Intelligent Nesting & Cost Simulation

tilia Phoenix for Digital Corrugated

Tyler Thompson | *Tilia Labs Inc.*

With Special Guests

ZÜND swiss cutting systems

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Tyler Thompson

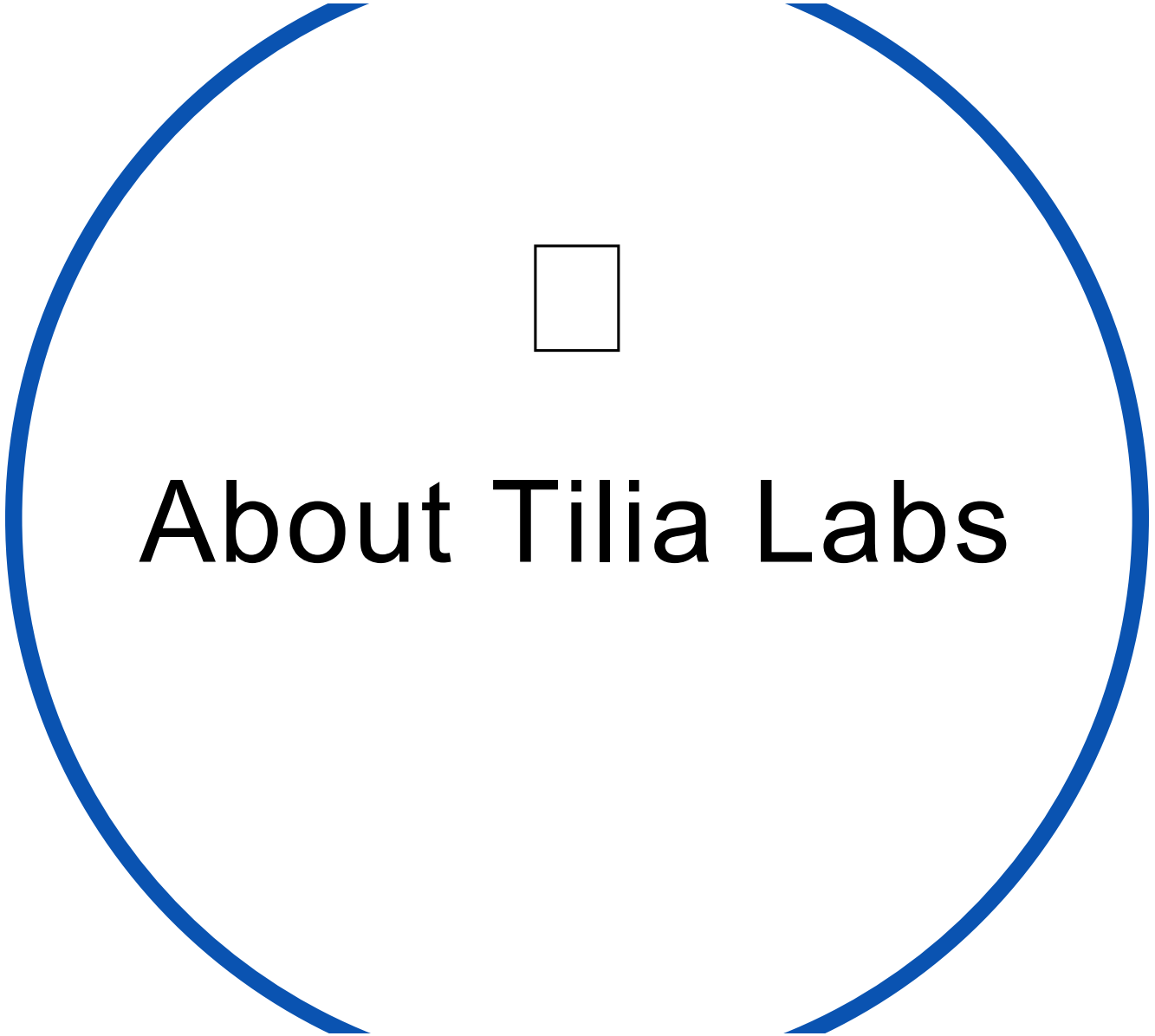
Solutions Director | Tilia Labs Inc.

ABOUT ME

- M.Sc. Degree Denver University | Computer Information Systems *(2019)*
- B.Sc. Degree Clemson University | Graphic Communications *(2012)*
- Tilia Labs Inc. | Director, Solutions *(2018-Present)*
- Esko-Graphics | Sales *(2012-2018)*
- Based in South Carolina
- tyler@tilialabs.com

Presentation Agenda

1. Introduction to Tilia Labs
2. What is the Internet of Things?
3. Introducing tilia Phoenix Nesting (*incl. demo of new IoT integration*)
4. Questions & Answers



About Tilia Labs

About Tilia Labs

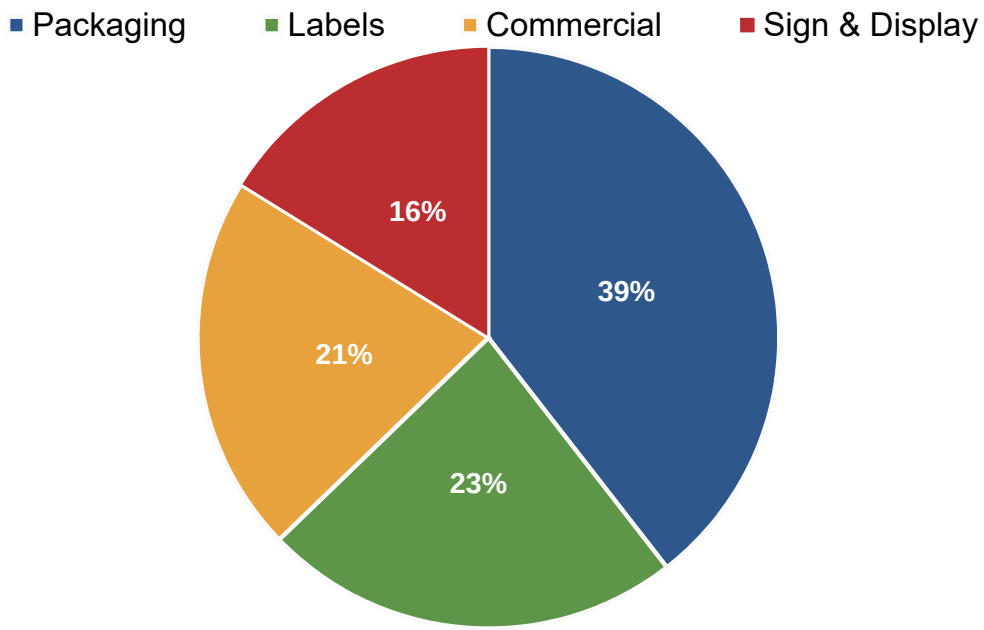
SOFTWARE COMPANY

- 2019 InterTech Award Recipient **(True-AI)**
- Software company founded in April 2012
- Based in Ottawa, Canada
- Small highly skilled group of developers
- Over 500 licenses sold YTD
- Global distribution in over 32 countries

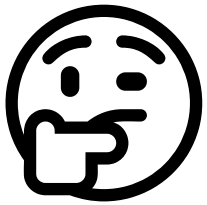
PRODUCTS

- tilia Phoenix ***(Flagship Product)***
- tilia Griffin *(sign & wide-format)*
- tilia Aries *(label step & repeat)*
- tilia Cloud *(cloud-based licensing)*

Customer Markets



What even is Internet of Things?



Alexa

Amazon

Family Hub

Samsung

Home Security

SimpliSafe

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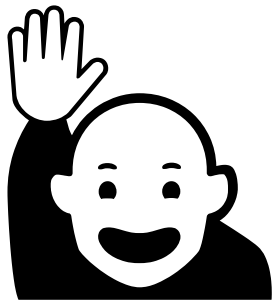

