CIDMO LCMT Manual

Lean Change Management Team

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Table of Contents

# 1 CIDMO LCMT Manual

Welcome to the Lean Change Management Team manual for all things related to lean implementation, Agile, resources and guides!

**Click within chapters and subsections** or use the **built-in search feature** to search throughout the manual for key terms.

# 2 Objectives

After reading this module, the teammate will understand and be able to relate:

* Lean-agile terms, acronyms and principles.
* How development value streams support clinical value streams.
* The role of the Agile Release Train and how they fulfill product and service requests.
* How product portfolios are prioritized by the IHPMB and sent to Agile Release Trains for development.
* How the organization will use cadence to enhance flow, planning and task execution.

## 2.1 Introduction to Lean at CIDMO

Lean is a theory and a work method that is aimed at maximizing value-added activities. Value-added activities are those activities that increase the incremental value of your product in the eyes of your customer. Certainly, a product can be a physical item, a block of code, a writing or even the result of a service. **Implementing Lean will be a transformation of how CIDMO prioritizes and performs work.** When overlaid with Agile work-methods, Lean promotes transparency, improves delivery speed, improves product quality and increases focus on priorities. Indeed, Lean succeeds because it allows people time and space to plan, innovate and challenge the status quo. Lean provides an engagement process that gathers the tacit knowledge frontline workers have and formalizes that knowledge to improve processes necessary to support the strategic direction of CIDMO.

## 2.2 Lean Is Based on 5 Principles

### 2.2.1 1. Define Value

In CIDMO, **Value** is defined as activities which result in a benefit, divided by the cost of deriving the benfit. So value can be increased by improving the benefit, by reducing the cost of deriving the benefit, or both.

### 2.2.2 2. Map the Value Stream

Mapping the value stream is a unified effort to distill the macro process steps of delivering value to the patient. It helps leaders to understand cross-functional dependencies across functional silos, to see the affect of information technology enablers, and create improvement targets and implementation strategies. **Value Streams** differ from workflows or other process maps, because they focus on macro process steps, information flows and their associated measurements, vice getting into the weeds of more tactical process steps. The definition of **Value Streams** in Agile methods are expanded to include “Development Value Streams,” which are standing service lines that enable improvements in an “Operational or Clinical” **Value Stream.**

### 2.2.3 3. Create Flow

In an ideal state, work in a value stream should flow uninterrupted. Usually, some form of waste obstructs the movement of value through the system. Examples of waste are listed in number 5 below. When a system is optimized to flow, unobstructed by wasteful obstacles, work is performed more quickly, with less frustration and with higher efficiency and quality.

### 2.2.4 4. Establish Pull

Work on one thing at a time in order of priority. Many organizations divide people’s time among several priorities. Working this way makes it difficult to develop team dynamics, such as habitual working relationships, continuity, a full understanding of dependencies across functions and a task focus that is necessary for the team to successfullly work through complex issues. Moreover, coordinating work among different skill sets leads to some people working ahead and others having nothing to do. In an effort to not let workers idle, managers assign work to fill the “void” using employees who appear to have capacity. However, the employee really doesn’t have excess capacity, because they are waiting for someone to give them upstream information or product. When the product or information actually arrives, they cannot work on it because they are distracted with the earlier “void” assignment. This leads to confusion, quality problems and delays.

### 2.2.5 5. Relentlessly pursue Perfection through the Removal of Waste

Pursuing perfection and removing waste is a key driver to the innovation process. Learning to see **and not accept** waste in all of its forms is fundamental to improving processes. Often workers see waste but ignore it because they don’t feel empowered to do anything about it. Many workers develop methods that are responsive to a wasteful activity called a “workaround,” which ironically is a form of innovation. However, because the “workaround” is not pulled into mainstream or formal knowledge, it can often be frowned upon and viewed as non-compliant behavior. Lean provides the means and methods to capture this frontline tacit knowledge and convert it into mainstream formal knowledge for all to benefit.

