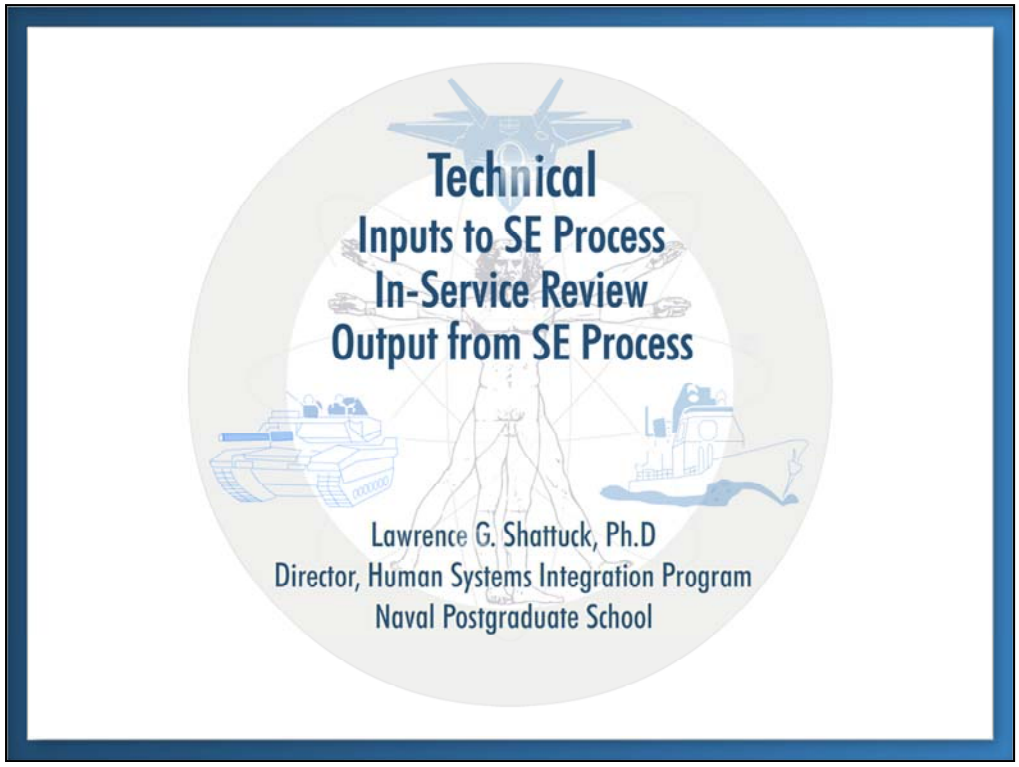
Technical
Inputs to SE Process
In-Service Review
Output from SE Process
Lawrence G. Shattuck, Ph.D
