

Decision Making in Agriculture

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Why Bother Making Decisions?

- Decisions are hard, especially when you have lots of choices and uncertainty.

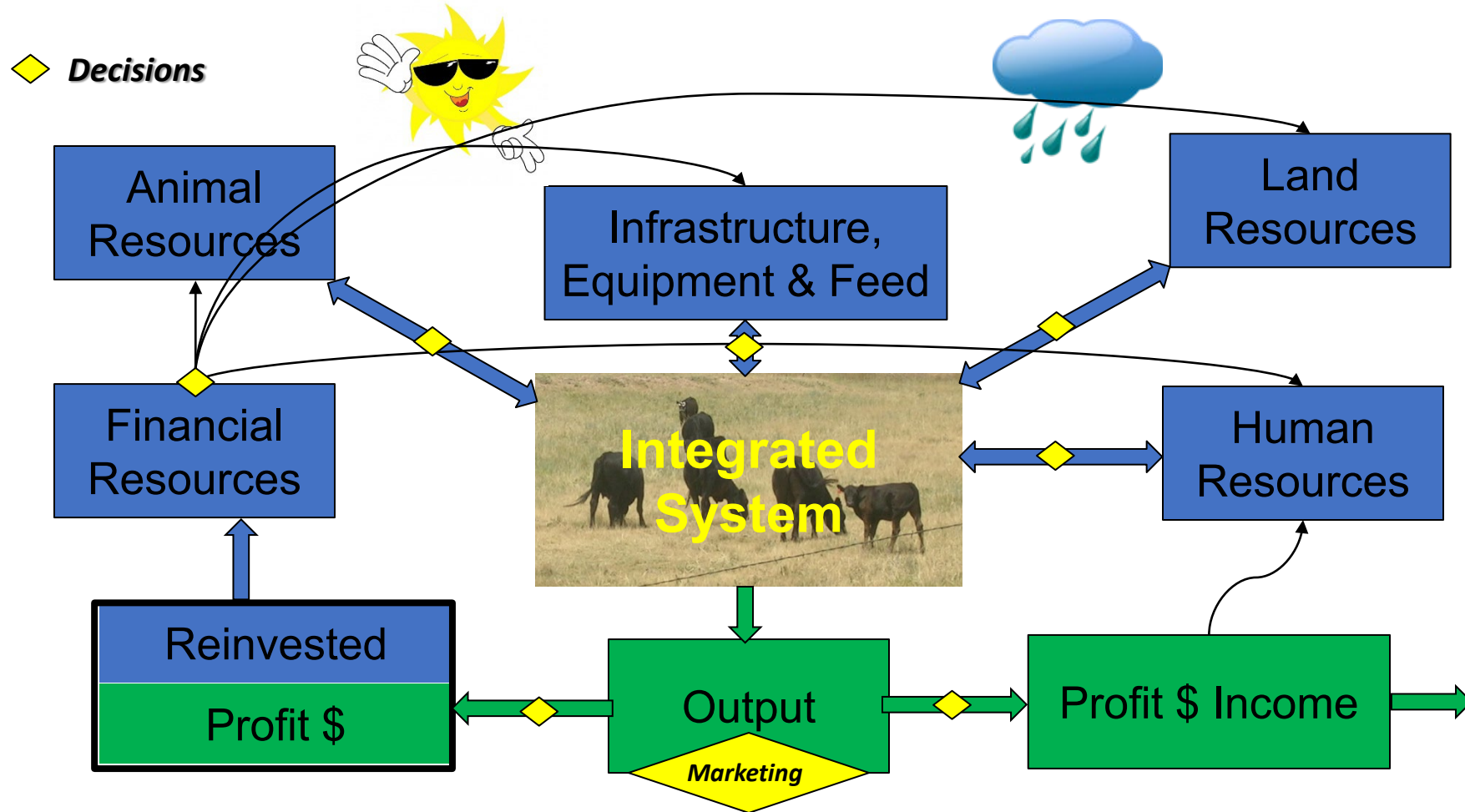


Agriculture is a Unique Decision-Making Environment

- Massive uncertainty (i.e. weather, markets, etc.)
- Family operations in a multiple range of sizes
- Government intervention
 - Incentive programs
 - Disaster programs
- Complex Systems
 - Biological
 - Environmental
 - Economically
 - Financial



Integrated Production System



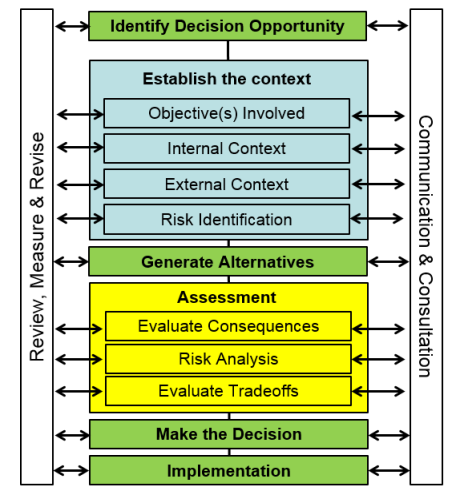
Management

- The most powerful thing in the world for a manager is a decision.
- Good management is the process or art of making decisions which maximize the probability of achieving business goals.



Identify Important Decision Opportunities

Working with your classmates, write down some of the most important decisions ranchers make (these could be made once, annually, regularly, etc.).



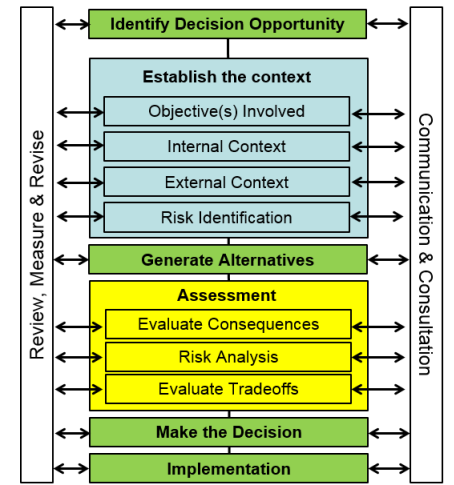
Proactive Decision Making

- Decisions should not be viewed in the narrow context of problems to be solved.
- A decision should be viewed as an opportunity to make choices that help you accomplish your objectives.
- Focus on objectives first, then choices.
- Clear objectives help identify decision opportunities that lead to more smart choices.



Establish the Context: Objectives

Working with your classmates, identify and write down important objectives ranchers (i.e. you) are trying to achieve with the decision(s) made.



Dimensions of Proactive Decision-Making

Cognitive Skills

Systematic identification of **objectives**

Systematic identification of **alternatives**

Systematic search for **information**

Using a '**decision radar**'

Proactive Decision-Making

Personality Traits

Taking **initiative**

Striving for **improvement**

Siebert and Kunz (2016)



Complete the Proactive Decision-Making Questionnaire



Effects of Decision Training in the Nebraska Ranch Practicum

Pre-post comparison of proactive decision making traits and cognitive skills for paired observations of participants in the Nebraska Ranch Practicum 2017-2020 (n=22).

Dimension	t ₁	t ₂	ΔMean (t ₂ - t ₁)	p-value (t-test)
Proactive Cognitive Skills	4.885	4.985	0.100	0.157
Objectives	5.000	5.106	0.106	0.565
Information	5.288	5.246	-0.042	0.761
Alternatives	4.432	4.807	0.375	0.012 **
Radar	4.936	4.900	-0.036	0.723
Personality Traits				
Initiative	4.015	3.894	-0.121	0.271
Improvement	5.846	5.667	-0.179	0.473

**Significant difference at the 5% level of significance.



Effects of Decision Training in the Nebraska Ranch Practicum

Pre-post comparison of satisfaction assessments for paired observations of participants in the Nebraska Ranch Practicum 2017-2020 (n=22).

Assessment	t ₁	t ₂	ΔMean (t ₂ - t ₁)	p-value (t-test)
Decision Satisfaction	4.273	4.432	0.159	0.145
Life Satisfaction	4.873	5.073	0.200	0.044 **
General Self Efficacy	4.900	5.045	0.146	0.014 **

** Significant difference at the 5% level of significance.



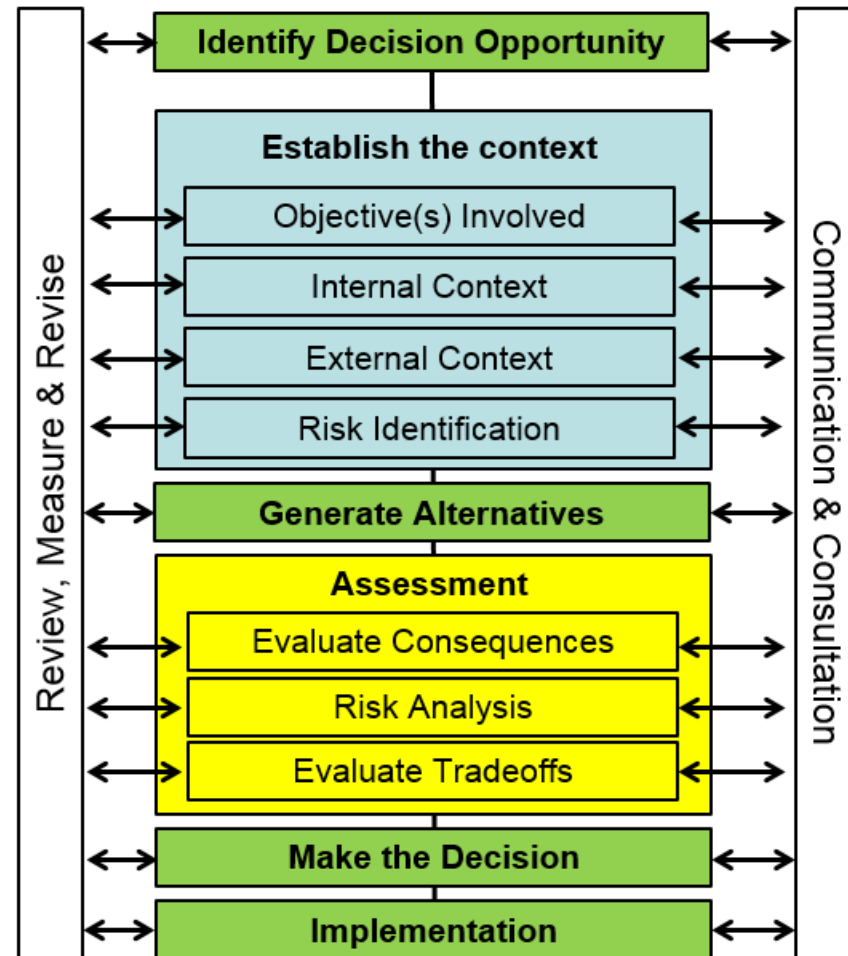
Why Bother Making Decisions?

