

EMGT 545/645
Project Management In Engineering and Technology

Dr. Dundar F. Kocaoglu

Project Management in The Fuzzy Front End: **A Comparative Study**

Team 3

Voraphol Attavavuthichai
Johannes Berking
Sylvain Gazaille
Kiatiphong Lertsathitphong
Clark Wilson

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What Is the “Fuzzy Front End”

Definition:

“ The fuzzy front end starts when a technology exists or a customer need is known. It ends when a project’s budget is approved and can start accepting charges.”

Donald G. Reinersten

Symptoms of Front-End Failure

- **New products are canceled when already midstream because they don't match the company's strategy**
- **New products are introduced later than announced due to bad defined goals/targets**
- **Key people are reluctant to invest time in projects even with a high priority, because too few were sorted out**

The Front-End Success Factors

- **Foundation Elements**

- Formulation and Communication of the strategic vision:
 - Well-planned portfolio
 - Well-planned organization structure
 - Well formulated product strategy

Weak organization's strategies will almost certainly make the FFE a disaster.

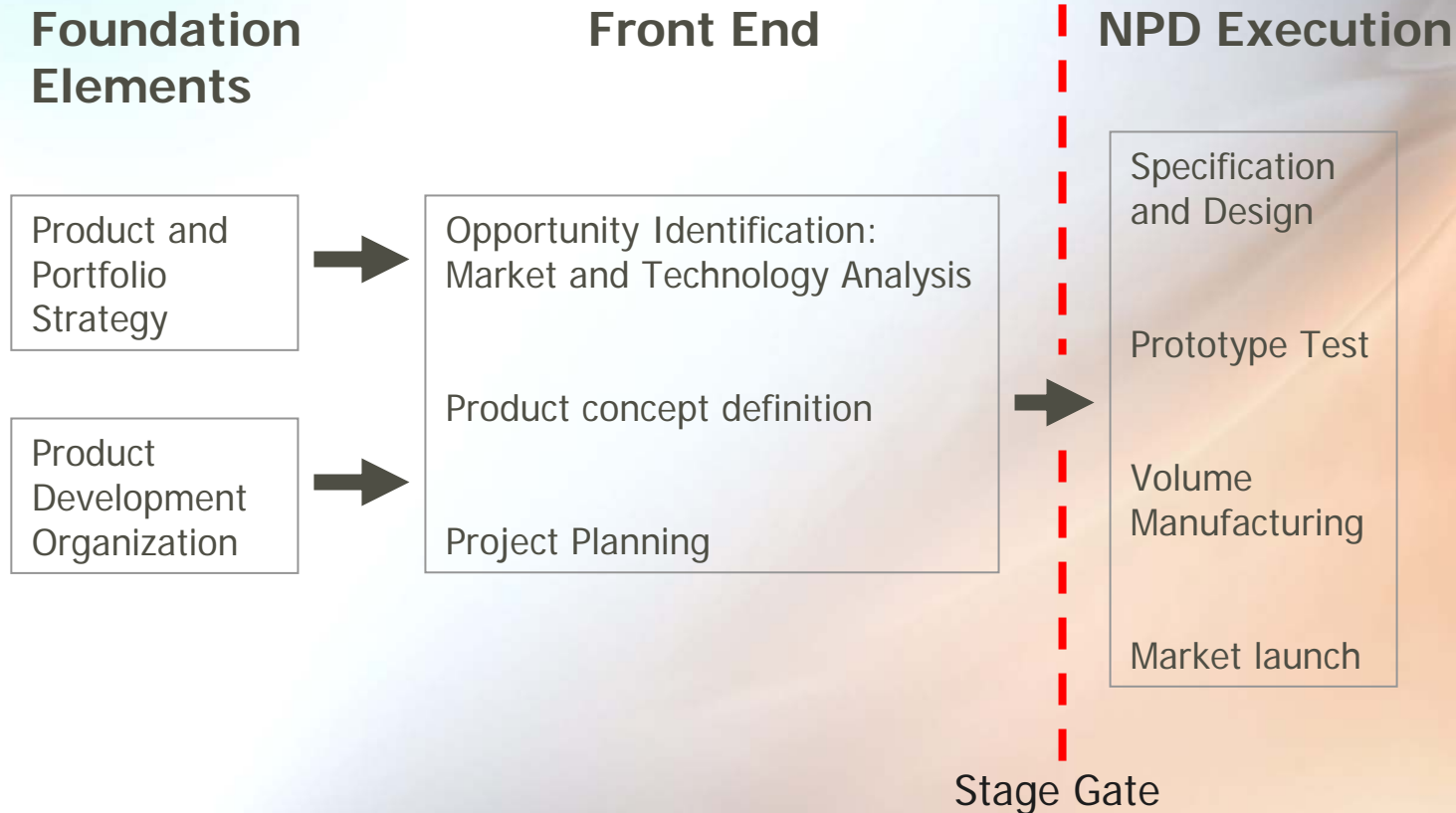
- **Project-Specific Elements**

- Identification of product and opportunity
 - Clarification of the product concept
 - Definition of customers, technologies...
 - Clear Identification of targets
 - Master schedule

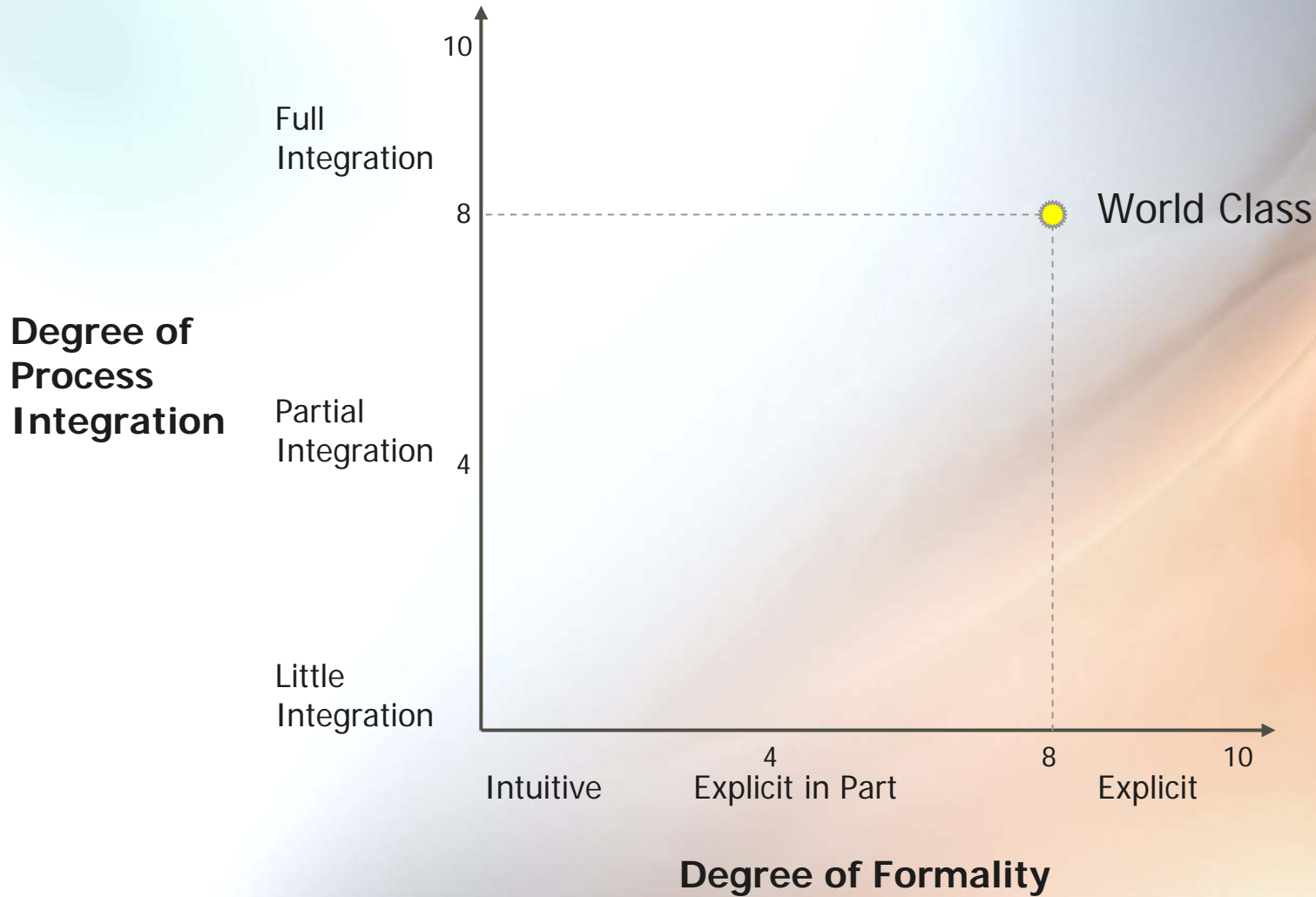
A weak definition and exploration of the product are likely to make the FFE really fuzzy.

