Toward a standard model of feedback report and dashboard content

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Symposium on Advancing
the Science of Audit and Feedback

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

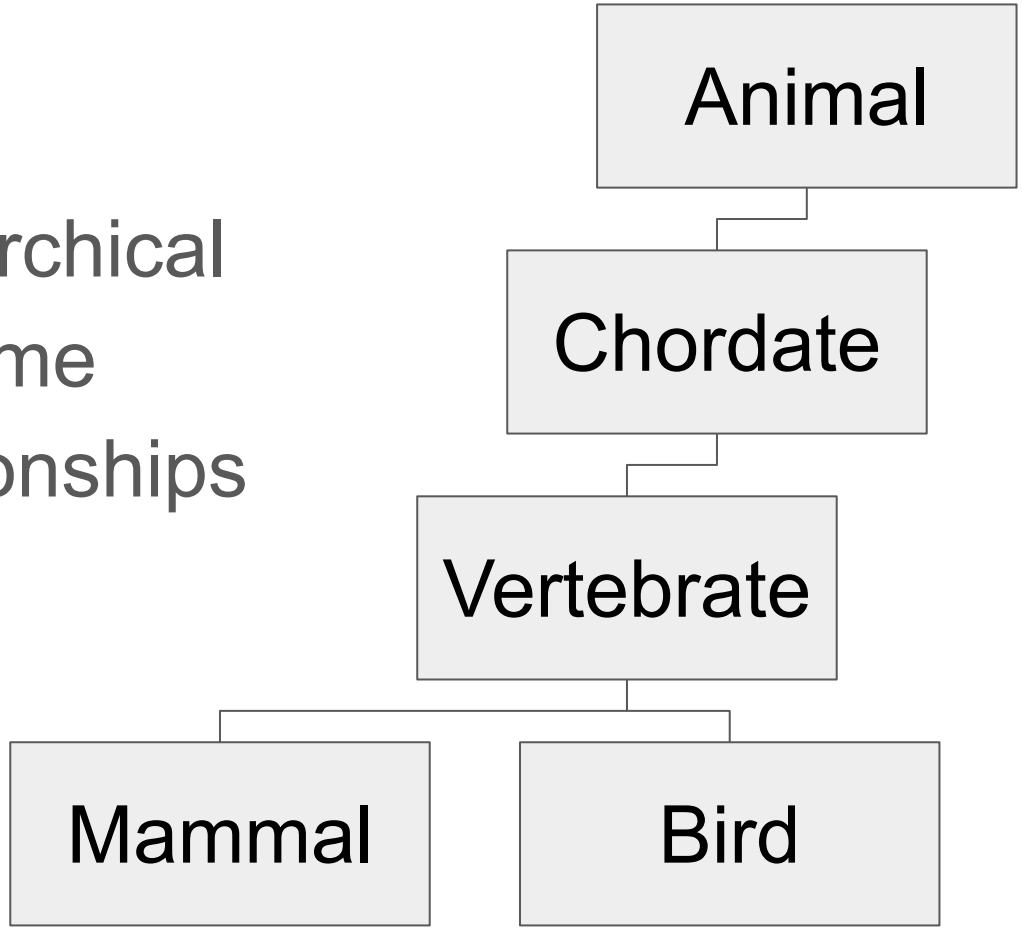
Why defining content matters

- To understand mechanisms, we must differentiate content and form

- Good visualizations leverage relationships between content and form elements

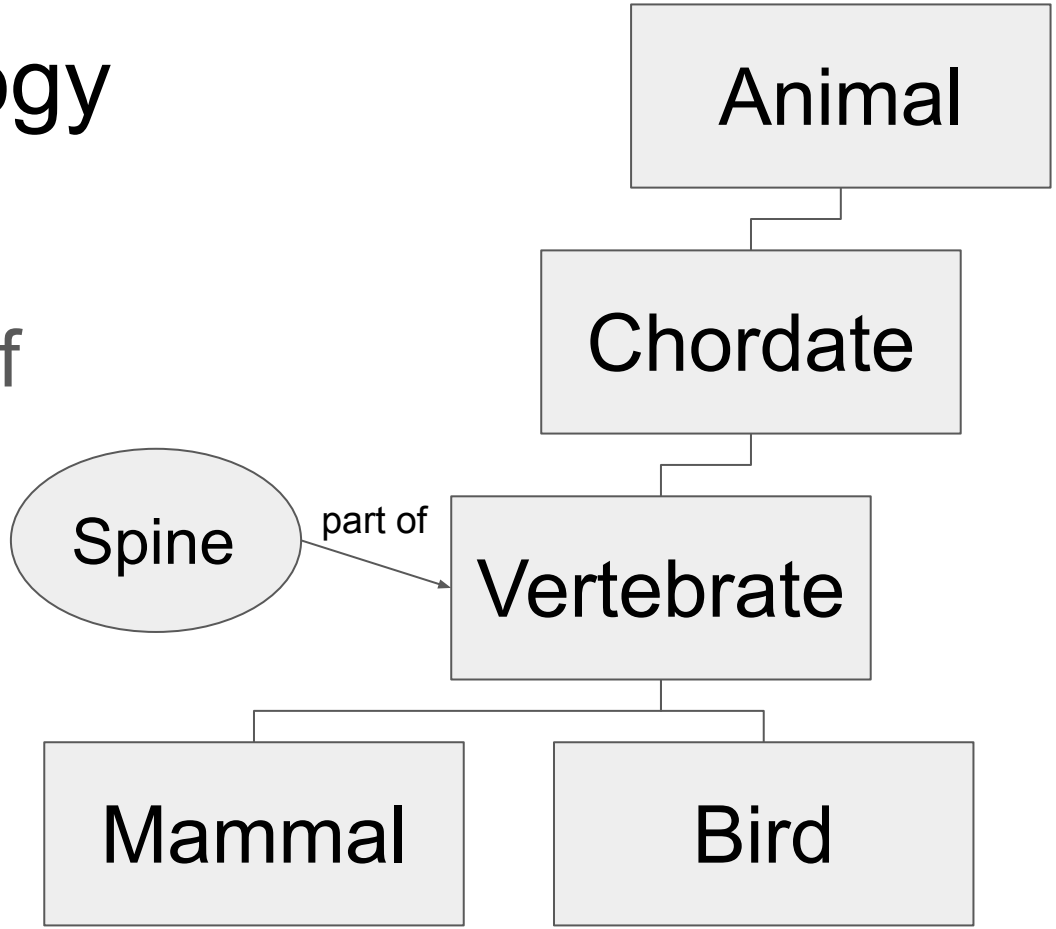
Using taxonomy

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



Toward an ontology

- taxonomy with additional types of relationships
- e.g. “part of”



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

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%
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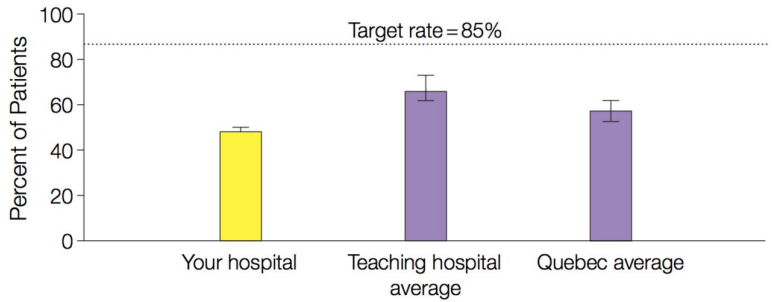

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Scope

- 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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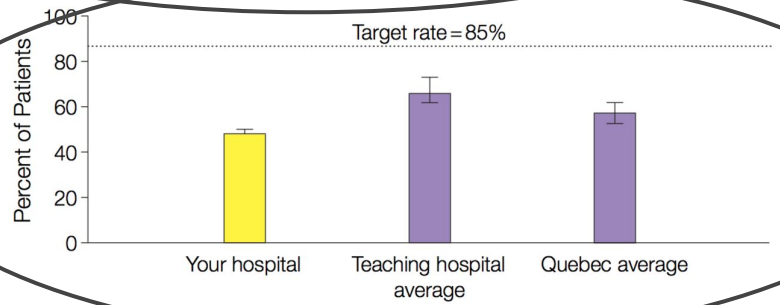

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What is feedback content? (1 of 4)

- 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**
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Performance summary

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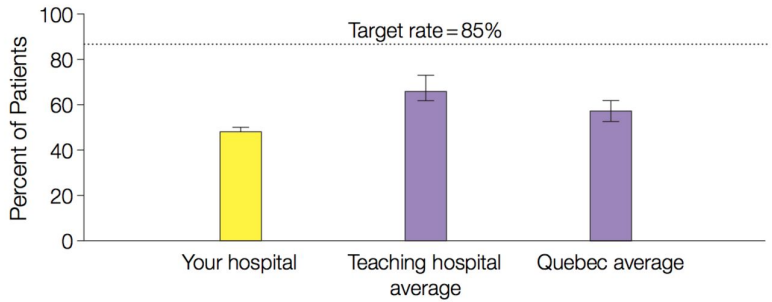

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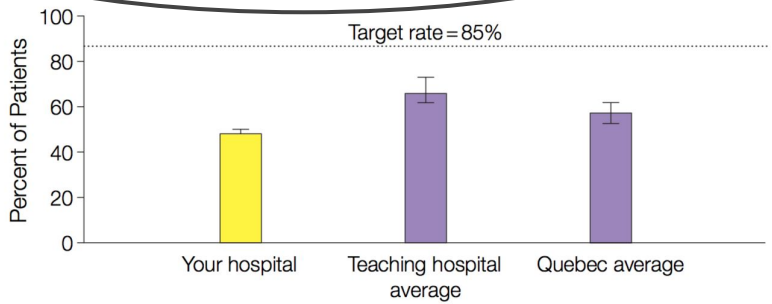

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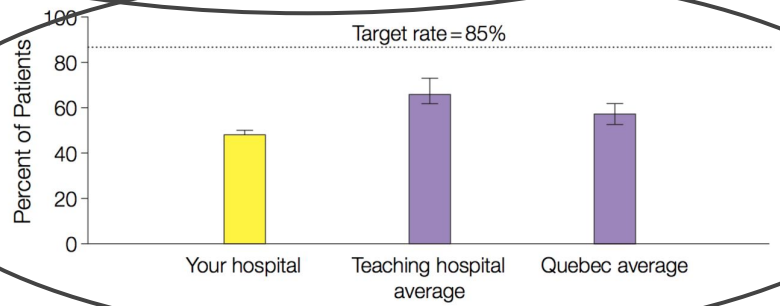

