



Workforce Challenges of the Future

Garry Golden
Forward Elements Inc

Start

End



***Changes Ahead
More or Less?***



**Workforce
Dynamics**



Steps to Explore

**Last
ten years**

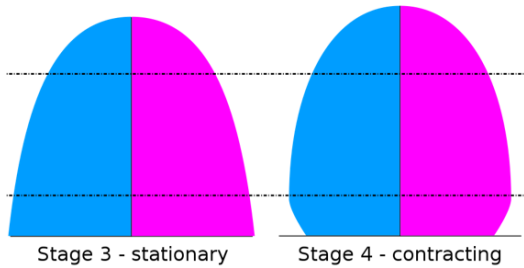
2005 – 2015

**Next
ten years**

2016-2026

More or Less Change Ahead?





***Demographics
+ Workforce***

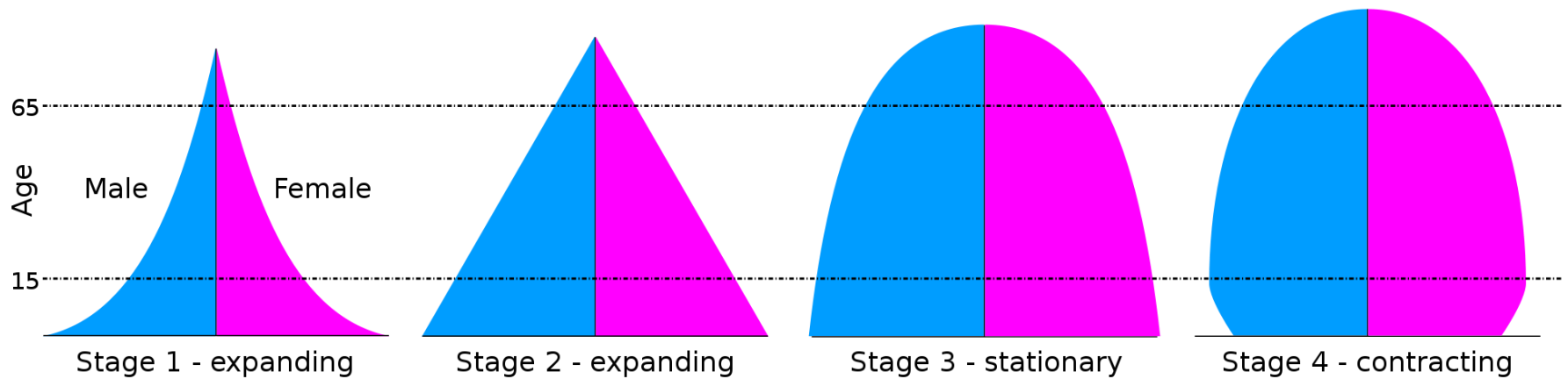


***Data-driven Workforce:
Training
+ Performance***



***AI-Driven Service
+ Knowledge Work***

Economies + Demographic Transitions



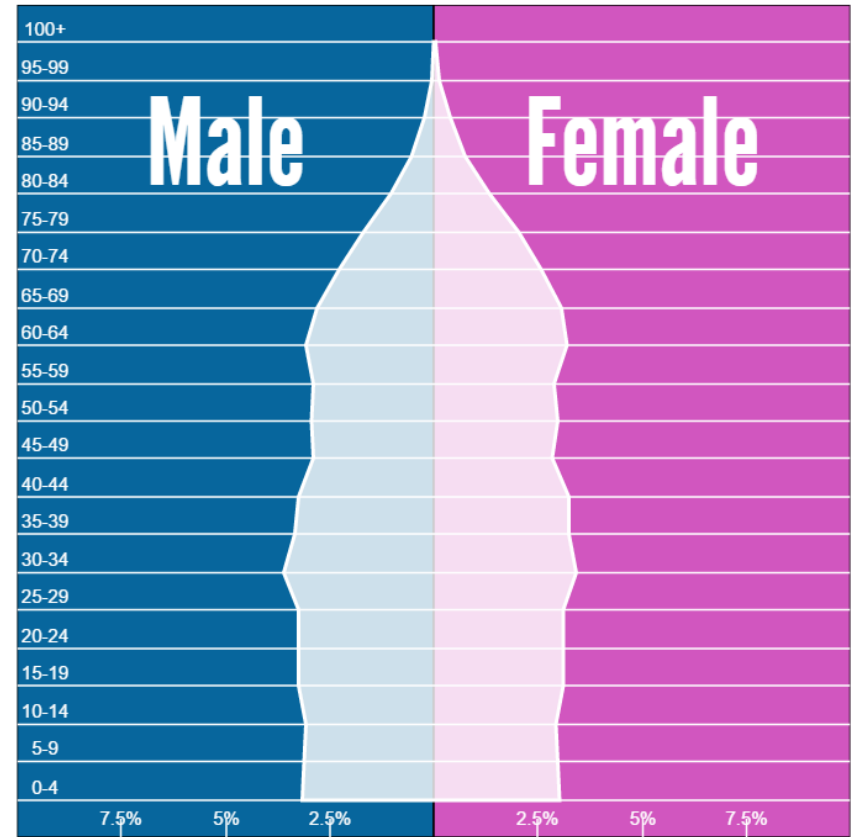
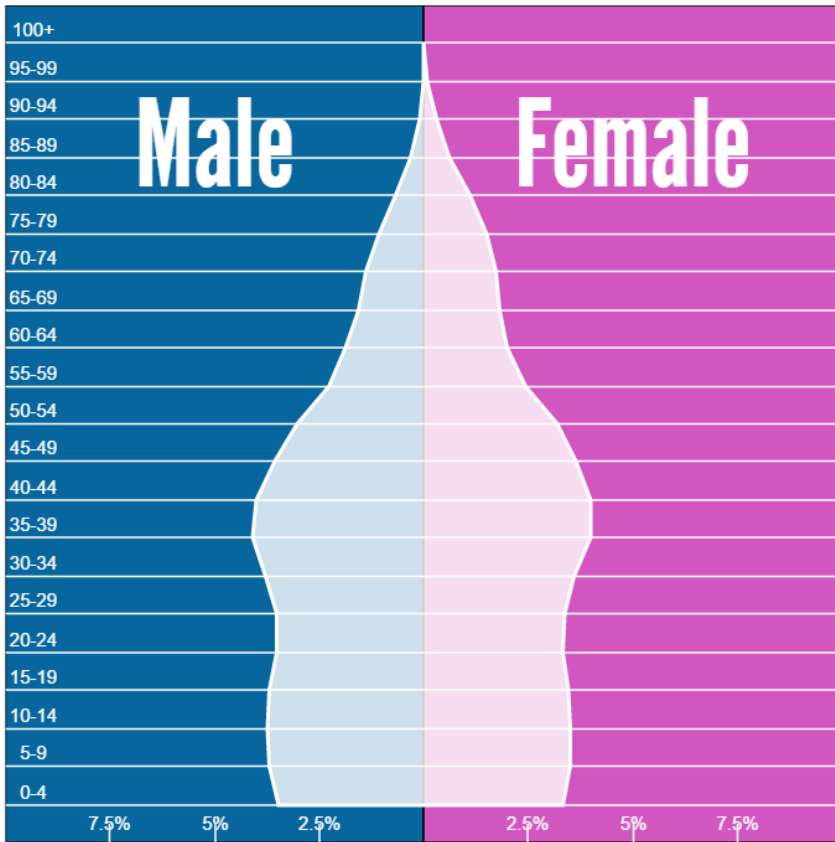
Global Economy + Waning Demographic Dividend

United States of America 2000

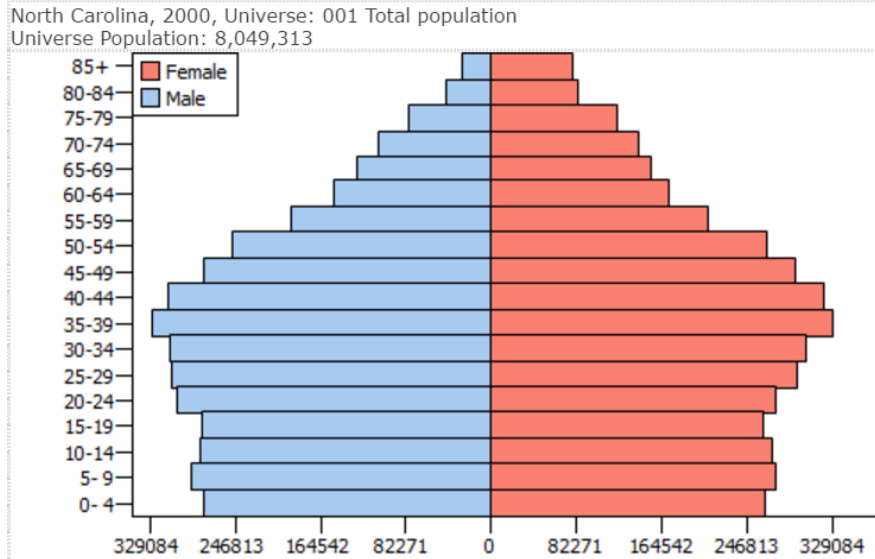
Population: **282.895.000**

United States of America 2025

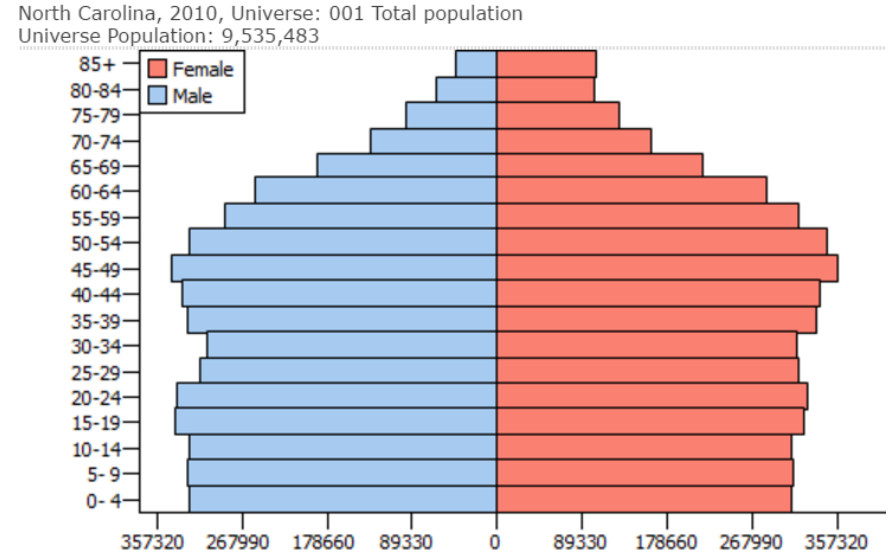
Population: **345.084.000**



North Carolina's *Demographic Dividend*

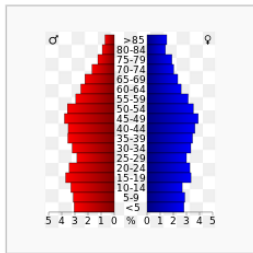


2000

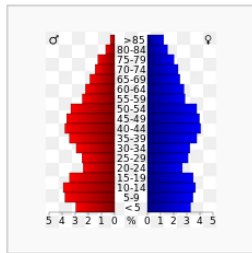


2010

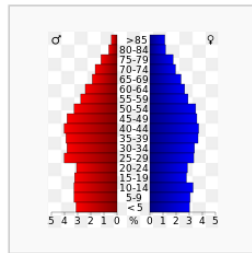
Understanding the Spectrum of Regional Pyramids