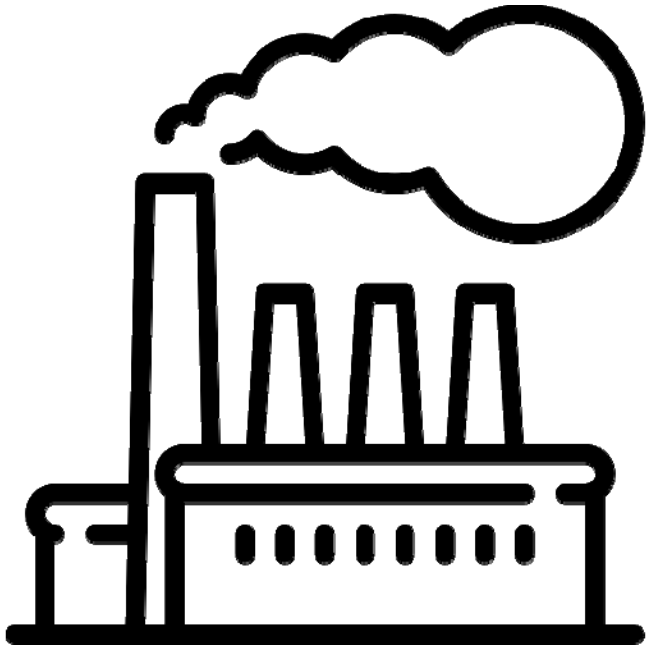

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Track-and-Trace

RFXcel

Self-Driving Vehicles

John Deere

Safety Wearables

IBM

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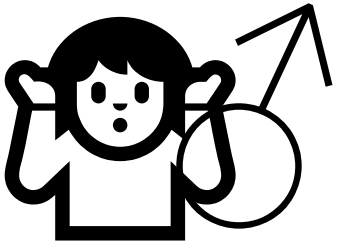
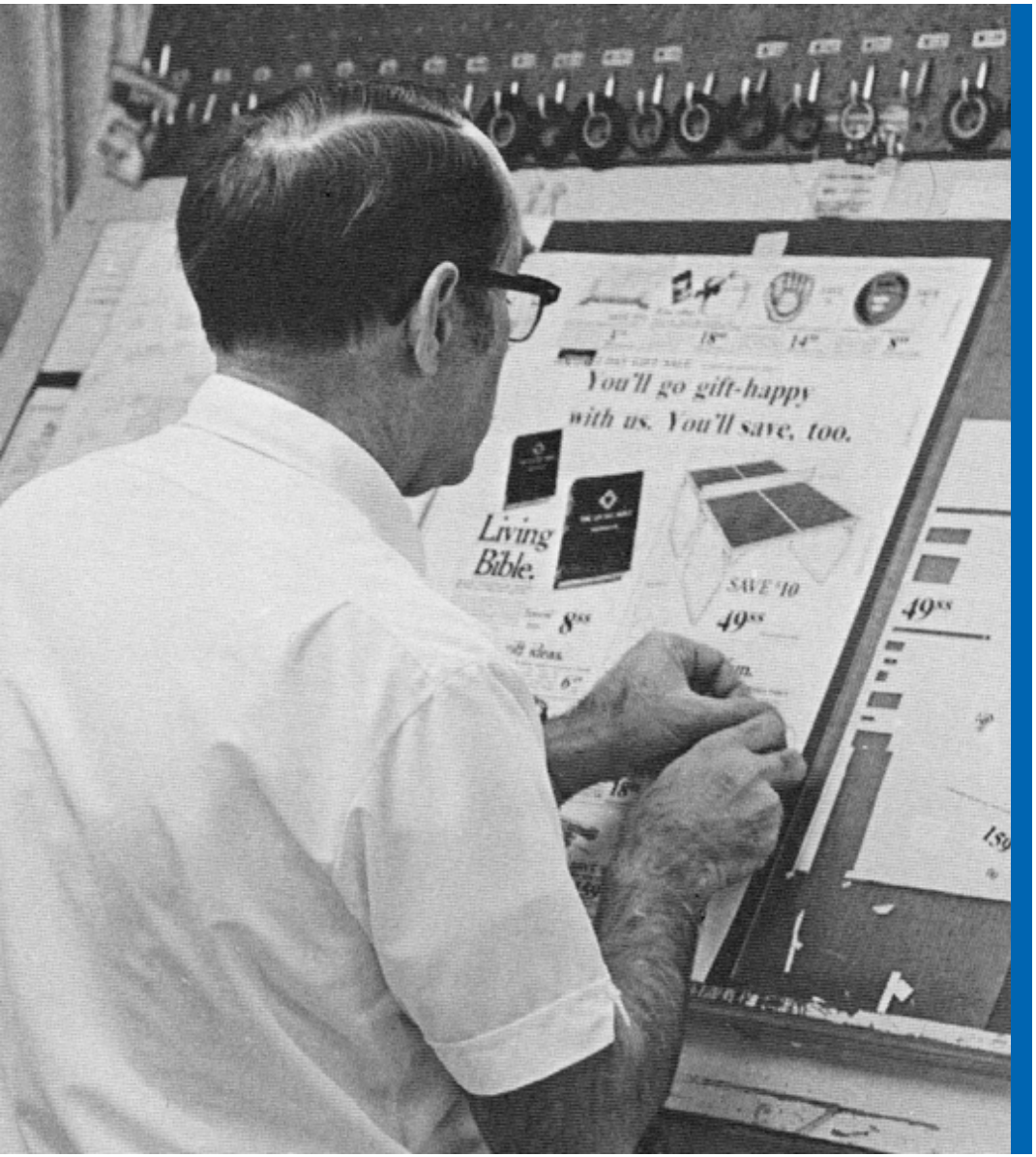
How can we use IoT in our business??





Estimating & Planning

- Manual process (Adobe Illustrator)
- Based off bounding boxes and rough machine speeds (Excel Calculators)
- May take hours or days of work to estimate
- Jobs nested and handled one-by-one at the RIP

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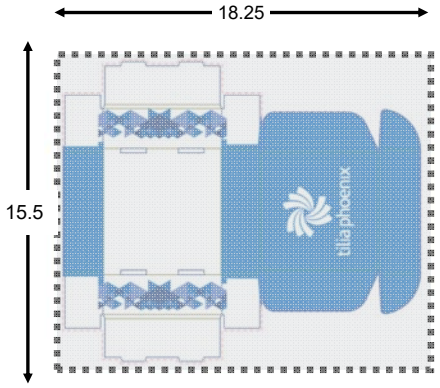
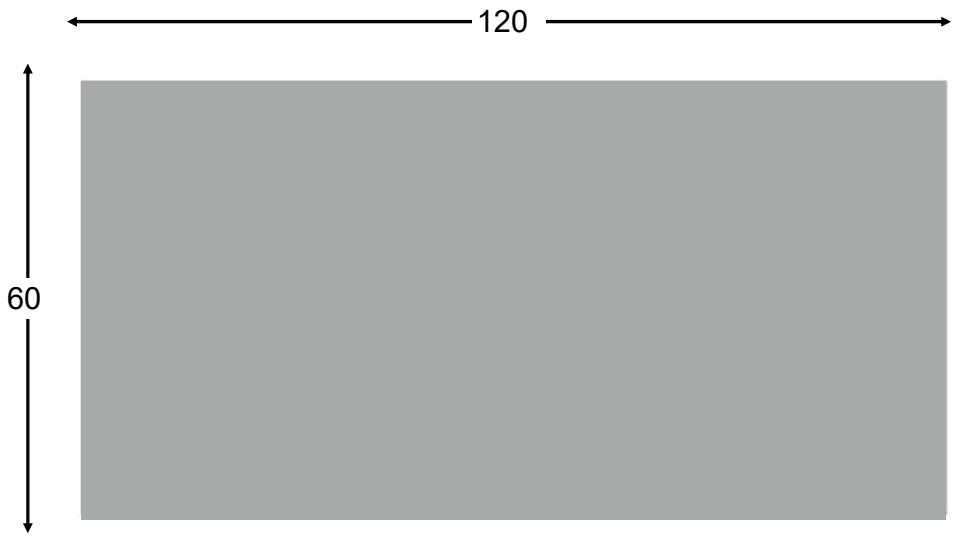
How Are We Estimating Today?



Sku 1
Qty: 500

	# up	# of sheets	Time on Press	Finishing
Totals	???	???	???	???



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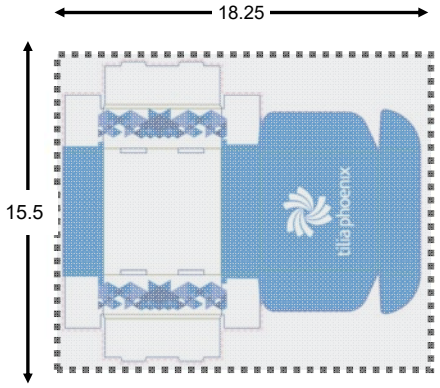
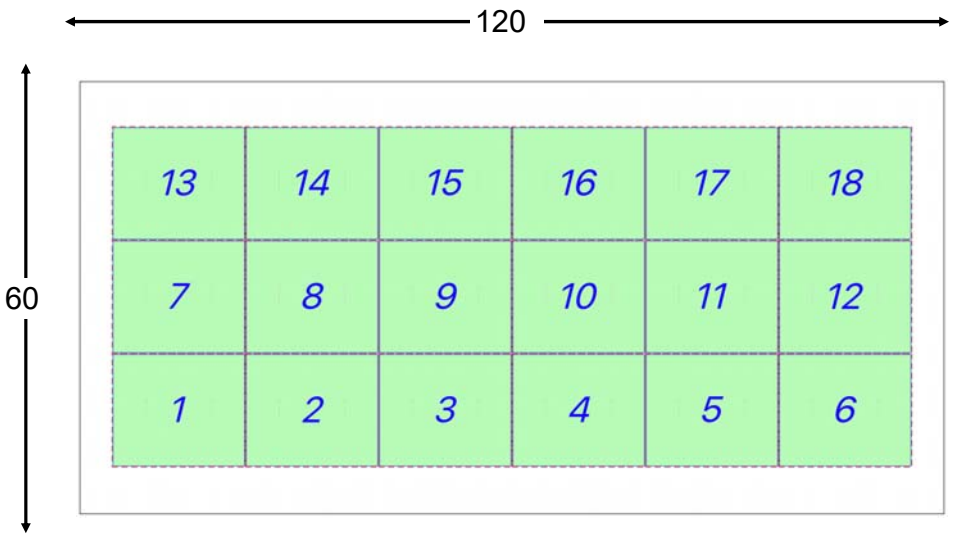
Did you get these results?



