include:

- Project
- Team Leader
- Team Manager
- Action Workflow

They all have a similar underlying approach in that they build upon the basic Internet mail item. A typical approach is to model an action or task as collection of mail items that have been extended by adding extra "user" fields e.g. Start date, End date, Percentage Complete, Requested By. They then present these groups of items as a single action with a history of changes.

A downside to all of these tools is that carry the overhead of being designed for different purposes than those required by CaribCAD. For example Project manages the amount of time and resource used in tasks, we did not need this, as it was internal to the organisations. Again it was likely that for CaribCAD we could avoid the use of these tools and customise a basic GroupWare items such as a mail or a task to meet our needs.[actually what happened was that without those tools it was very difficult to manage files, tasks, and people].

"The facility to quickly preview documents over the WEB and print them before retrieving them"

"The ability to review versions and changes/differences visually"

Four tools have been identified as main candidates that can preview CAD files.

The tools are

- Intravision
- AutoView Manager
- Dr DWG
- Myriad
- Autodesk VoloView

These tools provide similar facilities, these are

- CAD File viewing for a wide range of types
- Redlining/Mark-up or annotation
- Printing/Plotting

Intravision has more sophisticated rendering facilities and better support for 3D and STEP but these were not facilities we needed in the Pilots [at present].

Myriad has limited capabilities in its freeware version. ...Omissis...

Dr DWG is the most useful candidate, in that it can operate as a web browser plug in and read DWG and DXF files. It has a very useful server component that will support sharing of redlining and comments through the GroupWare

care by the performer was not enough. Luckily the problem was circumscribed to a few files, thus easily corrigible].

CaribCAD - TUD Partner	Title: APPENDIXES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 11 OF 33

APPENDIXES - PROPOSED TOOLS

interface as well as help with the viewing of drawings on the server. It met all CaribCAD needs apart from the function to show differences in CAD drawings. [At this very moment, VoloView is the best package by meeting all CaribCAD needs included the function to show differences in CAD drawings. Unknown are its capabilities as a server component]. The best package for this is AutoView Manager. However, this does not support the viewing of WEB CAD file formats. These file formats are designed to reduce the size of the drawing so that they can be viewed over the WEB very quickly. They typically reduce the file size to 20% of the original therefore making transmission five times faster. There are two key-WEB specific formats for CAD,

- Standard Vector Format (SVF)
- Drawing Web Format (DWF)

Essentially both of them convert a CAD drawing into a vector only representation and strip out all the other information content. The result is a smaller file, which can be download and viewed quickly by a WEB browser with the relevant plug-in, but cannot be edited in anyway. [At this moment, this is a very important point, and gives by itself reasons enough for not using those formats for exchanging CAD files, but just for very limited visual purposes. Every Building practice needs to be able to work on the CAD files, not just see them].

SVF, is a vector graphics format, which supports hyperlinks and layer information. SoftSource and NCSA to provide a useful 2-D vector format for use on the World Wide Web jointly developed it. The files can contain other data which isn't necessarily picked up by a viewer so extra information can be embedded in the file, this information is not used for display.

DWF is a highly compressed 2D-vector electronic plots graphics file. It represents a drawing, but does not contain the actual data behind the geometry. The DWG file format retains all the information-rich data components, such as arcs, vectors, splines, and annotations, as well as extended entity data.

Given the functionality of the CAD tools available at present there are two possible technical solutions to this aspect

1. Use Auto Manager viewing tool to view the files when they are on the local machine and see differences between them but use a separate browser "plug-in" (WHIP or other) to view the files on the server in a WEB format.
2. Use a DR DWG plug-in to view the files both on the local machine and on the server but do not use a WEB format, and forego at this moment the ability to review differences.

The proposal was to use the second alternative and in the initial stages of the project accept the slower download speeds and lack of difference checking and see how much of a problem this was. The reasons for this were

1. It reduces the number of file conversions, all files are stored in a single format on the server (we did not have the full CAD file and a WEB format version, only the CAD file), there is less chance of error
2. It is only necessary to buy one software set of licenses

CaribCAD - TUD Partner	Title: APPENDIXES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 12 OF 34

APPENDIXES - PROPOSED TOOLS

3. Dr DWG supports all version of AutoCAD DWG and DXF files (inc. 14)
4. Although the ability to see CAD file differences is lost, a lot of integration with the server side is gained. This would allow us to reliable exchange comments and redlines on CAD files, which appeared more important than viewing differences at present. [Practically it was just the opposite, and it was necessary to open files one by one and check them in detail; the use of x-refs. solved the problem].
5. If we will need to see differences we can purchase AutoManager at a later date.
6. There was already a beta version of Dr DWG, which could read WEB file formats if we needed them to make the transfer speed acceptable.

General Document Viewing and annotating is slightly different, there is a range of WEB based document viewers and editors, perhaps the most common are the Adobe Acrobat editor/viewer and the Microsoft Word editor/editor. The decision was really on the cost of the editor; if a CAD office has Adobe Publisher they will not wish to switch to WORD and vice versa. It was proposed that both viewers should be supported by all offices with the choice of editor left to the individual.

"Permissions control on who can read, write, create, delete documents in the server archive"

This is a basic facility supported by virtually all GroupWare environments.

"Automate the distribution of documents for approval and comment."