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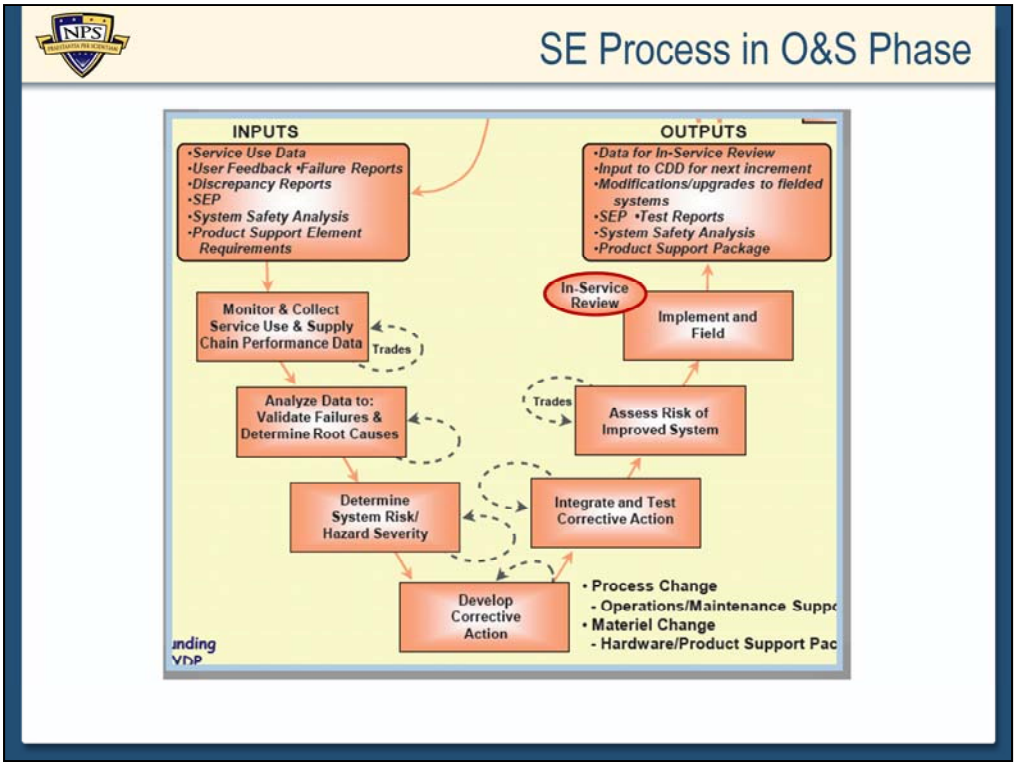
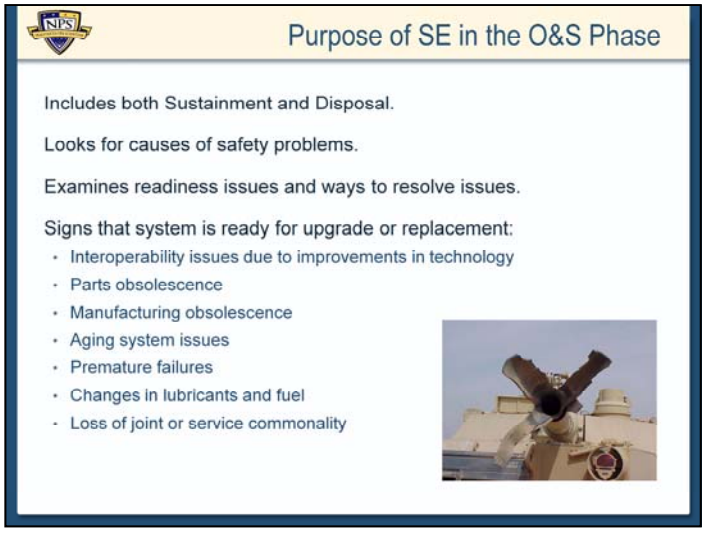


