



CATALYST

SPEEDING UP SCIENCE

MAGGEE BOND | THOMAS GASKIN | ANUSHREE JAIN | ALISA WEINSTEIN

Meet Jonah.

**He's working on his PhD in
Chemistry at Howard University.**



THE PROBLEM

The lab instruments he uses are old. Like, from the '80s.

They're slow, temperamental and sometimes, unreliable.

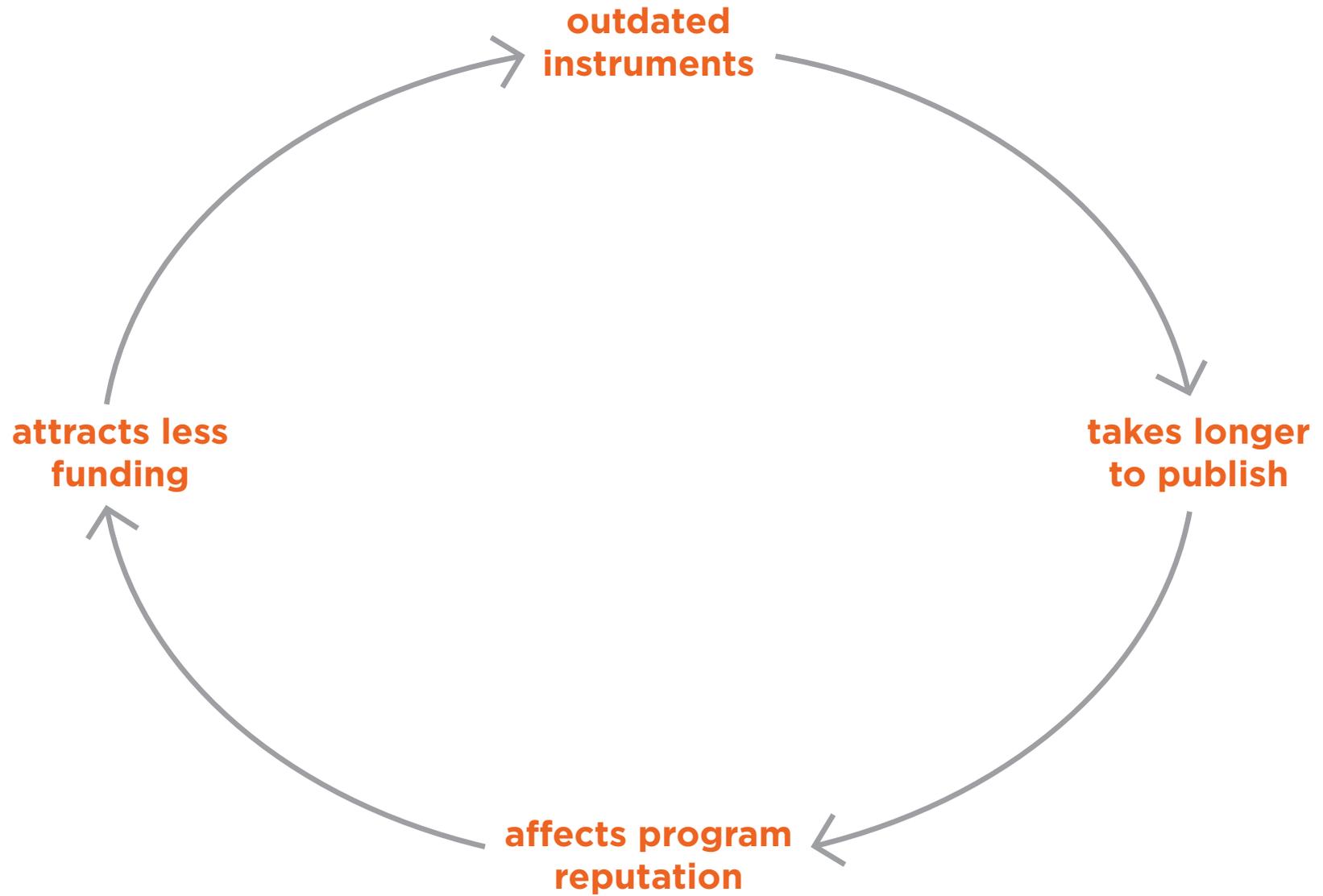


THE PROBLEM

In a competitive field,
that's a problem.



THE PROBLEM



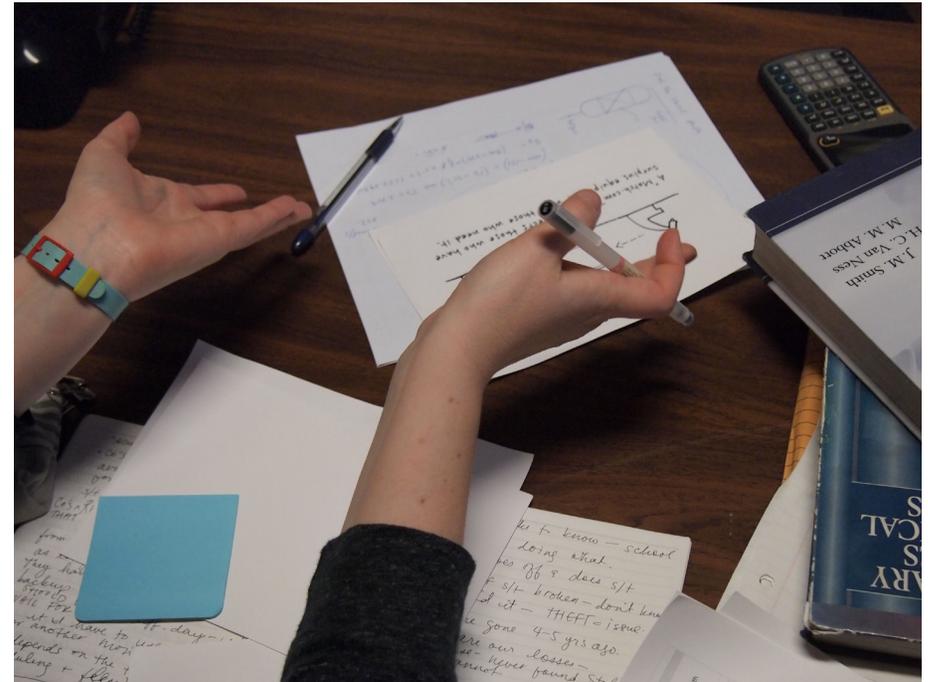
PHASE ONE

What is the current situation? How does equipment get bought and sold today?

EXPERT INTERVIEWS



USER INTERVIEWS WITH STIMULUS



What is the current situation? How does equipment get bought and sold today?

EXPERT INTERVIEWS

R&D Director, SCJ

CEO, Seeding Labs (lab equipment nonprofit)

Director, BioSurplus (buyer/seller surplus equipment)

General Manager, LabX (online lab equipment marketplace)

Operations Manager, OSU Surplus

USER INTERVIEWS WITH STIMULUS

PhD Candidates in Chemistry, Howard University

Lab Manager and Professor, IIT Chemical and Biological Engineering

PHASE ONE: INSIGHTS

Moving equipment from corporations to universities may not be the solution.

RISK IS A HUGE BARRIER

“We can’t sell equipment that’s been in storage for too long. There are just too many unknowns.”

— Rae DeLay, OSU Surplus

“A laboratory fume hood...may have had toxic chemicals passed through it. Is it safe to sell? Who is liable?”

— Ken Piech, LabX

LOGISTICS ARE OVERWHELMING

“At the end of the day, it’s easier to just put it in storage”

— John Goelz, SC Johnson

Informal systems for sharing are already in place. Can we improve existing solutions?

LAB SHARING SURVEY

Form Settings Progress Bar: No

Page 1 of 4

Sharing Lab Space and Equipment

Hello! We are graduate students at the IIT Institute of Design conducting research on how people in the science community share laboratory space and equipment.

You can help us by taking this survey and sharing it with others in the science community. Responses will be kept private and shared only within our research team.

Thanks for your time and support!

What type of lab do you work in?
e.g., chemistry, biology, etc.

What type of institution is your lab a part of?

PHASE TWO

Informal systems for sharing are already in place. Can we improve existing solutions?

LAB SHARING SURVEY

Goal

Understand the experience of visiting other labs and the experience of hosting researchers at your lab.

Learn about the perceived barriers and benefits of lab sharing.

Participants

Recruited through Twitter, ResearchGate, LinkedIn, word of mouth

Received 20 responses from 4 countries

Mix of academic, corporate and federally funded labs

Mix of students and professionals

Sharing is complicated.

RELATIONSHIPS ARE KEY

“I spent about two or three weeks trying to get in contact with some woman, but she didn’t want to respond to my emails because she didn’t know who I was.”

— Darkus, Research Chemist, Lawrence KA

DIFFERENT LAB, DIFFERENT ETIQUETTE

“Some people are so careless. They don’t follow the steps or take the precautions that are important when using the instrument.”

— Hannah, Student, Washington D.C.

LOGISTICS ARE AN ISSUE

“I do not like driving to different locations or making appointments with limited time to use labs.” — Matt, Student, Washington D.C.

PHASE TWO: INSIGHTS

**And it's not just about access.
Collaboration is a very real,
meaningful benefit.**

“I believe it is very important to connect to neighboring labs to keep a scientific spirit and many collaborations have been established by this.”

