Research Methodologies

Notes by Nance McGovern, Director, Digital Preservation at MIT Libraries – last updated December 2017

A simple model for comparison of and context for research methodologies.

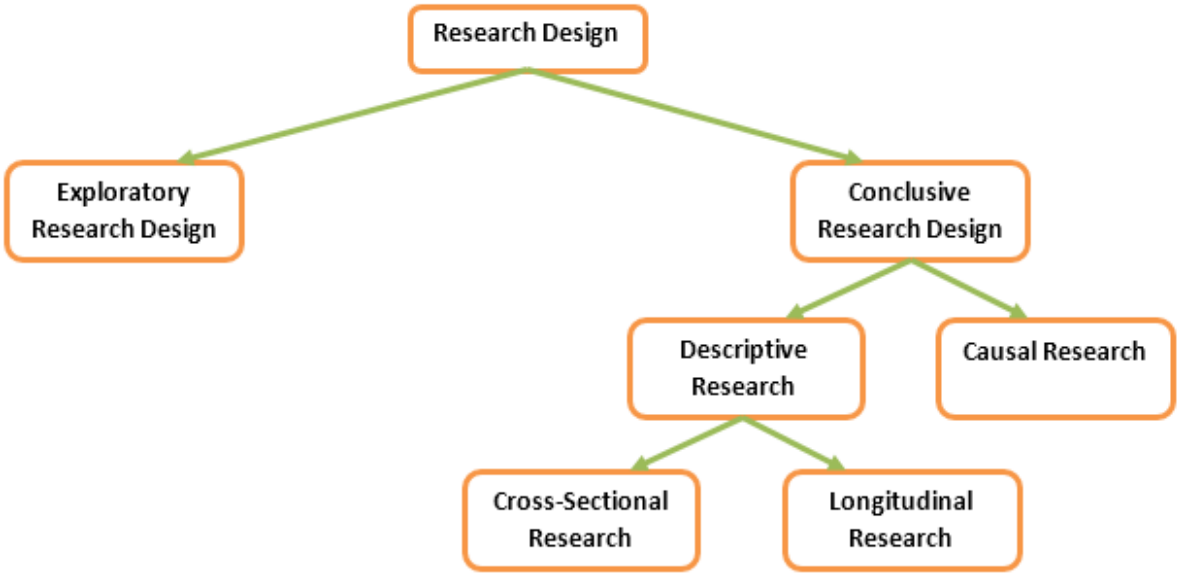

Image source: http://researchdesignmethod.com/research-design/research-design-classification/

Conclusive or confirmatory research has tended to dominate research undertaken by heritage institutions, though exploratory research is well-aligned with investigating emergent domains and unfamiliar problem areas. Exploratory research is useful when the objective it to help define research problems more clearly, to help identify all possible alternative answers, and/or to help researchers build a deeper hypothesis. Constructive research methodology is an example of exploratory research that emerged from computer science and is suited to research-based domains like digital preservation.

Exploratory Example: Constructive Research Methodology

Background: Constructive research methodology is suited to investigating aspects of digital preservation and other domains that evolve in response to technological change because it is an exploratory methodology that formalizes the development of products, including models. The primary purpose of constructive research methodology is to produce solutions to real problems. Constructive research methodology emerged in the 1990s and is slowly spreading by discipline and by geography. Constructive research methodology is sometimes confused with constructivist research, a qualitative form of research in which the research participates in observing social phenomena to understand how individuals or groups behave, largely through interviews. Constructive research has been widely used in computer science as well, although there has been less explicit definition and discussion of the methodology in that literature than in business. Constructive research is an exploratory approach that was explicitly defined within the business administration domain in a series of papers written between 1991 and 2003. Constructive research methodology has been used in studying human computer interaction, software engineering, information science and technology, economics, business administration and accounting, design science, architecture, engineering, and urban planning. Because constructive research allows that technologies can be studied as “artificial constructs” and as social

phenomena, it has particular relevance for the study of the human and technical aspects of technological responsiveness for digital preservation as a research problem. There are four types of generalized outcomes resulting from the application of the constructive research methodology: conceptual frameworks, providing the basis for discussion and action; descriptive models, documenting the current states; explanatory models, elaborating relationships in the problem area; and prescriptive models, offering solutions and guidance for practical problems.

