Course title: Digital Strategy and Action

Cases

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Outline of the presentation

- Motivation and objectives of the research
- Empirical analysis and scope of the analysis
- Highlights from the iREN research
- Policy module
- Platform and their potential impact on employment
- Concluding comments
- Case ABB Finland

Motivation

- Digitalisation as a driver of industrial renewal is in the heart of the economic debate and development in
  - Austria, Finland, Germany and the USA.
- The pace of change also in many traditional industries is now beginning to reflect this ’Moore’s law’.
  - Many incumbent businesses and employees are facing increasing pressure to adapt to this rapid change.
- There is a lot of talk on digitalisation but what really happens right now?
  - Drivers, Barriers to digitalisation
  - Capabilities – applications – impacts of digitalisation

Aims of the research

1. **Increased understanding of the digitalization** as a driver of industrial renewal phenomena
   - Business, research and policy perspectives

2. **In-depth understanding of industrial- and innovation policies** and practices in Austria, Finland, Germany and the U.S.A.
   - What actions are taken to support digitalization and industrial renewal
   - How innovation and industrial policy dimensions have evolved?
     - Aims, target groups, rationale, orientation, policy domains

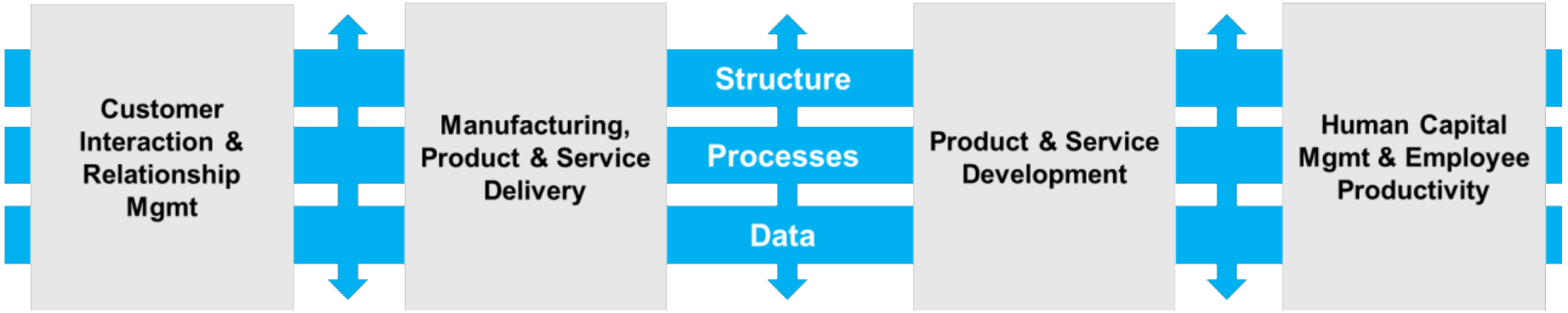
1. **Improved ability to harness digitalization driven industrial renewal**, related skills, technologies and capabilities for the benefit of the society by
   - Businesses, networks, employment
   - Research and knowledge services
   - Policy, actions, instruments

Enpirical data and analysis

- Total of ≈ 200 interviews
  - 50 interviews in each country
    - 25 business executives
    - 25 experts and policy makers
- Partnering organisations carry out interviews in each country
  - Austria, Finland, Germany and USA.
- Extensive analysis of policy documentation
  - On-going process

Scope of the study – firm level

- Digital transformation of the firm, deep transformation



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iREN

Research Highlights

Comparison between USA-Finland-Austria

Drivers for industry renewal through digitalization

- Common drivers in USA, Finland and Austria include
  - **Technology based performance for production efficiency and reducing costs**, as well as **competitiveness**

- But the emphasis differ:
  - In Finland emphasis is on **customer needs**, **value creation for customers** and **forthcoming new business opportunities**
  - In USA emphasis is on tackling **increasing offshore labor costs** and **utilizing additive manufacturing & 3D printing**
  - In Austria emphasis is on **technology performance for production efficiency** and **customer needs**

