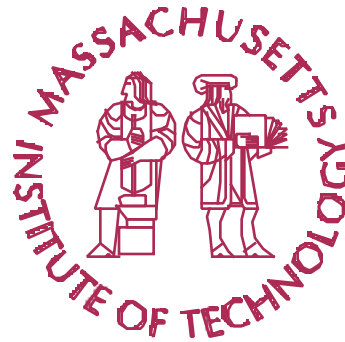


# Lean Aerospace Initiative Plenary Workshop

## LEM IPT



**March 31- April 1, 1998**

**Presented By:**

**Debbie Nightingale**  
**MIT**

Research Sponsored By LAI

**Geoffrey Bentley**  
**Visiting Scholar**

AF ManTech Funding through Textron



# ***The Lean Enterprise Model***



- The LEM is an organized compilation of LAI research findings
- Available on the web
- For all consortium members to use as:

- A reference tool to self-assess an organization's state of leanness.
- A guide to set future goals and leverage organizational change – you decide how, when, where to implement lean practices.

MIT

Debbie Nightingale

Industry

Ed Harmon

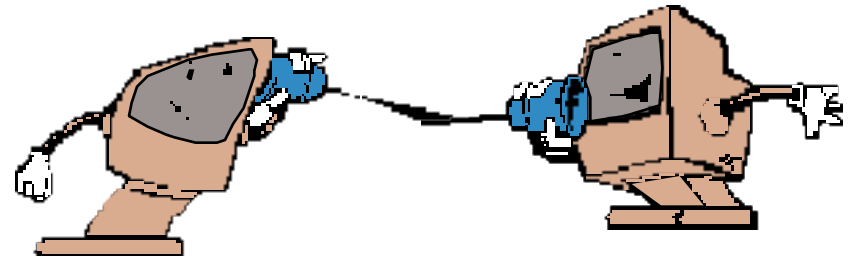
Government

John Cantrell



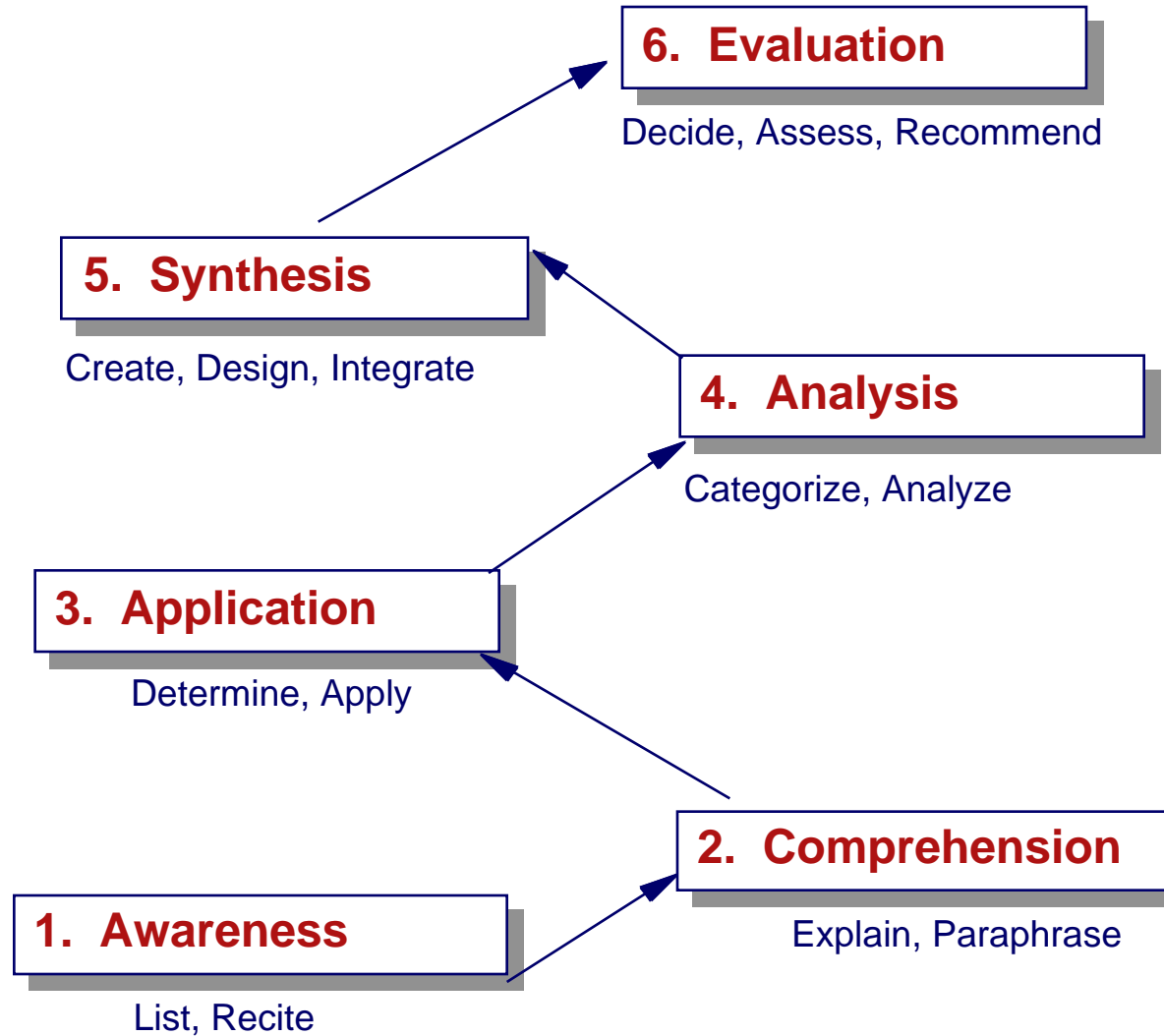
## What We've Heard

- More “how-to’s”
- More real-world examples
- Continuous LEM updates
- “What-if” capability
- Cost and cycle time impacts
- Sequence or order to implement lean practices
- Tools to better disseminate lean practices across organization



