We Are All In This Together:
Building a Network of Makerspaces In California Community Colleges

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WORKFORCE MISSION

From $100M to $900M…

From afterthought to state policy priority…

- Unifying framework
- Ecosystem of intrapreneurs
- Tools to "free the data"
- Innovations-at-scale

All in support of guided pathway development.

Investments to Build a Strong Workforce

- $500 million for Adult Education Block Grant (AEBG)
- $248 million for Strong Workforce Program – more and better CTE
- $150 million one-time Guided Pathways
- **$17 million for CCCMaker – STEM/STEAM skills for the creative economy**
- $9 million for CA Apprenticeship Innovation
- $8 million economic distressed regions/ colleges
- $5 million for Prop 39 energy workforce training
- $4 million STEM Teacher Preparation Pipeline

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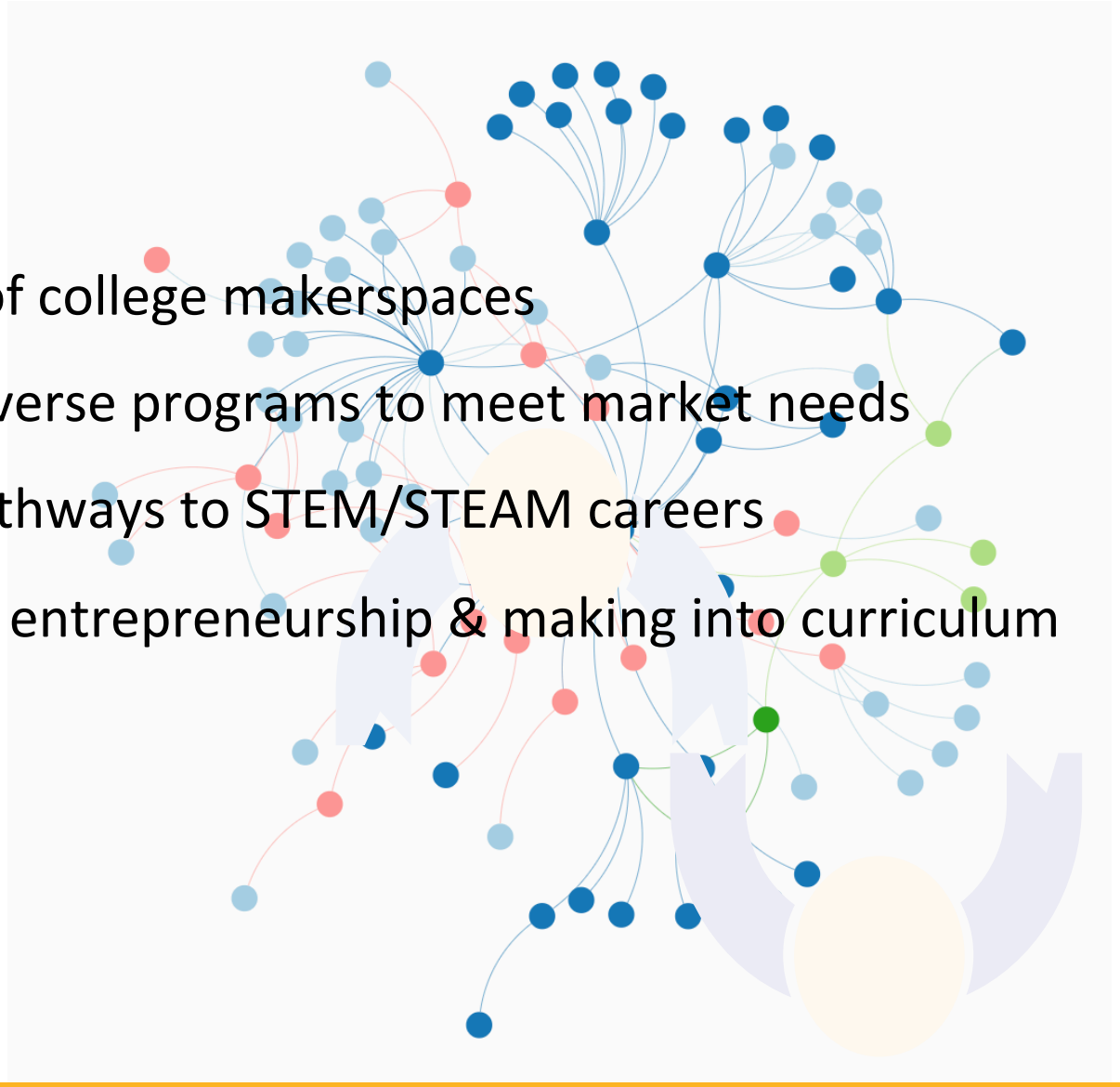
CCC Maker Goals

