

THE FUTURE OF WORK & HOW TO PREPARE

February 2018 @tvanderark @Getting_Smart



A changing world

Isabella, 15, is coding in high school, will earn a BS in Biology in 2023; she'll wrangle data and use machine learning tools to create global impact.



A changing world

Tristan, 10, will learn from his sister (in 2023) that AI is taking over a lot of coding and data wrangling.

Tristan will turn down a baseball offer to launch an impact organization.

Most of his friends freelance.



A changing world

Charli, 2, will grow up with a smart digital assistant and 24/7 AR, she'll never drive.

She'll skip HigherEd for a career in the new arts.

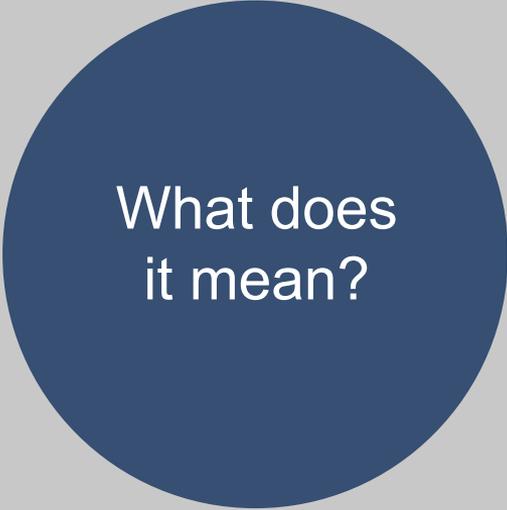




AGENDA



What's
happening?



What does
it mean?



How to
prepare?

Objects in windshield are closer than they appear



What's
happening?

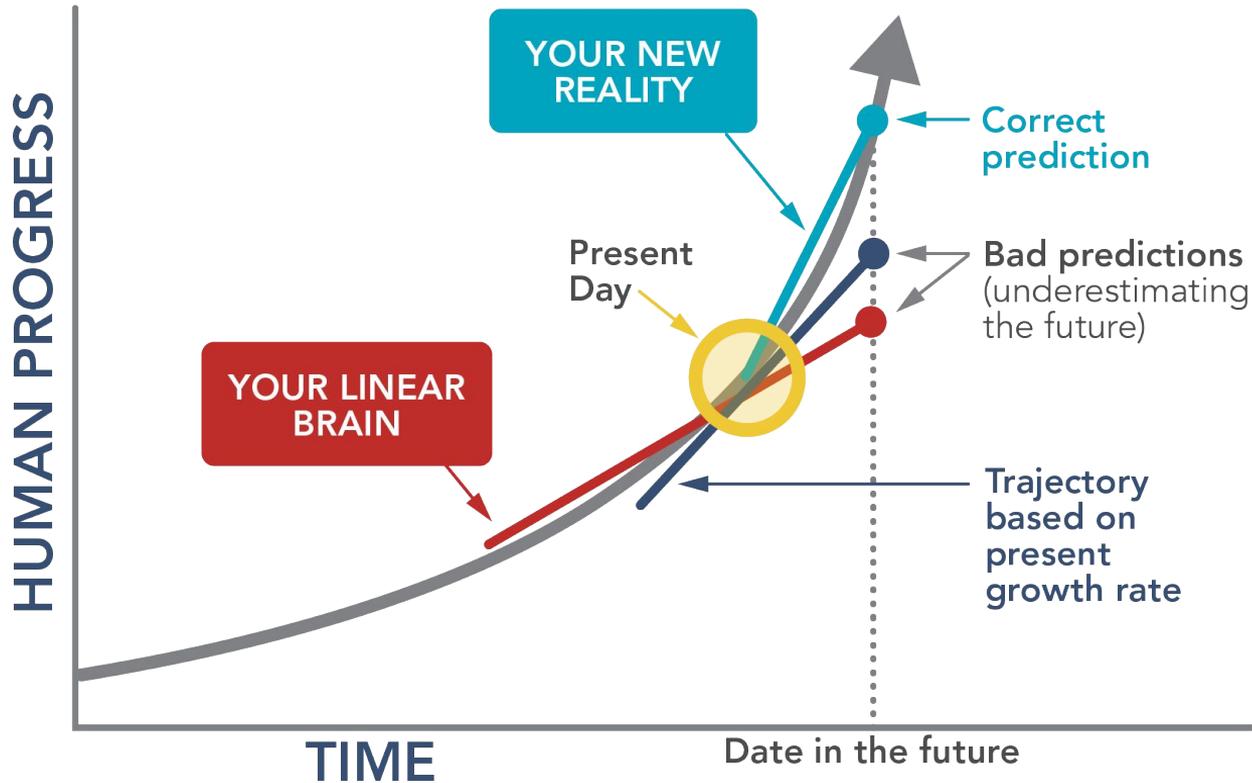
Objects in windshield are closer than they appear



Chips get more powerful (Moore's Law) making computing, storage and devices cheap...and driving exponential change.

What's
happening?

Our brains think linear not exponential



adapted from WaitButWhy.com

What's
happening?

New tech rules

 Mobile

key to frequency

 Video

key to engagement

 Social

key to virality and stickiness

 Responsive

five screen sizes and more to come

What's
happening?

New tech rules

Mobile	key to frequency
Video	key to engagement
Social	key to virality and stickiness
Responsive	five screen sizes and more to come
Cloud	requires anywhere integrations
Quantified	unlocking my digital data
My place	content to people, not people to content
Big data	key to matching people and things

What's
happening?

Platforms rule

Digital platforms have transformed the way we live, work, travel and learn.

Platforms offer big advantages:

- » Scale efficiently
- » Unlock new sources of value
- » Create feedback loops
- » Bring the outside in



What's
happening?

