



**Falcon Group – A Force for Good**  
***Zenator Systems and MasterClass Series***  
**Performance You Can Trust**



# We see projects through a prism







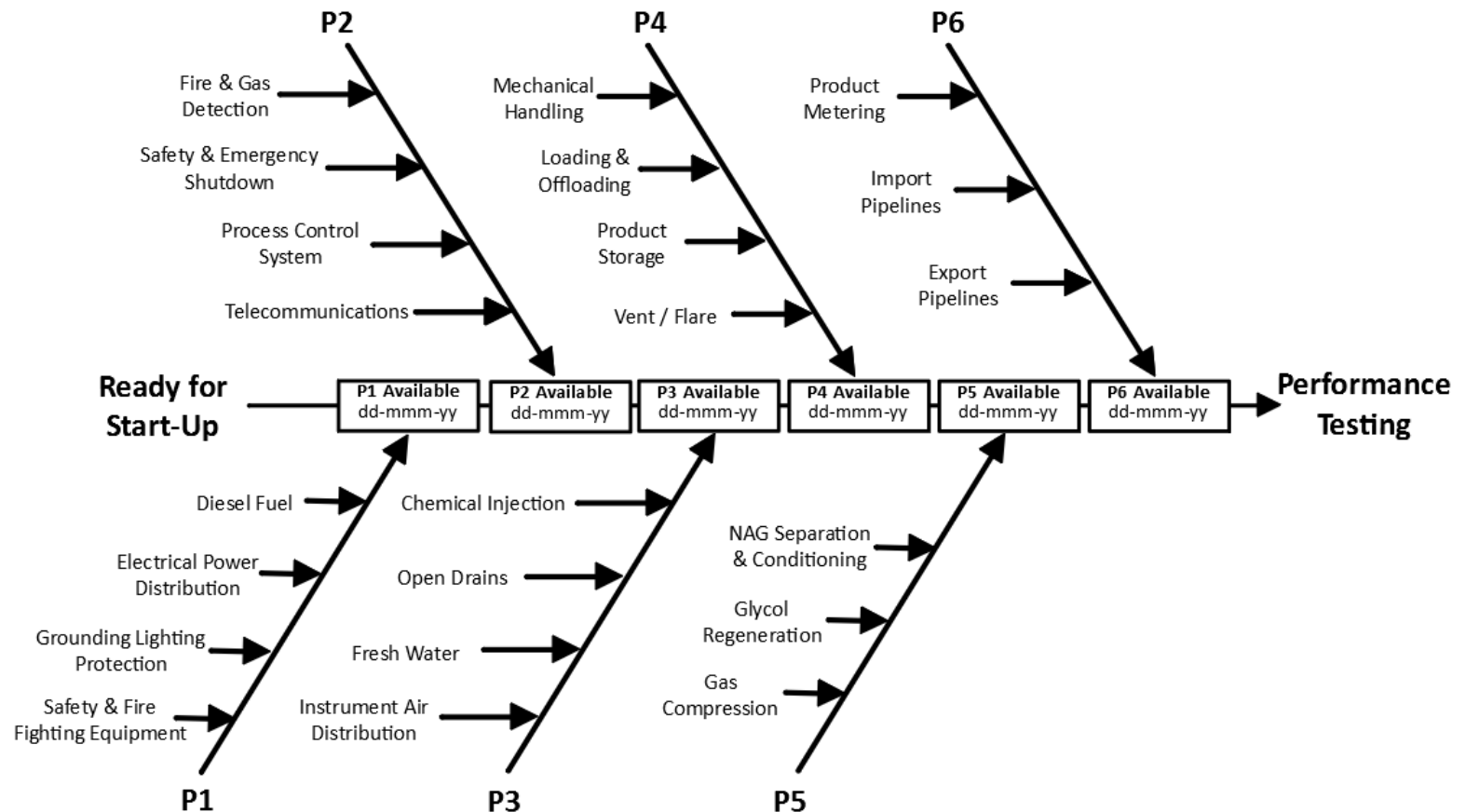
# Some customers see ...





# We see ...

## CSU Foundation Course with API RP 1FSC Example of Fishbone Diagram for Oil & Gas Production Facility



\* Mechanical Completion (AITR Completed)

\* Pre-Commissioning (BITR & Function Test Completed) / Commissioning (CITR )

March 10, 2020



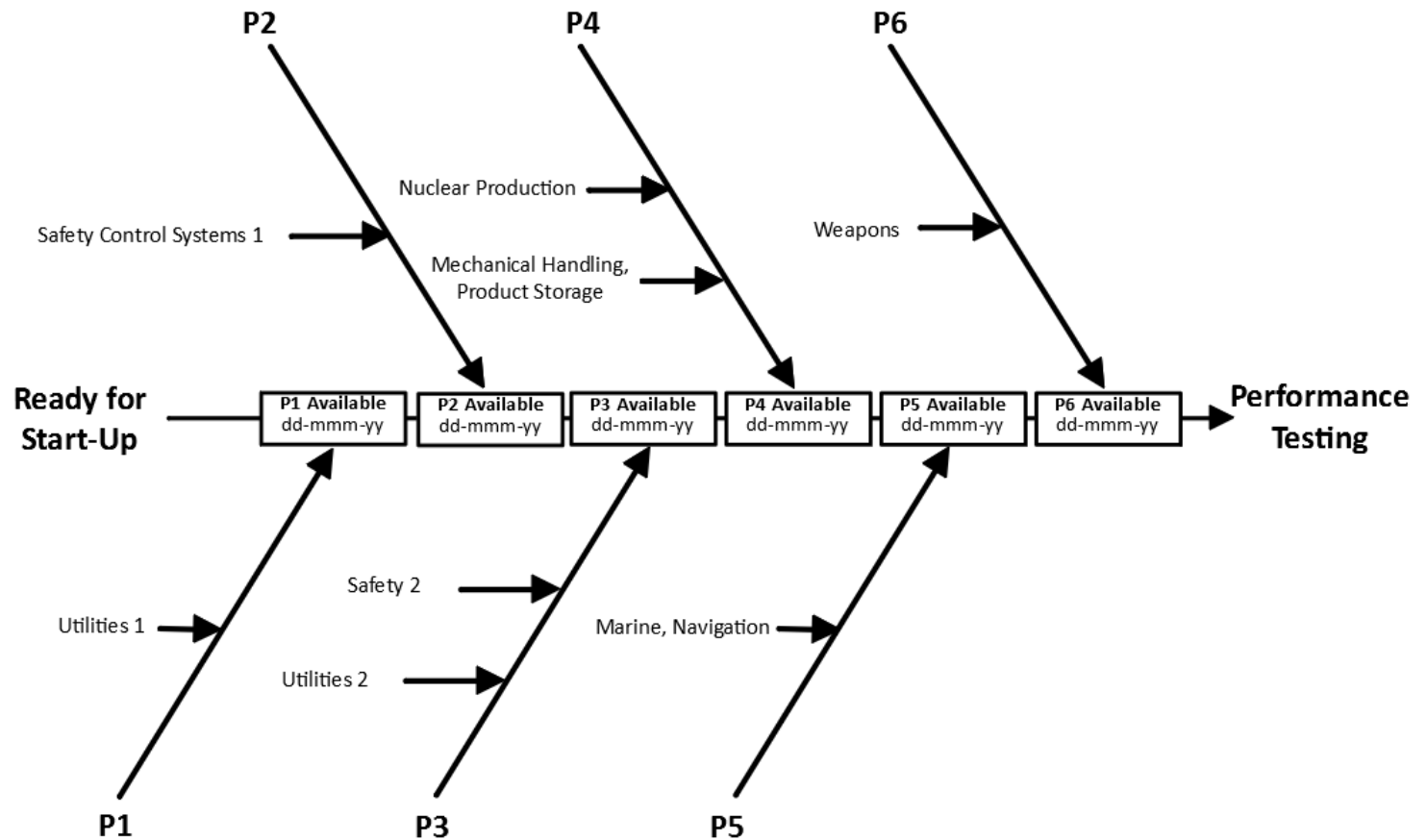
# You might see ...