The Front-End Process

- A Model of the New Product Development Front End



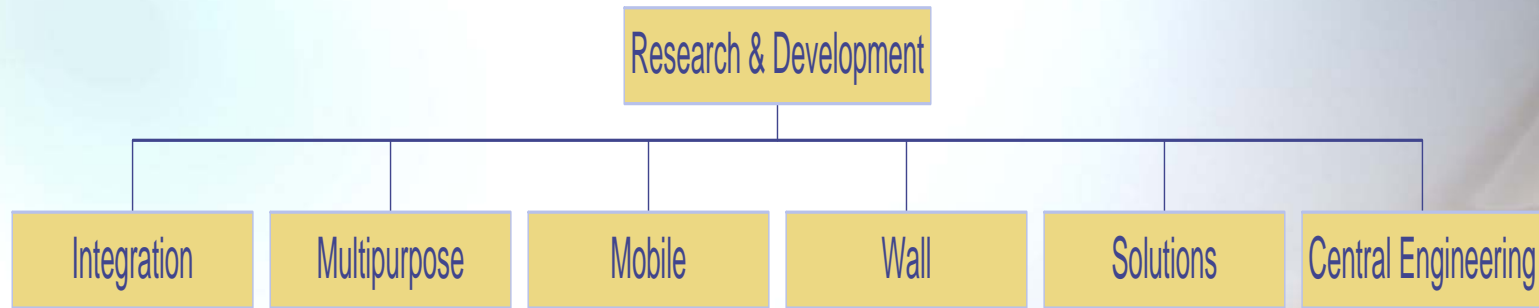
The Front-End Capability Map



InFocus Overview

- **Revenue: \$605M, Loss of \$110M in FY2003**
- **World Headquarters: Wilsonville, OR**
- **790 employees, 115 in R&D**
- **All products currently on the market were introduced in the last 2 years**

