

The Autodesk logo is displayed vertically in white text on a dark background. The background of the entire page features a faint, light gray architectural rendering of a modern building with a complex, angular facade and a series of vertical lines, possibly representing a staircase or structural elements.

Autodesk®

IDEAS

**THE INNOVATION
+ DESIGN SERIES**



IDEAS

**THE INNOVATION
+ DESIGN SERIES**

Autodesk Gallery at One Market
San Francisco, California
May 22, 23 + 24, 2011



Reimagining Manufacturing: The Technologies Driving the New Industrial Revolution

For the past 250 years, manufacturing was about companies mass-producing things in factories, and people buying them. Costs were largely determined by volume, and unique things were very expensive. But today, the rapid democratization of technologies such as 3D printing is transforming manufacturing into something radically different, as companies and people create customized products that are not only reasonably priced, but often more innovative and better for the environment. This fundamental change in the way we make things is bringing radical change to the fields of manufacturing, building, business, transportation, and sustainability—and to society at large.

As concepts like mass-customization, personal manufacturing, and the maker movement go mainstream, a new set of questions is forming about what this manufacturing transformation really means.

IDEAS: The Innovation + Design Series explores these and other questions about the impact of the new manufacturing on business, society, the environment, and each of us. Through conversations and workshops with a wide range of respected experts and provocative thinkers, **IDEAS** works to develop a deeper insight and perspective of this brave new manufacturing world.



- What does it mean for a manufacturer of consumer products to do, or even have to do, mass customization?
- What happens when the cost of making one unit falls to equal the cost of making a million units?
- What will happen to factories and supply chains when more things are made at home, and fewer bought in stores?
- How will traditional manufacturers survive when their customers become their co-creators, or even their competitors?
- How will this new form of manufacturing impact the economies and societies of developing nations?
- How will intellectual property change when “making” becomes a commodity activity?

IDEAS invites you to shape this debate with your own perspectives.



IDEAS

**THE INNOVATION
+ DESIGN SERIES**

Sunday, May 22

Reception



Reception

Lounge @ **Hotel Vitale**
San Francisco, Ca.







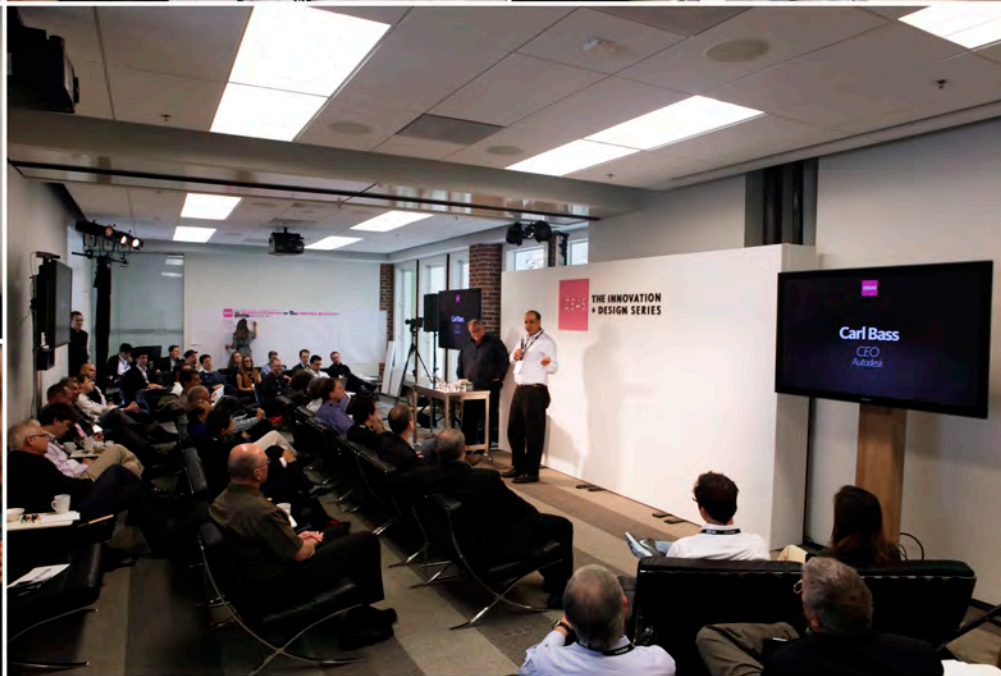
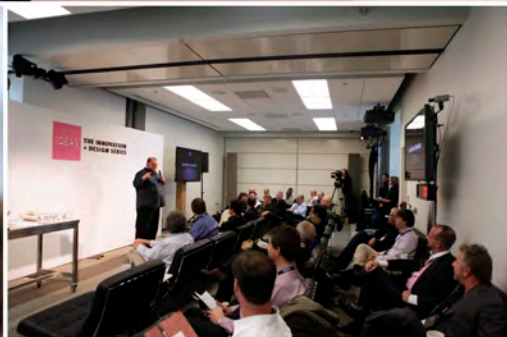


IDEAS

**THE INNOVATION
+ DESIGN SERIES**

Monday, May 23

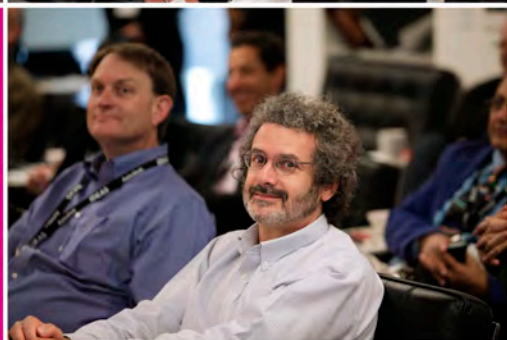
**Welcome + Introductions
Framework + Context
Guest Speakers + Panels
Group Activities**



Welcome + Intro

Jonathan Knowles, Autodesk, Inc.

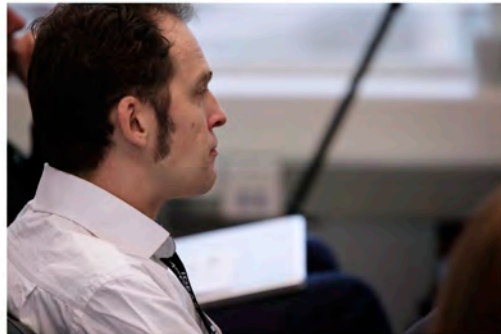
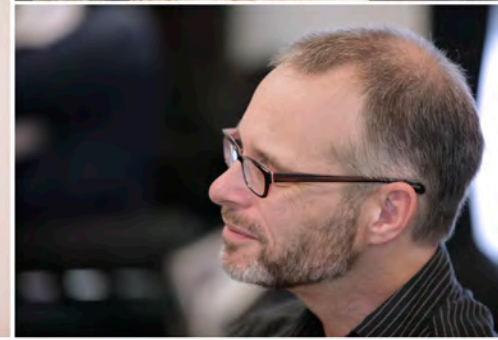
Carl Bass, Autodesk, Inc.

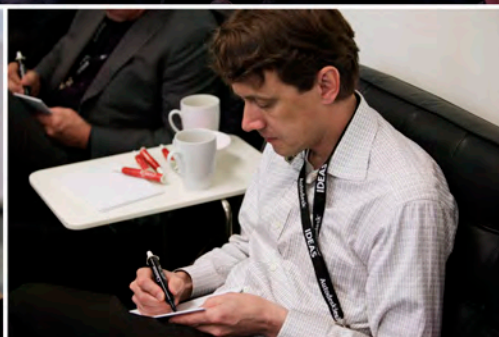
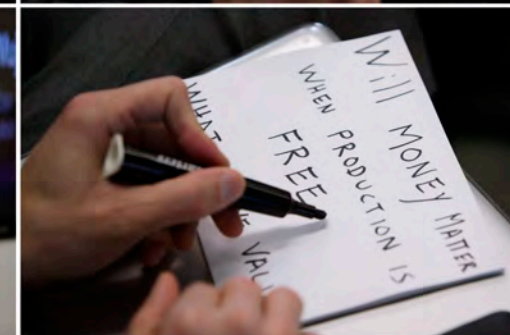
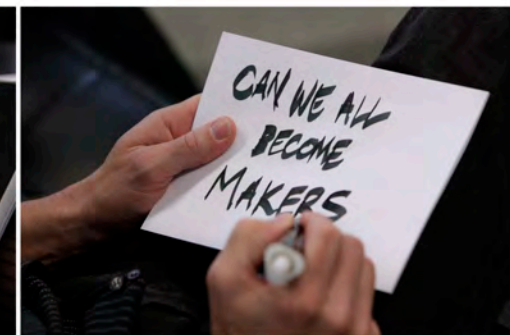
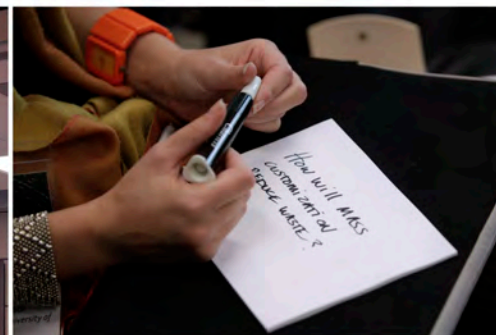




Framework

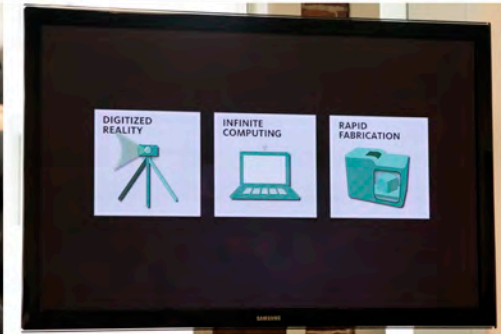
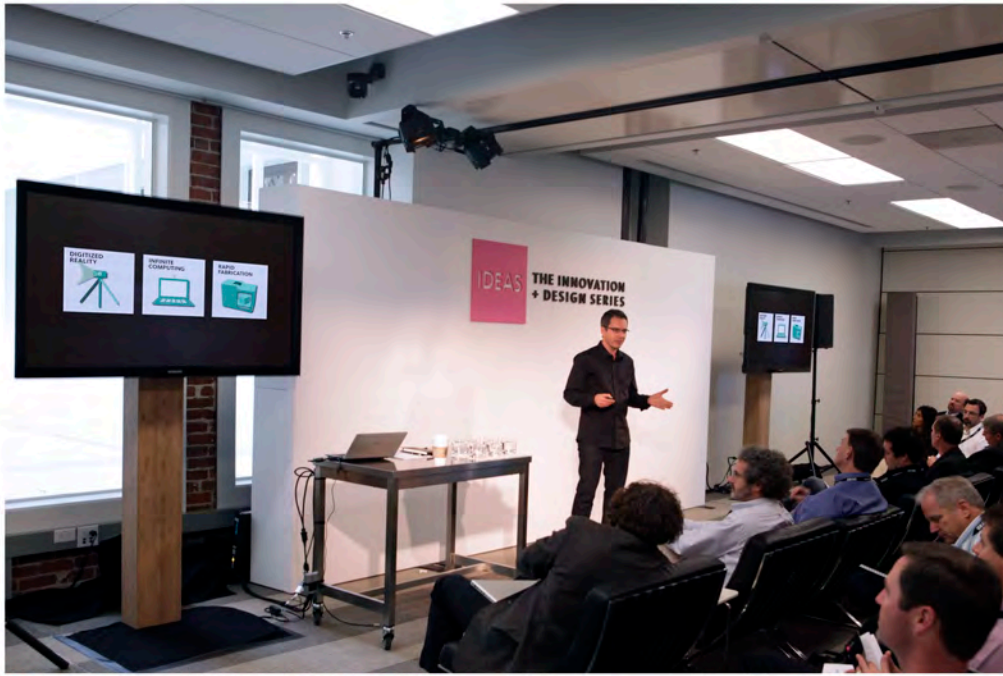
Jon Pittman, Autodesk, Inc.





