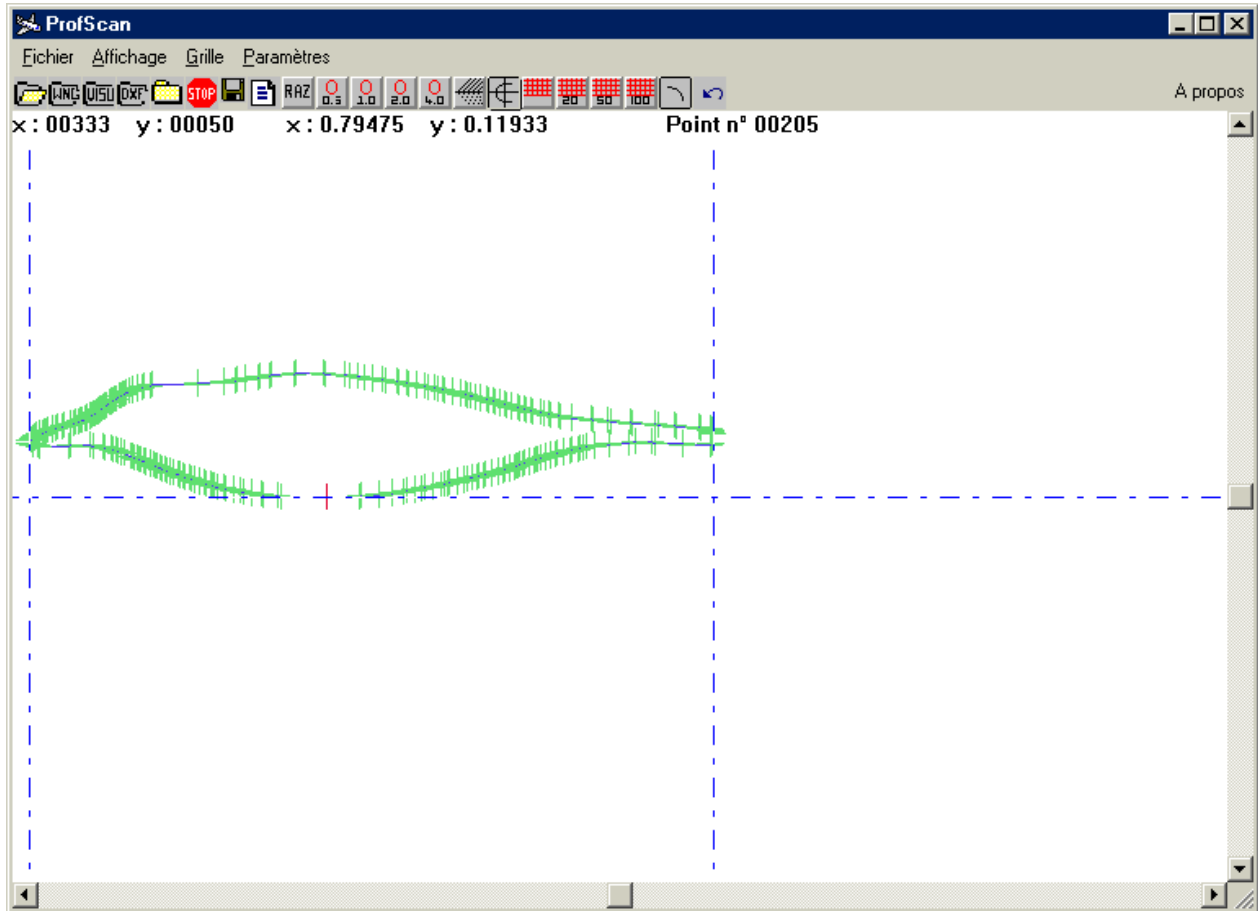


PROFSCAN is intended to the users of software of numerical cutting.



The functionalities at the end of the development will be the following ones:

- 1°) Data entry and modification of points of co-ordinates to the screen with. raised hand.
- 2°) Data entry and modification of points of co-ordinates to the screen by taking as model a digital image.
- 3°) Numerical Analysis of an image in order to determine the useful points of co-ordinates.
- 4°) Backup and recovery of the files of co-ordinates.
- 5°) Possible User interface which is user-friendly by using the functions of zoom, displacement of virtual windows, data entry with the mouse and the keyboard, etc.

