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# Tutorial: The BASYS Three-Step Approach to Relationship Management

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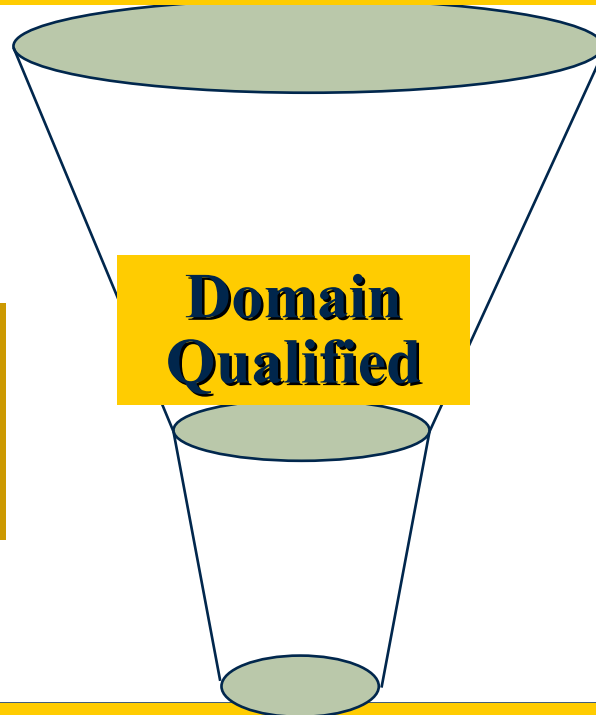
# The Critical Front End: Selection Process

## Evaluations:

- Domain Expertise

- Systems/Software
- Financial
- Program & Project Management

**Potential Suppliers or  
Funding Seeker**



**Qualified Supplier, Strategic  
Partner, or Investment Target**  
**On-going Relationship Management**

## Documents:

**Non-Disclosure  
Agreement**

**Evaluation Report  
and  
Recommendations**

**Decision  
Matrix**

# Relationship definitions

## # Subcontractor

- Contracts to develop and deliver a product
- Uses own management structure
- Is usually located off-site
- Is bound by a Statement of Work

## # Supplier

- Provides a key product used by the client
- May be a COTS (commercial off-the-shelf) product
- May supply custom or semi-custom solutions for the client

