

Cloud Based Manufacturing with Candy Mechanics

Chris Tait – CTO, Candy Mechanics

Luke Edwards, Software Development Manager,
Autodesk Advanced Consulting

Join the conversation #AUCity #AU2018





About the speakers

Luke Edwards

- Advanced Consulting within OCTO
- 10 years experience of automating CAD and CAM processes



Chris Tait

- Candy Mechanics CTO
- 6 years design engineering experience

Candy Mechanics Story

- University project - 2014
- Pop-up in Selfridges - 2015
- Switch from mould making to machining - 2016
- Events Cart - 2016
- Website Launch - 2016
- Corporate Gifting - 2016
- Covent Garden Popup - 2017
- Leeds and Cardiff Popups - 2017
- Partnerships - 2018

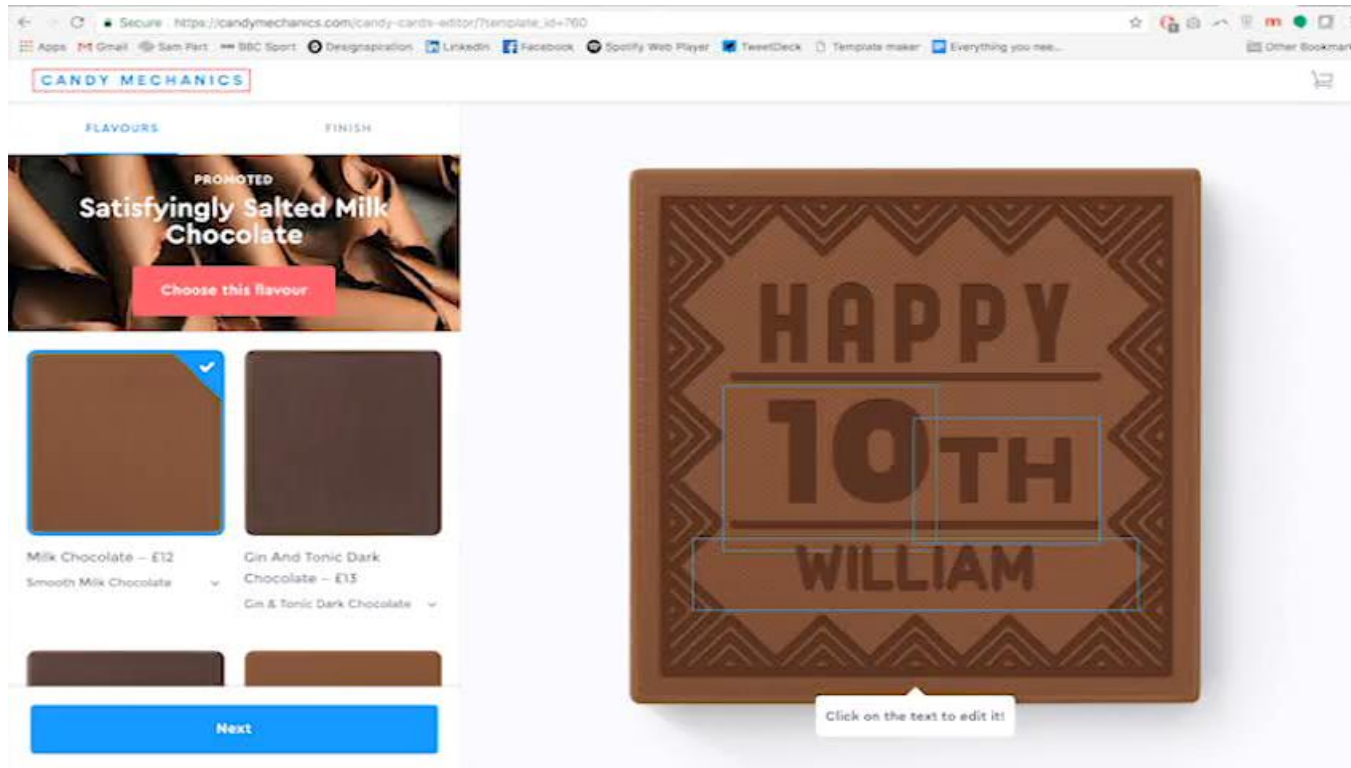


Where we started



3D Scan, Vacuum Form, Casting

Where we are



CNC and upcoming robotics integrations

The UK Market

\$6bn^{*}

UK CHOCOLATE
MARKET

Lacking Significant growth, current
players taking market share from
each other

\$1.5bn^{**}

UK PERSONALISED
GIFTING MARKET

Strong Growth, and links to
experiential retail and co-creation of
products.

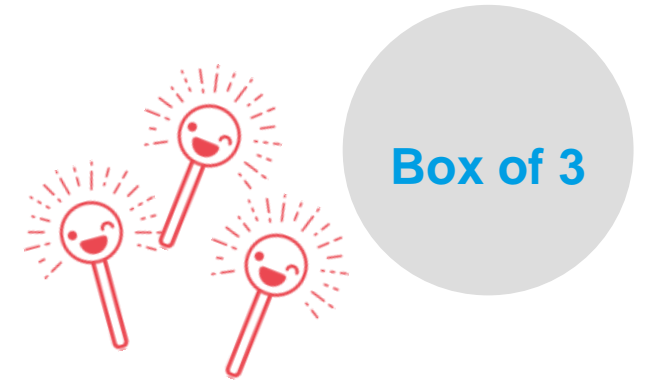
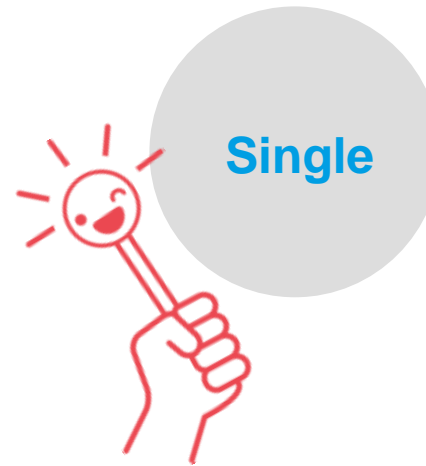
^{*}<https://www.ibisworld.co.uk/chocolate-confectionery-production.html>

^{**}<https://group.photobox.com/press-news/potential-spend-on-personalised-gifts-in-2015-reaching-1-billion/>

Lolpop - Our lead product

What is it?

A 3D chocolate lollipop of your own face
3 flavours of Belgian luxury chocolate



How is it made?