You have been augmented

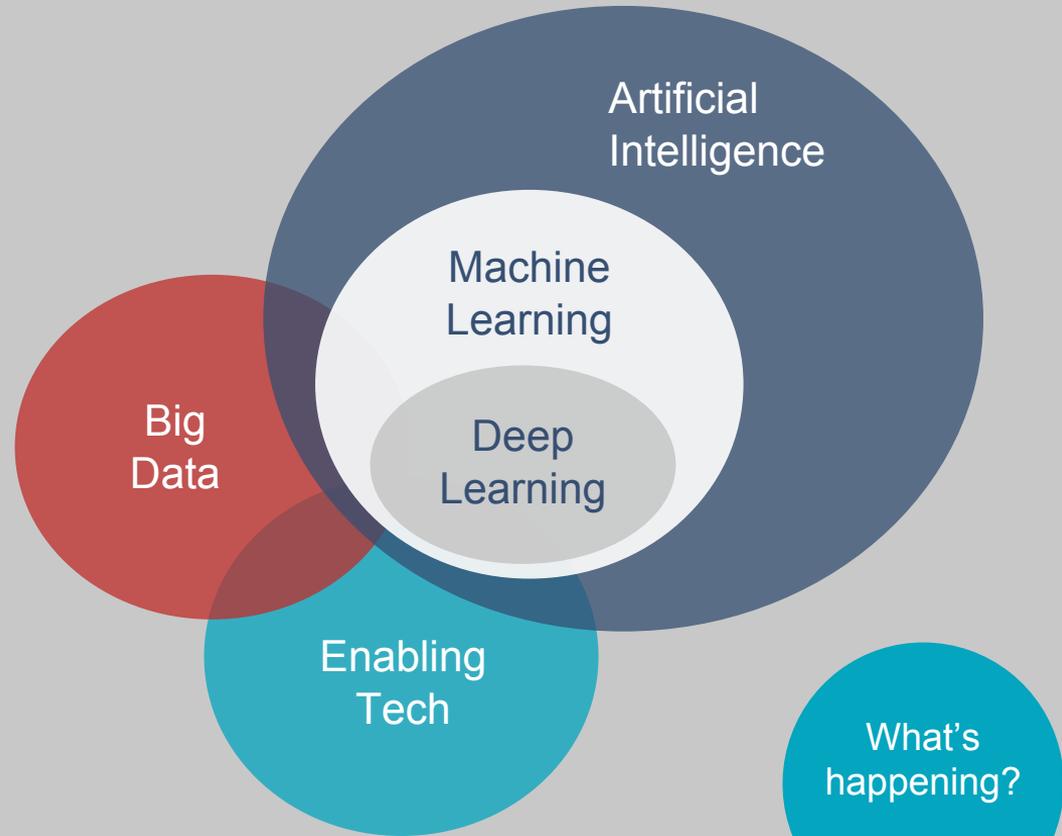
- » We live and work with machines getting smarter every month.
- » Billions will soon be augmented requiring higher skills while extending individual contributions.



What's
happening?

Arms and feet of smart machines

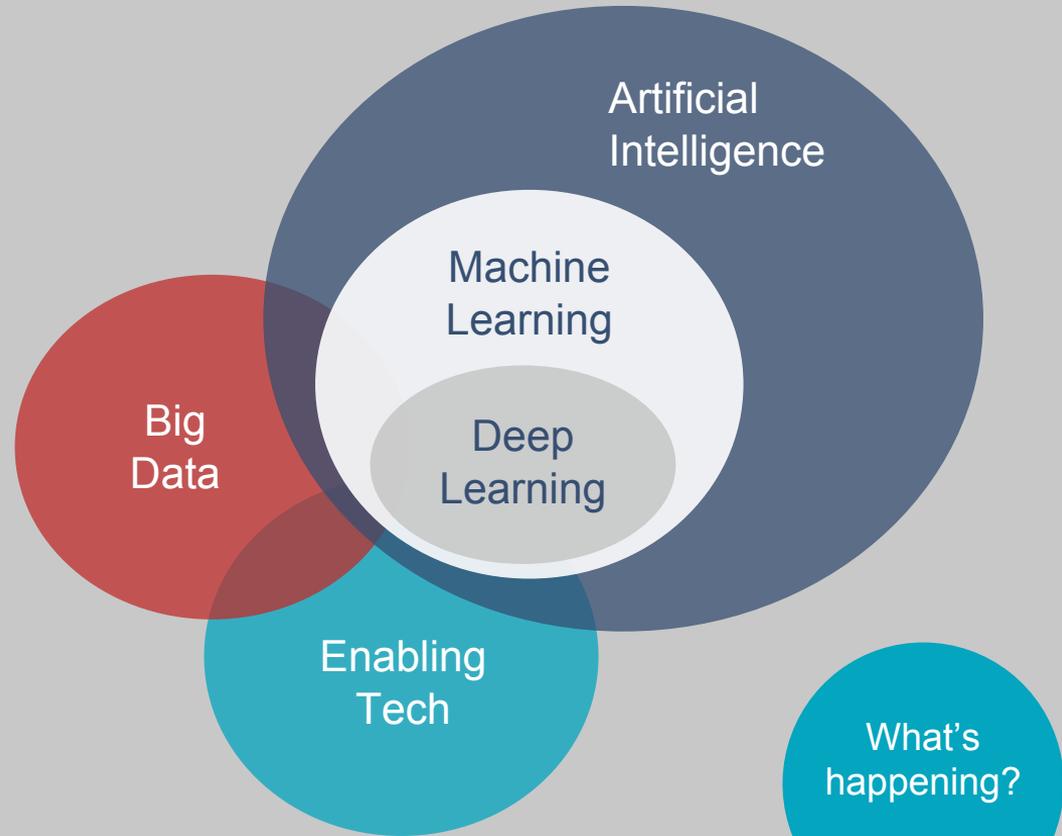
Deep learning + big data + enabling tech = TRANSFORMATION



Arms and feet of smart machines

Deep learning + big data + enabling tech = TRANSFORMATION

- » Robotics: industry 4.0
- » Cameras + sensor package: self-driving cars
- » Sensors + bioinformatics: precision medicine
- » CRISPR: genome editing
- » Chatbots: personalized retail



AI is Here! 101 Current Applications

Media: article writing, movie trailers, social media feeds, mapping, speech recognition, translation, image recognition

Recreation: dating, relationship coaching, game playing, art, synthesized music

Transport: autonomous car/truck/bus, route optimization, vehicle tracking

Security: fraud detection, predict criminality, aerial and undersea warfare, smart home control

Work: virtual assistant, coding, customer service, predict demand, trend spotting, improved service delivery, tax prep, legal services, inventory

Industry: robotics, improved design, preventative maintenance, logistics

Energy: improve exploration, predict pollution, efficient grid

Ag: optimize crop yields, reduce chemical use

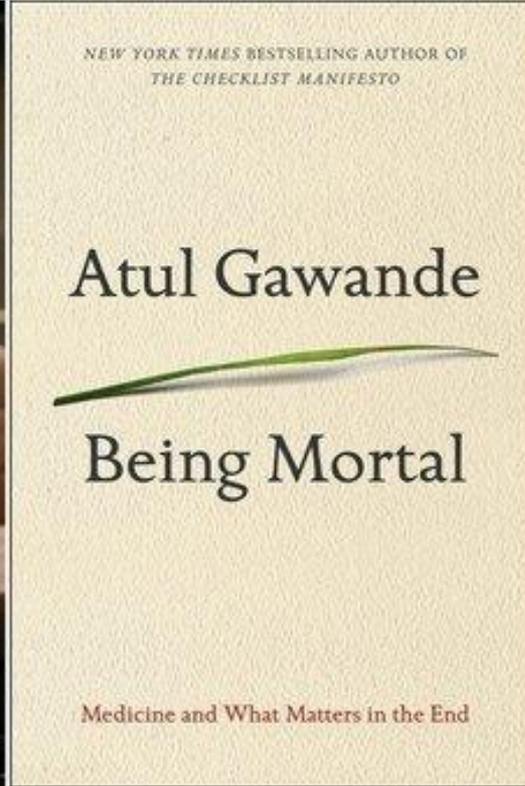
Edu: adaptive skill building, recommendations, scheduling, writing feedback, career education

Health: diagnosis, precision medicine, read x-rays, reduce errors, genome editing

HR: recruiting, identity verification, improved match, application/interview management, employee relations

What's
happening?

