New Cloth Modeling for Designing Dyed Patterns
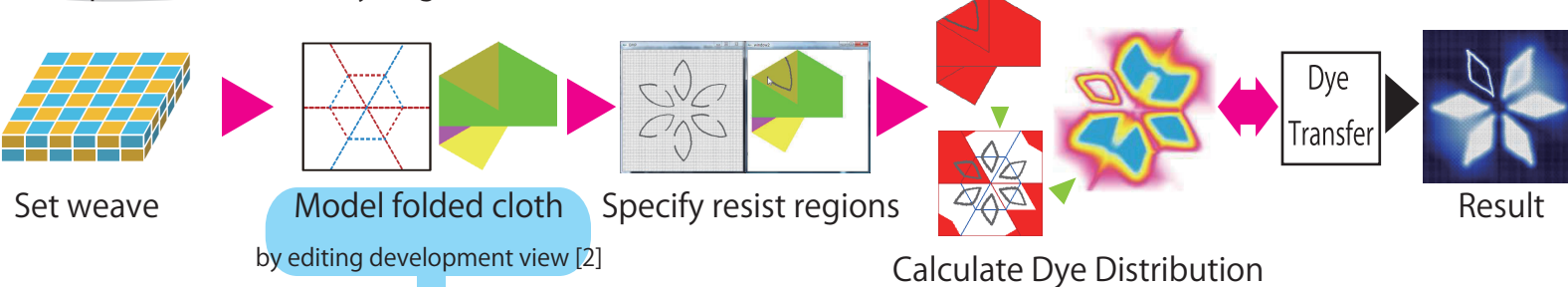
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<Real Dyeing Process>

Cloth weave → Resist Dyeing (Fold, stitch, clump, bind...) → Add Dye ↔ Dye Transfer → Result

dyer / cloth / dyebath

<Computer-Generated Dyeing Framework [1]>

Set weave → Model folded cloth by editing development view [2] → Specify resist regions → Calculate Dye Distribution ↔ Dye Transfer → Result

<Problems of development view editing for 3D folded cloth geometry>

Dyeing requires an order to fold

Some folding orders exist for one development view.

Folding multi-patterns is diffucult

How to specify a 3D folded cloth of multi-folding patterns?

Intuitive stitching operation

Specifying folding lines is not intuitive.

<Our System>

Sequential folding

View: 3D, 2D

Local folding operation

a) Line drawing   b) Division

Any folding operation for each separated cloth parts.

