

User's Guide Innovation Planner Card Deck

Center For Advantage™



**INNOVATION
PLANNER™**



IDEATION
INTERNATIONAL INC

**Strategies and Solutions
for Innovators**

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Introduction

Qualifications

- The content in the *Innovation Planner Card Deck* is based on the Ideation TRIZ innovation methodology that was derived from the analysis of over 3 million patents and 500 standard patterns of technical evolution
- The product comprehensively describes the principles from which all inventions are derived



Why was the *Innovation Planner Card Deck* written?

- The *Innovation Planner Card Deck* was written to help individuals and organizations develop the critical innovation skills they need to turn challenges and adversity into success



How does the *Innovation Planner Card Deck* work?



- The *Innovation Planner Card Deck* organizes inventive principles into distinct categories yet leaves inventors free to apply and combine them as they wish

Just as a musical instrument allows a composer to create music from existing scales

and notes, the Innovation Planner Card Deck allows inventors to create new inventions from existing principles of invention



Who is the *Innovation Planner Card Deck* for?

- Inventors
- Entrepreneurs
- Product Developers
- Engineers
- IP Professionals



The Innovation Planner is a low-tech but high-content tool that is in use at some of the most technically savvy companies in the world

Why is the *Innovation Planner Card Deck* Necessary?

- Innovation is a core skill central to the evolution of human intelligence and society
- People who know how to innovate better than their rivals tend to be more successful than their rivals
- The *Innovation Planner Card Deck* makes the fundamentals of innovation exceedingly clear



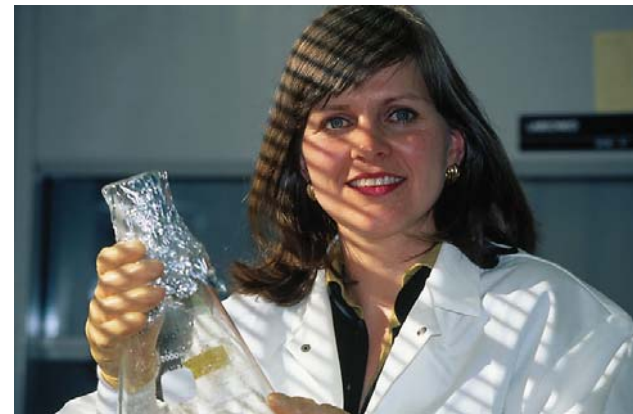
Why should I use the *Innovation Planner Card Deck*?

- When you know how to innovate, you know how to change your world
- When you know how to change your world, you need not depend upon the ideas of others to succeed...
- ...and yet you will be better able to use the ideas of others in combination with your own
- *You will also have better access to the ideas of others because you have ideas of your own to trade*



Why should I use the *Innovation Planner Card Deck*? 2

- Innovation is also a matter of survival in an increasingly competitive world
- As innovation moves from an art to a science, it has become more accessible to people around the globe
- The best way to ensure that you succeed over your rivals is to embrace the science of innovation and find better, faster, and cheaper ways for your customers to succeed



How should I use the *Innovation Planner Card Deck*

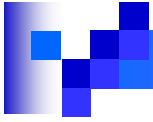


- Review the *Innovation Planner Card Deck* when you develop new ideas
 - Review the cards when problem solving
 - Review the cards when developing products
 - Review the cards when documenting intellectual property
- *It's not that each idea presented in the Innovation Planner Card Deck will be new to you, but that the cards bring the core inventive ideas to the top of your mind where you can reliably use them*

Advantage of the Card Approach



- Over books – Cards provide structure yet also provide flexibility that is difficult to achieve with a fixed sequence of pages
- Over computers – Despite all their capacity to network, computers are isolating devices, while cards tend to be collaborative devices that also happen to work well in isolation



The *Innovation Planner Card Deck* uses the state-of-the-art in innovation science for its content

*It highlights the fundamental principles of innovation
without compromising the subtleties of thought the best
inventors use to turn ideas into gold*



Card Set Description





Contents

- Each Innovation Planner Card Deck contains 166 unique cards
- Within these 166 cards there are seven card types
- These seven card types are named and defined on the following pages





