WORK IN THE DIGITAL ERA:

CHOOSING A FUTURE

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This presentation is based in part on:
Where will Work Come from in the Era of the Cloud and Big Data
John Zysman and Martin Kenney  January 2015
Utopia / Dystopia: Pioneers and Skeptics

- The Pioneers: Creating a Utopia
  - Noyce, Jobs, Sanders, Sporck (Gates in Seattle)

- Skeptics: Generating a Dystopia
  - Vonnegut (Player Piano)
How Revolutionary is the Digital Revolution?

WHAT NEW ECONOMY AND SOCIETY WILL WE SHAPE WITH OUR DIGITAL TOOLS ?????

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Takeaways

• Technology does not dictate:
  – Consequences depend on deployment, how it is used
Takeaways

• Technology does not dictate:

• Deployment strategies and work organization:
  – Are workers asset to be promoted or simply cost to be contained:
Takeaways

• Technology does not dictate:

• Deployment strategies organization matter:

• The People Factor: Answer to The Algorithmic dilemma:
  – The Routine can be automated
  – Automation can be copied
  – Sustained innovation requires human imagination and implementation
Takeaways

• Technology does not dictate:
• Deployment strategies and work:
• The algorithmic dilemma: Anything routine
• Deployment outcomes rest on policy, as well as corporate strategy:
  – Regulating Protections: Workers, Communities, Clients
  – Social policy: Markets, Employment, Citizenship
  – Competition Policy: Who gains and how do we compete
Technology and Work in the Digital Economy

• The Algorithmic Revolution:
  – The services transformation and the internet

• The Cloud Acceleration/ The Platform Era:
  – Algorithms live in the Cloud as Platforms

Where Will Work Come from in A Digital Age John Zysman and Martin Kenney
http://www.brie.berkeley.edu/
I. The Algorithmic Revolution

• Aspects of activities can be converted into:
  – Formalizable, codifiable, processes
  – Often with clearly defined rules for their execution
  – These are computable algorithms

• Software layer over everything: Evident throughout the economy

Services with Everything: The Digital Transformation of Services

The Algorithmic Revolution: The 4th Services Transformation: Communications of the ACM, Vol. 49 No. 7,
Algorithms: Software Layer Across Production

• Control Systems for Manufacturing
• ICT tools applied to services/markets/social activities
  – Services with Everything
    • Automated
    • Augmented Human Services
    • Hybrid

Services with Everything: The Digital Transformation of Services
The Algorithmic/Services Dilemma

• The Routine can be automated
• Automation can be copied
• Sustained innovation requires human imagination and implementation:
  – The high road adaptation to the algorithmic revolution is effectively using People
II. Algorithms Go to Live in the Cloud: The Era of the Platform
Cloud Computing Will Accelerate the Production Transformation

- Architecture (how) not just geography (where)
- The IT platform in an era of “computing resource” abundance
The Cloud Computing “Stack”

- **Software as a Service**
  - **Delivery model**

- **Platform as a Service**
  - **Development model**

- **Infrastructure as a Service**
  - **Management model**

http://www.adamalthus.com/blog/2013/03/01/a-short-guide-for-the-perplexed/
What is Distinct about Cloud?
The Magic of Abstraction

• Layers of abstraction enable loosely-coupled architectures
  – Loose-coupling enables elastic scaling and resource pooling
  – Program state, data and logic decoupled from each other
  – Applications decoupled from Infrastructure
Cloud Computing

• **Delivers:** elastic computing services - data storage, computation and networking - to users at the time, to the location and in the quantity they wish to consume, with costs based only on the resources used.

• **Procure:** only the computing needed

• **Provides:** the illusion of infinite resources on demand

• **Moves:** Computing costs from **CapEx** to **OpEx**
Implications of Cloud Computing: A First Cut

• Users:
  – Radically lowers the cost of access and use
  – Digitally based Tools widely available
    • For SMEs and individuals
  – For larger firms:
    • Time to value will be crucial

• Providers: A competitive offering
  – Scale matters
  – The flavor matters
  – The “rules” of provision matter
  – The Providers are principally American
Algorithms, as Platforms, Go to Live in the Cloud:

- Platform is a computing framework in which a range of activities can be conducted.
  - Platforms are then, can be, sources of new work or methods for reorganizing the existing work

- Platforms Grow on Platforms
Algorithms Go to Live in the Cloud: An Era of Platforms

- Platform for Platforms: Amazon Web Services
- App Stores: Apple/Android
- Globally biddable work: Odesk
- Transforming traditional business:
  - Converting personal consumption goods into investment
    - Uber
    - Airbnb
- Occasional work:
  - Task Rabbit
- Virtual consignment: Ebay
- Finance and independent start up projects
  - Kickstarter
Tool Cost and Availability: Lowered?

• Cloud

• Open source

• Tech Shop model with software layer
And, therefore....

Questions

• How Value is Created?
• Who Captures the Gains?
• What Happens to Work?
Work in the Platform/Digital Age

• We know: Routine will be automated
  – (over time-usually)

• We Don’t know
  – Entirely new products will emerge
    • Services, platform based markets, manufactures
  – Production processes for them
  – Skills and reorganizing existing production

• The balance? To Be Determined
Work in the Digital Era

- We know: Routine will (over time-usually) be automated
- We Don’t know what will emerge

- Consider Internet of Things– Smart Building:
  - Designing; Developing; Maintaining; Building out; Innovating
- Consider 3D printing and Tech Shops: Automation on the classic shop floor, but
  - Lower costs for prototypes
  - Designers become key
Work Outcomes Depend on Deployment

- RFID (radio frequency ID) in retail
  - Denmark v. Walmarts

- Industrie 4.0/ Smart Services Welt
  - German v. US
How is Work Packaged in A Era of Platforms and Algorithms

• How is work “packaged”: How will work be Repackaged?
  – Employment?
  – Contractors?
  – Gigs?

• The “packages” matter-- issues include:
  • Who bears risks and responsibilities
  • Are contractors entrepreneurs or vulnerable gig workers
Technology Deployment strategies influence:

- How many jobs
- What the tasks consist of
- How work is organized
- Labor markets. Serve whose interests organized by whom?
Shaping Outcomes: Policy and Work in the Platform Age

• Protections/regulations
  – Protect the client
  – Protect the workers
  – Protect the community

• Social protections and arrangements
  – Welfare rights tied to employment?
  – Welfare rights tied to citizenship?

• Terms of competition and taxation
Related Materials

Related materials can be found at:

http://www.brie.berkeley.edu/