- Decisions are your opportunity to maximize the probability of achieving your goals/objectives.
- Decisions are your opportunity to earn a competitive advantage.
- Decisions are the only way you can purposefully influence your life.
- Decisions are opportunities to shape the environment your future choices are made in.



Smart Choices in Agriculture

- A decision-making process focused on creating desired outcomes more consistently.
- It provides a robust decision-making framework while building proactive decision-making skills.



Seven Characteristics of a Good Decision

An appropriate
decision frame

Clear values to
adhere to and
objectives you are
trying to accomplish

Good information

Creative alternatives
to choose from

Clear tradeoffs and
sound reasoning

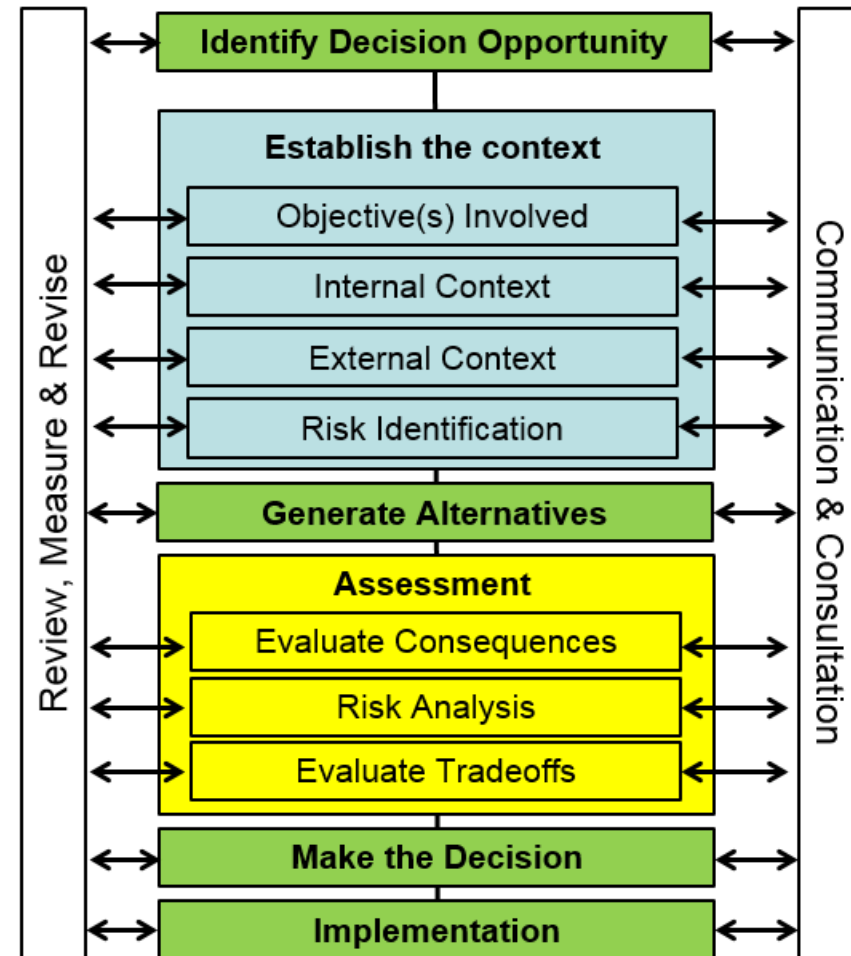
Choice alignment
with values and
objectives

Committed
implementation



Smart Choices in Agriculture

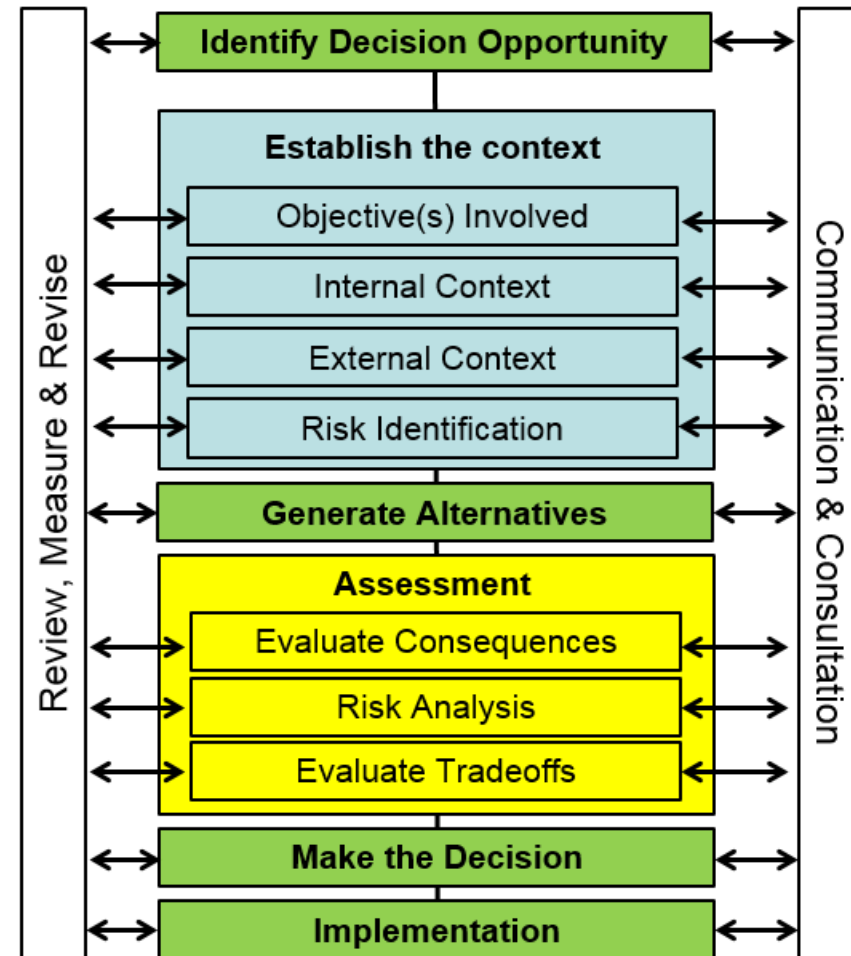
An appropriate decision frame



Smart Choices in Agriculture

Clear values to adhere to and objectives you are trying to accomplish

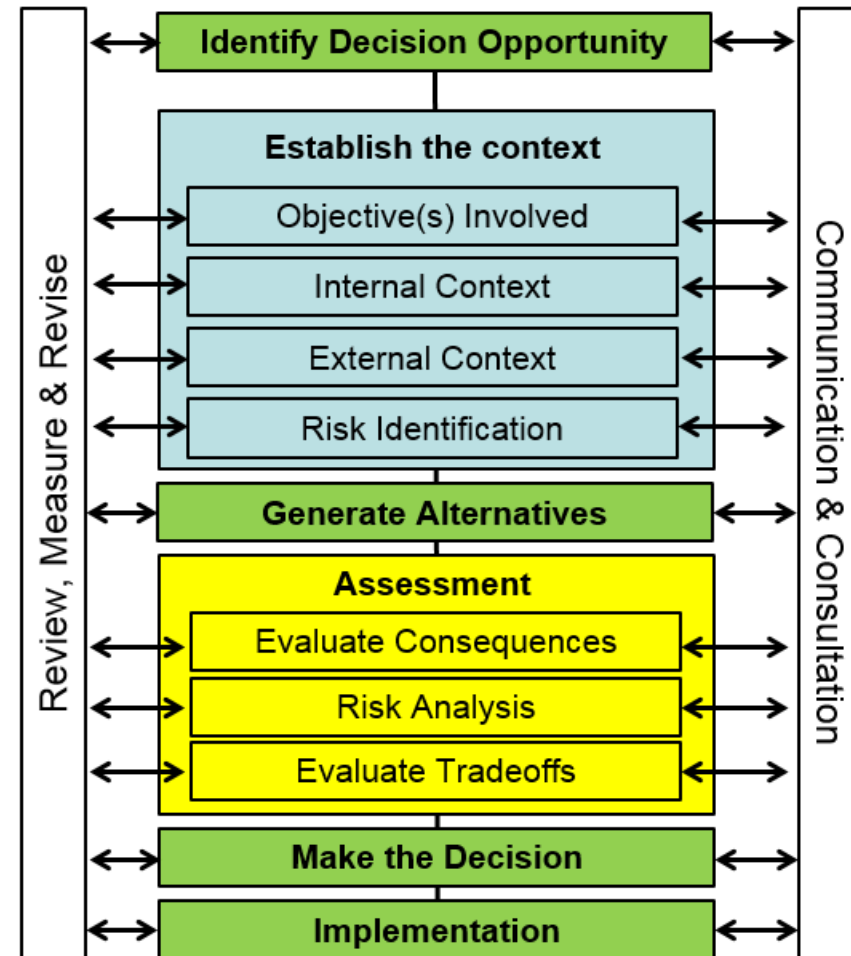
Good information



Smart Choices in Agriculture

- Identify decision opportunity
 - Alternatives (choices to choose from)
 - Objective(s) (reason(s) to choose)
 - Assessment (which to choose)