Stitching operation
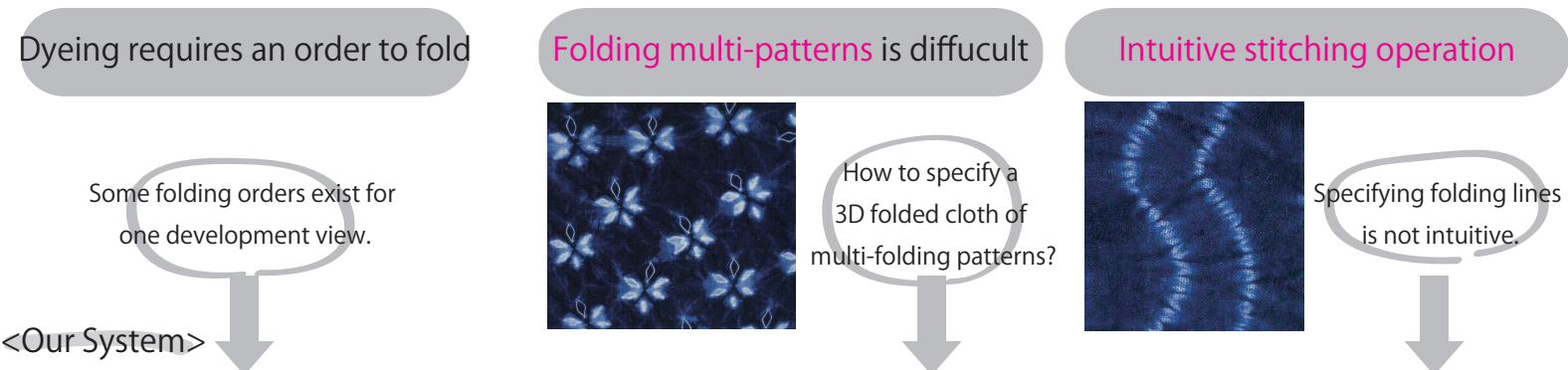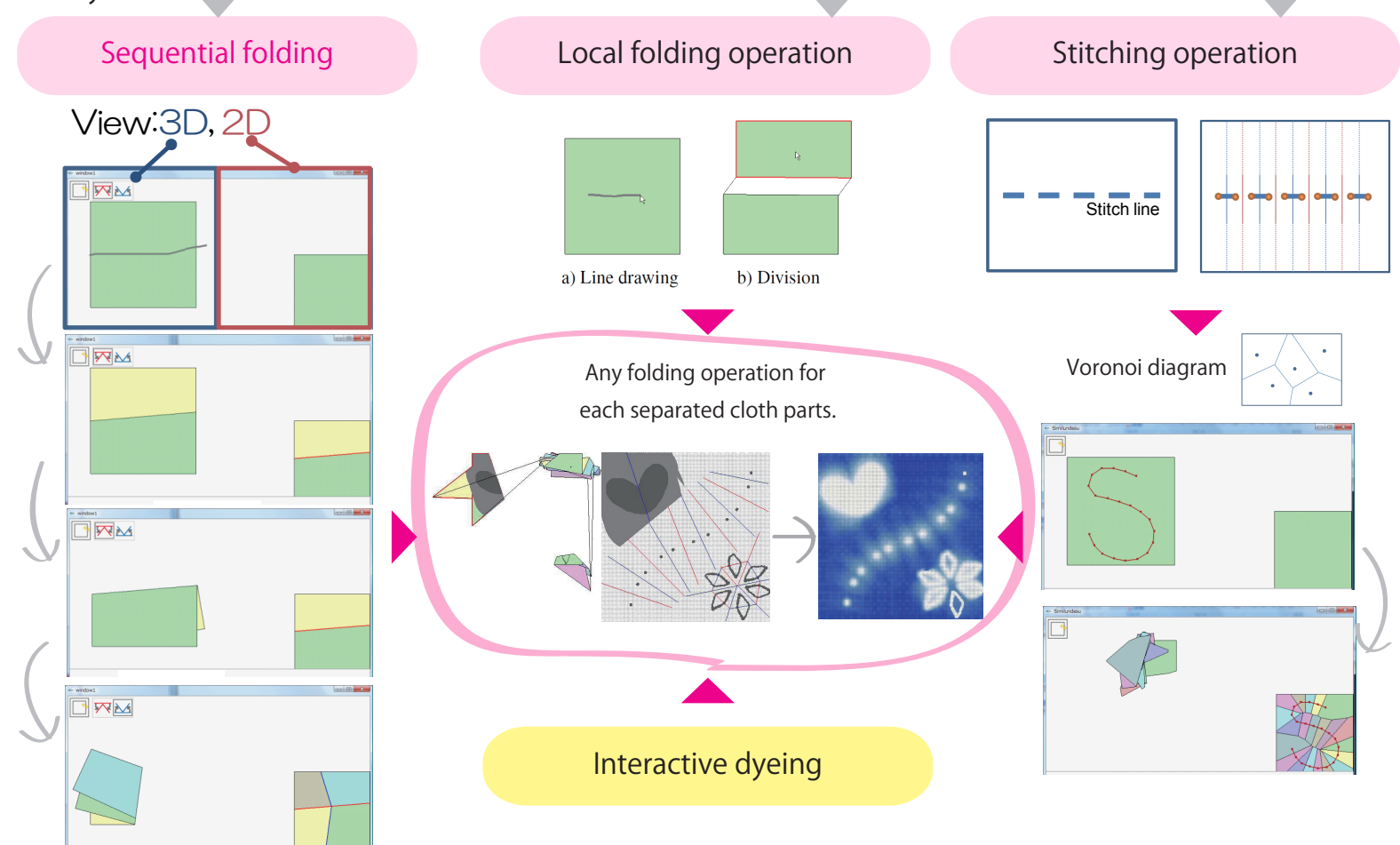
Stitch line

Voronoi diagram

Interactive dyeing

[1] Yuki Morimoto, Kenji Ono, "Computer-Generated Tie-Dyeing using a 3D Diffusion Graph", Proceedings of ISVC10 (6th International Symposium on Visual Computing), Las Vegas, USA, 2010.11.28-12.2, pp. 707-718

[2] Mitani, J.: The folded shape restoration and the CG display of origami from the crease pattern. In: 13th international Conference on Geometry and Graphics. (2008)