Unifying Framework

- Develop **network** of college makerspaces
- Create relevant, diverse programs to meet market needs
- Support Guided Pathways to STEM/STEAM careers
- Embed innovation, entrepreneurship & making into curriculum



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CCC Maker Goals

Ecosystem of 'Intrapreneurs'

- Links regional industry ecosystem partners
- Connects skills to capital in regional economies
- Supports small business job creation and growth
- Facilitates cross-generational skills
- Provides access to new technologies

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CCC Maker Goals

Bringing Innovation to Scale

- Fund 800 internships
- Prepare students for Middle skills jobs
- Connect CCCs to the world wide maker movement
- Align with Doing What Matters initiatives

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What is a Makerspace?

A community space where people access technology, expertise and connections to design, prototype and develop creative, social and entrepreneurial ideas.

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Makerspace Models

- **Academic** – PCC FabLab
- **Public/private partnership** – Hacker Lab powered by Sierra College
- **Non-profit/Private** – Allan Hancock College
- **Commercial** – TechShop
- **Community Driven** - Noisebridge
- Dispersed/Centralized/Mobile

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Connecting Making

Maker Movement

- Self-directed learning
- Open source knowledge
- Collaborative
- Entrepreneurial
- Open access
- Informal
- Process oriented

Education

- Project-based learning
- Authentic learning
- Team projects
- Real world problems
- Interdisciplinary
- Creative problem solving
- 21st century skills

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CCC Maker Organization

Sierra College

- Fiscal Lead, Project Management
- 2 public/private Makerspaces

Advisory Committee

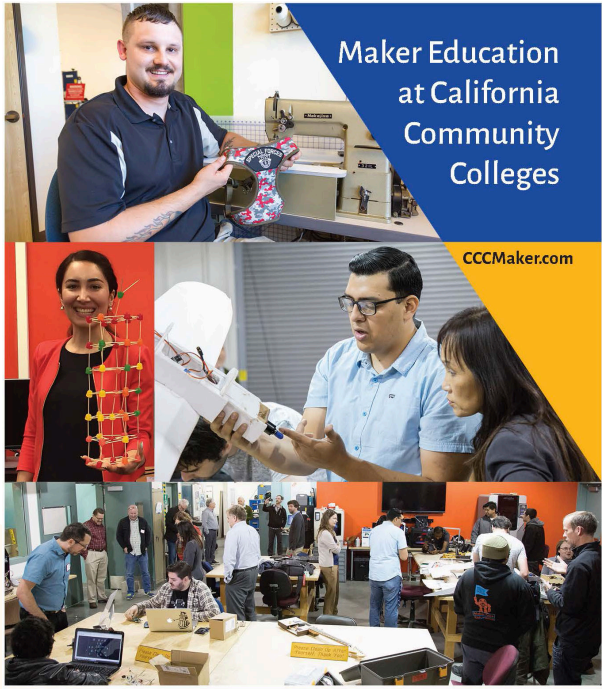
- Leaders in Maker Movement, Industry, Entrepreneurship & Education

Pasadena City College

- Technical Assistance Provider
- Campus Makerspace

Specialized Service Providers

- Entrepreneurship, 21st Century Skills, Pedagogy



Supports college makerspaces, nurtures a maker culture and incorporates innovation, entrepreneurship and making into education.