Delivering in teams

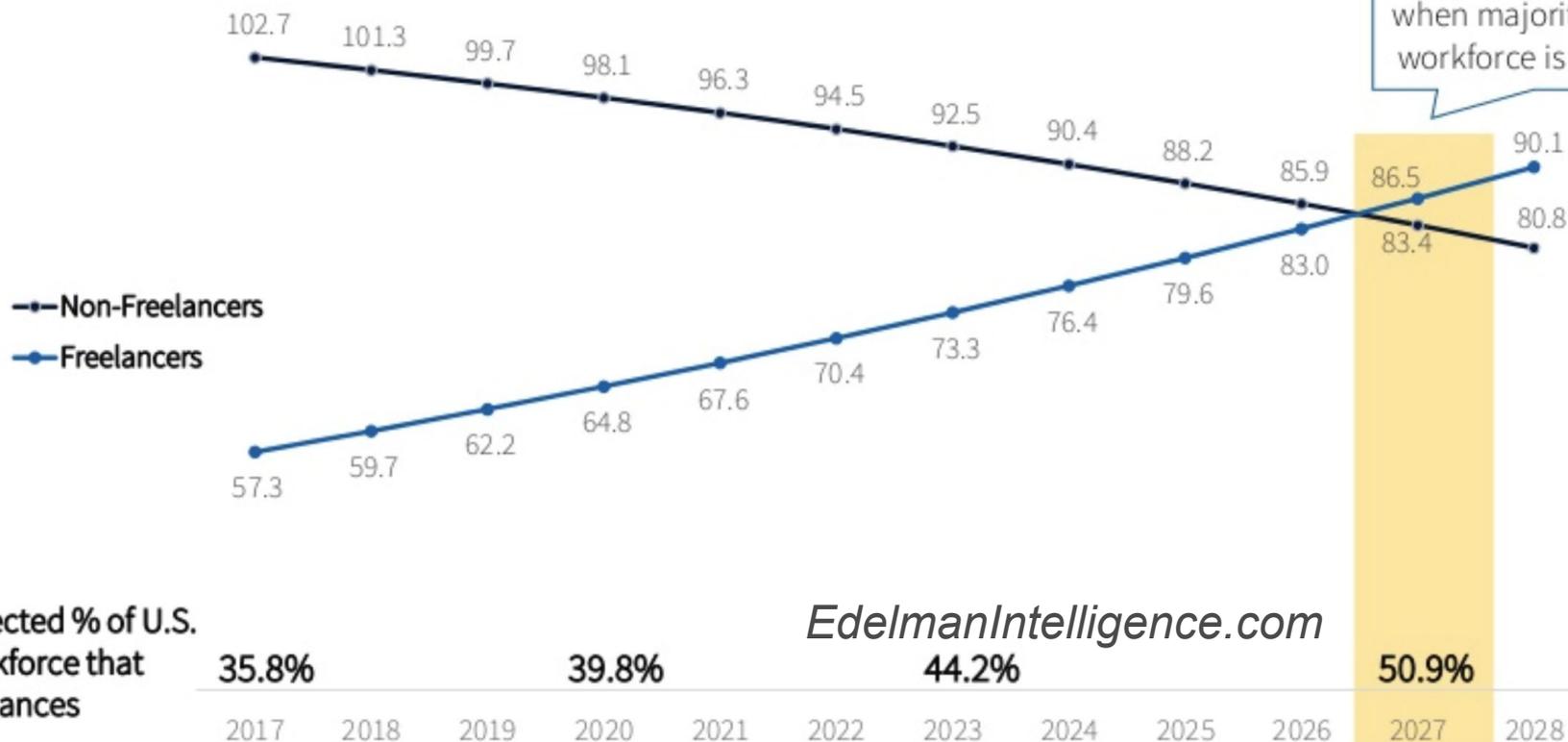


Like medicine, most professions **exceed the capabilities of any individual** to manage the knowledge and skill required, so we are now **delivering in teams.**

What's
happening?

...but working as freelancers

Projected Future Freelancer Size
[In Millions]



EdelmanIntelligence.com

Bad news: AI is coming for your job

There will be waves of job loss, but they will be different by sector and geography.

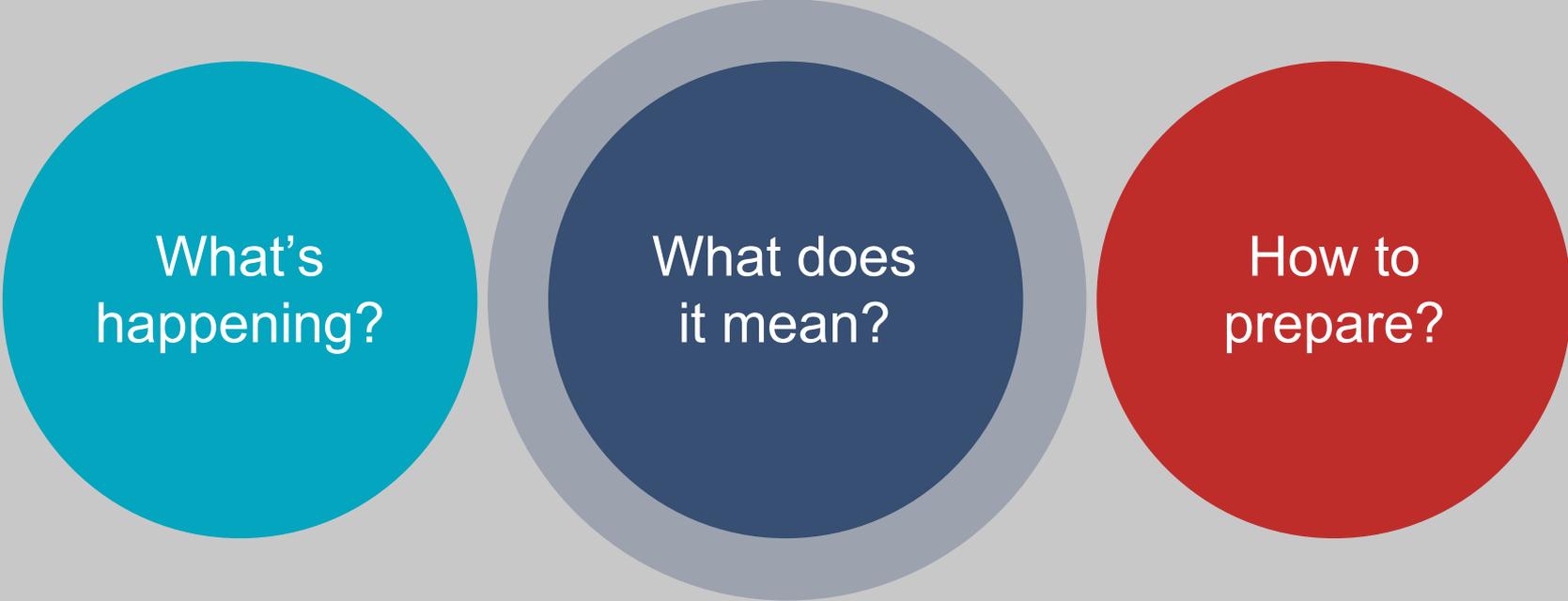
- » **Job loss:** Hundreds of millions of jobs based on repetitive rules application will be phased out.
- » **Big divide:** Smart machines will eat the middle of the job market—in some places as soon as 10 years, in others it may be 20 years—and create even bigger income gaps.