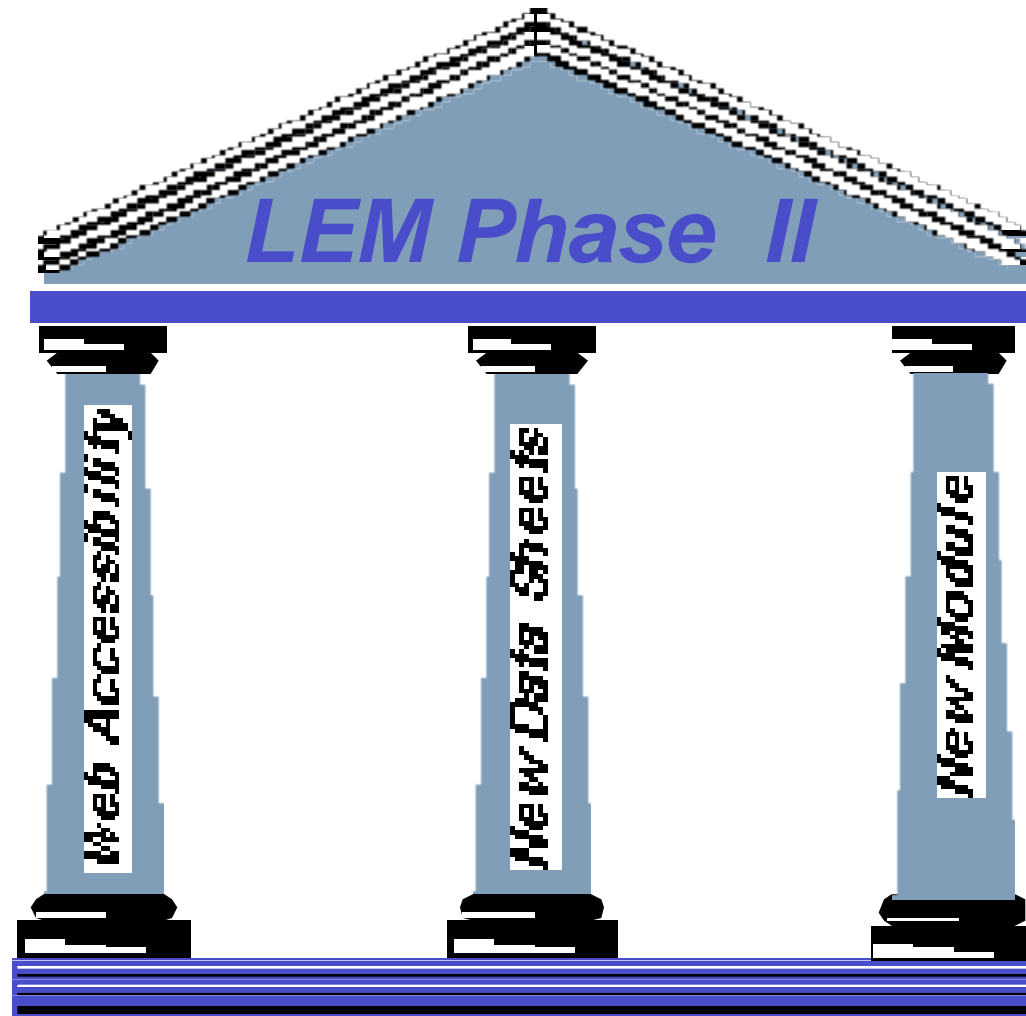


# Journey to Lean Requires Increasing Levels of Insight





# Three Major Activities Support Phase II



**LEM Phase I**



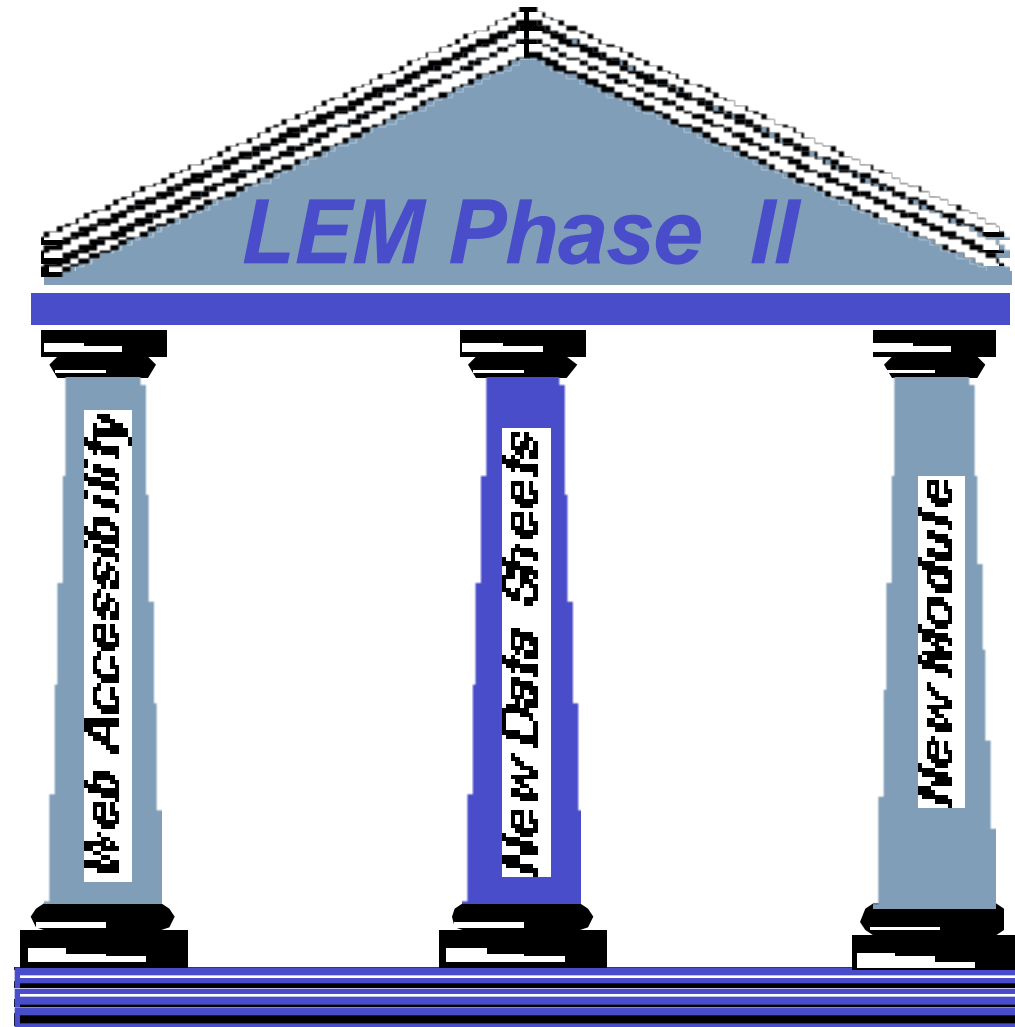
## ***Web Version of the LEM Provides Increased Capabilities***

- **Easier access through world-wide web**
- **More frequent updates as data becomes available**
- **“Hot Links” to:**
  - Complete articles and references
  - Associated web sites for external sources of information
  - Related research  
(e.g. key characteristics maturity model)





# Three Major Activities Support Phase II



**LEM Phase I**



# ***Additional Data to Increase Depth and Scope***

LAI Research

**40 Data Sheets**

External Sources

**50 Write-Ups**

- **Cover all Focus Areas**
- **Currently Under Review**
- **Incorporated into LEM  
(2nd Qtr 1998)**

**We're Doubling our Data Sheet Count!**



# ***External Data Sources Mission***

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**To Enhance the LEM with Relevant and  
Timely Case Studies from the Universe of  
External Data Sources (external to MIT/LAI researchers)**