3D scan



Carved in front of your eyes

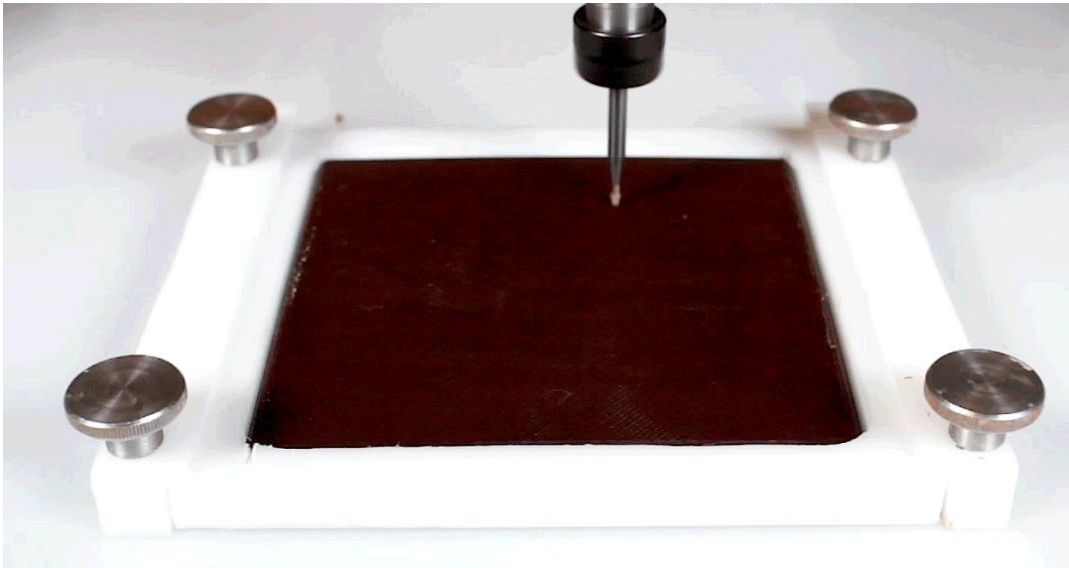





5 minutes later



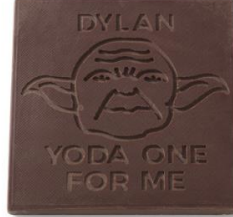



Cand Cards - Our Growth product

What is it? A luxury personalised chocolate alternative to a greeting card.

How is it made? Less than 5 minutes: pick a flavour, design your own card using our tools, or pick from design templates and add names. Watch it being made in live retail or order online.

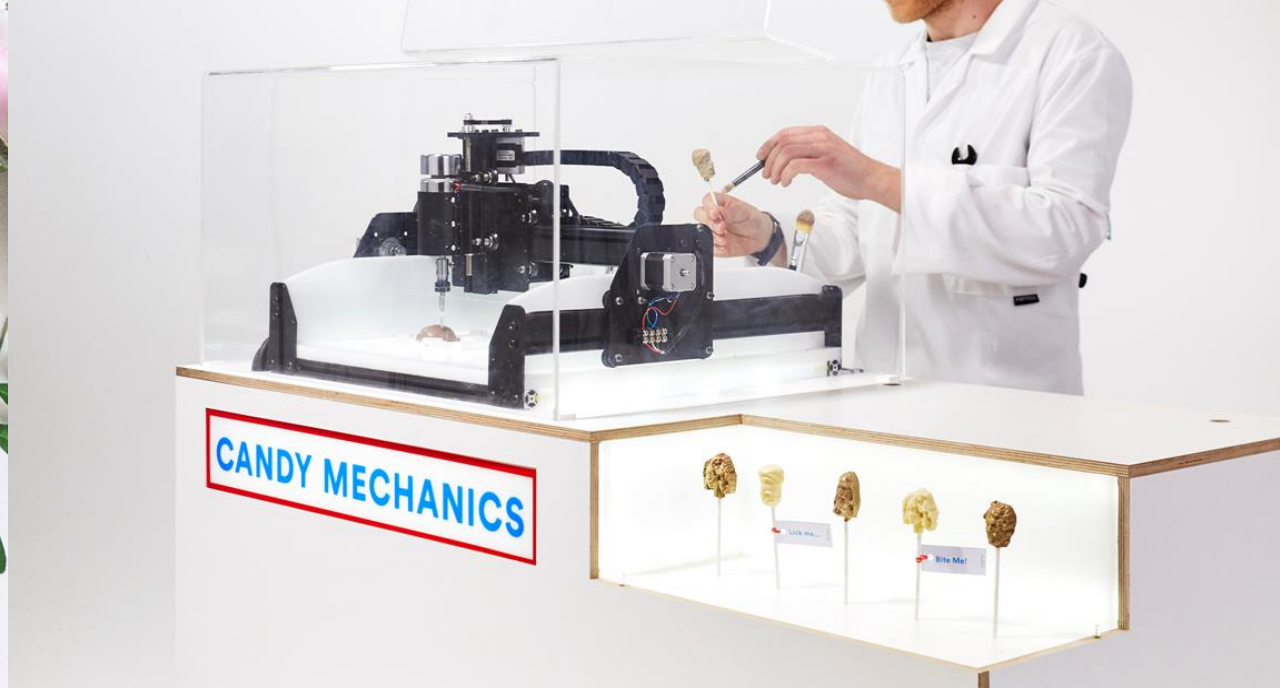


 VALENTINE'S DAY [VIEW ALL](#) 

 <p>It's You & Me Chocolate Card from £12.00</p>	 <p>Bee Mine Chocolate Card from £12.00</p>	 <p>Yoda One Chocolate Card from £12.00</p>
 <p>You're My Boo Chocolate Card from £12.00</p>	 <p>I Love Chew Chocolate Card from £12.00</p>	 <p>I Heart You Chocolate Card from £12.00</p>

Get 10% off your first order when you join our newsletter

[Join now](#)

