AlfaCAD v. 1.8 is here.

What is new:

1. Bézier splines

In addition to Bézier curves already available in previous versions of the program, the new version introduces multi-point Bézier splines based on - alternatively - fit points or control points. The program allows the user to draw a curve through a maximum of 256 points, determining a curve with a given, uniform tension parameter in each of the nodes.
Splines can be open or closed. In closed splines, the curve moves smoothly from the last point to the first point, keeping the same tension parameter at both nodes.
Spline drawing functionality comes with an entire toolbox, allowing the user to break a curve, trim a curve to the boundaries of other objects, including splines, extend lines and arcs to a spline, parallel copy (offset), divide into parts, and finally incorporate splines into a set of hatch boundaries and filling with a pattern, solid colour, or pattern of an image.
The calculation of the spline shape is based on a simplified algorithm which is a combination of the calculation of cubic Bézier curves, with a given tension in fit points or in calculated fit points for curves based on control points, where the simplification concerns the influence of the position of each point on the shape of only 2 spline segments on each side of the node.
The spline can also be a point location object when constructing other objects, offering to set the intersection point of a line perpendicular to the spline at a point or the closest point on the spline to the area indicated by the pointfinder’s frame.

When exporting a drawing to DXF format, the spline is saved in a native form, as a SPLINE object with the specification of the fit points or control points, the degree of the curve polynomial as well as the closure flag, however, due to differences in the algorithm for determining points on the curve for Bézier spline, unlike from quadratic and cubic individual Bézier curves, the shape of the spline may differ when editing the drawing in other CAD programs. Furthermore, the spline close flag is ignored in some programs (including AutoCAD).

2. The opacity of solids, traces, and single-color hatches.

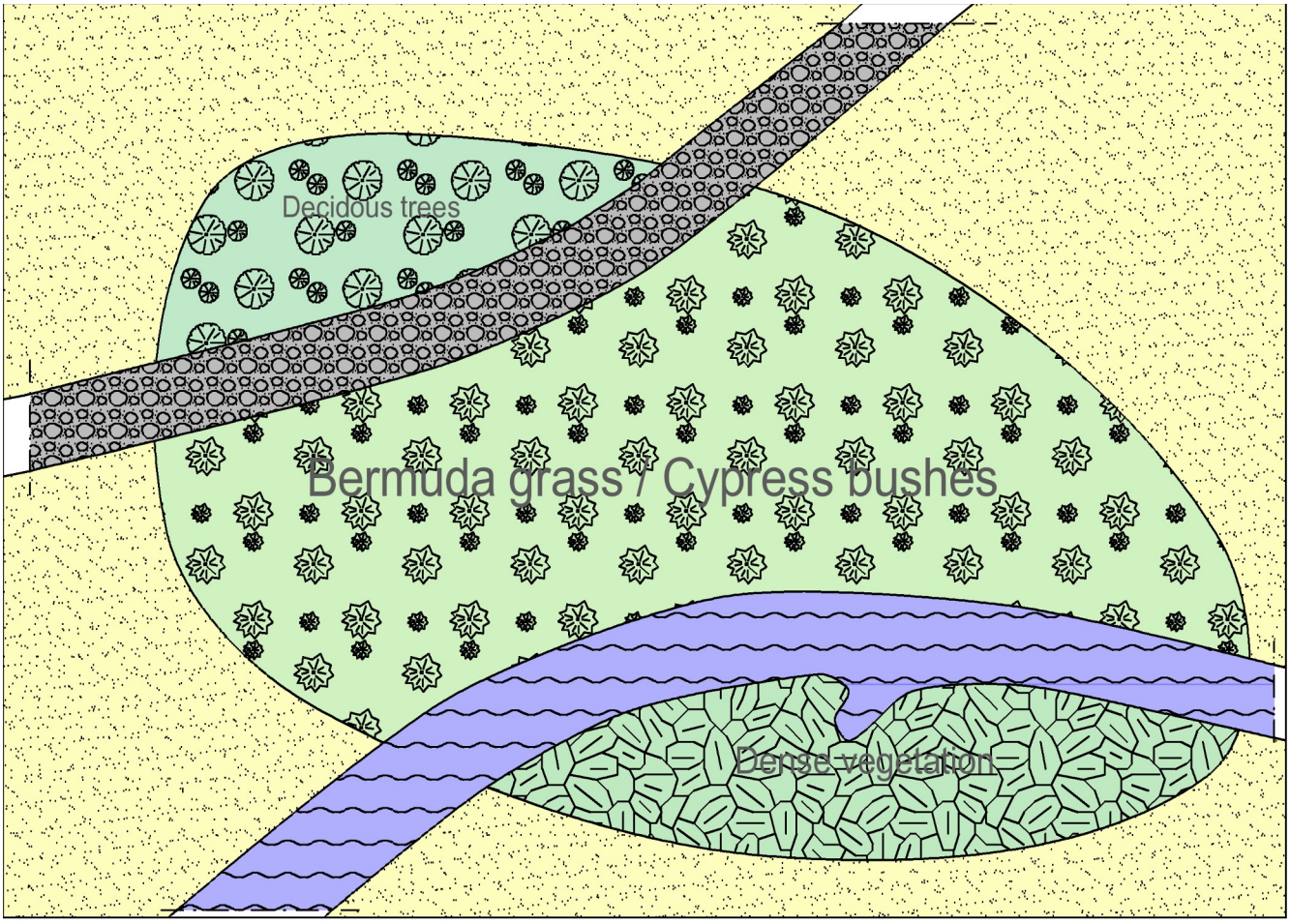
The Solid object has a new attribute - opacity. This parameter can take values from 0 to 255, however, to facilitate the selection, this parameter has been quantized to 5% of the range, so it can take values from 5%, 10%, 15%, etc. up to 100%.