Sku 1
Qty: 500

	# up	# of sheets	Time on Press	Finishing
Totals	18	28	1h 7m	**???**

Press Speed = 25 beds/hr



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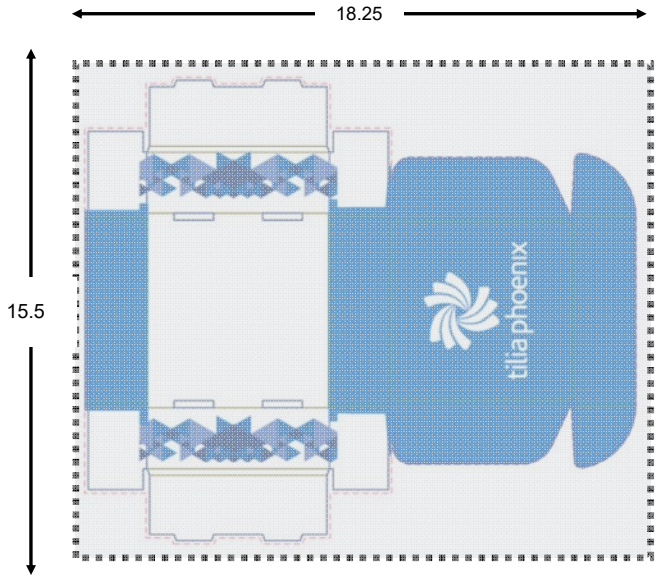
What about finishing?

Compexity	Inches / Second
Low	40 in/sec
Medium	25 in/sec
High	10 in/sec
Super High	4 in/sec

+ 1 min per board for manual offload



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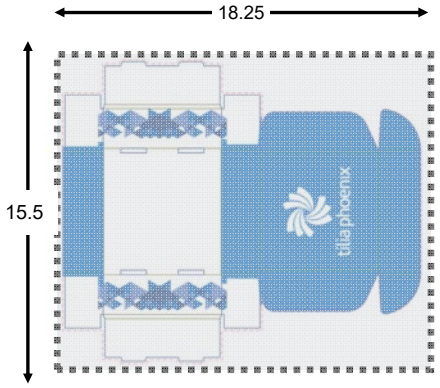
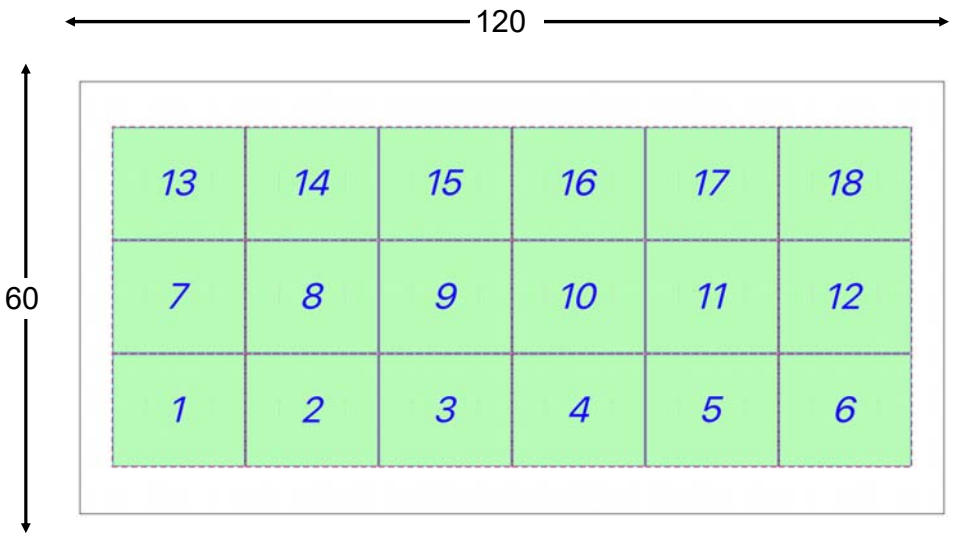
Our estimate looks like this



Sku 1
Qty: 500

	# up	# of sheets	Time on Press	Finishing
Totals	18	28	1h 7m	**1h 15m**

Press Speed = 25 beds/hr



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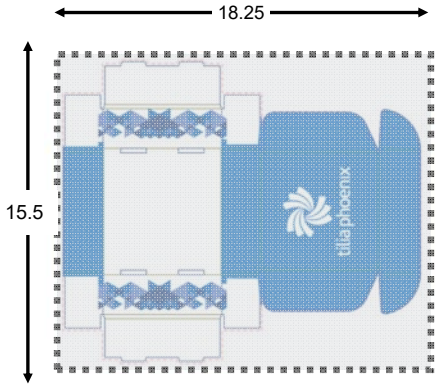
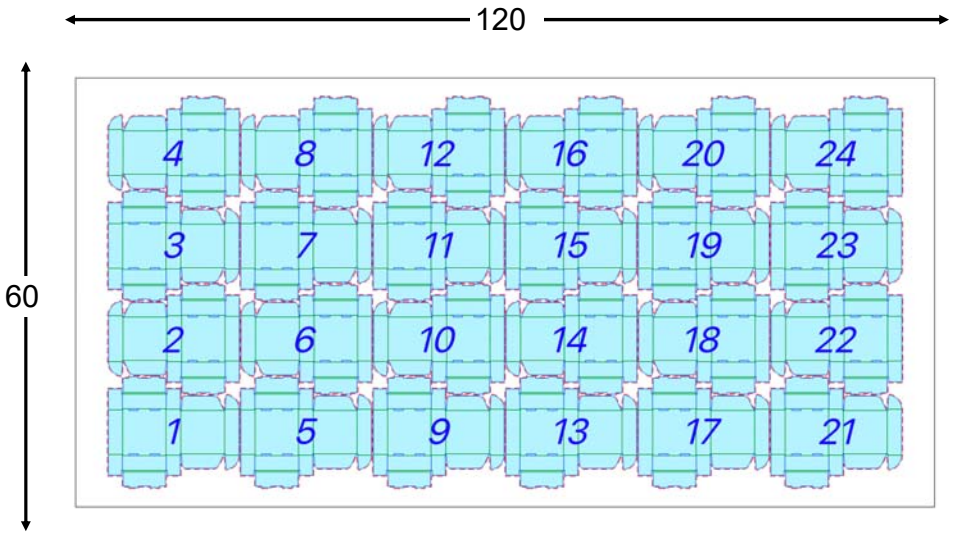
How we end up producing



Sku 1
Qty: 500

	# up	# of sheets	Time on Press	Finishing
Totals	24	21	51m	3h 15m



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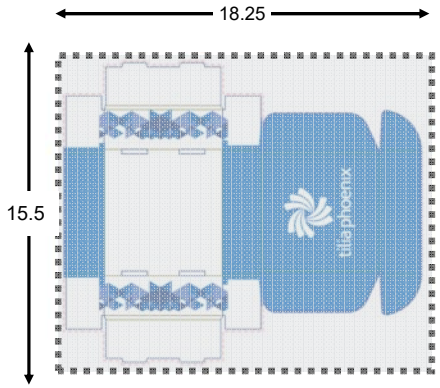
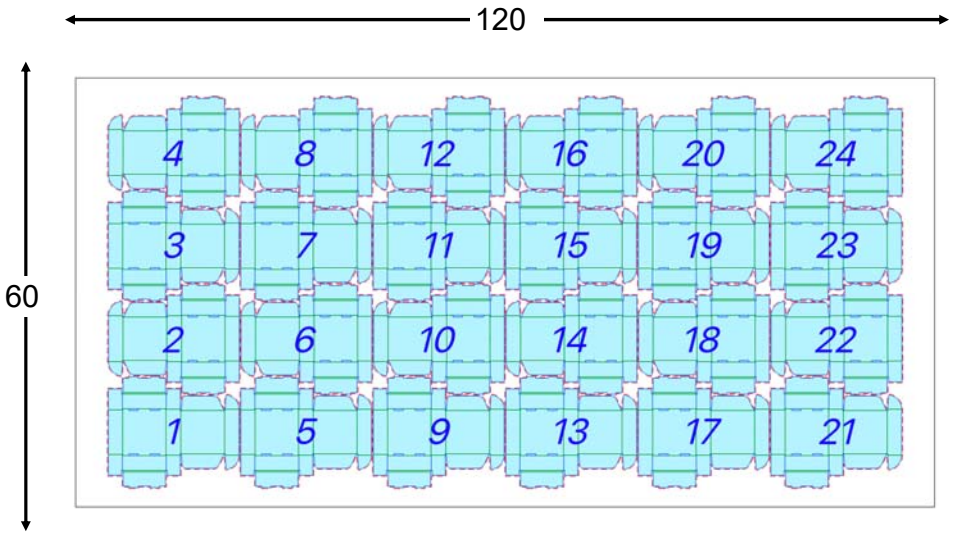
Estimation Restults



Sku 1
Qty: 500



	# up	# of sheets	Time on Press	Finishing
Estimation	18	28	1h 7m	1h 15m
Actuals	24	21	51m	3h 15m
Difference		*+7*	*+16m*	*-2h*
Cost		**+$21**	**+$75**	**-$560**

