Proposal to:

CITY OF FORT COLLINS OFFICE OF ECONOMIC HEALTH OFFICE
Local Cluster Support Fund 2014

A. Identifying Information

1. Name, address of applicant business: Colorado State University, Office of Sponsored Programs, Campus Delivery 2002, Ft. Collins, CO 80523

2. Initiative Title: A Personal Fabrication “Hub” To Support Innovation in Fort Collins

a. Area of Interest: Supporting Entrepreneurship, Innovation, Creative Artistry, “Makers”


5. Identify organizational structure: CSU is a 170(c)(1) - Government Unit

6. Additional Grants or Private Investment Received: January 2013-$35K from Autodesk Inc.; January 2013-$10K from CSU Mechanical Engineering; July 2013-$36K from CSU Office of Vice President of Research; October 2013-$10K from CSU College of Engineering; July 2014-$48K committed from CSU Office of Vice President of Research

7. Request Amount Total: $40,000

8. Number of Employees: half-time regular employee, 4 part-time hourly staff (each approximately 10 hours/week), 1 half-time Larimer County Workforce Development trainee

a. Predicted Growth: move half-time employee to full-time within 6 months, add part-time staff (pending this grant)

b. Primary Job Creation: Many primary jobs would be created indirectly by what we’re proposing, due to the indirect nature of our service. We directly serve entrepreneurs, innovators, “Makers” and small to medium businesses in our greater community, who then in turn would create primary jobs as a result of the services we provide. The more we help our constituents accelerate commercialization of their products, the more primary jobs would be created, sooner.

9. Workforce gaps: We, and local companies we have heard from, have difficulty finding employees with computer-aided design (CAD) and 3D printing experience. We hire CSU engineering students and Larimer County Workforce trainees. These people become well-trained and equipped employees for local companies. Thus our training programs described below fill this workforce gap directly.

10. Bankruptcy?: no

11. Lawsuits: none applicable to this project

12. Patents, licenses, demonstration projects: none applicable to this project

13. Letters of support: see Exhibit 1

14. W9: Exhibit 2

15. Certificate of Good Standing?: No, not applicable
B. Project Narrative (no more than 3 pages)

16. Organization (applicable to this project)

a. **Background:** CSU’s “Idea-2-Product Lab” (I2P) is a community-access facility for rapid-cycle product design and development – a “3D Make Lab”. I2P provides 3D printing, 3D scanning and related tools and expertise, enabling companies and individuals to accelerate their path to commercial success. (view short video on how 3D Printing works)

The I2P Lab helps our community capitalize on the national push for improved advanced manufacturing capability, empowering researchers, students, companies, entrepreneurs and “makers” (i.e. home/garage tinkerers) to move faster on their ideas, prototypes and products, raise money (with fast, low-cost product prototypes) and get them to market faster. As an additional benefit, we serve as a gateway for local companies to tap into CSU’s huge talent pool and research and development capabilities, for advice and assistance in product development, R&D and commercialization.

All users pay for materials they consume on our lab, and non-student users pay a fee to use our lab. This is our main revenue generation. Our original plan forecast sustainable operations in 2.5 years. We are ahead of this plan in revenue/fee growth, on-plan in expense, but behind plan in fund-raising. Frankly the current economic environment was/is non-ideal to launch any new venture, when budgets and donors already stretched thin. Therefore we need to continue growing our operation and filling the gap between

b. **Mission:** To enable and empower entrepreneurial, innovative, creative individuals, companies, students, and young people to learn, innovate, exercise their creative artistry and entrepreneurial passion, and accelerate product design, development and commercialization, leading to enhanced economic prospects and jobs for our greater Fort Collins community and ultimately the whole Northern Colorado region.

c. **Vision:** A collaborative “innovation network” involving the university, industry and government, that connects current and future Maker/Artist-spaces through all levels of our community, sharing expertise and resources and empowering each other through leverage of skills, experience and equipment. The “hub” or “mother-ship” of this network would be our existing I2P Lab. In this “ecosystem”, we create leverage - of equipment, expertise and experience throughout the network so the more expensive personal fabrication technology (including 3D scanners) is not required at all sites in the network, yet is available to all participants in the network. Funding is optimized and knowledge and expertise is shared, available to anyone in the network in the form of visits, seminars, support cooperatives, tutorials and other shared learning aids, and shared web infrastructure.

**Desired outcomes:** (1) increase local company innovation; (2) accelerate local company product development; (3) speed entrepreneurial commercialization; (4) enable faster decisions to produce final product designs faster; (5) at lower cost than any other available approach.

d. **Organization/size:** Currently a Director (Applicant, a volunteer), half-time Lab Manager, 4 part-time hourly staff (each approximately 10 hours/week) and 1 half-time Larimer County Workforce Development trainee

17. **Sector:** Professional Services; **Partners:** see above; **Potential Local Partners:** many more companies like those listed above; **Competitors:** none

18. **Impact on Current Trends/Emerging Technology:** 3D printing is a ground-breaking new technology that has exploded onto the world scene in recent years, enabling virtually anyone to create things nearly as quickly and easily as imagining them\(^1\). Also known as *Additive Manufacturing*, this amazing technology is helping countless companies worldwide to develop new innovative products and bring them to market faster than ever before possible.