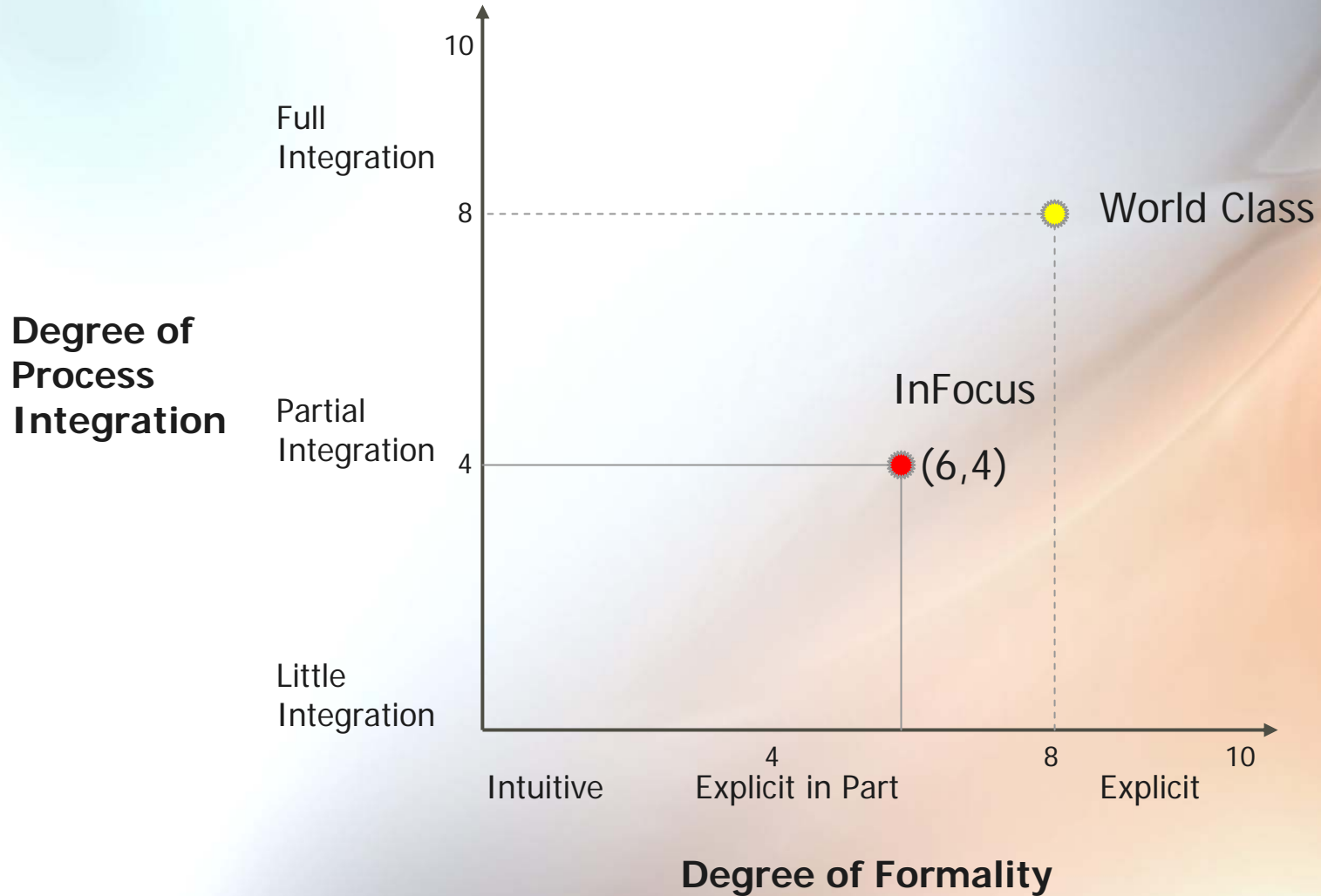
InFocus R&D



- **Organized into Product Families**
- **Each Family has all engineering functions**
- **Little cross-family project planning**
- **Fuzzy Front End can take from 2 wks to 3 years**
- **Not clear why it takes so long**

InFocus FFE Score

Formality = 6, Integration = 4



What InFocus does right

- **Uses product roadmaps**
- **Uses technology roadmaps**
- **Senior management is involved**
- **R&D and New Product Development are aligned**
- **Major suppliers are considered early**

Where InFocus can improve

- **Limited use of portfolio planning**
- **Idea evaluation by a single person**
- **No formal use of metrics other than business and financial**
- **Doesn't use PM early in process**
- **Product features not prioritized**
- **Doesn't capture knowledge**

Scope of the Military Study

- **Strategic Level**

- Capital Acquisition Projects
 - Purchase of a new helicopter fleet
 - Building of a new facility