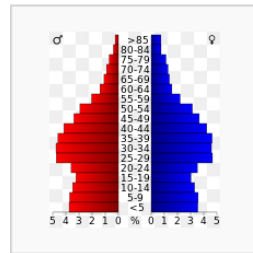
USA Madison County,
North Carolina age pyramid
7 KB



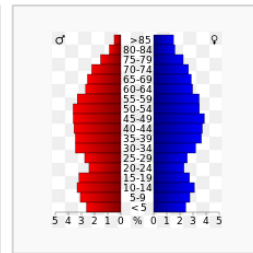
USA Martin County,
North Carolina age pyramid
7 KB



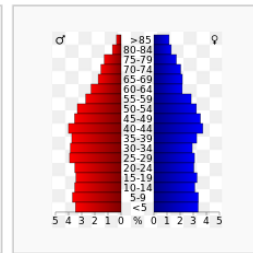
USA McDowell County,
North Carolina age pyramid
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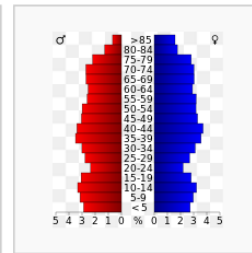
USA Mecklenburg
County, North Carolina
age pyramid.svg
8 KB



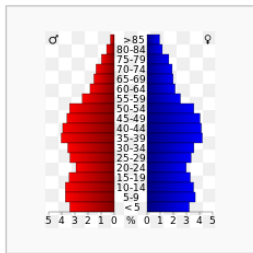
USA Mitchell County,
North Carolina age pyramid
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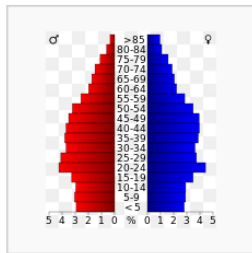
USA Montgomery
County, North Carolina
age pyramid.svg
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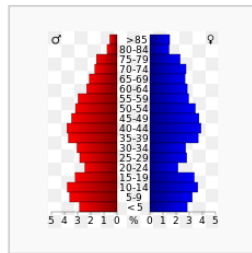
USA Moore County,
North Carolina age pyramid
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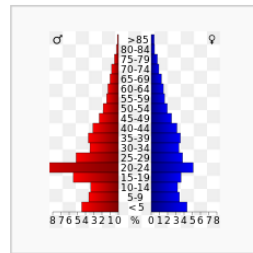
USA Nash County, North
Carolina age pyramid.svg
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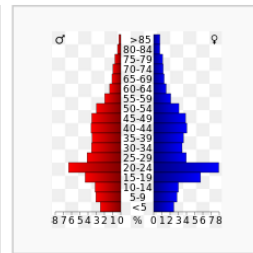
USA New Hanover
County, North Carolina
age pyramid.svg
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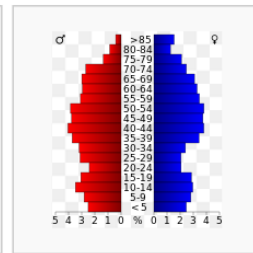
USA Northampton
County, North Carolina
age pyramid.svg
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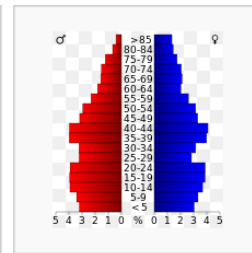
USA Onslow County,
North Carolina age pyramid
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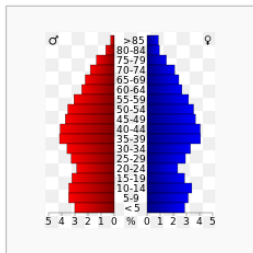
USA Orange County,
North Carolina age pyramid
8 KB



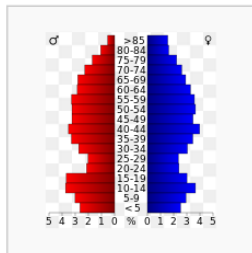
USA Pamlico County,
North Carolina age pyramid
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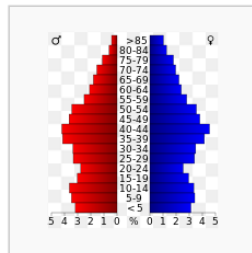
USA Pasquotank
County, North Carolina
age pyramid.svg
7 KB



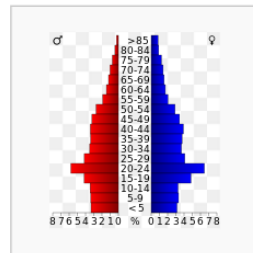
USA Pender County,
North Carolina age pyramid



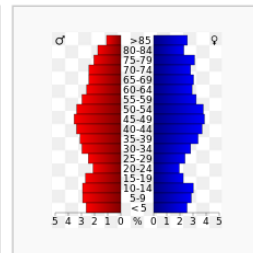
USA Perquimans
County, North Carolina



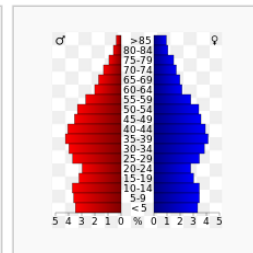
USA Person County,
North Carolina age pyramid



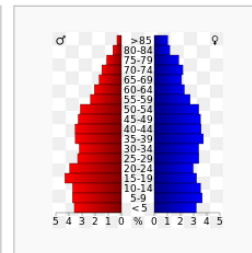
USA Pitt County, North
Carolina age pyramid.svg