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Example

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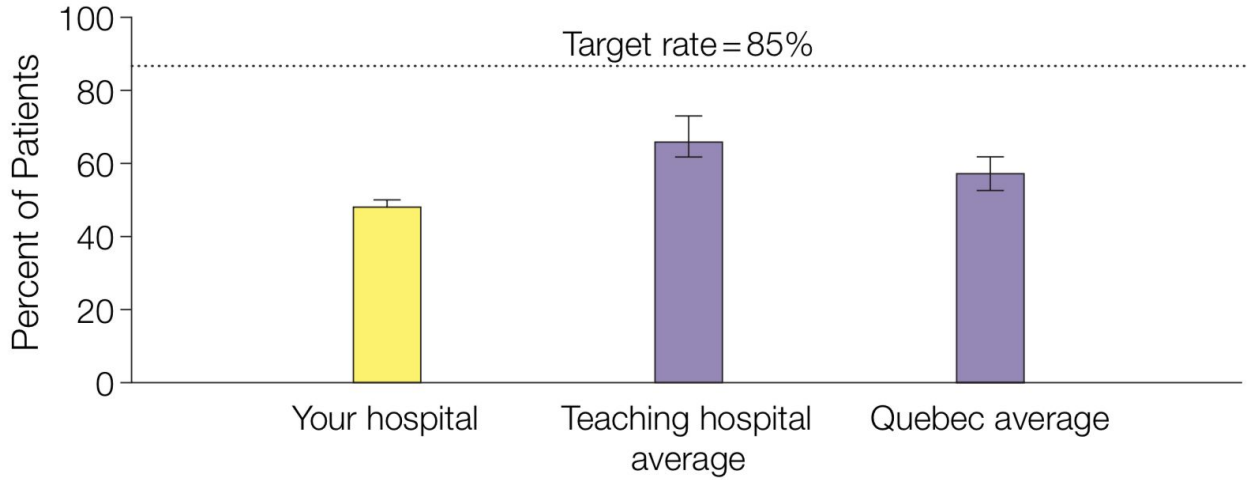
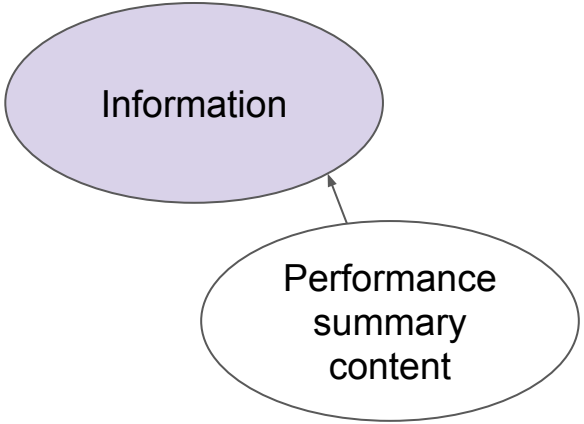
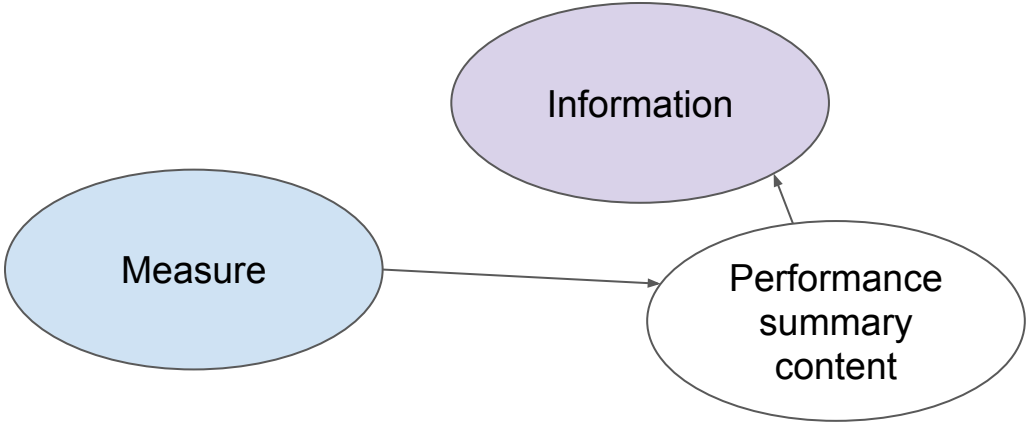



Performance
summary
content


Information
Performance summary content


Information
Measure
Performance summary content

Performance measure

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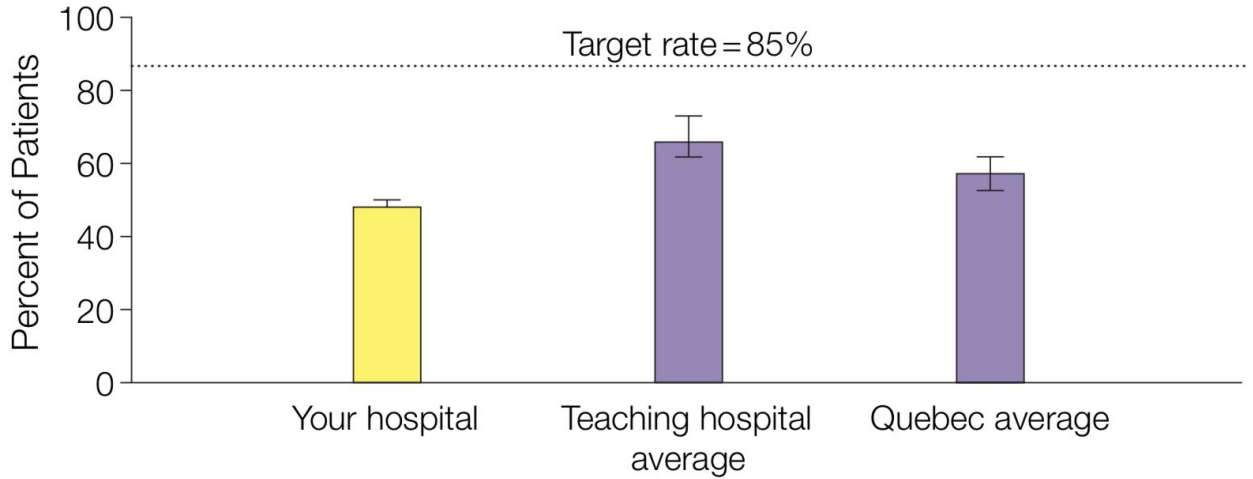
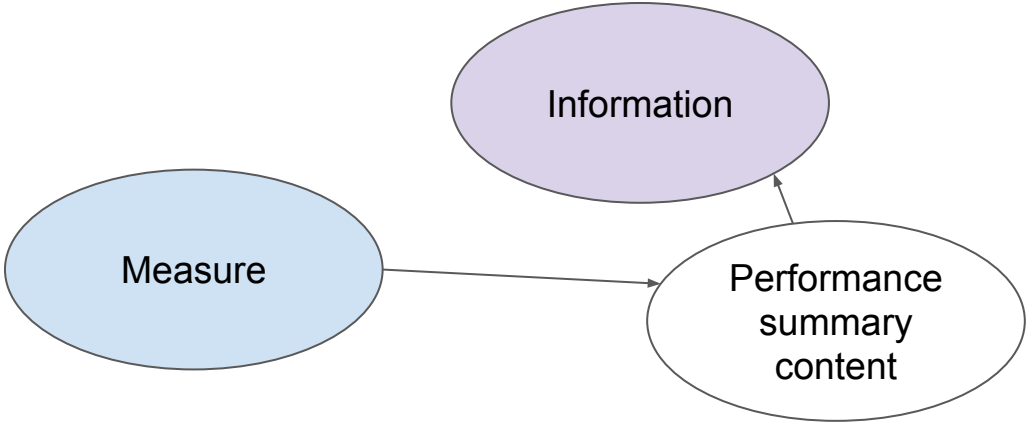


Performance measure

- Information about a method of measuring clinical practice referring to the structures, processes, or outcomes of care (modified from Campbell et al 2003)

- i.e. indicators, metrics


Information
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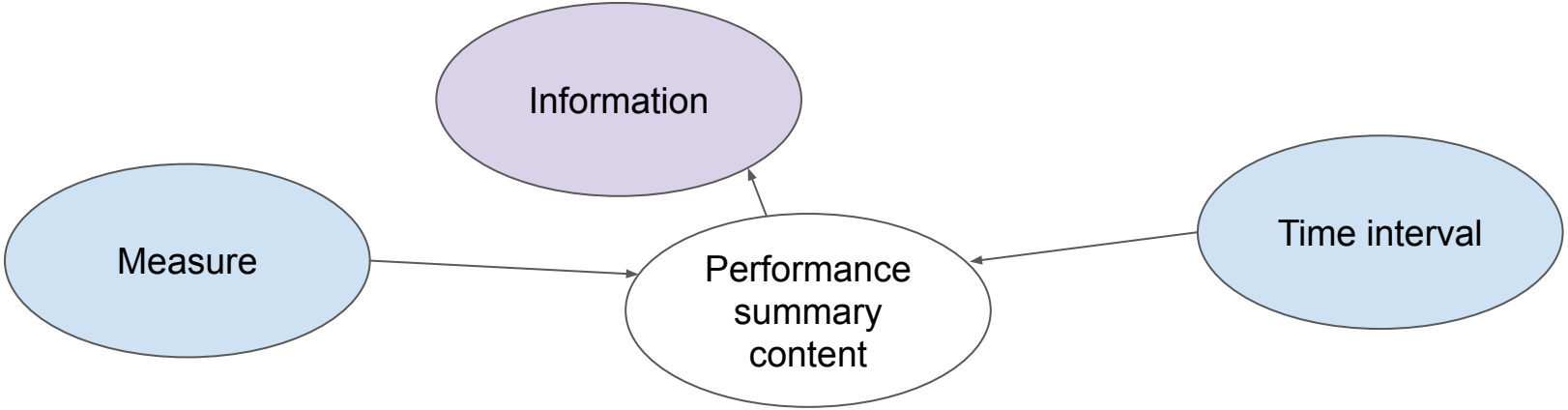
Performance summary content


Information
Measure
Performance summary content
Time interval

Time interval

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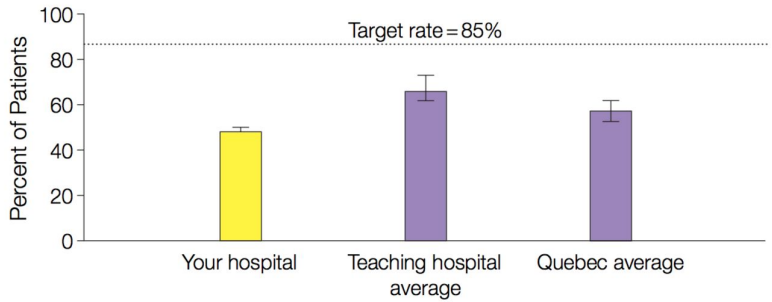