|  |  |
| --- | --- |
| Type of Waste | Description |
| **Transport** | Moving products that are not actually required to perform the processing |
| **Inventory** | all components, work in progress and the finished product not being processed |
| **Motion** | people or equipment moving or walking more than is required to perform the processing |
| **Waiting** | waiting for the next production step |
| **Overproduction** | production ahead of demand |
| **Over Processing** | resulting from poor tool or product design creating unnecessary activity |
| **Defects** | the effort involved in inspecting for and fixing defects |

## 2.3 Value

**Value** is the benefit we deliver divided by its cost. Value is rarely delivered by a single person with a single action. Typically value is delivered with a series of activities conducted by multiple people with different competencies. When these activities are strung together as a sequence of events and coupled with detailed descriptions and measurements, it is called a **Value Stream**. A value-stream offers a wholistic view of how work flows through the entire system. It differs from a workflow, because it is at the macro level, is quantitative and supports strategic decision-making. Moreover, value-streams cut across functional silos - forcing the organization to think about value delivery in terms of fulfilling customer expectations.

## 2.4 Value Flows to The Clinical Value Stream

The Veterans Health Administration operates multiple **Clinical Value Streams** (CVS) to deliver health care to Veterans. For example, providing primary care is a clinical value stream. And within that value stream, when a Veteran calls an appointment scheduler and makes an appointment, that would be considered a value-added activity. However, when the Veteran comes for his visit and spends 30 minutes in a waiting room - this is non-value added activity. This is an example of how some obstacle has prevented the Veteran from moving from the doorway, straight into the doctors examination room. Some obstacles are pure waste, such as a capacity imbalance on the clinical staff or unavoidable waste, such as a policy which directs the Veteran fill out a form before starting care. Value can also take the form of quality and safety. For example, if a Veteran has an allergy, but the clinical decision support system does not catch the information and provide a reminder dialogue, it may result in a poor patient outcome or put the patient at risk. The key to delivering value is to have a direct affect on these processes in a manner that enhances patient flow, by removing waste.

Most value streams are characterized graphically with respective rate and quality measurements, supporting information systems, quantities of people required with their desired competencies, and triggers or signals that start and stop parts of the process to move items along. This is called a Value Stream Map. An example of a CVS Map is illustrated below. *Please note that most CVS are not currently documented.* The goal of lean is to reduce waste in this system and improve the quality of value-added actitivities; therefore, **any value we create must flow to this system to be actualized.**

Image from Karen Martin and Mike Osterling, **Value Stream Mapping**, McGraw-Hill Education, 2014, p. 157

## 2.5 CIDMO Operates Development Value Streams

CIDMO has many teams organized by Division and/or Programs that describe competencies they can use to fulfill customer requirements. Using Lean principles, we are organizing these teams and the competencies they hold around **Development Value Streams (DVS)**. As features for customers are developed from the DVS, *it flows to improvements in the CVS*; thus, value we create is being actualized in terms of performance improvement in the CVS.

## 2.6 Agile Release Trains (ART)

An Agile Release Train is a standing “team of teams” that groups two or more Development Value Streams around a common mission or customer. Detailed information can be found at the [SAFe Agile Release Train](https://www.scaledagileframework.com/agile-release-train/). Collectively, the Integrated Clinical Communities and the Program Offices participate in the Integrated Clinical Practice Management Board to accept new work and prioritize the work backlog for the ART. The ART is managed by specific roles that have resource authority and are responsible for integrating backlog work into existing product portfolios.

* **Release Train Engineer (RTE):** is responsible for managing the relationship with business and product managers and clears obstacles that impede Agile Team’s progress.
* **Business Owners:** are the CIDMO directors (i.e., Office of Primary Care, Office of Mental Health and Suicide Prevention, and others) who are responsible for resourcing teams to complete backlog tasks.
* **Program Managers:** are the program office representatives who are responsible for defining how work in the backlog integrates with product portfolios managed by their offices.

### Agile Teams

Agile Teams are the cornerstone of the Agile Release Train (ART). Agile Teams are typically cross-functionally organized with specialized role to fulfill the mission, with two positions that have specific team operations management roles.