USA Polk County, North
Carolina age pyramid.svg



USA Randolph County,
North Carolina age pyramid

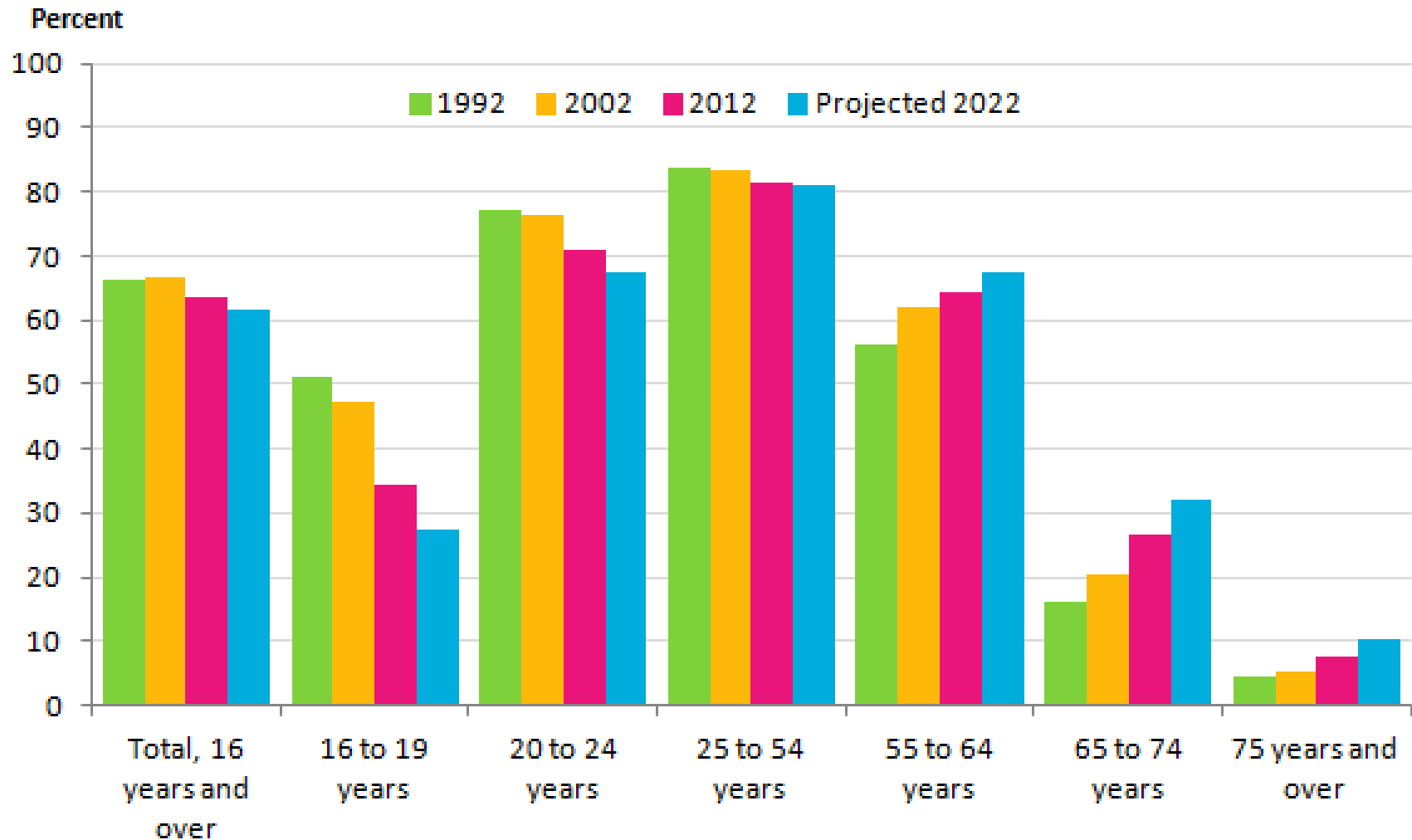


USA Richmond County,
North Carolina age pyramid

2020-2030

Big Story #1: Aging Workforce

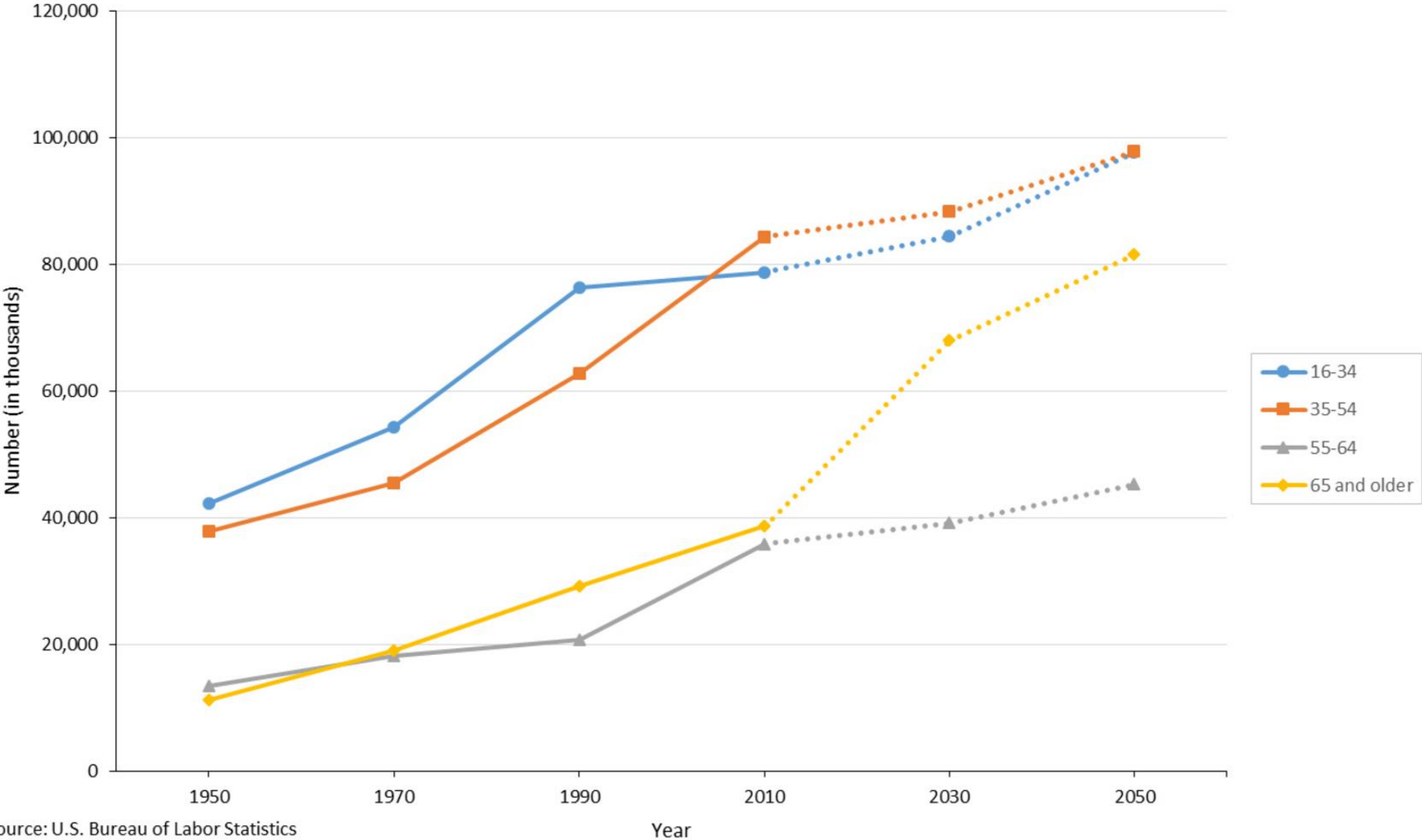
Labor force participation rates in 1992, 2002, 2012, and projected 2022, by age



Source: U.S. Bureau of Labor Statistics.

Growth of Aging Workforce

U.S. Civilian noninstitutional population by age group, 1950-2010 and projected 2030-2050



Source: U.S. Bureau of Labor Statistics

Uncertainties of Retirement Waves

U.S. Nonretirees' Expected Retirement Age

At what age do you expect to retire?

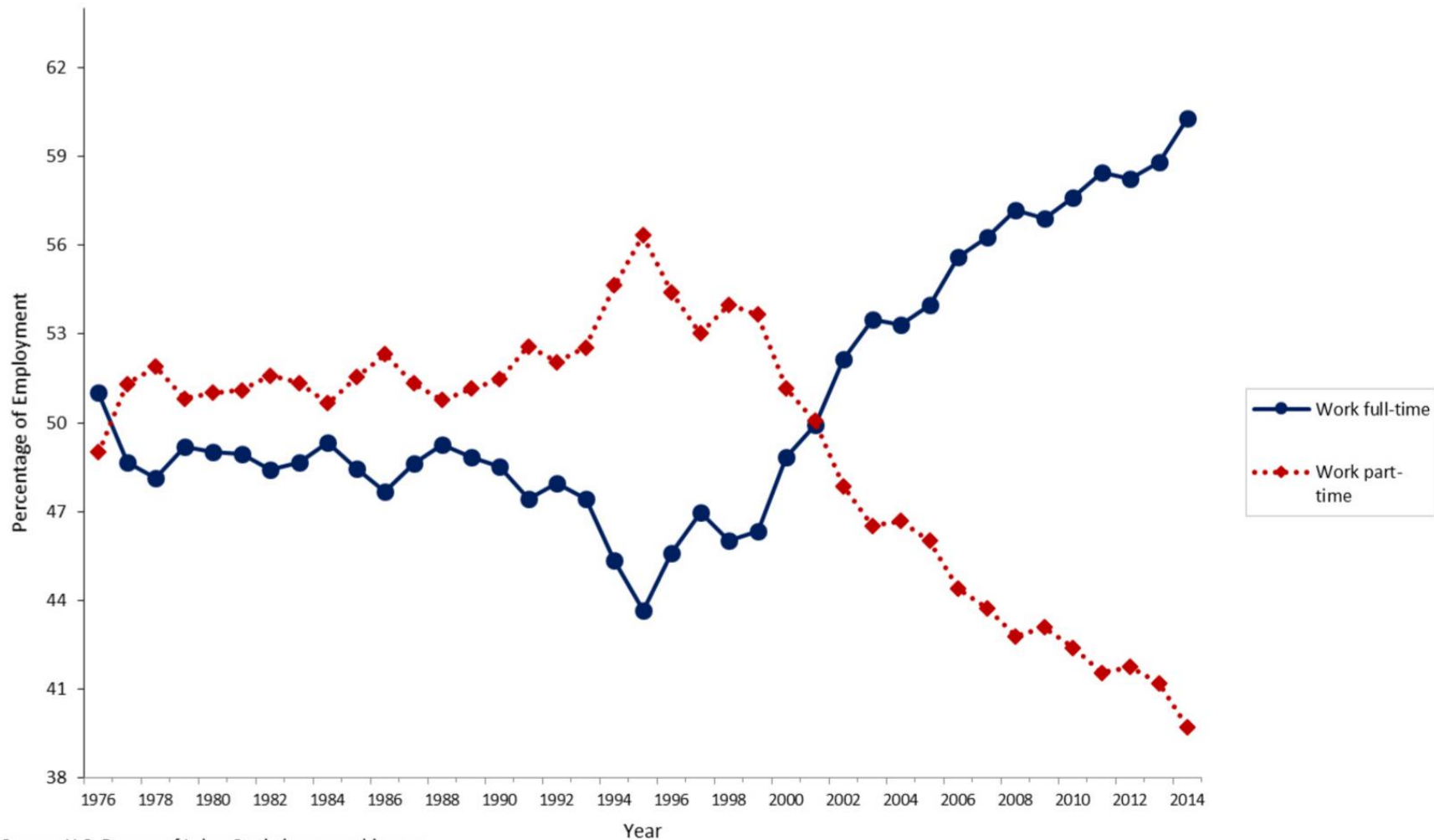
	U.S. nonretirees
	%
Will retire before age 62	23
Will retire between ages 62 and 67	38
Will retire at age 68 or older	31
Unsure	8

GALLUP, APRIL 6-10, 2016

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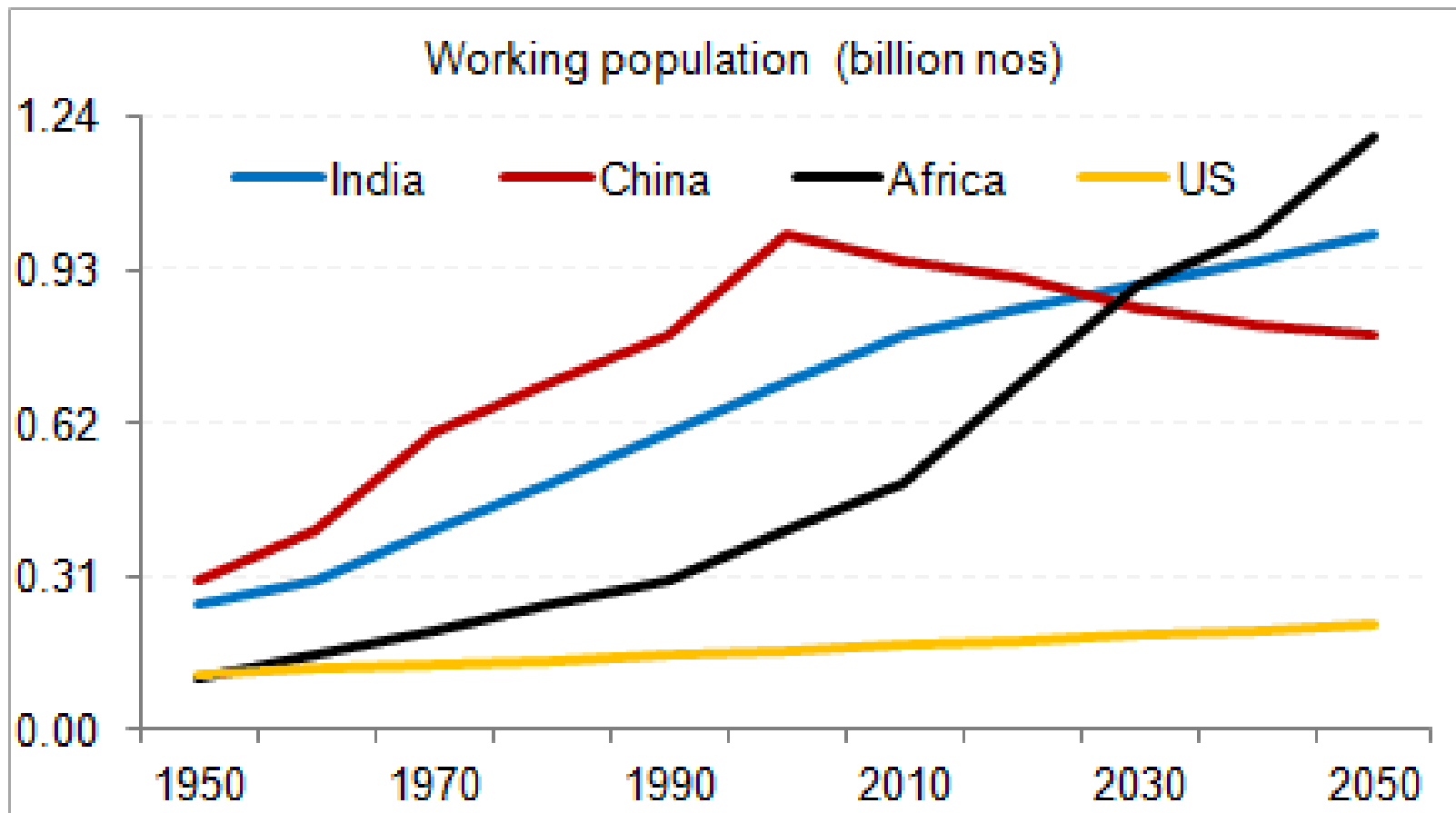
Uncertainties of Full-time, Part-time vs Gig

Workers 65 and over by work schedule, 1976-2014



Source: U.S. Bureau of Labor Statistics; www.bls.gov

Will Companies Seek Out Demographic Dividends?

