Comparison of Unified Process Model and Incremental Commitment Spiral Model

Aspect	Unified Process (UP)	Incremental Commitment Spiral Model (ICSM)
Development Approach	Use-case–driven, architecture-centric, iterative and incremental.	Risk-driven, iterative and incremental with explicit commitment points.
Iteration Structure	Four phases (Inception, Elaboration, Construction, Transition), each composed of multiple time-boxed iterations.	Multiple spirals; each spiral consists of cycles of risk analysis, prototyping, and evaluation leading to commitment decisions.
Risk Management	Implicit within Elaboration: architecture validation, use-case prioritization, and technical proof-of-concepts.	Central: each cycle begins with risk identification and ends with a commitment review.
Phase Gates / Decision Points	Milestones at the end of each phase (e.g., Lifecycle Objectives, Architecture).	Commitment points after each spiral cycle: decide to proceed, adjust objectives, or abort.
Architecture Focus	Strongly architecture-centric: early iterations establish and validate the baseline architecture.	Architecture emerges through successive risk-driven cycles.
Stakeholder Involvement	Stakeholders engage at phase milestones and during iteration reviews.	Continuous stakeholder reviews at each commitment point.
Requirements Handling	Requirements captured as use cases and prioritized; gradually elaborated.	Requirements evolve: high-risk addressed early, others deferred.
Documentation	Balanced: "just enough" models and artifacts refined per iteration.	Emphasizes lightweight documentation focused on risk assessments and decisions.
Flexibility & Change	Moderate: change within iterations; milestones expect scope consistency.	High: each cycle re-evaluates scope and objectives.
Best Suitability	Projects needing traceability, defined architecture early, moderate risk.	Complex, high-risk systems with evolving needs.
Advantages	- Clear structure and tools - Balanced discipline and agility	- Explicit risk management - Flexible scope - Continuous alignment
Disadvantages	- Can be heavyweight - Less explicit risk	- Requires rigorous risk skills

	management - Milestone overruns impact later phases	- Potential scope creep - May feel ad hoc

References

1. Kruchten, P. (2004). The Rational Unified Process: An Introduction. Addison-Wesley.

2. Boehm, B., & Lane, J. A. (2007). Using the Incremental Commitment Spiral Model to Integrate System Acquisition, Systems Engineering, and Software Engineering. CrossTalk, May/June 2007.