Mouse

The use of the mouse wants to be intuitive.

The co-ordinates of the cursor are displayed in top screen on the left. They are expressed in points of screen (pixels).

Item 0,0 is at the intersection of the two hatched red lines which represent the axes.

The points located below the horizontal axe have negative ordinates.

The co-ordinates take account of horizontal and vertical displacement window, factor of zoom as well as position of the axes.

The possible actions with the mouse are the following ones:

Left Clic: mark a point on the screen. This point is regarded as following the last traced point. It is registered in red.

Right Clic: If a point exists at this place or in the vicinity (two pixels), it is removed.

Drag and Drop: clic on a point or in the vicinity of it and keep the left mouse button depressed to move it with the mouse, the cursor takes the shape of double cross. When you slacken the button of the mouse, the point is left at this place and the cursor regains its initial shape of a simple cross.

The use of < ESCAPE > in the course of displacement cancels the action.

Drag and Drop with SHIFT: While ddragging and dropping, using shift creates a new point according to that on which one cliqué.

Left Clic with CONTROL: Allows to display the co-ordinates of the selected point and to modify them.

NB. It is advised to finish a layout by the point with which one started.

However, the software will automatically do it for reasons of security and compatibility with the programs which can use these files of co-ordinates.

Keyboard

The use of the mouse is intuitive but does not easily allow to obtain a precise positioning. It is thus, in certain cases, easier to use the keyboard to move precisely on the screen.

The arrow keys make it possible to move of a pixel in all the directions.

The combined support of SHIFT and the arrow keys makes it possible to move 10 times more quickly.

The combined support of CTRL and the arrow keys makes it possible to move the entire layout.

The combined support of SHIFT, CTRL and the arrow keys makes it possible to simply move the image

The support on the key < Spaces > or < Entered > allows to mark a point.

The support on the key < del > removes a point

Note that the usual keyboard shortcuts of Windows are operational (ALT+f to open the menu. File. for example)

Seized by a show of hands Before starting, you must take your reference marks, i.e. indicate to the program the point of co-ordinates 0,0 as not on the right which will be regarded as having one crosshair. equalizes to 1. For example:

```
|
|
|      .
|    0,0
|  1,y
| /
|-----|
|
|
|
|
```

With the starting of the program, the line of the crosshairs is positioned in the middle of the screen
To change the position of the point 0,0, it is enough to click on the icon-then to mark on the screen with the icon again to pass by again in seized mode of points.
You seize then all then to mark on screen with there the your points.
You always have the possibility of modifying a point, inserting a new one, visualizing your layout on all the scales, etc.

Data entry.

You to start to load an BMP image (file / to open an image. or icon.)
to open file, then you seize all the points which appear significant to you.

The step is the same one as for the data entry by a **show of hands**.
For numerical analysis after having loaded an image (see above), you activate the mode, "Analyze". (File / Analyze..
You then clic close to the contour of your image and the program does the remainder: it analyzes your image, locates the points of contour,removes the useless points and displays the result on the thescreen.
You have then the possibility of modifying this layout as explained above.

The precision of your layout will be determined by the positioning of the first point.

Let us take an example: You work with a basic screen functioning in 640x480 (standard VGA). In this case, it will be necessary to think of investing but you can nevertheless use the program.

You position item 0,0 on the left screen.

The point on the right of your layout is located on column 500.

The program manages the co-ordinates except for the point, i.e. which you have a relative precision of 1/500.

If your component in reality measures 10 cm, the absolute precision will be then 10 cm / 500, that is to say 2/10 mm, which can appear sufficient, and in any event higher than the mechanical precision of cutting.

If your component in reality measures 1m, the relative precision will be always 1/500, the absolute precision will be of 2mm, which can appear much.

Although 2 mm on a cord of 1 meter... You have two alternatives: You become satisfied with this precision, or to work well on a larger virtual space which will enable you to obtain a better precision.

For that you will move on the right window while clicking on the horizontal scroll bar until obtaining a co-ordinate in X of 1000.

While placing your first point at this place, you obtain an accuracy of 1/1000 at the price of a navigation on the screen that will be a little more complicated.

You will be able to also use the back zoom (menu or icon 0.5) to obtain a more complete outline of your drawing.

