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**eReality: Constructing the eEconomy**

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**eCommerce & Life Cycle Integration**

**Panel Members:**

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**Abstract**

Conventional manufacturing and engineering theory has long recognized standard developmental models, such as the Waterfall Model, as a structured approach to systems development. This approach sees system development as a sequential

series of activities, the entry to the next phase dependent upon satisfactory completion of the preceding step. The approach is designed to minimize risk and cost.

Despite this, the standard waterfall model is associated with the failure or cancellation of a number of large systems. It can also be very expensive. As a result, the engineering and manufacturing community has experimented with a number of alternative approaches, including: Spiral Design (Go through waterfalls, starting with a very rough notion of the system and becoming more detailed over time); Modified Waterfalls (Waterfalls with Overlapping Phases; Waterfall with Subprojects); Evolutionary Prototyping (Start with initial concept, design and implement an initial prototype, iterate as needed through prototype refinement until acceptable, complete and release the acceptable prototype); Staged Delivery (Go through Concept, Requirements Analysis, and Architectural Design - then implement the pieces, showing them to the customer as the components are completed - and go back to the previous steps if needed); and Evolutionary Delivery (a cross between Evolutionary Prototyping and Staged Delivery).

Even with these innovations, and the increasing sophistication of development tools available to developers and manufacturers, many systems still fail to meet customer needs and expectations, on the grounds of affordability, maintainability or usability. Expensive failures persist. Why?

There is a growing understanding that conventional management approaches to system development are inadequate, in that they focus on technical and financial decision points in the system life cycle, and generate processes that serve these decision points, rather than the holistic requirements of the system throughout its life. For example, a decision to build a Nuclear Power Generation Plant, with a working life of perhaps 40 years, cannot ignore the costs and implications of safely decommissioning the plant at the end of its useful life. And yet, such decisions are often taken on the very narrow grounds of input cost (can we afford to build now?) and relatively short-term benefit (will we see an immediate decrease in operating or unit costs?).

An approach which recognizes and addresses the fundamental weakness in conventional approaches is, then, long overdue. The ISO community has been working on a new standard for system management, **ISO/IEC 15288-System Life Cycle Processes**. The framework of this standard encompasses the life cycle of man-made systems, spanning the conception of the ideas through to the retirement of the system. It provides the processes for acquiring and supplying system products and services that are configured from one or more of the following types of system components: hardware, software, and human interfaces. This framework also provides for the assessment and improvement of the life cycle. The fundamental difference between this and a conventional management framework is that the new standard recognizes that enterprise processes are concurrent and interdependent, rather than sequential, and reconciles the time domain (phases) with the process domain (activities). Adopting this framework would begin to address, for the first time, a structured method of assessing the full implications of system

development, and lead to the development of higher quality and more cost-effective systems.

This is an exciting opportunity. However, adopting this approach will also raise some very uncomfortable issues that must be addressed. These may be summarized as Legacy...legacy systems, legacy processes and legacy organizations. The very latest and most sophisticated aircraft, for example, may be dependent upon spare parts controlled by a 30-year old warehousing system.

Among the points that the Panel will discuss are:

- How should organizations react to the adoption of a Life-Cycle approach to system development?
- What processes need to be addressed or re-designed?
- How can we reconcile short-term decision making with long-term benefits?
- What is the role of the Project Manager in a Life-Cycle approach?
- How can we minimize the impact of legacy systems?
- What are the cultural implications of Life Cycle Management for an organization?

We look forward to a lively and informative debate on a topic that will impact developers, decision makers and users.