

Centralized / Remote Assessments using ICAS

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Remote Assessment Objectives

...are to implement proven reliability-centered maintenance (RCM) strategies using condition-based maintenance (CBM) solutions in order to improve conditional awareness of distributed assets at all maintenance levels

Depot Maintenance:

That materiel maintenance requiring major overhaul or a complete rebuilding of parts, assemblies, subassemblies, and end items, including the manufacture of parts, modifications, testing, and reclamation as required. Depot maintenance serves to support lower categories of maintenance by providing technical assistance and performing that maintenance beyond their responsibility. Depot maintenance provides stocks of serviceable equipment because it has available more extensive facilities for repair than are available in lower maintenance activities. Depot maintenance includes all aspects of software maintenance.

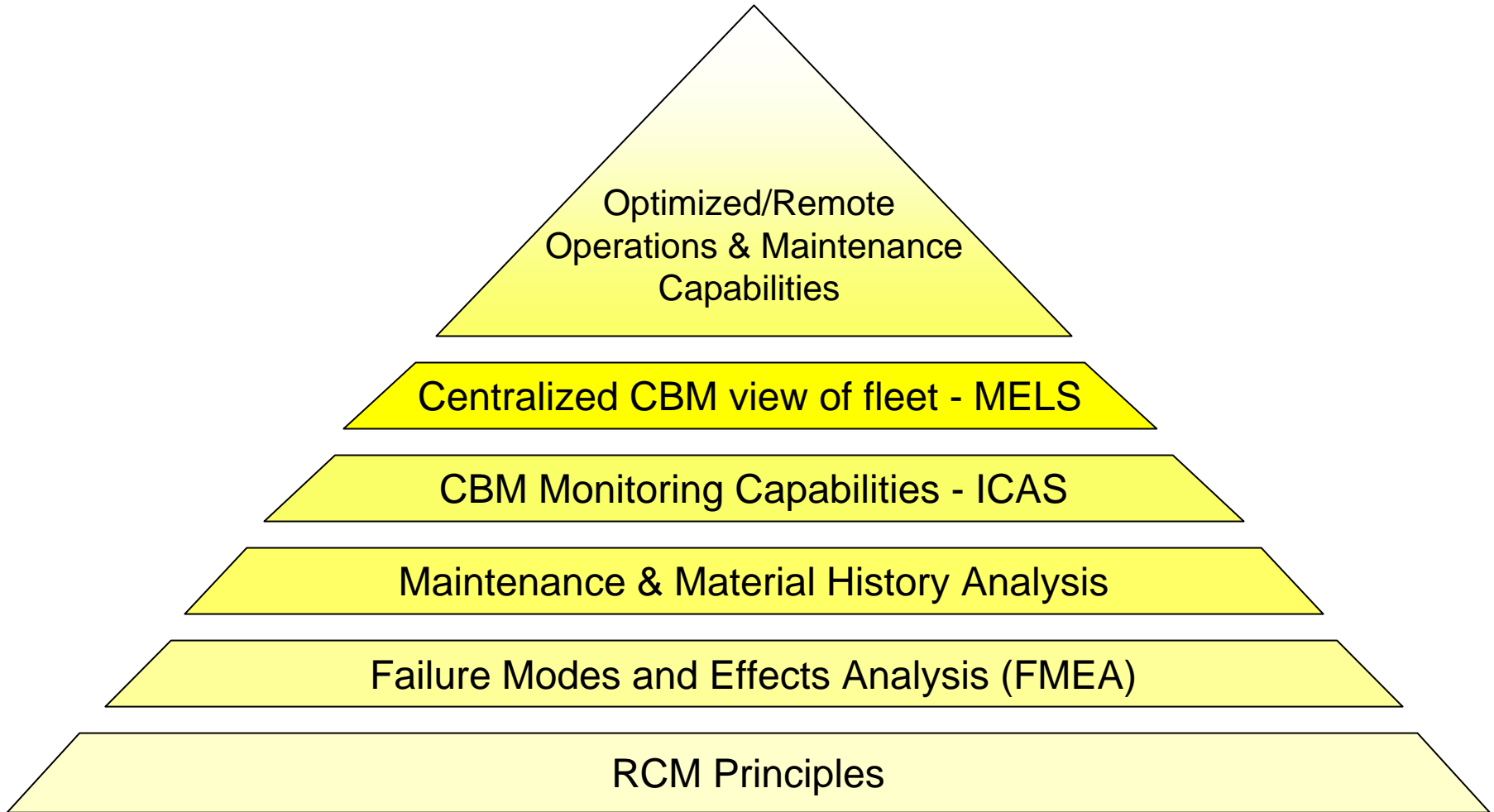
Intermediate-Level Maintenance:

That materiel maintenance that is the responsibility of, and performed by, designated maintenance activities in support of using organizations. The intermediate-level maintenance mission is to enhance and sustain the combat readiness and mission capability of supported activities by providing quality and timely materiel support at the nearest location with the lowest practical resource expenditure. Intermediate-level maintenance includes limited repair of commodity-orientated components and end items, job shop, bay, and production line operations for special mission requirements; repair of printed circuit boards, software maintenance, and fabrication or manufacture of repair parts, assemblies, components. Jigs and fixtures, when approved by higher levels.

Organizational-Level Maintenance:

Maintenance normally performed by an operating unit on a day-to-day basis in support of its own operations. The organizational-level maintenance mission is to maintain assigned equipment in a full mission-capable status while continually improving the process. Organizational-level maintenance can be grouped under categories of "inspections," "servicing," "handling," and "preventive maintenance."

Remote Assessment Requirements



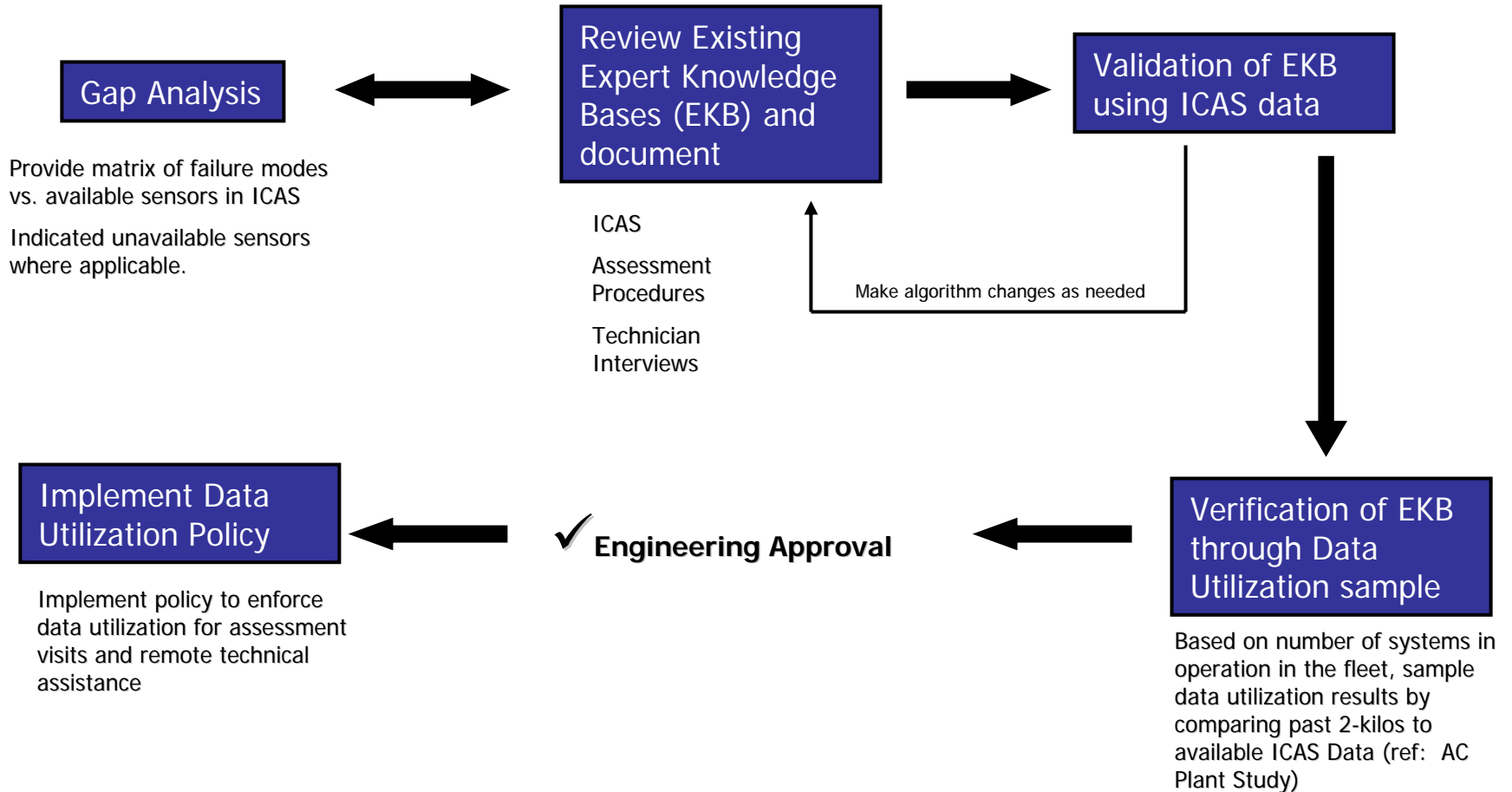
Reliability Centered Maintenance (RCM)

