Systems Engineering Effort Estimation

 # Requirements
 # Interfaces
 # Scenarios
 # Algorithms

Size Drivers

Effort Multipliers

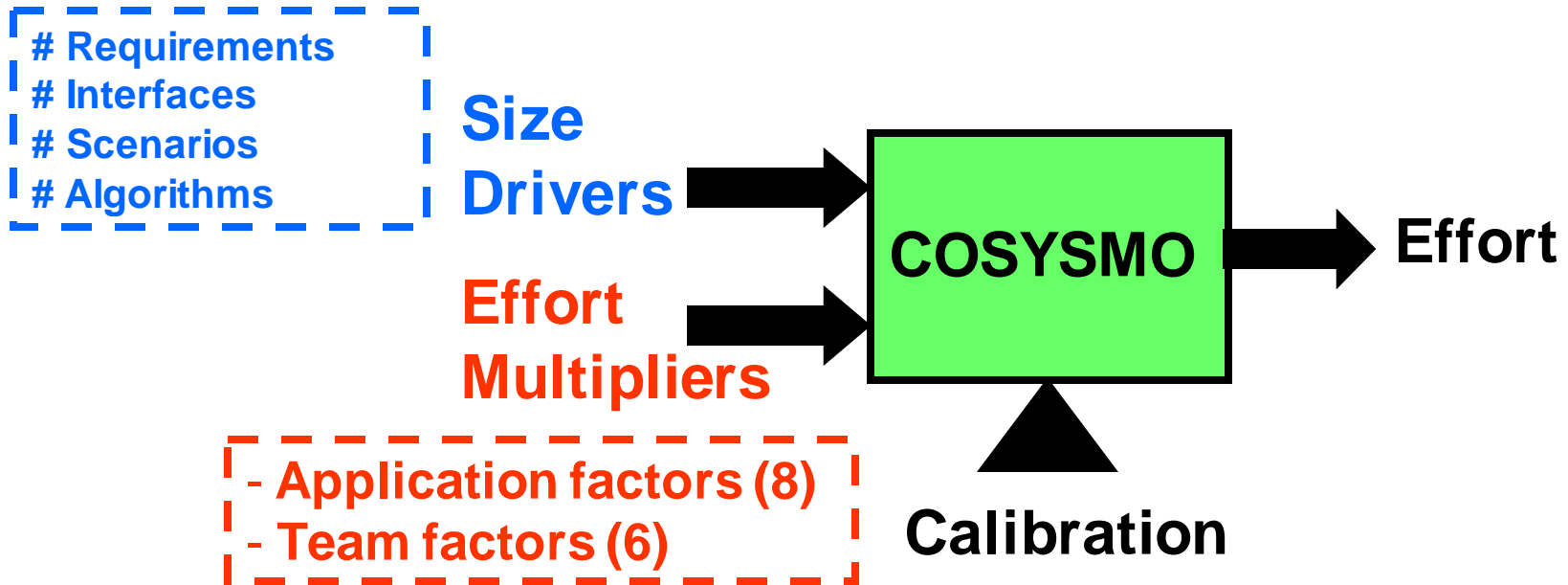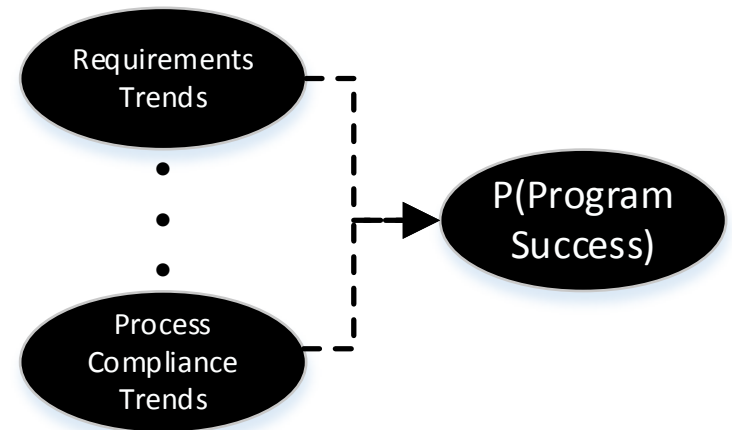- **Application factors (8)**
- **Team factors (6)**

