

- Welcome and Introductions
- Process Overview
- Systems Engineering “V”
- Cross-Cutting Activities
- Applying SE to a Project

Establishing SE in your Organization

- Process Improvement Discussion
- Wrap Up

Session 6: Establishing SE in Your Organization

These materials developed under the RITA National ITS Architecture Program



Learning Outcomes

- Identify ways to improve systems engineering capabilities
- List steps to establish systems engineering processes for your organization





Improving Systems Engineering Capability

Three aspects should be addressed:

- People – Build systems engineering knowledge
- Process – Establish systems engineering processes for your organization
- Technology – Use SE Tools to make the processes more efficient and effective





Building Systems Engineering Knowledge

People



- Identify systems engineering specialists in your organization
 - Don't overlook the Information Technology Group
- Provide staff training opportunities
 - Can use 100% federal funds from a project to pay for any training
- Hire experienced SE consultants
 - Still need SE skills within your organization



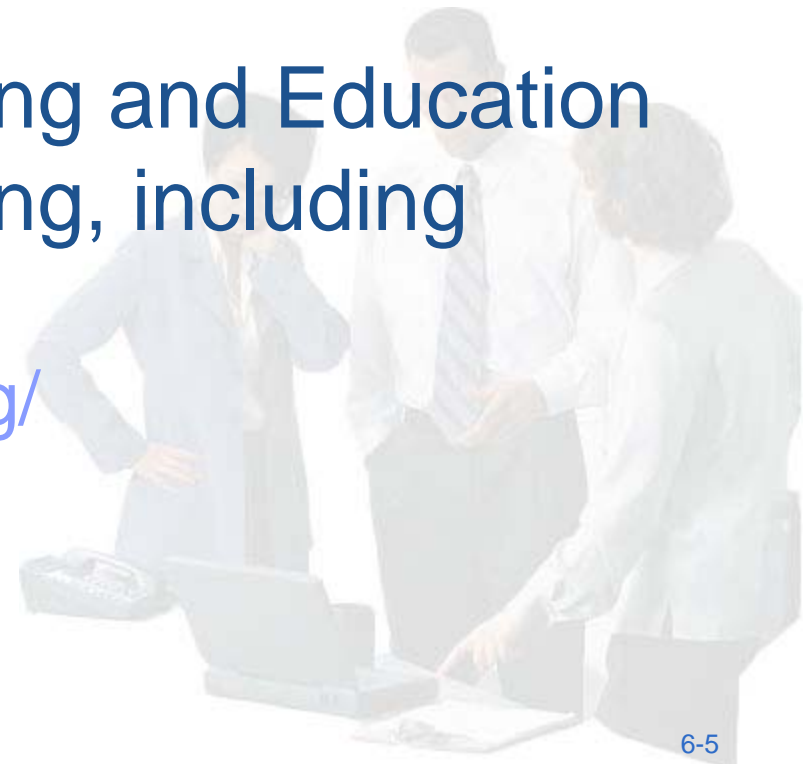


Training

People



- National Highway Institute (NHI -- mostly classroom-based courses)
http://www.nhi.fhwa.dot.gov/training/down_catalog.aspx
- Consortium for ITS Training and Education (CITE -- web-based training, including “blended learning”)
<http://www.citeconsortium.org/>





SE Training

People



- **Introductory**
 - Introduction to SE for Advanced Transportation
NHI Course #137024 and CITE
 - Managing High Technology Projects in Transportation
NHI Course #137026 and CITE

- **Intermediate**
 - Software Acquisition for ITS Projects
NHI Course #137019 and CITE
 - Procurement for ITS Projects
NHI Course #137020 and CITE

- **Advanced**
 - Advanced SE for Advanced Transportation Projects
CITE
 - Configuration Management for Traffic Management Systems
NHI Course #137042 and CITE





