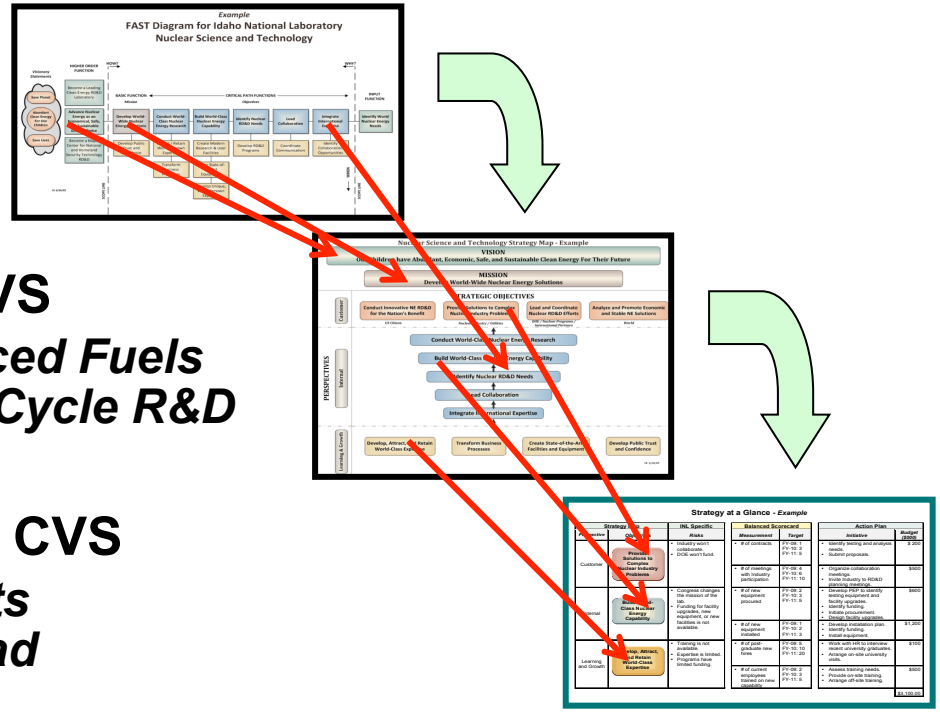
Value Engineering – A Systematic Approach to Strategic Planning



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July 13, 2010

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Idaho National Laboratory

Key Contributions and References

- **Value Engineering – *A Systematic Approach for Strategic Planning*, 2010**
  - Lori Braase, AVS
  - Alison Conner, CVS
  - Jodi Grgich, AVS
  - Margie Jeffs, AVS
  - Darcie Martinson, AVS
- **INCOSE Handbook, Version 3.2, Chapter 9.13**
- **Value Engineering Website: http://www.value-eng.org/**
- **Robert Kaplan and David Norton**
  - *The Strategy Focused Organization*, 2001
  - *Strategy Maps*, 2004

Agenda

- Purpose
- Introduction to strategic planning and Value Engineering
- Overview of Strategy Maps and Scorecards
- How to Use VE and FAST Diagrams to Develop Maps and Scorecards
- Questions

Purpose

- Explain how VE, a systematic team approach, can be used as an effective, comprehensive tool for Strategic Planning
- Introduce Value Engineering and the Strategy Map/Balanced Scorecard concept

Did you Know?

88% of organizations engage in some form of strategic planning

(Bain and Company Global Management Tools and Trends Survey)

…HOWEVER…

"**Less than 10%** of strategies effectively formulated are effectively executed"

(Fortune Magazine)

Common Strategic Planning Hierarchy

Strategy Maps and Balanced Scorecards

- Concept introduced by Robert Kaplan, PhD and David Norton, PhD in 1990s
- Started as a research project focused on measurement
- Evolved into a balanced strategic planning and execution approach

Framework for Execution

The Strategy Map and Balanced Scorecard provide a **framework** that helps an organization **translate strategy** into **operational objectives** that drive both **behavior** and **performance**

(Balanced Scorecard Collaborative)

Kaplan and Norton's Framework Formula

Describe the strategy ⇦ **Strategy Maps**

+

Measure the strategy ⇦ **Scorecards**

+

Manage the strategy ⇦ **Strategy Review Meetings**

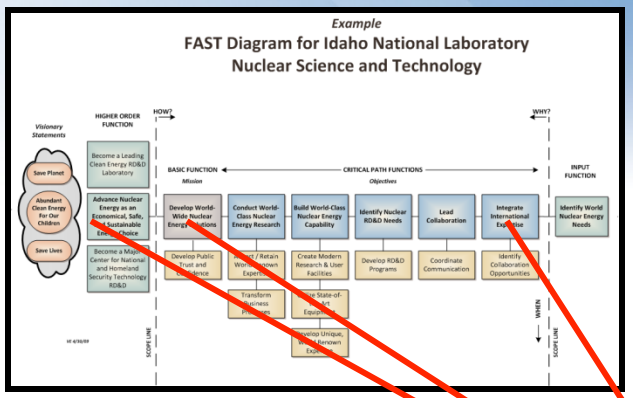
What is Value Engineering

Value Engineering uses a **systematic process** and **multidisciplinary team approach** to identify and evaluate **solutions to complex problems** in the life-cycle of a project, process or system, ensuring quality and reliability at the lowest possible cost.