**Maker Movement and Innovation Economy:** Innovators are everywhere around us – “Makers”, grade-schoolers with the next great idea, corporate professionals in R&D or moonlighting as garage tinkerers. Connecting and channeling their creative energy would make innovation, education and entrepreneurship as a whole far greater than the sum of its parts in any community\(^2\). The huge worldwide explosion in 3D printing activity is due in large part to the huge impact this technology is already having on innovation, education, and economic development/time to market.

19. **Local Community Impact:** I2P has been open for just over eight months and we have already enabled nearly 2000 projects for local companies (e.g. see support letters), students and researchers. Our user growth in recent months has been explosive – over 2 dozen local entrepreneurs and small/startup companies who are already using our equipment and/or services in their product development and commercialization (see support letters). We also serve students of all ages and numerous artists (e.g. see Moravan support letter). From early-September through December, we trained about 25 new people each week – our full capacity. We are already strengthening numerous segments of our local economy.

Within 5 years, every community in America will have a vibrant “Maker-space” as part of it entrepreneurial, incubation, innovation and creative arts portfolio. Aware of this trend, community leaders in the greater Fort Collins area are working to enhance and support our “innovation economy”. We really want to help and we’re in a great position to do so. We intend to deliver our capabilities and support to our community in whatever form best suits the most potential users in Fort Collins and our surrounding area. This would truly be a game-changer for Fort Collins. However, the main reasons nearly all community Maker-spaces fail are (1) lack of expert support for users, (2) lack of dependable, low-cost work space and (3) well-maintained equipment and cost of maintenance. Furthermore, some users require more advanced additive manufacturing capabilities which are much more costly, and simply unavailable.

Fortunately for our region, our I2P lab got an early start and is poised to play an active role in whatever “innovation community” the future may bring. Our vision described above can remove the first and third of these obstacles, and City leaders can/will arrange low-cost space. We need to strengthen the I2P lab so it can be there to help.

We would like to establish our I2P lab as a central “hub” or “mother-ship” that would support any future off-campus commercial/community “innovation/maker-spaces”. We have highly-experienced staff who could provide expert support. We build our own 3D printers today to minimize downtime and reduce maintenance cost. We already run training classes outside CSU in building and maintaining 3D printers (see Ridgeview letter and currently a project with Rotary/Lesher IB School). And we can provide easy access to our more advanced 3D printers and scanner when needed. In addition, our lab would become a conduit to connect users we serve into the sophisticated research and development expertise within the CSU community. This truly builds a triple-helix innovation model, and would directly benefit nearly all industry clusters, as they all can benefit from our services in some way.

However, **to do any of this, we need to build a stronger foundation under our existing I2P lab.** We need to: (1) increase our current equipment (build new printers) and replace some worn equipment; (2) develop training and tutorial courseware for availability to the community; (3) increase our staffing level to be able to accommodate our current and expected growth; (4) increase our level of service for commercial (non-academic) users; (5) strengthen our web-based infrastructure for support, automated learning and usage of our equipment; (6) expand our hours; (7) do some marketing to increase our revenue growth from commercial clients, building a faster path to sustainable (cash-positive) operation; (8) create a professional video to capitalize on crowd-funding opportunities. See Capital Needs below.

20. **Tie into City of Fort Collins Economic Health Strategic Plan:**

(1) **Business Support/Empowerment:** Nearly all discrete product manufacturing companies will use advanced/additive manufacturing processes and technologies somewhere in their product development in the next decade. However, to capitalize on this new technology and the direct business benefits it provides, companies need access to the equipment and a rich level of support and expertise. I2P provides advanced 3D printing equipment that would otherwise be unavailable to most companies – small companies can’t afford it and larger companies have difficulty justifying purchases of early-stage, high-cost technology. Furthermore, the I2P support staff is deeply experienced in all aspects of additive manufacturing, empowering our customers with a fast path to success. Today, we also provide a training courses that enables anyone to get hands-on experience with the technology. This can also help companies who want to learn how the technology might fit their current/future business. (2) **Innovation Economy:** Three of the core elements of innovation are fast, easy creative artistry, fast design cycle time, funding and aggressive commercialization. I2P provides all of these components to our customers. With I2P technology and materials, and our expert support, companies and entrepreneurs can move faster on their ideas, prototypes and products, raise funding (with fast, low-cost product prototypes) and get products to market faster. (3) **Talent Acquisition:** One of the biggest challenges companies face in hiring new primary jobs in manufacturing is finding people with adequate/appropriate skills. I2P is already providing students and others in our community with advanced/additive manufacturing skills. And we are already working with the Larimer County Workforce Development (LCWD) to train a talented but long-term jobless professional, which is turning out to be a big win-win.