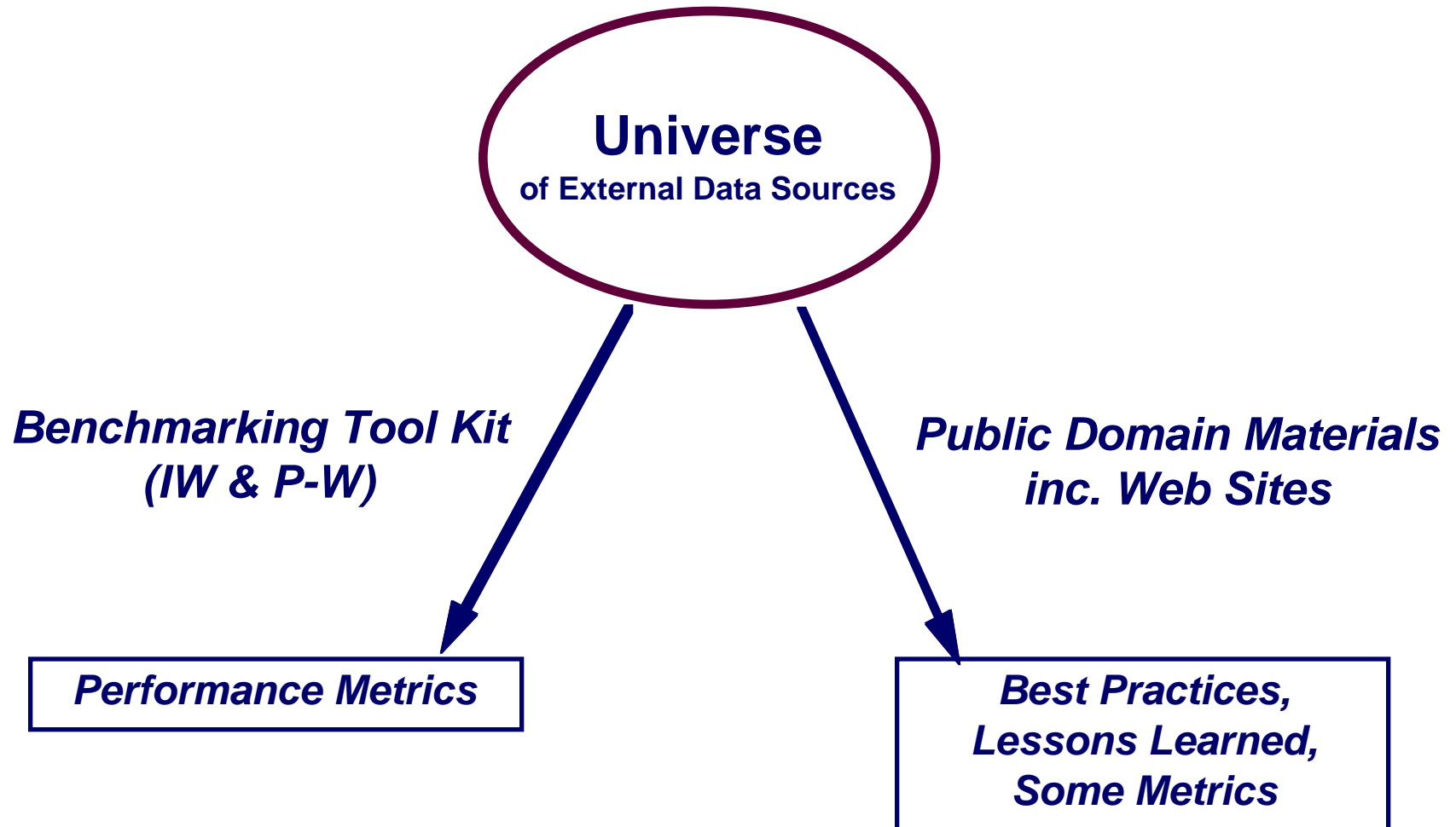


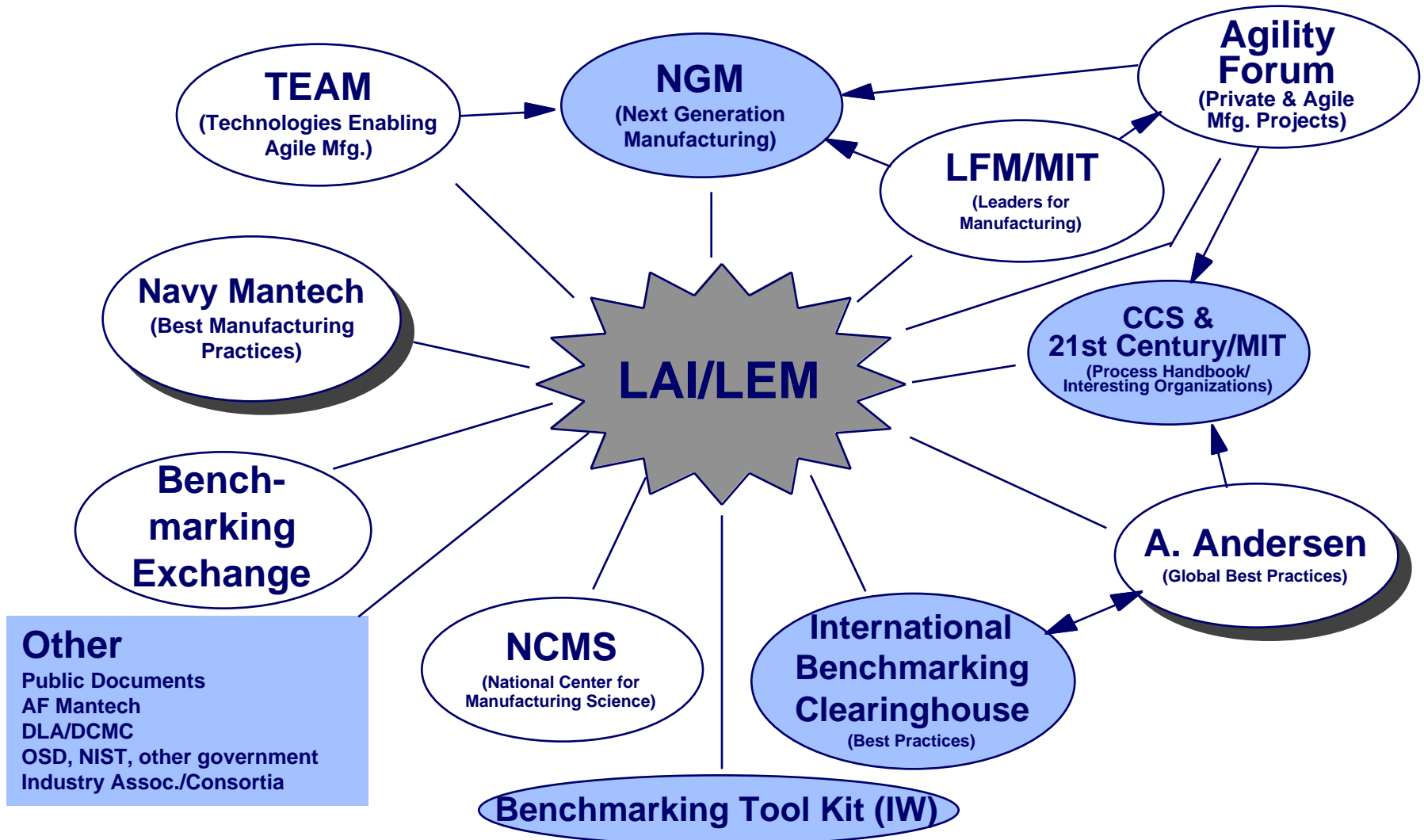
## 5-Step Process

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- **Discover (Databases, Data Sources)**
- **Screen (Relevance, Timeliness and Access)**
- **Format/Organize/Write**  
**(Modified LEM Data Sheet Format)**
- **Review (Focus Groups)**
- **Input (Web-LEM)**

*By Late-March*  
*Goal: 50 External Data Source Entries for Review*