— Marta, Lab Group Leader, Berlin

“I also enjoyed interacting with other scientists as they are able to teach me tricks and practices that are outside of my primary realm of study.”

— Lee, Student, Arlington

OPPORTUNITY

What if we could make it easier to share lab instruments and eliminate access as a barrier to scientific research?

OPPORTUNITY

488

Universities

with graduate degrees in
lab sciences

193,124

Students

graduate students in science programs

9,171

Labs

small R&D labs <20 employees
Federally Funded R&D Centers

PHASE THREE

How would something like this work? What would it look like?

EVALUATIVE RESEARCH

CATALYST SPEEDING UP SCIENCE Welcome friend! [Sign Out](#)

Dashboard	Your Profile	Your Account	Lab Calendar	Your History	Inbox
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Name
[\(edit profile\)](#)

Welcome to Catalyst! Here's a [guide](#) to help you get started

Alerts
Complete your profile by linking to Research Gate and LinkedIn

Messages (0 new)

PHASE THREE

How would something like this work? What would it look like?

EVALUATIVE RESEARCH

Wireframes

Low-fi wireframes were created as an experience prototype to test with select participants.

Scenarios were created to walk participants through the prototype.

Participants

Three participants recruited through our survey

PHASE THREE: INSIGHTS

We can't solve it all. But we can provide tools to guide our users.

CLARITY AND TONE

“It depends...is it a lab manager or student?”

— Courtney, Student, Washington D.C.

USER GUIDANCE ON THE SPECIFICS

“Even from NMR to NMR, there's two major softwares that they use, and even still, let's say we have the same software, when your installer set it up, he could've set up the commands differently. You wouldn't want to let someone in without telling them those kinds of things.”

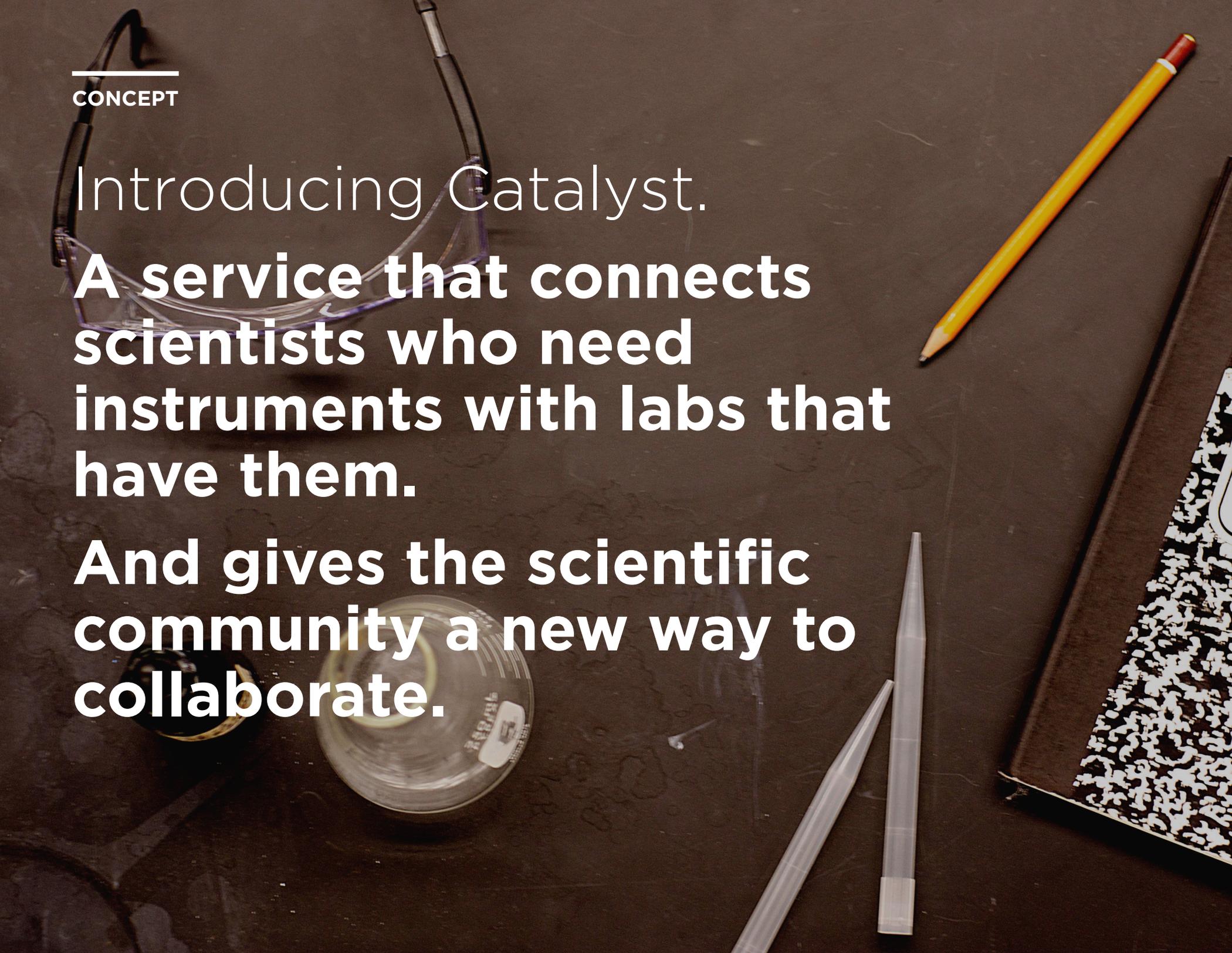
— Jonah, Student, Washington D.C.

CONCEPT

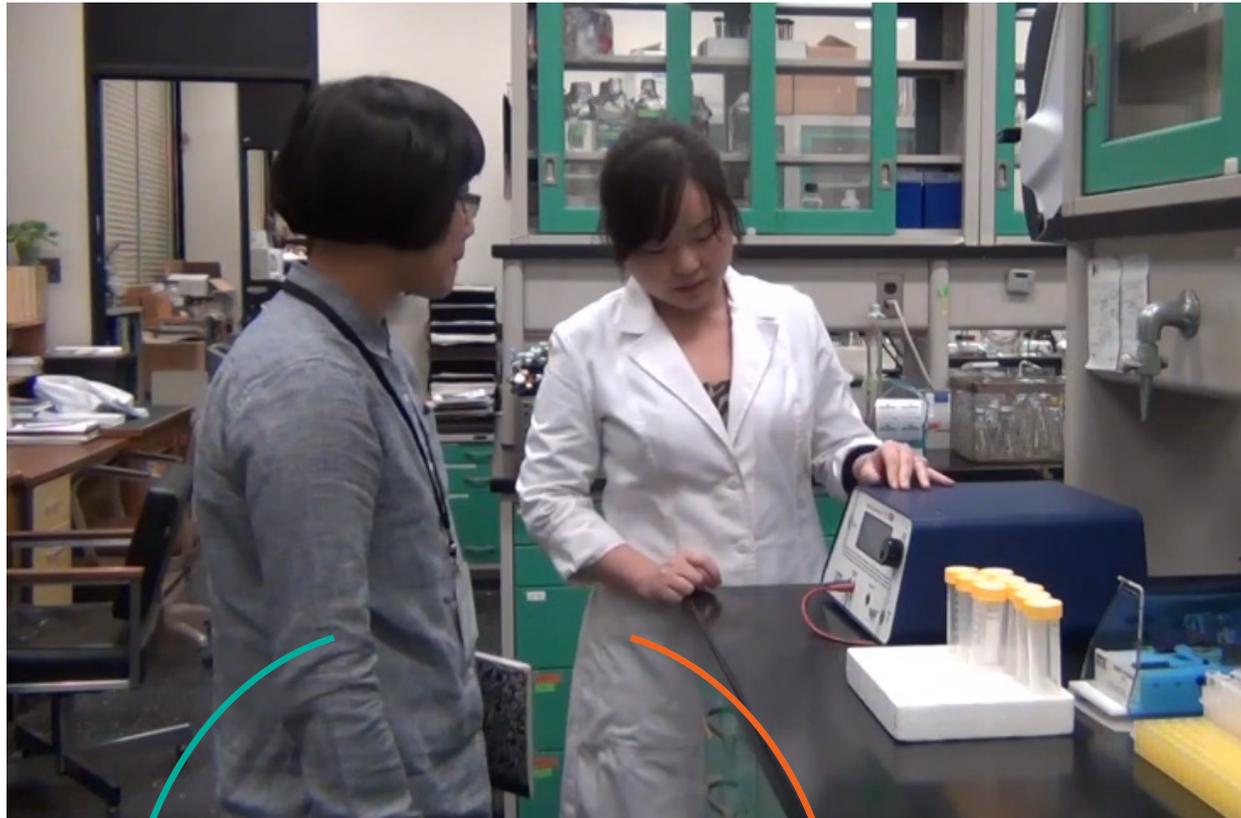
Introducing Catalyst.

**A service that connects
scientists who need
instruments with labs that
have them.**

**And gives the scientific
community a new way to
collaborate.**



HOW IT WORKS



GUESTS

who need instruments
search on Catalyst for the
machine that's right for
them in a lab nearby.

HOSTS

who have instruments
post their idle machines
as a way to offset
lab costs and meet
researchers in their field.