Surprisingly, this facility is not generally available in the mainstream GroupWare tools. It is normally referred to as routing and it is partially supported in the office type applications, for example a word processing document can be routed through a sequence of recipients for comment. But these are not very robust mechanisms and there is poor control over what happens when an error occurs or a recipient doesn't respond. ...Omissis...⁸

"The facility to maintain relationships between a CAD file and other externally referenced CAD files"

Both Pilot 1 and 2 needed to use the fairly standard CAD facility to make references between one CAD file and other. For example, if a hospital layout has 100 standard hospital bed arrangements to be drawn on each floor, the CAD technician will simply insert a reference a single drawing of a standard bed arrangement. Rather than draw the same thing 100 times or insert 100 copies of the same drawing that would make the file very large. These are normally referred to as external reference libraries. Every CAD file can reference many other CAD files. The problem for CaribCAD was that when a file was transferred to the CAD bureau for editing it was necessary to also ensure that all the latest version of those files it references were also transferred. This is a facility that should be provided by the document management software but

⁸ Comments specific for CaribCAD: It might be that this was out of scope for the first (baseline) pass implementation of the pilots. We have examined some beta version of routing tools and found them to perform acceptably, they were scheduled to be released as final versions this year [last year], if they do so we can easily extend WP2 support in this area if it is necessary. [Actually it was and is necessary but has not been completely or reliably implemented].

APPENDIXES - PROPOSED TOOLS

normally only exists in high-end expensive packages. Investigations to date led us to believe that WP2 could deliver this mechanism. This is a very important aspect of the situation, being the procedure proposed by TUD based almost completely on x-refs.

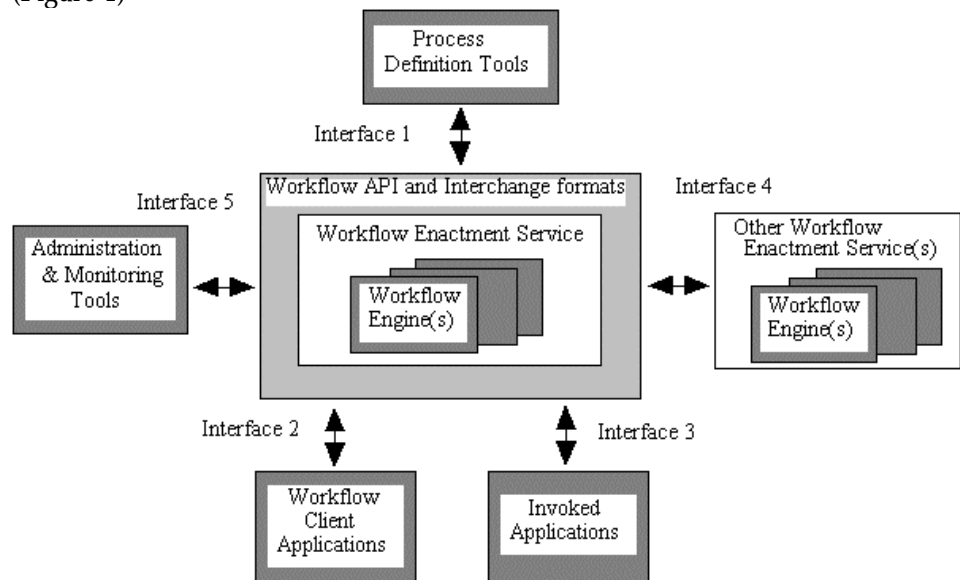


Collaboration and Workflow

"Workflow Management by definition is the proactive computer system that manages the flow of work among participants according to defined procedures consisting of a number of tasks. It co-ordinates users and systems, participants, together with the appropriate data resource, which maybe directly accessible by the system or off line to achieve defined objectives by set deadlines. The co-ordination involves passing tasks from participant to participant in correct sequence, ensuring that all fulfil their required contributions taking default actions when necessary" (Hale&Lavery, 1991).

Workflow management (WFM) is not a new discipline and over the last twenty or more years there has been available a wide range of WFM software and methodologies. However, these have mostly been highly specialised or proprietary systems. With the advent and establishment of sophisticated group-ware environments WFM has become more mainstream and aligned with these commercial software tools. At first this took the form of extensions to existing group-ware tools such as Lotus Notes, then over time these extensions became an integral part of the group-ware tools. In essence WFM and Group-ware are merging into one solution and it is difficult to draw clear boundaries between the two. As well as technology standardisation there are also moves towards theoretical standardisation through such groups as the WFM coalition.

The WFM Coalition produced a general model of the main components of a work flow environment, the components and relationships between them. (Figure 1)



APPENDIXES - PROPOSED TOOLS

Figure 1 Workflow Components and Interfaces

This is a good basic model to describe the CaribCAD workflow components, it is useful to outline the relationships between the tools we used in CaribCAD and the interfaces described here.

Workflow Enactment Service:

at the core are the Workflow engine, enactment service and interfaces. This was in essence the group-ware tool in CaribCAD, possible solutions are Sun/Solaris, Lotus Domino, Microsoft Exchange and Novell Inc.'s GroupWise.

Interface 1:

The Process Definition tools are the tools that we currently used to develop our models of the Pilot projects. These ranges from informal modelling tools such as flow charts, through more formal diagramming techniques such as the WEB based view [of Pilot 1 and 2] to formal models created with a WFM tool such as the Action Workflow process builder.

