Let’s Build Our Own Personalized Open Textile Production Line

Hong Phuc Dang, 31c3

fashiontec.org

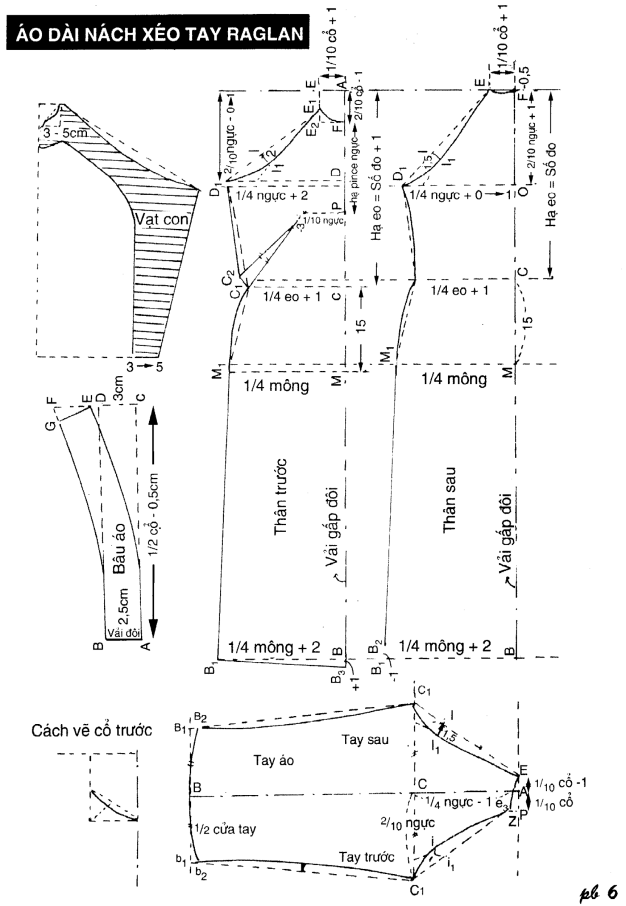
About me

Hong Phuc, FOSSASIA, Textiles

@hpdang

@fossasia

I am from Viet Nam



Let's make a *Revolution*

for the Textile and Garment Industry?

The system is broken.

Let's fix it.

TEXTILE and GARMENTS just aren’t fair. Night work in the not so shiny parts of Dubai

Globalisation race to the bottom in consumer prices and prevailing of the worst working conditions - Here Nike Sweatshops in China and Vietnam

Crashed Garment Factory in Bangladesh “as seen in the news”

I make 115 USD per month. This is 4.40 Dollar per day. My average shift is 13 hours per day.
I am working in the Tay Do Factory in Can Tho, Vietnam. One month has 26 working days.

Embroidery Dharavi, Mumbai, Ekabhishek CC Share Alike

TEXTILE and GARMENTS just aren't environmentally friendl

TEXTILE and GARMENTS just aren't *local* anymore

Marginal garment production in Europe and the US

↘

Traditional Knowledge (tk) gone.

Clothes don’t fit!

No standard sizes even within the EU but plain CHAOS.

Women have issues to find the right clothes for their bust size.

Men’s shirts never seem to fit the arm length.

