



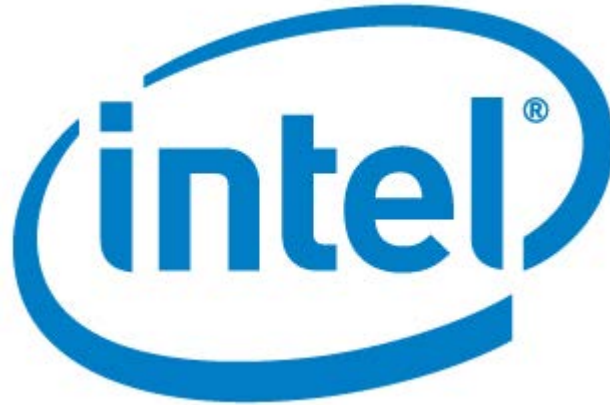
GRANTS OFFICE
empowering communities

NSF Funding to Connect Students to a World of STEM Opportunities

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Agenda

- Connection Public Sector Solutions
- The evolution of the education market with Intel
- K-12 STEM learning-focused grants from the NSF
- STEM solutions from Lenovo
- Questions?
- Tips for accessing NSF funding

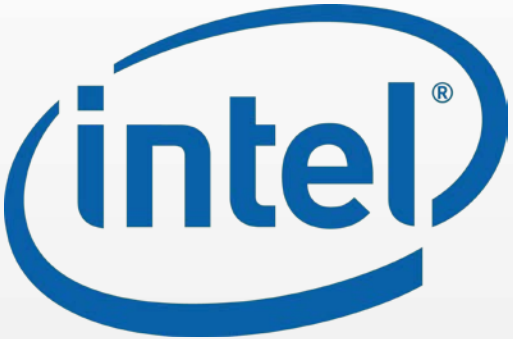


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Penny M. Conway, Program Manager
Microsoft Education
August 2018

Leaders in STEM Education Solutions





Education at the Core of IMPACTING Change

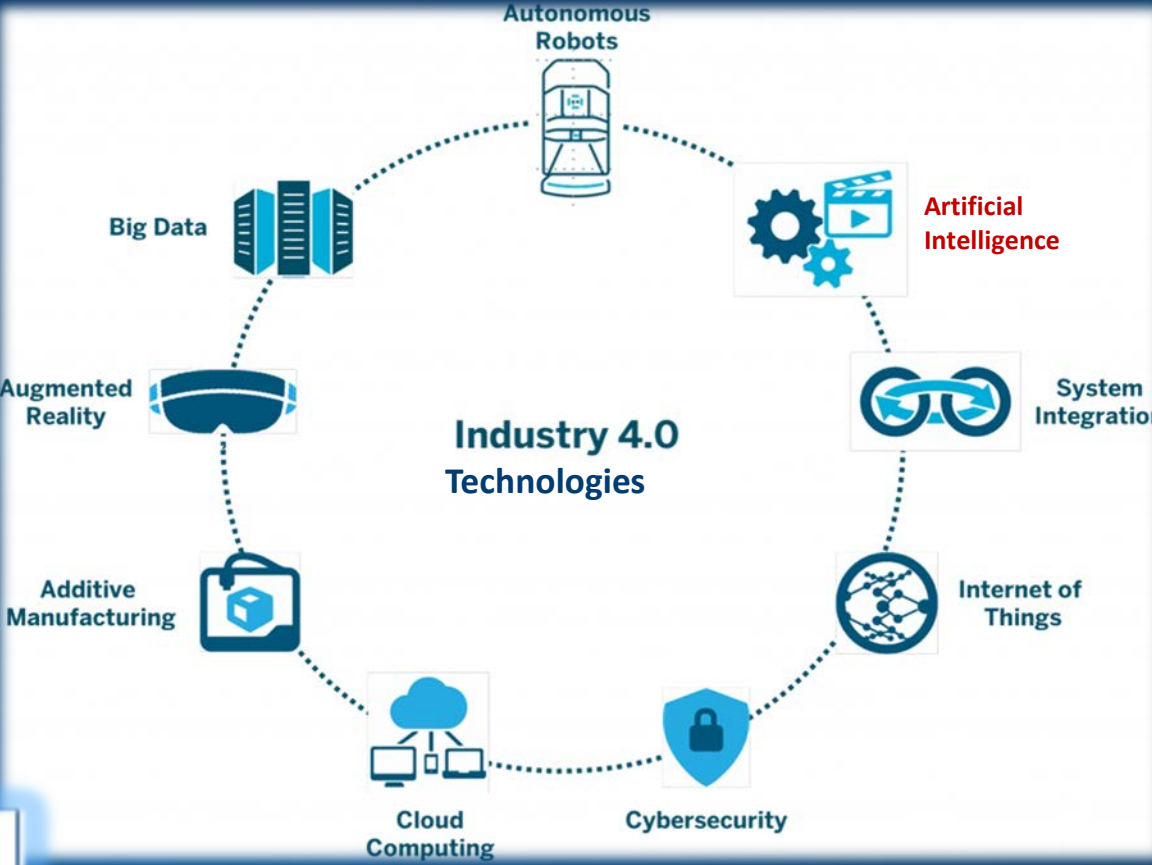
(in Fourth Industrial Revolution)