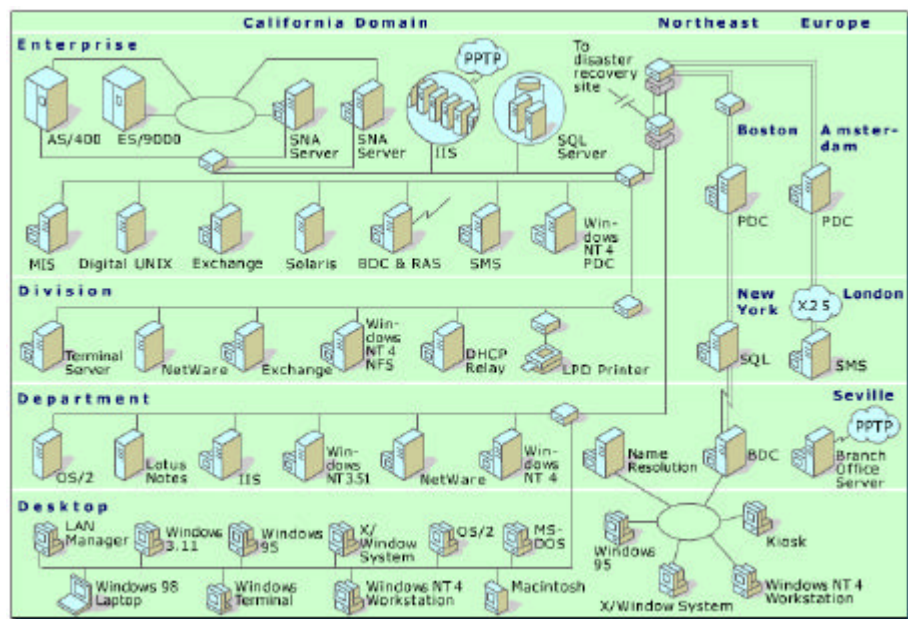


Figure 2 the Different Workflow Enactment Services - Example provided by Microsoft™ and about one of their servers.

Interface 2:

These are the mail reader tools such as Eudora, Exchange, Outlook, Pegasus, WEB browsers as well as more sophisticated tools that handle calendars/diaries, tasks, CAD file viewing, PDF file viewing. They run on the local machine in our offices rather than on the external servers [such as that at Funredes].

CaribCAD - TUD Partner	Title: APPENDIXES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 15 OF 37

APPENDIXES - PROPOSED TOOLS

Interface 3:

For CaribCAD examples of these [were](#) the CAD applications, AutoCAD, Arkey, Microstation etc. as well as document editing tools such as Word or Excel. They are third party applications for specialised tasks. A simple interface to these may be "execute the program and open this document", a more complex interface may be a task that happens in background such as "convert this file from DWG to DXF"

Interface 4:

This is communication between two or more enactment services, for example the server in CAD bureau 1 may need to synchronise the data it contains with that in CAD bureau 2 or request an action from a user in that office. It [was](#) unlikely that we [would](#) need this level of complexity in CaribCAD. [\[Actually it was required in many cases and will be necessary in real Outsourcing\].](#)

Interface 5:

Essentially this involves administering and monitoring activity in the enactment engine, typical examples are adding new users, responding to non-delivery of mails. The only real issue for CaribCAD [was](#) how we distribute administrative tasks, for example, who [was](#) responsible for adding new users, the CAD bureaux or [was](#) it a centralised WP2 activity. It [was](#) proposed that in the early stages we [would adopt](#) the latter approach. [In many cases this was too restrictive and it was asked to have more flexibility/freedom, or the alternative was to have a sort of "slave" in Newcastle to implement all the requests. A real system should be completely flexible and divided in different groups, each responsible for its components, but with some administrator roles.](#)

It can be seen from this brief overview that certain de-facto choices [had](#) already been made: the browsers, the mail clients, and the CAD packages. [After the completion of CaribCAD those choices can be evaluated and judged: the conclusion is that in many cases they were adequate to simple testing and to the contingent reality, but incapable to foresee the future or normal problems caused by a real practice. For a real outsourcing, very deep requirement analysis must be done and it is also necessary to exceed to some extents the prudential estimations. There remained the following decisions to be made](#)

- The Enactment Service
- The Process Definition Tool

Based on trials and paper reviews of the main candidates for these two areas the recommendation to WP2 [was](#) that Collaborative Data Objects with Microsoft Exchange Server [would be](#) used as the Enactment Service and Action Workflow Manager [used](#) as the Process definition tool. These reasons for this choice are discussed further.

Enactment Service

There are three main contenders in the commercial GroupWare area, Lotus Development Corp.'s Domino, Microsoft Corp.'s Exchange and Novell Inc.'s GroupWise [\[lately also Sun Solaris joined the group with full rights\]](#)

CaribCAD - TUD Partner	Title: APPENDIXES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 16 OF 38

APPENDIXES - PROPOSED TOOLS

The following is a summary of reviews carried out on the products.

All three systems support the common Internet protocols, such as POP (Post Office Protocol) 3 HTTP SMTP, and IMAP (Internet Messaging Access Protocol).

Domino the server-component of Lotus Notes is the most customisable of the GroupWare packages and supports the most varied number of hardware platforms.

Microsoft Exchange has not been very configurable until the 5.5 release, which contains server-based scripting that, integrates well with Microsoft's Windows NT and its Internet Information Server.

GroupWise messaging system is the least extendable although they pioneered a number of developments in the messaging category these have now been adopted by Exchange and Domino. For example, GroupWise allows items to be converted into different message types, such as changing an E-mail note into an appointment or a task.

The need to configure and "tweak" to meet CaribCAD requirements means that the choice of server component is between Domino and Microsoft Exchange. Exchange is proposed because

1. The WEB server integration is very powerful allowing us to access all GroupWare facilities through a WEB interface. Removing the need for any specialist client software tools at interface 2.
2. The customisation of items through the Collaborative Data Objects Interface provides a very extensible system [that would allow WP2 to quickly and easily create Internet objects for highly specialised tasks e.g. Project Objects, Drawing Objects, Scanned Objects. Note that it was also a necessity of WP1, although not fully understood].
3. The single client interface provided by Exchange is easy to understand and install, whereas the Domino client interface, in contrast, uses a variety of subprograms for mail, scheduling and database access, making things more confusing for end users and administrators alike. We found this interface very difficult to understand.

