

Lessons Learned: Implementing risk based estimating



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CDOT Risk Training
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Evaluating Change

- Is there a significant problem that must be addressed?
- Am I the right one to address it?
- Is this the right solution?
- What will it cost me to implement?



What is the Problem?

- Is there uncertainty?
 - Labor
 - Materials
 - Outside influences
 - ROW / landowners
 - Geotech / unsuitable site
 - Other



Why Me?

- Baseline
- Reporting
- Project Completion
- Accountability



Typical Solutions

- Use policy or practice to add contingency
- Risk register – Risk identification
- Inflate estimate to make up difference
- Take your lumps



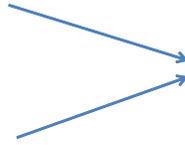
New Idea - RBE

- How much time will it take?
- Will it work?
- What support will I have?



Process & Results

- Labor and materials
- Outside influences
- ROW / land owners
- Geotech / unsuitable site
- Other



Identify
&
Quantify Risks



Allows for:

- Focused attention
- Resource allocation
- Expectation setting
- Proactive management
- Fewer surprises

Proactive Management

- Snapshot – immediate actions
- Update – capture new risks
- Identify issues early – trend over time



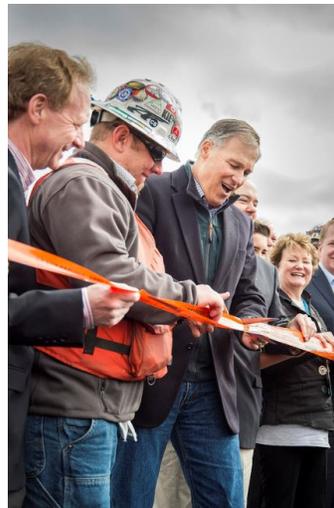
Limitations of RBE

- Does not solve problems
- Does not provide certainty
- Requires expertise and learning
- Is only one tool
- Requires commitment to get full benefit



Implementation Strategies

- Find champions
- Develop in-house expertise
- Right time / right situation
- Adjust policy / procedures
- Executive support
- Quick wins
- Consistent application
- Transparency
- Partner participation



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Questions?

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WSDOT's Cost and Schedule Risk Assessment – Innovative Solutions

- WSDOT Project Management (PM)
- Short history of the WSDOT process of Risk Assessment (RA)
- RA process overview
 - ❑ Definition
 - ❑ Scalability
 - ❑ Resources required
 - ❑ Benefits

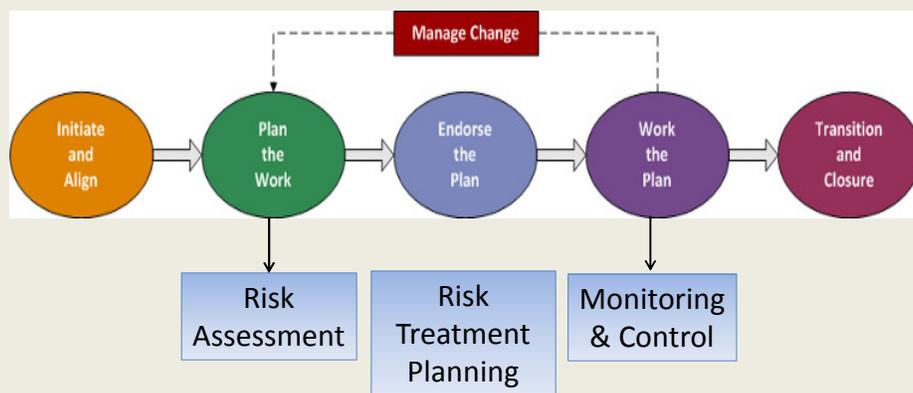
WSDOT's Cost and Schedule Risk Assessment – Innovative Solutions