Challenges in Austria, Finland and the USA

- Challenges faced in all three countries include **costs**, **cyber security**, and **lack of standards and connectivity**

- But the emphasis in USA, Finland and Austria, differ:
  - In Finland, **customers** (e.g. lack of interest or pull for digitalization), **cultural aspects** (resistance to change, and lack of experimentation culture) and **priorities in organizations** were highlighted as challenges
  - USA is facing challenges of implementing the digitalization, such as **workforce skills**, while Finland is facing challenges of deciding **how to begin utilizing digitalization**
  - In Austria, **technology and security**, **cultural issues** and **lack of skills** are the main challenges

Comparison of strengths - digitalisation

USA

- Innovative tolerant culture
- Technology agnostic
- Speed advantage
- Market driven
- Market size
- Technology leaders

Strengths of USA are different from Finland and Austria due to the size of the country and market

Finland

- Small country with potential as “test lab”
- Skilled workforce available (with Nokia background)
- Educational system
- Good technical infrastructure
- Public funding has facilitated collaboration between industry and research actors

Austria

- Location and small size of the country
- The high quality staff
- The high level of education
- A strong industrial base
- Openness to digitalization and new technologies
- Positive public recognition of science and technology

Comparison of weaknesses - digitalisation

USA

- Disorganized convergence
- Short-term perspective
- Technology driven
- Not part of cultural identity
- Lack of common vocabulary
- Competitive not collaborative
- Ability to attract skilled people to manufacturing

Finland

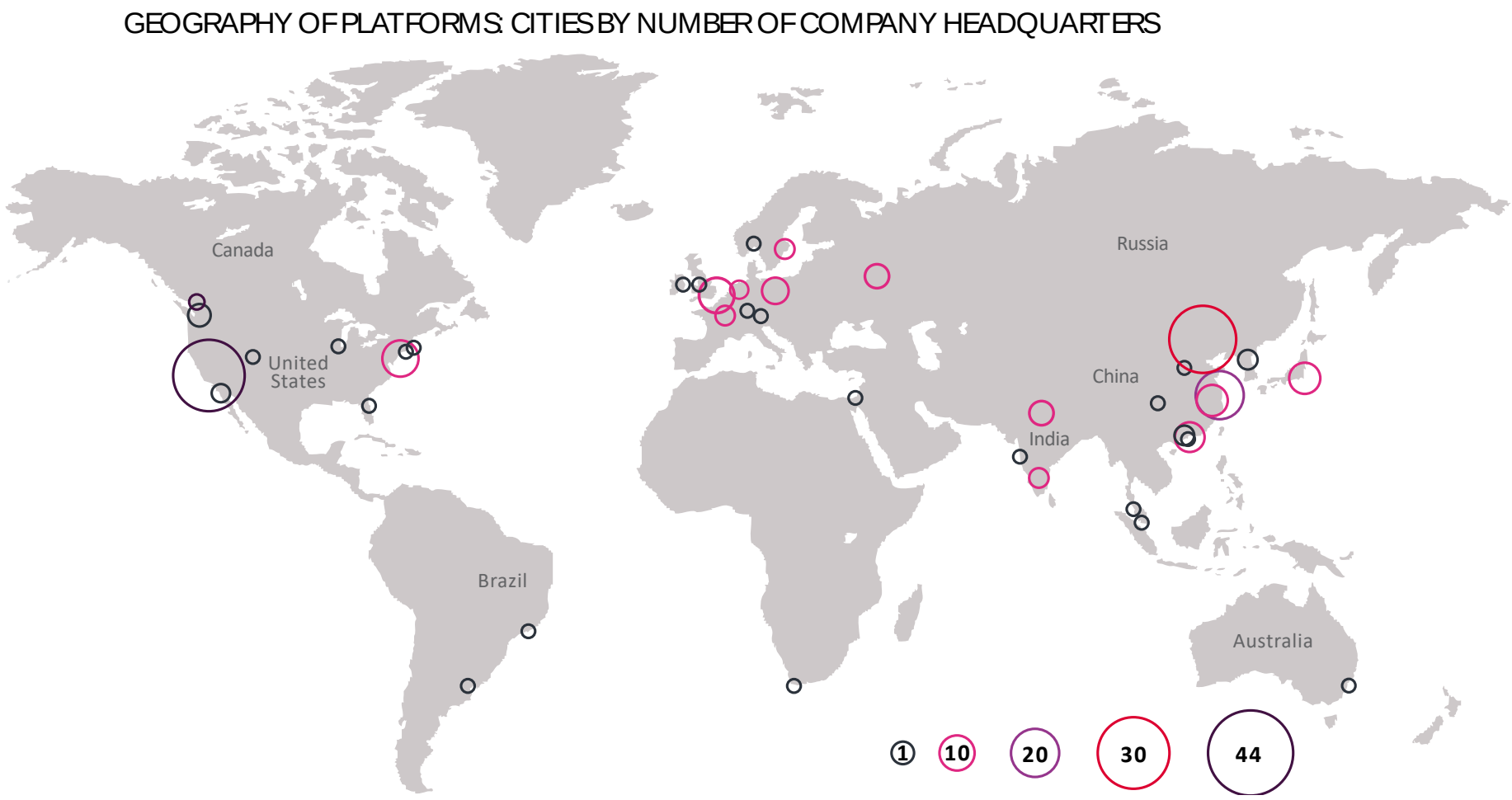
- Public R&D&I funding cuts harm collaboration
- Top management digitalization skills – a generational issue
- Risk avoidance
- Technology drives but marketing is weak
- Lack of service and consumer business related competences