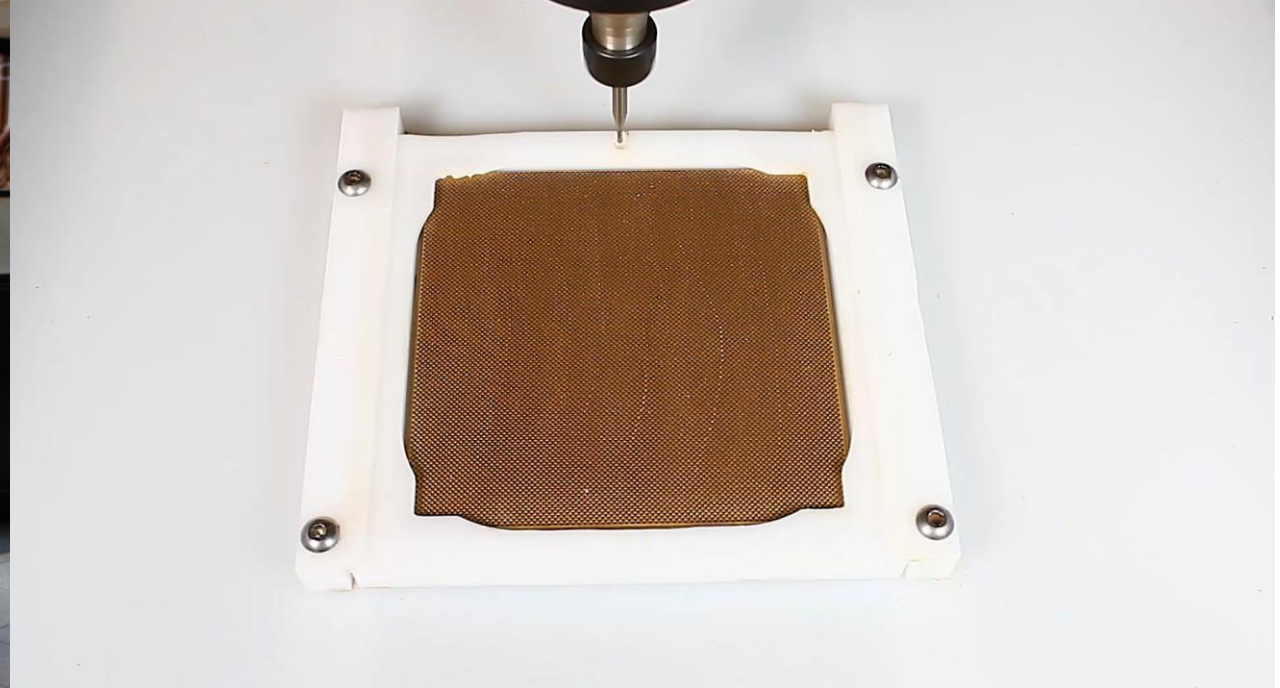


Online B2C

Candymechanics.com website

Events and Corporate Gifting

Private and Corporate events around the world



Retail

Pop-ups and concessions

Technology and Fulfillment Supply

Packaging up our platforms and processes

Steps to creating the custom candy factory of the future

1

MANUAL PROCESSES

Manually converting data into NC using CAM software – requires training, time, and licenses

2

PARTIAL AUTOMATION

Partially automated some of the CAM processes to improve fulfillment speed and reduce training required

3

CLOUD-BASED SOFTWARE AUTOMATION

Fully automated CAM processes free from traditional license fees and unrestricted in terms of location and numbers (assuming good internet connection!)

4

CLOUD-BASED SOFTWARE/ HARDWARE AUTOMATION

Pairing the software automation with a bespoke production process incorporating robots tending CNC machines and quality control measures