	Hourly Rate
Printer	$280/hr
Cutter	$280/hr

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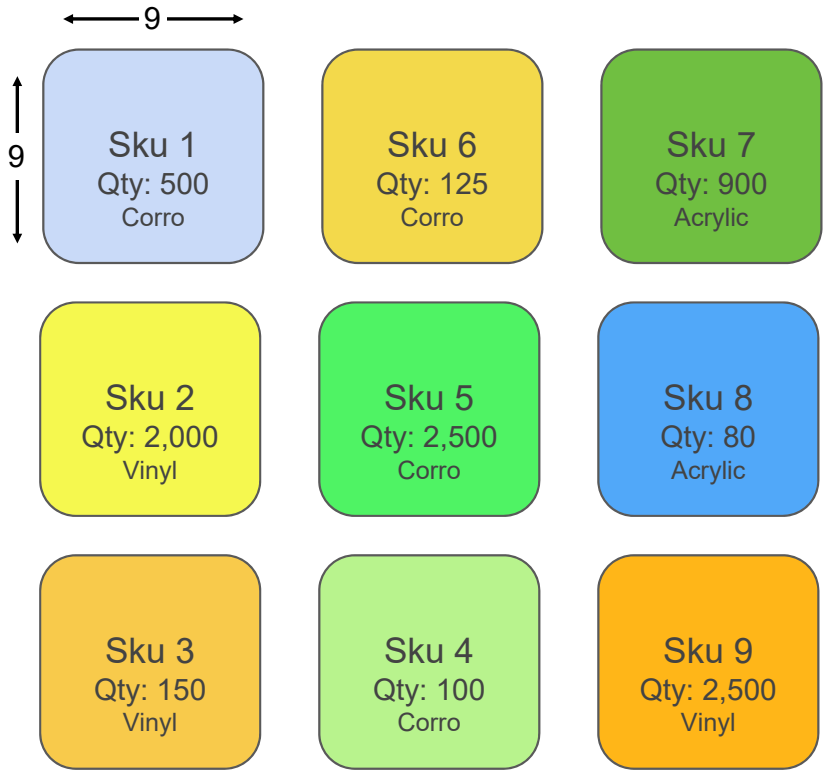
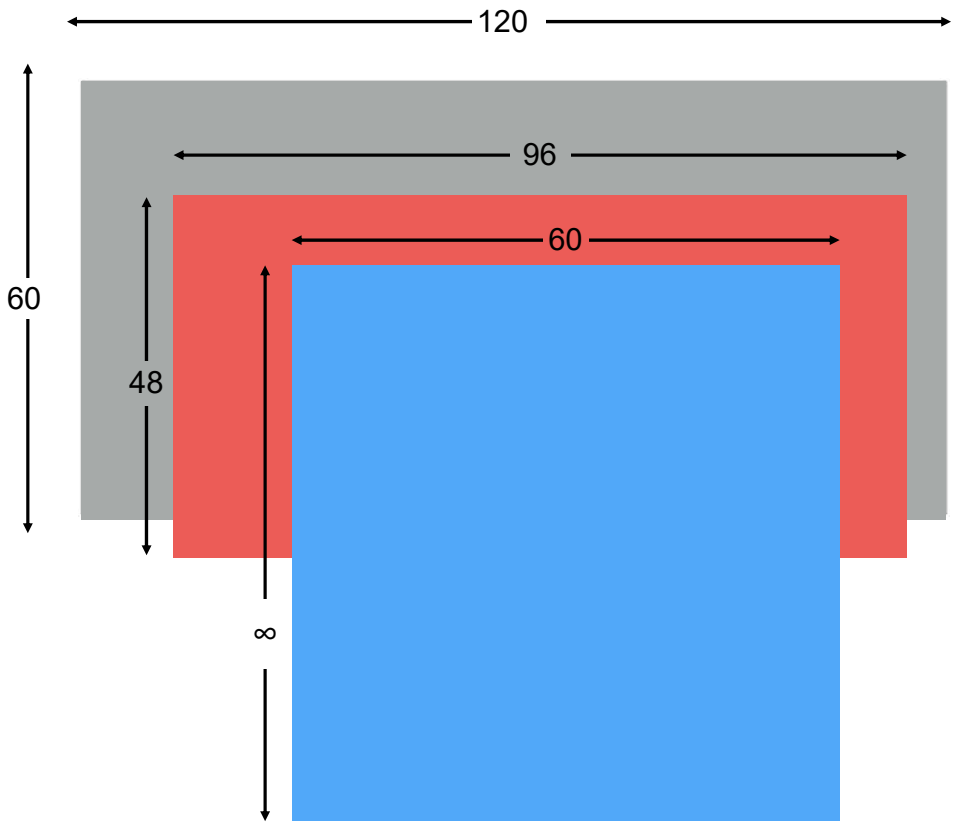
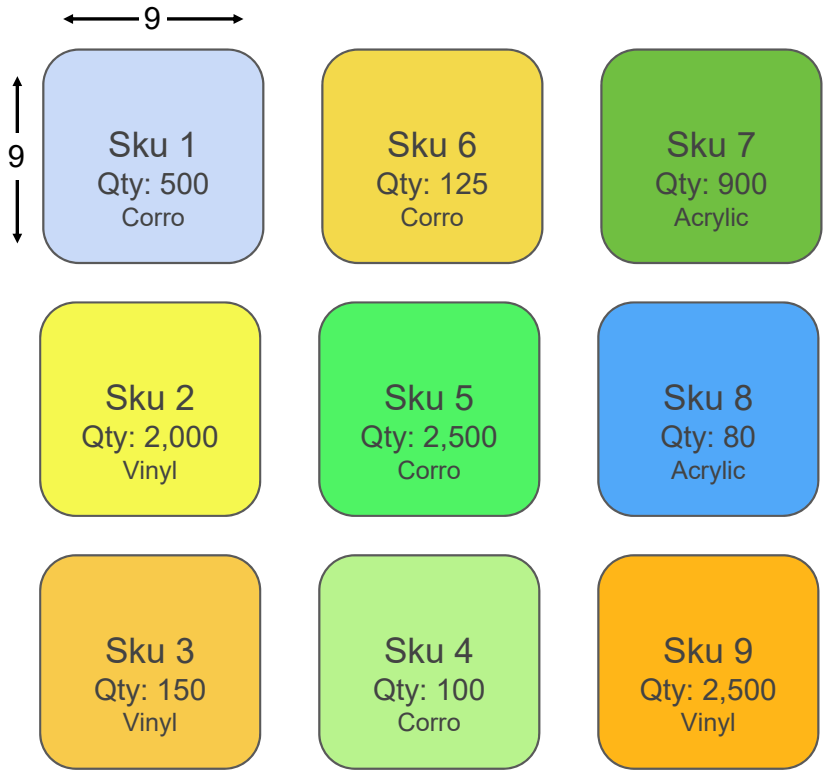
Let’s Estimate More!

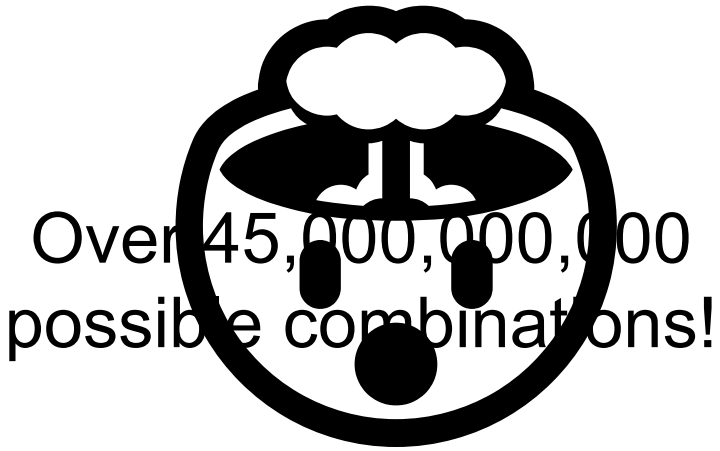


	# up	# of sheets	Time on Press	Finishing
Totals	???	???	???	???



Let's Estimate More!





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Why is this important?

PACKAGING TRENDS

- During 2016 some 40,000 CPG products came to market, **more than twice** as many as in 1998
  - *Led by smaller private-label/Tier 2*
- Suave now has **eight times as many** unique SKUs as it had in 2007
- There is now a greater variety of labels in shorter run lengths than ever before