Austria

- Lack of software engineers and IT specialists
- Lacking education, particularly on university level
- Inertia and conservativeness
- Federalism: Everybody is doing their “own thing” at the provincial level.
- Excess of regulation (e.g. market entry difficult, data security)

Policy issues

Geography of platforms



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Geography of platforms

TOP 10 CITIES BY PLATFORM HEADQUARTERS

RANK	HQ CITY 2	Country	Region	No. of Platform Companies
1	San Francisco Bay Area	Country	N. America	44
2	Seattle	US	N. America	4
3	Beijing	US	Asia	30
4	Hangzhou	China	Asia	6
5	Shenzhen	China	Asia	5
6	Tokyo	Japan	Asia	5
7	Walldorf	Germany	Europe	1
8	Cape Town	S. Africa	Africa	1
9	Norwalk	US	N. America	1
10	Shanghai	China	Asia	14

SOURCE: Global Platform Survey, The Center for Global Enterprise, 2015

Platforms and employment

1. Platforms represent
   - New opportunities and threats
2. Will more and more employees become independent contractors?
   - How to secure the rights of the digital age independent contractor?
     - Hybrid form – independent worker – how to secure their rights?
3. Work in its current form is not available for everyone?
     - Will we need to re-define work?
     - Do we need negative taxation income bracket, or guaranteed basic income for everyone?

Future is bright but different

- Global platforms will be key players but that is not the entire picture
- Case **ABB** Finland
  - Substantial investment in robotics and digital technology
    - Highly effective production process as a result of automation
    - As a result, the Finnish electric switch factory is more efficient that the Chinese one
  - Substantial investment in university industry cooperation
    - Each production site is located close to technical university
    - Need to secure supply of skilled labour
    - Need for joint research projects by the university and businesses
  - In 2015, ABB Finland hired one welder, several doctors and large number of Masters and Bachelor level engineers

Agenda

- digitization prospects in developing countries with particular emphasis on the National Archives of Zimbabwe.
- problems that impede wide adoption of digital solutions in Zimbabwe.
- implications of key audiovisual archiving philosophical and ethical issues on digitization projects
- realistic, low cost and applicable digitization solutions that do not strain institutional resources whilst respecting authenticity and inherent values of audiovisual heritage yet at the same time, considering the constraints in which some institutions are currently operating under.

Introduction

- The world is striving to keep pace with the digital technologies for audiovisual heritage but African archival institutions, Zimbabwe in particular have not done strides to bridge the digital divide.
- There and are over 15 000 different media formats available at National Archives of Zimbabwe some are almost obsolete e.g. 16 and 35mm film, reel to reel, video (umatic and VHS). Gramaphom vynl disks, audio tape cassete, this shhows great need for digitization.
- The pace of digitization at National Archives of Zimbabwe is rather too slow compared to the global world and digital pacesetters in the region(South Africa).
- There are many proposed digital solutions but nothing have been done so far.

