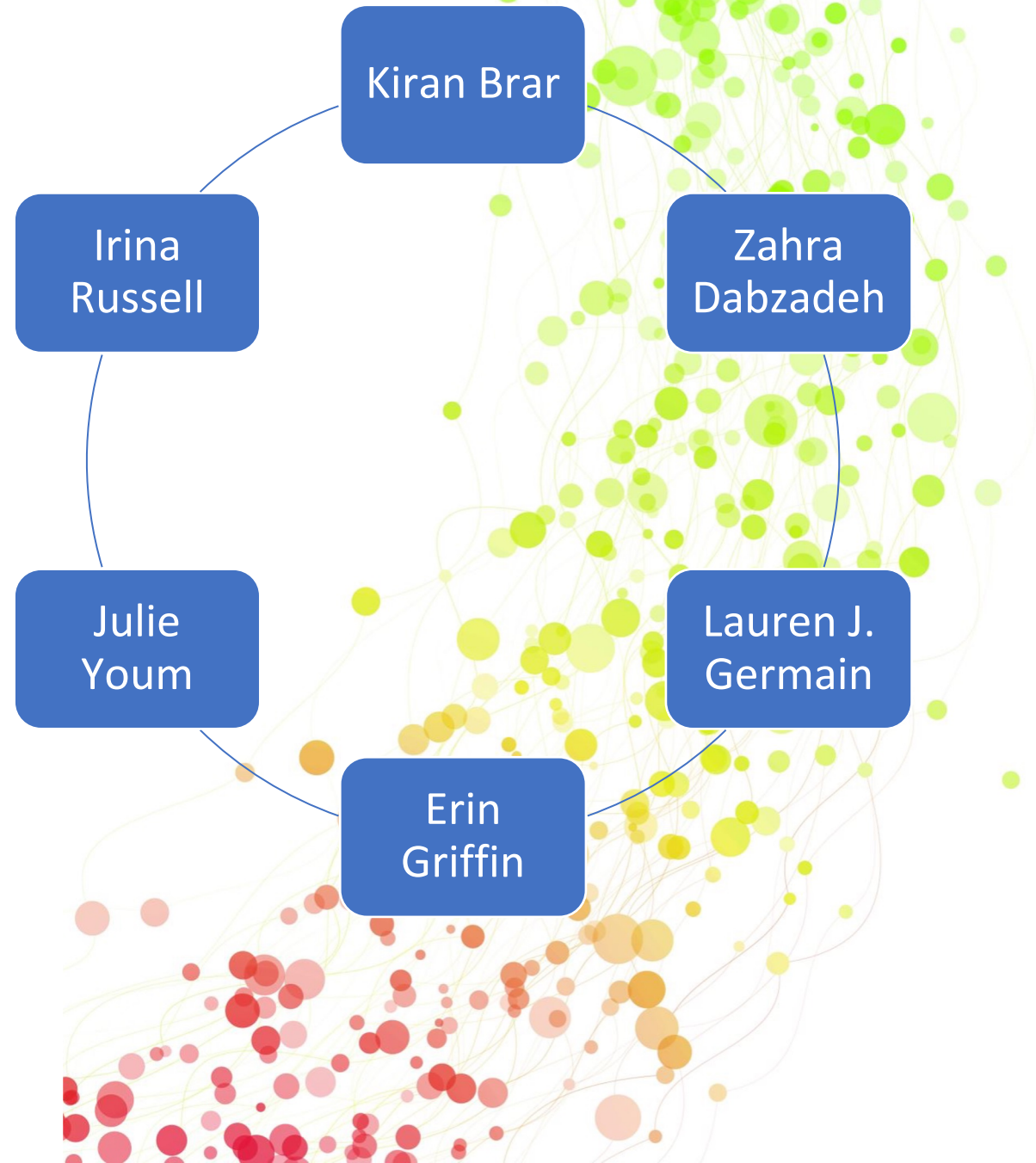


***From Silos to Systems: Leveraging  
Visualization Tools to Map and  
Navigate the Complex Terrain of  
Health Professions Education***

WGEA 2023  
Panel Presentation  
April 14-17, 2023



## *Learning Objectives:*

1. Identify three advantages of visualizing an organizational process map of the Health Professions education.
2. Describe three examples of how a systems approach can address silo-driven challenges in the academic program environment.
3. Discuss pain points of silos in a Health Professions education context and reflect on systems-based solutions.
4. Demonstrate how systems visualization tools can be used to map accreditation needs across silos.

# *From Silos to Systems: Integrated Accountability*

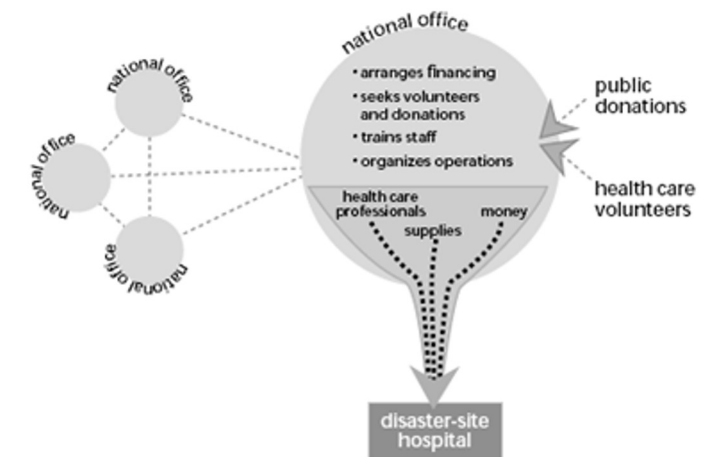
- Higher education is a complex ecosystem
- The ecosystem includes silos of accountability:
  1. Assessment
  2. Accreditation
  3. Institutional research
  4. Institutional effectiveness
  5. **Educational evaluation**
  6. Educational measurement
  7. Higher education public policy
- The unique demands of each accountability silo are specialized, resource intensive and dynamic: less integration of functions and infrastructure

# Visualizing Accountability Silos as a Systems: Organigraphs

[Organigraphs: Drawing How Companies Really Work: Henry Mintzberg and Ludo Van der Heyden](#)