# We see ...

## Simplified Fishbone Diagram for Nuclear Submarine



\* Mechanical Completion (AITR Completed)

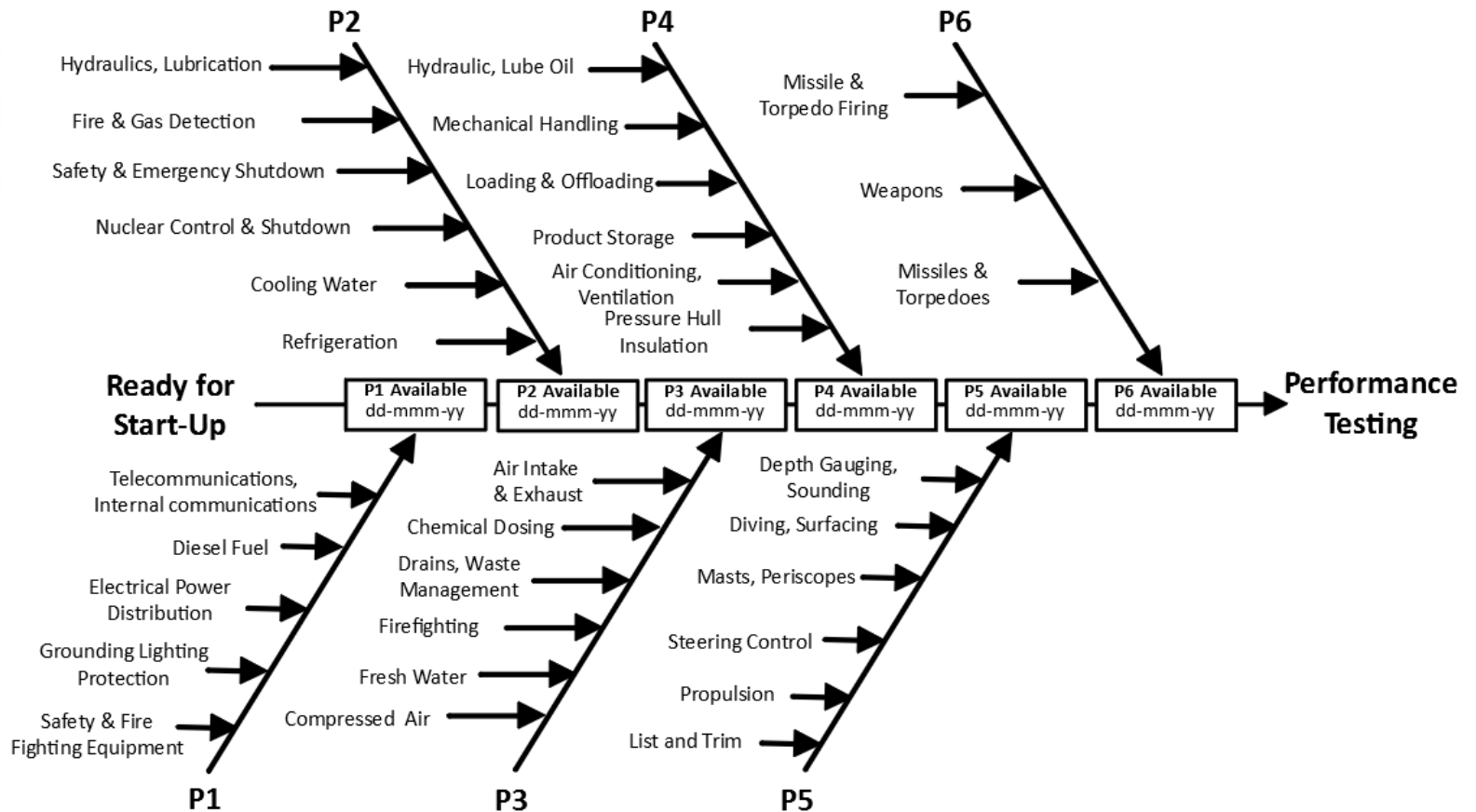
\* Pre-Commissioning (BITR & Function Test Completed) / Commissioning (CITR )

March 10, 2020



# We see ...

## Possible Fishbone Diagram for Nuclear Submarine



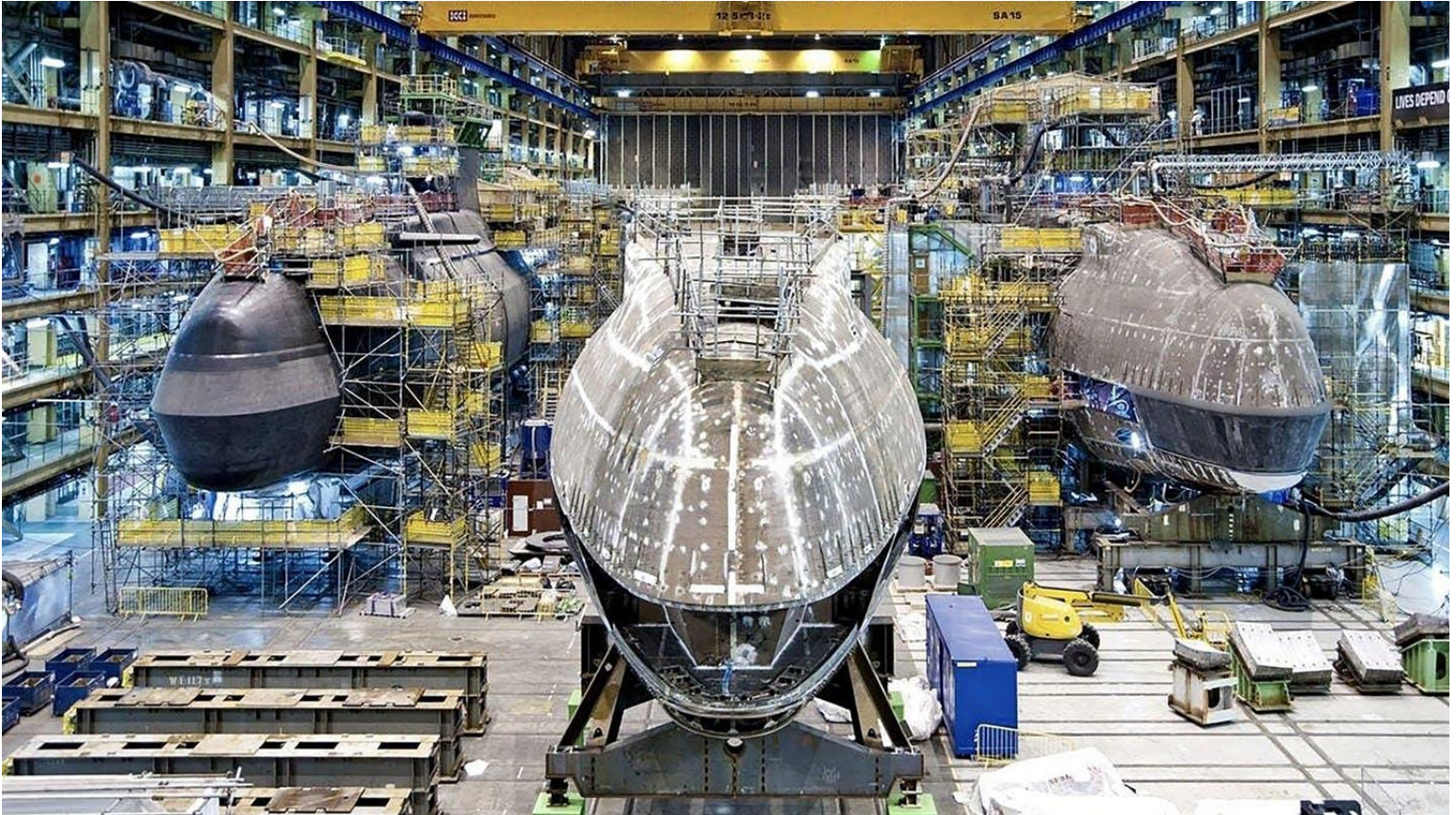
\* Mechanical Completion (AITR Completed)

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March 10, 2020



# Multi-projects ... no problem!







# ***A Force for Good***

## ***The Reasons Why***



### ***We believe ...***

- All Projects should have access to good quality information
- Team members should be trained, qualified and competent
- Owners and Contractors should be able to make good quality decisions
- Projects should be safe and fully Commissioned at Start-Up
- There should not be any Production bottlenecks
- Investors should be able to make expected returns





# ***A Force for Good***

## ***The Reasons Why***



### ***Just Imagine the Opposite ...***

- Without *Zenator*, where would you find reliable information?
- Without *MasterClass*, how would people be trained?
- Which reports would you believe without *Zenator*?
- Without access to reliable information how can you make good quality decisions?
- Without *Zenator*, how can you be sure the project will be safe and fully Commissioned at Start-Up?
- What confidence can an investor have that the forecast returns will be achieved?





