LEAN INTEGRATED

LEAN PROCESS OVERVIEW

The goal of LEAN Integrated is to train and guide our clients to become self-sufficient in the application of the Toyota Production System tools and methodologies. Our team has successfully realized this goal through the Lean certification of hundreds of professionals throughout the United States and Canada. Upon certification and through the successes achieved as part of that process, these organizations have autonomously continued their Lean journey, earning high accolades among their peer groups.

Members of our team have implemented Lean process improvement initiatives throughout virtually every industry, most notably the transformation of the Saskatchewan provincial healthcare system. Over 3-1/2 years, hundreds of providers earned their Lean certification through adult model training and the application of that training through nearly 900 Lean events.

THE GOAL OF OUR PROCESS IS TO TRAIN OUR CLIENTS TO BECOME SELF-SUFFICIENT IN LEAN APPLICATION

The following outline provides an overview of the LEAN Integrated Lean Transformation process. This outline is for informational purposes only and is intended for audiences seeking to understand the components of a high level Lean transformation.

LEADERSHIP

The executive team of any organization seeking to implement sustainable lean transformation, must lead the charge. Even as our team understands this concept is self-evident among organizations starting their journey, we are also aware of the fact that such mantra' require concrete, definable action. The establishment of an executive Lean oversite committee is required to provide high level direction for the Lean effort. This team must include the CEO and their direct reports. This team must be included in but not exclusive to, the first wave of Lean Certification trainee's. The role of the Lean oversite committee is to provide direction and support to the Lean implementation teams. This is achieved by clearly defining the outcomes expected and by committing the resources required to achieve those outcomes. The CEO will create a high level visibility wall in a location central to the Lean effort. All Lean efforts will be "rolled up" to the charts, graphs and reports, posted in this area. The weekly meeting in this area will be led exclusively by the CEO or one of his/her direct reports in his/her absence. This team will be trained and certified in Lean process management and process sustainability prior to the first Lean event. Failure to do so will result in unsustainable process improvement efforts, wasted resources and a general disillusionment of the Lean effort.

SUPPORT

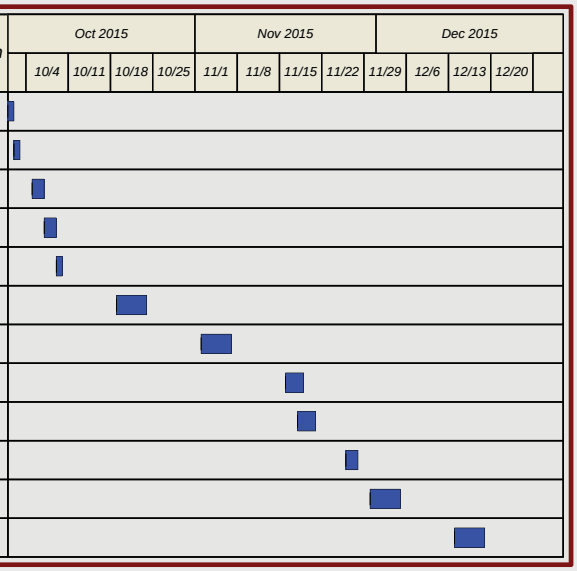
The Lean effort must include a dedicated support team known as the Kaizen Promotion Office, or KPO. While using the title KPO is not required the support team must be established regardless. While this team may at first require only one full time member, it will undoubtedly grow as the Lean effort expands. The role of this team is to ensure all aspects of the planned Lean events are scheduled and executed per Lean standard work. Responsibilities will include but are not limited to, setting up event rooms, gathering supplies, inviting and requiring commitment of attendees. They will also be required to attend the first wave of Lean leader training. At the end of the Lean contract, members of this team will serve as the "Lean Experts" assuming ownership of the continuing Lean leader certification process.

TRAINING AND CERTIFICATION

Lean leader training and certification must be preceded by certification in Basic, followed by Intermediate Lean training. Each course contains several modules which require methodological demonstration through the application of course learning in actual events. Adult didactic learning methods are applied throughout the training. Course instruction incorporates short PowerPoint presentations, supported by evidence review videos and practice simulations followed by immediate hands on application. Easy to follow, step by step instructional material is supplied to each participant for reference on upcoming events. The following chart demonstrates the training and events timeline, leading up to the first RPIW for a new client. Subsequent charts demonstrate the training requirements for individual Lean Certification.