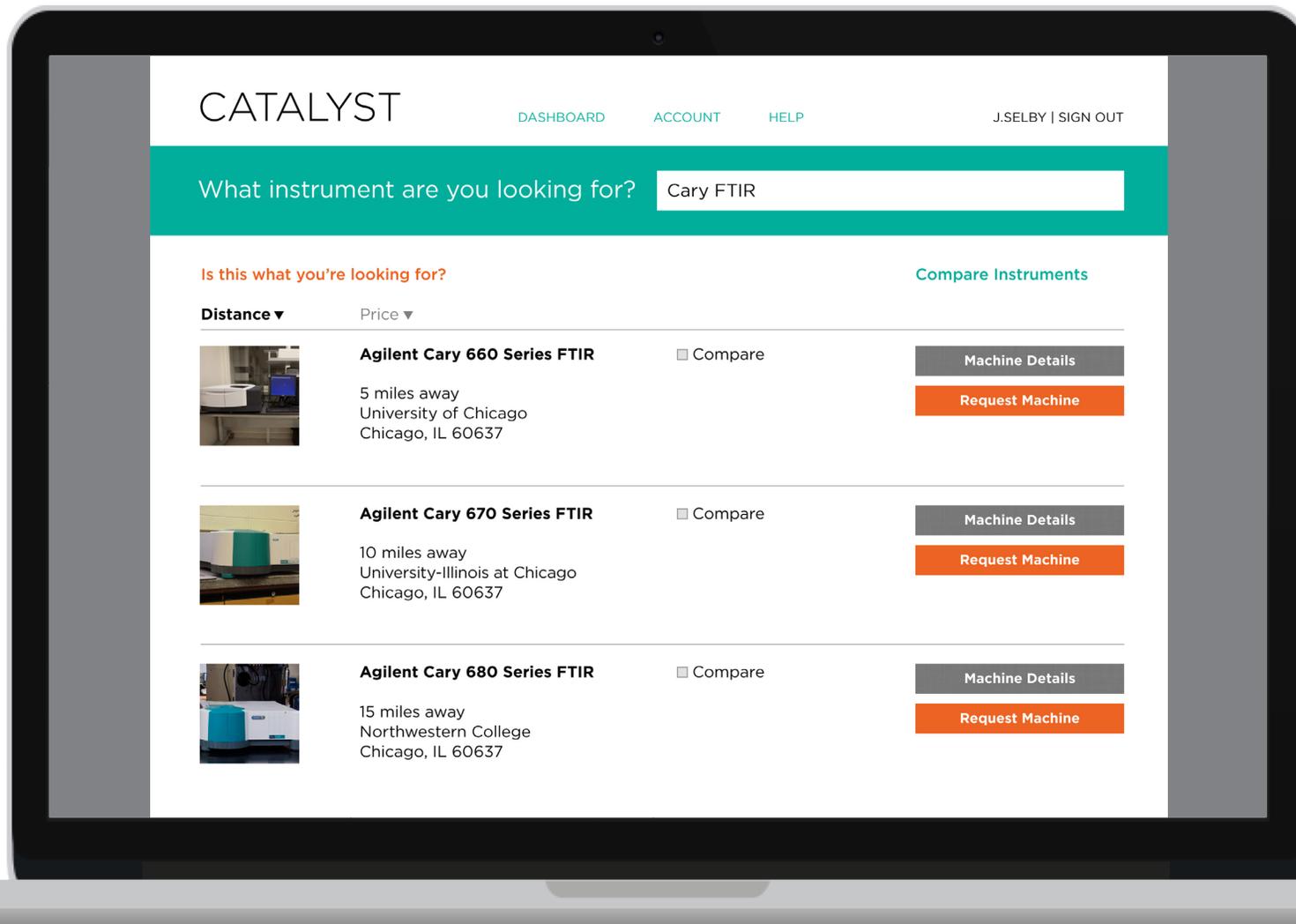
BENEFITS

- 01. Make equipment visible**
- 02. Establish credibility and trust**
- 03. Manage logistics**
- 04. Improve sharing experience**

BENEFITS

Make equipment visible

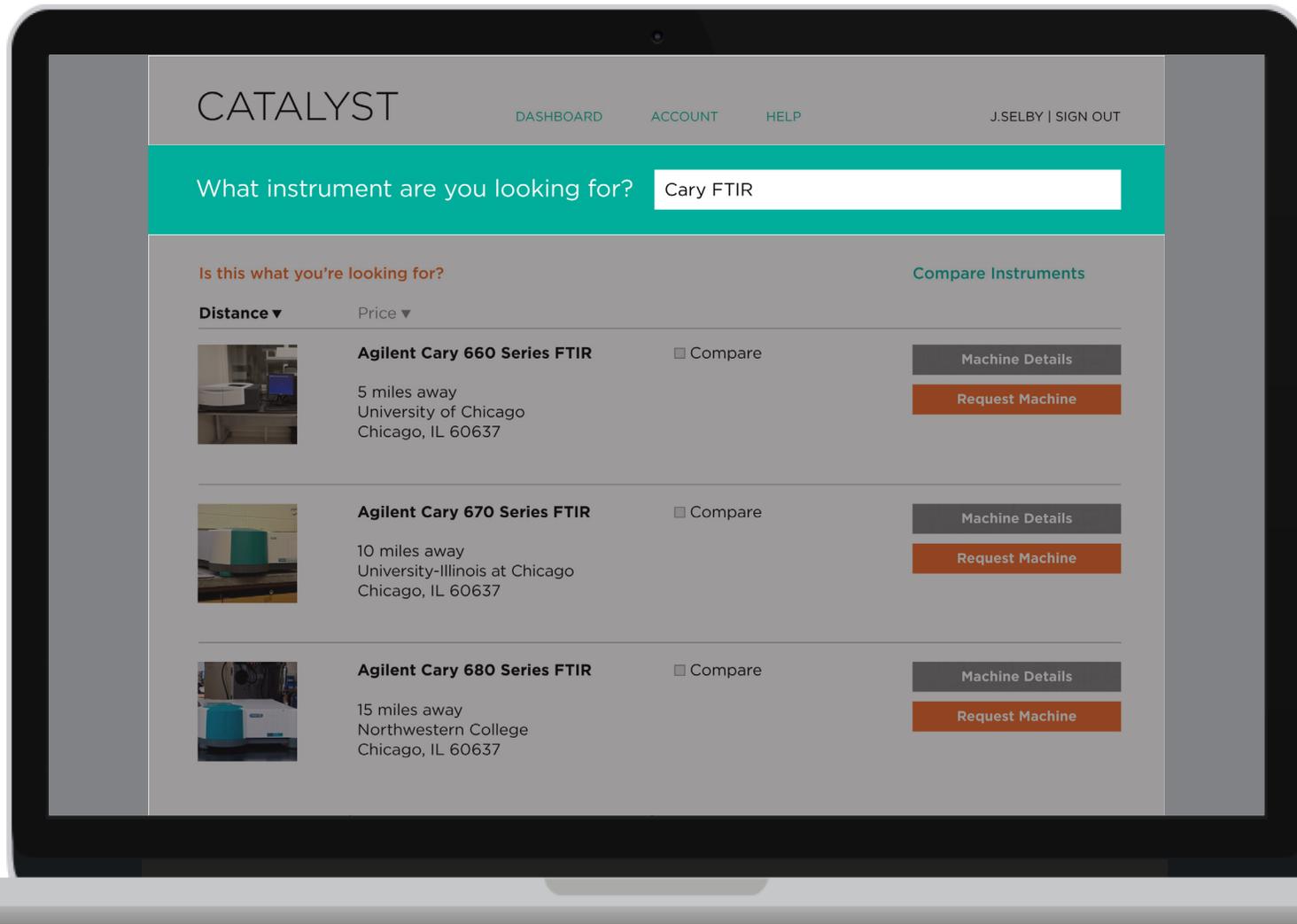
search | compare | listings find the right machine



BENEFITS

Make equipment visible

search | compare | listings find the right machine



BENEFITS

Make equipment visible

search | **compare** | listings find the right machine

The screenshot shows the CATALYST website interface. At the top, the logo 'CATALYST' is on the left, and navigation links 'DASHBOARD', 'ACCOUNT', and 'HELP' are in the center. On the right, the user 'J.SELBY' is logged in with a 'SIGN OUT' option. A search bar contains the text 'Cary FTIR'. Below the search bar, there are three columns, each representing a different Agilent Cary FTIR model. Each column includes a photo of the instrument, a 'Request Machine' button, and a list of specifications. A table at the bottom compares the three models across various technical specifications.