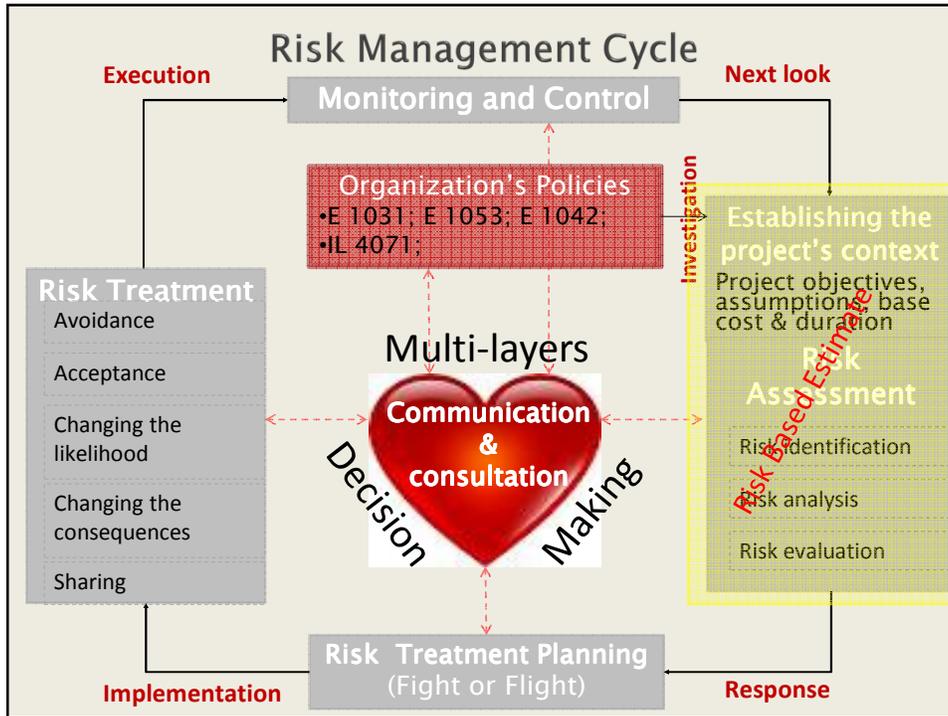
- Lessons learned
 - ❑ Develop in-house expertise
 - ❖ Resources
 - ❖ Tools
 - ❑ Risk reserve
 - ❑ Risk Treatment Planning

WSDOT's Cost and Schedule Risk Assessment – Innovative Solutions

- Innovations at WSDOT Risk Assessment
 - ❑ Combine Value Engineering with Risk Assessment (VERA)
 - ❑ Number of risks
 - ❑ Market conditions
 - ❑ Risk's conditionality
 - ❑ Dependency
 - ❑ Correlation
 - ❑ Risk's severity

WSDOT Project Management





Thirteen Years of Risk Assessment

“CEVP® (risk-based analysis) was developed to address risk and uncertainty - very useful results”

“...transportation department effort to plan more accurately and manage money more effectively... So give DOT some

“Giving citizens a range of costs, including full disclosure of the variables, “is not only politically smart, but it’s common sense”

Seattle Post-Intelligencer, June 2002

Thirteen Years of Risk Assessment

Methods of delivery of project risk assessment:

- Started with Cost Estimating Validation Process (CEVP) in 2002
 - Projects above \$100 million
 - Requires External Subject Matter Experts