- A systematic approach to developing focused, effective, and cost-efficient preventive and predictive maintenance programs
- A process to evaluate preventive and predictive maintenance programs for existing equipment systems with the objective of continuously improving these systems while increasing the equipment capacity.

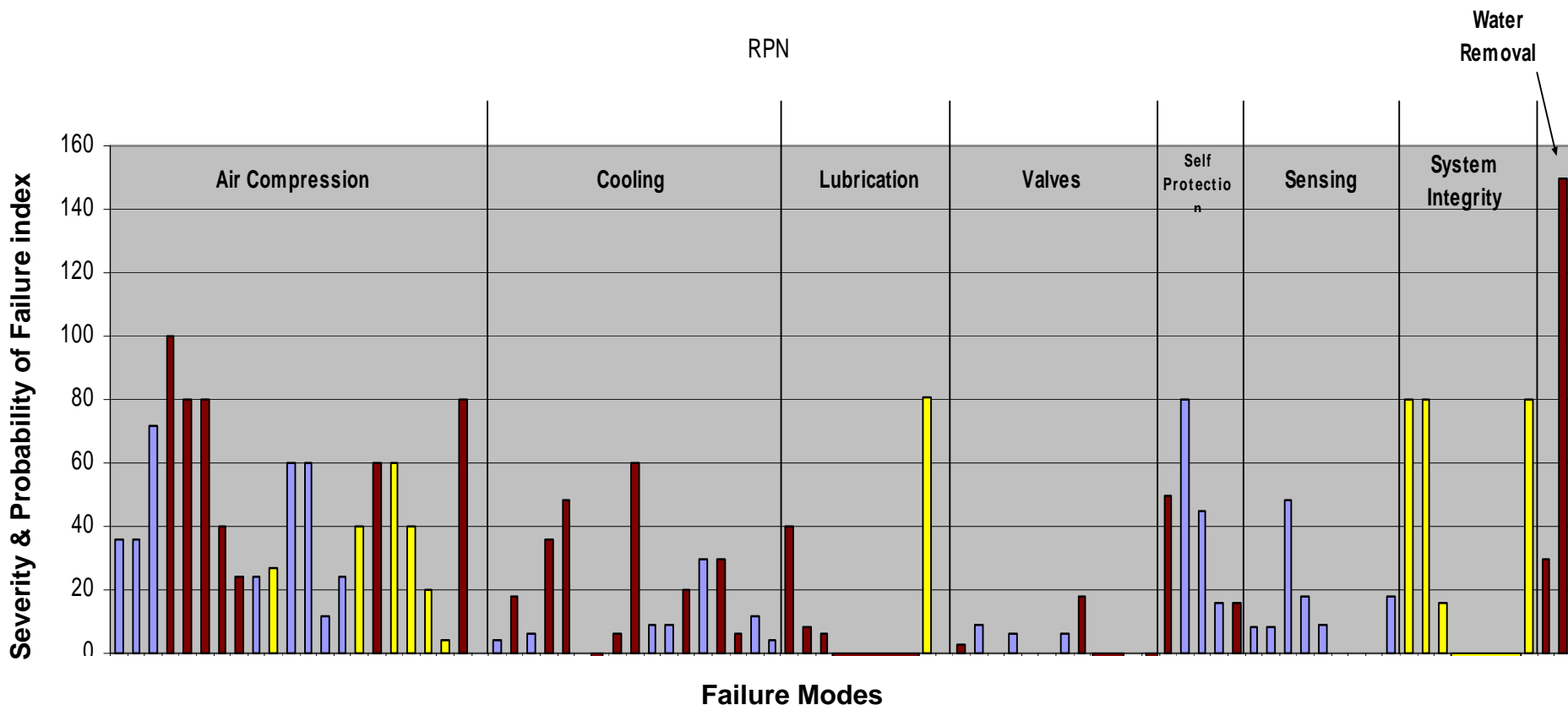
Streamline RCM Strategy

- 80/20 rule:
 - 20% of the equipment causes 80% of the maintenance
- Focus on strategies to reduce the manpower and cost associated with maintenance.
- Improved operations, Improved maintenance processes.
- How CBM Fits in.
 - Provides the feed back to support and validate operational changes, changes in maintenance strategy, and drives design changes back to the OEM.

