Digital Scenarios and Future Skills
TechConnect March 13, 2018

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Director Enterprise Architecture & Strategy, UW-IT
Chair, Itana
EDUCAUSE Digital Transformation Task Force member
Digital Transformation

Digital transformation is the change associated with the application of digital technologies to all aspects of human society.
Digital Transformation

Hyper-Personalization

Internet of Things

Artificial Intelligence

Big Data
Agenda

Part 1: Why should you care?

Part 2: Two tools to help you plan
   a. Scenario Planning - table work
   b. Personal Job Pathways - table work

Part 3: Hands On / Share Out

Part 4: Questions & Feedback
Part 1: Why should you care?

Predictions

The Shape of Transformations

Disruption is coming

Above the line competencies are critical
Predictions
Prediction 1: World Economic Forum and Boston Consulting

“A grim future for workers who don't learn new skills

Almost 1 million Americans will see their occupations vanish entirely by 2026”

The bottom line: In all, some 1.4 million years, including 70 percent of them — 41% — will have either minuscule or no chance of finding other work”

Axios: A grim future for workers who don't learn new skills
https://www.axios.com/workers-automation-lost-jobs-skills-2d944533-3f51-40ee-b2c0-b65e4644a9db.html
Scott Lever - Gartner Analyst

“Nearly 80% of CIO’s and IT leaders project that the skill and knowledge their organization will need in 10 years have little resemblance to the skills and knowledge they have today.”
Prediction 2: Clayton Christensen (Harvard Business School)

Harvard Business School professor: Half of American colleges will be bankrupt in 10 to 15 years

Abigail Hess | @AbigailJHess • 9:57 AM ET Wed, 15 Nov 2017

There are over 4,000 colleges and universities in the United States, but Harvard Business School professor Clayton Christensen says that half are bound for bankruptcy in the next few decades.
Phases of Transformations

- Phase 1: Refine
- Phase 2: Disrupt
- Phase 3: Transform
Phase 1 - Refine and Re-create (10-15 years)

- The core technology
- The infrastructure
- Refitting old to the new technology

1870 Refine 1885 Disrupt 1900 Transform
Phase 1: Refine and re-create

Electric trolley  Electric light  Electric Iron
Phase 2: Disrupt

- Natives are joining the workforce
- Outsourcing capabilities are available
- New things that require the new technology
Phase 2: Disrupt/Invent new things

- Washing machine
- Refrigerator
- Radio
Phase 3 - Transformation

> Changes in how society functions
> Major paradigms completely shift
> Society reshapes itself into the “new normal”
Washing Machines + Refrigeration = Women’s Vote

Washing Machines + Refrigeration = Women’s Vote

- Women have time.
- Women join the workforce
- Women get the right to vote (1920)
Founded May 1935
Digital Transformation

Phase 1: Refine
Phase 2: Disrupt
Phase 3: Transform
Topic Introduction: 35 Years in 6 Seconds

By the Harvard Innovation Lab
Digital Transformation

Phase 1: Refine
Phase 2: Disrupt
Phase 3: Transform
Waymo's self-driving cars are racking up miles faster than ever

Sean O'Kane

The Verge, May 10, 2017
IBM's AI can predict schizophrenia by looking at the brain's blood flow

First reported in Nature Partner Journal - Schizophrenia www.nature.com/npjschz
The Apple Watch can accurately detect hypertension and sleep apnea, a new study suggests

Posted Nov 13, 2017 by Sarah Buhr (@sarahbuhr)

Cardiogram and UCSF previously demonstrated the ability for the Apple Watch to detect abnormal heart rhythm with a 97 percent accuracy. This new study shows the Watch can detect sleep apnea with a 90 percent accuracy and hypertension with an 82 percent accuracy.
A shift from reactionary / diagnostic medicine

To proactive / predictive medicine.
Digital Transformation

YOU ARE HERE

Phase 1: Refine
Phase 2: Disrupt
Phase 3: Transform
The Most Common Job In Each State 1978-2014

Truck Driver

NPR’s Planet Money, Feb 5, 2015
Digital Transformation

Phase 1
Refine

Phase 2
Disrupt

Phase 3
Transform

YOU ARE HERE
We don’t know the full societal impacts or all the disruptive inventions.

IT workers need to be

Highly Resilient

and

Adaptable.
What Employees Do

Accomplishments
Quality of Work
Timeliness
Prioritization
Hard Skills
Engagement
Influence
Conflict Resolution
Critical Thinking
Adaptability
Communication
Collaboration
Problem Solving

How Employees Do

Learning Mindset
Adaptability
Communication
Collaboration
Problem Solving
Part 1: You should care!

Predictions

The Shape of Transformations

Disruption is coming

Above the line competencies are critical
Part 2: Scenarios and Job Pathways

Two tools to help you think about your future
Scenario Planning

Scenarios are possible future states given a set of conditions (drivers, current state, etc.)
The Art of the Long View, Peter Schwartz 1996
Future Scenarios

Drives the future state

What responds / adapts to the future state

Inhibits the future state

What are the critical uncertainties
Future Scenarios

What needs to respond or adapt to meet most of the scenarios
Example Scenarios for Homeowners
## Example Scenarios for Homeowners

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Response</th>
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<td>- Possible fire</td>
<td>Savings</td>
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<td>- Fire Safe, Smoke Alarms</td>
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<tr>
<td>Furnace failure</td>
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<td>- CO leak</td>
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Digital Transformation Drivers
Scenario 1: Future of Identity and Access Management

Identity and Access Management
IAM = What users expect now

“I’ve had people use the word “magic” when describing how they think their authentication/authorization flow should work.”

