

FINAL REPORT

APPLYING STATISTICAL PROCESS CONTROL TO COATINGS ACTIVITIES IN LEAN PRODUCTION IMPLEMENTATION

“NSRP White paper project on Statistical Process Control Techniques”

NSRP/ASE SURFACE PREPARATION & COATINGS PANEL (SP-3)

CONTRACTOR:
ADVANCED TECHNOLOGY INSTITUTE
5300 International Boulevard
North Charleston, SC 29418

SUBCONTRACTOR:
CORROSION CORRECTORS LLC
PO Box 2265
Poulsbo, WA 98370

SUBCONTRACT NUMBER: 2005-360

Project Technical Representative: Mr. Mark Panosky, Electric Boat Corporation

Project Lead: Mr. Phillip K. Parson, Corrosion Correctors LLC

Principal Research: Dr. Raouf Kattan, Safinah Ltd.

Industry Involvement: Mr. Steve Cogswell, Atlantic Marine Inc.

Principal Research POC:



Dr. Raouf Kattan
9b Chantry Place
Morpeth
NE61 1PJ

Tel. +44 (0)1670 519900

Fax. +44(0)1670 519911

E-mail: Enquiries@safinah.co.uk

Internet: www.safinah.co.uk

Industry Involvement POC:



Mr. Steve Cogswell
8500 Heckscher Drive
Jacksonville, Florida 32226

Phone: 904-251-1573

Fax: 904-251-3500

E-mail: scogswell@atlanticmarine.com

Internet: www.atlanticmarine.com

Category B Data – Government Purpose Rights
Approved for public release; distribution is unlimited.

Table of Contents

1	Introduction	3
1.1	Project background	3
1.2	Phase II work.....	3
2	Feedback from phase I.....	3
2.1	Feedback review	3
3	Phase II work.....	4
3.1	Computer software review	4
4	Solution identified	5
4.1	Software solution.....	5
5	Conclusions on the software	7
5.1	Features	7
5.2	Costs	7
6	Case study work.....	8
6.1	Initial desk top trials.....	8
6.2	Yard testing	8
7	Project conclusions.....	8
8	Appendix 1 – user guide.....	10
9	Appendix 2 – shipyard report	11
10	Revisions	233

1 Introduction

1.1 Project background

The SP3 panel of the NSRP instigated a white paper project to evaluate the use of Statistical process control techniques as a method to improve the quality and productivity of coating activities.

The project outlined comprised two phases:

Phase I – was a review of the potential for using SPC tools and techniques and was reported in Safinah report no... and presented to the SP3 panel at Louisville in June 2005. The outcome of this was the development and specification of a manual system that any computer system would have to be able to deal with.

Phase II – was to focus on a search for any software that may enable yards to more easily adopt the tools and techniques identified in Phase I and in failing to do that, develop some specifications for software to be developed at some later stage to meet the project needs.

1.2 Phase II work

The phase II work comprised the following key steps:

Assess feedback to phase I work after final report and presentation.

Review software available “off the shelf”

Identify a suitable piece of software and run a case study with the partner shipyard – Atlantic Marine.

Report on the case study and obtain feedback from the shipyard as to ease of use based on feedback from the case study.

2 Feedback from phase I

2.1 Feedback review

The feedback from phase I that was provided to the project team was that the phase I report had provided a very good base from which the project could progress. The development of the manual system was accepted as a good base solution and the material provided in the first phase report also provided a good reminder of how all these tools and techniques fitted into the ongoing lean initiatives at the various yards.

3 Phase II work

3.1 Computer software review

From the base of the manual system developed in Phase I Safinah investigated a variety and range of SPC software that was commercially available to see if a system could be identified that followed the basis of the manual system outlined in Phase I.

The review took in some 20 software programs, all of whose manufacturers were approached and either web based demonstrations carried out or detailed specifications of the software capability was reviewed.

The products fell into a number of categories.

Industry specific products

These included products tailor made for the automotive industry in particular and therefore focus on mass production systems.

Statistical analysis tools

Software that offered a considerable array of statistical analytical techniques that allowed data collected to be analysed in variety of ways.

Control chart generation software

Focus primarily on control charting tools and techniques.

The feedback from the questionnaire work carried out in Phase I identified a broad range of analysis and tools required of which simple charting techniques were only a small part.

The yards also identified that initiatives such as Lean production had already introduced tools and techniques such as 5 Whys and 5 S that they wish to incorporate into any problem solving approach.

In addition the yards also have some of their own forms and reports already in place for many problem solving activities so it would be useful to be able to easily refer to these or to take data from them to manage a problem solving project rather than re-inventing them or developing alternative.

Thus the software should provide a structure to enable a variety of problems to be managed as they are solved in a true quality improvement approach.

It should be able to easily refer and draw on existing data

It should allow an adequate level of analysis to be carried out.

It should manage the work, communication and results for any problem solving activity.

4 Solution identified

4.1 Software solution

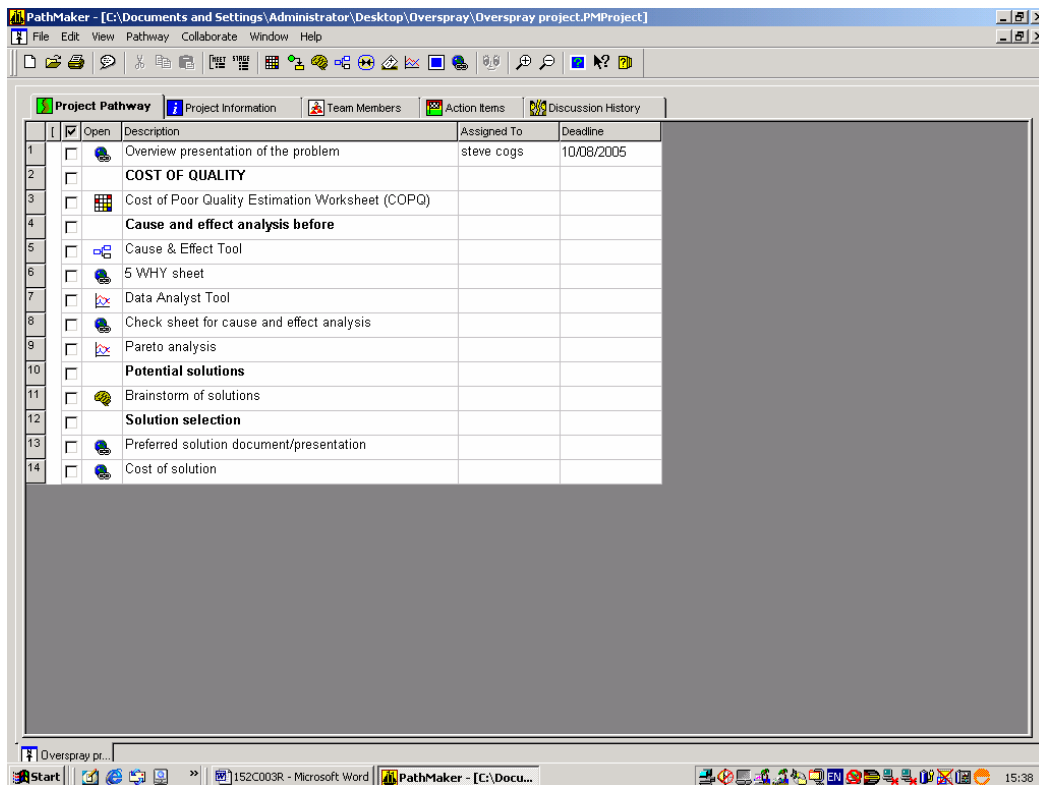
The research into the various software available generated one very promising option this is:

Pathmaker software developed by Skymark in Pittsburgh PA.

A demonstration versions was downloaded by the project members and trialled for 30 days at the end of which it was agreed that the project should invest in a copy of the software as it appeared to meet the requirements set out in Phase I.

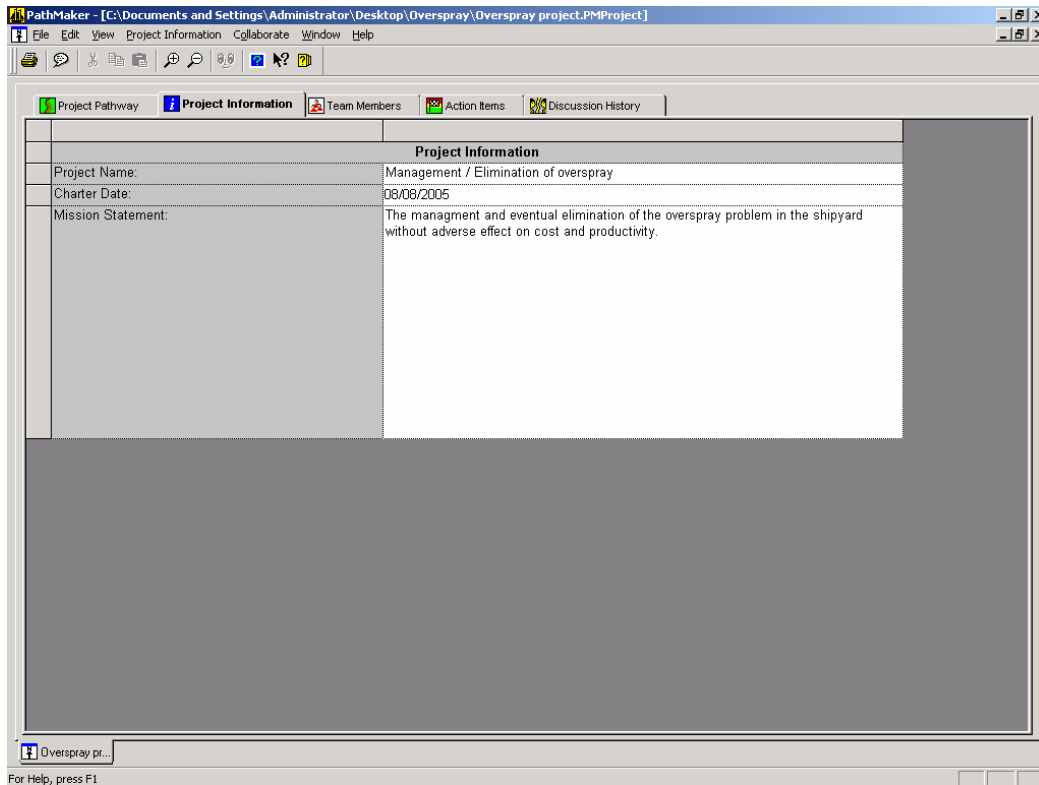
The software was purchased and has now been installed at the Atlantic Marine shipyard and a problem pathway set up for the first problem to be assessed that of Overspray management.

The path developed for this is shown in figure 4.1



A file was created in windows called overspray to hold all the elements of the project.

