

# Advanced Techniques

## AI Model Types

- Text: Complex reasoning, multi-turn conversation, specialized domain knowledge.
- Image: Hybrid concept mapping (like advanced system architecture diagrams).
- Audio: Multi-step instructions or advanced scenario-based training.
- Multimodal: Combine texts, images, and annotated instructions in a single session.

## Prompt Engineering Fundamentals

- Zero-Shot: Useful for quick advanced tasks if you trust the model's general ability.
- Few-Shot: Provide small curated examples to refine advanced tasks (like contract prototypes).
- Chain-of-Thought: "Explain each reasoning step in detail."
- System-Level Prompting: Set an overarching instruction for consistent style or logic across a long session.

## Prompt Structure Templates

- Multi-turn: "Ask clarifying questions first, then provide a final SOW draft."
- System + User: "System: Always use formal tone. User: Summarize the market research..."
- Chain-of-Thought: "Step by step, detail your logic to evaluate compliance."
- Hypothesis Testing: "Propose a hypothesis, test it with given data, and conclude."
- Scenario Simulation: "Simulate a negotiation scenario and respond to user queries."
- Complex Integration: "Combine risk analysis and schedule forecasting in a single overview."
- Iterative: "Draft a solution, gather feedback, then refine accordingly."

## Do's and Don'ts

Do:

- Break down complex tasks: multi-turn or chain-of-thought.
- Use system prompts to control style or domain specificity.

Don't:

- Let large, multi-step queries go unstructured—guide the model.
- Assume chain-of-thought is always correct; verify with SMEs.

## Use Case Examples

- Systemic Planning: Holistic source selection with cost, schedule, and risk factors simultaneously.
- Long-Form Deliverables: Creating entire strategy docs with iterative revision.
- Deep Analysis: Combining multiple data sets, cross-referencing regulations, or multi-part tasks.

## Evaluation Methods

- Multi-Pass Review: Evaluate interim steps and final output.
- Expert Scrutiny: Particularly for compliance-heavy or sensitive tasks.
- Stress Testing: Provide new scenarios or conflicting inputs to see if the logic holds.

## Prompt Collection

### Content Creation

1. "Draft a full acquisition strategy (3–5 pages) that covers contract type, evaluation criteria, and risk management."
2. "Iteratively build a program management plan: start with objectives, then ask clarifying questions before finalizing."
3. "Create a chain-of-thought explanation for why we should choose a multiple-award IDIQ contract."
4. "Compose a scenario-based training document that walks users through a hypothetical negotiation."

### Data Analysis/Summarization

5. "Combine these 2 risk registers and 1 performance report into an integrated advanced risk analysis."
6. "Summarize a complex set of Earned Value Management (EVM) data and produce a forecast."
7. "Cross-reference compliance logs with schedule metrics to find hidden correlations."
8. "Provide a step-by-step reasoning for identifying anomalies across multiple vendor cost proposals."

### Code Generation

9. "Generate Python code to simulate different outcomes if certain risk factors occur mid-project."
10. "Write a script that merges text from multiple contract sections and flags repetitive clauses."
11. "Create a robust routine for regularly querying updated data sets for multi-turn AI analysis."

### Creative Ideation

12. "Brainstorm disruptive innovations in government acquisition, focusing on advanced AI integration."
13. "Suggest ways to combine chain-of-thought logic with crowdsourced SME reviews."
14. "Design a new cross-agency approach to accelerate complex source selections."

### Problem-Solving

15. "Outline a multi-turn approach to resolve major differences in an integrated product team's viewpoints."
16. "Propose a complex change management plan if we pivot from one AI system to another mid-contract."
17. "Use advanced scenario-based reasoning to identify the root cause of persistent schedule slips."

### Educational Purposes

18. "Create a mini-course explaining multi-turn conversation techniques for advanced AI users."
19. "Develop a 5-question advanced quiz on chain-of-thought prompting methods."
20. "Explain system-level prompting vs. user-level prompting with short use-case examples."