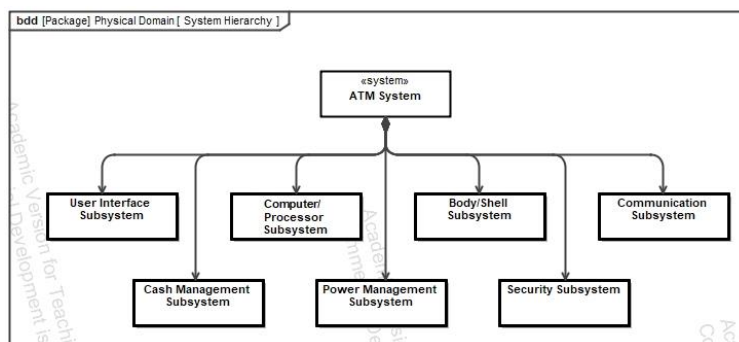
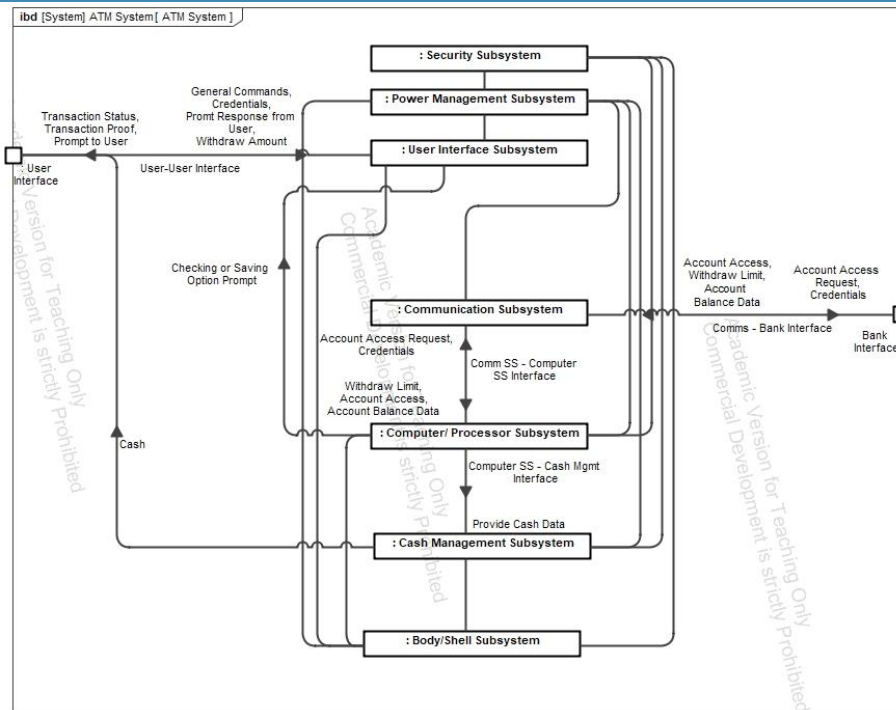


Topic: Physical Definition

Problem: Using your Functional Definition from the previous exercise, construct a top level physical block diagram. Then use a table or spreadsheet to show which functions are assigned to which components.

Pointers/Tips:

- For each function from the previous exercise, ask yourself, “What physical piece of hardware or software could perform this function?”. Be generic with your answer, e.g. “computer” instead of “HP Envy 15 inch i7 quad core”. We can use the trade study process to decide the specific computer later.
- A single function should only be assigned (allocated) to a single component.
- A single component can have many functions assigned to it.
- It is not uncommon for tiers in the functional domain to raise up 1 level in the physical domain. E.g., tier 3 functions in the functional domain would be allocated to tier 2 components or subsystems in the physical domain.
- Our purpose here is to assign relevant functions to components, where each component can be assigned to a design team to go off and design, implement and integrate.
- We typically try to group functions by subject matter areas (for the above reason), but sometimes this is not always possible. For example, all propulsion- related functions can be grouped and allocated to a “propulsion subsystem”.
- We created a physical hierarchy in one of the first exercises. There we kind of ‘cheated’ because we looked at our system in hindsight: we saw the final product and we tried to deconstruct it in our minds. This is called “bottoms up” engineering and can only be done on existing systems.
- For new, unprecedented systems, we use “top down” engineering. This is the essence of this exercise: from a list of functions, determine what components are necessary to fulfil them.
- I have constructed only part of the tier 2 physical domain for the ATM on the next page.
- Given the subsystems you have created, now you can create your own “top down” hierarchy. Compare it to your original hierarchy from exercise 2. Think about the functions each element performs. Did you forget some functions?
- Submit to support@learnse.com if you’d like me to check it and provide feedback.



Legend		Physical Domain [Model]				
	Allocate					
	Allocate (Direct and Implied)					
		Physical Domain [Model]	ATM System	Cash Management Subsystem	Communication Subsystem	Computer/Processor Subsystem
			1	1	2	5
		Perform General ATM Operations(context ATM System) [Model::Beha	17	1	1	2
		Finalize Transaction				
		Initialize Transaction				
		Manage Power				
		Perform Account Balance Service				
		Perform Deposit Service				
		Perform Maintenance Services				
		Perform Security Services				
		Perform Withdraw Service				
		Perform Withdraw Service(context ATM System)	9	1	2	5
		Perform Withdraw	2			
		Provide Cash	2			
		Provide option to print Receipt	2			
		Provide option to withdraw from Checking or Savings Account	2			
		Provide Transaction Status	2			
		Receive Check or Saving Option	2			
		Receive Receipt Print option	2			
		Receive Withdraw Amount	2			
		Request Withdraw Amount	2			

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