

The IT6423 Story So Far...

In LM0/A0, we aligned the IT6423 course objectives with our career objectives using what I call an “alignment table.”

In LM1/A1, we saw the technology base of IT is continually advancing, which means IT professionals need to be able to discuss and apply: a) how IT is related to business and organizational strategy; b) how IT is critical to the success of most business models today; c) how the critical role of IT in the Value Chain [1] is less understood and recognized than the Value Chain itself; and d) there is a wide and diverse range of options for sourcing IT today with each option having its own advantages, disadvantages, risks, constraints, etc.

1. Wikipedia article on the Value Chain (retrieved August 29, 2018)
https://en.wikipedia.org/wiki/Value_chain

Part 1: Articles on IT Systems Acquisition Life Cycles (SALCs)

First, understand that the knowledge foundation and application of (IT) Systems Acquisition is diverse and also continually growing and expanding:

Some Terms in a “Word Soup”

To understand IT systems acquisition, one generally begins by making and then eating some, what I call, “word soup,” which is a set of terms, concepts, words and phrases that have all been thrown together at KSU in a broth brewed from Southern-American-English stock.

Starting with *system* Wikipedia defines it as “a regularly interacting or interdependent group of units forming an integrated whole” (<https://en.wikipedia.org/wiki/System>). One would then expect *IT system* to be something like, as “a regularly interacting or interdependent group of IT units forming an integrated whole system for processing information.” But, no deal; as of today, Wikipedia does not have a page for “information technology system.” Instead it offers the reader a generic page covering IT (https://en.wikipedia.org/wiki/Information_technology) or a page covering “information system” (https://en.wikipedia.org/wiki/Information_system).

Searching more words for LM2, *system development* is defined as the Systems Development Life Cycle or SDLC (https://en.wikipedia.org/wiki/Systems_development_life_cycle) and the search for *system acquisition* or Systems Acquisition Life Cycle (SALC) circles back to SDLC. Looking back to IT sourcing strategies and LM1, historically within IT the SDLC has been used for “make” projects and the SALC has been used for “buy” projects. There are also other conceptual word nuances (<https://www.quora.com/What-is-the-difference-between-software-development-life-cycle-and-system-development-life-cycle>) that we can cover in making our word soup here.

Please spend 10 to 30 minutes searching the web to get a grasp on this word soup for system, IT system, system development, system acquisition, SDLC, SALC, etc.

Systems Engineering is the Foundation for the SALC

To move forward, we begin by noting that today's IT systems are the descendants of more general manufactured systems; the development and acquisition of such systems has been studied in the field of systems engineering (https://en.wikipedia.org/wiki/Systems_engineering) since World War II. Our modern phone and Internet networks, success in the space race, victory in war, etc. would not be possible without "systems thinking" and disciplined systems engineering.

Of the organizations that utilize systems engineering to acquire (IT) systems, the U.S. Military is a thought and practice leader. As a matter of fact, they have a university devoted to acquisition—the Defense Acquisition University or DAU (<https://www.dau.edu/>). The DAU press had made available an online reference book, Systems Engineering Fundamentals, and since it was in the public domain, a pdf copy is contained in D2L LM2. We suggest that you skim through the Table of Contents and then read closely the Preface through Chapter 3 (ending on page 34). Pay close attention to:

- Figure 1-4 (page 8) and the descriptions of the Primary Life Cycle Functions (pages 7-8)
- Figure 2-1 (page 12) showing the time flow of the standardized Defense Acquisition Process (A) Concept; B) Development; C) Production; D) Sustain and Dispose). Chapter 2 (pages 11-22) shows the overview and then details each of the Milestones A-D.
- Supplement 2A (pages 23-24) show an ordinal scale of Technology Readiness. Read through this and reflect on your answer to Question 2 of Exercise A1, where you analyzed IT technologies for Higher Education over the past five years. Could your analysis table benefit from an additional column showing the Readiness of those technologies on this scale?
- Chapter 3 (pages 31-34) covers an overview of the Systems Engineering Process. By focusing on Figure 3-1 (page 31), one obtains a process-flow-perspective SALC with Inputs; (Four Major) Categories of Sub-Processes (Requirements Analysis, Function Analysis and Allocation, Synthesis, and Systems Analysis and Control for Balance); and Outputs.
- Finally, step back and read Supplement 2B (pages 25-28) on Evolutionary Acquisition. Reflect back on Moore's Law from LM1 as this supplement helps us understand how to deal with rapid advancements in technology for our IT systems.

Details on Getting from Point A to Point C

Historically in IT, formal SDLCs and SALCs have covered the scope of getting from Milestone A to Milestone C of Figure 2-1 on page 12 of the DAU Systems Engineering Fundamentals. The traditional *waterfall* method (https://en.wikipedia.org/wiki/Waterfall_model) has been used throughout my career to develop software and IT systems. Recently, the *agile* methodology has overtaken waterfall (https://en.wikipedia.org/wiki/Agile_software_development) for software and IT systems as well. Knowing and applying these detailed methods to move from point A to point C are important to successful IT systems acquisition.

Then, understand there are multiple perspectives and approaches to the SALC

Once you have an idea about the word soup and the DAU way of approaching the SALC, develop an understanding of the wide range of perspectives, frameworks, models and approaches of how to acquire an IT system so that it contributes to business value, it does no harm and it can be controlled. Spend up to an hour reviewing at least one more approach to the SALC. Two are highlighted below.