21. **Potential Problems:** The most expensive cost of running any company, I2P included, is people cost – the cost of experienced staff and management. Professional, experienced staff that can help users be as productive as possible, as
quickly as possible, are the core of our success strategy. Especially with new technology like 3D printing, there are many potential pitfalls that can slow progress. Companies and entrepreneurs, more than anyone else, cannot afford their time to “figure out” how to deploy these powerful new tools and they can least afford the cost of mistakes. We provide talented staff and management to smooth this process and reduce this risk. We have access to a large pool of talented, low-cost individuals at CSU, but with the incredible growth trajectory we are experiencing, our staff is spread very thin. This is good news of course – many individuals and companies are using our lab – but we must make sure their time investment is productive and beneficial.

22. **Long Term Goals**

   a. **Capital Needs:** (1) New and updated 3D printers - during peak times, all of our existing 3D printers are in use, and potential users must wait to schedule time. Furthermore, after enabling almost 2000 projects about 8 months, some of our equipment is worn out. These costs are requested in the Salaries, Equipment and Supplies budget below. (2) To reduce cost of staff, capture their knowledge and use it to develop training and tutorial courseware for availability to the community. We need to automate our high-quality service delivery, to minimize cost of staffing. To do so we need to develop professional on-line tutorial and learning tools. These costs are requested in the Other Direct Costs and Salaries budget below. (3) Increase our staffing level to be able to accommodate our current and expected growth. Our user growth is quickly out-stripping our capacity and we cannot afford to add hourly staff, so we are sometimes forced to throttle down growth. This cost is requested in the Salaries budget. (4) Increase our level of service for commercial (non-academic) users. We currently offer a “guided self-help” usage model. While suitable for students and most Makers, it is often non-ideal for the corporate/entrepreneurial communities we also serve. We would like to enhance our services to enable more personalized service to these customers. This would result in faster time to success for these customers but requires more staff hours which we cannot currently afford. This cost is requested in the Salaries budget. (5) Strengthen our web-based infrastructure for support, automated learning and usage of our equipment. These costs are requested in the Other Direct Costs and Salaries budget. (6) Expand our hours. Entrepreneurs like to work nights and weekends. At current staffing levels, we are unable to keep our doors open at these times. We need funding to support the cost of making these people available to our customers at a sufficient level to allow us to expand our hours. This cost is requested in the Salaries budget. (7) Do some marketing to increase our revenue growth from commercial clients, building a faster path to sustainable (cash-positive) operation. We need to extend our outreach to include marketing to more local entrepreneurs and local companies. We have not yet been able to afford to do any marketing other than a newsletter and open house. This cost is requested in the Other Direct Costs budget. (8) Create a professional video to capitalize on crowd-funding opportunities, enabling us to attempt fund-raising through this new channel. This cost is requested in the Other Direct Costs budget.

   b. **Similar Industries Recruitable to Region** – hundreds, if not thousands of small companies and entrepreneurs could use our services; An “innovation network” would be a game-changer for Fort Collins and Northern Colorado.

23. **Impact of Funding on Goals/Milestones**: support current demand from community; enable broader outreach; faster path to sustainability (cash-flow positive operation); improve level of service; enable courseware development

C. **Program Work Plan**

24. **Yearly Tasks, Major Events, Milestones** – the requested funding will be used in the coming 12 months. We are already planning to implement some of these, e.g. web site/infrastructure improvements, but new funding will accelerate.
   
   o April 2014: deploy new improvements in new web site (numerous planned improvements)
   o April: deploy 2nd phase of improved infrastructure (numerous planned improvements)
   o April: Move current half-time manager to full-time (or risk losing him)
   o Extend hours of operation to include later each day and Saturdays
   o Starting April: Replace/add 1 3D Printer each 8 weeks until 6 new printers are deployed
   o May: Second edition of newsletter, Spring Open House/Seminars
   o May: first marketing outreach program to develop more customers
   o May-June: Develop Crowd-funding video and launch crowd-funding campaign
   o June: Expanded fund-raising – target larger national/STEM grants
   o June: offer summer course in 3D Printing and 3D Printing “certificate” program
   o August: second marketing outreach program to develop more customers
   o September: offer tutorial materials on-line
   o September: offer full-semester additive manufacturing course at CSU
   o October: Third second marketing program, new edition of newsletter, Fall Open House/Seminars
D. **Budget**

25. **Program Budget**

<table>
<thead>
<tr>
<th></th>
<th>City of Fort Collins Contribution</th>
<th>CSU Contribution</th>
<th>Total Project Costs</th>
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<tbody>
<tr>
<td>Personnel Salaries</td>
<td>$ 3,854</td>
<td>$ 7,129</td>
<td>$ 20,004</td>
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<tr>
<td>Materials and Supplies</td>
<td>$ - $</td>
<td>$ - $</td>
<td>$ 3,299</td>
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<tr>
<td>Other Direct Costs</td>
<td>$ 12,146</td>
<td>$ 3,471</td>
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<tr>
<td>Equipment Fabrication</td>
<td>$ 24,000</td>
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<td>$ 6,097</td>
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<td>TOTAL:</td>
<td>$ 40,000</td>
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<td>$ 29,400</td>
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E. **Management Team**

