



FLOWCIRCUITS

Executive Summary

- Flow Circuits is a design platform that replaces manual laboratory processes with “lab-on-a-chip” devices using microfluidics
- Microfluidics is a large but nascent industry (\$43B, 18% CAGR)
- Flow Circuits is 10x faster, half the cost, and twice as reliable as current methods
- We have early signs of traction, ready for growth



flowcircuits.com



andrew@flowcircuits.com



Agenda

- Background
- Problem
- Solution
- Market
- Business Model
- Traction
- Go To Market
- Team
- Financing
- Appendix



flowcircuits.com



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A life science revolution has started!

ILLUMINA USHERS IN \$200 GENOME WITH THE LAUNCH OF NEW SEQUENCERS



U.S. POISED TO APPROVE FIRST GENE-EDITING TREATMENT IN BREAKTHROUGH FOR SICKLE CELL PATIENTS

PUBLISHED THU, DEC 7 2023-9:10 AM EST

EMILY MULLIN SCIENCE FEB 2, 2024 7:00 AM

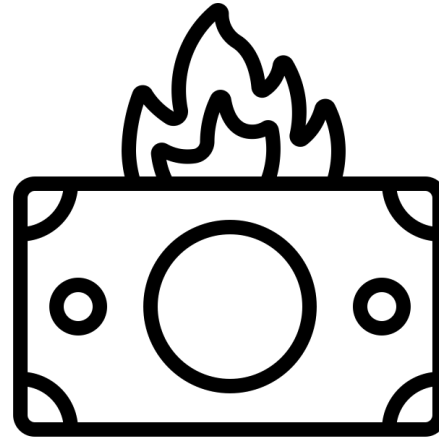
A Startup Has Unlocked a Way to Make Cheap Insulin

But We Have A Problem!

Life-saving life-science innovation has a

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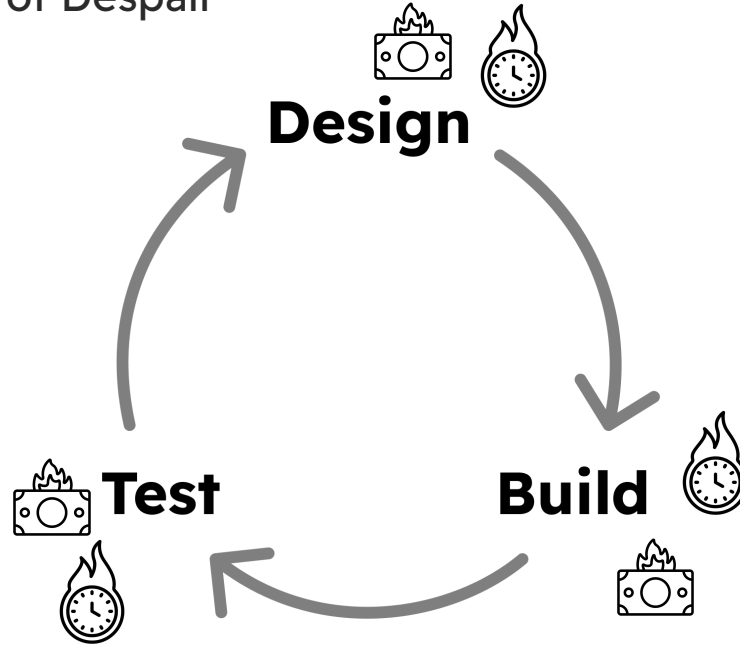
Scientists have solutions, but *engineering* them into products using microfluidics burns **BIG time and money!**