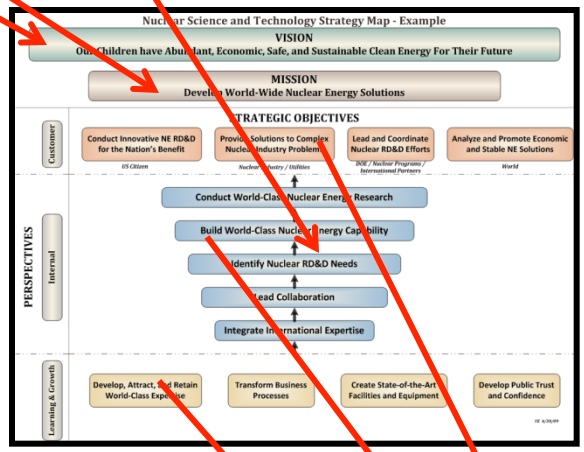
Using VE for Strategic Planning

- Provides a **structured methodology** for strategic planning – from strategic thinking through execution
- Provides **broader, more balanced perspective** of the organization
- Produces **creative, cost effective approaches** to accomplish strategic objectives
- Provides **evaluation tools** to select strategies, initiatives, and measures

VE/Balanced Scorecard Relationship

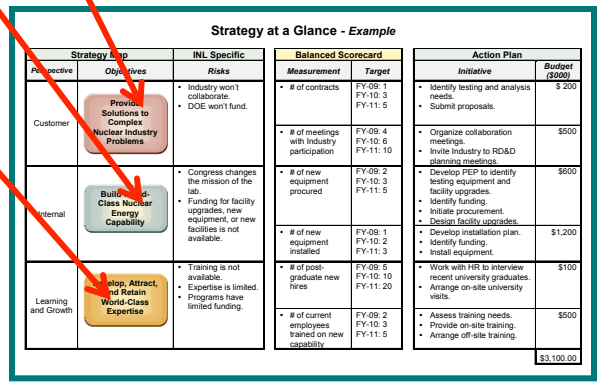


From FAST……



To Strategy Map……

To Scorecard……



Follow the VE Job Plan!

Phase 0:	Preparation/Planning
Phase 1:	Information Gathering
Phase 2:	Function Analysis/FAST
Phase 3:	Creativity
Phase 4:	Evaluation
Phase 5:	Development
Phase 6:	Presentation/Implementation

Phase 0: Preparation Planning

- Select members of the strategic planning team
- Identify stakeholders and customers
- Identify thought and opinion leaders
- Understand issues to be addressed

Phase 1: Information Gathering

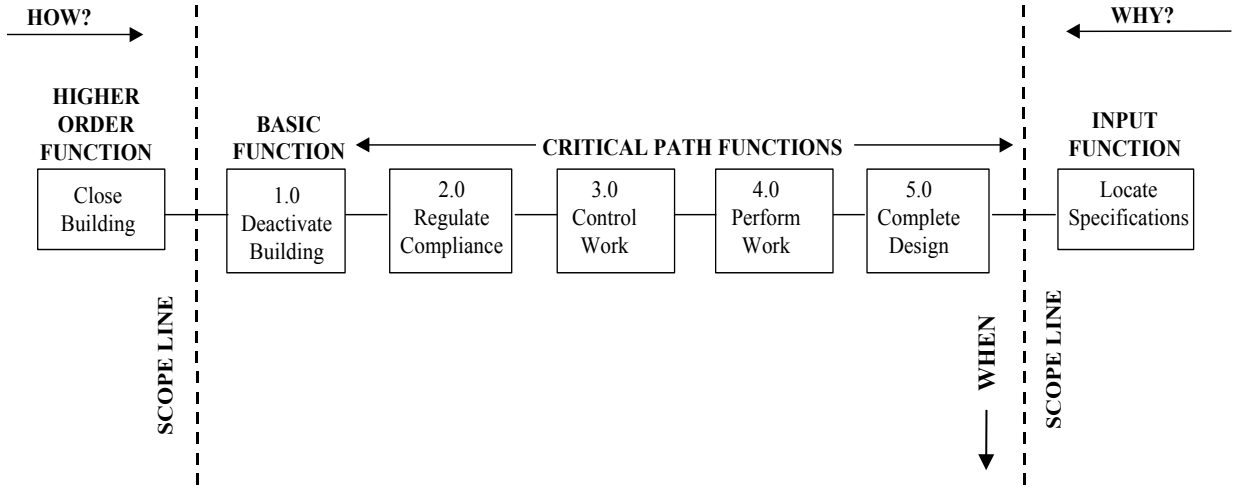
- Current situation
- Desired end state
- Strengths, Weaknesses, Opportunities, Threats (SWOT)
- Customer input
- Stakeholder input
- Draft Vision and Mission