Context Setting

Tom Wujec, Autodesk, Inc.



How can we best bring "making" to education -- elementary, higher ed?

How DEMOCRATIZED CAN DESIGN BECOME?
WHERE DOES DESIGN LITERACY COME FROM?

When can we print any object from a single device using any locally sourced material and readily available energy supply?

How does PERSONAL MANUFACTURING IMPACT SUSTAINABILITY?

Can an industrialized Maker Movement be an engine of job creation?

How will Autodesk help in making autodesk accessible to a wider population worldwide?

ARE WE THERE YET?

I hate the term "digital fabrication"
So what's a better name for it?
(digital anything sounds cheap)

do we want to what can we do now that we couldn't do before?
Not just faster, cheaper, smaller, but new.
Hal Lipson

How will MASS CUSTOMIZATION REDUCE WASTE? / pollution?

What role will Autodesk play in 5 years? 10 years? Software only?

How will we make in the future?
Will everyone be a manufacturer?
How will all of this change A+?

CAN WE GROW EVERYTHING WE NEED?

HOW DO WE APPLY ALL THESE TECHNOLOGIES TO THE NON-PHYSICAL WORLD - DESIGN SERVICES, BUSINESSES, ETC.?

What are interesting Business Models to help facilitate and add value to the maker movement?
MIT Free MFG.com

WHAT ARE THE ECONOMIC DRIVERS OF THIS NEW AGE?

Sustainability
how to make maker movement sustainable for com / usg / edu

Will technology drive this revolution? or will business model innovation drive the technology?

How will 3DCAD Architecture EVOLVE FOR EASY 3D PRINTING OUTPUT

Why are 3D/Physical Design Software Interfaces so "hard"?

WHAT'S SO FUNNY 'BOUT PEACE, LOVE & UNDERSTANDING?

AT WHAT POINT IS THE CONSUMER READY TO BE A PARTICIPANT IN THE PROCESS OF CREATION OF A PHYSICAL PRODUCT?

CAN WE RE-MAKE K-12 EDUCATION IN ONE YEAR?

HOW AND WHO WILL SOLVE THE "CREATION" DILEMMA?
↳ How do you tell me what you want to make

Will the cost really be competitive for custom manufacturing?

Will 3D printing be adopted by households in the next 10 years?

WHAT'S NEXT FOR MASS PRODUCTION?

WHAT UNMET, UNARTICULATED NEED WILL BE UNIQUELY SATISFIED BY 3D PRINTING?
(↳ scanning + democratized accessible tools)

Not "which technology will win" - But where each technology will fail (and win).
The 360° Question

What's the biggest barrier between engineering tools and digital fabrication devices?

HOW CAN WE USE THE POTENTIAL OF THESE NEW TECHNOLOGY TO SOLVE BIGGEST SOCIAL PROBLEMS?
(rather than just make a move towards making more advanced products)

What are the next steps to democratize 3D printing?

How will we sustain the maker movement?
From the standpoint of fixing it when it breaks?

What segments of the economy will transition to rapid fab?

The Path to mass-customization, what are the milestones and from
1) technology advances
2) user expectation & experiences

How will the change towards a global cloud based digitized world change one company

IS 3D PRINTING GOING TO SERVE JUST A NICHE OF THE MANUFACTURING INDUSTRY (HIGH-VALUE, CUSTOMIZED PRODUCTS) OR REALLY REVOLUTIONIZE THE INDUSTRY AT SCALE?

Will MONEY MATTER WHEN PRODUCTION IS - FREE -
WHAT WILL WE VALUE?

How SHOULD F&E FISHER-PRICE APPROACH/RESEARCH MASS CUSTOMIZATION?

How can RAPID FAB BE APPLIED TO FIRM PRODUCTION?

WHAT TECHNOLOGY, CULTURAL TREND, OR EVENT WILL PUT THIS MOVEMENT OVER THE TOP? WHAT'S THE KILLER APP?

Will NEW TECHNOLOGIES RADICALLY TRANSFORM OUR WORLD, IF SO, HOW?

Will this style of manufacturing lower cost below cost of manufacturing in China? (at scale)

IDEAS

THE INNOVATION + DESIGN SERIES

THE TECHNOLOGIES DRIVING THE *New* INDUSTRIAL REVOLUTION

Autodesk MAY 23-24, 2011

- POSE QUESTIONS.
- SEEK ALTERNATIVES.
- MAKE CONNECTIONS.
- EXPLORE THE POSSIBILITIES.

BRINGING PEOPLE TOGETHER ON THE PROFOUND TOPIC AND IMPACT OF THE NEW TECHNOLOGIES DRIVING THE NEW INDUSTRIAL REVOLUTION.

...AND WE NEED TO ADDRESS THE BIG QUESTIONS.

THE WORLD IS MOVING FAST!

1 DIGITIZED REALITY

PROVIDING A DIGITAL VISION OF OUR WORLD.

2 INFINITE COMPUTING

NOW THAT WE HAVE A DIGITAL VISION OF OUR WORLD, WHAT DO WE DO WITH IT?

3 CORE GAME CHANGING TECHNOLOGIES

3 DIGITAL MODELS

ALLOWING FOR LOCAL "PRINTING" OF PRODUCTS. IS THIS THE NEW SCAN/PRINT MODEL?

SOME OF THE QUESTIONS...

- OPPORTUNITIES?
- STANDARDIZATION?
- BUSINESS MODELS?
- SUSTAINABILITY?
- GROWING EVERYTHING WE NEED?
- WHICH TECHNOLOGIES WILL RADICALLY CHANGE OUR WORLD?
- WILL MONEY MATTER WHEN PRODUCTION IS FREE?
- HOW DO WE ADD SOUL TO THE PRODUCTION PROCESS?

SHOULD DESIGN BE DEMOCRATIZED?

KEEP IN MIND THAT TECHNOLOGY IS JUST 1 OF MANY DRIVERS...

WHERE IS OUR LONG-TERM FUTURE?

...WE ARE CREATING A PEER GROUP HERE TO HAVE CONVERSATIONS REGARDING WHERE WE GO FROM HERE?

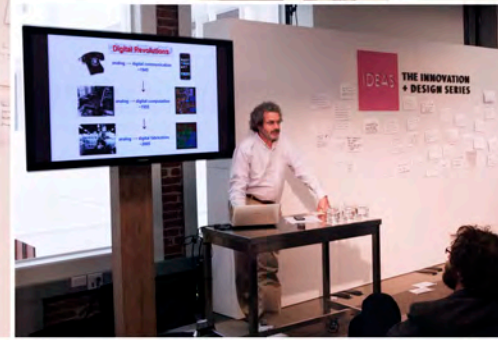
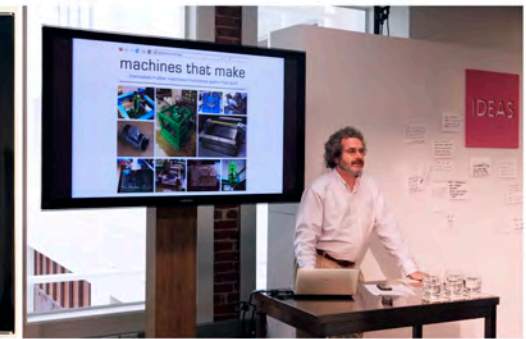
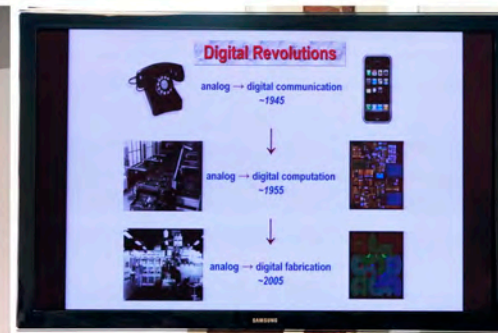
...SEPERATING THE hype FROM WHAT IS REAL...

WHAT ARE OUR QUESTIONS?

WHAT ARE THE IMPLICATIONS OF THESE TECHNOLOGIES UPON OUR WORLD?

Graphic Recording

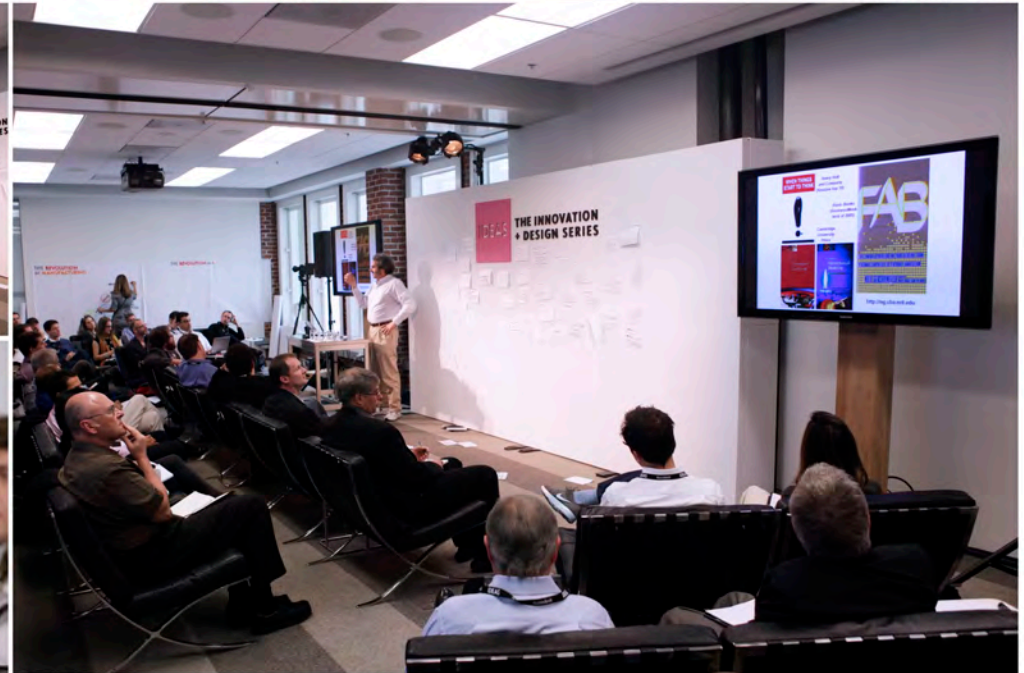
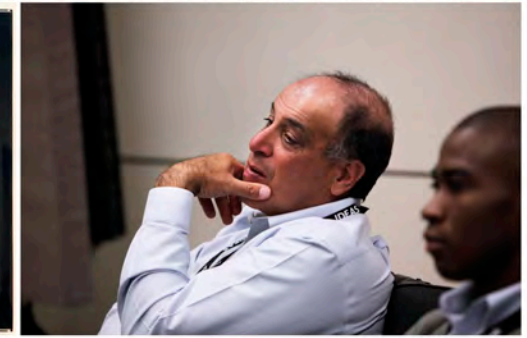
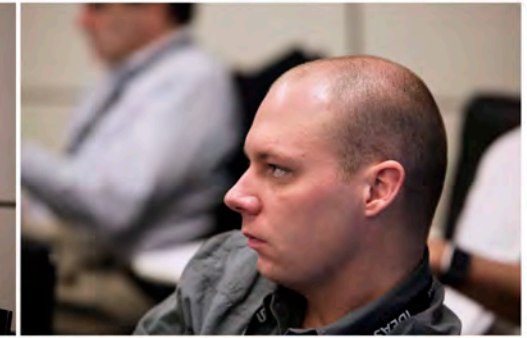
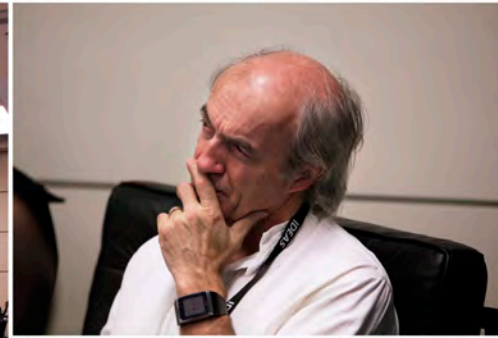
Stephanie Crowley
Chrysalis Studios