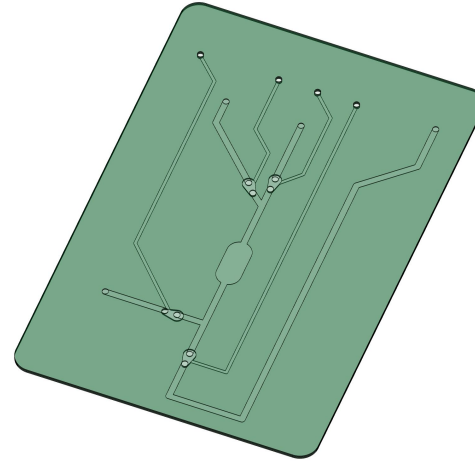
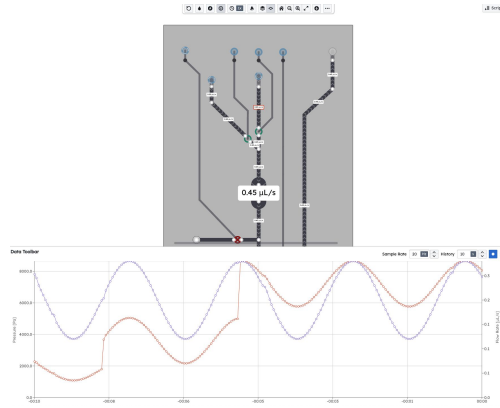
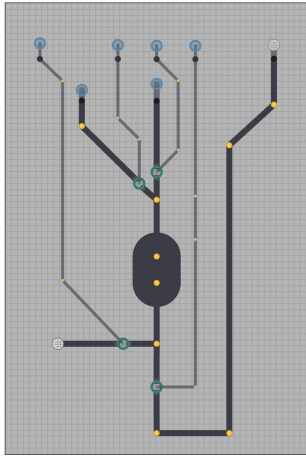
How It's Done Now

“The Microfluidics Cycle of Despair”



Years of work! Millions of dollars!

Our Solution



Design



Test



Build



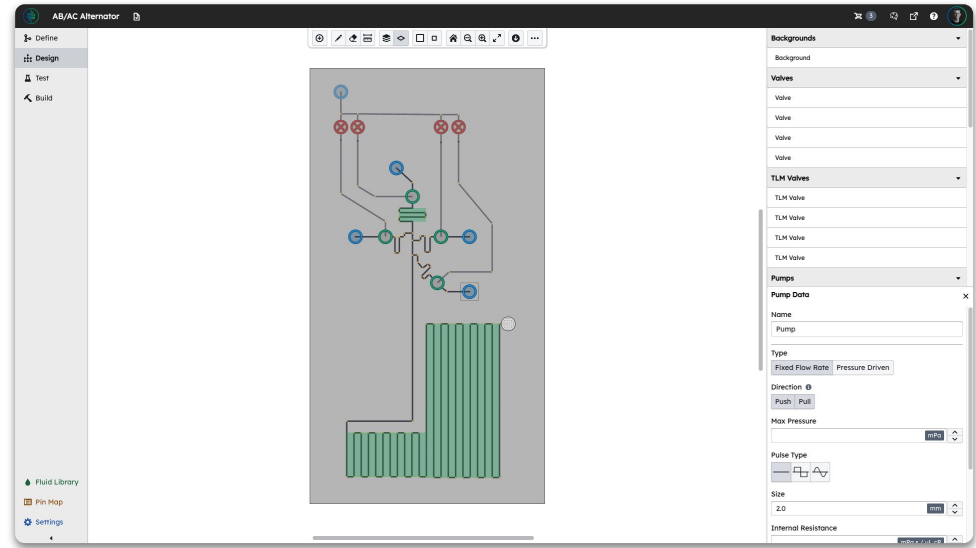
Done!

3 hours of work! <\$1k! Easy!

How: An Integrated Platform



Flow Circuits is a complete and collaborative cloud-based fluidics platform. *Design, test, and build* your device, all in one place.



The World with Flow Circuits



We replace manual laboratory processes with “lab-on-a-chip” devices



Automate

- End-to-end workflows
- ↓ hands on time
- ↑ precision



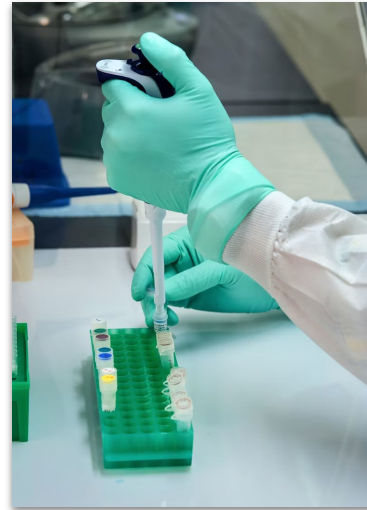
Scale

- ↑ impact



Decentralize

- From lab to point-of-need
- Ready for parallelization



The Market is Big!