What's
happening?

Good news: AI will create jobs, enable contribution

- » **Job gains with skills:** Tens of millions of new high-wage jobs will be created in smart cities that skill up.
- » **New contributions:** Machine intelligence makes predictions cheap but human **judgement valuable**. Empathy and social interaction, creativity and design thinking, and an innovation mindset will be increasingly in demand.

What's
happening?



What's
happening?

What does
it mean?

How to
prepare?

Everyone is experiencing high change

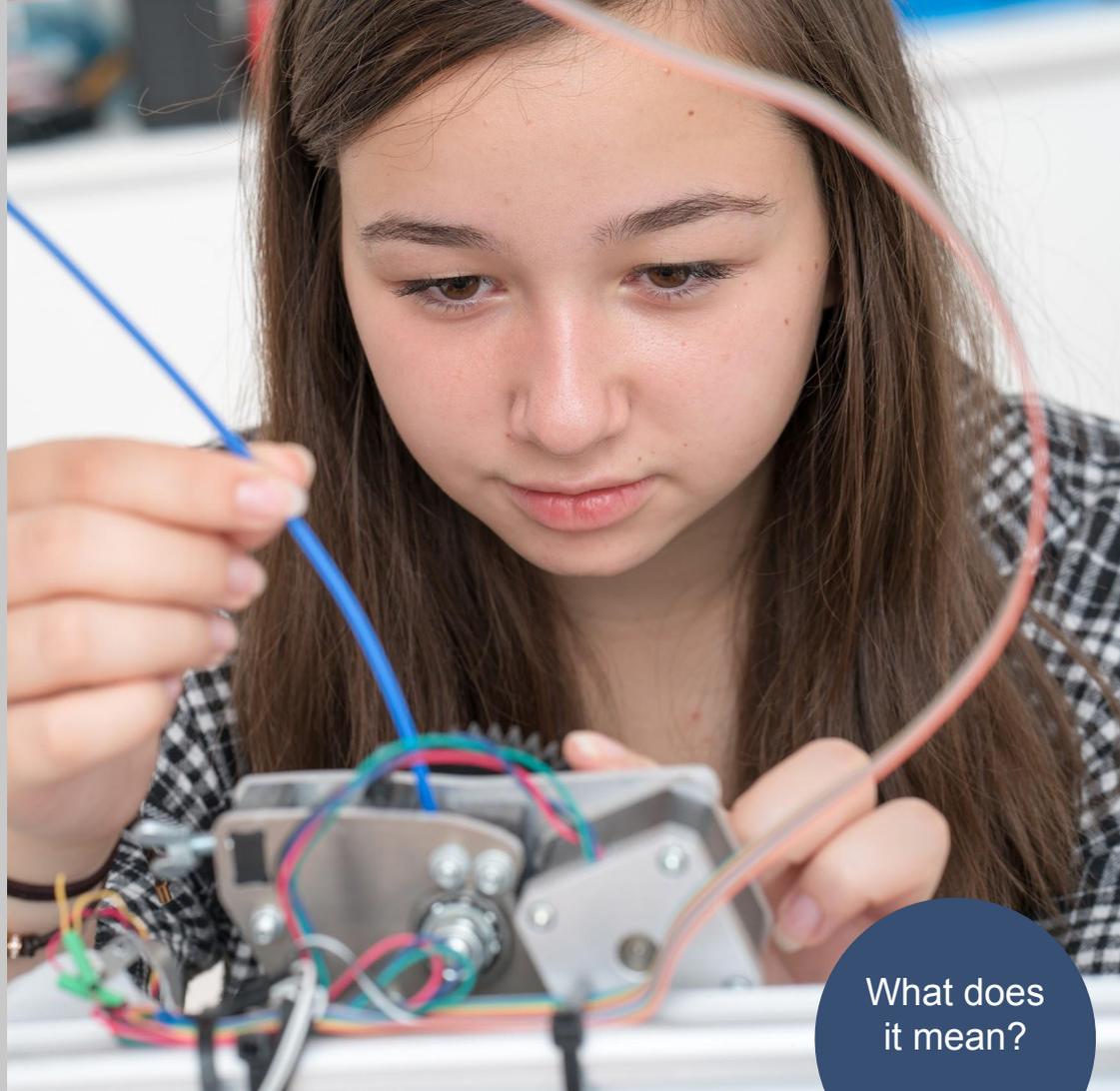
Urbanization, automation, and globalization (and the clash of natural and man made systems) will result in unprecedented waves of **novelty and complexity**.



What does it mean?

More novelty and complexity

Young people could
experience 10x more
new and complicated
systems than I did.



What does
it mean?

Ethical and privacy issues will outstrip civic capacity

- » Unemployment
- » Income inequality
- » Algorithmic bias
- » Robotic ethics
- » Autonomous vehicles
- » Genetic modification
- » Tool/expertise access

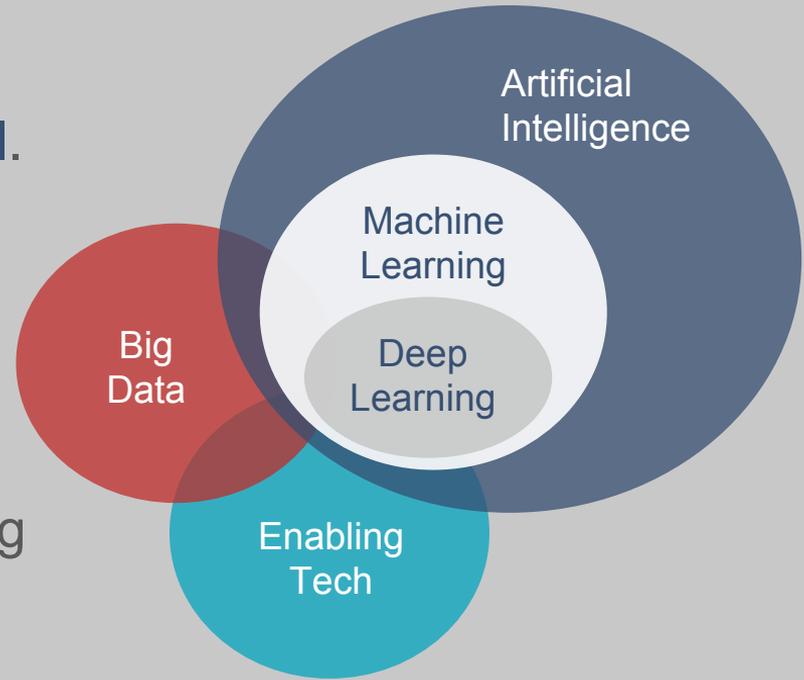


What does it mean?

