

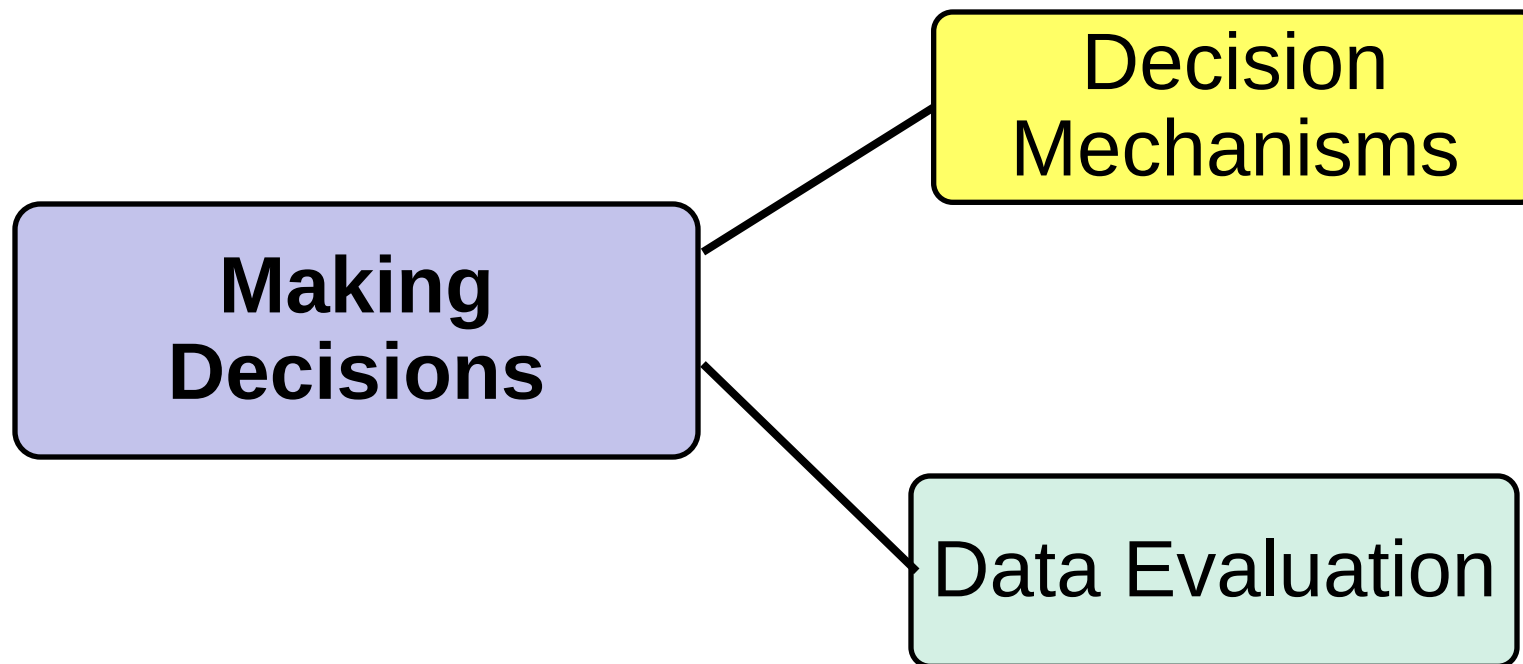
Making Decisions: Learning Objectives

Learn how to:

- ▶ Use ISM data to make decisions
- ▶ Evaluate data
 - Identifying sources of error
 - Quantify error
 - Interpret error
 - Isolate sources of error