Methodology: The method and evaluation criteria for constructive research includes the construction of models using a combination of natural science (descriptive and explanatory) and design science (prescriptions and artifacts that embody prescriptions). There are four types of research products: constructs, models (mathematical or abstract), methods, and implementations. Constructive research uses a six-step procedure with the possibility exists to check every step or every phase of the construction.

1. Find a relevant practical problem with research potential
2. Obtain a general and comprehensive understanding of the topic
3. Build an innovative solution (or construct)
4. Demonstrate that the solution works
5. Show the theoretical connections and research contributions of the solution
6. Examine the scope of applicability of the solution

Some tactics for data collection and analysis are identified in advance, while others are developed later in the research process to match the research questions and the requirements of the methodology. Constructive research is intended to produce repeatable, extensible, and generalizable results for application to similar problems. Three steps of the constructive research process address the internal validity of the research: Step 2 (general and comprehensive understanding of topic); Step 3 (build an innovative solution); and Step 4 (demonstrate that the solution works). The final step (examine the scope of applicability of the solution) addresses the external validity of the research. There is a set of five metrics for evaluating research outcomes*:* fidelity with real world phenomena, completeness, level of detail, robustness, and internal consistency. The evaluation of the outcomes constructive research also occurs over an extended period as other researchers and practitioners engage with the results of the research. Constructive research can be used for individual, team-based, or community-level research. Constructive research could be applied to the exploration of new areas as technology and requirements evolve.

One resource: Lukka, K. 'The Constructive Research Approach'. Edited by L. Ojala and O.P. Hilmola. In *Case Study Research in Logistics*, *Series B 1*, 83-101. Turku, Finland: School of Economics and Business Administration, 2003.

Collaborating Across Communities: Leveraging Our Strengths for Sustainable Programs and Services

Nancy Y McGovern
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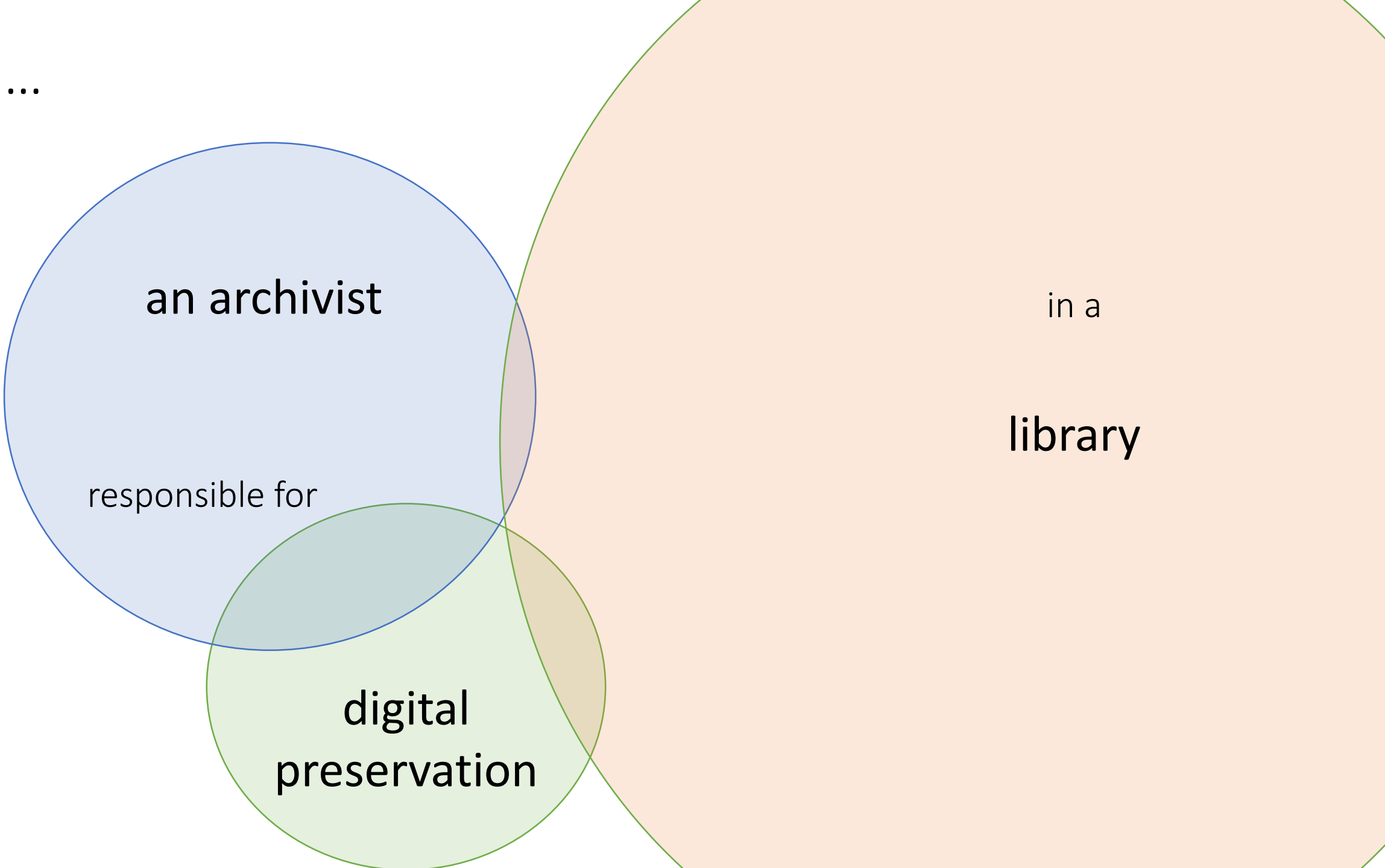
IDCC 2018