Everything is computational

MIT's Eric Lander said in a few years **every biologist will be computational.**

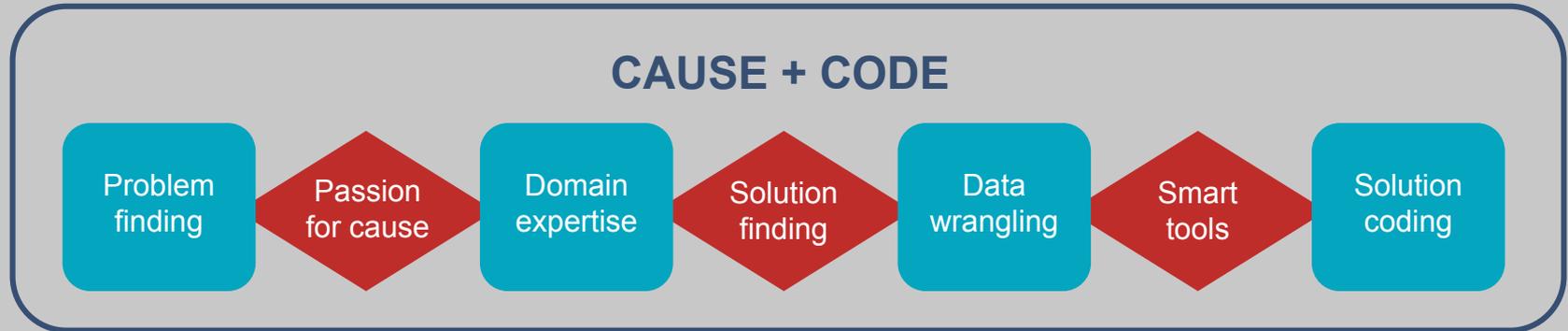
The same will be true for doctors, mechanics, economists, water managers and soldiers—nearly every field is being transformed by the combination of AI, big data and enabling technologies.



What does
it mean?

Wrangling for impact

- » There's never been a better time to make a difference but it almost always involves assembling a big data set
- » Wrangling data requires creativity, partnerships, analysis, lots of clean up and a good truth detector



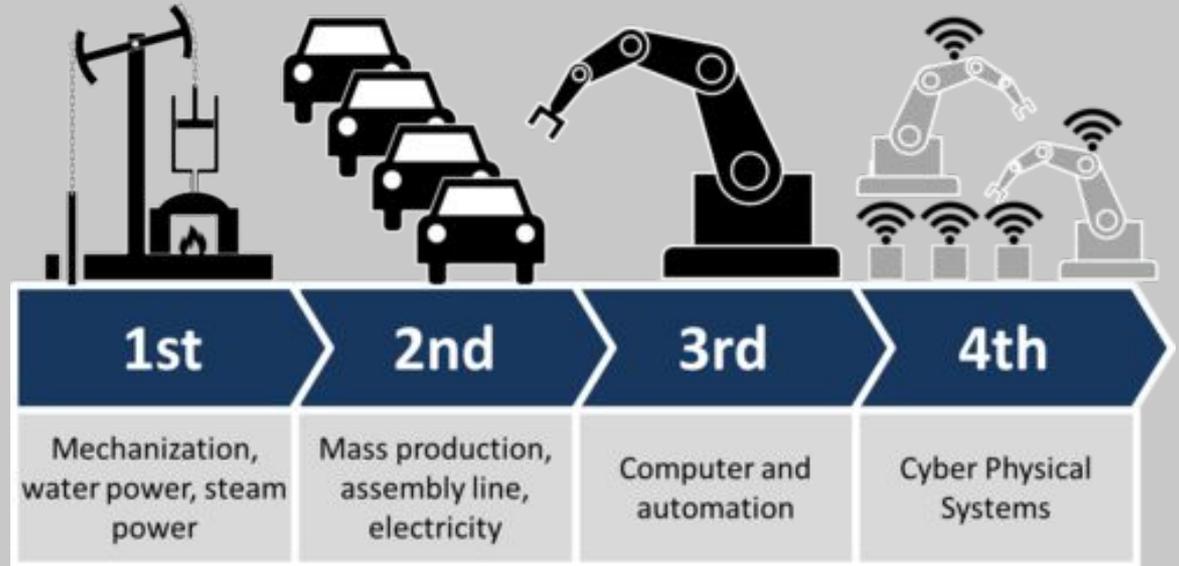
What does it mean?

4th Industrial Revolution: Small is beautiful

Custom. Local. Networks.

New opportunity for micro-manufacturing.

New requirement for regional agility (see AgeofAgility.org)



Deloitte.com

What does it mean?

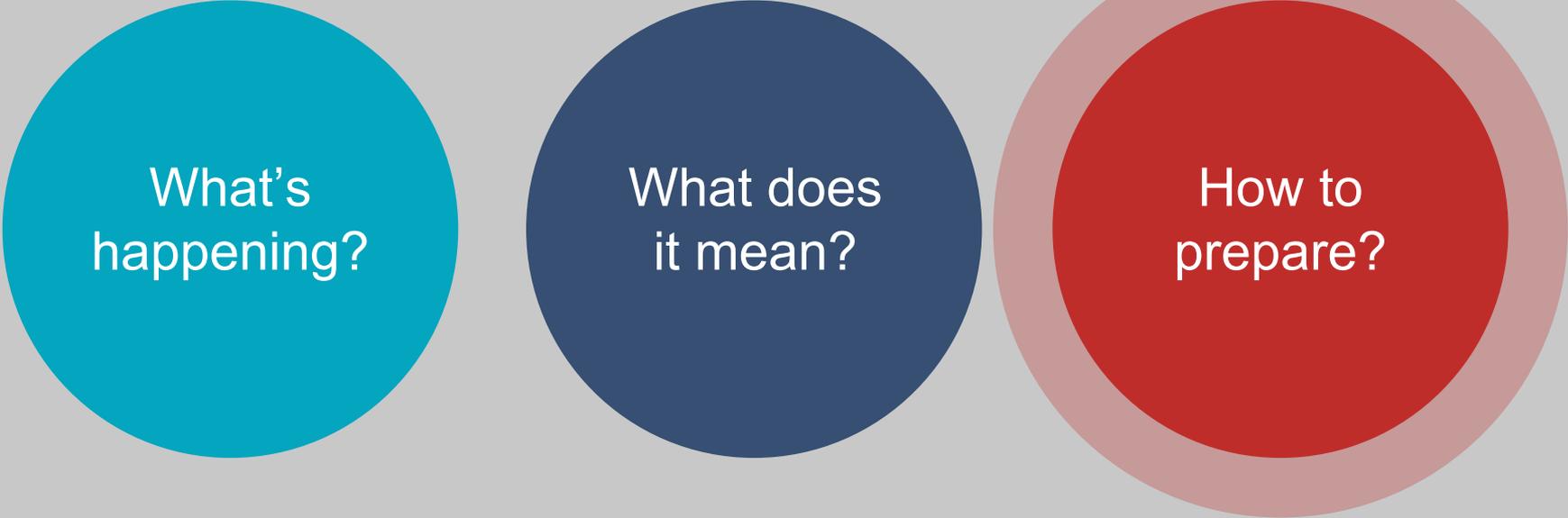
AI behind everything in education

- » Tutoring
- » Assessment
- » Recommendations
- » Hiring & development
- » Scheduling
- » Transportation

A hand in a dark suit jacket is pointing upwards with the index finger. The finger is touching a glowing blue 'AI' logo that is set within a square frame. The background is a blurred image of a person in a suit and tie.