ISO/IEC/ISO 12207:2017 Standard on Software Life Cycle Processes

The ISO standard for the software life cycle process takes a standards-oriented approach to IT systems acquisition and the SALC. To do so, you will need to log into the virtual KSU library after clicking this link:

<https://ieeexplore-ieee-org.proxy.kennesaw.edu/document/8100771/>

Simply put, ISO standards work for the organization to maintain quality by documenting a standardized set of processes for organizations to utilize. A good way to review this standard is to start by reading Section 5 (pages 13-23) and connect it to what you have already learned about system engineering and development and the SALC. Note that the ISO concept of a standardized process is covered well in section 5.5 Process concepts (page 19). Then, print out Figure 4- Software life cycle processes on page 21 and work from the inside-out in either direction- backwards to the preliminaries and forwards to the standardized processes (6.1.1 through 6.4.14).

The Georgia Department of Administrative Services (DOAS) "Georgia Procurement Manual"

The DOAS procurement manual takes a policies-procedures-and regulations-oriented approach to the IT SALC. Any IT system acquisition done with state funds in Georgia should follow this manual. The website is at:

http://pur.doas.ga.gov/gpm/MyWebHelp/GPM_Main_File.htm

This site operates like a file-folder directory. Click on the root folder in the upper left to drop down the folders and files it contains. Repeat as necessary to access files in the sub-folders. As can be seen, there is a preliminary stage followed by seven stages to the DOAS SALC.

Part 2: Articles on Business Process Modeling for IT Systems

According to Wikipedia, (https://en.wikipedia.org/wiki/Business_process_modeling), *business process modeling (BPM)* is "the activity of representing processes of an enterprise, so that the current process may be analyzed, improved and automated;" this article states with respect to the SALC, BPM is an important in the development, documentation and management of requirements. BPM can be performed for the current state or future state. IT technology components, e.g., a browser or network, can be designed and configured to support categories of business process models (also BPM) and workflows as illustrated by Wikipedia's (https://en.wikipedia.org/wiki/Artifact-centric_business_process_model) article on artifact-centric BPMs. *Change management* is also a central activity to the success of IT's support of BPMs (https://en.wikipedia.org/wiki/Change_management) and should be understood by all IT professionals.

To be a successful IT professional working with BPM, change management, workflows and delivering value from IT to the organization, etc., one needs to understand that the business owns the process. IT supports the business. Businesses and organizations with more mature approaches to (IT) governance and strategy appoint a business process owner for each of their main or critical business processes. Generally this role is filled by a senior executive or manager, not in IT. Throughout our experience, we have learned that the foundational definition of a business process owner is “the person with the authority to change a business process.” The main take-away here is that any change in a business process or BPM, including all of IT system acquisition and integration, needs to flow through and be approved by the corresponding business process owner.

Of our go-to sources, one 2013 Educause (<https://er.educause.edu/articles/2013/1/information-privacy-revealed>) article authored by Merri Lavagnino makes use of the concept, business process owner with respect to who holds the authority role for principles of action concerning privacy of data. Although there is no Wikipedia page, web searches show a lot of information about the business process owner from many sources. Again, please do not register or pay for information for this course.

Spend 30 to 60 minutes exploring what Wikipedia (and other sources) has to say about BPM, the business process owner, and change management. Relate it to the IT SALC, requirements management¹, business value of IT, etc.

Optionally, link these more generic sources to IT by web exploration, e.g., three Educause portals on BPM and Change Management in Higher Education (Note that some of these will not be available to you without registering with Educause- you can ignore those articles requiring registration):

Educause on Business Process Reengineering

<https://library.educause.edu/topics/information-technology-management-and-leadership/business-process-reengineering>

Educause on Change Management

<https://library.educause.edu/topics/information-technology-management-and-leadership/change-management>

Org Culture Change Management

<https://er.educause.edu/blogs/2016/10/managing-change-in-your-institution>

¹ See Figure 3-1 Page 31 of the DAU Systems Engineering Fundamentals (<http://www.dtic.mil/dtic/tr/fulltext/u2/a606327.pdf>)- Requirements management in this SALC encompasses much of the Process Input, the Requirements Analysis block and the Requirements Loop

Finally for Part 2, adopt some methods to communicate how IT adds value to business

Once you have an understanding about how IT adds value to business through utilizing an effective IT SALC and performing and using effective BPM, as an IT professional or manager you will frequently be called upon to explain and justify how IT adds value. I suggest adding your A2 updates to your slides created in A1 for this purpose.

Part 3: Requests for Proposals (RFPs)

You and your team will develop an RFP Package for procuring an IT system. At the heart of it is an RFP, which according to Wikipedia (https://en.wikipedia.org/wiki/Request_for_proposal) is a document produced by a buyer organization to procure a commodity, service or valuable asset from a supplier. The RFP is made public and is used to solicit bids and technical proposals for buying the IT system. Other parts of the package are kept internal to the buyer organization, e.g., specific details on how proposals will be scored.

To aid you in understanding and applying sound principles and best practices in developing an RFP and an RFP Package, the DAU Systems Engineering Fundamentals which is included as a pdf file in LM2 provides much advice and identifies proven methods for use in procurement of IT systems through an RFP. Chapter 19 goes into the details and options for RFPs; other chapters cover requirements analysis, functional analysis (a “function” is like a “business process”), risk management, assessment, metrics, configuration management and many other topics and elements that need to be included in the RFP Package for a successful IT system procurement. Similarly, the Georgia DOAS Procurement Manual provides much advice and has sample RFP templates (Chapter 3 of DOAS) to help you get started. Spending at least an hour exploring and mining good stuff from these treasure troves of advice and resources on IT system procurement and RFPs will save you 10 hours later in the course.

Georgia DOAS Procurement Manual:

http://pur.doas.ga.gov/gpm/MyWebHelp/GPM_Main_File.htm - Interactive Procurement Manual

<http://doas.ga.gov/state-purchasing> - General Web Portal for purchasing in Georgia Government

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