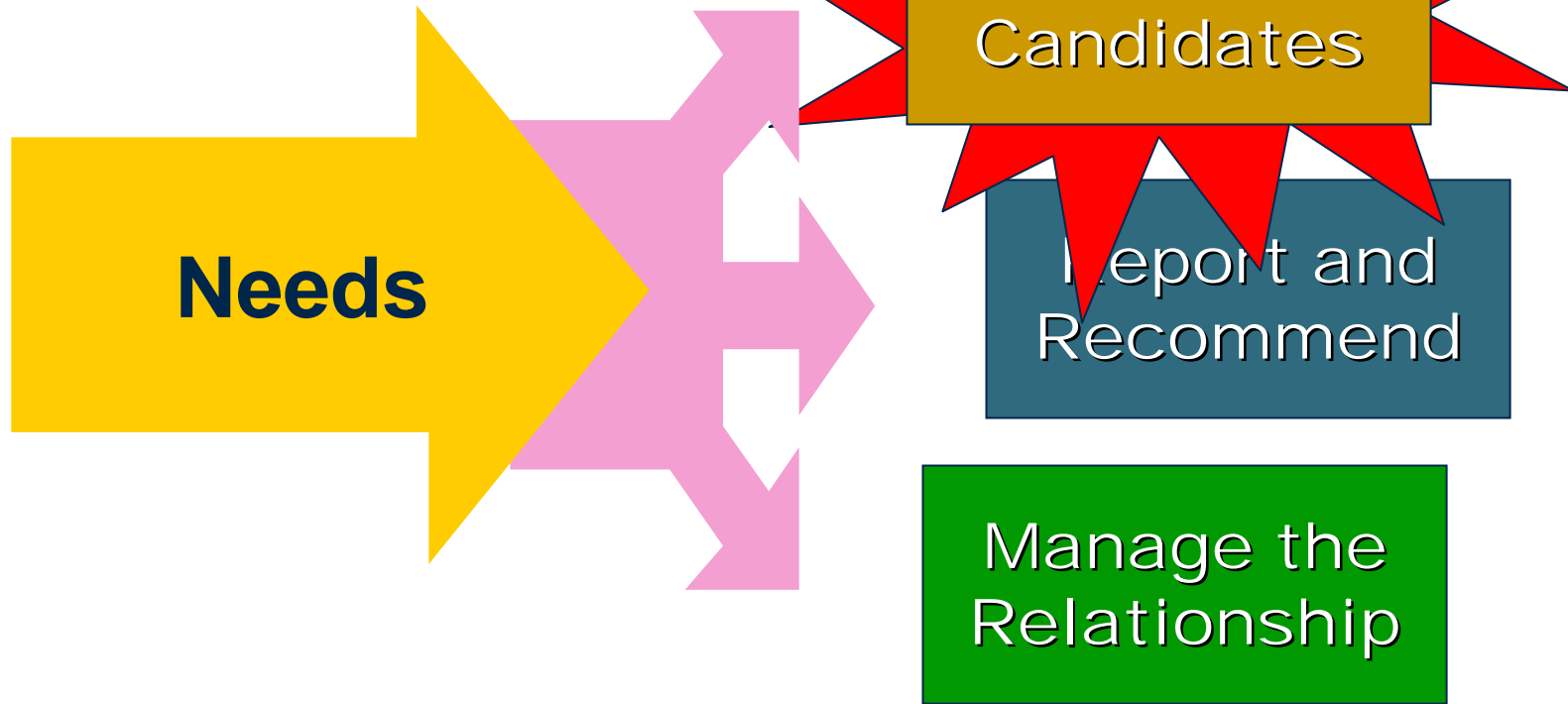
## # Investment Partner

- Large company taking an equity position in a key technology owner
- Venture capitalist investing in potentially lucrative

# Three ways to obtain a subcontractor or supplier

- Pre-determined source
  - Arranged for political or business reasons
  
- Only possible source
  - Only one in world with technical capability
  
- Multiple source - competitive bids
  - Selected from a short list of domain experts

# The BASYS Three-Step Approach



# Evaluation options

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## # Full multi-dimensional evaluation

- Domain Expertise
- Software-Systems Engineering Process Capability
- Project and Program Management
- Financial Stability

## # Tailored evaluations:

- Shorter evaluation for smaller companies
- Commercial off-the-shelf (COTS) supplier evaluation

## # Periodic re-evaluation and process support follow-up

# Evaluate candidates:

## Why conduct supplier evaluations?

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- # Determine the best possible subcontractor, supplier, or investment candidate
- # Assess and mitigate or eliminate investment risks
- # Lay foundations for a long-term relationship
- # Give target companies a head start on developing practical engineering and business process improvements

# Implementing supplier/partner evaluations

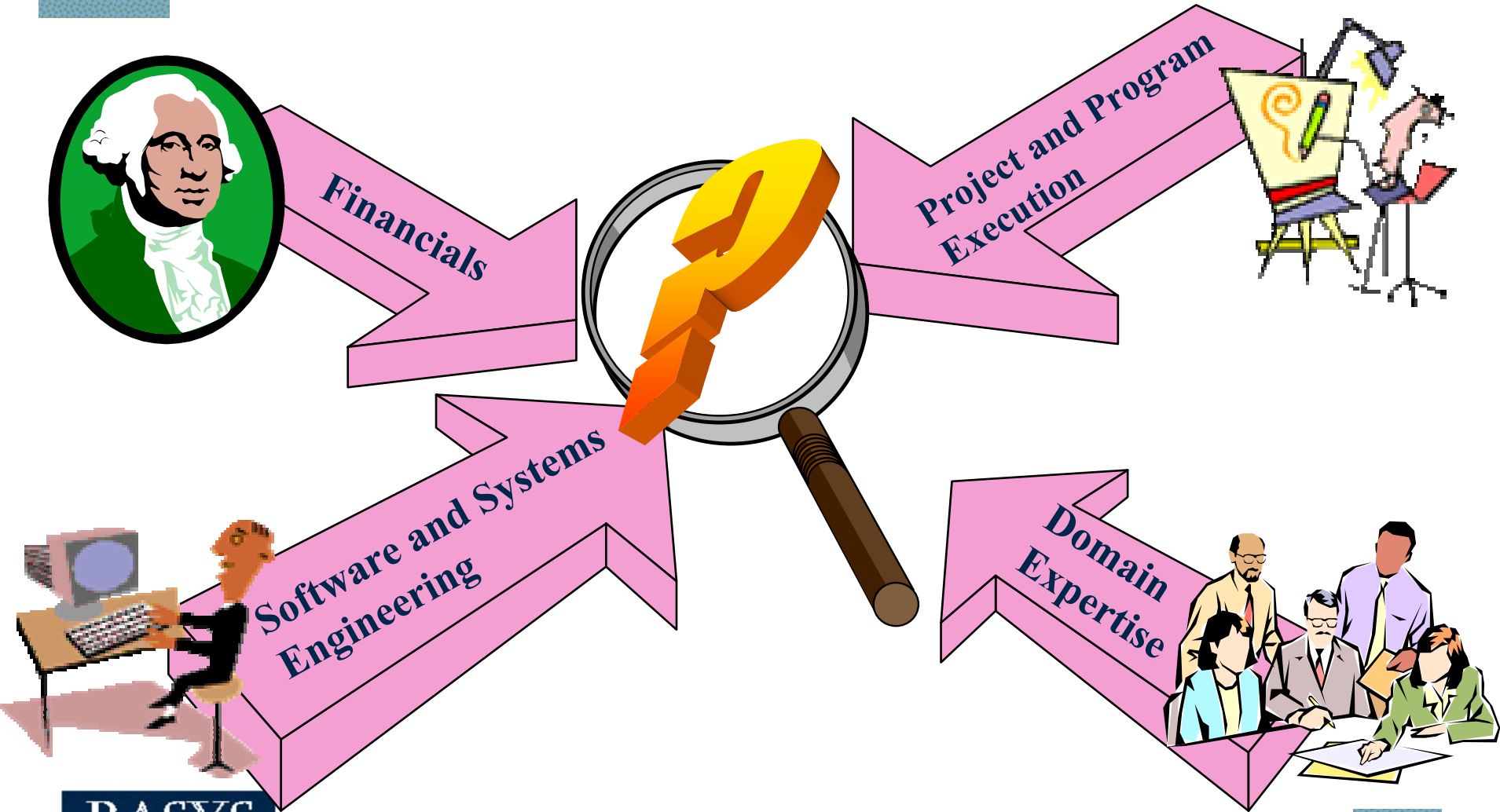
- # Capability evaluation pros and cons:
  - PRO: Gives you a thorough understanding of supplier/partner's development process and business capability
  - PRO: Assessments can pay big rewards by driving focused supplier/partner process improvement
  - CON: Formal assessments are costly for both the suppliers and customers
  