I am …


an archivist
responsible for
digital
preservation
in a
library

Community

Community in this context: “a feeling of fellowship with others, as a result of sharing common attitudes, interests, and goals” source: http://bit.ly/2tbthPR

Community affiliations depend on context - examples of my communities:

- archival community
- digital preservation community
- digital practice community
- LGBTQIA community
- dog owners
- …

Digital Practice

to continually work
to bring content and lessons from the past
for the benefit of the present
on behalf of the future

Collaborate

to work jointly on an activity or project [OED]

to work jointly with others or together especially in an intellectual endeavor

to cooperate with an agency … with which one is not immediately connected

Latin: to work together

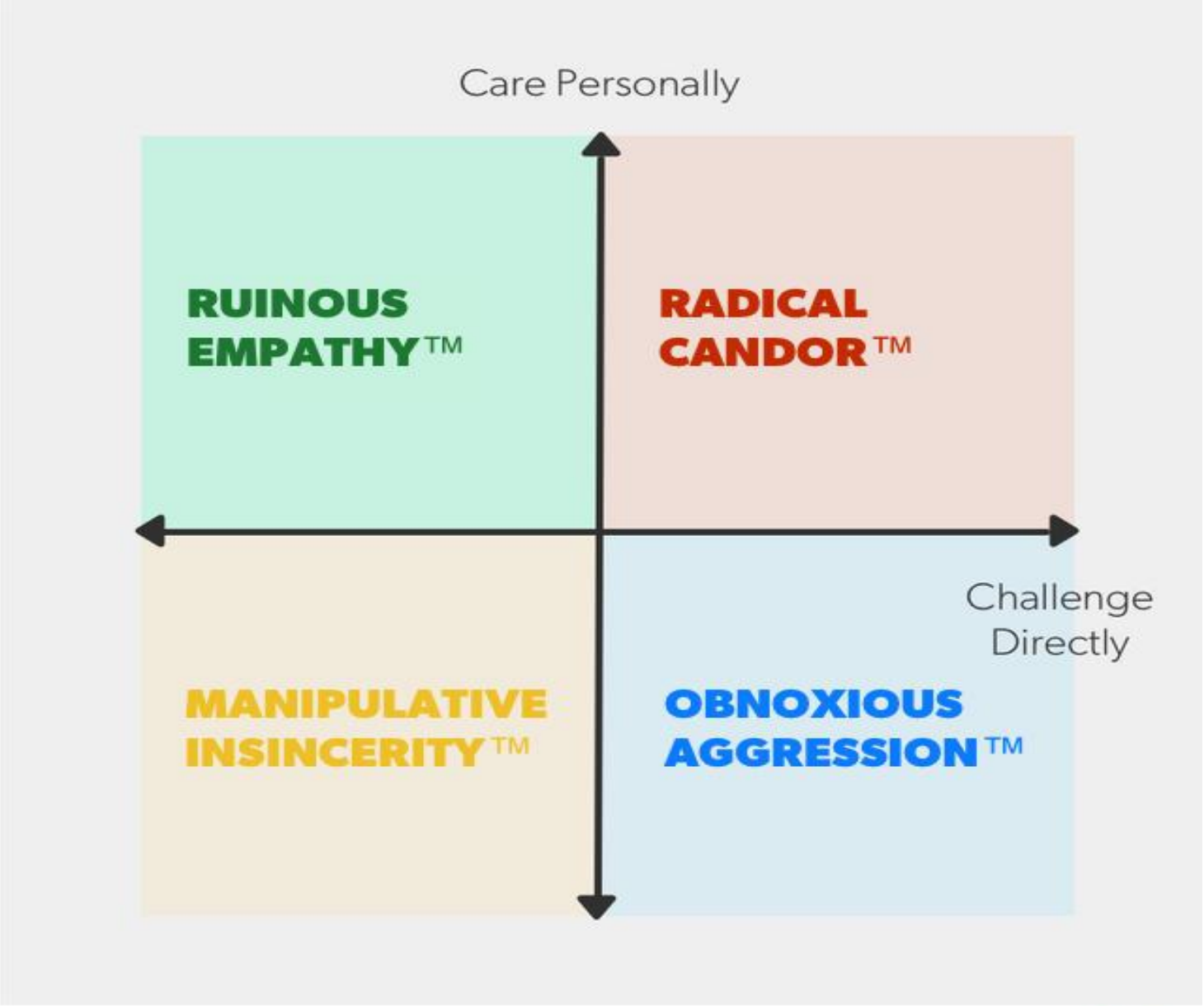
In this context: rely on others to do agreed upon things for or in concert with you and to do agreed upon things for or in concert with others

