Developing the most appropriate Verification Strategy

CompuwareCorporation

A presentation for CMMI Technology Conference
Denver, Colorado
November 20, 2003

Sandy Sweeney, Compuware
QAArchitect, Testing Senior Specialist
sandy_sweeney@compuware.com

Risk Management and Verification

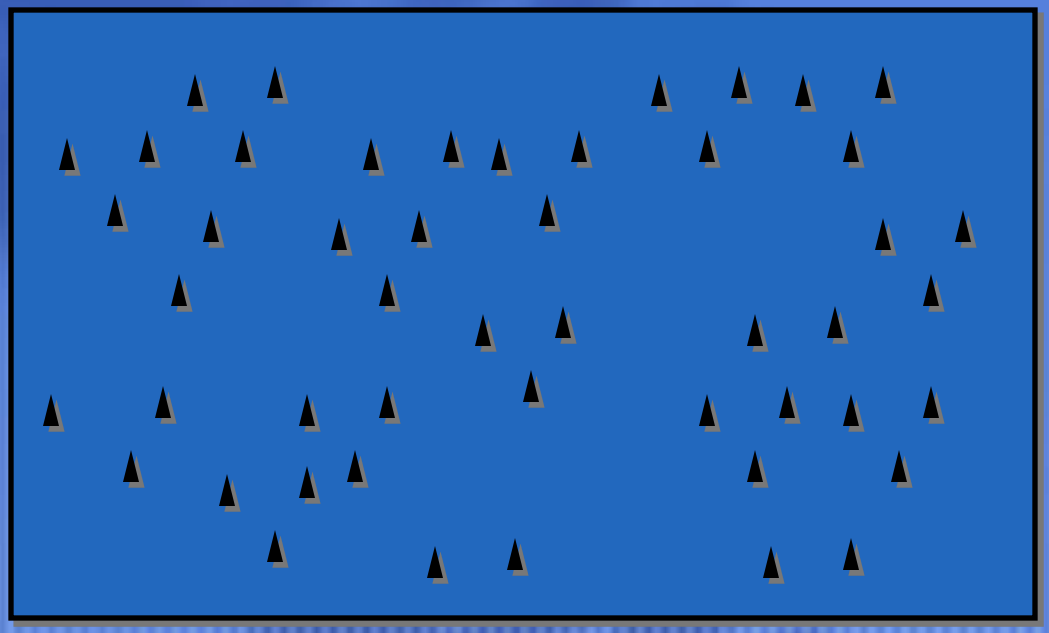
- **Risk Management is identified as a Project Management Process Area**
  - **Risks to achievement of project objectives**
  - **Involves both Risk Identification and Risk Mitigation**
- **Risk Management can be an important tool in Verification processes**
  - **Identify probability and consequences of defects**
  - **Build a Verification Strategy that reduces the probability that defect risk will become a project risk**
  - **Can also assist in reaching Verification objectives efficiently and effectively**

Risk Management in Verification

- **Include a Risk Assessment activity in the Verification Strategy Planning Process**
  - **Determine areas of ‘defect’ risk**
  - **Build a Risk Profile by Requirement**
  - **Use the Risk Profile like a Topographical Map**
  - **Use this map to determine how to apply Verification Activities**

