# DIGITAL TRANSFORMATION FOR MANUFACTURERS

## DIGITAL IMPROVEMENT PROJECT PRIMER

The objective of the Digital Transformation for Manufacturers is to help small- and medium-sized manufacturers to digitally transform their organizations. This primer is intended to introduce Digital Transformation for Manufacturers Assessment (DTMA) teams to the basics of managing a digital improvement project. The primer covers five steps:

1. Digital Improvement Project Identification
2. Digital Improvement Project Planning and Scope
3. Digital Improvement Project Execution
4. Digital Improvement Project Review
5. Sustaining Digital Improvements

### 1. Digital Improvement Project Identification

Once an assessment team completes a DTMA, team members identify where they want to establish an improvement project(s) — i.e., where they will invest time, energy, and resources to apply technologies to improve a process, function, or the organization, and/or eliminate constraints to digital transformation. The following process is recommended to identify the most impactful projects:

1. *Contribute digital improvement ideas:* Each team member should come up with five to 10 digital improvement ideas/actions to help the company become more digitally mature in the DTMA categories with low maturity levels and/or constraints.
2. *Group ideas:* The team then groups similar digital improvement ideas together. For example, “Use sensing technologies to decrease reactive maintenance” and “Implement predictive and preventive maintenance applications” could be grouped together into a “Digitally enhanced maintenance” project.
3. *Prioritize ideas:* The team plots the grouped ideas on a 2X2 matrix of difficulty (x axis) by performance impact (y axis) (*see 2X2 Matrix*). The matrix will help to prioritize actions (e.g., high impact/low difficulty actions are likely to be pursued immediately). Other actions, such as those with high impact but greater difficulty, may also be addressed because of their importance.

![Table

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The work identifying projects will lead the team to begin planning the projects.

### 2. Digital Improvement Project Planning and Scope

Completing a Digital Improvement Plan will help a team define and monitor its projects. Critical planning criteria include:

* *Digital project action plan:* The team clearly identifies the digital improvement actions to be implemented and the objective. If possible, define the objective as a SMART goal (Specific, Measurable, Achievable, Realistic, and Timely). The project should be defined so that everyone can recognize if objectives have been met.
* *Key processes involved:* Detailing the processes to be impacted by the project will help a team to identify the departments and personnel that need to be briefed about the plan; determine and prepare for cross-functional dynamics; and enlist process-specific participants for the project.
* *Technologies and resources required:* Identifying the technologies likely to be deployed as part of the project and the resources (e.g., training, funding, staff) required to complete the project will help the team to secure those components before starting.
* *Project lead:* Identify the individual(s) responsible for leading, monitoring, documenting, and completing the project. This person will be responsible for managing the project going forward, especially primer steps 3-5.
* *Project sponsor:* Frequently the project leader and his or her team will come upon circumstances or challenges that they cannot address. Identifying an individual(s) or entity(ies) who can provide support and/or provide resources to overcome these issues is critical. The individual(s) or entity(ies) must be willing to assume this role and may include those who initiated the DTMA and/or established the assessment team.
* *Target date completion:* Indicate a date, month, and year when the project will be completed.

In addition to detailing the elements of the Digital Improvement Plan, the project leader should also work with team members to develop a project budget, establish team roles (and those who will fill them), and set a detailed schedule/timeline for the project to meet the completion date. Scheduling is often done with a Gantt chart (*see below*).

**Gantt Chart**

Chart, timeline

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The project lead and team should, when possible, go to the location where the digital opportunity(ies) and/or problem(s) exist to observe current conditions; there is no substitute for seeing a process in action and talking with those who work or manage it. These “gemba walks” will help to shape the actions the team will take and may cause the team to revise its perceptions and rescope the project.

With the problem well-defined through observation, the team begins the “Plan” stage of the PDCA (Plan, Do, Check, Act/Adjust) cycle. This will consist of using problem-solving techniques to identify root causes and designing specific actions and changes to address those root causes; fix problems; eliminate constraints; and implement technologies to enable digital transformation of the process.

### 3. Digital Improvement Project Execution

Alongside those who work in the process, the team will apply changes and technologies according to plan. This becomes the “Do” stage of the PDCA cycle.

Changes should be standardized so that they are understood and repeatable by *all* who work in a process. Achieving adherence to standardization may also require training for frontline associates and managers with the new technologies. One way to ensure standardization is to conduct small experiments or trials of the changes with different individuals and at different times (different shifts may face different challenges). Ask for feedback during the trials from those doing the work, and redesign practices as necessary.

In addition to implementing standard practices, the team should incorporate visual management so that workers and managers can see that a practice is followed regularly and producing desired outcomes. Establish metrics that show what is occurring and post these daily or digitally so every team member can see them. A simple green (good), yellow (fair), and poor (red) rating system can bring attention to successes and problems. This begins the “Check” stage of PDCA, which carries over into the fourth step of the primer.

Lastly, incorporate regular routines for reviewing the process, changes to it, and the technologies implemented. These should not be elaborate meetings, but daily standup discussions or “huddles” at the visual management board or digital format where performance results are recorded. The board or digital format can also include actions required for lingering problems or new issues.

### 4. Digital Improvement Project Review

At predetermined milestones prior to the target completion date, the team reviews progress with those working in the process as well as other stakeholders. The team determines if changes are working and, if not, why: Was the solution flawed? Was the solution implemented poorly?

These formal sessions may extend the duration of the project, lead to additional digital improvement projects (e.g., issues are uncovered unrelated to the initial project), and/or make stakeholders aware of larger issues that require their involvement (e.g., infrastructure, leadership). The outcomes from these “Check” sessions lead to the “Act/Adjust” stage of the PDCA cycle.

### 5. Sustaining Digital Improvements

When solutions have been implemented and objectives for the project achieved, the digital improvement project is over — in one sense. But in another, more important sense, it *isn’t* over. The new techniques (visual management) and routines (daily huddles) will keep individuals working in the process aware of its conditions, such as new opportunities to share data and information that the digital transformation has made possible or new problems to solve. These conditions may warrant reconvening the original digital improvement project team, or possibly the formation of a new team. Continuous improvement means the PDCA cycle never ends, with those working in the process regularly implementing changes and best practices, moving closer to perfection.