CSM THE CENTER FOR SYSTEMS MANAGEMENT
INTEGRATING PROCESS & PERFORMANCE

Getting Lost on the Way to Levels 4 and 5

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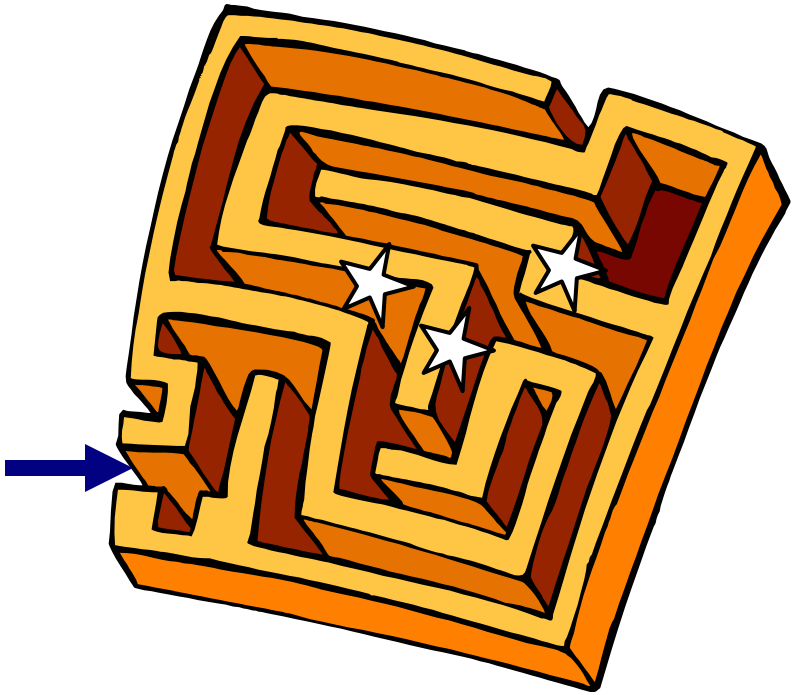
Background

- **Appraisal results show some common weaknesses for Level 4 and 5**
- **Tracing back….**
  - Time pressures to get the level
  - Wrong decisions at key points
  - Relationship to current processes ignored
  - Statistics takes precedence over good business decisions
- **How to avoid missteps**
  - Have a guide
  - Integrate new activities with current activities
  - Interpret for your environment



Agenda

- **Commonly Cited Level 4 and 5 Problems**
- **Key Decision Points Along the Way**
  - How Level 4 and 5 processes are developed
  - Compose the Define Process
  - Selecting Subprocesses for Statistical Management
  - Choice of Statistical Techniques
  - Statistical and Quantitative Management
  - What Characterizes Level 4 Institutionalization?
  - Using Six Sigma for Maturity Level 5