The basic project information was input into the project information sheet (figure 4.2)



Details of team members were then completed, this function provides an e-mail link as well as access rights for users. Figure 4.3

The screenshot shows the 'Team Member Account' dialog box. It contains the following fields and options:

- ID (e.g. John):*** steve cogs
- Full Name:*** steve cogs
- Privileges:*** Administrator (selected from a dropdown menu)
- Responsibilities:** Chairman (selected from a dropdown menu)
- Email:** scogswell@atlanticmarine.com
- Job Title:** Surface Prep and coatings manager
- Department:** Surface Prep and coating
- Organization:** Atlantic Marine
- Phone:** 904 251 1573
- Extension:** (empty field)
- Other Phone:** 904 251 1731
- Password:** (empty field)
- Enter New Password:** (masked with xxxxxx)
- Confirm New Password:** (masked with xxxxxx)
- Address:** 8500 Heckscher Drive
- City:** Jacksonville
- State:** FL
- Post Code:** 32226-2400
- Country:** USA
- Other Information:** (empty text area)

At the bottom, there are buttons for 'OK', 'Cancel', and 'Help'. A note states '* Indicates a required field'.

The project was started with a powerpoint presentation prepared in MS Office and hyperlinked into the project through the hyperlink tool on the Pathmaker system (this is a simple click of a button and a location of the desired file).

The cost of quality was then assessed using a cost of quality template provided within the Pathmaker programme, alternatively this could have been undertaken on an excel spreadsheet and also hyperlinked.

The cause and effect tool was then used for the team members to analyse the potential causes of the problem. This was also linked to the yards own 5 Why forms so that all documentation for the project could be tied into one folder.

Each step was undertaken either using the tools built into the Pathmaker software or linked to existing MS Office documents, pictures or scanned forms.

The project took about 20 minutes to set up and if the software is run over the intranet the individual team members can contribute to a project remotely prompted by e-mails by the project leader and actions can be undertaken a discussion group set up etc.

Appendix 1 includes the overview of the software.

5 Conclusions on the software

5.1 Features

The software met all of the requirements set out in Phase I of the report, either through its own inbuilt tools or its ability simply refer to other software or documents and link those into the project so that all documentation relating to a particular problem solving initiative could be easily logged, filed and accessed.

5.2 Costs

The cost of the software can be found on the web site www.skymark.com as can a download to trial the software for free for 30 days.

The costs are as follows:

No Licences	1-4	5 pack	10 pack	25 pack	100 pack	500 pack	1000+
Price	\$295 each	\$275 each	\$250 each	\$225 each	\$200 each	\$180 each	\$170 each

For 12 months after purchase all upgrades are free.

6 Case study work

6.1 Initial desk top trials

On receipt of the software, Corrosion Correctors, Atlantic Marine and Safinah ltd all tested the software on a 30 day free trial.

On conclusion of the trial it was decided collectively that the software would perform the tasks set out in phase I.

Safinah then went on to purchase a copy of the software (now residing with Atlantic Marine) and continued testing and evaluation.

6.2 Yard testing

Safinah then took the software on site to Atlantic Marine in Jacksonville and together with the paint department developed the case study outlined above.

The results presented are by necessity an overview as much of the data input into the case study was considered commercially sensitive by Atlantic Marine.

The software was found easy to install (5 minutes) and the case study on overspray was set up over the course of one afternoon.

The software proved to be intuitive and linked nicely with the élan production activities in the yard.

In fact on the second day the lean production team visited the paint department to review the software and get a presentation of its capabilities and the overspray case study and the outcome was that the steel department also applied for the 30 day free trial.

7 Project conclusions

The partners deemed the project a success. The software identified carried out all the requirements set out by phase I. it is easy to use and has the added benefit of working through hyperlinks with MS office, thus allowing the power of each of those programmes to be used also.

It has also been linked to Adobe acrobat and other software. The yard is investigating a link to Microsoft project manager.

Tasks can be copied from one project to another.

Weaknesses evident at present:

Within the scope of the work carried out in the pilot project, no specific weaknesses could be determined at present. The key unknown area is how the system would really perform live across a shipyard intranet. This could not be readily evaluated within this project, although sending e-mails and meetings functions were tested successfully.

8 Appendix 1 – user guide



Appendix 1 PathMaker 5.5.pdf



PathMaker® 5.5

Getting Started

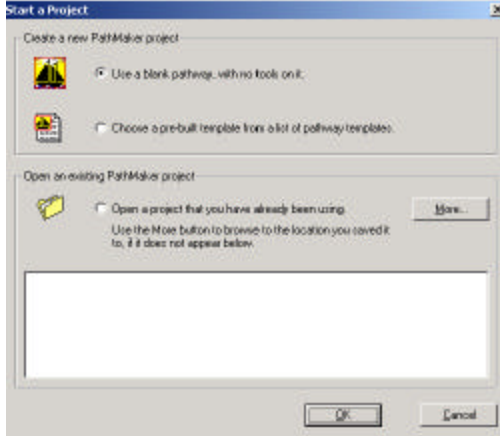


SkyMark
7300 Penn Avenue,
Pittsburgh, PA 15208 USA

Main Telephone: (800)826-7284 or + 1.412.371.0680
Facsimile: (412)371-0681
Tech Support: (412)371-4791
Web: www.skymark.com

Starting a New Project

In PathMaker, one file contains all the work required to complete a given mission. This file is called a project. When you run PathMaker, the Start Project dialog box will appear.



If you want to use a pathway template, select the "Choose a pre-built template" option and click on the **OK** button. Then, in the **Select a Template dialog box** that opens, select the template you want to use for your project and click on the **OK** button. See **Choosing a Project Pathway Template** for more information. The **Choose a Project Name and Location dialog box** will appear. In the **dialog box**, type in a name for your new project and click on the **Save** button. You will then be asked to log in to the project. See **About the Log in Screen** for more information.

If you want to create your own pathway from scratch, select the "Using a blank Pathway" option and choose the **OK** button. In the **Choose a Project Name and Location dialog box**, type in a name for your new project and click on **Save** button.

Main Frame Toolbar

You will also notice the mainframe toolbar in the top left corner displayed under the menu bar of the application window, when no project files are open.

Click:

To:



Create a new project in PathMaker. Shortcut: **CTRL+N**



Open an existing project. Shortcut: **CTRL+O**



Activate the Context Help pointer to get help on menus, buttons, and other screen items.



Activate the Help Cards.

About the Log In Screen

When you create a new project, you are the Administrator. You create your User ID and a password. **A password is not required.** Both are case sensitive. Once in the project, you will be able to create ID's and passwords for any additional team members. **Note: If you lose your User ID or Password, you will have to email your file to support@skymark.com for technical assistance in retrieving it.**



User ID

Type in your ID in the project.

Password

Type in your password for the project.

Confirm Password

Confirm the password you have selected for this project.

Remember Name and Password

Select this box to have PathMaker remember these items for you each time you enter this project.

OK button

Confirm the name and password to login the project.

Help button

Open the help topic related to the dialog box.

Record the Information About a Project

Look at your screen. You should see a blank project pathway window with five tabs at the top:



The Project Pathway Tab - opens the Pathway or the map of a project.



The Project Information Tab- opens the Project Information form where you can name your project, and enter some information about it.



The Team Members Tab-opens the Team Members list. Team Members are users who can access the project at the same time. If you are the administrator, you can add team members and edit the information of them. If you are one of other users, you can only view the information and edit your own profile.



The Action Items Tab- opens the Action Items list that lets you record tasks related to your project. The action items recorded in meeting agendas are also stored here.



The Discussion History Tab- opens the Discussion History list that lets you record all the discussion related to the project. You can add or join a discussion from this view.

Add Tools to Build A Pathway

Now, let's add some steps to the pathway, i.e. the tools we'll use to plan and execute our project.

On the tool bar, click the **Add Slide Show** button.



In the dialog box that opens, select the "Strategic Planning" directory, and the first slide in the list of slide files. Press **OK**.

The slide show gets added to your pathway.

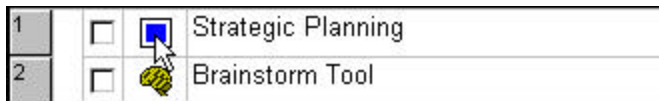
Next, click the tool bar buttons to add a Brainstorm, a Cause and Effect Diagram, and a Flowchart tool to your pathway.



You will see the pathway grow as you add steps to it.

Launch and Close Tools

We've added steps. Now, we're going to launch and use them. Double-click on the launch icon of the slideshow tool that you added.



The slideshow tool window will open, and you will see the first slide in the strategic planning slide show. PathMaker 5.5 has 32 built-in slide shows, including one for each kind of tool, and some more general ones. You can use them for quick introductory training or refreshers.

You can use the navigation links in the slides to page through the slide show, and read a brief summary of strategic planning methods.

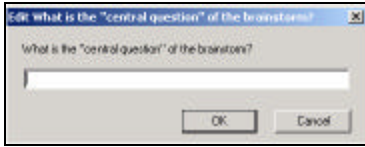
When you're done, click on the **Close Window** button to return to the Project Pathway window.



Next, launch the brainstorm tool, which is the next step on your pathway. The launch button is to the left of the text that says "Brainstorm Tool".



A dialog box will appear asking you to enter the "central question" of the brainstorm:



Once in the Brainstorm, you'll see a split window. You will see your "central question" in the upper left corner. This is also where Brainstorming ideas will go after they are typed into the **Enter Idea** space. The right side is for an affinity diagram. We're not going to do a brainstorm now; this is just to illustrate how to launch and close tools. You'll notice that the menus and the toolbar, or row of buttons under the menu bar, change according to the tool window you are using.

Close the Brainstorm tool window, using the **Close Window** button.

Dividing Your Pathway into Stages

You can add stages to your pathway, which simply act as headings for a series of steps, rather like chapter titles in a book. To add a stage, click on the **Add Stage** button on the toolbar of the pathway window.



The text "Stage Line" will be added to your pathway. You can edit it to describe the steps to follow.

Adding Hyperlinks

There are many tools contained in PathMaker 5.5, but it is often helpful to be able to link the tool to some other file, e.g. a spreadsheet or document that relates to the project, or to a web page. You can use the **Add Hyperlink** button to add one of these links to your pathway.



Editing Step Descriptions

Each step has a textual description beside its launch button. There's a default description for each tool, but it is fully editable, and you will usually want to change it so that it is more descriptive of the particular contents of the tool.

Marking Steps as Complete

To the left of the launch button for each step is a checkbox, which you can use to mark a step as being complete. Checking a box doesn't lock a tool; it is just a visual indicator that a step is finished.

Using PathMaker's Tools

Each of PathMaker's tools has its own menus, its own toolbar, and its own set of functions. We'll take a brief look at each tool.

PathMaker 5.5 provides you with multi-user functions. All team members specified in the Team Members list can access the project and even the same tool at the same time. However, in a tool, only the team member who has control can edit the tool. Others may watch the changes.

Press down the **Ask for Control** button each time when you want to edit a tool. Release the button to give up control when you finish.