Related ITS Training

People

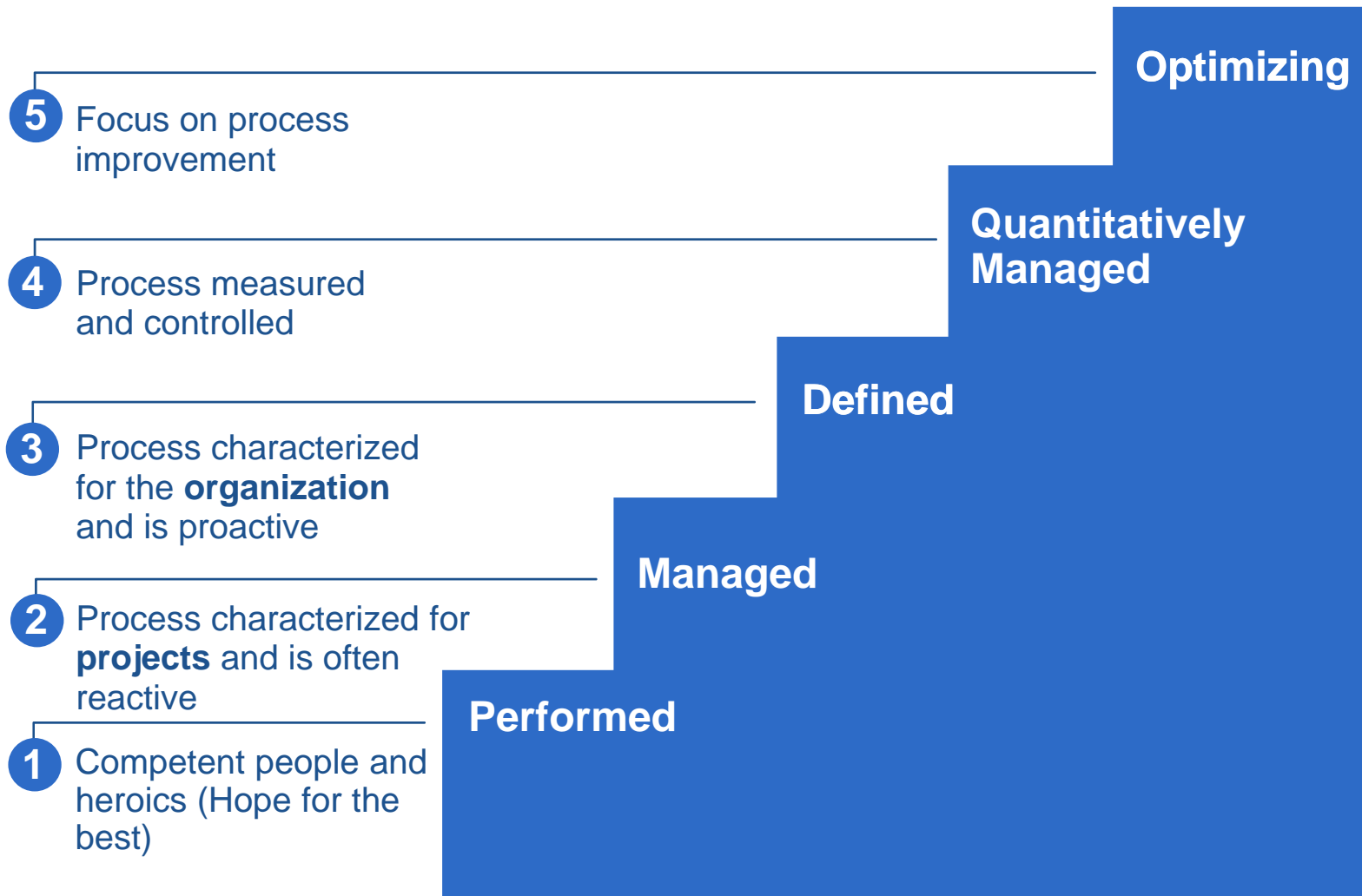
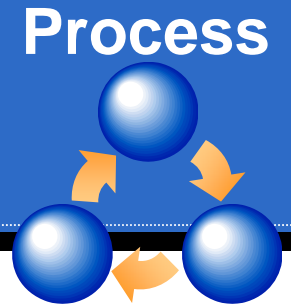


