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DEFINING THE FUTURE

Risk Management Beyond CMMI Level 5

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Background

- There are several straightforward ways to meet the practices of the Risk Management process area
- Beyond compliance, a Level 5 organization asks “Can the effectiveness and efficiency of the Risk Management process be improved?”
- This presentation examines some of the techniques and opportunities being used by Northrop Grumman to build on the CMMI Risk Management practices

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Agenda

- A Quick Review of Risk Management Practices in the CMMI
- Risk Management – What's Important to Improve?
- The Journey Ahead – More Opportunities for Process Improvement

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Review – Risk Management in the CMMI

SG 1 Prepare for Risk Management *Preparation for risk management is conducted.*
SP 1.1 Determine Risk Sources and Categories *Determine risk sources and categories.*
SP 1.2 Define Risk Parameters *Define the parameters used to analyze and categorize risks, and the parameters used to control the risk management effort.*
SP 1.3 Establish a Risk Management Strategy *Establish and maintain the strategy to be used for risk management.*

SG 2 Identify and Analyze Risks *Risks are identified and analyzed to determine their relative importance.*
SP 2.1 Identify Risks *Identify and document the risks.*
SP 2.2 Evaluate, Categorize, and Prioritize Risks *Evaluate and categorize each identified risk using the defined risk categories and parameters, and determine its relative priority.*

SG 3 Mitigate Risks *Risks are handled and mitigated, where appropriate, to reduce adverse impacts on achieving objectives.*
SP 3.1 Develop Risk Mitigation Plans *Develop a risk mitigation plan for the most important risks to the project as defined by the risk management strategy.*
SP 3.2 Implement Risk Mitigation Plans *Monitor the status of each risk periodically and implement the risk mitigation plan as appropriate.*

Process Compliance is Not Enough

- **A compliant process may not be efficient, nor effective, nor sufficient to meet the customers' needs**
- **A competitive environment requires a proactive approach to improving all processes**

What do we expect to happen in a Level 5 organization?

- **Institutionalization**
  - All projects implement Risk Management
- **A process improvement focus**
  - Every practitioner is looking for ways to make the risk management process better
- **A data-driven culture**
  - Data is gathered about the risk management process to identify ways it can be improved

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Risk Management is a Decision Management Tool

Decisions With Respect to Level of Knowledge

Uncertainty
(Probabilities)

More Uncertainty

Choosing between emerging technologies

Some Uncertainty

Selecting an architecture

Certainty / Near Certainty

Deciding on best COTS to meet requirements

Certainty
("Perfect" Information)

Many decisions fit somewhere in the middle where uncertainty can be "managed"

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Where Can We Look for Improvements?

Lean Six Sigma, applied to Risk Management

- **Voice of Customer**
  - Who are the customers of the risk management process?
  - What do they need? Desire? How do they judge success?
- **Voice of Process**
  - How efficient is our process? (e.g., risks identified/managed per resources spent)
  - How effective is our process? (e.g., identifying all risks)
  - Is there any unnecessary variation?
  - Are there any bottlenecks or time-wasters?
  - Can we reduce defects? (e.g., unidentified risks)
- **Voice of Business**
  - What best-practices exist in the community?
  - What will our future needs be?

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SIPOC Process Map – Project-Level Risk Management

Suppliers	Inputs	Process	Outputs	Customers
		Determine risk sources and categories	Risk sources, categories, parameters	Risk identifiers (project personnel)
Process Group	Historic risks Organizational guidance	Define risk parameters	Risk strategy Identified risks Prioritized risks	Project Risk Manager
External Customer	Areas of concern	Determine risk strategy	Risk mitigation plans	Project personnel
Project personnel	Areas of concern	Identify risks	Risk mitigation results	Project Risk Manager
Project Risk Manager	Expertise, experience	Evaluate, categorize, and prioritize risks	Lessons learned Metrics	Process Group
		Develop risk mitigation plans	Adherence to plans	Customer
		Implement risk mitigation plans		

Risk Management Improvement Opportunities (1 of 2)

Goal/Practices	Improvement Opportunities
SG 1 Prepare for Risk Management Preparation for risk management is conducted.	
SP 1.1 Determine Risk Sources and Categories Determine risk sources and categories.	▪ More useful sources ▪ More useful categories
SP 1.2 Define Risk Parameters Define the parameters used to analyze and categorize risks, and the parameters used to control the risk management effort.	▪ More insightful parameters
SP 1.3 Establish a Risk Management Strategy Establish and maintain the strategy to be used for risk management.	▪ More effective strategies ▪ Tailorable strategies