* **Scrum Master:** is similar to a traditional project manager. A Scrum Master has expert knowledge of how work is tracked using the Kanban method and helps the team to understand its performance. This assists the team during planning, because the team understands its capacity; therefore, plans its committments during planning more precisely. The Scrum Master is also a team advocate who helps to clear obstacles, by coordinating needed resources or escalate team needs via the “Scrum of Scrum” meeting conducted by the Release Train Engineer.
* **Product Owner:** is the individual that ensures that the outputs from the team meet the requirements of the use-case or design intent in terms of fit, form and function. The Product Owner maintains a standing relationships with Program Managers to understand and help integrate new features into existing portfolios.

### 2.6.1 How It All Fits Together

Every month, representatives fro the Integrated Clinical Communities (ICC) and the Program Offices (OPC, OMHSP and others) participate with CIDMO in the Integrated Health Practices Management Board (IHPMB). During the meeting, feature intake requests are reviewed by members of the board and are voted on for acceptance into the work backlog. Then members evaluate the features and prioritize the work in the queue for the Agile Teams in the ART to develop.

Once per quarter, a Program Increment Planning Conference (PIPC) is convened over a 1 to 5 day period. The length of the PIPC is dependent on the volumn of work to be planned and the number of Agile Teams involved. During the conference, Agile teams review work in the program backlogs and break the work down into two week sprints. The result of each sprint, barring any obstacles, should result in an incremental product. The Agile Teams sequence the work and determine how far into the backlog they can complete. If there are features desired by Product Owners that the Agile Team may not be able to deliver to meet expectations, resource and time requirements can be negotiated with managers present to overcome or at least understand constraints that would affect on-time delivery.

# 3 Development Value Streams Change the Way Work Is Performed

Today, teams are organized through a non-standardized request process that allocates an employee’s time as a percentage of full time employment (% FTE). In effect, a person may be on muliple project teams, with unrelated purposes which requires significant amounts of time to coordinate. One main benefit of the Lean Agile transformation is to provide employees with a one-at-a-time task focus. While one might think that would slow down the amount of work being completed, it actually improves workflow velocity and shortens delivery time, since it reduces wasteful coordination, scheduling and planning tasks and provides more time for actual value-added work to be performed.

## 3.1 Setup a Development Value Stream Using Value Stream Mapping

The instructions below outline a step-by-step method for defining your work using a Value Stream Map. To refresh, a value stream is the the actions (both valued-added and non value-added) that are necessary to deliver a product or service to a customer. A value stream map visually represents the material, work, and information flow, as well as the queue times between processes for a specific customer demand. Processes are ultimately defined by the flow of materials and information across your team’s organization. It helps us learn-to-see how our work is performed and what inhibits our performance. Informatics specialists, programmers, human factors engineers, coding specialists, data scientists, technical writers are the people who typically work in a development value stream and are responsible for its performance. Do not confuse a value stream or value stream map with a workflow or other process diagram. While a Value Stream does have steps like a process, it is meant to span end-to-end and across functions to help participants see contributions by them and others and provide clarity for improvement activities. Below are some other benefits of mapping your Value Stream.

* **Enhances Systems Thinking**. System thinking is looking at a complex activity and breaking it down into components and highlighting the relationships between those components. For various reasons, people often hold mental models in their heads that represent their understanding of the complex system but rarely are two mental models alike. Value stream mapping provides a holistic view of various activities the team must perform and the relationships with each other needed to produce a product.
* **Visual Unification Tool**. A Value Stream map is a graphical illustration of a system, created by a teammates across functions. It helps participants to see and understand the end-to-end process. Value Stream Maps help to combine each participants individual mental model of the system into a unified view.
* **Simplification Tool.** Often relationships between activities across several functions and their commumications via information systems are very complex. Value Stream Maps provide a means to distill complexity into its essential elements and measurements.
* **Practical Means to Drive Continuous Improvement**. As stated earlier, the Value Stream Map is a strategic tool, used by teams to understand where obstacles to their performance may exsist and to prioritize improvement activities. The Value Stream Map is a constantly evolving document that reflects the results of improvement activities. During Program Increment Planning, improvement activities are prioritized along with customer related tasks.