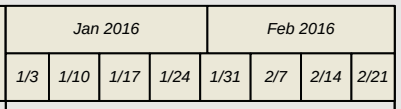
BASIC TRAINING TIMELINE

ID	Task Name	Start	Finish	Duration
1	Executive Oversight Committee	10/1/2015	10/1/2015	1d
2	Lean Basics Training	10/2/2015	10/2/2015	1d
3	Management Training	10/5/2015	10/6/2015	2d
4	KPO Setup	10/7/2015	10/8/2015	2d
5	Visibility Wall – Reporting Structure	10/9/2015	10/9/2015	1d
6	Value Stream Mapping	10/19/2015	10/23/2015	5d
7	Standard Operations	11/2/2015	11/6/2015	5d
8	5S Training	11/16/2015	11/18/2015	3d
9	Training Within Industry (TWI)	11/18/2015	11/20/2015	3d
10	Rapid Process Improvement	11/26/2015	11/27/2015	2d
11	First RPIW data collection week	11/30/2015	12/4/2015	5d
12	First RPIW event week	12/14/2015	12/18/2015	5d



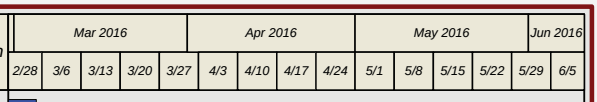
INTERMEDIATE TRAINING TIMELINE

ID	Task Name	Start	Finish	Duration
1	Setup Reduction	1/4/2016	1/8/2016	5d
2	Multi-Process Operations	1/4/2016	1/8/2016	5d
3	Continuous Flow	1/4/2016	1/8/2016	5d
4	Process Quantity Analysis	1/4/2016	1/8/2016	5d
5	Kanban	1/18/2016	1/22/2016	5d
6	Mistake Proofing	2/1/2016	2/5/2016	5d
7	Visual Control	2/15/2016	2/19/2016	5d
8	Total Productive Maintenance	2/15/2016	2/19/2016	5d
9	Jidoka	2/15/2016	2/19/2016	5d



LEAN LEADER TRAINING TIMELINE

ID	Task Name	Start	Finish	Duration
1	Lean Management Training	2/29/2016	3/4/2016	5d
2	Lean Process Owner	3/14/2016	3/18/2016	5d
3	Logistics Administration	3/28/2016	4/1/2016	5d
4	Process Measurement	3/28/2016	4/1/2016	5d
5	3P	4/11/2016	4/15/2016	5d
6	Hoshin Kanri	4/25/2016	4/29/2016	5d
7	North American Tour	5/9/2016	5/13/2016	5d
8	Saskatchewan Tour (Pending)	5/9/2016	5/13/2016	5d
9	Japan Hands On Training (Optional)	5/23/2016	6/3/2016	10d



SASKATCHEWAN SURGICAL WAIT TIMES

One of the most common issues we have addressed with new clients is the lack of results they have attained through prior Lean projects. That is not to say they achieved no results at all, usually Lean events provide insight and understanding that would not have otherwise been realized. The real issue is commonly stated as a lack of overall results. In other words, we have improved parts of our surgical care path, but are seeing no increase to overall capacity. "Wait times are not decreasing". The following comments describe the series of events leading up to the dramatic decline in surgical wait times that Saskatchewan experienced starting in September 2013.

Saskatchewan started their province wide Lean transformation in October 2011. Surgical wait times were among the top priorities for the Ministry of Health. At the beginning of the surgical initiative there were 15,352 patients waiting longer than 3 months to receive their surgery. By the end of March 2014, that number had dropped to 3,824, a 75% decrease. But how. The following example demonstrates how one of the 14 Saskatchewan health regions, Regina Qu'Appelle (RQHR) achieved these results.