	Agilent Cary 660 Series FTIR	Agilent Cary 670 Series FTIR	Agilent Cary 680 Series FTIR
Interferometer type	38mm dynamically aligned	42mm dynamically aligned	46mm dynamically aligned
Spectral range	9,000-375	9,500-350	9,750-300
Spectral resolution	Better than 0.06	Better than 0.04	Better than 0.02
Signal-to-noise ratio	>10,000:1 p-p	>12,500:1 p-p	>15,000:1 p-p
Infrared power	>50 mW	>50 mW	>50 mW
Wavenumber	0.005 cm at 2200 cm	0.004 cm at 2200 cm	0.003 cm at 2200 cm

BENEFITS

Make equipment visible

search | compare | **listings find the right machine**

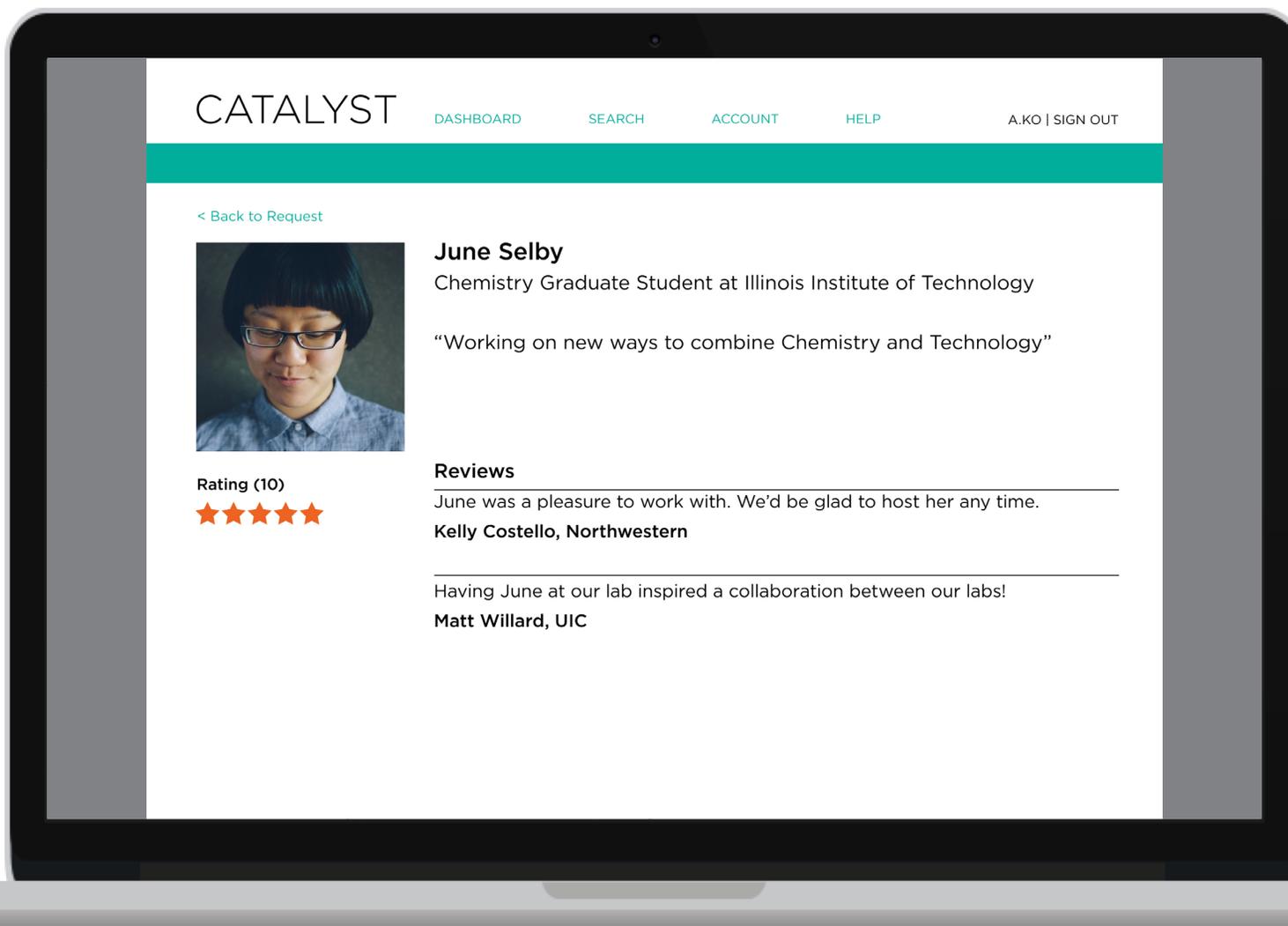
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BENEFITS