- **Tactical Level**

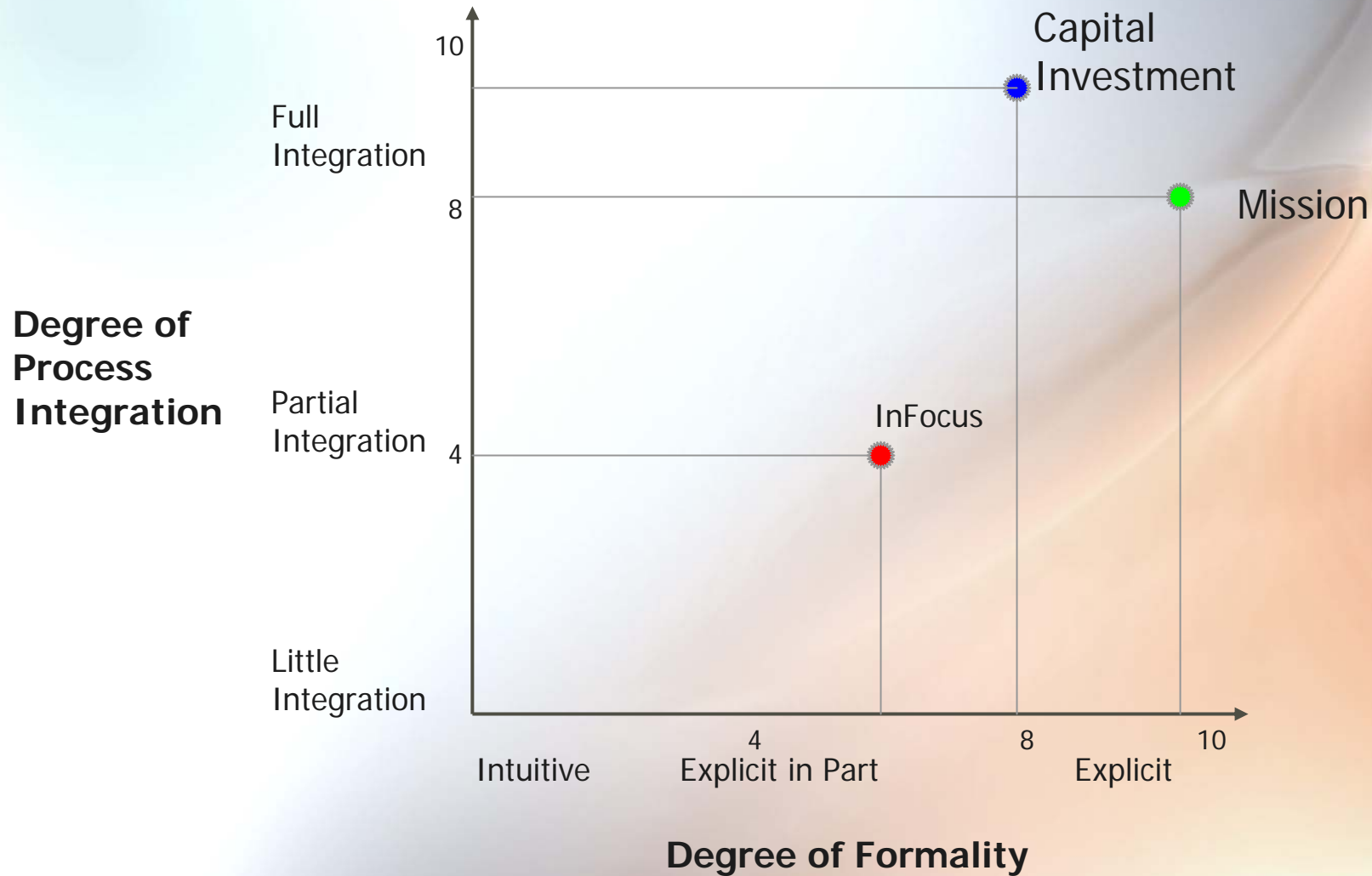
- Military Missions
 - Deployment of 2 Squadrons to Afghanistan for 6 months