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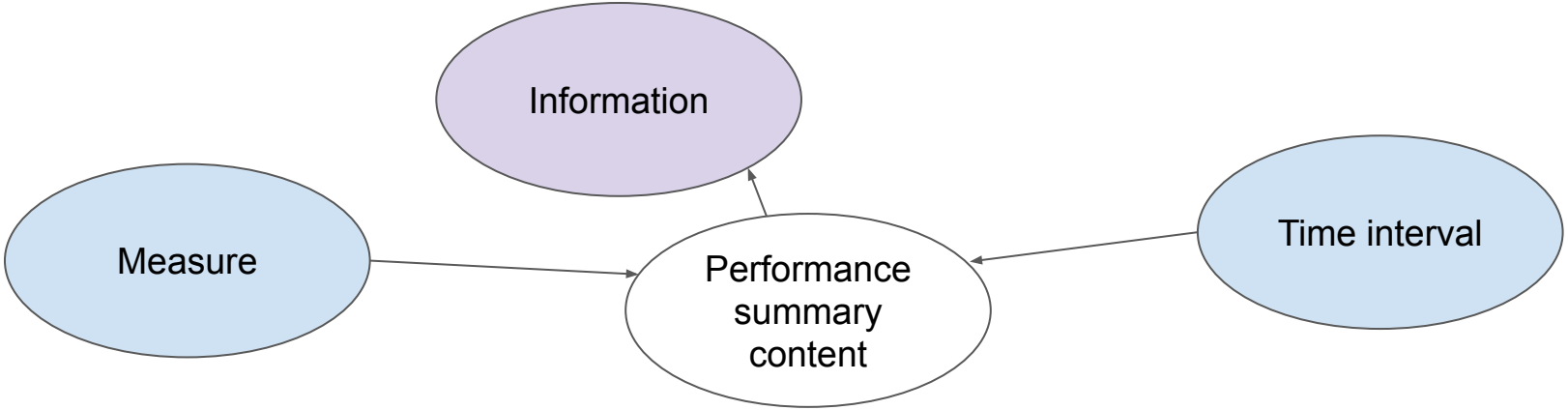
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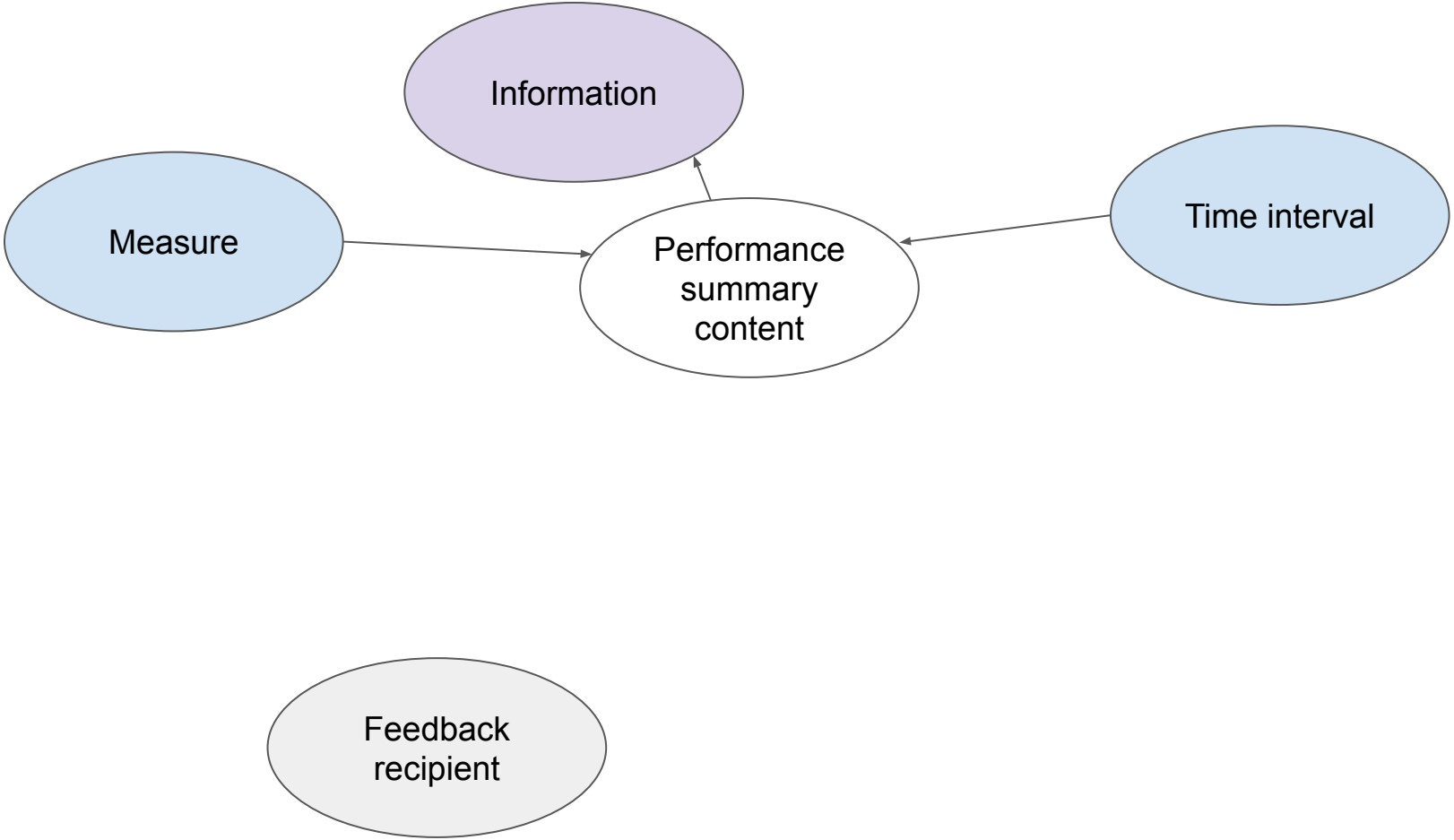
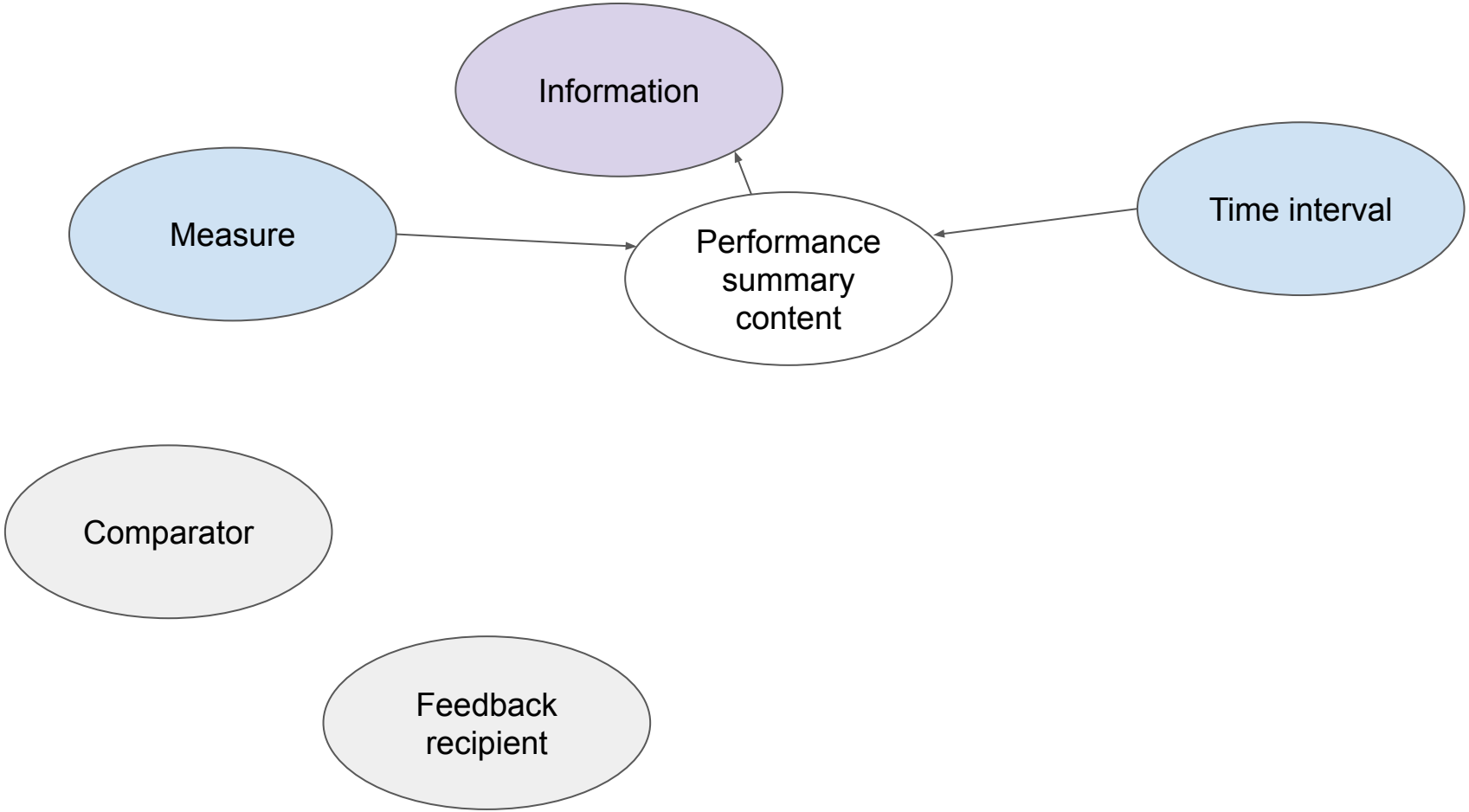

Information
Measure
Performance summary content
Time interval
Feedback recipient


Information
Measure
Performance summary content
Time interval
Comparator
Feedback recipient

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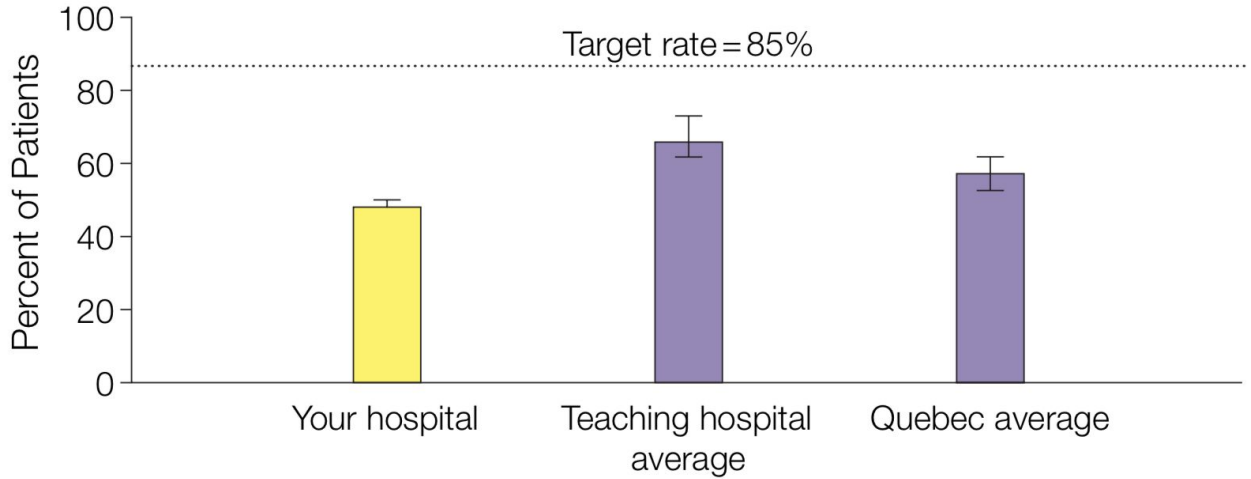