7 Card Types: Back Designs





7 Card Types: Definitions

1. **Operators** – Solutions for systems that provide the ways to solve problems – 85 cards
2. **Resources** – Properties and attributes of systems that provide the means to solve problems – 37 cards
3. **Center of Gravity** – Location within the system where a solution is or could be applied – 16 cards
4. **Concept** – Idea behind how the problem will be solved – 7 cards
5. **Decision Cycle** – Strategic parameters of how the problem will be solved – 7 cards
6. **Organizational Resources** – The capacity of the supporting organization to provide the ways and means to solve problems (These are solution constraints.) – 9 cards
7. **Resolve Contradictions** – Methods for which a system can exhibit two or more conflicting properties or attributes – 5 cards

Card Layout



- **Each card has 5 parts**
 1. **Title** – Core idea
 2. **Type** – What the card describes
 3. **Strategy** – Definition of the strategy
 4. **Basis** – Why the strategy works
 5. **Question** – Link between the idea and a mechanism of action

123

**PROVIDE
FOR
SELF-SERVICE**

OPERATOR
Increase Controllability

Strategy – Free up resources by configuring the system to do or support its own required work.

Basis – Automated devices, plus the use of otherwise wasted material and energy, can reduce operational costs.

Question – How might the system service itself?



Linkages Between Cards

- Each card represents an idea
- Any given card could provide the means to make the idea on another card work
- The following pages show an example progression where one card links to the next to produce a solution

*Each card is like a single note on a piano
Infinite possible combinations of cards create
the melody that is the invention*

Example Progression



- While brainstorming ways to improve my product, I might decide to “Increase User Friendliness” (Card 57) so it is appealing to more buyers
- How might I make my product easier to use?

57

**INCREASE
USER
FRIENDLINESS**

OPERATOR
Improve Usefulness

Strategy – Present the benefits from the system in a way that demands less from the user.

Basis – Resources no longer required to attain a benefit can be used for other purposes.

Question – How might I make the system easier to use?

Example Progression



- Perhaps I can improve the instrument of control (Card 17) so that my product is easier for customers to use
- How might I improve the instrument of control (to make it easier to use)?

17

IMPROVE THE INSTRUMENT OF CONTROL

CENTER OF GRAVITY

Strategy – Advance the system by enhancing or optimizing the element that responds to or enacts commands.

Basis – The Instrument of control determines the capacity of the system to turn useful action into useful results.

Question – How might I Improve the Instrument of control in my system?

Example Progression



- Perhaps I can provide self-service (Card 123) for some of the elements of control so my prospective customers do not have to worry about them
- How might the system service itself (in order to improve the instrument of control (to increase user friendliness))?

123

PROVIDE FOR SELF-SERVICE

OPERATOR
Increase Controllability

Strategy – Free up resources by configuring the system to do or support its own required work.

Basis – Automated devices, plus the use of otherwise wasted material and energy, can reduce operational costs.

Question – How might the system service itself?

Example Progression



- Perhaps I use properties inherent in the system to convey information to a computer that provides automatic controls (Card 139)
- *This process continues until you find your solution*

139

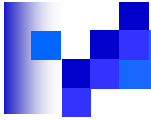
USE PROPERTIES TO CONVEY INFORMATION

RESOURCE
Information

Strategy – Leverage detectable characteristics of the system to communicate with other systems.

Basis – Energy emitted from or interacting with a system can be detected by other systems.

Question – How might I use the properties of a system to convey useful information?



Total Solution

- In this example I build my total solution around the four cards 57, 17, 123, and 139:

57

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Question – How might I use the properties of a system to convey useful information?

- *This progression, for example, might have helped a camera designer create a camera that uses available light to adjust shot exposure automatically*



Core Ideas

Core Ideas

- The *Innovation Planner Card Deck* is a highly flexible tool with a wide variety of applications
- The following are core ideas designed into the product plus a more detailed description of the corresponding card types that will make it easier to use them to develop your own unique applications



Operator Cards



- All inventions do one or a combination of the 85 inventive principles shown in the Operator cards
- They represent the building blocks of all inventions
- As an innovator, combine operators in an infinite variety of ways to create and develop your solutions
- Operator cards eliminate the need to reinvent or remember inventive principles during each new innovation session
- Innovators can focus on creating the solution instead of also creating the building blocks for the solution

Resource Cards



- All inventions are systems
- Resource cards describe the properties and attributes within a system and its environment that inventors can apply to make the operators function
- An idea stays an idea until you apply a resource to make the idea work

