Introduction to Operational Readiness Management

Transnet National Port Authority - TNPA
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A. Concept of Operational Readiness

As corporate or government entities are intensely investing capital for growth, it is critical that tools and controls are put in place that will increase the chances of realising investment benefits – Large Infrastructure Projects, capital projects are in the first place initiated in order to improve the operational environment; therefore, capabilities (emerging from sets of artefacts or project outputs) in that environment must be exploited in operations to deliver the expected benefits ...

A key goal of Capital Projects is to achieve a State of Operational Readiness in order to achieve successful Start-up on time and within budget – and people, processes, and technology contribute thereto – Another goal is to reach a State of Operational Excellence as soon as possible after Start-up ... (R. Faciane, 2015)

Many organisations involved in capital projects at some point wonder why they can’t seem to get any real BANG for all the Bucks invested thus far ... Well, something was not “ready” in their operations!
A. Concept of Operational Readiness

**Readiness** as a concept originated from the military; it is often defined as follows:

> “The capability of a unit/formation, ship, weapon system, or equipment to perform the missions or functions for which it is organized or designed ...”

*Dictionary of Military and Associated Terms, US Department of Defence, 2005*

- The term **readiness** is used in a general sense or to express a level or degree of readiness to transition to operations; thus, its application in capital projects – **Operational Readiness (OR)** [1] is a project management tool that is used to prepare the “operational environment” of the organisation to **effectively support the product/solution and accept the changes resulting from a project.** It is also the concept of setting things to a good start for a product or solution;

- **Operational Readiness**, as an essential component of any Capital Programme initiative, is required to streamline the transition of new assets from project environment to operational environment – **OR is a business (case) imperative!**

[1] *Commissioning* is a quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets defined objectives and criteria ...
A. Concept of Operational Readiness

A more comprehensive Project Lifecycle Model – which indeed includes the operational environment, thus aligns to Systems Engineering – is shown here:

- Operational matters shall be considered first during Concept & Development; [In accordance with “9 Laws of Effective SE” by Zane Scott: Law #1 – Begin with the End in Mind]
- Focus should shift away from “building the physical facility” to developing a “successful system” that effectively improves the Operational Environment;
- Project Team’s active involvement may end at Close-Out; however, the team should be “intermittently” involved in Operational Environment (e.g., at PIR) to allow for Lessons-Learned, fine-tuning of Design, and/or Retrofitting ...

FEL = Front End Loading

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A. Concept of Operational Readiness

Both theory and experience have confirmed that successful project delivery is necessary, but not sufficient to realise the benefits intended in the Business case – An Operational Readiness process is needed to safely and efficiently transition from the project environment (where physical assets are created, delivered) to the operational environment, affecting both ‘business’ and ‘broader’ environments!

- Construction Environmental Management (including EIA)
- Project Environment
  - The Project Manager is accountable for quality and ensuing handover of products or systems ...
- Business Environment
  - The Project Sponsor is accountable for their operational integration and benefit realisation ...

Environmental Impact
- “Short-term” effects ... thru Construction
- “Long-term” effects ... during Operations

Brown-field projects

Operational Readiness (OR) plays “Integration Role” to both environments to enable “safe and effective transition” of System from project to Operations ...
A. Concept of Operational Readiness

“The new system {LIP} will often change the original Context ... in ways that are sometimes beneficial, but more often ... this change is to the detriment of those we were trying to help” – J. Martin, 2004; the purpose of OR is to have new systems effectively integrated and deployed in a business environment by being “ready” ...

“Capabilities are exploited in order to achieve outcomes ... you have to make some changes in ‘business as usual’ in order to enable outcomes ... those outcomes and benefits are what enable you to achieve transformational corporate objectives ... but also recognise that they may lead to dis-benefits.” – A. Ferguson, 2014
B. Necessity of Operational Readiness

Recent studies/surveys (e.g., Deloitte & Touche, 2012) have revealed the following:

(i) Retrofitting Operational Readiness may cost the Owner-organisation an additional 25% of Estimated Total Cost – but far less when it is planned-in ...
Indeed, when planned-in from the project onset, OR will only cost around 1-4% of total Cost!

(ii) Operational Readiness failure may cause up to 30% loss of returns due to delayed and/or ailing Ramp-up, which has the potential of defeating the viability of the Business Case (e.g., reduced/negative NPV due to failed OR).

Operations is supposed to reach 90% of Design Capacity at Start-up. The investment in OR could be the differentiator – human elements, technology (i.e. equipment) and processes will also need strong foundations and well-designed support systems to facilitate a viable “Vertical Start-up” ...

Adapted: GP Strategies, 2015
B. Necessity of Operational Readiness

“Operational Readiness significantly enhances the chances for the project success by preparing the end-user environment, not as an afterthought, but as an integral part of project management. The concept of readiness embraces five of the nine PMBoK Guide Knowledge Areas – Scope, Time, Cost, Quality, and Risk.”