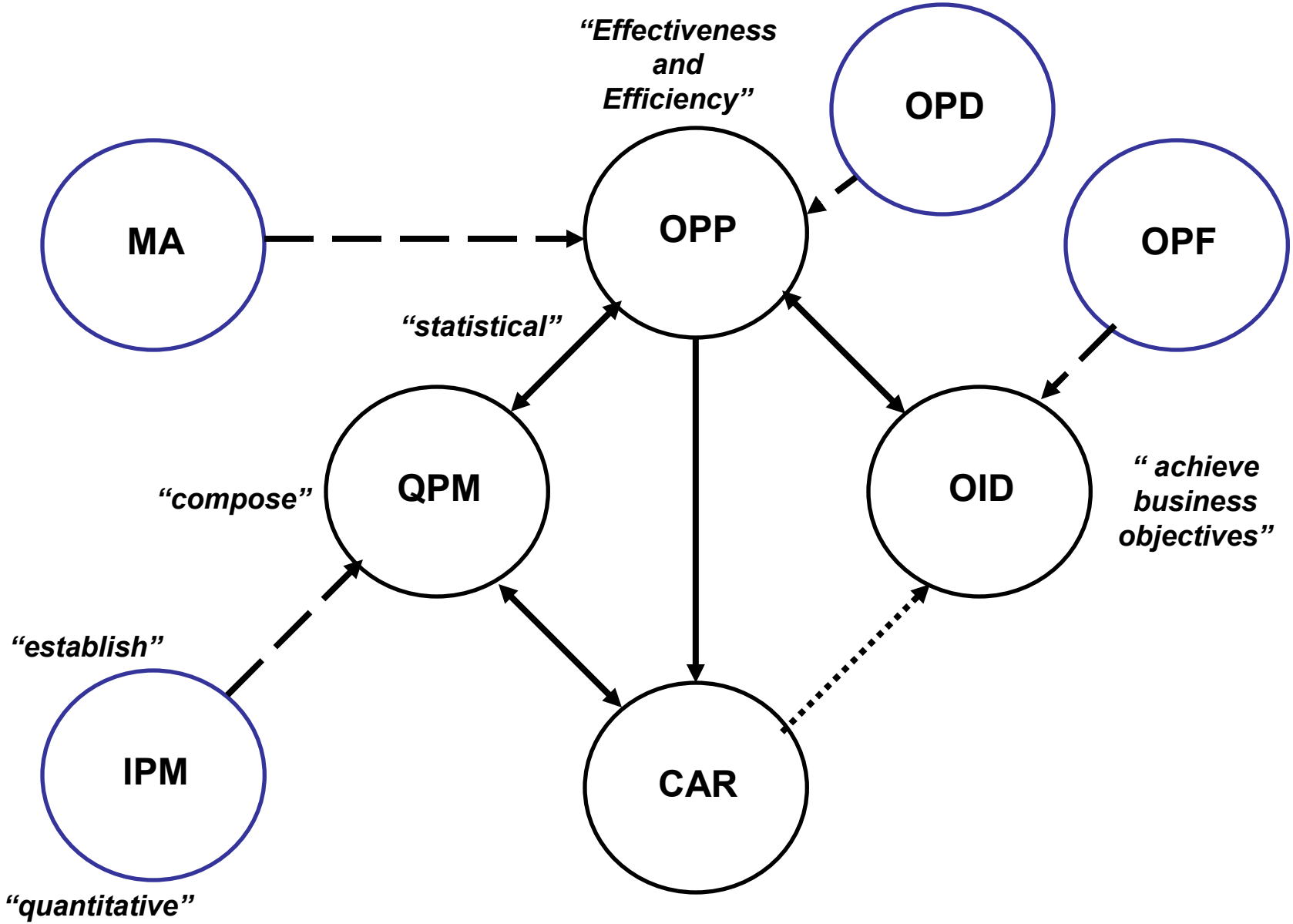
Commonly Cited Level 4 and 5 Problems

- Business goals not aligned with measures
- Failure to revise measurements (or question validity)
- Relationship between statistically managed subprocesses and business goals is unclear
- Failure to perform risk mitigation when desired results do not match expected results
- Models aren't used to manage attainment of critical project objectives
- Statistical techniques are used incorrectly
- Failure to question and or evolve measurements
- Level 4 and 5 activities are unrelated (including Six Sigma activities)

How Level 4 and 5 Processes are Developed

- ☐ We develop new processes, add them to our Process Asset Library, and transition projects as needed
- ☑ We evolve existing processes to include level 4 and 5 activities where appropriate
  - Level 4 and 5 activities do not replace existing processes
  - Level 4 and 5 activities are extensions of existing Process Areas
    - Measurement
    - Project Management
    - Process Improvement

How Processes Evolve



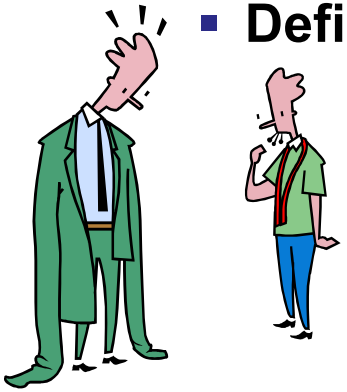
Compose the Defined Process

How do you compose the defined process?

☑ **We use our project objectives to determine our defined process**

☐ **We follow the tailoring guidelines to determine our defined process**

- **If project objectives (desired) are not achievable with historical achievements (expected)**
  - Current tailoring won't achieve different results
  - Risk needs to be identified and analyzed (CAR or Six Sigma could help)
  - What needs to be added or changed to achieve project's objectives?
- **Defined process expectations may not be known**
  - Can model be used to monitor risk?
  - How will you gain insight into the impact of different processes?