Report Documentation Page				Form Approved OMB No. 0704-0188	
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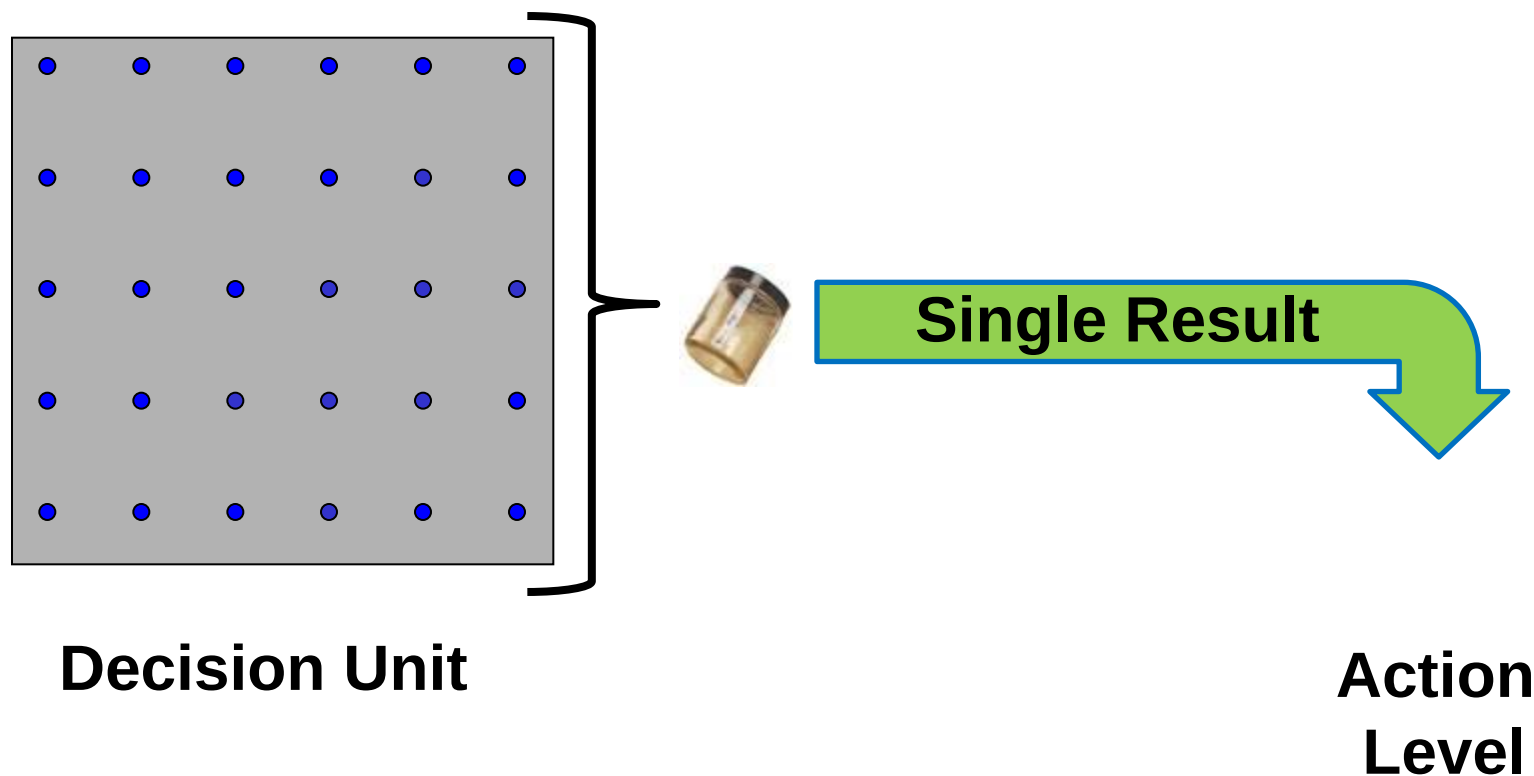
Making Decisions Using ISM Data



Making Decisions

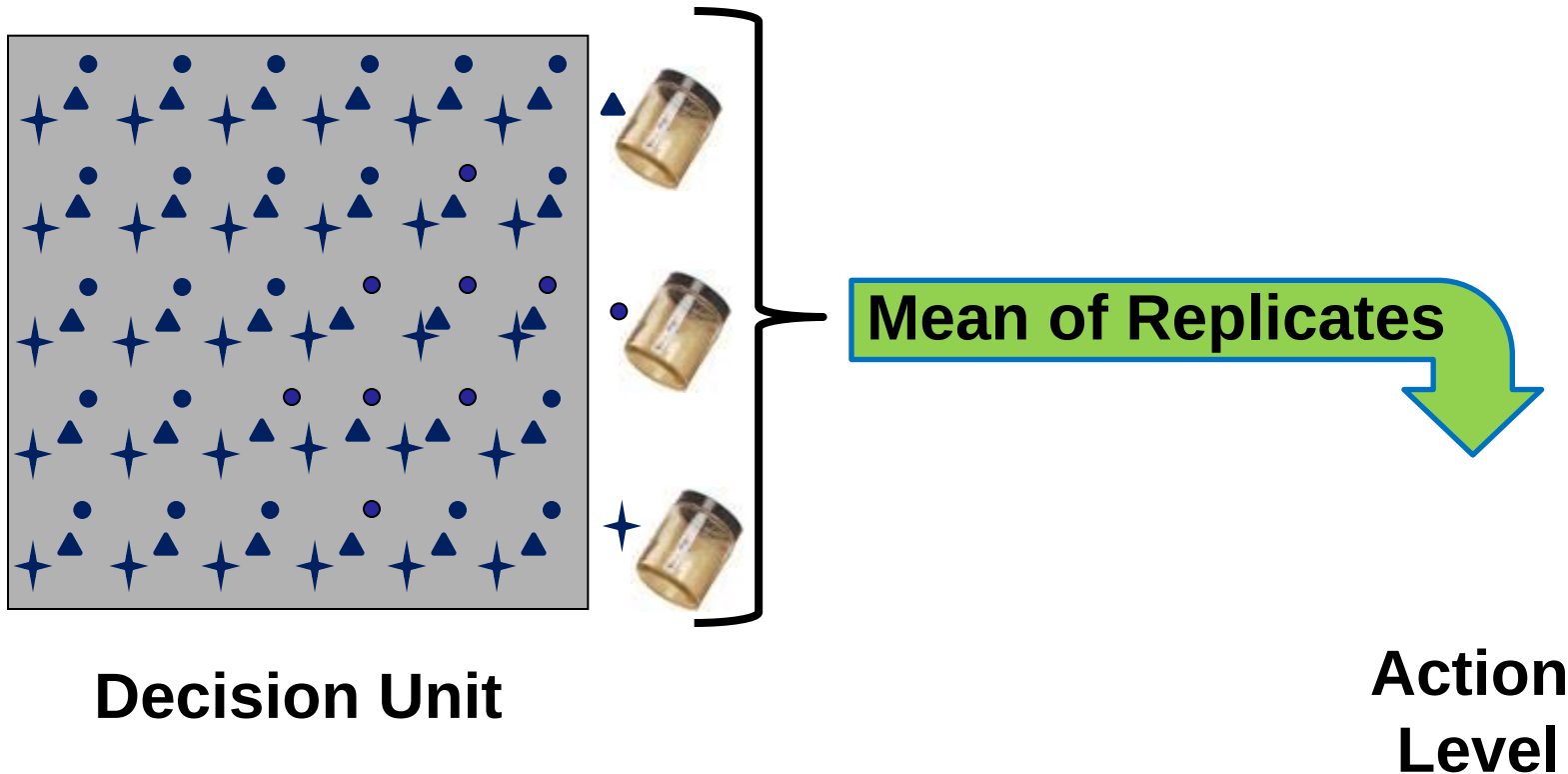
- ▶ Decision Mechanism (DM)
 - Structured approach to making decisions
 - Identified and agreed upon during Data Quality Objective (DQO) process
 - 6 common types of DM

