

Decision Quality in Total Cost Management: Tools & Techniques



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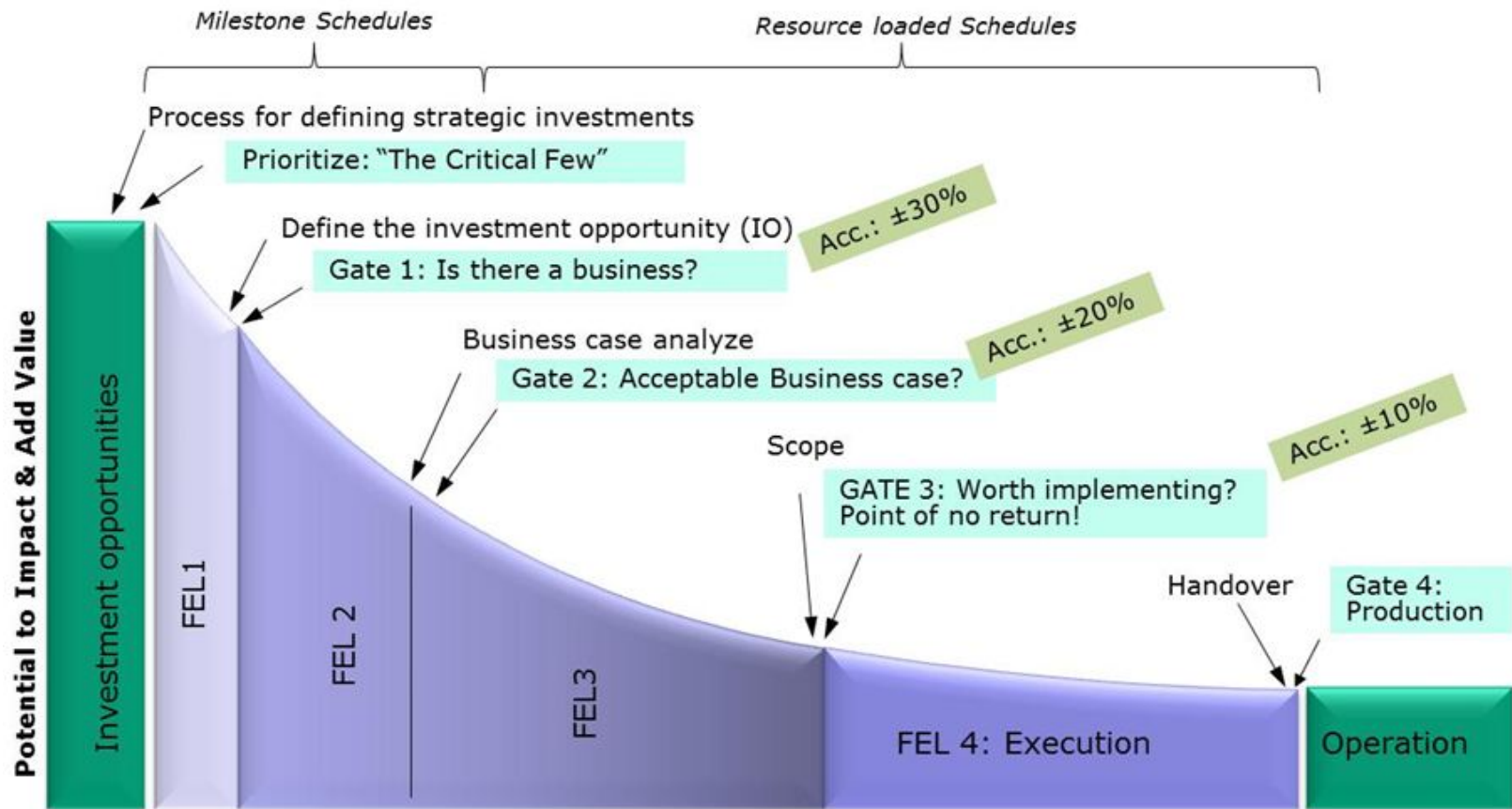


Agenda

- Need for Decision Quality in Capital Projects
- 6 Elements of Decision Quality & Failure Mode
- Process for Complex Decisions
- Extended Role of Cost Engineering Professionals
- Questions and Answers