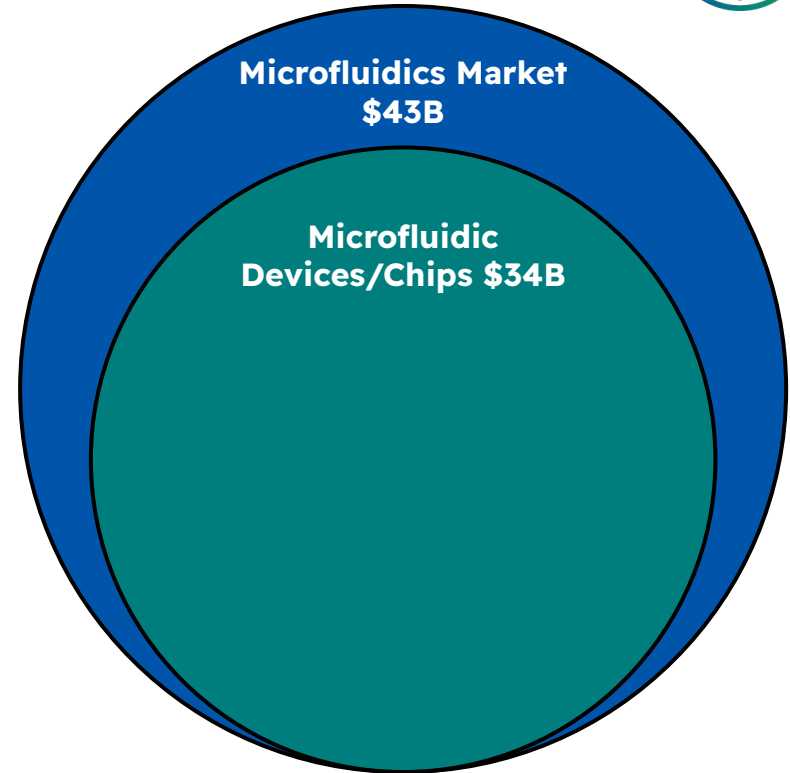


SaaS Opportunity

- Microfluidics originated with academic research. Now transitioning into commercial phase with significant unmet needs in specialized tools and software.

Versatile Applications

- Blue chip biotechs
- Research institutions
- Life science startups

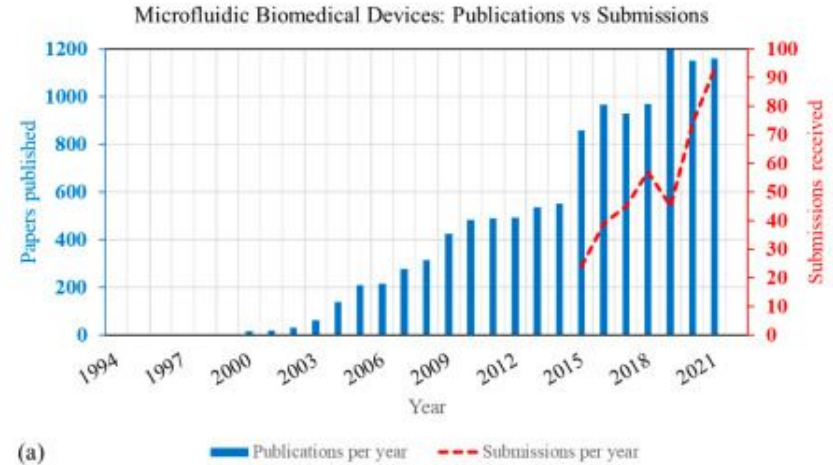


Source: [Insight Partners](#), 2027 Projection

And Growing Quickly!