The screen shot on this slide is from the IDAT&L Life Cycle Management System, the big, complicated wall chart. It shows the details of the Systems Engineering process in the Operations and Support phase.

In this presentation we'll talk about the SE process and its purpose in the O&S phase. We'll also talk about the Inputs to the SE process and the Outputs from the process. And, we'll talk about the SE Technical Review that takes place in this phase – the In-Service Review (or ISR).



The Operations and Support phase is made up of two main efforts: sustainment and disposal.

During the sustainment portion of the O&S phase, the Systems Engineering process looks for safety problems and ways these problems can be resolved. The SE process also examines issues that degrade readiness. This effort includes participating in trade studies that help determine the best way to resolve these issues. Resolutions can take the form of any of the following:

Changes to the product support package;

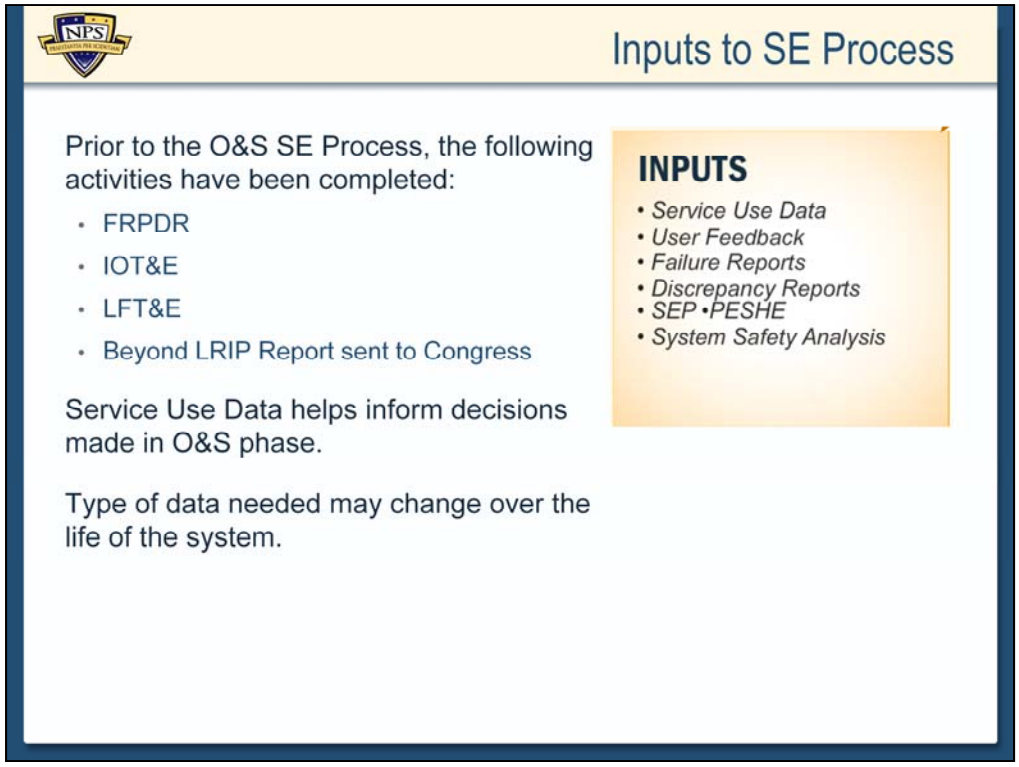
Recommendations for process improvements;

And, modifications and upgrades to future increments of the system.

These solutions have to take into account the operational needs of the Warfighters and the remaining service life of the system. There's no reason to invest billions of dollars to upgrade a system if it's expected to be replaced in a year or two.

There are several things that should give you an idea that the system is reaching the end of its service life. A few of them are mentioned on this slide.

The other O&S phase activity is disposal. Most of the time, disposal is not a Systems Engineering activity. In spite of that, Systems Engineers should consider disposal requirement issues early in the acquisition process. Paying a little attention to disposal in the beginning will make the disposal process that much easier at the end of a system's service life.

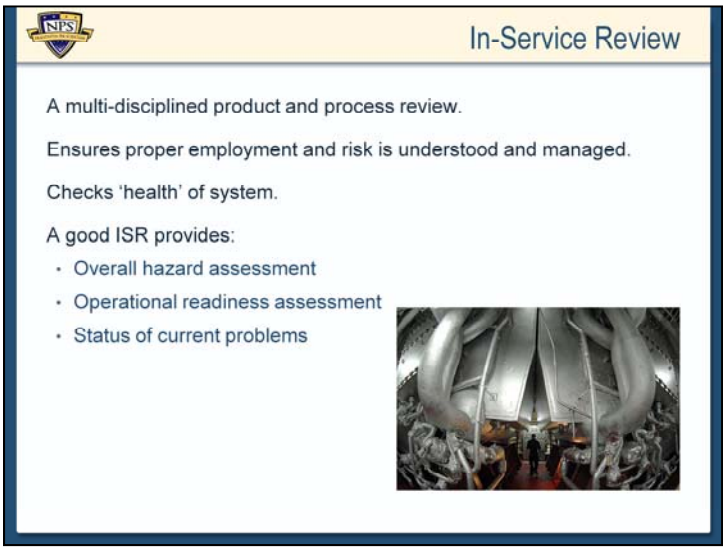


The Systems Engineering Plan, PESHE, and System Safety Analysis have been included in the Input blocks for the SE Process 'Vs' for the last couple of modules, so it's no surprise to see them again here. But before we talk about the other things in the Input block for the SE Process 'V' in the O&S phase, remember where we've been.

We've just completed the Full Rate Production Decision Review. We've also finished Initial Operational Test and Evaluation and Live Fire Test and Evaluation. And, the Beyond Low Rate Initial Production report has been sent to Congress. So, given that all of this testing and reporting has happened, it only makes sense that there would be a whole lot of data available to the Program Mangers and the Systems Engineers. And since these data are available, they ought to be used to make any improvements to the system that are called for.

