Tangram Technical Note

Scan Unknown
Tangram V4.02

Rev.	Date	Change Reason
1	07-06-2018	First Release

Sommario

Activate the Labs

The Unknown scanning is still under *beta test*.

For this reason, it is still a "*Lab"* feature (as we call not stabilized functions).
By default, the Labs entry in not visible and there are no labs active after the first installation of Tangram.
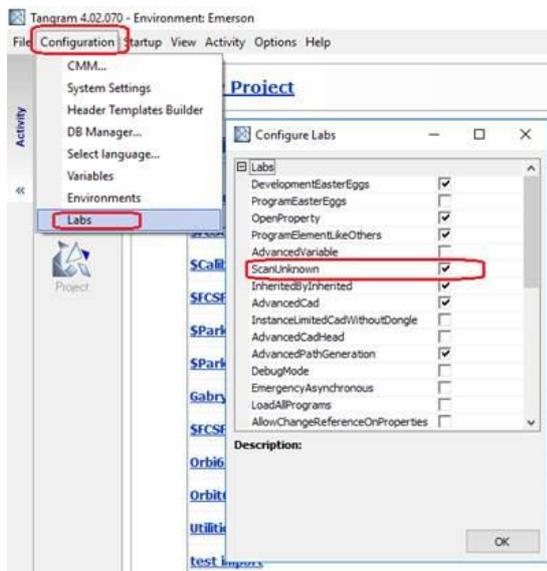
To make visible the Labs Entry it is required to do a manual operation and have a copy of the file **Labs.xml** inside the installation folder of Tangram (generally *C:\Program Files (x86)\itaca\Tangram*).
A copy of the Labs.xml is located inside the subfolder "*Tools\Labs"*.
What you have to do is manually copy the file from "*C:\Program Files (x86)\itaca\Tangram\Tools\Labs*" to "*C:\Program Files (x86)\itaca\Tangram*" and restart Tangram.

When the labs entry is visible you can activate them by selecting the related items in the list.
The Lab we are going to analyze is "Scan unknown".

Speed and acceleration

VERY IMPORTANT

As soon the scanning speed is only one inside Pantec, it is mandatory to pay attention to the speed and acceleration during the scanning.

Trying to run the Scan Unknown at full speed will probably have the result to lost the surface (with the corresponding anomaly)

In our machine we generally have scanning speed = 80mm/s

Generally, the speed used for unknown scanning must be set around 5% and acceleration around 10/20%

Setting higher or lower values depends by the surface to follow. Almost straight surfaces allow bigger value and sharp angles smaller value.

How Scan Unkown works

Inside Tangram, the default scanning is the known one. It means that, using the geometrical information (ScanOnCircle, ScanOnLine…) or the nominal path (ScanOnCurve) there is a computed path to follow. This path is executed even if the surface is missing.

To activate the ScanUnknown it is required to enable the "adaptive" option in Scan dialog.

For the moment, even if it is present inside every element take care that

- it works only with the element Curve
- the curve must be 2D
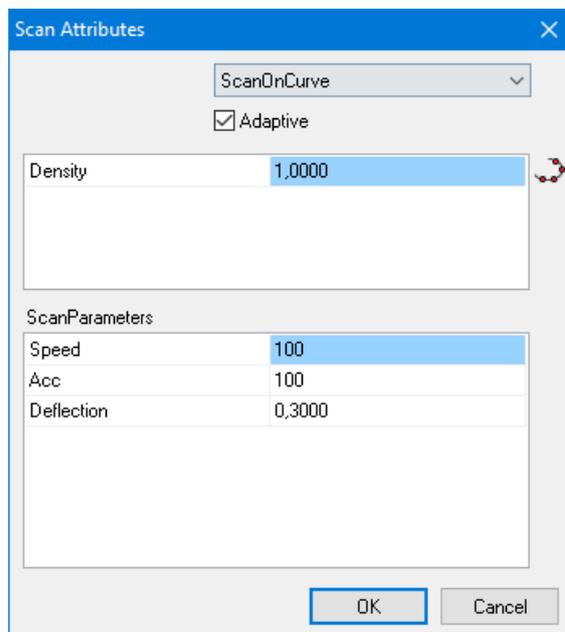
Once the Adaptive is activate, the scanning will work in significant different way respecting to no-adaptive.