The Trace object is a sorted chain of Solid objects, similar to a uniform colour hatch, where the closed boundaries of the hatch area are filled with Solid-type objects, approximating the area shape with a given accuracy. Both traces and hatches can have an opacity value different from 100% (default).

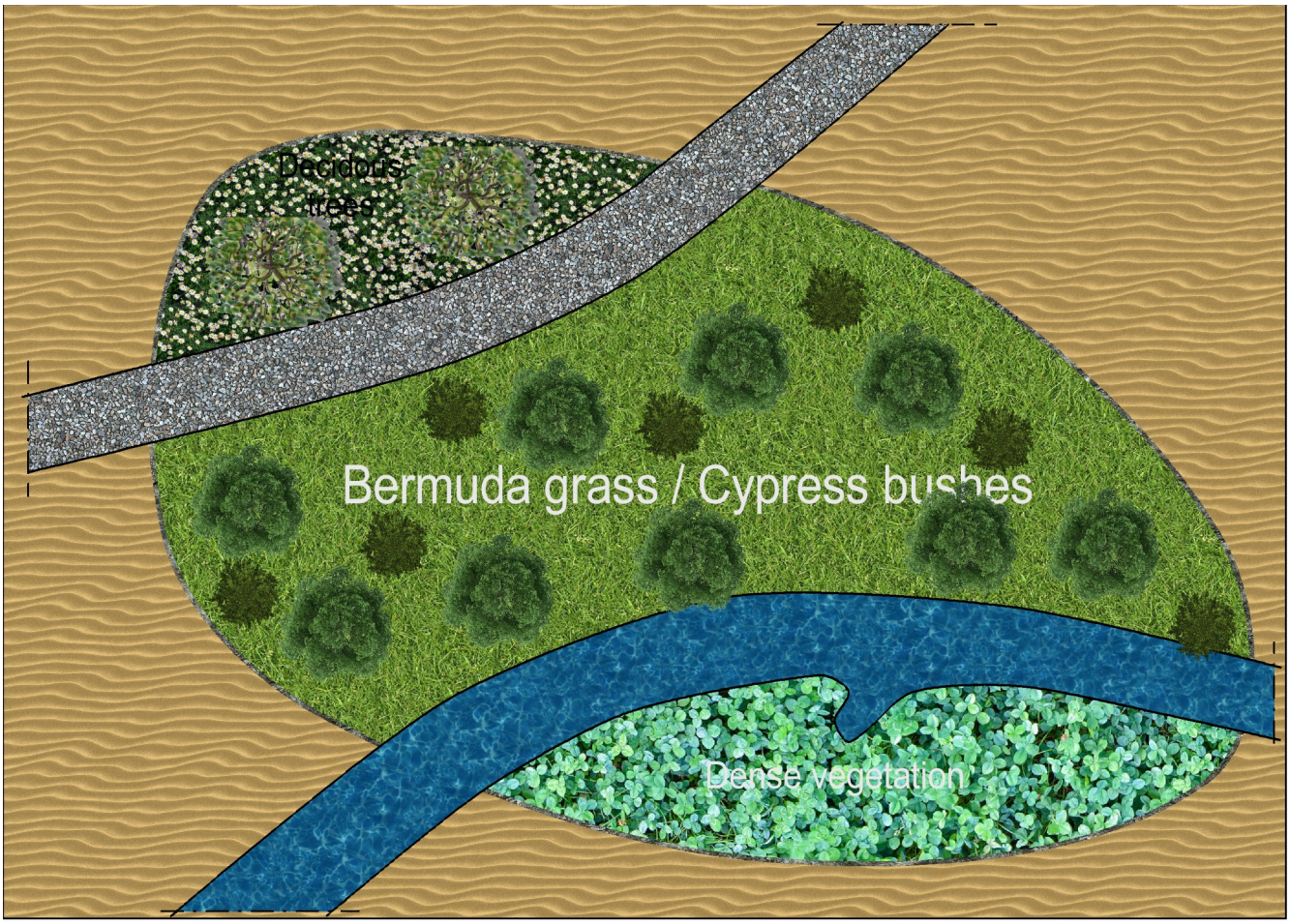
In the case of the Solid and Trace objects with a selected line thickness in exchange for a fill, the opacity parameter does not apply, because only the contour of the solid or trace with the specified line thickness is visible in the drawing.

For demonstration of new objects and attributes, here is such a naive, goofy but funny plan of a green island with a stream and a path. In the middle of the desert ...

As a schematic sketch using open and closed splines, then cut (broke) and trimmed, with vector hatch patterns combined with transparent colours:



And more decorated, using pictorial hatch patterns instead:



3. The best is yet to come …

Linux

Work on a version for Linux as a native application of the system is underway. So far, AlfaCAD can only be run on Linux using the Wine library, although despite the great progress (tested on version 7.7), the program does not work 100% well, and the problem concerns screen refreshing, when refreshing sometimes requires interaction, such as moving the cursor or interaction with the keyboard, which to some extent limits the usefulness of the program. The program has been tested on Fedora and Arch Linux. The Linux version requires some work and time…

Open Source

By decision of the sole developer of the program, AlfaCAD's source code will be made available to the community on an Open Source basis, under the GPL license.

For this, the AlfaCAD source code is cleaned of all garbage and the entire package and supporting libraries are put in order.
I will keep you posted on the progress of this matter. I think that in times of the dominance of giants or even monopoly on the implementation of CAD programs in engineering practice and among amateurs, a certain dose of freedom of choice still makes sense. Let AlfaCAD, along with other programs such as LibreCAD, Qcad, FreeCAD and several others, become an inspiration for those who want to know how CAD should or should not be done.

Enjoy AlfaCAD

author