- Introduction to the National ITS Architecture
NHI Course #137013 and CITE
- Advancing Transportation System Management
and Operations
NHI Course #133098
- Improving Highway Safety with ITS
NHI Course #137044
- Turbo Architecture Software Training
NHI Course #137029A
NHI Course #137048 (Web Based)





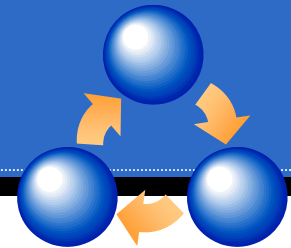
CMMI Capability Levels are a Proven Process Improvement Approach





Process Improvement Recommendations

Process



- Pilot SE processes on projects – begin with SE “V” Model
- Leverage parallels in processes
 - SE
 - Capital Projects
 - IT
- Improve cross-cutting capabilities – Project Mgmt, Risk Mgmt, Configuration Mgmt
- Establish policies, document SE process
- Implement across organization



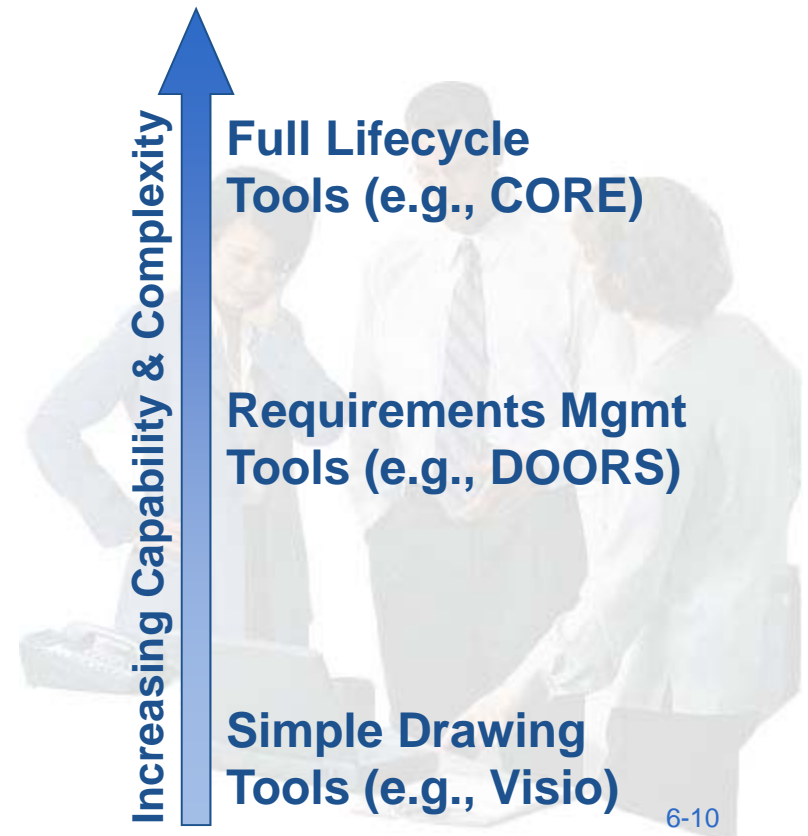


Systems Engineering Tools

Tools



- Establish SE library (e.g., templates, best practices, decision support tools)
- Consider range of SE tools as organization gains experience
 - Project Management
 - Requirements Management
 - Systems Architecture
 - Testing/Problem Tracking
 - etc., etc.
- Use complex tools based on project need





SE Resources

- Systems Engineering Handbook
- Systems Engineering Guidebook
- Guide to Contracting ITS
- Lessons Learned Database
- Comprehensive list of resources included in your workbook