The providers working in the surgical service line were responsible for discovering the issues involved in delaying surgical flow. Management's responsibility was to enthusiastically support their efforts. The management and providers received basic training in Lean tools and methodology. Many of the doctors, nurses and staff were studying to receive their Lean Leader Certifications which require leadership roles in several Lean events. The teams started their process as all Lean processes start, by following the patients to create the Value Stream Map (VSM).

RAPID PROCESS IMPROVEMENT WORKSHOPS

From the VSM, the team discovered many of the issues driving excessive patient wait times. Using Rapid Process Improvement Workshops (RPIW's), the teams were able to address many of these issues. They decided to start their Lean improvement efforts at the beginning of the surgical process, scheduling. RPIW's are two week events including one week of data collection followed by a week of process improvement. During the data collection week, this team discovered that nearly 50% of all scheduled surgeries were unattended by the patient. Solving this problem would be a key component of reducing the surgical backlog.

The team implemented a 3 day call ahead to remind patients of their scheduled surgery. This was also an opportunity to remind the patients of the surgical preparation protocol and the information they would be required to submit prior to beginning their surgery. This process increased patient attendance to just over 90%. The new process was a huge success for the team, but had no effect on patient wait times. Surgery itself was now the constraint.

MOVE THROUGH THE VALUE STREAM

The teams went to work in the surgical theaters. Through a series of RPIW's over the next 6 months, the teams addressed surgical room turnover, from 50 minutes to 10 minutes. They worked closely with the surgical prep team to reduce waste and increase flow between departments. They staggered their start times after discovering that providers were all accessing the sterile core at the same time. The sterile processing and materials departments decided to start their day an hour earlier, allowing the providers unobstructed access to the sterile core prior to surgery. Equipment and supplies were moved to point of use where appropriate and charting was completed before the next surgery. Another huge success, but no effect on patient wait times.

The team then moved to the post anesthetic care unit (PACU), where patients recover from the effects of anesthesia. This area seemed to be the new constraint in the surgical care path. They continually pushed back on surgery when they reached bed capacity. Surgeries were delayed or canceled when PACU beds were unavailable. Although the team identified some important root cause factors within the PACU itself, it became immediately apparent that the highest priority issue was lack of beds on the medicine floors. Patients were stuck in PACU waiting for a bed to become available. Lack of beds on the medical floors was pushing back on PACU which in turn stopped surgery. This was an incredible insight for the team as they realized that the lack of beds was also pushing back on the emergency room and in fact, all processes upstream of the medical floors

CREATING FLOW

Even though the team discovered issues within the PACU that could be improved through RPIW events, they realized that the data was pointing them to the medicine floors as the true next constraint. As they began to focus on the medicine floors, they discovered that 40% of the patients were medically ready for discharge but were held up by the medical system itself. Specialist availability, physician documentation, nursing capacity and room turnover were all constraining bed availability. As the teams went to work on these issues through several RPIW events, they were able to significantly reduce these barriers to discharge. In turn, beds were freed up in PACU allowing the surgical department to fully realize the results of all their previous improvement efforts. At last, after several months of focused improvement, the final major constraint of the surgical care path was eliminated. Patient wait times dropped steadily over the next few months. In September of 2012, the number of patients waiting longer that 90 days for their surgery were 5704, in March 2013, that number had dropped to 443. A decrease of 78%. As you can see demonstrated in the graph below, the team hit a critical turning point in March 2013. This incredibly tenacious, well supported team had courageously focused their time and energy for many months, addressing issue upon issue leading to the reduction in surgical wait times.

NECESSARY LEADERSHIP

It is important to note that this team was supported by their leadership in this effort. The Premier, Minister of Health, Deputy Ministers, Regional CEO's and boards, cleared the path for this team, as well as all other teams achieving similar results throughout the province. The structure of the leadership involvement in Saskatchewan may be discussed with our team upon request.

THIS IS WHAT THE LEAN TRANSFORMATION PROCESS TAUGHT BY OUR TEAM HAS ACHIEVED IN MANY AREAS FOR OUR CLIENTS

SURGICAL WAIT TIMES 90TH PERCENTILE