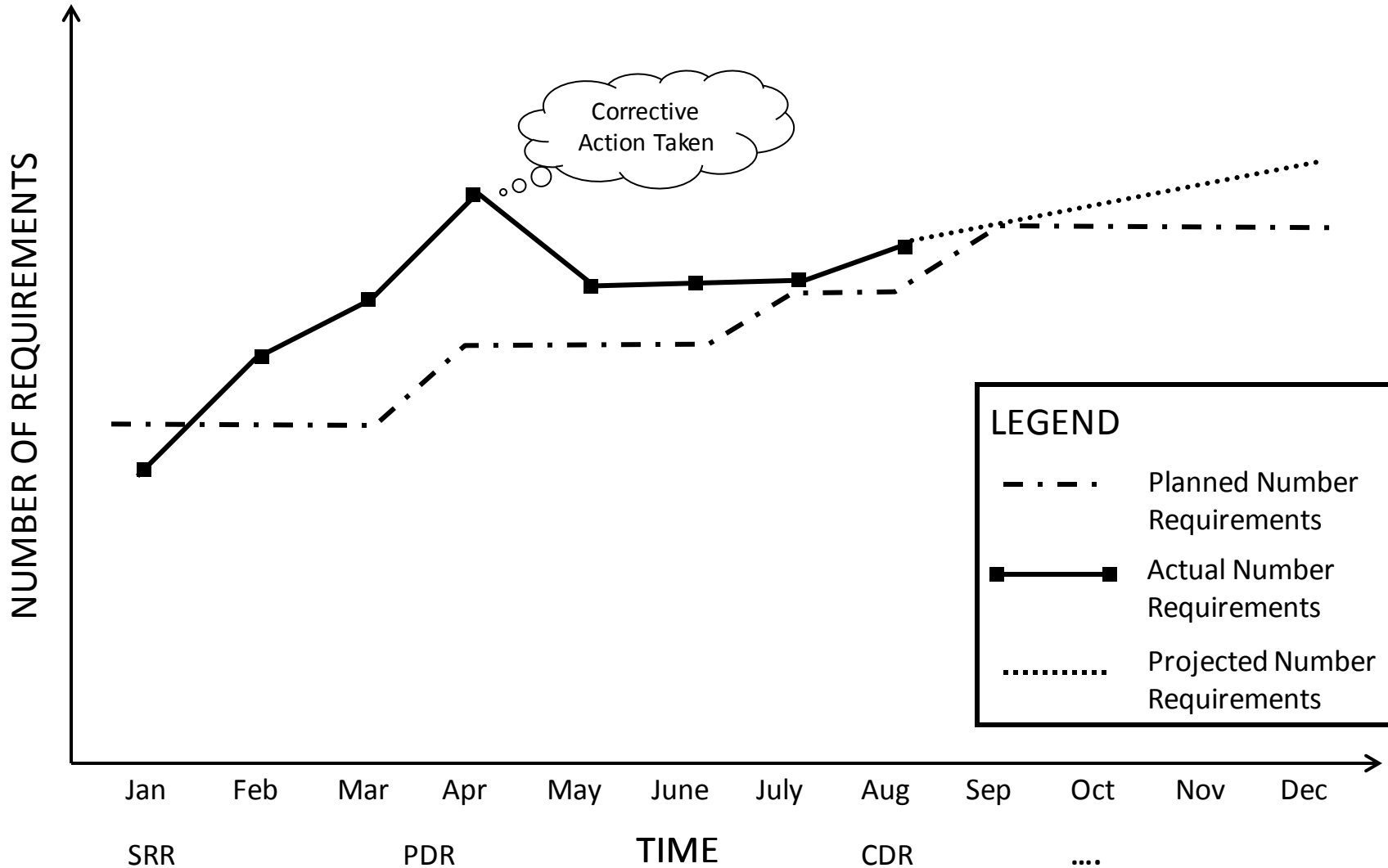**COSYSMO**

Effort

Calibration

Systems Engineering Leading Indicators

1. Requirements Trends
2. System Definition Change Backlog Trend
3. Interface Trends
4. Requirements Validation Trends
5. Requirements Verification Trends
6. Work Product Approval Trends
7. Review Action Closure Trends
