METALAB PRESENTATION

Display Lab

2019-05-24

Toward a standard model of feedback report and dashboard content

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Disclosure

I have no competing interests to declare

Takeaways

- "Performance summary content" is an important term to define for our community
- Key types of performance summary content
  - Performance gaps and trends
  - Measures (i.e. indicators)
  - Time intervals

Outline

1. Introduction
2. Objective
3. A proposed model of feedback content
4. Discussion

Research Focus

- Can software tailor feedback messages for situations that matter?

- We encountered confusion when describing the content of a display

The Problem

A&F terms are not well-defined

- feedback
- performance summary
- comparator

Why defining content matters

- To understand mechanisms, we must differentiate content and form
- Good visualizations leverage relationships between content and form elements

Using taxonomy

- Taxonomy: a hierarchical classification scheme
- "is a kind of" relationships
- E.g. Linnaean taxonomy

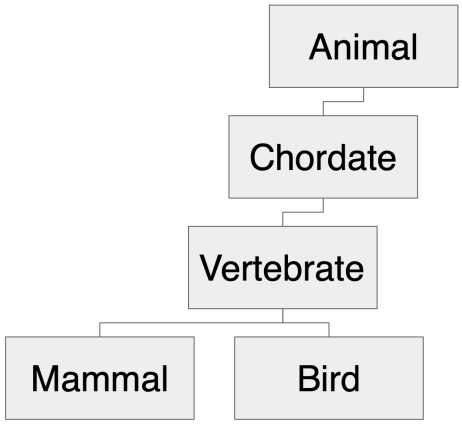

Figure 1:

Toward an ontology

- taxonomy with additional types of relationships

- e.g. “part of

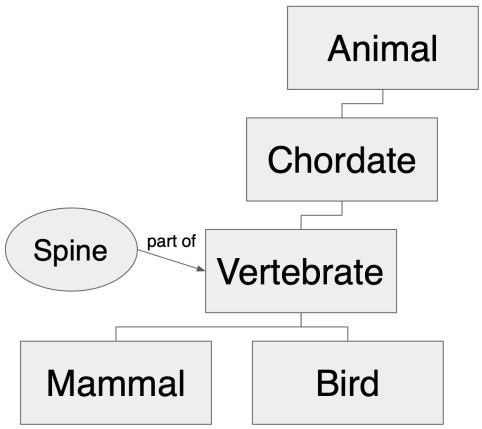

Figure 2:

Value of ontologies

- Describing our data
- Scientific communication and learning

Ontology development goals

- Use our existing language and theory-based terms
- Write definitions with necessary and sufficient characteristics
- Use a standard (Basic Formal Ontology)

Assumptions about ontologies

- A work-in-progress that evolves
- Preferred terms, not correct/incorrect terms
- Challenging and time-consuming to develop
- Systematic, open science approach is optimal

Benefits of taxonomy and ontology

- Better classification of research findings
- Better consensus on knowledge, language
- Better learning for new researchers

- Better development of software for A&F
  - Dashboards
  - Reporting tools

Scope: Performance summary content

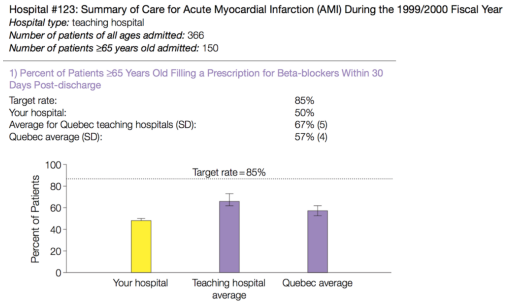

Figure 3:

Beck CA, Richard H, Tu JV, Pilote L. Administrative Data Feedback for Effective Cardiac Treatment: AFFECT, A Cluster Randomized Trial. JAMA. 2005 Jul 20;294(3):309–17.