System Level FMEA Process

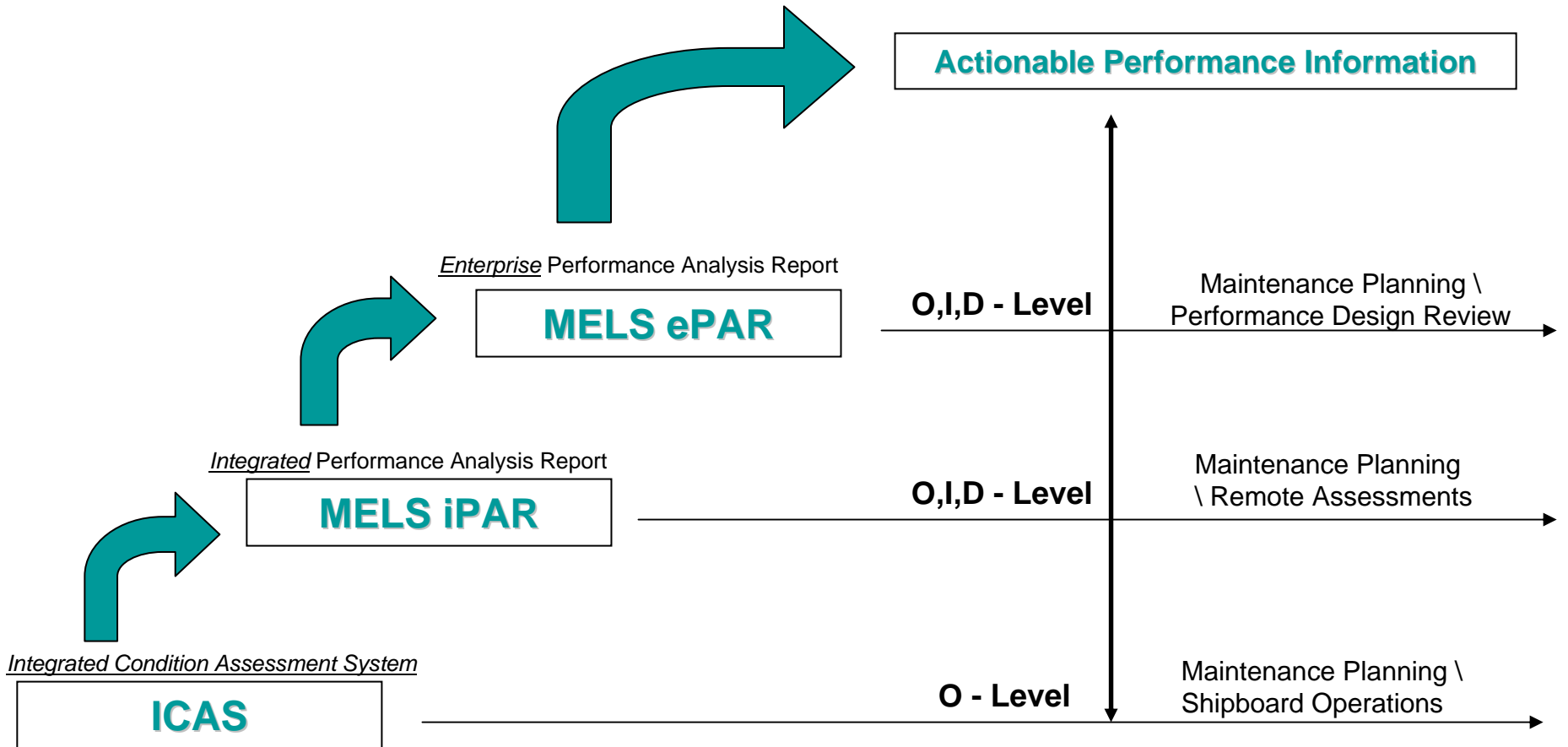


System Level FMEA Studies results

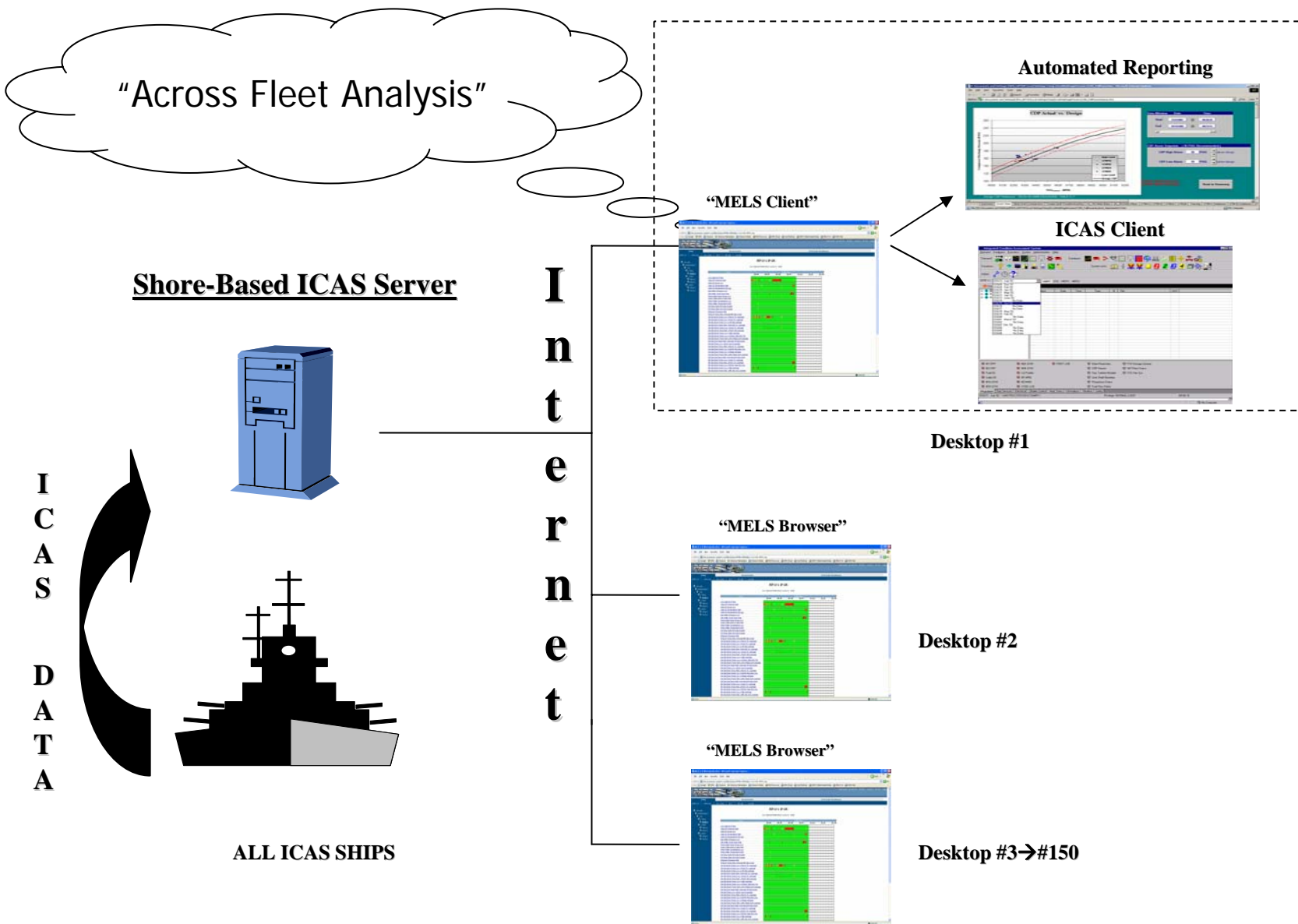


- Data DOES NOT Support Failure Identification
- Data Supports Failure Identification
- Data Can Support Failure Identification with ICAS Configuration Change