The table below gives some examples of absolute precision with various sizes of parts:

Taille du dessin points	Taille de la pièce		Précision
	cm	mm	
500	10	0,2	
	20	0,4	
	50	1	
1000	10	0,1	
	20	0,2	
	50	0,5	
2000	10	0,05	
	20	0,1	
50	0,25		

Processing of the table of the co-ordinates

All the points, whenever they are seized by the mouse, keyboard or numerical analysis, are stored in a table which is possible to visualize by the menu.

Display / List of the co-ordinates. or well while click on the icon. list.

At the time of the backup, this table will be treated in the following way:

A-Suppression of the useless points:

- All the points of the table are successively examined three by three.

If calculation shows that they are aligned, the point in the middle is removed.

In this way one only keeps the point useful for the layout and possibly cutting by program CNC.

Seek the X-coordinate highest (the point on the right) and shift of the table to start with this point.

B-Generation of two files:

- a File .DAT which will be compatible with program CNC insofar as it does not comprise more than 512 points, (the limit of program CNC) and

- a file .PSC which makes it possible to recover the points to work again with PROFSCAN.

PROFSCAN is limited to 3000 points.

Formats of the files

.DAT format comprises of the following:

The lines in different length are separated by one.

Carriage return. (value hexa. 0D. As many lines than of points, the co-ordinates is expressed like real numbers, ranging between 0 and 1.

The co-ordinates are calculated by dividing the co-ordinates on screen by the factor scale.

The factor scale is intended to bring back the values of the co-ordinates between 0 and 1, 0 being the crosshair point on the right, 1, the crosshair point on the left.

The two values are separated by at least a space.

All the lines which do not comprise in first positions two real numbers are ignored.

Format PSC is the following:

The lines in different lengths are separated by one.

Carriage return. (value hexa. 0D. A line (or several, c.est the last which counts) including/understanding the position on screen axes:

OFFSET xxx yyy a line (or several, c.est the last which counts)

including/understanding the position on screen associated l.image:

OFFSETIMAGE xxx yyy

Co-ordinates of the points expressed of integers (X-coordinate, ordinate).

The two values are separated by at least a space: SCREEN xxx yyy

All the lines not corresponding to these criteria is ignored

Format WNG is the following:

The lines in different lengths are separated by one.

Carriage return. (value hexa. 0D. As many lines than of triplets of points successively representing the X-coordinate, the ordinate suction face and the co-ordinate under-surface.

The co-ordinates are expressed like real numbers, ranging between 0 and 100.

The co-ordinates are calculated by dividing the co-ordinates on screen by the factor scale.

The factor scale is intended to bring back the values of the co-ordinates between 0 and 1, 0 being the crosshair point on the right, 100, the crosshair point on the left.

The three values are separated by a comma.

All the lines which do not comprise in first positions three real numbers are ignored.

An exception exists: it occurs when the designer of the profile considered that a point Y is not significant or does not have interest.

In this case the value of Y is replaced by a star.

The Visuaéro format is the following:

The extension is also .DAT.

The lines in different lengths are separated by one.

Carriage return. (value hexa. 0D. As many lines than of points, the co-ordinates is expressed like real numbers, ranging between 0 and 100.

The co-ordinates are calculated by dividing the co-ordinates on the screen by the factor scale.

The factor scale is intended to bring back the values of the co-ordinates between 0 and 1, 0 being the crosshair point on the right, 100, the crosshair point on the left.


The two values are separated by a comma.

All the lines which do not comprise in first positions two real numbers are ignored. In the same way, the analysis of the data starts as from the moment when co-ordinate 100,0 was found.


Icons


Icons the icon bar represented below Corresponds to the menu.





 File/open an image... Makes it possible to load a image (File BMP with the standard of Windows) into monochromic.


The PAINT utility in Windows easily enables you to convert images in this format.


 File/open a file WNG... Makes it possible to d.ouvrir a file WNG and to write a file DAT with format CNC


 File/open a file DAT (Visuaéro). Allows to d.ouvrir a file DAT with the Visuaéro format and to write a file DAT with format CNC. This file will be called " xxxx.DAT "


 File/open a file DXF (AutoCad). Allows to d.ouvrir a file DXF with the AutoCad format and to write a file DAT with format CNC. This file will be called " xxxx.DAT "


 File /Fermer l.image.. Makes it possible to close l.image open and to work simply on co-ordinates.


 File/quit.. Makes it possible to leave the program. If you modified a file of co-ordinates, the program will ask you Whether you want to back up your work.


