Section I: Proposal name and contact information

Title / name of proposal:	Resources for Immersive Visualization and Collaborative Digital Work
Contact person name and title:	Robert Twomey, Assistant Professor of Art // Launch Lab
E-mail address:	rtwomey@ysu.edu
Phone number:	202-997-3952

Section II: Approvals of the appropriate College Dean and/or Division Officer

To certify that the proposal is aligned with the strategic objectives of the department, college or division, signature approvals are required by the appropriate Department Chair or Director, College Dean, and/or area division officer, i.e., Provost, Vice President, Associate VP.

Signature of Dept. Chair or Director	*Joy Christiansen Erb*
Name (printed/typed):	Joy Christiansen Erb
Title:	Acting Chair
Date:	1/28/18
Signature of Dean (if applicable):	**Phyllis M. Paul** — Digitally signed by Phyllis M. Paul, DN: cn=Phyllis M. Paul, o=YSU, ou=YSU, email=pmpaul@ysu.edu, c=US Date: 2018.01.29 13:20:58 -05'00'
Name (printed/typed):	Phyllis M. Paul
Title:	Dean
Date:	
Signature of Division Officer:	
Name (printed/typed):	Martin Abraham
Title:	Provost
Date:	1-31-18

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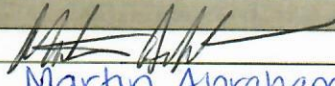Dean, STEM College

1/30/2018

Betty D. Jenrala
Dean, WCBA, 1/30/18

YOUNGSTOWN STATE UNIVERSITY

Template for Strategic Investment Funding Proposals, FY 2018
Proposals must be submitted to the YSU Budget Office, no later than February 1, 2018

Section II: Description of the proposal and its alignment with the YSU 2020 Strategic Plan

Please summarize the proposal and specify how it aligns with the YSU 2020 Strategic Plan.

We propose the creation of a new Immersive Visualization and Collaborative Digital Work lab at YSU. This would be a unique resource on campus, open for shared use for teaching and scholarship by all colleges on campus. Our request builds on Launch Lab's pioneering efforts supporting interdisciplinary research, community engagement, and shared resource development at YSU.

Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR) are major growth areas for entertainment, arts, and engineering industries, yet we have no significant facility on campus. These reality technologies are also a powerful learning tool for various educational applications by allowing the student to fully immerse themselves in a 3d virtual environment. Our requested AR/VR/MR and cooperative work tools would provide an essential complement to existing capabilities in 3d imaging, 3d design, and digital fabrication, filling an infrastructural hole at YSU. These tools will also support the nascent interdisciplinary game design curricula in development by STEM and CCAC.

Addressing the cornerstones of the YSU 2020 Strategic Plan:
- We support YSU's development as an Urban Research University by creating essential new capabilities for researchers from CCAC, STEM, and WCBA, aligning with the contemporary state-of-the art in multiple disciplines.
- The proposed tools would be a resource for Interdisciplinary Collaboration and long distance joint effort projects.
- Student Experience with these cutting-edge techniques prepares them for careers in the arts, visualization, game design, and engineering.
- We expand Community Engagement in creating resources that will be open, available, and engaged with the public, as Launch Lab is. Additionally, these tools open possibilities for further exchange with local game studios and other ventures at the Youngstown Business Incubator.

Section III: Shared governance and stakeholder engagement

Was the proposal developed collaboratively and with input from all stakeholders? Please describe the process used to develop your proposal.

This proposal was developed collaboratively by the interdisciplinary steering committee of the Launch Lab from STEM, CCAC, and WCBA. All stakeholders (faculty and staff) agree on the need for shared immersive VR and collaborative digital tools. Our request has support from:

CCAC: Robert Twomey, Dana Sperry, Greg Moring, Jennifer Kirkpatrick.
STEM: Brett Conner, Brian Vuksanovich, John Martin, Eric MacDonald, Darrell Wallace, Jay Wargacki.
WCBA: Michael Pontikos, Joe Angelo.

With the establishment of this new resource on campus, and through campus outreach efforts, we believe these new tools will be widely adopted by faculty from our three colleges and the Bitonte College of Health and Human Services.

Section IV: Return on Investment

If applicable, describe how the proposal may generate new revenue to support related expenses or other strategic initiatives. If there are benefits other than revenue-generation, whether tangible or otherwise, you may also describe those.

Our proposal will establish a vital new area for teaching, scholarship, and production at YSU.