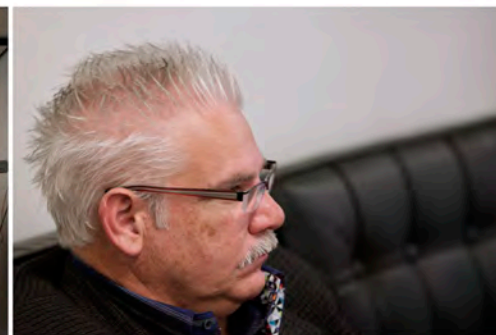


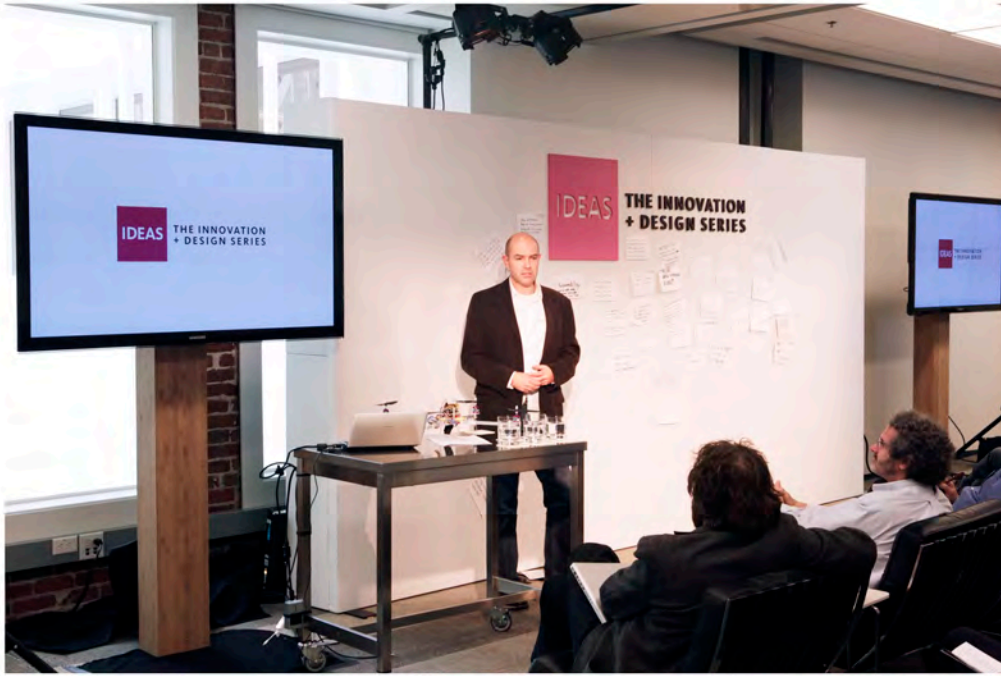
**Digital Fabrication:
Making Anything**

Neil Gershenfeld, Professor
MIT Center for Bits and Atoms



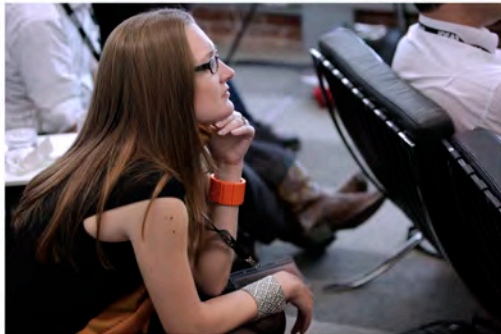






The Experience of a Maker

Chris Anderson, Maker, Editor-in-Chief,
Wired Magazine

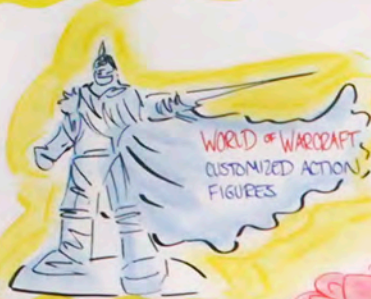




THE REVOLUTION IN MANUFACTURING

“NONE OF US KNOW AS MUCH AS ALL OF US...”

WITH BUD KOLICH
FISCHER-PRICE



BUILDING EXCLUSIVES:

- 1 CUSTOMIZED FOR SPECIFIC RETAILERS.
- 2 PERSONALIZED/CUSTOMIZED BASED ON FABRIC AND FASHION.



- 3 WITH LEGO, THE CHILD DOWNLOADS A CAD PROGRAM TO CUSTOMIZE THEIR OWN TOY.



LIMITED PRODUCTION



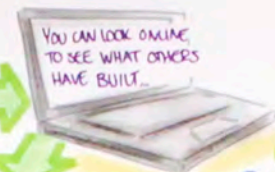
- 4 WITH AMERICAN DOLL, YOU CAN SELECT ALLOF YOUR OWN CUSTOMIZATION: LOOK, HAIR, CLOTHING, SKIN COLOR, ETC.

- 5 SAVES ON PRODUCTION AND PACKING...

WITH CHRIS ANDERSON
WIRED MAGAZINE

FUN FOR YOU, FUN FOR YOUR KIDS...

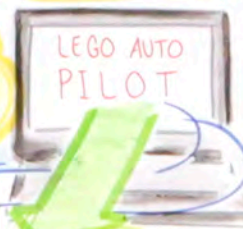
PLAYING WITH THE
TRI-BOT KIT...



- 1 ONLINE COMMUNITY... WHAT IS POSSIBLE?

- 2 A SMALL MAKER PROJECT GOING HEAD-TO-HEAD WITH AEROSPACE!

CREATE
THE
COMMUNITY
first.



...ATOMS ARE THE
NEW BITS...



- 3 OPEN-SOURCE AERIAL ROBOTICS

...WHAT DO YOU DO?
IT DOESN'T MATTER
WHAT YOU BECOME IS...

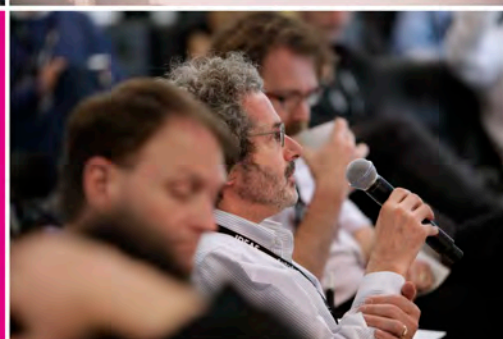
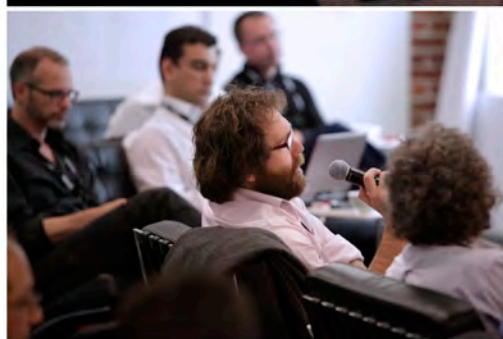
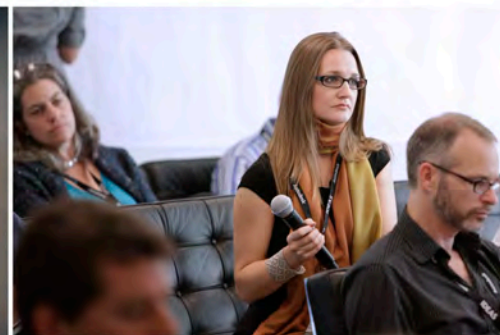
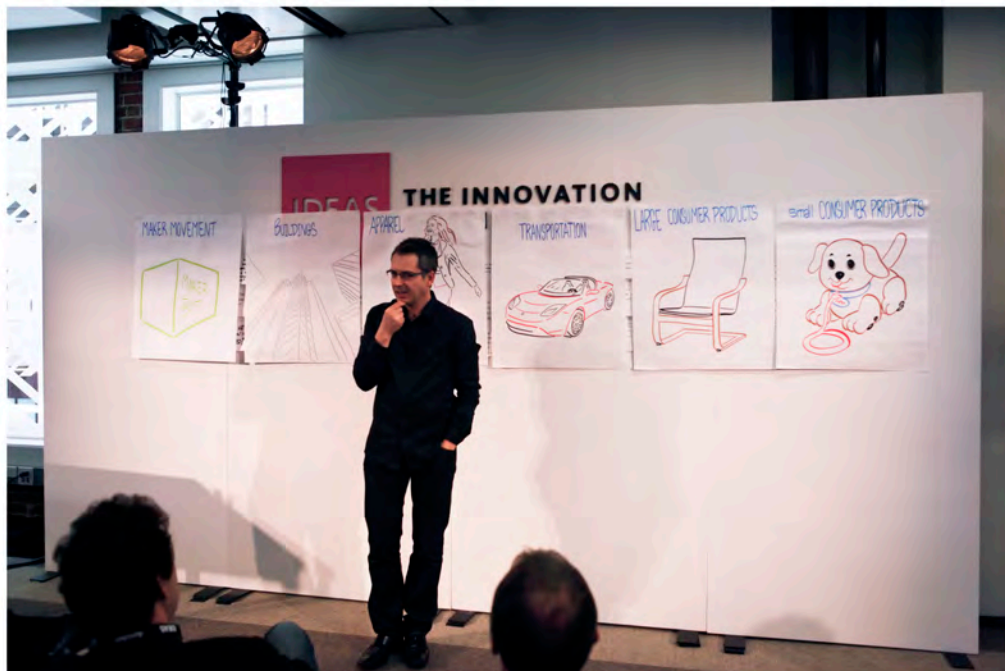
- 4 MOVED TO ARDUINO PLATFORM AS AN AUTO-PILOT

OPEN-SOURCE

FASTER, CHEAPER,
BETTER...

- 5 DEMOCRATIZING TECHNOLOGY

...CREATED FOR FREE BY AN ONLINE
COMMUNITY... REINVENTING THE MODEL



Group Activity

-Identify the Categories

Tom Wujec, Autodesk, Inc.





