Death Spiral

- **Death spiral** occurs when large fixed costs of a common resource are allocated to users who could decline to use that resource. As the allocated costs increase, some users choose to decrease use. Then the fixed costs are allocated to the remaining users, more of whom use less. This process repeats until no users are willing to pay the fixed costs.
- Possible solutions to death spiral:
  - When excess capacity exists, charge users only for variable costs
  - Reduce the total amount of fixed costs allocated

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Death Spiral Example: Cost-based Contracts

Military Aircraft:

- Defense contractors working on advanced technology incur large fixed cost over-runs that are allocated to each aircraft manufactured
- Government reduces number of aircraft purchased and that causes average cost to increase on remaining orders
- Government responds by ordering fewer aircraft
- Eventually, the entire project is abandoned before all fixed costs are recovered

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Service Allocation: Direct Method

Procedure: Ignore each service department's use of other service departments and allocate service department costs only to operating departments.

Advantages: Simple to administer and explain.

Disadvantages:

- Allocations are not accurate estimates of opportunity costs when service departments use other service departments.
- Incentives for service departments to make excessive use of other service departments.

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Service Allocation: Step-down Method

Procedure: Start with one service department and allocate all of its costs to the remaining service and operating departments → Continue one-by-one through each service department allocating all direct costs of that department and costs allocated to it.

Advantages: Considers some of the interdependence of service departments

Disadvantages: Resulting allocations are inaccurate estimates of opportunity costs (Allocation is *less* than opportunity cost for first department and the allocation is *more* than opportunity cost for last department)

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Service Allocation: Reciprocal Method

Procedure: Write equations defining variable cost relationships among divisions and then solve system of simultaneous equations with linear algebra. Allocate fixed costs based on each operating division's planned use of the service department's capacity

Advantages: Most accurate method

Disadvantages:

- Slightly harder to set up and compute solution
- Difficult to explain results to unsophisticated managers

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Reasons to Allocate Service Department Costs

- Encourages reduction of use of costly services
  - With no cost allocation (zero transfer prices), management must use nonprice priority schemes to control use.
- Reveals economic demand for services - Rational users will only pay a transfer price when the benefits are greater than or equal to that price.
- Compare internal service departments to external vendors - Gross inefficiency is revealed when internal transfer prices greatly exceed external prices.

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Joint Costs Defined

- **Joint cost** is incurred to produce two or more outputs from the same input - the cost is common, inseparable and cannot be specifically identified with any one product.
- Joint costs occur only in disassembly processes, such as refining and food processing
- Common costs occur in either disassembly or assembly processes, such as building cars

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Joint Costs: Process further?

Split-off point: the point in the disassembly processing at which all joint costs have been incurred

Decision: Should each joint product be processed further or sold as is at the split-off point?

Solution concept: The joint costs are sunk costs at the split-off point. Do the incremental benefits of further processing exceed the incremental costs?

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Joint Costs: Net realizable value

Net realizable value (NRV) is the difference between selling price and costs that would be incurred after the split-off point.

1. Compute NRV of each product after the split-off point. Decide to produce products with positive NRV, but not with negative NRV.
2. For control and divisional reporting, allocate joint costs to products in the ratio of the NRV of each product.

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