Scope

- Feedback reports and dashboards have many types of content
  - e.g. Patient lists, recommended actions
- Scope for this talk:
  Key information in a performance summary

Feedback content vs form

- Content
  - What we say
  - e.g. Feedback information, signal
- Form
  - How we say it
  - e.g. Feedback delivery, visual display

Feedback content vs form

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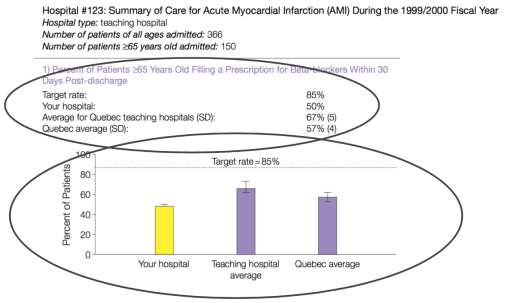

Figure 4:

What is feedback content? (1 of 4)

- ICEBeRG 2006
  - Comparative or not, anonymous or not?
- Hysong et al 2009 and 2016 (FIT)

- Sign (positive/negative)
- Correct / incorrect
- Correct solution
- Attainment level
- Velocity
- Goal-setting type
- Normative information
- Norms
- Discouraging
- Praise

What is feedback content? (2 of 4)

- Ivers et al 2012
  - Summary of performance, recommended actions
- Colquhoun et al 2016

- Processes of care
- Patient outcomes
- Individual/group performance
- Individual/aggregate patient cases
- Identification of behavior
- Graph presented

- Type of comparison
- Others' performance
- Guideline

- Own/Others' previous performance

What is feedback content? (3 of 4)

Brown et al 2016: Interface components

- Performance summaries
- Patient lists
- Patient data
- Recommended actions

What is feedback content? (4 of 4)

- Brown et al 2019: CP-FIT

Feedback display variables

- Performance level
- Patient lists
- Specificity
- Timeliness
- Trend
- Benchmarking
- Prioritisation
- Usability

Gude et al 2019:

Comparators

- Benchmarks
- Explicit targets
- Trends

Outline

1. Introduction
2. **Objective**
3. A proposed model of feedback content
4. Discussion

Objective

To propose a standard model of performance summary content for the purposes of:

- Description: Organizing data and information about A&F interventions

- Learning: A&F research communication

Outline

1. Introduction
2. Objective
3. **A proposed model of feedback content**
4. Discussion

Performance summary

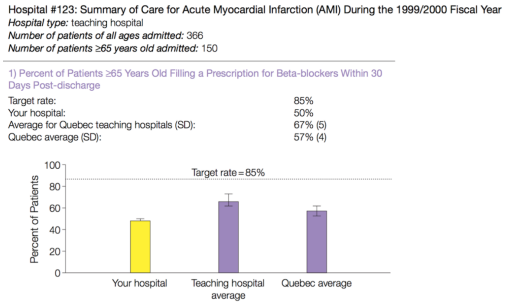

Figure 5:

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Performance summary

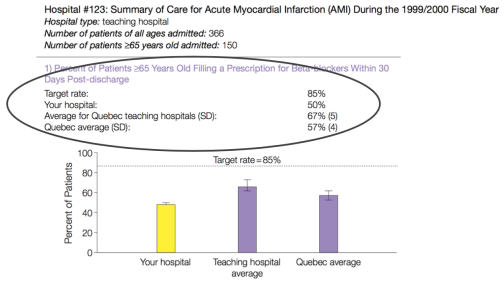

Figure 6:

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Performance summary

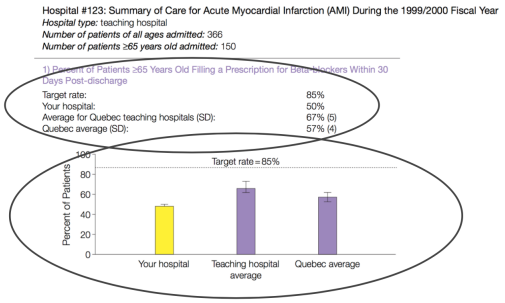

Figure 7:

Beck CA, Richard H, Tu JV, Pilote L. Administrative Data Feedback for Effective Cardiac Treatment: AFFECT, A Cluster Randomized Trial. JAMA. 2005 Jul 20;294(3):309–17.