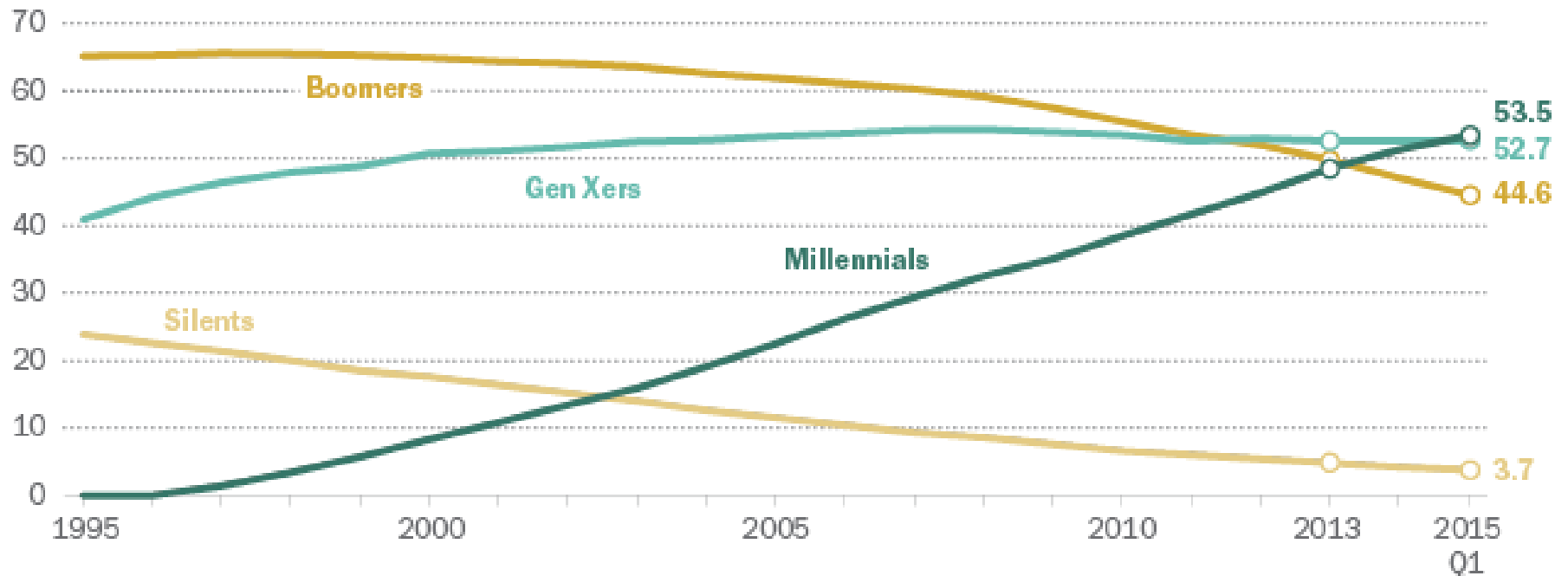


2020-2030

Big Story #2: Millennials Grow up

U.S. Labor Force by Generation, 1995-2015

In millions



Note: Annual averages plotted 1995-2014. For 2015 the first quarter average of 2015 is shown. Due to data limitations, Silent generation is overestimated from 2008-2015.

Source: Pew Research Center tabulations of monthly 1995-2015 Current Population Surveys, Integrated Public Use Microdata Series (IPUMS)

Workforce Implications of Aging Boomers + Millennials Rising:

Opportunities?

Risks ?



HR Implications with Aging Boomers + Millennials Rising:

Opportunities

- Leveraging Loyalty and Experience
- Restructure org chart
- Attract talent to drive innovation
- Rethink place of work
(e.g. reduce footprint; work-from-home; co-working)
- Retain Boomer Experience
- Capture + Transfer Knowledge
- Two-way + Reverse Mentoring
- Gig Economy (Boomers opportunity?)
- Capture upside of Universal Workspace Design with focus on wellness-driven productivity

Risks

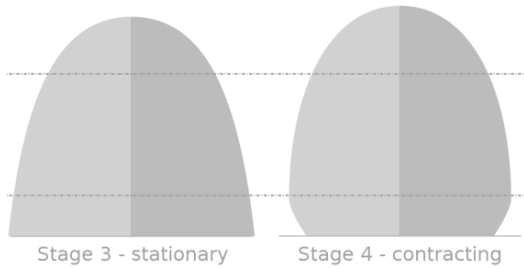
- Losses from Experience- and Relationship-driven Productivity
- Old way not aligned to Needed Changes
- Workers Compensation
- Discrimination Issues
- Delayed retirement slows innovation
- Realistic benefits + compensation
(Limits of Phase Retirement)



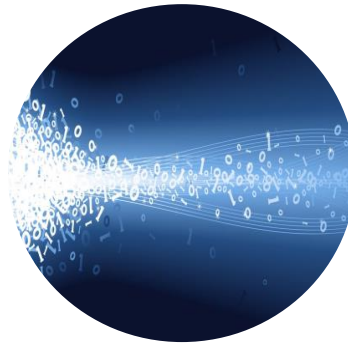
What assumptions about our Aging and Millennial workforce must we push across the organization?

What assumptions must we challenge?

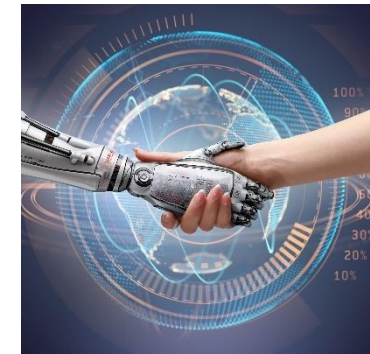




*Demographics
+ Workforce*

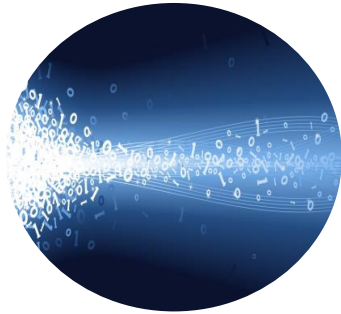


***Data-driven Workforce:
Training
+ Performance***



***AI-Driven Service
+ Knowledge Work***

**The Creepy vs
Compelling Line of...**

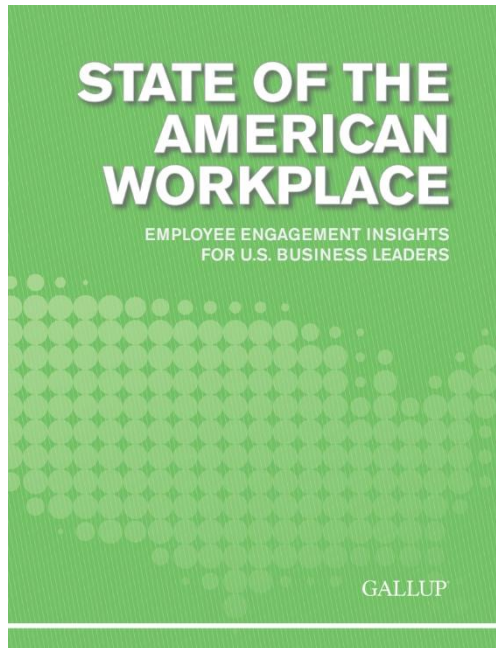


**Data-driven
Workplace**

**Learning +
Performance Analytics**

**Working with A.I.
Intelligent Assistants**

How might the emphasis on a culture of learning + performance support improve engagement?



70% Workers Disengaged at work...

....disengagement costing the U.S. an estimated \$450 to \$550 billion annually.

Where do workers apply what we learn in training?



Course



Real World

Our job is not to build training. It is to improve performance

Training Culture

- Put *inside* person
- Instructor-focused
- Event-based (Class)
- Centralized (Formal)
- Linear (Sequential)
- Delivery (Output)

Performance Review

- Purpose: Assess
- Weakness-focused
- Periodic (Annual)

Learning Culture

- *Grows out* of personal effort
- Learner-focused
- Continual / On-demand (*Chunks*)
- Decentralized (Hybrid)
- Non-linear (Contextual)
- Results (Outcomes/Impact)

Performance Support

- Purpose: Support (Perform)
- Growth-focused
- Continual / On-demand (*Chunks*)

Emerging L&D (Performance Support) Strategies

Micro Content



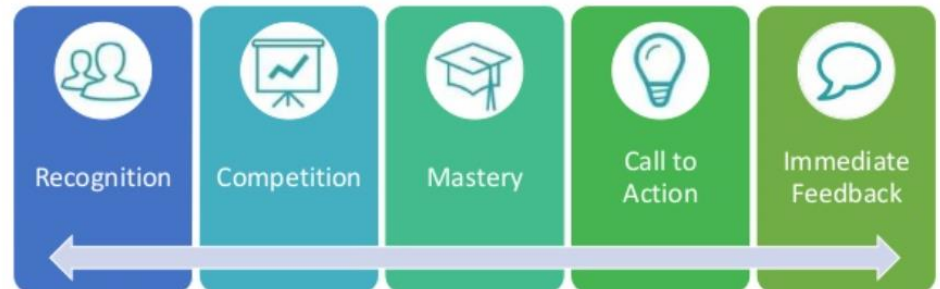
7 minute modules
vs
Two hour Training
Sessions

Gamification (Behavioral)



Gamification?