Center of Gravity Cards



- The center of gravity is where, within the system that is an invention, you apply inventive effort to achieve a result
- All systems have:
 1. A working body
 2. An energy source
 3. A transmission of the energy source to the working body
 4. An instrument of control
- Any of these four elements and more provide centers of gravity that inventors can use to focus their inventive efforts

Concept Cards



- Concept is the underlying idea behind how a problem will be solved
- All inventions tend to evolve toward ideality – an invention that delivers an intended result without an underlying mechanism (*All benefit and no harm*)
- Commercially successful inventions tend to reside at the point of optimal – an invention that is neither too good nor not good enough to fulfill its purpose
- Ideality is a fixed target that a state-of-the-art invention rarely actually achieves
- The optimal is a variable target that evolves as other elements of systems evolve (*good enough today may not be good enough tomorrow*)

Decision Cycle Cards



- Decision cycles represent the strategic parameters for both how and why a problem will be solved
- They define the strategic purpose for creating the invention and the nature of the solution
- The most competitive organizations tend to operate at a higher tempo than other organizations
- The application of Decision Cycle cards helps innovating individuals and organizations innovate and operate at a higher tempo than their rivals

Organizational Resource Cards



- Organizational resources serve to identify constraints associated with inventing
- Inventors necessarily operate within certain constraints such as money and time
- The inventor must either succeed within a given constraint or change the constraint
- Rival organizations will have different constraints and therefore different advantages and disadvantages

Resolve Contradictions Cards



- Inventors solve problems
- Problems tend to arise when one condition in a system conflicts with another condition
- Resolve contradiction cards describe the types of conflicting conditions and how, as a rule, to solve them
- For example, by separating physical characteristics in time, a chair can be extended for sitting at one time and folded up flat for easy storage at another time
- Resolve Contradictions Cards serve as a guideline to help define objectives and how the problem will be considered resolved



Methods of Use

Methods of Use

- Number of users

- Single – One individual using the cards
- Group – Several individuals using the cards
- Team – Several groups of individuals using the cards

- Two primary methods

- Systematic card review
- Brainstorming



Systematic Card Review

- Identify a problem or challenge
- Systematically review the Operator and Resource cards to find a solution
- Use the other five types of cards to better define the problem, limitations, and the solution approach



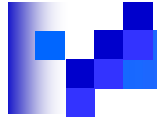
Brainstorming

- Recommended variation follows:
 1. Shuffle the Operator and Resource cards
 2. Deal 5 Operator and 3 Resource cards to each individual, group, or team
 3. Collect ideas from participants based on the cards they have been dealt
 4. The facilitator uses the other five card types to direct the course of the brainstorming session





Applications



Applications

- Problem Solving
- Product Improvement
- Technical Analysis & Evolution
- Intellectual Property Development
- Strategic Planning

Problem Solving

- Identify the problem, its cause, and its effect
- Include the causes of the cause and the effects of the effect if useful
- Systematically review cards or brainstorm until you satisfactorily address the problem, its cause, or its effect



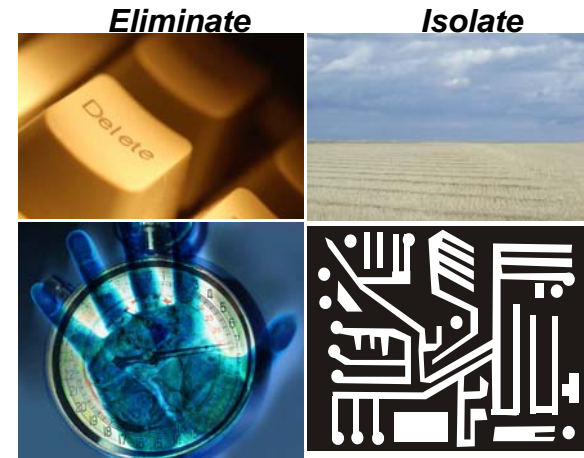
Solution Space for Problems

- Inventions solve problems in one of four ways
- If problem equals gap and solution equals bridge then your solution space is:
 1. How you make the bridge
 2. How you bridge the gap
 3. How you cross the bridge
(direct or reverse solution)
 4. How you negate the need to bridge the gap