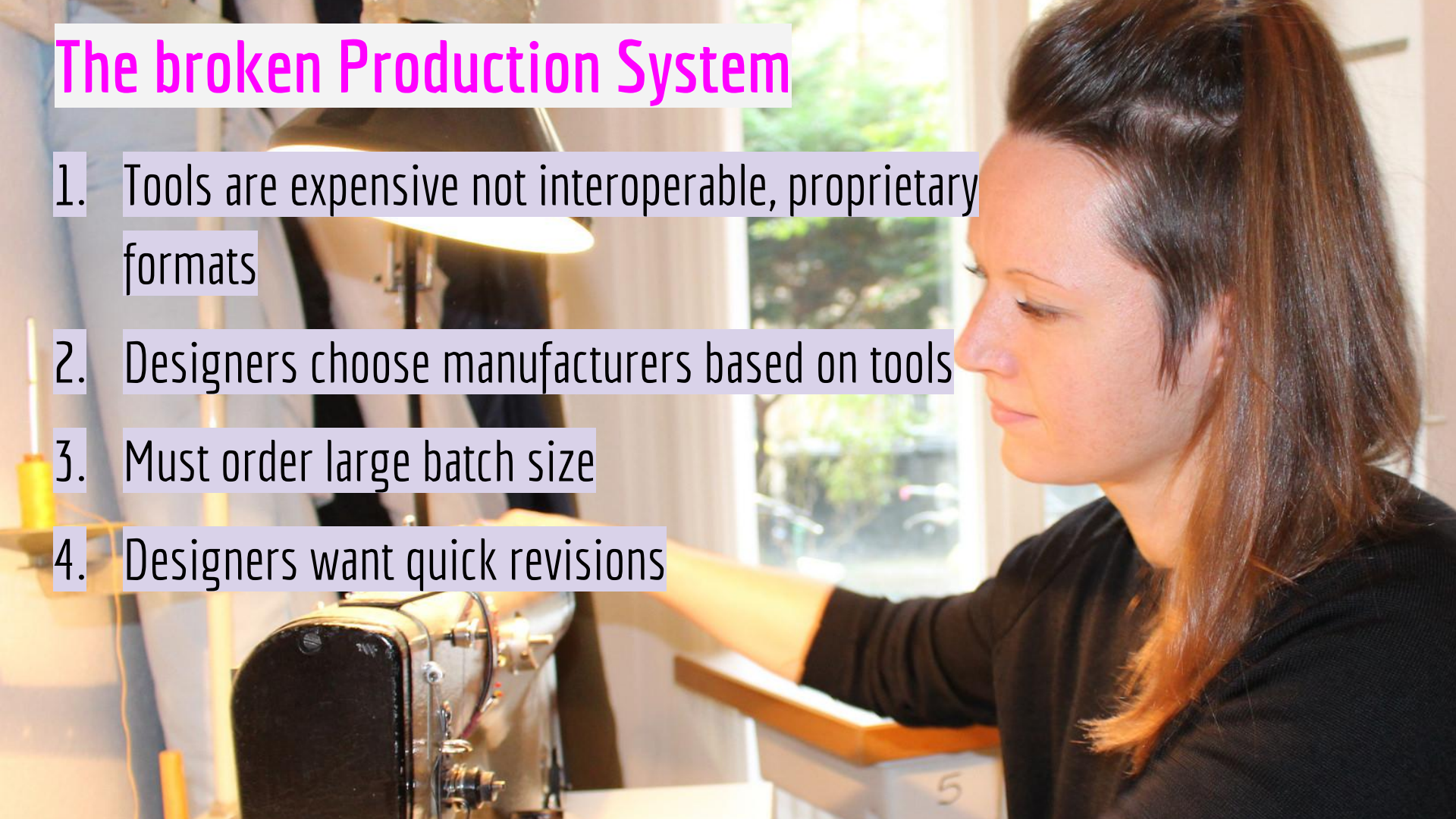
UNITED STATES	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28
EUROPE GERMANY	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
FRANCE	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62
ITALY	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64
AUSTRALIA UNITED KINGDOM	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
JAPAN	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33
CHINA	155 - 160 80 - 84	160 - 165 84 - 86		165 - 170 88 - 90		167 - 172 92 - 96		168 - 173 98 - 102		170 - 176 106 - 110					
KOREA	44	55		66		77		88							
BUST (IN)	**32.25**	**33.5**	**34.75**	**36**	**37.25**	**38.5**	**39.75**	**41**	**42.25**	**44**	**46.25**	**48.5**	**50.5**	**52.5**	**54.5**
(CM)	82	85	88.5	91.5	94.5	98	101	104	107.5	112	117.5	123	128.5	133.5	138.5
WAIST (IN)	**25**	**27**	**29**	**30.5**	**32**	**33.5**	**35**	**36.5**	**38**	**39.5**	**41**	**42.5**	**44.5**	**46.5**	**48.5**
(CM)	63.5	68.5	73.5	77.5	81.5	85	89	92.5	96.5	100.5	104	108	113	118	123
HIPS (IN)	**33.5**	**35**	**36.5**	**38**	**39.5**	**41**	**42.5**	**44**	**45.5**	**47**	**48.5**	**50**	**52.5**	**54.5**	**56.5**
(CM)	85	89	92.5	96.5	100.5	104	108	112	115.5	119.5	123	127	133.5	138.5	143.5

Broken Customer Relationship

No room in the current large industry model for made-to-measure clothing in tools and design.