 File/generate file DAT.. Makes it possible to generate files DAT and PSC

 Display /List of the co-ordinates. A clic on this button allows Display the list, another clic makes it possible to hide it.

 File / Handing-over with zero of the co-ordinates. the table of the co-ordinates will be entirely emptied.

 Display /Zoom x0,5.. It s.agit d.un back zoom allowing to visualize four times (2 x2) the initial surface of screen. This option is useful when you treat big images or big layouts.

 Display / cut. This button brings back the contents of l.écran to its initial size.

 Display /Zoom x2.. It s.agit d.un zoom before allowing to visualize the contents of l.écran more precisely.



Even action that above with a zoom four times more powerful



Carry out a vertical symmetry of the drawing (mirror)



Center the drawing in the North-eastern quarter of l.écran



Grille/Pas of grid. Default option, the program n.affiche not of grid for l.aide to the data entry of the points.



Grille/Grille with the step of 20. The program displays a grid d.aide with the data entry separated by 20 points d.écrans



Grille/Grille with the step of 50. The program displays a grid d.aide with the data entry separated by 50 points d.écrans



Grille/Grille with the step of 100. The program displays a grid d.aide with the data entry separated by 100 points d.écrans



File/Analyse.. Positions the mode. analyze d.image.. L.analyse numerical of l.image go start as soon as you have select the starting point with l.aide some mouse or some keyboard.



Allow to undo the modifications. You can undo the last 10000 modifications.

Menus

Fichier

- Ouvrir an image
Makes it possible to d.ouvrir preferably a file image (File BMP with the standard of Windows) into monochromic.
L.utilitaire PAINT of Windows easily enables you to convert images in this format.
- To close l.image
Makes it possible to close l.image open and to work simply on co-ordinates.
- To open a file PSC
Makes it possible to d.ouvrir a file PSC (see technical description of this one below). A file PSC contains one. project. PROFSCAN, c.est with saying the co-ordinates of the points seized on l.écran as well as the sites of the axes and l.image possibly associated.
- To open a file WNG and to generate a DAT
Make it possible to d.ouvrir a file WNG (see technical description of this one below) and to generate a file with format DAT CNC.
- Ouvrir a file DAT(Visuaéro) and to generate a DAT

Permet de d.ouvrir a file DAT with the Visuaéro format (see technical description of this one below) and to generate a file with format DAT of CNC. This file will be written with the same name as the file of origin plus the character C For example file " CLARKY.DAT " will be called " CLARKYC.DAT " with format CNC.

- Générer a file DAT
Permet to generate files DAT and PSC.
- Return to zero of the **co-ordinates**
Permet co-ordinates to entirely empty the table of the co-ordinates.
- Quit
Makes it possible to leave the program. If you modified a file of co-ordinates, the program will ask to you whether you want to back up your work.
- Analysis Positions
the mode. analyze d.image.. numerical L.analyse of l.image will start as soon as you select the starting point with l.aide mouse or keyboard

Display

- Zoom x0,5 It s.agit d.un zoom allowing to visualize four times (2 x2) the initial surface of l.écran. This option is useful when you treat great images or great layouts.
- Real size Brings back the contents of l.écran to its initial size.
- Zoom x2 It s.agit d.un zoom before allowing to visualize the contents of l.écran more precisely
- Zoom x4 Même action that above with a zoom four times more powerful
- List co-ordinates Display the list of the co-ordinates. The list is sorted on the n° points. a double clic on a line allow of modify the co-ordinate of point
- Mirror vertical Turn over the drawing Center the drawing
- Center the drawing on the screen compared to point (0,0)

Grid

- Not of grid
Default option par défaut, the program n. Display not of grid for l.aide with data entry of point
- Grid with not of 20
The program display a grid d.aide with data entry space of 20 point
- d.écrans Grid with not of 50
The program display a grid d.aide with data entry space of 50 point
- d.écrans Grid with not of 100
The program display a grid d.aide with data entry space of 50 point

Parameters

- Paramètres graphiques

- Permet de personnaliser les paramètres graphiques de Profscan (voir la fenêtre)
- **Répertoires**
Permet de mémoriser le répertoire pour les fichiers traités par Profscan (voir la fenêtre)

To Do: See where to place the search of the maxx When one is in analysis, to change the shape of the cursor (plane)