# ***Format/Organize/Write***

---

## **Write-ups from--**

- **International Benchmarking Clearinghouse**
- **Interesting Organizations**
- **NGM and Industry Associations & Consortium (NGM, CAM-I, CIMS, EIA, NCAT)**
- **Government Sources (AF Mantech, DLA/DCMC)**
- **Other**

**NGM--Next Generation Manufacturing**  
**CAM-I-- Consortium for Advanced Manufacturing-International**  
**CIMS--Consortium for Intelligent Manufacturing Systems**  
**EIA--Electronic Industries Association**  
**NCAT--National Center for Advanced Technologies**



## ***What's Immediately Ahead***

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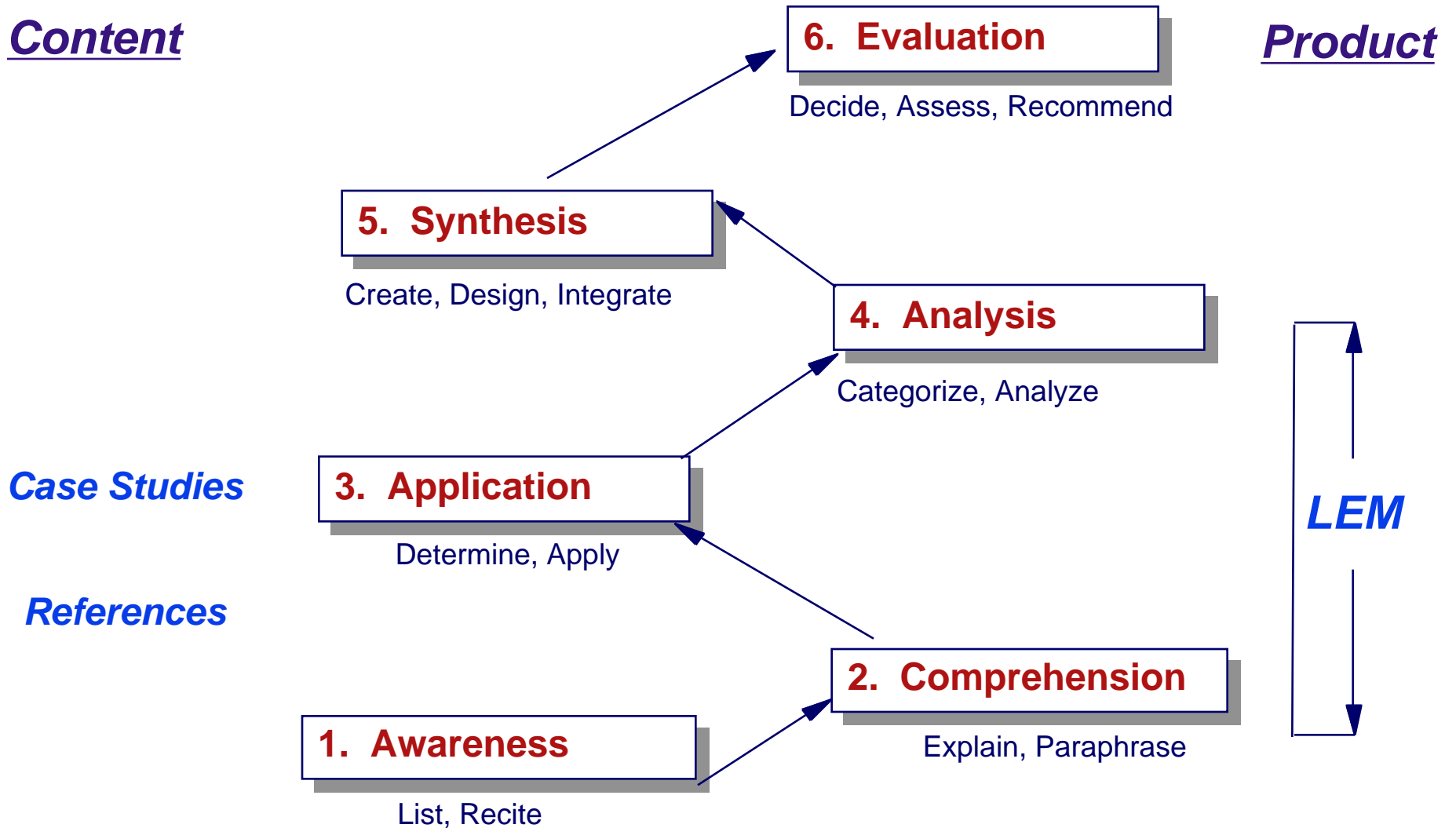
- **Benchmarking Tool Kit (IW & P-W)**
  - Mix & Match Metrics to LEM Overarching Practices
- **Arthur Andersen**
  - Global Best Practices Database
  - No-charge Access for One-Month
- **Navy Mantech**
  - Best Manufacturing Practices Database