Phase 2: Function Analysis/FAST

- Creates or enhances the vision and mission "substance" via the critical path
  - Vision - higher order function
  - Mission - organization's basic function
- Aligns strategic objectives with vision and mission
- Clarifies and tests the cause and effect relationship between strategic objectives
- Translates functional view of the organization into the strategy

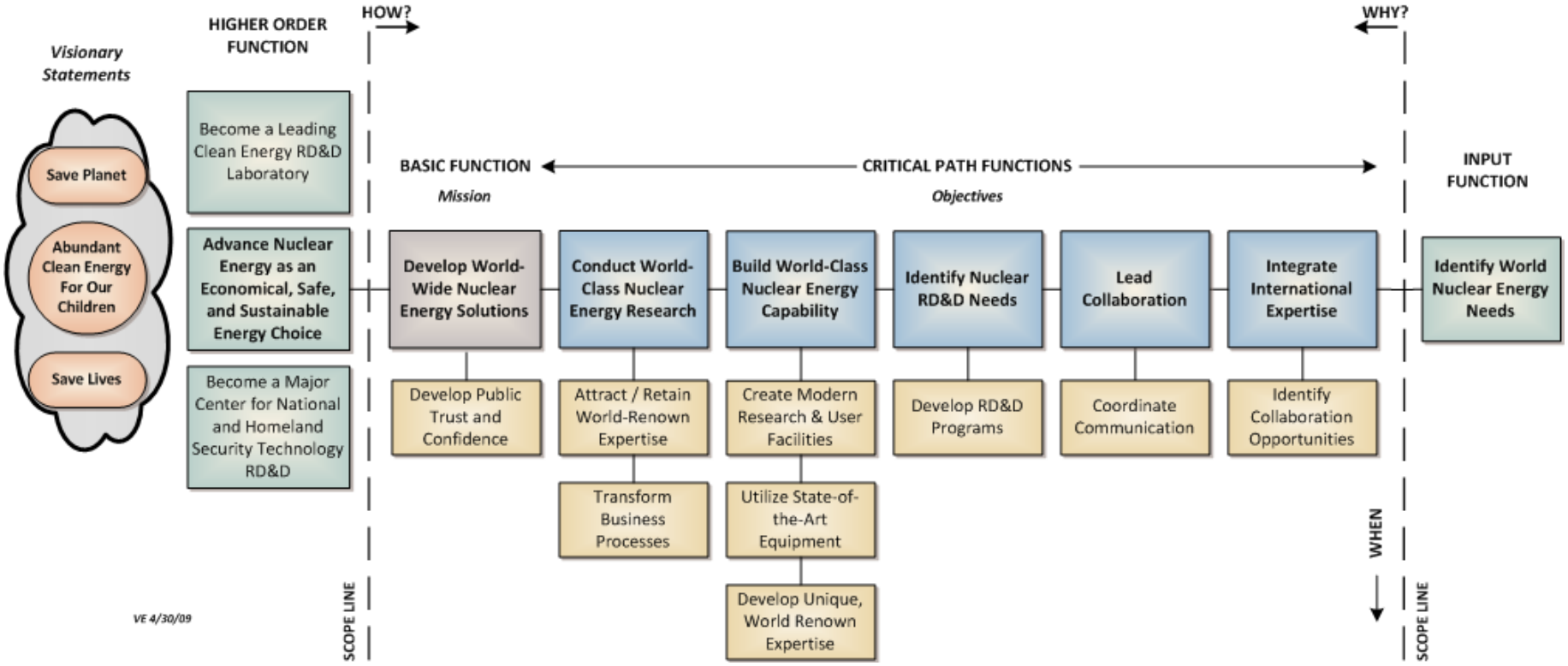
FAST Diagram: Not your typical linear flow diagram!