- Alternative to traditional org chart
- *‘Organigraphs are more than just pictures.... they provide an overview of a company’s territory—its mountains, rivers, and towns, and the roads that connect them.’*
- *‘Organigraphs ... introduce new components called hubs and webs’*
  - **Set:** Machines, people, etc.
  - **Connections:** Traditionally chains
  - **Hubs**
  - **Webs**

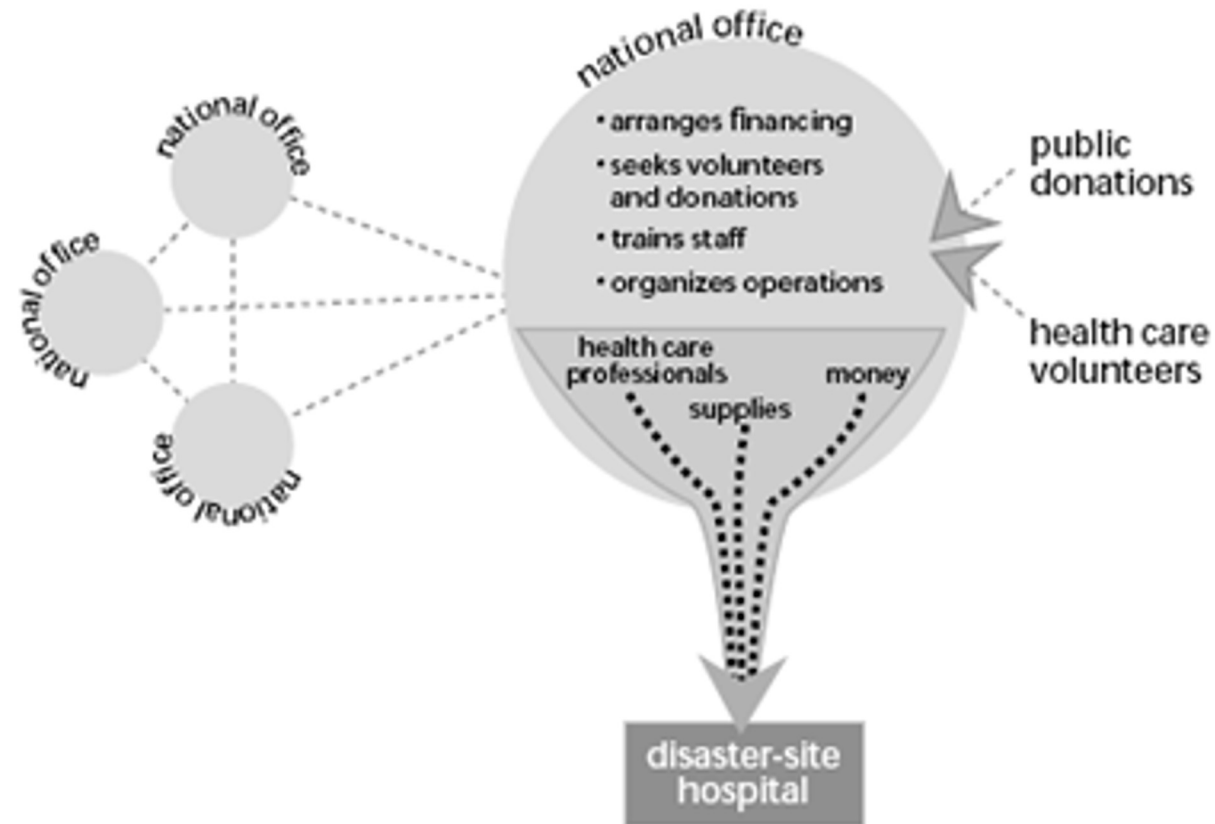
Organigraph of Medecins Sans Frontieres



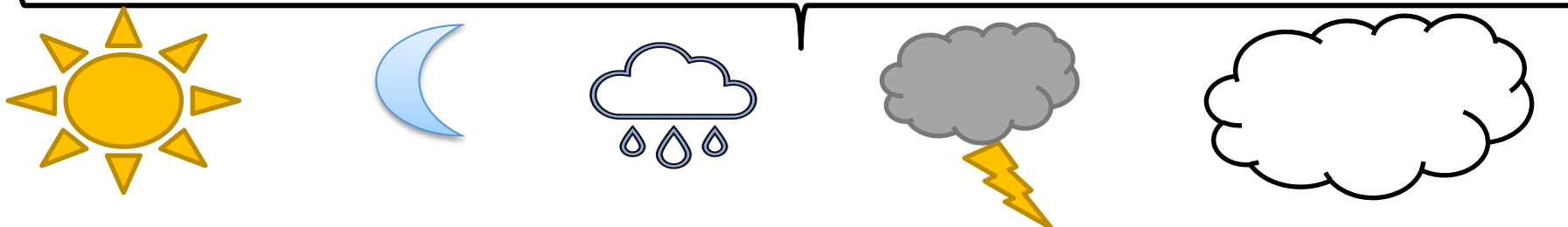
## Visualizing Accountability Silos as a Systems: Organigraphs

- Visualizing systems reveals opportunities for integration, clarifies redundancies, and provide a canvas for productivity and creativity.