Creative alternatives
to choose from

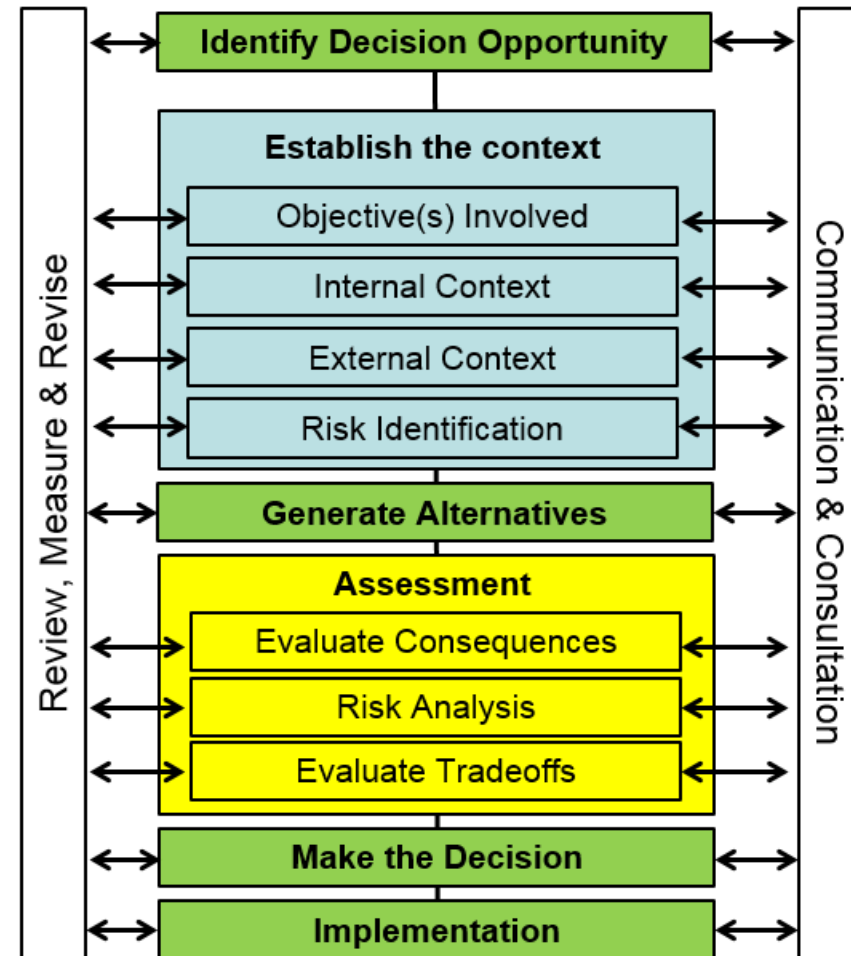


Smart Choices in Agriculture

- Identify decision opportunity
 - Objective(s) (reason(s) to choose

Creative alternatives
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- Assessment (which to choose)

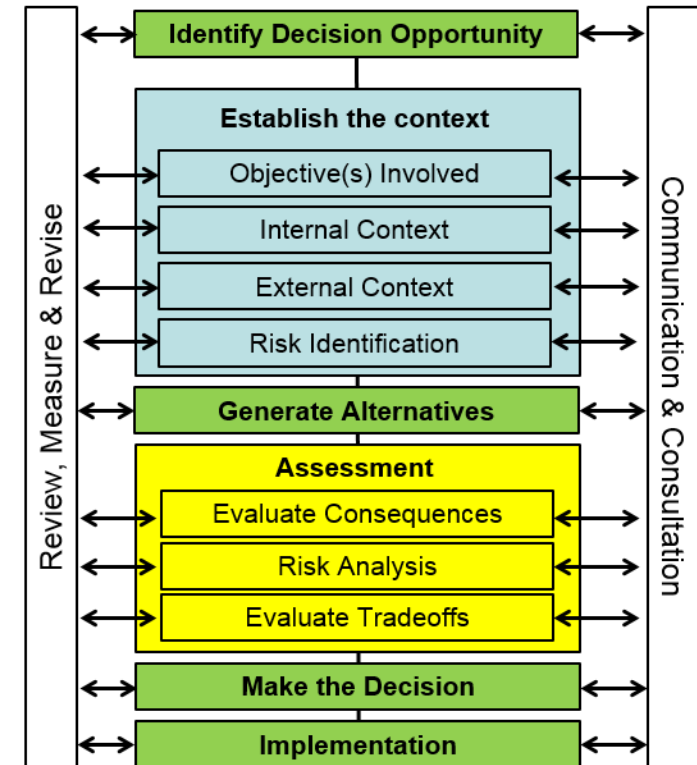


Two Pillars of Success

***Can you improve your understanding of the context in which you are making the decision? Better information? More clearly stated objectives?
Can you identify additional, better alternatives to choose from?***

Communication & Consultation: Who can you talk to?

Review, Measure, Revise: What needs updated?

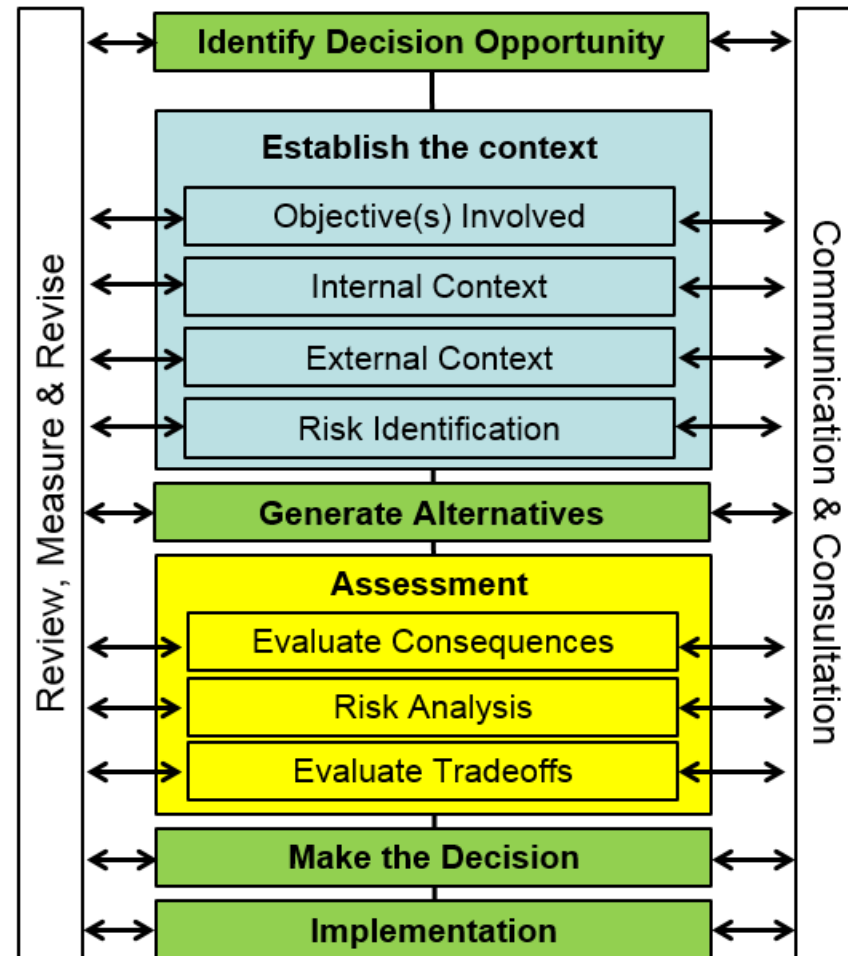


Smart Choices in Agriculture

Clear tradeoffs and sound reasoning

Choice alignment with values and objectives

Committed implementation



Objective Focused Thinking

- A full, clear set of objectives is the key to making good decisions consistently.
- Clear objectives
 - help identify choices you can make
 - help determine the information you need
 - help determine the importance of decisions
 - speed up the evaluation of your decision choices
 - help explain the choices you make to others.



Definitions

- Attributes – things you value and measure (profit, debt, happiness, etc.)
- Objectives – directions of improvement of one or more attributes like increasing profit or decreasing debt, etc.
- Goals – combining an attribute with an acceptable target level of achievement.

Goal: Debt reduced to less than 20% of asset value.