17.9% CAGR



Number of publications for the keyword search 'microfluidics + medical + devices' and device submissions received at CDRH. [Source: NIH](#)

Our Business Model



We make money in three ways:

SaaS

- Free
- Standard: \$320/mo/user
- Enterprise: Custom pricing

Marketplace

- Custom manufacturing %
- Off-the-shelf components %
 - Pumps
 - Valves
 - Sensors
 - etc.

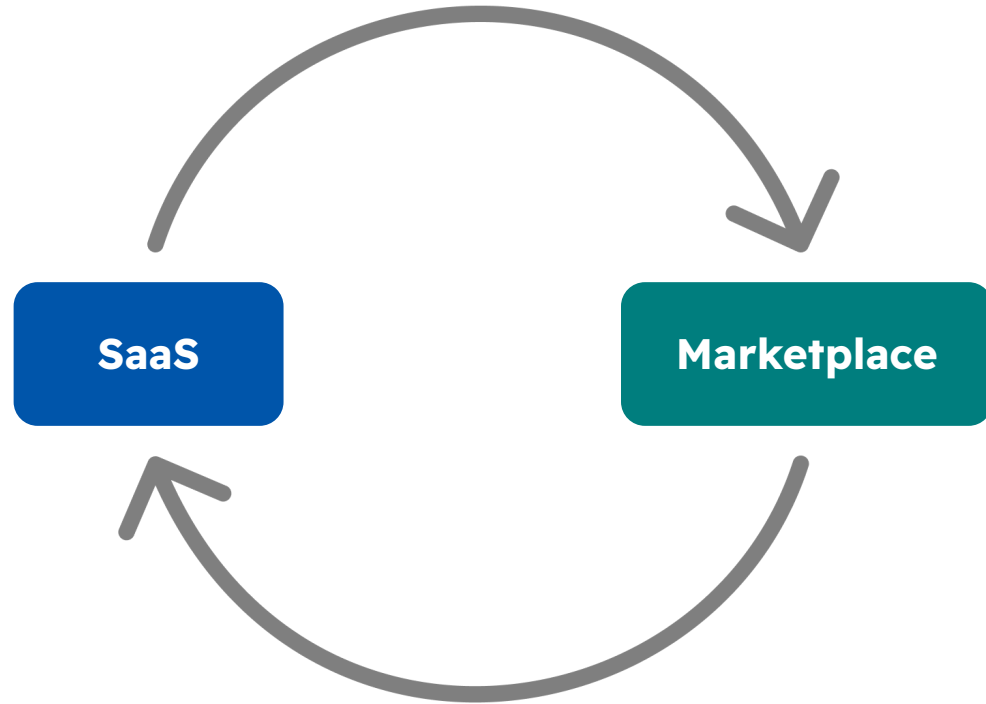
Services

- Fixed & T+M engineering services for support, customization, and integration

Flywheel



- Software users drive marketplace sales
- Marketplace suppliers drive software users
- Services spin up the flywheel and accelerate **growth**



We Have Early Traction

Flow Circuits is live and ready to scale!



Users	298
ARR	\$53k
Churn (Mo.)	3.46%
Est. LTV	\$9,250

We Have Early Traction

Flow Circuits is live and ready to scale!



Ethan Dinauer

Product Realization Manager @
MicroMed Solutions

"Thank you for developing a tool to address a significant pain point in fluidic-based product development. Flow Circuits is a massive improvement over Visio/PowerPoint/AutoCAD for doing fluidic layouts. Plus, you can do basic fluid simulations where CFD is overkill."