Mike D. D'Amico
Director of WW HW Ecosystem, Global Education Sector
Intel Corporation

August, 2018



Industry 4.0

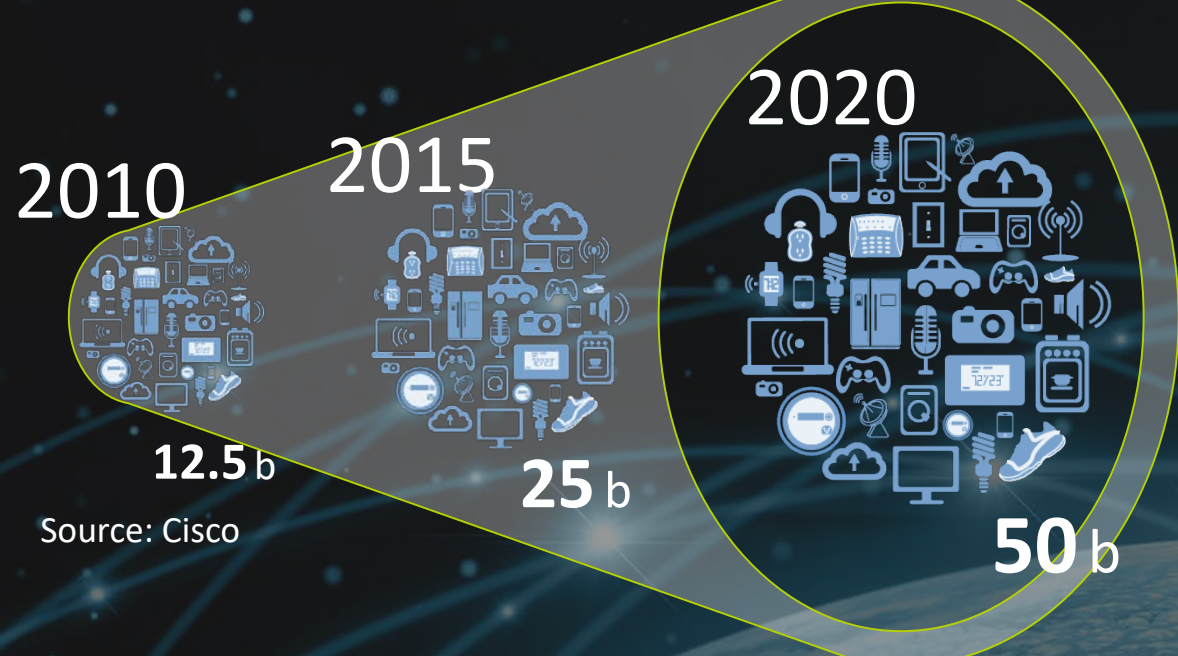


First Industrial Revolution	Second Industrial Revolution	Third Industrial Revolution	Fourth Industrial Revolution
Introduction of mechanical production facilities using water and steam power	Introduction of division of labour, mass production and electricity	Introduction of electronic and IT systems	Introduction of cyber-physical systems
			
1780's	1870's	1970's	Today

Source: WEF

Technology transforms everything...