People, organizations, benchmarks, goals

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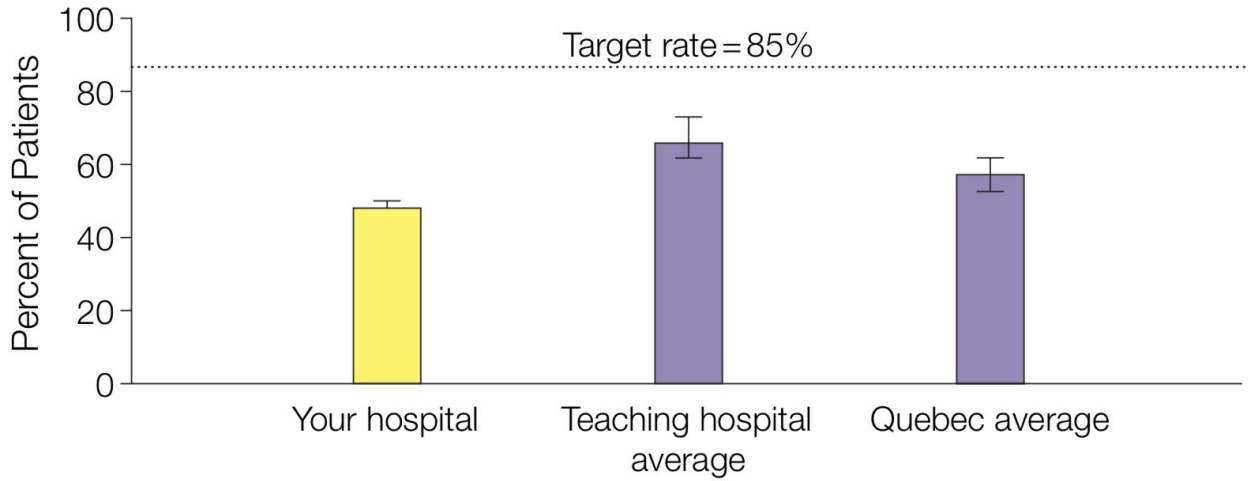

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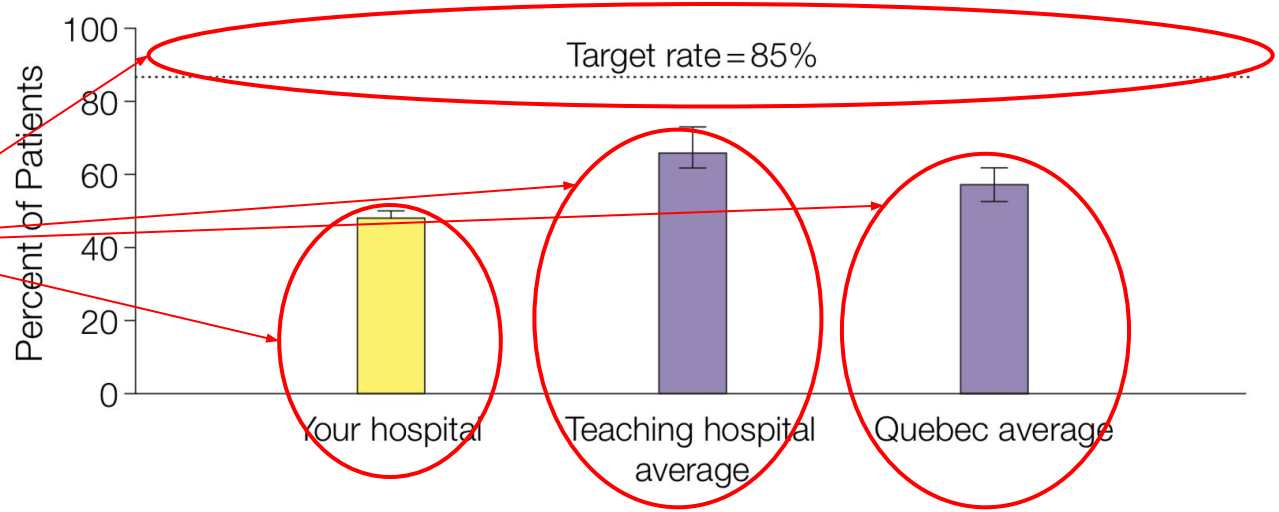
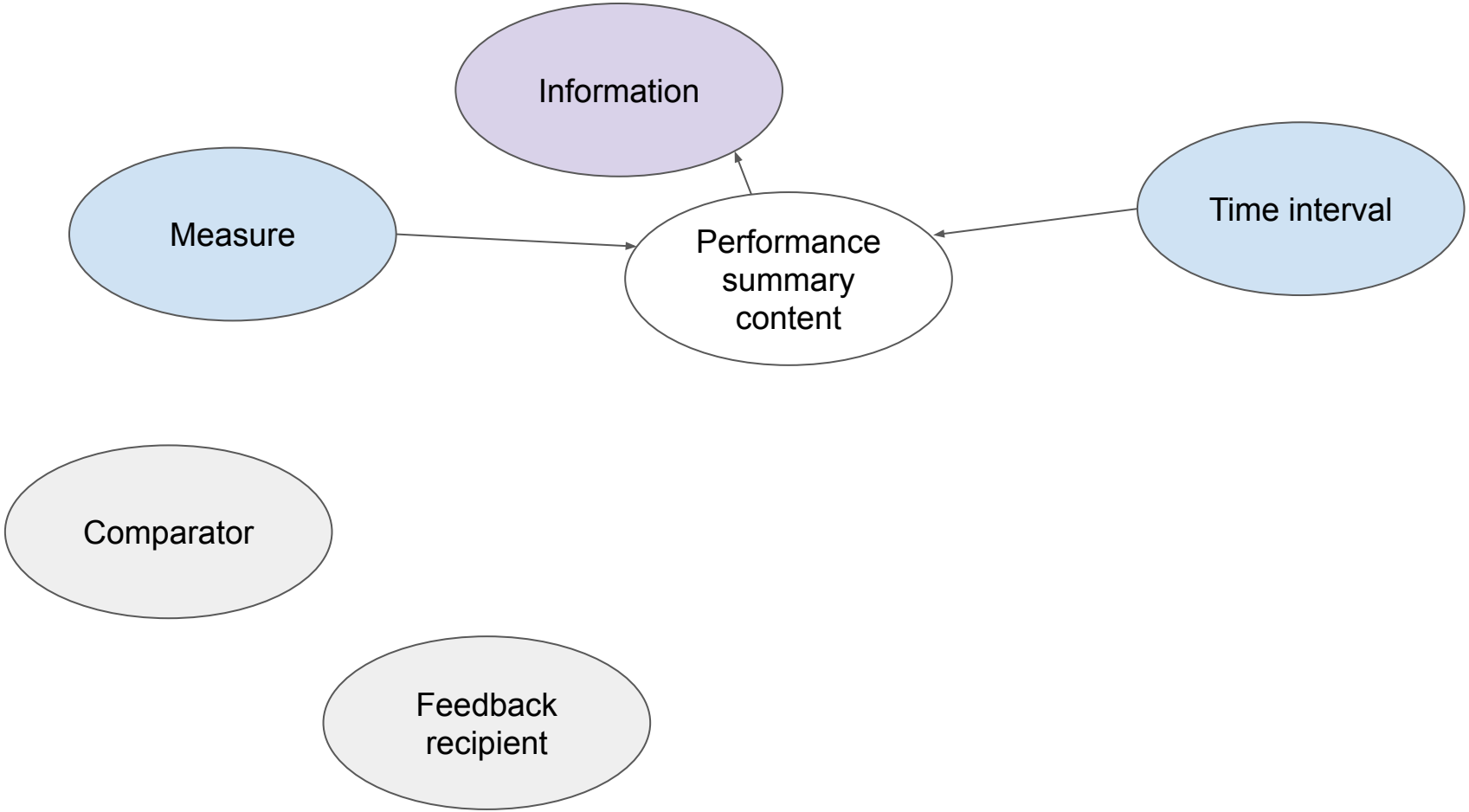
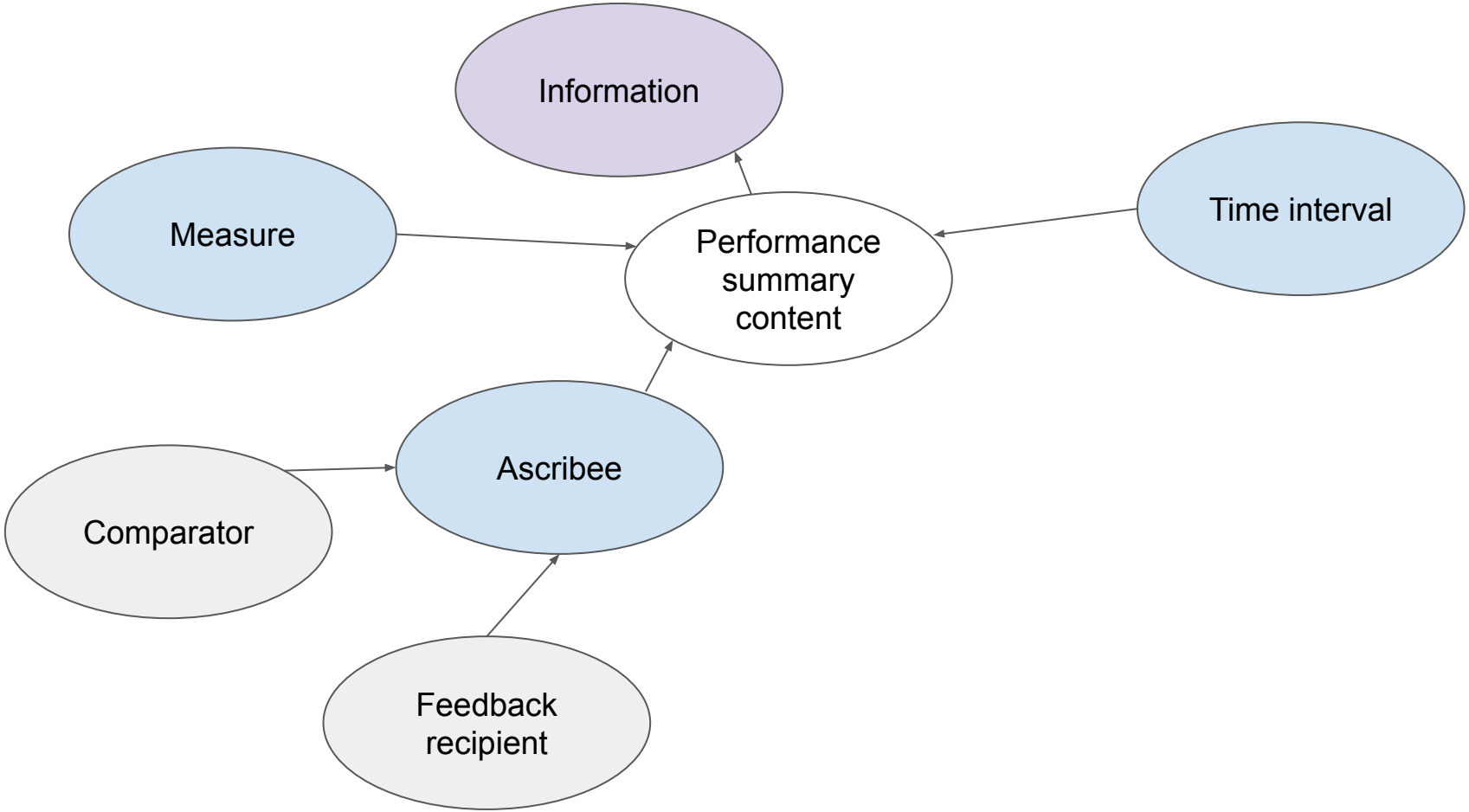