The broken Production System

1. Tools are expensive not interoperable, proprietary formats
2. Designers choose manufacturers based on tools
3. Must order large batch size
4. Designers want quick revisions



The broken Distribution System

- Need huge distribution channels to handle huge production runs
- Small & medium designers get no access to industry channels
- No space for smaller designers in corporate stores like H&M, Zara, Esprit...

Broken Textile & Garment Industry

For designers

Distribution

Production

For customers

HOW
to get
it right for
Yvonne
& the
rest of us

We will Solve the Challenges in the Industry and build our own local production lines

New interfaces for garment and textile production:

- Free Open Source Tools (Software + Hardware)
- Open Data Formats
- Open Garment Marketplaces

.: Kimmy Tailor :.

kimmytailor.com/component/clothshop/index.php?option=com_clothshop&collection=8&ms=men&v=measurement

Kimmy CUSTOM TAILOR

Handmade Luxury Apparel

Username Password Forgot your password? Create an account Login

Home Products Fabrics Resellers About Us Faqs Contact Us

What is happening already

Select Design | Style Detail | Pick a Fabric | Measurement | Check out

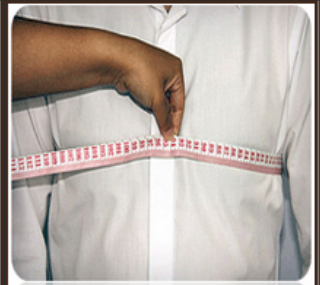
BACK NEXT

Kimmytailor Suit Questionnaire Size: (in cm)

Examples

Neck

Put the measuring tape around your neck right below the Adam's apple/ voice box. To provide some extra space and to ensure a comfortable fit please put one finger between the neck and the tape.



Chest

Take the chest measurement at the fullest part of your chest. Pass the measuring tape directly through the armpit and across the fullest part of your chest while keeping it at the same level on the back. Stand in a relaxed upright position and breathe out while measuring.

Waist

Take the waist measurement at its fullest part, usually right above your navel.Stand upright and relaxed and breathe out while measuring.

Front Width

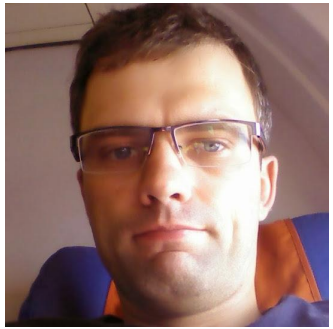
The front width is measured at chest level from the left-hand side intersection of arm and chest to the right-hand side of the same intersection. Please keep your arms straight and close to your body while being measured.

3D Body Measurements

Prototype Showcase:
freelayers.org

Free Software - Code:
github.com/fashiontec/

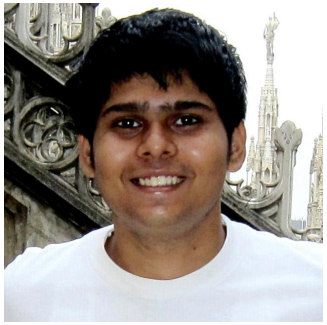
Body-Apps International Contributors



Joerg Henning (Germany)

Prashant Kiran (India)

Ayantha Randika (Sri Lanka)



Vishv Brahmbhatt (India)

Mario Behling (Germany)