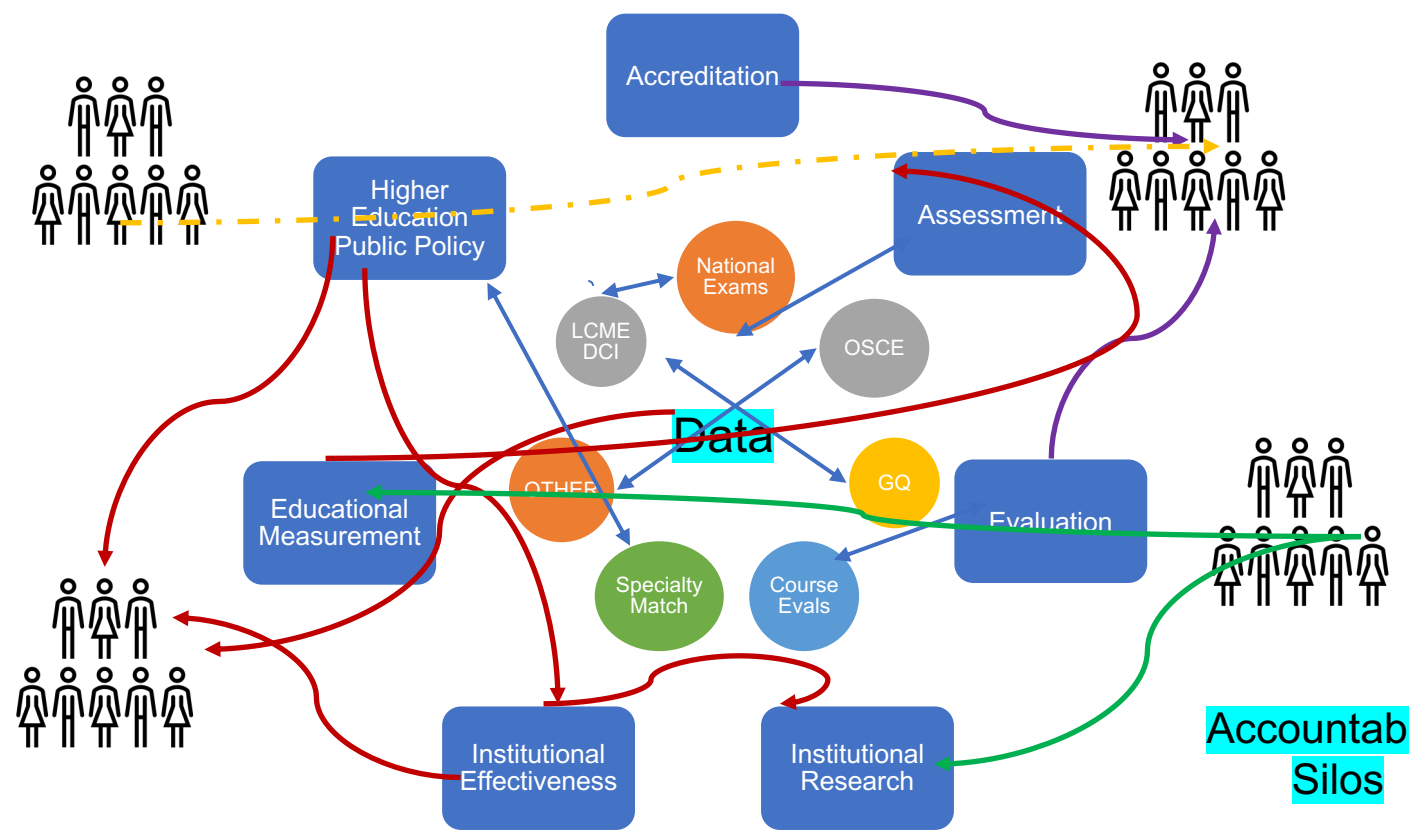
### Organigraph of Médecins Sans Frontières



Culture and Climate



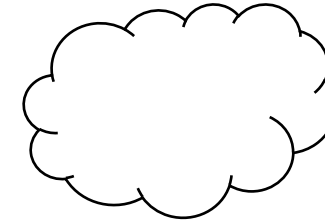
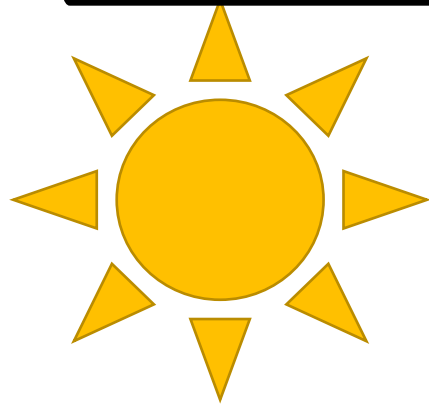
People



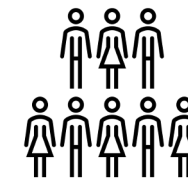
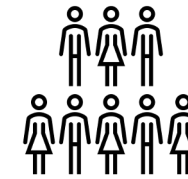
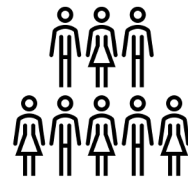
10	Unimaginable unspeakable	
9	Excruciating unbearable	
8	Utterly horrible	
7	Very intense	
6	Intense	
5	Very distressing	
4	Distressing	
3	Tolerable	
2	Discomforting	
1	Very mild	
0	No pain	

Accountability  
Silos

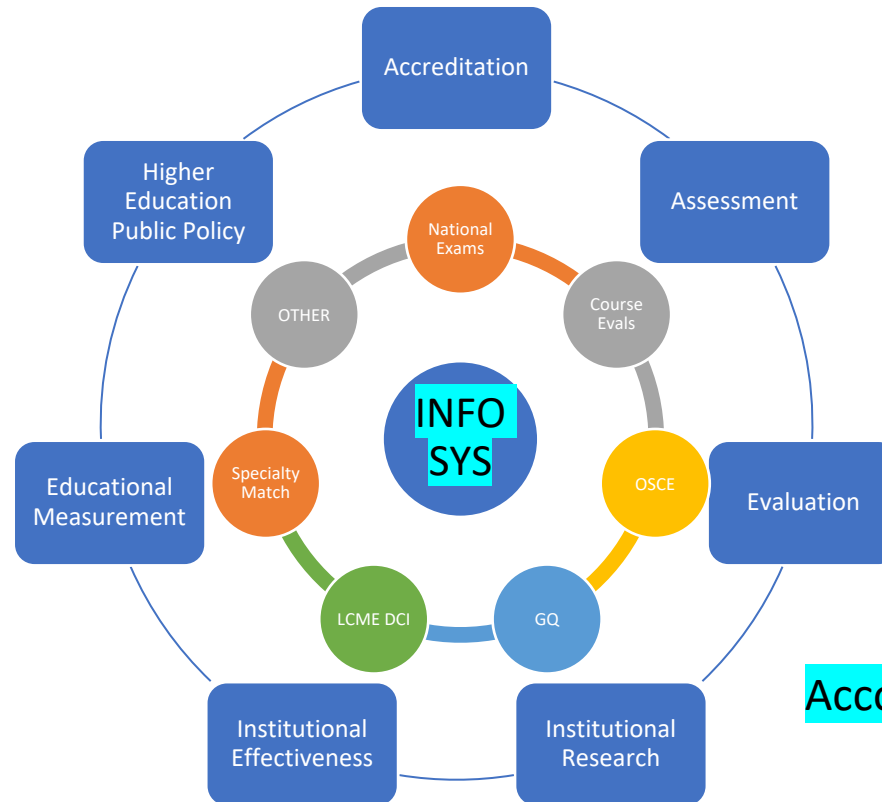
# Culture and Climate



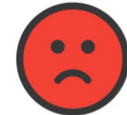
People



Program Evaluator



Accountability  
Silos



- 10 Unimaginable unspeakable
- 9 Excruciating unbearable
- 8 Utterly horrible
- 7 Very intense
- 6 Intense
- 5 Very distressing
- 4 Distressing
- 3 Tolerable
- 2 Discomforting
- 1 Very mild
- 0 No pain