Number of Connected devices

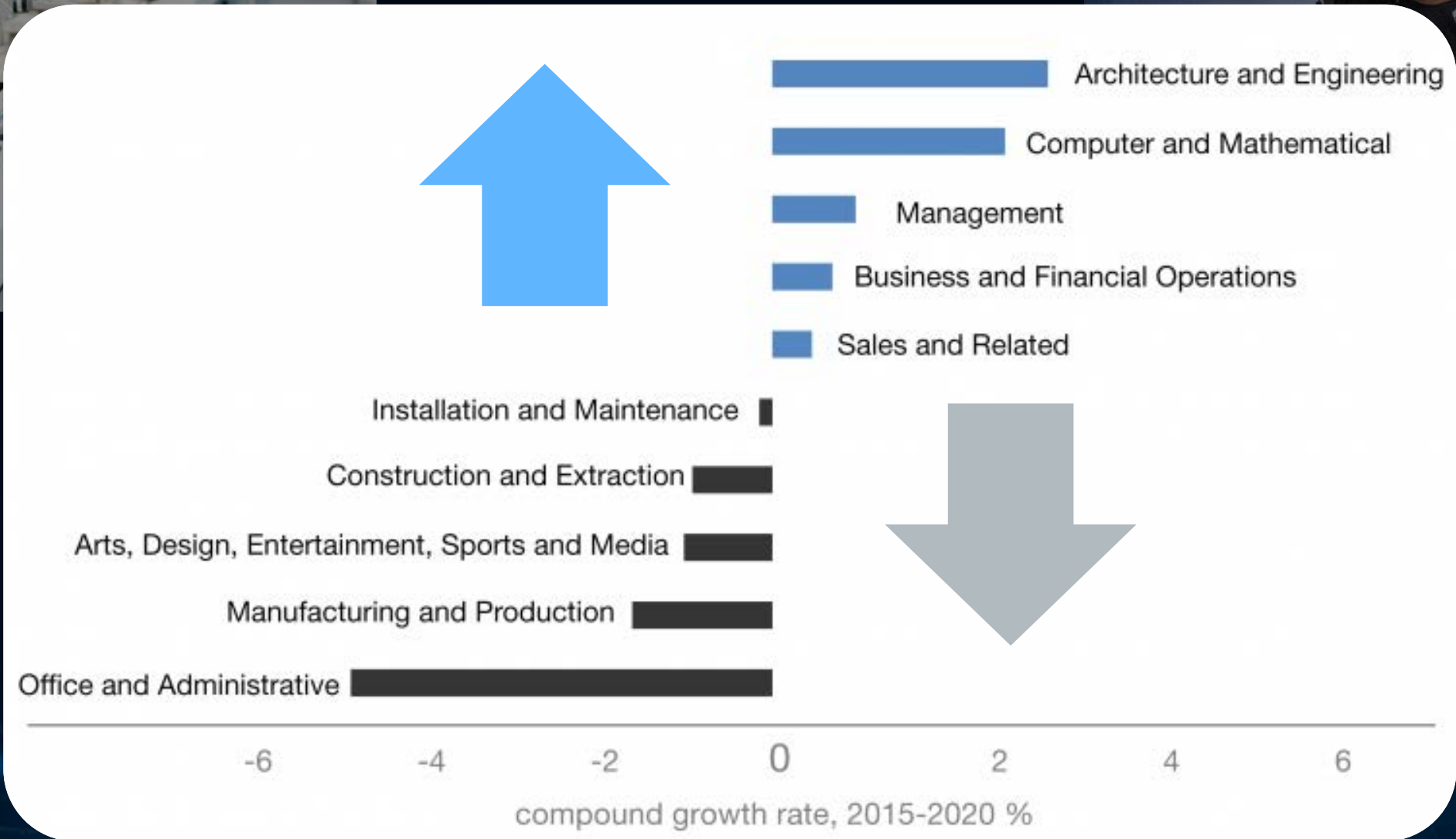


Source: Cisco

2025
Global impact of
\$11.1
trillion / year

Source: McKinsey

Where is the growth?



Global Skills Gap

Demand is
outpacing
skilled graduates
worldwide.

More than
50%
of today's jobs
require technology skills

Within the next decade,
demand for these skills
will jump to

77%¹

1. *Technology skills training critical to employ low-income youth*, September 2014
<https://www.devex.com/news/technology-skills-training-critical-to-employ-low-income-youth-84377>

The New Reality

*Previous generations had to “find” a job.
Today our kids will have to “invent” a job.*

*Every child needs to be “innovation ready” –
knowing how to add value to whatever they
do.*

Thomas L. Friedman



Industry 4.0 → Skills 4.0

- 1. Innovative and Adaptive thinking**
- 2. Complex problem solving** with a creative design mindset
- 3. Leading people in the new age way – not command & control**
- 4. Virtual collaboration** - across territories and time zones
- 5. Emotional intelligence** - empathy and social skills.
- 6. Advanced negotiation techniques**
- 7. Computational thinking & actions**
- 8. Entrepreneurship**

Activating the Innovation Generation

Education → Entrepreneurship → Employability



Increase Country Competitiveness

Enhanced teaching & learning for all



Build Required Competencies

New job skills & re-skilling



Boost Economic Development

Grow ICT industry base, jobs & revenue



Enhance Citizenship & Social Cohesion

Narrow divide, include rural, sustain locally

Preparing the Industry 4.0 Generation

Skills 4.0

Novel & Adaptive learning

Computational Thinking

New-media literacy

Virtual collaboration

Design mindset

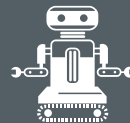
Coding/
PROGRAM
MING



Physical
Computing



Robotics



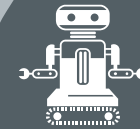
Electronics



3-D
Printing



Robotics



Student
Innovation

Traditional
activities



Physical
computing



CNC
Tools

Intel's focus is on student solutions that support & amplify:

Computational Thinking & Actions

Innovation and Entrepreneurship

Personalized Student Centered Analytics

Employability and Job Creation

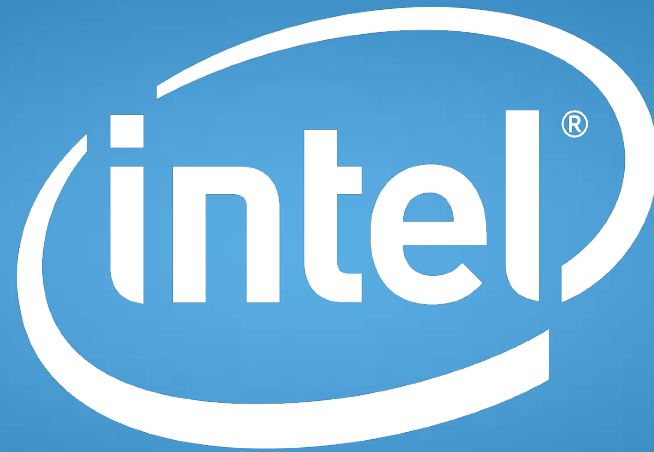


Summary

- ◆ Rapidly developing technologies require nations to be competitive at digital transformation.
- ◆ We need our youth to have the skills & tools to prepare as future innovators.
- ◆ Education needs to embrace and adapt to technological trends to drive growth