An advantage and disadvantage of Exchange is its close relationships with Windows NT, on the one hand this makes aspects such as security and administration very simple but on the other it reduces portability to other environments such as UNIX.

Process Engineering Component

A key factor in choosing a modelling tool for this component is the underlying representation the model tool assumes. A wide range of WFM modelling tools were considered but preference was given to those tools, which incorporated the work of the WFM coalition.

A key issue in identifying the correct tool is the nature of the business process being modelled. At first glance Pilot 2 had more advanced collaboration requirements than Pilot 1, but it was apparent that this simplistic view turned

CaribCAD - TUD Partner		Title: APPENDIXES	
		Revision: 06-01-00	
Reference:	05-A	Date:	03-05-99
Issue #:	01 VC	Page:	17 OF 39

APPENDIXES - PROPOSED TOOLS

out incorrect as a better understanding of both pilots was achieved. Pilot 1 essentially was a repetition of a fairly consistent set of operations with the need to resolve specific problems as they arise, it followed closely an Input / Output (IPO) model of workflow. Whereas Pilot 2 was focused entirely on problem definition and resolution, requiring a high degree of collaboration and negotiation between the two organisations. This was more in line with recent WFM developments sometimes referred to as the Language Action Approach (LA).

The IPO models the problem as a series of tasks or activities with a set of inputs, a process that modifies the inputs and a set of resulting outputs. In the Pilot 1 model the inputs and outputs were documents of one form or another. For problems of a mechanistic nature this is a valid approach.

However, if the problem is people centred and the focus is on the interaction and conversations between those people then the IPO model may not be appropriate. And that was effectively the case of Pilot 1 turned out to be different from what expected. The LA approach models the problem as a series of tasks that are moved by conversation through four distinct phases,

1. Preparation, resulting in an offer or request to do work,
2. Negotiation, resulting in agreement to do the work,
3. Performance, resulting in execution of the work and
4. Acceptance, resulting in an assessment of the satisfactory completion of the task.

Throughout these four phases each task has a customer, who wants the job done, a performer, who will do the job and onlookers who are monitoring progress.

It was clear from the review of the pilots that both would benefit from this approach. To produce a model that can be executed by the enactment service it is essential to know, who will request a task to be performed, who is expected to execute it and where it should go next. Therefore we had to deal with this in our models; the Action Workflow tool can model these facets and check the consistency of the result.

Baseline Implementation

Based on the analysis described earlier a two-part implementation strategy was proposed

- Definition of the Data and Process Models [for the core pilot environment].
- Identification and configuration of software tools.

Definition of the Data and Process Models

Both pilots had the need to handle and exchange CAD drawings. Since the Delft workshop it had become clear that scanned drawings might not need any special consideration.

Figure 3 illustrates the top-level view of the data model proposed to support the CAD drawings needs of the Pilots. The words in circles are objects the lines between the circles relationships between those objects and the letters "1" and "M" the cardinality of those relationships (1 or Many).

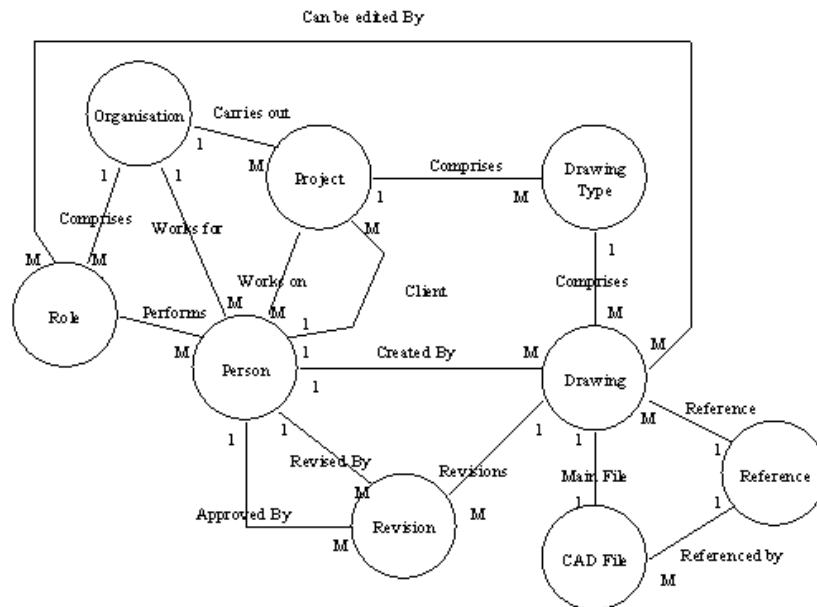


Figure 3 Data Model Overview

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 19 OF 41

APPENDIXES - PROPOSED TOOLS

This is only the top-level view of the key CaribCAD data components and their relationships. In addition we needed to consider the attributes of these objects and the relationship to Internet Items or objects.

We have adopted the Collaborative Data Objects (CDO) Model for Internet Items; the following shows the relationship between these and the CaribCAD objects.

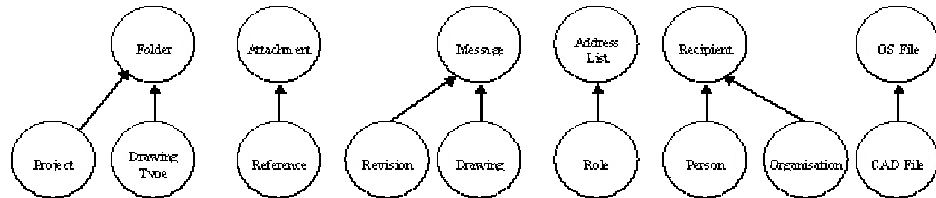


Figure 4 Relationship to Collaborative Data Objects

The arrow terminated line indicates inheritance or "Special Kind of". All the CDO items have the facility to support programmatically added fields of a wide range of types. These will be used to add attribute data, such as "Drawing Title", "Scan Resolution" etc.