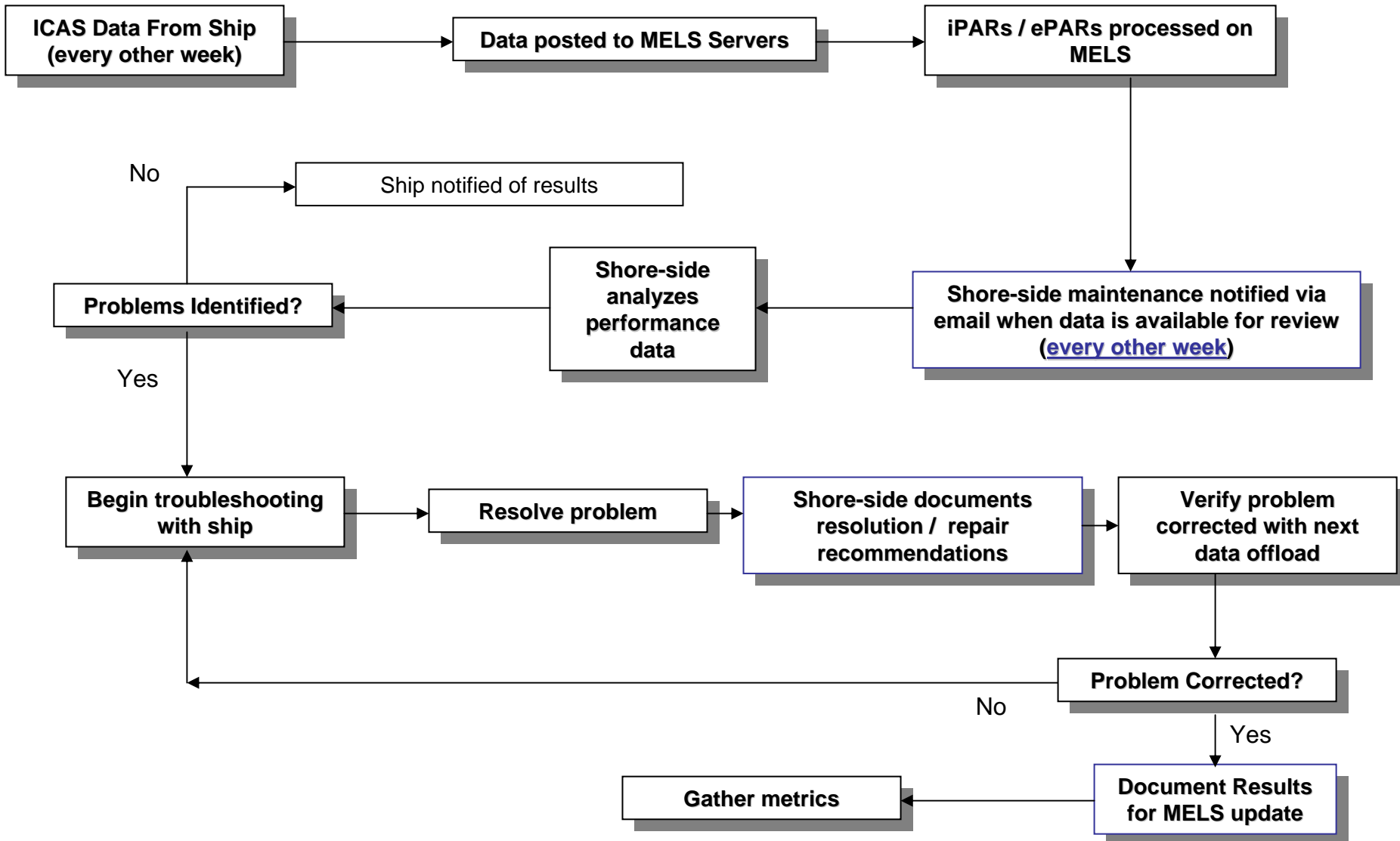
Reporting CBM / FMEA data into the maintenance plan



Centralized view of CBM Data



Expanding from remote to continuous assessments



Backups

Condition Based Monitoring Objectives

- Achieve maximum reliability, performance, and safety of the equipment.
- Restore equipment to required levels of performance when deterioration occurs (but before failure).
- Collect the data (during the life of the equipment) to change the design of the equipment in order to improve its reliability.
- Accomplish the above with minimal lifecycle costs.

CBM as a risk mitigation strategy

- Mitigate the risk of reduced maintenance budgets based on material history metrics.
- Maintenance actions extended or eliminated can still be managed on an as required basis through condition monitoring.
- Reducing the Risk of unplanned failures.

Failure Definition

- An unsatisfactory condition (may be a catastrophic shut down or an out of specification condition, such as a quality defect).
- A condition in which the equipment does not meet a certain performance standard.
- A physical change in the equipment indicating that a failure is imminent.

References

- [1] T . Wireman “Reliability Centered Maintenance – Which approach is best for your Company”, Engineering Digest, Dec. 2000
- [2] J. Moubray, “ Reliability Centered Maintenance II”, Industrial Press, 1997
- [3] “Sustained maintenance Planning”, Available from DoD Reliability Analysis Center, [HTTP://rac.alionscience.com](http://rac.alionscience.com)