<http://www.intel.com/education>



experience
what's inside™

National Science Foundation Funding

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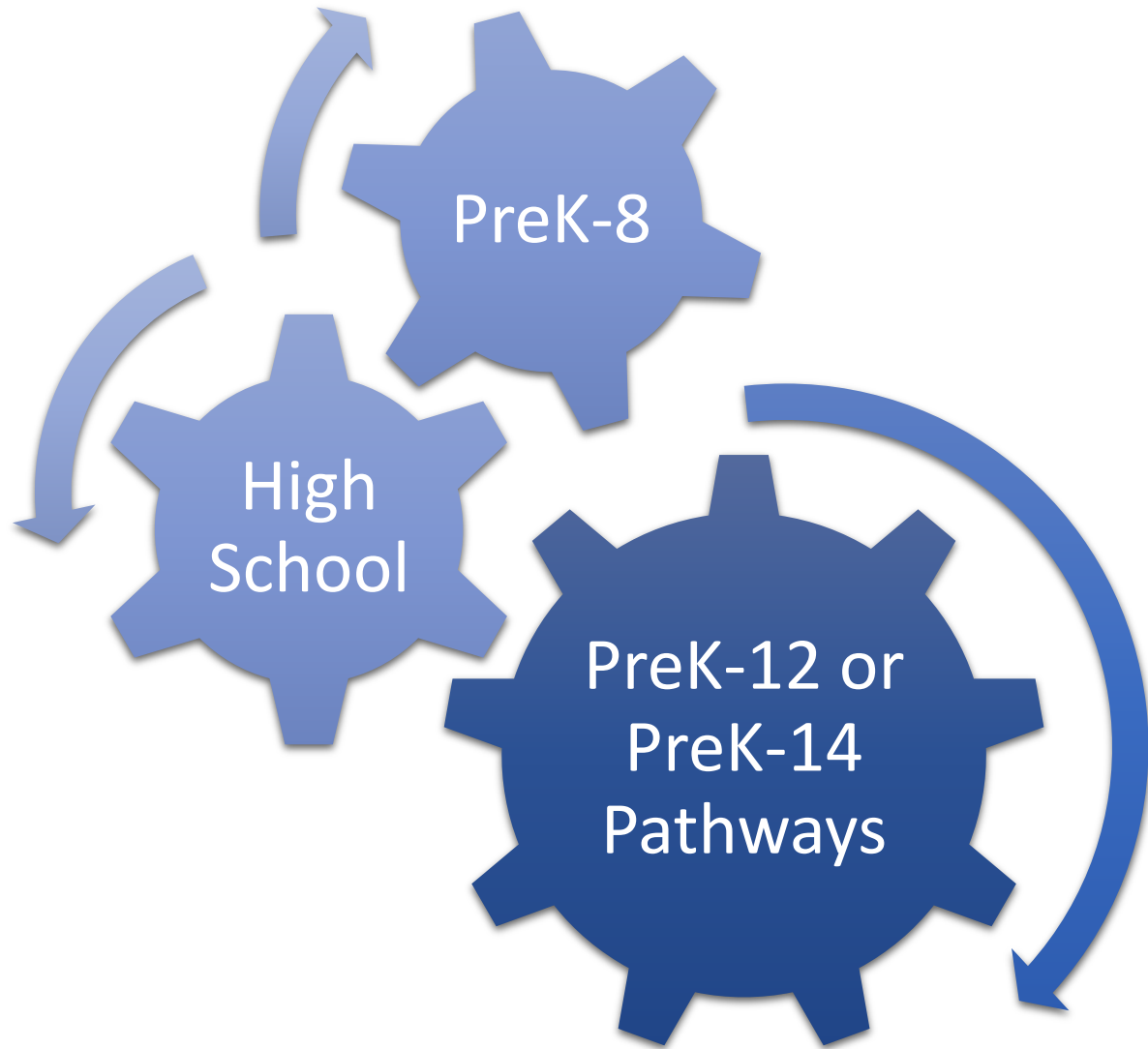


Computer Science for All

(CS for All)

Due: Feb 12, 2019

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Research-Practitioner Partnerships are mutual collaborations intentionally organized to investigate problems of practice and solutions for improving school/district outcomes.