# Who We Are, What We Do

## Helping to complete your projects - On Time and Safely



**Falcon Global Ltd** - created in 2000, providing management, engineering and support services to the Energy industry.  
**Global Falcon Americas Inc** - created in 2006 to maximize potential in the Americas.

- **Falcon Group** formed in 2006 with the UK and US companies at its core
  - *PathMaker Systems*, 2000 to 2011
  - *Zenator Systems*, 2009 to date
- Owned and Operated by Alan Mills, Chartered Engineer, 21 years with Operators and Contractors

Providing Operators with technical consulting services in Systems Completion (SC) and Commissioning & Start-Up (CSU) pre-FID, to final Handover to Operations.

**Zenator Systems** are continuously improving, enabling customers to better manage Construction, Completions, Pre-Commissioning, Commissioning, Start-Up and Operation, including direct integration with Planning, Materials, Expediting, Engineering, Documentation, Maintenance and Vendors.

We fully understand the risks in SC & CSU and effects to business performance. We minimize your risks, ensuring safe and timely project delivery. Repeated across all projects, this boosts business performance and your bottom line.

In 2014 Global Falcon Americas was approved by API to deliver training in, “*Commissioning & Start-Up with API RP 1 FSC*”.

We are a leading provider of technology and expertise. Wherever we operate, our *Zenator* Super Users and Power Users are developed from local talent, creating high value positions in the local economy.

Our affiliate offices in global ‘hot spots’, provide customers with engineering support, expertise and immediate response.





# Who We Are, What We Do

## Systems Completions & Commissioning Services



### Commissioning Readiness: Planning, Implementation and Close-Out

- Integrated technical consulting pre-FID to Final Handover, setting strategy, identifying solutions, reducing risk and holding schedules underpinned by *Zenator*, our world-class Asset Verification Management tool.
  - *MasterClass Series* training, online and classroom based
  - Worldwide professional expertise, focused on safe, timely Start-Up with Technical Integrity.
- 
- Determine Commissioning and Start-Up Priorities
  - Conduct Operability Reviews in FEED and Detailed Design
  - Develop an authentic FAT program
  - Functional Systemization & Fishbone Diagram
  - Identify Performance testing limits
  - Risk Remediation
  - Prepare Commissioning Philosophy
  - Prepare Execution Plans
  - Use Lessons Learned – Create Best Practices
  - Create and apply the Completions Pyramid
  - Determine Plans for Systems Completions
  - Prepare Preservation Procedures and Schedules
  - Identify Sub Systems
  - Develop testing specifications, engage specialist vendors
  - Operate and Maintain *Zenator* Project Databases
  - Prepare Commissioning and Start-Up Procedures
  - Prepare Handover strategy
  - Prepare Risk Assessments
  - Identify Training Requirements
  - Provide Specialist Commissioning Personnel (all disciplines)
  - Execute Commissioning Activities
  - Make Final Handover to Operations





# A Force for Good

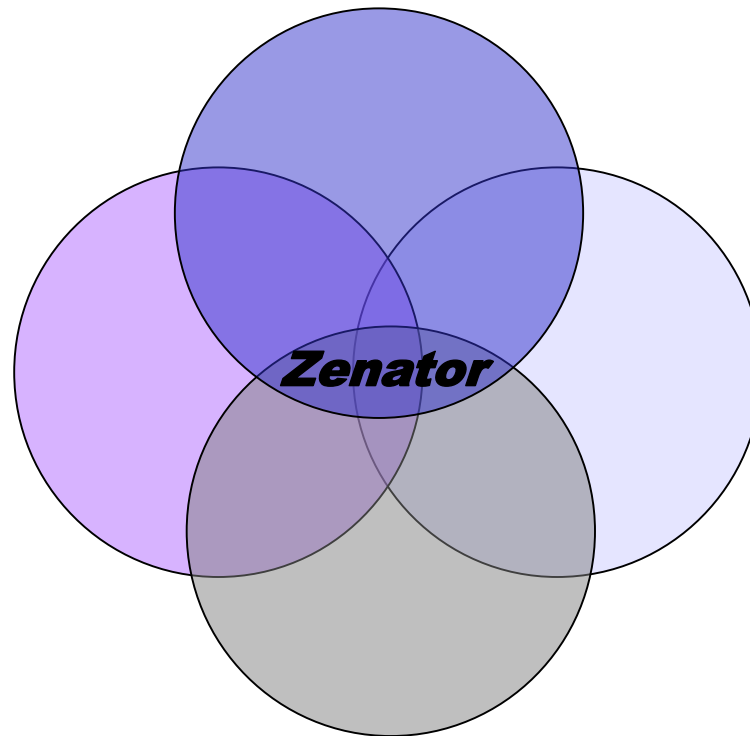
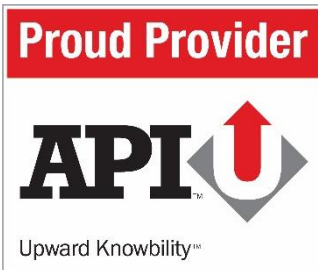
**Systems Completion through Commissioning & Start-Up**



**Super User and Power User  
Training Approved by API since 2015**

**In accordance  
with API RP 1 FSC**

**Help Desk and  
Product Support**



**CSU Audit,  
Advice and  
On-Site Support**

**MasterClass Series Training in  
Systems Completion and CSU with API RP 1 FSC**





# A Force for Good

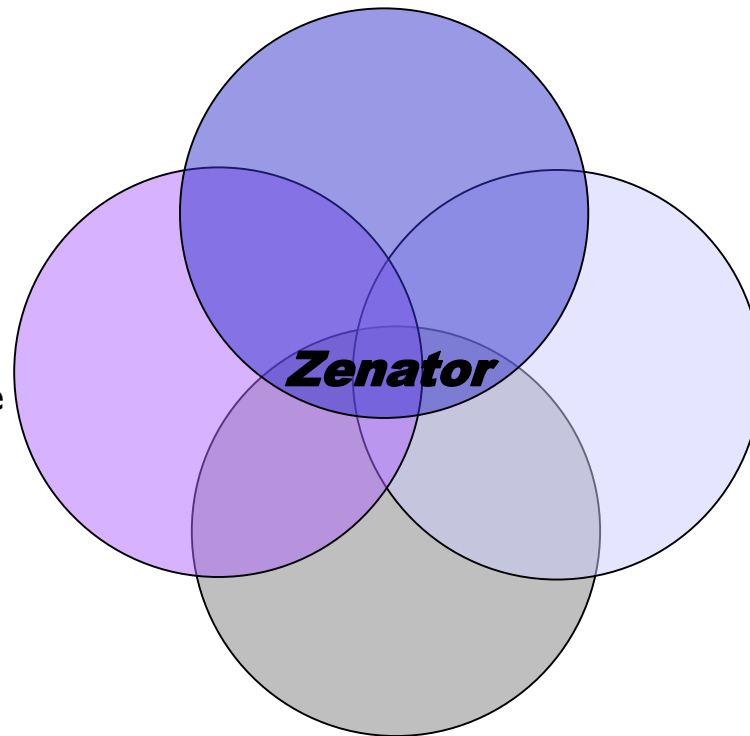
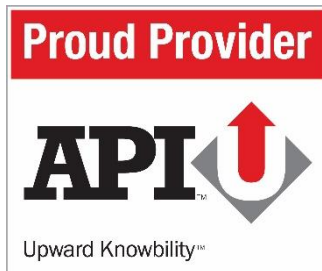
**Systems Completion through Commissioning & Start-Up**



