Manufacturing Accelerator and Supply Chain Accelerator

Digital manufacturing and broader supply chain operational excellence (OpEx) work system
Five Common (OpEx) challenges

1. **Underperforming operations**: Programs have failed to realize their stated objectives, or they fail to sustain their initial improvements.

2. **Top-down approach to implementation**: Accountability for improvements is not in the hands of the people who have the most knowledge of what’s happening in operational teams.

3. **Lack of standardization**: Organizations falter when they try to scale the program across operations. As the program rolls out, each operation begins to interpret its own way of implementation and direction, which limits the ability to measure or manage performance.

4. **Disconnected approaches**: Workforce teams are not sharing knowledge dynamically and are not being connected to a central improvement system, and there is a lack of engagement and ownership.

5. **Inconsistency and language barrier**: Many operational excellence (OpEx) programs start out in English, or the host country’s language. However, as soon as companies try to expand the program across jurisdictions with multiple languages, the content may not be translated properly, leading to confusion and inconsistency.
Why
EY Catalyst?
Catalyst is part of the EY broader Smart Factory offering
Integrating both digital OpEx and manufacturing systems capability

Smart Factory

Digital OpEx Platform
- Global online repository of leading practices, training, analytics and tools to build capability
- Automates and tracks overall OpEx journey for a line, department, plant and network function
- Online user forum for communication and knowledge sharing between departments and plants

Digital Shopfloor execution applications
- Performance visualization and analytics that use line data and reliability engineering analytics to drive greater loss analysis and focused actions
- DDS and DMS applications through which the operators execute their work more efficiently and effectively
- Increases the “intelligence” of the equipment
Imagine the ease of being able to rely on a digital OpEx platform with advisors helping to focus your people’s efforts on performance improvement to support sustainability of gains.

Benefits:

- **Meets you at your maturity level** and then builds on current practice and performance improvement capability
- **Provides you with an interconnected road map** that guides your people’s daily improvement actions with step-by-step work packages for leaders, team leaders and operators
- **Standardizes and integrates** all practice maturity assessment, and improvement methods and approaches, into one version of the truth
- **Supports dynamic reporting** for you to visualize progress and identify further improvement opportunities at local, regional and global levels

**EY Catalyst Platform**

A digital OpEx maturity-based road map standardized, interconnected and self-directed for sustainable performance improvement.

- **Guides** improvement actions on the journey to excellence
- **Meets you where you are** and builds on the good work done to date
- **Standardizes and integrates** all improvement Pathways
- **Builds operator and leadership morale and capability**
Manufacturing Accelerator and Supply Chain Accelerator Provided on the EY Catalyst Platform

- EY Catalyst is a smart, cloud-based OpEx platform that integrates improvement methodologies into one road map.
- Supported by advisors it helps to focus your people’s efforts on sustainable performance improvement.
- It builds organizational capability and leadership alignment, thereby facilitating a performance improvement culture.
- The strong focus on employee engagement and culture transformation supports you to deliver value to all your stakeholders.

Manufacturing Accelerator
Supply Chain Accelerator

provided on the
EY Catalyst Platform
What is the opportunity?

Typical sustainable OpEx benefits needed today to become and remain competitive:

A performance culture

Workforce engagement and capability resulting in:

- **Increased revenue** and deferred capital investment due to OEE improvement
- **Cost reduction** due to focused improvement in all teams
- **Increased productivity** due to improved morale and workforce stability

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Cost reduction | Inventory reduction | COGS reduction | Wasted effort reduction | Wasted material reduction | Energy, water and carbon emission reduction | Safety injuries and incident reduction
OpEx in the palm of your hand

Manufacturing Accelerator and Supply Chain Accelerator, offered on the Catalyst Platform, provide in-depth OpEx self-assessments, custom-built daily work plans with tailored improvement actions, training programs to develop the required skills, extensive global reporting and improvement result tracking.

Catalyst helps organizations to:

1. Recognize and remedy your underperforming operations: Measure all operations against one standard, identify the "gap to good" and set a road map to improvement for each leading practice Pathway.