# How LEM Supports Your Lean Journey

Content

Product



*Case Studies*

*References*



# Three Major Activities Support Phase II





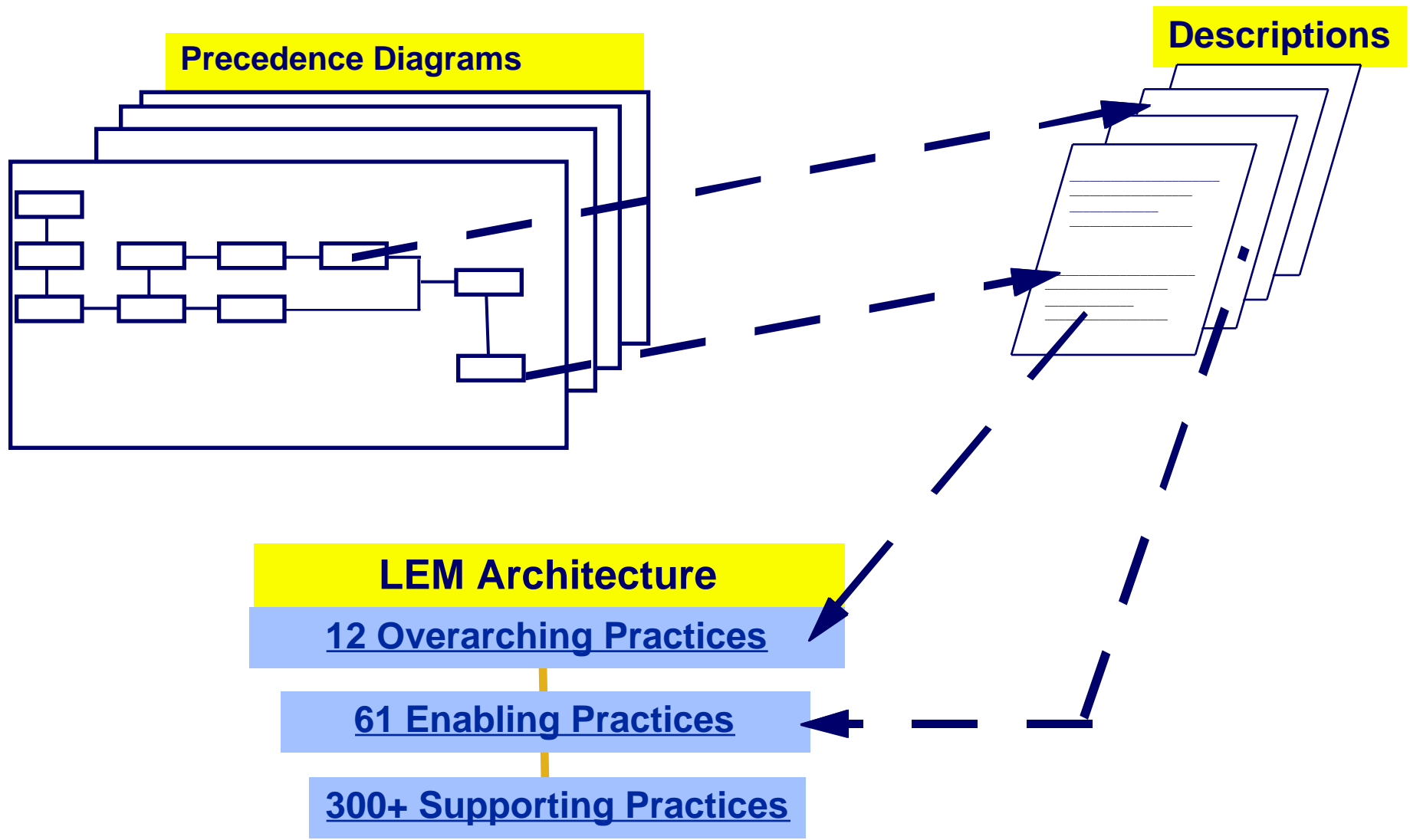
# Transition-to-Lean Module Selected

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- **Addresses member needs for:**
  - More “how-to’s”
  - Sequence or order for lean practice implementation and focus
- **Precedence diagrams are tools for:**
  - Organizing LEM practices
  - Representing priority and sequence



# Transition-to-Lean Module





# Transition-to-Lean Module: Plan

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- **Involve “Lean” experts in process**
  - Draw from successful lean implementations
  - Not limited to aerospace
- **Employ facilitated workshops to develop precedence diagrams**
  - First at enterprise level
  - Then at a detailed functional level
- **Develop descriptions**
  - Elaboration of concepts
  - Interpretation of issues
- **Link to LEM**



## **Transition-to-Lean Module: Status**

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- **Five consortium members are currently participating and providing resources**
  - Boeing
  - Lockheed Martin
  - Northrop-Grumman
  - Pratt & Whitney
  - Textron Systems
- **Mantech funds identified to support MIT led effort**
- **Kickoff workshop planned for mid second quarter**