Using game elements to drive behavior, engagement:
communicate, feedback and coach to performance



Emerging L&D (Performance Support) Strategies

Flip the Training Classroom



MOOCs based Content

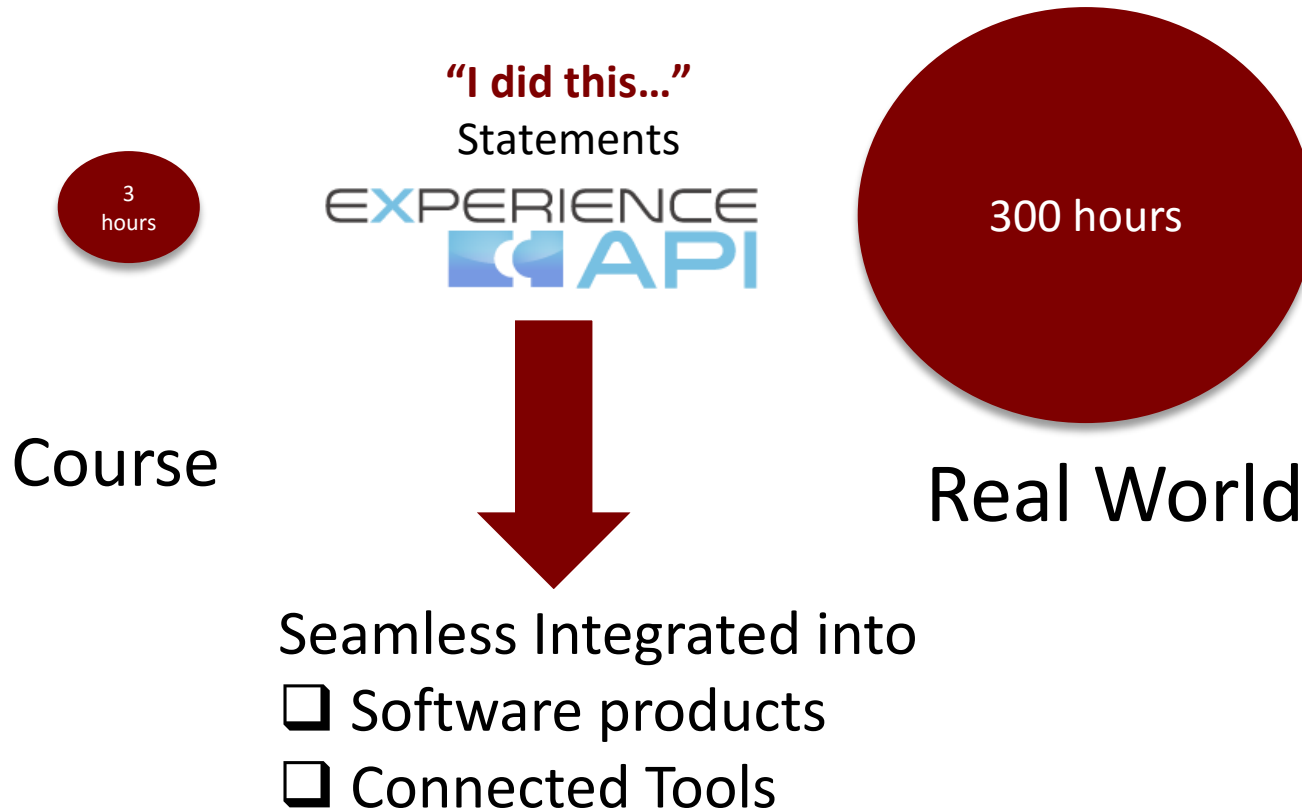
coursera

U
UDACITY

edX

Early Days of Performance Analytics

What if we could make connections between training to performance?



xAPI Performance Analytics driving Engagement



“I did this...” Statements

- Simone ***watched*** a Youtube video on Aging populations
- Simone ***completed*** a MOOC class on designing homes for aging populations
- Simone ***funded*** a Kickstarter project on home robotic assistant for seniors
- Simone ***followed*** MIT Aging Labs director Tom Couglin on LinkedIn and Twitter
- Simone ***attended*** an MIT workshop on Aging in Place
- Simone ***wore*** an ‘aging suit’ while visiting the MIT Aging Lab
- Simone was ***mentored*** by Russell Jones, Aging Service Design Expert
- Simone ***wrote a blog post*** on aging in place & energy sector for APPA
- Simone ***wrote*** a proposal on new aging-in-place energy product-service concepts
- Simone ***presented*** a business plan to Board on business model
- Simone ***promoted*** to Head of Aging of Place solutions

Field Experiences
I did this...

EXPERIENCE
 API





Showroom experiences
I did this...

Situational Awareness View of Managers

EXPERIENCE
API

Experience Streams

<Actor, Verb, Object>

“I did this”

Watershed LRS

Learning Record Store (LRS)

Individual Control over
Access to Learning Data

**Interventions: Self-directed Learning,
Performance Support, Training**

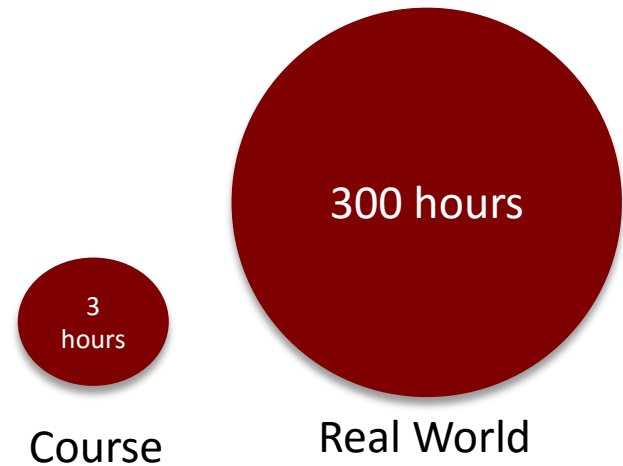
What we might do with xAPI Performance Analytics...



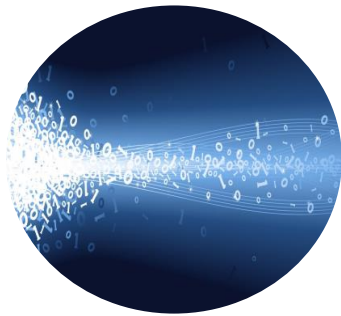
Managers + Employees

- Create a culture of continual learning
- Anticipate team capacity for addressing situational opportunities or challenges
- Reveal just-in-time opportunities to provide Performance Support
- Make connections between training + performance support to business outcomes

How might we shift
organizational culture
from training to
performance support?



The Creepy vs Compelling Line of...



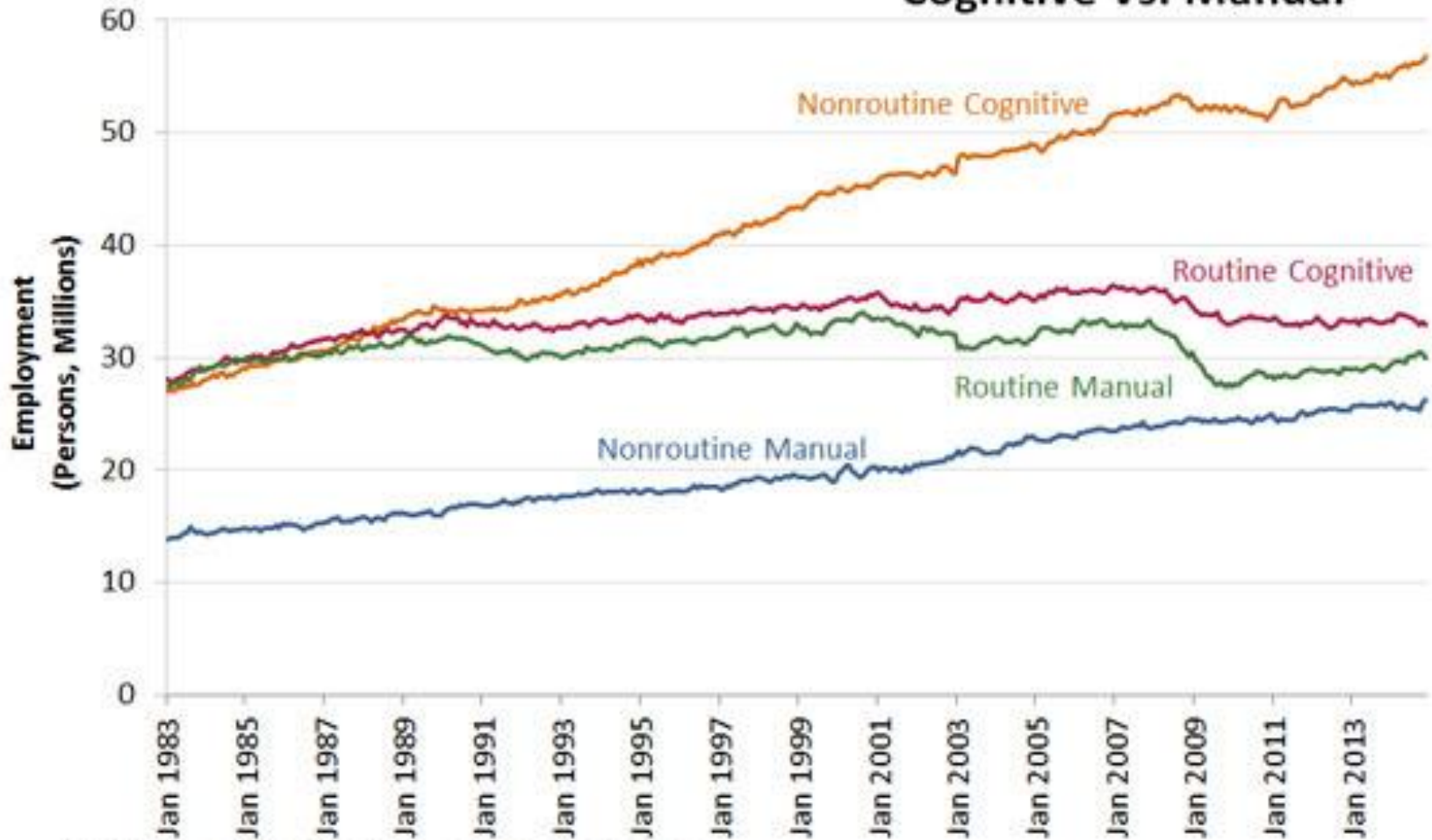
**Data-driven
Workplace**

Learning +
Performance Analytics

**Working with A.I.
Intelligent Assistants**

Cognitive Jobs, Meet Cognitive Software

Jobs: Routine Vs. Nonroutine, Cognitive Vs. Manual



SOURCE: Current Population Survey and author's calculations.

Cognitive Systems

Race to Build Intelligent Assistants



Hi, I'm Cortana.



IBM Watson



MindMeld

ARTIFICIAL
SOLUTIONS

amazon
echo

next IT

KASIST@

“...it is clear that the most powerful technology companies are investing immense resources to make virtual intelligent assistants ubiquitous before the end of the decade”