TCM: Need for Decision Quality



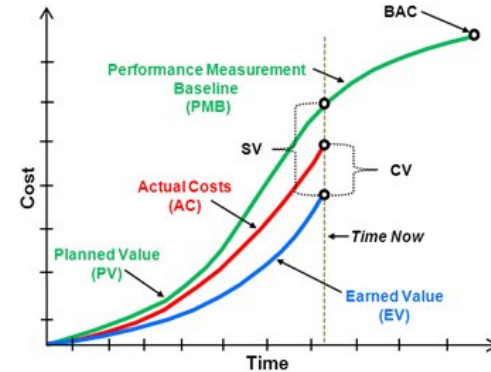
Source: <http://www.hrv.is/Businesssegments/EngineeringAlliance/>



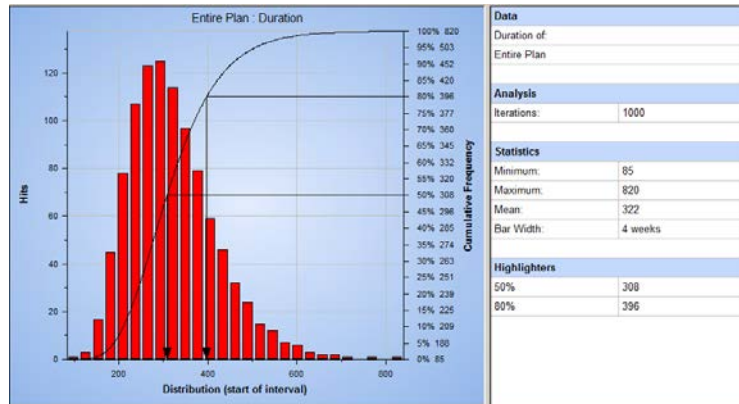
FEL4: Project Controls Tools

Legend	Progress	Link	Start Date	Filter	Activities		
Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Activity % Complete	Var
BA1000	Project Administration	207	198	11-Jan-13	12-Jun-13	100%	
BA1000	Building Address Easement	6	6	11-Jan-13	11-Jan-13	100%	
BA1010	Design Building Address	103	6	11-Jan-13	20-Jun-13	100%	
BA1020	Preventive Maintenance	7	7	11-Jan-13	22-Jun-13	100%	
BA1030	Assemble Technical Data for Heat Pump	39	6	26-Jun-13	01-Feb-14	100%	
BA1040	Prepare Technical Data for Heat Pump	309	6	26-Jun-13	23-Mar-14	100%	
BA1050	Single Building Construction	64	6	26-Jun-13	100%		
BA1060	Site Preparation	95	6	27-Jun-13	12-Feb-14	100%	
BA1070	Excavation	304	6	27-Jun-13	18-Feb-14	100%	
BA1080	Install Underground Water Lines	54	4	18-Feb-14	25-Feb-14	20%	C
BA1090	Install Underground Electric Conduit	54	4	18-Feb-14	25-Feb-14	20%	C
BA1100	Form and Concrete Footings	309	18	28-Feb-13	11-Mar-14	0%	C
BA1110	Concrete Foundation Walls	309	18	12-Mar-13	25-Mar-14	0%	C
BA1120	Form and Pour Slab	54	7	24-Mar-13	03-Apr-13	100%	
BA1130	Backfill and Compact Walls	14	7	25-Apr-10	02-Apr-10	0%	C
BA1140	Foundation Phase Complete	64	6	02-Apr-10	02-Apr-10	0%	E
BA1150	Single Structural Phase	64	6	05-Apr-10	0%	C	
BA1160	Erect Structural Frame	204	26	05-Apr-10	30-Apr-10	0%	C
BA1170	Floor Decking	142	14	09-May-10	20-May-10	0%	C
BA1180	Concrete First Floor	95	15	21-May-10	11-Jun-10	0%	C
BA1190	Erect Stairwell and Elevator Wells	309	18	14-Jun-13	26-Jun-10	0%	C
BA1200	Concrete Basement Slab	154	16	14-Jun-13	26-Jun-10	0%	C
BA1210	Concrete Second Floor	95	16	14-Jun-13	02-Jul-13	0%	C
BA1220	Structure Complete	64	6	02-Jul-13	0%	C	
BA1230	Sanitization and Electrical Equipment	95	16	14-Jun-13	02-Jul-13	0%	C
BA1240	Plumbing Phase Begins	64	6	26-Jul-10	0%	C	
BA1250	Phase and Slab End for Heat Pump	39	3	22-Feb-10	24-Feb-10	0%	E
BA1260	Prepare Data for Heat Pump	29	7	24-Feb-10	24-Feb-10	0%	E
BA1270	Assemble Contract for Heat Pump	14	7	07-Mar-10	01-Mar-10	0%	E