Rather than letting people know what you did, actively engage and inform

More than asking for feedback or help with your idea/project, include in the framing

Adapt Radical Candor …

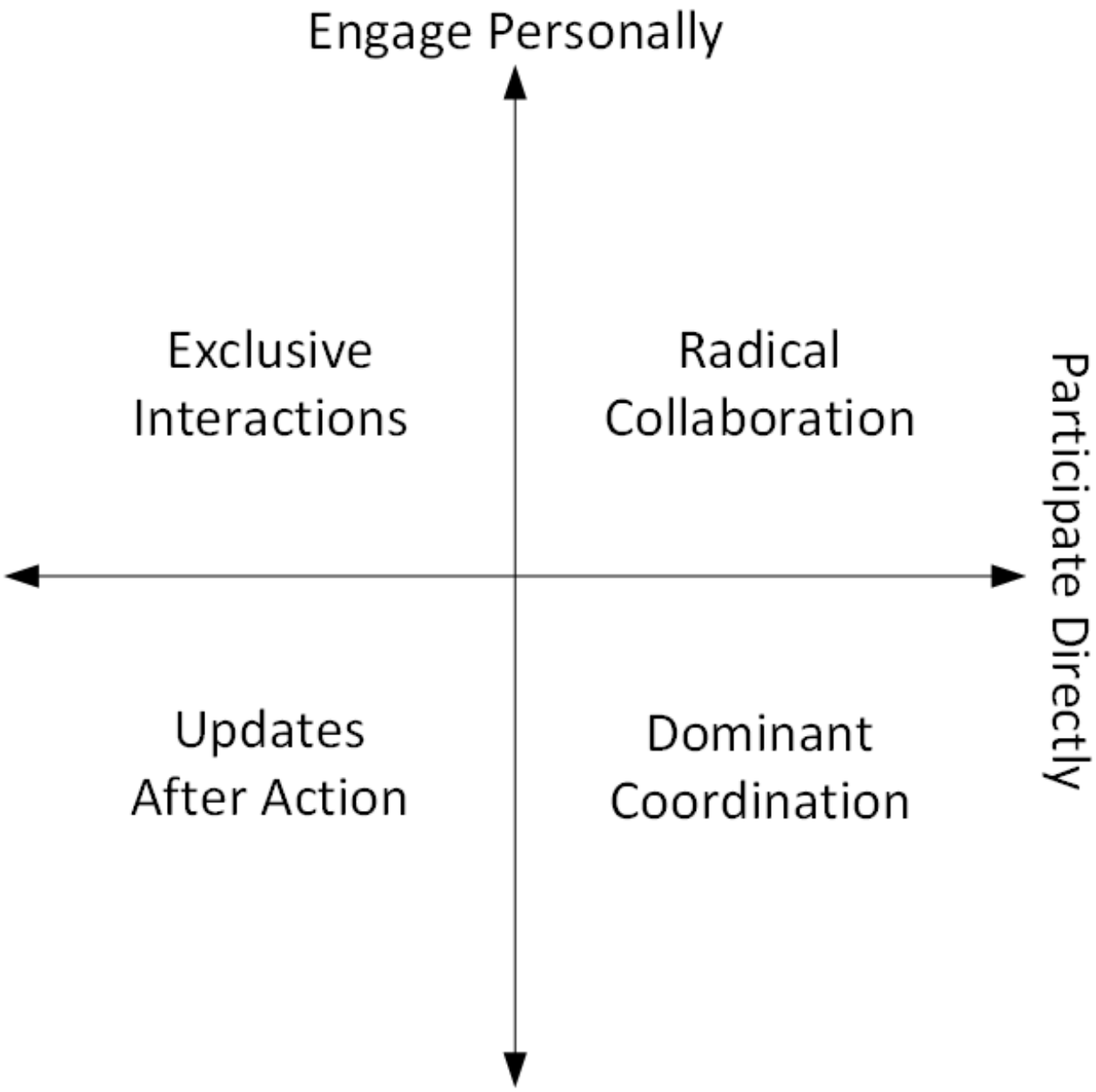
An approach for encouraging constructive feedback