VALUE Changes education by better preparing students for STEM and entrepreneurial careers, and makerspaces strengthen regional economies.

OPPORTUNITY Build a community of college makerspaces that welcome non-traditional students, support faculty in embedding making into instruction, and partner with businesses to produce innovation-ready graduates.

APPROACH Offer resources, connect colleges and encourage plans that fit community needs.

BENEFIT Create relevant career pathways and stackable credentials, promote student success and get Californians into open jobs.

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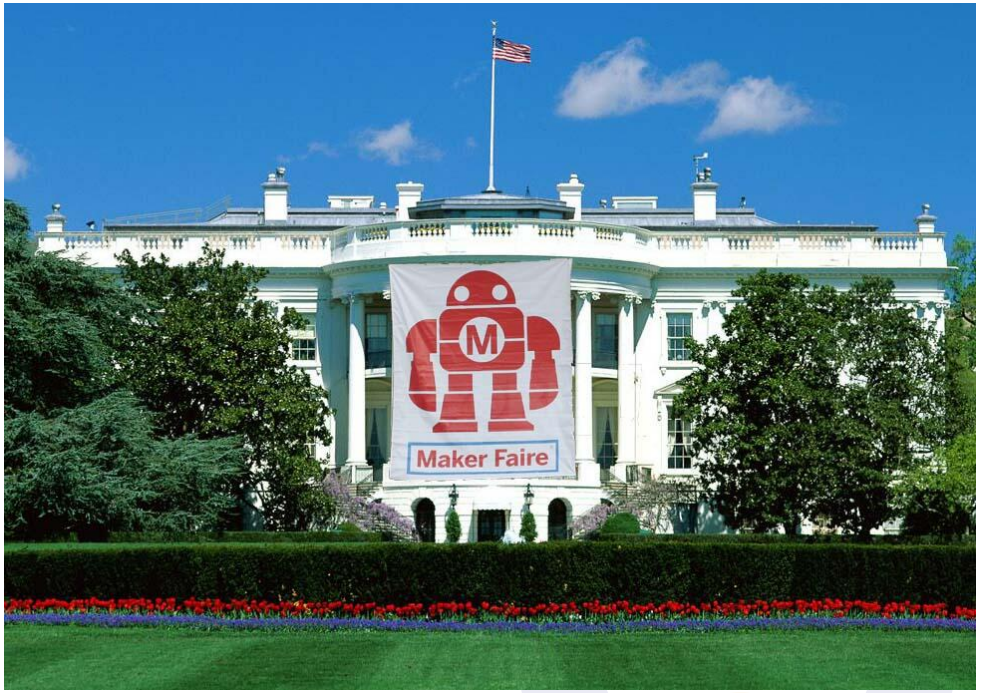
Advisory Committee

- International Thought Leaders
- Direct, Active role
- Purposeful connection
- Embedded Accountability



