

# UpFRONT<sup>®</sup>

Operational Readiness and Start-Up Support



# **FLUOR**<sup>®</sup>



## Where Will You Start?

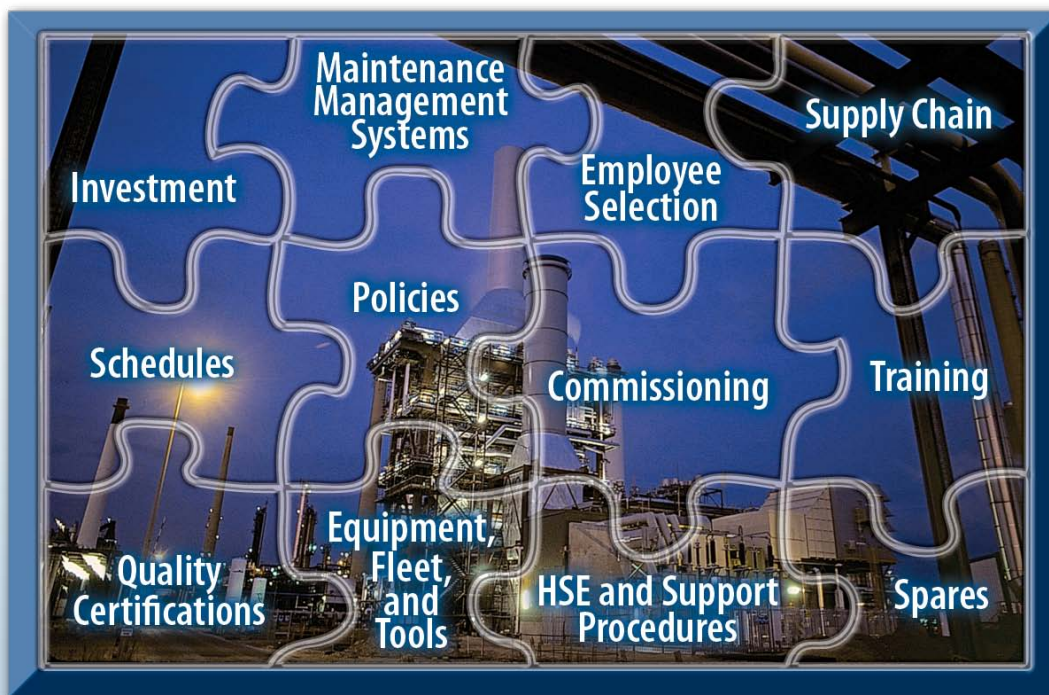
Starting a new facility is both rewarding and challenging – rewarding because your company is growing and generating more revenue and challenging because there are thousands of tasks that must be accomplished before revenue is generated. Whether you are starting an oil refinery, steel rolling mill, process or discrete manufacturing facility, chemical facility, mine, pharmaceutical plant, or power generating facility, you face thousands of obstacles that must be addressed UpFRONT!

### An Opportunity to Build Competitive Advantage

Starting a new facility is a unique opportunity to build competitive advantage for your company.

It is not just that the facility will be brand new with the latest technology. You have the opportunity to train and develop a new workforce. You can select and implement new work processes, systems, and best practices. You can establish new supply chains to replace inventories.

But how do you capitalize on these opportunities? And how do you ensure your plans and programs will be sustainable?



# A Complete Solution



## Owner's Challenges

Some owner challenges include:

- Achieving desired net present value from both capital costs and life-cycle operating costs
- Implementing O&M best practices to sustain performance
- Recruiting and training a qualified workforce
- Optimizing building layout, product flow, material handling, and plant logistics

## Managing All the Pieces of the Start-Up Puzzle

Fluor has developed an integrated work process called UpFRONT that addresses the thousands of tasks you must accomplish and the potential risks you must mitigate to have a successful start-up.

UpFRONT...

- Identifies gaps in owner and contractor start-up plans and processes
- Develops methodologies to supplement and deliver missing pieces
- Delivers a schedule for implementation of all activities
- Identifies risks to enable their mitigation
- Supports the optimization of capital investment into plant life-cycle costs

UpFRONT provides a complete solution for starting any new facility.

## Owner's Benefits

Some of the benefits that can be realized by using UpFRONT include:

- Higher return on investment and net present value
- Lower total life-cycle cost
- More efficient owner, supplier, and contractor start-up master plan and schedule
- Reduced risks for commissioning, start-up, and production ramp-up
- Faster start-up to accelerate operations revenue
- Better prepared workforce – Aligned, trained, equipped, and ready for production





# All the Pieces Work Together

## UpFRONT's Readiness Modules Integrate with the EPC Process to Accelerate Vertical Launch



**Steady State Operations:**

- Capacity
- Cost
- Quality
- Safety
- Environmental

On or Ahead of Schedule

### Capacity Planning

- Evaluation of capital and non-capital options for creating production capacity
- Refinement of preferred capacity options with financial benefit analysis
- Location analysis, site selection, permitting, capacity creation, and community due diligence

### Operational Readiness Planning

- Identifies organizational tasks, roles, and responsibilities for hiring, training, operations and maintenance (O&M) procedures, material induction, quality accreditation, customer certification, etc.
- Assists with plant start-up, production ramp-up, and O&M
- Focuses on high-priority risks
- Identifies opportunities created by activities ahead of schedule

### Life-Cycle Design Support

- Integrates life-cycle and business-case justification into the EPC process
- Articulates strategies, goals, and objectives for operations and maintenance
- Identifies opportunities to increase reliability, safety, and compliance
- Assesses the impact of lean production principles
- Prioritizes risk criticalities
- Consolidates equipment supplier documentation, data, and training