Team Exercise

-Trends Driving the Revolution
in Manufacturing

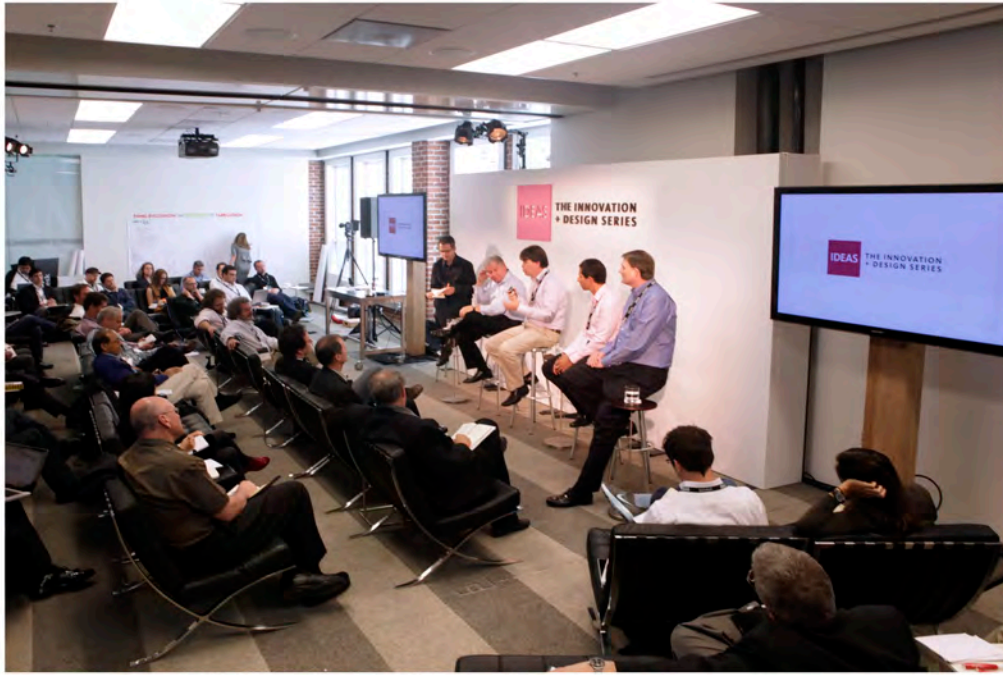


OUR PROJECT/TOPIC IDEAS...



QUESTIONS TO CONSIDER:

1. SOCIETY
2. TECHNOLOGY
3. ECONOMICS
4. ENVIRONMENT
5. POLICY/POLITICS



Panel Discussion

-The Evolution of Fabrication

Tom Wujec, Autodesk, Inc.

Abe Reichental, 3D Systems

Peter Weijmarshausen, Shapeways

Gilad Gans, Objet Geometries

Scott Crump, Stratasys, Inc.





PANEL DISCUSSION: THE EVOLUTION OF FABRICATION

WHAT IS REAL?

Direct: WHAT IS PRINTED, IS WHAT IS UTILIZED... AND THEREFORE $R = E \cdot A \cdot L$.

ECONOMIC IMPACT/SAVINGS IS ALSO $R = E \cdot A \cdot L$.

DEMOCRATIZING ACCESS TO THE TOOLS ACCELERATES ADAPTATION/ADOPTION OF THE TOOLS, WHICH RESULTS IN MORE MAKERS.

THE BUSINESS MODELS WILL COME FROM THE COMMUNITY IF WE CONTINUE TO DEMOCRATIZE THE TOOLS.

IDENTIFY THE NEEDS OF THE PEOPLE...

EXPANSION INTO EVERY ELEMENT OF CONSUMER LIVES...

DIGITIZING THE MATERIAL SO IT FORMS INTO A MORE HOLISTIC SHAPE IS ESSENTIAL.

CURRENTLY MOVING INTO SUPPLY CHAIN INTO ENDLESS MANUFACTURING.

CONTENT CAPTURE HELPS TO FURTHER CONNECTIVITY. CONTENT CAPTURE IS REPLACING CAD AS A DESIGN STARTING POINT.

CONVERGENCE BETWEEN SUBSTRATIVE AND ADDITIVE.

PEOPLE CARE ABOUT MATERIALS... IF WE CAN UTILIZE BOTH ADDITIVE AND SUBSTRATIVE TECHNOLOGIES, THIS WILL MEET MORE NEEDS.

RATE OF TECHNOLOGY ADOPTION COULD IMPACT COMPANIES WITH LARGE INVESTMENTS IN INFRASTRUCTURE IF THE QUALITY OUTPUT AND EASE OF USE REMAINS HIGH.

CATALYSTS TO THE EVOLUTION
WE ARE GAINING MORE TRACTION, AND,
THE CHANGING, EVOLVING, INTUITIVE USE OF THE CAD TECHNOLOGY WILL QUICKEN THE PACE OF FABRICATION EVOLUTION.

...TO FURTHER DEVELOPMENT MORE QUICKLY, SHARE INFORMATION
TECHNOLOGY AND EDUCATE/PROMOTE THE POTENTIAL OUT COMES...

MANAGE THE CHANGE.
HOW DO YOU DO THAT?
HAS MORPHED IN TO...
wow! IMAGINE THE POSSIBILITIES YOU CAN DO WITH THIS!
I WANT TO MAKE WHAT I WANT... JUST FOR MY NEEDS.

HOME FACTORIES WILL BE A Viable DEMOCRATIZED VISION OF THE FUTURE... WE SHOULD EMBRACE THE OPPORTUNITY.

MY OWN CUSTOM FACTORY!

THIS IS GREAT, BUT MY OPTIONS ARE SO LIMITED.

MAKE IT EASIER FOR ME TO SHARE MY WANTS.

I WANT TO MAKE WHAT I WANT... JUST FOR MY NEEDS.

SHARED SERVICES.

CONTENT CAPTURE.

COMBINATION OF ADDITIVE AND SUBSTRATIVE

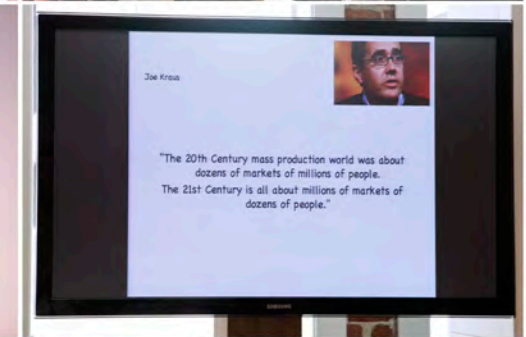
AWARENESS

SIMPLICITY

BIG THEMES

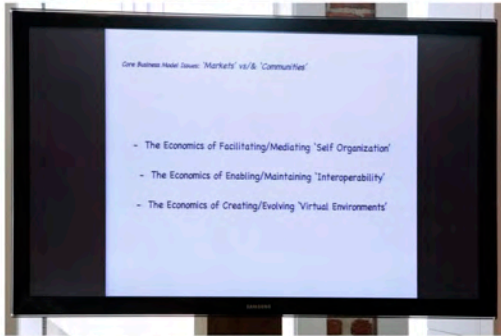
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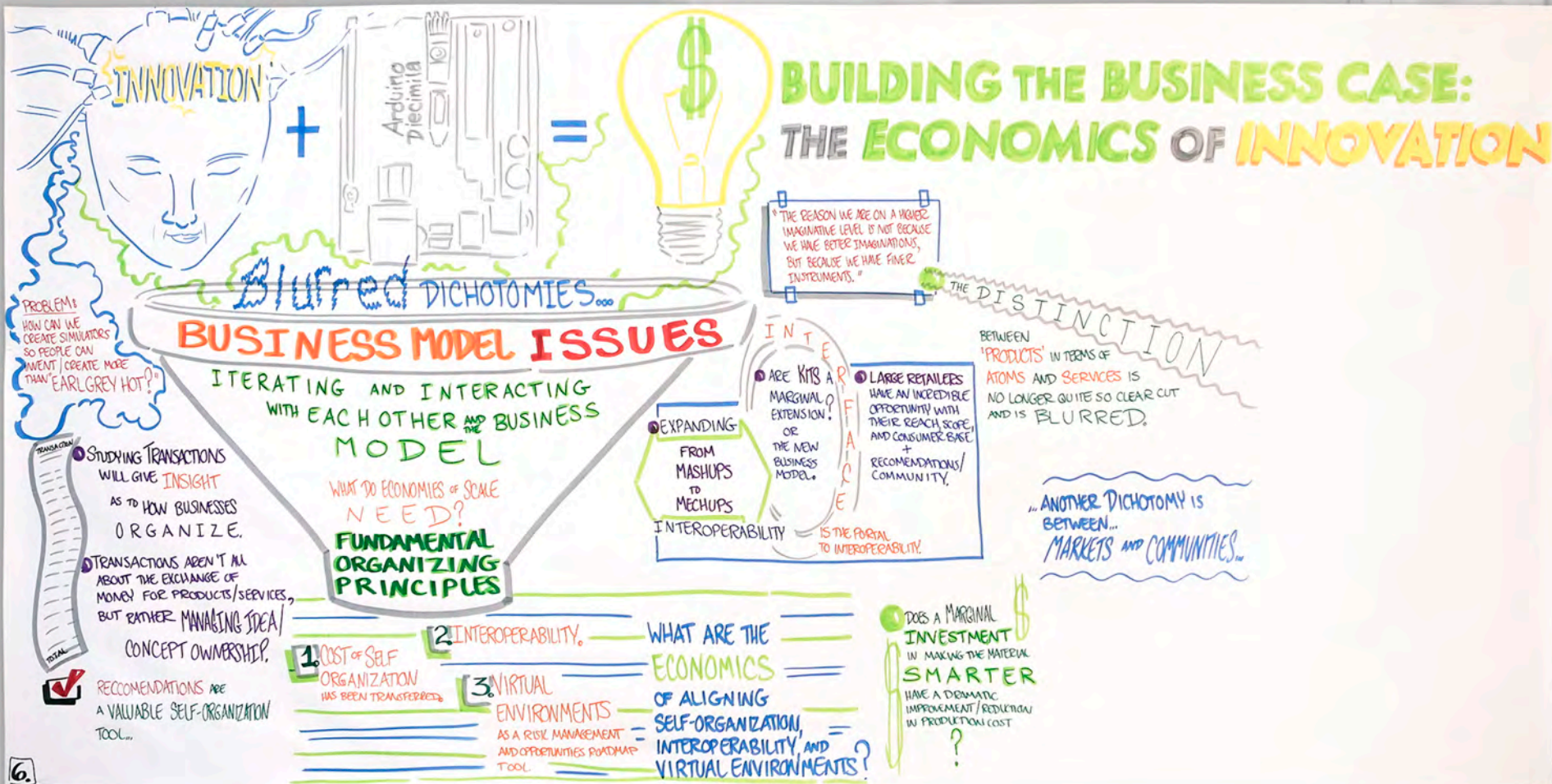
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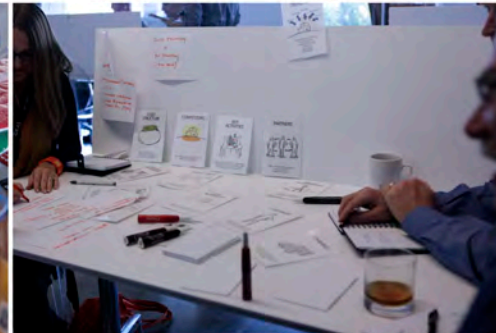
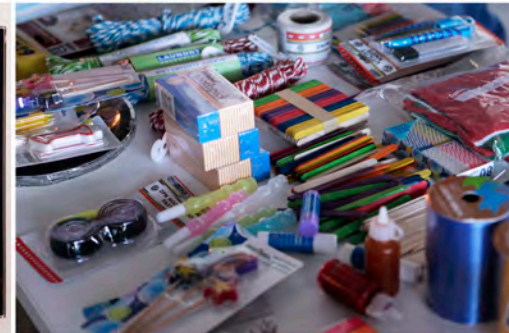
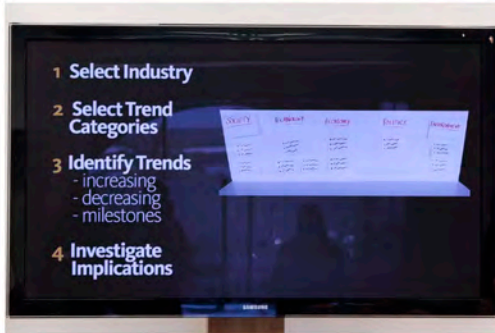
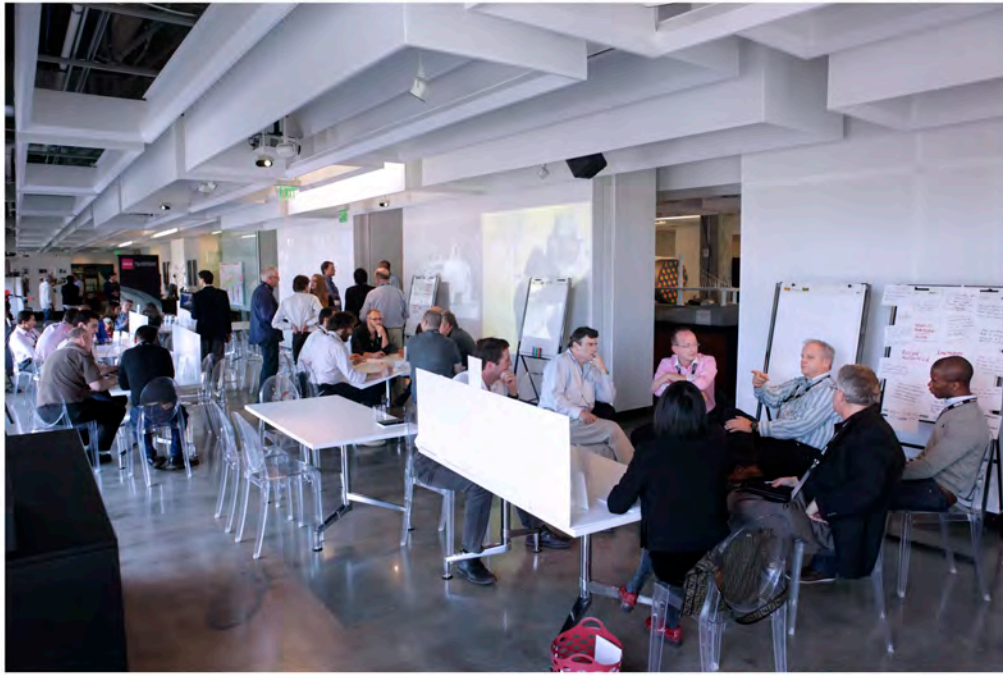