Courtesy of CANDOR

Explanatory video: https://www.youtube.com/watch?v=yj9GLeNCgm4

To Radical Collaboration



Inclusive Inclusion

Social and demographic inclusion

i.e., not excluded based on race, ethnicity, gender, sexual orientation, religion, age, disability, or on any other characteristic or preference

Showstopper: first and foremost ensure that people are safe

Professional inclusion

People from all impacted or related professions and domains are included openly and equitably

Technical inclusion

Technical is not limited to technological

Technology (skills, tools, capabilities) should be available to all

Digital Practice + Collaboration

Who would you bring to the table?

- examples of domain strengths
- round table (with no head)
- stronger together
- professional inclusion
- common interests
- overlapping members
- overlapping objectives

Who's not at the table and why?

Archives
- provenance and context
- chain of custody

Libraries
- discovery services
- usage analytics

Digital Preservation
- preservation packages
- obsolescence management

Data Science
- data curation
- domain expertise

Records Management
- appraisal
- scheduling

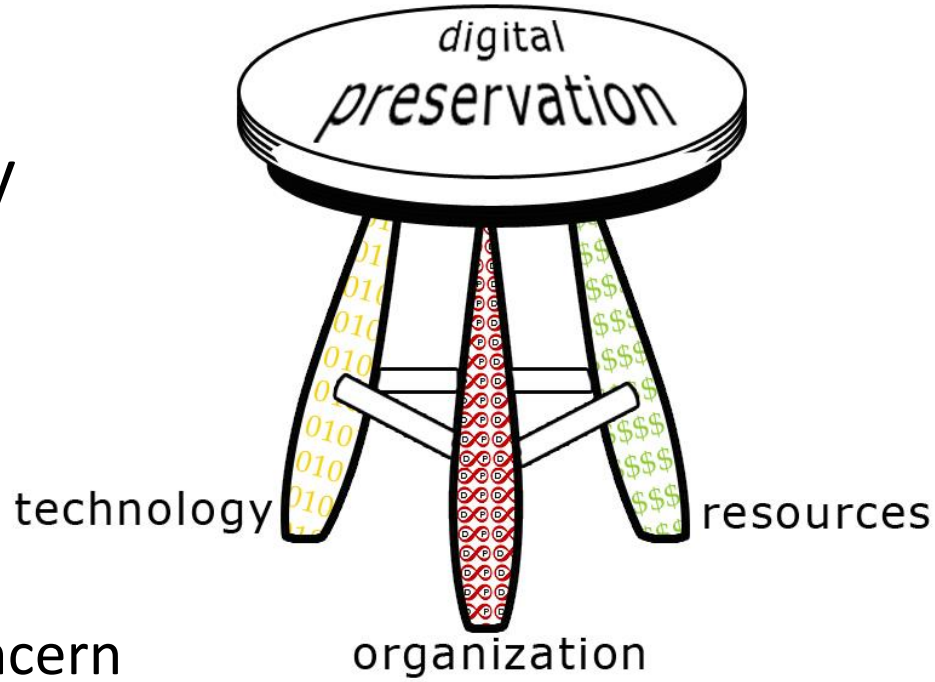
Software Development
- problem-solving
- project management