- # Biggest fears:
  - Over-assessment; overhead; paralysis by analysis
  - Hard to minimize assessment impact on supplier or customer/investor
  
- # Solution:
  - Conduct multi-dimensional, tailored BASYS Supplier Evaluations
  - Use business results-oriented action selection process to build action plans, focusing process improvement efforts on the highest payoff activity

# Why not do an in-depth assessment (SEI, SSQA, ISO, etc.) on everyone?

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- # Time consuming
- # Intrusive
- # Expensive
- # Overkill for most situations
- # May be appropriate in special situations

# What types of evaluations do we need?



# Phase 1: Domain Expertise Evaluation

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- # Initial screening for competence
- # Identify companies with knowledge, methods, techniques, and assets in a given domain
- # Occurs at front end of solicitation
- # Performed by a team of technical experts
- # Use past experience, web searches, requests for information (RFIs), and technical interchange meetings (TIMs)

# Phase 2 Evaluations

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- Proceed to Phase 2 if Domain Expertise is suitable
  - Supplier or partner has the domain expertise to succeed
  - Product will be suitable if delivered intact, on time
  
- Select all the appropriate Phase 2 evaluation types:
  - Software and System Engineering Process Capability
  - Project and Program Execution Capability
  - Financial Stability

# 2.1 - Software and Systems Engineering Process Capability Evaluation

- # Based on the SEI Capability Maturity Model-Integrated (CMMI), covering software and systems engineering
- # Uses interview-discussion format, led by trained assessors
- # Yields an indication of overall process maturity
- # Selection and weighting of specific key process areas done for each evaluation, including:
  - Schedule and estimation risks
  - Design, construction, test, and post-release support
  - Staffing size, capability, and sources
  - Management commitment and support
  - Disaster recovery risks

# Software-Systems Evaluation based on the SEI CMM assessment method

## Similarities

- # Uses interview-discussion format
- # Conducted by trained assessors
- # Assesses overall process capability and maturity

## Differences

- # Shorter, variable schedules
- # Tailored to the evaluation target company
- # Smaller teams
- # Senior management interviews
- # No questionnaire or detailed documentation disclosure
- # Limited time spent on-site doing findings preparation
- # Includes architects, designers, manufacturing, support
- # Covers product life cycle from concept through deployment, manufacturing, and support

# Software-Systems Evaluation segments

## # Process Management

- Organizational process focus and definition; training, quantitative quality management; process performance, technology development, and deployment

## # Project Management

- Project planning, monitoring, management, and control; supplier relationship management; risk management; decision analysis and resolution

## # Engineering

- Requirements management; technical solution; product integration, verification, and validation

## # Support and Integration

- Configuration and data management; product and process quality assurance; measurement and analysis; causal analysis and resolution; integrated teams; leadership; organizational environment for integration

## 2.2 - Project and Program Execution Capability Evaluation

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- Likelihood that the target company will be able to meet its project commitments
  - Deliverables
  - Schedule
  - Cost
  - Quality

# Project-Program Execution Capability Evaluation highlights

- # Project-Program completion history
  - On-time, on-budget completion
  - Exceptions/deviations from previous SOWs or RFPs
  - Feedback from references, end users, customers
- # Developer/staff management
  - Hiring, allocation, and motivation processes; attrition rate
  - Average years of experience for assigned personnel
- # Product development and support environment
  - Product line management and reuse capability
  - Development, test, integration, and support infrastructure
  - Problem management and response
  - Product maintenance experience

## 2.3 - Financial Stability Evaluation

- # Indicates history of business success and possible future success
- # Indicates efficient use of firm's capital, financial, and human resources
- # Indicates how a firm finances itself
- # Includes:
  - Probability of bankruptcy
  - Intellectual property rights position (e.g., patents, copyrights, licenses both owned and used)
  - Cost of poor quality (COPQ)

# Financial evaluation component: The Altman Z-Score

- # A statistical technique to predict a company's probability of failure
- # The weighted financial ratios comprising the Z-Score are:

**A** = EBIT/Total Assets

**D** = Working Capital/Total Assets

**B** = Net Sales /Total Assets

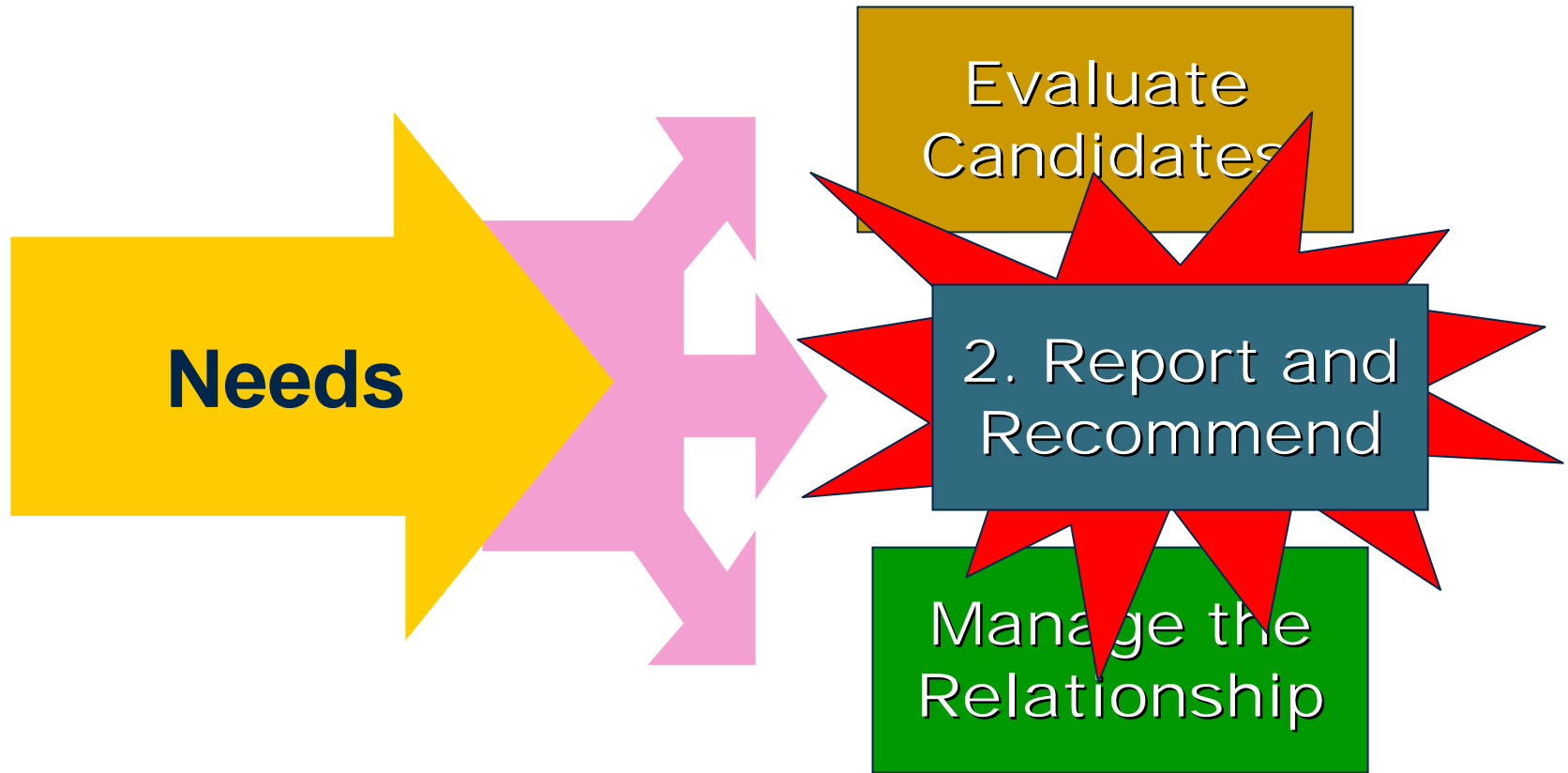
**E** = Retained Earnings /Total Assets

**C** = Market Value of Equity / Total Liabilities

$$\mathbf{Z\text{-Score}} = 3.3*\mathbf{A} + 0.99*\mathbf{B} + 0.6*\mathbf{C} + 1.2*\mathbf{D} + \mathbf{E}$$

<b>Z-Score</b>	<b>Interpretation</b>
<b><math>Z \geq 3.0</math></b>	The company is safe based on these financial figures only
<b><math>2.7 \leq Z &lt; 3.0</math></b>	On alert: exercise caution
<b><math>1.8 \leq Z &lt; 2.7</math></b>	Good chances of the company going bankrupt within two years of operations from the date of financial figures given
<b><math>Z &lt; 1.8</math></b>	Probability of financial embarrassment within a year is very high

# The BASYS Three-Step Approach



# Evaluation Report:

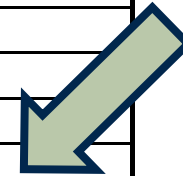
## Summarize findings and recommend action

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- # Final report
  - One page executive summary
  - Full detailed report of all evaluation components
- # Findings
  - Strengths
  - Weaknesses
  - Obstacles to partnership, if any
- # Process improvement recommendations, if necessary
- # Quantitative rating, based on weighted criteria selected by team
- # Recommendation for or against engagement