Funding this proposal allows us to expand current curricula and develop new curricular offerings (majors and minors) in the areas of gaming, animation, and engineering visualization using these new AR/VR/MR tools. This contributes to recruitment for existing programs, increased enrollment of new students, and thus increased tuition money and FTE production for faculty in CCAC, STEM, and Business, directly benefitting the university budget.

Additionally, we believe that these immersive capabilities will open the door to new possibilities for collaboration and sponsorship from corporate and governmental organizations.

Section V: Proposed funding amount requested (NOTE: Available strategic investment funds are one-time dollars left over from the prior fiscal year. Consequently, proposals requiring multi-year funding will require additional consideration.)

Single year funding request:	$ · · · · · ·· ··· ··· ·· ·· ·· ·· ·· ·· $89,514	
Multi-year funding request (if applicable):	$	No. of years:

Section VI: Space utilization and/or modification

If applicable, describe any special and/or additional building or space requirements that would be needed to pursue your proposal.

In the near term, this new equipment will be staged in Bliss Hall Room 3000 to establish a 10-seat AR/VR/MR shared visualization lab, which will facilitate up to 20 students. Additionally we will create two travel kits with AR/VR rigs and VR-capable laptops.

Ultimately, this equipment would be targeted for the Phase 2 Mahoning Valley Innovation and Commercialization Center (MVICC) facility downtown, serving as a shared digital workspace and immersive visualization hub. This supports the MVICC vision of a multidisciplinary innovation center co-locating diverse specialized production capabilities. In addition, this equipment would be a key component towards MVICC reaching its full potential as this technology is rapidly growing and already being utilized in a number of professional fields (http://www.realitytechnologies.com/applications). Another key point to note is that one of the major applications of this technology is used specifically for training and workforce development. One example is users can assemble/ disassemble multi-million dollar pieces of equipment virtually, which would provide great use to a technician as well as a research engineer.

Section VII: Personnel costs / additions

> If applicable, explain any additional costs associated with the need to add staffing and/or faculty resources required to pursue your proposal.
>
> By situating these resources in an existing classroom instructional facility under the management of the YSU Art Department, we expect no additional personnel costs for our proposal at this time.
>
> Shared access will be coordinated using procedures developed for existing Launch Lab and CCAC/STEM/WCBA resources, with the expectation that interested faculty from across campus will be responsible for managing their own students and projects.
>
> This is a proven model and has successfully facilitated research and instruction using 3d printers, scanning, digital fabrication (laser cutter), and foundry equipment coordinated through Launch Lab.

Section VIII: Enterprise risk management

> If applicable, describe the risk mitigated by your proposal, or the risk elevated if your proposal is not funded.
>
> Implementing this technology at MVICC will help to ensure the innovation center is properly positioned to match not only the present needs of industry, but future needs as well. There is a potential elevated risk that YSU/MVICC will be behind on this popular and useful technology if this proposal is not funded. One important factor involving future benefits for YSU is that these reality technologies will provide the opportunity to participate in an increased number of long distance collaborative projects with other universities, businesses, and government agencies. In other words it can facilitate a much broader reach for YSU.

Budget for Immersive Visualization and Collaborative Digital Work Resources

Item	Cost	Quantity	Total	Link	Reference
MICROSOFT					
Microsoft Hololens	$3,000	5	$15,000	https://www.microsoft.com/en-us/hololens/buy	https://www.pcmag.com/article/349786/the-bes
Microsoft Surface Hub 55"	$12,479	2	$24,958	https://www.cdw.com/shop/products/Microsoft-	
Rolling Stand for 55" Surface Hub	$2,715	2	$5,430	https://www.cdw.com/shop/products/Microsoft-	
Wall Mount for 55" Surface Hub	$379	2	$758	https://www.cdw.com/shop/products/Microsoft-	
			$46,146		
HTC					
HTC Vive	$599	10	$5,990	https://store.us.vive.com/store/htcus/en_US/bu	
OCULUS					
Oculus Rift + Touch	$399	10	$3,990	https://www.oculus.com/cart/	https://www.oculus.com/oculus-ready-pcs/
COMPUTER					
Desktop VR Workstations					
Alienware Aura i7 Desktop	$2,199.99	10	$21,999.90	https://www.dell.com/en-us/gaming/alienware-\	
Mouse, Keyboard Included	$0	10	$0		
Dell 27" Gaming Monitor	$599	10	$5,990	http://www.dell.com/en-us/shop/dell-27-gaming	
			$27,989.90		
Mobile VR Workstations					
Alienware 15" Laptop i7-7820HK quad core with NVIDIA 1080	$2,699	2	$5,398	http://www.dell.com/en-us/shop/dell-laptops/ali	
			$89,514		