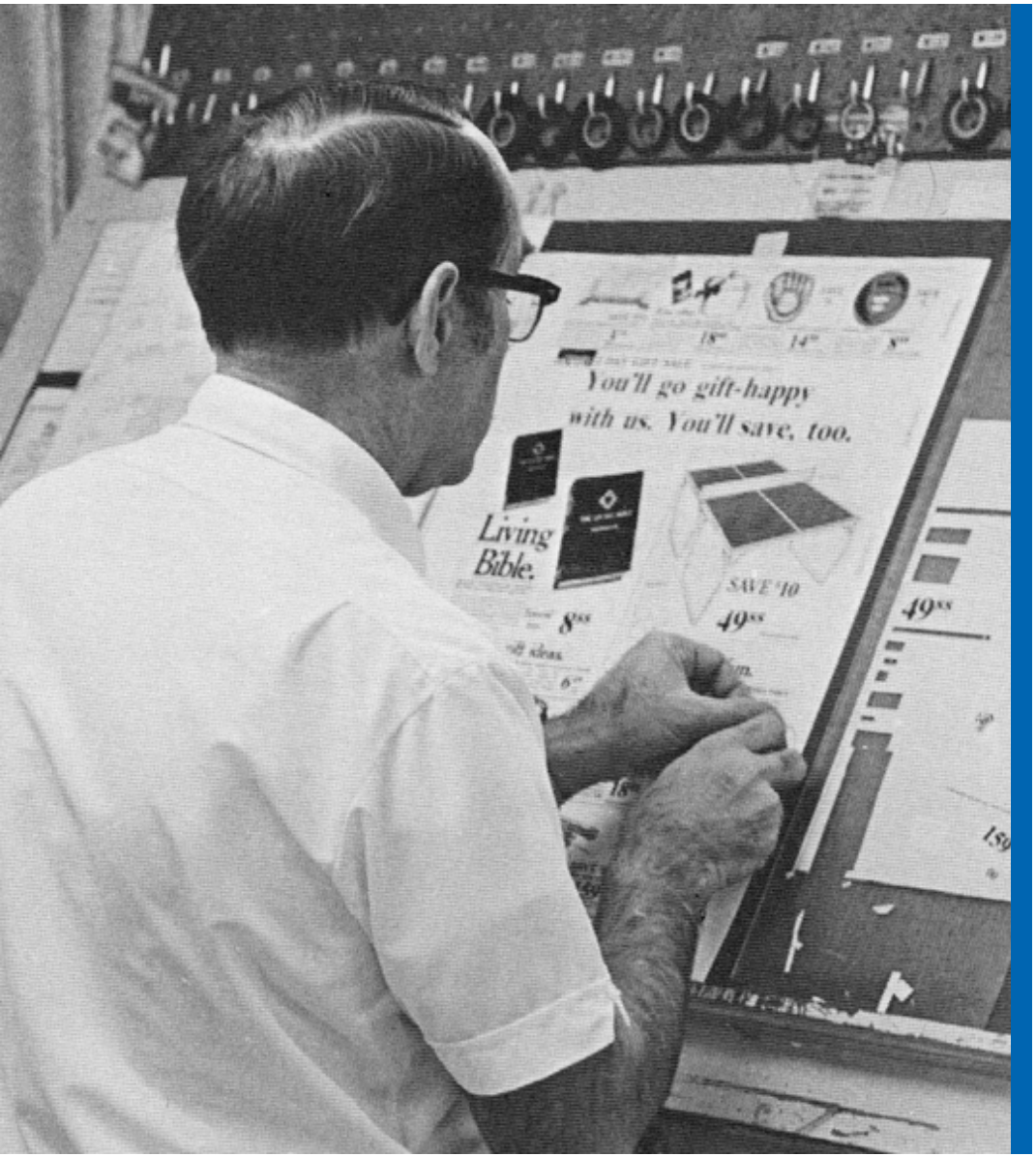
PRINTER/CONVERTER CHALLENGES

- Shorter run lengths
- Increase number of SKU's
- Faster turn-around
- Decrease costs

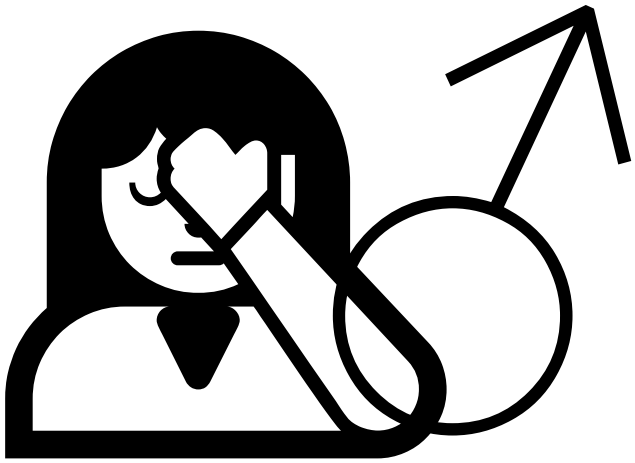
Figure 3
Proliferation of packaging formats

Source: L.E.K. analysis

https://www.lek.com/insights/ei/strong-winds-driving-packaging-demand



Solve Human Planning



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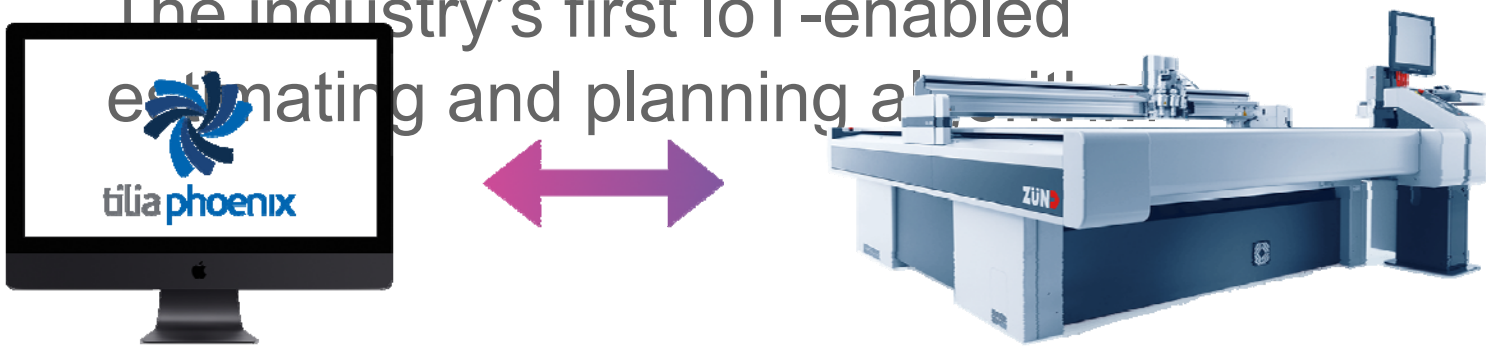
tilia labs + ZÜND swiss cutting systems

Introducing: Tilia Phoenix

The industry's first IoT-enabled
estimating and planning a[illegible]

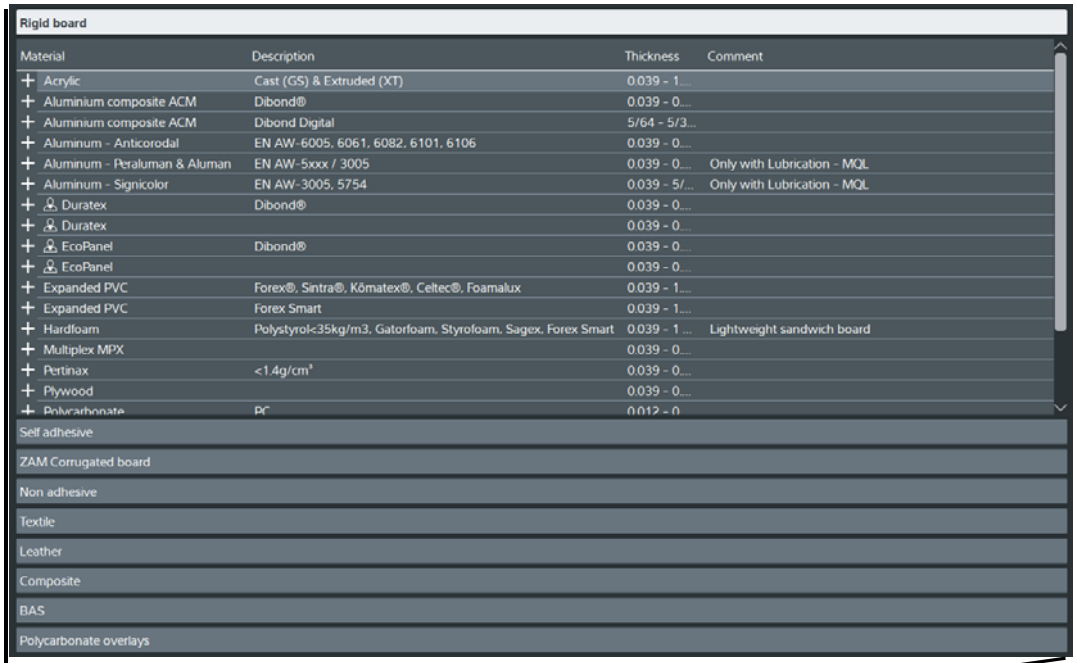


How does it work?