## 3.2 Step 1 - Gather Your Agile Team and Develop a Value Stream Canvas

This section describes how the team will describe the value stream and how it is measured. A value stream can be expressed in layers, with the physical steps outlined and the supporting technical layer shown. We describe our objective value stream using a Development Value Stream Canvas. Consult the Development\_Value\_Stream.docx for a template to use in the development process. A Development Value Stream is a process or sequence of events that converts a use-case, hypothesis or feature request into a solution. A key understanding is that each process step is related to improving the value of the use-case, hypothesis or feature as it transits the value stream.

Typically, a Development Value Stream (DVS) is organized to support a given operational or clinical value stream. In some cases, organizations group these service or product development activities by compentency into “portfolios.” The Development Value Stream often incorporates competencies from these portfolios into process steps. For example, a common Human Factors Engineering competency is software user-testing. If the Development Value Stream (DVS) had a software testing step, then this competency would need to be present on the team to support that value-added step in the process.

Open the canvas document and use the definitions below to fill it out.

### 3.2.1 Supported Clinical Value Stream

It is important to understand exactly how your work will affect the Clinical Value Stream (CVS). As stated in the Introduction to Lean chapter, value must flow from the Development value stream (DVS) to the Clinical Value Stream (CVS) to be actualized. In other words, if the product or service is not used, then its value is not realized in a meaningful way. In some cases, the Clinical Value Stream (CVS) may not be articulated, in which case the *team would need to at least define a causal chain that links the outputs of the Development Value Stream to the affects it intends to acheive in the CVS*. While objectively, we would like to look at the target facility or activity’s Value Stream Map to see what performance improvement steps they are targeting. However, in the event there is no Value Stream Map available, the team may have to determine effects of its value proposition by identifying the customer’s critical success factors, key performance indicators, leading indictors and lagging indicators. Consult the Value\_Stream\_Playbook.docx for more information on setting up a balanced scorecard.

### 3.2.2 Value Proposition

The Value Proposition describes the purpose of the DVS and for whom the proposition serves. The Value Proposition has a full description of the product or service, how it benefits the customer (from the customer’s point of view) and how it is different and better than products like it. The latter may not be identifiable as many of our products or services do not have competitors.

### 3.2.3 Solutions

Based on the competencies available in the DVS and the needs of the CVS, this DVS produces a solution in the form of a product or service. List these here.

### 3.2.4 Solution Context

Solutions normally operate within a given context. For example, a notes template in terms of coding, sequence and presentation may change considerably between an in-person visit and a telehealth visit. The context for which your DV provides value is important to identify for both you and your customers.

### 3.2.5 People and Locations on the Team

This is a roster of individuals who are on the team and where they are physically located. Location is important, especially in digitally enabled cross-timezone operations. Sometimes, teams expand the roster to include skill details people bring to the team.

### 3.2.6 Customer Segments

A Customer Segment is a logical grouping of activities for which your Value Proposition is targeted. It is important to understand who your customers are, since you may need to develop Channels to reach them. Below is a list of example segment types:

* Solution appeals system wide (such as a nationally implemented COVID-19 vaccination template).
* Solution appeals to only a narrow part of the system, such as an individual facility or clinic.
* Solution appeals to a facility of a certain size or servicing a certain population of Veterans.
* Solution supports individual or mulitple platforms such as Cerner and CPRS.
* Solution supports diversified needs such as in-person clinics and telehealth.

### 3.2.7 Channels

A Channel is a means the team will use to move the product or service from your team’s DVS to your customer. Customer channels are extremely important and often a missing piece of a successful implementation. Implementation fails because there is no customer who is signed up to recieve the new innovation or improvement, and no means identified to mature the product once it is in place. Today, there are likely informaticists in the organization who have longstanding relationships with facility and clinic leaders. These are useful for enlisting the help of field volunteers to provide study participants or end user testing. Doubtless, these are valuable relationships but they differ immensely from a more formal development Channel. Below are charcteristics of a solid partner channel.

* The channel partnership is habitual.
* Channel partners participate in demos and other related tests.
* They provide useful feedback.
* They habitually provide early adoption of solutions.

### 3.2.8 Customer Relationships

Customer Relationships are what support Channels. There are a variety of expectations a customer may require to maintain the channel.