The following was the first attempt to determine the attributes/fields that will need to be added to each object over and above those that were inherited from the CDO layer. Where the "Folder." Or "Message." notation is used it indicates that an inherited CDO attribute is employed.

Project	Name [Folder Name]
Drawing Type	Name [Folder Name]
Drawing	Created [Date] Reference Number [String] Title [Message Subject] Public Release Version [String] Latest Revision [Number] Scale [String] CAD File Type [String] Comments [Message Subject]
Revision	Description [Message Body] Number [Number] Created Date [Date]
Task	Planned Start [Date] Actual Start [Date] Planned End [Date] Actual End [Date] Completion Status [Enumeration]

APPENDIXES - PROPOSED TOOLS

Percentage Complete [Number]

Assigned To [String]

Assigned By [String]

Reference

Inserted By [String]

Inserted On [Date]

This was only a brief overview more detailed work was needed in this definition.

Process Models

Based on the two informal Pilot models a general CAD transaction process model was proposed. The lifecycle of a CAD file had been mapped throughout its usage within the project and the processes that surround this had been abstracted into five models, they are

- 1 Create Drawing/Document
- 2 Edit Drawing/Document
- 3 Review Drawing/Document
- 4 Issue Drawing/Document
- 5 Plot Drawing/Document

Informal models were then made for each of these areas. They are

1 Create Drawing/Document

- a. Specify Project
- b. Identify Drawing/Document Type
- c. Identify Reference Drawings/Documents
- d. Prepare Drawing/Document Meta Data
- e. Nominate Editors
- f. Nominate Readers
- g. Nominate Reviewers
- h. Nominate Owner
- i. Invoke the create operation (NB no CAD file or document file exists)
- j. Receive confirmation of creation.
- h. Notify owner of its existence.

2 Edit Drawing/Document

- a. Define the editing work to be executed
- b. Identify and locate the relevant drawing/document
- c. Allocate work and agree/negotiate time-scale
- d. Accept/Understand work to be done
- e. Check out the Drawing/Document
- f. Raise queries about work to be done as they occur

CaribCAD - TUD Partner		Title: APPENDIXES	
		Revision: 06-01-00	
Reference:	05-A	Date:	03-05-99
Issue #:	01 VC	Page:	21 OF 43

APPENDICES - PROPOSED TOOLS

- g. Monitor progress/status of editing operation
- h. Notify that editing is complete
- i. Review editing work, comment redline etc. (Invoke "Review Drawing/Document" session)
- j. Approve drawing/document
- k. Issue Drawing (Invoke Issue CAD file model)

3) Review Drawing/Document

- a. Receive instruction drawing is ready for review
- b. Obtain project and drawing requirements (what is needed, brief etc.)
- c. Redline and comment on drawing (This and the next three are not necessarily sequential)
- d. Raise queries with Editors
- e. Issue drawing (make it public) or
- f. Invoke a new "Edit Drawing" session

4) Issue CAD Drawing/Document

- a. Identify recipient
- b. Prepare transmittal advice
- c. Transmit package to public area
- d. Notify recipients of its availability
- e. Recipients acknowledge receipt
- f. Recipients invoke "Review Drawing/Document" session
- g. If review requires changes sender invokes another "Edit Drawing/Document" session
- h. If recipient approves drawing the "Issue for Construction"

It should be noted that these **were** general process models for Pilot 1 and Pilot 2, they **needed** to be extended to meet the specific needs of the formal models currently under development. Here are a few examples of how these fit into Pilot 1 model,

- Item 1.1 Prepare Initial Instruction Document
- Item 1.2 Comment on Instruction Document
- Item 1.3 Revise Instruction Document

Have counterparts of

"Create Document", "Edit Document", "Review Document", "Issue Document"

In the more CAD specific areas,

- Item 3.3.1 Draw elements until correct and
- Item 3.3.1 Check Correctness

Have a direct counterpart as they decompose into a "Create Drawing" followed by a series of "Edit Drawing" operations followed by a "Review Drawing" and finally an "Issue Drawing"

CaribCAD - TUD Partner	Title: APPENDICES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 22 OF 44

APPENDIXES - PROPOSED TOOLS

The difference between the WP2 model and the Pilot models **was** that the WP2 model **had** no specific project application and **needed** to be configured for a specific project related set of actions. The precise level of project configuration that should **have been** done by WP2 **needed** to be determined. Examples of areas where agreement **needed** to be attained between whether it **was** better for WP2 to configure the environment or the CAD bureaux **were**

- The identity and configuration of the project team
- The exact structure and content of the project information stores
- Automated or manual routing of tasks between members

Identification and configuration of software tools

Client Tools (In the CAD offices)

It **was** proposed to have the minimum number of applications in the CAD offices, where possible all work **would** be done through a WEB browser with the minimum dependency on plug-ins and Java applets. Where possible basic HTML and scripting languages **would** be employed with the maximum use of software execution on a server.

Two main browsers **would** be supported Netscape Navigator 3 (or later) and Microsoft Internet Explorer 3 (or later). No extra efforts **were** made to support others.

Attempts **would be** made to support Macintosh as well as PC's [**but if these efforts become detrimental to the outcome of the project then Macintosh support will be withdrawn**] There should be no cost implication to partners in this area.