Go to Market

- We can have 15,000 customers in 3 years
- Direct Enterprise Sales
- Education
- Events
 - Trade Shows
 - Conferences
 - Workshops
 - Lunch and Learns
- Content



ADLM 2024



Milestones



Ubiquitous
Design Platform
(Free!),
1,000+ Users

Q4 2024



Marketplace +
Order Now

Q4 2024



Advanced
Simulations,
Hardware
Integration,
4,000+ Users

Q2 2025



AI-Powered
Lab-on-a-Chip
Factory,
15,000+ Users

Q1 2026

CEO & Founder



- BSME California Polytechnic University SLO
- Ex-Toolbox Medical Innovations (Acquired by TE Connectivity)
- Ex-Biological Dynamics
- HVAKR: Built vertical SaaS platform for HVAC engineering design
- 9+ Years Product Development on IVD Consumables/Instruments
- Lead dozens of devices to market:
 - [DNAe LiDia SEQ](#)
 - [Hound Labs Marijuana Breathalyzer](#)
 - [Curate Cell Processing System](#)
 - [Biological Dynamics ExoVerita Pro](#)
 - [Thermo Fisher Accula SARS-CoV-2 Test](#)



Andrew Krippner
Founder

Current Investors & Advisors



Mike Glanz

Ex-Founder/CEO HireAHelper
(Marketplace, Acquired by Porch)



Miguel Hernandez

Ex-CFO UltiSat
(Technology)

Financing



Investment	SAFE Note
Size	\$800k
Key Terms	\$5M pre-money valuation capped SAFE
Use of Funds	Go To Market
Expected Close	Q3 2024

Thank you!

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- 📅 Meet: flowcircuits.com/calendar
- 🌐 Website: flowcircuits.com
- 🌐 LinkedIn: linkedin.com/company/flowcircuits

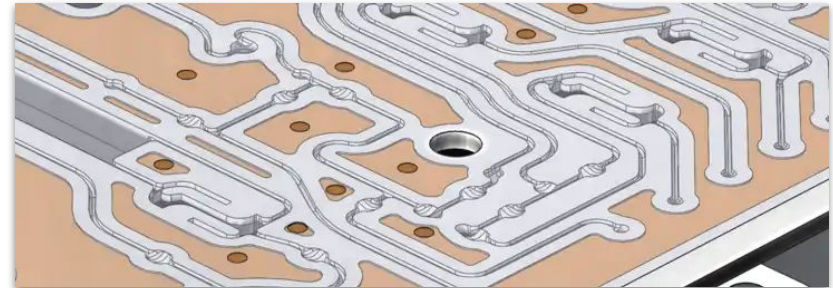
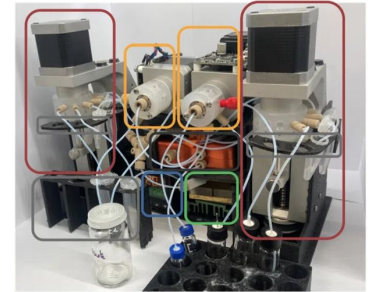


Appendix

What is a Flow Circuit?

“A network of fluidic components connected through fluid channels to facilitate a useful process”

- Pumps (Syringe, Peristaltic, Piezo, Vacuum, etc.)
- Valves (Pinch, Rotary, Membrane, Solenoid, Check Valves, etc.)
- Chambers (Input, Output, Mixing, Blister, etc.)
- Filters
- Fluid Sensors (Optical, Ultrasonic)
- Flow/Pressure Sensors
- Optics
- Flow Cells/Electronics Integration
- Magnets
- Heaters
- Custom Microfluidics



What are Flow Circuits used for?



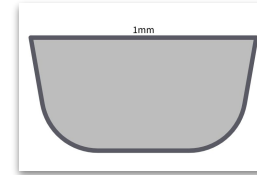
These devices are currently used in the market in many important life science applications:

- In Vitro Diagnostics/Molecular Assays
- Life Science Research/Drug Discovery
- Synthetic Biology/Biomanufacturing
- Lab-on-a-chip, Organ-on-a-chip
- Personalized Medicine
- Genomics