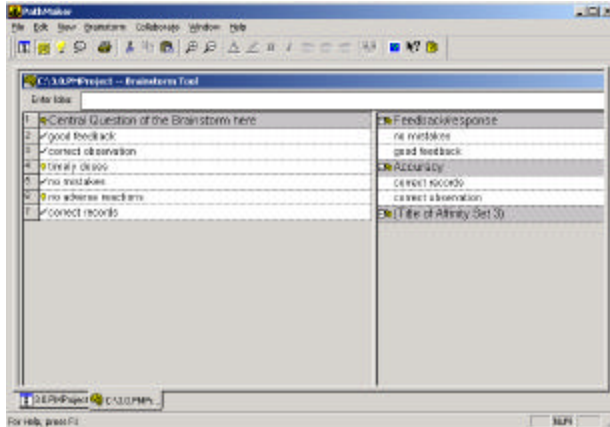
Saving Projects

You don't need to save the project or the tools. Because PathMaker projects are stored in a database, updates to records are made automatically.

Brainstorming and Affinity Diagramming



Launch the brainstorm tool again. Press down the Open Floor button  so that all team members can submit their ideas. Enter your ideas in the **Enter Idea box**, they will then appear on the left hand side. Don't worry about whether your ideas are sensible; it's a brainstorm!




When you run out of ideas, release the Open Floor button so that you can start grouping ideas into an affinity diagram – a sorted brainstorm. Select one problem, for example, "good feedback", and drag it to the empty line in the affinity set on the right side of the screen. Does the next idea belong with it? If so, drag it to the same set. Otherwise, drag it to the second affinity set, and continue in this way. Just select the **Close Window** button when you are finished.

Cause and Effect Analysis

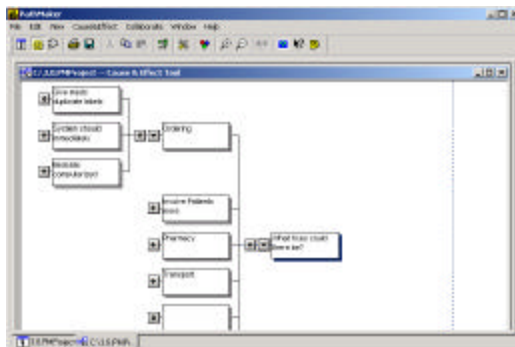


Launch the C&E Diagram tool from the Pathway. You get a right-angled version of the classic Ishikawa fault tree. Decide on a problem that you want to focus on, and enter it in the Main Effect node (the first box you see).

Then, try to determine factors contributing to this effect.

By clicking on the plus buttons  in the chart, you can add nodes that eventually build a tree of causes for this main effect.

You can also save your diagram as a bitmap  for use in other word processing applications.



While you're thinking, you can experiment with the software. Try to collapse and restore branches, adjust spacing, change node sizes, edit colors or anything else. Click on a node to select it, and notice how you can drag and drop it on another to attach the two nodes.

This tool doubles as a tree diagram, which you can use to plan the various strands of a project.

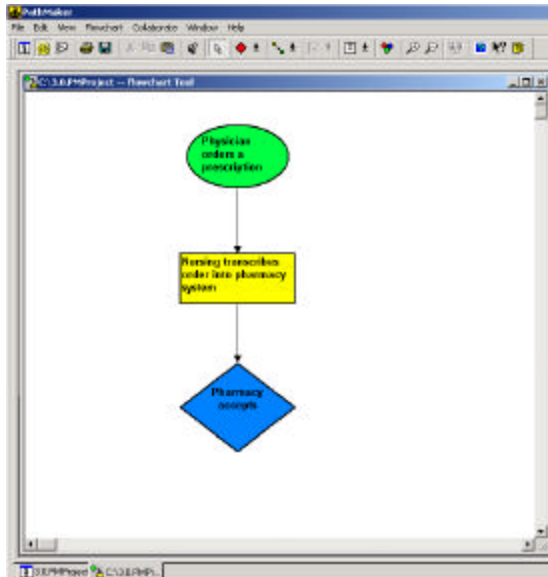
When you have finished with your cause and effect diagram for the moment, use the **Close Window** button to return to your project pathway.

Flowcharting



Now launch the flowchart tool by clicking on the flowchart step's launch button.

You'll see the flowchart window open. In this window, you have all the appropriate buttons and menus for the quick construction of flowcharts. You can add shapes and then connect them, change their colors, align them, align the text within them, etc.



For a quick review of flowcharting and the meaning of the different shapes, you might want to read through the flowchart slide show. Each tool's slideshow is just a click away. Use the **View Slideshow** button to launch it.



On the flowchart toolbar, click the add shape button.




Then click down in the blank workspace in the window. When you click, PathMaker 5.5 creates a shape of the type you have selected. Immediately after you create a shape, it is ready for text entry. If you start typing the text will appear inside the shape.

With your mouse, click on the add shape button again, and add it to your chart. Type in some text. Then, on the toolbar, this time click on the add connection button.



If you click inside one shape, and drag the cursor over into the other shape, and then release the mouse button, PathMaker 5.5 draws a connection between the two shapes.

If you are going to add several shapes or connections in a row, it is quicker to use the **Mode Lock** button . If the little padlock icon shows as being locked, you will stay in your current mode – e.g. connection mode, until you choose another mode. In Lock Mode, you can keep connecting shapes without having to keep selecting the add connection button.

You can also save your flowchart as a bitmap for use in other word processing applications .

You can play with some of the other flowcharting functions as you construct a flowchart that depicts one of the processes that leads to a world problem you want to fix. Most are available on the button bar or under the Flowchart menu command. They are largely self-explanatory, and there is help on each one.

Detour - A Quick Look at PathMaker 's Help System

PathMaker 5.5 has extensive help resources. You've already seen the slide shows that are built-in. There is always a relevant slide show link on your toolbar, which is activated by the **View Slide Show** button.



You may also use the help button.



If you click on this button, and then point your cursor to something else in your window, and click on it, PathMaker 5.5 will display the help topic related to the item you pointed to.

For quick and brief help, you can use the help cards

Help cards are little decks of cue cards, which give you quick overviews of how to work in the various tools. The cards you see are always related to the tool window that is being displayed.

Finally, there is the standard on-line Help system, with a searchable index, table of contents, a glossary, and other reference material. To open Help, choose the **PathMaker Help** command from the Help menu or press **F1** on the keyboard.

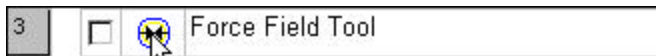
Other management resources, links, notes, explanations of tools and answers to frequently asked questions are available at our excellent web site, www.skymark.com.

Force Field Analysis

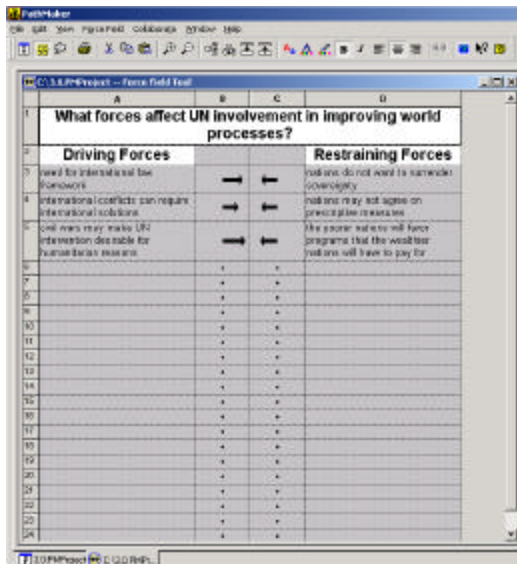
In the pathway window, add a Force Field Analysis step to your pathway.



Use the launch button to launch the Force Field Diagram window.



The Force Field Diagram is very simple – just two lists. You usually use it to list the driving forces behind an idea, vs. the forces that will tend to restrain an idea.



For example, imagine you want to determine what forces affect UN involvement in improving world processes. You can type some ideas into the driving force section of the force field diagram: the need for humanitarian reasons, etc... Restraining forces could be that nations do not want to surrender sovereignty, nations may not agree on prescriptive measures, etc...

Then you can use the arrows to graphically depict the strength of the various forces.



If you are going to try to effect a change, you need to strengthen the driving forces, and try to weaken the restraining forces.

After you finish, close the window.

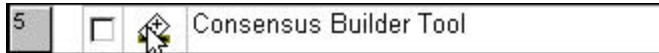
Consensus Builder

If you are trying to narrow down a list of possible actions or candidates, and to build consensus for a given choice, the consensus builder tool can be a great help. There are two basic voting/rating methods available to you in the consensus builder tool: multi voting and multi-criteria rating.

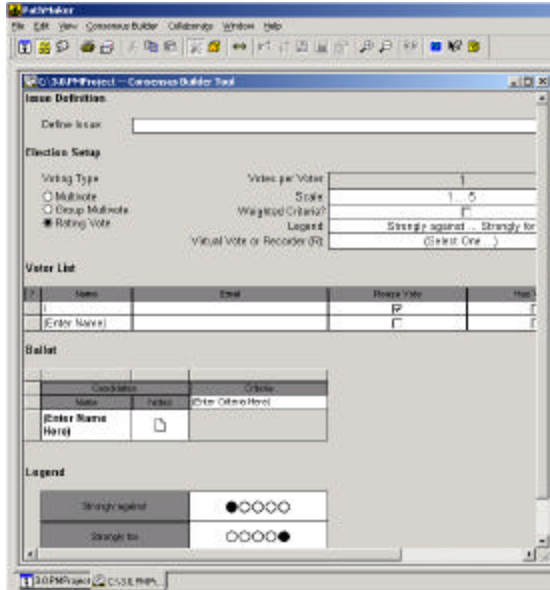
Before you begin, just a quick note on terminology...Consensus Builder uses election terminology throughout. Different alternatives or ideas that you are considering are referred to as candidates. Each person involved in the process is a voter, and each voter will cast a ballot. The whole process is an election.



Add a consensus builder tool to your pathway, and launch it.



When you open the tool for the first time, the tool is in Setup Mode.



In Setup Mode, first define the issue you are voting on. Then specify whether you want to multi vote (recommended if you have more than 8-10 candidates), group multi vote (good for long lists or large teams) or rate the different alternatives (best for short lists of candidates where you want to examine each one in detail).

Choose the voters and a rating scale (if you are rating), enter the names of the candidates, enter criteria (again, if you are rating candidates against several criteria), and whether you want to weight the relative importance of the criteria.

Use this email button to notify team members who are not online that they need to vote.



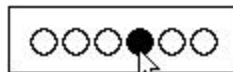
Once you have finished setting up your election, press the **Vote!** button:




In a multi-criteria rating vote, each voter has the opportunity to weight each criterion. There may be times when you do not want to use the weights and would prefer all the criteria to be treated equally in figuring the results. Thus PathMaker lets you choose between having the weights enabled or disabled.





PathMaker 5.5 will set up a ballot for each voter. Each voter clicks on the round circles to fill them in, just as one would fill in a standardized test form.




When the ballot is complete, press the **Cast Ballot** button .

Once all the ballots have been completed and cast, the final voting result will be displayed.

You can use the **Sort Results** button to sort the voting results into descending order .

Divisive issues will be highlighted in red. The **Consensus Threshold** button  lets you set the level at which you want to flag areas of disagreement within the group. This is a very powerful way of focusing on the specific causes of disagreement, and getting issues onto the table before going further.


The display chart command  brings up the **Consensus Analysis** dialog box, which contains a chart of the rating results for the cell. This command is only available when the selected cell contains data which may be graphed.