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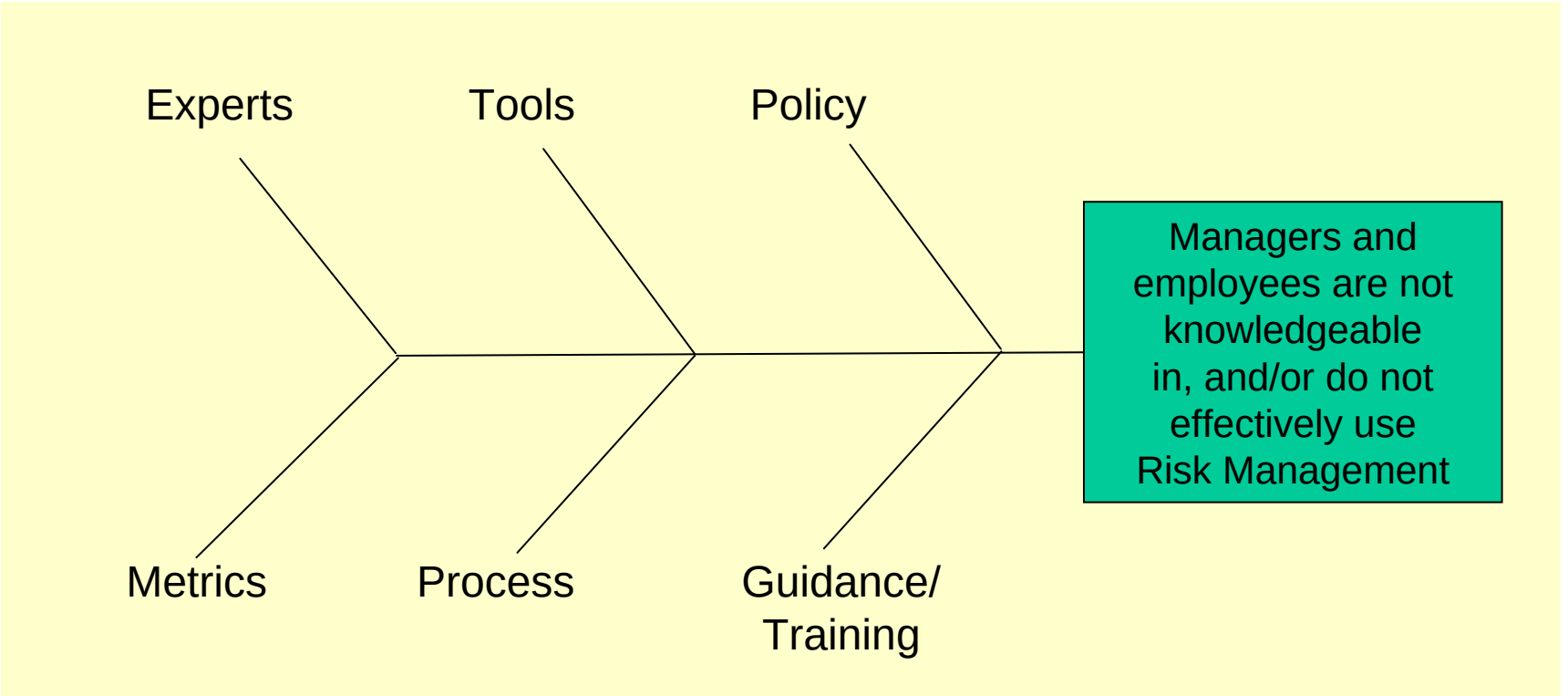
Risk Management Improvement Opportunities (2 of 2)