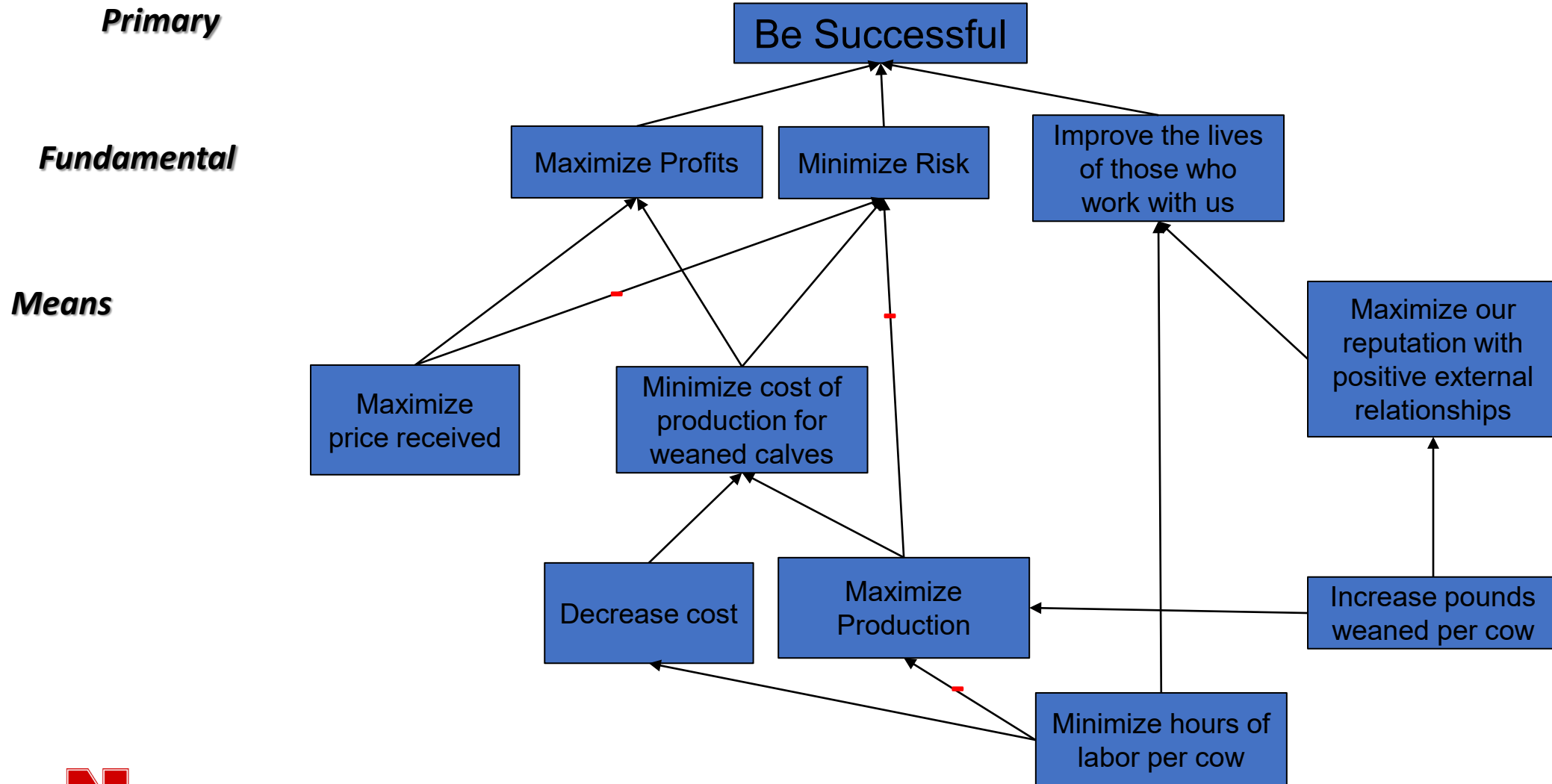


Fundamental vs. Means Objectives and Goals

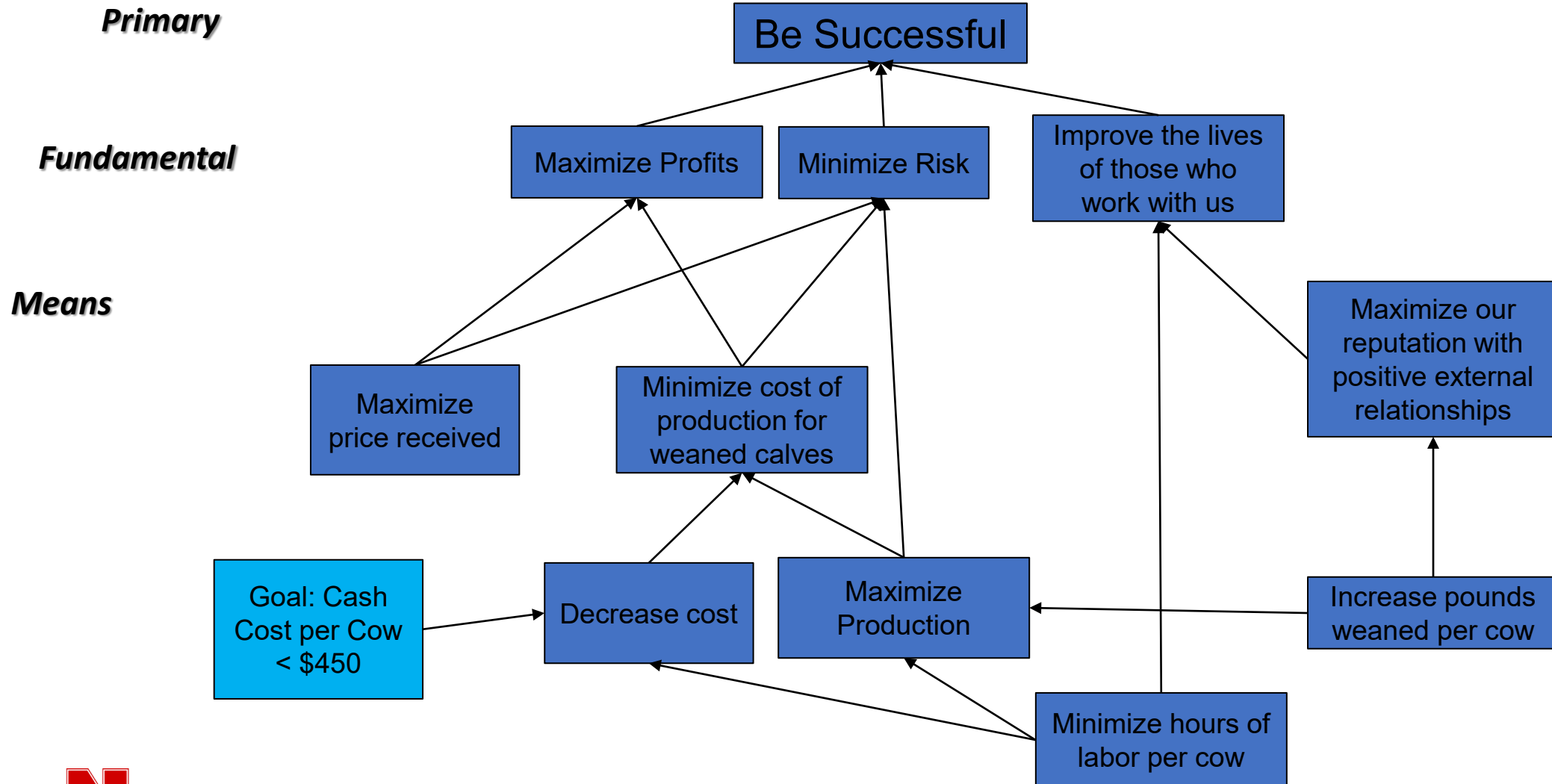
- Fundamental objectives capture the fundamental reasons behind your decisions.
 - They help you evaluate alternatives.
- Means objectives lead you toward accomplishing your fundamental objectives.
 - They help you identify alternatives.