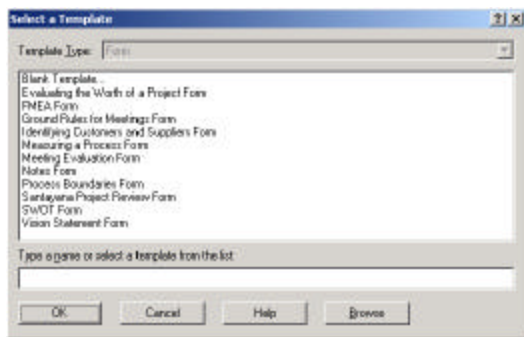
The Recorder of the vote may use this command  to view results while the vote is in progress.

Forms

There are some forms that are useful in process improvement and strategic planning.

PathMaker 5.5 includes a forms design tool, and a set of pre-designed form templates.

Add a form to your pathway by clicking on the add form button . When you first launch this tool you will see. **Select a Template** dialog box appear. If you wish to use an existing form, select it from this list. If you wish to create your own select the **Blank Form**. Once in the form you have chosen if you wish to change it go to **File** and **Change Template**. The list of pre-designed form templates will appear to choose from.



If you want to change the design of the form, press down the **Design Mode** button to turn on your design options.



If you do make design changes, you can save them as templates for future uses using the **Save As Template** command on the File menu.

If you just want to fill in the form, stay in use mode by releasing the **Design Mode** button.

Data Analyst

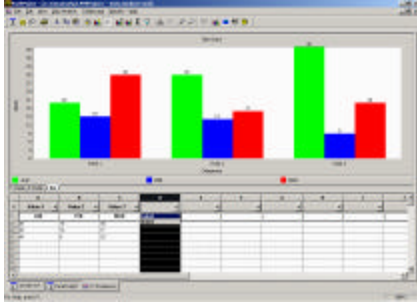
The Data Analyst tool gives you a quick and easy way to generate all the chart types used in process improvement and strategic planning work.




Add a Data Analyst tool to your pathway, and launch it.



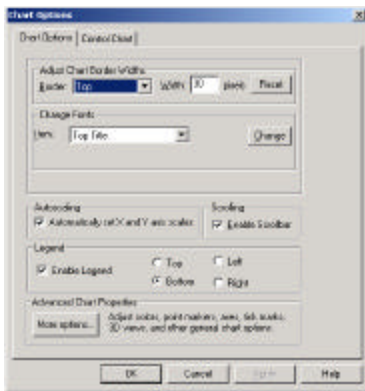
Pick a chart type that you want to create, and work your way through the wizard. When you first finish with the wizard, you get a split screen, with an empty chart window above, and an empty data grid below. Below the column headers of the grid (labeled A, B, C etc.) there is a row of gray cells. This row contains assignable headers. You use these headers to tell PathMaker 5.5 where the data is that you want to use for constructing a chart. Each chart type has specific headers. Those headers appear in a drop-down list if you click on one of the assignable headers cells.




Enter some data into the columns under your preassigned headers. Under the assignable header row, there is a third row of cells. If you enter text here, it will be interpreted as series labels. Enter your data in the appropriate columns and a chart will appear. You can construct any number of charts from one grid of data.

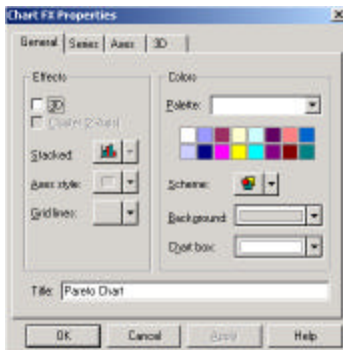
To add a second chart, click on the Add Chart button. 

It brings up the chart choice wizard again, and lets you choose another chart. If you pick a different chart type, the preassigned headers will usually be different, since the headers are always appropriate to the chart that is being displayed.



To configure the options for a chart, select the **Chart Options** button  on the toolbar.

This will open a dialog with several tabs, where you can select options for chart display, titles, the scales of x and y-axes, and more.



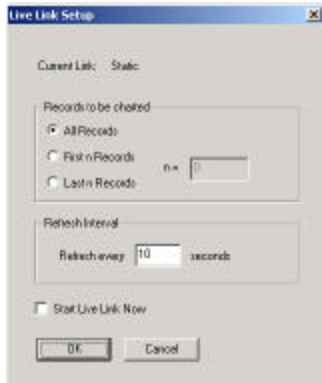
The **More options** tab will launch the **Chart FX® Properties Dialog box**. Within this box you are able to customize your charts even further in relation to 3D, cluster or stacked. Also the appearance of grid lines, axis style, color palette, background or scheme, customization of point markers, and tickmarks among other features.

To display the statistics associated with a chart, press the **Display Statistics** button.




To import data from another source, you can copy and paste, or use the **Get External Data** command on the **Data Analyst** menu.

Once you have imported data from an external data source, you can set up a permanent link to it. That way, any changes being made in your database will be reflected in your data analyst chart. From **Get External Data** go to **Setup Live Link**. This command will launch the **Live Link Setup Dialogue Box**:



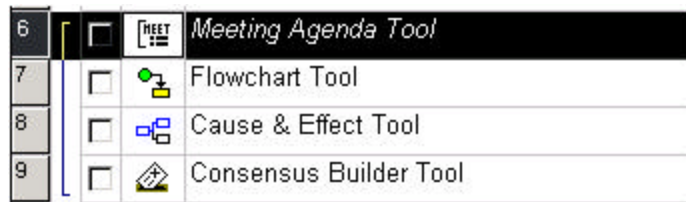
There are many other functions and options in the Data Analyst tool. A detailed explanation is beyond the scope of this quick start guide, but there are such explanations in the help system and the User's Guide. You will quickly learn how most of the options work by exploring the menus – particularly the Edit and Data Analyst menus – and the toolbar. The

Help Pointer  can also be very useful for such exploration.

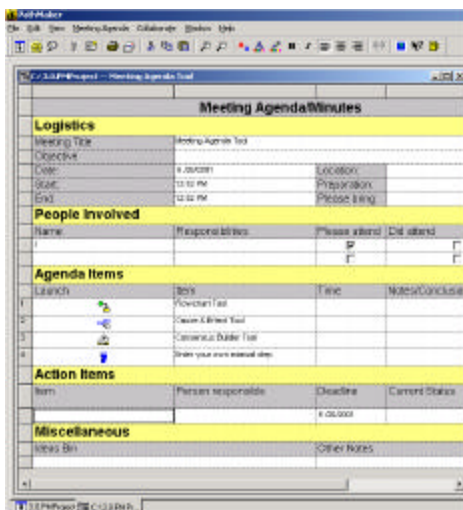
Running Meetings with PathMaker

You can add meetings to your project pathway, and include steps from the pathway in a Meeting Agenda that PathMaker generates. To add a meeting, select the **Add Meeting** button  on the toolbar of the pathway window.


Look for the bracket to the left of the meeting step. Click on the bottom of the bracket, and drag it down until it includes the steps that you want to take in your first meeting. These will appear under the **Agenda Items** section.



Launch the Meeting Agenda by double-clicking on its launch icon on the pathway. Enter the appropriate information (e.g. time and place). For a real meeting, you could print out the meeting agenda, or send copies via e-mail. But for now, click on the **Close Window** button on the toolbar to return to the pathway.



If you wish to add your own step to the **Agenda Items**, use your mouse to select the line in which you want it to appear so that it is highlighted, (in the example below under the Consensus Builder tool), and then go to the toolbar and select the

Manual Step tool: 

When you are ready to hold the meeting, launch it, using the agenda to keep it running efficiently. You can edit colors, fonts, and other style characteristics.

One of the nice features of the Meeting Agenda is that the launch buttons for all the items are included on the agenda itself. This eliminates the need to switch back and forth between the pathway and the agenda when launching tools.

Templates

PathMaker 5.5 provides built-in templates for the project pathway and tools. You can modify them, or create your own, so that you have a template that represents the way your organization solves problems.

From the File menu, choose **New**. In the **Start Project** dialog box that opens, select the "Using a project template" option and click on the **OK** button. From the list of standard templates, choose Process Improvement, and then choose **OK**. The file opens - there are lots of steps, but they are empty, waiting for you to fill them in. You can launch, add, delete, and edit steps.

Open a form tool. From the File menu, choose **Change Template**. In the **Select A Template** dialog box that opens, choose the template you wish to use. Now you have a standard form provided by PathMaker, you can change it the way you prefer.

When you have designed your own tools and pathways, you may save them as templates for future uses. From the File menu, choose **Save As Template**. Enter a template name at the prompt. The next time when you are choosing templates for pathway or tools, the new template you made appear in the list.

PathMaker 5.5 allows you to save templates in different template databases. When you choose a template, you can select a template contained in a template database other than the current using the Browse function. You can also use the Browse function to save a template in different template databases.

Note: Please be aware that any templates created in previous versions will need to be converted. See the Template Maintenance Dialog Box.

Saving a Project as a Template

Although PathMaker files are normally saved as projects, they can also be saved as pathway templates. A pathway template is intended to get people started on a project. The pathway template suggests what tools to use when, and provides access to helpful information.

If a person or team devises an effective problem-solving approach, it can be saved as a template. Any project-specific data can be removed, so that it provides a general approach that others can use. After a file is saved as a template in a Template Database, it will appear in the list of available templates when a new project is started using that Template Database.

To save a file as a template:

From the File menu, choose **Save As Template**. The **Save As Template** dialog box will appear.

In the box labeled "Type a name or select a template from the list", type in a descriptive name for your template. This name will appear in the list of templates to choose from when you start a new project. An example title could be "*Improving a Process*".

If you want to save the template in a Template Database other than the current one, choose the **Browse** button to open the **Open** Dialog Box, and you can select the Template Database you want the template to be saved in. Or you can type a new Template Database name into the **Open** Dialog box to create a new Template Database.

Choose the **OK** button to save.

Note:

All the pathway templates and tools templates are stored in Template Databases. PathMaker allow you to store templates in different Template Databases, which helps you classify your templates.

Saving a Tool as a Template

You do not need to save a tool after editing it, since PathMaker saves all the changes automatically. However, you may wish to save a tool as a template for future use, so that you don't have to repeat steps to format it the way you prefer.

To save a tool as a template:


1. From the File menu, choose **Save As Template**.
2. In the **Save As Template** dialog box, type in a name for your new tool template in the box labeled "Type a name...".
3. If you want to save the template in a Template Database other than the current one, choose the **Browse** button to open the **Open** Dialog Box, and you can select the Template Database you want the template to be saved in. Or you can type a new Template Database name into the **Open** Dialog box to create a new Template Database.
4. Choose the **OK** button to save the tool template.