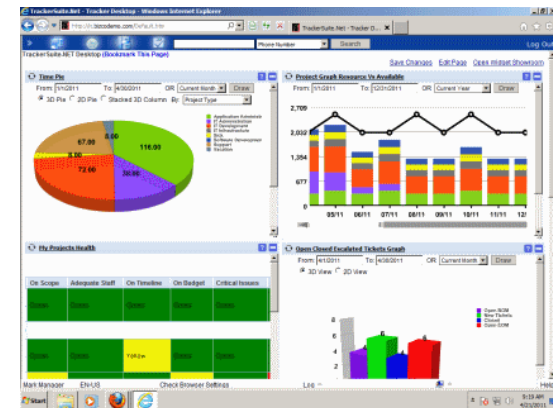
Critical Path Method



Earned Value Management



Monte Carlo Simulation



Project Controls Dashboard

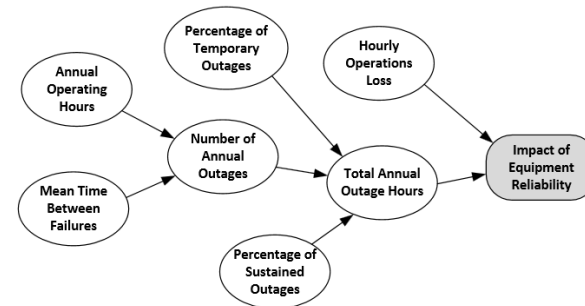


FEL 1, FEL 2, FEL 3

- Front End Loading phases entail complex decisions
- Cost Engineers Professionals do not contribute much during these phases
- Sometime Complex decisions to be taken during the execution phase FEL4
- TCM Framework proposed some tools but they are rarely applied.



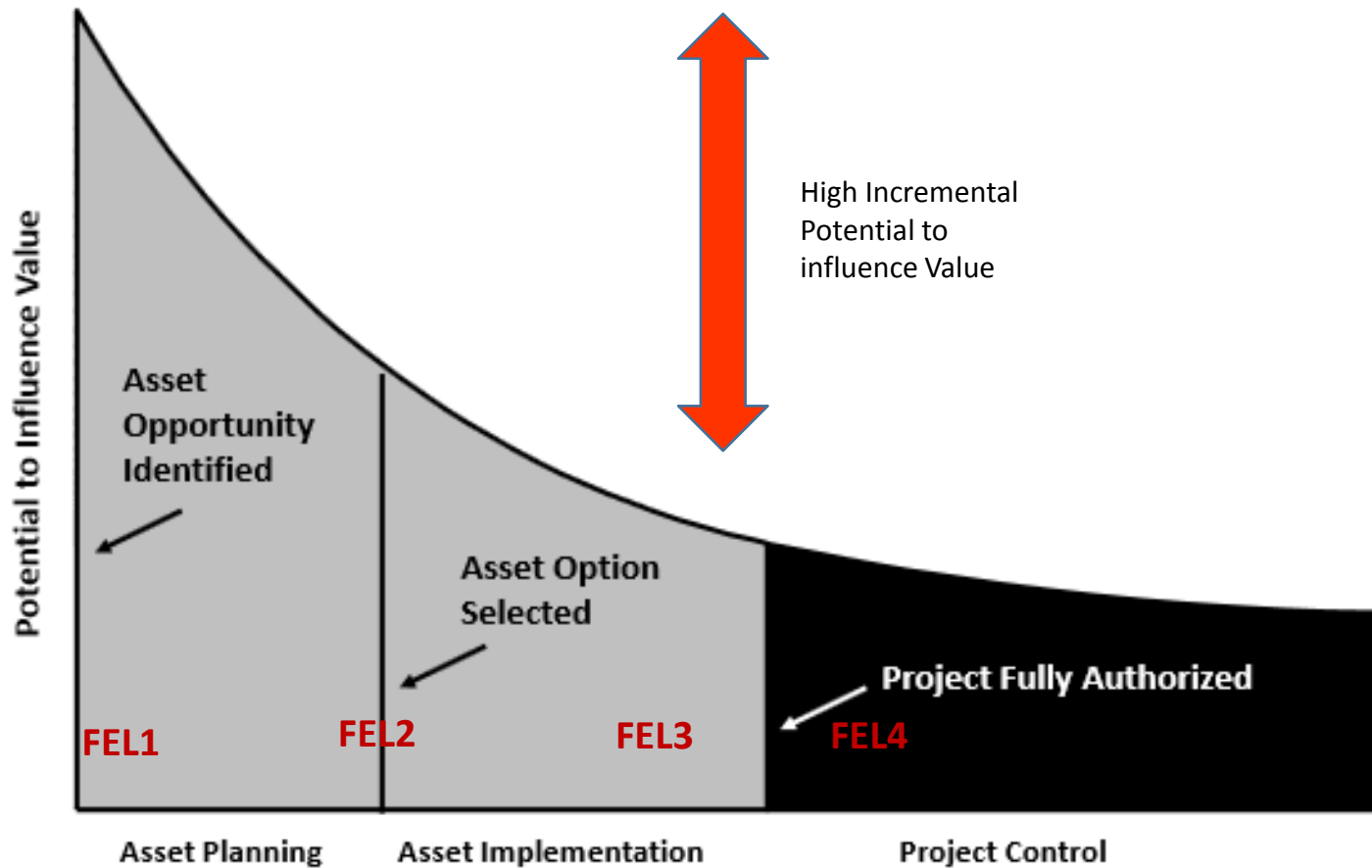
TCM Framework: 3.3.1.2 Decision Quality
Decision Chain