Challenges faced by African nations in digitizing their collection.

- Lack of funding
- Lack of technical expertise
- Overwhelming current collection
- Institutional structural limitation
- Resistance to change due to technophobia
- Its difficult to engage private players/ leaders in the field for collaboration because of beaurocratic tendencies
- Depreciated condition of original media and quality of playback equipment
- Technological obsolescence
- Social, political and technological mileau

Challenges faced by African nations in digitizing their collection

- Institutional structural limitation
- Resistance to technological changes
- Poor condition of original media and playback equipment
- Technological obsolescence
- New socio political, environmental economic and technological milieu
- Poor metadata description

- Digital materials are different from their analogue predecessor and this presents curators of digital information with fundamental challenges as business is radically changed whilst overall purpose remains.
- Philosophical foundations for actions to be taken provides a framework for digitization archiving model

Key Audiovisual archiving ethical and philosophical issues on digitization.

Key philosophical and ethical issues in the ESARBICA region

- Respecting originality- technology, content and media
- Capturing everything from the original is fundamental
- Faithful reproduction of the original
- Comprehensive meta data
- Preservation of original content
- Adherence to internationally agreed standards
- Two preservation copies and additional access copies are essential
- Checking and verification of the imported digital copy against original.

Digital realities at National Archives of Zimbabwe

- Available digital solutions fall below the recommended and appropriate standards. Efforts have been limited to providing access to digital content for materials.
- The access copies provided are of very poor quality only fit for home use. (digital access copies of films heavily compromise on quality).
- Option (a) Copying to film – VHS - DVD
- Option (b) shooting off wall

Digital dilemma

- In reality digitization is yet to take, where clear digital preservation strategies that respect audiovisual archiving philosophical and ethical foundation are adopted
- NAZ lags behind in formulating strategies for maintaining digital archives.
- digitization efforts fall short of key audiovisual archiving philosophy and ethics.

Digital solutions for developing countries

- Archives in developing countries should plan for sustainable funding before embarking on digitization projects.
- High prioritization considering cost implications,
- Careful collection assessment
- Follow FIAF recommendations on affordable solutions /format without compromising on quality
- Small manual approaches before Digital Mass Storage System
- Human resources capacity building to develop the required staff skills
- Advocate for the formulation of national policies on digitization

Digital solutions for developing countries

- Collaboration with local, regional and international players in the field is vital
- Disaster preparedness and recovery planning should not be blindly ignored
- lobby for digital preservation within the institution and with responsible authorities
- NAZ and audiovisual archives in developing countries should come up with activities that raise awareness and cement digitization initiatives rather than crying foul due to challenges whilst doing nothing
- IASA tc04 guidelines and specifications should be used as a benchmark

Digital solutions for developing countries

- government and archival institution should be prepared to part with considerable monies on digital projects as well as constant equipment and software upgrading.
- 10-20 year digital transcription to avoid unnecessary information loss and duplication of effort
- NAZ and institutions in developing countries should work to equip staff with necessary knowledge and skill to efficiently and effectively carry out these highly technical and scientific tasks

Digital solutions

- Bit stream copying
- Refreshing
- Durable/Persistent media e.g. Gold CDs
- Technology preservation- disaster preparedness
- Digital Archaeology - emergency recovery strategy
- Analogue backups
- Migration
- Replication
- Reliance on standards'

Digital solutions

- Normalisation
- Canonicalization
- Emulation
- Encapsulation
- Universal vital computer

conclussion

- However given the low cost digital solutions, it remains a mammoth task for the National archives of Zimbabwe and archival institutions in developing countries to compete for standard digitization of their film and sound archives. The cheaper costs demand space for storage and it’s a matter of regrouping near obsolete methods and tedious tasks. There is dire need for concerted efforts to be directed towards an overhaul adoption of current digital solutions at the same pace with the developed world

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