DM 1: Compare One ISM Result to Action Level



DM 2: Compare Average ISM Result to Action Level

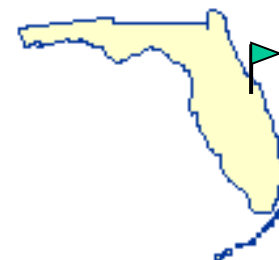
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Florida Case Study: Decision Mechanism (DM) 2

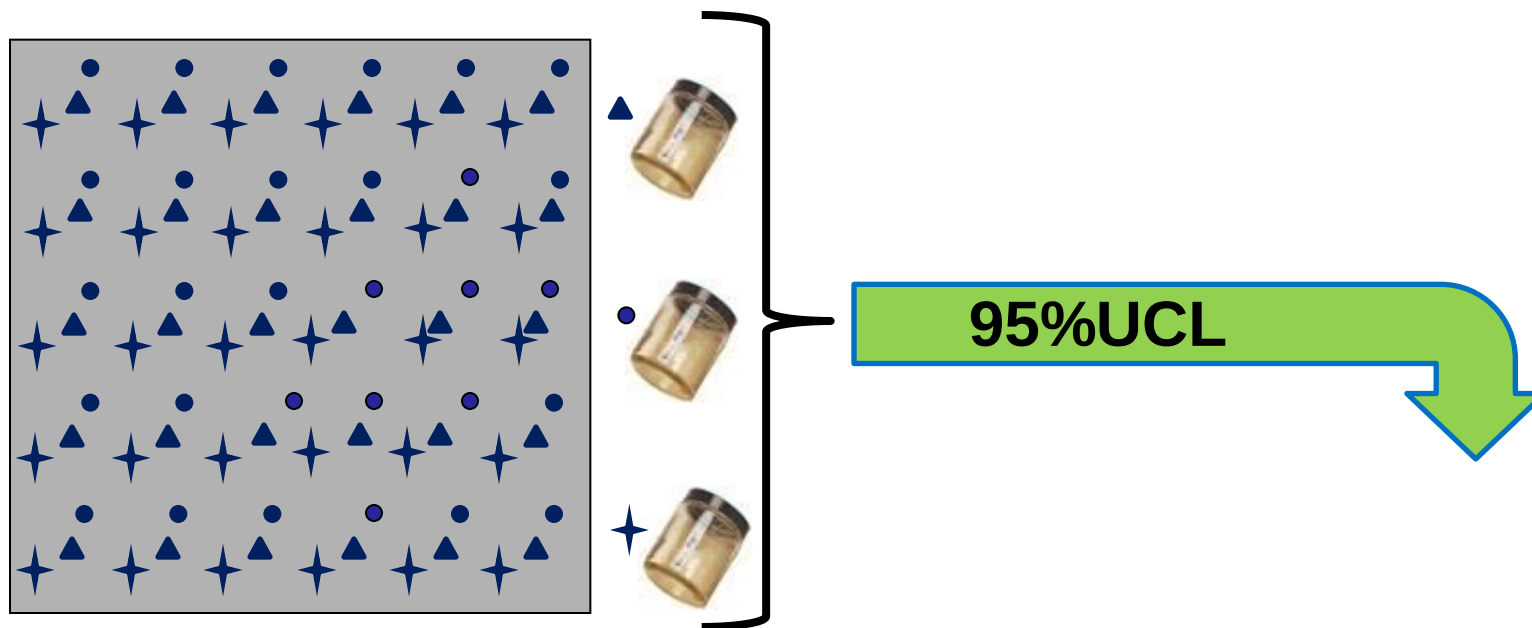
Mean arsenic concentrations (mg/kg)