Objectives Hierarchy

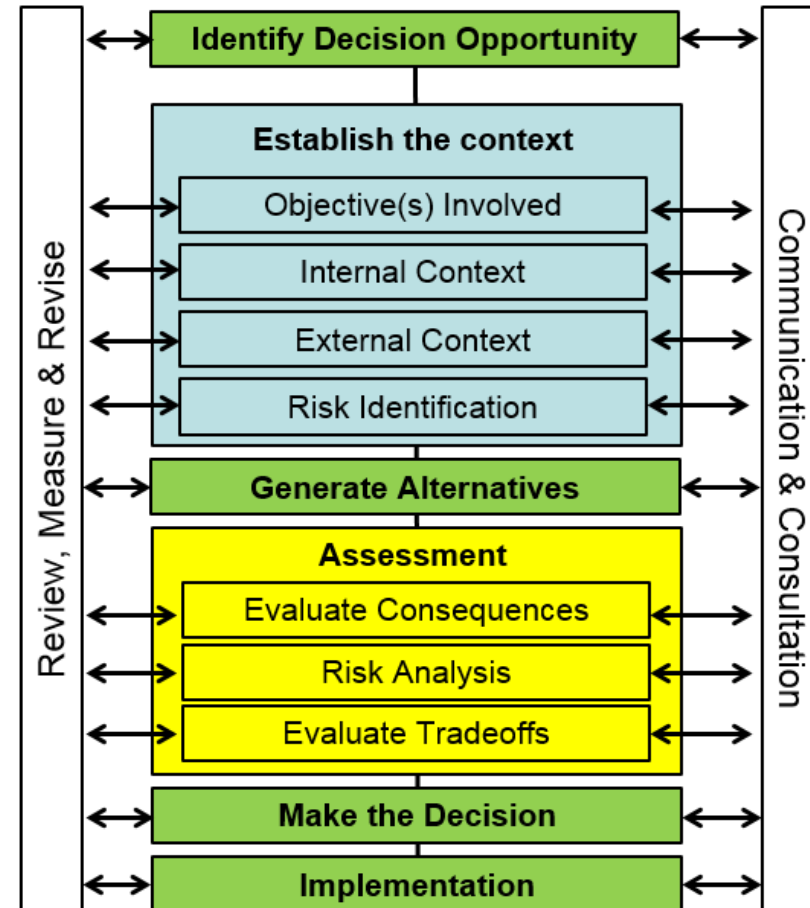


Objectives Hierarchy



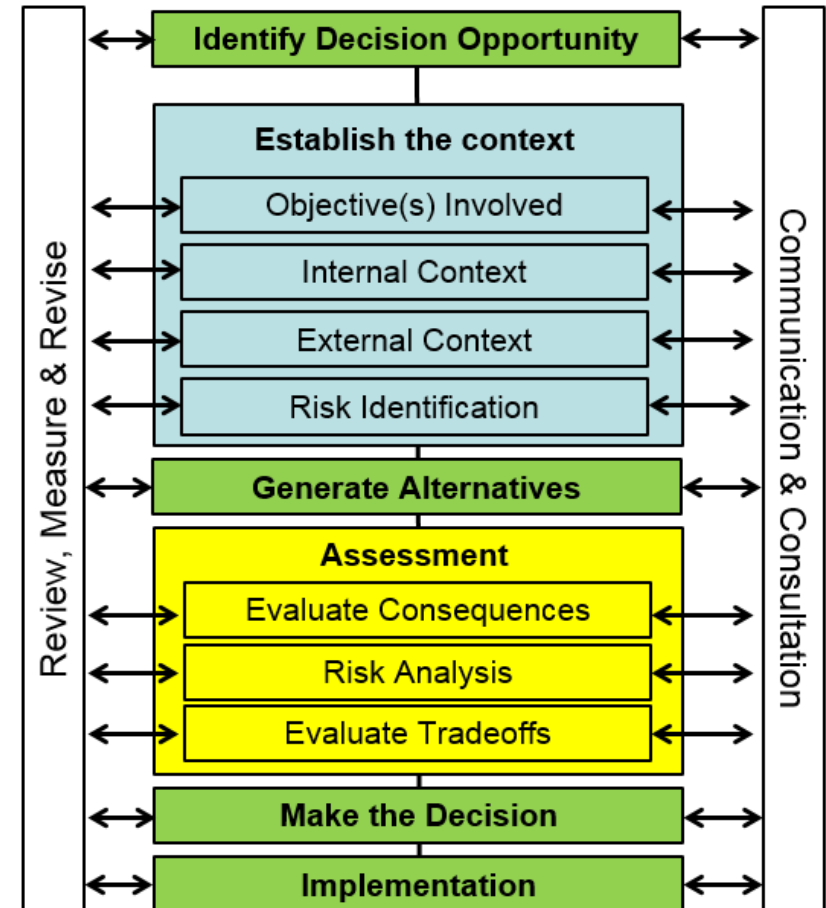
Establish the Context

Identify the objectives you are trying to achieve by making the decision.



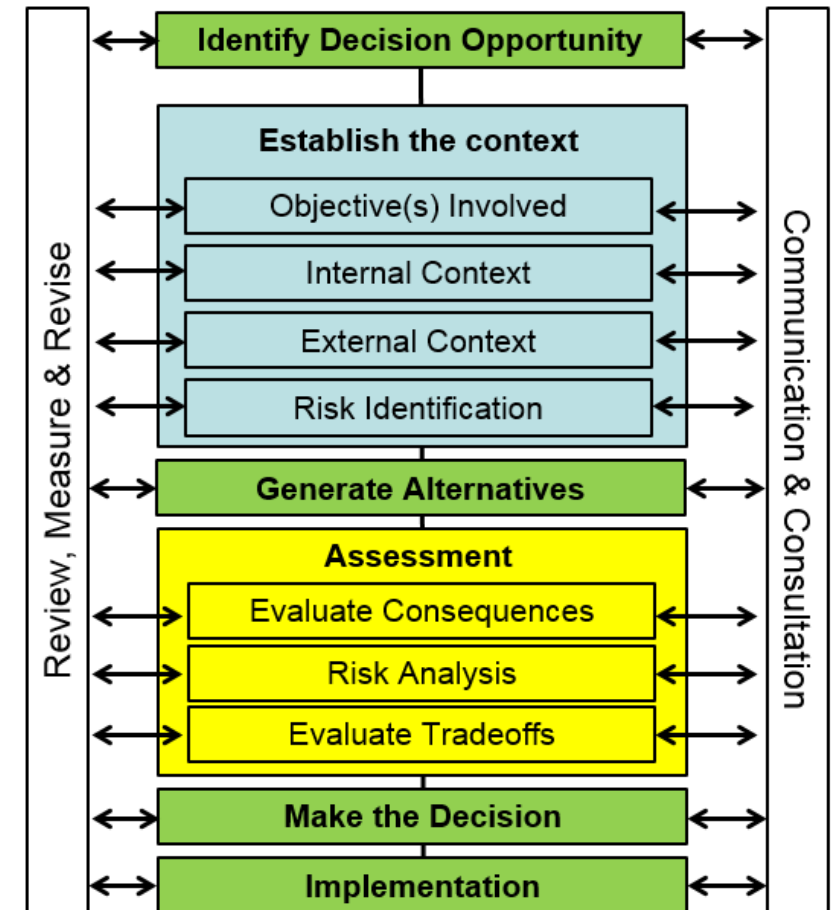
Establish the Internal Context

- What is the situation within the organization?
 - Strategies and policies
 - Resources
 - Structure (roles, responsibilities)
 - Knowledge, skills, and resources
 - Relationships
 - Strengths and weaknesses



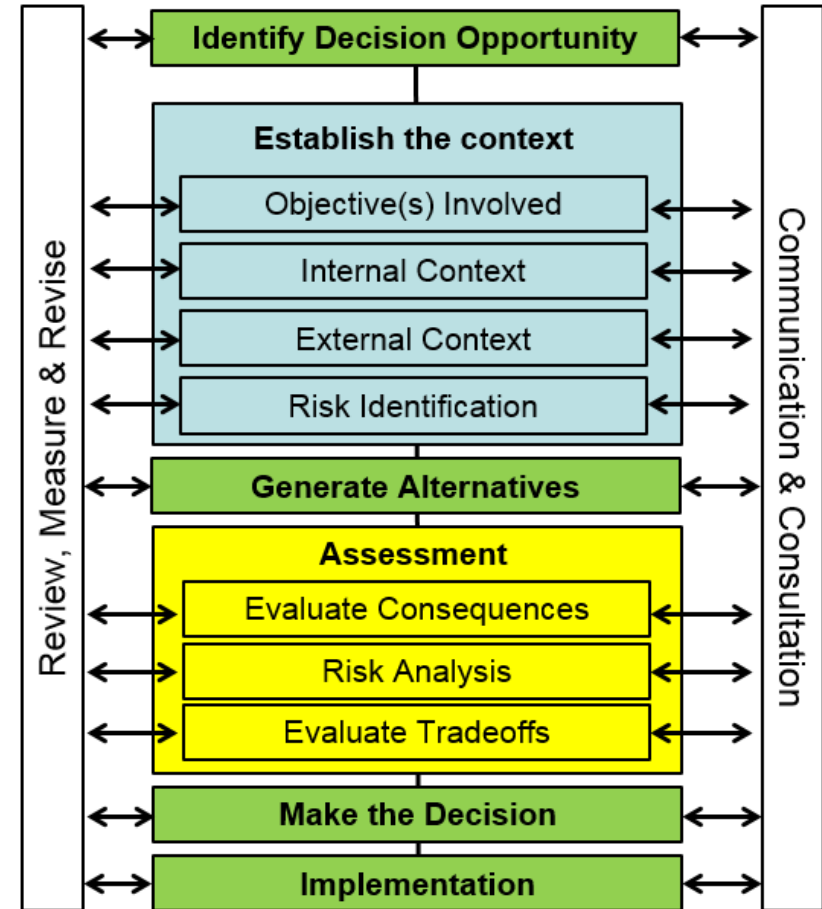
Establish the External Context

- What is the situation outside the organization as far as the environment you are making the decision in?
 - Trends and key drivers
 - Perceptions of key stakeholders
 - Economic situation (markets, etc.)
 - Social and political environment
 - Technological environment
 - Environmental and legal situation
 - Opportunities and threats



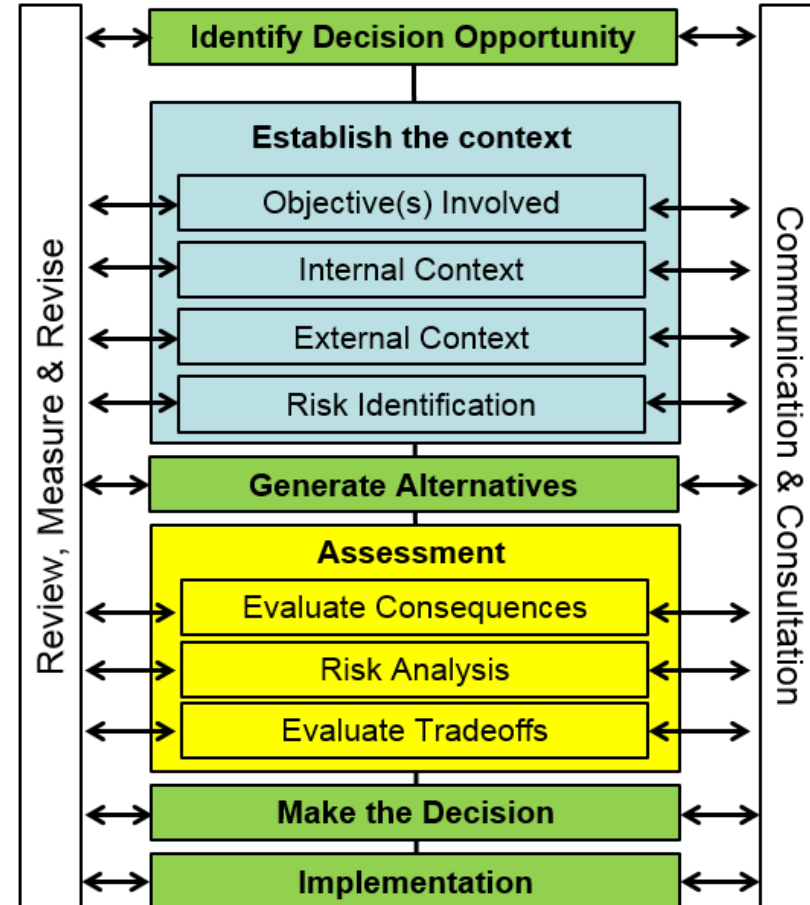
Risk Identification

- What are the risks and uncertainties involved in your decision?
- What uncertainties could affect your ability to achieve your objectives?
- Worst case scenarios?
- Best case scenarios?
- Probabilities?