# Domain Expertise score sheet

Domain Expertise Evaluation Criteria				Supplier : ACME Corporation		
Sl. #	Factors	Scale (0 - 5)	Level (0 - 5)	Maximum Score	Awarded Score	Remarks
1	Management's strategic goals and investments to excel at TMN domain/technology	4	4.0	20	16.0	
2	Past experience as subcontractor or prime in TMN domain	5		25	0.0	
3	Existing family of TMN products and services	0		0	0.0	
4	Demonstrations and trade shows participation	0	3.0	0	0.0	
5	Understanding of end-user needs and requirements of TMN specific products	5		25	0.0	
6	Understanding of present and future TMN product requirements and trends	4		20	0.0	
7	TMN specific architectures (HP Openview, HP OEMF etc.), protocols (SNMP, CMIP) and components and their reusability	5	4.0	25	20.0	
8	TMN specific tools (GDMO tool-sets, MIB, GUI, Protocol stack support), prototypes and simulators	5		25	0.0	
9	Understanding of key technologies, engineering disciplines and their underlying theories	3		15	0.0	
10	Understanding of future technology development and evolution	4		20	0.0	
11	Current and past internal research and development efforts and level of funding	2		10	0.0	
12	Participation / publication in standard NM bodies like IETF, NMF etc.	2		5	0.0	
13	Availability of key technical personnel	0		0	0.0	
14	Availability of facilities and labs	0		0	0.0	
15	Capability to perform economic and market analysis services	0		0	0.0	
16	Regulatory compliance and environmental issues	0		0	0.0	
17		0		0	0.0	
18		0		0	0.0	
19		0		0	0.0	
20		0		0	0.0	
Domain Evaluation Score:				190	36.0	
Percentage of Domain Evaluation Score:				100	18.9	



# Integrated Software and Systems Evaluation Example

- # Each process area assigned a weight before the evaluation
- # Ratings applied: 0 (Incomplete) through 5 (Optimizing)
- # Weighted rating computed as absolute and percentage of maximum possible rating

Integrated SW and Systems Engineering Capability					
PA #	Process Areas	Weight (0 - 5)	Rating (0 - 5)	Max Rating	Wtd Rating
<b>Process Management</b>					
1	Organizational process focus	3	1	15	3
2	Organizational process definition	3	1	15	3
3	Organizational training	3	2	15	6
4	Quantitative management of quality	2	1	10	2
5	Organizational process performance	2	1	10	2
6	Organizational process technology innovation	2	2	10	4
7	Organizational process innovation deployment	2	1	10	2
			<b>Subtotal</b>	<b>85</b>	<b>22</b>

# Altman Z-Score Report: Probability of bankruptcy

## Z-FACTOR SPREADSHEET FOR: ACME CORPORATION

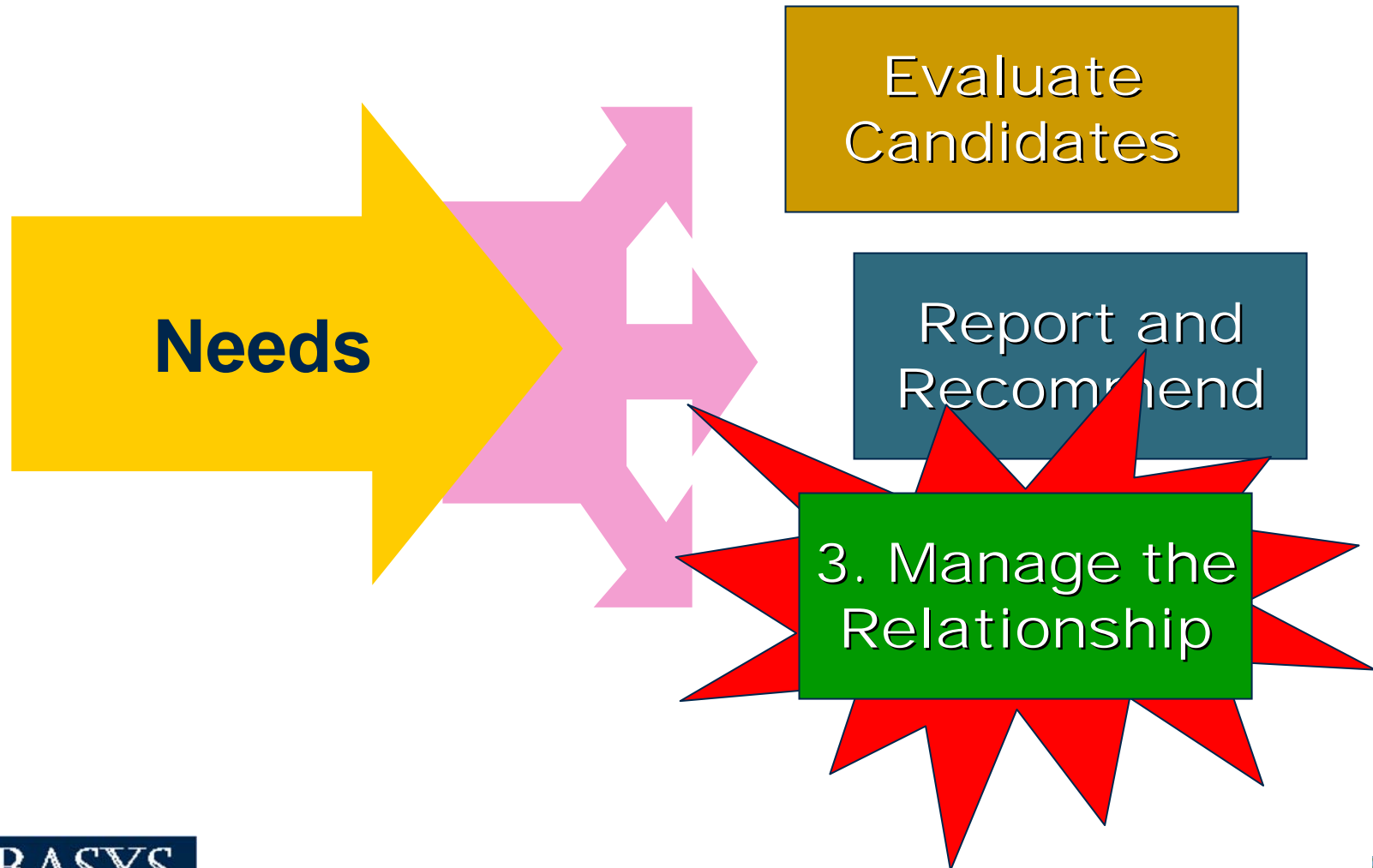
### PREDICTION OF CORPORATE BANKRUPTCY IN THE SHORT TERM