TCM Framework: 3.3.2.2 Develop Deterministic Decision Model
Influence Diagram



Value Management in SAM



Asset Planning and Implementation Phase

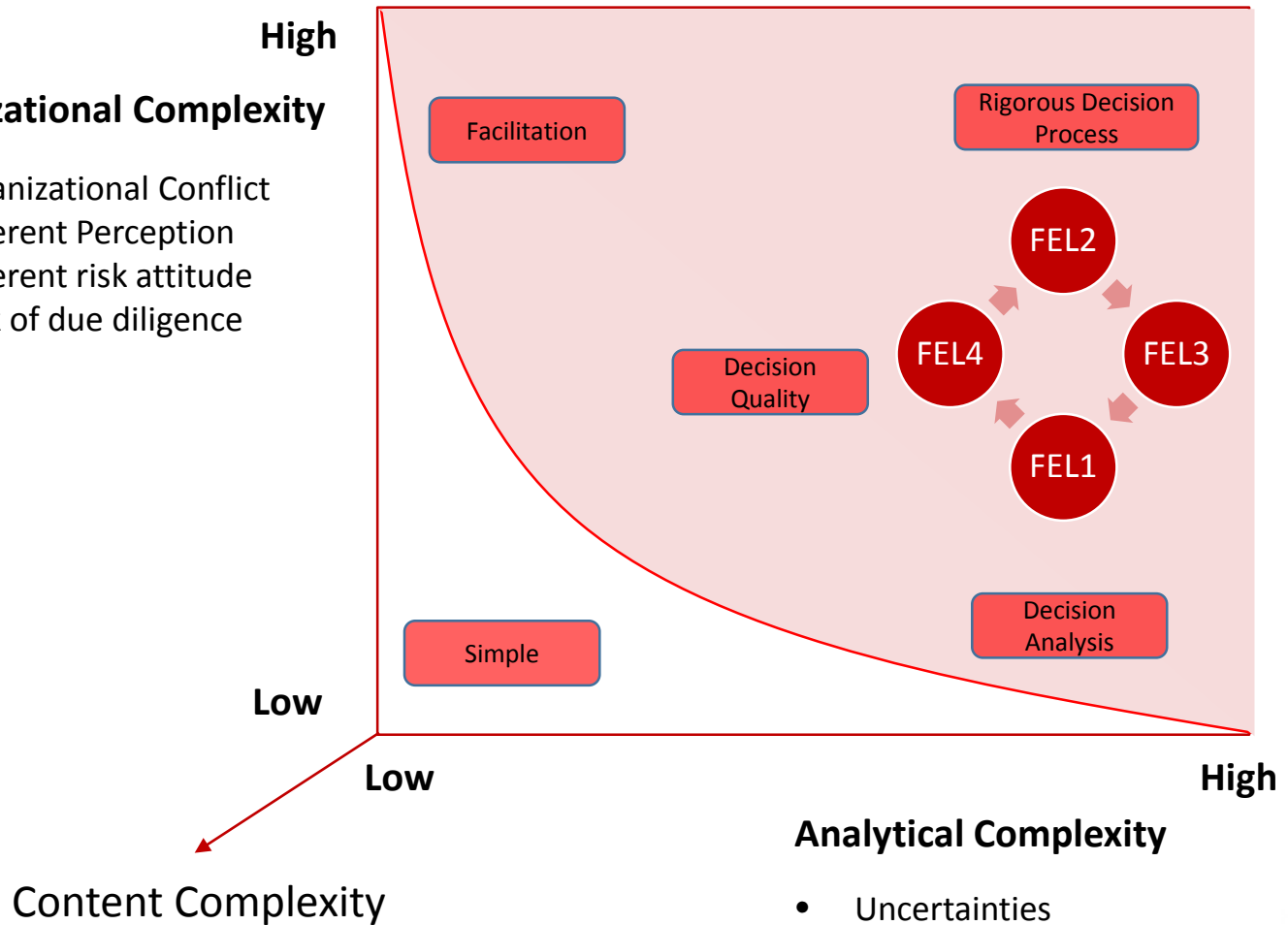
TCM: 11.5 Value Management
Influence Curve