01

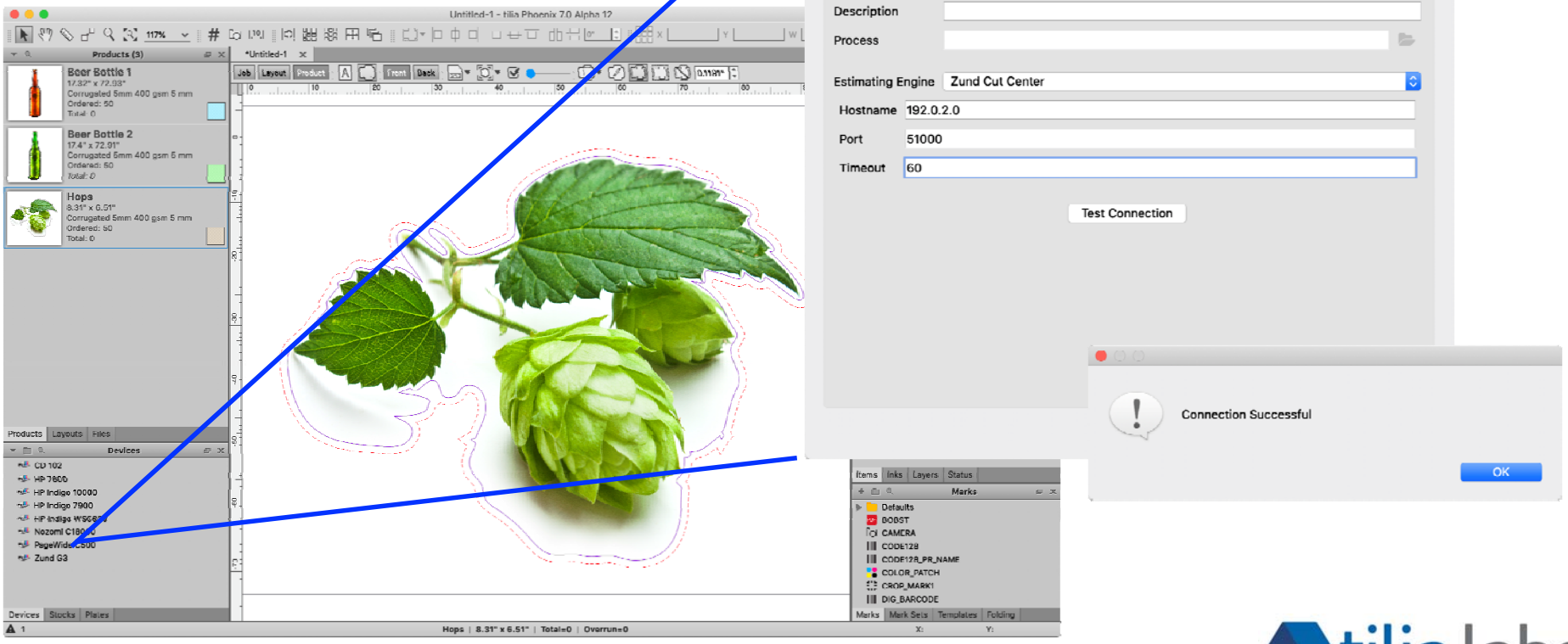
Zund Cut Center

- Material Database with 50+ materials, parameters for cutting
- Highly accurate motion control simulation
- Open API architecture for connectivity



02

tilia phoenix



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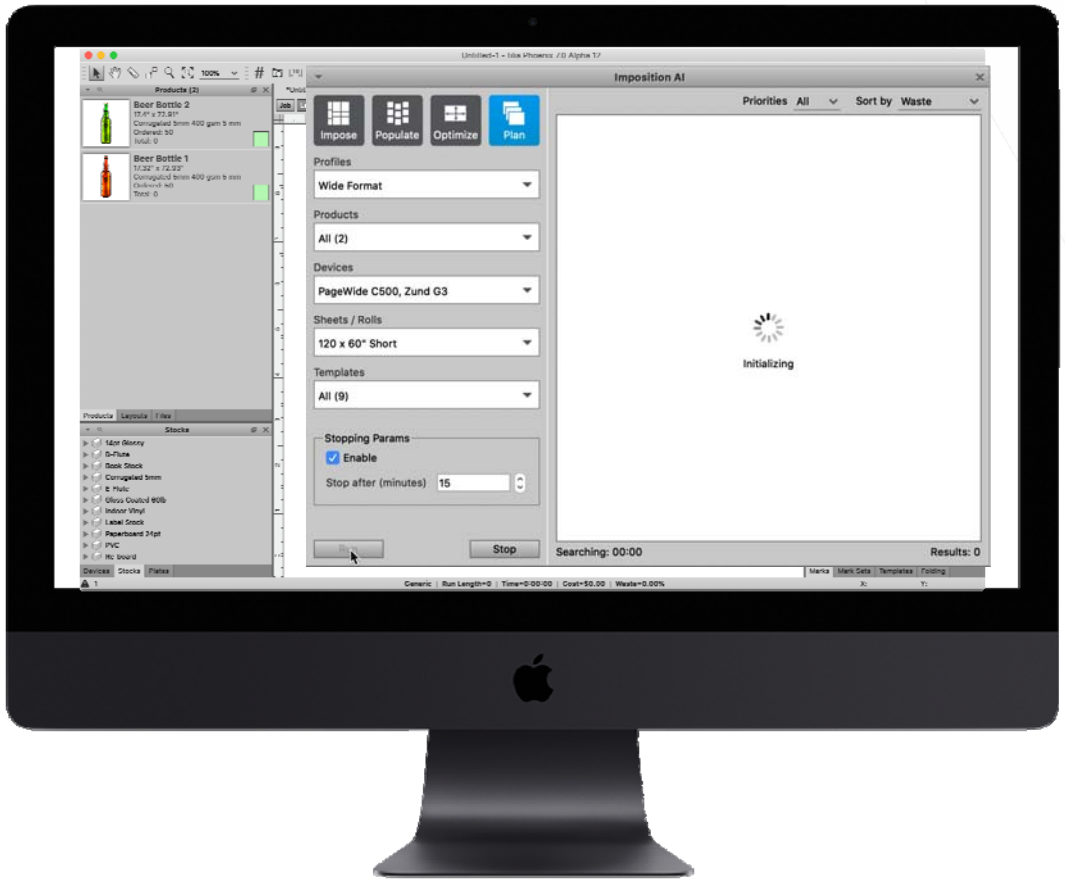
03



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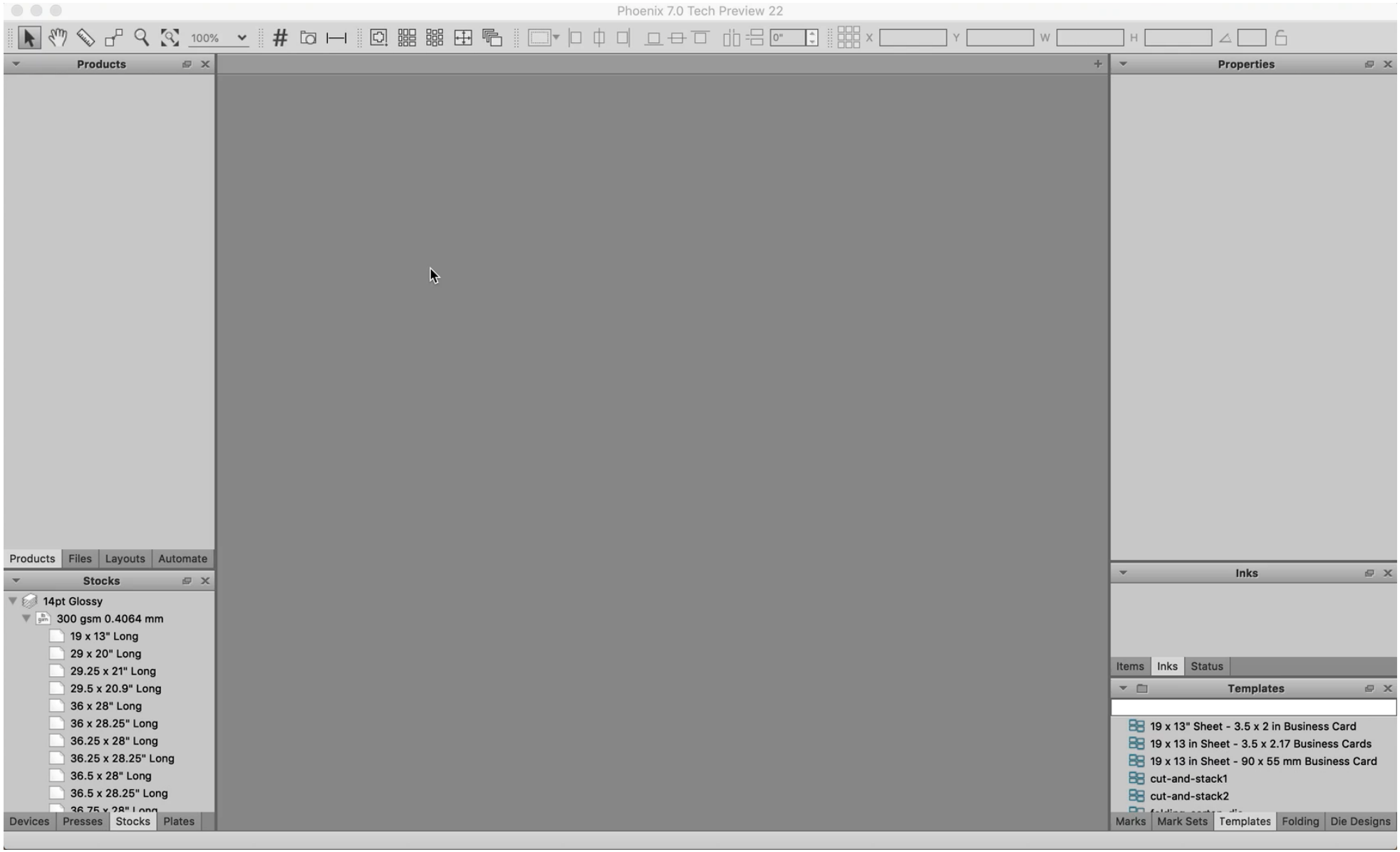
PHOENIX DEMO