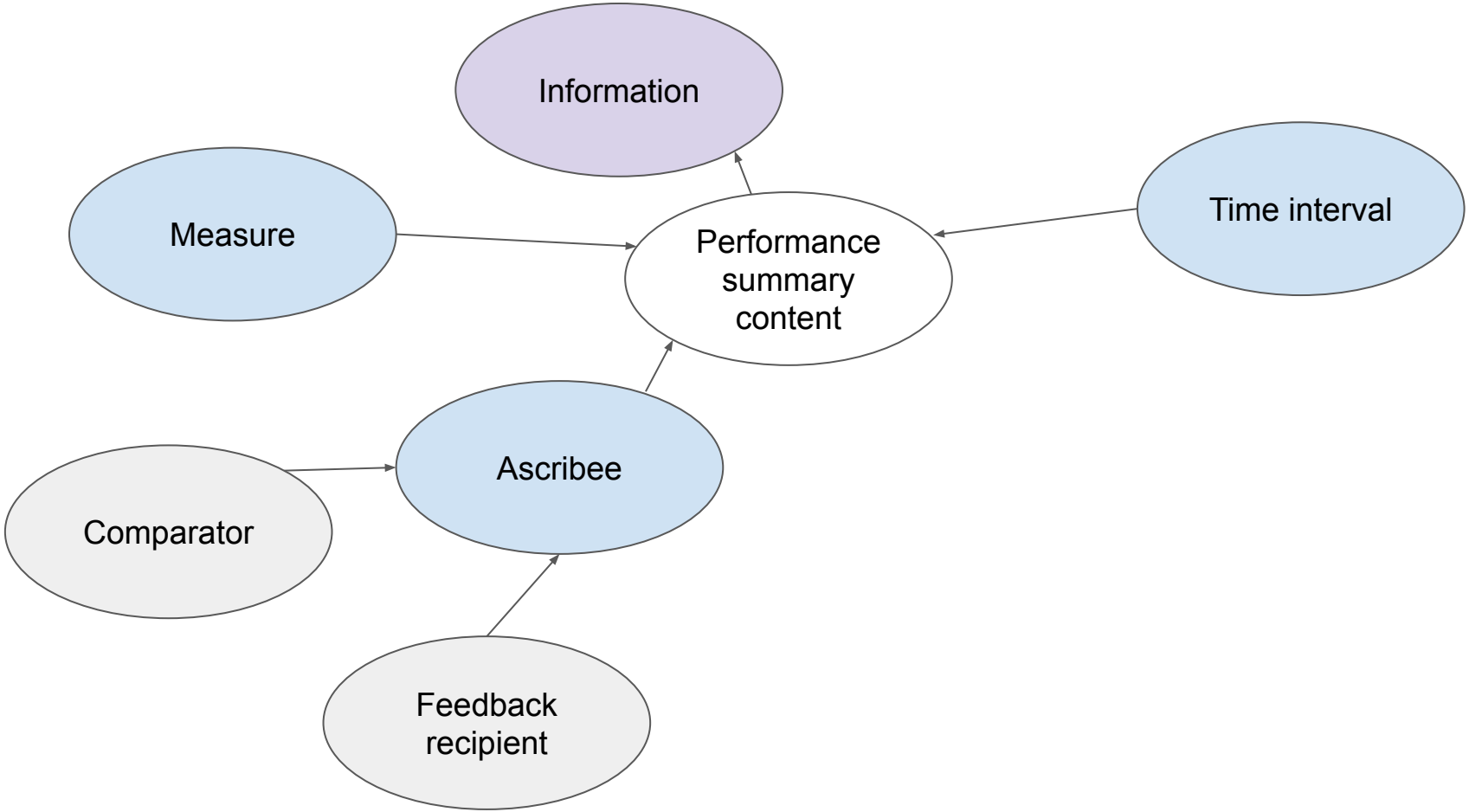

Information
Measure
Performance summary content
Time interval
Comparator
Feedback recipient


Information
Measure
Performance summary content
Time interval
Ascribee
Comparator
Feedback recipient

Ascribee

- Information about an entity that has an attributed performance

- i.e. feedback recipient, comparator


Information
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Time interval
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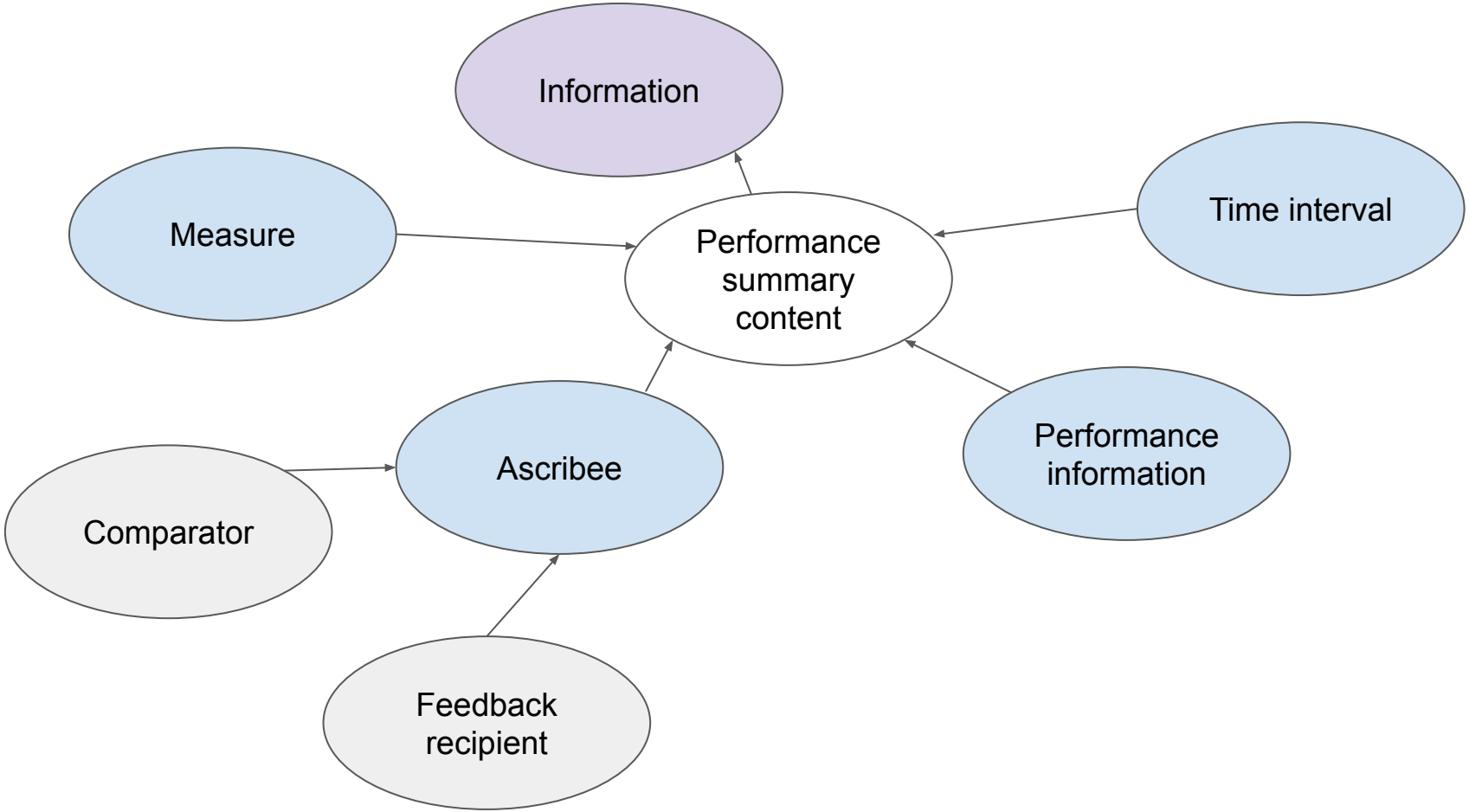
Feedback recipient