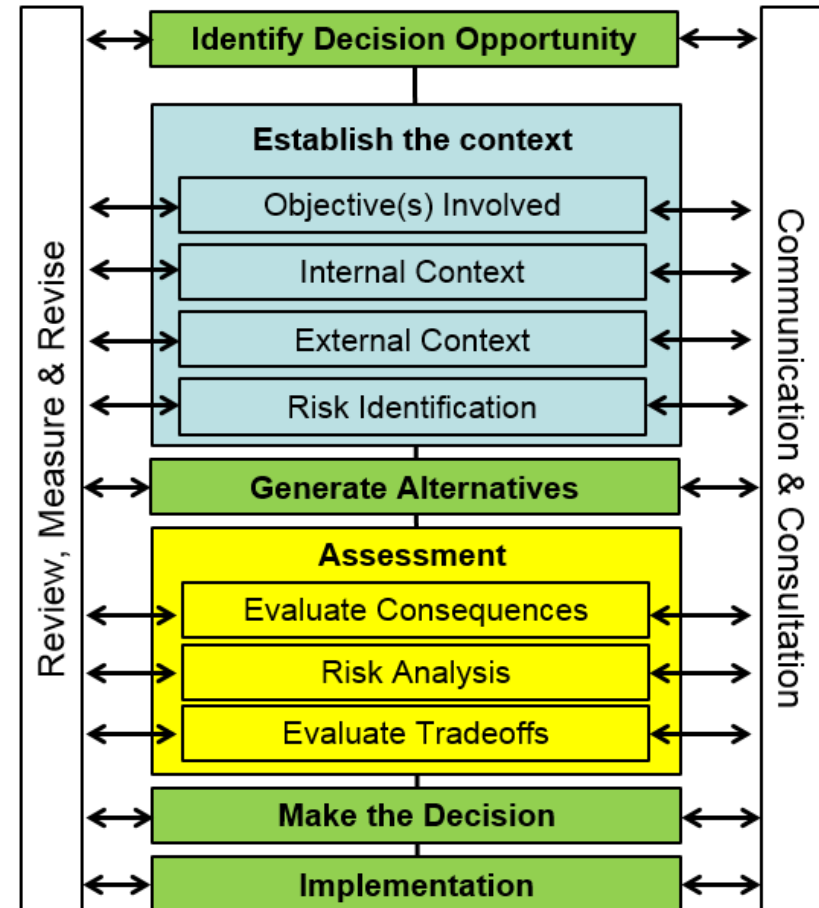
Five Key Principles of a Good Risk Management Culture

- Ability to anticipate decisions
- Adequate resources and capacity to respond to changing conditions
- Free flow of information into and throughout the organization
- Willingness to learn and adapt
- Risk management is embedded in all decision-making processes



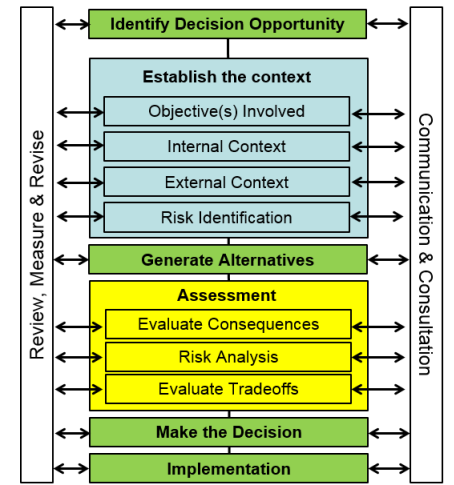
Generate Alternatives

- Alternatives are possible courses of action
- Ask “How can I accomplish my objectives?”
- Be creative and imaginative
- Challenge constraints
- Do your own thinking first.
- Ask others for suggestions.
- Keep an open mind!
- Iterate and generate better alternatives



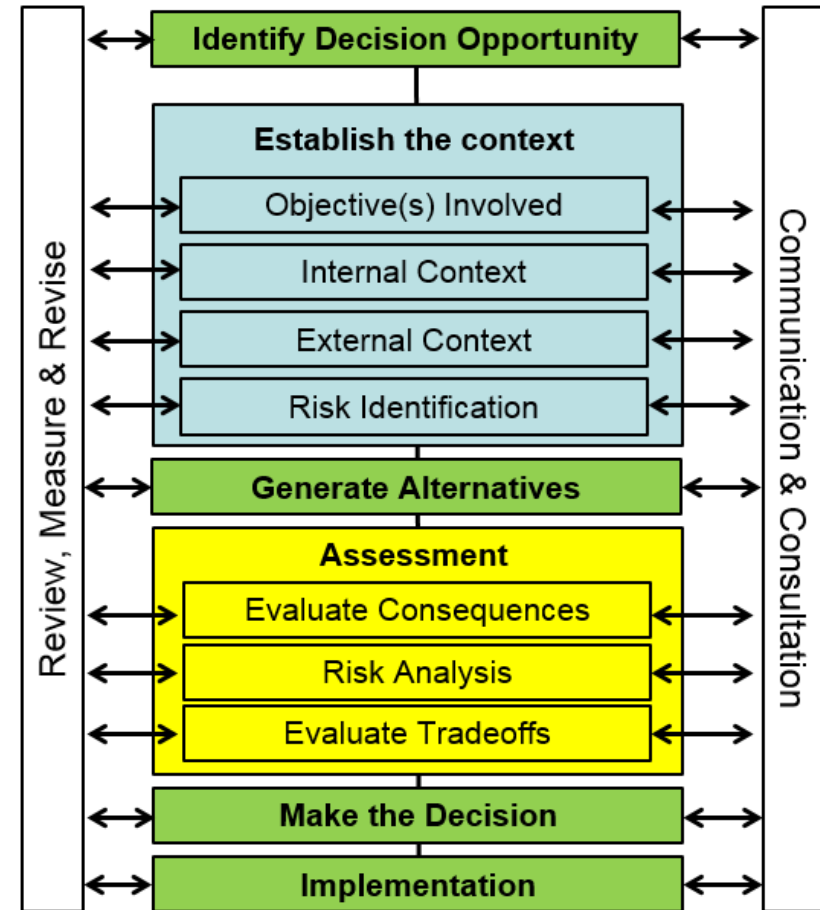
Generate Alternatives

Working with your classmates, identify and write down alternative actions you can take to achieve ranch management objectives.



Assessment

- Evaluate Consequences
 - How well does each alternative address the objectives associated with the decision?
 - Consider linked decisions
- Risk Analysis
 - Clarify uncertain consequences
 - Ranges & probabilities
 - Clarify risk sources
 - Incorporate risk tolerance into decision
- Evaluate Tradeoffs
 - Look to simplify decision
 - Ignore irrelevant objectives
 - Eliminate dominated alternatives
 - Pairwise comparisons
- Use appropriate scales and be realistic about precision.



Identify Decision Opportunity



What should I do to comply with my CRP requirements?

Timeline for Making the Decision:

Production practice must be completed by Sep. 30



Objectives Hierarchy

Primary

Be Successful

Fundamental

Maximize Profits

Minimize Hassle

Meet CRP
Contract
Requirements

Means

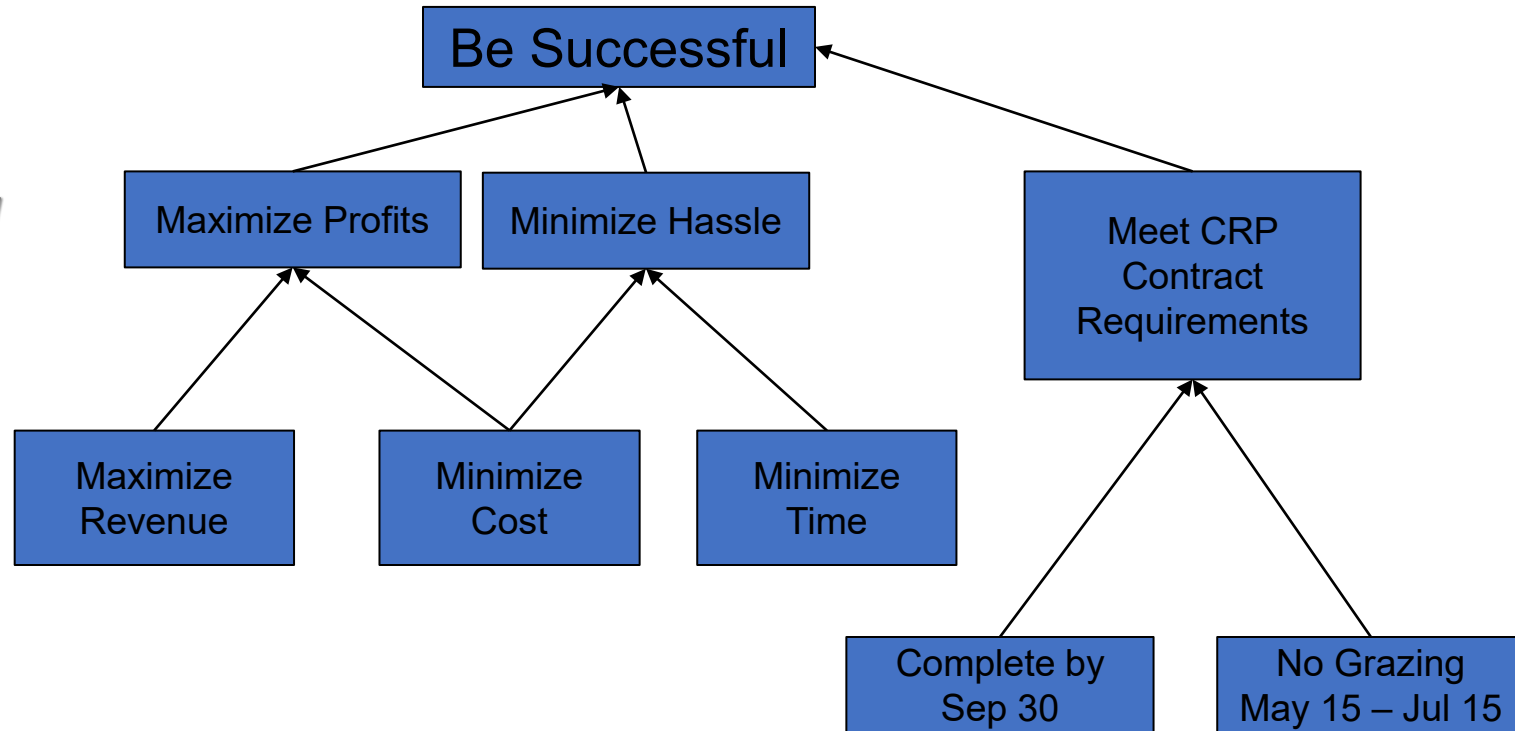
Maximize
Revenue

Minimize
Cost

Minimize
Time

Complete by
Sep 30

No Grazing
May 15 – Jul 15



Establish the Context

Internal Context:

Good water source for livestock
No fencing
Grazing practice approved with FSA
Good nearby grass can be used too
Growing wheat nearby
I don't have cattle but renter does
Renter relationship is good
Good relationship with FSA office
Spring is a busy time
Long distance to property

External Context:

Nearby road provides access
Cattle markets are down
Hay prices are down
Grazing land is fairly expensive
Strict CRP rules within FSA



Risk Identification

Risk and Uncertainties:

Time required could vary greatly

Extra expenses

Weather could affect production performance and land condition

Livestock markets could go up or down

Animal handling liability

FSA could view practice unfavorably or favorably

Uncertain future value of any investments

NOTE: Recognize linked decisions and timing of those decisions relative to risk and uncertainty



Objectives Hierarchy

Primary

Be Successful

Fundamental

Maximize Profits

Minimize Risk

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Means

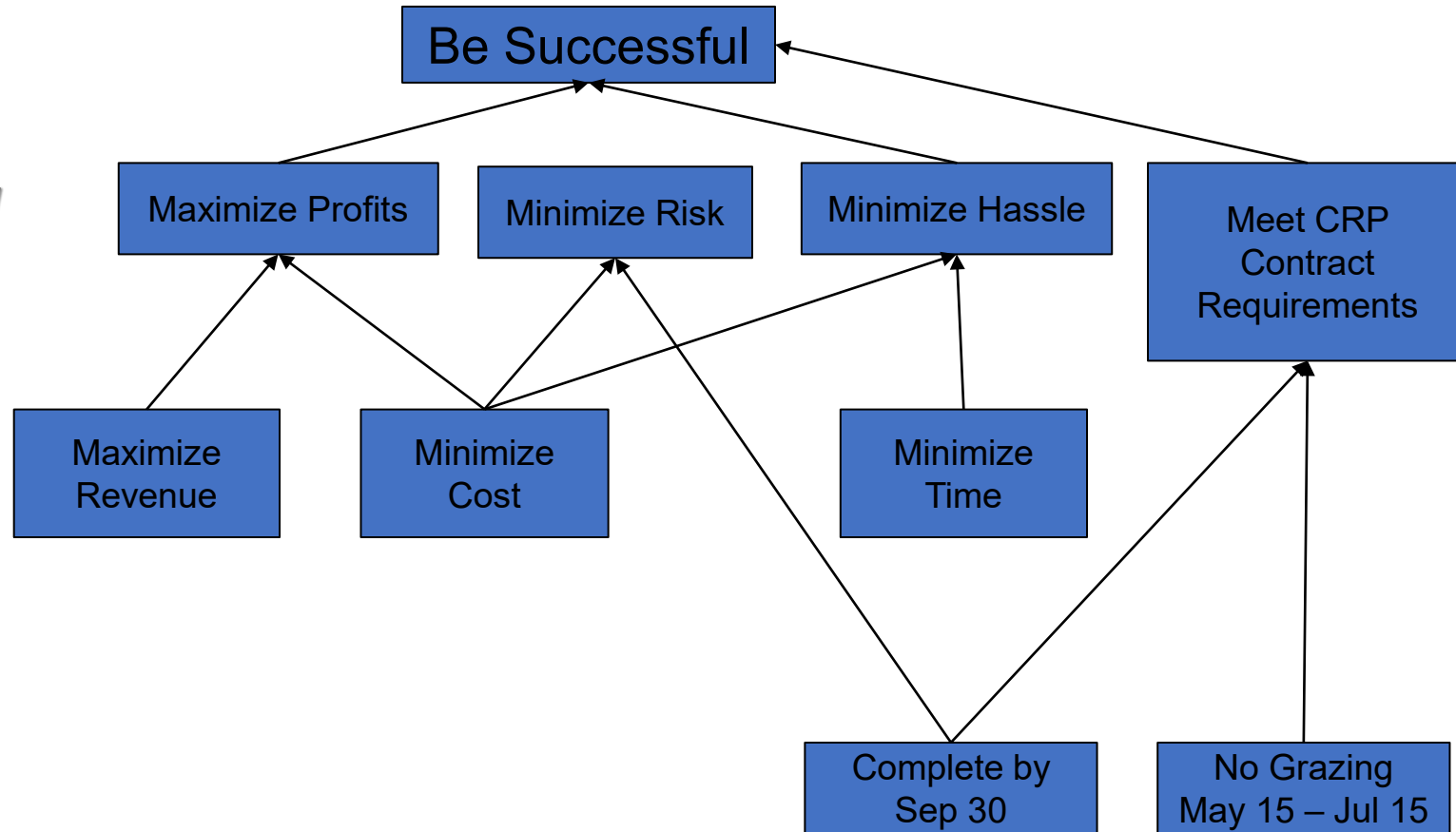
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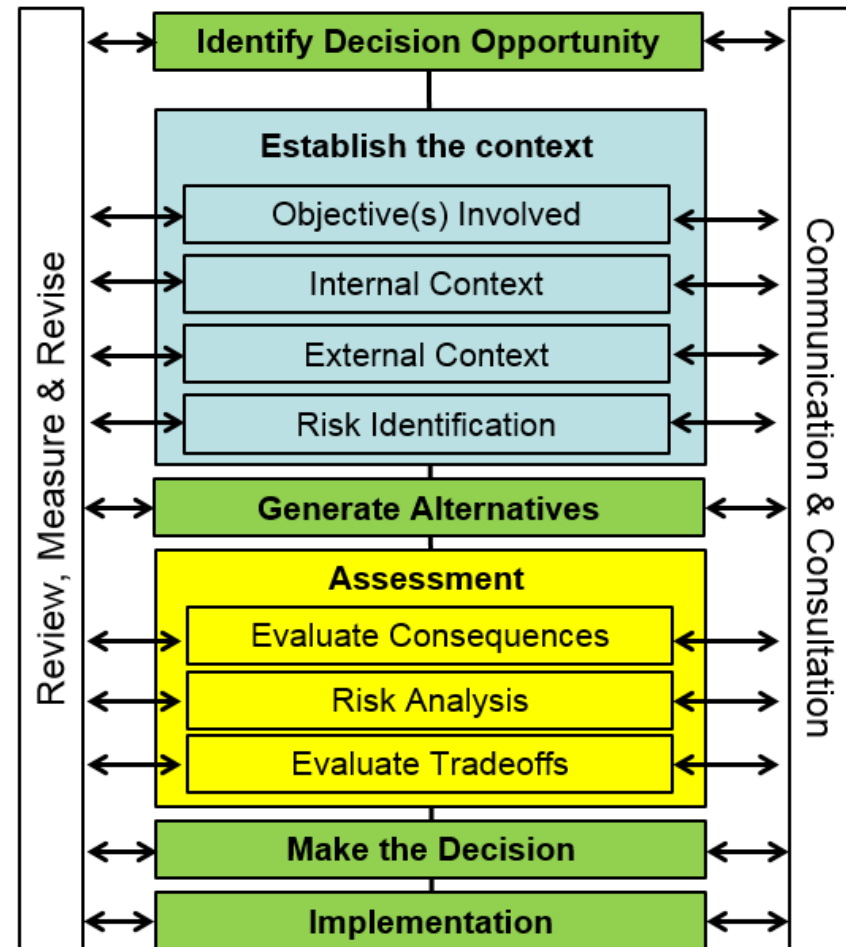
Complete by
Sep 30