2. Support top-to-bottom and bottom-to-top performance improvement: Alignment, capability building, collaboration and knowledge sharing.

3. Standardize for consistent measurement and reporting: Know-how on why to improve, what to do, when, how and by whom in sequenced improvement work packages and track the improvement results at operational, regional and global level against the same standard.

4. Interconnect and integrate all of its operations, practices and people to create an aligned approach that delivers sustainable results.

5. Provide OpEx in multiple languages to successfully scale.
Facilitated self-directive OpEx journey map
Assess, plan, execute improvements guided by the EY Catalyst Platform

**Assessor**
To collaboratively self-identify practice capability and performance gaps

**Improvement actions**
Leading practice improvement work bundles focused on logically ordered step-by-step actions that lead to performance gains

**Planner**
OpEx improvement journey maps that acknowledge improvements already made, and plans the work bundles needed to close performance gaps

**Capability building**
OpEx skill development workshop material linked to each improvement action, downloadable from the platform for internal trainers to utilize just-in-time
What is different?

Digital OpEx system features and benefits
What is different about the EY digital OpEx platform?

1. A digital OpEx platform accessible to all and centrally controlled
2. End-to-end supply chain OpEx work system
3. Facilitated self-directive OpEx journey plans — assess, plan, execute, learn and leading practice standardization across your peer network
4. A step-by-step five-stage maturity-based transformation and capability-building journey
5. Ability to upload local practices, tools and standard operating procedures to share knowledge directly on the shopfloor and between operations
6. Extensive global OpEx journey reporting and tracking
7. Interactive training and eLearning for capability building
8. Online communities and forums with the mobile reader application
9. Customizable — add and align your own OpEx program content to the journey map
10. Add your brand — configurable to allow you to add your branding for continuity
A digital OpEx platform, single sign-on and cloud-based, accessible to all and centrally controlled

- A secure, client-dedicated hosted service accessible on multiple devices — PC, tablet and mobile phone
- Single version of the truth that drives consistent practice improvement standards
- 24/7/365 access to assess, plan, execute improvement work, learn and share knowledge
- User management capability by client system administrator — control content access by user type, location, or plant and allow usage to all employees who are on the improvement journey at a licensed entity
- Advanced help and search capability
- Ability to quickly on-board new operations, teams and acquisitions
- Internal training capability development through train-the-trainer certification to make training cost-effective and deliverable by local resources
- Workshop materials centrally stored for download for just-in-time use
- eLearning and self-study capability
- Site-and company-wide community collaboration

EY Catalyst Application:
A secure web-based application that allows the organization to assess, plan, track and share leading practice knowledge and manage Accelerator implementation across all global operations of its business.

EY Catalyst Reader:
A tablet (iOS and Android) and Windows PC application that gives the organization easy, mobile and electronic access to the Accelerator’s leading practice and process improvement steps, shared learning and resources.

EY Catalyst Training:
Workshops and materials to facilitate the organization’s workforce in order to build the capability to maintain lasting performance improvement results.

EY Catalyst Community for knowledge sharing via the Reader:
An online forum to see leading practice examples and interact with others on the improvement journey.

EY Catalyst eLearning Modules:
Pathway overview eLearning modules for self-paced learning, which will support the leaders and improvement teams of the organization to gain an understanding of “why” a leading practice creates competitive performance, “what” the improvement work entails and “how” the implementation of a leading practice Pathway works. The reflective learning practice of the eLearning modules create buy-in and context for the improvement work and the transformation journey.
End-to-end supply chain OpEx work system
Facilitated self-directive OpEx journey plans
Assess, plan, execute, learn and leading practice standardization across your peer network

In-depth up-front OpEx self-assessments to:
► Clarify opportunity areas, focus on improvement plans, and compare against leading practice standards
► Get a combined view of OpEx journey required, by adding a combination of practice and performance assessment data to a financial opportunity analysis, a competency review, and a climate survey

Conduct self-assessment every six months thereafter to:
► Gain peer network practice and performance benchmark information
► Give your organization a regional and global view of your improvement and performance progress