Information
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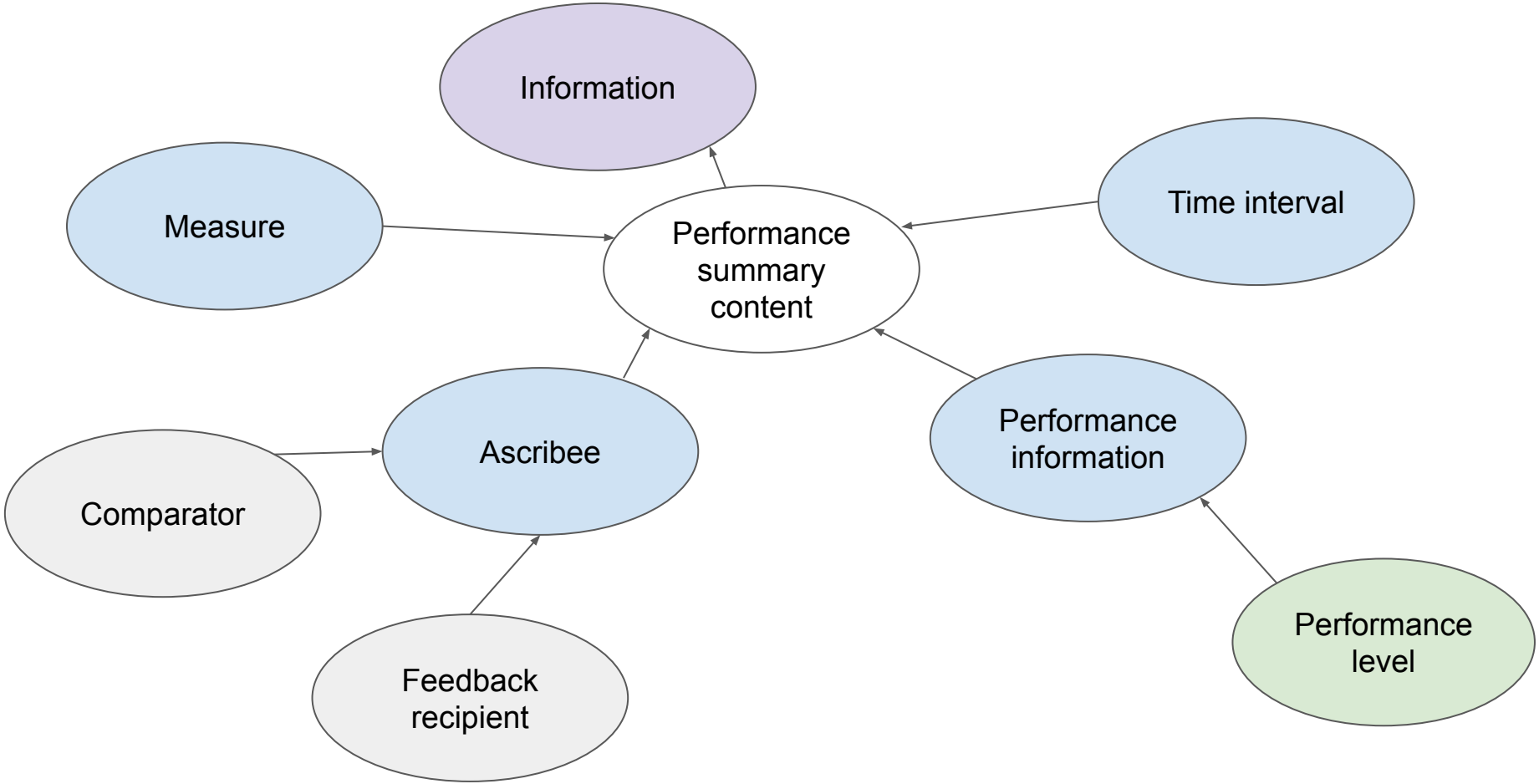
Time interval
Ascribee
Comparator
Performance information
Feedback recipient


Information
Measure
Performance summary content
Time interval
Comparator
Ascribee
Performance information
Feedback recipient
Performance level

Performance levels

Data about events, scores, percentages

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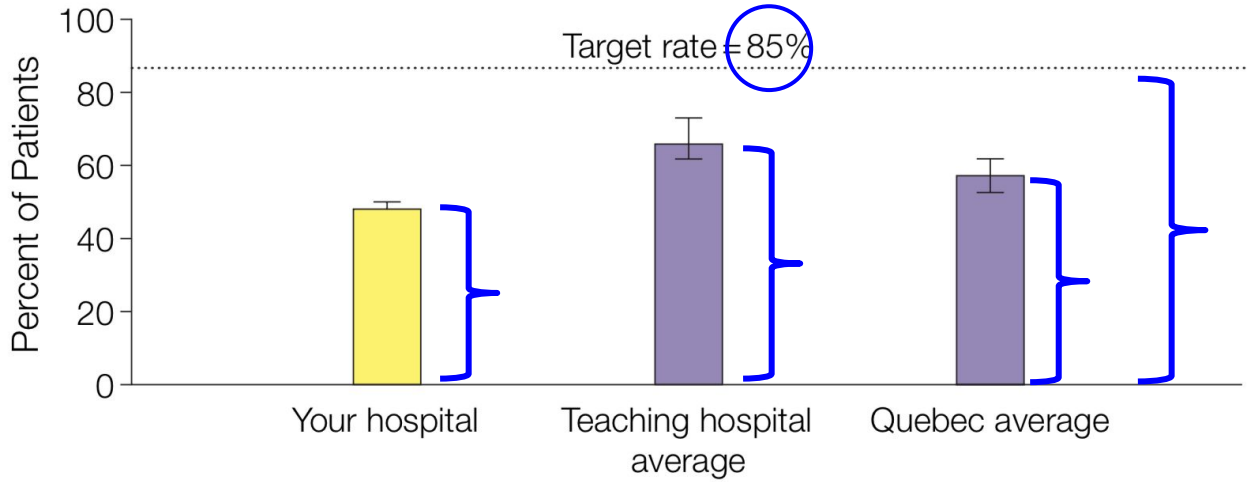
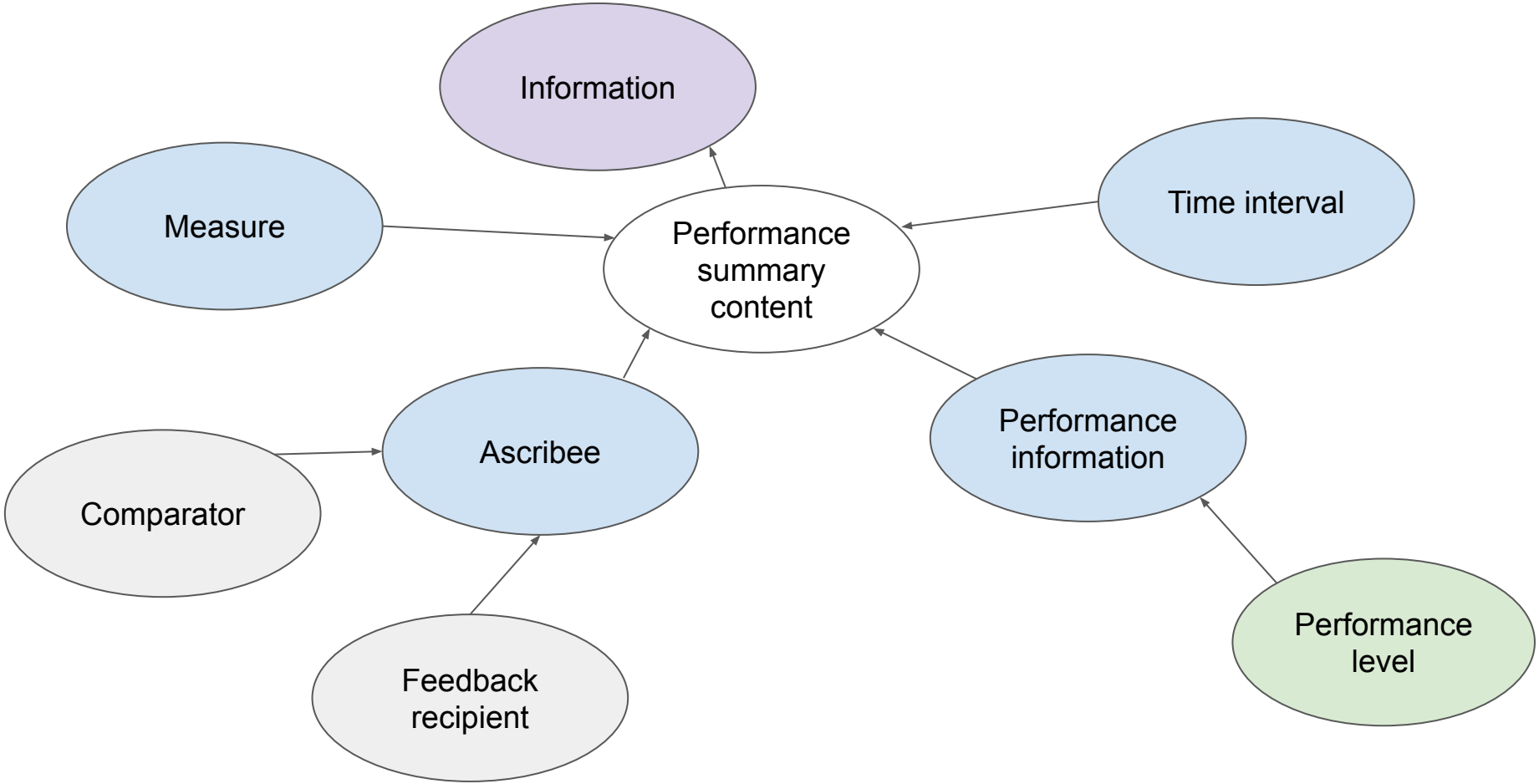
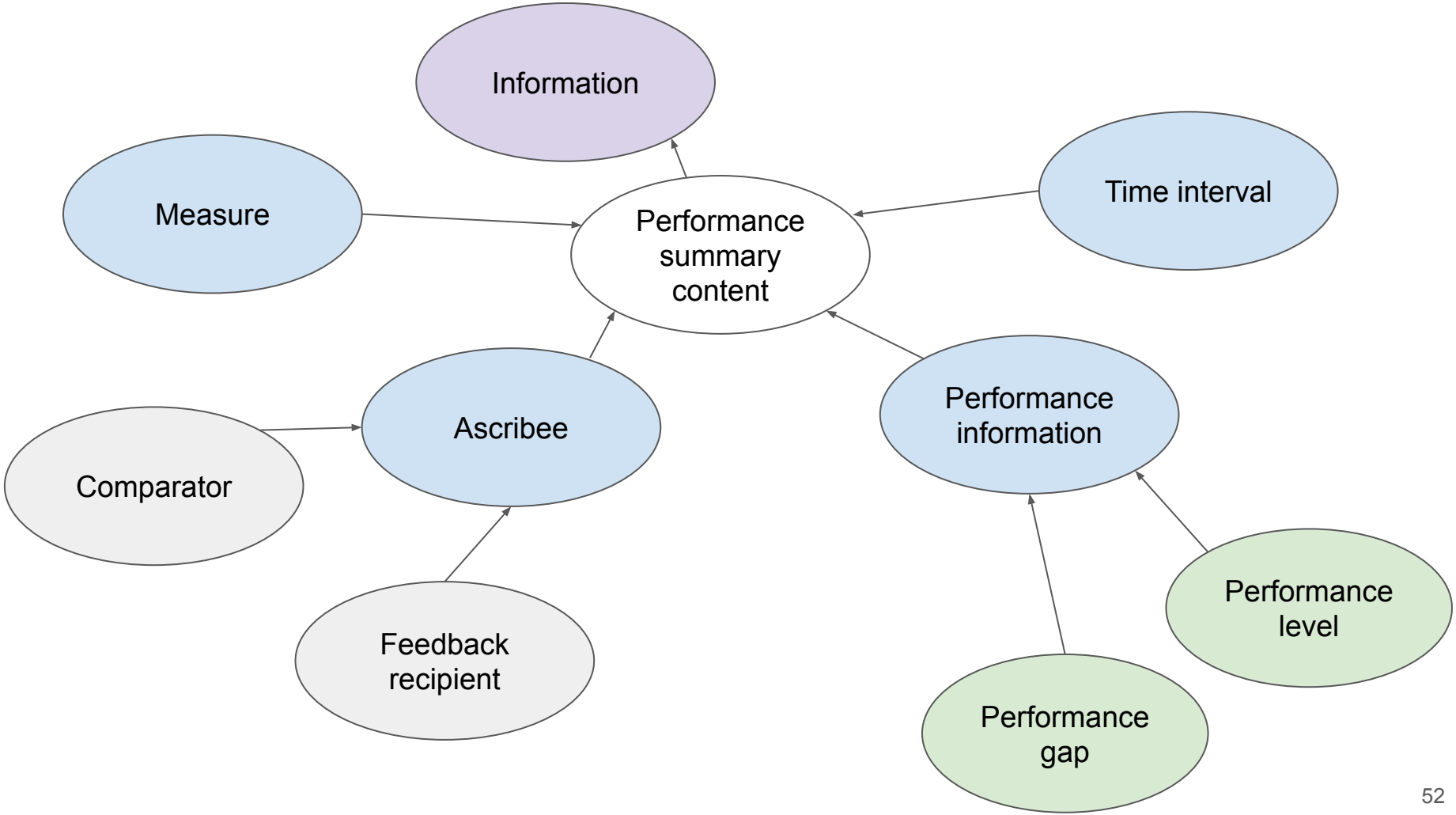