Museums
- Engagement (audiences)
- Objects

Digital Practice + Diversity and Inclusion

- Individuals and institutions engaged in digital practice are not diverse
- Some efforts to expand opportunities for experience and training
- Consider archival practice vs institutional policies
- Common acquisition models don’t meet needs of communities
- Collection policies for repositories
- Technical Inclusion (conference example)
- Different professions have different issues
- Engage in discussion…

Building (an Inclusive) Community



Common stages of organizational maturity model:

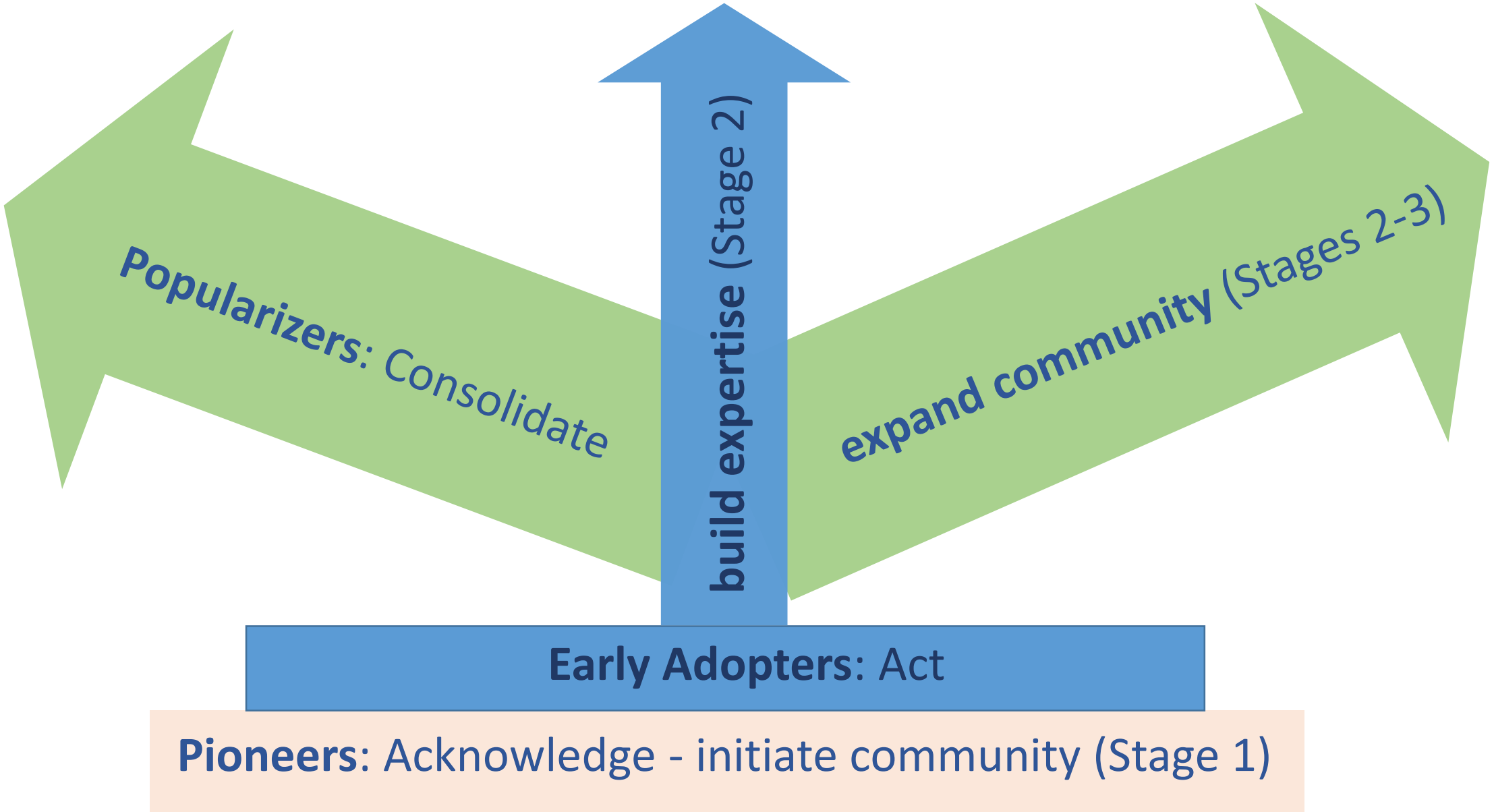
1. ***Acknowledge**:* understanding that this is a local concern
2. ***Act**:* initiating projects
3. ***Consolidate**:* segueing from projects to programs
4. ***Institutionalize**:* incorporating larger environment; rationalizing programs
5. ***Externalize**:* embracing inter-institutional collaboration and dependency