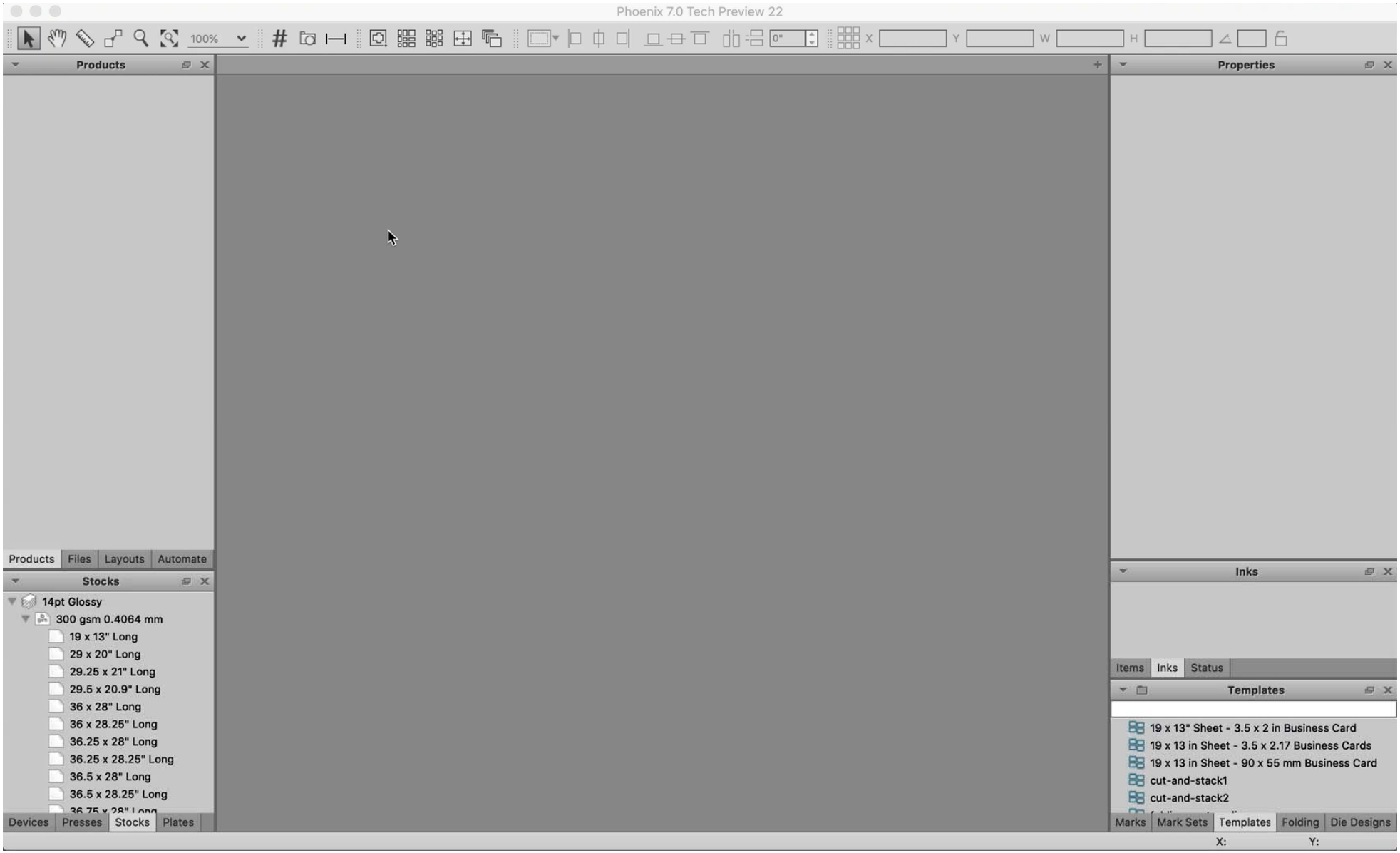
Digital Corrugated Planning Demo

(nesting optimization)


Phoenix 7.0 Tech Preview 22
100%
Products
Properties
Products
Files
Layouts
Automate
Stocks
14pt Glossy
300 gsm 0.4064 mm
19 x 13" Long
29 x 20" Long
29.25 x 21" Long
29.5 x 20.9" Long
36 x 28" Long
36 x 28.25" Long
36.25 x 28" Long
36.25 x 28.25" Long
36.5 x 28" Long
36.5 x 28.25" Long
Devices
Presses
Stocks
Plates
Inks
Items
Inks
Status
Templates
19 x 13" Sheet - 3.5 x 2 in Business Card
19 x 13 in Sheet - 3.5 x 2.17 Business Cards
19 x 13 in Sheet - 90 x 55 mm Business Card
cut-and-stack1
cut-and-stack2
Marks
Mark Sets
Templates
Folding
Die Designs

Digital Corrugated Planning Demo

(Sorted)


Phoenix 7.0 Tech Preview 22
100%
Products
Properties
Products
Files
Layouts
Automate
Stocks
14pt Glossy
300 gsm 0.4064 mm
19 x 13" Long
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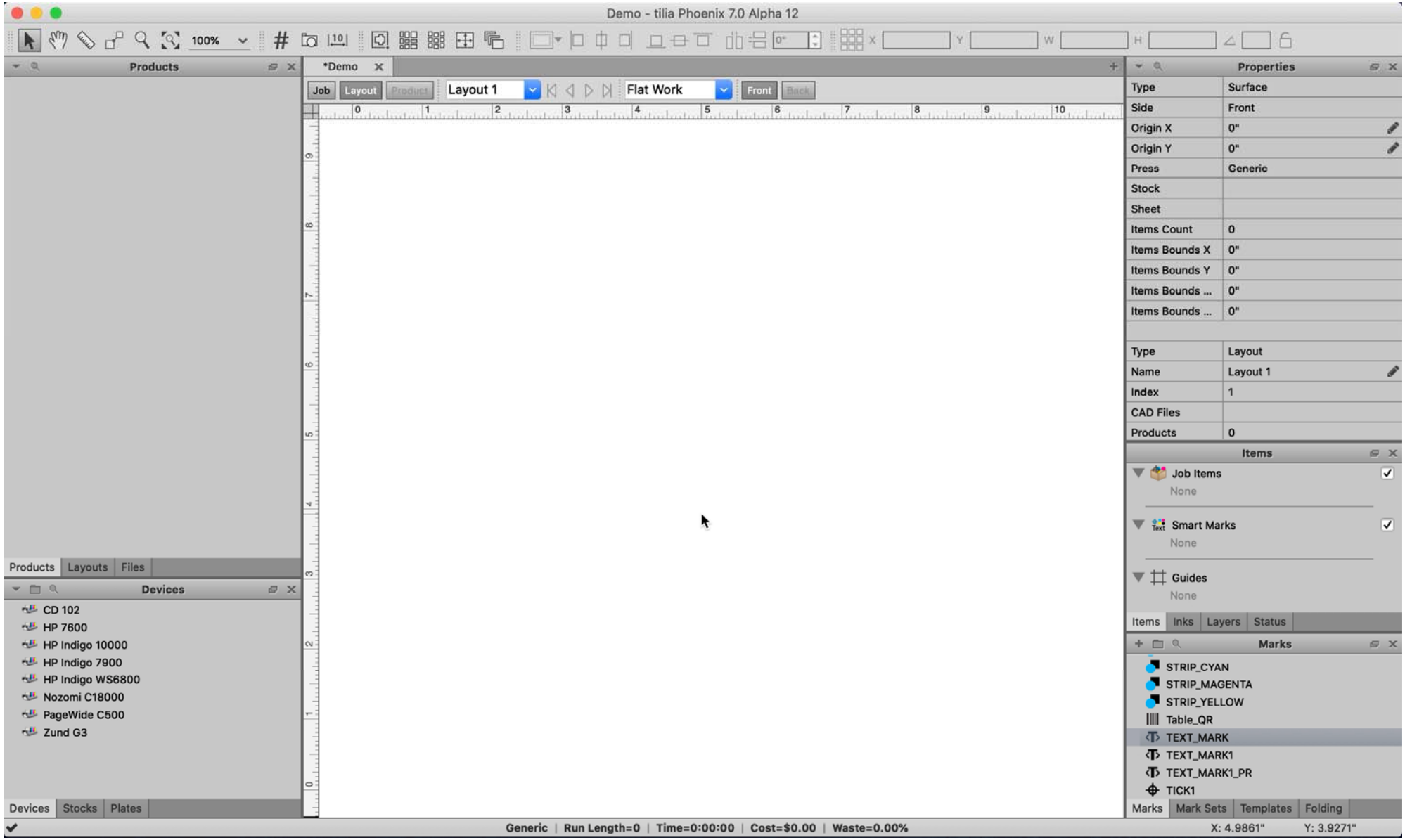
36.25 x 28.25" Long
36.5 x 28" Long
36.5 x 28.25" Long
Devices
Presses
Stocks
Plates
Inks
Items
Inks
Status
Templates
19 x 13" Sheet - 3.5 x 2 in Business Card
19 x 13 in Sheet - 3.5 x 2.17 Business Cards
19 x 13 in Sheet - 90 x 55 mm Business Card
cut-and-stack1
cut-and-stack2
Marks
Mark Sets
Templates
Folding
Die Designs
X:
Y:

Wide Format Planning Demo

(Phoenix + Zund IoT Integration)

(Phoenix + Zund IoT Integrated)