Performance level

- Information about clinical practice that was accomplished
- i.e. performance score, data, or information
- e.g. 81%, High, 23/42


Information
Measure
Performance summary content
Time interval
Comparator
Ascribee
Performance information
Feedback recipient
Performance level


Information
Measure
Performance summary content
Time interval
Ascribee
Comparator
Feedback recipient
Performance information
Performance level
Performance gap

Performance gaps

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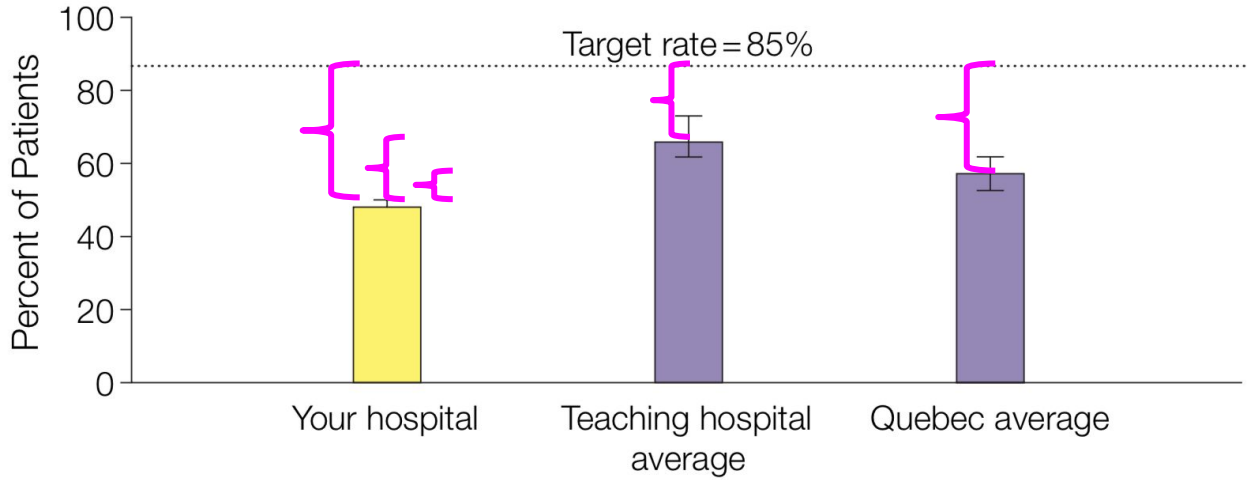
Distances between performance levels

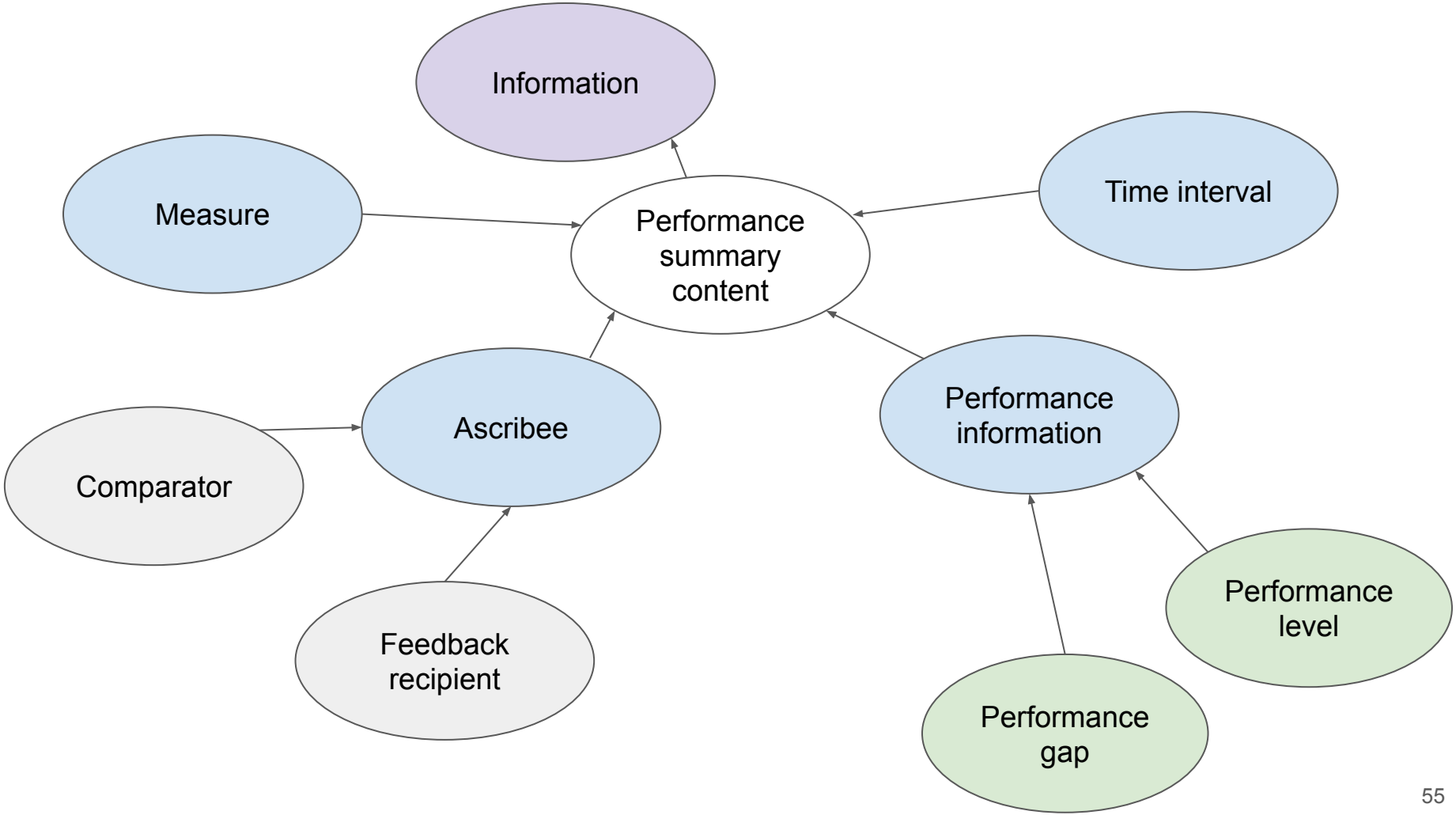


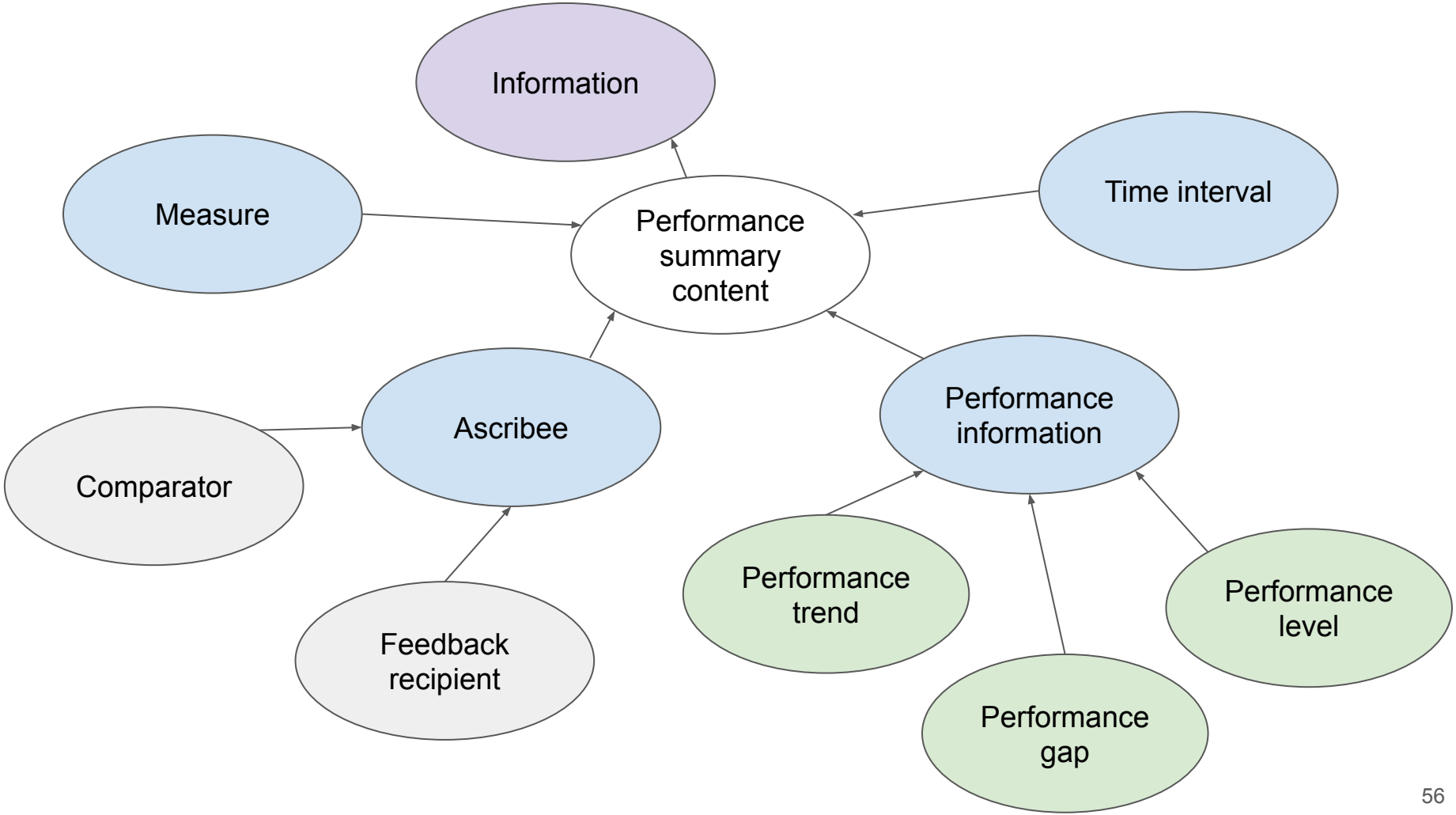
Performance gap

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

- i.e. performance discrepancy

- e.g. below average, top performer


Information
Measure
Performance summary content
Time interval
Ascribee
Comparator
Feedback recipient
Performance information
Performance level
Performance gap


