Five Steps to a High-Performance Workforce

Creating Successful Engineered Labor Standards

In today's world of high labor costs and increasing demand, the need for accurate and timely customer service levels is more important than ever. Labor costs typically account for half of distribution costs. In order to stay competitive, it is imperative that companies start looking for savings in this area. The time- and money-saving steps offered here will result in shorter timelines, reduced implementation costs and the creation of dependable standards.



Combining engineering methodologies with the best technology provides companies with the most value and sustained ROI in the long term. By following the five steps described here, one can implement an Engineered Labor Standard (ELS) successfully and create a high-performance workforce.

STEP 1: Streamline Existing Processes

The ideal way to start an Engineered Labor Standards (ELS) implementation project is to review existing processes. This is usually done in the form of formal observations to gain an understanding of the interaction between the system (WMS) and the processes. These observations help to document current processes and functional relationships. Documentation, in the form of flowcharts (value stream maps) helps to distinguish between value-added (VA) and non-value-added (NVA) steps in the process. An example of a process flowchart is shown in Fig. 1.1.

Some examples of VA steps include:

- Scanning the item (necessary)
- Picking the item from its source location (necessary)

Some examples of NVA steps include:

- Travel between locations (necessary)
- Avoidable delays (unnecessary)

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It is essential to eliminate any unnecessary NVA steps present in the process. It is also beneficial to create an "actions list" for every process. This list generally consists of every issue that can hinder and prevent associates from performing with best practices and methods. Always get feedback from your associates when developing the "actions list", because they are the ones who spend the maximum amount of time working through the process on the floor.

The actions list should then be submitted to the management team in charge of the ELS implementation for follow-up.

STEP 2: Create Elements

After the non-value-added unnecessary steps are eliminated and all known issues in the actions list are fixed, the next step in implementing the ELS is to create elements.

	Value-Added	Non-Value-Added
Necessary	CONTINUOUS IMPROVEMENT VIA KAIZEN	ELIMINATE, IF POSSIBLE KAIZEN, IF NOT
Unnecessary	ELIMINATE, IF POSSIBLE KAIZEN, IF NOT	ELIMINATE IMMEDIATELY

Figure 1.2 – Value added vs. non-value added steps

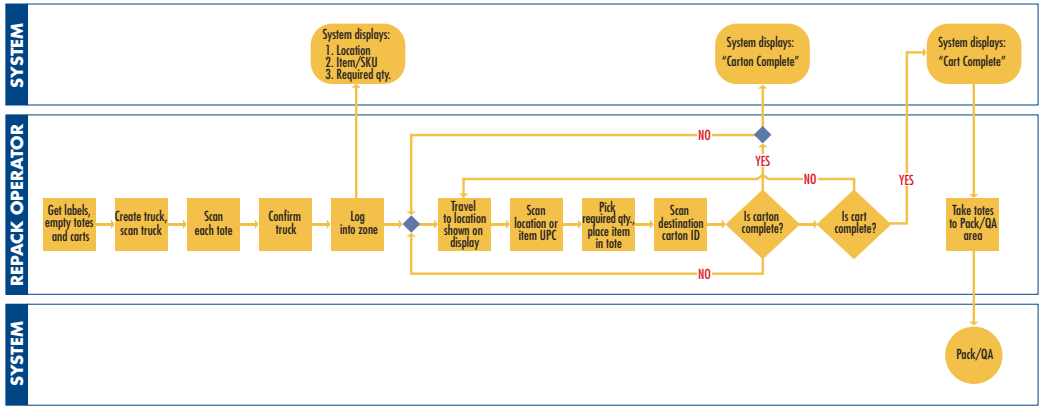


Figure 1.1 Value Stream Map

Elements are small work-steps in every process or function that can be accurately and consistently calculated by means of a unit of measure. A unit of measure is any unit that can be counted; e.g. number of cases, number of units, number of lines, number of pallets.