Product: Design



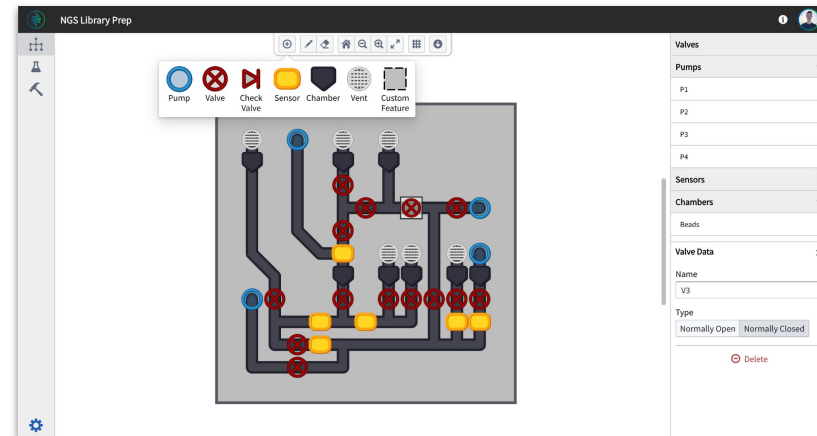
- Draw Fluid Channels
- Drag and Drop Fluidic Components
- Volume Sizing and Layout
- Define Channel Cross Sections
- Multi-Layer Functionality
- Fluid Library
- Real Time Collaboration
- Configurable and Customizable
- Easy changes w/o broken design intent
- Integrated OTS Component Selection



Fluid Library

Name	Viscosity	Color
Pretreatment	1.000 cP	
Sample	1.000 cP	
Wash	1.000 cP	

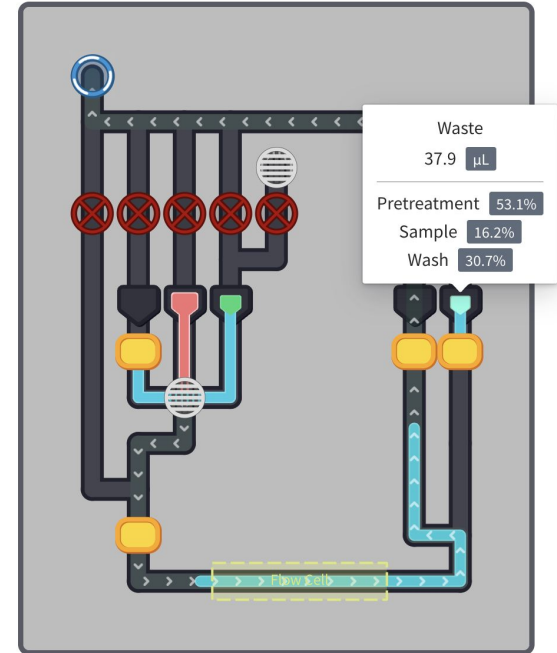
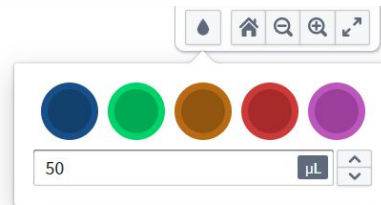
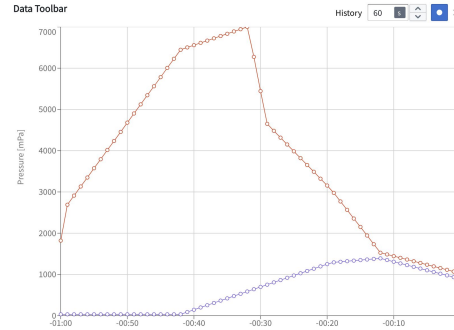
[Create New Fluid](#)



Product: Test



- Interactive Components
- Visualize Open Flow Paths
- Drag and Drop Fluid Volumes
- Simulate Fluid Flow
 - Hagen-Poiseuille Equation
 - Young-Laplace Equation
- Inspect Fluid Volumes in Real Time
- Pressure Charting and Export
- Identify Design Errors Instantly



Product: Scripting



- Visual Programming Language
- Test Instantly With Simulation
- Intuitive Commands
- Consistent Playback
- Tune In Timing Between States
- Program Subscripts
- Drag and Drop Ordering
- Export and Reuse as Instrument Controller

The screenshot displays a 'Main' window with a list of control actions. Each action is represented by an icon and text, with some having associated input fields and dropdown menus. The actions are as follows:

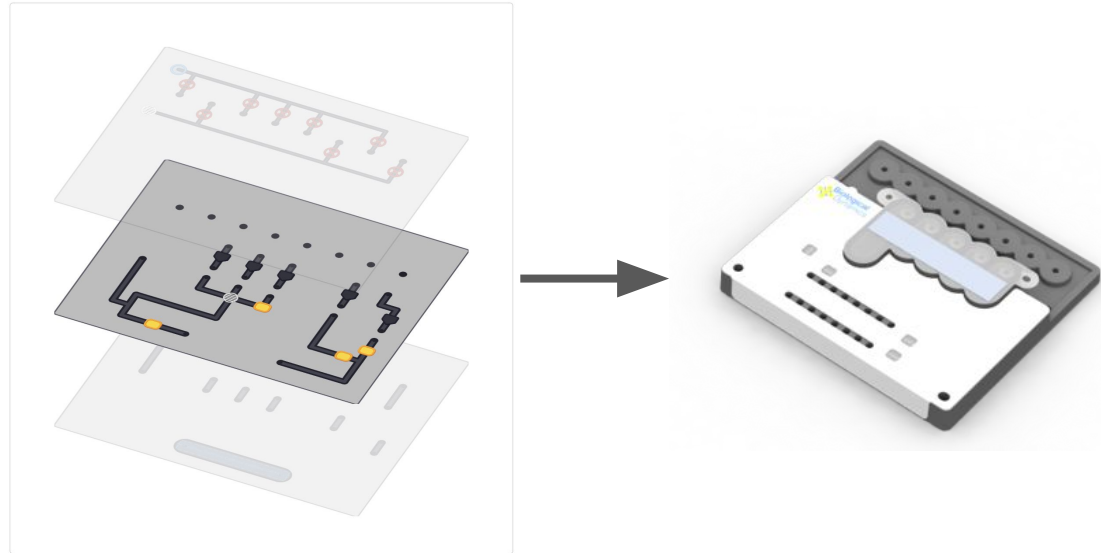
- Calendar icon: Await S3 Air
- Clock icon: Delay 2 s
- Gear icon: Set Pump P1 0.0 $\mu\text{L/s}$
- Grid icon: Set Valves
- Gear icon: Set Pump P3 -1.0 $\mu\text{L/s}$
- Calendar icon: Await S4 Fluid
- Calendar icon: Await S4 Air
- Clock icon: Delay 2 s
- Gear icon: Set Pump P3 0.0 $\mu\text{L/s}$
- Grid icon: Set Valves
- Gear icon: Set Pump P1 -1.0 $\mu\text{L/s}$
- Calendar icon: Await New Sensor Fluid
- Grid icon: Set Valves

Product: Build



We offer a systemized translation of the designed schematic to final products in many architectures. We monetize this as a marketplace:

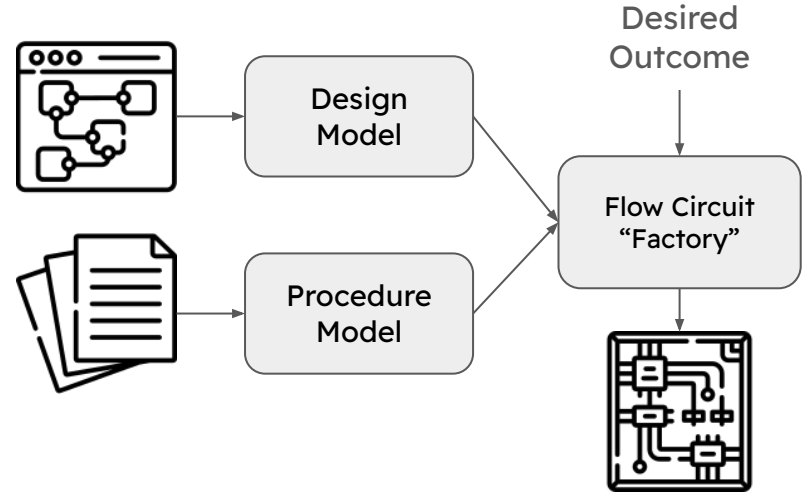
- Injection Molding
- 3D Printing
- Laminate Assembly
- Machined Manifold
- Hot Embossing
- PDMS
- OTS Components
 - Pumps
 - Valves
 - Sensors
 - Tubing
 - Connectors