* One-on-one support.
* Training.
* Mass communications and updates.
* Community of practices and other forums for discussion and support.

### 3.2.9 Budget

This section is yet to be published, as budgeting and finance needs to be rationalized with our program portfolio and integrated into our Agile framework.

### 3.2.10 Key Performance Indicators (KPI)

The key performance indicators for the team are value, flow, quality, and happiness. *All teams are responsible for improving the outcomes of their DVS.* More on that later.

* **Value** is the affect acheived by a given product or service delivered to a CVS. The value statement is related to the customer’s broad goal and the quantifiable target outcomes and the results that collectively document achievement of the goal.
* **Flow** is the rate of output the team is able to achieve with minimal waste. Flow is measured in total lead time, process step time, and flow load.
  + *Total Lead Time* is the median amount of time it takes for a feature to transit your DVS.
  + *Process Step Time* is the median amount of time it take for a feature to transit a process step in your DVS. The total of these should equal the Total Lead Time.
  + *Flow Load* is the median number of features the DVS can hold at any given time.
* **Product Quality** is measured by how well the product or service meets criteria of fit, form and function agreed to by the Product Owner. Often, quality is measured by the amount of rework or “bugs” that a team must prioritize into their daily workflows.
* **Happiness** is what is sounds like. How happy is the team? It is theorized that if a person is working at the “top of license,” then they will be happier than if working through the drudgery of endless coordination and other busy work that gets in the way of actual production. Happiness can be measured by using questionnaires periodically to assess the team’s attitudes and emotions towards their work.

## 3.3 Step 2 - Develop a Current State Map

Now that the Agile Team has completed their DVS Canvas, they should understand a great deal more about their customer base and how they deliver their products. They should have at least a rough idea of the affect their products or services can have on the CVS. Now they are ready to develop their own Value Stream Map and its measurables. Value Stream Mapping exercises are typically done in a classroom or conference room environment with all stakeholders present. However, with distributed adminstrative environments, Teams and Zoom are teleconferencing services that are rapidly replacing the in-person meeting. Internet challenges notwithstanding, it is possible to conduct a Value Stream Mapping exercise as described below using a teams channel, with a shared Whiteboard, Lucid or Word Doc for team members to participate. Consult Setup\_a\_value\_stream\_workshop.docx for detailed instructions on how to set up a Teams channel with a shared Whiteboard.

If the Team is forming an Agile Team and its associated Development Value Stream **for the first time,** then collecting some of the measurements below may not be possible. However, having a solid grasp of how a Development Value Stream is optimized, will help the team form effective policies with which to manage itself. Furthermore, the First-Walk, Second-Walk process will help stimulate conversation about what data the team will need to collect.

### 3.3.1 Conduct a First-Walk

Since most CIDMO process steps are not tangible, its not like we can walk through a factory and actually witness the work being performed on the shop floor. With our digitally enabled and distributed teams, we use the term “walk” as a metaphore for stepping through the basic steps in our objective process for the first time. In some respects, we may need **time to deliberate** when forming the team to define these steps for the first time. Typically, it is best to start with the big picture. Answers to many of these questions have already been answered in the Development Value Stream Canvas. Quickly review them here.

* What is the story of our product?
* Who does it serve?
* How does it serve them?
* What are the major steps used to make the product or perform the service?
* How does it get to them?
* Once the product or service is delivered, how does the customer need to be supported?
* What measurements are associated with each step (process time, percent correct and acceptable)?

#### 3.3.1.1 Layout the Value Stream Map

After the team completes the discussion above, the team returns to the task of developing its first Value Stream Map. We will use Microsoft Whiteboard in a Teams channel to develop the working copy of the map. The Whiteboard is accessible simultaneously by all members of the team. The Whiteboard has PostIt notes that can be used to describe each process block. Process flows from left to right.

**Remember that we are looking at most basic information at the macro level.** Although there may be many sub-steps required to complete a process step, we are not focusing on these. This is what differentiates a value stream map from a workflow. A workflow would include all work steps to complete a given task, whereas the Value Stream would focus on the macro steps needed to transform the product to meet the customer need. Value Stream maps are strategic in nature and will be used for focusing on improvement activities over a long period of time.