Establish credibility and build trust

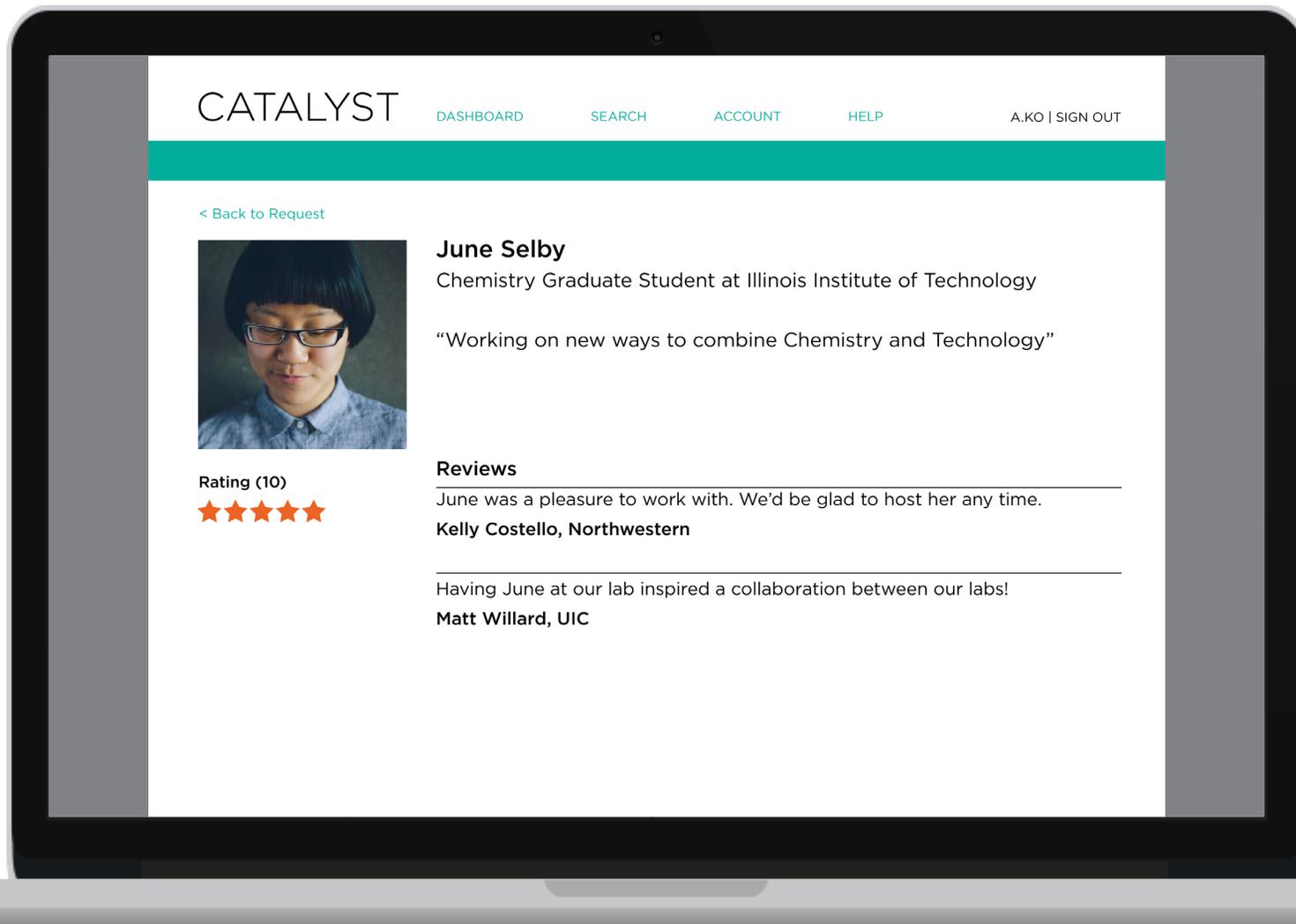
scientist profile | rate and review



BENEFITS

Establish credibility and build trust

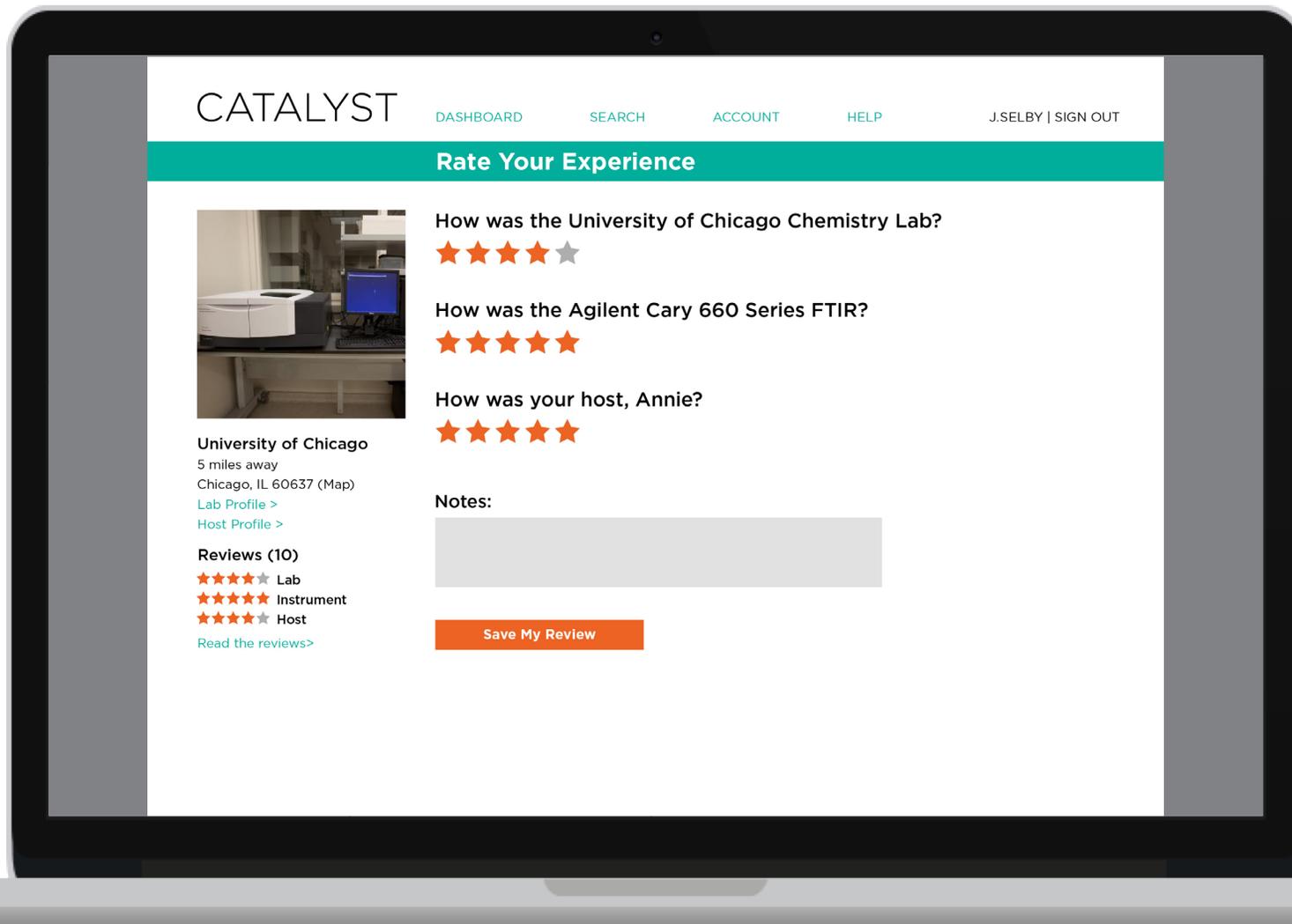
scientist profile | rate and review



BENEFITS

Establish credibility and build trust

scientist profile | **rate and review**



BENEFITS

Manage logistics

simple scheduling | clear financial terms | communication

CATALYST DASHBOARD SEARCH ACCOUNT HELP A.KO | SIGN OUT

Reservation Request

**June Selby**
Graduate Student, Chemistry
Illinois Institute of Technology
[June's Profile >](#)

Rating (10)
★★★★★

[Contact The Guest](#)

December 16, 2013, 9am-2pm
Agilent Cary 660 Series FTIR

December 2013

<	S	M	T	W	T	F	S	>
	15	16	10	11	12	13	14	
8								
9								
10								
11								
12								
1								
2								
3								
4								
5								

June has a question
Do you have time to give me a short intro to the instrument?

[Accept Reservation](#)

[Decline Reservation](#)

Price

5 hours @ \$20/hr	\$100
Catalyst Fee:	\$25
Total:	\$75

You will receive the funds once the visit is complete.

BENEFITS

Manage logistics

simple scheduling | clear financial terms | communication

The screenshot displays the CATALYST website interface for a reservation request. The header includes the CATALYST logo and navigation links: DASHBOARD, SEARCH, ACCOUNT, HELP, and A.KO | SIGN OUT. The main heading is "Reservation Request".

Reservation Details:
December 16, 2013, 9am-2pm
Agilent Cary 660 Series FTIR

Guest Profile:

June Selby
Graduate Student, Chemistry
Illinois Institute of Technology
[June's Profile >](#)

Rating (10)
★★★★★

Price

5 hours @ \$20/hr	\$100
Catalyst Fee:	\$25
Total:	\$75

[Contact The Guest](#)

June has a question
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[Accept Reservation](#)

[Decline Reservation](#)

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BENEFITS

Manage logistics

simple scheduling | **clear financial terms** | communication

CATALYST DASHBOARD SEARCH ACCOUNT HELP A.KO | SIGN OUT

Reservation Request

December 16, 2013, 9am-2pm
Agilent Cary 660 Series FTIR

June Selby
Graduate Student, Chemistry
Illinois Institute of Technology
[June's Profile >](#)

Rating (10)
★★★★★

Contact The Guest

December 2013

S	M	T	W	T	F	S
15	16	10	11	12	13	14
8						
9						
10						
11						
12						
1						
2						
3						
4						
5						

June has a question
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Accept Reservation

Decline Reservation

Price	
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Catalyst Fee:	\$25
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BENEFITS

Manage logistics

simple scheduling | clear financial terms | **communication**

The screenshot displays the CATALYST website interface. At the top, the navigation bar includes 'CATALYST', 'DASHBOARD', 'SEARCH', 'ACCOUNT', 'HELP', and 'A.KO | SIGN OUT'. Below this is a teal header for 'Reservation Request'. The main content area features a profile for June Selby, a Graduate Student in Chemistry at the Illinois Institute of Technology, with a 5-star rating and a 'Contact The Guest' button. The reservation details specify 'December 16, 2013, 9am-2pm' for an 'Agilent Cary 660 Series FTIR'. A calendar view for December 2013 shows the reservation slot highlighted in orange on Tuesday, December 10th. A price table shows a total of \$75, including a \$25 catalyst fee. A notification box on the right asks 'June has a question: Do you have time to give me a short intro to the instrument?' and provides 'Accept Reservation' and 'Decline Reservation' buttons. A note at the bottom states, 'You will receive the funds once the visit is complete.'

CATALYST DASHBOARD SEARCH ACCOUNT HELP A.KO | SIGN OUT

Reservation Request

December 16, 2013, 9am-2pm
Agilent Cary 660 Series FTIR

June Selby
Graduate Student, Chemistry
Illinois Institute of Technology
[June's Profile >](#)

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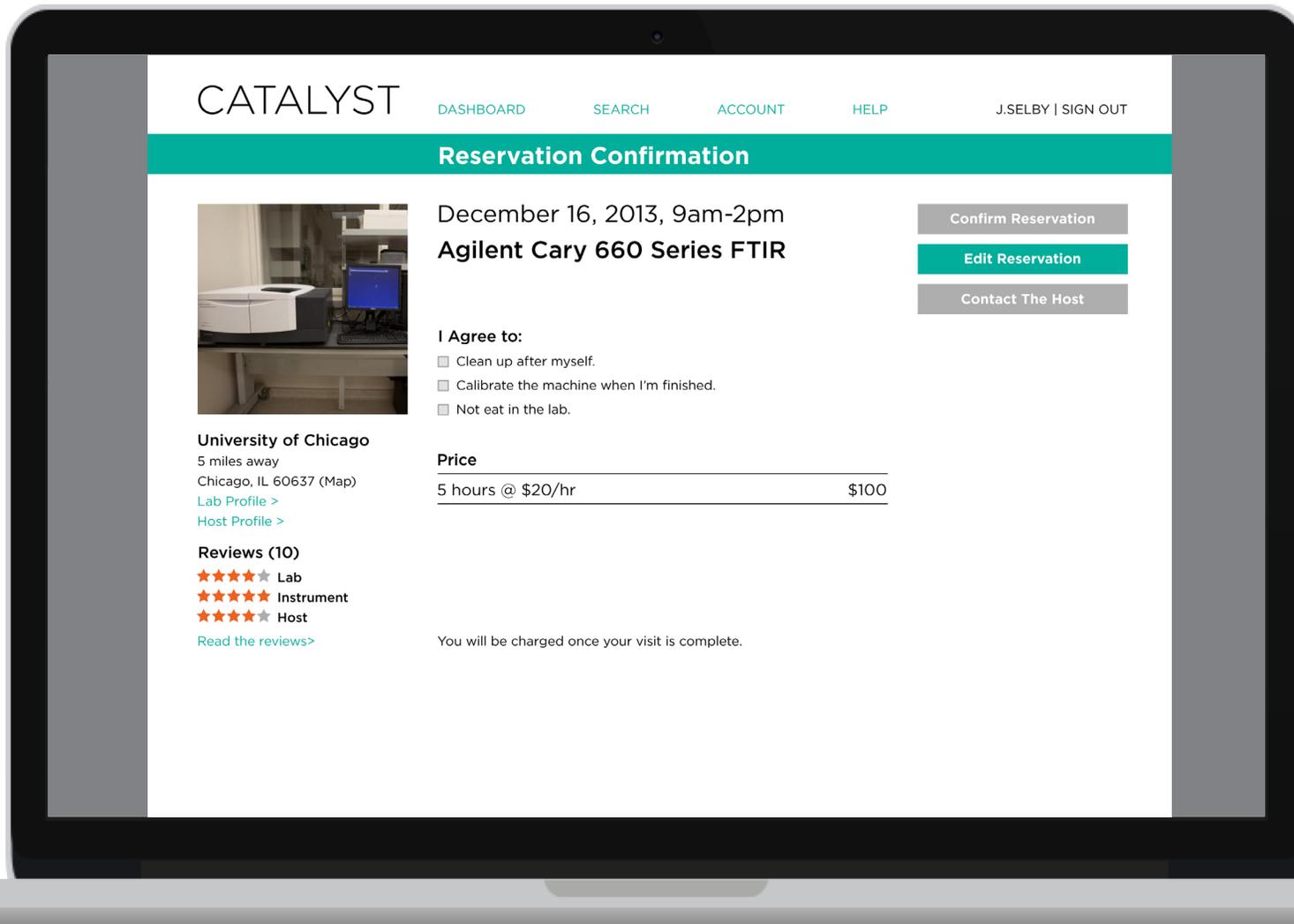
Accept Reservation