**Systems Completion & CSU for  
Commissioning Manager**

**In accordance  
with API RP 1 FSC**

**Excellence in  
Corporate Governance**



**Feeding Operations  
At System  
Handovers**

**Mechanical Completions Turnovers from  
Construction Manager**





# Commissioning & Start Up Workshop

## Systems Completion



The Message To Ensure Companies Get It

***“Begin with the end in mind”***

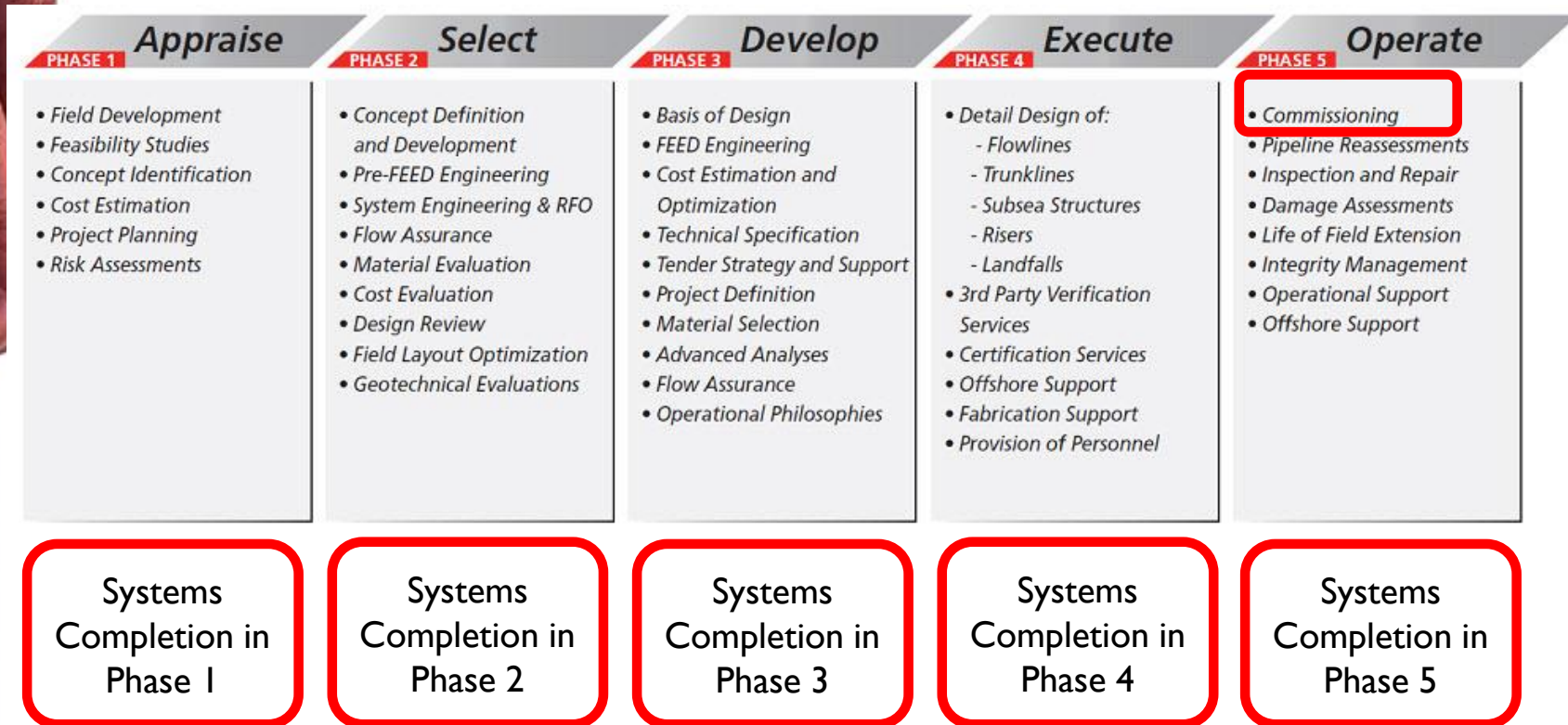
**Who said that?**

**API RP 1 FSC 1<sup>st</sup> Edition,  
Section 3.2,  
Planning and Organization**



# Systems Completion

## Some Companies Just Don't Get It





# What is Systems Completion?

API RP 1 FSC defines the Systems Completion process as,

*“the sequential activities within a project that verify and prove the construction, installation, integration, testing, and preparation of systems have been completed as designed, and thus, the facility is ready for start-up and operations.*

*The Systems Completion process is designed to help prepare and manage the transfer of care custody and control of facilities under construction through appropriate certification and documentation, such that the details of progress are evident.”*

*API RP 1 FSC Recommended Practice for Facilities Systems Completion Planning and Execution, 1st Edition – Courtesy of API*





