Exploration Supply Chain Simulation

Decision/Data Models and Analysis

The Exploration Supply Chain Simulation project was chartered by the NASA Exploration Systems Mission Directorate to develop a software tool, with proper data, to quantitatively analyze supply chains for future program planning. This tool is a discrete-event simulation that uses the basic supply chain concepts of planning, sourcing, making, delivering, and returning. This supply chain perspective is combined with other discrete or continuous simulation factors. Discrete resource events (such as launch or delivery reviews) are represented as organizational functional units. Continuous resources (such as civil service or contractor program functions) are defined as enabling functional units. Concepts of fixed and variable costs are included in the model to allow the discrete events to interact with cost calculations. The definition file is intrinsic to the model, but a blank start can be initiated at any time. The current definition file is an Orion Ares I crew launch vehicle. Parameters stretch from Kennedy Space Center across and into other program entities (Michaud Assembly Facility, Aliant Techsystems, Stennis Space Center, Johnson Space Center, etc.) though these will only gain detail as the file continues to evolve.

The Orion Ares I file definition in the tool continues to evolve, and analysis from this tool is expected in 2008. This is the first application of such business-driven modeling to a NASA/government–aerospace contractor endeavor.

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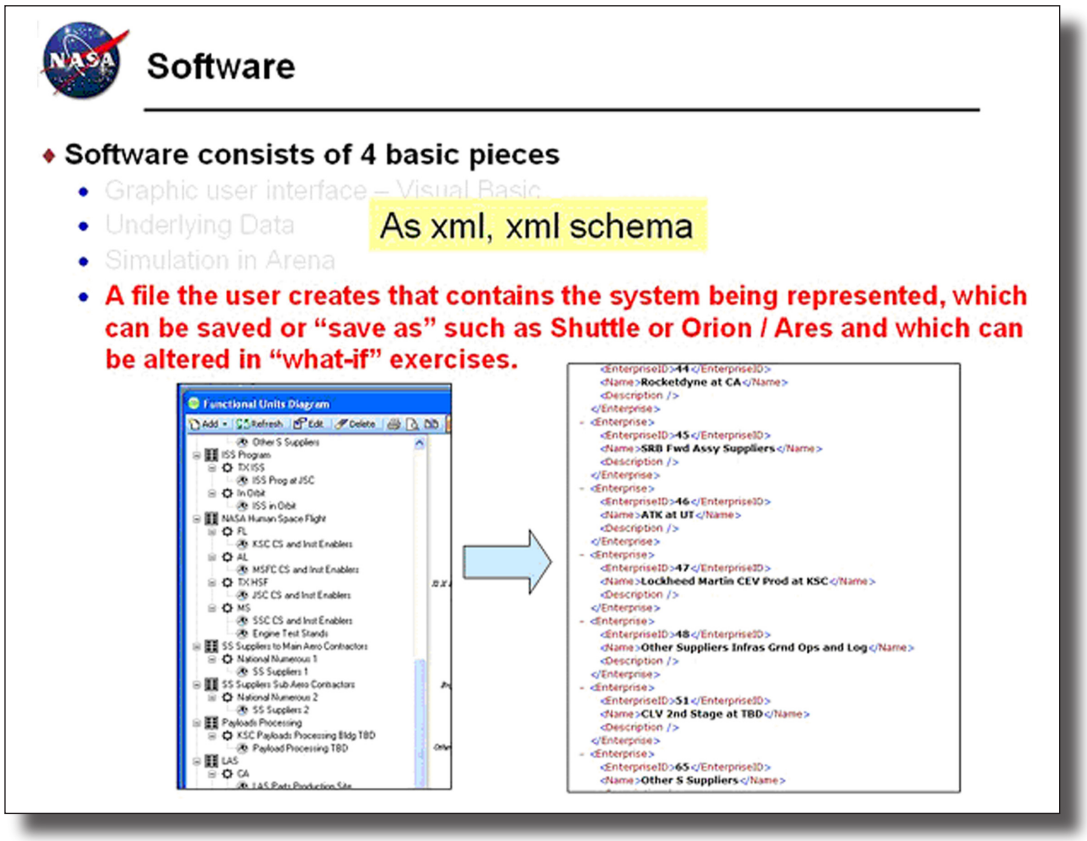

Representing the exploration supply chain: a collection of entities that partner together to achieve specific goals.