Derived Global Integrated Practice Maturity Progress Report
Progress gap reports by site
Derived Global Performance Practice Improvement Report
Use aggregated values to compare performance/practice progress across regions/countries
Facilitated self-directive OpEx journey plans
Assess, plan, execute, learn, measure

- Meets you where you are based on your maturity assessment
- Plans your gap-closing work in sequential steps
- Provides you with all the “How to” and learning content to execute the plan

Assess

Plan

Measure performance

Execute and Learn

Share internal standards

Add evidence

Collaborate and share experience and tools

Replicate your organization’s site structure

Generate progress charts with performance gaps

Create gap closing plan with sequenced improvement actions

Conduct practice Pathway assessments by site
Facilitated self-directive OpEx journey plans
Assess, plan, execute, learn, measure (contd)

► Provides extensive assessment questions across all manufacturing and supply chain capability areas to measure and report on practice and performance
► Is carried out at line or department level — you can roll up assessment scores across the enterprise
► Provides fact-based assessment reports of current capability and helps establish consensus across the organization on leading practice maturity
► Identifies the performance improvement opportunities
► Provides a gap report per practice that allows you to compare the plans for different areas and identify common remedies
► Provides ongoing tracking of performance improvement and progress
► Facilitates tracking of performance improvement over years as baseline assessments are stored and never lost

“Assessment questions can be configured and modified by organization.”

Rewording of assessment questions to suit organizational requirements

Ongoing tracking of performance improvement by capability area

Fact-based assessment of current capability and establishment of consensus across the organization on leading practice maturity
Facilitated self-directive OpEx journey plans
Customized plans and execution

- Based on the assessments, a customized OpEx improvement plan is generated — at line and/or department level.
- Action plans have detailed step-by-step improvement actions and process steps on how to make the improvements required.
- Manufacturing and supply chain leading practices improvement actions with tools and training material are linked to these action plans.
- User pulls down “content” on how to execute the improvement and develop the capability from their action plan — because it’s broken up in sequential steps and it is not overwhelming.
- Users upload customized standard operating procedures, photos and evidence as improvement actions are completed to help other teams and prevent duplication.

Generate a Gantt Chart as a visual representation of scheduled start and end-dates for planned gap-closing improvement work.

Assign responsibilities, set target dates and track progress on the improvement plan.

Access Accelerator improvement action content directly from the gap-closing plan.
A step-by-step five-stage maturity-based transformation and capability-building journey

Pathway Progress: Autonomous maintenance

<table>
<thead>
<tr>
<th>Catalyst™</th>
<th>Stage 1: I operate, you fix</th>
<th>Stage 2: Basic conditions</th>
<th>Stage 3: Inspection and lubrication</th>
<th>Stage 4: Minor maintenance</th>
<th>Stage 5: Fully autonomous</th>
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<tbody>
<tr>
<td>1. Strategy</td>
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<tr>
<td>2. Basic conditions</td>
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<td>3. Inspection</td>
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<td>4. Technical tasks</td>
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<td>5. Improvements</td>
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<td>6. Visual Standards</td>
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<td>7. Training and development</td>
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<td>8. Benefits</td>
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Each matrix block contains:
- **Assessment Criteria (AC)** to identify improvement needed to close performance gaps
- **Stop & Thinks (SnT)** to allow leadership to support and lead the improvement process
- **Implementation Actions (IA)**, step-by-step process steps on how to close performance gaps with tools and templates
- **Training and learning material** to develop the capability needed at all levels

Continuously moving your operations forward across five stages of maturity in both practice and performance — **Assess, Plan, Execute, Learn, Repeat**

Assess, Plan, Execute, Learn, Repeat

Journey Began on (Date)
Ability to upload local practices tools and standard operating procedures — Share knowledge directly on the shopfloor and between operations

- Team members and leaders can upload local leading practice tools and standard operating procedures.
- Knowledge sharing helps to eliminate duplication of effort and reinvention of standard operating procedures and improvement tools.
- This increases productivity and quality of data capture.