Client CAD Viewing Tools (In the CAD offices)

The key exception to these objectives **was** in the area of CAD and document viewing tools. It **was** proposed to use DR DWG as a browser plug-in to view CAD files at the local machine and over the network. This **came** as two software components,

1. A Java based browser extension to view DWF files (Beta no current charge)
2. A browser plug-in that allows AutoCAD 11,12,13 and 14 DXF and DWG to be viewed and printed, \$40-50 per license. An evaluation of this can be obtained from

<http://www.drdwg.com/netview.htm>

CaribCAD - TUD Partner	Title: APPENDIXES
Reference: 05-A	Revision: 06-01-00
Issue #: 01 VC	Date: 03-05-99
	Page: 23 OF 45

APPENDIXES - PROPOSED TOOLS

Client CAD Editing Tools (In the CAD offices)

The CAD editing tools currently in use in the bureaux were to be accepted. ...Omissis...⁹
...Omissis...¹⁰

For viewing documents (PDF, WORD etc.) it was proposed to install WORD 97 viewer and ADOBE Acrobat viewer on all machines, these are freeware. Word 97 can be obtained in 16 or 32 bit versions from <http://eu.microsoft.com/word/internet/viewer> ADOBE Acrobat viewer can be obtained from <http://www.adobe.com/prodindex/acrobat/readstep.html>.

Server Environment

It was proposed to build the CaribCAD data store and messaging facilities on top of Microsoft Exchange Server 5.5 using Collaborative Data Objects and Active Server Pages. The cost of this would have been around \$2000 for up to 25 CaribCAD users. We were looking at reducing this through per client licensing. In addition we would need the server component of Dr DWG for managing and sharing redlining facilities, this is in the region of a few hundred dollars and would allow users to exchange comments on CAD work to be done via the server.
...Omissis...

Note

The sample TOC text uses the Section Heading Style to create chapter headings. However, the headings must be manually typed and formatted with the Section Heading Style. ("Note" text uses the Block Quotation First Style for the heading, and the Block Quotation Style for the text.)

FUNREDES Comments on "Feasibility Study and Baseline..."

⁹ Comments specific for CaribCAD: A conversion tool would be produced by WP2 that transforms AutoCAD DWG files into validated DXF files ready for submission to the server. This would be delivered in two phases, the first phase version would convert the file and check it is graphically valid, the second phase version would check that only CaribCAD valid graphical entities are being exchanged. It was not done and moreover it was decided to use DWG files, being the standard de-facto in CAD formats.

¹⁰ Comments specific for CaribCAD: Annotating and redlining of CAD drawings would be provided by the Dr DWG tool and corresponding server based component that would integrate and manage comments for the drawing team. This is described in the following server section.

CaribCAD - TUD Partner	Title: APPENDIXES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 24 OF 46

APPENDIXES - PROPOSED TOOLS

The above mentioned document presents an articulated and coherent approach for the solution of communication and information *requirements* within the pilot projects 1 and 2 of the CaribCAD project.

The requirements are not exposed as such

Funredes would have felt more comfortable with an approach where the requirements would have been *explicitly* identified, presented, analysed, debated and published. The part of the requirements, which are

exclusive characteristics of remote CAD collaborative activities, should have deserved deeper analysis to drive, from the requirements, the corresponding solutions. This would have allowed drawing more precise frontiers with generic solutions from the areas of GroupWare, workflow management or EDI. In the absence of precise description of the requirements, the risk is taken to offer too broad solutions and to come to a "*belief*" oriented position rather than *problem* oriented.

Two different approaches are contending: "Internet rooted" vs. "business as usual "

Our activity on *Internet based collaborative environment*, applied to the specifics of CAD, is getting to the dilemma proper of the state of the art of the Internet. Two contending visions of the whole Internet are currently prevailing. It is difficult to take a neutral position without a clear and thorough knowledge and analysis of the C&I requirements drawn by remote CAD collaborative activities. And a precise identification of the subset of the requirements which are dedicated or specific to CAD (as compare to other activities performed in a remote collaborative environment). Rather than arguing again in favour of one of the approaches, we prefer to take some distance.

We offer then a synthetic and schematic comparison of the two prevailing approaches, of the philosophy and believe which sustain them and on the concrete solutions they propose. The presence of these contending approaches *was* not typical of our project environment. A similar situation can be recognised in many areas, with more or less paroxysm, comparing with what *has happened* currently in the CaribCAD project.

The "Internet rooted" approach

This approach, which is reflected in the "Funredes Position Paper", considers that the Internet goes far beyond the fact of using C&I tools, and represents a new paradigm in the working environment. The

vision could be considered as a natural extension of the young history of the Internet where some collective values have emerged, which can be characterised by the following terms: bottom-up, self-reinforced regulation, netiquette, proactivity (or "push"¹¹), etc.

¹¹ Push vs. Pull approach: in the traditional Internet environment, the user goes to the information by a decided move, the "interactivity" is the buzzword. In the "pull" approach the information reaches directly the user without explicit request providing situation similar to "broadcast" media, although with the added-value of the personalisation of the broadcast selection.

APPENDIXES - PROPOSED TOOLS

The approach will focus Internet *training* (cultures and methods more than tool) and methodology as the appropriate resources to build a working environment. The tool aspect is not ignored, but it is focused in a generic manner (learn how to use **an** e-mail agent rather than **such** software). Two main rationales support that position:

- A "pragmatic" one, which takes into account the tremendous development of new software, the personal preferences and the variations in infrastructure. What is taught today may become obsolete faster if the learner is tight to a specific software environment.
- A "philosophical" one, which pretends to develop the capacity to deal with a variety of situation in a fast evolving environment, thus empowering the users rather than making them prisoners of a particular software.

