The history of system engineering and software modeling for the purpose of understanding unprecedented new system problem space and communicating the results of an analysis of that problem space in the form of specifications is about to come full circle. Starting in the 1950's with a fairly universal application of flow charts, we have evolved a series of models including MSA/PSARE, and UML/SysML to form three universal modeling approaches. There do seem to be a few pieces missing to completely cover the problem space associated with all possible systems, however. This talk will offer three views of a universal modeling capability to support the requirements analysis work for any system while providing the individual or enterprise with a template they can use to build their own comprehensive universal model. DoDAF is treated as a modeling component that is expected to be drawn into UML through the efforts of DoD and OMG that are working toward a Version 2.0 that will be implemented using UML artifacts.

A description of the architecture of a system is treated as the union of all of the modeling artifacts used to define the system and the specifications created from those models. The universal architecture descriptions offered are coordinated with a universal specification format into which the requirements derived from the modeling work will flow in a very obvious fashion. A trio of options is included for capturing the results of the modeling work including a special system architecture report, the tool set used to accomplish the modeling work, or in the set of specifications. The question of the existence of specifications in the evolution toward model-based development is explored. Should specifications be expressed in the form of models or should we insist on the continued use of paper documents?

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