Building the Business Case -The Economics of Innovation

Michael Schrage, Research Fellow
MIT Sloan School of Management







Team Exercise

-The Exploration of Future Business Models







The Maker Movement

Dale Dougherty, Editor and Publisher,
Make



The Story of TechShop

Mark Hatch, CEO, TechShop



THE MAKER MOVEMENT

A COMMUNITY THAT IS DRIVEN BY PASSION...

...AND CAN BE TRANSLATED TO EDUCATION...
GIVE PEOPLE, ESPECIALLY CHILDREN, THE OPPORTUNITY TO HAVE CONTROL OVER SOMETHING...

ORIGINALLY DERIVES FROM HACKING...
WE ARE HACKING A PHYSICAL WORLD!

A COMMON THREAD:

TECHNOLOGIES PROMOTE ENGAGEMENT...

TINKERING is the NEW MIDDLE CLASS...
...and it's EMPOWERING...

...it's the MARTHA STEWART for GEEKS!

PEOPLE ARE BUYING 3-D PRINTERS TO EXPLORE, EXPERIMENT, AND TO BE A PART OF SOMETHING.

OBSERVING INNOVATION IN THE WILD

BROAD SPECTRUM
OPENS UP AND REINVENTS POPULAR MECHANICS.

MAKER FAIR IS ALL ABOUT THE PEOPLE.

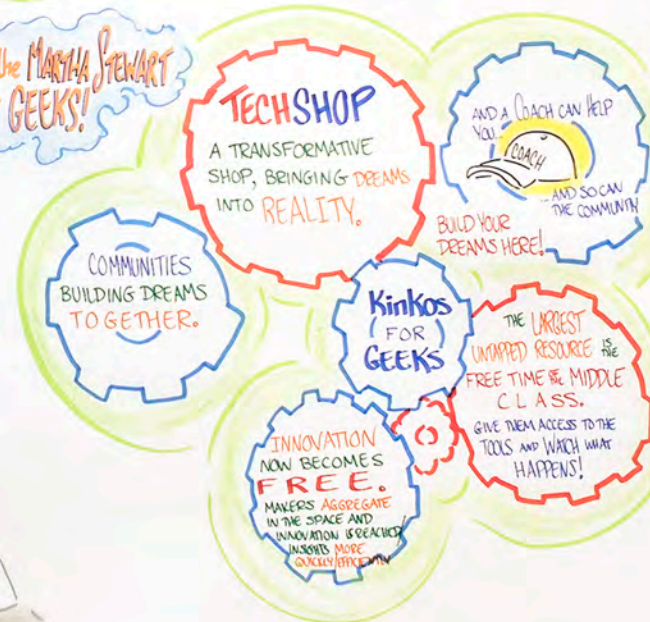
LOTS OF PEOPLE DOING THINGS INDEPENDENTLY, CONNECTED, BUT NOT CONSTRAINED.

IS MAKER FAIR THE TYPE OF SCIENCE FAIR WE SHOULD BE HAVING?



BIG IDEAS
ARE LIKE LOCOMOTIVES AND THEY CAN CARRY ALONG LOTS OF PEOPLE & IDEAS WITH THEM... BUT THE PEOPLE CHOOSE TO GO.

AND CONNECTS TOGETHER A MYRIAD OF DIFFERENT IDEAS.



DRAFT IDEAS

NEW EDUCATION EXPERIENCE
K-12. NEW SKILLSETS.
MENTORING, COLLABORATION,
ACQUISITION EDUCATION EXPERIENCE
CROSS-SECTOR.

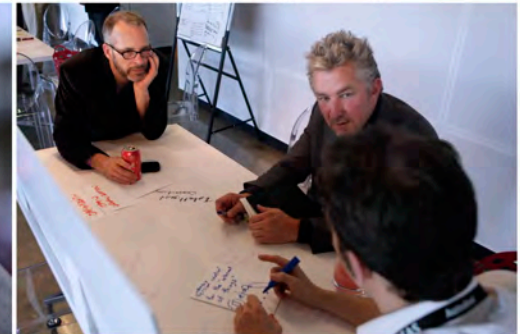
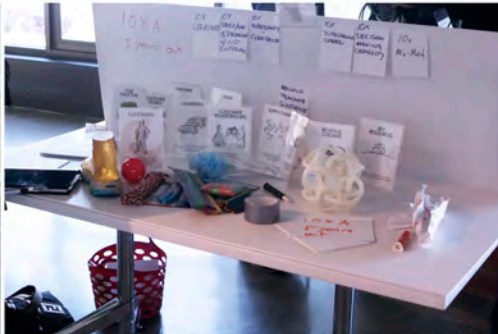
IOXA QUALITY CONTENT
SMART TEMPLATES.

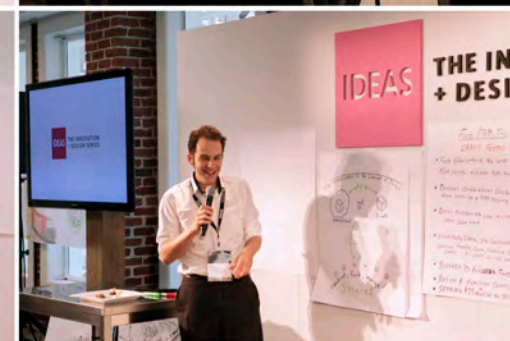
OPEN INNOVATION MODELS
THAT WORK.
COLLABORATION ENVIRONMENT
TRACK CONTRIBUTIONS, CHANGES.
ENCOURAGE VISUAL DOCUMENTATION
AND ALLOW FOR AGGREGATION.

TRANSACTION COSTS...
COGNITIVE TRANSACTION COSTS
... "WISH FULFILLMENT."

FOOD & BIO PRINTING
3D PRINTING
"FOOD FAB"
SHARING RECIPES, PRINTING ON DEMAND, NUTRITIONAL AWARENESS.
... BECAUSE THAT LOOKS LIKE PIZZA.

EFFICIENCY... PARTNERS
BETTER DESIGN TO MARKET
VIRTUAL → LESS VOLUME IN STORES.
MASS CUSTOMIZATION.
TIED TO SOCIAL MEDIA TOOLS.
COMPLETE VALUE PROPOSITION TO CUSTOMER.
... RELIABILITY, TANGIBLE ITEMS, FOCUS ON EDUCATION.







DRAGONS DEN PITCHES:

OUR INPUT TO THE BUSINESS CASE OF THE MAKER MOVEMENT

GLOBAL INSTITUTE OF SCIENCE AND TECHNOLOGY

- 1. THINGS COMING TO THE SCREEN BECOMES THE DATA ... 3D.
- 2. COLLABORATION NODES WORKGROUPS.

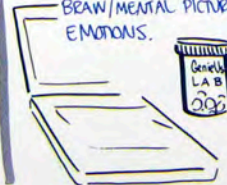
10X ACCELERATION

- 1. SOFTWARE THAT CREATES SMART TEMPLATES TO SPEED UP THE DESIGN PROCESS.
- 2. THE DESIGN TEMPLATES HAVE THE SMARTS FOR 'CUSTOM FIT' FOR APPAREL, FOR EXAMPLE.
- 3. IDEA FOR MUSEUM APPLICATION TO SCAN > PRINT > SELL IN STORES, MAKING DUPLICATES FOR OVERCOMING LEGAL ISSUES.



GenieUs COGNITIVE DESIGN

- 1. CURRENT BARRIERS TO ADOPTION: MENTAL EFFORT TO DESIGN.
- 2. SEAMLESSLY INTEGRATES TO TAKE 'IMAGINED IDEA' TO REALITY.
- 3. TAKE A PILL THAT CAN TAP INTO THE BRAIN/MENTAL PICTURE AND EMOTIONS.



EASY VERSION CONTROL FOR THE WEB

- 1. OBJECT TO TRACK ALL ITEMS NEEDED TO MAKE THAT OBJECT → SHADE ONLINE THROUGH CLOUD COMPUTING → ABILITY TO MERGE & SHADE WITH OTHERS.
- 2. LARGER API AROUND THE IDEA ... PAPER HOSTING, PLUG-INS FOR ADVERTISING.

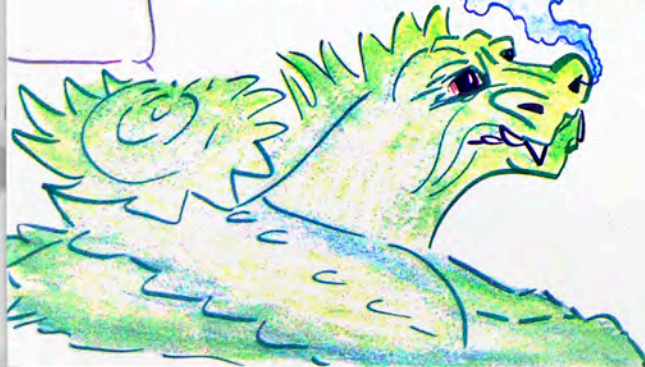
OPEN UP DIGITAL FABRICATION TO LARGE CORPORATIONS, i.e. check out FORMS CURATORSHIP.