Breaking down a process into elements facilitates the next step – collection of data / time study. A guideline to use here is "if you see it, you can measure it." At the same time, you do not want to dive too much into detail. You want to keep it as simple as possible. Here is an example of elements necessary for picking full case items.

1. Travel to location.

2. Scan source location.

This occurs when an associate verifies SKU information and presses the F3 key on the radio frequency (RF) gun to accept or enter the information. In reality, most of the time, these two actions are performed simultaneously and result in the best-practice method of picking.

3. Verify SKU / enter F3 on radio frequency (RF) device.

RF devices are handheld or equipment-mounted devices that are used to communicate with WMS / LMS via access points set up in the distribution center. They transfer information back and forth between the WMS / LMS and the end user.

Also note that this process may be further divided into two different elements rather than listing both as the third element.

4. Pick item from location / place item to destination.

5. Enter quantity in RF device.

STEP 3: Collection of Data / Time Study

Data for a labor standard is collected by conducting a time study – determining the amount of time it takes each of the elements to be completed. A traditional analysis is done using a stop watch and notepad to record any breaks in time. However, this is extremely difficult to do because you will spend more time writing than actually observing the process.

A more efficient and reliable process is using time study software such as UMT Plus, TimerPRO, or Quetech.The elements for the process are created when the software is downloaded to your PC. A compatible version of the software is then transferred to a PDA.

The PDA device is used to conduct time studies, which is then used to note stop times across elements. Once the time study is completed, the data is transferred to your PC in the form of an Excel spreadsheet, making it easier to perform data analyses or calculations.

STEP 4: Data Analysis / Data Validation From Time Study

This is the most important and time-consuming step in creating an ELS. Time study data will show the number of occurrences and the time across each occurrence, for each element. The time per occurrence is then calculated from this information (time per occurrence = total time / number of occurrences). An important step at this stage is grade factoring – comparing the pace and skill of an associate to establish average pace and skill levels. An average grade factor of 100 percent is given to a trained associate who works in a safe manner while using the correct methods at an average pace that can be sustained for an entire shift. Grade factoring is done to ensure that everyone is at a level playing field across all operations. In some time study software, the grade factoring process can be done during the time study itself.

Time study data is then fine-tuned to minimize variation across elements. It is essential to minimize variation across elements that have a high number of occurrences. Such elements represent a major percentage of time in the study when compared as a whole, i.e. scan item, pick item, travel to location.

Up to this point we have only created "Level time" associated with the standard. Level time is the amount of time it should take an associate to perform a function working with normal skills, an average pace and under normal conditions, where allowances are not included. "Standard

