

Metrics for Measuring Team Performance

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Overview

- **Why measure team performance?**
- **Why is it not done well?**
- **What should be measured?**

WHY MEASURE TEAM PERFORMANCE?



Why Measure Team Performance?

1. **Quality control**

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- 2. To test the impact of training or changes in job design**



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Why Measure Team Performance?

1. Quality control
2. To test the impact of training or changes in job design
3. To provide meaningful feedback
- 4. To assess training needs**

Properties of a Good Measure

- Raters can reliably use it
- Scores are meaningful - predicts performance
- Scores are diagnostic
 - Developmental feedback is meaningful
 - Isolates training needs
- Measure is practical to use
 - Instructors can cognitively manage it
 - Trainees can understand it



WHY ISN'T TEAM PERFORMANCE MEASURED WELL



So.. Why Isn't Team Performance Measurement Done Well?

1. **Measuring performance (especially team performance) costs money**

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So.. Why Isn't Team Performance Measurement Done Well?

1. Measuring performance (especially team performance) costs money
2. Defining performance standards is controversial/political
3. **Developing valid performance measures is difficult and time consuming**

Common Mistakes to Avoid

- Mixing process and outcome
- Inferring cognitive states from behaviors
- Category definitions that are overlapping
- An unmanageable number of categories



Teams Need Help

“Seeing the forest for the trees”

Information
Search

Information
Pushing

Providing
Big Picture
Summaries

**Confusing
Phraseology**

**Providing Backup for
a Teammate**

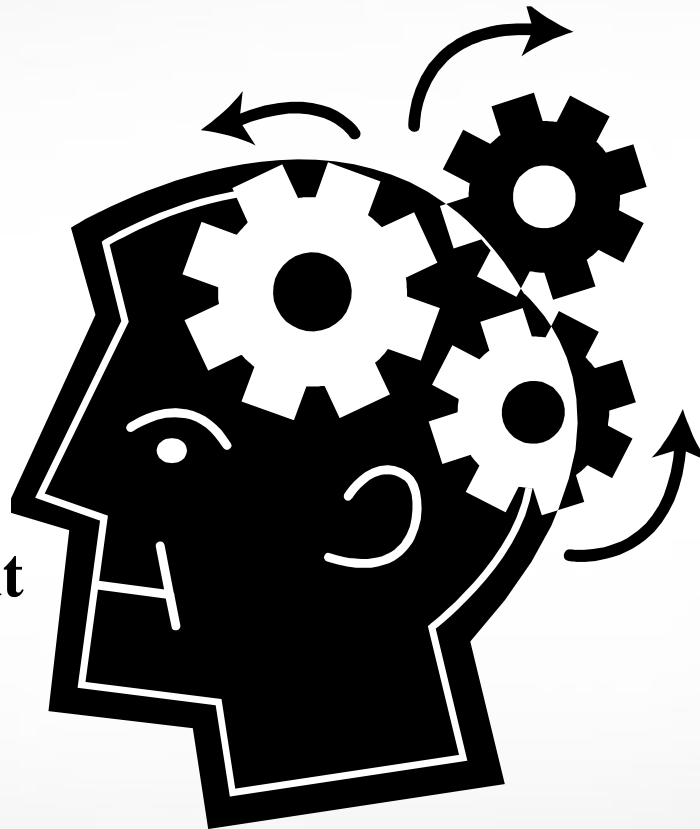
Communication

**Correcting
Mistakes**

Leadership

Task Overload

**Helping Out Without
Being Asked**



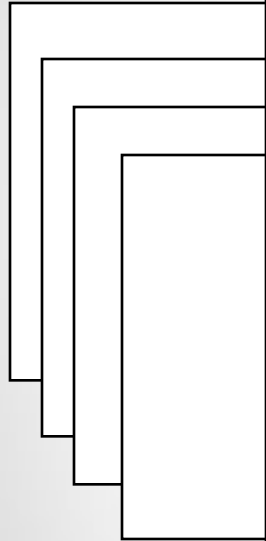
Developing a Good Measure

- Generate initial list of behaviors based on observation and input from subject matter experts
- Group into conceptually-distinct categories
- Test for inter-rater reliability
 - Categorization
 - Evaluation