Hospital #123: Summary of Care for Acute Myocardial Infarction (AMI) During the 1999/2000 Fiscal Year
Hospital type: teaching hospital
Number of patients of all ages admitted: 366
Number of patients ≥65 years old admitted: 150

1) Percent of Patients ≥65 Years Old Filling a Prescription for Beta-blockers Within 30 Days Post-discharge

Target rate:	85%
Your hospital:	50%
Average for Quebec teaching hospitals (SD):	67% (5)
Quebec average (SD):	57% (4)

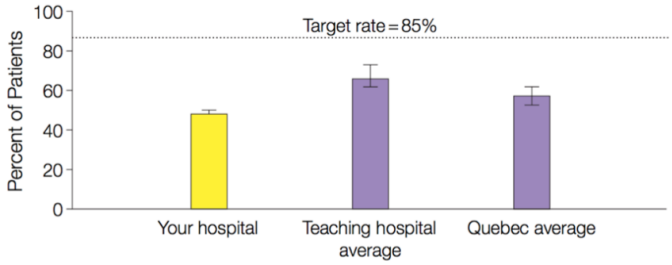

Figure 8:

Example

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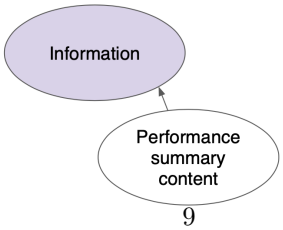
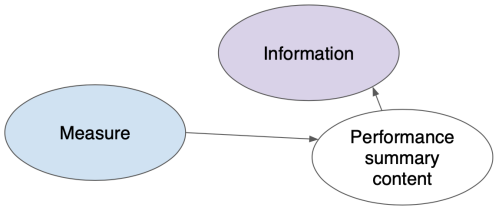


2003)
- i.e. indicators, metrics



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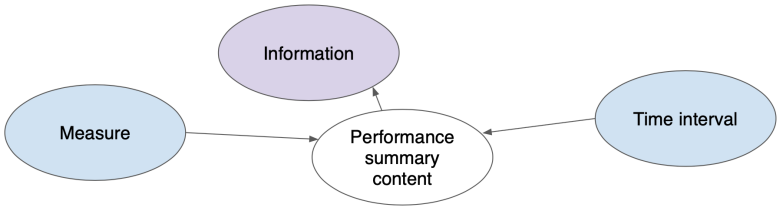

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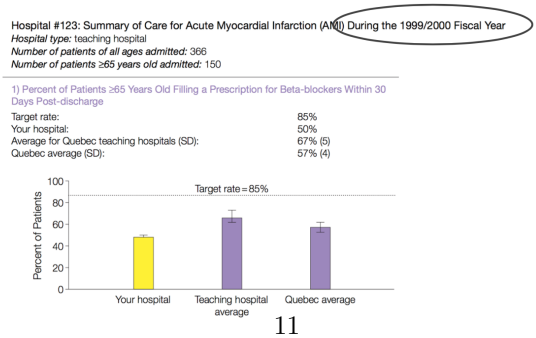
Time interval



