

Leap Cad System, LCS, Process Flow

Moving Energy Development from the Deep Silo Subject Matter to the Knowledge Age

1st Expert & Model Analytic Mining

Models: Mining, abstraction, translation

Create Bibliography of 100 leading edge research papers in multiple energy research areas.
Mine Analytic papers.

Analytic/Model Library: Leverage existing math tools like Mathcad, Mathematica, or MatLab to abstract the leading papers into a common framework or script that can be easily edited, understood, discussed, analyzed, shared, and used to jump start innovation and widen interest in the energy & knowledge domains.
- [See Example Abstraction](#)
Create Models' Properties Matrix.

2nd Virtual Laboratory, VL

An Integrated Environment

Examine behavior and results.

Common mathematical framework
Model Library and databases:
Re-usable and can be merged with other scripts into new creations.

Entrepreneurial
business models

Product, environment,
and social cost models
and common database

Materials Science

- ▲ Materials LCS models
- ▲ External Simulation Models
- ▲ Proposed model
- ▲ Common database

3rd Apply Knowledge Science & PBM to VL

User: Application of higher level thinking

Provide Software Toolset to Implement:

- ▲ Model Properties Matrix and Explorer
- ▲ Structured, Meta-Innovation Process
- ▲ Most innovation from lateral thinking
 - Facilitate lateral cognition styles
 - Expose to variety of information
- ▲ Break out of “specialization silos”
- ▲ Framework for “What if?” investigation
- ▲ Tutorial models
- ▲ Detect analogies, patterns, exceptions
- ▲ Proven Breakthrough Methods, PBM
 - Edward de Bono’s Lateral Thinking
 - Synthesis/Convergence
 - “Physical Process Factorization”
 - [See Example PBM](#)
 - General Morphological Analysis
 - TRIZ Principles
 - Concept mapping – Thinker Toys
- ▲ Mathematical Process Transformations
 - Thermodynamic transformations
 - Where applicable, Linear Control

4th LCS Meta-Research and Development

Community: Multi-Disciplinary Collaboration

Grow the LCS science and methodologies

- ▲ **Promote, Advocate, Advertise LCS**
- ▲ **Continued evolution of LCS methods**
- ▲ Metcalfe’s Law to expand power of tools
- ▲ Leap Cad System Training
- ▲ Breakthrough Methodology research
- ▲ Information Systems research
- ▲ XML tagging categorization
- ▲ Develop new computer tools, e.g.
 - Knowledge systems engineering
 - Concept mapping, Engineering Ontology
- ▲ Characteristics of best modeled papers
- ▲ Symposia on LCS application, methods