Note:

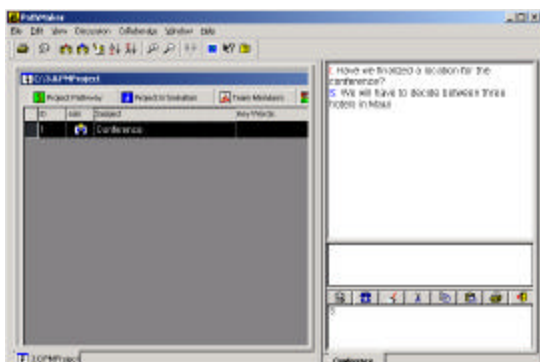
All the pathway templates and tools templates are stored in Template Databases. PathMaker allow you to store templates in different Template Databases, which helps you classify your templates.


Instant Messages and Discussions

PathMaker 5.5 gives you convenient ways to discuss issues online with your team members.

Use the Send Message button to send messages to the team members: 

Use the Display Online Users button to check the users who are working at the same tool with you: 



Start a discussion at the Discussion History list and invite other team members to join you.  **Discussion History**

All the discussion messages you and your team members enter in the Discussion window are saved with the project.

Exiting PathMaker

Quitting PathMaker closes any open projects as well as the application.

To quit PathMaker:

From the File menu, choose **Exit**.

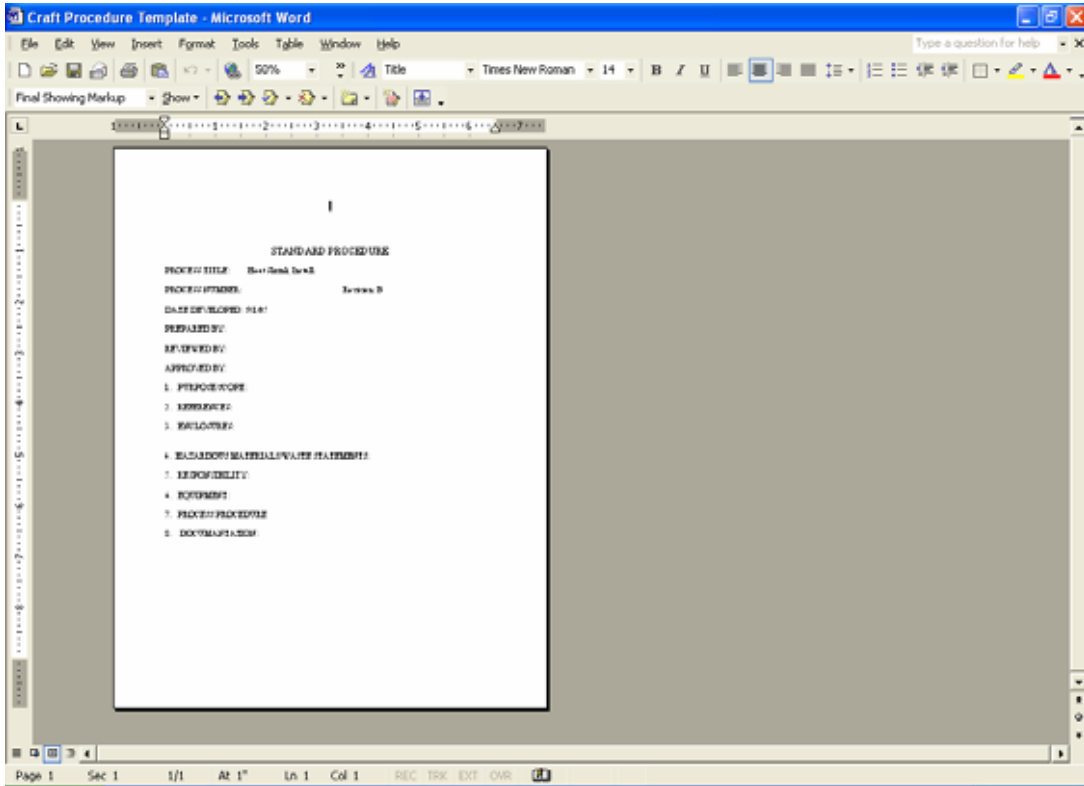
Copyright © 2003 by SkyMark Corporation. All rights reserved. Reproduction of any part of this work beyond that permitted by Section 107 or 108 of the 1976 United States Copyright Act without the permission of the copyright owner is unlawful. Unauthorized reproduction or distribution of this penalties, and will be prosecuted to the full extent of the law. PathMaker is a registered trademark of SkyMark Corporation. All other trademarks are the property of their respective owners.

9 Appendix 2 – shipyard report

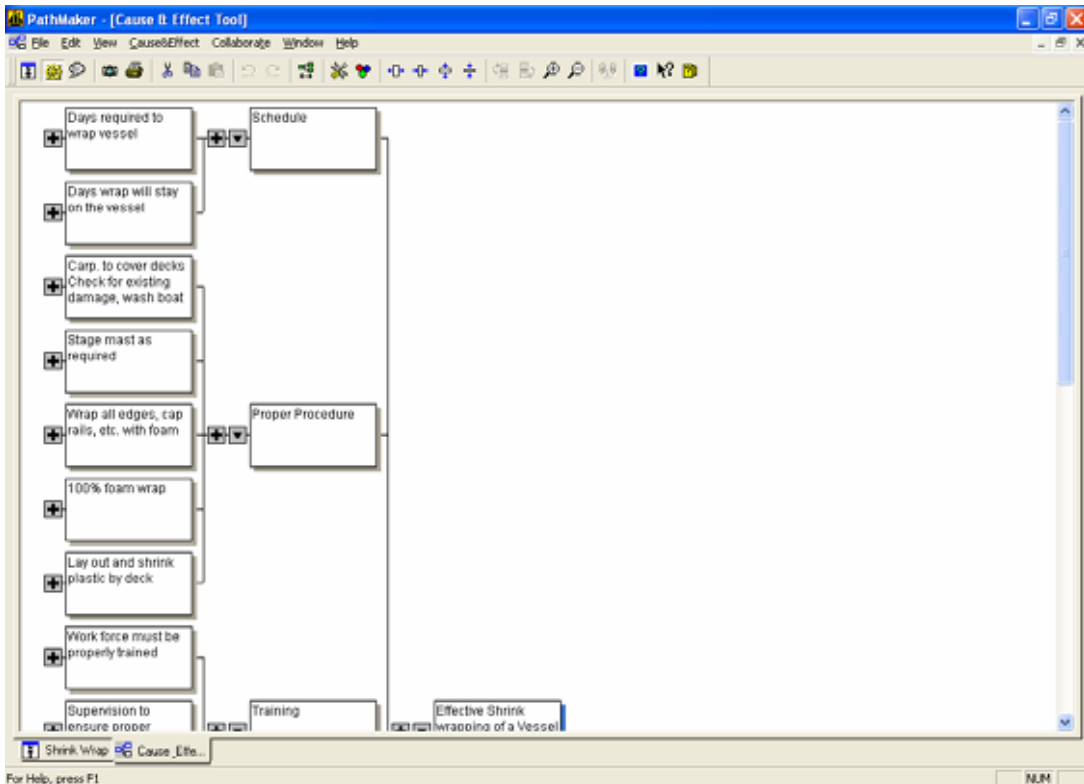
What follows are screen shots from the Atlantic Marine project to assess possible solutions to the over-spray problems the yard has been facing.

These extracts are modified to reveal only non-commercially confident items.

There is a dialogue box with each screen shot extract to describe what has been undertaken at each stage.

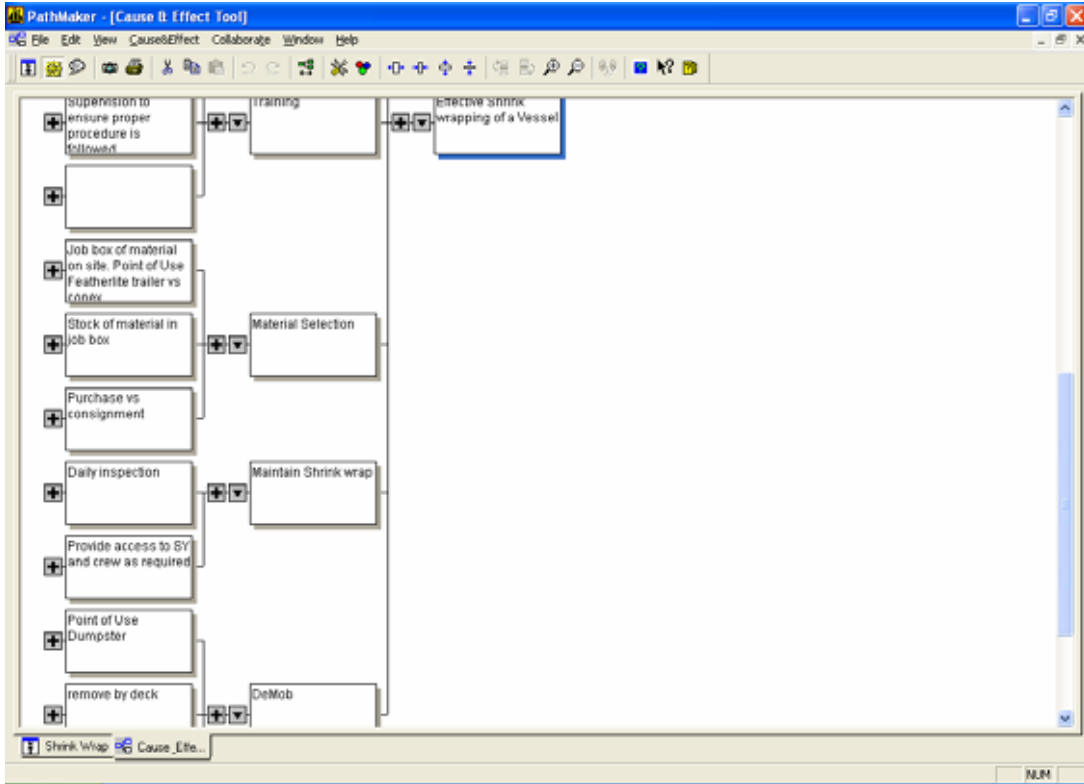


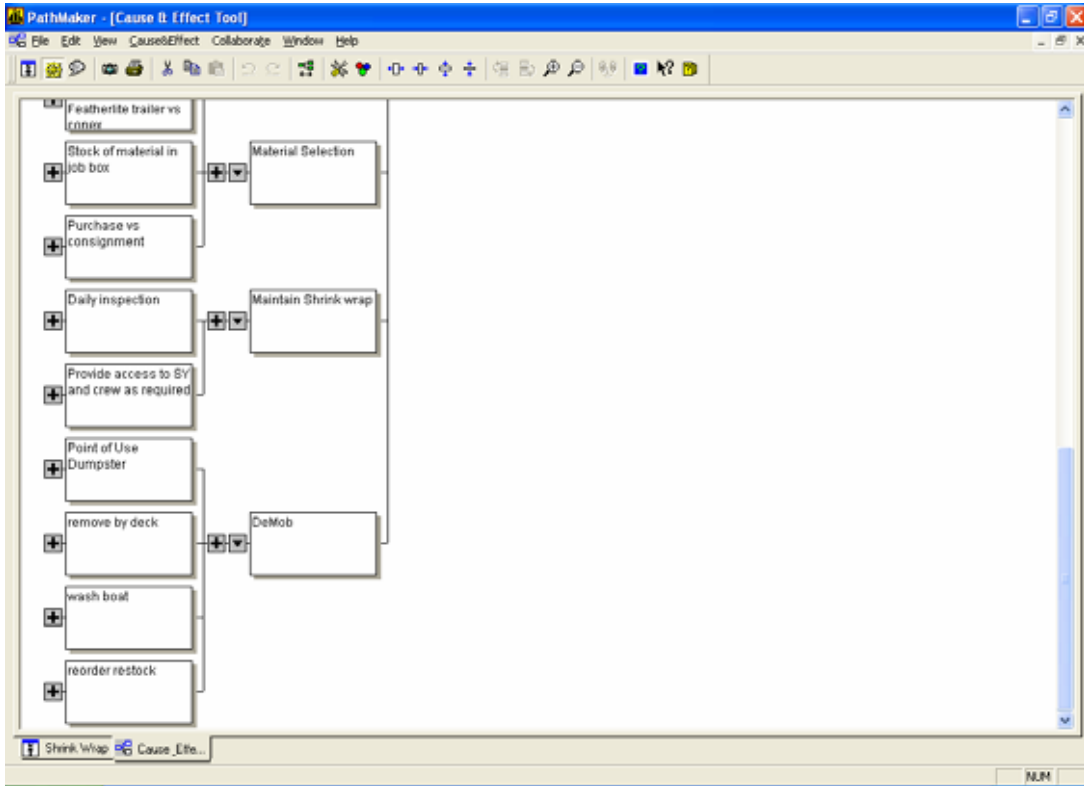
The Yards own standard procedure a work document has been hyper-linked into the project file so that all relevant documents are contained in this "smart file" irrespective of where they actually reside on the computer or the network.