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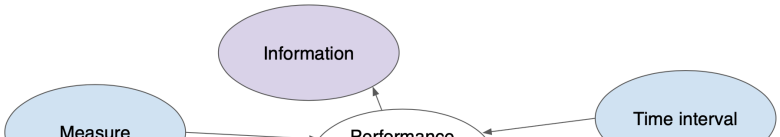
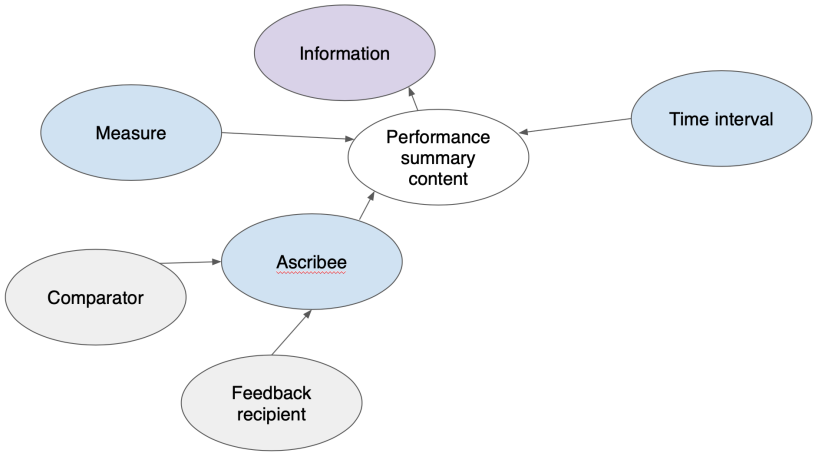


- i.e. feedback recipient, comparator



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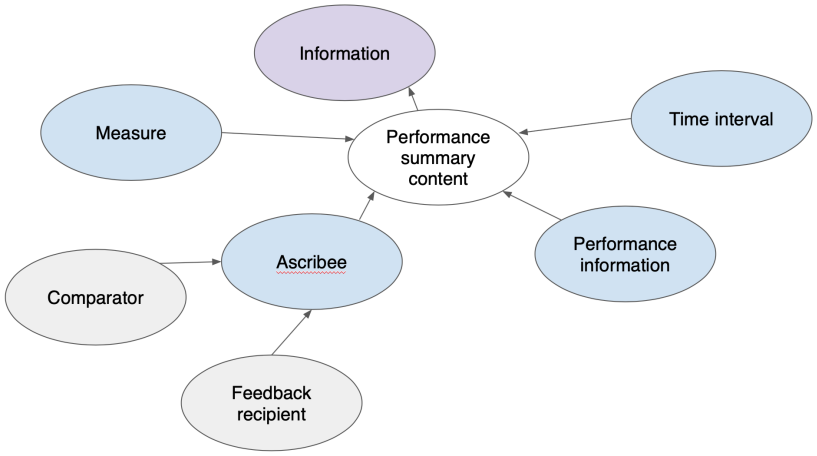

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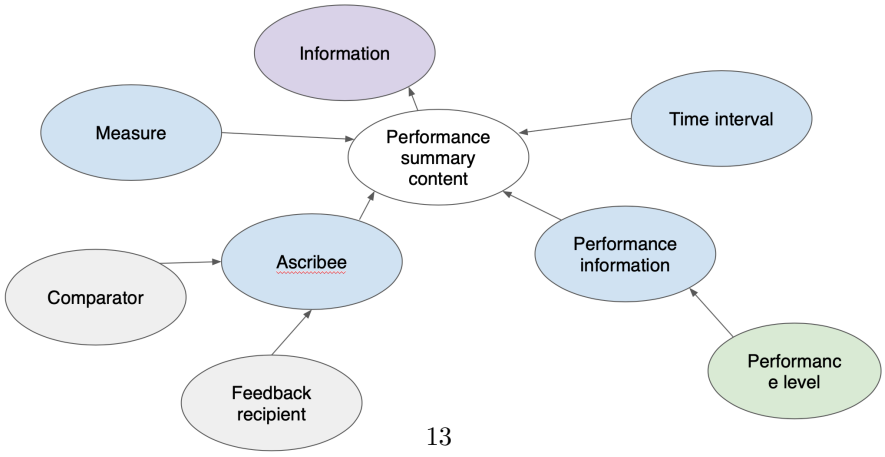