# Transition-to-Lean Module Provides Further Insight

Content

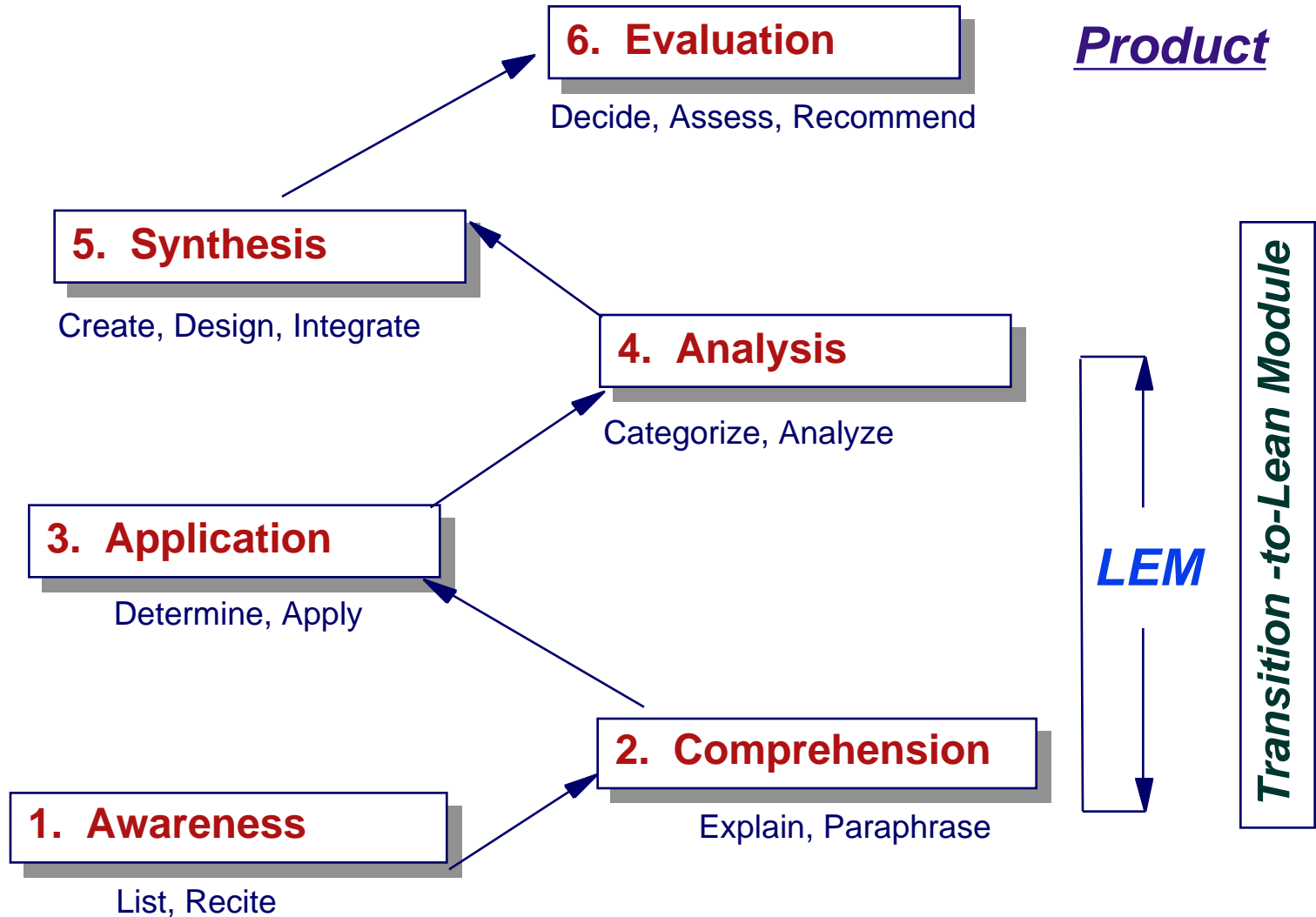
Product

Precedence Diagrams

Case Studies

References

Lean Descriptions





# Exploring Additional LEM Enhancements

- **More “how-to’s”**
  - Supporting practice data sheets
  - Expanded data linkages
  - Multi-media vignettes
- **Introducing “what-if’s”**