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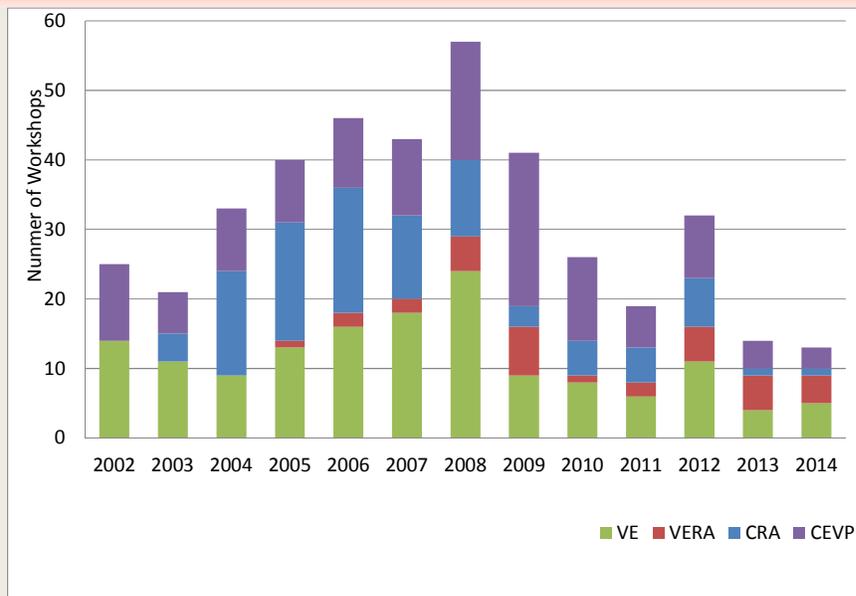
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 - ☐ Projects between \$25 and \$100 million
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- Combined Value Engineering and Risk Assessment (VERA) in 2005
 - ☐ Projects over \$25 million and bridges over \$20 million
 - ☐ Any other projects that may benefit from VERA
 - ☐ Requires External Subject Matter Experts

Thirteen Years of Risk Assessment



Risk Assessment -- Process overview

- ❑ Definition – is a systematic cost and schedule review that incorporates the effect of uncertainties upon project's objectives.

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- ❑ Scalability – the level of effort varies depending on project's magnitude and complexity.

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- ❑ Benefits:
 - ❖ Better understanding of project's objectives
 - ❖ Minimizes surprises
 - ❖ Provides data for optimizing the project's objectives

Risk Assessment -- Lessons learned

Executives Support!!

Risk Assessment -- Lessons learned

- Develop in-house expertise
 - ❑ Human resource – dedicated team that should have a passion toward understanding and enhancing the process of risk management

Risk Assessment -- Lessons learned

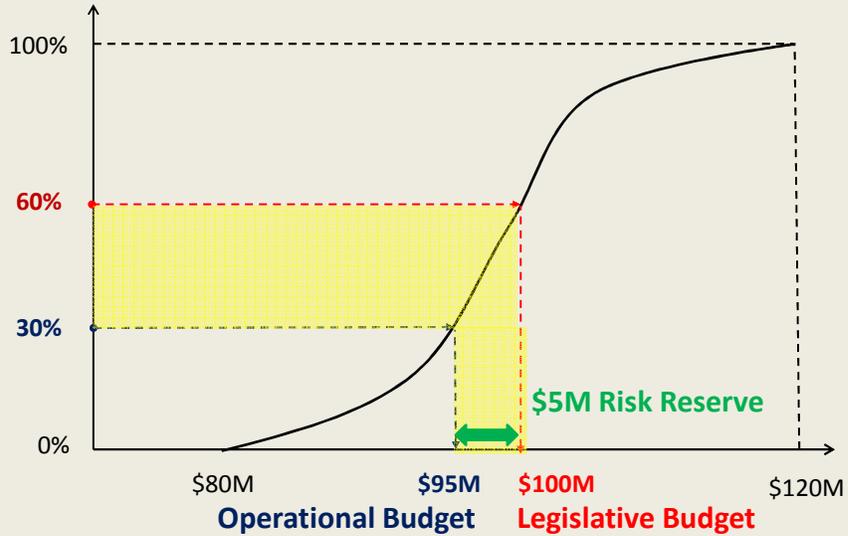
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 - ❑ Collaborate with consultants