Goal/Practices	Improvement Opportunities
SG 2 Identify and Analyze Risks *Risks are identified and analyzed to determine their relative importance.*	
SP 2.1 Identify Risks Identify and document the risks.	▪ More efficient identification ▪ Few risks not identified
SP 2.2 Evaluate, Categorize, and Prioritize Risks Evaluate and categorize each identified risk using the defined risk categories and parameters, and determine its relative priority.	▪ More efficient evaluation, categorization, prioritization ▪ Fewer risks mis-evaluated, mis-categorized, mis-prioritized
SG 3 Mitigate Risks *Risks are handled and mitigated, where appropriate, to reduce adverse impacts on achieving objectives.*	
SP 3.1 Develop Risk Mitigation Plans *Develop a risk mitigation plan for the most important risks to the project as defined by the risk management strategy.*	▪ More efficient planning ▪ More effecting planning
SP 3.2 Implement Risk Mitigation Plans *Monitor the status of each risk periodically and implement the risk mitigation plan as appropriate.*	▪ More efficient monitoring ▪ More effective monitoring

Voice of Customer – Project Managers' Top Concerns

- More consistent risk identification, to reduce the number of unidentified risks
- Better integration across teams and management levels
- Better process tailoring to fit project size and risk level



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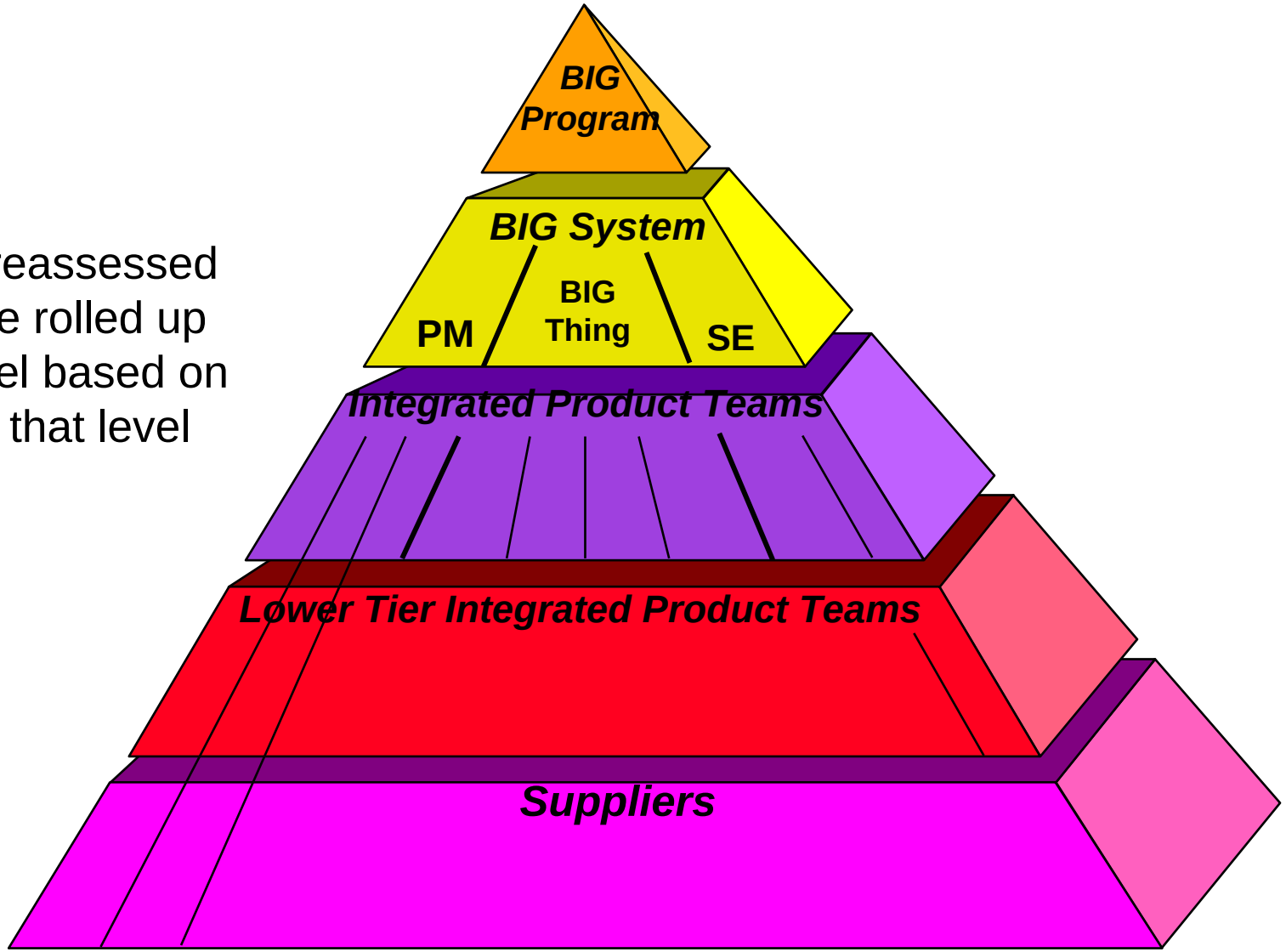
Risks Must be Rolled Up Throughout the Entire Stakeholder Pyramid Vertically