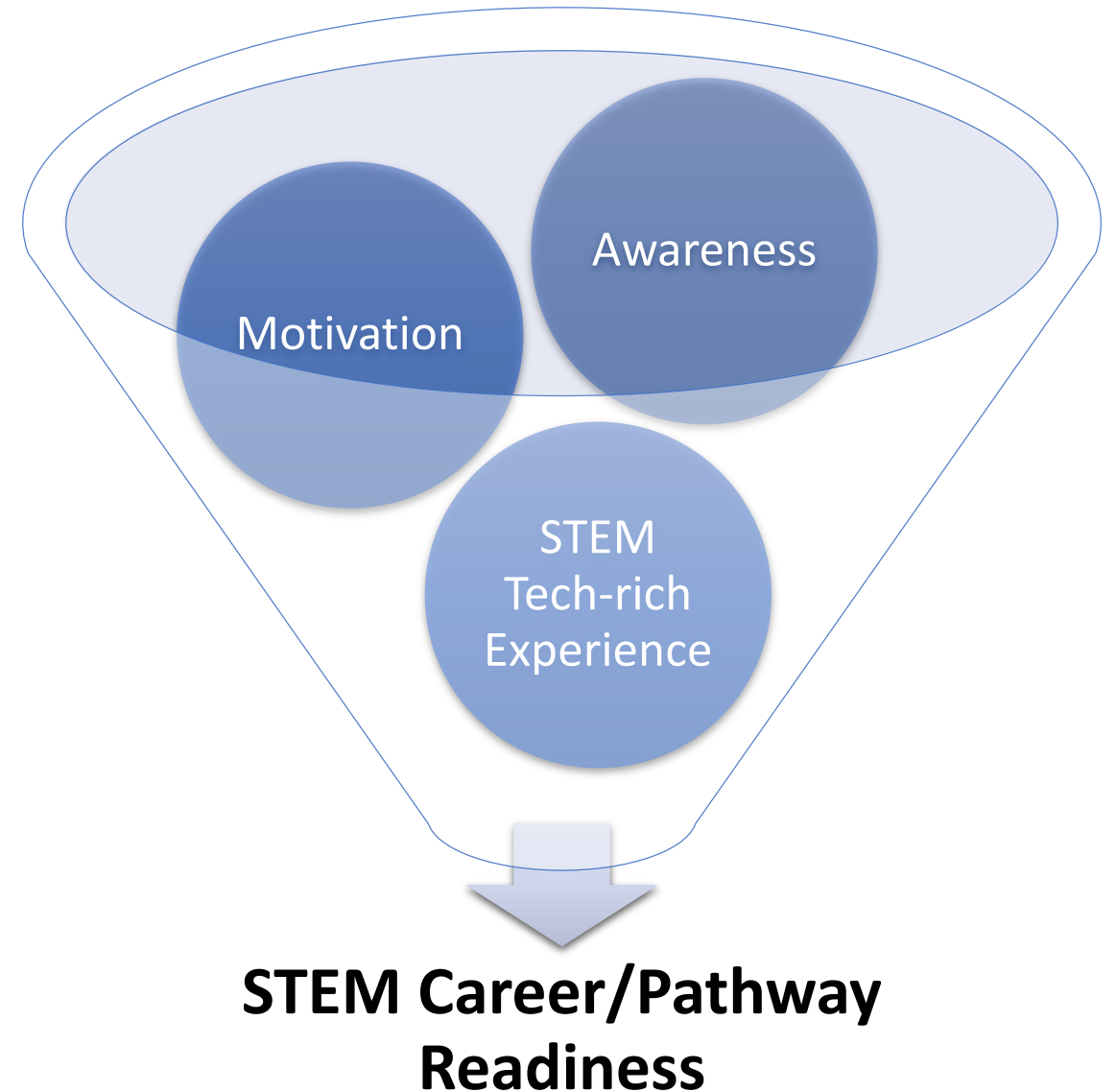


Innovative Technology Experiences for Students & Teachers (ITEST)

Due: Aug 14, 2019*

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Projects that actively engage **business and industry** to better ensure K-12 experiences are likely to foster the skill-sets of emerging STEM and cognate careers are strongly encouraged.





STEM + Computing Partnerships (STEM+C)