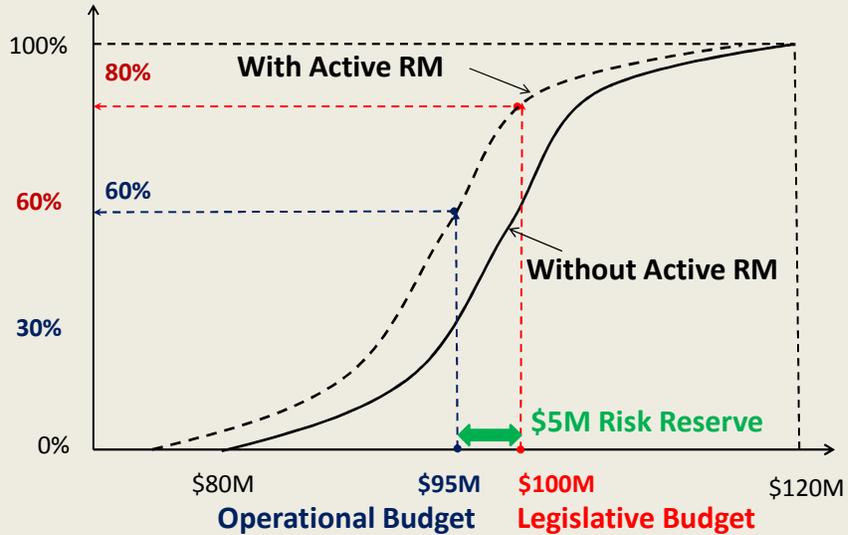
Lessons learned – Risk Reserve

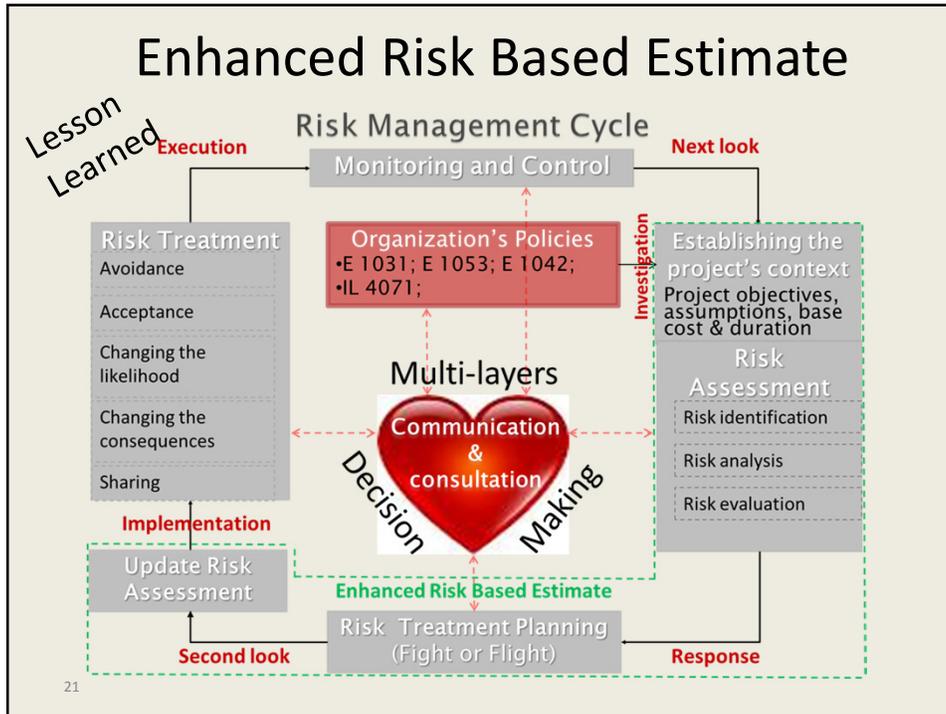
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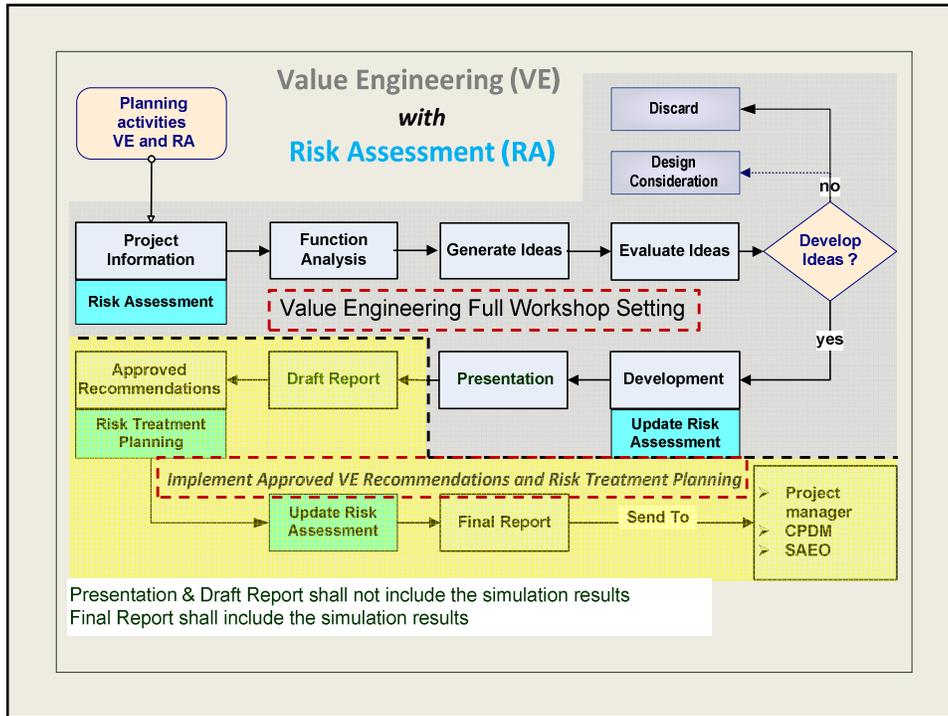
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- ❖ The cost risk profile is more accurate
- ❖ It initiates the implementation of risk treatment strategies.