<b>FORMULA:</b>	$(1.2 * \frac{\text{Working Capital}}{\text{Total Assets}}) + \frac{\text{Retained Earnings}}{\text{Total Assets}} + \frac{\text{Operating Income}}{\text{Total Assets}} + 3.3 + \frac{\text{Mkt Value of Common \& Pref. Stock}}{\text{Total Debt}} + (0.99 * \frac{\text{Sales}}{\text{Total Assets}})$
<b>for</b>	
<b>Z-FACTOR</b>	

	<u>SCORE</u>	<u>Probability of Short Term Failure</u>
<b>RESULTS:</b>	1.80 or less	Very High
	1.81 to 2.7	High
	2.8 to 2.99	Possible
	3.0 or higher	Not Likely

(dollars in millions)	<u>1992</u>	<u>1991</u>
Working Capital	\$1,883	\$1,424
Total Assets	\$10,629	\$9,375
Retained Earnings	\$3,634	\$3,287
Operating Income	\$1,142	\$890
Market Value-Common Stock	\$11,366	\$7,257
Market Value-Preferred Stock	\$0	\$0
Total Debt	\$1,695	\$1,606
Sales	\$13,303	\$11,341
<b>Z-FACTOR</b>	<b>6.32</b>	<b>4.61</b>
<b>PROBABILITY OF BANKRUPTCY</b>	<b>Not Likely</b>	<b>Not Likely</b>

# The BASYS Three-Step Approach



# Relationship management goals

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# **Goal:** Reduce risk based on evaluation findings

## Actions:

# Establish a supplier/partner process management plan

# Establish effective software and systems quality assurance

# Monitor progress through regular metrics reporting, analysis, and action

# Perform periodic capability re-evaluations

# What's the deal with getting a better development process?

- # Cost of poor quality is too high
  - Too many defects shipped
  - Too much time spent on rework, not developing new products and features
  
- # The good news:
  - Process improvement and quality assurance are well-understood fields, with many qualified practitioners
  - There are many well-known practices that have been shown to be effective
  - Some benefits can show up quickly
  
- # The other news:
  - Investment is required (process, training, tools)
  - For maximum benefit, practices must be ingrained in a company's culture
  - Management commitment is the biggest predictor of success

# What's a practical quality approach?

- # **DO:** Go for effective, sustainable process improvement that has measurable impact on your business
  - Tailor your process improvement activities to your business
  - Use process frameworks and best practices for guidance, not as a straitjacket
  - Introduce process improvement incrementally, with highest return first
  - Plan and invest for long-term, cultural impact: it's not extra work, it's just the work
  
- # **DON'T:** “Go for the badge” of a particular maturity level or certification
  - RISK: Focus and costs go to satisfying assessment requirements rather than real process improvement
  - RISK: Gains are small, hard to sustain
  - RISK: May be contractually required
  
- # Let recognition follow results!

# Managing with metrics

- # A *metric* is “A quantified measure of the degree to which a system, component, or process possesses a given attribute” (IEEE 610.12-1990)
- # What kind of metrics are we talking about using?