Information
Measure
Performance summary content
Time interval
Ascribee
Comparator
Feedback recipient
Performance information
Performance trend
Performance gap
Performance level

No trend

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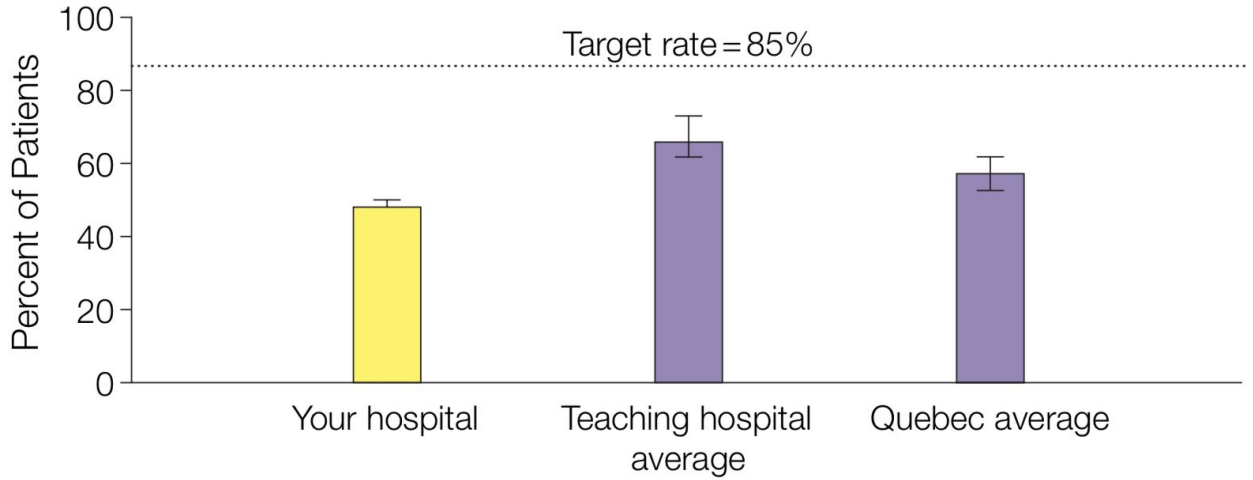
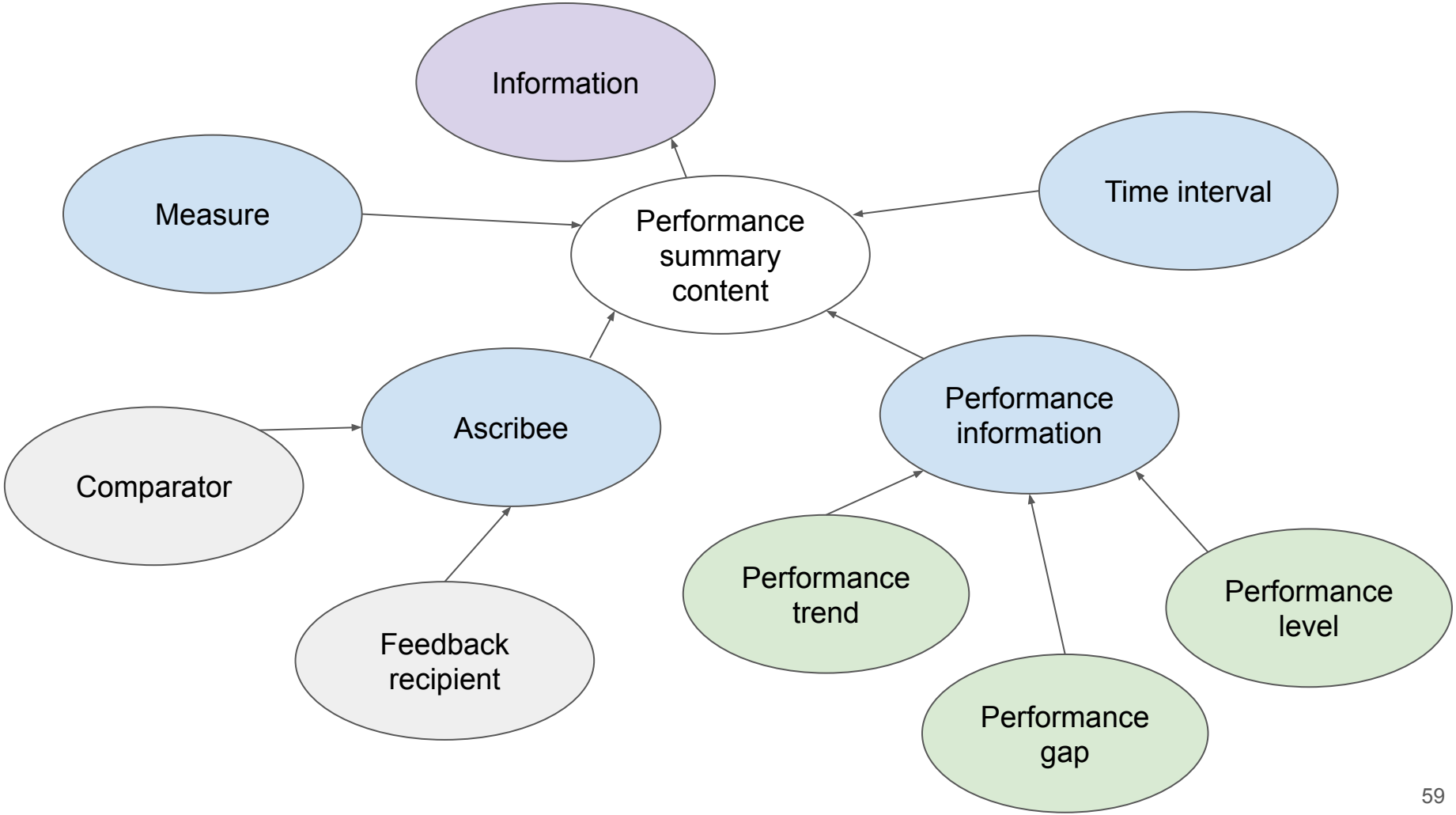


Performance trend

- Information about movement that emerges from performance levels displayed over time
- i.e. velocity feedback
- e.g. performance is increasing/decreasing


Information
Measure
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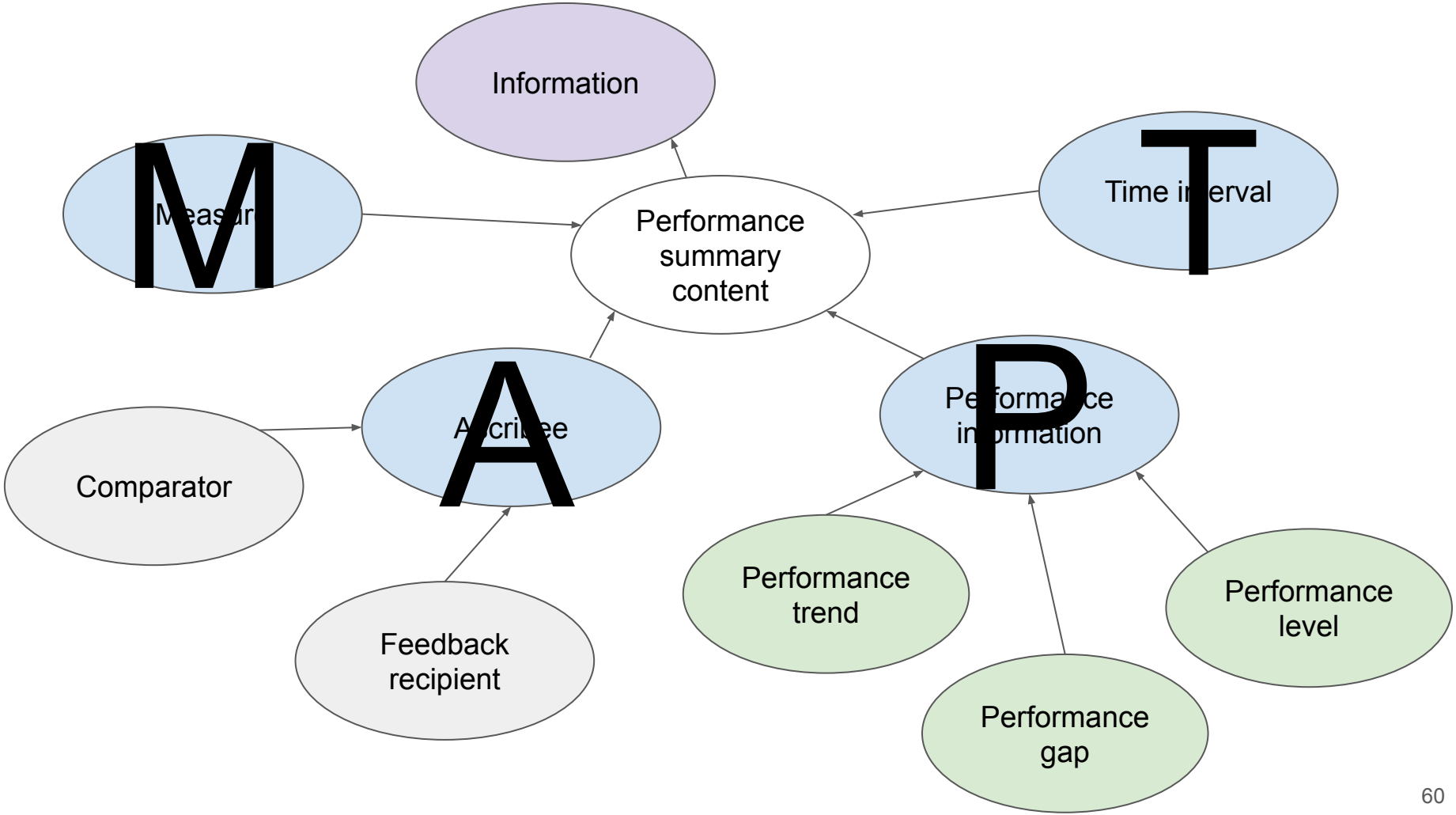
Feedback recipient
Performance information
Performance trend
Performance gap
Performance level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Performance information
Performance trend
Performance gap
Performance level

Outline

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

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

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