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CCC Maker Timeline

Year One Start-Up

December 2016 – June 2017

- Guided Process
- $40k Seed Grant
- 32 Colleges

Year Two Implementation

July 2017 – June 2018

- Initiate Systems
- $100 - $350K Funding
- 24 Colleges

Year Three Implementation

July 2018 – June 2019

- Scale + Sustain
- $100 - $350K Funding
- 24 Colleges

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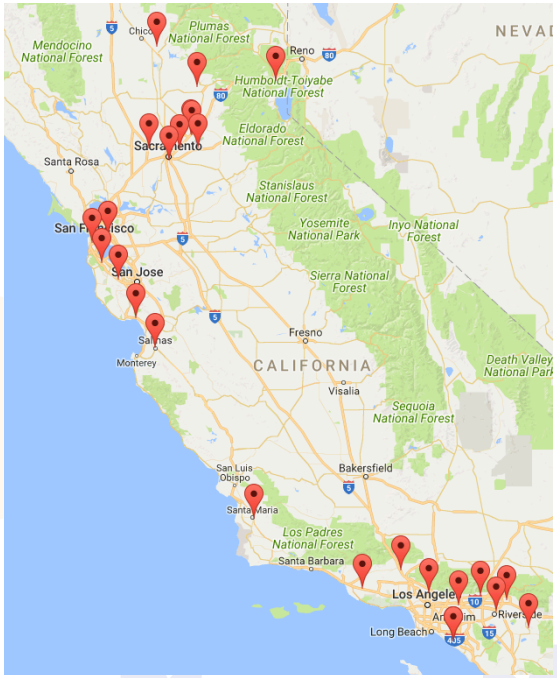
CCC Maker Colleges

Allan Hancock College
American River College
Butte College
Cabrillo College
Chaffey College
City College of San Francisco
College of Alameda
College of San Mateo
College of the Canyons
Folsom Lake College
Foothill College
Glendale Community College
Golden West College
Hartnell College
Laney College
Moorpark College
Moreno Valley College
Mt. San Antonio College
Mt. San Jacinto College
Orange Coast College
Sacramento City College
San Bernardino Valley College
Sierra College
Woodland Community College



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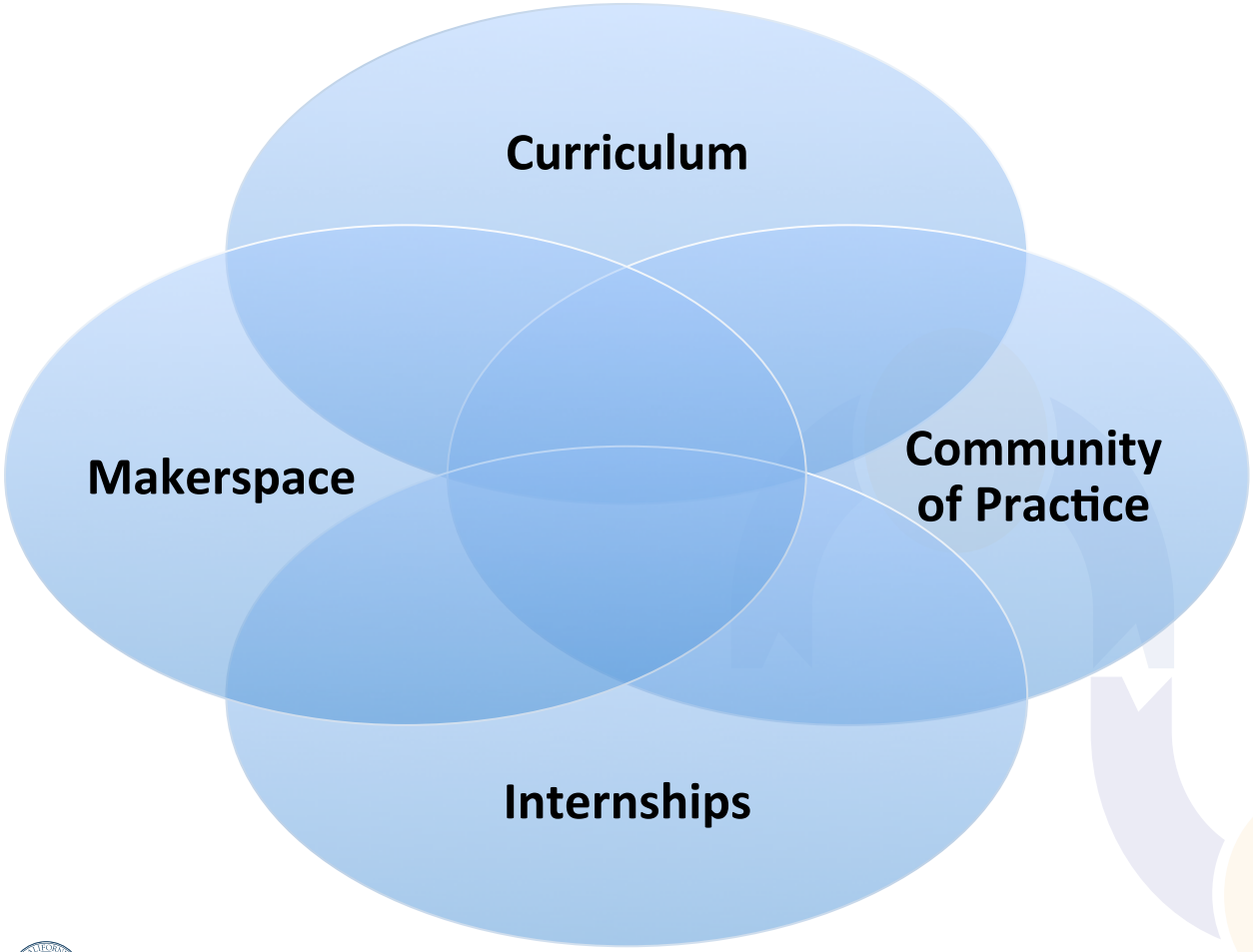
CCC Maker Integrated Outcomes