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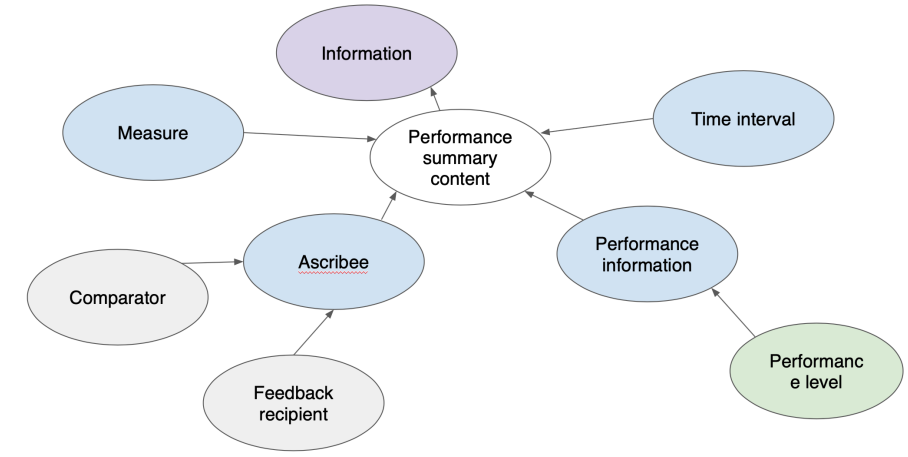
Performance levels

1) Percent of Patients ≥65 Years Old Filling a Prescription for Beta-blockers Within 30 Days Post-discharge

Target rate: 85%
Your hospital: 50%

- i.e. performance score, data, or information
- e.g. 81%, High, 23/42



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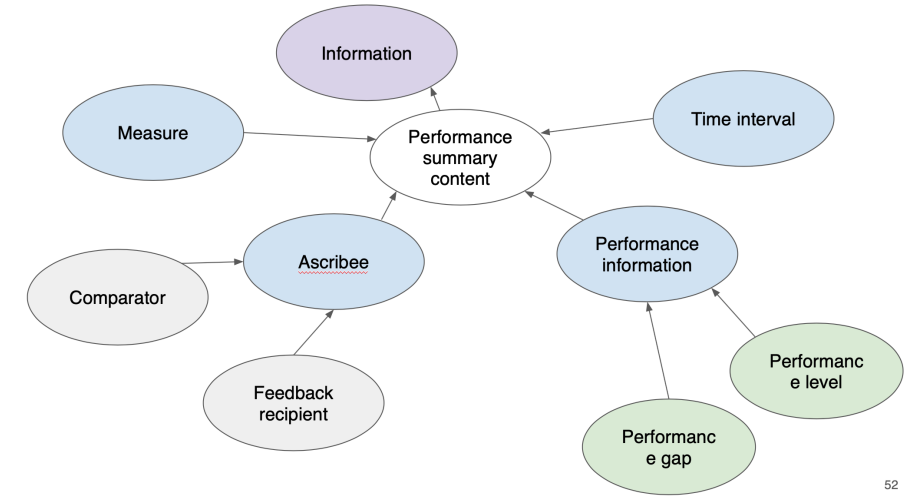

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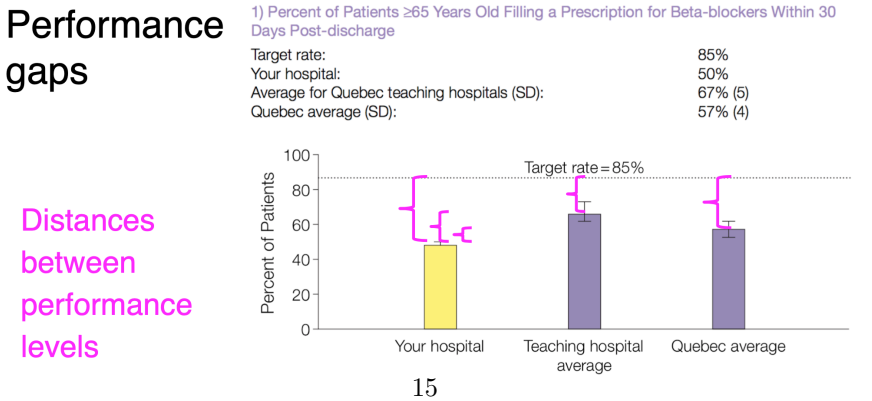