Incidentally, this vision does not recognise the dominance of any specific platform, hardware or software, and pays intense attention to the compatibility issues. This is clear and interesting, but probably not really focused on the issues that CaribCAD has researched. Training can go on, and the tests had demonstrated it, indefinitely, without producing valuable result except frustrations. A generic training, moreover is not practicable, as Funredes well points out the environment is fast evolving and subject to tremendous development. As it is always the case, the best way to self-instruct on I.T. matters is to use and peruse all the available tools, rather than studying, being trained, and abstracting from the battlefield.

The "Business as usual" approach

For the contender of this approach, the Internet is, above all, another set of Communication and Information *tools* which must be integrated to the *current* platforms and working environments. These

"plug and play" tools must be adapted to the working environment and not the other way around. The so-called "Internet culture" is considered as a reminiscence of the origin of the technology which has now to disappear (or at least to shadow) while "business as usual" takes over. The approach often proposes Microsoft environment and software as appropriate resources to build a working environment. [For this point it is necessary to read the further reply by S.R.Lockley.](#)

A middle term?

In spite of the existence of a number of "pull" proposals, there is no evidence yet within the Internet world that the second approach is taking over the first one. It is common to see businesses,

which are using the Internet, rooted approach to develop and this is probably the case of the most successful ones within the Internet at the moment¹². Although the future will probably show the coexistence of a plurality of

¹² Two representative examples are amazon.com and geocities.com.

CaribCAD - TUD Partner		Title: APPENDIXES	
		Revision: 06-01-00	
Reference:	05-A	Date:	03-05-99
Issue #:	01 VC	Page:	26 OF 48

APPENDIXES - PROPOSED TOOLS

approaches and the emergence of more balanced visions, the opposition between the two approaches is today very important and have to be acknowledged in the Internet environment as well as in the CaribCAD project. This is another interesting point, although a little bit dated. It is for all the nineties that the researches in IT were directed to integrate and make coexisting different approaches and platforms. The client, if not provided by the market, searches the more balanced vision, and if it is true that software houses are not always looking for integration but opposition, it is also true that this is firmly but inexorably changing in the last years.

The CaribCAD dilemma

This very schematic framework being set-up, one should go to pragmatics and decision within the CaribCAD project. The hazard had played an interesting challenge to the CaribCAD project putting together in the same project groups that are very "extremes" in each of the two approaches.

Funredes has worked and is still working in *appropriate methodologies for group environment within the scope of "Internet rooted" approach*. (The partners who aim at getting more in details the gist of our approach may want to read [the annex](#): we document there the broad directions in which we investigate in other projects and environments).

The Newcastle University Architecture Department appears to be a heavy user of Microsoft products and strong believer of the "business as usual" approach. This brought an interesting dilemma to the project. Insofar, as it seemed quite difficult, if not totally impossible, to define a middle term position, it seemed equally complicated to ask any of the "extremist" parties to adopt the vision that is opposite to his own. Probably this is just an aspect of the entire situation, the other aspect is that the Internet world is so rapidly changing that extremism's are day by day less and less perceivable thus making it completely absurd an idealist thus, per se extremist, concept about Internet, Netiquette, and Virtual Communities.

Pragmatics

One way to overcome the dilemma was clearly and definitively split the responsibilities of C&I between the project and the pilots. In the previous situation, the boundary of C&I responsibilities within the project, as far as Pilots were concerned, has never been clearly stated and many honest attempts of the parties, with good and sound intentions to clear the point had failed. In the recommended new situation, Funredes retired any proactive responsibilities concerning the pilots C&I and only reacted, on request, for consulting on his field of competence (or commenting reports when they are provided). Consulting could be correctly performed providing the requests were exposed with a clear separation of the requirements from the solutions. Consulting obviously could not include training proprietary packages (this must be included in the cost of providing such packages, being the package free of charge or not)

CaribCAD - TUD Partner	Title: APPENDIXES
	Revision: 06-01-00
Reference: 05-A	Date: 03-05-99
Issue #: 01 VC	Page: 27 OF 49

APPENDIXES - PROPOSED TOOLS

but certainly could include the verification of the application of such or such functionality of the commercial packages.

For instance, if we were asked about the convenience of using Outlook^{TM13} "in a web environment" vs. "in a PC environment", we would answer that our recommendation is strongly and definitively for **the PC environment**. Messaging in a web environment, unless the companies dispose of leased lines, is a cumbersome and low productivity activity. In a dial-up environment, reading and writing mails should not be done online. Furthermore, in a web based messaging interface, the writing of e-mails could take as much as 5 times longer than in an off-line PC environment. These inconveniences may not appear during benchmarks where only few mails are exchanged but definitively are killers in a real life professional environment. Those are all good points that highlight the main problem being the necessity to define case by case the needs of every firms willing to outsource or convert to C.&I. Moreover it points out that to be successful in the IT re-conversion or uses two are the possibilities: always having the latest technology with very high economical costs and due to the local situations not always feasible, or deciding for the right cocktail of tools, procedures and pieces of hardware suitable for a specific situation and try to keep it up-to-dated as much as possible. Situations different from these inevitably bring to failures or reduced competitiveness.

Perspectives

...Omissis...

Our belief is that both approaches could provide a workable result but that the "Internet rooted" would present a higher productivity and flexibility and a much more open platform. On the other hand, the second approach may lead to a more "easy to start" environment but will probably be constrained by proprietary packages and deeply dependent on these packages.

...Omissis...

Remaining issues

Although two opposite positions were supported within the CaribCAD team, we are convinced that a "modus-vivendi" could be found for the remaining of the project life based on the split of C&I

responsibilities as mentioned.

However, we do perceive two remaining unsolved issues and offer them to the group reflections:

1. Can we move along this applied research without a clear separation from requirements to solutions?

No, a requirement is very important and should be previous to any kind of research, development, and solution.