# Systems Completion

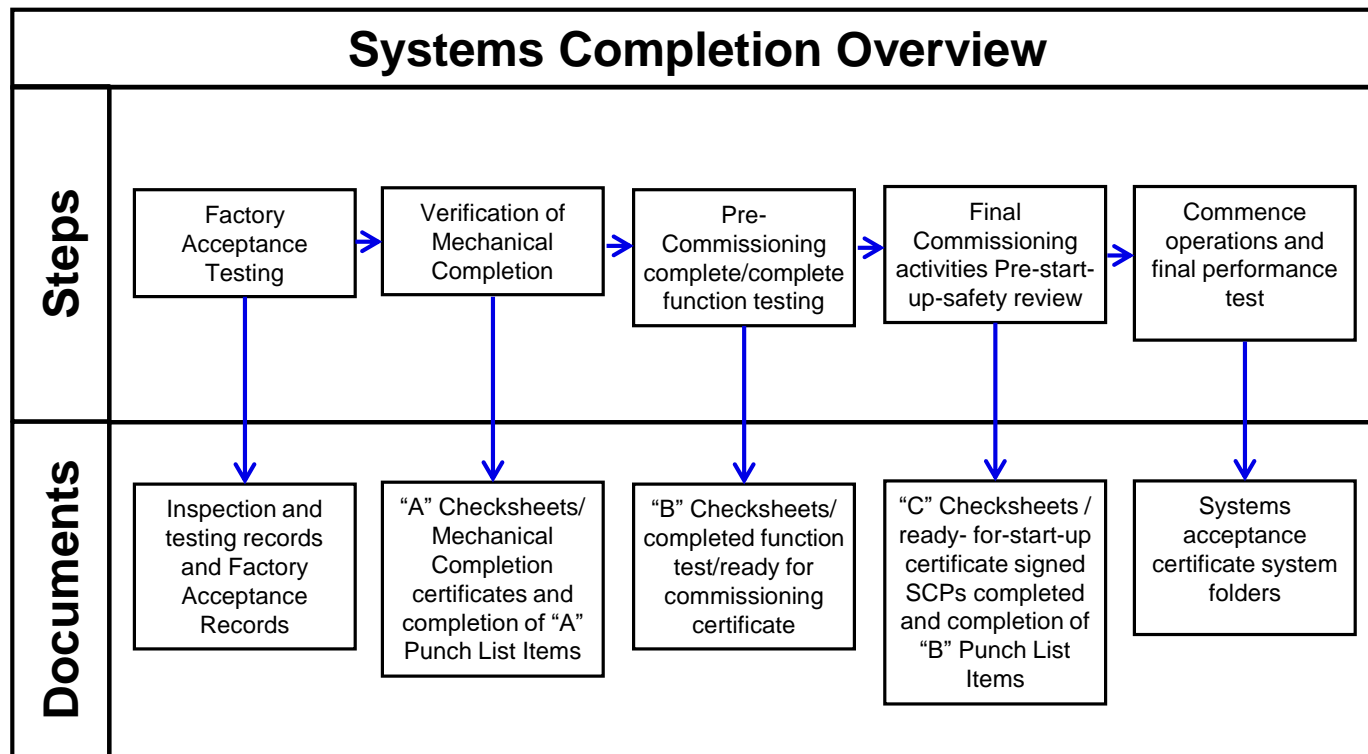
## Safe and Timely Handovers





# API RP IFSC Fig I

## Systems Completion Execution Process

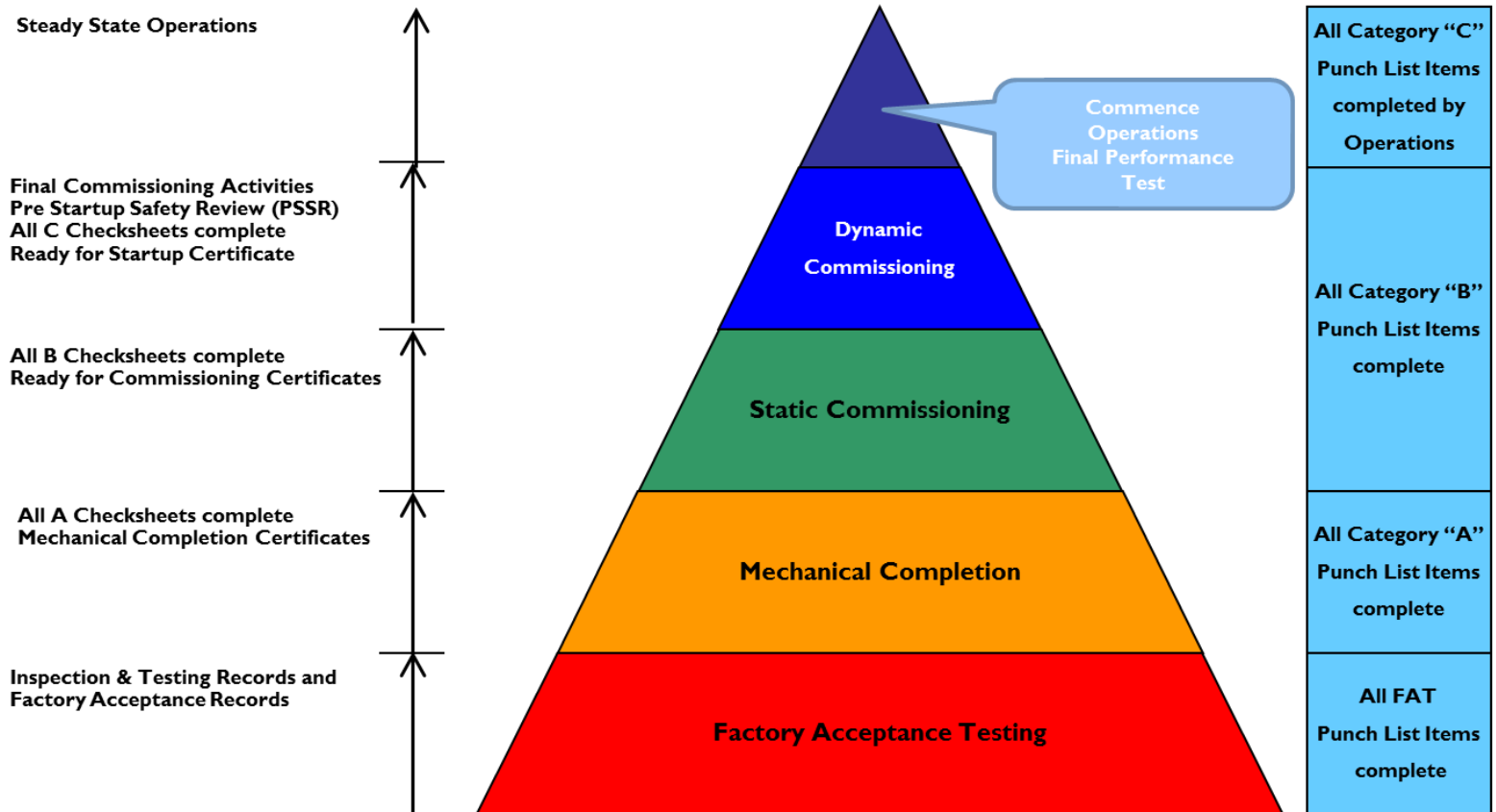


**API RP IFSC Recommended Practice for Facilities Systems Completion Planning and Execution, 1st Edition –  
Courtesy of API**