AI Strategy



- Become ubiquitous platform for designing microfluidic circuits
- Utilize free user data to train AI models to build “lab on a chip factory”
- Ingest research and generate next-gen products with model



Competitive Landscape



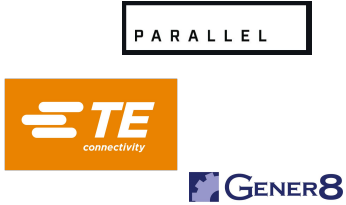

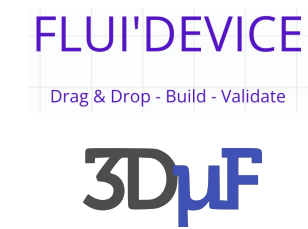
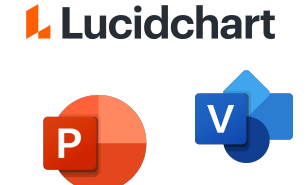
We are the first microfluidics design platform!

Software

- Some highly specialized and expensive CFD tools (Ansys, COMSOL)
- Product “Hacking” (PowerPoint, LucidChart, Visio)
- Drawing Tools (3DuF, Fluidevice)

Design Services

- Product Development Organizations (TE, Gener8, etc.)

<p>PD Orgs + Mfgs</p> 	<p>CFD Software</p> 
<p>uF CAD Software</p> 	<p>Product Hacks</p> 

Videos



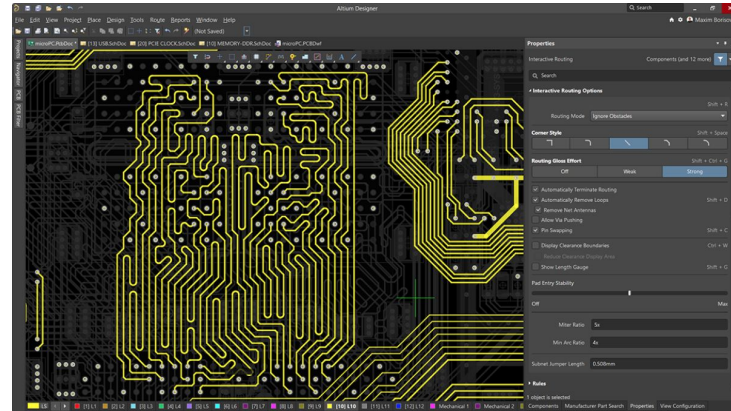
- [Design Test Build Demo](#)
- [Promo Video](#)
- [Walkthrough Series](#)

Analogous Market

- [Altium Limited](#) is an Australian multinational software company that provides electronic design automation software to engineers who design printed circuit boards
- \$4020/year subscription
- The total printed circuit board market size is \$75B/year ([Link](#))
- Altium's revenue in 2020 was \$221.5M ([Link](#))
- The total microfluidics market size is \$43B/year (2027)
- If we apply Altium's 2020 revenue capture percentage to Flow Circuits, we get \$127M/year



**ALTIUM
DESIGNER**



Macro Problem & Opportunity



Healthcare remains inaccessible, costs are rising, life expectancy is falling

Biotech has failed to progress at the pace of computing. (Moore's Law vs [Eroom's Law](#))

Flow Circuits will enable massive growth in life sciences by automating, scaling, and decentralizing science

The More You Know



\$1500

Average cost of
blood test



>\$1B

Cost to develop
single drug



30-50%

Biologist's time
manually moving
fluids with pipette

Our Mission

We exist to accelerate and simplify the development of life science products to extend life and benefit human flourishing.



Our Vision

We make building Flow Circuits as easy as building printed circuit boards.