foss asia

Open Formats - HDF

- Human Definition Format
- Container format, similar to ODF
- Structured data (XML) + binary (images)
- MIME: “application/vnd.org.valentina.hdf”
- github.com/fashiontec/hdf

```
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  <given-name>Hong Phuc</given-name>
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  <sex>female</sex>
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```
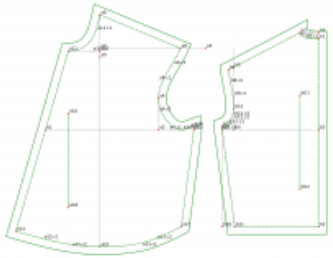

Open Source Patternmaking

Tau Meta Tau

Processing

Project Valentina

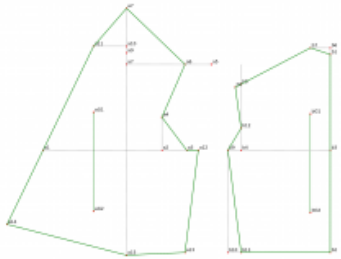


Documentation, Patterns, Tutorials

Creating a Pattern as an Inkscape Extension: Part 4

Continuation of Part 3 STEP 8: ADD CONTROL POINTS AND CREATE THE CURVES Curves are stored in SVG files as bezier curves. Bezier curves in Tau Meta Tau Physica are defined with 4 points: a start point, two control points and

February 5, 2013 / Comments Off

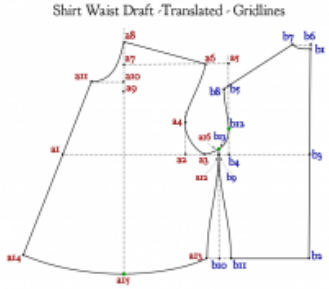


Documentation, Patterns, Tutorials

Creating a Pattern as an Inkscape Extension: Part 3