Selecting Subprocesses for Statistical Management

- ☑ **We select subprocesses that are critical to meeting our project objectives**
- ☐ **The subprocesses we select are consistent across the organization**

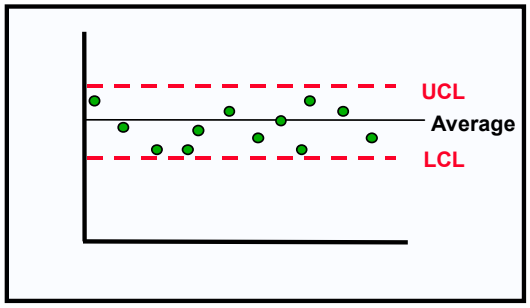
  - **Project needs and organizational needs may be different – contract type, customer, product needs**
  - **Combining data across projects to increase confidence is problematic**
    - Variation is usually increased
    - Valuable insight into needed process performance can be lost

Choice of Statistical Techniques

☐ **We rely primarily Statistical Process Control (SPC) techniques**

☑ **We encourage a wide range of statistical techniques**

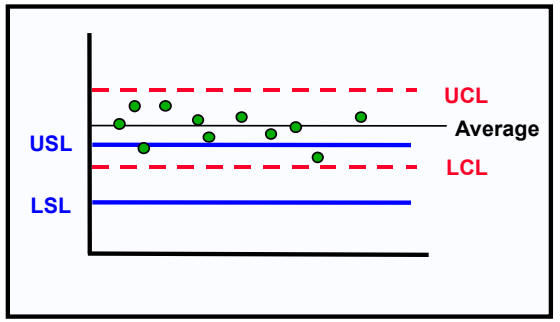
- **SPC techniques work well for some situations**
  - Data should be time independent
  - Sufficient data exists for confidence
  - Calculated control limits are useful
  - Collect enough information so that data can be repartitioned if needed



- **SPC can be use to verify results of other techniques**
  - Design modeling and simulation with manufacturing SPC
  - Part-time resource allocation and productivity

Statistical and Quantitative Management

- ☐ **Statistical characterization indicates statistical management**
- ☑ **Statistical management infers acceptance of statistical expectations**

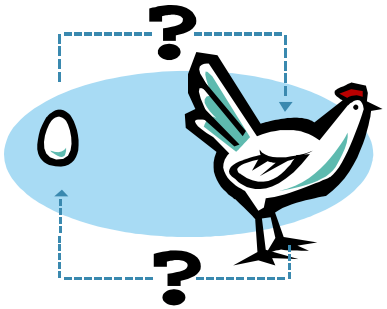


  - **If expected results will not satisfy desired results – quantitative management makes sense**
  - **Statistical management may not be good business in all cases**
    - Expected variation is unacceptable
    - Data is insufficient to provide sufficient confidence

Organizational Role in Quantitative Management

- ☑ **The project determines what will be managed using statistical and other quantitative techniques**
- ☑ **The organization sets guidelines for projects as to what will be managed using statistical and other quantitative techniques**

  - **Organizational role**
    - Need to monitor certain indicators at organizational level
    - Provides historical project data as a planning asset to projects
  - **Project role**
    - Satisfy customer needs and expectations
    - Organizational obligation for insight into future projects (CAR, OID)



What Characterizes Level 4 Institutionalization?

- ☐ **We have demonstrated use of statistical and other quantitative techniques across the entire lifecycle**
- ☑ **We have collected enough data and used techniques long enough to determine if it is working**
- ☐ **It's time for the appraisal**

  - **Is it working?**
    - Projects are able to predict and insight is valuable
    - Unexpected failures are analyzed – revision to measurements or techniques
    - Stakeholder involvement and confidence is apparent
  - **It makes good business sense**
    - Intent of model is satisfied
    - Business and Quantitative objectives are integrated

Using Six Sigma for Maturity Level 5

We've used Six Sigma long before we introduced level 4 activities

- ☐ **Six Sigma projects satisfy Maturity Level 5 activities**
- ☑ **A subset of our Six Sigma projects satisfy Maturity Level 5 activities**

  - **Six Sigma has numerous interpretations**
    - Some rely on statistical understanding
    - Some require use of statistical techniques
  - **Look for Six Sigma projects that support Maturity Level 4 activities**
  - **Include cost/benefit estimations and tracking to achievement of organizational/project business objectives**

Summary

- **Understand the differences between Level 4 and Level 3 behaviors**
- **Understand the relationship and evolution of Level 3 to Level 4 activities**
  - Project Management
  - Process Improvement
  - Measurement
- **Interpret the activities in the context of your business**
  - Level 4 and 5 activities need to make good business sense
  - Understand the big picture of CMMI Level 4 and 5

Q&A

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