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Cabrillo College Experience

- Start-up Process
- Accelerated Interdisciplinary Collaboration
- Focused Ecosystem Development
- Facilitates Internships

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Engineering in the Arts
Arts in Engineering

Hands on Traditional

Adapting CAD

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Joseph

Fresh out of high school
Disenfranchised with Engineering
About to drop out because it's "Too Hard"

Discovers Interdisciplinary Connection

- Struggling with Engineering
- Chooses Art as easier alternative
- Discovers common tools in Engineering and the Arts

Accesses Digital Fabrication through 3D Design

- Uses Art Department makerspace tools

Renews commitment to Engineering

- Gains confidence + resilience
- Builds creative problem solving skills

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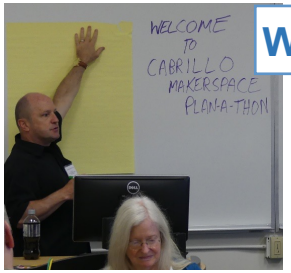
Cabrillo College
Breakthroughs happen here.™

SOUNDPRINCIPALS L.L.C.

Plan-o-thon

NHS
Skateboard Manufacturer & Distributor Since 1973



World-renowned maker industry eager for Cabrillo maker interns

Santa Cruz has 5th highest concentration of artists per capita in the nation after NYC, LA, SF & Santa Fe
(2010 US Census Data)

By 2020, over 40% of the workforce will be participating in the gig economy

FOX

MAH
Museum of Art & History

COASTAL MANUFACTURING, INC.
425-407-0624

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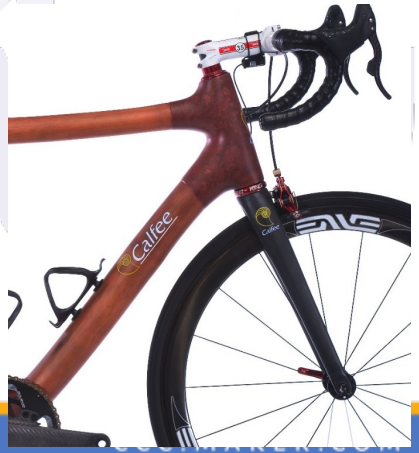
VISTA OUTDOOR

40 YEARS of Redefining Ride Dynamics

GIRO BELL Blackburn Raskullz KRASH!