Continuation of Part 2 STEP 6: CREATE THE SVG OBJECTS The formulas we've written calculate the x,y coordinates for each point. They don't create the SVG elements that we see on the Inkscape canvas. If we wrap each of these formulas

February 2, 2013 / Comments Off

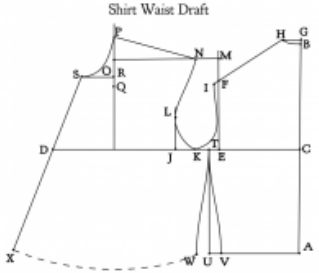


Documentation, Patterns, Tutorials

Creating a Pattern as an Inkscape Extension: Part 2

Continuation of Part 1 Here is the pattern with the new points added: STEP 4: RENAME THE POINTS The next step is to convert each point into a naming convention. The pattern pieces are single capital letters. The Front Bodice will

February 2, 2013 / Comments Off



Documentation, Patterns, Tutorials

Creating a Pattern as an Inkscape Extension: Part 1

This diagram and the instructions below were re-created from Practical Sewing and Dressmaking, Sara May Allington, Boston: Dana Estes and Company, 1913. 1. Draw Line A-B length of Back Length measure. 2. From A measure on line A-B Underarm measure. Mark this

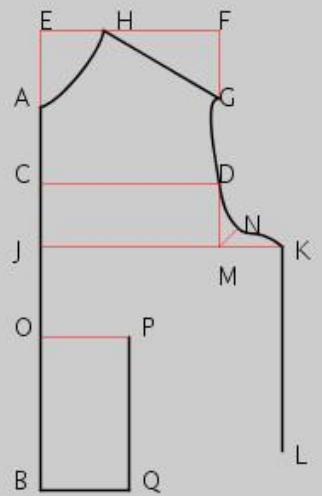
processing_sketch_pattern

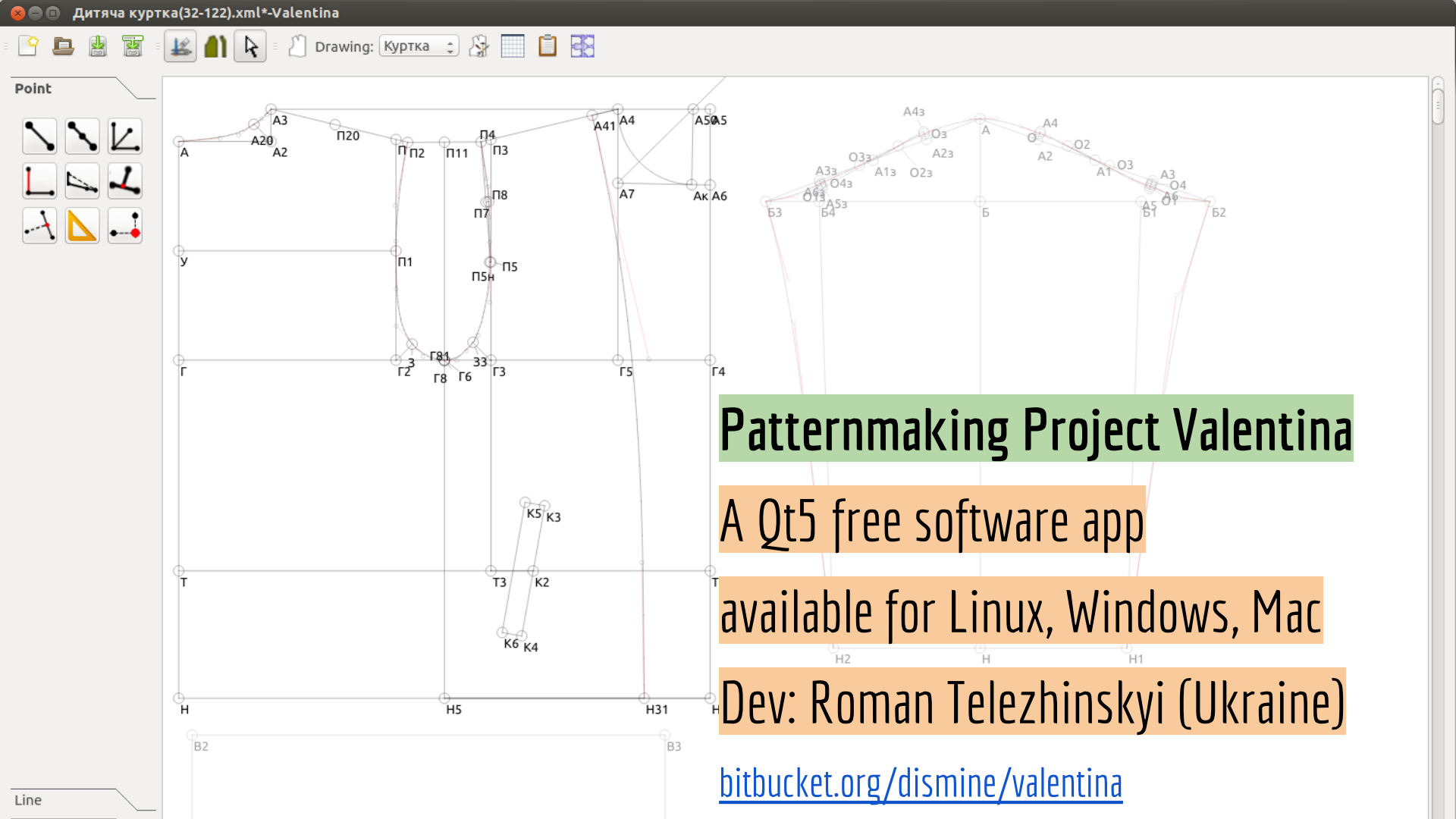
processing_sketch_pattern | Processing 2.0b8

processing_sketch_pattern §