- **Basic Function:** Primary reason for existence
- **Higher Order Function:** Future outcome
- **Input Function (Lowest Order Function):** Current state or Need
- **Critical Path Functions:** Provide the logic between the Basic and Input Functions
- **When Functions:** Support the Critical Path, but are not Linear



Example

FAST Diagram for Idaho National Laboratory Nuclear Science and Technology



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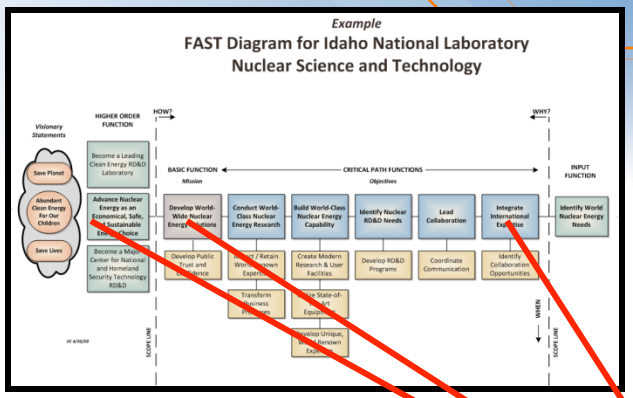

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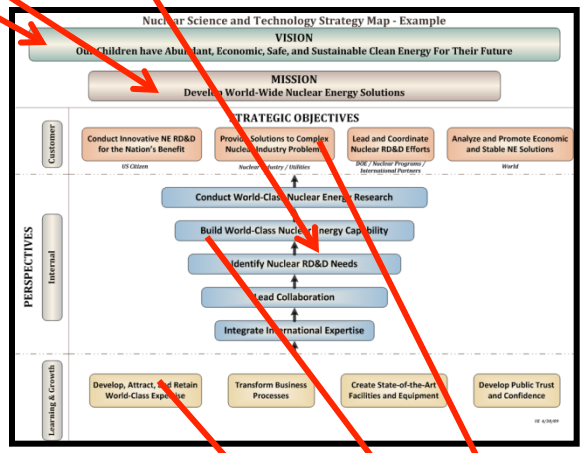

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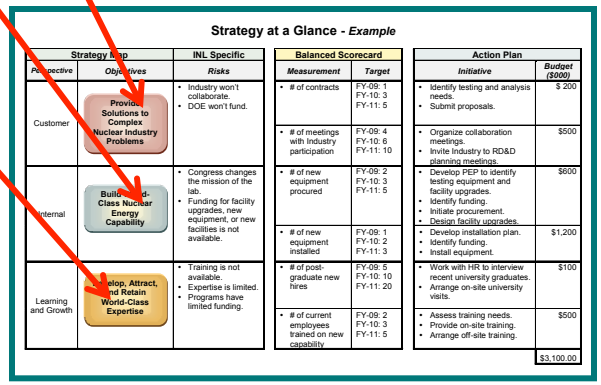