26. CVs – *Relevant Background and Accomplishments*

a. **David Prawel (Applicant)**

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<th>NAME</th>
<th>POSITION / TITLE</th>
</tr>
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<tr>
<td>David A. Prawel</td>
<td>Senior Research Scientist, School of Biomedical Engineering, Mechanical Engineering, Colorado State University</td>
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**EDUCATION/TRAINING**

<table>
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<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tr>
<td>State University of New York at Buffalo</td>
<td>B.S.</td>
<td>1978</td>
<td>Biology (engineering minor)</td>
</tr>
<tr>
<td>State University of New York at Buffalo</td>
<td>M.S.</td>
<td>1980</td>
<td>Natural Sciences – Interdisciplinary</td>
</tr>
<tr>
<td>University of Michigan Business School</td>
<td>Executive Education</td>
<td>2002</td>
<td>Mergers &amp; Acquisitions for Technology Companies</td>
</tr>
<tr>
<td>Colorado State University</td>
<td>Ph. D.</td>
<td>2011</td>
<td>Biomedical Engineering</td>
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</table>

**Positions and Employment**

**Associate Director, Biomaterials Research and Engineering Laboratory**

**Director, Idea-2-Product Laboratory for Advanced and Additive Manufacturing**

*Colorado State University* 2007 to present

- Independent and collaborative research in polymeric, biomimetic materials and coatings for orthopedic and cardiovascular applications, including grant-writing
- Manage laboratory of graduate and undergraduate students
- Founder and Director of CSU’s community-access 3D printing lab, Idea-2-Product

**Founder, President, Principal Consultant, Longview Advisors Inc.** 2001 to present

([www.longviewadvisors.com](http://www.longviewadvisors.com))
- Consulting in 3D digital product development, commercialization and technology transfer
- Expert opinion in engineering software patent reviews and intellectual property assessment
- Manage international teams of sub-contracted and customer engineers and other professionals
- Founder & Chair: 3D Collaboration & Interoperability Congress [www.3dcic.com](http://www.3dcic.com)
- Author & Editor: 3D Collaboration & Interoperability Market Report

**Co-founder, SkyBeam Wireless (a.k.a. LP Broadband Inc.) 2003 to 2006**
- A wireless internet service provider (WISP) [www.skybeam.com](http://www.skybeam.com)
- Managed Strategy, Business Development (partnerships), Acquisitions and Marketing
- Sold company in 2007 to private market consolidator
- Now among the largest WISPs in the US, exceeding 140,000 customers

**President & CEO, Critical Reach Inc. 2000 to 2001**
- 3D web-based manufacturing and MRO (maintenance, repair and operations) software company
- Re-launched this German company in the US market and sold company in 2001

**Vice President, Spatial Technology Inc. 1993 to 2000**
- 3D Engineering Software start-up company
- VP of Strategy and Business Development (commercial licensing/technology transfer, mergers & acquisitions, product revenue through third party collaborations)
- Managed international teams of software engineering and other professionals
- Acquired and/or licensed over 20 software companies/products.
- Helped lead company through successful IPO and sale to a large French firm

**Director, Precision Visuals Inc. 1988 to 1992**
- Start-up company that made 3D scientific software
- Directed Marketing and Technical Product Marketing
- Licensed third-party products for re-sale

**Director, Unicad Inc. 1985 to 1988**
- Start-up company that developed/sold 3D engineering software
- Directed Technical Product Marketing and Customer Education

**Software Engineer, Autotrol Technology Corp. 1982 to 1984**
- Company developed/sold 3D Engineering Software
- Software Engineer and Managed partnerships with 3rd party software suppliers

**Relevant Accomplishments – start-up ventures (see details above):**
- Founder, Longview Advisors Inc., Loveland, Colorado (2001 to present)
- Autotrol Technology, Denver, Colorado (1982 to 1984)

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**b. Kent Johnson (Lab Manager)**

**EDUCATION**

Bachelor of Science, Physics, 2012
University of Colorado, Boulder, CO

**RELEVANT COURSEWORK**

Classical Mechanics, Thermodynamics, Electromagnetism, Quantum Mechanics, Optics, Special Relativity,
Chemistry, Electronics, Differential Equations, Linear Algebra, Analytic Geometry, Calculus

**COMPUTER SKILLS**

Math and Design Software: MathCAD, Mathematica, SolidWorks, LabVIEW, Blender, Netfabb, Pronterface, Slic3r, Objet host software, Magics, Perfactory, NextEngine, FreeCAD, openSCAD, Arduino

Extensive experience with office suite applications across multiple operating systems

**RESEARCH PROJECTS**

**Wave-Particle Duality, Senior Research Project in Optics, 2011**

Created project to investigate wave-particle duality of light, involving an optical apparatus design with appropriate application of photomultiplier tubes, amplifier-discriminators, NI-DAQ data acquisition sytems, and LabVIEW graphical programming interfaces. Used Mathematica for data analysis and statistical propagation of uncertainty to confirm a refined hypothesis.