```
float ADy = ACy;
float AEx = AAx;
float AEy = ABy - front_shoulder_height;
float AFx = dist(ACx, ACy, ADx, ADy) + 1/2;
float AFy = AEy;
float AHx = AEx + neck_width/2;
float AHy = AEy;
float AGx = AFx;
float AGy = AAx - (dist(AAx,AAy,AEx,AEy) - sqrt(sq(front_shoulder_seam) - sq(dist(AHx,AHy,AFx,AFy))));
float AJx = ABx;
float AJy = ABy - 1.375 - (1.014*side_seam_length);
float AKx = AJx + front_full_width/2;
float AKy = AJy;
float ALx = AKx;
float ALy = AKy + side_seam_length;
float AMx = ADx;
float AMy = AJy;
float ANx = AMx + sin(45)*7/8;
float ANy = AJy - sin(45)*7/8;
float AOx = ABx;
float AOy = ACy + dist(ABx, ABy, ACx, ACy)/2;
float APx = (AEx + AFx)/2;
float APy = AOy;
float AQx = AOx + dist(AOx, AOy, APx, APy) - 1/2;
float AQy = ABy;

//code for the front bodice start from here
size(500,500);
scale (15.0, 15.0);
translate (10, 10);

noFill();
```

processing_sketch_pattern




Дитяча куртка(32-122).xml*-Valentina
Drawing:
Куртка
Point
Line
Patternmaking Project Valentina
A Qt5 free software app
available for Linux, Windows, Mac
Dev: Roman Telezhinskyi (Ukraine)
bitbucket.org/dismine/valentina

Embroidermodder

Create your own embroidery designs in the CAD program.

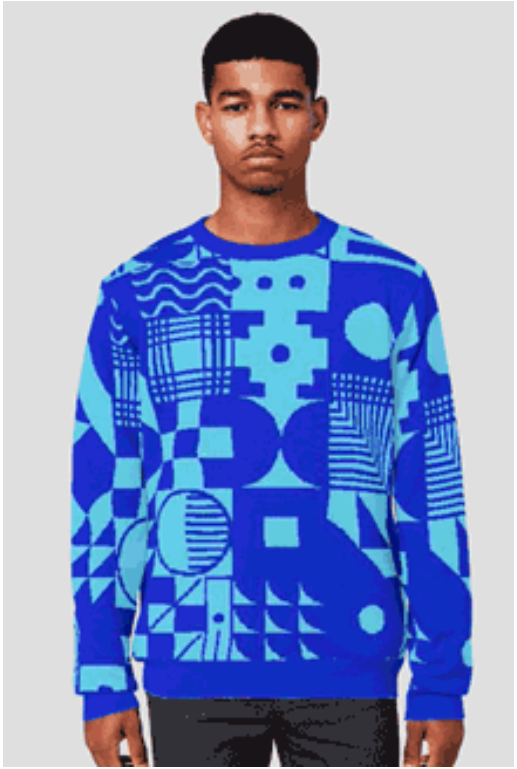
Then generate embroidery files for home or commercial machines.

github.com/Embroidermodder/

Josh Varga