Strategy at a Glance - *Example*

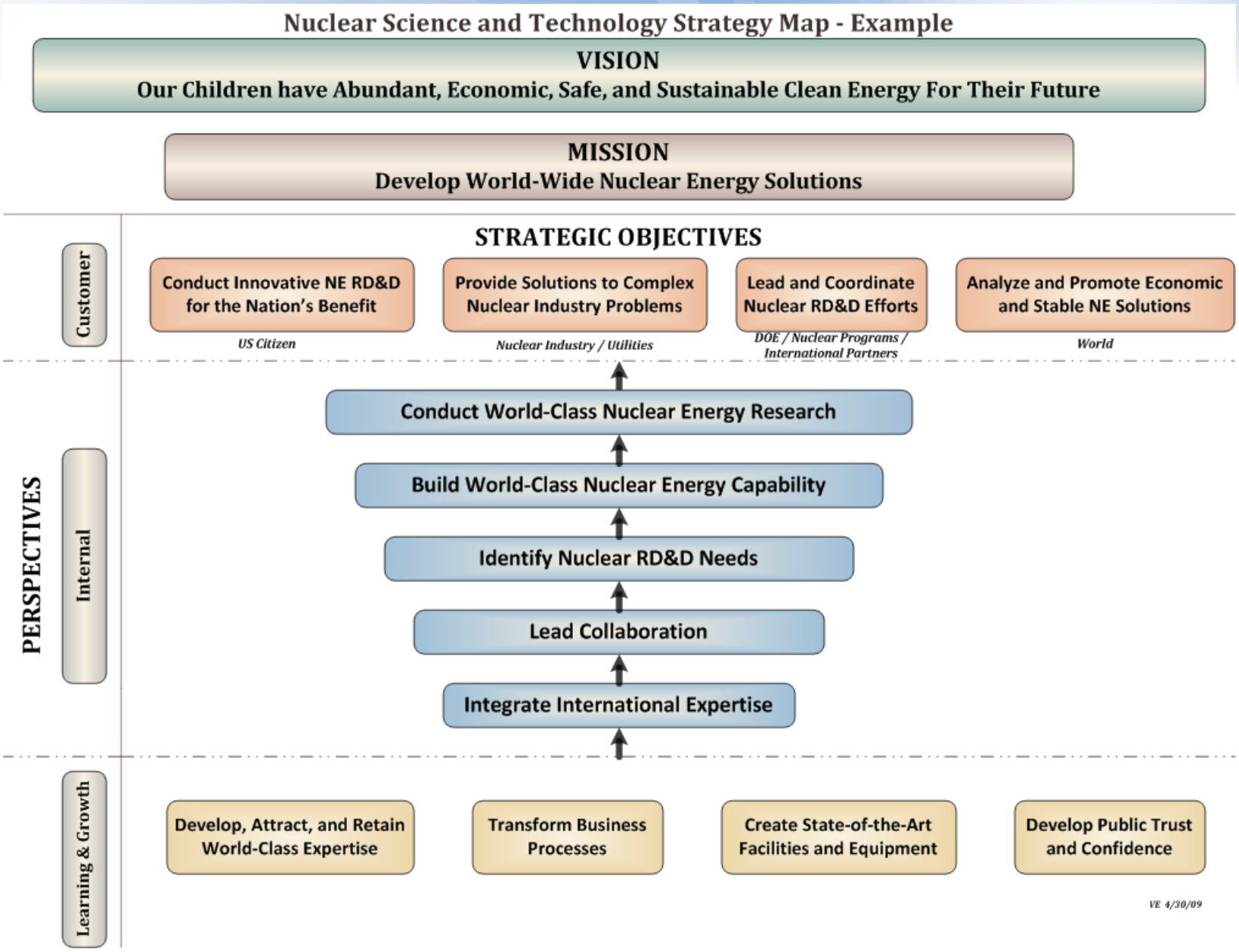
Strategy Map		INL Specific	Balanced Scorecard		Action Plan	
Perspective	*Objectives*	*Risks*	*Measurement*	*Target*	*Initiative*	*Budget ($000)*
Customer	Provide Solutions to Complex Nuclear Industry Problems	• Industry won't collaborate. • DOE won't fund.	• # of contracts	FY-09: 1 FY-10: 3 FY-11: 5	• Identify testing and analysis needs. • Submit proposals.	$ 200
			• # of meetings with Industry participation	FY-09: 4 FY-10: 6 FY-11: 10	• Organize collaboration meetings. • Invite Industry to RD&D planning meetings.	$500
Internal	Build World-Class Nuclear Energy Capability	• Congress changes the mission of the lab. • Funding for facility upgrades, new equipment, or new facilities is not available.	• # of new equipment procured	FY-09: 2 FY-10: 3 FY-11: 5	• Develop PEP to identify testing equipment and facility upgrades. • Identify funding. • Initiate procurement. • Design facility upgrades.	$600
			• # of new equipment installed	FY-09: 1 FY-10: 2 FY-11: 3	• Develop installation plan. • Identify funding. • Install equipment.	$1,200
Learning and Growth	Develop, Attract, and Retain World-Class Expertise	• Training is not available. • Expertise is limited. • Programs have limited funding.	• # of post-graduate new hires	FY-09: 5 FY-10: 10 FY-11: 20	• Work with HR to interview recent university graduates. • Arrange on-site university visits.	$100
			• # of current employees trained on new capability	FY-09: 2 FY-10: 3 FY-11: 5	• Assess training needs. • Provide on-site training. • Arrange off-site training.	$500
						$3,100.00

Strategy Maps

A Strategy Map is a **pictorial model** (visual representation) that holistically describes an organization's strategy

- Shows where the organization wants to be in the future and how to get there
- Includes different perspectives to remain "balanced"

Example of a Strategy Map for the INL NS&T Directorate



Vision

- Inspiring **image of the desired future** of the organization
- Empowers people to think and act in new ways
- Memorable and repeatable
- Evocative, exhilarating, and challenging

"Sets Emotion in Motion"

Mission

- Reason for an organization's existence
- What the organization does, for whom, and why
- Conveys **uniqueness of organization**

Strategic Objectives

- Interim steps toward achieving an organization's long range mission and goals
- Measurable, time-based statements of intent
- Emphasize the results of actions at the end of a specific time
- Integrate customer/stakeholder needs