Decision and levels of Complexity

Organizational Complexity

- Organizational Conflict
- Different Perception
- Different risk attitude
- Lack of due diligence

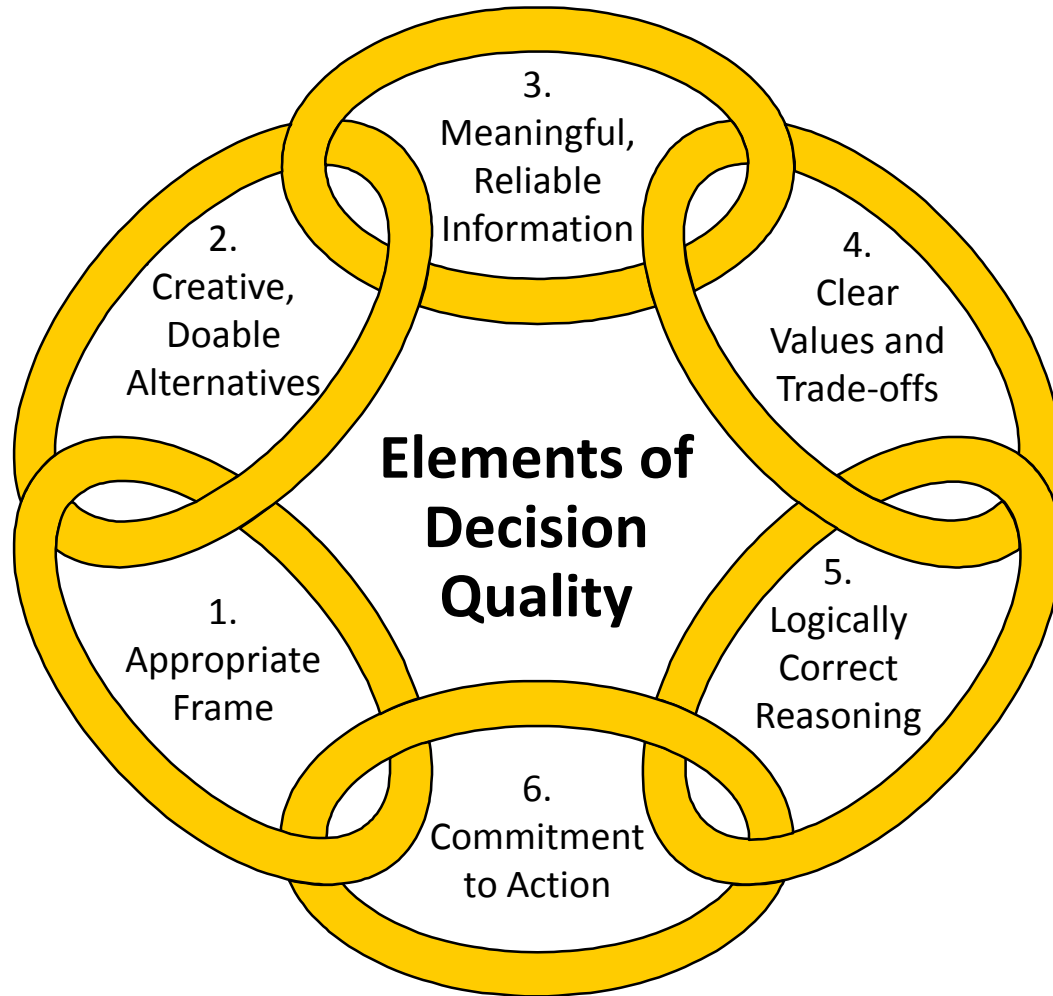


Analytical Complexity

- Uncertainties
- Unclear value drivers
- Multiple attributes



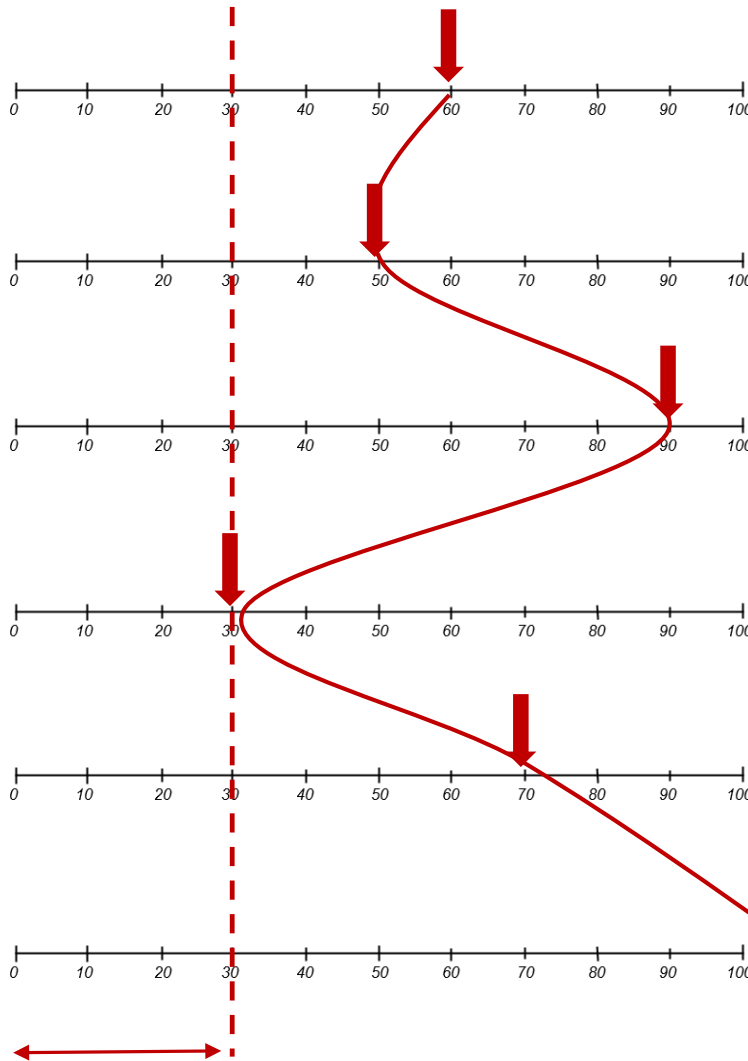
Six Elements of the Decision Quality



Like a chain, overall quality is no stronger than the weakest link. **|SD|G|**



Decision Quality Failure Modes



Quality of the Decision

Appropriate framework

- Missing Stakeholders
- Wrong Perspective
- Jumping to solution

Doable Alternatives

- Not too many alternatives
- No outside the box thinking

Reliable Information

- uncertainty is not considered
- Biases

Clear Values

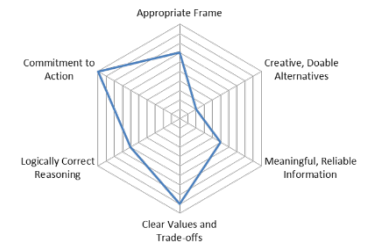
- Different Expectations
- No tradeoffs
- Missing Stakeholders