Kenney and McGovern,2003

Organizations reach these stages through community building

- set objectives, engage community members, build towards critical mass

Act (Stage 2) to Consolidate (Stage 3) Transition



Archives in context – words are important …

To an archivist:

Archives are an **organization** that collects the records of individuals or organizations; the professional **discipline** of administering such archival collections and organizations; the **building** (or portion thereof) housing archival collections.

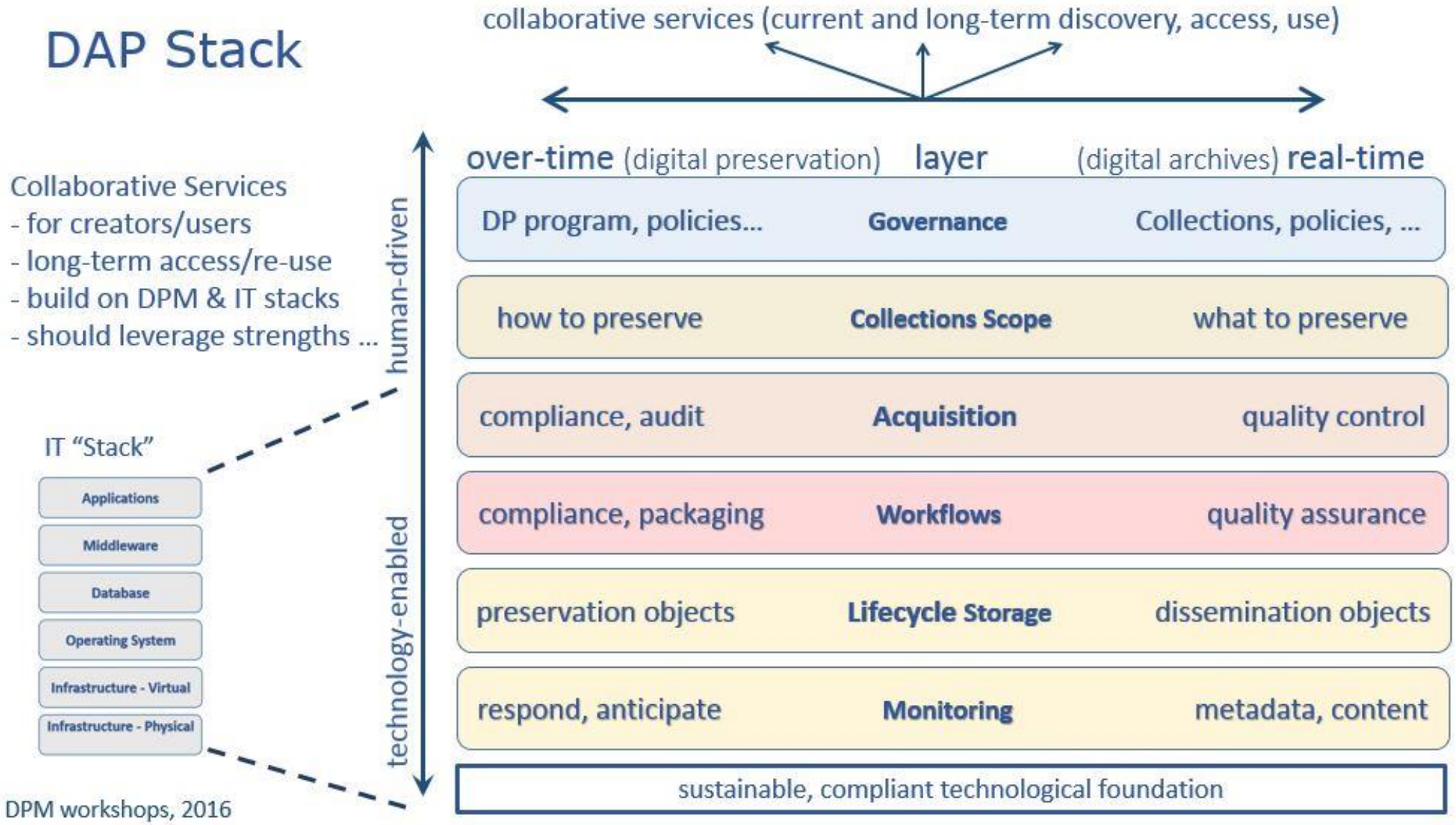
The archival community refers to archivists anywhere who have training and expertise in **archival principles and practice** (e.g., SAA Code of Conduct and Ethics)