No Grazing
May 15 – Jul 15



Generate Alternatives

1. *Have renter run cattle on it and temporary fence it*
2. *Advertise and rent to the highest bidder without fencing in place*
3. *Get stocker cattle of my own and graze it (temporary fencing installed)*
4. *Install fence and then advertise for late summer grazing*
5. *Approach FSA about alternatives other than grazing*
6. *Partner with renter on livestock purchase and grazing arrangement*



Evaluate Consequences

Risk:		Risk Analysis									
		Consequences				Risk Sources (+ uncertainty)					
Alternatives		Sep 30	May-Jul	Time	Profit	Market	Production	Institutional	Human	Financial	
	1.	Renter/temp fence	2	2	0	0			+		
	2.	Highest bidder/no fence	1	1	1	1600	+	+	++		
	3.	Own stockers/temp fence	2	1	3	2600	+++	+++	*	++	++
	4.	Install fence/advertise	3	1	2	3000*	+	+	++	+	+++
	5.	Approach FSA/alt.	1	1	2	-1000			+		+
	6.	Partner with renter	2	2	1	1300	++	++	+	+	+

***Fence amortized over 30 years**

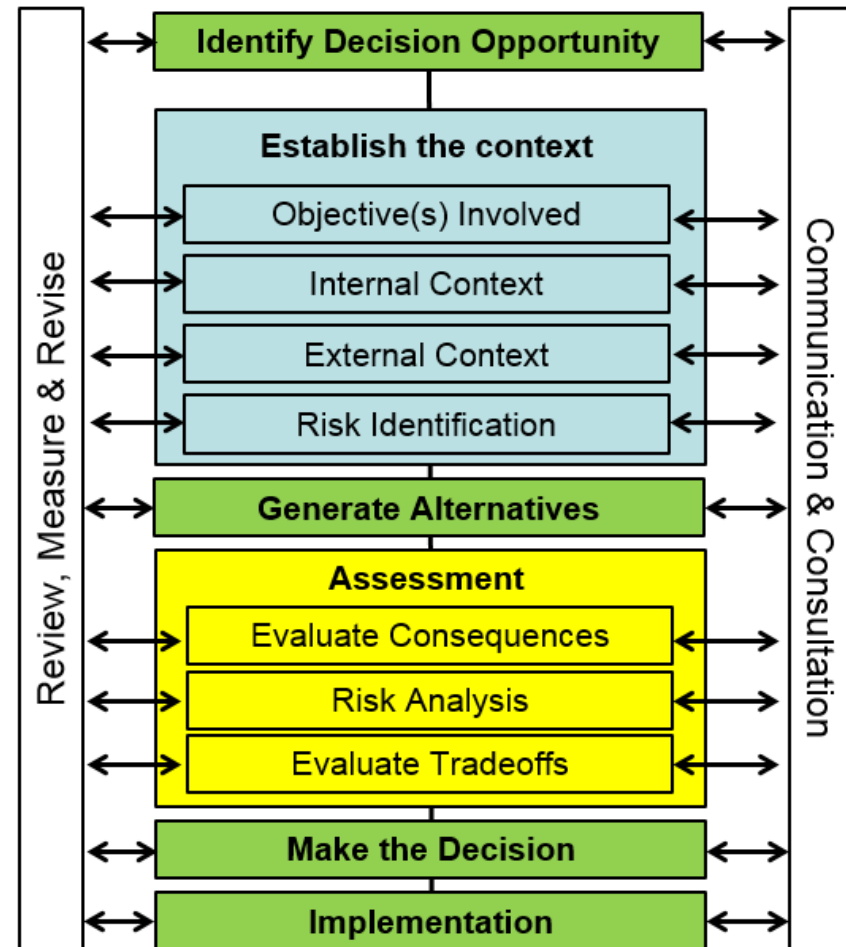
Sep 30, May-Jul, Time – lower number is better

Risk – fewer stars is better



Evaluate Tradeoffs

- Look to simplify decision
 - Eliminate dominated alternatives using pairwise comparisons
 - Create/ignore irrelevant objectives
- Fully incorporate risk and uncertainty
 - Risk tolerance and upside opportunity
 - Linked decisions



Evaluate Tradeoffs

Risk:		Risk Analysis									
		Consequences				Risk Sources (+ uncertainty)					
Alternatives		Sep 30	May-Jul	Time	Profit	Market	Production	Institutional	Human	Financial	
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	5.	Approach FSA/alt.	1	1	2	-1000			+		+

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Evaluate Tradeoffs

Risk:		Risk Analysis									
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	1.	<i>Renter/temp fence</i>	1	1	0			+			
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Evaluate Tradeoffs

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Evaluate Tradeoffs

Risk:		Risk Analysis				
Alternatives						
	1. <i>Renter/temp fence</i>	Time	Profit			
	2. <i>Highest bidder/no fence</i>	1	0			
	3. <i>Approach FSA/alt.</i>	1	1600			
		2	-1000			
		Risk Sources (+ uncertainty)				
		Market	Production	Institutional	Human	Financial
				+		
		+	+	++		
				+		+

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Evaluate Tradeoffs

Risk:

Risk Analysis

Alternatives

1. Renter/temp fence

2. Highest bidder/no fence

	Time	Profit
1	1	0
2	1	1600

Risk Sources (+ uncertainty)				
Market	Production	Institutional	Human	Financial
		+		
+	+	++		

What about my relationship risk with the renter?

- a. I want it to be good.
- b. This implies another objective.

***Fence amortized over 30 years**

Sep 30, May-Jul, Time – lower number is better

Risk – fewer stars is better



Objectives

Must be done by Sep. 30

Cannot graze from May 15 to July 15

Don't want it to be too big of hassle (low time)

Don't want it to cost too much & prefer to make money (higher profit)

Don't want to take on too much risk

Want a good relationship with renter to continue

Decision:

- 1. Offer it to renter to put a temporary fence up and run cattle at no charge***



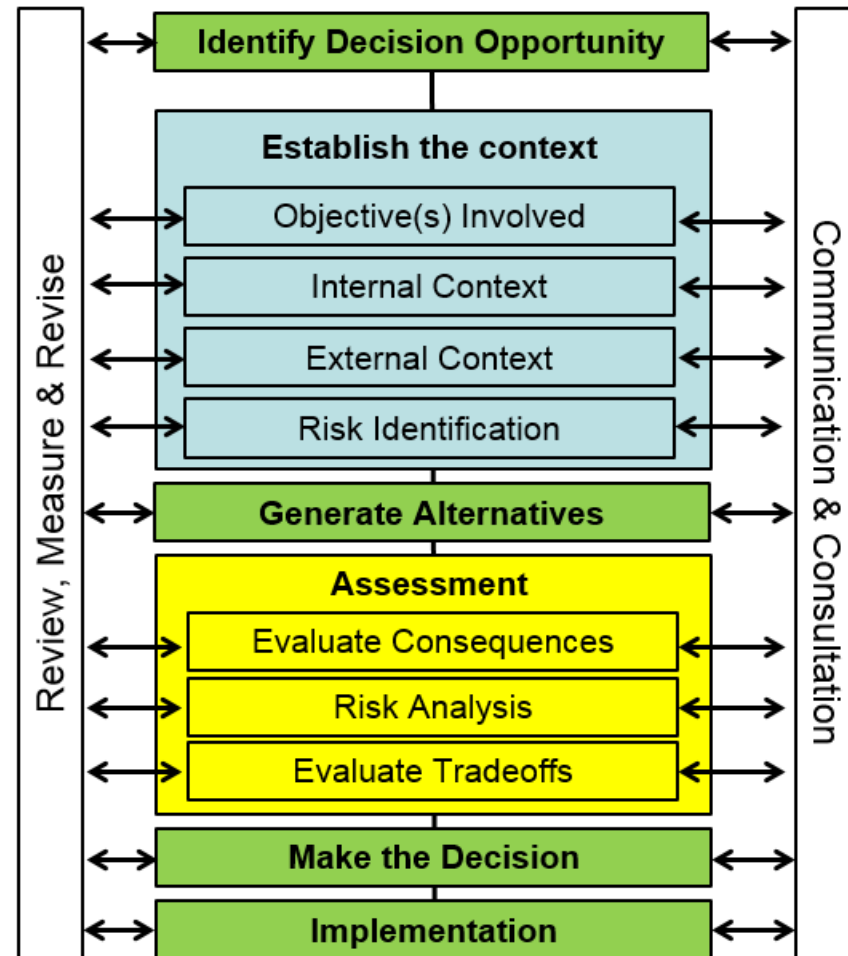
Some Important Decisions

- Strategic decisions guide future decisions in the direction of long-term goals and objectives.
- Irreversible decisions are difficult or impossible to completely undo
 - Irreversible decisions should be made with great care.
 - The most important aspect of doing so is making sure the irreversible choices that are made align with the overall management strategies.



Smart Choices in Agriculture

- A decision-making process focused on creating desired outcomes more consistently while establishing a good risk management culture.
- It provides a robust decision-making framework while building proactive decision-making skills.



Take Home Points

- Good decision-making skills can be learned.
- Focus on accomplishing objectives.
 - Proactively look for opportunities to make smart choices that lead to achieving objectives.
 - Systematically seek, process and evaluate information
- Embrace uncertainty
 - Imbed in decision making
 - Opportunity to manage to an advantage





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THANK YOU!