### Maintenance Readiness

- Implements maintenance and reliability practices
- Helps drive top quartile maintenance performance
- Confirms desired reliability levels for plant equipment
- Optimizes spare parts investment
- Orients the maintenance team for start-up, ramp-up, and ongoing operations



## Predictably Superior Performance

### Operations Readiness

- Integrates procedures for operations, quality, logistics, and production control staff functions
- Applies lean principles to help create a competitive workforce
- Develops procedures which improve the availability of systems, databases, tools, parts, facilities, and personnel for facility operations
- Implements all operations programs and procedures at start-up

### Systems Readiness

- Develops and implements overall information systems strategies
- Establishes information systems, databases, tools, facilities, and personnel
- Integrates with related IT functions
- Generates procedures for the implementation and application of all software applications
- Generates EPC, OEM, and owner systems integration plans

### Organizational Readiness

- Supports design of organization strategies and objectives
- Develops and implements HR policies, databases, and procedures including:
  - Recruiting and selection
  - Hiring
  - Pay and progression
  - Critical training needs
- Aligns HR policies with O&M strategies and objectives

### Owner's Risk and Readiness Reviews

- Focuses on major risks to the investment case
- Provides gap analysis, risk list, and mitigation plans
- Enables the project team to evaluate:
  - Implementation of appropriate best practices
  - Completion of correct tasks
  - Validation of key start-up deliverables

### Support Readiness

- Establishes the plant and facility support functions:
  - Health and safety
  - Environmental management
  - Plant engineering
  - Facilities services
  - Utilities/energy management
  - Accounting
- Prepares policies, procedures, databases, and support systems needed for vertical launch and operating success

### Supply Chain Readiness

- Establishes an integrated supply chain
- Develops strategy, policies, databases, work processes and procedures, and training programs
- Enables identification, procurement, and receiving of materials and services
- Establishes database of suppliers for quick reference after start-up

### Vertical Launch

- Delivers effective precommissioning, commissioning, start-up, and performance testing
- Combines noninvasive acceptance testing with predictive maintenance baselines
- Integrates launch procedures including:
  - Commissioning
  - Onsite system acceptance testing
  - Performance validation
  - Validation of operating procedures
- Manages vendor-supplied/field training activities



## Track Record of Success

Below are some of our recent client successes. Results will vary as each project presents its own challenges.

**Reduced Capital Investment and Improved Profitability**

### Chemicals

- Site selection incentive negotiations
- Applied UpFRONT during the EPC phase to prepare a new plant for operations and maintenance
- Implemented best practices for on-time commissioning, start-up, operations, and maintenance
- Achieved 10 to 1 payback on UpFRONT investment



**Early Start-Up and Record Productivity**

### Metals

- Started up 100 days ahead of schedule
- ISO and QS certification at start-up
- Set records for first-year productivity and safety
- Plant considered best in class with numerous national and international productivity, cost, and quality awards



**Predictability in Regulatory Permitting**

### Life Sciences

- Global competitiveness analysis, site selection, and incentive negotiations
- Provided engineering, procurement, construction management, start-up, commissioning, and validation services
- Met validation requirements during start-up and completed project one month ahead of schedule
- Passed FDA licensing inspection with zero observations





## Oil and Gas



- Established master plan to mitigate start-up risks, omissions, and duplicative efforts
- Developed an integrated operational readiness schedule aligned with EPC milestones
- Implemented operations, maintenance, and safety programs
- Successful on-time, on-budget launch satisfied the investment business case

**Plant Performance  
Exceeding  
Business Plan**

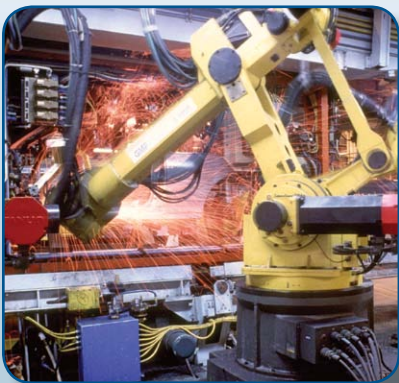
## Power



- Site selections for multiple concurrent projects
- During start-up, successfully established maintenance and reliability program
- Developed standard operating practices and procedures
- Trained all plant personnel prior to start-up

**World-Class  
Workforce for  
Sustainable  
Competitive  
Advantage**

## General Manufacturing



- More than \$1 billion in site location incentives
- Identified and mitigated \$300 million of program risks
- Established O&M procedures and systems
- Led recruitment, selection, and training of all plant personnel
- Created world-class, two-tier supply chain system
- Produced first unit ahead of schedule and with zero defects
- Winner of numerous lean manufacturing awards

**Superior Operating  
Performance Creates  
Superior Financial  
Performance**



## About Fluor

- Fluor is one of the world's largest, publicly traded engineering, procurement, construction, maintenance, and project management organizations. Over the past century, Fluor has become a trusted global business leader by providing exceptional expertise and technical knowledge across every phase of a capital project or facility program. Clients rely on Fluor to deliver integrated, world-class solutions that optimize their assets, improve their competitive position, and increase their long-term business success.
- Our UpFRONT start-up planning and implementation technologies can accelerate asset productivity, profitability, and performance by bridging the transition between project completion and ongoing operations. UpFRONT expedites validation, commissioning, and start-up activities, including organization preparedness, employee training, HSE procedures, quality certifications, and maintenance best practices.
- Consistently rated as one of the world's safest contractors, Fluor's primary objective is to assist our customers in maximizing return on capital, employed safely with complete regulatory compliance. The expertise of our global workforce of 42,000 men and women provides cost-effective, intelligent solutions in a timely manner.

## Worldwide Delivery



For more information on UpFRONT, call 864.517.3301.

[www.fluor.com](http://www.fluor.com)

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