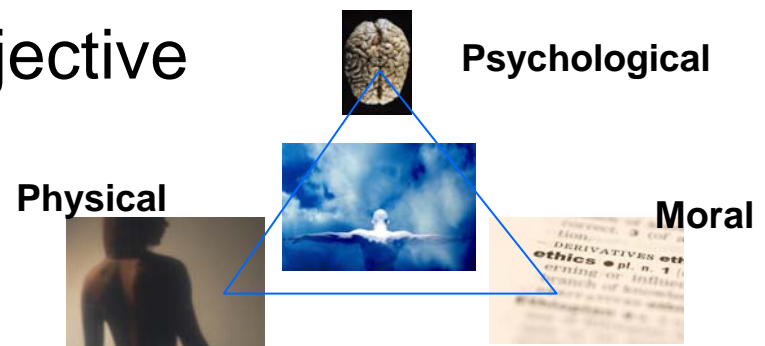
Solution Goal

- A problem can be considered solved if you arrive at and can accept one of the four conclusions:
 1. Eliminate the problem – the problem no longer exists
 2. Isolate the problem – the problem is contained
 3. Integrate the problem – the problem is converted into a benefit
 4. Negate the problem – the problem is made irrelevant



Three Solution Components

- A total solution has three components which need to be in alignment for long-term success
 1. The Physical Solution – logical evidence that the objective is accomplished
 2. The Psychological Solution – belief that the objective is accomplished
 3. The Moral Solution – objective is accomplished in an acceptable manner



Problem Solving Example

- Problem: A boat cannot carry enough cargo to make a profit at the other shore
- A systematic review of solutions suggests the following examples among many possibilities:
 - Build a boat that can carry more cargo (Cards 82, 145)
 - Build a faster or more efficient boat (Cards 112, 163, 165)
 - Have the buyers on the other shore bring the cargo back on their boats (Cards 68, 76, 78)
 - Build the cargo on the other shore (Cards 1, 47, 50)



See next slide for card titles



Card Titles from the Example

- Card 82 – GO ALL THE WAY
- Card 145 – APPLY OR ALTER A MATERIAL OBJECT
- Card 112 – PERFORM RISKY OPERATIONS QUICKLY
- Card 163 – ELIMINATE WASTED TIME
- Card 165 – CHANGE THE PACE OF THE ACTION
- Card 68 – REDIRECT THE PROBLEM
- Card 76 – USE THE REVERSE ACTION
- Card 78 – MOVE THE OTHER OBJECT
- Card 1 – ELIMINATE THE PROBLEM
- Card 47 – BREAK A LINK IN THE CHAIN
- Card 50 – REMOVE HARMFUL PARTS

Invention Improvement

- Select an invention you would like to improve (For example a cell phone)
- Do one of the following or both:
 1. Systematically review each Operator and Resource card as it applies to a given invention
 2. Brainstorm
- Record all possible improvements that come to light
- Improve the invention
- Option: Write these improvements into the claims of a patent



Invention Improvement Example

- Through a Brainstorming exercise, a regular cell phone becomes the “Amber Alert” cell phone. It will call the guardian (Card 76) using a special ring tone (Card 121) if the phone has moved from where the child should be (Cards 119, 120) or if it no longer detects (or detects abnormal) biological signals from the child (Card 139). Put a GPS into the phone so the guardian can track the child’s whereabouts (Card 158).



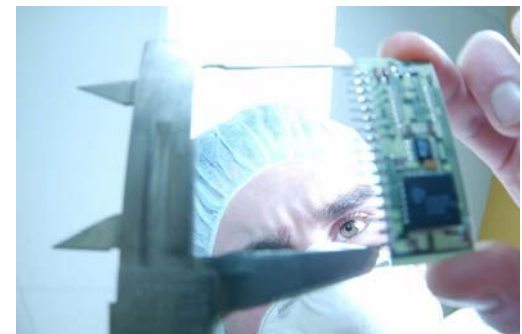


Card Titles from the Example

- Card 76 USE THE REVERSE ACTION
- Card 121 DESIGN FOR VARIABLE OUTPUT
- Card 119 ALLOW BOTH FLEXIBILITY AND REGIDITY
- CARD 120 ALLOW PARTIAL MOBILITY
- CARD 139 USE PROPERTIES TO CONVEY INFORMATION
- CARD 158 EXPAND THE RANGE OF OPTIONS

Technical Analysis & Evolution

- Describe the ideal solution to a problem so that the solution provides all benefits and no drawbacks
- Identify the current state-of-the-art for that solution
- Follow the steps for Invention Improvement to make the state-of-the-art closer to ideal
- Brainstorm on breakthrough ideas in the Solution Space for Problems
- Conduct Invention Improvement on the breakthrough ideas that move them closer to the ideal
- Map these progressions to the ideal