# How we see Projects

## The Completions Pyramid

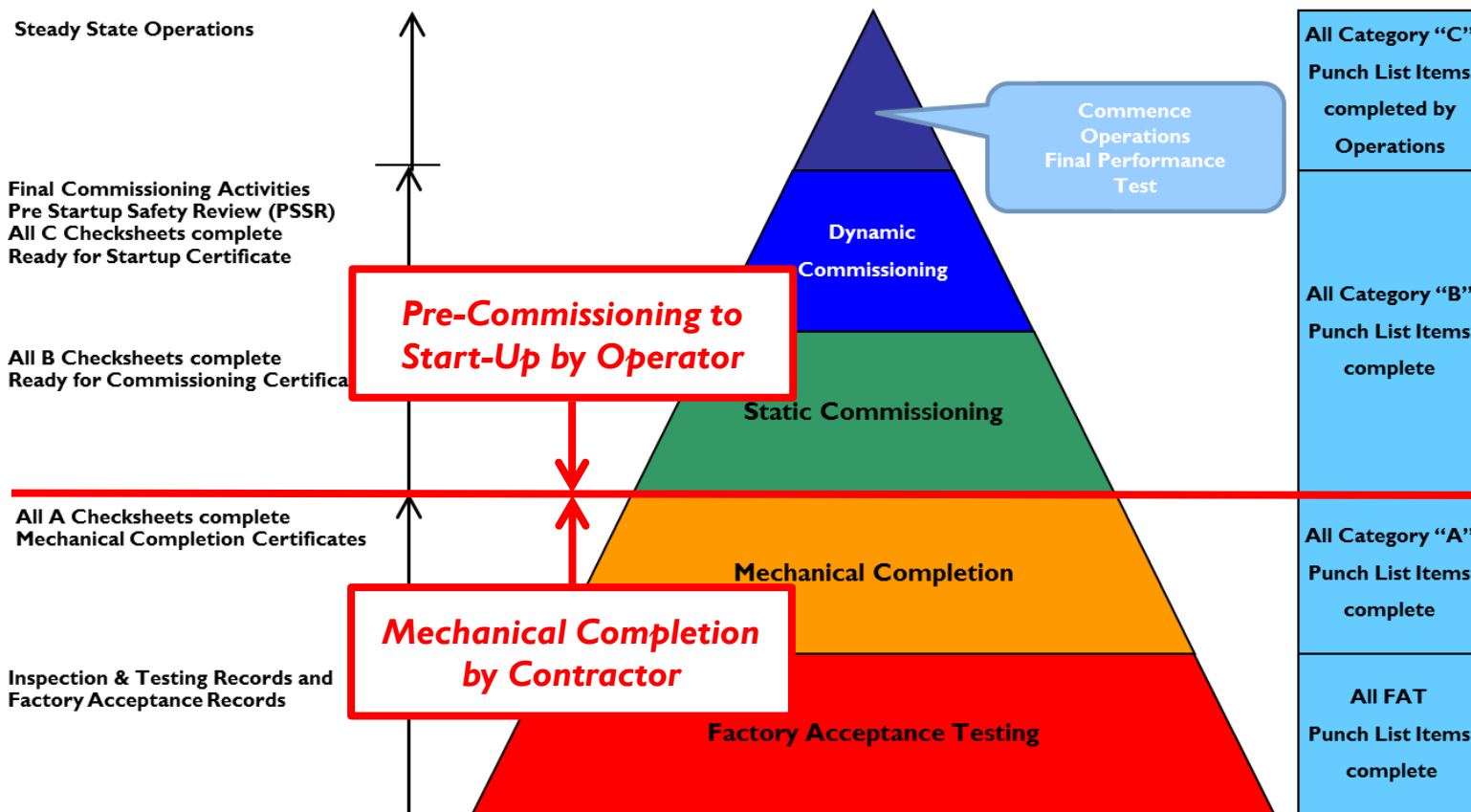


**Completions Pyramid © 2005**  
With reference to API RP 1FSC Figure 1



# Current Reality

## Contractor-Operator Commissioning Teams



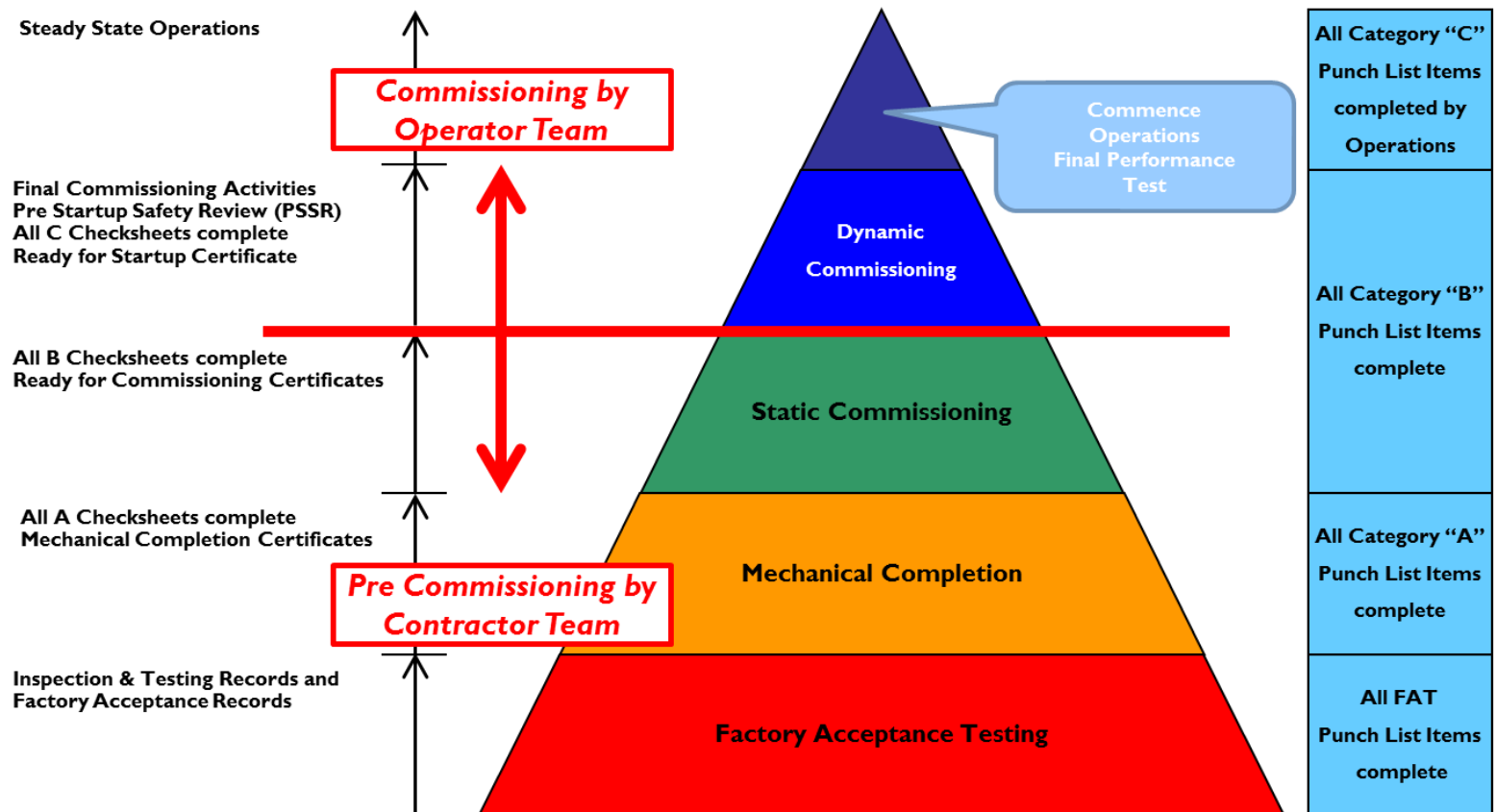
**Completions Pyramid © 2005**  
With reference to API RP 1 FSC Figure 1





## Raise the Bar I

### Contractor-Operator Commissioning Teams



**Completions Pyramid © 2005**

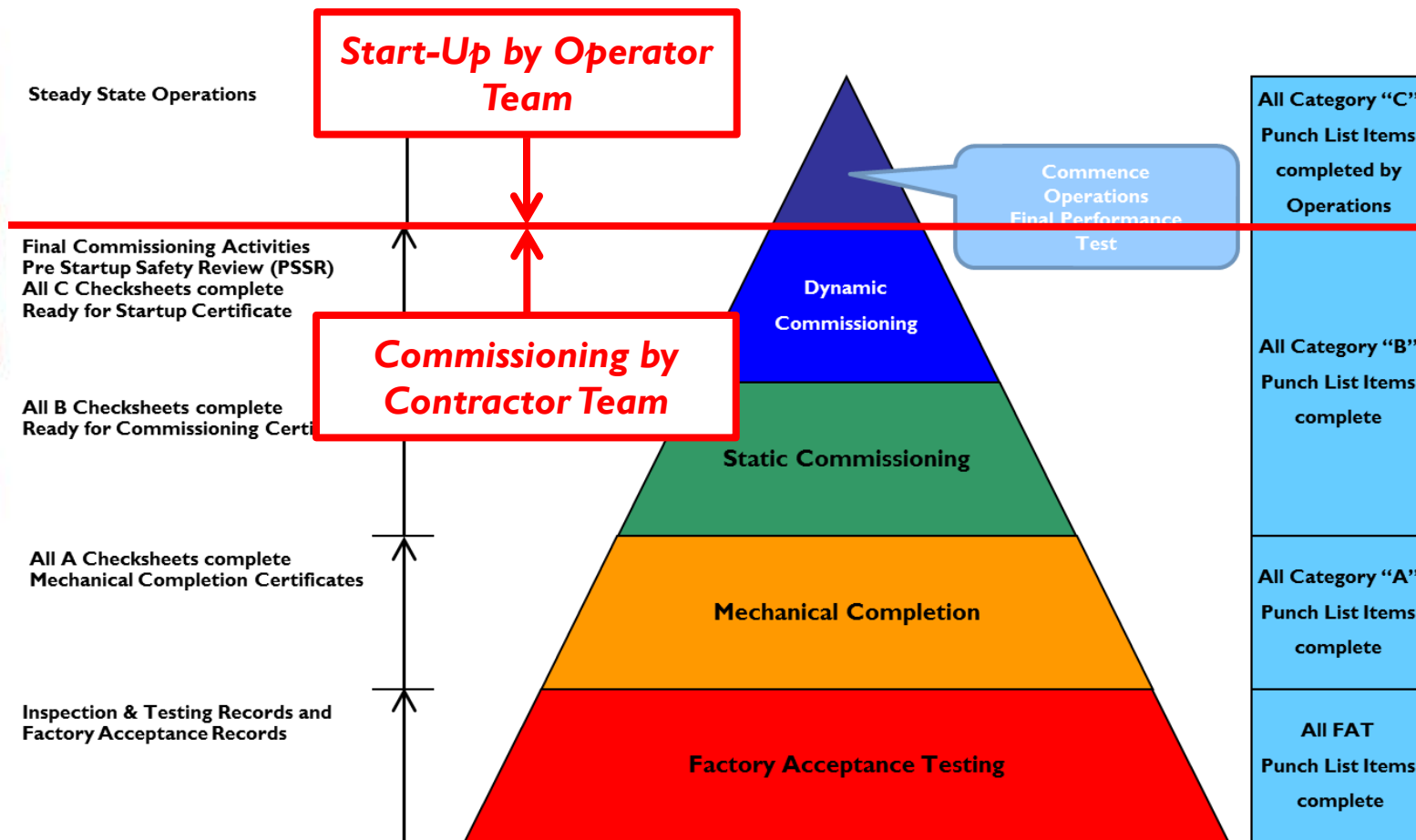
With reference to API RP 1FSC, 1<sup>st</sup> Edition, Figure 1