	Discrete <i>n</i> = 30	Incr-30 <i>n</i> = 3	Incr-100 <i>n</i> = 3
DU 2	4.2	5	5.2
DU 3	7.5	10.5	9.5



DM 3: Calculate 95%UCL then Compare to Action Level or Use for Risk Assessment

Decision Unit



Action level
or risk assessment

Florida Case Study:

Decision Mechanism 3: (DU 1)

Arsenic Data (mg/kg)

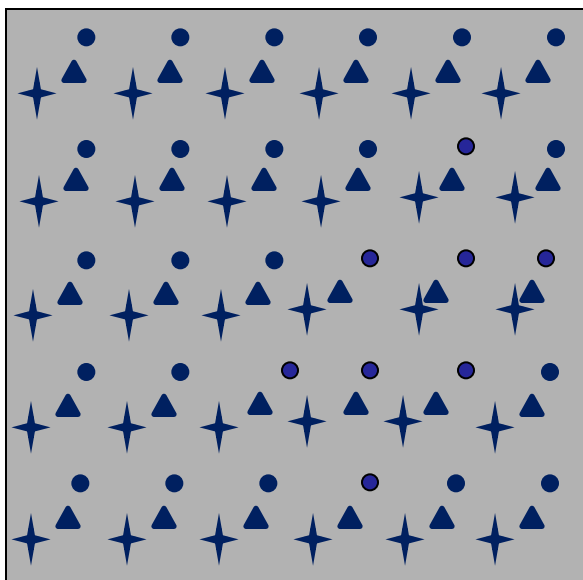
	Discrete n = 10 (mg/kg)	Incr-30 n = 3 (mg/kg)	Incr-100 n = 3 (mg/kg)
Mean	2	1.8	1.7
Std Dev	1.4	0.08	0.03
95UCL	3.0	2.0	1.8

Florida Action Level: 2.1 mg/kg



DM 4: Compare to Background

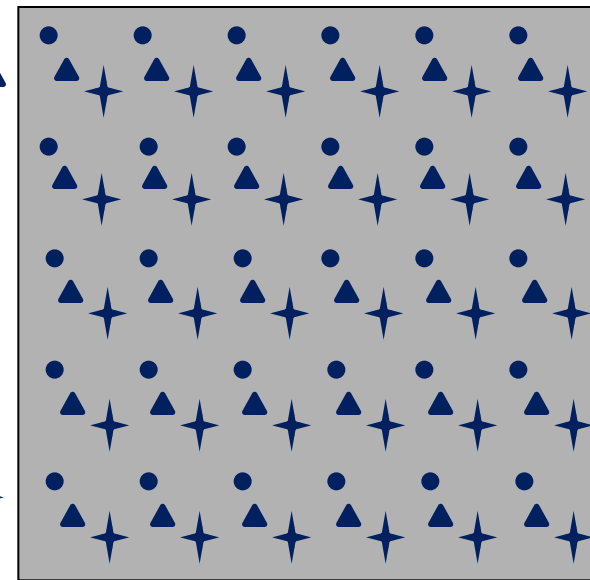
Decision Unit



Mean & S.D.

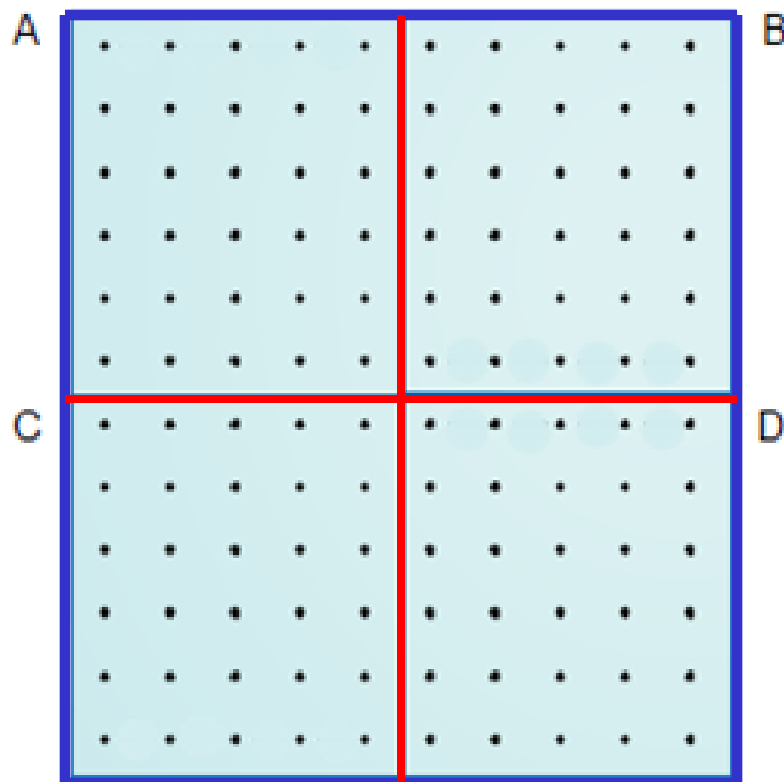
Mean & S.D.