– Is your system more ‘ready’ than your environment? by DG Gardner, Nov 2001

“[1] It is increasingly recognised that a focus on operational readiness is a key differentiator in a programme’s ability to deliver against the commitments in its business case. [2] Programmes that embed operational readiness from the outset typically identify risks earlier, mitigate design issues when they are less costly to resolve and build highly capable teams … [3] Evidence suggests … ongoing operations and maintenance costs over an asset’s lifecycle are typically 1-2% higher, year-on-year and for the entire life of the asset, where operational readiness was not sufficiently achieved …” – Operation Go Live!, Deloitte, 2013

“While a number of industries do focus on operational readiness, few can claim to have mastered managing the human factor, with people by far the most challenging and least predictable component in delivering a complex operation.”
C. Requirements for Operational Readiness

Unless an adequate Operational Readiness (OR) exercise is suitably undertaken, the organisation may fail to establish the scope, costs and optimum timing of Operational Readiness implementation – which could compromise the value a particular set of projects is expected to deliver (as intended in the Business Case!)

Four main Organisational Domains impact on Operational Readiness as follows:

(i) Legal and Statutory (e.g., licensing & permitting, compliance);
(ii) Human Resources (e.g., skills, culture, structures, interfaces);
(iii) Processes (e.g., transactional, operating systems, workflows); and
(iv) Infrastructure (e.g., power-supply, services, logistics, facilities).

Operational Requirements should consider needs, demands from the Competing, Collaborative, and Sustaining (sub-) systems within the Context System. It follows that Operational Readiness should apply to the whole SoI, including the Context-, Realisation-, and Solution- Systems – E.g., Is there a “market” for the new system?

The intended ‘Concept of Operations’ of the Solution-System should inform the OR Scope – Indeed, Operational Readiness serves to accommodate a Solution ...
C. Requirements for Operational Readiness

Failure to adequately address OR will generally impact of Operations as follows:

<table>
<thead>
<tr>
<th>Operational Readiness Challenges</th>
<th>Possible Impacts on Operations</th>
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<tbody>
<tr>
<td><strong>Legal and Statutory Readiness:</strong> &lt;br&gt; Securing licenses to operate or applying for new (by-)laws to allow/protect operations</td>
<td>• Operations halted for non-compliance&lt;br&gt; • Delayed Start-up to allow legal process&lt;br&gt; • Waste Disposal prohibited/not allowed</td>
</tr>
<tr>
<td><strong>Human Resources Readiness:</strong> &lt;br&gt; Addressing skills and capacity shortages or organizational design flaws</td>
<td>• Increased costs due to “imported” skills&lt;br&gt; • Confused roles &amp; responsibilities&lt;br&gt; • Sub-optimal production throughput&lt;br&gt; • Poor quality and/or safety records</td>
</tr>
<tr>
<td><strong>Processes/Systems Readiness:</strong> &lt;br&gt; Ensuring workflows and management systems are able to support changes in operating environment</td>
<td>• Constrained management effectiveness&lt;br&gt; • Inability to produce meaningful management reports&lt;br&gt; • Material and critical parts shortage</td>
</tr>
<tr>
<td><strong>Services and Infrastructure Readiness:</strong> &lt;br&gt; Availability of infrastructure and related services and supplies to support operations</td>
<td>• Operations impended by lack of supply&lt;br&gt; • Increased production costs due to <em>pro tem</em> supplies (e.g., by use of generator)&lt;br&gt; • Delay/Inability to reach design capacity</td>
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<tr>
<td><strong>Commercial Agreement:</strong>&lt;br&gt; Signing Off-take Agreements <em>before</em> Start-up</td>
<td>• Lack of customers for products/services&lt;br&gt; • Customer(s) not ready/able to transact</td>
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</table>
C. Requirements for Operational Readiness

An adequate PM methodology (PLM) shall accommodate a built-in OR Process; successful delivery of capital/infrastructure projects (LIPs) rely on OR due to the propensity of the newly deployed system to rely/impact on the Context-System ...

PLM Activity

- **FEL-1** (Conceptual)
  - Confirm Strategic Alignment
  - Generate/Identify Options as per ORS

- **FEL-2** (Pre-Feasibility)
  - Select the “Most Viable”, “Single-Go-forward” Option

- **FEL-3** (Feasibility)
  - Plan Execution of “Single-Go-Forward”
  - Finalise Business Case

- **FEL-4** (Execution)
  - Detailed Engineering and Procurement
  - Construction
  - Hand-Over to Ops

- **Close Out**
  - Commercial Closeout
  - Administrative Closure
  - Lessons Learned

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**OR Focus**

- **Org Environment “baselined” by Sponsor**
  - OR Requirements Baseline Report

- **OR Requirements Defined by Project Team**
  - OR “Should Be” Requirements

- **OR Plan # (scope, budget, timing, risks) by Sponsor**
  - OR Requirements (Draft) Plan

- **OR Plan implemented by Sponsor**
  - OR Requirements (Final) Plan

- **Commissioning & Start Up Reviews by Sponsor**
  - Continuity of Operations Plan

# Costs (Capex & Opex), risks, or timing implications of OR Plan to be reflected in Business Case...
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“The significance of project complexity to project success or otherwise cannot be underestimated, hence the compelling need to allow for a thorough understanding of the inherent complexities in an infrastructure delivery system.” - Baccarini, 1996

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  5. Managing Project Risks
  6. Managing Operational Readiness
  7. Managing Project Business Case