**Note, only suitable for more capable Operators working with more technically advanced EPCs**



# Raise the Bar 2

## Contractor-Operator Commissioning Teams



**Completions Pyramid © 2005**

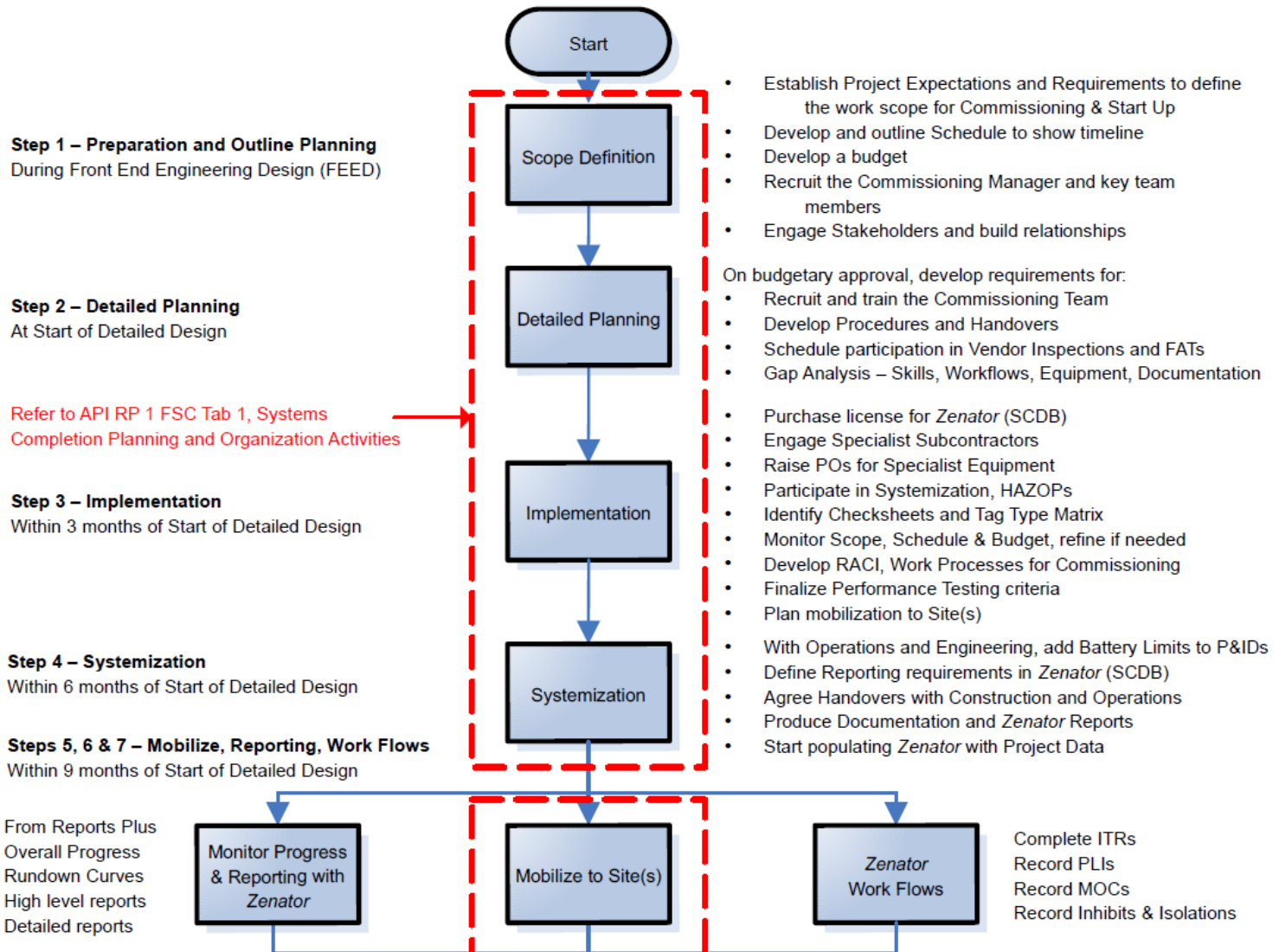
With reference to API RP 1FSC Figure 1

*Note, only suitable for more capable Operators working with more technically advanced EPCs*



# Zenator Implementation

## Simplified Commissioning Logic, Part I





# Zenator Implementation

## Simplified Commissioning Logic, Part 2

### Step 8 – Make Progressive Handovers

Progress Work Flow through Dynamic Commissioning of Systems, complete Certification, prepare to make Staged Handovers to Operations in line with Project Schedule

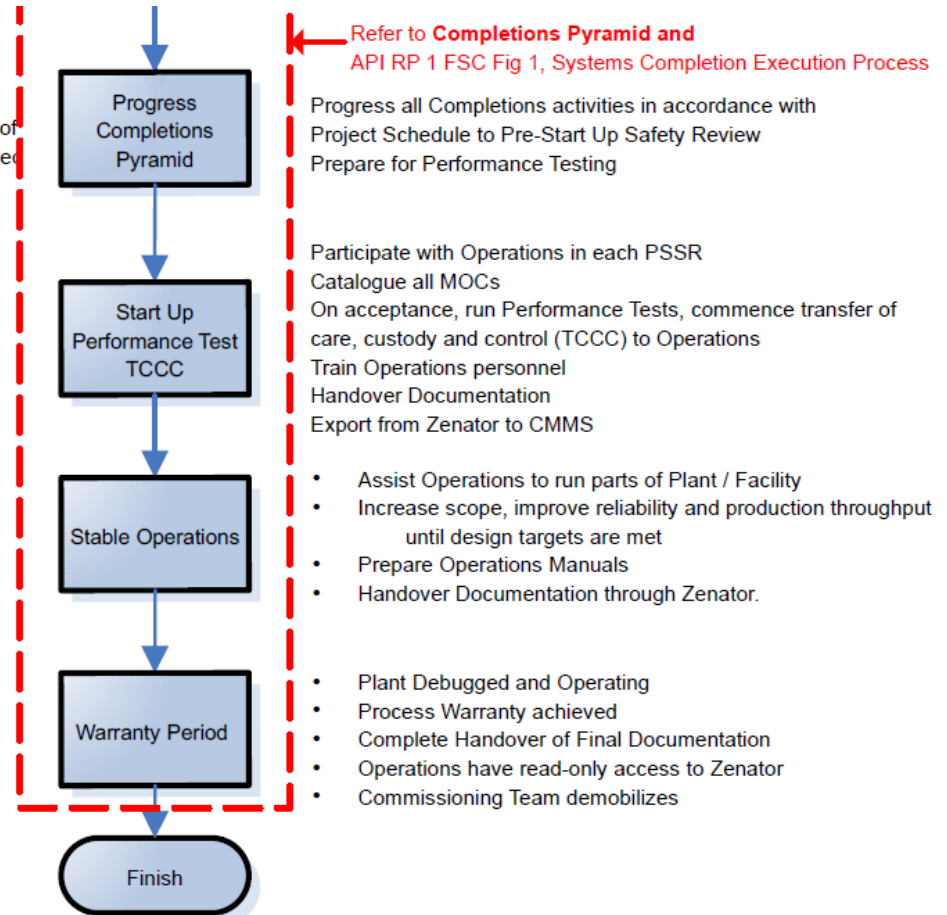
### Step 9 – Start Up & Performance Testing

### Step 10 – Achieve Stable Operations

Completion Certificates issued

### Step 11 – Warranty Period Begins

Certifying Authority and Regulator satisfied  
Final Acceptance Notice Issued







# Zenator Implementation

## Simplified Commissioning Logic



### **Preparing – Steps 1 & 2**

Is the recruiting and organizing of resources, gathering of information, developing schedules, producing documentation.

### **Implementing – Steps 3 to 8**

Is the “doing” phase usually viewed as “commissioning”, but embraces activities prior and subsequent to actual “commissioning”.

### **Closing Out – Steps 9 to 11**

This final phase will define how the project is perceived by those responsible to take custody and continue operations as the plant or facility goes into production. On completion of Closing Out, the Commissioning Team will demobilise.





# Zenator Implementation



## The Influence Curve



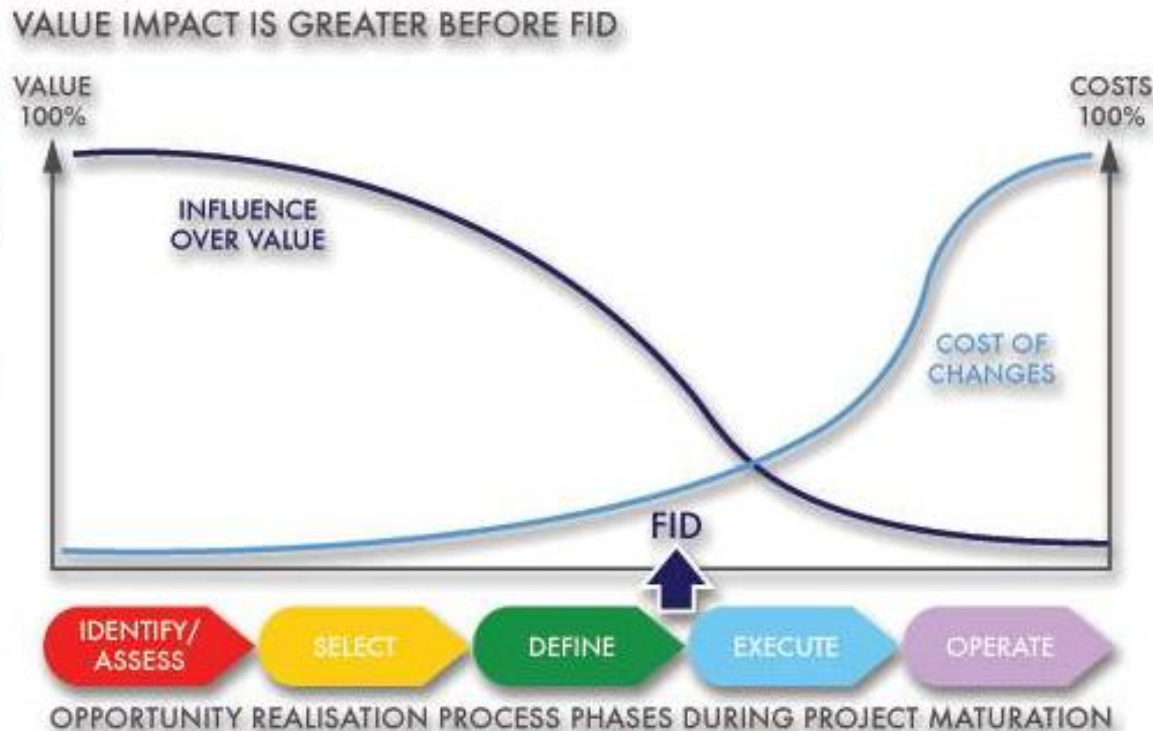




# Zenator Implementation

## The Influence Curve

### Influence Curve over Project Life Cycle Reproduced with grateful thanks to Shell Oil



Notice in the diagram the 5 Stage Gate phases in a project there are two curves overlaid;

1. The **Influence Curve** which declines from Phase 1
2. The **Cost Change Curve**, increasing from Phase 1

The two curves are anecdotal, not scientific, but they are true, proven by experience.