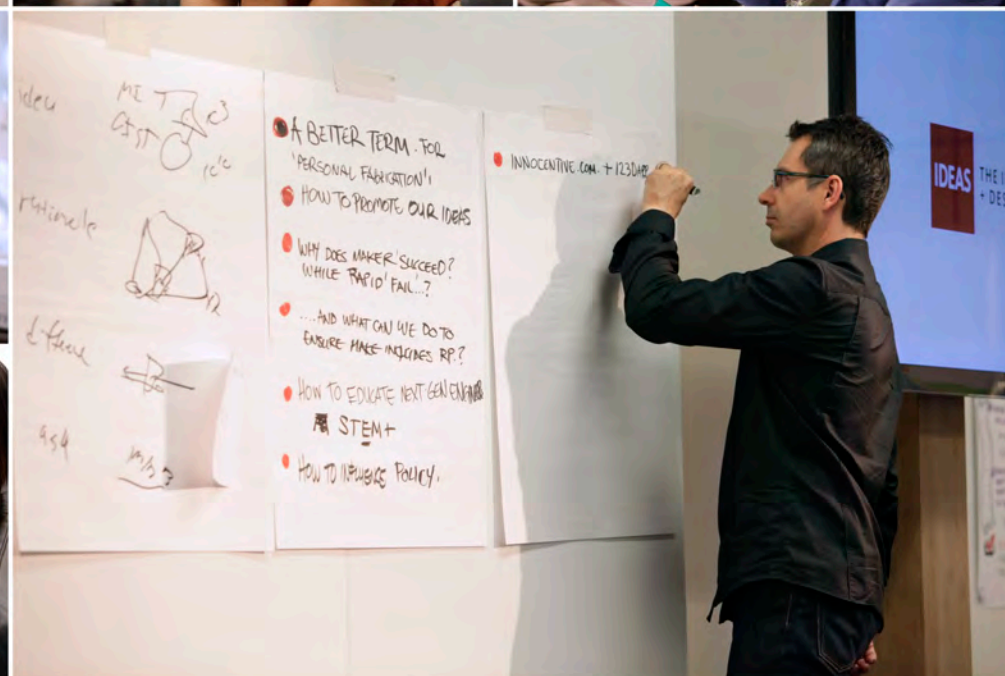
FOOD FAB

- 1. 3D PRINTED FOOD.
- 2. COMES IN ANY SHAPE/FORM.
- 3. SELLS FOOD FABRICATORS AS A KITCHEN APPLIANCE.
- 4. ANYONE CAN BE A CHEF!
- 5. SOCIAL NETWORK ENABLED: SHARE RECIPES AND SUGGESTIONS.
- 6. FOOD IS SECOND LARGEST BUSINESS IN WORLD.
- 7. FOOD CONSISTENCY CONTROL.

FAST TRACK

- 1. CONVERTING YOUR CHILDHOOD IDEAS TO REALITY.
- 2. BETTER IDEA TO MARKET AND LESS COSTS INCURRED DUE TO 'ERROR'.
- 3. IMAGINE IT → PRODUCE MORE COMPLEX.
- 4. MASS COLLABORATION ON IDEAS.
- 5. ALIGN WITH CLOUD COMPUTING.
- 6. EFFICIENT: DREAM ABOUT IT A NIGHT, WAKE UP IN THE MORNING WITH YOUR IDEA READY FOR PRODUCTION.





- A BETTER TERM - FOR 'PERSONAL FABRICATION'!
- HOW TO PROMOTE OUR IDEAS
- WHY DOES MAKER 'SUCCEED?' WHILE 'RAPID' FAIL'...?
-AND WHAT CAN WE DO TO ENSURE MAKE INCLUDES RP.?
- HOW TO EDUCATE NEXT-GEN ENGINEERS
STEM +
- HOW TO INFLUENCE POLICY.

- INNOCENTIVE.COM. + 123DAPP.COM
- ON-LINE FORUM.
- FRAMEWORKS FOR EVALUATION
- EXPLORE NEW FRAMEWORKS FOR INNOVATION (ORGANIZATIONAL).
- IDEAS OF WHAT TO DO w/ MACHINES.
- WHAT SHOULD THE LEADING COs DO?
- WHAT SHOULD THE STANDARDS.
- BARRIERS



IDEAS

**THE INNOVATION
+ DESIGN SERIES**

Monday, May 23

Visual Fight Club

Visual Fight Club

Mac vs PC
Food Fab
Buildings in a Day
Democratized Design
Mass Adoption of 3D Printing





Welcome to VISUAL



PC VERSUS MAC!



- Mac is a Fashion Statement!
- Mac-Mess!
- You can't get video out of a Mac.
- Where's the person's Docking Station!
- Wires, Wires, Plugs, Plugs!
- USBs cover the other USB Port!
- We're a Design Company... Mac won't do!

- PC Commercialism is FUNNY!
- PCs are small, portable, beautiful!
- PC is fast, baby!
- Bill Gates doesn't think the Maker-Movement is interesting!
- They mean, what kind of computer do you use?!

- **GOOD IDEA!**
- Everything is made automatically... and so should buildings.
- Can be reinforced... built by laser... same as traditionally.
- It's earthquake safe!
- Print the glue!
- Less expensive - automated!



- **democratized!**
- Design is a matter of personal taste!
- Let the work speak for itself!
- No Way!
- Historic buildings... not quite earthquake proof.
- You will you attach wires?

- **DESIGN SHOULD BE DEMOCRATIZED**
- Everyone should have the opportunity to design!
- You elitist!!!
- You don't have to buy it!
- Designers can make designed shit!
- You don't play violin with a sausage!
- ...huh?
- Don't fiddle with a sausage!
- Only a designer can design!
- It's too important to leave to those not trained! Leave it to professionals!
- Sing, and design, in the shower!
- Design takes training.
- ...know an amateur!

BUILD A BUILDING IN A DAY...

MASS ADOPTION OF 3D PRINTING

- **YES!**
- Not Cheap (but affordable!)
- My idea becomes reality!
- Only limited by imagination!
- Efficient + quick!
- Technology will catch up for quick printing.
- No more going to the store!
- **GREAT IDEA!**

- **NO!**
- Too expensive!
- What about toxicity in people's homes? Fabrication in H-O-M-E-S!
- Takes too long to print!
- It won't be adopted quickly to scale... enough to be efficient!



WE WANT THE TRUTH ABOUT THE WORLD OF DESIGN

- **GREAT IDEA**
- Best thing since sliced bread!
- Juice industry!
- We all have to E-A-T!
- It will change the world!
- You can get organic!
- Everyone is a chef!
- It's the future!
- Helps with portion control health!

FOOD FAB! it's a DRAW...

- **BAD IDEA**
- Remember TANG?!
- Food needs to be real!
- Want good organic food!
- Science fiction!
- What about the joy of cooking... it's art!
- No fun!
- It'll be expensive! New hardware!
- Frankenfood!
- Elitist crap!



waterbar

IDEAS THE INNOVATION + DESIGN SERIES

May 23, 2011

Roasted Beet Salad - little gems, walnuts,
Ponzo, Boursin cheese

Choice of

Grilled Salmon - roasted baby carrots,
roasted sweet peas, crispy shallots

Filet Mignon - grilled - Yukon gold potato puree,
creamy spinach, red wine sauce

Building Salad - coffee ice cream

IDEAS

THE INNOVATION
+ DESIGN SERIES

Monday, May 23

Dinner





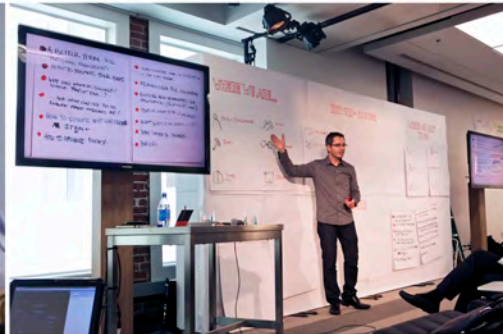
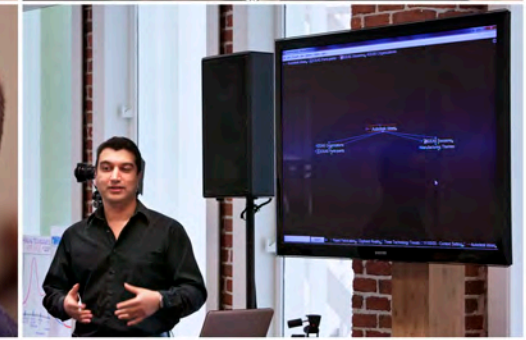
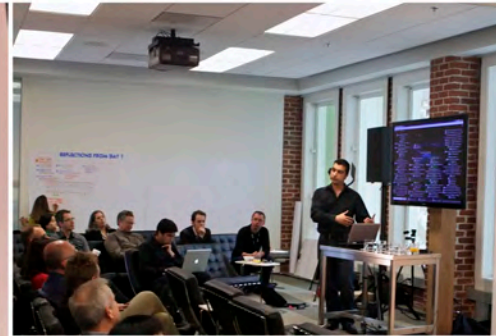
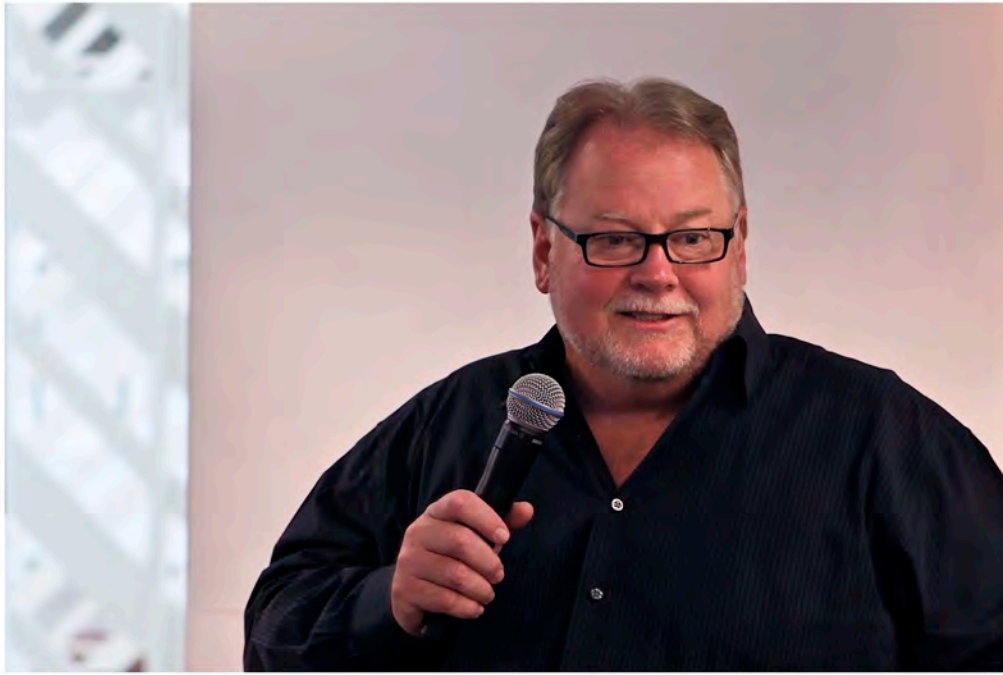


IDEAS

**THE INNOVATION
+ DESIGN SERIES**

Tuesday, May 24

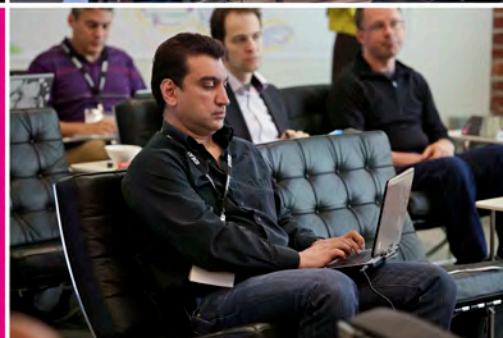
**Welcome + Day 1 Summary
Guest Speakers
Group Activities
Optional Group Tour**



Welcome
Jonathan Knowles, Autodesk, Inc.