**Acoustic Signal Processing, Junior Research Project in Electronics, 2010**

Combined music and circuit theory to design, build, and test a circuit to harmonize acoustically generated frequency signals. Successfully completed project on time and under budget.

**WORK EXPERIENCE**

**Manager, Idea-2-Product Lab, Fort Collins, CO, January 2013 – Present**

Coordinate a team to develop, build, and manage a fleet of public-access additive manufacturing machines, including FDM, Selective photocuring, and PolyJet technologies. Responsibilities included training new users, maintaining and ordering materials, and working with commercial clients on a variety of design and computer aided manufacturing projects.

**Partner, eNTWORKS Ltd., Loveland, CO, June 2012 – Present**

Contributed to ongoing development of RepRap style 3D Printers.

**Manager, UPS Store, Boulder, CO, May 2010 – December 2012**

Responsible for managing a shipping and packaging franchise while maintaining a reputation for excellent customer service. Managed all employees in multiple locations. Trained multiple new employees.

**Sales Associate, Lowes, Castle Rock, CO, May 2007 – November 2009**

Responsible for representing and maintaining a positive company image while completing sales transactions and assisting with shipments.
XI. Application Certification

I certify that:

- The project described in this application and for which the company is requesting funds complies with the statutory criteria, rules and application requirements identified in this application document.

- The applicant has a dedicated, matching source of moneys from a third-party that is equal to or greater than the amount applied for under the Program. Include pledge form or documentation to verify this. For early phase high impact projects, applicants may submit a fundraising proposal.

- The information contained in this Application, including all attachments and exhibits, are true and correct.

- The applicant company is headquartered in Fort Collins, or is partnering with an organization based in Fort Collins.

- The person’s or persons’ signature on these Certifications and Application are authorized to act on behalf of the applicant organization.

Pursuant to personal communication between Sam Houghteling, Industry Cluster Coordinator, Economic Health Office, City of Fort Collins, and David Prawel, principal investigator for Colorado State University, the University herein commits to providing the additional matching funds required to bring the proposal into compliance with the mandatory 1:1 requirement. The participating University organizations are:

College of Engineering
Department of Mechanical Engineering
Colorado State University Libraries
College of Veterinary Medicine & Biomedical Sciences
Department of Biochemistry
January 29, 2014

David Prawel, Ph.D.
Associate Director, Biomaterials Research & Engineering Laboratory
School of Biomedical Engineering
Department of Mechanical Engineering
Colorado State University
1374 Campus Delivery
Fort Collins, CO 80523-1374

RE: AlloSource Letter in Support of CSU’s Idea-2-Product 3D printing lab-A Personal Fabrication Hub-shared/matching funds grant -$5000.0

Dear Dr. Prawel:

On behalf of AlloSource, I am pleased to provide this letter in support for CSU’s Idea-2-Product 3D printing lab, as we feel it will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in our great Fort Collins and Northern Front Range communities. Additionally this effort supports our interest in regenerative medicine and the technologies that have the potential to enable AlloSource to extend our mission of tissue donation.

In keeping with our mission and in support of CSU, AlloSource agrees to supply cost sharing/matching funds in the amount of $5000.00 (five thousand dollars) to Colorado State University’s project entitled “A Personal Fabrication “Hub” To Support Innovation in Fort Collins” under the direction of David Prawel at Colorado State University. This project is sponsored by the CITY OF FORT COLLINS OFFICE OF ECONOMIC HEALTH OFFICE under the Local Cluster Support Fund 2014 Grant program.

As you are aware, AlloSource is a not-for-profit 501(c)(3) Colorado based tissue bank with a substantial interest in regenerative medicine and the enhancement of gifted allograft tissue. The objectives of your proposal are in alignment with the strategic objectives of AlloSource. Likewise we strongly support the benefit to economic growth and innovation your CSU 3D lab brings to our Northern Colorado region.

Sincerely,

[Signature]

Peter Stevens, Ph.D., MBA
Vice President, R&D
Dear Dr. Prawel,

Amalgam Industries, Inc. is very pleased to give our support to Colorado State University's Idea-2-Product 3D printing lab. We feel this printing lab will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in the Fort Collins and Northern Front Range communities. Here is why.

Amalgam Industries is a high tech manufacturing startup dedicated to bringing a disruptive manufacturing platform, a type of direct digital manufacturing (DDM), to produce "locally hard, but globally soft" non-textile polymer, metal, or ceramic fabrics. This technology has been in development for several years. In that time, Amalgam has looked for and found many partners to help with our mission. However, none in Colorado has demonstrated the printing lab's skills, enthusiasm, and educational mission - all of which manufacturing-based startups like Amalgam need to make the next industrial revolution a reality here in the front range.