Advantages of Automation

COST SAVINGS

Time, Errors, Training

QUALITY CONTROL

Order Management, Standards

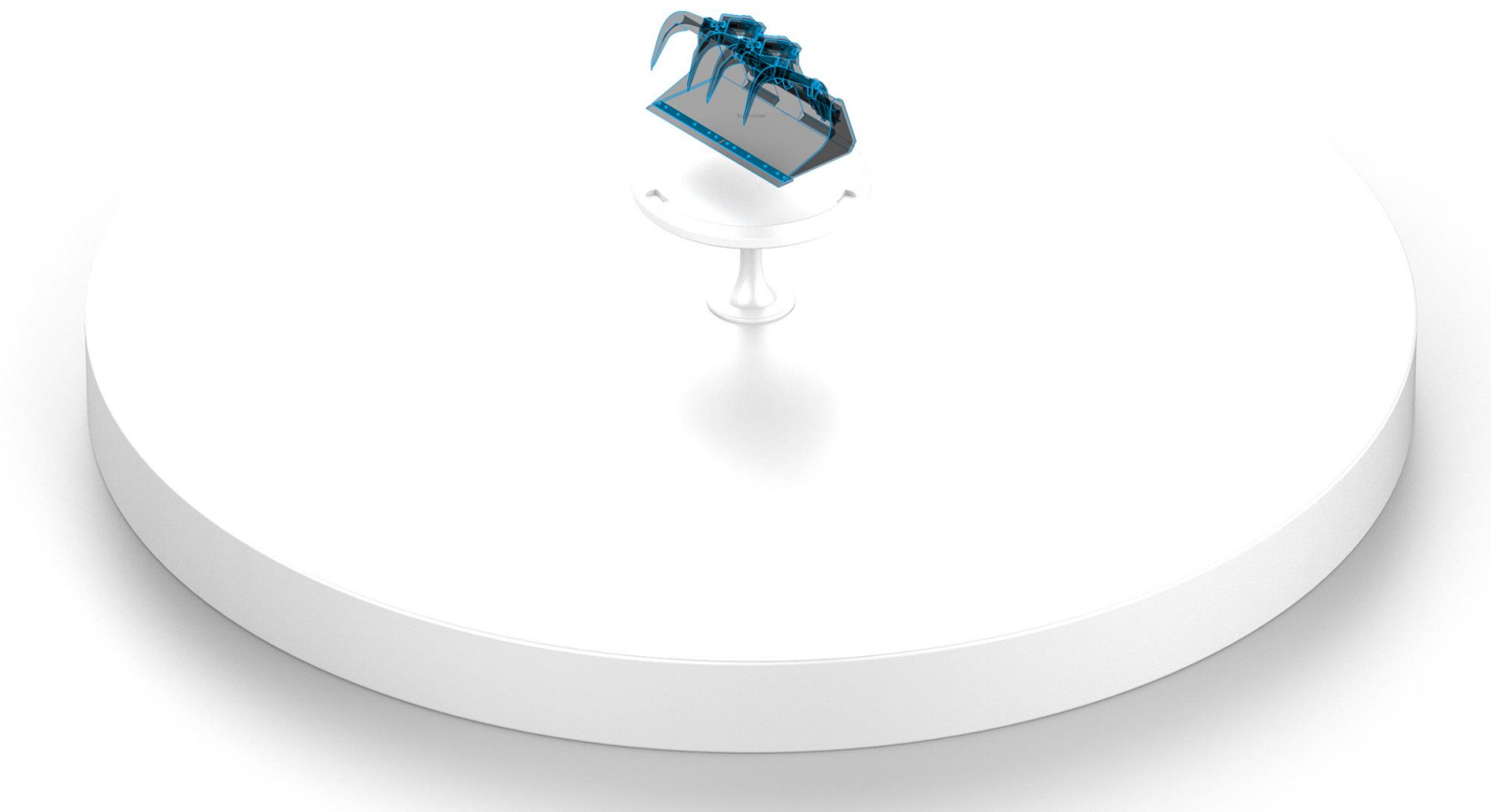
INFORMATION AVAILABILITY

Stock control, Staffing



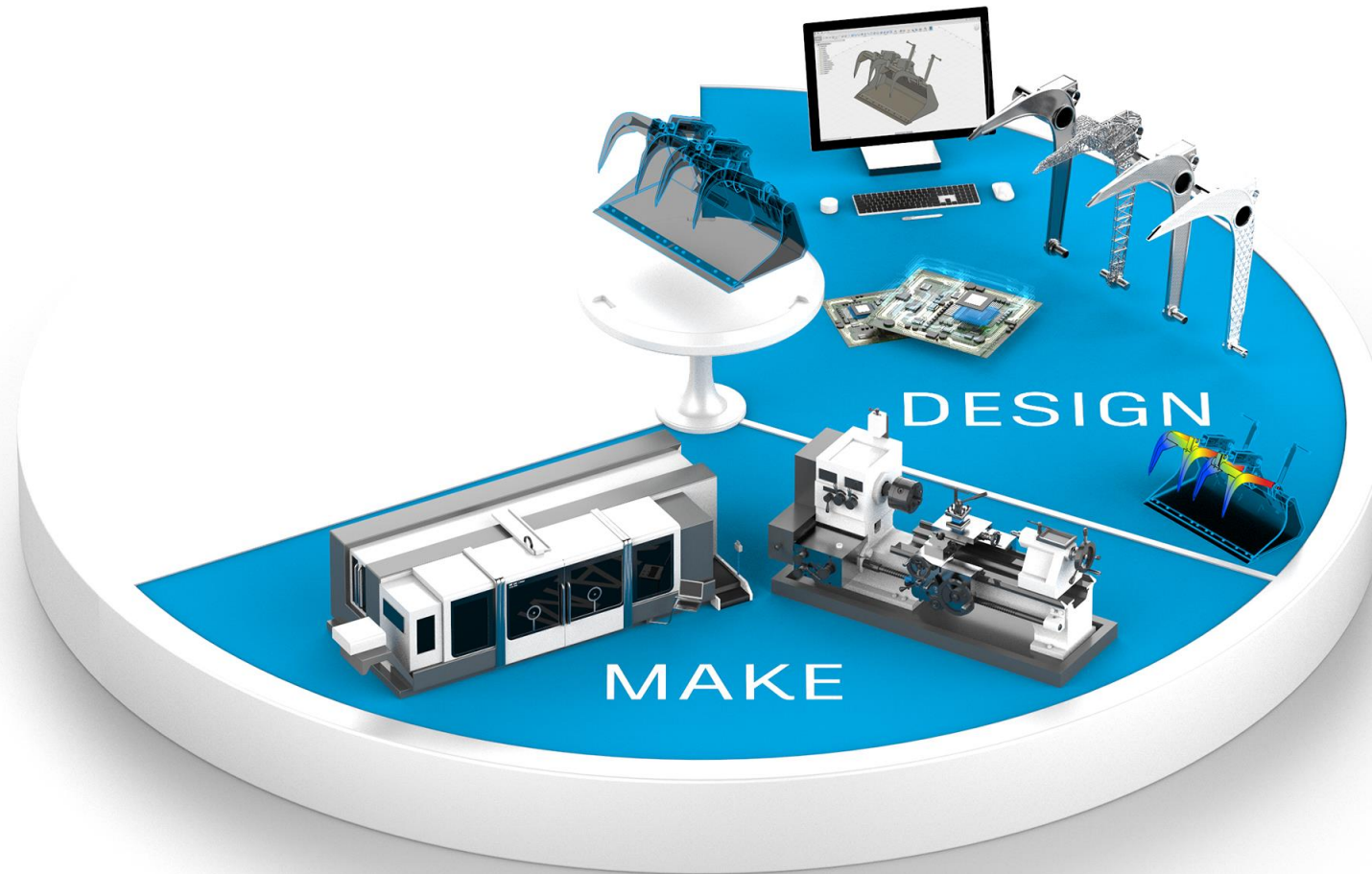
The Product Innovation Platform and Automation





Design Lolpops and Cards in Fusion 360





Track in Fusion Production

IoT data fed back to
Candy Mechanics to
improve processes



Product Innovation Platform - Fusion

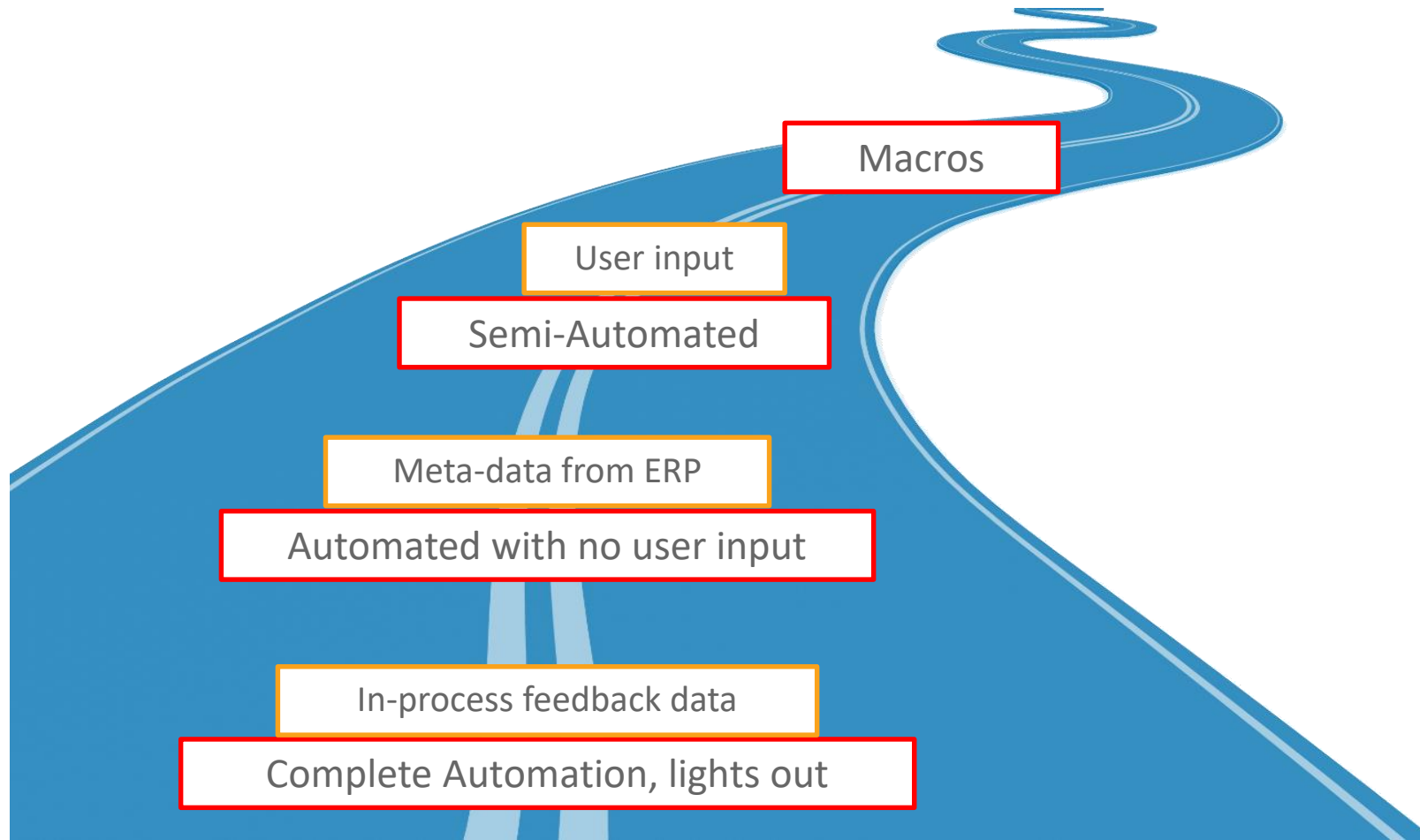
The PIP allows all phases of your design and make process to be fully connected

- Data at the center
- Parametric designs
- Toolpaths
- In use process data
- Service and maintenance data

A single tool where you can move through the stages of Design, Make and Use.

But we can go further than that... Automate!