AI

What does it mean?



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How to
prepare?

Learning how to be

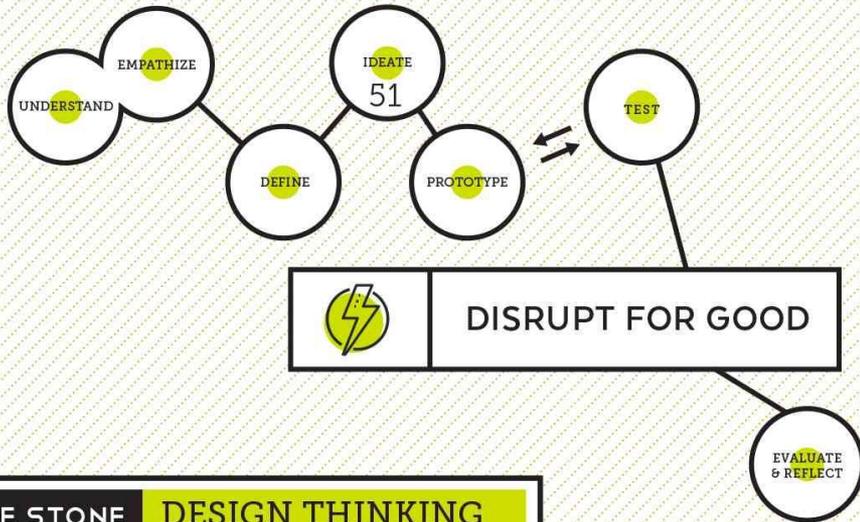
- » Cancer researcher Kevin Jones describes his work as “taking a bath in uncertainty, unknowns, exceptions and outliers.”
- » The 2 most important values, given uncertainty in his line of work, are **humility and curiosity**.



How to
prepare?

Learning attack skills

» Given high change and adaptive problems, **design thinking** is a core skill



Learning how to earn

- » Taking initiative
- » Marketing
- » Project management
- » Finance (time value, ROI)
- » Business models



Learning to collaborate

Social & emotional learning

- » Self management
- » Social awareness
- » Collaboration



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How to prepare?

Broader aims

MyWays Competencies for Success in Learning, Work, and Life

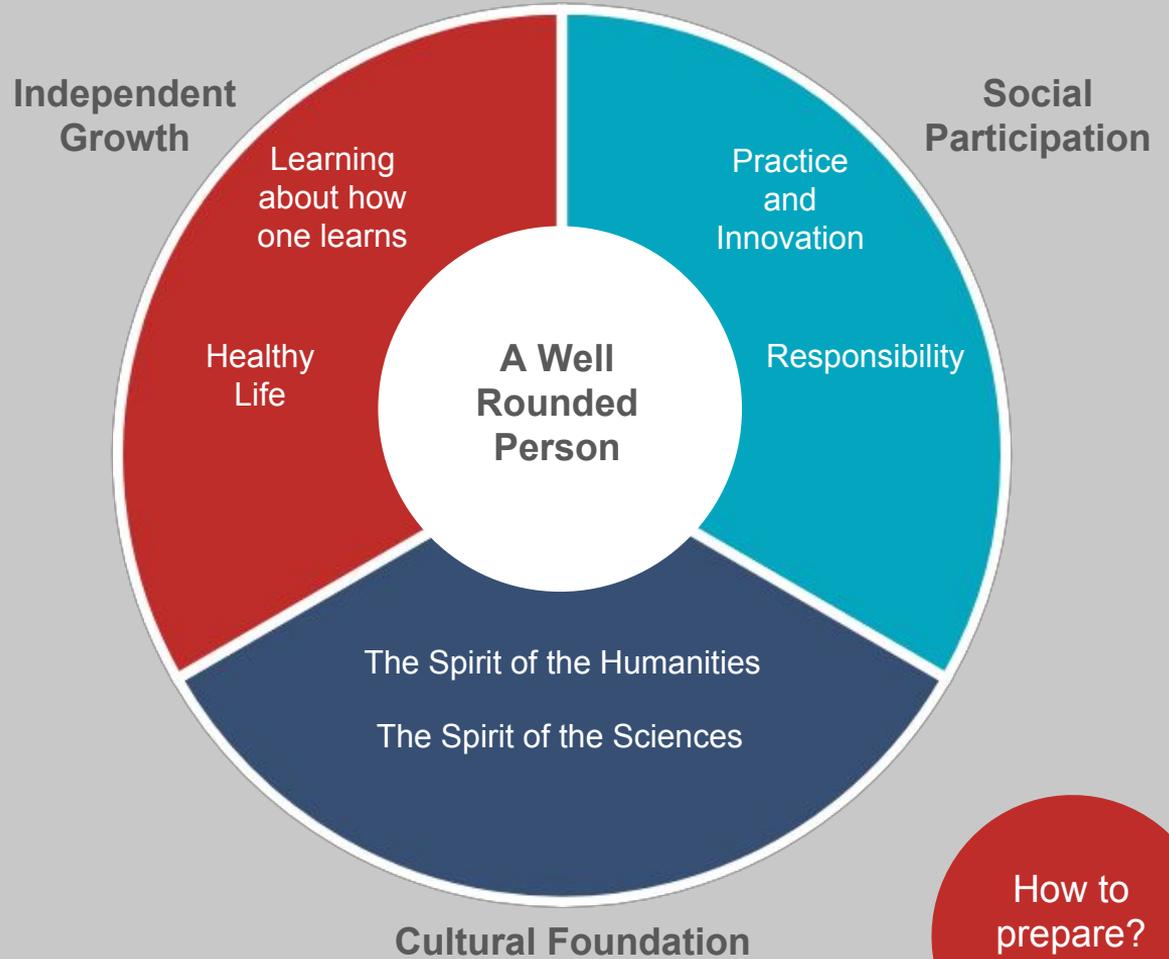


Source: Next Generation Learning Challenges

How to
prepare?