Risk Assessment -- Innovations

- Combined Value Engineering with Risk Assessment (VERA) – represents the most efficient process of risk assessment. It was used for projects ranging from less than \$10 million to over \$1 billion.

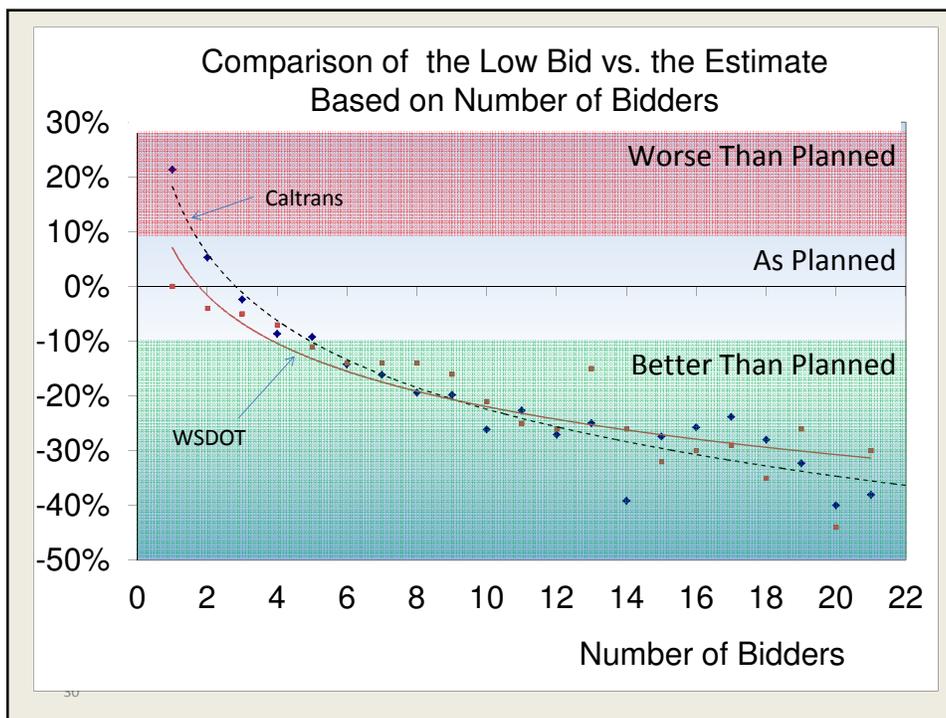


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- ❑ Market Conditions – we found the MC may be the most important driver of the construction cost. MC is driven by the expected number of bidders on the project.