- Daniel Nadler, CEO of Kensho

IBM's Watson – Game Show in 2011



IBM Watson Proof of Concept 2012-14



Healthcare

Helping doctors identify treatment options



Finance

Helping planners recommend better investments



Retail

Helping retailers transform customer relationships



Public Sector

Helping government help its citizens



Accelerated Research

Helping researchers find info faster



Home
What is Watson?
Implement Watson

Build with Watson
The Watson Ecosystem
Mobile Developer Challenge

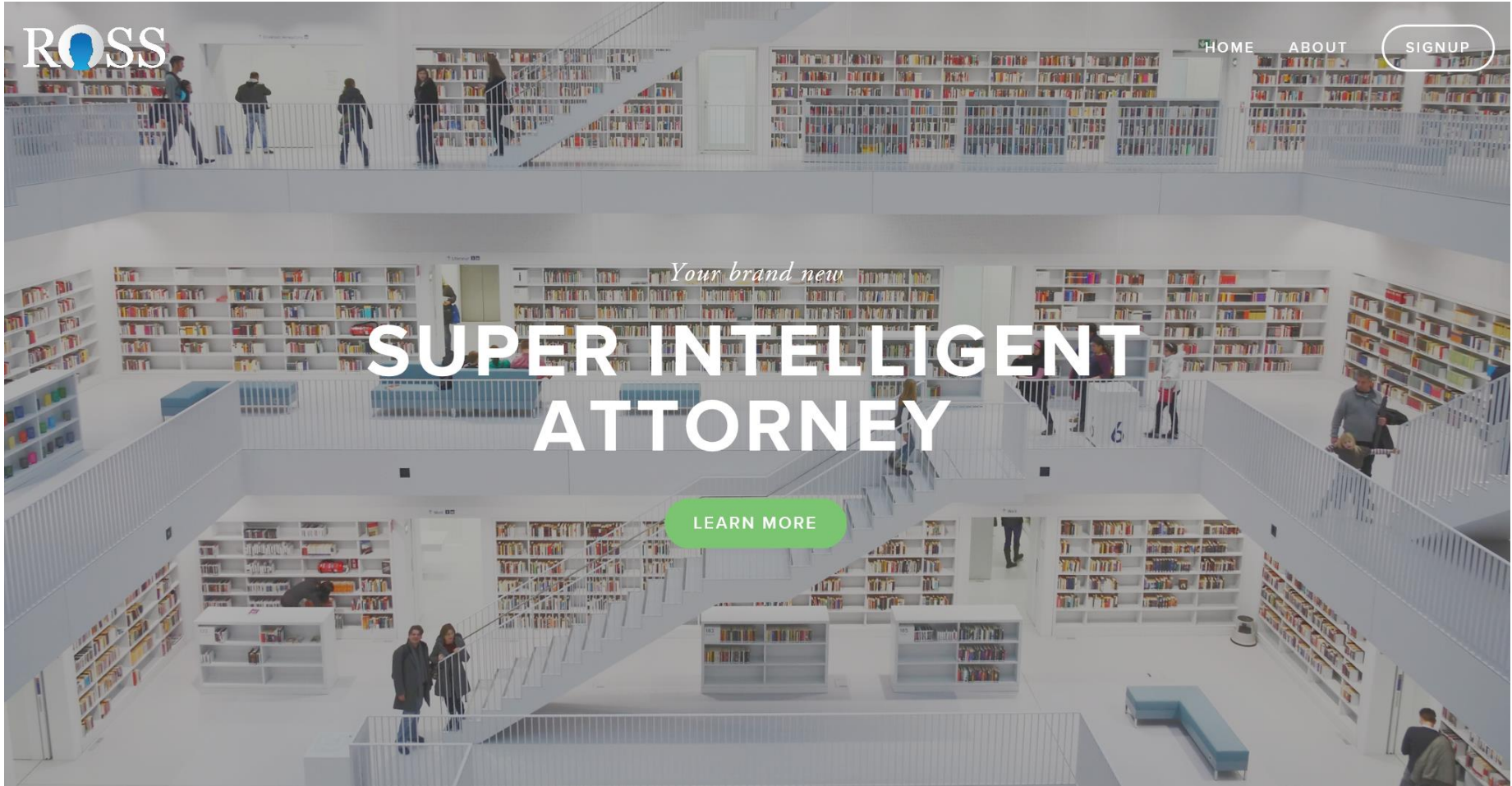
About Us
Our Headquarters
Our Team
Careers
Academic Partnerships



Email IBM
Call 1-877-426-3774
Priority code: 109HF03W
Tweet us your questions
Like us



IBM Watson in *the Cloud* 2015



ROSS

HOME ABOUT SIGNUP

Your brand new

SUPER INTELLIGENT ATTORNEY

LEARN MORE

The image shows a modern, multi-level library with white bookshelves and people walking on different levels. The text 'ROSS' is in the top left, and 'HOME ABOUT SIGNUP' is in the top right. The main headline is 'SUPER INTELLIGENT ATTORNEY' with 'Your brand new' above it. A green button with 'LEARN MORE' is in the center.

Decision Support via:

- Grid Data
- Weather Data
- Demand Data
- Workforce Data
- Economic Activity Data
- Transportation Data
- Social Web Data
- Connected Device Data



How might HR anticipate and lead culture change in a world where humans + learning machines drive collaboration, innovation and productivity?

- Hiring Strategy
- L&D for Age of Augmented Work
- Rethinking the Role of Managers
- Ensuring Data + Privacy Controls
- Preserving Pride in Work
- Best Arena for Proof of Concept and Pilot

Data + AI Driven Workplace

Ready for Performance Support + Intelligent Assistants?

Opportunities?

Risks ?



HR Implications of data-driven workplace:

Opportunities

- Improve employee engagement
- Improve customer experiences
- Evolve role of manager
- Create learning culture
- Leverage data-driven decision making

Risks

- Inability to leverage advanced technology to reduce costs
- Inability to improve quality of service
- Inability to train and support performance
- Pushback to perception of *measuring everything*
- Automation erodes trust and connectivity to employees and customers





*Changes Ahead
More or Less?*

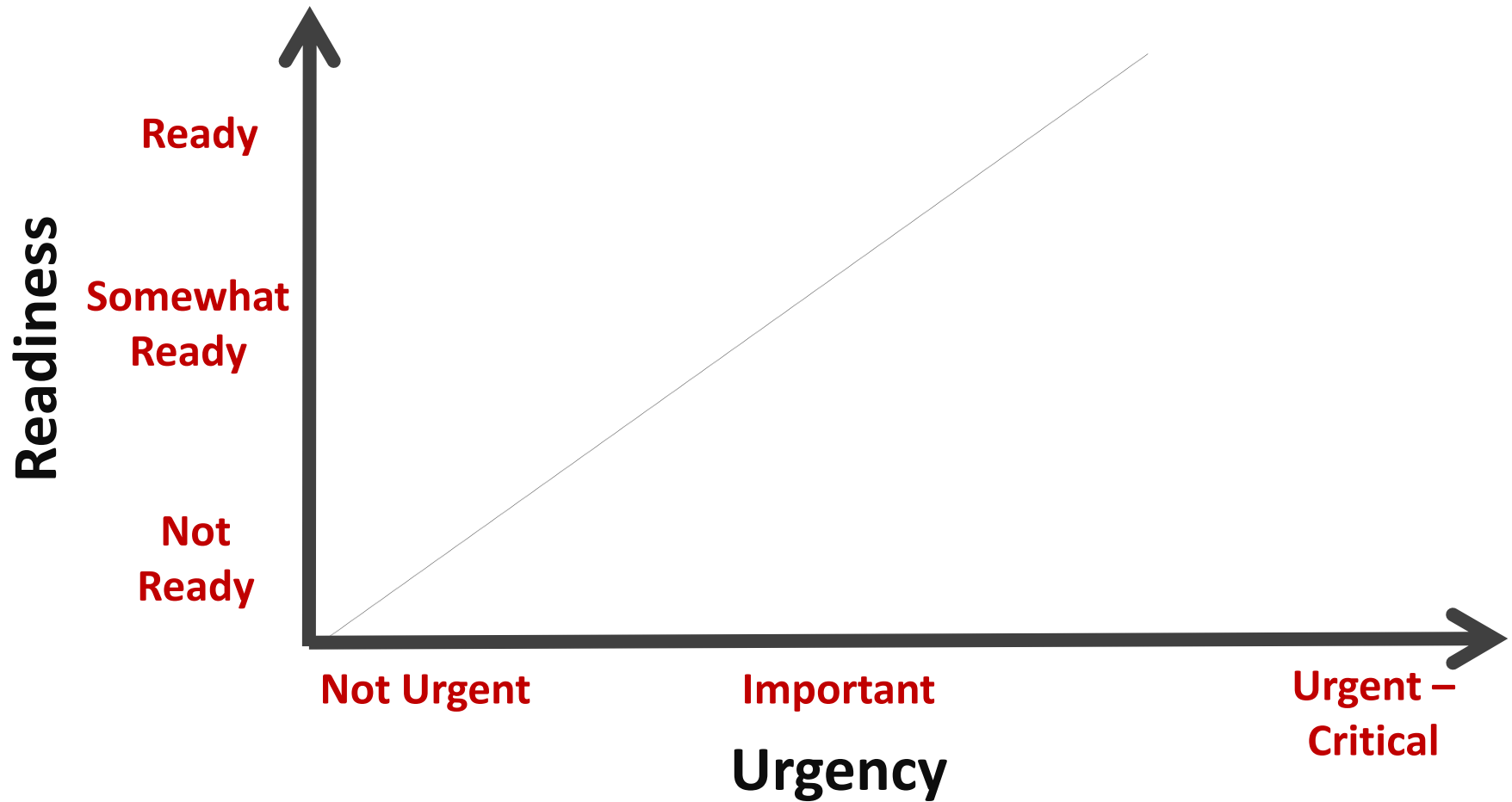


*Workforce
Dynamics*



Steps to Explore

Survey Leadership on Emerging Trends



Utility Sector Careers

Skill Sets + Mindsets for the Future



“I” Shaped

Success via Specialization



“T” Shaped

Success via Many Paths

Foundations for an I-shaped Approach to Utility Career

Depth of Subject Expertise

Encouraging Depth of Skills that...

- Are in demand
- Looks great on a resume
- Industry or domain-specific
- Shows discipline + commitment

Utility Careers Prepared for Uncertainty + Change

Broad set of Skill Sets & Mindsets

**Depth of Subject
Expertise**

Encouraging Breadth of Skills that...

- Appeal to organizations hiring *learners*
- Embraces curiosity amidst uncertainty
- Shows desire to integrate solutions

What might our list of T-Shaped Skill Sets + Mindsets look like for a new hire in 2020?

Broad set of Skill Sets & Mindsets

Depth of Subject Expertise

- Service/Experience Design
- Data Science
- Design Thinking
- Visual Communication
- Ethnography
- New Digital Literacies
(*e.g. Working with A.I.*)
- Leadership
- Values / Ethics
- Communication (Storytelling)
- Entrepreneurship
- Behavioral Economics
- Sociology / Demographics
- Design-Manufacturing

New idea to explore with colleagues?





Thank You!

Learn more:

garrygolden.com/EC2016

garrygolden@gmail.com

Two Rs

2016
ELECTRICITIES OF NC
**ANNUAL
CONFERENCE**
Aug. 11-13, Concord, NC



Appendix

Additional Resources

- 1. ExperienceAPI (xAPI)***
- 2. Graph Analytics***
- 3. Learning Resources***

1) ExperienceAPI (xAPI) + Learning Record Store (LRS)

ExperienceAPI is specification that enables people to capture enriching “I did X” activity statements (e.g. courses taken, people followed on Twitter, certifications earned, jobs taken) — and present them as an Experience Graph.

xAPI statements are captured in a Learning Record Store (LRS). xAPI is in early phase of development with pilot programs in L&D units.



“I did this...”
Statements

Vendors: Learning Record Store (LRS)

- Watershed LRS**
- Wax Saltbox LRS**
- Learning Locker LRS**
- Yet Analytics**

Garry's Tags:

<https://www.diigo.com/user/garrygolden/xapi> (ExperienceAPI)

<https://www.diigo.com/user/garrygolden/LRS> (Learning Record Store)

Example of xAPI Statements

Connecting the Dots between Performance Analytics, Engagement + Outcomes



“I did this...”