CREATURE KRUX BRONSON SPEED CO. INDEPENDENT FLIP RIL TH SANTA CRUZ MOB GRIP NOR CAL ROAD RIDER



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plantronics

RCR Fabrication

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Dave

Disabled Veteran with electronics background
Recently homeless
Starts taking Community College Courses to find a new career and get back on his feet

Discovers 3D printing in 3D design art course

- Career Exploration
- Gateway Course

Identifies career and business opportunity

- digital fabrication tools maintenance and repair
- Entrepreneurial approach to career
- Adaptable skill set

Hired as Technician through CCC Maker

- Work based Learning Continuum
- Student Expertise

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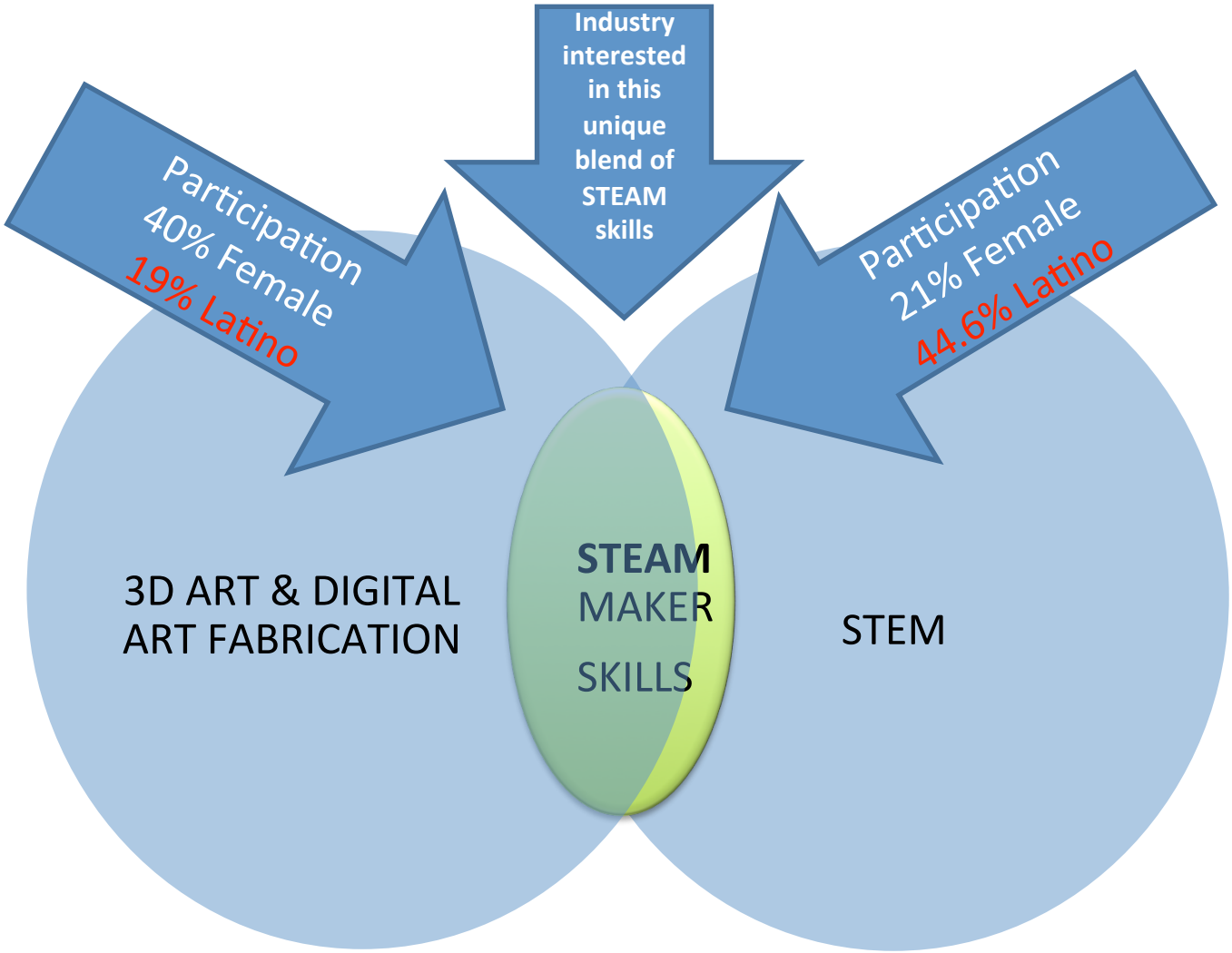
Might makerspace/STEAM
collaborations improve equity by boosting
Latino participation in ART, and female participation in STEM?