Background



Comparison

DM 5: Combining Decision Units

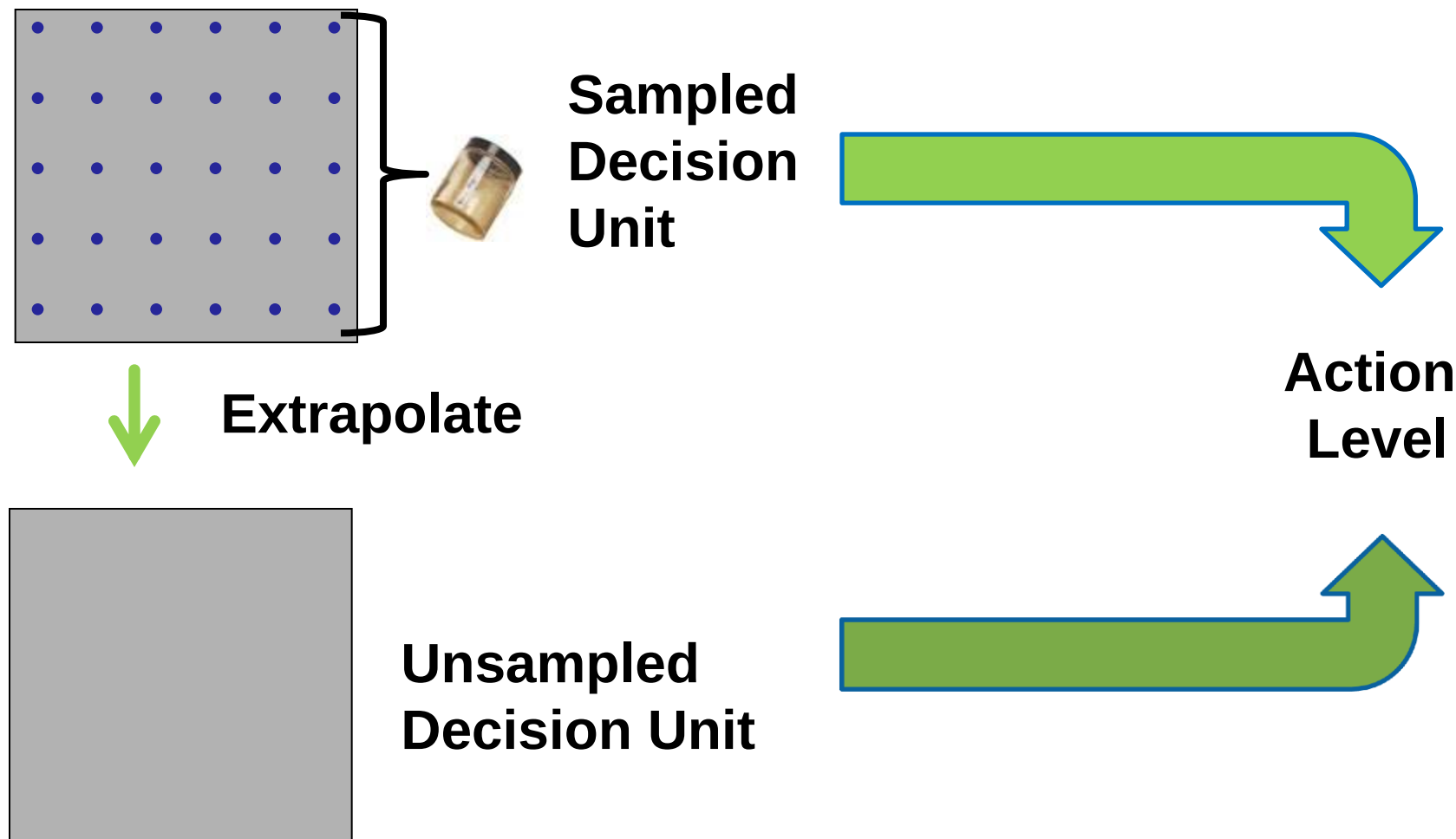


DU average
and
Weighted average

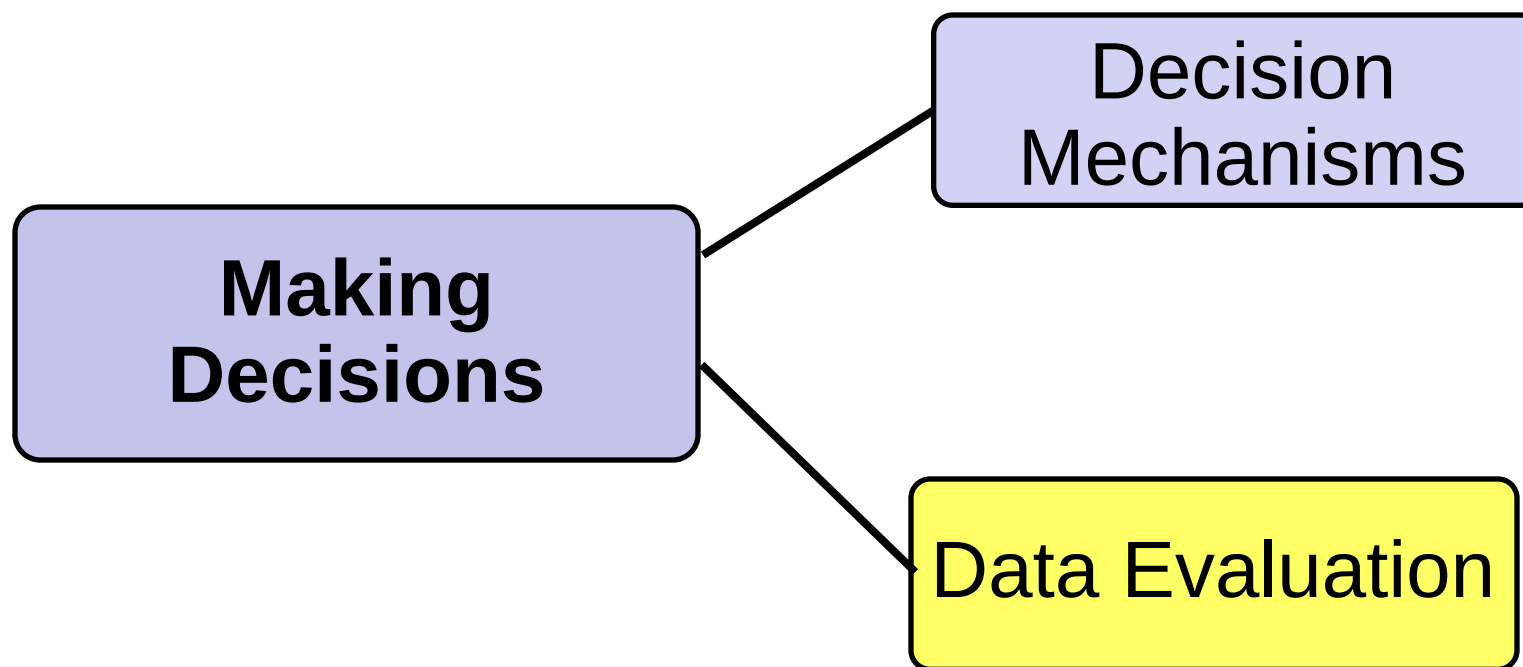
Action Level

11

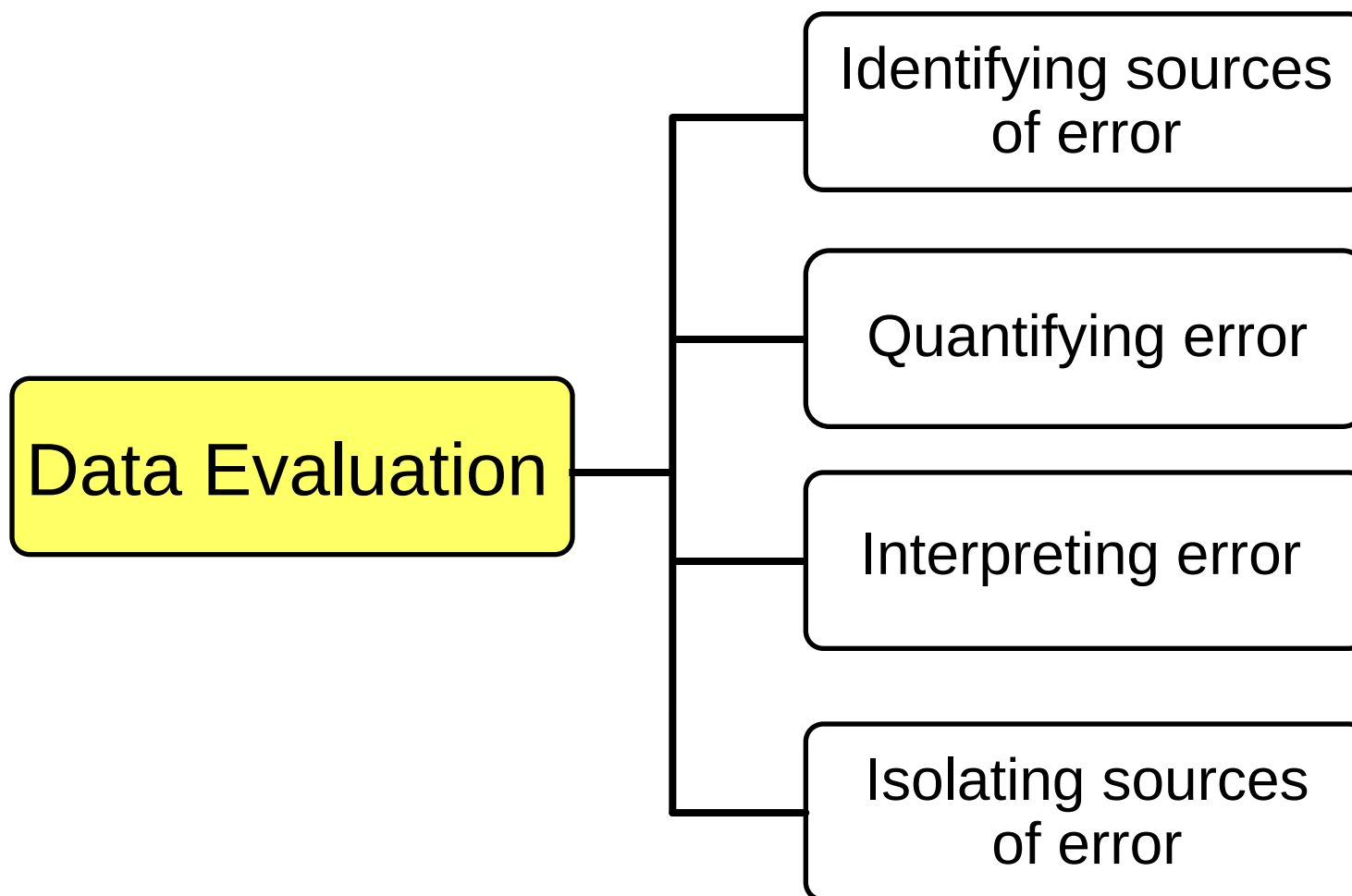