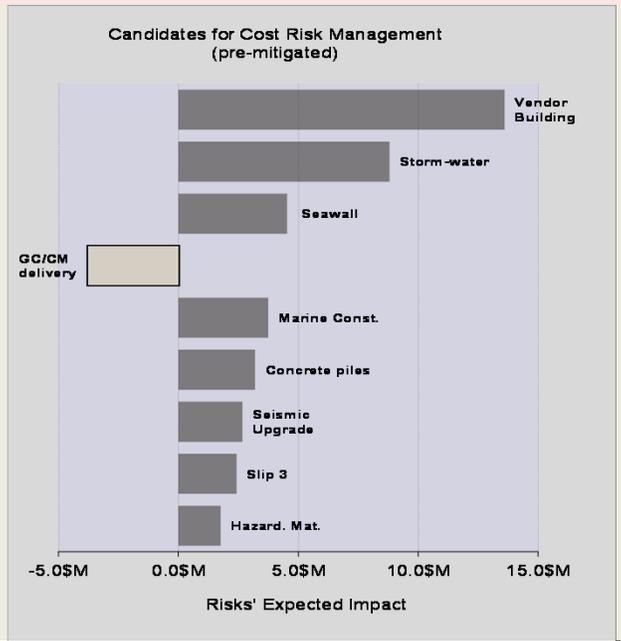
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 - ❖ Dependency – every risk must be evaluated in relationship with other risks.
 - ❖ Correlation – must be justified and documented. Correlation is a powerful way of increasing the cost distribution range and sometimes is abused.

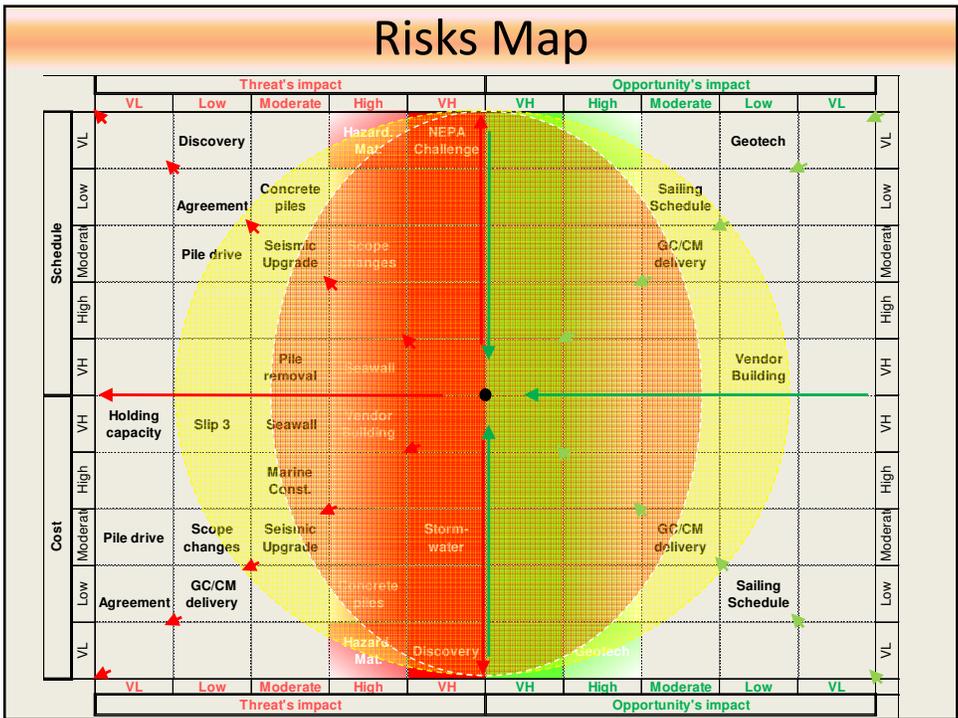
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- ❑ Project risks map – comprehensive visual representation of the project risks

Traditional Tornado Diagram



Risks Map



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