The road to automation



Experience of Automation



Fully automated production line for finishing gas-turbine blade castings.
200,000 blades per year

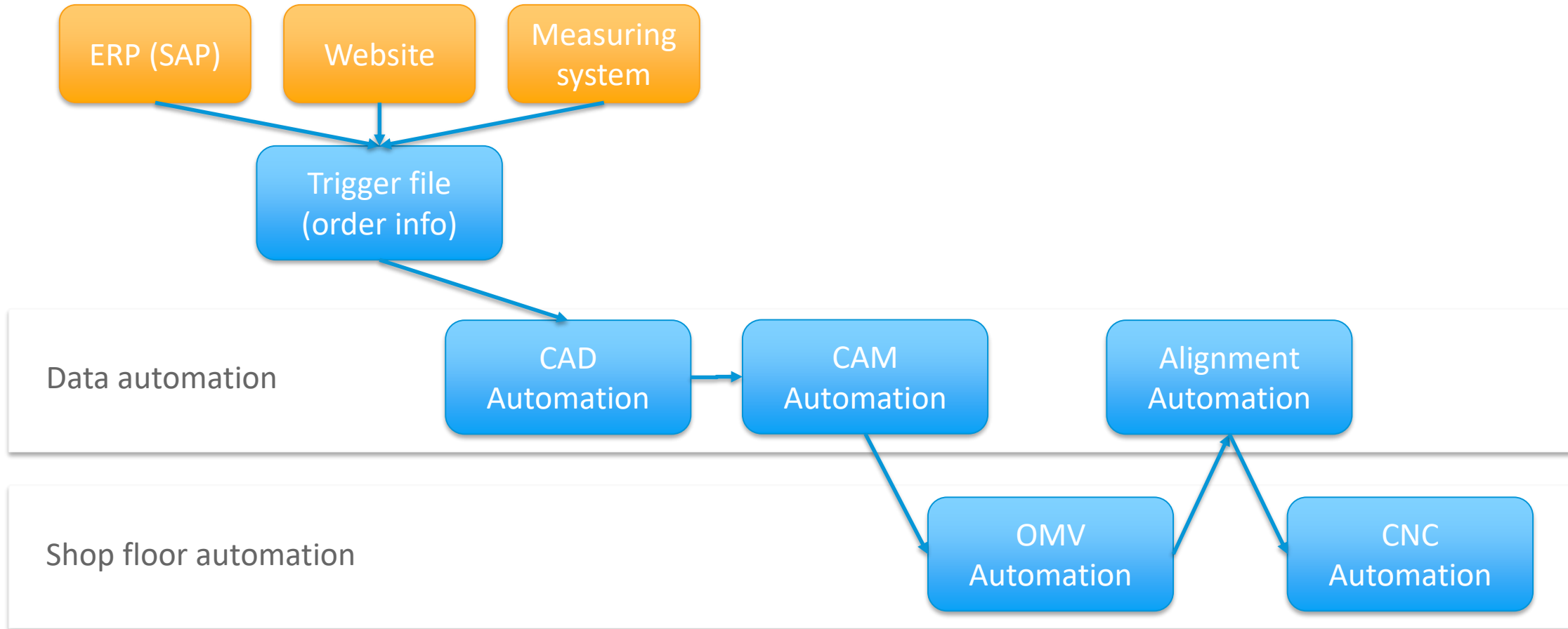
- $\pm 0.020\text{mm}$ tolerance
- Automated design & manufacture process for each individual blade
- Fully integrated with external hardware for lights-out operation



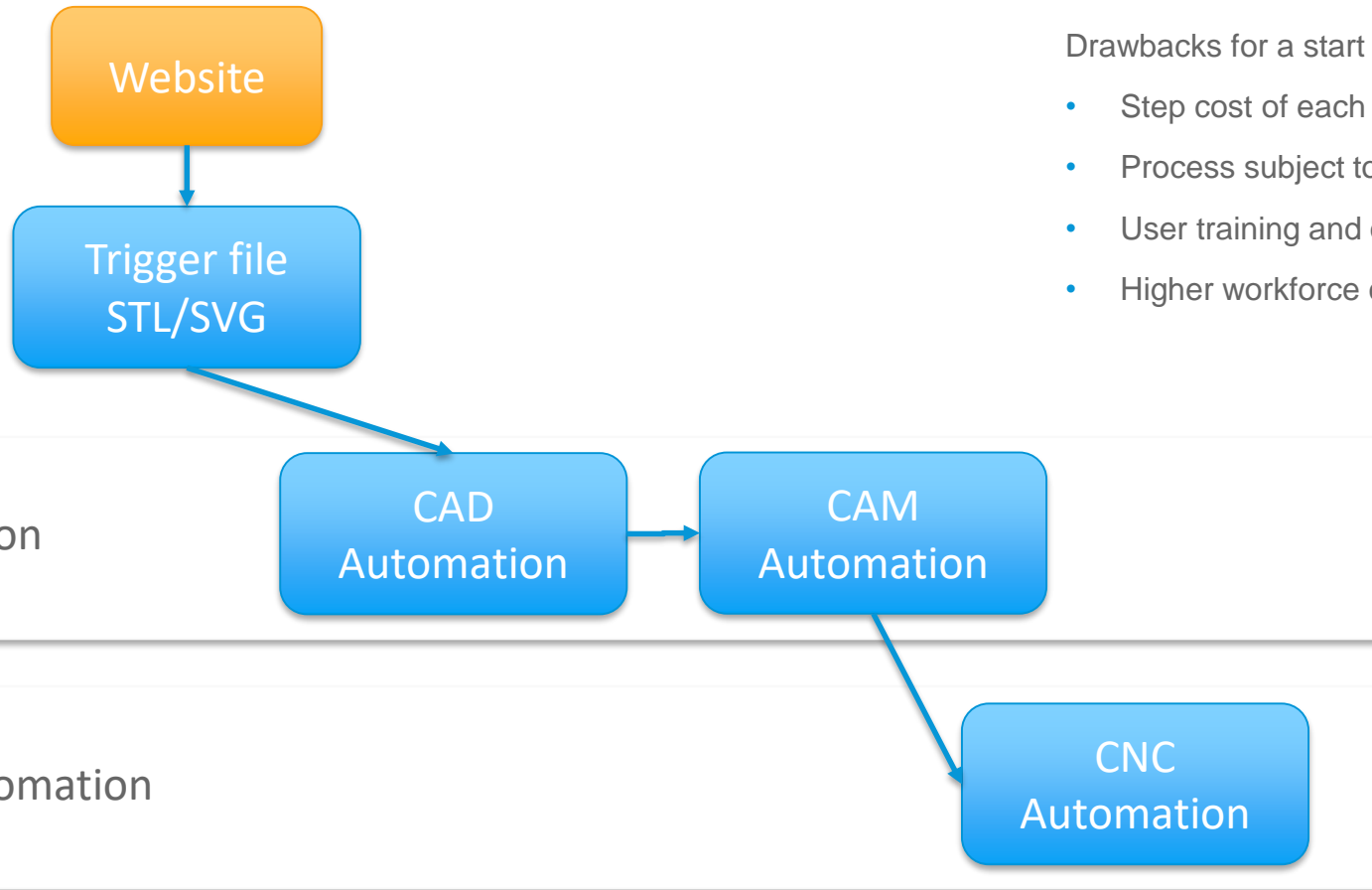
Automated processing of consumer products (novelty pumpkins) in which the manufacturing process responds to customizations made by the end-user