Sound Reasoning

- Using intuition
- Analysis paralysis

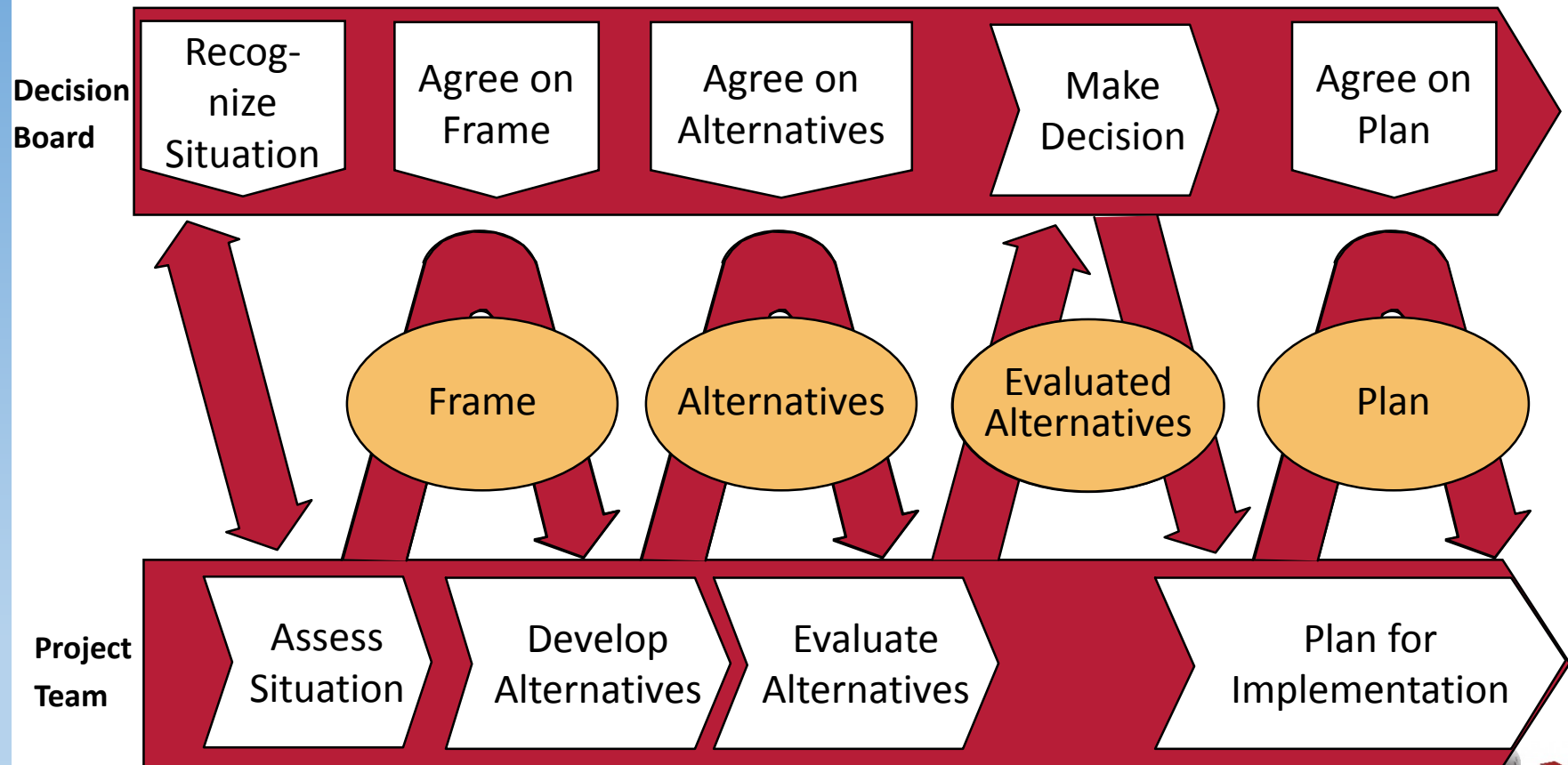
Commitment to Action

- Appropriate resources are not allocated
- No buy in from all stakeholders



Complex, strategic decisions Process

Dialogue Decision Process



The process provides insight and clarity, which lead to alignment and commitment to high-quality decisions.



Tools for Decision Quality

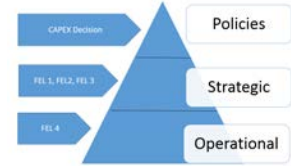


Appropriate framework

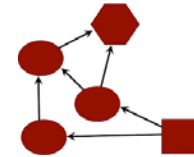
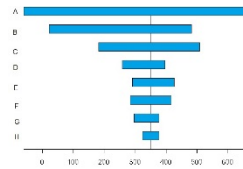


Doable Alternatives

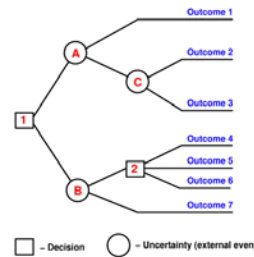
Key Decision Items					
Strategy theme	Products to be offered	Services/ manufacturing	Pricing	Advertising / Promotion	Geographic location of facilities
Aggressive	Products being sold in the U.S. and European markets	Size of existing facilities	Little heavy	All forms of media (TV, radio, magazines)	All major regions in Asia
Moderate	Specialty products for the Asian market	Contract new plant	Low	Special TV program and the work that we do for the leader in Asia	Concentrated on Japan
Non-entry	NO	NO	Standard	Low price	Concentrated on Southeast Asia