- **Operational Level**

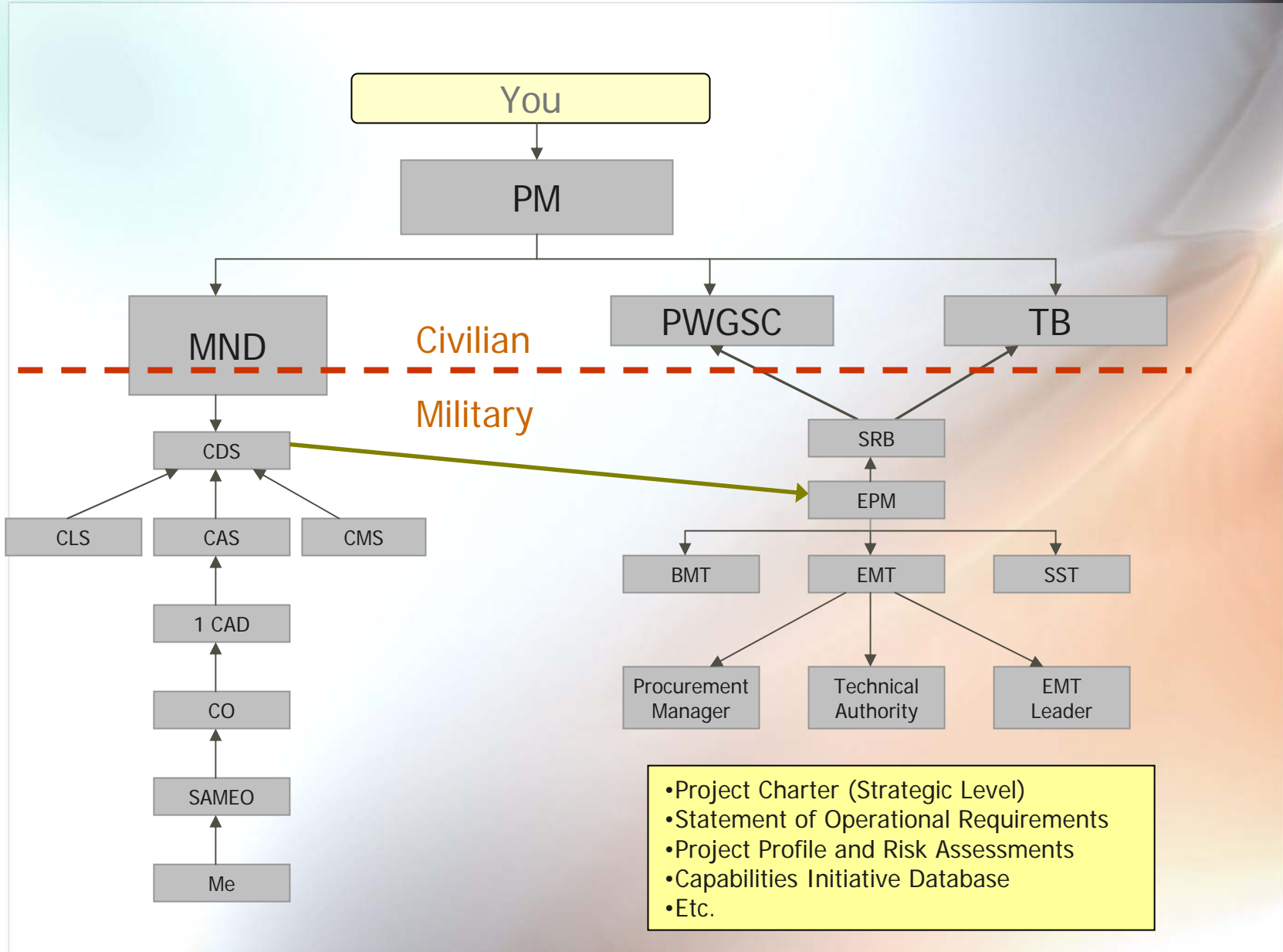
- Squadron level activities
 - Replacement of oxygen carts
 - Daily flight missions

Peacetime versus Wartime (2 sets of regulations!)