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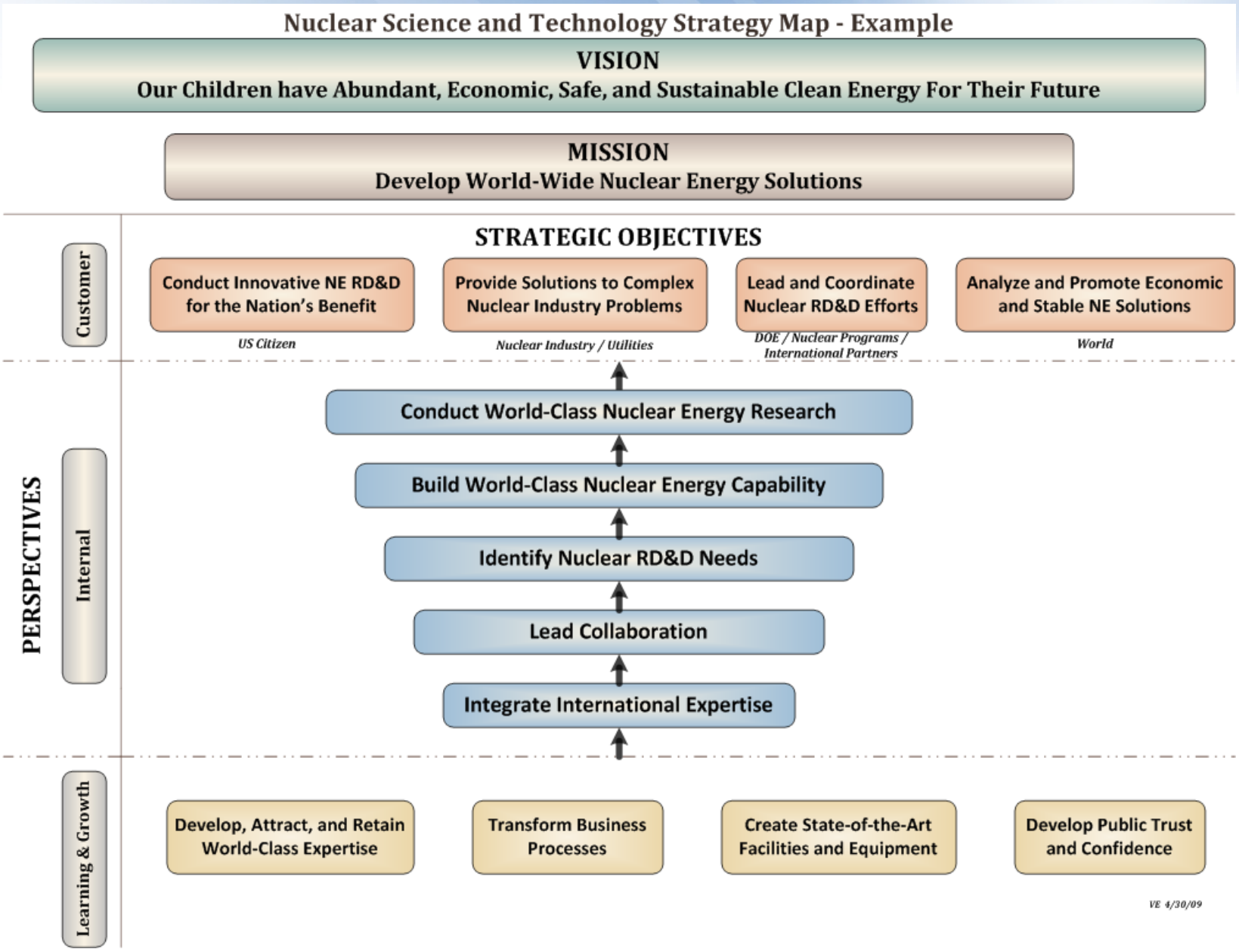

Phase 3: Creativity

- Brainstorm how to accomplish strategic objectives from strategy map (=> potential initiatives)
- Brainstorm measures
  - Lag measures provide outcome information
  - Lead measures can drive desired behavior and activities

Phase 4: Evaluation

- For each objective, select preferred set of initiatives using common evaluation techniques
- Select preferred set of measures to monitor and gauge the performance
  - 1-2 per strategic objective

Phase 5: Development

- Develop Balanced Scorecard – converts Strategy Map into action
  - For each objective, identify the risks, measures, targets, and initiatives
  - Identify the cost of the resources needed to implement the initiatives

- Becomes the tool to track progress and status management

Example of a Balanced Scorecard for the INL NS&T Directorate

Strategy at a Glance - *Example*

Strategy Map		INL Specific	Balanced Scorecard		Action Plan	
Perspective	***Objectives***	***Risks***	***Measurement***	***Target***	***Initiative***	***Budget ($000)***
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Phase 6: Presentation / Implementation

- Present proposed strategy to organization to create dialogue and obtain input
- Refine Strategy Map and Scorecard
- Execute strategy
  - Cascade to individual performance plans
  - Conduct strategy review meetings
  - Review/refine Strategy Map and Scorecard as needed

Remember: Development of Strategy is an iterative process!