Add your organization’s own practice improvement documents and tools. Practice leaders can provide organization-specific reference material and guidance lines for the entire organization, or for a specific region or site, based on the good work done to date to supplement the Accelerator content to maintain continuity.
Extensive global OpEx journey reporting and tracking

- View improvement progress, status and results by line, department, operation and level, and further roll up into local, regional and global reports
- Track progress to plan at any level in terms of activities completed or not completed
- Compare the differences and correlations between leading practice progress vs. performance across all your operations against one practice maturity and performance standard
- Export and print reports
- Manage improvement actions’ planned dates vs. actual completion dates

Use aggregated values to compare performance and practice progress across sites

Generate a gap report of actions completed or not completed to dynamically manage the improvement plan
Advanced analytics and progress reporting
At global, regional and local levels it supports the use of data-driven OpEx analytics to:

► Quantify practice capability status, and thus correlate with business performance
► Track overtime, to feed internal and external benchmarking
► Apply broader analytics to identify further improvement opportunities
► Improve platform usage governance and assessment cadence

Experience has shown that there is a strong correlation between practice maturity and operational performance:

► Site A indicates a strong leadership drive for performance.
► Site B exhibits a potential for organizational learning as they have good performance underpinned by good practices.
► Site C probably needs support in understanding leading practice as the apparent maturity in processes isn’t reflected in their performance.
Interactive training and eLearning for capability building

- **Train-the-trainer certification**: Allowing internal trainers to conduct training just-in-time as teams need specific competencies to complete an improvement work package.
- **Tools and templates**: Supporting the implementation of required improvement actions with the tools that teams learn to use as they complete improvement work.
- **Knowledge sharing**: Building on collective capability to prevent duplication of efforts; best-case standard operating procedures (SOPs), quality criteria and job aids can be shared across multiple operations.

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<th>Training and development: capability-building material in the form of training workshops and self-directed eLearning</th>
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<tr>
<td><strong>Train-the-trainer certification</strong> equips internal trainers to conduct just-in-time workshops. Materials for leading practice training by internal trainers can be downloaded from the platform as and when they need it.</td>
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<tr>
<td><strong>eLearning modules for self-directed learning</strong> inducts all members of improvement teams to the value of each leading practice Pathway. As new members join improvement teams, they can be brought up to speed very quickly.</td>
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</table>
The eLearning modules make on-boarding people to leading practice improvement work bundles cost-effective and dynamic.

- Online “coaching guides” facilitate guided self-reflection.
- They draw a user’s attention to something they could be doing differently and provokes thought around that new behavior.
- When called upon to express a response, the learner crystallizes in their mind a model for future behavior. Or, simply put, they know how to behave the next time they’re in a similar situation.

Our eLearning modules combine a coaching approach with domain-specific knowledge — each practice Pathway has four overview modules to provide context for practice proficiency, and, more importantly, it helps your people reflect on how a leading practice would add value.
Online communities and forums with the mobile reader application for collaboration and knowledge sharing

Study improvement actions “How to” content offline
► Codified standard improvement work sequentially planned out across five stages of maturity, accessible on a tablet and PC Reader application to support self-study, offline preparation and forum discussions between your people

Participate in online forums
► Site-based or organization-wide communities to connect, ask questions and share experiences

“The shopfloor enablement aspect of this approach has not only made my work as an operational excellence site leader easier, but has also created a much richer work environment for our operators and dramatically reduced dependence on our Six Sigma Black Belt resources in the improvement process. It allowed my team to add much more value.”

OpEx Plant Leader
Customizable
Add and align your own OpEx program content to the journey map

- EY Catalyst Platform is fully loaded with market-leading maturity-based assessment questions and practice improvement content in step-by-step standardized process steps, and tools and templates for Manufacturing Accelerator and Supply Chain Accelerator.

- Custom improvement content and tools and templates developed by your center of excellence (CoE) over the years can be added to the platform and directly linked to the roadmap.

- Custom content added is aligned to the appropriate practice Pathway and stage of maturity to make it easier for your people to use the right tools at the right time.