Technical Analysis & Evolution Considerations

- Inventions tend to evolve to improve benefits of:
 - Speed
 - Efficiency
 - Effectiveness
 - Convenience
 - Cost
 - Reduced Harmful Impact
 - Appeal
- Appeal is the wildcard since it is oriented around the Three Solution Components
- Appeal can develop:
 1. because of a physical improvement
 2. because of a psychological factor (that may run counter to ideality)
 3. because it is morally the right way

Case Example: A Technical Progression toward Ideality

■ Cross Atlantic travel state-of-the-art

- Sailing ship
- Powered ship
- Propeller airplane
- Jet plane – *speed is limited by moral considerations concerning environmental damage of SST*
- ? What is next

Partial solution toward ideality



- Instant travel:
 - Sound
 - Sound and video
 - ? What is next



Intellectual Property Development

- Follow the steps detailed on Invention Improvement
- Record the ideas to include date reference
- Review ideas for disclosure or inclusion in claims

To create a patent picket fence, do this same exercise with competitive inventions



Case Example: Cell Phone Improvement

- Some examples of possible incremental improvements include:

Card 76: USE THE REVERSE ACTION
(Amber Alert Cell Phone)

Card 150: SUBSTITUTE AN INEXPENSIVE MATERIAL
(Disposable phone)

Card 66: COMPENSATE FOR UNRELIABILITY
(Cell phone with land line connector)

Card 45: REMOVE UNNECESSARY PARTS
(Car built-in cell phone)



Card 100: OBTAIN THE BEST OF BOTH
(PDA that acts as a cell phone)

Card 113: CHANGE COLORS
(Multiple covers)

Teaching Innovation



Teaching Points

- Each card has four points about inventing that you can talk to
- There are 664 teaching points in total within all 166 cards



University Training

- The *Innovation Planner Card Deck* helps students apply the science and engineering techniques they have learned in class
- Students can use them to develop their own right answers to case problems you present
- Tell students what you want them to do, not how you want them to do it, and they will surprise you with their ingenuity



Creativity Training



- Just as wooden blocks provide a tool for children to express their creativity, the *Innovation Planner Card Deck* provides “idea blocks” for people of all ages to build new inventions
- The *Innovation Planner Card Deck* presents inventive principles that have already been identified so that students can focus on creating something new (i.e. they do not need to reinvent the analogous blocks)
- Apply the ideas described in the Methods of Use section of this Users’ Guide to problems given to your students and let them free to create

Games

- All the applications described in the applications section of this user's guide can be played as games
- The individual or team that provides the best solution or best new idea wins (typically decided by group consensus)
- See www.innovationplannercards.com for a complete description of the Evolve It™ game



TRIZ



- The *Innovation Planner Card Deck* can be used in the instruction of TRIZ
- TRIZ is the Russian acronym for Theory of Inventive Principle
- TRIZ is considered one of the most powerful general purpose innovation sciences yet devised anywhere in the world
- The *Innovation Planner Card Deck* is based on Ideation International I-TRIZ, which is itself an advancement over Classical TRIZ

Habit Breaking

- When faced with a problem, people tend to fall back on the solutions they know or solutions that worked before
- These familiar solutions are not always the best solutions for a given situation
- The *Innovation Planner Card Deck* allows you to quickly consider solutions that you might recognize when you see them, but that might not otherwise be at the top of your mind
- By reviewing the cards, you have the opportunity to develop ideas you might not normally consider





Supplementary Applications

Supplementary Applications

- Strategic Planning: Effects Based Operations (EBO)
- Solution Sales



Strategic Planning: Effects Based Operations (EBO)

- The *Innovation Planner Card Deck* incorporates powerful Effects Based Operations ideas that have evolved concepts similar to TRIZ
- For this reason, the *Innovation Planner Card Deck* is useful for strategic planning and threat assessment
- EBO is being researched by such institutions as RAND and the National Defense University, as well as Center For Advantage that is exploring business aspects of EBO and works with the National Defense University





TRIZ and EBO Link

- TRIZ and EBO share the philosophy that in the ideal solution, you obtain the result you want without an underlying mechanism

The Chinese philosopher Lao Tzu summed ideality up 2,500 years ago when he said, “Nothing is done, yet nothing is left undone.”