This and the following screen shot show the cause and effect analysis as carried out by the yard team on line to identify the possible factors that influence good shrink wrap of a vessel.

The system took a couple of attempts to organise correctly but once a layout is established it is easy to add more branches and boxes and to navigate. There is no real limit to the number of branches and sub-layers. If you want to add more you simple click on the “+” sign next to the box and it will expand at that level.



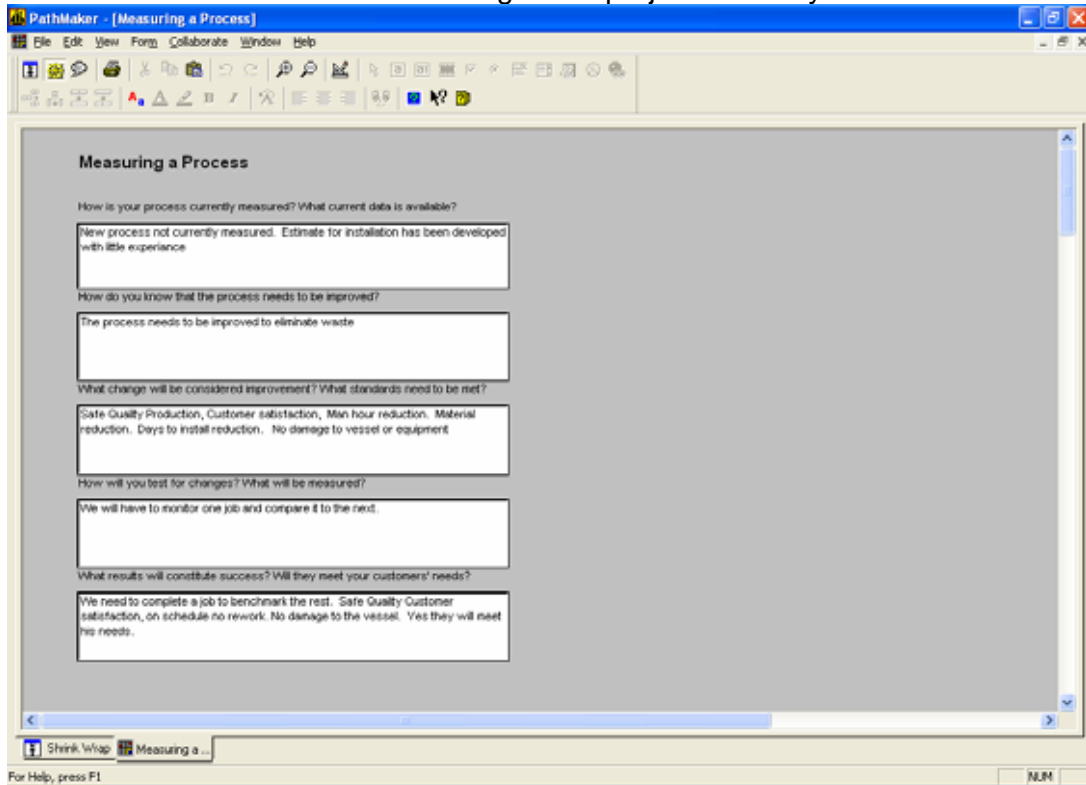


The cause and effect tool is one of the standard tools within the pathmaker software and is easy to use.

The screenshot shows the PathMaker software interface with a Meeting Agenda/Minutes tool. The tool is a table with several sections. The sections are: Logistics, People Involved, Agenda Items, Action Items, and Miscellaneous. The Logistics section includes fields for Meeting title, Objective, Date, Start, End, Location, Preparation, and Please bring. The People Involved section includes a table with columns for Name, Responsibilities, Please Attend, and Did Attend. The Agenda Items section includes a table with columns for Launch, Item, Time, and Notes/Conclusions. The Action Items section includes a table with columns for Item, Person Responsible, Deadline, and Current Status. The Miscellaneous section includes fields for Ideas Bin and Other Notes. The software interface includes a menu bar (File, Edit, View, Meeting Agenda, Collaborate, Window, Help) and a toolbar with various icons. The status bar at the bottom shows 'Shrink Wrap' and 'Meeting Age...'. At the bottom left, it says 'For Help, press F1'.

Meeting Agenda/Minutes			
Logistics			
Meeting title:	Meeting Agenda Tool		
Objective:			
Date:	8 /17/2005	Location:	
Start:	02:42 PM	Preparation:	
End:	02:42 PM	Please bring:	
People Involved			
Name	Responsibilities	Please Attend	Did Attend
steve		<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
Agenda Items			
Launch	Item	Time	Notes/Conclusions
Action Items			
Item	Person Responsible	Deadline	Current Status
		8 /17/2005	
Miscellaneous			
Ideas Bin		Other Notes	

The meeting tool allows you through one format to contact all people on a project and notify them of a meeting. This is also then stored within the smart file so that all material relating to the project is readily at hand.



The screenshot shows a window titled "PathMaker - [Measuring a Process]". The window has a menu bar with "File", "Edit", "View", "Form", "Collaborate", "Window", and "Help". Below the menu bar is a toolbar with various icons. The main content area is a form titled "Measuring a Process" with the following questions and answers:

How is your process currently measured? What current data is available?
New process not currently measured. Estimate for installation has been developed with little experience.

How do you know that the process needs to be improved?
The process needs to be improved to eliminate waste.

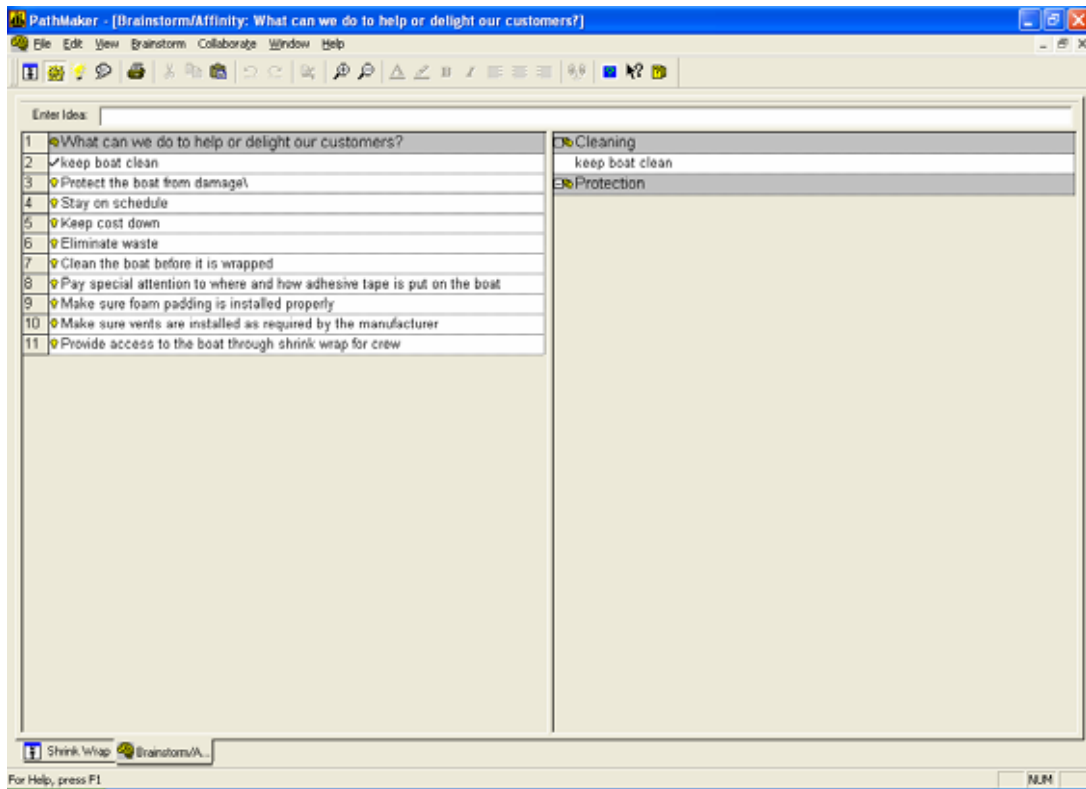
What change will be considered improvement? What standards need to be met?
Safe Quality Production, Customer satisfaction, Man hour reduction, Material reduction, Days to install reduction, No damage to vessel or equipment.

How will you test for changes? What will be measured?
We will have to monitor one job and compare it to the next.

What results will constitute success? Will they meet your customers' needs?
We need to complete a job to benchmark the rest. Safe Quality Customer satisfaction, on schedule no rework. No damage to the vessel. Yes they will meet his needs.

