

The 4th Industrial Revolution is Changing Higher Education- What You Need to Do

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What's Ahead

- Introductions
- Overview of 1st-3rd Industrial Revolutions
- Explanation of the 4th Industrial Revolution
- Relation of 4th Industrial Revolution to Higher Education
- What Do We Need To Do?
- Case Study: California Lutheran University

Today's Key Themes

- Disruption
- Integration
- ~~Silos~~

About David

- Background- IT / Education / Business
- International perspective
- Enrollment Systems Analyst at California Lutheran University (CLU)

WAKE UP!!!

*Almost half of U.S. jobs may be lost
to automation within 20 years*

<https://www.oxfordmartin.ox.ac.uk/downloads/academic/future-of-employment.pdf> (2013)

Previous Industrial Revolutions

- 1st (18th/19th centuries): iron/steam engine
farming -> manufacturing
- 2nd (1870-1914): steel/electricity/telephone
-> mass production
- 3rd (from 1980s): personal computers/networks/mobile phones
-> computer-aided manufacturing/automation & white collar jobs

Each IR made some jobs obsolete, but created new jobs/industries

What is the 4th Industrial Revolution?

Integration of multiple core technologies: physical, digital, and biological

Affects ALL industries

Faster adoption, **wider** effect, **deeper** penetration than previous IRs.



4th Industrial Revolution Examples

Artificial Intelligence (AI) / Machine Learning

Big Data / Analytics

Internet of Things (IoT)

Clouds / Crowds

Advanced Robotics

Autonomous / Self-driving vehicles

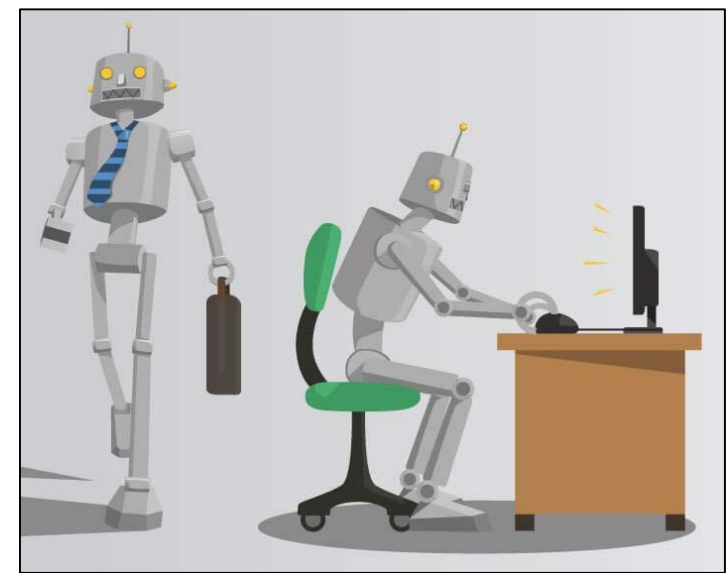
3D printing

Blockchain (e.g., BitCoin)

Virtual Reality / Augmented Reality

Nanotechnology / Biotechnology

*Almost **half** of U.S. jobs may be lost to automation within 20 years*



Quotes- Fears & Opportunities

- Americans fear robots replacing people in the workforce more than they fear death.
 - Chapman University survey, 2015
- “A kid in Africa with a smartphone has access to more information than the President of the U.S. did 15 years ago”
 - Ray Kurzweil (futurist), 2012
- 65% of children entering primary school today will eventually work at jobs that do not exist yet.
 - World Economic Forum, 2016

Obsolescence/Opportunities Already Here!

Drivers

- Technology Improvements/Costs
- Better Quality Control
- Higher Minimum Wages
- Shortage of Younger Labor



4th IR Trends/Future

- Complete disruption of industries/society
- Only a few “winners”
- Blurring of boundaries between industries
Example: Companies are taking on a role as educators

4th IR Related to Higher Education

- Huge gap between Higher Ed's delivery and what "customers" expect
- Today's students expect customization/technology
 - Already tech savvy
 - High expectation from all businesses/organizations
- > 80% of companies want "leadership" skills; social skills also critical
 - National Association of Colleges and Employers, 2015
- Solution: Treat Higher Education as a business
 - Competing against businesses
 - Competing against AI/machine learning

4th IR Components for Higher Ed Focus



Big Data / Analytics



AI / Machine Learning



Crowd (vs Core)

Components must be integrated more, not handled separately.

Integrate into Higher Ed AND teach to students.

How Do We Educate Students for the 4th IR?

Need “big picture”/well-rounded education

- Knowledge (Technology / Data)
 - “Humanics”- technology, data, social components
 - Lifelong Learning
- Critical Thinking / Leadership / Entrepreneurship
 - Experiential Learning
 - Strategic Partnerships
 - Entrepreneurial Spirit

Do across entire campus (not just in classroom) in integrated way

What Do Students Want?

- 97% want “technologies that support them outside of class” just as important as learning technologies
- 94% believe connecting with faculty/students, event suggestions, deadline alerts, course suggestions would help them feel more connected with their schools

- <https://www.ellucian.com/White-Papers/Students-are-looking-for-personalized-digital-experiences/>

Students Want Personalization

About 75% want schools to customize experience like businesses do based on their personal information.