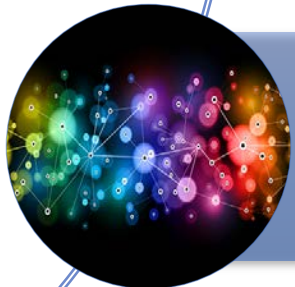
Due: anytime



Future of Work at the
Human-Tech Frontier



Harnessing the Data
Revolution



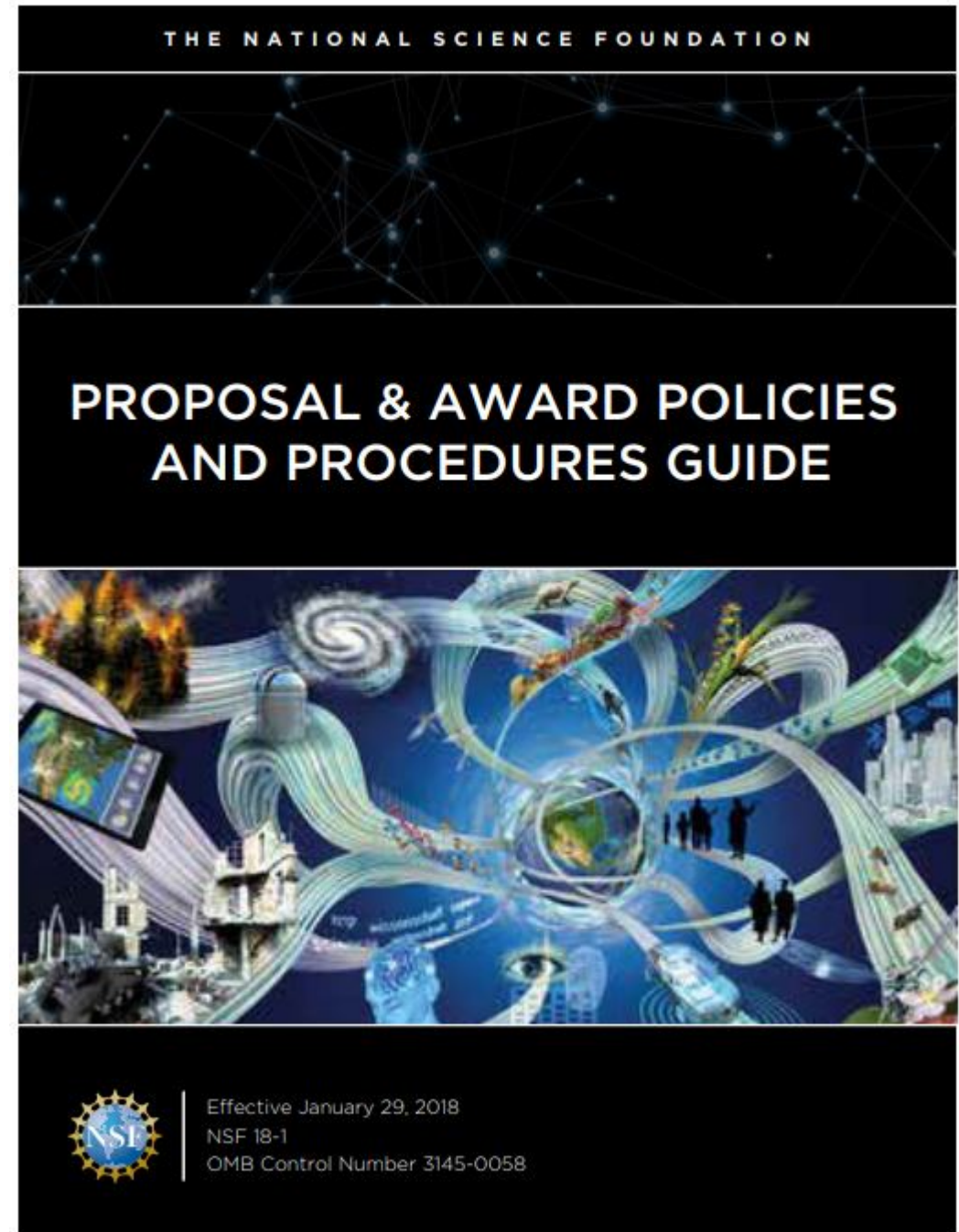
Growing Convergence
Research

Research and
development of
**interdisciplinary and
transdisciplinary**
approaches to the
integration of computing
within STEM teaching
and learning for preK-12
students.

Read the Proposal &
Award Policy &
Procedures Guide
(PAPPG) before you start
planning your project!

https://www.nsf.gov/pubs/policy_docs/pappg18_1/index.jsp

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Lenovo VR: Virtual Reality Classroom US



SOLO &
CAMERA

with Daydream



VR HEADSET

VR180 CAMERA

Lenovo Mirage Solo

All-in-One Daydream Headset

No Phones. No PC. No Cables.
Just Awesome VR

- All-in-one
- WorldSense camera
- Less motion sickness
- Wireless controller
- Sanitizable fabric for KIDS!!
- Ages 13+

VR Classroom Cart

- Bretford- top cart maker
- Cart form factor is known to schools provides easy checkout/checkin process
- Ergonomic handle
- Integrated charging!
- Minimal outlet use
- Easy for students to remove and put back
- Made in the USA

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LET'S GO ON AN EXPEDITION



Saunders Reef

Great Barrier Reef, Australia

Coral reefs are diverse ecosystems found in tropical waters. They provide food and habitat for thousands of marine species. The reef also protects the mainland from strong waves created by storms. The Great Barrier Reef is one of the largest living structures on Earth. Visible from space, it provides habitat for thousands of species of invertebrates, fish, reptiles and mammals.



Algae

Single celled algae, called zooxanthellae, which live within the coral providing it with energy and nutrients. The algae also contributes to the color of the coral. Without it the coral would appear white.