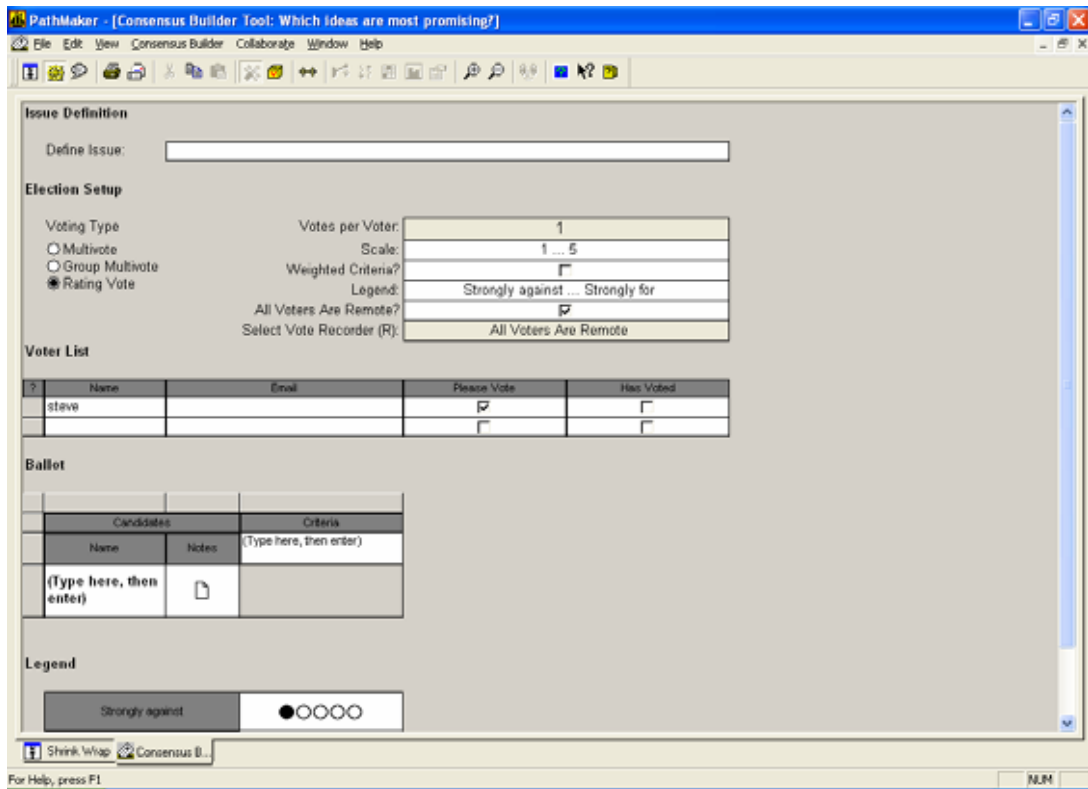
At the bottom of the window, there is a taskbar with a "Shrink 'Whap" button and a "Measuring a ..." button. The status bar at the very bottom says "For Help, press F1" and "NLM".

Another one of the basic forms from Pathmaker, the software does offer scope to customise these either internally or allow you to develop your own with a hyper-link. This really does make the tool very flexible to use with all elements of Microsoft Office software.



The brainstorming facility allows team members to brainstorm on line and add to the process as they think of new ideas.

Again it is relatively easy to use and each idea can be subsequently marked for further study or reject as appropriate.



The team can then be polled to vote on particular courses of action and again all feedback is conveniently stored in the one project location.

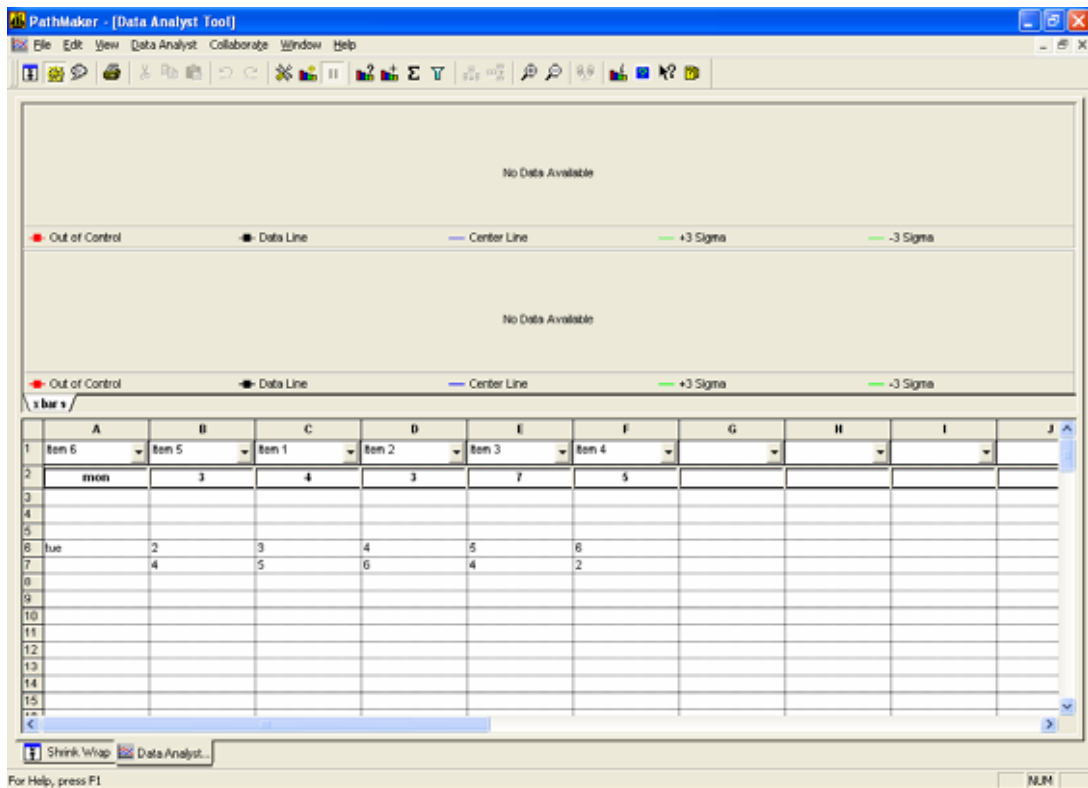
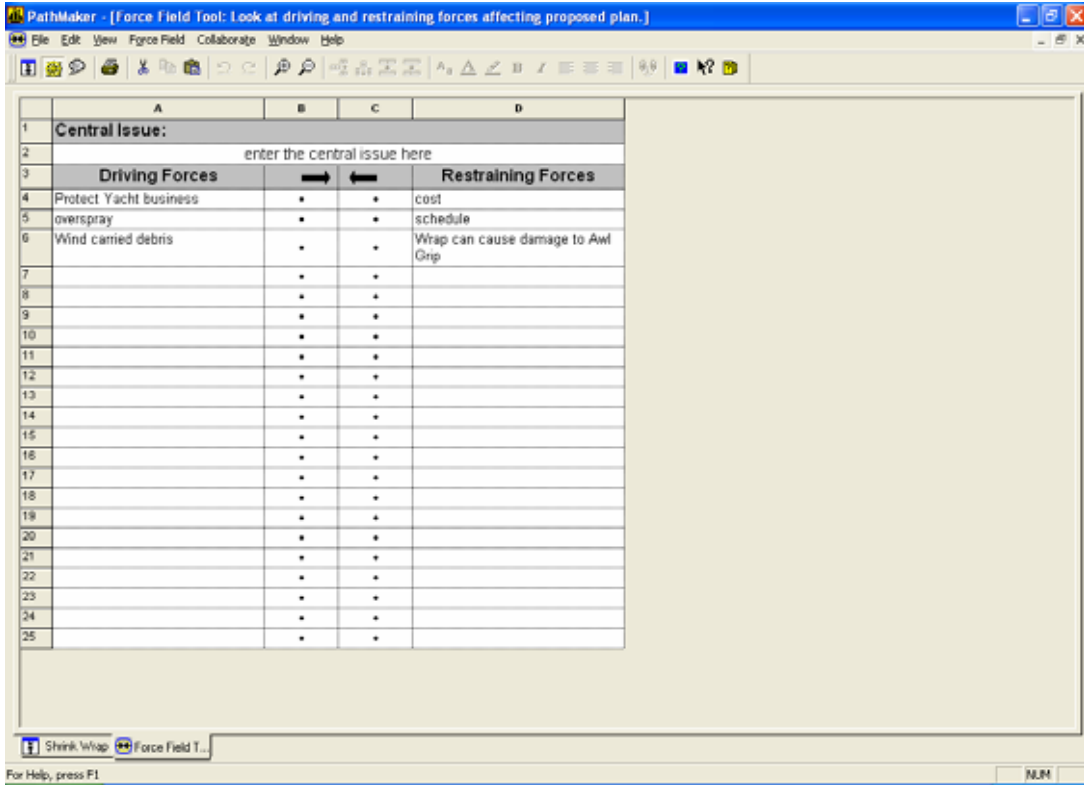
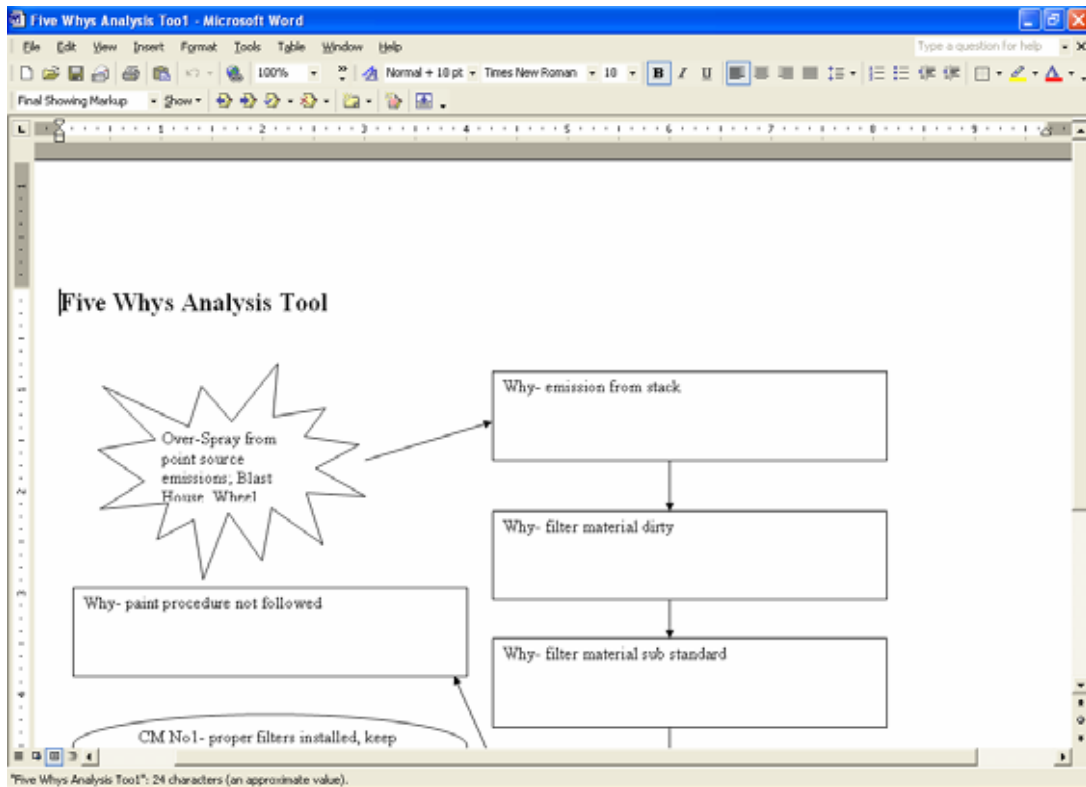


Chart data can be collated, if appropriate, and X-bar charts generated.