- Automated calculation of design and manufacturing data
- Integrates with both hardware and external ordering systems

Typical process flow



Candy Mechanics desktop



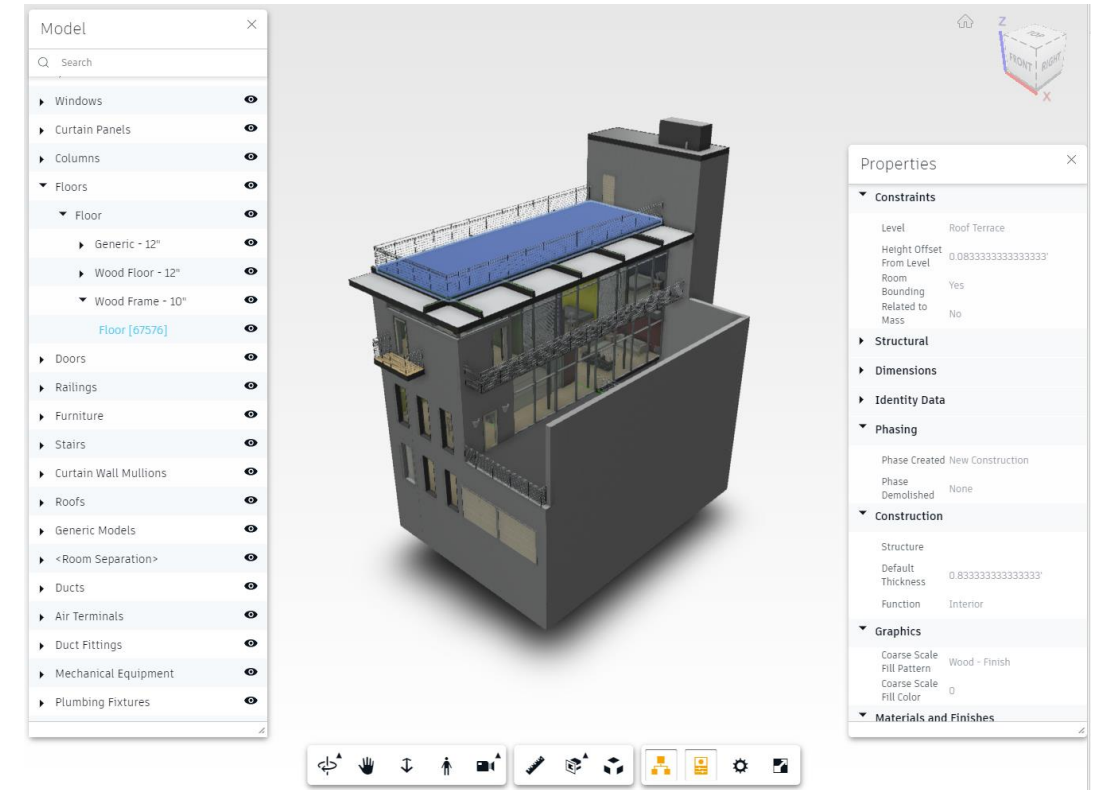
Drawbacks for a start up

- Step cost of each software license
- Process subject to manual flaws and human error
- User training and onboarding
- Higher workforce costs

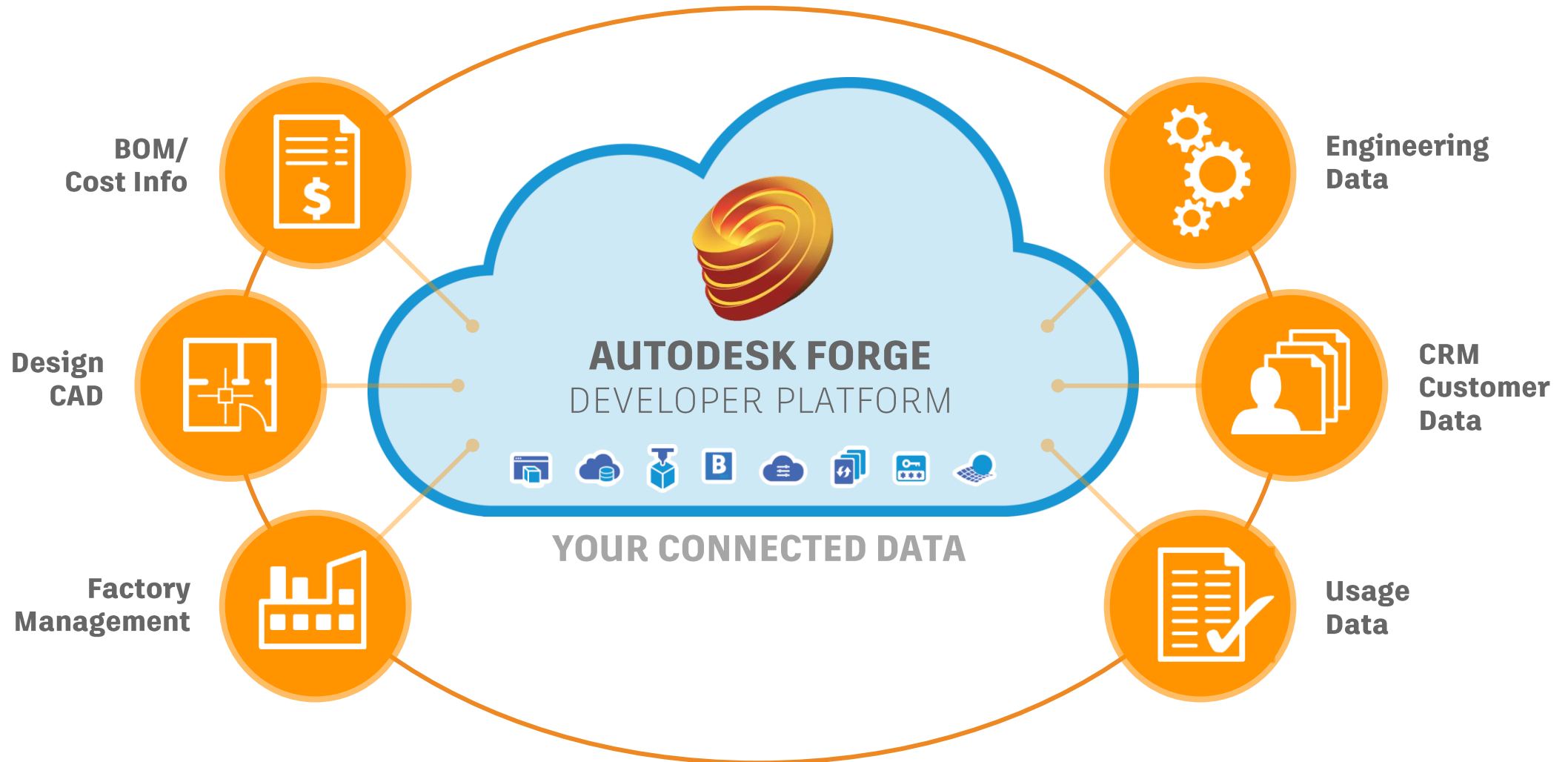
Introduction to Forge

- Forge is a PaaS targeted at developers
- Microservices to automate
 - Data storage
 - Data translation
 - Design automation
 - Data viewing
- A platform to enable “data at the centre”

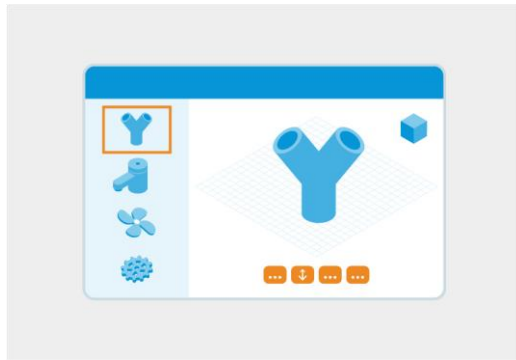
A platform we can use to Automate!