Decline Reservation

BENEFITS

Improve sharing experience

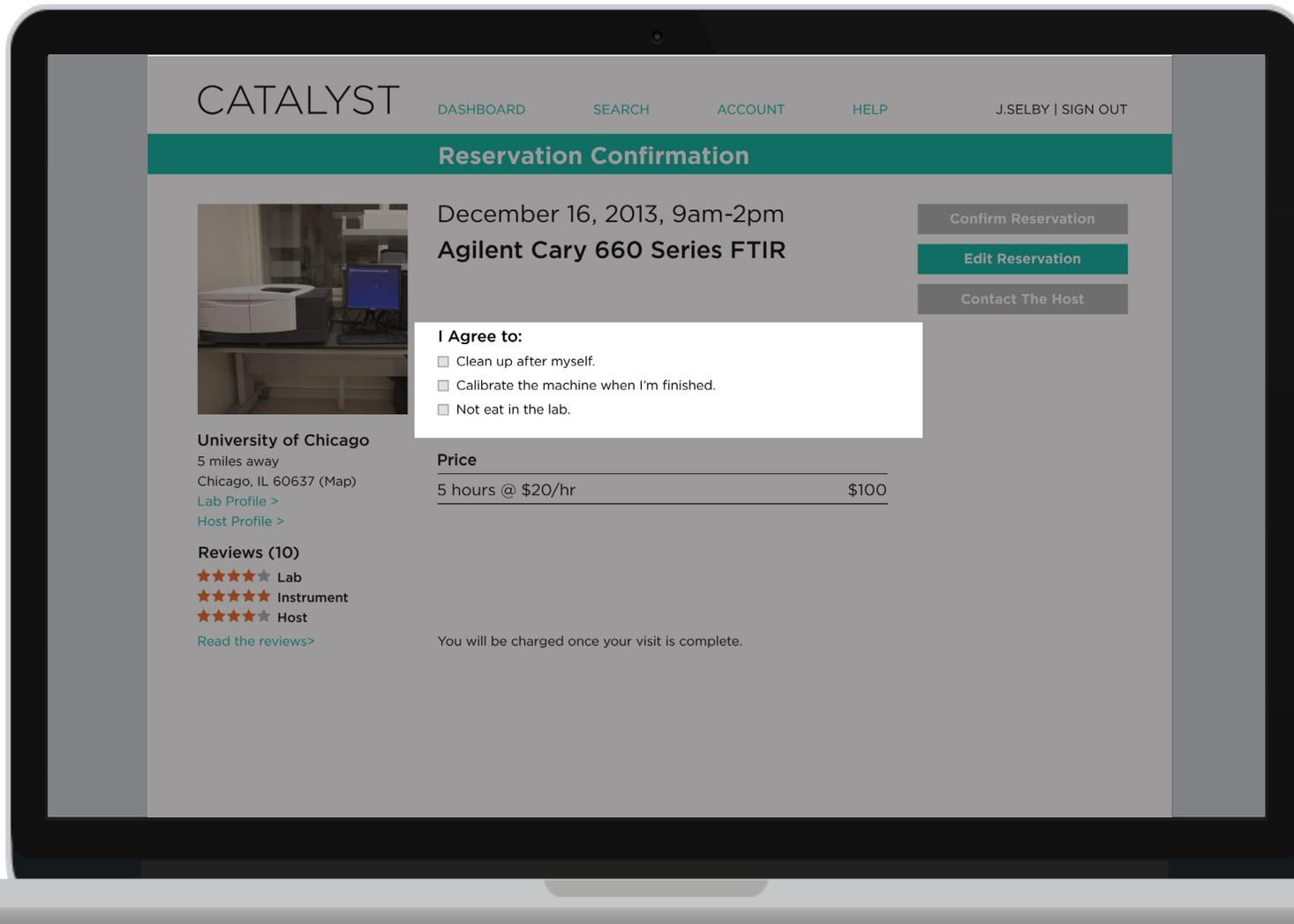
articulate lab rules | walking directions | alerts



BENEFITS

Improve sharing experience

articulate lab rules | walking directions | alerts



BENEFITS

Improve sharing experience

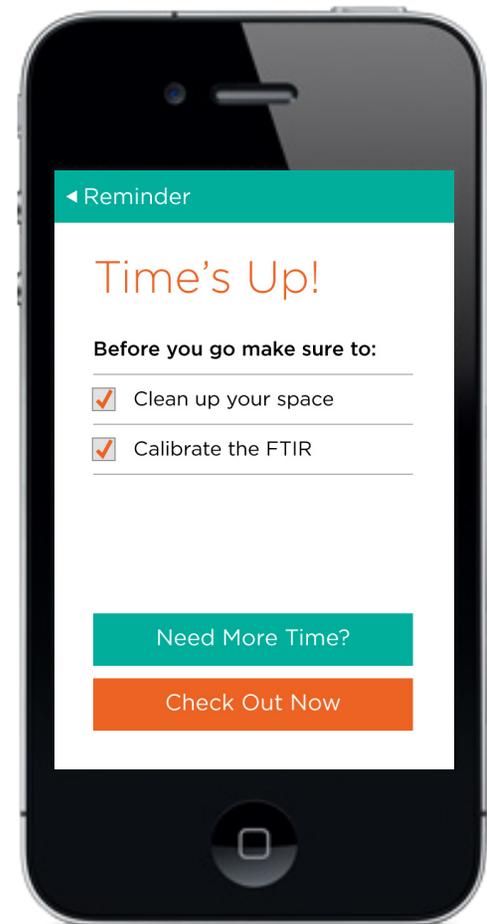
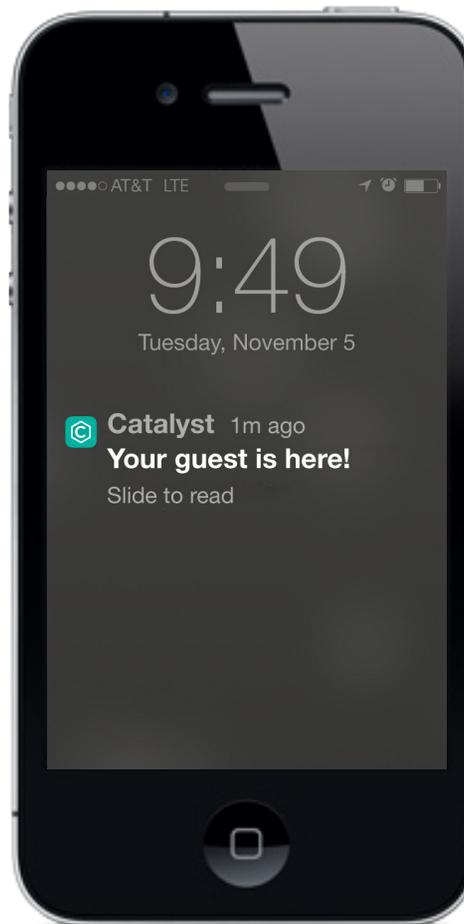
articulate lab rules | **walking directions** | alerts



BENEFITS

Improve sharing experience

articulate lab rules | walking directions | **alerts**



BENEFITS

Improve sharing experience

welcome package with member ID card



BUSINESS MODEL

Estimated Penetration % (Guests)	5%	5,119
Estimated Penetration (Labs)	5%	507
Monthly User Base Increase	10%	
Attrition Rate (per month)	5%	
Fee per visit	\$25	
Fee per sample	\$5	
Additional Revenue (Ads + Reports)		

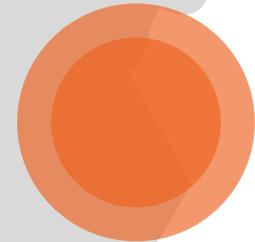
	Year 1	Year 2	Year 3	Year 4+
Number of Guests	886	2,386	5,081	5,119
Number of Host Labs	33	188	581	581
Costs	\$277,333	\$241,000	\$241,000	\$241,000
Revenue	\$187,250	\$319,576	\$576,297	\$1,037,557
	\$-90,084	\$78,576	\$335,297	\$796,557

Data generated by Catalyst has the potential to provide additional value.

Machine Performance Data	Manufacturer (R&D)
Machine Usage Data	Manufacturer (R&D + Marketing) + Consumables Suppliers
Product Interest	Manufacturer (Marketing) + Consumables Suppliers
Industry Trends	Corporations (R&D)
Competitor Data	Manufacturers (Marketing)

Next...partner with a scientific research hub for a pilot.

We seed the site and these labs become our evangelists.