Cognitive Mapping
Jim Keravala, Shackleton Energy Co.

Day 1 - Reflections
Tom Wujec, Autodesk, Inc.



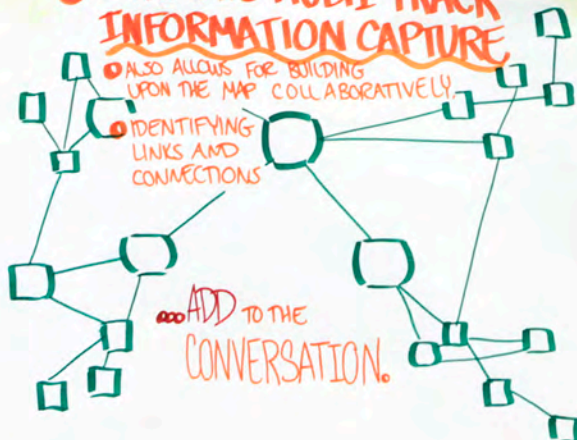
REFLECTIONS FROM DAY 1

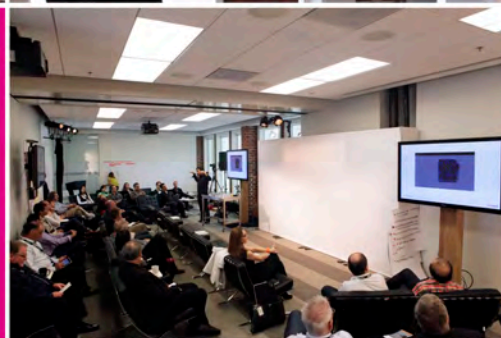
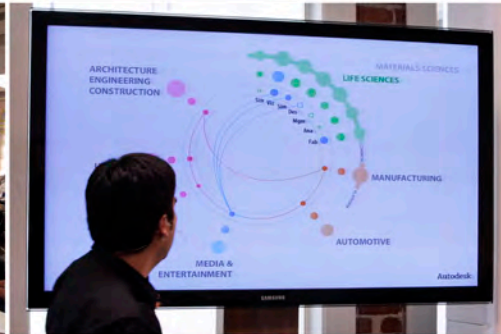
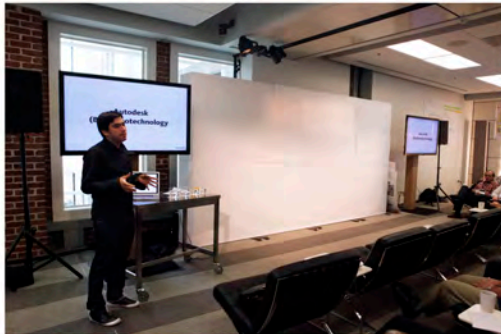
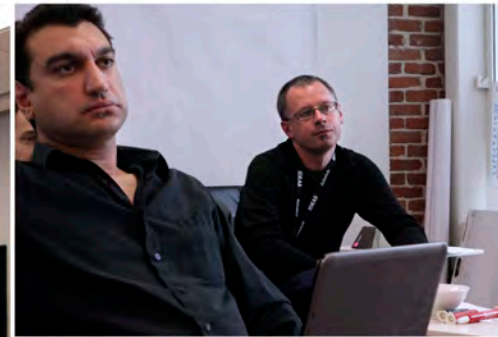
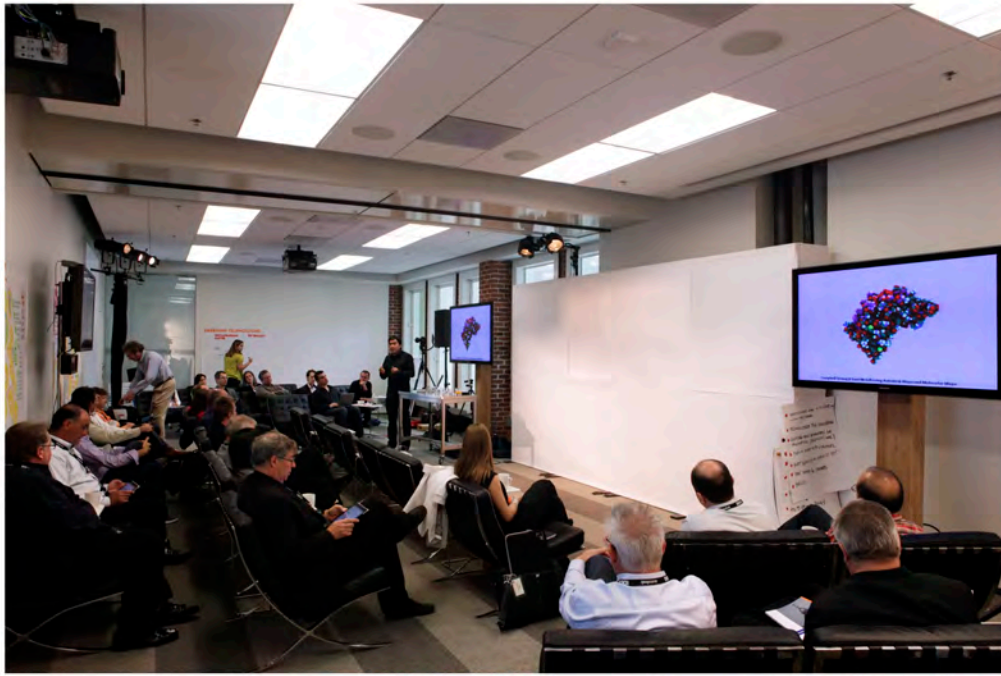
SOME OF OUR WANTS...

- A BETTER TERM FOR THE MAKER MOVEMENT.
- THOUGHTS AND IDEAS REGARDING HOW WE CAN PROMOTE THE BUSINESS.
- POSSIBILITY TO CREATE CROWD-SOURCING PROBLEM-SOLVING FORUMS AND COMMUNITIES...
- HOW CAN WE INFLUENCE POLICY?
- IN ADDITION TO STEM, HOW CAN WE EDUCATE / INFLUENCE THE NEXT GENERATION OF ENGINEERS?
- HOW DO WE DEFINE OURSELVES WITH IN THE MAKER MOVEMENT?
...attracting capital to the space...
- WHAT WILL THE INNOVATION ECOSYSTEM LOOK LIKE?

CONTINUE THE CONVERSATION...

DYNAMIC MULTI-TRACK INFORMATION CAPTURE





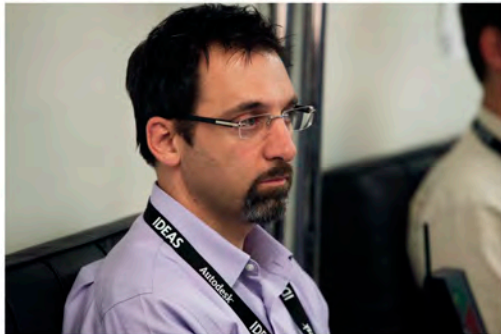
Self-Assembling Matter

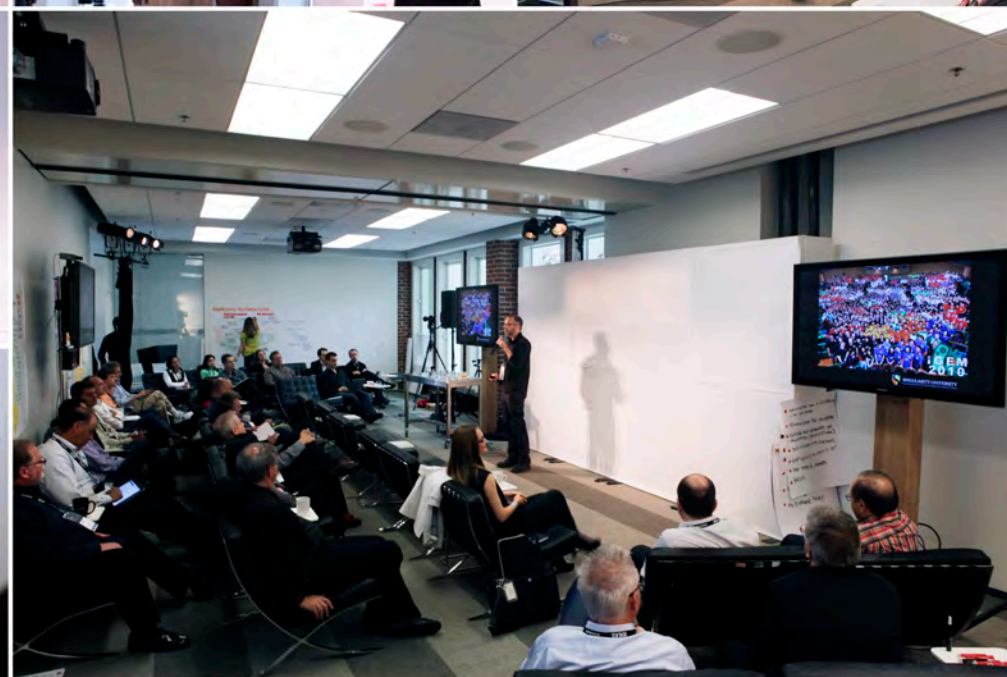
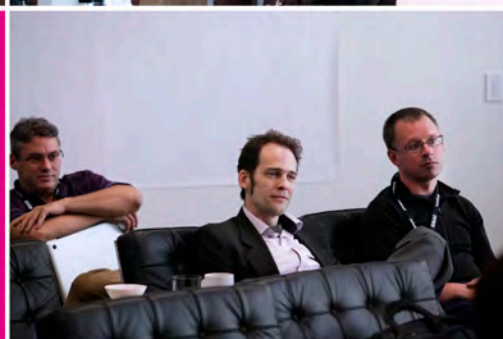
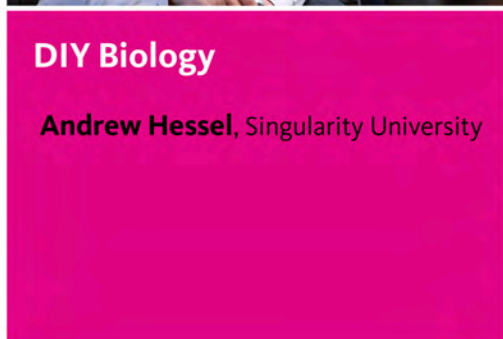
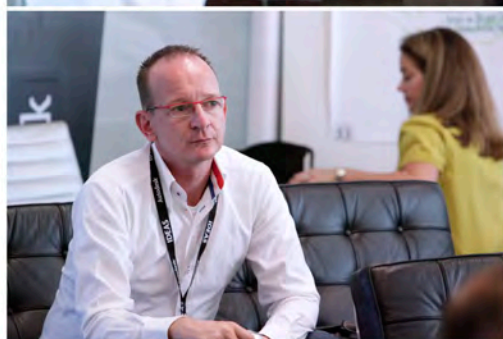
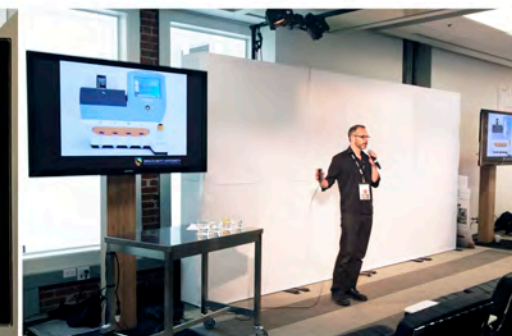
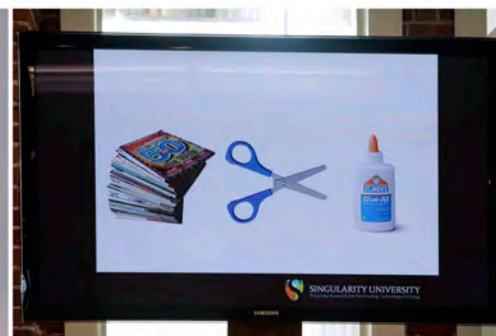
Carlos Olguin, Autodesk, Inc.