Corals

Corals are composed of colonies of animals related to sea anemones. Their



- 700+ field trips
- Scroll through stopping points
- Hear and see information along the way
- Teachers can point students to certain areas of interest

TEACHER VIEW



Hall of Mirrors

Pause

Completed in 1686, the Hall of Mirrors—la Galerie des Glaces in French—is located in the central block of the palace on the back, or garden side. Originally an open gallery, it was enclosed by architect Hardouin-Mansart and decorated by Charles Le Brun. During the residencies of the 3 King Louis, the 73-meter-long hall was used primarily as a meeting place. In 1745, Marie-Antoinette danced here at a ball celebrating her wedding to the future Louis XVI.

Beginner Question: What is a cartoon, in reference to the Hall of Mirrors?
(Answer: A cartoon is a drawing or sketch that serves as a basis for a painting.)

Intermediate Question: In what ways do you think Charles Le Brun's role as First Painter to the King benefited his career?
(Answer: As decorator to the royal family, his work was seen by a broad swath of the nobility. He was able to influence style and then fulfill people's desire to be fashionable through his work.)

Advanced Question: In what way can the Hall of Mirrors be said to be a collaboration?

- Talking points for teachers pop up on their tablet
- Probing questions in different levels of difficulty
- Happy face icons show the teacher where students are looking



TEACHERS ▾

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STEP INTO *Life*

Google Expeditions is a 21st-century teaching tool that allows your students to take virtual field trips through space and time. Use these uniquely crafted STEM lesson plans, brought to you by Lenovo and Scholastic, to enhance your classroom experience.

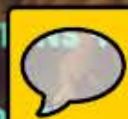
Astronomy

GRAVITY & THE SOLAR SYSTEM

[KEY QUESTIONS +](#)[KEY STANDARDS +](#)

Geology

EARTH'S HIDDEN HISTORY

[KEY QUESTIONS +](#)[KEY STANDARDS +](#)

+ Lenovo VR Classroom: The Kit



- Advanced exchange means no waiting, quick replacement, no return shipping charge
- Premier support of the solution means instant Level 2 support
- Call Raleigh NC engineers
- 1 Year School Year Term means a total of 18 months warranty included with every kit
 - Buy in the Spring, and you're covered for the entire next school year
 - 2 Year upgrade available for additional charge

Virtual Reality and Lenovo Workstations

Lenovo WS is preferred for AR / VR content creation and professional application

AR/VR is integrating into professional industries:

- Product Design
- Architecture, Engineering, Construction
- Film, TV, Game Development

Pro AR/VR Benefits:

- Lower development cost and time
- Working in scale; Improved accuracy
- Faster time-to-market

Customers require ISV certified, pro solutions for:

- Precision Design + Accurate Simulation
- Photo-realistic Rendering
- Realistic AR/VR Experience



Lenovo AR/VR Workstation Portfolio



LENOVO THINKSTATION P SERIES

A powerful range of desktop workstations NVIDIA certified for ProVR use. Entry level through to ultra-high-end and built to not only meet but exceed the rigorous performance requirements of Virtual Reality workflows.

- Intel Xeon E5 CPUs
- NVIDIA Quadro Pascal GPU(s)
- Desktop/Rackmountable Chassis
- Microsoft Windows 10

NEW – LENOVO THINKPAD P71

World's most powerful & technologically advanced 17" notebook. NVIDIA Quadro ProVR certified and perfect for demanding mobile VR requirements.

- World's First ProVR Certified Laptop
- 17" 4K Color Accurate Display
- Mil-Spec Tested for Ultimate Durability
- Microsoft Windows 10



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<https://www.thinkworkstations.com/products/virtualreality/>