Risks are reassessed as they are rolled up to each level based on impact at that level



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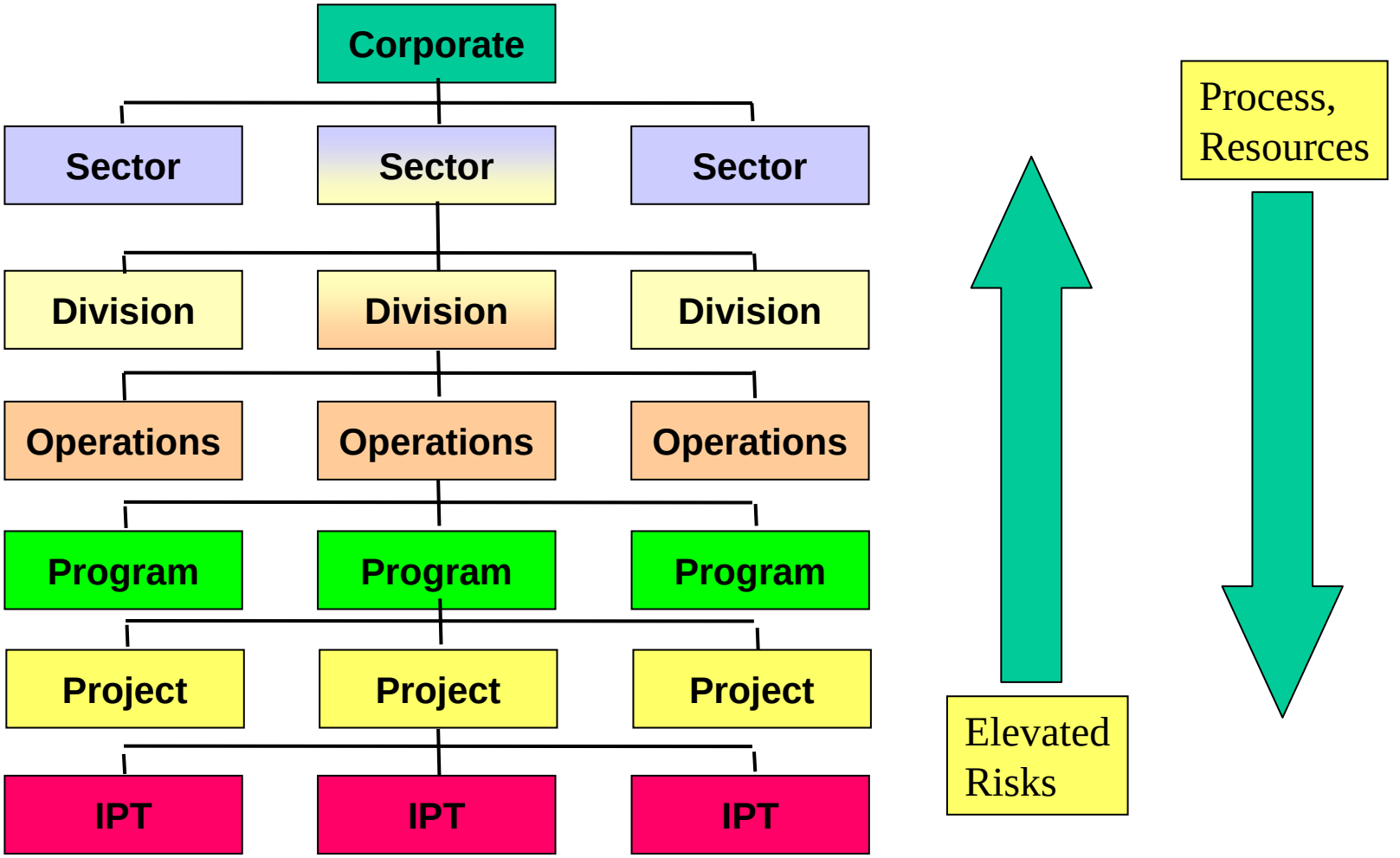
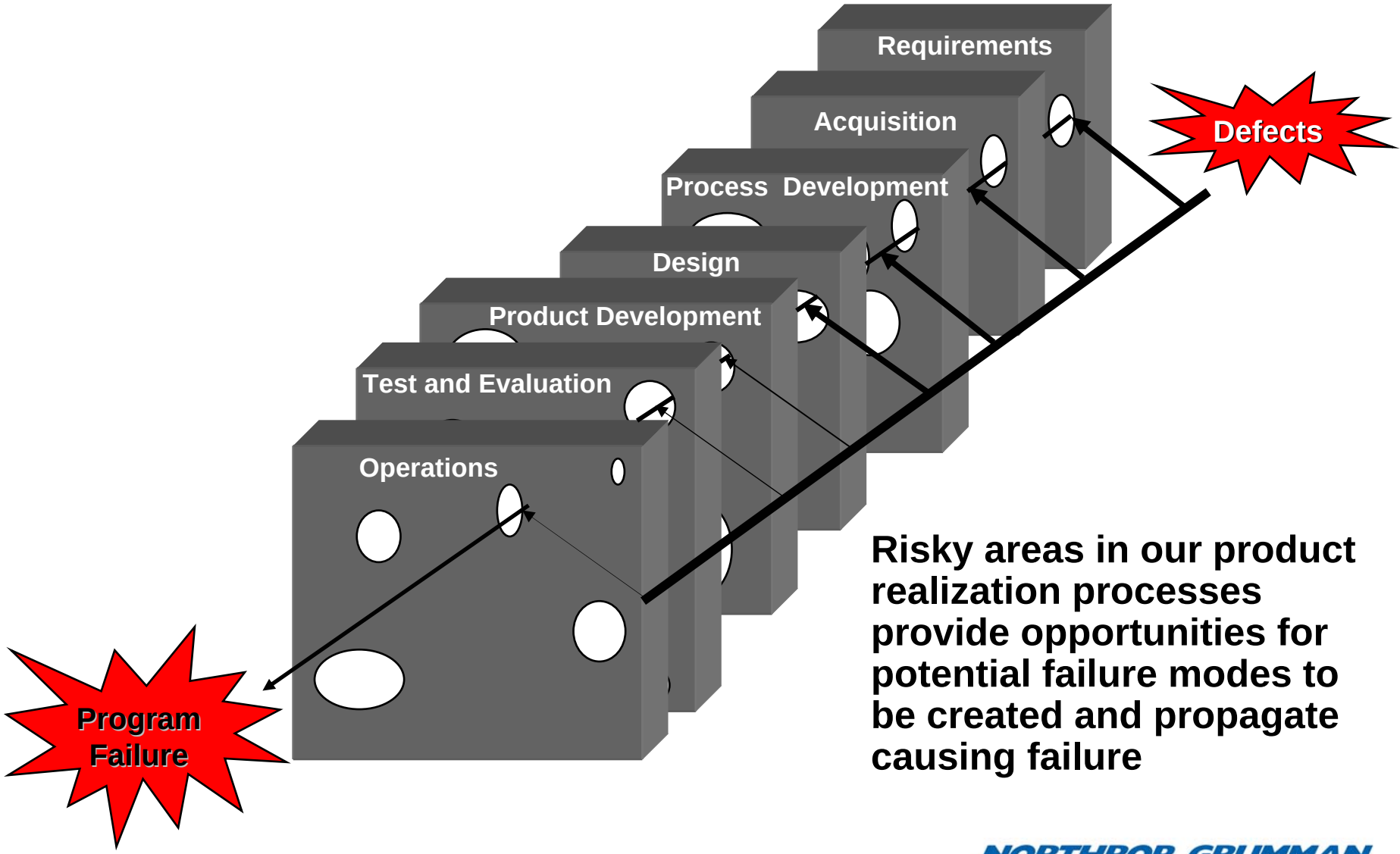
Better Integration Across Teams And Management Levels



“Small Risks” Can Lead to Program Failure



Risky areas in our product realization processes provide opportunities for potential failure modes to be created and propagate causing failure

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Mission Success Requires Multiple Approaches