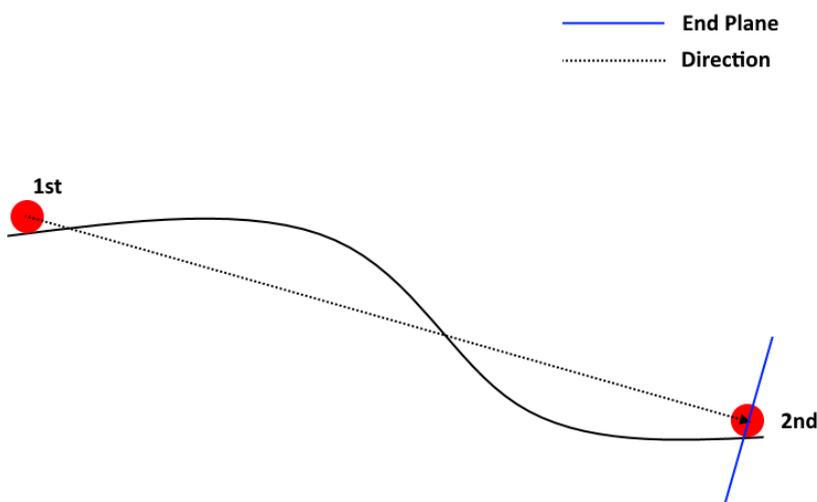It uses the points inside the nominal path in order the understand how to move using the following rules:

- It uses only "PMea" and "Mea" points. It ignores all the "Pos"
- 1st point is used as starting point. This will be the position where the machine will approach the surface
- Last point is used as end point.
- Direction computed between 1st to 2nd point is the direction of the scanning (projected on the working plane)
- Direction computed between second-last and last is the normal of the end-plane. When the scanning reaches the end-plane, it stops and retract.
- If the count of the points is bigger than 4, it uses only the first 2 and the last 2 ignoring all the points in between.

Using these rules, based on the number of points within the nominal path, the scanning will use from 2 to 4 points:
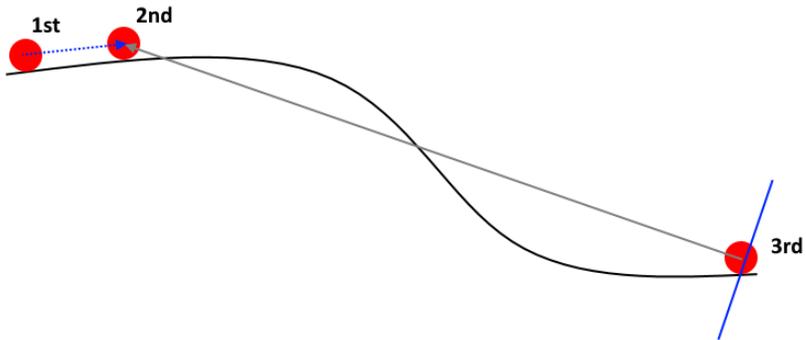
Number of points	Start from	End to	Direction	Normal plane
2 points	1st	2nd	1st to 2nd	2nd to 1st
3 points	1st	3rd	1st to 2nd	3rd to 2nd
4 points	1st	4th	1st to 2nd	4th to 3rd
>4 points	1st	"Last"	1st to 2nd	"Last" to "Last -1"

It is preferable to use 4 points because the scanning is more predictable.

Examples

End Normal

End Plane

Direction

1st   2nd

3rd

End Normal

End Plane

Direction

1st   2nd

3rd   4th