Biomanufactured Brick

Ginger Krieg Dosier,
VergeLabs &
American University of Sharjah

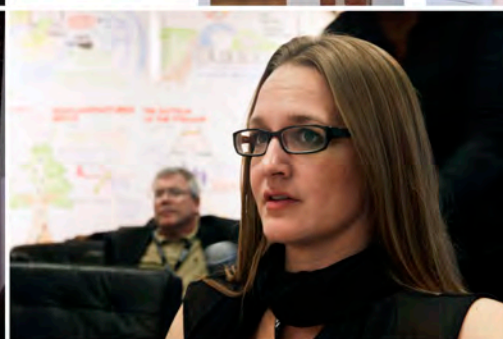
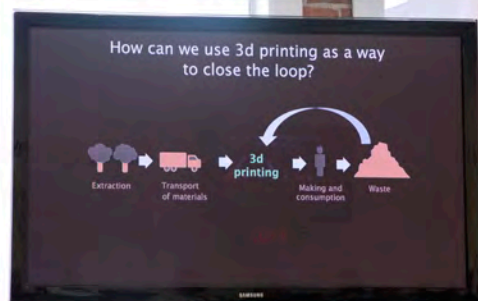






Bottom of the Pyramid

Florencia Estrade, Cria



EMERGING TECHNOLOGIES...

SELF-ASSEMBLING MATTER

WITH CARLOS OLGUIN
AUTODESK



DIY BIOLOGY

BUILD
A
LIVING
WORLD.

THIS IS A
LIVING WORLD
AND MANUFACTURING
SHOULD REFLECT
THAT.

WITH ANDREW
KESSEL

BACTERIA

GENETIC ENGINEERING
WITH BETTER TOOLS

BIOLOGY HAS ALREADY
FIGURED IT ALL
OUT...

AND BACTERIA
ARE JUST SMALL
COMPUTERS.

BACTERIA ARE THE IDEAL
WORKERS
AND CAN BUILD
WHAT IS NEEDED
WITHOUT WASTE
(BECOMES FOOD FOR
OTHER ORGANISMS)

READING

LEARN

WRITING

THIS IS
WHERE THE
OPPORTUNITY
LIES...

ARITHMETIC

LIFE
CODE

DIGITAL
CODE

WILL BE ABLE
TO SYNTHESIZE
GENOMES
WITHIN 20 YEARS.

PROGRAM LIFE AS YOU WOULD
A COMPUTER.

BIOMANUFACTURED BRICK

WITH GINGER



WHAT IF WE COULD GROW
OUR BUILDING MATERIALS
USING MICRO ORGANISMS?

SAND + BACTERIA + FOOD +
CALCIUM CHLORIDE = CALCIUM
CARBONATE

5 DAYS...

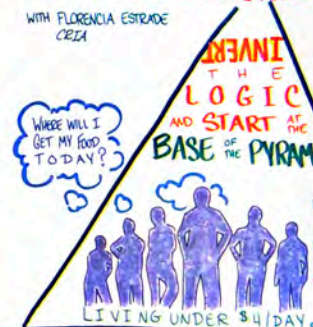
ORGANISM BECOMES
ENCAPSULATED IN
CRYSTALS AND THE
BRICK IS FORMED.

UTILIZING 3D TECHNOLOGY TO
DETERMINE SCALE OF PRODUCTION.

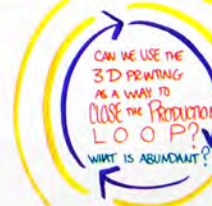
BRICKS ARE
SIMILAR TO SANDSTONE
AND CAN BE MADE
OF DIFFERENT STRENGTHS,
AND AT DIFFERENT
TEMPERATURES.

THE BOTTOM OF THE PYRAMID

WITH FLORENCIA ESTRADA
CEEA

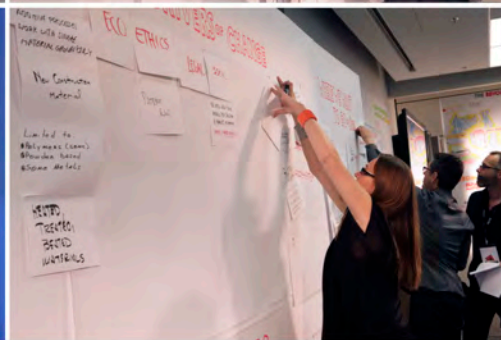
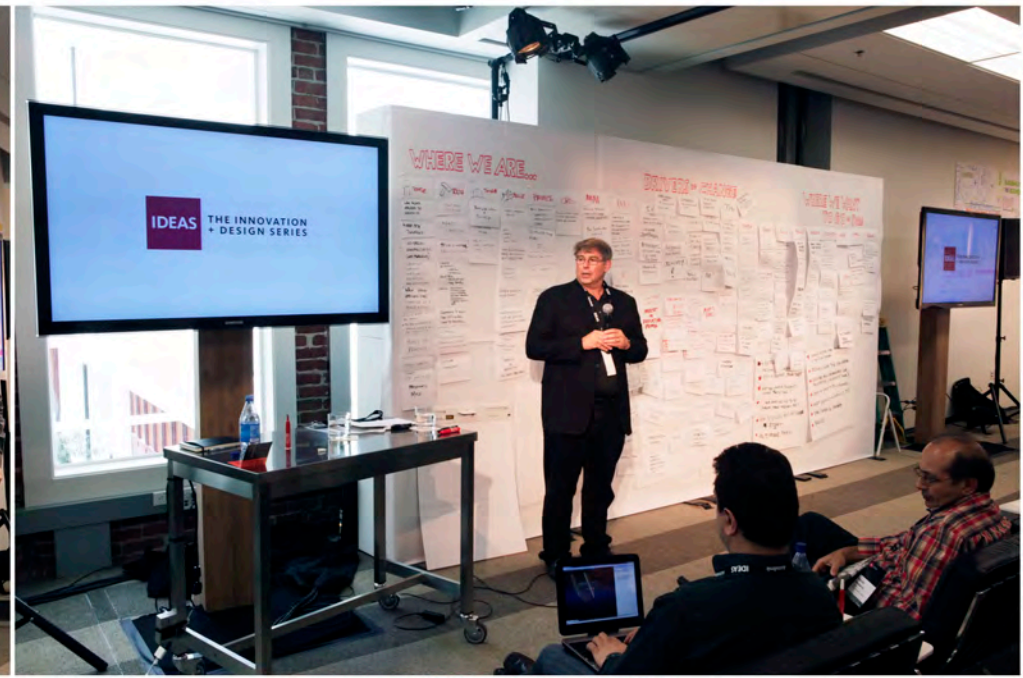


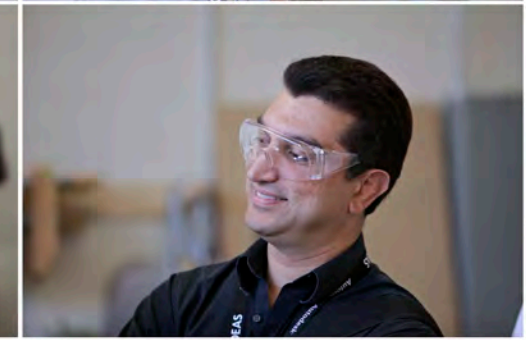
'POVERTY TAX'
... DIFFICULT ACCESS
PRODUCE THE PRODUCT
LOCALLY
EMPOWER THE BASE...
THEY ARE MAKERS.



WASTE
IS
ABUNDANT

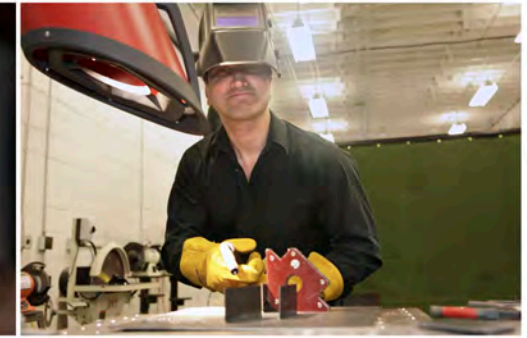
NEW PRODUCT





Optional Group Tour

TechShop SoMa
San Francisco, Ca.





Participants

Chris Anderson, Wired Magazine
 Carl Bass, Autodesk, Inc.
 Sara Beckman, Haas School of Business
 Terry Brickman, PCL Construction Enterprises, Inc.
 Bill Burkett, Evans Consoles Corporation
 Maurice Conti, Autodesk, Inc.
 Scott Crump, Stratasys, Inc.
 Dale Dougherty, Make
 Ginger Krieg Dosier, VergeLabs & American University of Sharjah
 Florencia Estrade, Cria
 Mitch Free, MFG.com
 Ping Fu, Geomagic
 Gilad Gans, Objet Geometries Ltd.
 Neil Gershenfeld, Center for Bits and Atoms, MIT
 Samir Hanna, Autodesk, Inc.
 Mark Hatch, TechShop
 David ten Have, Ponoko
 Andrew Hessel, Singularity University
 David Higgins Jr., HMM Builders
 Jim Keravala, Shackleton Energy Company
 Behrokh Khoshnevis, University of Southern California

Jonathan Knowles, Autodesk, Inc.
 Bud Kolich, Fisher-Price
 Jeff Kowalski, Autodesk, Inc.
 Hod Lipson, Cornell University
 Gonzalo Martinez, Autodesk, Inc.
 Brian Mathews, Autodesk, Inc.
 Jeffrey McGrew, Because We Can
 Charles Melcher, Melcher Media
 Nolan Murtha, Lightstorm Entertainment
 David Ofori-Amoah, thinkmore
 Carlos Olguin, Autodesk, Inc.
 Jon Pittman, Autodesk, Inc.
 Hans Quivooij, Damen Shipyards Group
 Abe Reichental, 3D Systems
 Michael Schrage, Sloan School of Management, MIT
 Nathan Shedroff, California College of the Arts
 Scott Summit, Bespoke
 Peter Weijmarshausen, Shapeways
 Terry Wohlers, Wohlers Associates, Inc.
 Tom Wujec, Autodesk, Inc.



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