At this time, Amalgam is much too small to provide cost sharing/matching funds to support to CSU's “A Personal Fabrication “Hub” To Support Innovation in Fort Collins” project under the direction of David Prawel at Colorado State University. We understand this project is sponsored by the CITY OF FORT COLLINS OFFICE OF ECONOMIC HEALTH OFFICE under the Local Cluster Support Fund 2014 Grant program. We intend to stay in close collaboration with Dr. Prawel’s project and hope one day to be able to give back to this fine effort.

Sincerely yours,

Gregory W. O'Connor, Chief Scientific Officer, COO

cc Robert Wigger, CEO
Cost Sharing Commitment Letter Content  
(please include on your letterhead)

Autodesk, Inc is pleased to support CSUs Idea-2-Product 3D printing lab, as we feel it will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in our great Fort Collins and Northern Front Range communities.

Autodesk, Inc agrees to supply cost sharing/matching funds in the amount of $15,000 to Colorado State University’s project entitled “A Personal Fabrication “Hub” To Support Innovation in Fort Collins” under the direction of David Prawel at Colorado State University. This project is sponsored by the CITY OF FORT COLLINS OFFICE OF ECONOMIC HEALTH OFFICE under the Local Cluster Support Fund 2014 Grant program.

By: ___________________________ Date: 1-30-2014

Name: Michael Geyer

Title: Sr. Manager, Manufacturing 2020
To Whom It May Concern:

Begin Again Toys is pleased to support CSUs Idea-2-Product 3D printing lab.

We feel 3D Printing and the Idea-2-Product Lab will be a great service to our entrepreneurial and innovation community. It has already helped our business.

We are big believers in desktop manufacturing and as a team comprised of 15 year veterans in product design and development, we see a true demand for localized manufacturing and prototyping shops.

Our current retailers and clients are pushing hard for “on-shoring” of manufactured goods. Having a local shop like the Idea-2-Product lab will help companies like ours prove concepts and production competencies allowing us the ability to manufacture our goods in the USA and more importantly in Colorado.

The Idea-2 Product lab will significantly benefit economic growth and development, innovation, creative artistry, and entrepreneurial success in Fort Collins and the Northern Front Range.

Sincerely,

Chris Clemmer  
co-founder, BeginAgain  
www.beginagain-toys.com
Letter of Support to Idea-2-Product - 3D Printing Lab

Fluonic is pleased to support CSUs Idea-2-Product 3D printing lab, as we feel it will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in our great Fort Collins and Northern Front Range communities.

Fluonic is a medical device company developing flow sensors for applications in medical infusion. As part of this process, we are testing prototypes which will be demonstrated to potential end users and strategic partners. 3D printing gives us the capability to quickly design a professional-looking casing around our prototypes, which improves both our end user experience and our perceived value to partners and investors. The ability to achieve rapid turn around times for building and testing of such prototypes is important to us and the rest of the device community.

By: ____________________________ Date: January 29, 2014

Name: Seth Miller, PhD Title: Chief Scientific Officer
January 30, 2014

To whom it may concern.

Huber’s House LLC definitely supports CSUs Idea-2-Product 3D Printing Lab, as we feel it will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in our great Fort Collins and Northern Front Range communities.

In May 2013, the Idea-2-Product 3D Printing Lab staff worked with me and printed a 3D prototype device. The prototype device enabled me to continue working with the CAD designer and a professional tool / mold manufacturing company. Also, I am working with a Colorado manufacture and national distributor. In addition, I have been to trade shows, met with multiple retailers and distributors, and redesigned the device to facilitate manufacturing and optimal sales.

The 3D Printing Lab staff are supportive and professional, which adds another level of support for the city of Fort Collins, state of Colorado designers, entrepreneurs, and existing businesses. Their services can improve rapid product inception to production capabilities and economic and employment opportunities.

Sincerely,

Mike Gould

Mike Gould, Owner
Huber’s House LLC
hubershousellc@gmail.com
Cell - 970-310-3387
January 29, 2014

To Whom It May Concern:

**Illustrative Designs** is pleased to support CSU's Idea-2-Product 3D printing lab. We used the lab to make a prototype for a product that converts a 10 gallon bucket into a funnel used in the beverage industry. We see 3D Printing and the Idea-2-Product Lab as a great service to our entrepreneurial and innovation community. It already helped our business. We feel it will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in Fort Collins and the Northern Front Range.

Sincerely,

Christopher Andrews

Illustrative Designs
The **MICHAEL & ELAINE MORAVAN FOUNDATION** is pleased to support CSUs Idea-2-Product 3D printing lab, as we feel it will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in our great Fort Collins and Northern Front Range communities. **CONNECTED TO THE INTERNET I2P OFFERS THE POSSIBILITY ON BEING A UNIQUE RESOURCE FOR THE ENTIRE STATE OF COLORADO!**

The **MICHAEL & ELAINE MORAVAN FOUNDATION** agrees to supply cost sharing/matching funds in the amount of **$2000** to CSU’s project entitled “A Personal Fabrication “Hub” To Support Innovation in Fort Collins” under the direction of Dr. David Prawel at Colorado State University. This project is sponsored by the CITY OF FORT COLLINS OFFICE OF ECONOMIC HEALTH under the Local Cluster Support Fund 2014 Grant program.