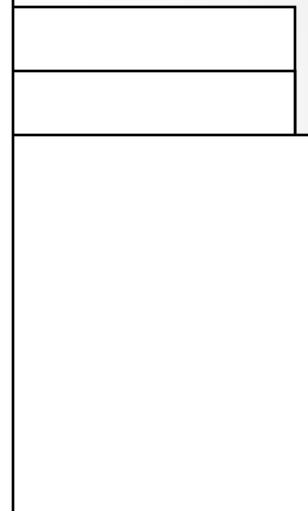


Information

Excha



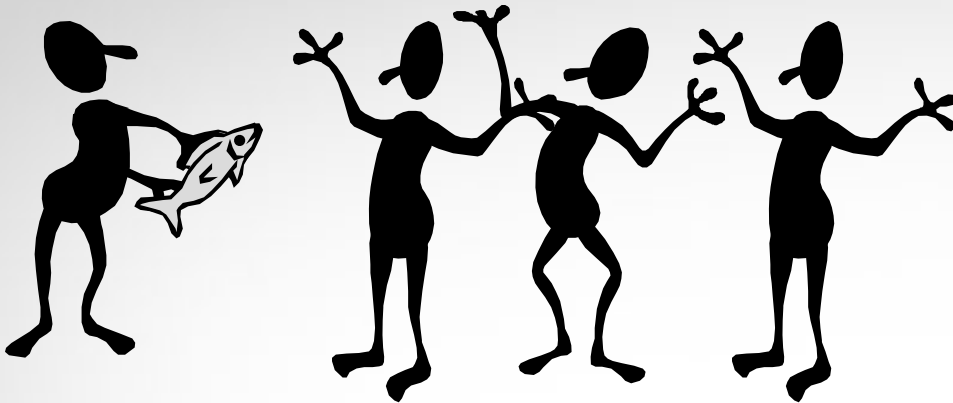
Initiative/
Leadership



A controller failed to account for the slight communication delays on the ISS and repeatedly talked over communications from the flight crew.

Behavior

Team Self Correction



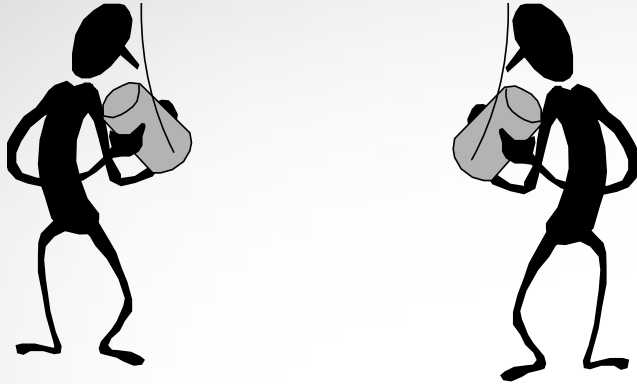
“Give a [team] a fish and they’ll eat for a day...”



... teach a [team] to fish and they’ll eat for a lifetime.”

Frame-of-Reference Training

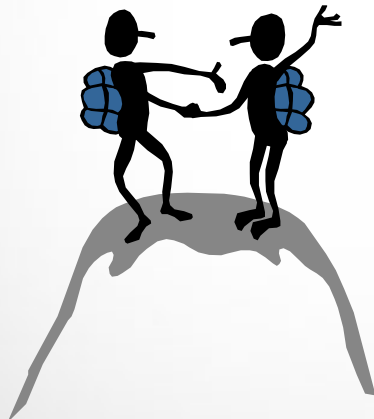
INFORMATION EXCHANGE



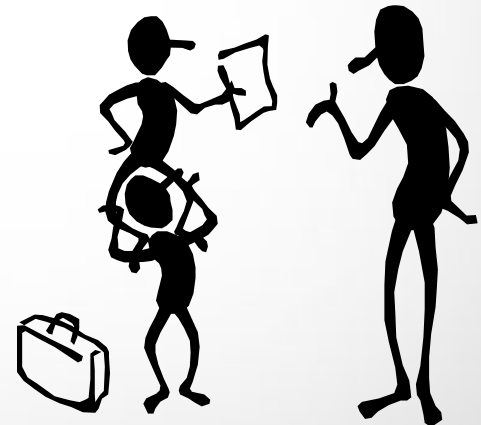
COMMUNICATION DELIVERY



SUPPORTING BEHAVIOR



LEADERSHIP/FOLLOWERSHIP





WHAT TO MEASURE

Ad Hoc Teams

Low Fidelity Simulation



High Fidelity Simulation



Intact Teams



Low Fidelity Simulation

Ad Hoc Teams





High Fidelity Simulation



Intact Teams



	Low Fidelity Simulation	High Fidelity Simulation
Ad Hoc Teams	<p>Individual-level Teamwork skills</p>	
Intact Teams		

	Low Fidelity Simulation	High Fidelity Simulation
Ad Hoc Teams		Individual-level Task-work Teamwork
Intact Teams		

Low Fidelity Simulation


High Fidelity Simulation

Ad Hoc Teams


Intact Teams





	Low Fidelity Simulation	High Fidelity Simulation
Ad Hoc Teams		
Intact Teams	<p>Team-level Teamwork</p>	



	Low Fidelity Simulation	High Fidelity Simulation
Ad Hoc Teams		
Intact Teams		<p>Team-level</p> <p>Task-work Teamwork</p>

Ad Hoc Teams

Low Fidelity Simulation

38% Improved Teamwork Learning



110% Improvement in Decision Making

High Fidelity Simulation

Improved Learning
21% Teamwork 28% Task-work



Intact Teams

Improved Learning
28% Teamwork 30% Task-work



285% Reduction in Tactical Errors



TAKE AWAYS

Take Aways

- Separate process and outcome measures
- Raters should evaluate observable/audible behaviors
- Definitions of rating categories definitions must be distinct
- Raters should not be asked to rate more than 4-5 categories during the same performance episode

Take Aways

- Check inter-rater agreement with respect to categories (revise as needed)
- Provide frame-of-reference training
- Ad hoc team setting – individual-level behavior
- Intact team setting - team-level processes



Thank You!