8. Risk Exposure Trends
9. Risk Handling Trends
10. Technology Maturity Trends
11. Technical Measurement Trends
12. Systems Engineering Staffing & Skills Trends
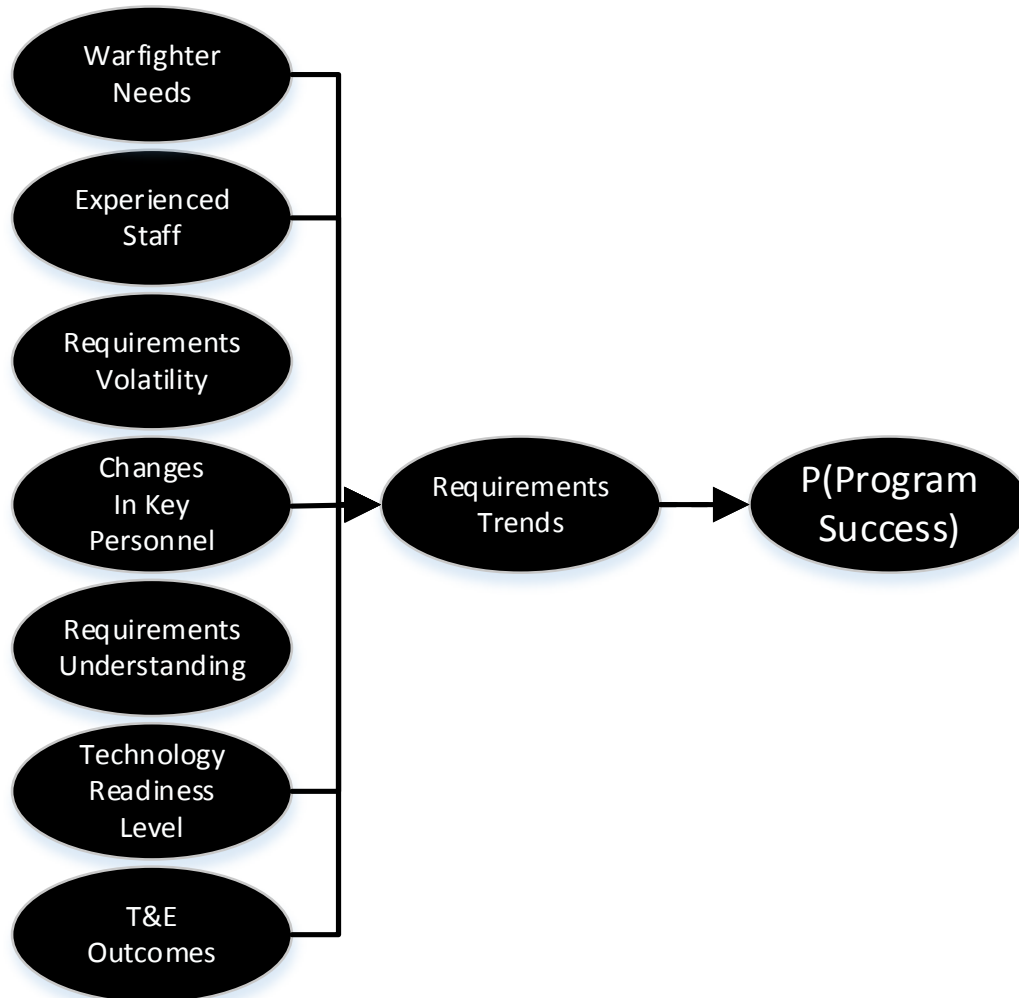13. Process Compliance Trends

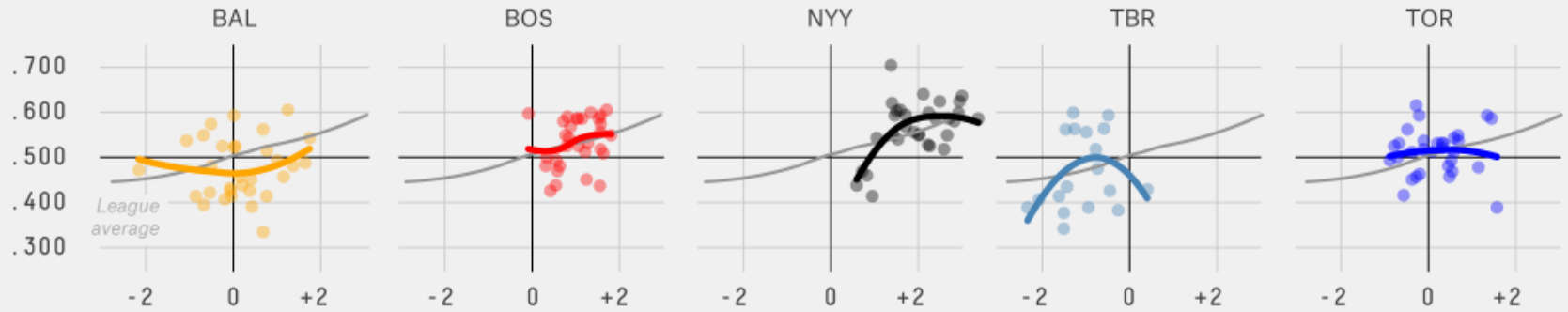# Leading Indicator Example: Requirements Trends