“The service should just know who they are and what they want to access. ....it just works.”

“...seamless to the users because the systems know what sort of actions should be flagged and the level of risk for each service and scales the identity requirements appropriately.”
Insert example scenarios here!

**Scenario 1:** AI/Machine Learning drive behaviour based Authentication/Authorization.

**Scenario 2:** Personalization allows users to highly customize their own Authentication/Authorization experience to their own lifestyle.
## Insert example scenarios here!

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Skill Responses</th>
</tr>
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</table>
| **Scenario 1: AI/Machine Learning drive behaviour based Authentication/Authorization.** | AI/Machine Learning Programmer  
                      Statistician  
                      Solution Architect  
                      Customer Experience Designer |
| **Scenario 2: Personalization allows users to highly customize their own Authentication/Authorization experience.** | Customer Experience Designer  
                      UI/UX designer  
                      Solution Architect |

Customer Experience Designer  
Solution Architect
Tool 1: Scenario Planning

Future state scenarios and what needs to adapt and/or change for your team or yourself regarding jobs and skills.
Tool 1: Scenario Planning

Scenario Planning (quick and dirty):

1. Capture 1 to 3 scenarios for your area of work.
2. Look for common skills or responses in those scenarios.
Job Pathways

Job Pathways are maps of career steps towards a future role, duties, job or career.
Job Pathway

Current Job

Future Job 1
New skills needed
Benefit

Future Job 2
...

Future Job 3
...

Future Job 4
...

Future Job 5
...
Example Scenario - Job Pathway

Digital Technologies and Identity and Access Management
Scenario 1: Future of Identity and Access Management

Hyper-Personalization

BIG DATA
## Scenarios

| Scenario 1: AI/Machine Learning drive behaviour based Authentication/Authorization. |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| AI/Machine Learning Programmer                  |
| Statistician                                     |
| Solution Architect                               |
| Customer Experience Designer                     |

<table>
<thead>
<tr>
<th>Scenario 2: Personalization allows users to highly customize their own Authentication/Authorization experience.</th>
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<tr>
<td>Customer Experience Designer</td>
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<tr>
<td>UI/UX designer</td>
</tr>
<tr>
<td>Solution Architect</td>
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</tbody>
</table>
**Job Pathway**

IAM Developer

**ML Programmer**
- Statistical modeling
- ML Frameworks…
  ++ Hot new field, generic to many field

**Solution Arch.**
- Design skills
- Facilitation
  ++ Adaptable to other dev. groups

**Customer Exp. Designer**
- Design skills
- UX/UI
  ++ Hot new field, generic to many industries

**Predictive Security Analytics**
Tool 2: Job Pathways

Job Pathways are maps of career steps towards a future role, duties, job or career.
Part 3: Hands On / Share Out

Two tools to help you think about your future
Tool 2: Make a Job Pathway

Job Pathways:

1. Think of a 2-4 job “steps” you could make
   a. Could be 3 single steps
   b. Could be a couple of 2 step changes
2. What new skills are required?
3. What are the “benefits” of each
   a. Other jobs, more generic, etc.
4. What is common and interesting?
Share out

Talk with your table about your scenarios and pathways
Part 1: Why should you care?

The Shape of Transformations
Disruption is coming
Above the line competencies are critical
Digital Transformation

Phase 1
Refine

Phase 2
Disrupt

Phase 3
Transform
Part 2: Scenarios and Job Pathways

Two tools to help you think about your future
Feedback.

What did you like.
What didn’t you like.
Did you get ideas from this?
Do you still have questions?
Thank you.

Digital Scenarios and Future Skills
Jim Phelps, Director Enterprise Architecture & Strategy, UW-IT
phelpsj@uw.edu
Handouts
## Digital Transformation Drivers

<table>
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<tr>
<th>Driver</th>
<th>Description</th>
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<tbody>
<tr>
<td>User-Centered Design</td>
<td>User-centered design tries to optimize the product around how users can, want, or need to use the product, rather than forcing the users to change their behavior to accommodate the product.</td>
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<tr>
<td>Hyper Personalization</td>
<td>Hyper Personalization has been defined as the use of data to provide more personalized and targeted products, services, and content.</td>
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<tr>
<td>Artificial Intelligence / Machine Learning</td>
<td>Systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.</td>
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<tr>
<td>Internet of Things</td>
<td>All devices are connected to the internet</td>
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<tr>
<td>Autonomous Systems</td>
<td>Systems which respond to inputs on their own without human intervention especially those driven by AI and environmental sensors.</td>
</tr>
<tr>
<td>Big Data</td>
<td>Extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.</td>
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<tr>
<td>Multi-device and location services</td>
<td>Solutions designed to work where-ever customers are on whatever device they have.</td>
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<td>Drivers</td>
<td>Scenario</td>
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<tr>
<td>Current Job</td>
<td>Job Step 1 / Skills needed / benefit</td>
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