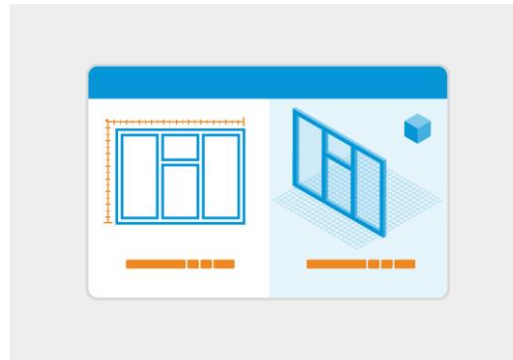
Forge is a Connected Developer Platform that Powers the Future of Making Things



Three Areas Manufacturers Can Create Competitive Advantage with Forge



Catalog
Visualization



Virtual
Operations



Buying
Experience

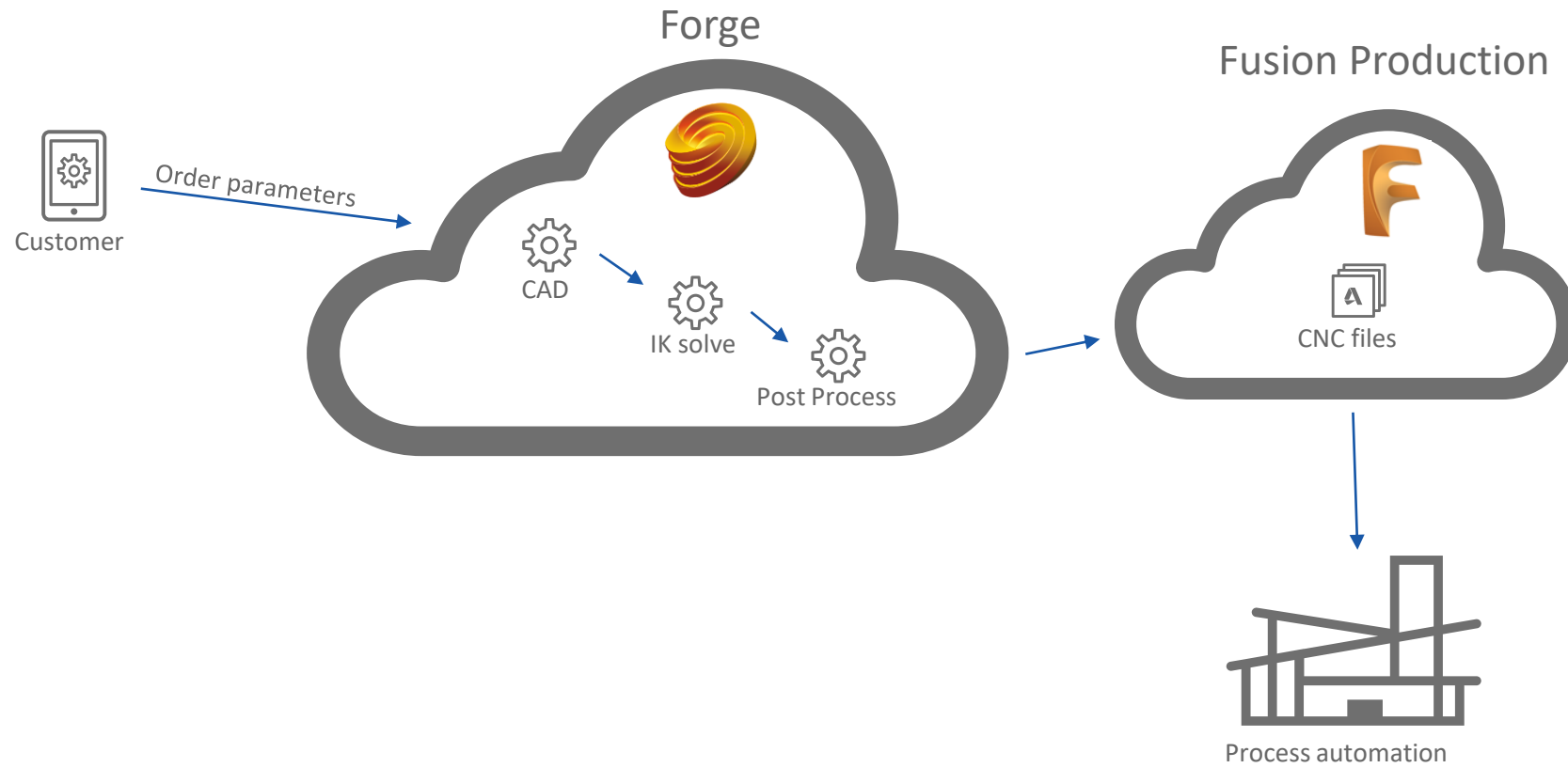
Automation in Forge

- Plug together microservices that can perform discrete operations
- Services react to changes in their input data to produce new outputs



- Services could run in the cloud or locally depending on the resource required
 - CAD resource – Cloud
 - Machining resource – Shopfloor
- Data could be stored in the cloud or locally depending on IP concerns