Implied Causality

Baseball Analytics

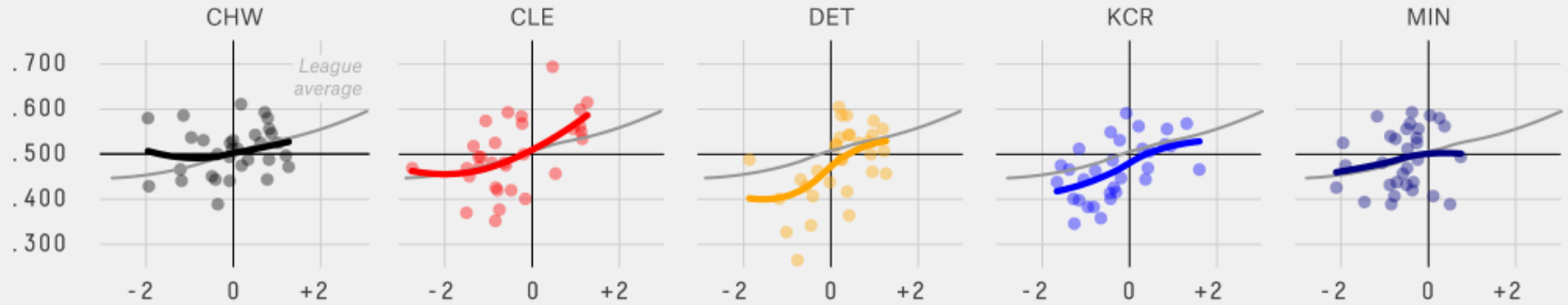$$\frac{runs\ scored^2}{runs\ scored^2 + runs\ allowed^2} = estimate\ of\ percentage\ of\ games\ won$$

AMERICAN LEAGUE EAST

BAL   BOS   NYY   TBR   TOR

AMERICAN LEAGUE CENTRAL

CHW   CLE   DET   KCR   MIN

AMERICAN LEAGUE WEST

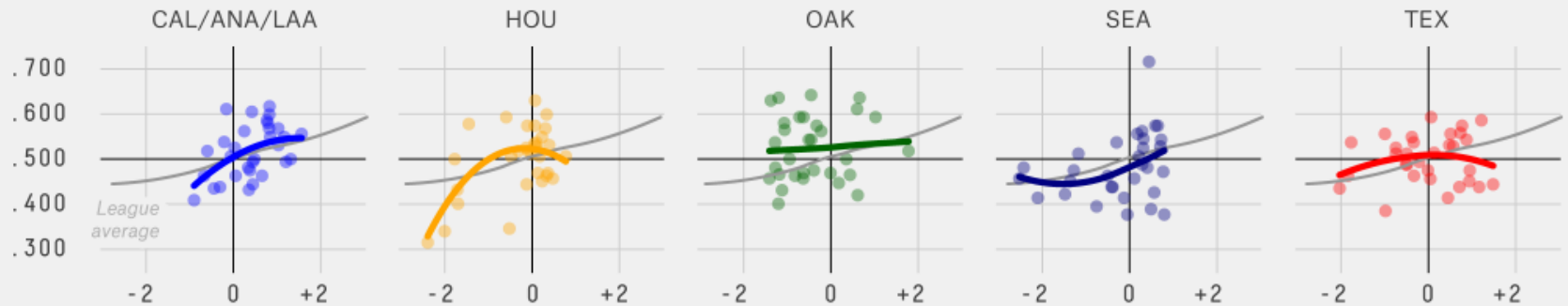CAL/ANA/LAA   HOU   OAK   SEA   TEX

https://fivethirtyeight.com/features/how-your-favorite-baseball-team-blows-its-money/