## Metric Type

Service Quality Metric

Product Metric

Process Metric

## What it Measures

Attributes of the service relationship between supplier and customer

Attributes of a delivered product

Attributes of the process used to develop and support delivered products

- # Purpose of a metrics program

- Learn the attributes of the system, component, or process being measured
- Identify opportunities for improvement (build action plans)
- Monitor the effects of improvement actions taken (drive action plans)
- Leverage improvements to the product and service

# Managing with metrics is hard!

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- # Most organizations don't have the infrastructure in place to support collecting, reporting, and using metrics
- # Infrastructure, automation, and training are all needed on how to collect and how to apply the information
- # Coverage, completeness, and accuracy concerns

# Why metrics programs fail

- # Metrics programs fail due to lack of effective definition and lack of training in how to make use of metrics:
  - Is this information really relevant to helping run my business?
  - How do I collect what I need to report? How do I roll up data into a group report?
  - What do I do with what I've collected to improve my performance?
  - How do I get reports distributed?
  - What do I do with the report I receive? How do I interpret this rolled up report?
  - What do I ask the supplier to do to improve performance?
  - What are appropriate performance goals?
  - How do I drive performance to meet goals?



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# Conclusions

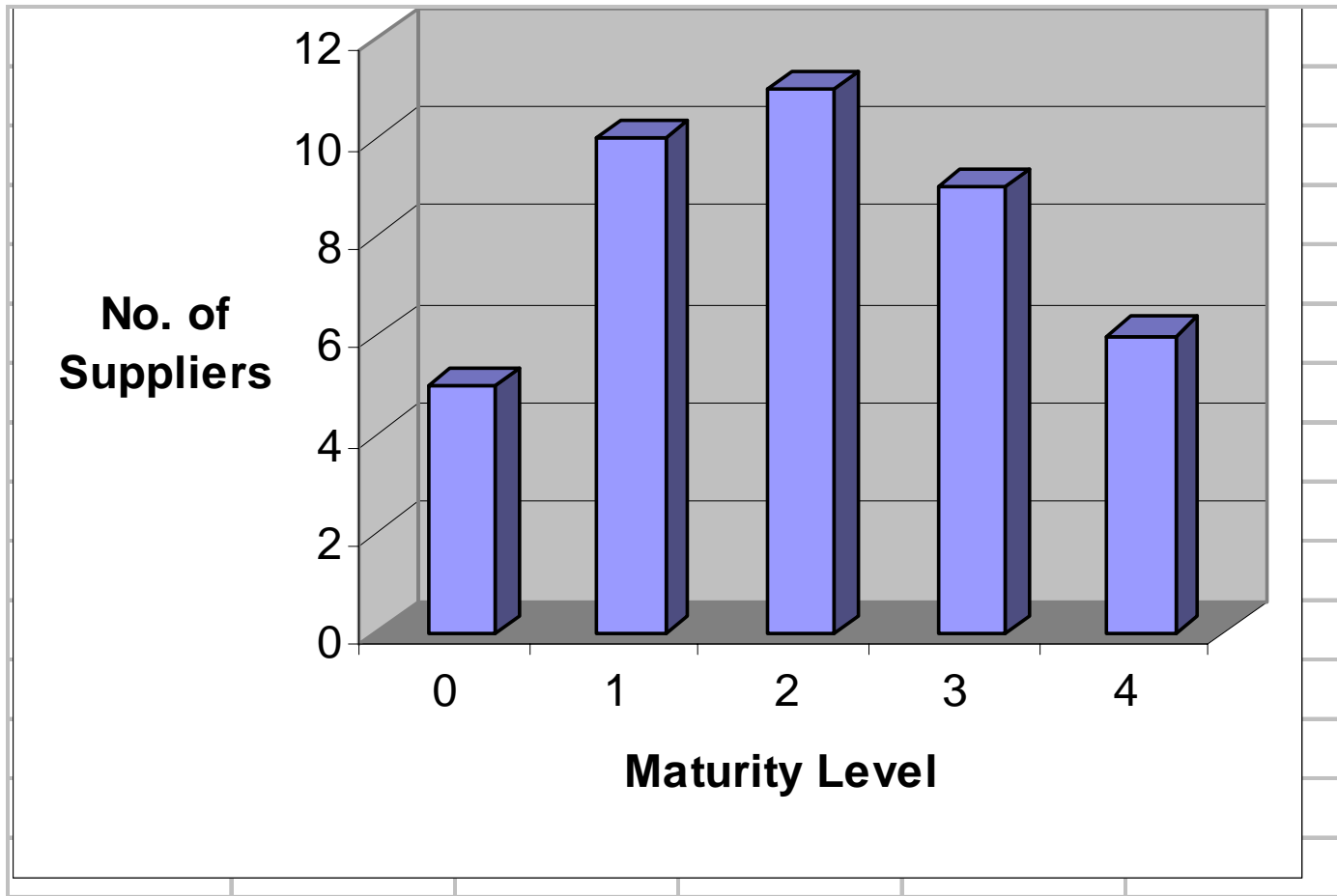
# Usability of the BASYS Three-Step Approach to Relationship Management

- # A rigorous, complete processes
- # Adaptable to any discipline:
  - Software/system product developers
  - Publishing and training suppliers
  - Deployment and installation suppliers
- # Scalable to evaluate any scope subcontractor, supplier, or strategic partner
- # Consistent reports, templates, scoring
- # Ready to use today!