The graphic below illustrates the major features of a Value Stream Map. The map starts with a customer request or requirements, identifies the major value-added steps that transforms the request into a delivered product or service. If needed, a Value Stream can have branches to represent a certain percentage of effort that might take on a slight variation.

\* Information regarding CIDMO program portfolio can be found in the CIDMO Director Office Operations Strategic PMO channel/CIDMO Program Catalog.

### 3.3.2 Conduct a Second-Walk

During the First-Walk, we identified the major activites and functions sequentially involved in delivering a product or service. During the Second-Walk we will focus on the performance of the value stream and the obstacles to flow. In order to prioritize any inprovements to the Value Stream, it is important to assess its performance in terms of value, flow and quality.

**In lieu of actual measurements, educated guesses will suffice to get started.** If you are organizing an Agile Team and documenting a Development Value Stream for the first time, many of these measurements may not be available. See the chapter on GitHub and ZenHub for more information about passive collection of team performance information. GitHub and ZenHub provide repository storage capacity, document version control, code-base control and kanban work management support; while passively gathering data for the team to self-regulate its performance and set priorities to meet objectives.

#### 3.3.2.1 Estimate Process Time (PT) for Each Process Block

The amount of time to complete the transformation described by the process step is called the Process Time (PT). It is nomrally measured in terms of minutes, hours, days, or in some cases weeks. Standardize the unit of measure for time throughout the Value Stream. Process time *does not* include any time the product or service spends waiting. It is determined as if the workers can work on the process step uninterrupted. Time studies are not required for this step; just need to know more or less how long it takes to finish the work. As improvement activites are directed to this step, more detailed analysis can be performed to highlight areas of improvement.

#### 3.3.2.2 Value-added versus Non-value Added Process Time (VA/UVA)

Value-added activity is what your customer is willing to pay for. Non-value Added Activites fall into two categories - Unavoidable Non-Value Added activity and Avoidable Non-value Added activity. Unavoidable Non-value Added activity is an activity that must be performed, such as a policy decision that requires a certain form be filled out before the Value Added step is performed. An Avoidable Non-valuye Added activity is an activity that can be, and should be, immediately removed because it is within the teams control. The distinction between these types of activities are key to understanding wasteful practices and how to remove them. Using your customer’s perspective, evaluate each process step for its Value-Added and Non-value Added content. Lable the step “VA” or “UVA” for Value Added or Unavoidable Non-value Added.

#### 3.3.2.3 Estimate Process Lead Time (LT)

Lead Time is the amount of time it takes for the work from the previous steps to present at the current step. It is determined by taking the sum of the previous process step Process Times. The total of all Process Times in a Value Stream is the total Lead Time or throughput time. Lead Time includes all delays and time work spends in queu waiting for the next step. Therefore, the total Lead Time calculation is not made until the Barriers to Flow in Step 3 are identified.

#### 3.3.2.4 Estimate Percent Complete and Acceptable (%C&A)

A simple quality measure is percentage of work completed in a process step that can move directly to the next step without correction or rework over the total work performed in that process. The higher the percentage, the higher the rate of completion and acceptance in the eyes of downstream process steps, or the end customer. Because a shortcomings in a process step may not be discovered until further down in a Value Stream, it is important to identify the source of %C&A hits.

#### 3.3.2.5 Work-in-Process (WIP)

Each process step will likely have more than one feature or development item in-work at a given time. Like a juggler who keeps three or four balls in the air at the same time, a team must juggle multiple work items at the same time. This is called “work-in-process” or “WIP” (pronounced “Whip.”). WIP is constrained by the Team’s capacity, and exceeding its WIP capacity will cause a backlog of work before the process block. WIP can amounts can fluctate between periods and typically the median of these measures is acceptable for the teams WIP capacity. The median is used as the measure of central tendency because it illustrates the most sustainable number the team can manage.

#### 3.3.2.6 Work Volume or Total Demand

Understanding the relationship between total demand, lead-time and process-time will help the team understand if it has sufficient capacity to meet customer expectations. Certainly, the ability to meet scheduled predictions for deliverables is important. However, if the relationship between capacity and demand is not managed, then these expectations will be difficult to fulfill.