Notice that near the end of Phase 3, a final investment decision (FID) is taken.

If positive, the project will move into the next Phase, Execute.

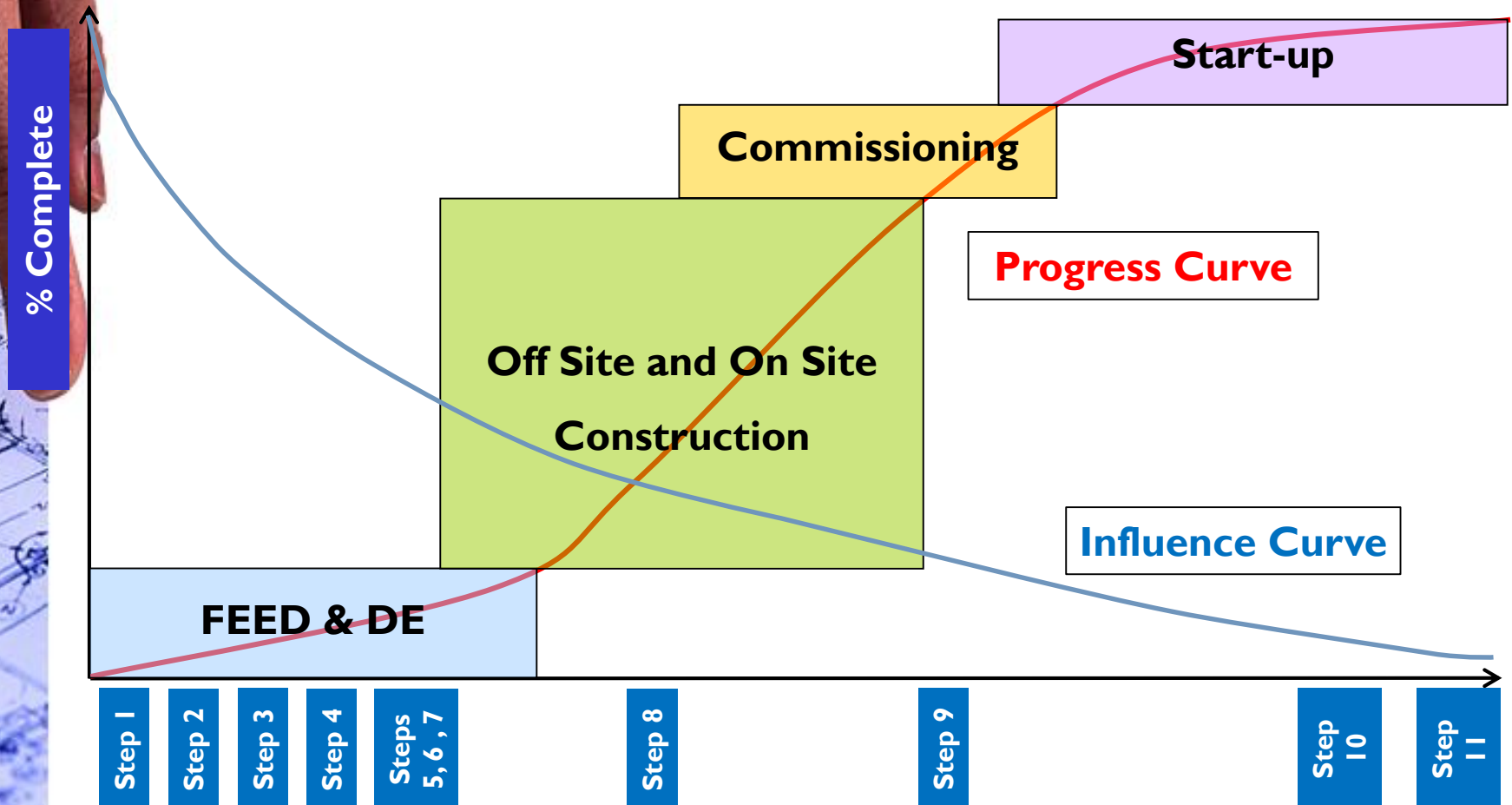
See also the statement that value impact is greater before FID.



# Zenator Implementation

## The Influence Curve

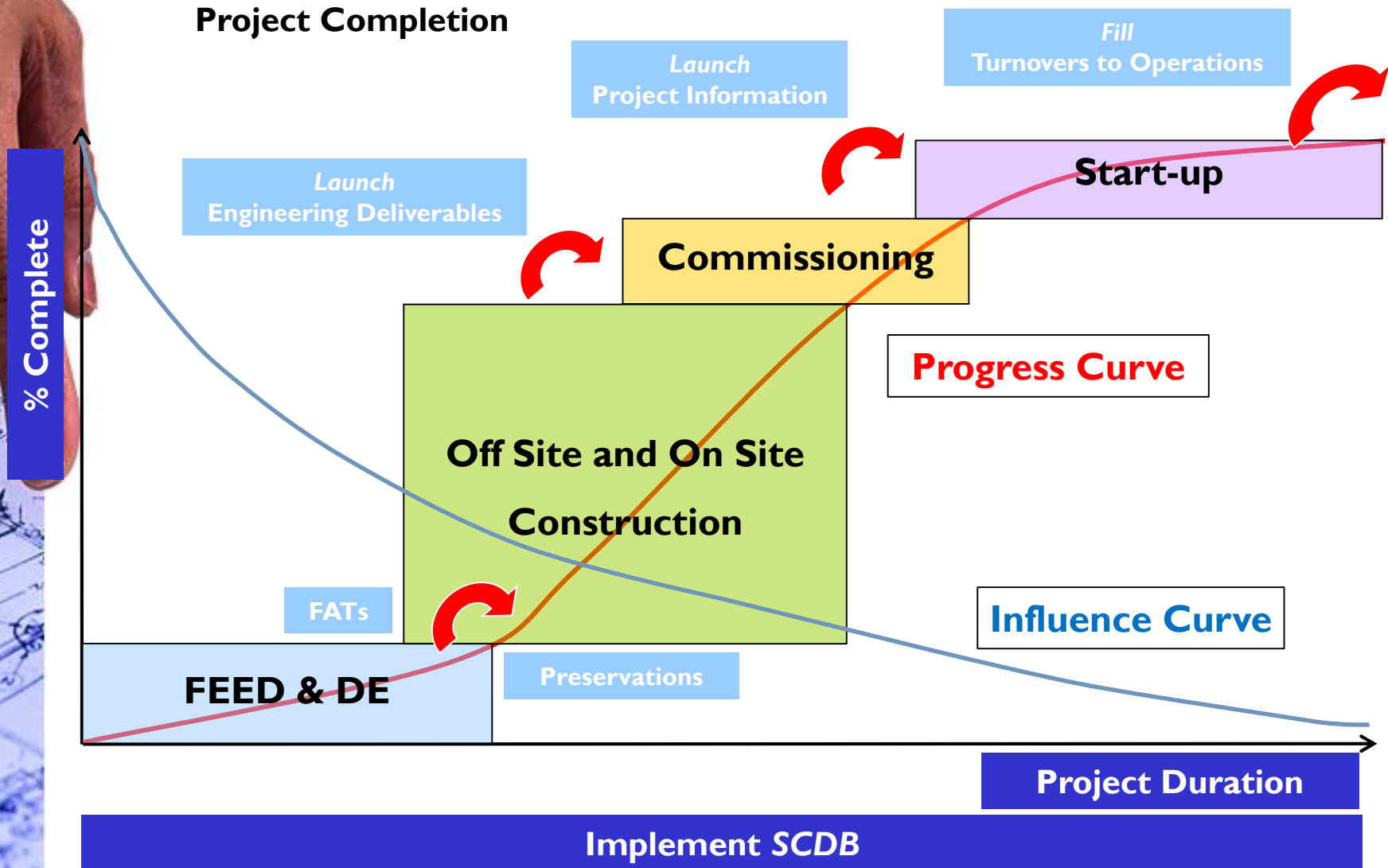
### Simplified Commissioning Logic





# Zenator Implementation

## The Influence Curve







# Falcon Group and Zenator



## Helping you to complete your projects

- On Time and Safely

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