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Making Opportunity

Driving innovation

- Close California's middle-skills gap
- Prepare students with 21st Century Skills
- Develop skills for STEM/STEAM fields
- Fuel job creation
- Strengthen regional economies

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Tools to 'Free the Data'

- **Self Study – Critical analysis, student centered**
  - Institutional Research
  - Launchboard
- **Ecosystem Mapping**
  - 2700+ connections
- **Work Plan + Budget Verification**
  - Integrated data collection
- **Baseline Data**
  - Ongoing collaborative data gathering
  - Open source
  - State-wide Meta-data

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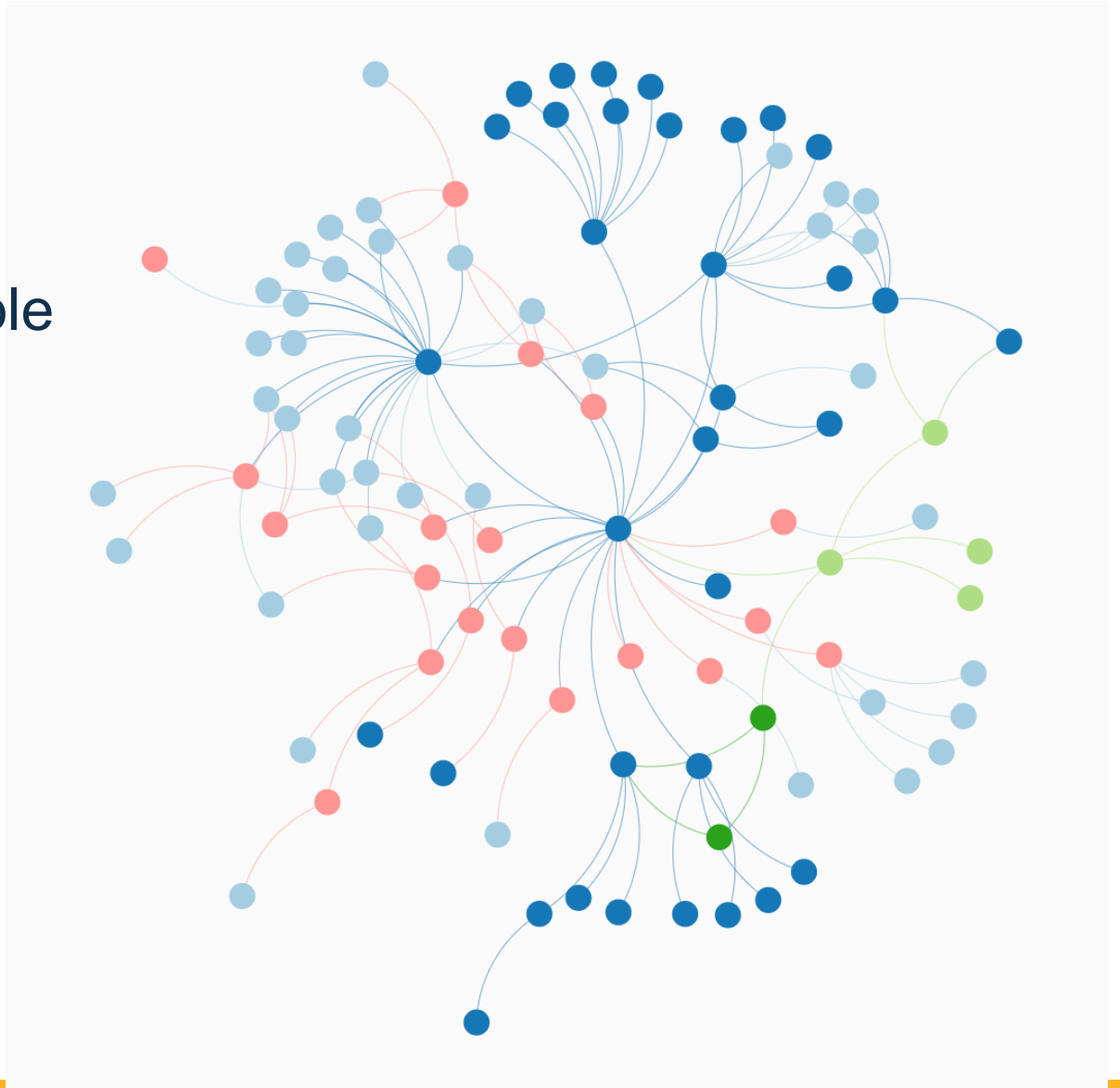
Ecosystem Mapping