As a CSU retiree, with a BSEE and years of experience being CSU’s principal computer network engineer, along with being an active investor with a large portfolio of high tech stocks, including several 3D stocks, I believe the impact of 3D PRINTING on society could equal that of the creation of the INTERNET!

Ignore it at your peril, embrace it at your profit.

Several examples may illustrate why I so strongly believe this:

** Victor Issa, a renowned Loveland sculptor, currently used a form of 3D printing/CNC MACHINES to enlarge his small scale commissions to larger-than-life styrofoam, clay covered, figures in casting ready forms. He would like to experiment & learn with 3D printed clays, but the labor saving, creativity enhancing techniques required very expensive ($5K) materials. If I2P had the clay printers/materials, many budding 3D printing artists, coupled with the existing Loveland foundries could potentially evolve new methods to sculpt!

** As an artist in Kinetic WIND ART using polished copper and diffraction grating (think rainbows of color) media, I have been wanting to test 3D printing of my works, which sell for a minimum of $500 per commission. Having the I2P lab available with a variety of 3D printing technologies and the talented staff will accelerate my learning curve, even though I will shortly be a resident of Durango.

** I am currently buying a house in Durango. To help my Durango builder and my wife and I to better visualize the home, I've arranged with Dr Prawel, his I2P staff & my builder to use my I2P account to 3D print a model of our planned home and FEDEX the plastic model to us here in Durango. This project is currently underway with Dr. Prawel's oversight.

** Currently SPACEX, under contract to service the ISS, uses sintered 3D printing to create several rocket engines on its FALCON 9 launch vehicle. SPACEX, trusting is 3D printed rocket motors, is working with NASA, to human certify this Vehicle! To my knowledge, I2P DOES NOT currently support metallic printing. This grant could change the situation!
Like I wrote before:  **Ignore it at your peril, embrace it at your profit.**

Respectfully Submitted,

Michael J. Moravan  
Colorado State University, retiree  
LT CEC USNR, inactive  
970-402-2514
To whom it may concern,

Ridgeview Classical Schools received its 3D Printer and training prior to the 2013 school year, and in under a year has been an inspiration in dozens of students’ projects and opened up exciting opportunities for teachers. To date, nearly 100 Ridgeview students have volunteered their own time to get trained in preliminary functionality of the printer, which is nearly 1/8th of the entire k-12 school. From that, nearly 30 have used the printer for their own personal or class projects.

The youngest students which have used the printer were in 6th grade. Their teacher had an extra credit project where students designed a board game based upon the Aeneid, and many students took an interest in printing out game pieces (typically downloaded from Thingiverse). For many of these young students, this was their first time working with this level of technology, and they were obviously greatly inspired. After this project, I’ve continued working with a handful of them for their personal projects, from Christmas presents to small tools they want to design. Having easy and unfettered access to a 3D Printer has truly empowered these students, and they are taking a great deal of personal initiative to spend more time on the machine; it's particularly fun to hear them coerce their parents into sticking around after school so they can finish a print.

We have used the 3D printer extensively in my Engineering elective. With this machine, students' designs were no longer constrained by my limited wood fabrication skills. What we were able to produce this year far surpassed any previous class in elegance, creativity, and originality. Those students with CAD experience took it upon themselves to teach their peers, often after school. Through this they not only gained self-esteem, but drew the class together as students worked jointly to understand and use the new, exciting technology. Even though the class finished last semester, the students have petitioned me to start an after school club so they can continue to refine their project; they 'own' their ideas, and bringing them successfully into fruition has become a point of pride for every student in the class.

The introduction of the 3D printer to Ridgeview has had a deep impact on the students here, from 6th graders to seniors. The young feel empowered by the technology, and the old have become fantastic team-oriented designers. I'm delighted by the effect it has had on our school, and I am eternally indebted to Dr. Prawel for all he has done for us.

Sincerely,

Ben Doremus, STEM teacher at Ridgeview Classical Schools
January 30, 2014

City of Fort Collins Office of Economic Health
City Hall West
300 LaPorte Ave.
Fort Collins, CO 80521

Dear Economic Health Office Staff and Cluster Support Fund Selection Committee,

I am writing to support CSU’s Idea-2-Product (I2P) 3D printing lab in their application of applying for local cluster support.

CSU’s Idea-2-Product 3D printing lab continues to have a positive community impact in benefiting economic growth and development, innovation, creative artistry and entrepreneurial success in our great Fort Collins and Northern Front Range communities.

There are many ways in which 3D Printing is speeding innovation and time to market. 3D printing is a revolutionary new technology that has exploded onto the world scene in recent years, enabling virtually anyone to create things nearly as quickly and easily as imagining them.