Broader aims

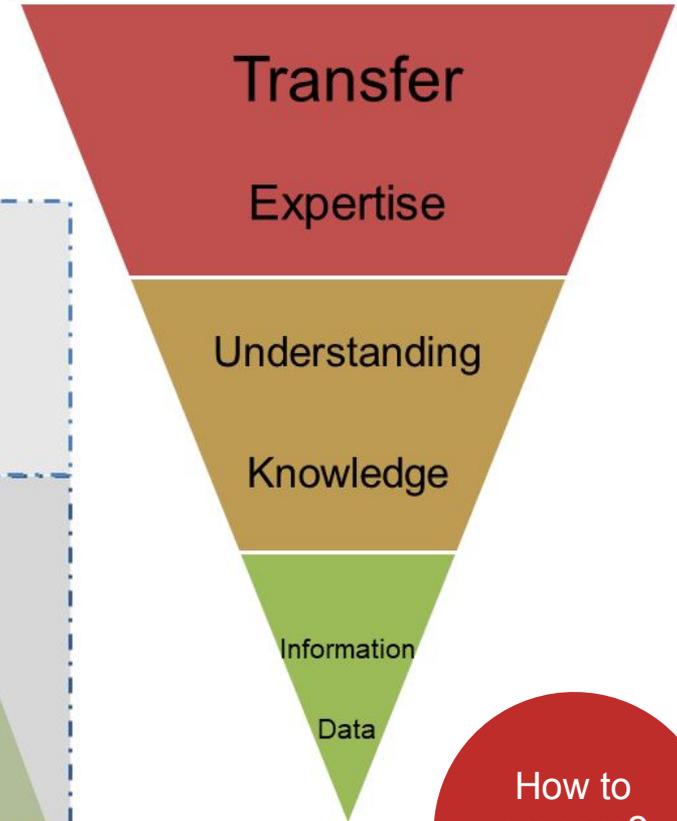
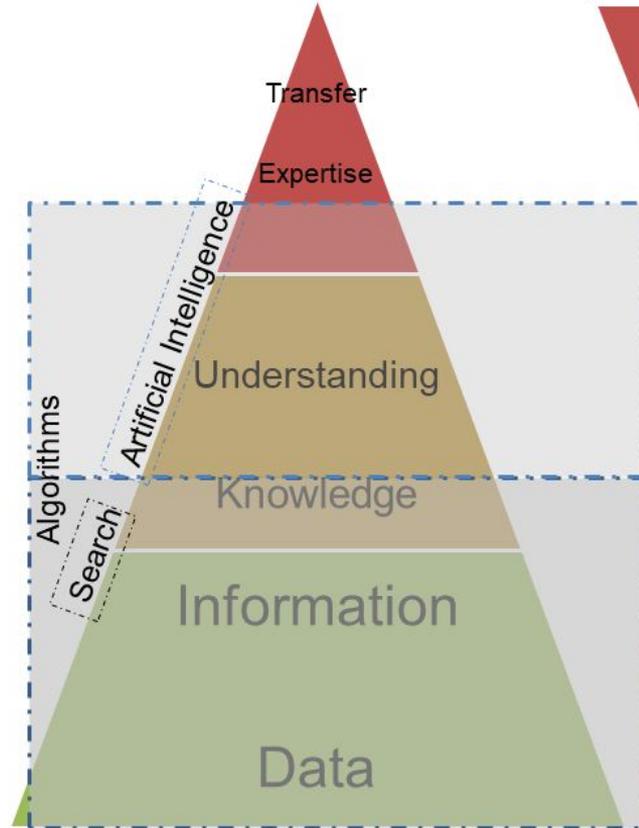
In 2016, the Chinese government released student learning goals aimed at preparing well-rounded individuals.



Time to flip the curriculum

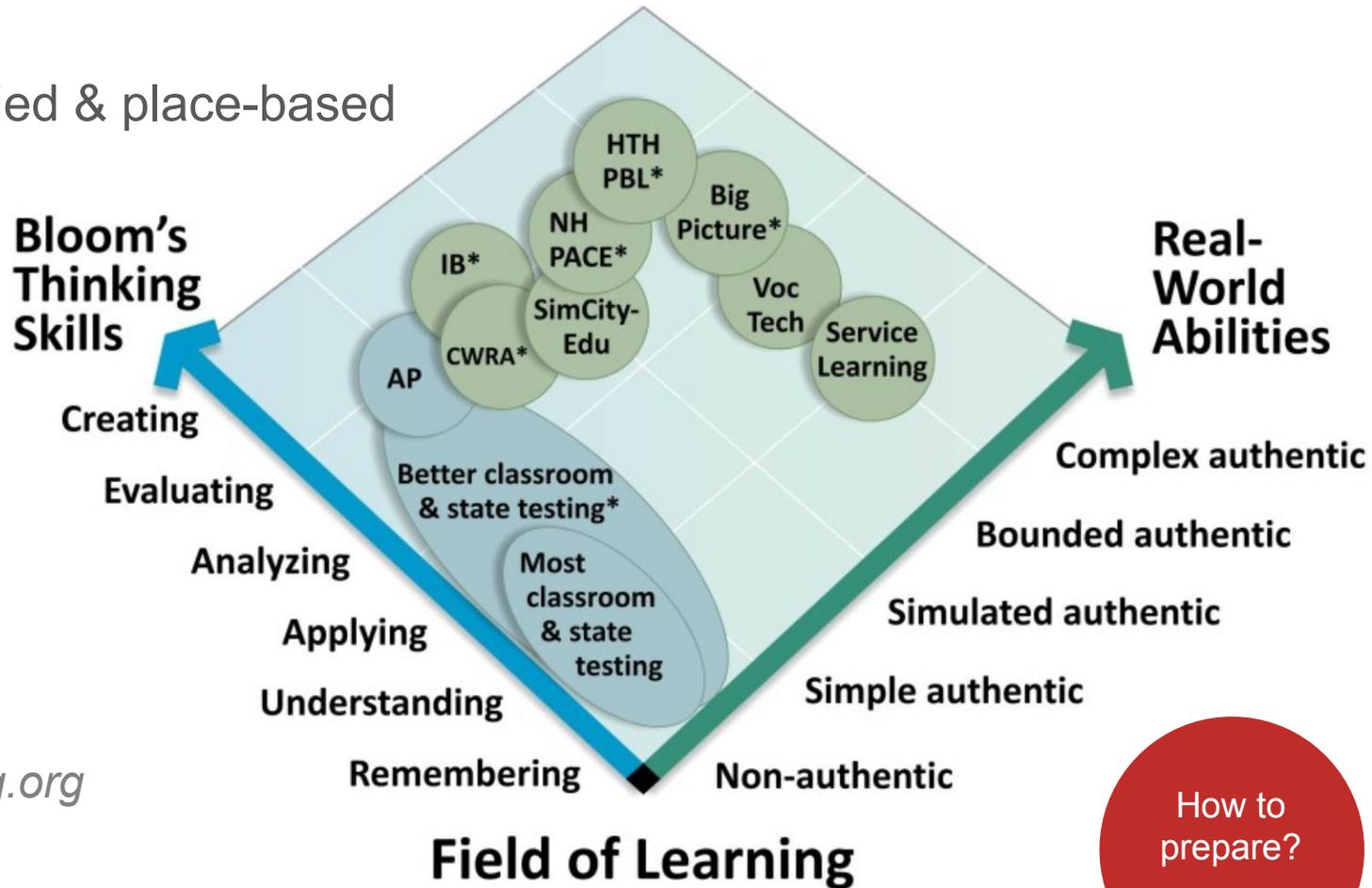
Metalearning:

- » Interdisciplinary
- » Metacognition
- » Growth mindset



Project-based challenges

Extended, applied & place-based



Work that matters

“We should be supporting and compelling students to do well-crafted work that makes them, their families and their communities proud.”