DM 6: Extrapolation to Unsampled Areas



Making Decisions Using ISM Data



Data Evaluation Components



Identifying Sources of Error

Field

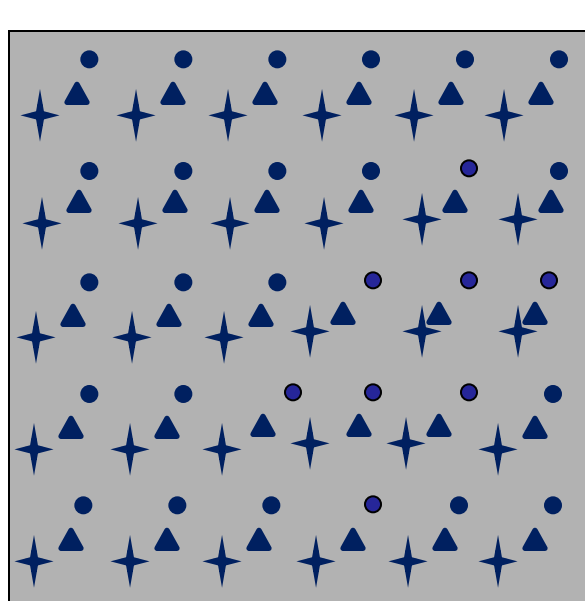
- ▶ Number of increments
- ▶ Increment collection
- ▶ Field processing
- ▶ Field splitting
- ▶ DU size and shape

Laboratory

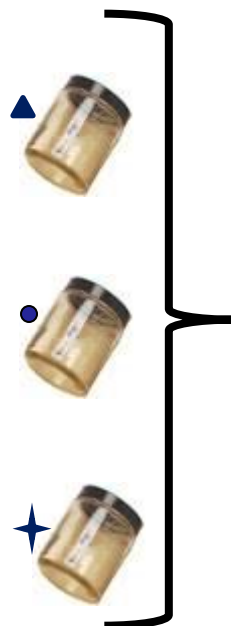
- ▶ Lab processing
- ▶ Subsampling
- ▶ Extraction
- ▶ Digestion
- ▶ Analysis