Successful Strategy Execution

- Commit to an approach focused on strategy execution
  - Regular strategy reviews should be integrated into the management and operation of an organization
  - Mobilize employees so their daily activities support strategy execution
  - **Get on with it!** Focus on executing the strategy; and not developing a “perfect” Strategy Map and Scorecard.

Conclusion

- Our many years of experience with VE and Strategic Planning leads us to support the hypotheses that the **VE methodology is an effective strategic planning tool** and can be used to develop Strategy Maps and Scorecards
- This is a proposed new application of VE for Strategy Map and Scorecard Development
- Aligns an organization's strategies with the mission and vision through use of FAST diagramming

Questions?

INL Overview

- INL has operated as a government facility in southeastern Idaho since 1949.
- The INL “site” occupies 890 square miles.
- Idaho’s third largest employer.
- More than 50 nuclear reactors have been built and operated – the largest concentration of reactors in the world.

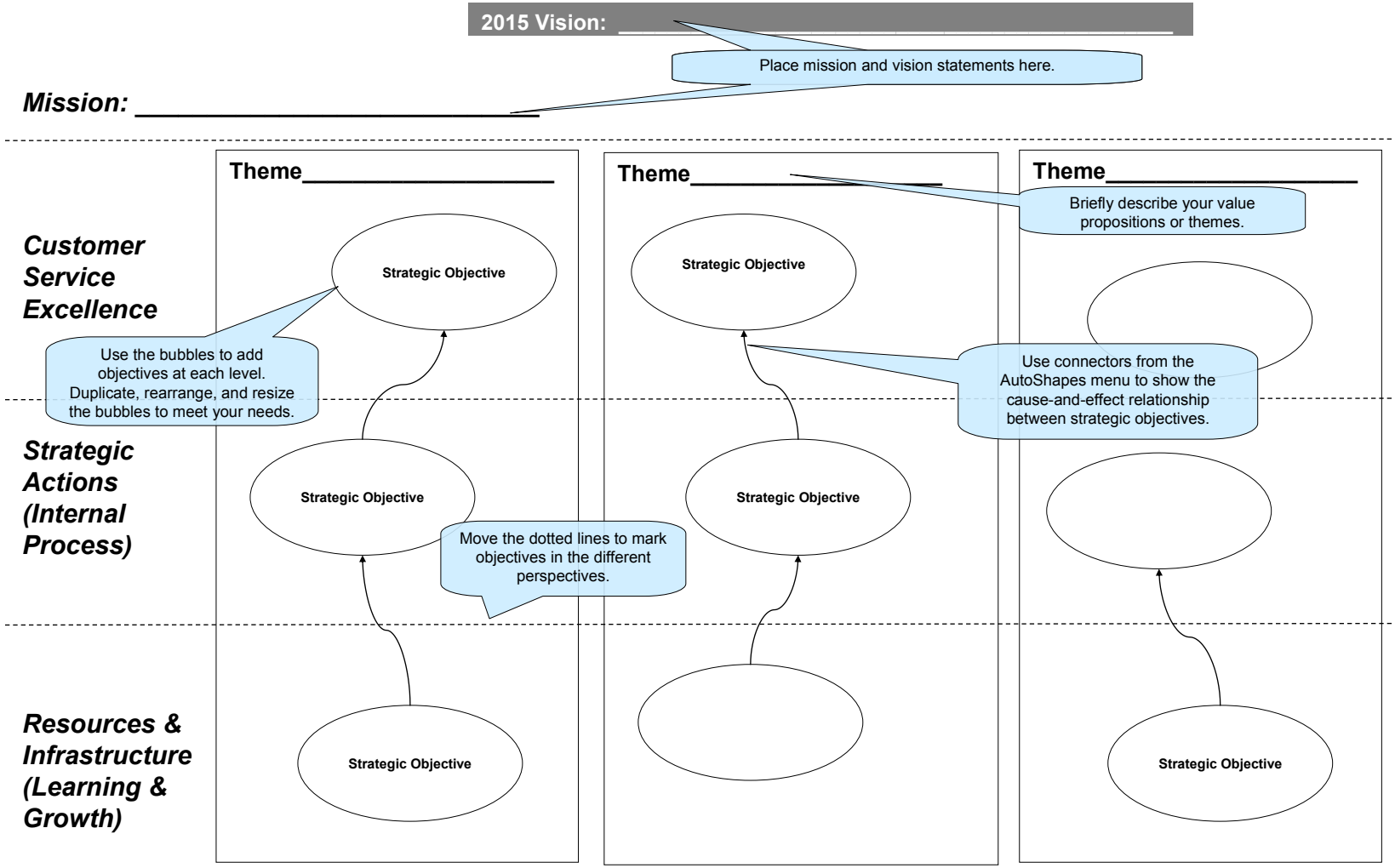
INL History

- **1951** – the first usable amounts of electricity were generated by nuclear power by the Experimental Breeder Reactor #1, now a Registered National Historic Landmark.
- **1953** – Technology for the world's first nuclear-powered submarine was pioneered.