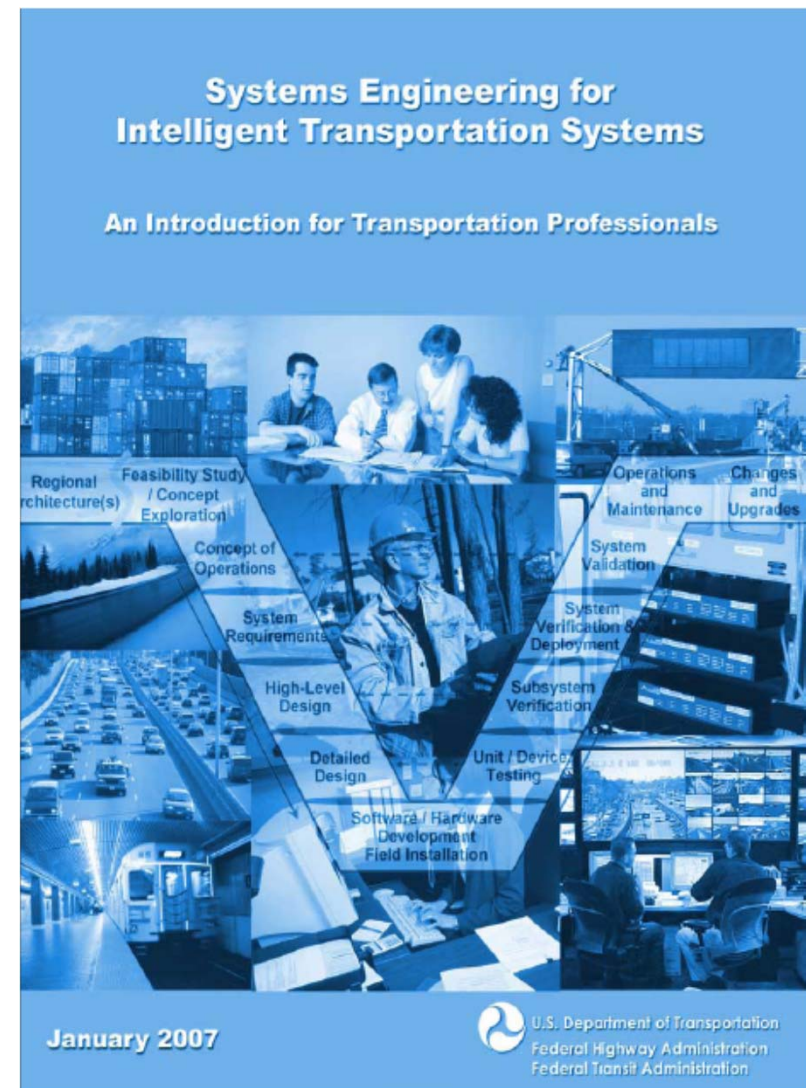


Systems Engineering Handbook

On-Line at:

<http://ops.fhwa.dot.gov/publications/seitsguide/index.htm>

CD in your workbook





Choosing the Right Contracting Approach

National Cooperative Highway Research Program (NCHRP)

**Edwards
AND
Kelcey**

ENGINEERS
ARCHITECTS
PLANNERS
CONSTRUCTORS



Documentation

Web-Based
Decision Model

NCHRP Project 03-77: Guide to Contracting ITS

Credits

<http://www.citeconsortium.org/Model/index.htm>



Lessons Learned Database

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Systems Engineering Activities

[Systems Engineering Activities Definitions](#) | [Resources](#)

Click on the activities in the "V" below to view related lessons and resources.

Systems Engineering Management

- Program Management
- Project/Technical Management

<http://www.itslessons.its.dot.gov/its/benecost.nsf/LessonSystemsEng>



Review Learning Outcomes

- Identify ways to improve systems engineering capabilities
- List steps to take to establish systems engineering processes for your organization