# Interactive Activity: Draw your Organigraph

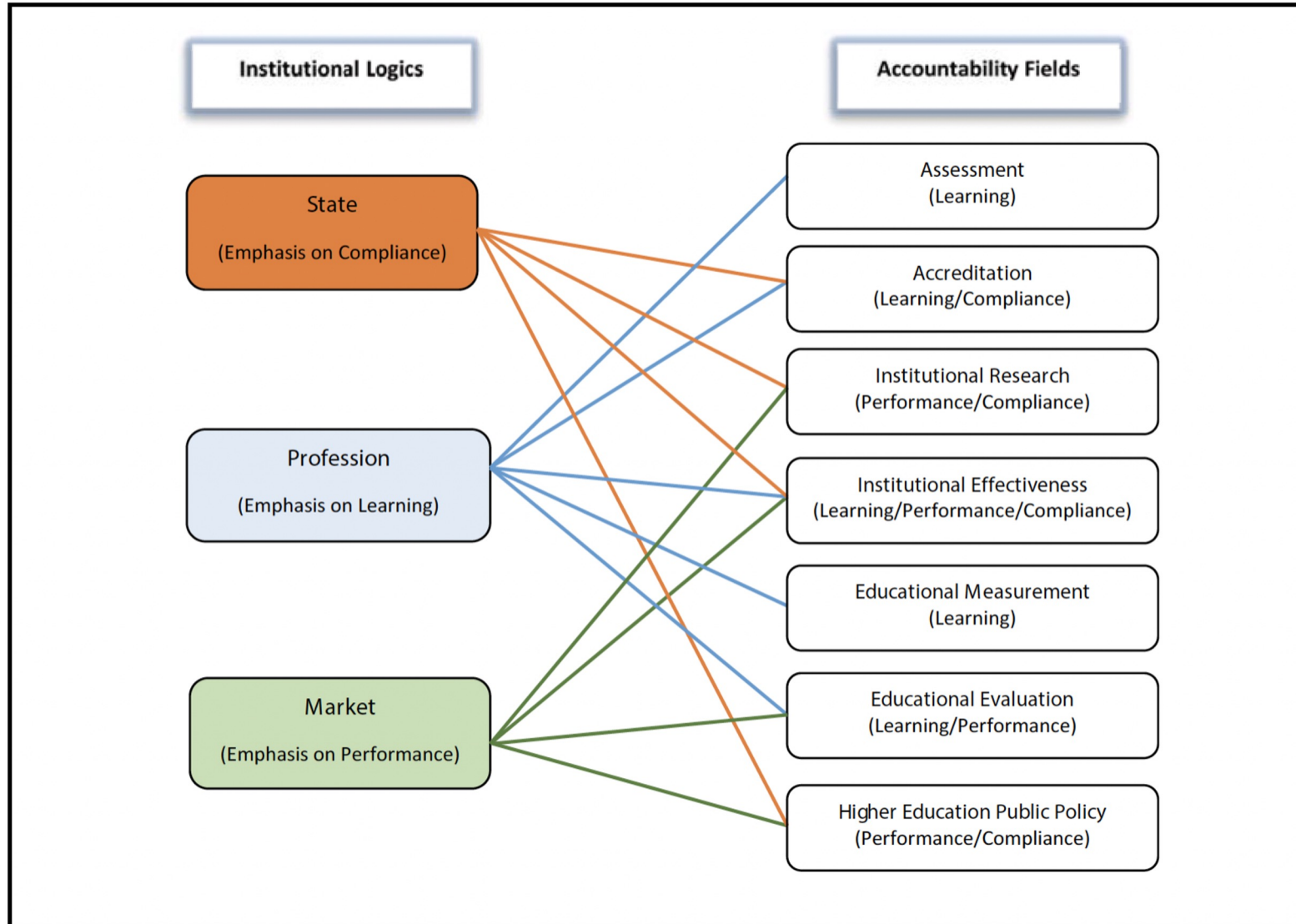


15 minutes



# Silos of Accountability

# A Map of the Social Embeddedness of Silos



- Social context of:
  - **Market:** Performance
  - **State:** Compliance
  - **Profession:** Learning

# From Silos to Systems: Integrated Accountability

- Silos connected to social frameworks
- Silos are mapped to each other within organizations, and each responds differently to their context
- Silo maps are conceptual, like organigraphs, but can be measured and visualized with data
- From the mapping, we can understand how data can bring these different silos together and integrate them

# From Silos to Systems: Integrated Accountability (Map)

Accountability Silo	Accountability Elements	Information Systems			
		Data Sources	Data Systems	Reporting Format	Audience
1. Accreditation					
2. Assessment					
3. Institutional Research					
4. Institutional Effectiveness					
5. Educational Measurement					
6. Evaluation					
7. Higher Education Public Policy					
8. Culture/Mission					

# From Silos to Systems: Integrated Accountability (Map)

Accountability Silo	Accountability Elements	Information Systems			
		Data Sources	Data Systems	Reporting Format	Audience
1. Accreditation	LCME DCI Standards				
2. Assessment	Program Outcomes Student Measures				
3. Institutional Research	USN&WR, IPEDS				
4. Institutional Effectiveness	CQI				
5. Educational Measurement	NBME Subject Exams				
6. Evaluation	Summative Evaluations, Formative Evaluations				
7. Higher Education Public Policy	Graduation Rates				
8. Culture/Mission					

# Interactive Activity: Poll Everywhere



15 minutes



# Open-source survey

Anonymous

<https://forms.gle/LbLNbkjG8rSGm9t27>



Select the image that best approximates the Culture and Climate at your institution:



1 2 3 4 5

Sunny / Very Comfortable

Stormy / Miserable

Select the option on this mood scale that best describes how you feel about your job and role:



1 2 3 4 5

Great!