-Ron Berger, EL Education

1 NO POVERTY 	2 NO HUNGER 	3 GOOD HEALTH 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION
7 RENEWABLE ENERGY 	8 GOOD JOBS AND ECONOMIC GROWTH 	9 INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE AND JUSTICE 	17 PARTNERSHIPS FOR THE GOALS 	

THE GLOBAL GOALS
For Sustainable Development



How to prepare?



Communicating competence

Mastery transcripts

» Skills not grades

» Consistent format

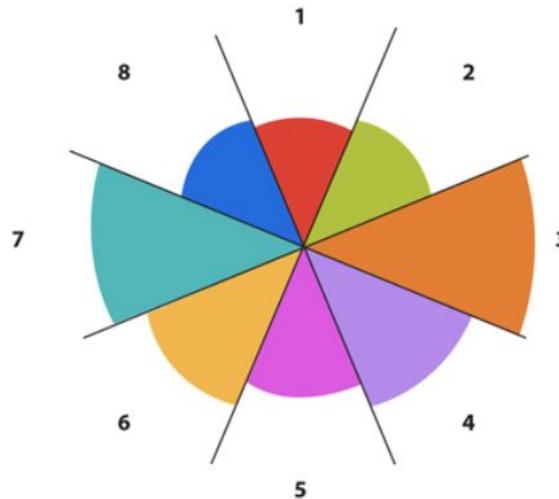
Smith, Joseph '17

Parents: Scott and Gina Smith
Student Residence Address & Phone:
1234 Cleveland Avenue
Cleveland, OH 44108
(555) 555-5555

Date of Birth: 10/11/1998
Entered:
Today's Date: 1/16/2017
Status: Current Student
Sex: Male



Hawken School
CEEB Code: 361262
12456 County Line Road, P.O. Box 8002
Gates Mills, Ohio 44040-8002
(440) 423-2916, fax (440) 423-2994



Featured Credits:

- 7b** Foster integrity, honesty, fairness and respect
- 3b** Lead through influence
- 3c** Build trust, resolve conflicts, and provide support for others
- 3g** Coordinate tasks, manage groups, delegate responsibilities
- 3h** Implement decisions and meet goals
- 8e** Persistence



Lifelong learning plans

“Institutions must prioritize and recognize ongoing learning—both formal and informal—for their faculty, staff and students.”

-NMC Horizon Report

Professional schools

Professional associations

Alumni associations

Marketplaces (Udemy)

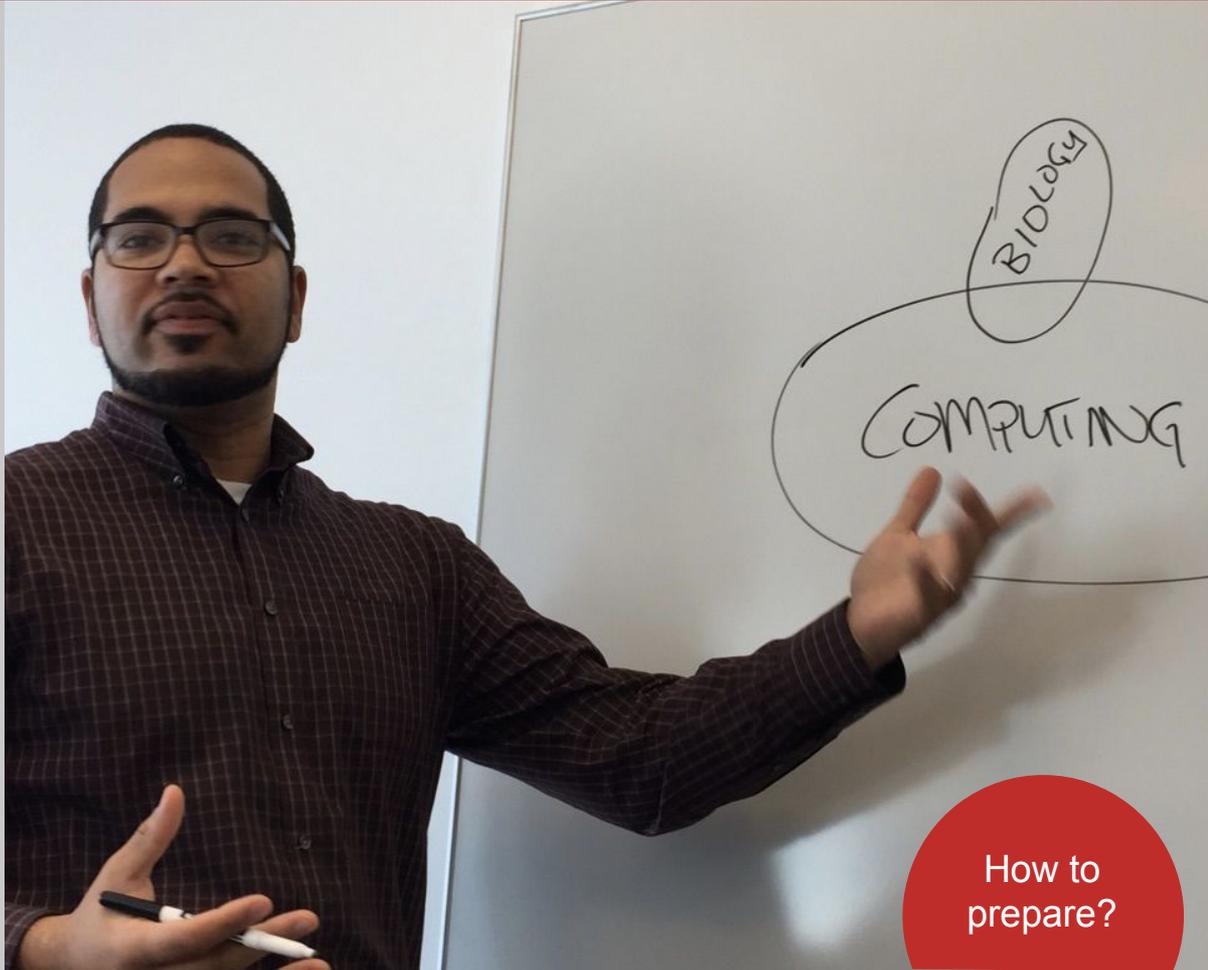
How to
prepare?

Guidance matters

Tech is a magnifier: with **guidance** it's powerful; without it, a waste.

Young people need sustained relationships at home and school that support powerful learning experiences.

Olin.edu



How to
prepare?

Impact Opportunity

For youth: there's never been a better time to build an app, launch a campaign, start an org.



How to
prepare?

Impact Opportunity

For youth: there's never been a better time to build an app, launch a campaign, start an org.

For educators: it's never been more important to provide:

- powerful learning
- support & guidance
- collective action



How to
prepare?

THANK YOU!



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