Strategic Planning



- Combine the *Innovation Planner Card Deck* with the Center For Advantage *Art of War: Sun Tzu Strategy Card Deck* and you have a powerful training and operational tool to develop breakthrough strategies in accord with EBO principles
- The *Art of War: Sun Tzu Strategy Card Deck* focuses on what to do, and the *Innovation Planner Card Deck* helps you find the best way to do it
- Ask what is your desired result
- Ask how you can achieve that result
- Choose the best method within your tolerance for risk

Strategic Planning

- Develop your strategy in accord with your planning format
- An example format is:
 - Situation – what is happening
 - Mission – what do you want to accomplish
 - Intent – what is the desired result
 - Execution – what do you do as a whole
 - Sub-unit Execution – what do individuals and teams do
 - Service and Support – what and where are resources
 - Communications – how do we coordinate our action



Solution Sales



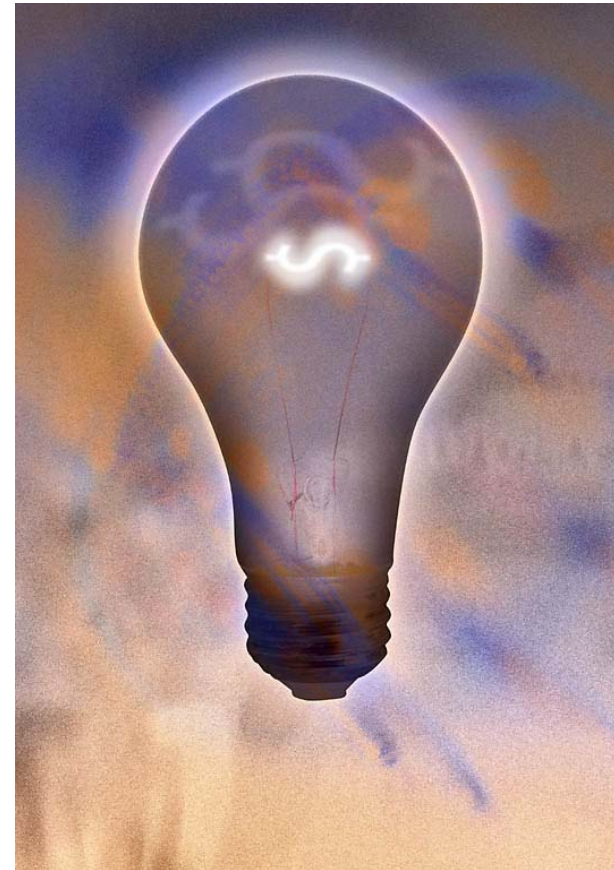
- Combine the *Innovation Planner Card Deck* with *The Sales Strategy Fundamentals* and you have a powerful tool for solutions sales
- To succeed in solution sales, salespeople help customers define and solve problems
- To succeed at solution sales, salespeople need to know both how to sell and how to innovate
- The closer a salesperson can derive an optimal solution for his or her customer, the more likely he or she is to obtain the sale

Solution Sales

- Define the problem the customer wished to solve
- Use the card set combination to develop appropriate solutions within your product suit
- Use the card combination to explore complementary solutions outside your product suit
- Combine the two for a total solution
- Propose the total solution to the customer
- Seek to offer the optimal solution that is neither too good nor not good enough



May the Next
Breakthrough
Idea be Yours!!!



Contact Details

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INNOVATION
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IDEATION
INTERNATIONAL INC
Strategies and Solutions
for Innovators



■ Card Products

Center For Advantage

www.centerforadvantage.com

- Art of War: Sun Tzu Strategy Card Deck

www.artofwarcards.com

- Innovation Planner Cards

www.innovationplannercards.com

- The Sales Strategy Fundamentals

www.fundamentalsales.com

Book by Robert Cantrell

www.artofwarsuntzu.com

Heartland Reviews

As a retired military intelligence professional and conflict theorist, I must say this is the best interpretation of Sun Tzu's classic work I have read. The author focuses on the meanings behind this ancient Chinese war philosopher's writings. He puts them into a modern context, making them easy to understand. Apparently the Department of Defense agrees with me on this, since they have selected Mr. Cantrell's book as a text for the National War College in Washington DC. This is a must read for all military officers and business leaders. It rated a perfect five hearts.

Bob Spear

*Publisher and Chief Reviewer for
Heartland Reviews, Leavenworth, KS*