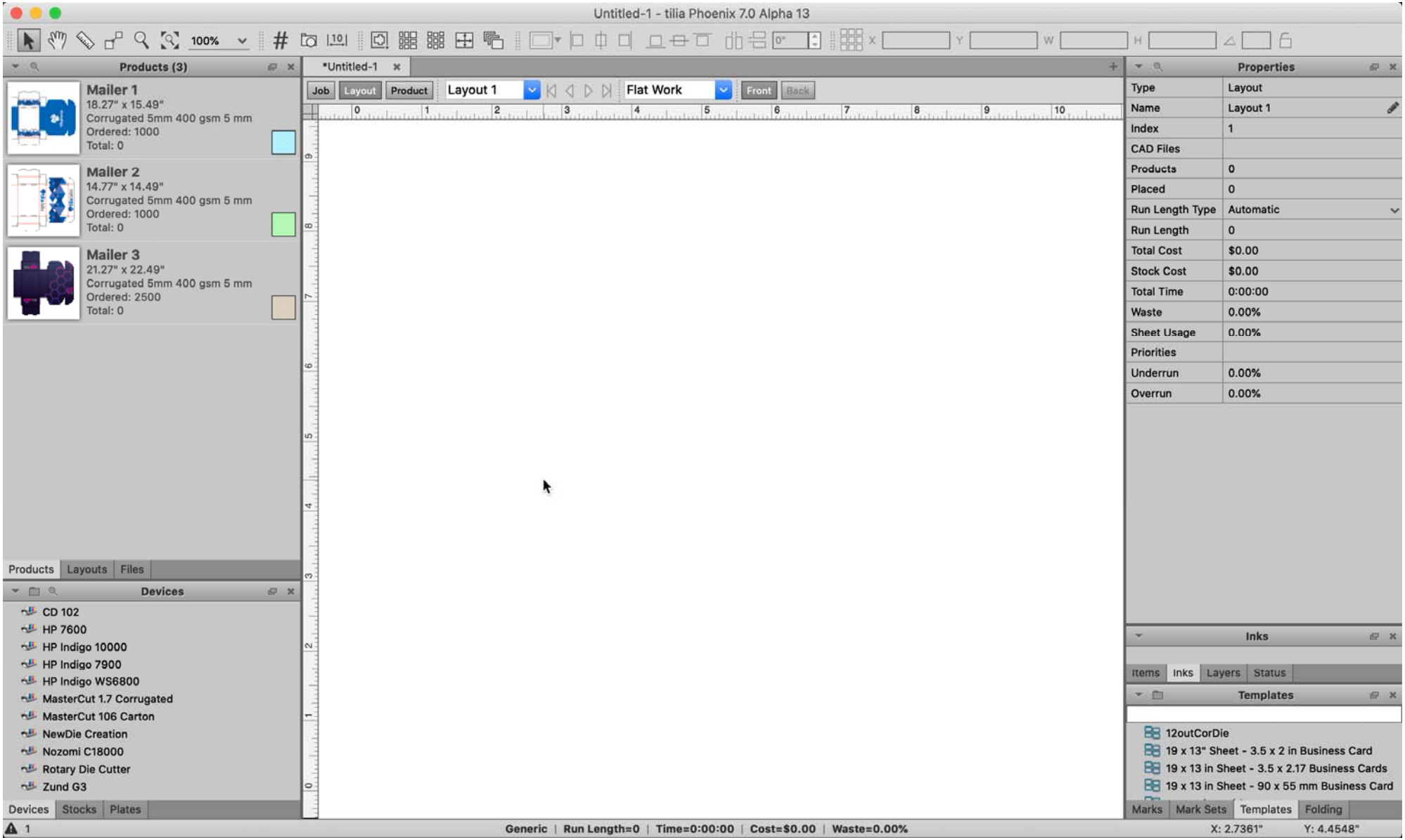

Demo - tilia Phoenix 7.0 Alpha 12
100%
Products
*Demo
Job
Layout
Product
Layout 1
Flat Work
Front
Back
Properties
Type
Surface
Side
Front
Origin X
0"
Origin Y
0"
Press
Generic
Stock
Sheet
Items Count
0
Items Bounds X
0"
Items Bounds Y
0"
Items Bounds ...
0"
Items Bounds ...
0"
Type
Layout
Name
Layout 1
Index
1
CAD Files
Products
0
Items
Job Items
None
Smart Marks
None
Guides
None
Items
Inks
Layers
Status
Marks
STRIP_CYAN
STRIP_MAGENTA
STRIP_YELLOW
Table_QR
TEXT_MARK
TEXT_MARK1
TEXT_MARK1_PR
TICK1
Marks
Mark Sets
Templates
Folding
Products
Layouts
Files
Devices
CD 102
HP 7600
HP Indigo 10000
HP Indigo 7900
HP Indigo WS6800
Nozomi C18000
PageWide C500
Zund G3
Devices
Stocks
Plates
Generic | Run Length=0 | Time=0:00:00 | Cost=$0.00 | Waste=0.00%
X: 4.9861"
Y: 3.9271"

Phoenix Cost Simulating

(Conventional Die Cutting vs Digital Finishing)

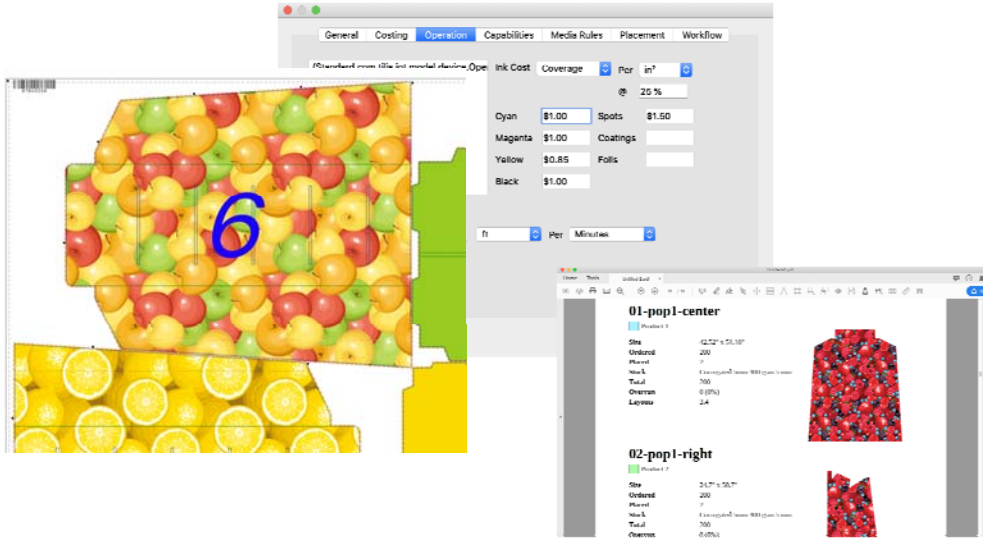
ZÜND

swiss cutting systems


Untitled-1 - tilia Phoenix 7.0 Alpha 13
100%
Products (3)
Mailer 1
18.27" x 15.49"
Corrugated 5mm 400 gsm 5 mm
Ordered: 1000
Total: 0
Mailer 2
14.77" x 14.49"
Corrugated 5mm 400 gsm 5 mm
Ordered: 1000
Total: 0
Mailer 3
21.27" x 22.49"
Corrugated 5mm 400 gsm 5 mm
Ordered: 2500
Total: 0
Products
Layouts
Files
Devices
CD 102
HP 7600
HP Indigo 10000
HP Indigo 7900
HP Indigo WS6800
MasterCut 1.7 Corrugated
MasterCut 106 Carton
NewDie Creation
Nozomi C18000
Rotary Die Cutter
Zund G3
Devices
Stocks
Plates
*Untitled-1
Job
Layout
Product
Layout 1
Flat Work
Front
Back
Properties
Type
Layout
Name
Layout 1
Index
1
CAD Files
Products
0
Placed
0
Run Length Type
Automatic
Run Length
0
Total Cost
$0.00
Stock Cost
$0.00
Total Time
0:00:00
Waste
0.00%
Sheet Usage
0.00%
Priorities
Underrun
0.00%
Overrun
0.00%
Inks
Items
Inks
Layers
Status
Templates
12outCorDie
19 x 13" Sheet - 3.5 x 2 in Business Card
19 x 13 in Sheet - 3.5 x 2.17 Business Cards
19 x 13 in Sheet - 90 x 55 mm Business Card
Marks
Mark Sets
Templates
Folding
Generic | Run Length=0 | Time=0:00:00 | Cost=$0.00 | Waste=0.00%
X: 2.7361"
Y: 4.4548"

tilia Phoenix Benefits

- Pre-press and planning automation
- Nesting, Front-to-back (recto/verso), Tiling
- Avoid double entry and errors by linking to the MIS system or CSV data input
- Conditional grouping based on order parameters
- Standardized, cost-based nesting for optimized sheet usage
- Boost productivity of equipment and staff
- Direct IoT integration Zund for finishing time estimation
- Compare die cutting versus CAD cutting



- Automated nesting of orders
- Cost-based optimization finds results automatically
- Fine-grained production reporting (sheet turns, time estimates, ink costs, stock costs, print time, cutting, make-ready, setup)
- Ink costing based on coverage or clicks

Corrugated Use Case *(Advanced Graphics)*

HTTPS://WWW.PACKWORLD.COM/ARTICLE/AI-APPLIED-DIGITAL-PRINTING

"Rather than asking the human brain to think it's way through all these combinations and options to plan, batch, and gang orders as efficiently and cost effectively as possible, we leverage AI algorithms instead."

"tilia Phoenix generates print-ready layouts and JDF or die instructions--for all devices in the production chain."

"Because it's so efficient at fitting artwork into a file, it's **reduced the number of corrugated sheets** required for a given print run," says Henderson. "A print run that might have required **600 sheets in the past may only require 400 today**."

Questions?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