The Front-End Capability Map



Project Organization Chart



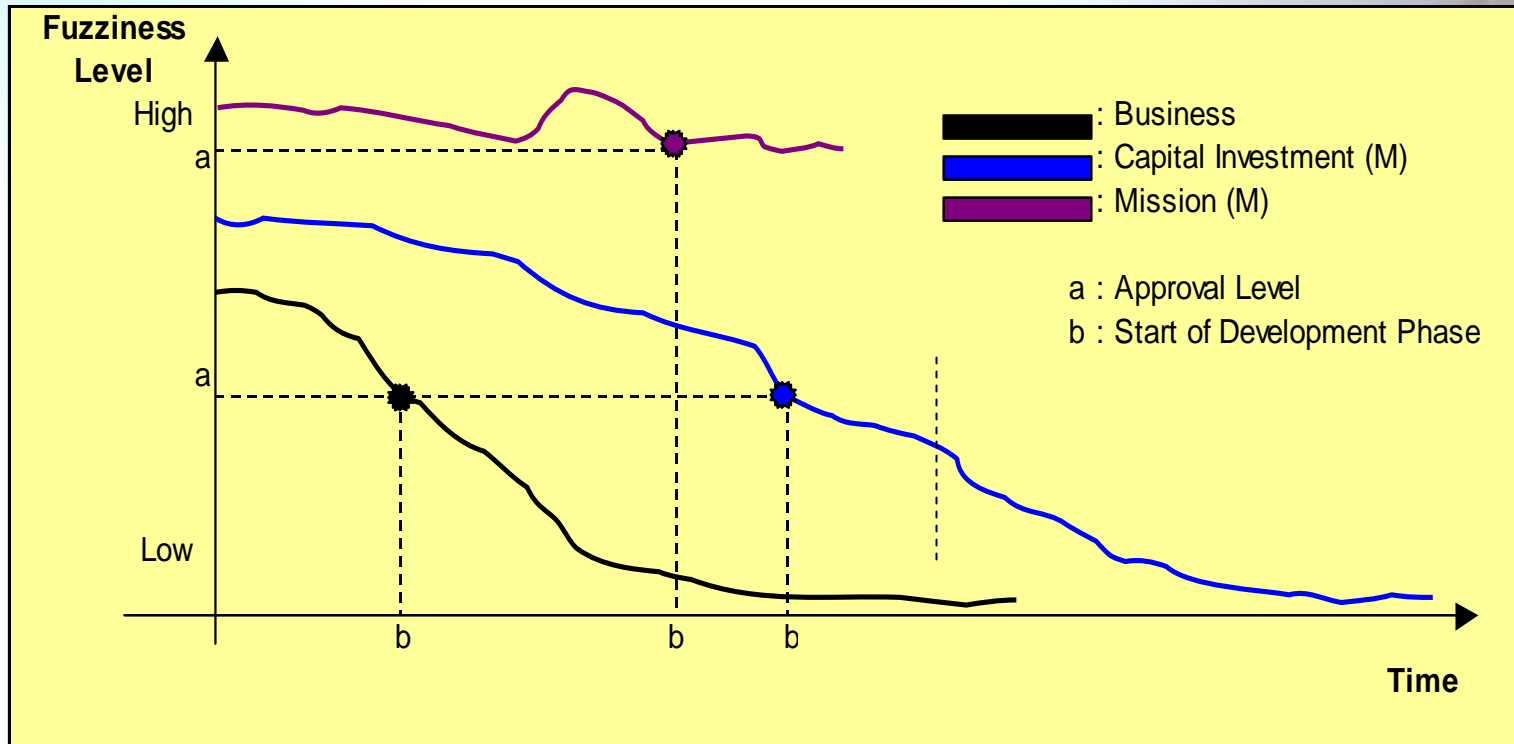
Key Military Differences

- **Organizational Structure**

- Not as many functional problems
- Formalized communication channels
 - Chain of Command makes the decision
 - Customer is told what his needs are
- Vertical Org Chart
- Internally, Horizontal is difficult
- Very long approval process
- Lots of lesson learnt
- Dedicated, loyal, flexible, self-motivated personnel
- Head Quarter is like a black box
- Developing relationships with suppliers/contractors is not an option

Key Military Differences

- **Fuzziness Level**



Based on the Fuzzy Front End Phase by Jongboe Kim & David Wilemon from Focusing the fuzzy front-end in new product development.