Terrible

Select the option on this pain scale that best describes how you feel about your job and role:



No pain Discomforting Distressing Intense Utterly horrible Unimaginable unspeakable  
0 1 2 3 4 5 6 7 8 9 10

Very mild Tolerable Very distressing Very intense Excruciating unbearable

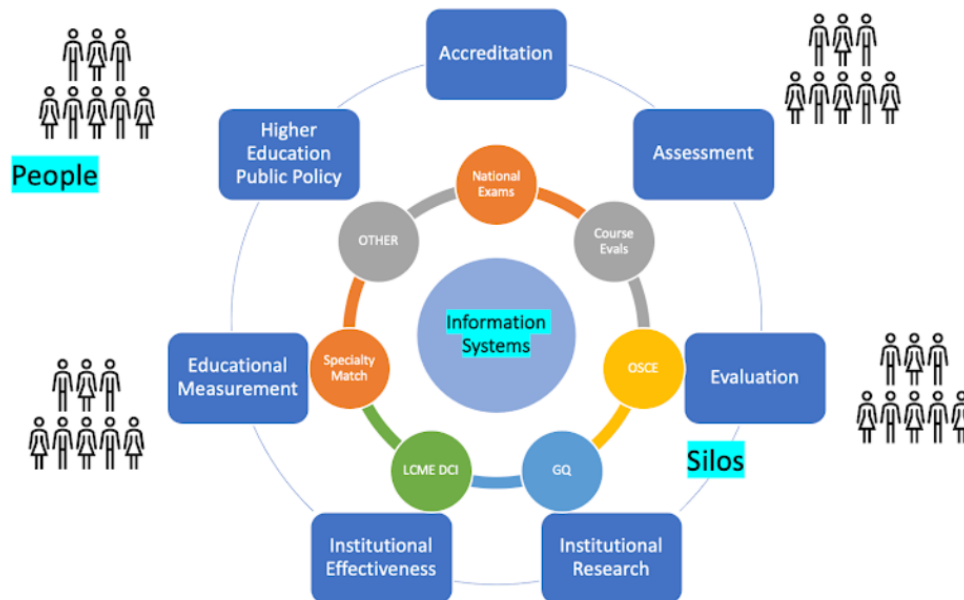
0 1 2 3 4 5 6 7 8 9 10

No Pain

Unimaginable unspeakable

Select the general area of effort that best fits your role functionally: \*

Once selected, you will see a brief description of this functional area and you will be asked to select particular metrics that you use and work on as part of your role. If the description doesn't align with your job duties, you will have a chance to select different or additional areas.



- Evaluation
- Assessment
- Educational Measurement
- Accreditation
- Institutional Research
- Institutional Effectiveness/CQI
- Higher Education/Public Policy



# Evaluation of HPE effectiveness: Metric Categories

- Outcome measures
  - Student Performance
  - Student Satisfaction
  - Career Outcomes
  
- Process measures
  - Curriculum Design
  - Learning Environment
  - Compliance
  - Others

# Evaluation of HPE effectiveness: Metric Categories

- Outcome measures
  - Student Performance
    - National: NBME, USMLE
    - Local: Clinical Skills
  - Student Satisfaction
    - National: AAMC Graduation Questionnaire
  - Career Outcomes
- Process measures
  - Curriculum Design
    - Learning Objectives
    - Mapping Assessment to Learning Objectives
  - Learning Environment
  - Compliance
  - Others

# Open-source visualization

Learning Objective: Demonstrate how systems visualization tools can be used to map accreditation needs across silos.



# Linking survey outcomes on Silos to Metric Categories

Effectiveness of Education Metrics

Education Metric categories derived from literature on UME Effectiveness: using the same specific measures that we mapped to Silos.

Priority of Measures in Silos

Our survey on prioritizing specific measures (High to Low Priority rating, or N/A) for different roles within organizational silos.

Link survey outcomes to Education Metrics

Use a visualization tool (Tableau) to map survey outcomes, which were centered on Prioritization Levels in Silos, to Education Metric Categories centered on Effectiveness.

Category	Specific Measure	Silo	Priority Level
All	Multiple values	Evaluation	All
Category	Specific Measure	Silo	
Career	Performance in the first year of residency (self and program direct..	Evaluation	Med/Low Priority
	Residency matching results	Evaluation	Med/Low Priority
	Specialty selection	Evaluation	N/A, 0 Priority
Clinical Experiences	Clinical settings/sites	Evaluation	High Priority
Curriculum Design	Assessments aligned to learning objectives	Evaluation	N/A, 0 Priority
	Clerkship and session learning objectives	Evaluation	Low Priority
	Direct observation	Evaluation	Med/Low Priority
	Formative feedback, including mid-clerkship feedback	Evaluation	Med/High Priority
	Grade distribution	Evaluation	Low Priority

# Use Case: Linking survey outcomes to LCME (Accreditation) Standards and Elements

Education Metrics linked to LCME

Specific measures are requested by accreditation agency (LCME) for evaluating different standards and elements of an MD program operation.

Priority of Measures in Silos

Our own survey on prioritizing specific measures (High to Low Priority rating, or N/A) for different roles within organizational silos.

Link to LCME Elements

Use a visualization tool to map survey outcomes to LCME Standards and Elements to explore areas of redundancy and gaps in priority.