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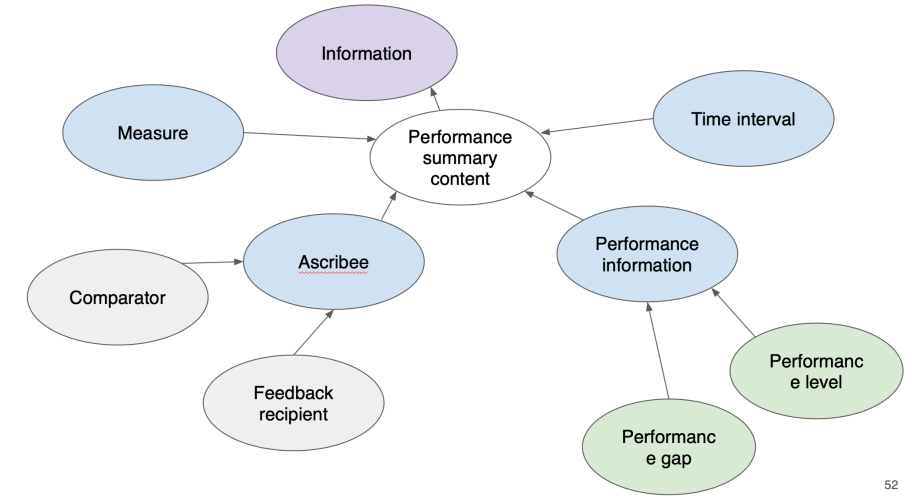
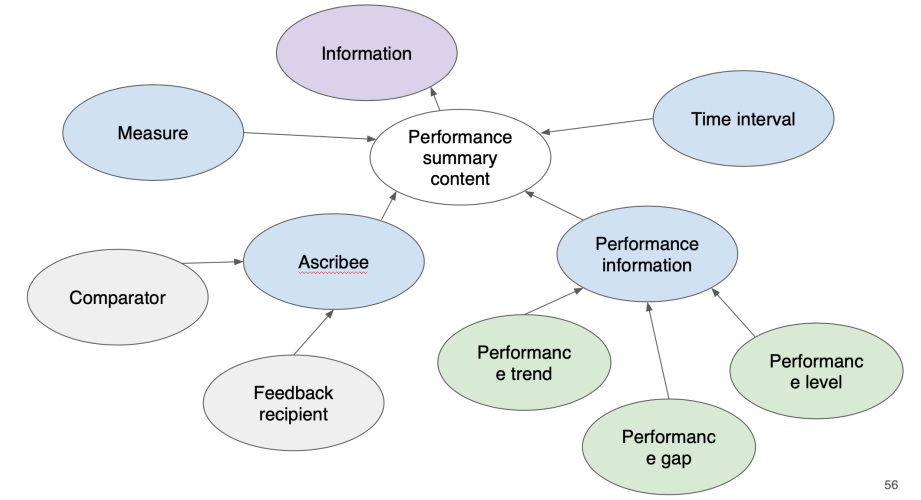
Performance gap

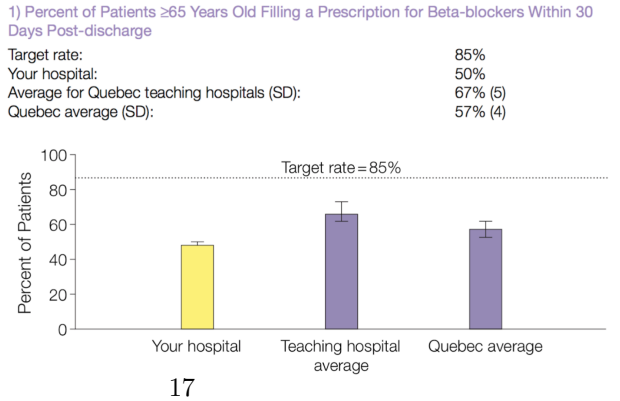
- Information about a distance between performance levels of a feedback recipient and a comparator