# Are evaluations useful in predicting performance?

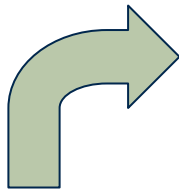
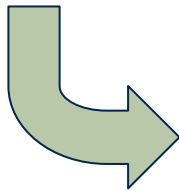
- Can evaluations predict the target company's success?
  - Financial viability
  - Cost
  - Schedule integrity
  - Product quality
  
- Industry results example, using a similar process:
  - 41 potential suppliers evaluated over six year period
  - 22 awarded some form of contract
  - Range of sizes and process maturity
  - World-wide representation

# Supplier maturity distribution



# Supplier case history

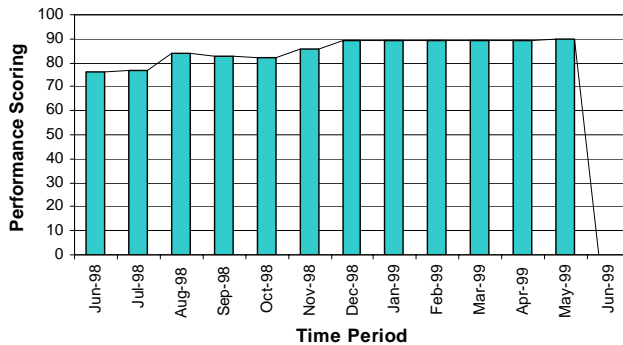
Sub	Preliminary Evaluation Rating	Final Performance Rating	Product Quality Rating
A	4	3	3
B	4	3	3
O	4	3	3
D-1	4	3	3
D-2	4	2	2
D-3	4	0	0
G	3	4	3
M	3	3	3
I	3	3	2
C	2	2	2
H-1	2	1	2
H-2	2	1	1
E	1	4	4
K	1	2	2
L	1	2	3
N	1	2	2
J	1	1	2
F-1	1	0	0
F-2	1	0	0



# Composite supplier performance metrics

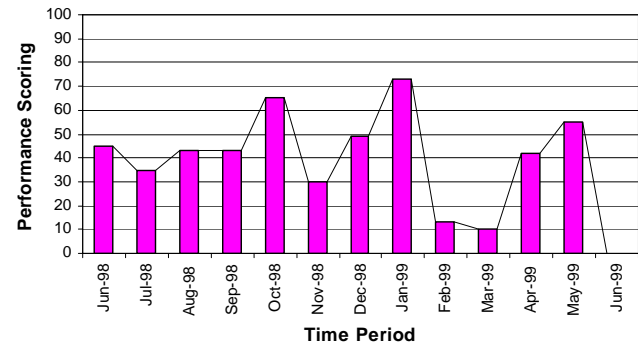
## Performance Metrics for High Maturity Subcontractor

Goal = 80



## Performance Metrics for Low Maturity Subcontractor

Goal = 80



# Lessons Learned

- # Evaluations are a reliable predictor of success
- # High capability found in the evaluation is strongly correlated with high performance on the job
- # Perform the critical front end evaluation and selection process thoroughly and consistently
- # Evaluate everyone (even single sources)
- # Follow through on your findings

**Domain expertise vs process maturity???**

# How can BASYS Consulting help you evaluate and manage suppliers?

- # BASYS has extensive, hands-on experience in software quality, process improvement, supplier evaluation, and relationship management with many technology companies
- # BASYS focuses on sustainable, measurable improvements to the client's business
- # BASYS involves the client's complete business team: management, marketing, engineering, and operations
- # BASYS can tailor programs for any size organization: large and small companies, divisions, start-ups
- # BASYS supports all key quality management activities: planning, improvement, and control

**For more information,  
contact BASYS Consulting**

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# Backup Slides

# Product and process metrics

- # Product and Service Quality metrics reports (Black Box)
  - Supplier View: Product Metrics Report
  - Customer View: Product and Service Quality Metrics Report
- # Process Quality metrics reports (White Box)
  - Supplier Process Assessment Report
  - Supplier Process Improvement Action Plan
  - Supplier Process Improvement Status Report
- # High level reports view companies as a whole
  - Business unit metrics rolled up into single corporate report
  - Reflect systemic problems and issues
  - Focus on what to fix, not how to fix it

# Relationship management using metrics

- # Product, service quality, and process metrics can all be valuable in improving products and service quality
- # Defining metrics is the easy part – effectively collecting, reporting, and using them is much harder to do
- # Investors need to observe at least two levels:
  - Investor's relationship with the strategic partner
  - Partner's relationship with its customers
- # Metrics are useless if they aren't monitored, don't have goals, or aren't coupled to a performance improvement action plans

# Sample metrics

## Development Metrics

- # Schedule integrity
- # Requirements churn
- # Earned value
- # Staffing level deviation
- # Change request cycle time
- # Bug fix cycle time
- # Bug report by severity
- # Phase containment effectiveness
- # Cycle time/X-Factor
- # Sigma level
- # Cost of poor quality

## Operational Metrics

- # Product Failures Reported
- # Product Failures Fixed
- # Product Failure MTBF (days)
- # Product Failure MTTR (days)
- # Productivity Impacts Reported
- # Productivity Impacts Acknowledged
- # Productivity Impact Fixed
- # Function Requests Submitted
- # Function Requests Acknowledged

# Sample supplier metrics