Standard	Element	Specific Measure	Silo	Priority Level
All	All	Multiple values	All	All
Standard	Element	Specific Measure	Silo	
<b>Standard 2: Leadership and Administration</b>	2.4 Sufficiency of Administrative Staff	AAMC Graduation Questionnaire	Accreditation	High Priority
			Evaluation	High Priority
<b>Standard 3: Academic and Learning Environments</b>	3.2 Community of Scholars_Research Opportunities	AAMC Graduation Questionnaire	Accreditation	High Priority
			Evaluation	High Priority
	3.5 Learning Environment_Professionalism	Clinical roles and expectations	Accreditation	High Priority
			Institutional Effectiveness/CQI	Med/High Priority
	3.6 Student Mistreatment	AAMC Graduation Questionnaire	Accreditation	High Priority
Evaluation			High Priority	
	Mistreatment	Accreditation	Med/Low Priority	
			Higher Education/Public Policy	Medium Priority

Standard	Element	Specific Measure	Silo	Priority Level
All	All	Multiple values	All	Multiple values
Standard	Element	Specific Measure	Silo	
<b>Standard 4: Faculty Preparation, Productivity, Participation, and Policies</b>	4.5 Faculty Professional Development	Faculty	Accreditation	N/A, 0 Priority
	4.6 Responsibility for Medical School Policies	Other university/college policies	Accreditation	N/A, 0 Priority
			Higher Education/Public Policy	Low Priority
<b>Standard 5: Educational Resources and Infrastructure</b>	5.4 Sufficiency of Buildings and Equipment	Physical spaces and resources	Accreditation	N/A, 0 Priority
	5.5 Resources for Clinical Instruction	Patient volumes	Accreditation	N/A, 0 Priority
	5.6 Clinical Instructional Facilities_Information R..	Physical spaces and resources	Accreditation	N/A, 0 Priority
	5.7 Security, Student Safety, and Disaster Preparedness	Security and safety	Accreditation	Low Priority
			Educational Measurement	Low Priority
			Institutional Research	N/A, 0 Priority
5.8 Library Resources_Staff	Physical spaces and resources	Accreditation	N/A, 0 Priority	

# Use Case: Operationalizing Priorities for Silos using Metric Categories

## Effectiveness of Education Metrics

Education Metric categories derived from literature on UME Effectiveness: using the same specific measures that we mapped to Silos.

## Summarize Priorities of Measures

Aggregate outcomes of prioritizing specific measures (High to Low Priority rating, or N/A) across the Education Metric Categories.

## Compare Priorities between Silos

Use a visualization tool (Tableau) to compare allocation of aggregated Priority levels for Education Metric Categories in different Silos.