Statements

- Liz ***read*** an article on aging populations
- Liz ***watched*** Youtube video on Aging Boomers
- Liz ***spoke with*** Active Aging Institute
- Liz ***attended*** and MIT workshop on Aging in Place
- Liz ***completed*** a MOOC class on Universal Design
- Liz ***wore*** an ‘aging suit’ at MIT Aging Lab
- Liz ***drafted*** new aging in place product line
- Liz ***presented*** to John on business model
- Liz ***wrote a blog post*** on utility solutions for aging populations
- Liz ***launched*** new product line
- Liz ***promoted*** head of Aging Solutions

Situational Awareness View of Managers



Experience Streams

<Actor, Verb, Object>

"I did this"



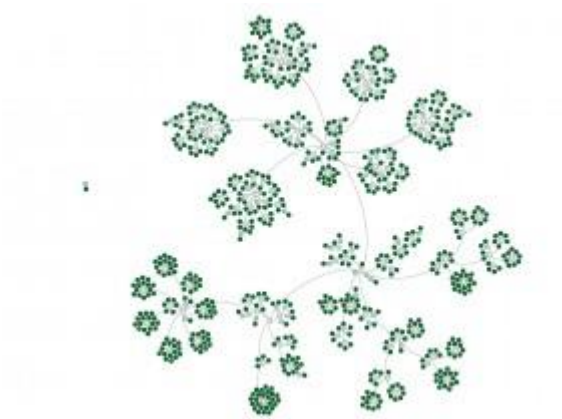
Learning Record Store (LRS)

- Individual Control over Access to Learning Data

**Interventions: Self-directed Learning,
Performance Support, Training**

xAPI Goes Mainstream by 2020

**Imagine workplace where
people control their own
*Learning (Experience) Graph***



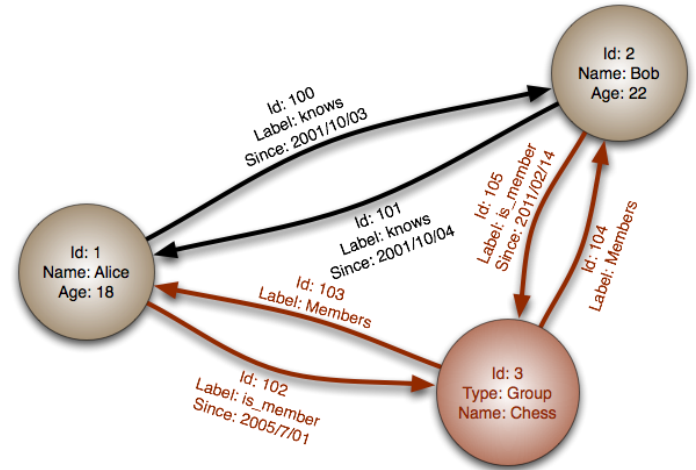
Learning Record Store (LRS)

- Individual Control over Access to Learning Data
- Most Valued Asset for Organization and/or Employee
- Starting point for Training + Performance Support
- Forget about 'the resume'
- Help Managers see capacity for completing new tasks

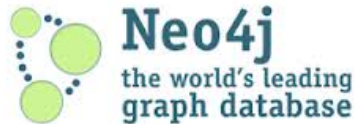
2) Graph Analytics + Connected Data

Graph Databases consist of 'entities' (people, courses, skills, et al) and 'relationships' between entities. Graph analytics can help us understand connections, relationships, influencers and pathways.

Graph analytics is the foundation of Google (Search Graph), Facebook (Social Graph), and LinkedIn (Professional Graph/Economic Graph).



Vendors



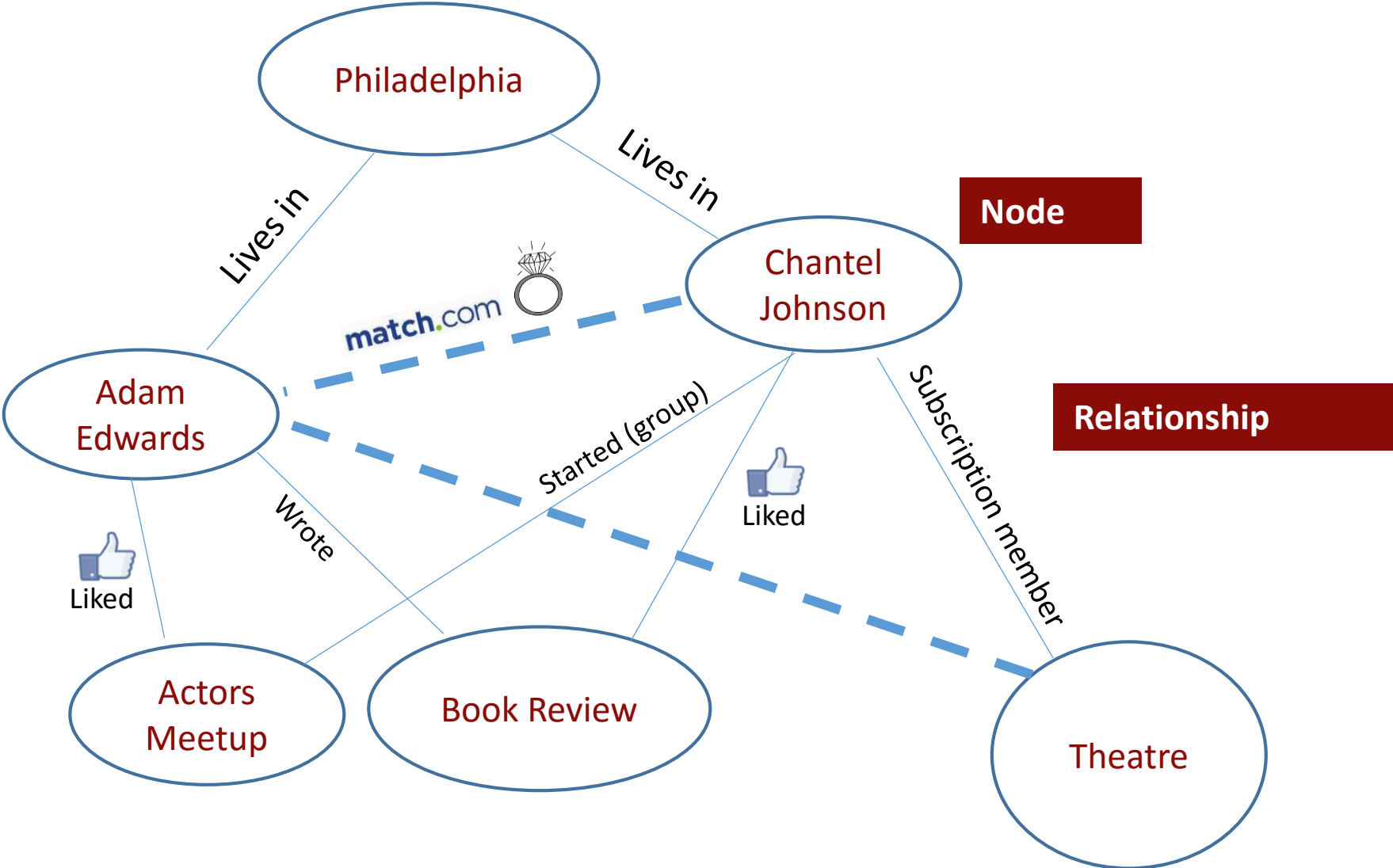
Garry's Tags:

<https://www.diigo.com/user/garrygolden/graph> (Graph)

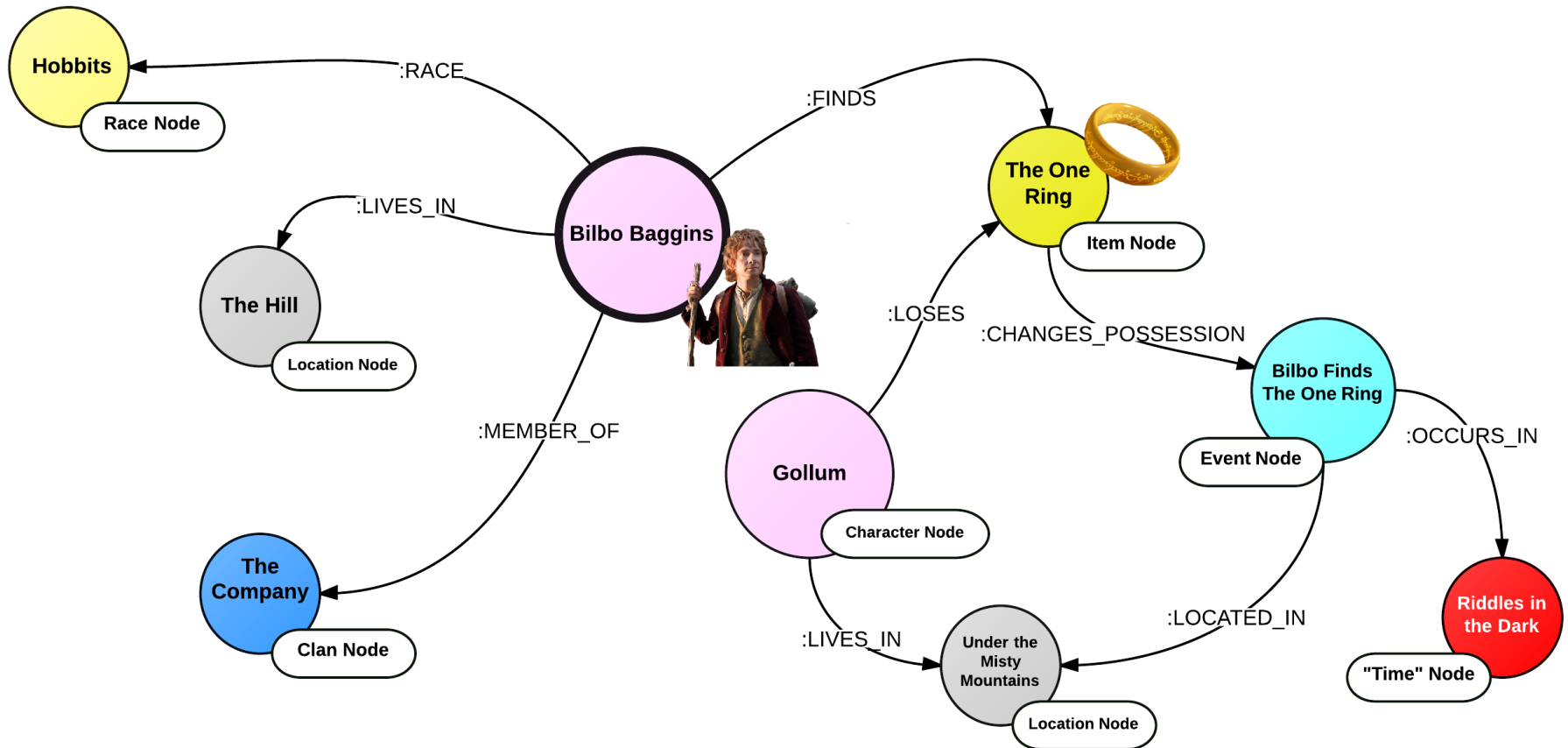
<https://www.diigo.com/user/garrygolden/graph%20HR> (Graph + HR)