  - Simulation capability
  - Decision support tools





# Potential Enhancements Extend LEM Applicability

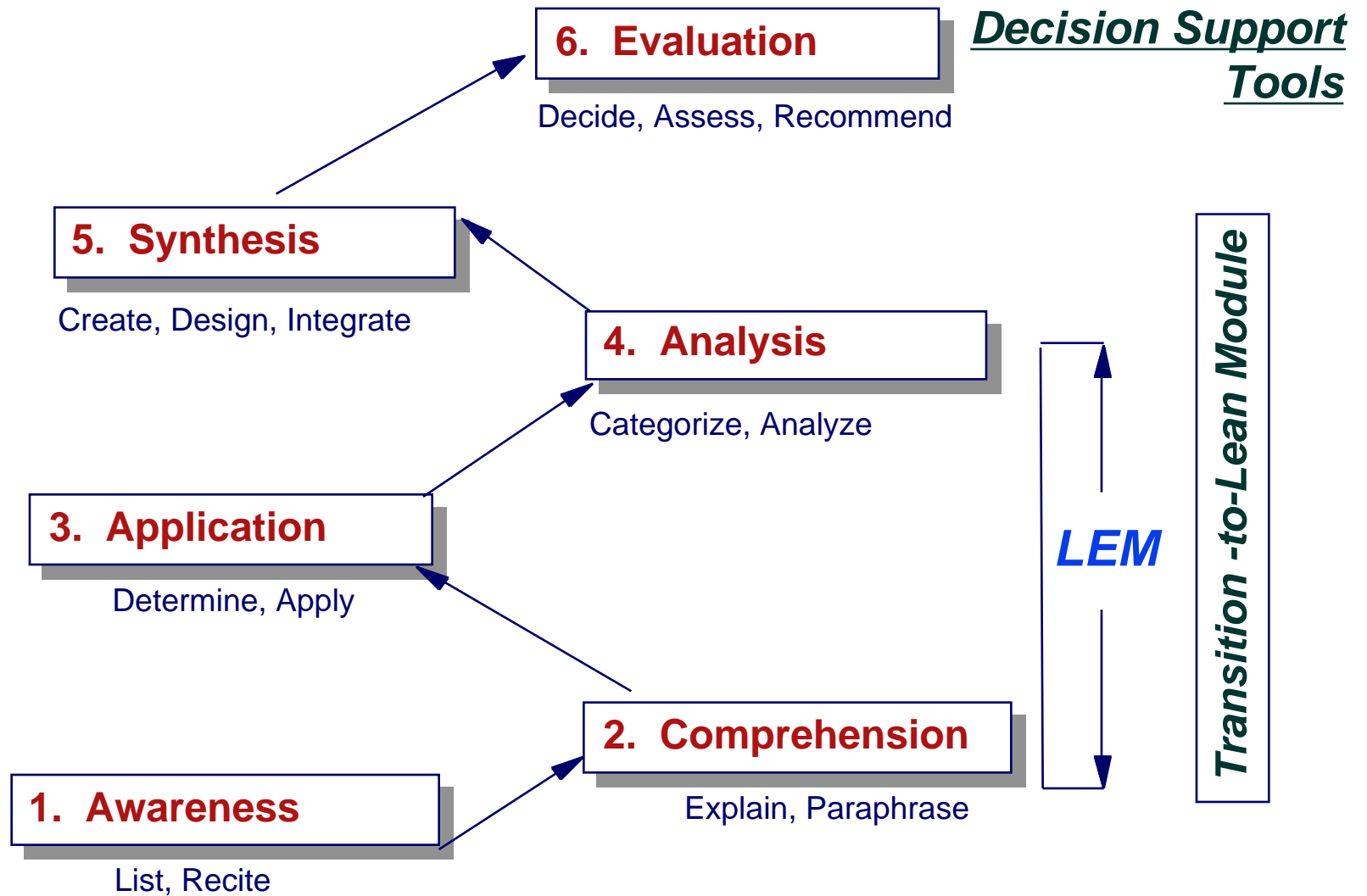
Simulation

Precedence  
Diagrams

Case Studies

References

Lean  
Descriptions







# *Helping Us Help You!*

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**We need your  
feedback  
and  
involvement!**