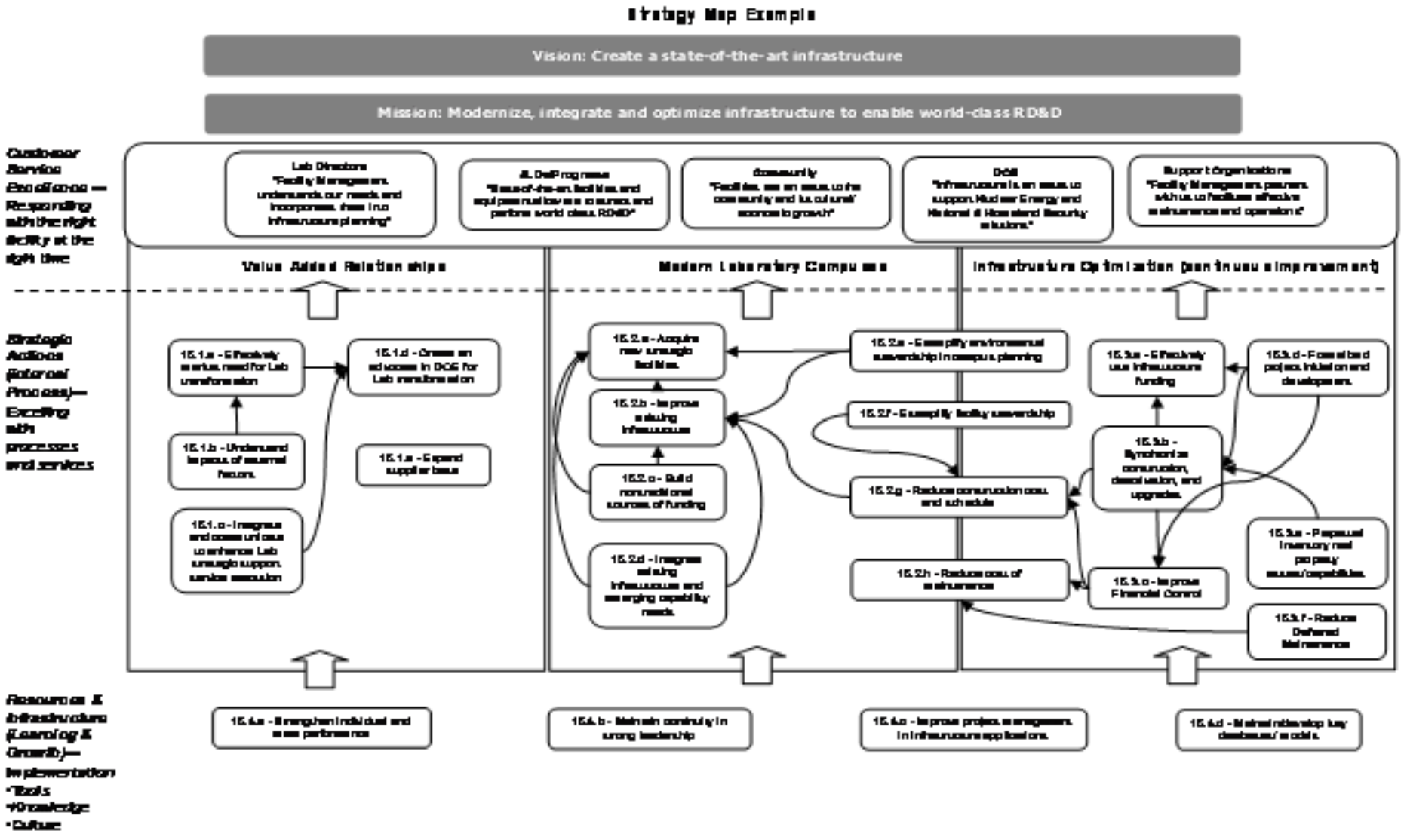
INL Future

- **Nuclear Energy** – develop advanced nuclear technologies that provide clean, abundant, affordable, and reliable energy to the US & world.
- **National and Homeland Security** – use scientific expertise, engineering discipline, & unique infrastructure assets to meet daily challenges faced by our military, law enforcement, & homeland security customers.
- **Energy and Environment** – integrate nuclear energy research with other bio / fossil energy systems, advance renewable energy technologies, & develop alternative energy & transportation fuels.

Generic Strategy Map Template



Example of a Strategy Map



Example of a Generic Scorecard

Scorecard

Objectives	Risks	Measures	Targets	Initiatives