**Takt Time** is a useful calculation regarding the relationship between demand and capacity and establishing work rate. Takt Time is total demand divided by total work time available. For example, if there was a stack of 150 feature requests (demand) that was needed in 90 days (total time available), then 150/90 = 1.6 feature requests would need to be produced by the Value Stream every day for it to reach its target.

## 3.4 Step 3 - Identify Barriers to Flow

Key to fundamentally improving a system is to understand the forms of waste and to see where it occurs. Below is a table that defines the types of waste that can occur in clinical and product development Value Streams. During the Second Walk, the Agile Team should identify “low hanging fruit” or obvious non-essential non-value added waste. Review the table and look at the process blocks in the Value Stream. Are there instances where the work stops? Why does it wait? Is there an accumulation of materials? How about mistakes - do those make it from process block to another unchecked? Identify these barriers to flow using a red PostIt and identify the form of waste.

|  |  |  |
| --- | --- | --- |
| Type of Waste | Definition | Example |
| Batching | Batching is holding a work-piece until other similar work-pieces are completed before releasing to the next process step. | Holding a document from a review step because not all the chapters are complete. |
| System Downtime | System downtime is when a system you rely upon to process work is not available to perform that work. | Databases in a corporate data warehouse may not be available during certain allocated periods to manage demand capacity. |
| Shared Resources or Inaccessible Staff | A shared resource or inaccessible is not always available the point in time when it is needed. | Some individuals have a primary job and are detailed to support a given task; they are often not available when needed and that causes delays. |
| Switch-taskings/interruptions | Switching from task A to task B divides the focus of the team and can cause delays. | When COVID-19 broke out, teams switched from their normal work to directly supporting COVID-19 related work, causing normal work to suffer. |
| Prioritization Rules | Prioritization that is not shared between functions can cause one function to desynchronize with another. | One example would be a unilateral reprioritization by one division, which removed a resource from the team to support a priority outside the team. |

## 3.5 Step 4 - Map Information Flow

An important part of analyzing the Value Stream is understanding how information interacts with each part of the process. The Team should identify any IT systems, such as CPRS, or the Corporate Data Warehouse (CDW), that interfaces with a process block. The team should not worry about email systems or things of this nature, unless email is used in conjuction with a customer relationship management system. Client side applications like Word are not necessary to track either. However, if the Team is using Excel or a database to perform work, these should be identified. Label these IT systems above the process steps and point arrows that indicate the direction of information flow. Identifying the information flow is usually a step the highlights how the same process can interface with multiple platforms that pose integration challenges.

## 3.6 Step 5 - Create Your Dashboard

Use the table below and tools such as GitHub and ZenHub to begin tracking your Team’s performance. It is important to gather this kind of data as passively as possible and automatically accumulate it. If the team has to divert resources to gather this information apart from its normal workflow, that is wasteful. Check out the chapter devoted to GitHub and Zenhub to deepen your understanding of how it works. If you have questions talk to a member of the Lean Change Management Team or your Scrum Master.

|  |  |  |
| --- | --- | --- |
| Metric | Description | Supporting ZenHub Report |
| Total Lead Time (TLT) | TLT is total time it takes from customer request landing in the backlog to being completed. | Control Chart |
| Velocity | The total load (in story points) the team can complete per sprint | Velocity Tracking |
| Activity Ratio | This is a ratio of Total Process Time over Total Lead Time and indicates the percentage of time that is Value-added. | Control Chart and XXXX |
| Rolled Percent Complete and Accurate | Issues tagged with “rework” label in a given process step divided by the total issues processed in that step | XXXXX |
| Burndown Report | Reports the completion of issues for a spint, subtracted from the total issues assigned to that sprint | Burndown Report |
| Cumulative Flow | Reports accumulation of issues in process steps. Increased accumulation indicates a bottleneck. | Cumulative Flow Report |

## 3.7 Glossary

Activity Ratio Demand Lead Time Process Time Percent Complete and Accurate Economic Framework