Type of Measure

All

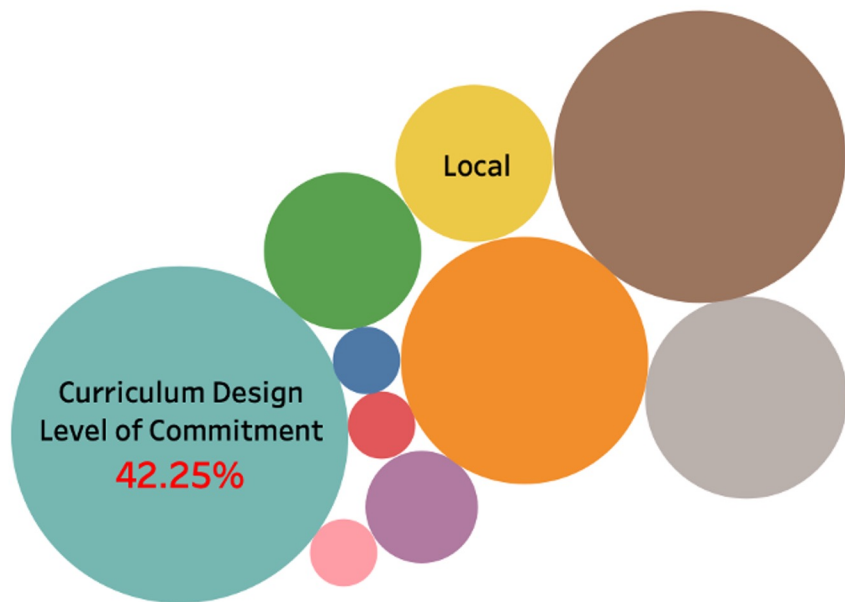
Category

All

Silo

Accreditation

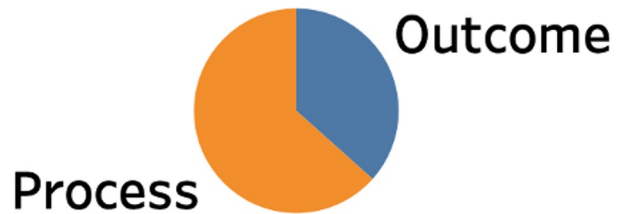
### Category



### Accreditation

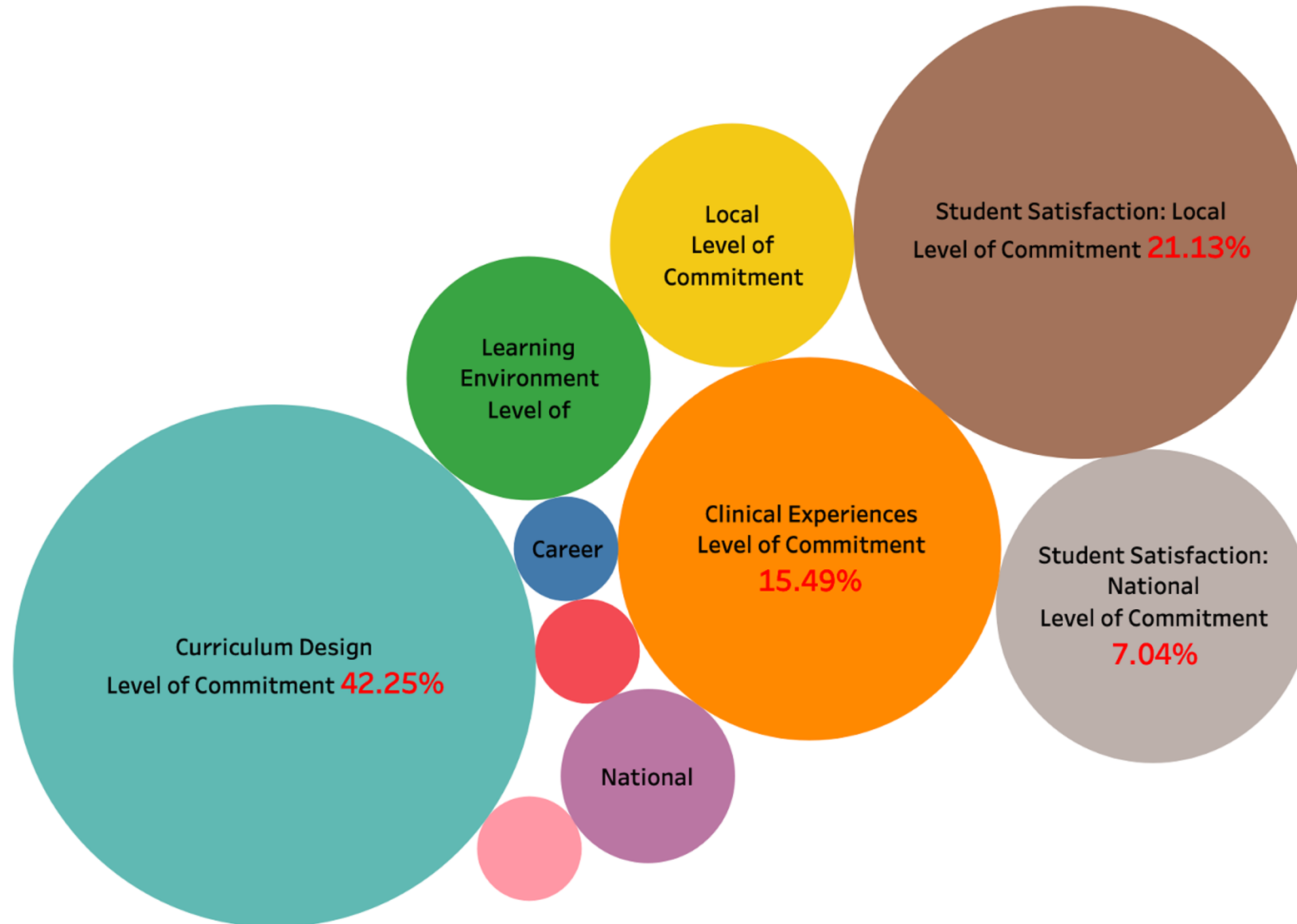


### Outcome v. Process

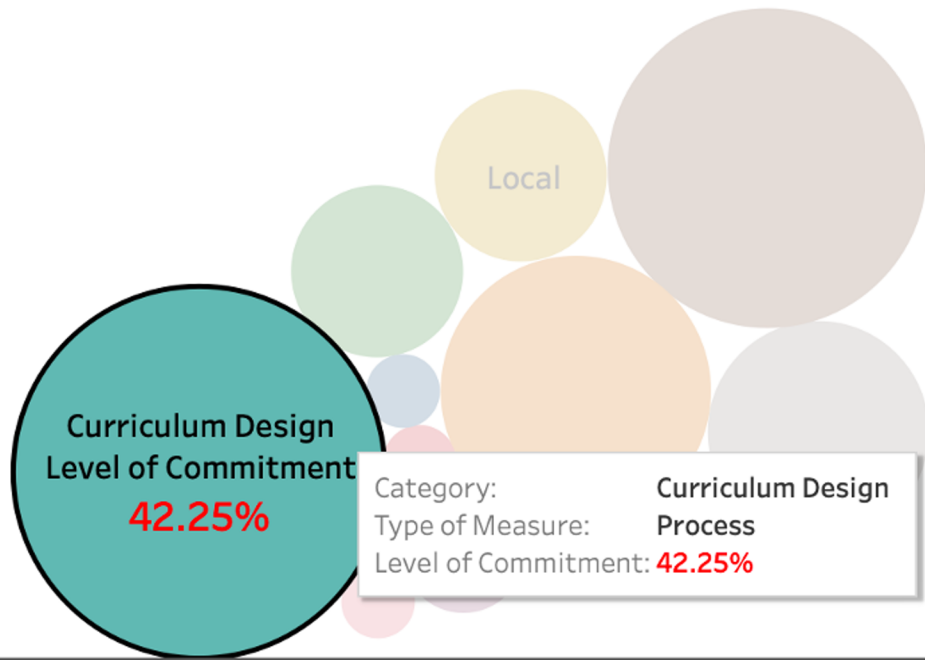


# Silo: Accreditation

## Category

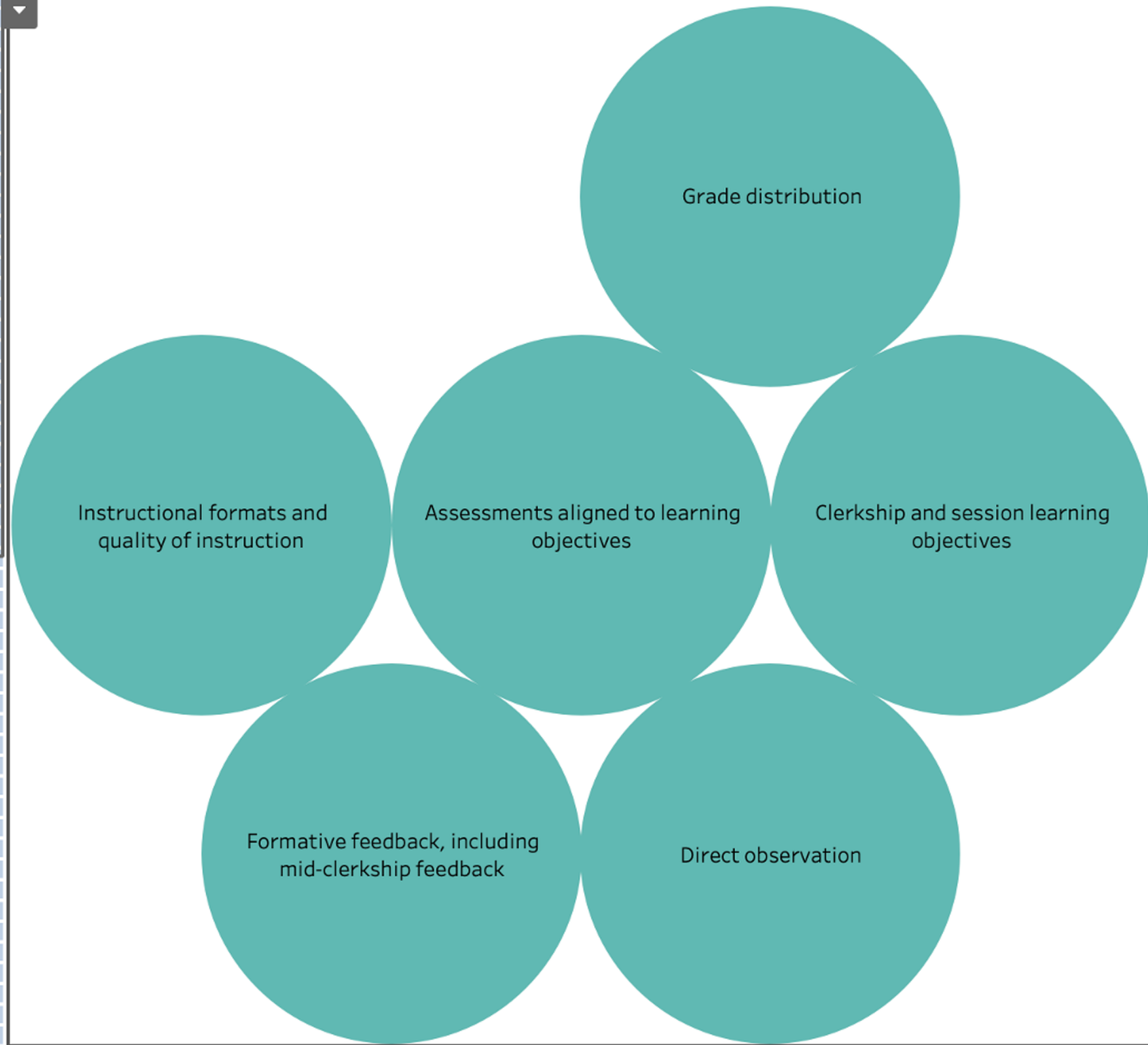


# Category



Category: Curriculum Design  
Type of Measure: Process  
Level of Commitment: 42.25%

# Accreditation

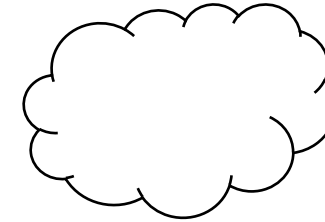
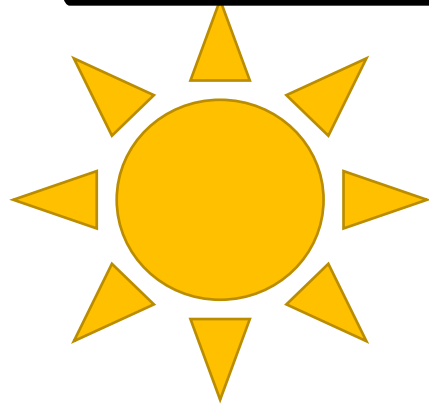


# Outcome v. Process

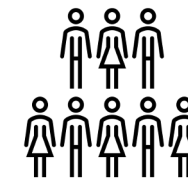
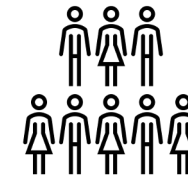
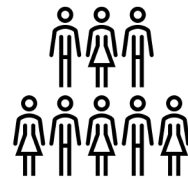


Process