How Catalyst could grow

Micro grants and sponsorships (3.4M Alumni)

Collaboration Platform

A recruiting tool for companies

A service applicable to other industries

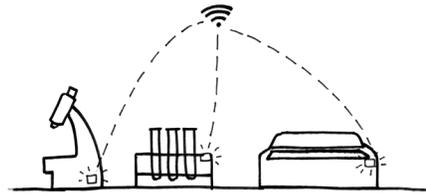
The background is a solid teal color with a white geometric pattern of overlapping hexagons. The pattern is composed of thin white lines that form a grid of interconnected hexagonal shapes, some of which are partially cut off by the edges of the frame.

Thank You!

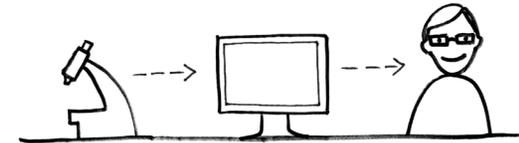
APPENDIX: INTERVIEW ACTIVITY



What if scientists could access a shared lab through a membership or subscription?



What if sensors placed on equipment could help track usage and history?



What if there were a Match.com or Yelp to connect those who have equipment with those who need it?

HOWARD UNIVERSITY

"I'd want to know how available the equipment is. It's all about how quickly we can get something done."

"You might not want to share if there's residual samples that could contaminate your work."

"The larger instruments...you know where they are, they aren't going anywhere. And stickers have a service date on them so you know the last time they were worked on."

"Some schools (not Howard) keep log books by the machines to tell you how it worked the last time it was used."

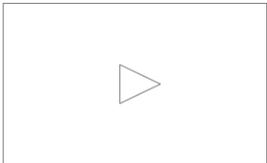
"You want to know who has what and what it was used for, how frequently it was used."

"(On sharing with companies) they might not have the same regulations, I'd be more cautious about sharing equipment with them."

APPENDIX: WIREFRAMES

CATALYST SPEEDING UP SCIENCE

Connecting scientists and moving research forward, faster.



What is Catalyst?

Catalyst enables scientists to quickly and easily find university labs that are willing to rent equipment and services. We also help those labs to manage the sticky logistics of renting.

Catalyst is a web-based service that makes it easy to see whether academic institutions have equipment they will share. Catalyst also connects the science community in a new way and supports the advancement of scientific research by removing financial and other barriers.

CATALYST SPEEDING UP SCIENCE Welcome friend!

Dashboard | Your Profile | Your Account | Lab Calendar | Your History | Inbox



Name [\(edit profile\)](#)

Welcome to Catalyst! Here's a [guide](#) to help you get started

Alerts

Complete your profile by linking to Research Gate and LinkedIn

Messages (0 new)

Invite others to join Catalyst!

enter email addresses followed by a comma

CATALYST SPEEDING UP SCIENCE Welcome friend!

Welcome! Tell us a little about yourself.

Dashboard | **Your Profile**

Connect to existing profiles to complete your profile



[upload photo](#)

First Name

Last Name

Gender

Birthdate

Preferred email

Phone

About me

APPENDIX: SURVEY SNAP SHOT

Timestamp	What type of lab do you work in?	What type of institution is your lab a part of?	What is your occupational title?	Age	Where do you live?	Have you used equipment or space at a lab other than your own?	If no, tell us the primary reason, then CONTINUE TO PAGE 3.	If yes, what was the nature of this arrangement?	How often do you visit other labs to use their space or equipment?	Briefly describe the experience of visiting other labs and tell us what you like and do not like about it.	Have visiting scientists, researchers or students used your lab equipment and/or space?	If no, tell us the primary reason, then CONTINUE TO PAGE 4.	If yes, what was the nature of this arrangement?	How often do visitors use your lab space and/or equipment?	Briefly describe the experience of having visitors at your lab, and tell us what you like and do not like about it.	In your lab, what are possible concerns when it comes to sharing space and equipment?	How might your lab be from sharing and equip
10/23/2013 14:13:01	Chemistry	Academic	Student		Silver Spring, MD	No	Don't have access or knowledge of who has what instrumentation		Rarely		No	Scheduling visitors would be too difficult		Rarely		Wear and tear of the machine, Scheduling conflicts or availability of equipment, Protecting intellectual property, Safety and liability issues, A strain on financial and/or human resources, Our equipment is specialized and requires training. We need to keep close track of how our equipment is used	Provides acc equipment th don't have, Reduces the to purchase i equipment, C me access to equipment th tends to get overcrowded Opportunity t meet and collaborate w scientists fro outside my la
10/23/2013 18:39:21	biochemistry	academic	student	21-30	Silver Spring, MD	Yes		My lab uses the lab space at the NIH because our work is a branch off from the research my advisor used to conduct there. We also use a more advanced NMR at the University of Maryland College Park because we have a shared grant with them where we can use the instrument.	Occasionally	I like being able to share the lab and equipment with other universities and companies because it is convenient when we need to use equipment we don't have but only need it occasionally. The only thing I don't like is not having access to the facility in order to track samples as needed.	Yes		Rarely	I don't have any real issues with others using our equipment. The only issue I have come across is when they end up using it longer than anticipated and then I need to use it as well.	Scheduling conflicts or availability of equipment	Provides acc equipment th don't have, Reduces the to purchase i equipment, C me access to equipment th tends to get overcrowded	
10/23/2013 18:42:05	Chemistry	Academic	Graduate student	21-30	Washington, DC	Yes		It's a shared instrument for the department.	Occasionally	I wish students had 24 hours access to the instrument.	No	Never really looked into to the idea of inviting others.		Rarely	N/A	Wear and tear of the machine	Reduces the to purchase i equipment
10/23/2013 18:52:58	Organic geochemistry	Federal government	Research chemist	31-40	Lawrence, KS	Yes		I had to use other institutions equipment such as NMR, Raman, X-Ray diffractometer, and lab space. Usually, the equipment usage was at no cost because of previously established collaborations. However, under different conditions the equipment use would have come at a cost.	Occasionally	During grad school I needed to use equipment at other institutions because the NMR at my school was not working. I needed Raman data to include with my FT-IR, and I needed to manually collect X-ray crystallography data due to the size of my crystal when our instrument could not accommodate such conditions. The most annoying thing about using someone else's equipment is that the technician may not be as knowledgeable as you need that person to be. They may not know detection limits, some special instrument parameters, or are willing to change instrument specs to meet your needs.	Yes	In grad school we allowed another group you use a Schlenk line, fluorescence and lifetime instrument, as well as, x-Ray diffractometer.	Occasionally	Some scientist are not interested in learning how our lab works and do not like to utilize our safety procedures.	Scheduling conflicts or availability of equipment, Safety and liability issues, A strain on financial and/or human resources, Our equipment is specialized and requires training. We need to keep close track of how our equipment is used	Provides acc equipment th don't have, Reduces the to purchase i equipment, Opportunity t meet and collaborate w scientists fro outside my la	
10/23/2013 22:04:14	Chemical Engineering	Academic	Research Scholar	21-30	IIT madras, Chennai	Yes		The cost of equipment was too much and in fact it	Frequently	I dint find any difference.	Yes		Share	Frequently	again it is based on the person who is visiting the lab,	Scheduling conflicts or availability of equipment	Provides acc equipment th don't have,

APPENDIX: POTENTIAL FAILURE POINTS

As with any website or application, there are bound to be technical glitches. Usability testing should help surface potential problems, but we must design out issues that may discourage use or damage trust in the service itself, including issues with sign up, search, scheduling and communication and, of course, payment.

Payment. Today, some grants and purchasing systems within some universities are extremely inflexible. Red tape abounds. Approvals are needed at every turn. Every penny spent must be accounted for and approved. It may be hard for scientists to get approval to visit another lab.

Solution: We have designed an option to print a cost estimate for a requested instrument so that those who need approval from an authority, whether their grantor, program advisor, etc., can seek approval ahead of time.

This is a stop-gap solution, but should work for those who can't yet connect to a payment service or credit card via their organization.

Training and Supplies—relating to scheduling and payment. This is another area that needs more exploration. We know that many labs want to train scientists before they let them use their instruments. This might make scheduling a challenge, especially if a scientist needs several days of training before he or she can be trusted with an instrument.

We also know that some labs want visiting scientists to use their supplies because they are concerned about contamination. We need to figure out a good way to account for training and supplies in costs.

Solution: Today, we are allowing labs to provide a drop-down list of the supplies that go with each instrument. Visiting scientists can request to use the supplies at the lab for a cost specified by the labs. Or, if the lab requires the use of their supplies, they can also provide this information within the instrument listing. They may account for the cost of these supplies in their hourly rate.

Labs don't choose to sign up. That the risk of sharing instruments is too much of a barrier. Catalyst will only work if enough labs choose to list their instruments.

Solution: We are hoping to work around this issue by building trust through a pilot. We will partner with a cluster of labs to develop and execute the pilot. That way, these labs will help us prove the concept and convince other labs to join.

Labs don't want to charge. We know that informal agreements are common today, and we wonder if some labs will be reluctant to charge for the use of their instruments. This would affect Catalyst's revenue, at least until we could find an alternative model.

Solution: We know that subscriptions to instrument and user data for instrument manufacturers and others could provide a more steady and predictable revenue stream. We also know that manufacturers, consumable companies, other companies, etc. may pay

to advertise on Catalyst. This could offset any issues around labs not wanting to charge for the use of their instruments or supplies. We also believe labs may feel differently about charging when the agreements are not born out of previously existing, personal relationships, as they often are today.