Quantifying Error

$RSD = CV = \text{standard deviation} / \text{arithmetic mean}$



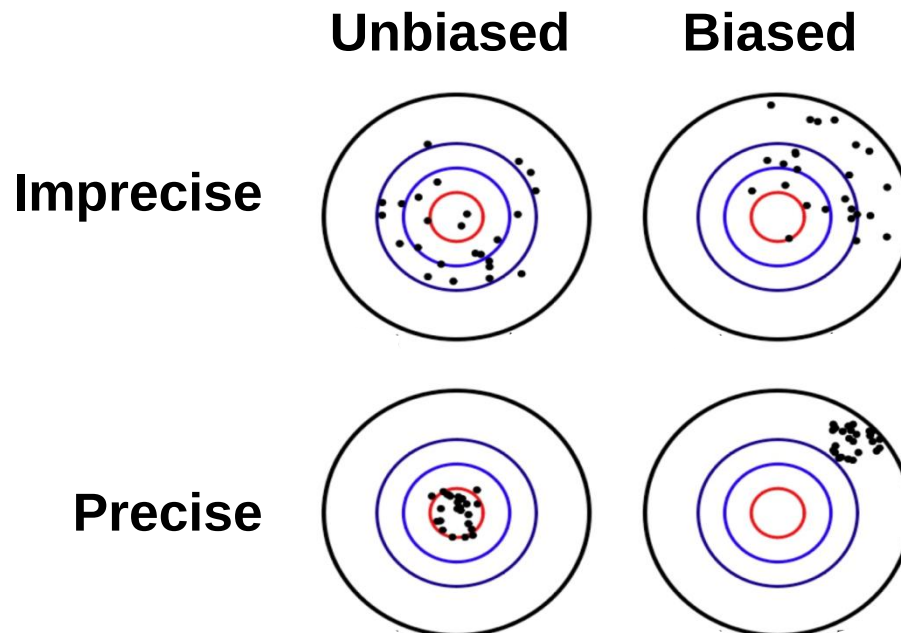
Decision Unit



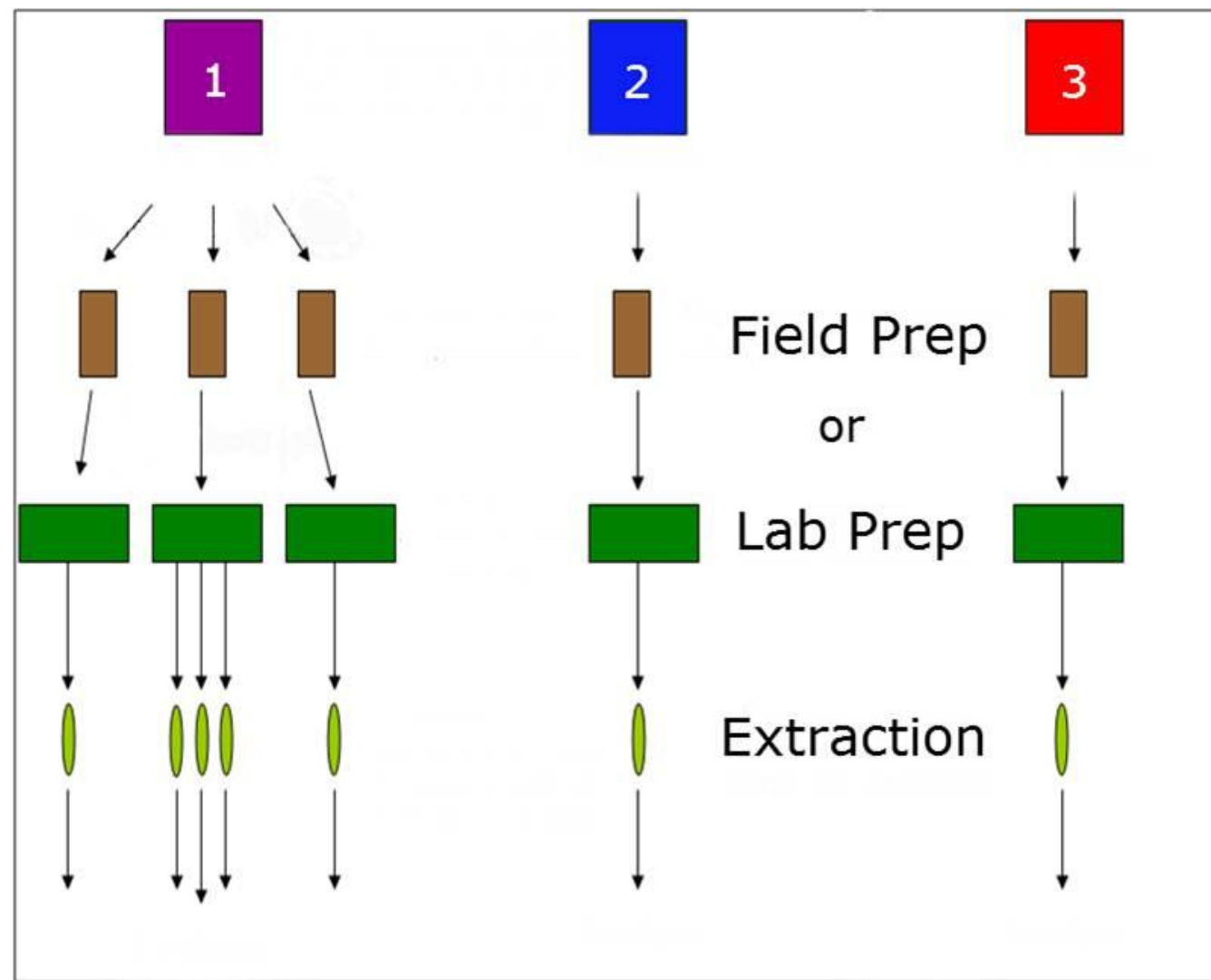
**Data includes all
sources of error**

Interpreting Error

- ▶ “Unacceptable” RSD
- ▶ Low RSD
- ▶ High RSD



Isolating Sources of Error



Making Decisions Using ISM Data

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