Catalyst Platform + combined content (customization)

- Majority of content and material is from the Manufacturing Accelerator and Supply Chain Accelerator with some existing organization-specific content from your OpEx work system loaded.

- All Catalyst content are co-branded to company logo and OpEx program name.

Catalyst Platform + extensive use of Catalyst content

- Greater use of Catalyst content compliments in-house leading practice content.
Add your brand
Configurable to allow you to add your brand and OpEx program name for continuity

Your company logo and OpEx program name can be applied to the skin on the applications and content pages.

Company name and OpEx program name inserted here

Slide title

Company logo here
Practice Pathways
Manufacturing Accelerator

13 Pathways: Standardized, maturity-based leading practice improvement journey maps
12 Pathways: Standardized, maturity-based leading practice improvement journey maps
How we deploy

Capability building for sustainable improvement underpins the deployment model of self-directed teams guided by Advisory teams all along the journey.

1. **Baseline**
   - Unclear strategy
   - Processes not understood
   - Silo approaches
   - Fire fighting
   - No improvement focus
   - Compliance shaky

2. **Stabilization**
   - Operational reviews
   - Quick wins and problem-solving
   - Improvement KPIs
   - Full compliance
   - Standardization
   - Core processes understood
   - Work teams formed

3. **Reliability**
   - Strategically aligned
   - Customer-focused
   - Process integration
   - Team ownership
   - Problem-solving tiers entrenched
   - Sound data accuracy
   - Risk well-managed

4. **Network integration**
   - Value chains consolidated
   - Demand sensing
   - Full systems integration and visibility
   - Integrated improvements
   - Six Sigma capability
   - New technologies
   - Matching with global benchmarks

5. **Industry-leading**
   - Demand shaping
   - Outside-in
   - Total performance alignment
   - Organizational agility
   - Employer of choice
   - Exceeding global benchmarks
How we can help
Enhanced sustainability and ownership via internal improvement structures to establish ongoing improvement cadence

“..."The capability-building approach focuses on helping to set up improvement journey governance and to coach leaders in their process of creating work force structures to own the improvement journey. We are there to guide, support and coach.”

An EY advisor

EY Catalyst set up a secure cloud-based installation of the platform containing the recommended practice Pathways to improve and train your organization on how to use the platform and applications.

EY Advisory works with your leaders and teams to conduct:

► Up-front practice and performance assessments to identify financial opportunities
► A climate survey and people competency review to understand the business’ return-on-investment opportunity

EY Advisors helps to set up and train your internal deployment and roll out structures. Once trained, the Advisory team assists your operations to start the high-impact kick-off phase and maps out the ongoing advisory support for deployment and sustainability across your entire network.
How we can help

Enhanced sustainability and ownership via internal improvement structures to establish ongoing improvement cadence (contd)

EY Advisory support team to advise, coach, train and guide the self-directed deployment process
How we deploy
Deployment with a high impact and sustainable results

Opportunity assessment
- Identify capability and performance gaps
- Conduct Gemba walk and culture survey to assess staff morale and transformation readiness
- Establish improvement team and set deployment targets
- Perform documentation of the improvement road map milestones

High-impact kick-off
- High-impact kick-off
- Work with improvement teams on-site to set up daily management processes
- Implement improvement actions to impact first quarter milestones
- Photograph before and after improvements and display visually
- Prepare document improvement case study as zone of excellence
A self-funding focused improvement initiative that attacks losses and waste, and realizes opportunities uncovered in the one week assessment — it creates a “zone of excellence” and readiness for enterprise-wide deployment

Enterprise transformation rollout
- Craft an improvement strategy
- Deploy the Catalyst Platform and conduct system training
- Set up improvement structures and train teams
- Assess all practice Pathways to identify opportunities
- Train internal trainers
- Implement improvement actions to provide sustainable performance improvement
- Guide and coach improvement teams
- Conduct ongoing training as and when required

* This deployment methodology has been tried and tested in different process industries.
Potential next steps

1. Demo
2. Opportunity assessment
3. Site visits
About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

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