Key Military Differences

- **Not Profit Oriented**

- National security comes first
- Budget is next
- We do not sell products or services
- We measure performance in term of mission success
- We did not ask our customers if they are satisfied

- **Timelines**

- Much longer for Capital Acquisition projects
- Much shorter for Missions
- Transition between Peacetime and Wartime

Key Military Differences

- **Innovation**

- Even more important than High Tech
- Consequences could be devastating

- **Personnel Changeover**

- Posting length of 3 years for Officers
- Projects may take up to 10 years
- Every project is classified
- Great documentation (corporate knowledge)
- Overlaps and Civilian Employees
- Changeover of key personnel
- Selection of personnel (Career Manager)
- Junior Officers in charge
- Rely heavily on suppliers/contractors

Key Military Differences

- **Operations Sensitivity**
 - You only know what you need to know
 - Based on your security level
- **Position in the Chain of Command**
 - Has a huge impact on your influence
 - No avenues to go around it
 - Chain disappear if working with civilians
- **R&D**
 - Mostly contracted out

Comparison With InFocus

- **Similarities**

- Selection based on 1 individual & project champions
- No formal use of metrics other than business and financial
- Senior Management is included
- Organized in product families
- Use product roadmaps equivalent
- R&D and New Product Development are aligned
- Not clear why FFE takes so long

- **Differences**

- We do capture knowledge
- Lots of cross family project planning
- We use a PM early in the process
- Major suppliers are not considered early
- Product features are prioritized

Where the Military can improve

- **Reducing the amount of work prior to approval**
- **Controlling the back burner**
- **Selecting the right person for the right job**
- **Tailored training for PM**
- **Improve at doing business**



Any Questions?

Diagnosis Questions – Formality [Ref. 2]

1. Customer and market information is used early on to set scope for product (target markets, customer segments, features, prices).
2. Core team jointly reviews product concept and senior management formally approves.
3. Early concept and other feasibility prototypes are planned, tested and completed at the front end so that there are no surprises later.
4. Product definition is explicitly developed and documented.
5. Major supplier and tooling considerations are explicit at front end.
6. Manufacturing, distribution and logistics requirements are planned; product concept is modified to reflect process and logistic constraints.
7. Need for new technology for products is clearly stated.
8. Project targets (time, cost, quality) and relative priorities are clear.
9. Resource requirements are formally defined.
10. Roles and responsibilities for tasks and communications for core team are clear and well executed.
11. Roles for executive review team are clear and well executed (review criteria, decision responsibility, ongoing interaction with core team).

Diagnosis Questions – Integration [Ref. 2]

1. There is a clear vision of product lines and platforms for specific markets.
2. R&D and NPD have matching agendas and plans.
3. Balance is sought and achieved multiple NPD projects belonging to different platforms/products lines (e.g. risk, novelty, etc).
4. Project priorities are consistent with product strategy, portfolio plans and resource availability.
5. Resources allocations consider multiple project requirements and their relative priorities and pre-existing project commitments.
6. Early identification of technical and organizational interfaces is done for systems products so that development can proceed smoothly.
7. Core front-end team includes representatives from manufacturing, logistics, and after-sales service, apart from engineering and marketing.
8. Staffing policies and project-specific staffing are consistent with product strategy.
9. Need for new innovations is anticipated so that extensive innovation is not required during the product development process.
10. If there is uncertainty on any dimensions – e.g. technology or markets – organization has carefully planned alternative approach.

References

1. Reinersten, Donald G., "Managing the Design Factory", The Free Press, 1997, pp 215-216.
2. Khurana, Anil & Rosenthal, Stephan R., "Integrating the Fuzzy Front End of New Product Development", Sloan Management Review, Winter 1997.