Risk Management

Systems Engineering

Independent Reviews

Training, Tools, & Templates

Dashboards for Enterprise-Wide Measurement

Communications & Best-Practice Sharing

Robust Governance Model (Policies, Processes, Procedures)

CMMI Level 5 for Software, Systems, and Services

ISO 9001 and AS-9100 Certification

Six Sigma

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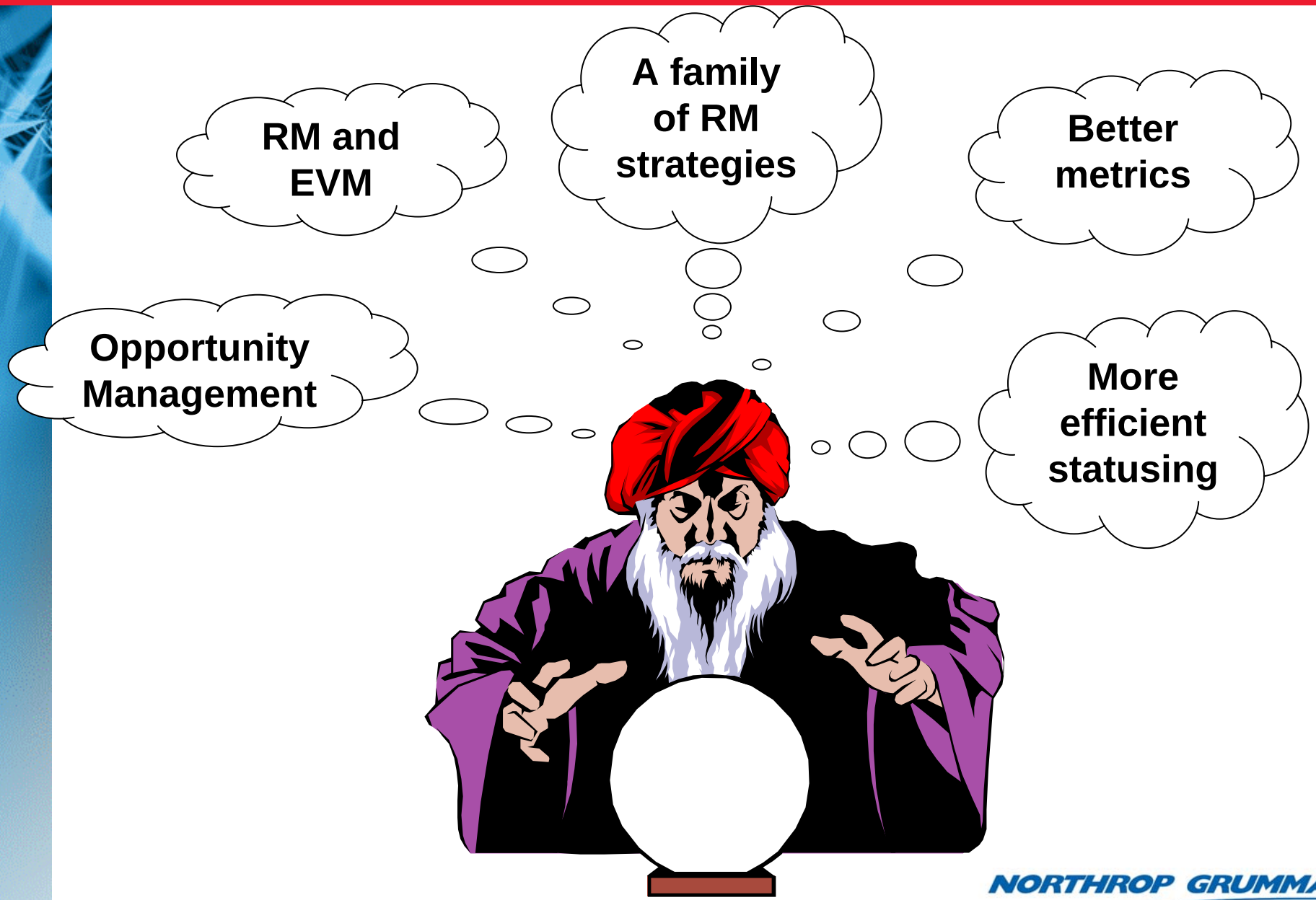
A Level 5 Organization is Never Satisfied….



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