2. The "business as usual" approach need to build a software environment. Can the group proceed in this building without respecting, until the

¹³ Trademark of Microsoft.

APPENDIXES - PROPOSED TOOLS

software environment is operational, the rules of the current state of the art of the Internet¹⁴.

This is not completely clear, but if respecting the rules of the current state of the art of the Internet means staying blocked to some tenths of years ago, not progressing, paralysis etc. the reply is definitely yes. If the idea is that out of past and present experiences a better software environment can result, again the reply invites to see the present further developments that differ from the past of IT light years. For sure the basic concepts are still the same, basic methods as well, but connections, portability, potentialities, procedures, have been improved in an unforeseeable way.

A reaction to Funredes's comments

The Funredes comments raise an issue which needs to be addressed, that is, are there two approaches to the technical solutions of WP2, the "Internet Rooted Approach" and the "Business as usually approach"?

Firstly, UNINEW do not consider that these two approaches are mutually exclusive. Business is in a transition from paper based working through digital media to distributed (Internet) working. In making this transition it always has to maintain its revenue stream and train staff to employ new methods of working and technologies. The need for training and the introduction of new working practice are indivisible. Therefore it is not a tenable argument to make an either... or situation. We believe that the baseline implementation definition recognises this problem very clearly and is a solely Internet rooted solution to a business problem. We justify this as follows

1. At the core of our proposal are the standard Internet Mail and the WEB browser technologies. We have gone to great lengths to ensure that where possible the "user" is only dealing with standard Internet rooted technologies and methodologies. It can be seen that we have purposely **not proposed** using software tools that would lead users to become "prisoners of a particular software".
2. Although we use sophisticated proprietary software tools on the server, all interfaces between the clients and the server are using agreed internet technologies (HTTP, POP3, SMTP etc)

¹⁴ The first sending of the commented document in the CaribCAD listserv rather than putting it directly on the FTP server was a good example of the problem. By doing so Steve was coherent with the approach he is proposing. However, the length of the file made it rejected by the listserv program, which has been built in conformity with the rules the Internet community has stated and which say that there is a limit of the size of the file which could be sent via a listserv. Note that this limit is not bound to technical problems, but to netiquette, for it is not appropriated to receive large files without request. That may take too much time at an inadequate moment, and among 20 or 30 people they reach, there will be some that are less interested than others. Please also note that the same problem occurs with HTML in listservs: it is very nice to exchange messages with special fonts, sizes, colours, in a software environment that display their nice features, but **listservs do not accept this type of encoding**. In spite of various warnings by FUNREDES, the sending of such messages is becoming the standard *de facto* in CaribCAD, a situation which is a burden for everyone, and which should definitely not have happened.

APPENDIXES - PROPOSED TOOLS

Secondly, if UNINEW were consulted by the EU we would advise that Communication and Information tools **should** be integrated to the current platforms and working environments, but that this does not mean that these platforms and working environments will not change with time or even during introduction. The remit of this project is essentially to develop new working practices; UNINEW supports evolution rather than revolution. In fact with reference to the comment on Microsoft, they are successful precisely because of this approach not just their software engineering skills.

Thirdly, UNINEW do not perceive the Internet as a culture, we do not take any extremist or fundamental approaches to the delivery of technical solutions for this project. We recognise there are Internet Cultures (in a wide variety of flavours) and that to adopt any one culture would be a folly. The UNINEW approach can best be exemplified by our attitude to one extremist group in the Internet culture, this group believes that all browsers should be text only and non-graphical. If UNINEW were asked to provide a technical solution for a group of partially sighted people then this would be a sensible route forward and we would adopt it, but for a visual oriented designer it would be nonsense. In addition UNINEW believe that the Internet Culture is evolving as fast as the software tools and there is an equally great danger of becoming locked into an obsolete culture as there is of becoming constrained by a specific software tool. Fourthly and finally, to address the technical specifics of FUNREDES's comments.

4. Composing mail on-line Vs off-line. Within the scope of the Pilots we do not see this as an issue. We propose that all communication of a voluminous nature will be sent as document attachments, composed off-line and dispatched with immediate confirmation of receipt on-line.
5. Outlook on the PC. This is an alternative for users instead of the WEB browser Outlook, the basic Microsoft Exchange mailer, indeed any POP3/SMTP compliant mailer (Netscape, Eudora) can be used in parallel with WEB Browser interface, on or off-line. If the Pilots need such a software interface it can easily and cheaply be exploited if necessary. The advantage of the browser approach stated is that sophisticated interfaces and functionality can be developed within WP2 without having to distribute additional software to the CAD bureaux.
6. The comment about WEB based off-line writing of emails could take five times longer, UNINEW do not propose that this should happen and are unsure what is meant.
7. The example of the "business as usual failure" and the associated reference 4 in the "remaining issues" section needs to be discussed. We did indeed send an RTF file that was large (740 KB) to the CaribCAD listserv. It was rejected because the listserv has been configured to reject mail over 100KB. FUNREDES explain this by stating it has built in accordance with the rules of the Internet community. Then I must raise the questions, "Is the listserv configured thus the correct technical solution for small research projects with a known and finite number of members that want to exchange large documents and files"? Other

APPENDIXES - PROPOSED TOOLS

listserv communities adopt different rules, such as warning all members that they are about to send a large mail. It would be useful to have the rules of the Internet Community transparent in order that WP2 does not propose solutions that contravene them.

In conclusion, UNINEW do not agree nor advocate that two approaches are necessary or even a reality. We look forward to Funredes providing training on methodology and Internet culture to the CaribCAD members but do not see that the technical solution proposed to WP precludes this in anyway.