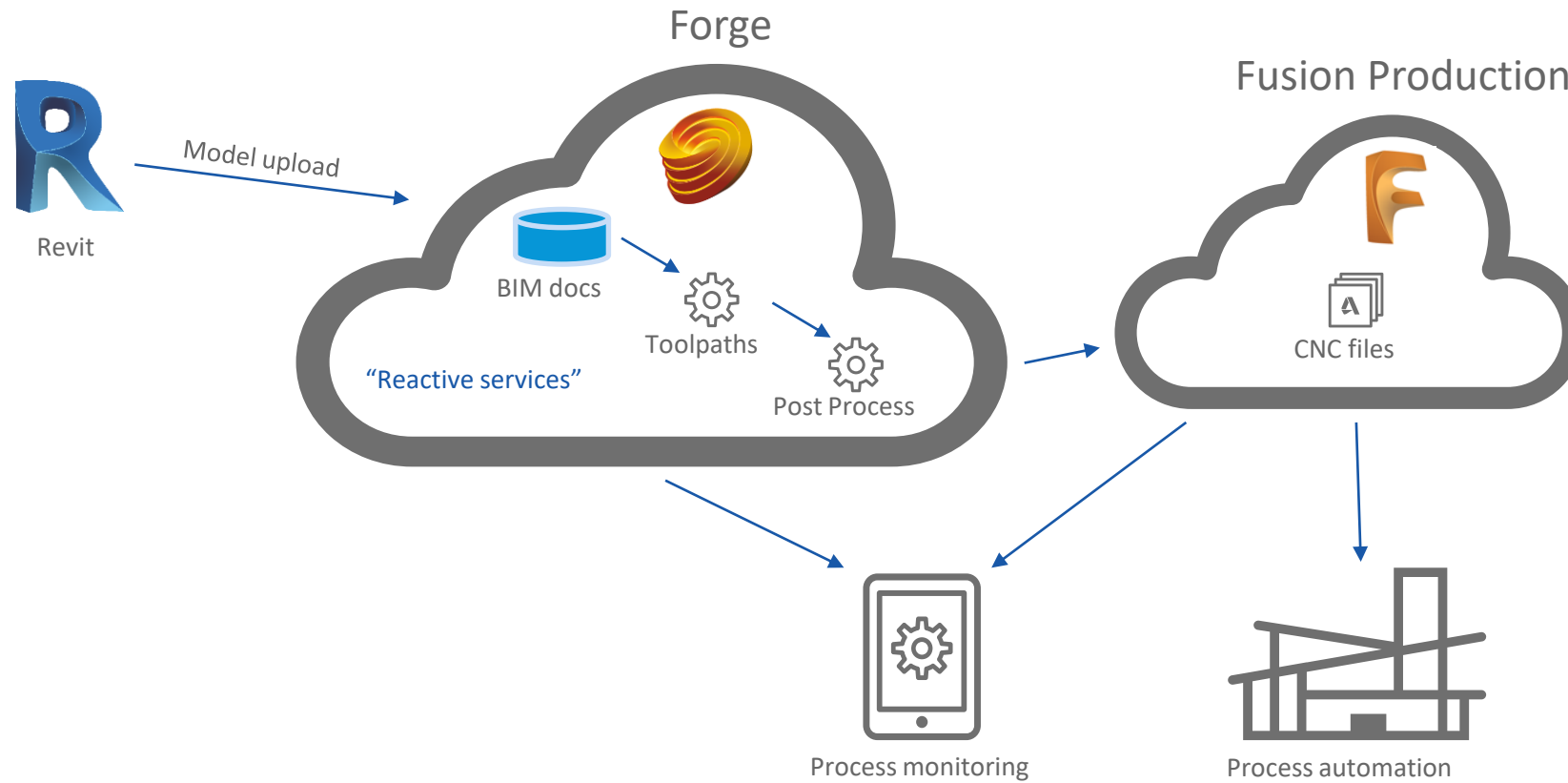
Converting to Chocolate



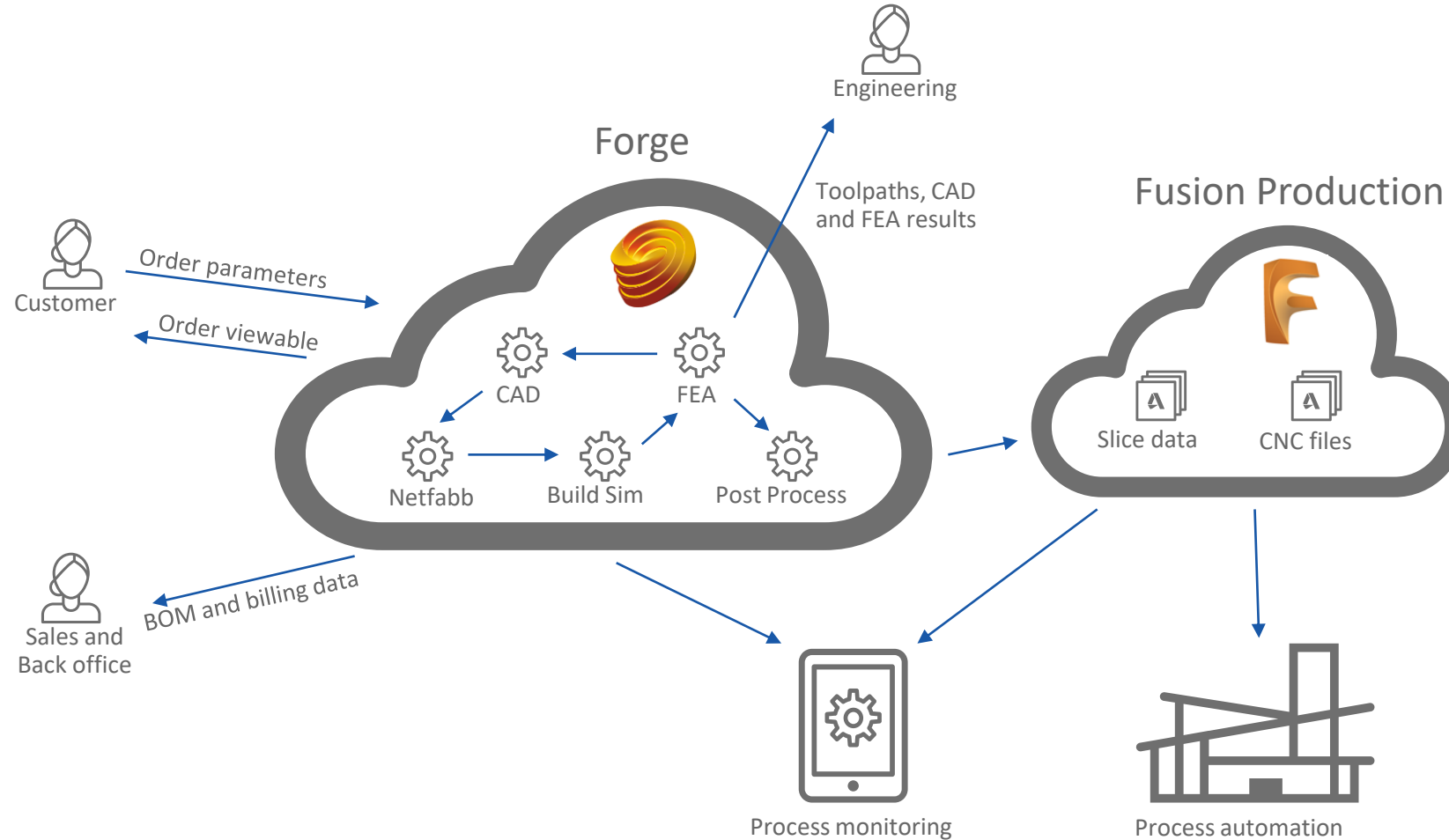


AUTODESK®
ADVANCED CONSULTING

Beyond Chocolate – Reactive Services



Beyond chocolate – Round trip engineering



The next steps

- For me:
 - Continue to work with the Forge team to build the microservices required by Candy Mechanics
 - Develop other projects with customers to provide concrete examples through Advanced Consulting
- For you:
 - Head to developer.autodesk.com and start trying out the available microservices
 - Make use of the LMV to understand how data at the centre could work for you
 - Review the customer success stories
 - Forge DevCon in Las Vegas, 12th and 13th November 2018 (part of AU Las Vegas)

Questions?



CANDY MECHANICS

15% discount code: Autodesk2018
@candymechanics



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