IT use of "archives" and "archiving": often refers to **aggregations** of content, storage of content – is typically not archival from an archivist's perspective and does not equate to preservation (a more robust and collaborative concept)

e.g., Twitter archives

Non-archivists use of "digital archivist" may refer to work by anyone on digitized or other digital content of any kind

Disambiguating digital archives and digital preservation



Video about stack: http://bit.ly/2EVhaLz

Preservation and Access

Preservation – actions, agents, and infrastructure to ensure ongoing access to content

Access – means of enabling discovery, delivery, and use of content

90% + of the world focuses on access – and that's okay if preservation is supported

Renewed interest in post-custodial and recent (mis)understandings of preservation

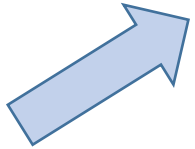
Pre-custodial period: between creation (actual or expected) and long-term custody

- Preservation view: opportunity to determine retention and build relationships
- Access view: perception that preservation is absent or not working

Perceived immediate access (or lack) is not an indicator or measure of preservation

Generations of Practice…

…follow generations of technology – a distributed world leads to distributed practice

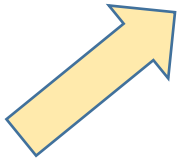


emerging: distributed digital practice

(hybrid collections, modularity, flexibility, scalability, independence…)

recent: connected digital practice

(homogeneous collections, monolithic providers, common services)



early: individual digital practice

(limited collections, offline, handcrafted)

Emerging Distributed Digital Practice

to continually work
to bring content and lessons from the past
for the benefit of the present
on behalf of the future
…
achieved through radical collaboration
across all domains
that are interested, engaged, reliant upon, or willing to help
to continually devise, implement, and improve
solutions in response to ongoing technological change

Examples: OO-IO model, DP storage
what will a distributed practice look like for … archives? storage?

Considerations for collaborating across communities

- Raise awareness through open discussion – listen and assume good intent

  balance advocacy and inquiry; use inclusive terms (e.g., digital practice) and adjust …

- Remember that digital archives may refer to aggregations of archival records

  or to any digital content an individual or institution may be managing, whether preserving or not …

- Be aware that people often conflate digital archives and digital preservation

  these are distinct and co-dependent domains

- Revisit institutional policies and practices

  need review, revision, re-engineering, re-thinking to encourage not hinder collaboration and inclusion

- Be aware of using our own lens and our cumulative progress in viewing our past

  like saying: "those dratted people in the 90's refused to use social media!" ???

- Balance advocacy and inquiry

  determine when to make your case, when to listen and learn

- Continue from now – facing forward (informed by lessons learned)

  look for opportunities – especially the unexpected …

See you in Boston!

Save the date: 24-27 September 2018

https://ipres2018.org/

"It is harder to crack a prejudice than an atom“

Albert Einstein

Thank you!

Questions?

@mcgovern60