ThinkStation P320 Tiny

World's Smallest Workstation: Small Size, Big Performance

7th Gen Intel CPU & NVIDIA Quadro P600 GPU

Six Independent Displays

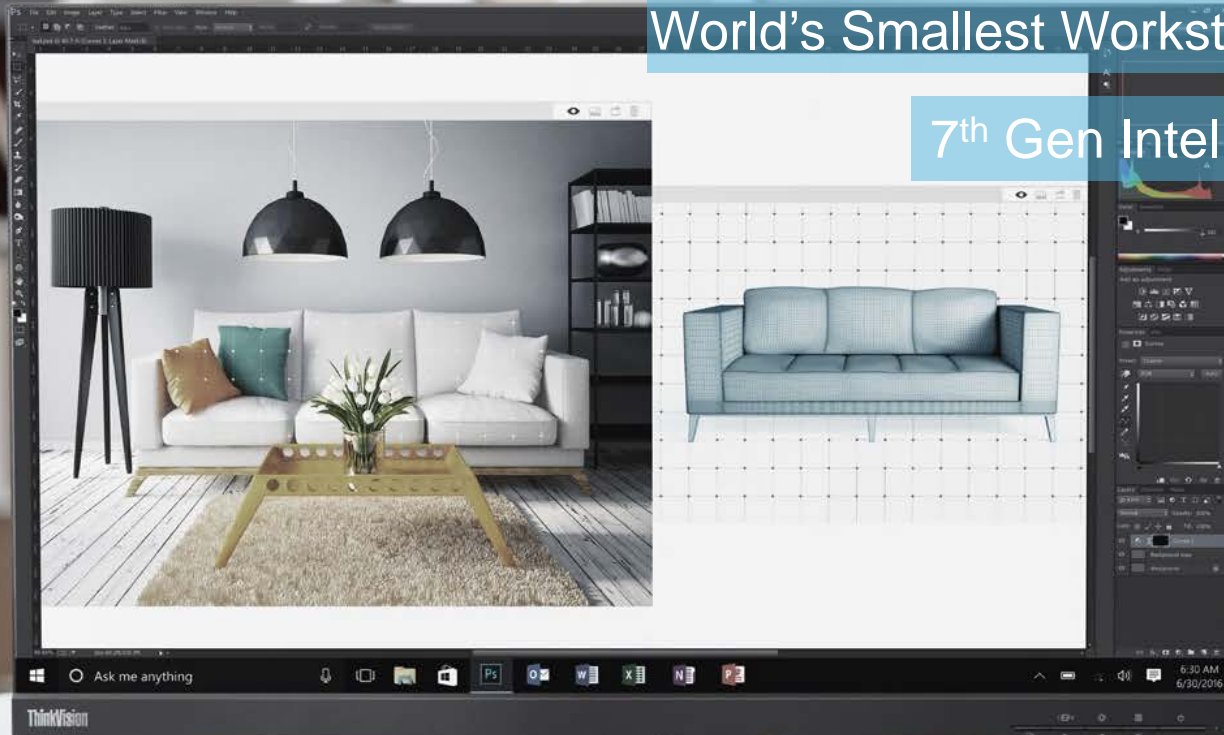
Up to 2TB M.2 NVMe SSD

Engineering & Architecture

STEM Education

Financial Services

Medical



+ A Device for Every STEM and Advanced Learner



	THINKSTATION P320 Tiny	THINKSTATION P320 SFF/TWR	THINKSTATION P520c	THINKPAD P52s	THINKPAD P52
Why This Device?	<p>World's Smallest Workstation Engineered to go where others can't, yet ISV Certified. Simple and efficient design with the professional power of a workstation. Affordable, ideal solution for the demands of architecture and engineering or any other area where powerful ideas are brought to life. MIL-SPEC tested.</p>	<p>Workstation Power, Desktop Value VR-ready (TWR); serious computing capabilities at affordable PC pricing; upgradeable all in one package. Designed for media instruction, classrooms, and labs . Perfect for CAD/CAM and entry photo/video learning.</p>	<p>Affordable Performance Perfect for STEM and research workloads, with robust redundancy, flexible I/O that brings dependable performance. Ideal for rendering and simulation, animation, 3D CAD modeling. Extra reliability with ECC memory. Compact chassis design.</p>	<p>High Performance with Functionality Workstation muscle meets Ultrabook mobility with powerful, quad-core processing, all-day battery life, and rugged construction paired with high resolution video with discrete graphics. ThinkShutter on HD Camera! MIL-SPEC tested.</p>	<p>Raising the Bar for Mobile Workstation Power and portability your students will demand for real-world projects. The industry's go-to portable solution for engineering. Offers mid-range NVIDIA Quadro graphics for more demanding software applications. MIL-SPEC tested.</p>
Form Factor	Ultra small form factor 1L chassis	Small Form Factor or Tower	Tower	Ultrabook laptop	Traditional laptop
Processor	Intel Core i5 and i7™	Intel Core i5, i7, Xeon E3™	Intel Xeon W™	Intel Core i5 and i7™	Intel Core i7, Xeon E3™
Graphics	NVIDIA Quadro P600	SFF: Up to NVIDIA Quadro P1000 Tower: Up to NVIDIA Quadro P4000	Up to NVIDIA Quadro P5000	NVIDIA Quadro P500	NVIDIA Quadro M1200M or M2200M graphics
ISV Certified	✔	✔	✔	✔	✔

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QUESTIONS?

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Tips for Making Your Next NSF Grant Proposal More Competitive

1. Remember: Grants fund projects, not products.
2. The NSF is interested in funding innovative research, development, and evaluation of practices aimed at improving STEM teaching and learning.
3. Review previously funded projects in the same funding category or STEM topic to avoid replication of previously funded work.
<https://www.nsf.gov/awardsearch/>
4. Speak to program officers – they're available to answer questions and discuss your ideas ahead of submission!
5. A strong literature review sets the stage for your project and can highlight your unique contribution to the knowledge-base.



Tips for Making Your Next NSF Grant Proposal More Competitive

6. Don't forget to include the "Intellectual Merit" and "Broader Impacts" sections. Denote these with their own individual headings.
7. Provide a detailed budget justification. How will each individual line item enable a grant-funded activity that will help you accomplish your goals? (Remember to include any required budget items like travel for conferences or workshops!)
8. Start early. Many NSF grant programs have long submission windows, and strong applicants may take 3-4 months to prepare.
9. Get an outside set of eyes to edit your proposal provide feedback.
10. Follow directions – double check the grant against the PAPPG!





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*Using Grants to Leverage the Connectivity
You've Already Funded with E-Rate – September 18*

*Funding to Empower STEM Education
Within Your District – October 9*

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