CSU’s I2P is a public-access facility for rapid-cycle product design and development - a "3D Make Lab". I2P provides powerful additive manufacturing and related tools, along with rich expertise, and an easy gateway into CSU's huge talent pool and research and development capabilities, enabling companies and individuals to accelerate their path to commercial success. The I2P Lab empowers researchers, companies, entrepreneurs and "makers" to move faster on their ideas, prototypes and products, and get them to market faster.

To this end, Innosphere supports the I2P Lab Director, David Prawel, this grant application, and the many entrepreneurs who have used the lab.

Sincerely,

Mike Freeman
CEO, Rocky Mountain Innosphere
Mike.Freeman@rmi2.org
970.818.7736
The Rotary Club of Ft. Collins is pleased to support CSUs Idea-2-Product 3D printing lab, as we feel it will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in our great Fort Collins and Northern Front Range communities.

The Rotary Club of Ft. Collins in cooperation with the Rocky Mountain Innosphere agrees to supply cost sharing/matching funds in the amount of **$2,400** to Colorado State University’s project entitled “A Personal Fabrication “Hub” To Support Innovation in Fort Collins” under the direction of David Prawel at Colorado State University. This project is sponsored by the CITY OF FORT COLLINS OFFICE OF ECONOMIC HEALTH OFFICE under the Local Cluster Support Fund 2014 Grant program.

By: [Signature]

Name: James Epstein

Title: Chairman, STEM Committee, Rotary Club of Fort Collins

Date: January 29, 2014
To whom it may concern:

The Wild Gym Company is pleased to support CSUs Idea-2-Product 3D printing lab, as we feel it will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in our great Fort Collins and Northern Front Range communities.

Over the past several months, our company has worked closely with CSU’s Idea-2-Product lab and its staff to successfully create components for our first run of working prototypes. Without access to the lab this would have been impossible due to the high costs of tooling traditionally required when making the component we needed.

With the parts printed from the 3D lab, we can send beta units to customers for usage feedback, approach buyers, and pitch our company to investors with our product in hand. None of this would have been possible without the help of the lab.

As a recent MBA graduate from CSU, a client at the Rocky Mountain Innosphere, and a participant in last year’s New Economy Venture Accelerator, I have clearly seen a need expressed by entrepreneurs in the Fort Collins area for the 3D printing lab.

Sincerely,

David Hunt, CEO

The Wild Gym Company
320 E Vine Drive, Suite 219
Fort Collins, CO 80524
Wolf Robotics is pleased to support CSUs Idea-2-Product 3D printing lab, as we feel it will significantly benefit economic growth and development, innovation, creative artistry and entrepreneurial success in our great Fort Collins and Northern Front Range communities. It would foster innovation amongst Wolf Robotics design engineers and may have significant benefit to specific system solutions.

Wolf Robotics agrees to supply cost sharing/matching funds in the amount of **$5,000.00** to Colorado State University’s project entitled “A Personal Fabrication “Hub” To Support Innovation in Fort Collins” under the direction of David Prawel at Colorado State University. This project is sponsored by the CITY OF FORT COLLINS OFFICE OF ECONOMIC HEALTH OFFICE under the Local Cluster Support Fund 2014 Grant program.

Name: Cheryl A Brown  
Title: Chief Financial Officer
Dear Sir or Madam:

In regard to your request for certain tax-related information, the following is provided.

Colorado State University (EIN 84-6000545), an agency of the State of Colorado, is, by Colorado law, exempt from sales tax. A copy of the University’s certificate of exemption is attached for your files.

The University’s Federal excise tax exemption Certificate of Registry, #84-730123K is on file with the Internal Revenue Service, Ogden, Utah.

As an agency of the State of Colorado, Colorado State University is exempt from backup withholding under Section 3406(g)(1)(A) of the Internal Revenue Code of 1986, as amended.

A copy of a completed W-9 is attached for your files.

Sincerely,

Colorado State University
Business & Financial Services
Tax Accounting Office
Request for Taxpayer Identification Number and Certification

Name (as shown on your income tax return)
Colorado State University
Business name, if different from above

Check appropriate box: ☐ Individual/Sole proprietor ☐ Corporation ☐ Partnership
☐ Limited liability company. Enter the tax classification (O=disregarded entity, C=corporation, P=partnership) ☐ Exempt payee

Print or type in, if applicable:

Address (number, street, and apt. or suite no.)
6003 Campus Delivery, 555 S. Howes St.
City, state, and ZIP code
Fort Collins, CO 80523-6003
List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on Line 1 to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see How to get a TIN on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. See the instructions on page 4.

Signature of U.S. person

Date

CERTIFICATE OF EXEMPTION FOR COLORADO STATE SALES/USE TAX ONLY

THIS LICENSE IS NOT TRANSFERABLE

USE ACCOUNT NUMBER
FOR ALL REFERENCES

LIABILITY INFORMATION

ISSUE DATE

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202 JOHNSON HALL FT COLLINS CO

COLO DEPT OF HIGHER EDUCATION
COLORADO STATE UNIVERSITY
202 JOHNSON HALL
FT COLLINS CO 80523-0001

Executive Director
Department of Revenue