Damage to a lab/instrument. Other problems related to experience.

Solution: We are coming at this issue from a number of ways:

1. Rate and Review: the scientific community is tightly knit. It behooves scientists to maintain their reputation in order to further their careers, especially if there is a chance their bad behavior may be exposed in a public forum.
2. Clearly articulated lab rules: Through our survey, we learned that labs have different Standard Operating Procedures ("SOPs") and that rule-breaking is often the result of poor communication, miscommunication or just a lack of knowledge of what is expected on the part of the visiting scientist. By allowing labs to clearly communicate expectations and allowing scientists to clearly articulate their plans in using an instrument, we hope we can avoid these issues.
3. Insurance policy: like Airbnb, Catalyst will have an insurance policy to cover major damage to lab instruments. We encourage labs to charge a refundable security deposit for smaller claims.

Another important element to protect the experience of both visiting scientists and hosts is our FAQ section. Through our research, we've come up with a list of best practices for both sides of the equation. This includes tips on being a better visiting scientist, as well as help with pricing, advice on how to prepare your lab to host visiting scientists and take the right precautions that will help promote trust between scientists and host labs.

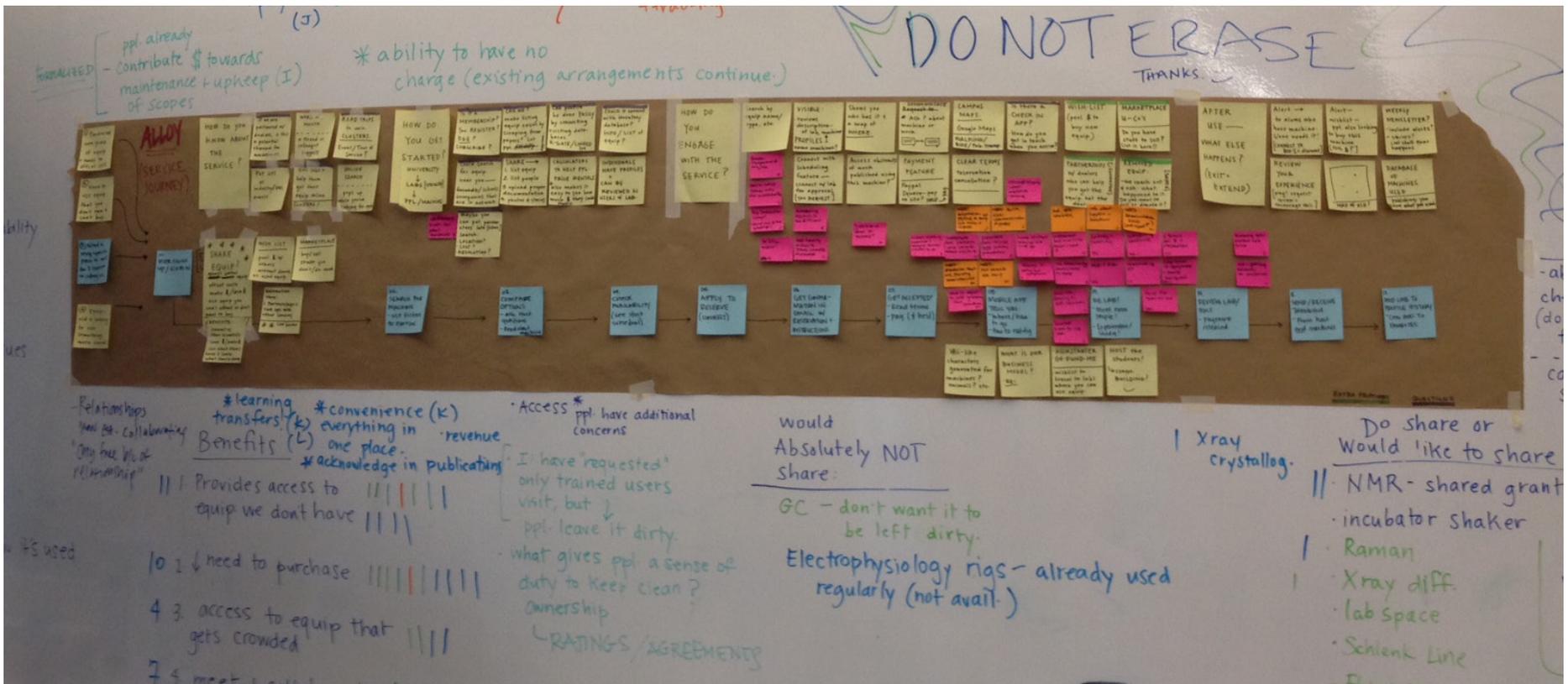
Finally, we know we can't be there to control every aspect of the interaction between labs and visiting scientists, nor can we confirm that a lab manager or listing scientist has the authority to list instruments on Catalyst. We are taking a "hands off" approach to the following:

1. managing host/visitor relationships/experiences (solution: rate and review, reminders to confirm booking, honor appointment)
2. making sure hosts have the authority to list their instruments (asking users to confirm that they have authority)
3. making sure visiting scientists have the knowledge necessary to use an instrument (labs may require training, scientists may articulate how they will use the instrument)

<https://www.airbnb.com/guarantee>

Another point to note: We believe the customer service team must be knowledgeable about scientific instrumentation and the laboratory environment. This is one of the key benefits offered by second-hand equipment dealers, and something that our sources said would be very important for creating and maintaining trust.

APPENDIX: SERVICE JOURNEY MAP



APPENDIX: SERVICE BLUEPRINT

LAB HOST
GUEST
BOTH

USER ACTIONS	Learn about service	Sign up	Complete user profile	List instrument	Complete lab profile	Input payment information	Receive membership cards
PHYSICAL EVIDENCE	Email invitation Conference pop up Membership card Web search, website visit Direct mail/POS	Website Email confirmation	Website	Website	Website	Website	Membership cards Website
FRONT OF STAGE INTERACTION	Display email invitation Interact with pop-up visitors Display service benefits (FAQs, video, "How it Works")	Collect sign up information Confirm lab affiliation Confirm authorization to list instruments	Collect profile information Connect to social media including Research Gate & LinkedIn	Collect instrument information	Collect lab information Collect email addresses	Collect payment information Confirm registration Notify re: shipment of membership cards	
BACK OF STAGE INTERACTION	Generate email invitation link Create conference materials Generate explanatory content Generate direct mail	Cross-reference email with existing listings (.edu, .gov) Create user account Create lab account Generate confirmation email Process confirmation	Add information to user account Link to social media accounts Pull profile data from social media accounts Auto populate profile	Add instrument to lab profile Cross-reference instrument information with existing listings Generate instrument list Add machine to database	Generate email invitation Complete lab profile	Link account to payment service Confirm payment information	Generate and send membership cards Activate membership benefits

APPENDIX: SERVICE BLUEPRINT

**LAB HOST
GUEST
BOTH**

USER ACTIONS	Learn about service	Sign up	Complete user profile	Search for instrument	Request instrument	Accept request	Confirm visit
PHYSICAL EVIDENCE	Email invitation Conference pop up Membership card Web search, website visit Direct mail/POS	Website Email confirmation	Website	Website	Website Printed estimate	Email Website Mobile app	Email Website Mobile app
FRONT OF STAGE INTERACTION	Display email invitation Interact with pop-up visitors Display service benefits (FAQs, video, "How it Works")	Collect sign up information Confirm lab affiliation	Collect profile information Connect to social media including Research Gate & LinkedIn	Collect instrument information Display instrument comparison	Collect booking information Update calendars Provide cost estimate with print option	Prompt host to review request Display guest profile and request details	Prompt guest to confirm visit Display confirmation
BACK OF STAGE INTERACTION	Generate email invitation link Create conference materials Generate explanatory content Generate direct mail	Cross-reference email with existing listings (.edu, .gov) Create user account Generate confirmation email Process confirmation	Add information to user account Link to social media accounts Pull profile data from social media accounts Auto populate profile	Cross-reference instrument information with existing listings Generate instrument list Generate comparison	Display instrument availability Create booking record Generate estimated cost Send instrument request to host	Send confirmation	Update calendars Generate request summary Notify lab manager of confirmation

APPENDIX: SERVICE BLUEPRINT

LAB HOST
GUEST
BOTH

USER ACTIONS	Receive reminder	Go to lab	Lab tour	Use instrument	Leave lab	Rate and review experience
PHYSICAL EVIDENCE	Email Mobile app Website	Mobile app Membership card	Membership card/ nametag	Mobile app	Mobile app	Email Website Mobile app
FRONT OF STAGE INTERACTION	Display guest reservation reminder Prompt guest to review lab rules	Display guest arrival alert Display lab location map		Display end-of-reservation reminder Display updated instrument, profile data Display availability	Display visit completion alert and prompt final steps Display receipt Display print option	Display review/rate screens Prompt reviews via email
BACK OF STAGE INTERACTION	Generate reminder for host and guest Generate walking directions and lab rules	Generate guest arrival alert		Generate end-of-reservation reminder Generate updated fee if extending time Display updated cost and schedule	Generate alerts Update payment due Process payment Update instrument history Update lab and guest information Send receipt, thank you from Catalyst	Update profiles with ratings and reviews