Jonathan Greig

Customized Knitting Patterns



Knyttan shop in London connects Designers to People to make clothes that last

Ref. knyttan.com

Open Source Knitting

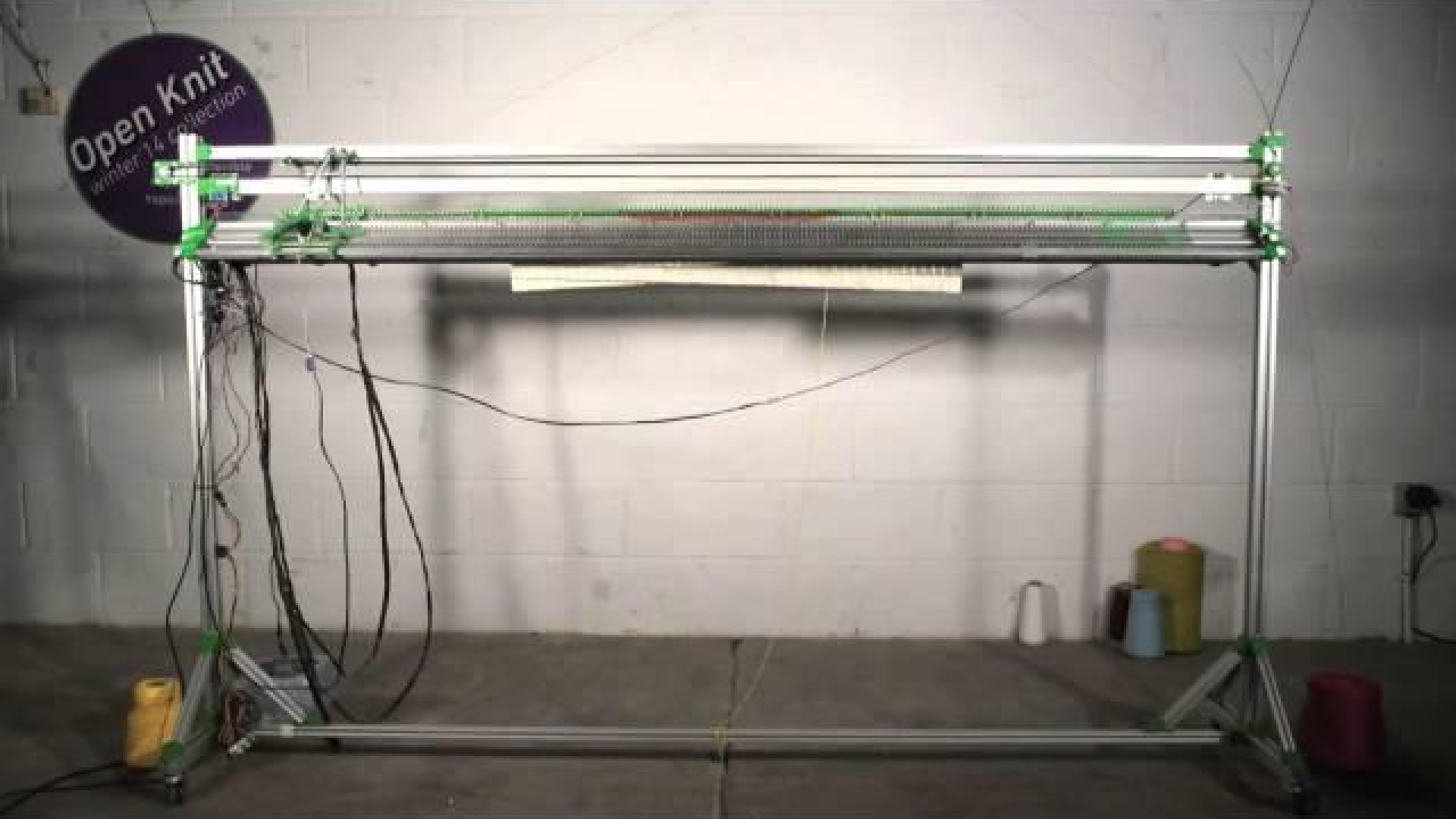
Open Knit: Gerard Rubio

Video: vimeo.com/90035643

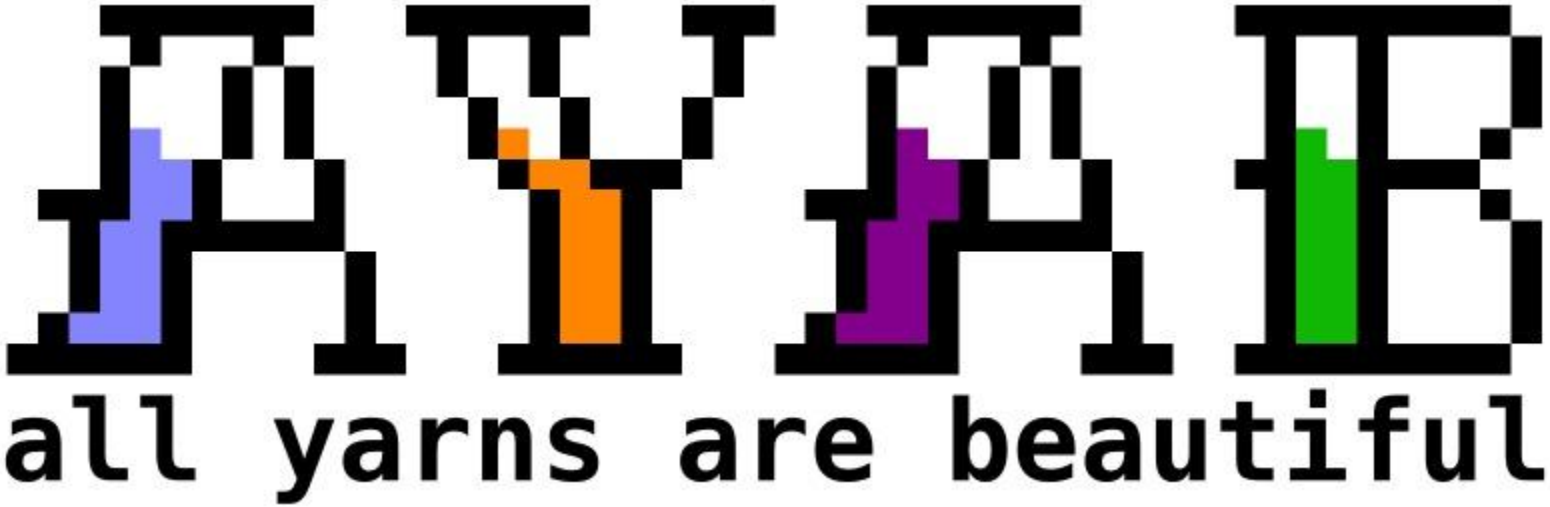
Hardware: github.com/g3rard/OpenKnit

Knitic Software: Mar Canet

github.com/mcanet/knitic


Open Knit

AYAB Knitting



Live Demo: Christian and Andz (Munich) | ayab-knitting.com

What are the next steps: We need

more machines to hack and liberate

fashiontec maker spaces

software developers & designers

to restart local production everywhere and control environmental standards

makers to start their own businesses and Open Fashion Stores

Our Own Personalized Open Textile Production Line - How can you help

- Hacking machines - sewing, stitching, crocheting, embroidery machines
- 3D printing experts to build our own machines
- Join our OpenXLab network of makers
- Your idea ‹here›

Addi Knitting Machine

Where to meet #FashionTec in 2015

FOSDEM, Brussels, Jan 31/Feb.1 (Room Internet of Things)

FOSSASIA, Singapore, March 13-15 (Open Hardware Track)

OpenTechSummit, Berlin, May 15 (Open Hardware Track)

MeshCon FashionTec Week, Berlin, Oct. 6-12

Thank you
-› Questions
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