Now, when you look at the Input block on this slide it seems reasonable that Service Use Data would be included. The Service Use Data, coupled with the User Feedback, Failure Reports, and Discrepancy Reports provide the basis for many O&S decisions that will be made throughout the life of the system.

We all know that many fielded systems remain in service much longer than originally planned. As a result, the type of data needed to inform operational understanding and decisions may change as the system matures.



Just like the technical reviews we covered in previous modules, the In-Service Review is also a multi-disciplined product and process assessment. The ISR ensures that the system is operationally employed and that the system risk is well-understood and properly managed.

This review also is designed to describe and characterize the health of the system. It provides assessments that are measureable for the following things:

Risk
Readiness
Technical status
And, trends.

These assessments become part of the documentation used to justify the support budget priorities.

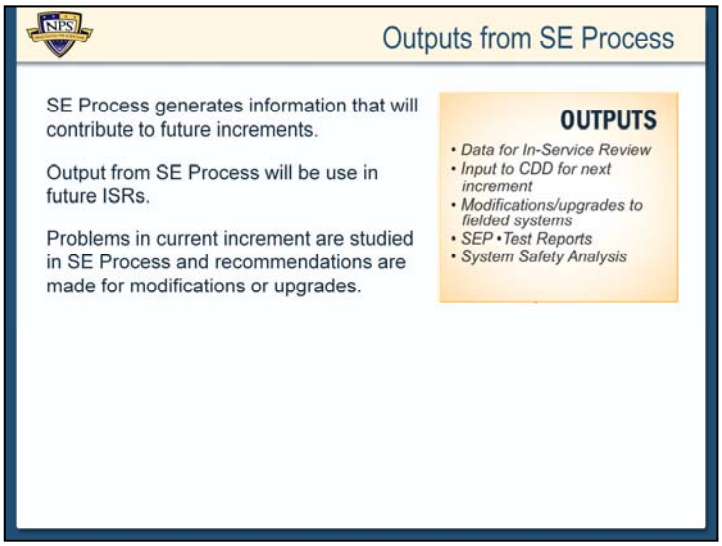
In-Service Reviews often are carried out by lower echelon organizations called 'sub-tier groups. Example of these 'sub-tier; groups are the Systems Safety Working Group and the Integrated Logistics Management Team.

A good ISR should provide the following three things:

1. An overall System Hazard Risk Assessment,
2. An operational readiness assessment in terms of system problems, including hardware, software, and production discrepancies, and
3. The status of current system problems, their resolution rate, their trends, and any update to the metrics.

A successful ISR should provide the Program Manager and other stakeholders with the information they need to establish their priorities and to develop budget requirements.

DoD has developed an In-Service Review Risk Assessment Checklist. It's attached to the block on the Interactive DA Framework where you found this presentation. It's yet another checklist that contains over 100 references to HSI!



The presentation in the Oversight and Review view of the O&S phase, talks about system increments. It mentions that, in many ways, each increment is treated as its own acquisition program. And since this is the case, each increment needs to have its own Capability Development Document and Capability Production Document. Later increments ought to be shaped by the increments that preceded them. That's why one of the things listed in the Output block on this slide is "Input to CDD for next increment." The work that comes out of the SE Process in the O&S phase will help shape the next increment of the system.

Another output from the SE Process is the data that will support the next In-Service Review. These data will help the Program Manager assess the health of the system – or at least this increment of the system – throughout its service life.

A third important output from the SE process is any recommended modifications or upgrades to the fielded systems. In the SE Process, a lot of effort has gone into examining the failures, risks, and hazards of the current increment. Designers and engineers have identified and tested various solutions. And, the risks associated with implementing these solutions have been studied. If the risks of keeping the current increment as is are greater than the risks associated with modifying the system, then the Program Manager seeks permission to modify or upgrade the current increment. As you can imagine, this is a costly undertaking. It clearly suggests that there's so much risk associated with the current increment that waiting for the next increment is not a viable option.

The other reports listed in the Output block are updates of the documents from either the Input block of this SE Process or from the SE Process in previous modules.