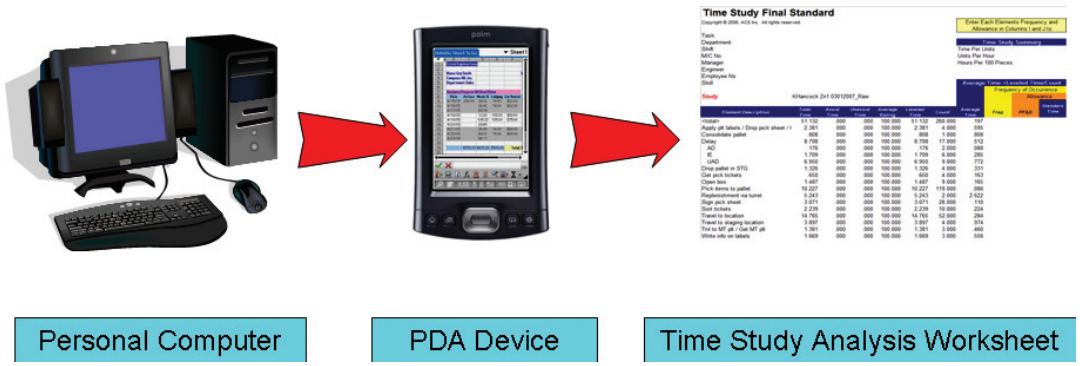


Figure 1.3 – Collection of data using time study software

PICKING–Elements / KVI	12010 Item	12010 Units	12020 Cart Location	12030 Location Scan	12070 12080 Cycle Count Check/ Damages	12040 12050 12060 Drop LPN	10 Travel	PF&D
Obtain pick cart								
Set up boxes and LPN						**0.329**		
Travel speed								
Scan location	**0.045**			**0.025**				
Scan cart location			**0.025**					
Pick and place item in box / scan store		**0.033**						
Close out box / drop box on RF						**0.085**		
Close out box / close box and place on ground						**0.221**		
Verify location empty					**0.050**			
	0.045	**0.033**	**0.025**	**0.025**	**0.050**	**0.635**	**1.43 MPH**	**6.2%**

Figure 1.4 – Example of a standard worksheet for "picking"

time" or Standard Allowable Minutes (SAMs) are created by adding allowances to the level time to account for personal fatigue and delay (PFD) time.

The PFD allowance factor accounts for the difference in picking a heavy versus light case, working in dry / ambient temperature areas versus working in cooler / freezer-type environments. SAMs are created by adding a PFD percentage to the level time.

Figure 1.4 shows the different elements in the "picking" standard with their corresponding SAMs. The SAMs are, in turn, associated with different time buckets (shown above as 12010, 12020, 12030, etc.) in labor management software (LMS). These time buckets are nothing but "screens" in a LMS where the SAMs are entered.

As an example, 12010 is a time bucket associated with "item." The corresponding element associated with the "item" time bucket is "scan location." In other words, each time a location is scanned, a SAM value of 0.045 minutes is credited to the item picked from that location. Each LMS has a different set of time buckets. There is always a generic screen for travel time, pick time, set-up time, and PFD percentage in the LMS.

After the SAMs are entered into the LMS, the ELS needs to be validated. Validation can be done by a number of methods. If the LMS is set up already, a standard can be validated by checking variation across time buckets and overall variation in the standard. It is important to keep the variation as low as possible (in a + - 1% range).

The standard is measured in as a percentage of standard time (SAM) versus the time it took the associate to actually complete the process (minus any delays). This measurement is also known as "performance," and is defined as:

Performance (%)
= Standard time / Actual time

If the LMS has not been implemented, a mock time study is performed on the process. This is a general observation of a number of associates performing the standard function. The time taken to perform the function, along with different unit of measures, are noted during the observation. Performance of each associate is then calculated to check whether associates can meet the average performance expectations.

Another method used to validate standards is to create **most** models on the current process and compare this with the existing standard.

STEP 5: Rollout ELS / Post-Labor Standards Implementation

Once the ELS has been created and validated, it should be rolled out to the management team and associates. The rollout is basically a

walk-through or review of all the steps that were taken to create the standard. The rollout also is an opportunity for the associates to ask questions and clear up any doubts they have about the labor standard.

After the rollout is completed, it is essential to get associate buy-in for the labor standard. After labor standards implementation, the area managers / supervisors conduct observations on associates to prove each associate can meet the average performance expectation, and in some cases, even exceed the expectations. This not only creates confidence in the standard from the associate's point of view, but also gives confidence to the supervisor in his or her overall process.

Area supervisors will also run labor reports on a daily or weekly basis, which show the associate and overall department performance. Work does not end for the industrial engineer here. After standard rollout, he or she will be actively involved with supervisors, overseeing the observations process and checking for variations in the labor standard, which may arise because of changes in the process and maintenance of the exiting labor standard.

As a final step, an incentive program is recommended for associates who are consistently performing above expectations. Incentives not only boost associate morale and motivation, but they have also been shown to increase overall productivity by 20 to 30 percent.

Summary

The steps to create successful engineered labor standards combine the use of pre-determined time systems, time and motion studies, and work sampling to evaluate and measure labor activities. The resulting standards save time and money for your distribution centers, retail stores, and delivery operations, and they keep management and labor motivated and involved. Results include shorter timelines, reduced implementation costs, and the creation of extremely dependable standards.

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