- Internal + External
- Makes Network Visible
- Shows
  - Strengths
  - Opportunities
  - Connections
  - Gaps



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Data Informed Decisions

- Active engagement with data
- Systems thinking
- Formative and summative
- Tool for reflection, iterative development
- Integrated quality assurance
- Sustained support + accountability not compliance

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Sustainability

- **Distributed support structure**
  - makerspace community
- **Metrics for Program Planning**
  - Institutionalize makerspaces
  - Access alternative funding sources
- **Alignment to other CCCCO Portfolio**
  - Strong Workforce
  - Guided Pathways
  - CCCCO Initiatives
- **Relational systems (Ecosystem)**
  - Employers, Community Partners, Faculty, Students, Board of Trustees, Local Governance

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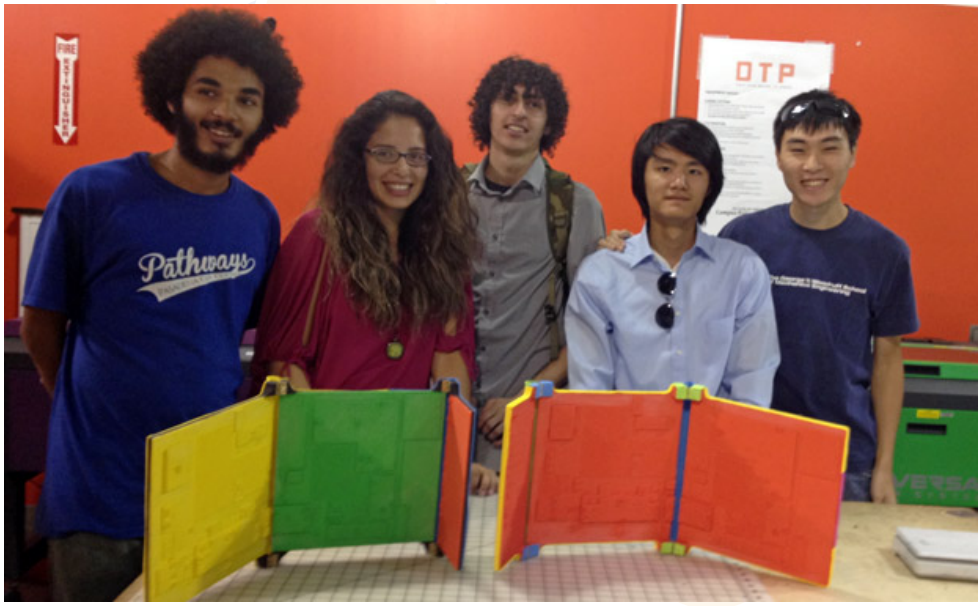
Open Source Philosophy

- Sharing best practices – Community of Practice
- Make Learning Visible – Student Portfolios
- Engaging Ecosystem – Internships, Partnerships, Meet-ups



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Tell Our Story

To fill the STEAM skills gap, the California Community College Chancellors Office has funded the CCC Maker Initiative to build 24 college makerspace communities.

In the makerspaces, students collaborate and use tools to solve problems, faculty embed making into the curriculum and businesses provide 800 internships.

Through the CCC Maker Initiative, making will become essential to being well educated in the 21st Century and innovation-ready graduates will fuel economic growth.

http://cccmaker.com/

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