Watch Neo4j HR demo <https://www.youtube.com/watch?v=aMteRRultWE>

Graph Database = Understanding Relationships + Connections

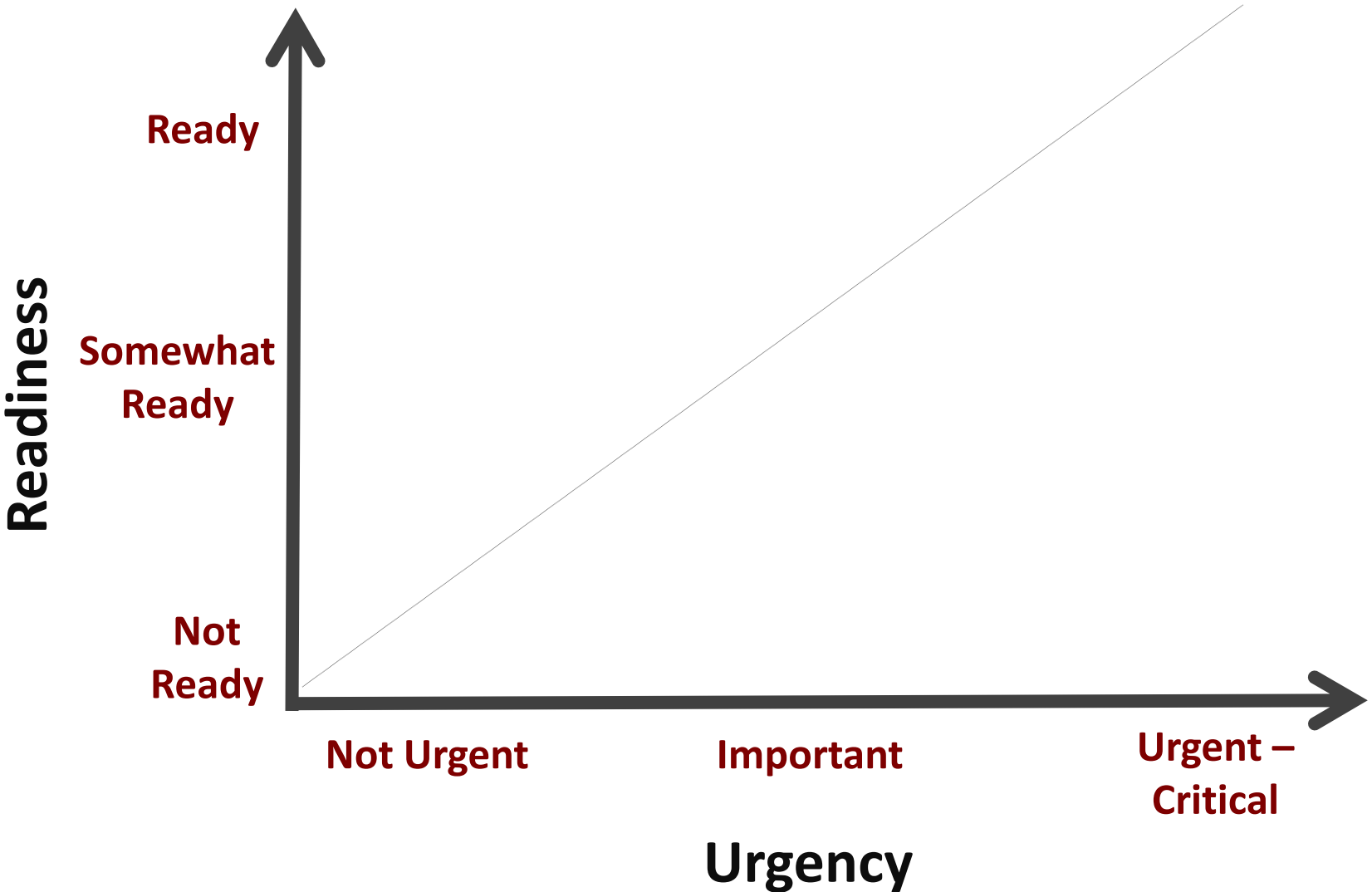


Imagine an Employee Journey Captured in Graph Databases: Understanding Aggregate Context from On-boarding to L&D



Pulse Check

Emerging Trends vs Organizational Appetite



Tell Stories + Take Mental Leaps (Part 1): Describe the Four Futures for HR, Business Units + Organization

?

**Continued
Growth**

?

**Disciplined
- Constrained**

?

Transformed

?

**Decline
- Collapse**

In 2026...Transformed Scenario: **NAME**

Conditions for Decline-Collapse Scenario:

↔ Economy + Business Climate – (Capture Sentiment)

One sentence description using (-/+)

News Headline: _____

↓ Politics – (Capture Sentiment)

One sentence description using (-/+)

News Headline: _____

↑ Social Norms – (Capture Sentiment)

One sentence description using (-/+)

News Headline: _____

↑ Organizational Culture – (Capture Sentiment)

One sentence description using (-/+)

News Headline: _____

↔ Human Resources – (Capture Sentiment)

One sentence description using (-/+)

News Headline: _____

Tell Stories + Take Mental Leaps (Part 2): Trend Card based Scenarios

Session: Trend Card Poker!

Write a 'day in the life' story about the future and how it might change HR or the organization

Designing for Behavior Change

- In 2016 wearable device shipments are expected to surpass \$140 million and \$30 billion in revenue.
- Companies are integrating the design of user experiences, real-time analytics and the psychology of behavior change to influence or shape behavior to guide people to desired outcomes with their products and services.
- The Fog Behavior Model (FBM) highlights three elements to affect behavior: Motivation, Ability, and Trigger. Behavior design strategies include reduction, tunneling, tailoring, suggestions, self-monitoring, surveillance, and repetitive conditioning.
- Buzzwords to Watch: Gamification; Quantified Self Movement; Neuromarketing; Persuasive Technology; Wearables

Opportunity Examples:

- Design for Incentives, Rewards + Desired Outcomes**
 - Bayer's Digits is a glucose monitoring program linked to mobile gaming platform Nintendo DS. Played correctly with diabetes are rewarded for testing blood levels.
 - John Hancock policyholders who wear FitBit devices get discounts of up to 15% on their life insurance policy.
 - Progressive's Snapshot and State Farm's In-Drive both use in-vehicle devices to track and transmit information on driving habits in return for lower insurance rates.
 - KFC repackaged its 'To Go' food containers to fit automobile copholders to reduce pain point of drive experience.
 - Moven and Simple allow bank users to set saving goals and then receive real-time spending recommendations to guide people to desired savings outcomes.
 - HelloWallet is an application and program designed to help employees track behavior and build financial habits to secure financial wellness.
 - Utilites partner with Ambient Devices to deliver based on objects that glow green, red or yellow to indicate real-time energy use against monthly goals.

Mindfulness + Mental Health

- Mindfulness is a practice aimed at developing a sense of non-judgemental focus and active awareness to the present. The practice has shown scientifically variable benefits to health, productivity and collaboration.
- World Health Organization estimates stress costs American businesses \$300 billion annually.
- International business school INSEAD and Singapore Management University found employees who practice mindfulness have less stress, are more open to feedback and are better at making decisions, seeing ethical challenges, and generating insights.
- Mindfulness programs have been implemented at Aetna Bank of America, Google, General Mills, Intel and Keurig Green Mountain.

Opportunity Examples:

- Show Connections to Decision making**
 - INSEAD and The Wharton School of the University of Pennsylvania have demonstrated that mindful employees to better avoid negative decisions with 'sunk costs' where organizations could be money at worsening problems.
- Quantify and Show Bottom Line Connections**
 - Aetna estimates savings of \$3,000 per year for an employee who took mindfulness training, and average a 28% reduction in employees' sick leave improvement in sleep quality, and a 15% improvement in sleep quality.
- The Benefits of Focusing and Situations**
 - Mindfulness practice can help reduce employee distraction and a culture of short attention spans. The average employee visits Facebook 2.5 times per hour, and looks at their phone 74 times.
 - Keurig Green Mountain has developed a strategy for warehouse distribution with reduction in workplace injuries.

Millennials Grow Up

By 2020, the global population of Millennials (Gen Y) is expected to reach 2.56 billion.

- Millennials are typically defined as those born after 1980 and before the year 2000. They will soon become the majority adult population in the US.
- This cohort makes up 25% of the global population; 37% of Millennials will live in India and China.
- Millennials will gain control over consumer and discretionary spending as they shift into household formation years (starting families, buying homes, etc.).
- A Visa survey estimates Millennials will earn more than US \$3.2 trillion annually by 2018—surpassing earnings of plateauing Baby Boomer workforce.

Opportunity Examples:

- Aligning with Values + Personal Growth:**
 - Millennials connect with brands that support social values similar to their own such as diversity and environmental and social responsibility.
 - A PwC survey found 57% of Millennials agreed: "access to 'sharing' and 'on-demand' economy, using services that allow individuals to borrow or re-use things like cars (Uber), rooms (Airbnb) or clothes (ThreadUp; RentRunway); Millennials seek out development opportunities. A Deloitte survey found 28% of Millennials feel their current organization is making full use of their skills. More than 53% aspire to become the leader or senior most executive within their current organization.
- Connecting via Big & Small Social Media:**
 - Millennials will continue to use social media as they grow up, join the workforce, and start families of their own. The advertising sensation of the 'Old Spice Guy' campaign was successful largely because of a social media reinforcement strategy that allowed the Millennial audience to push the brand message among friends.
 - Many brands see the upside of niche social sites (e.g. 'Mommyblogs', Beauty Vloggers) that appear more peer-based and authentic to Millennial audiences.

Fictional Future Events:

- New Laws + Regulations
- New Competitors
- New Internal Rules
- New Leadership
- Disruptive Wildcards

Direction A
Scenario Name

+10

+5

+1

Today

+1

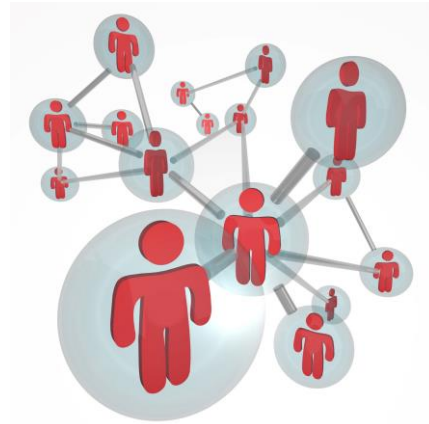
+5

+10



Start a Signals Team:

Step One - Follow Communities Who Imagine Radical Change



Graph Analytics
Connected Data



Neuro Science
+ Behavior Change

Learning & Development
xAPI "I did this..."

LOTS of Uncertainties + Unknowns!

Don't hate on Garry

Creepy and Compelling ...

- Not perfect but better than today
- Learning + Performance Analytics is desired asset of employees and organizations
- Make performance analytics about 'professional development' not 'disciplinary action'
- Create Aggregate Profiles of Learning Pathways Across Orgs