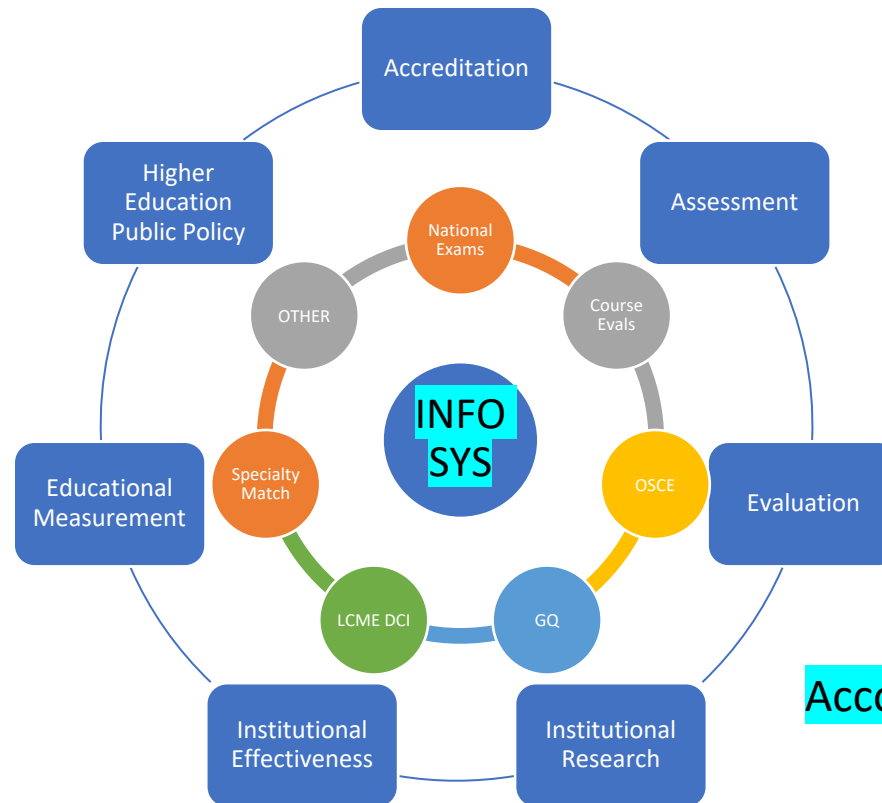
# Culture and Climate



People



Program Evaluator



Accountability  
Silos



- 10 Unimaginable unspeakable
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- 2 Discomforting
- 1 Very mild
- 0 No pain

# Next Steps

- Identification of core components of accountability silos
  - Populating the open survey
- Conceptualization of accountability silos as parts of integrated system
- Finessing of the Organigraph
- Develop actionable recommendations
  - *Opportunities for integration of accountability functions*
  - *Identification of redundancies*
  - *Step-wise operationalization of an accountability system*
- Continue developing open-source tool to share
- *Thank you! Questions?*