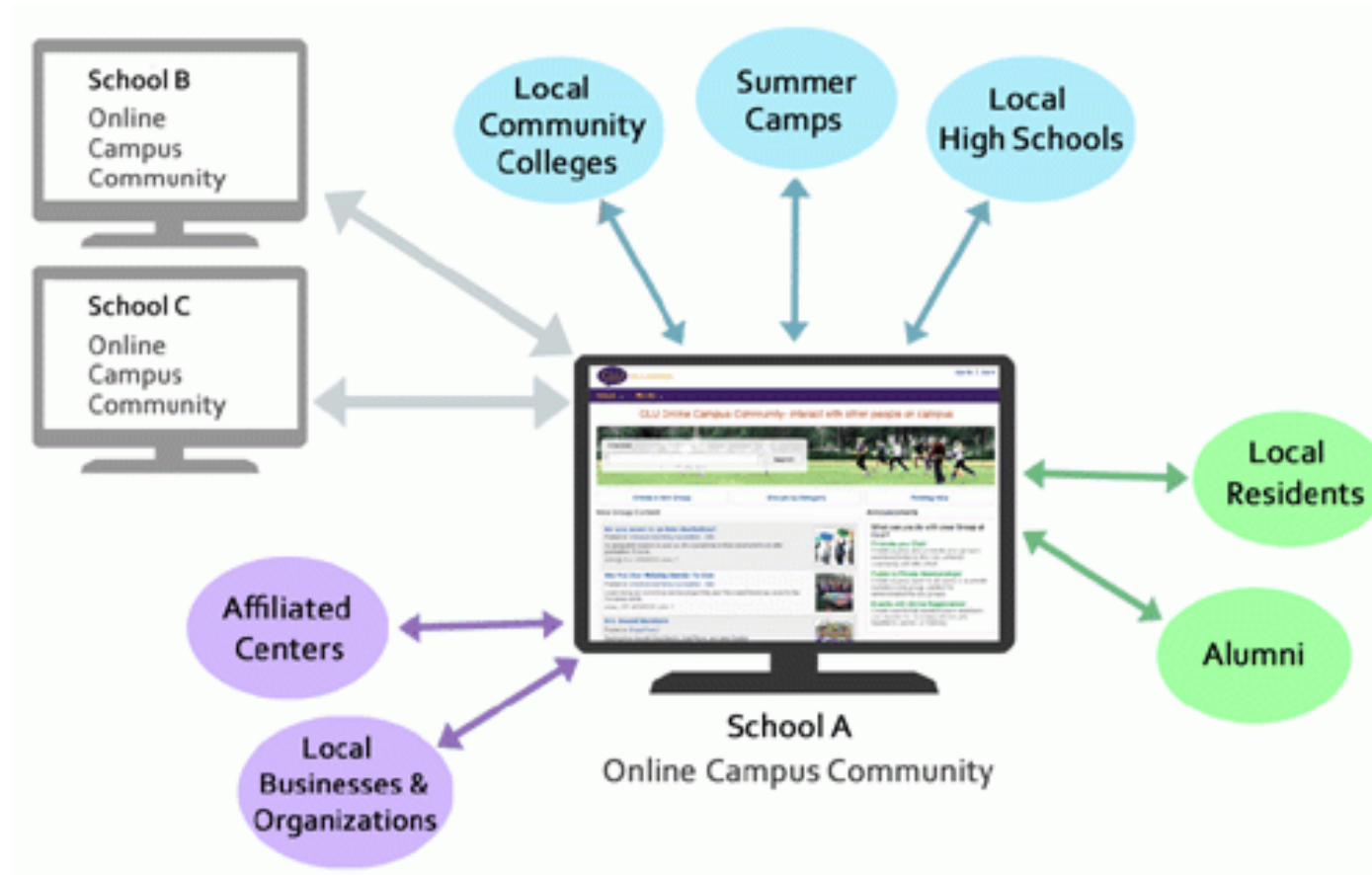
Where Do Students Want Personalization?

- 56%- student connections
- 47%- individualized course suggestions
- 45%- customized event recommendations
- 44%- alerts for deadlines
- 42%- connecting with professors
- 26%- supplemental resources/tutoring

Case Study: Cal Lutheran

- Slate / Colleague
- Residence
- Blackboard
- Orientation App
- Advisor
- Informer
- In-house App

Connected Online Campus Community



clu-campus.lifeinlocal.com

Further Research

<https://www.oxfordmartin.ox.ac.uk/downloads/academic/future-of-employment.pdf>

<https://www.ellucian.com/White-Papers/Students-are-looking-for-personalized-digital-experiences/>

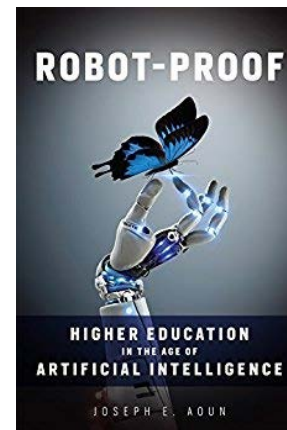
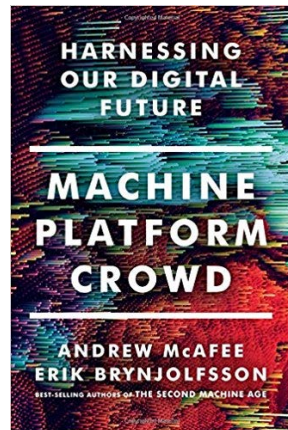
<https://www.youtube.com/watch?v=kjMCRirxjpQ> (Korean)

<https://youtu.be/iul8-y-R9JU> (Korean)

<https://www.youtube.com/watch?v=2pNmNZwNd8A> (Korean)

<https://clu-campus.lifeinlocal.com>

https://campus.lifeinlocal.com/lil/mission_statement



Thank You!

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