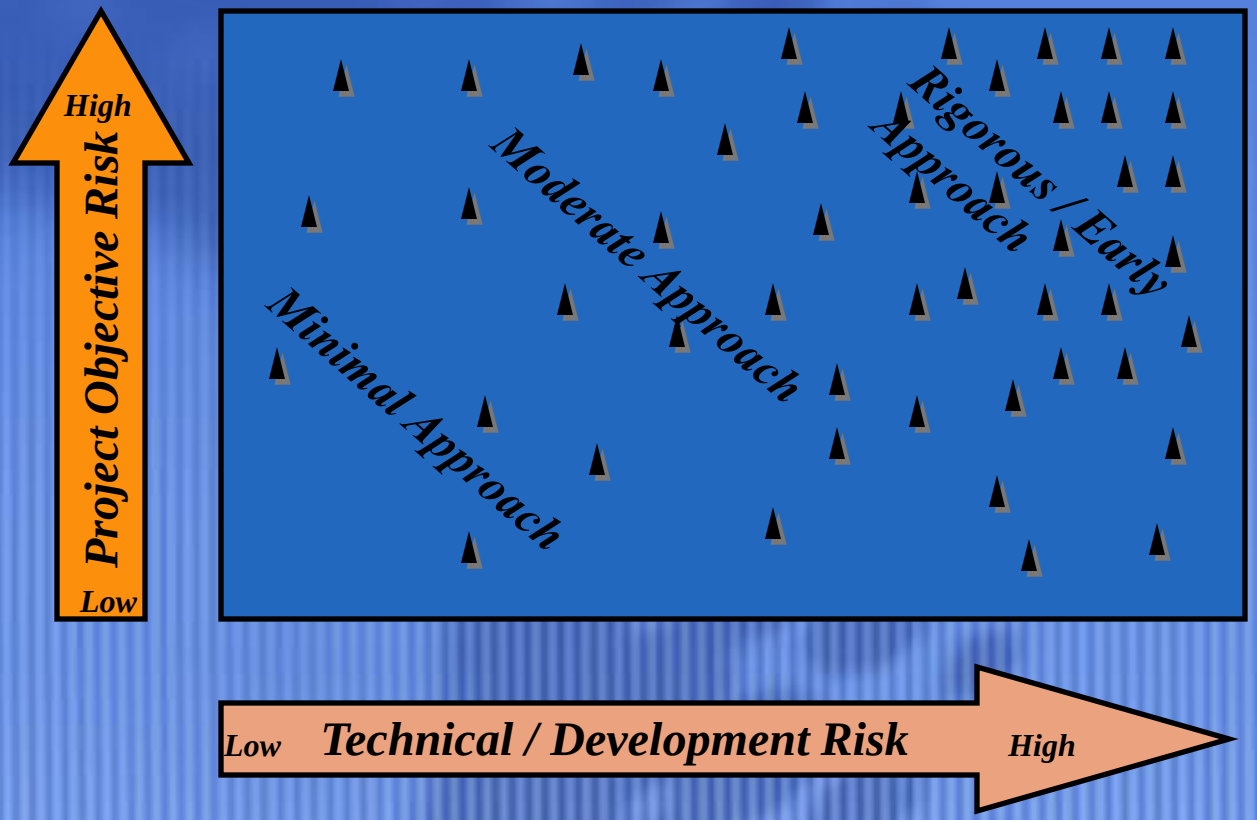
Non-Risk Based

Requirement 1
Requirement 2
Requirement 3
Requirement 4
Requirement 5
Requirement 6
Requirement 7



Environments and Data Scenarios

Risk Based


High
Project Objective Risk
Low
Rigorous / Early Approach
Moderate Approach
Minimal Approach
Low
Technical / Development Risk
High

Risk Assessment in the Verification Strategy Process

- **Need a process that is quick and easy**
- **Matrix/Table based**
- **Estimation and assignment of number is ‘relative’ not ‘absolute’**
- **Working for order of magnitude – not pinpoint precision**
- **Profile will emerge through collaboration and communication**

Risk Profile

- **Risk Factors**
  - **Predictors of Risk**
- **Risk Weights**
  - **Balances the Risk Predictors based on experience**

Determining Risk Factors

- **Mix Probability and Risk**
- **Consider all groups**
  - **End-Users, Customers, Clients**
  - **Development**
  - **Testing**
- **Ask other groups for suggested factors**

Examples of Risk Factors

- ‘Age’ of the element (Requirement)
- Complexity of the element
- Cross-element integrations
- Ties to project objectives
- Number of end-users
- Prior history of defects
- History of element in production
- Maturity of the process in the organization that produced it
- Politics of the organization
- Experience with the technology

Risk Weights

- **Not all factors predict risk equally**
- **When first assigned just take a stab**
  - **don't expect perfection the first pass**

Rank each Factor for each Element

- **This is collaboration, investigation and negotiation**
- **‘Blank Sheet’ can be a problem**
- **Focus attention on one or two areas**
- **Use what you did as an example**
- **It does get easier over time – on the first pass just give it your best shot**

Do the Math

- **Score = Weighted Sum**
  - **Sum all (Factor Rank * Factor Weight)**
- **Index = Weighted Average**
  - **Score / Average of Weights**
- **An ‘automated’ solution can make the math much easier**

Check your work

- **Check the assumptions of your model**
  - **Look at 2-3 elements for ‘gut feel’**
- **Have someone else look at 2-3 other ones**
  - **Build buy-in to the answers**

Typical Problems with Model

- **Risk Weights can skew the results**
  - **Double check the assumptions on it's predictive ability**
- **Not everything is critical**
  - **Too many of the same values in a column make the ranking meaningless**

Use the Model for the Verification Strategy

- **Items with high risk index should have Verification activities as early as possible**
- **Items with high risk index should have the most Verification activities**
- **Negotiate to get high risk index items developed and delivered as early as possible to provide defect measurement data to predict the remaining risk**
- **Develop more stringent entry and exit criteria for high risk items**
- **Don't totally ignore medium and low risk items – just handle them according to risk**

Questions?

CompuwareCorporation

Sandy Sweeney, Compuware
QAArchitect, Testing Senior Specialist

sandy_sweeney@compuware.com