Reliable Information



Clear Values



Sound Reasoning

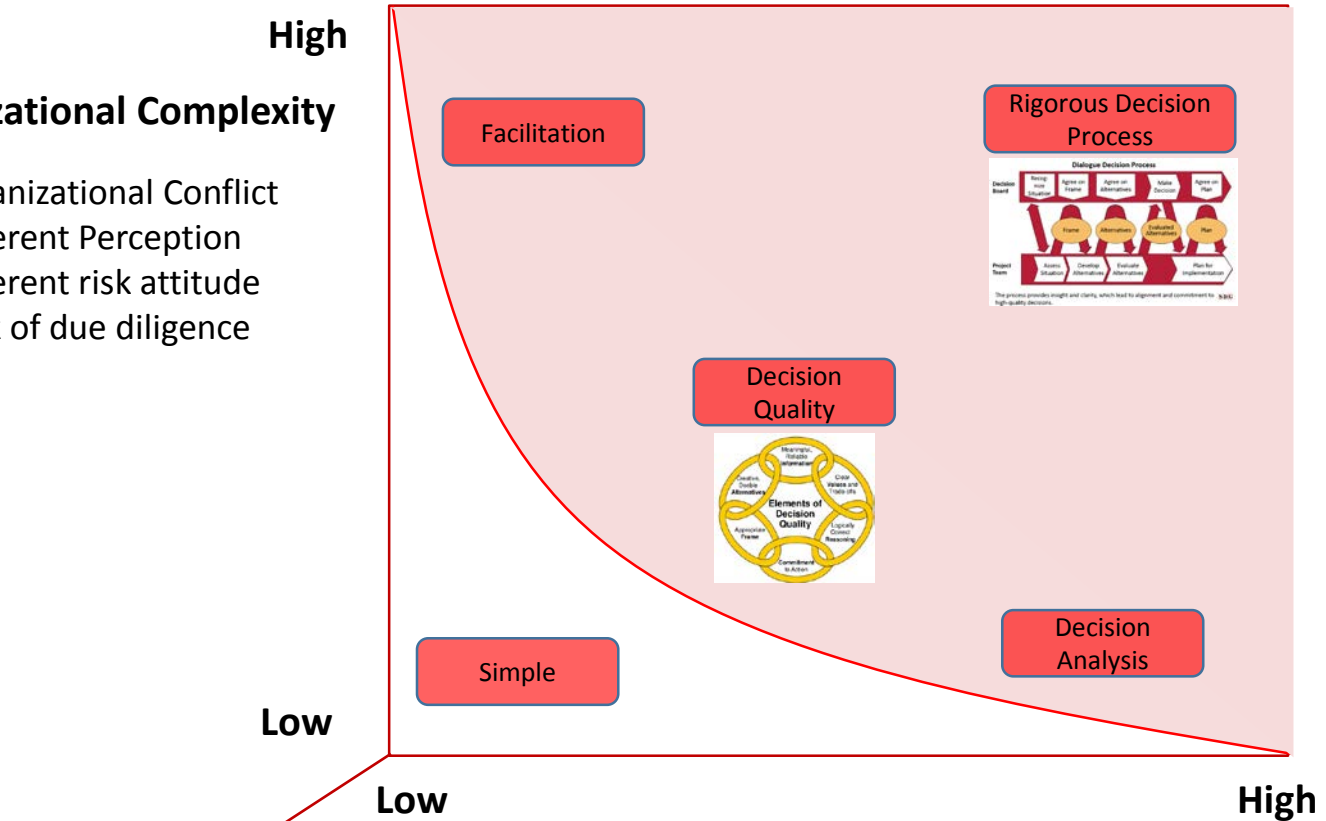
Commitment to Action



Decisions and Level of Complexity

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Analytical Complexity

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Redefined Role of Cost Professionals

- FEL1, FEL2, FEL3 are complex phases with high uncertainty and substantial value at stake
- Dialog Decision Process would be very helpful
- Decision Analysis and Decision Quality shall be more explored in the organization
- During FEL4 some complex decision might appear.
- Project Controls Manager and Cost Engineering Professionals are better positioned to lead such role.



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Questions and Answer