- i.e. performance discrepancy
- e.g. below average, top performer





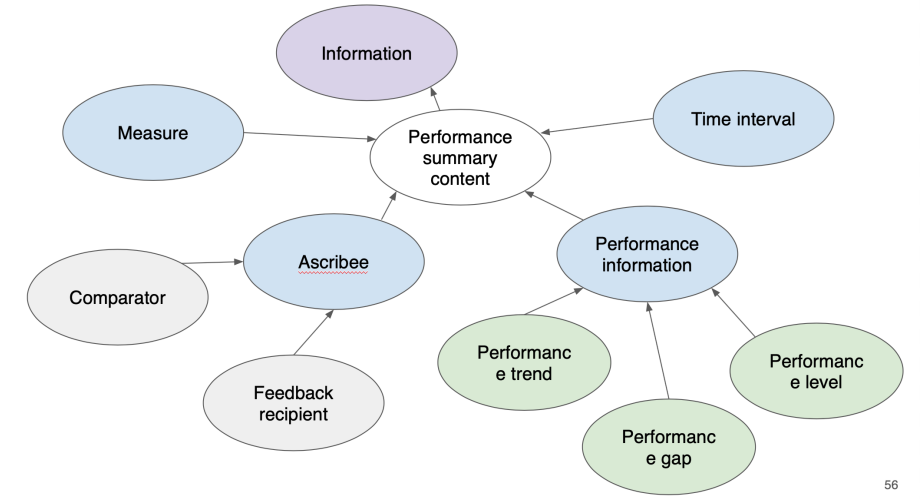
No trend

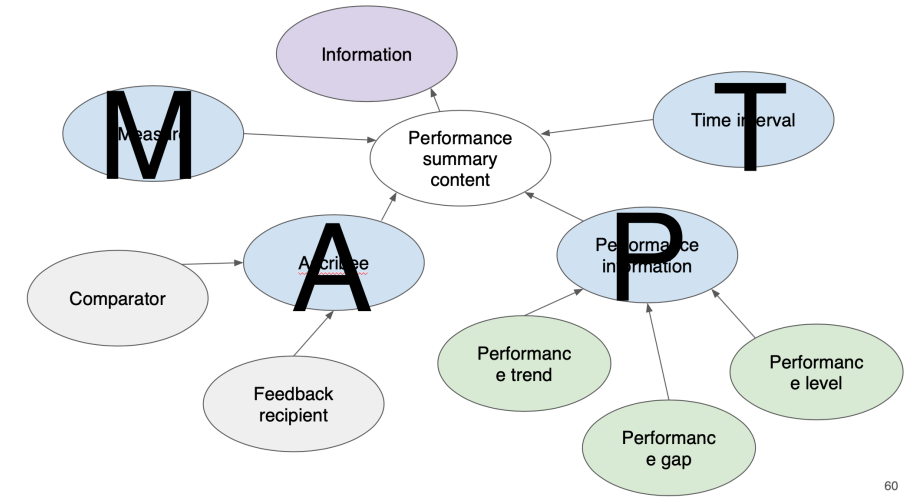


Performance trend

- Information about movement that emerges from performance levels displayed over time

- i.e. velocity feedback
- e.g. performance is increasing/decreasing





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Limitations

- Incomplete
  - Many other important types of content are not yet included
- Slow-going, this represents ~3 years of work
- Limited input from A&F community to date

Toward a feedback intervention ontology

- We are developing a computer-interpretable form of MAPT
- Purposes of the computable model:
  - Organizing data and information about feedback interventions
  - Learning about feedback mechanisms

Implications for A&F research

- A standard model of feedback content could be useful for large-scale studies
- Support organized efforts to address A&F hypotheses at large scale

Thank you

NIH National Library of Medicine K01 #5K01LM012528-02 DISPLAY Lab: https://github.com/Display-Lab

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