Digital embroidery to teach ICT skills

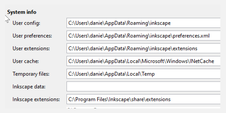
Objectives & rationale

- Contribute to ICT education and valorize digital embroidery as subject to be taught in both making and ICT classes

Digital embroidery:

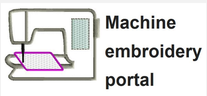
- allows learning vector drawing, programming, image manipulation, using complex software, installing software and general making skills,
- is a technology that works since the 1980s,
- includes an artistic component and appeals to a “non-technical” audience,
- is more environment-friendly than typical 3D printing and laser cutting projects and does not present any health risk.

System administration



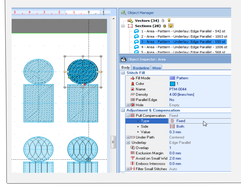
Installing open source software such Ink/Stitch (inkstitch.org) requires understanding the file system, permissions, managing zip files, etc. and following instructions to the letter.

Sharing & documenting



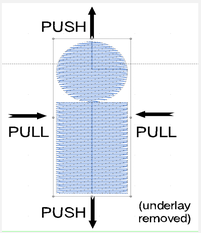
Embroidery being a very technical field, its practice encourages sharing, peer helping and participation in online communities.

Parameterization

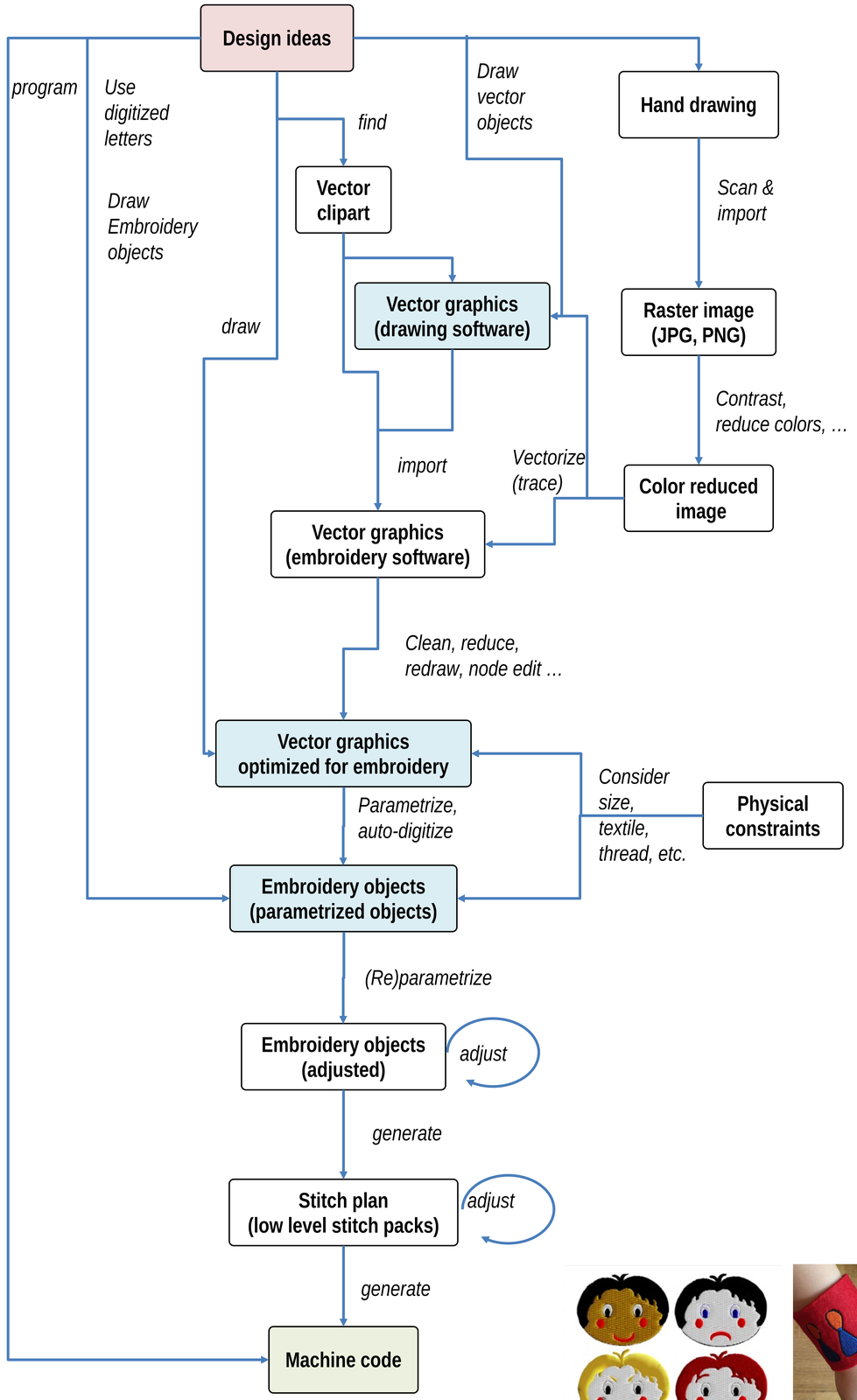


Using advanced commercial software such as Stitch Era (stitchera.com) allows training learners in parameterization, e.g., by examining objects, exploring menus and panels.

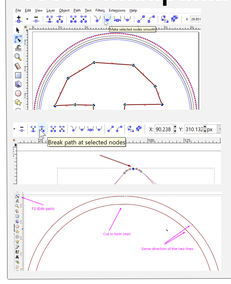
Physical constraints



Each fabrication method must consider different constraints. Students will learn that a model on the screen may not «print» as expected. Model design with any making technology has to take into account material parameters.

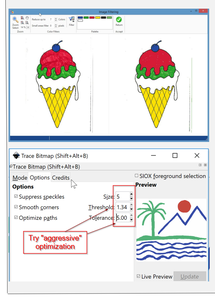


Vector manipulation



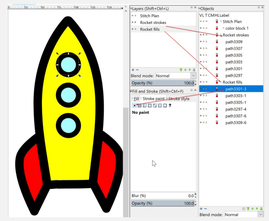
Imported or created vector “paths” must be reshaped, broken, glued, etc.
This encourages learning advanced functionally of a vector drawing program or a vector drawing module.

Image manipulation



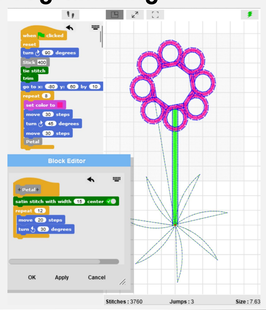
Embroidery projects can start from scanned hand drawings. These raster images then need to be vectorized. Before doing so, images have to be simplified e.g., color reduction, change contrast, remove specks are useful skills for other contexts. Vectorizing is a common task in multimedia design.

Vector drawing



Vector drawing is a useful ICT skill. E.g., to create drawings in Word or PowerPoint, illustrations in learning materials, or shapes for computer animations.

Programming



Turtle Stitch (turtlestitch.org) is a browser-based educational programming language (based on Snap!) to generate patterns for embroidery machines. It is easy to use, requiring no prior knowledge in programming, yet powerful in creating novel patterns for embroidery.

Faclab http://faclab.ch
tecfa http://tecfa.unige.ch
ARBORES http://arbores.tech

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