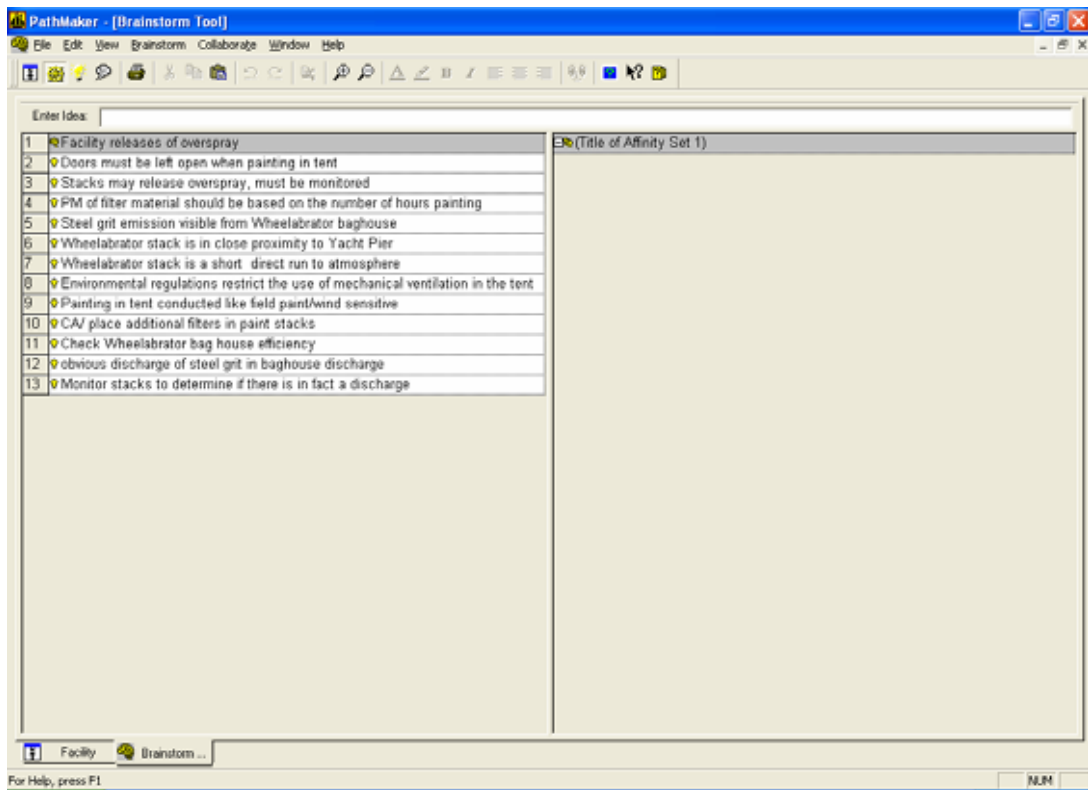
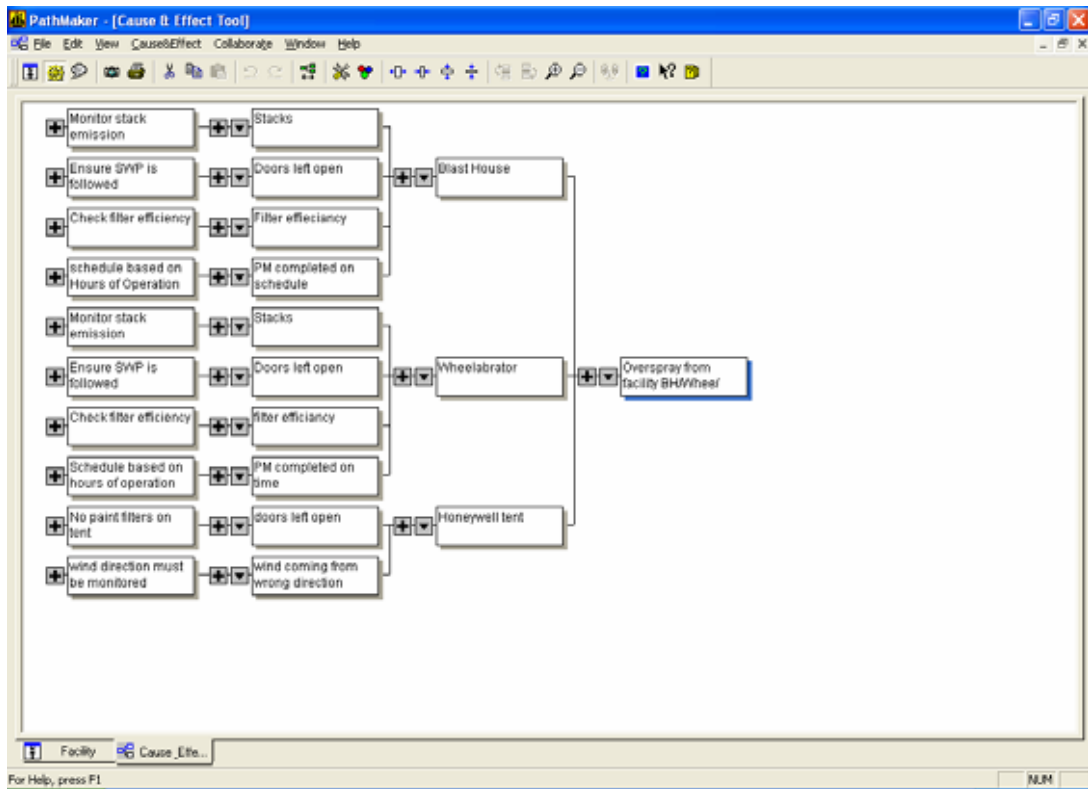
The force field tool allows problems and issues to be raised to identify the factors that may prevent a particular solution from being adopted, so that the team can assess how best to overcome these problems.

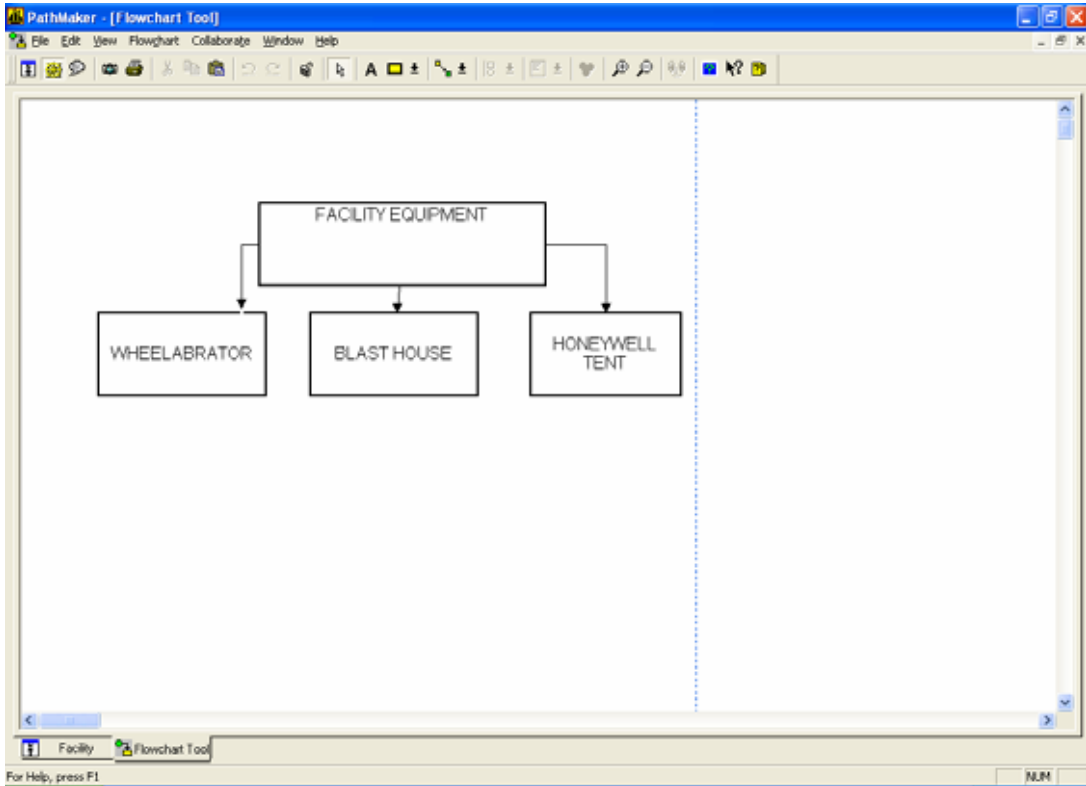


The yard had developed its own 5Y programme and had its own forms for this process, these were easily linked into Pathmaker through the Hyper-link function, keeping consistency with other yard initiatives and therefore not re-inventing the wheel.

In this sense the software is like a project specific Lotus notes approach but with emphasis on problem solving rather than project management.

The following slides are further extracts from alternative projects the yard has run using Pathmaker.





The forms below are created in Excel and hyper-linked to the Pathmaker project smart file.

Process Flow Worksheet						
Step	Description of the Step	Time				Comments
		VAT	Set up	Queue	FT	
1	Develop SWP for painting in test		120			
2	Guidelines for SWP should be the same for field painting					
3	Wind direction critical to paint ops					
4	Spray technique is important but will not eliminate overspray					
5	tip size & pressure will reduce overspray					
6	doors must be left open while painting					
7	Design and build a door frame covered with filter material		480			
8	Develop SWP for preventative maintenance		120			
9	measure efficiency in stack emissions		60			
10						
11						
12						
13						
14						
15						

Microsoft Excel - Copy of Process Flow Sheet

File Edit View Insert Format Tools Data Window Help

Type a question for help

MS Sans Serif 10 B I U

J18

Process Flow Worksheet

Process/Part Description Facility Equipment-Honeywell Tent

Step	Description of the Step	Time				Comments
		VAT	Set up	Queue	FT	
1	Develop SWP for painting in tent					
2	Guidelines for SWP should be the same for field painting		120			
3	Wind direction critical to paint ops					
4	Spray technique is important but will not eliminate overspray					
5	tip size & pressure will reduce overspray					
6	doors must be left open while painting					
7	Design and build a door frame covered with filter material		480			
8	Develop SWP for preventative maintenance		120			
9	measure efficiency in stack emissions		60			
10						
11						
12						
13						
14						
15						

Process Flow

Ready NUM

Microsoft Excel - Copy of Process Flow Sheet

File Edit View Insert Format Tools Data Window Help

Type a question for help

MS Sans Serif 10 B I U

J18

Process Flow Worksheet

Process/Part Description Facility Equipment-Honeywell Tent

Step	Description of the Step	Time				Comments
		VAT	Set up	Queue	FT	
1	Develop SWP for painting in tent					
2	Guidelines for SWP should be the same for field painting		120			
3	Wind direction critical to paint ops					
4	Spray technique is important but will not eliminate overspray					
5	tip size & pressure will reduce overspray					
6	doors must be left open while painting					
7	Design and build a door frame covered with filter material		480			
8	Develop SWP for preventative maintenance		120			
9	measure efficiency in stack emissions		60			
10						
11						
12						
13						
14						
15						

Process Flow

Ready NUM

10 Revisions

Document No	152CNSRP003R
Document Title	Final Report on NSRP White paper project on Statistical Process Control Techniques
Client	NSRP
Compiled by	RAKAT

Revision	Date	Summary	By