KANBAN ESSENTIALS PROFESSIONAL CERTIFICATE

KEPC™

EDITION 2020

KEPC™ VERSION 112020

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Professional Knowledge

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Objectives

This course and certification provides an overview of the **Kanban** process and steps required to create a **Kanban** board.

- Understand the purpose and potential of a **Kanban** adoption.
- Learn the basics of **Kanban**.

Who is CertiProf®?

CertiProf® is an Examination Institute founded in Unites States in 2015.Located in Sunrise, Florida.

Our philosophy is based on the creation of knowledge in community and for this purpose its collaborative network is made up of:

- **CKA's (CertiProf Knowledge Ambassadors)**, are influential people in their fields of expertise or mastery, coaches, trainers, consultants, bloggers, community builders, organizers and evangelists, who are willing to contribute in the improvement of content.
- **CLL's (CertiProf Lifelong Learners),** Certification candidates are identified as Continuing Learner proven their unwavering commitment to lifelong learning, which is vitally important in today's ever-changing and expanding digitalized world. Regardless of whether they win or fail the exam.
- **ATP's (Accredited Trainer Partners)**. Universities, training centers and facilitators around the world that make up the partner network.
- **Authors (co-creators).** Industry experts or practitioners who, with their knowledge, develop content for the creation of new certifications that respond to the needs of the industry.
- **Internal Staff,** our distributed team with operations in India, Brazil, Colombia and the United States that support day by day the execution of the purpose of **CertiProf®.**

Our Accreditations and Affiliations

Who should attend this certification workshop?

Anyone who is interested in becoming a **Kanban** Professional.

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Presentation

- Name.
- Company / Role.
- Motivation / Goals for taking this program.

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Lifelong Learning

The holders of this badge have demonstrated their unwavering commitment to lifelong learning, which is vitally important in today's ever-changing and expanding digitized world. It also identifies the qualities of an open, disciplined and constantly evolving mind, capable of using and contributing its knowledge to the development of a more equal and better world.

Earning criteria:

- Be a candidate for CertiProf® certification.
- Be a continuous and focused learner.
- Identify with the concept of lifelong learning.
- Believe and genuinely identify with the concept that knowledge and education can and should change the world.
- Wanting to enhance your professional growth.

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Introduction

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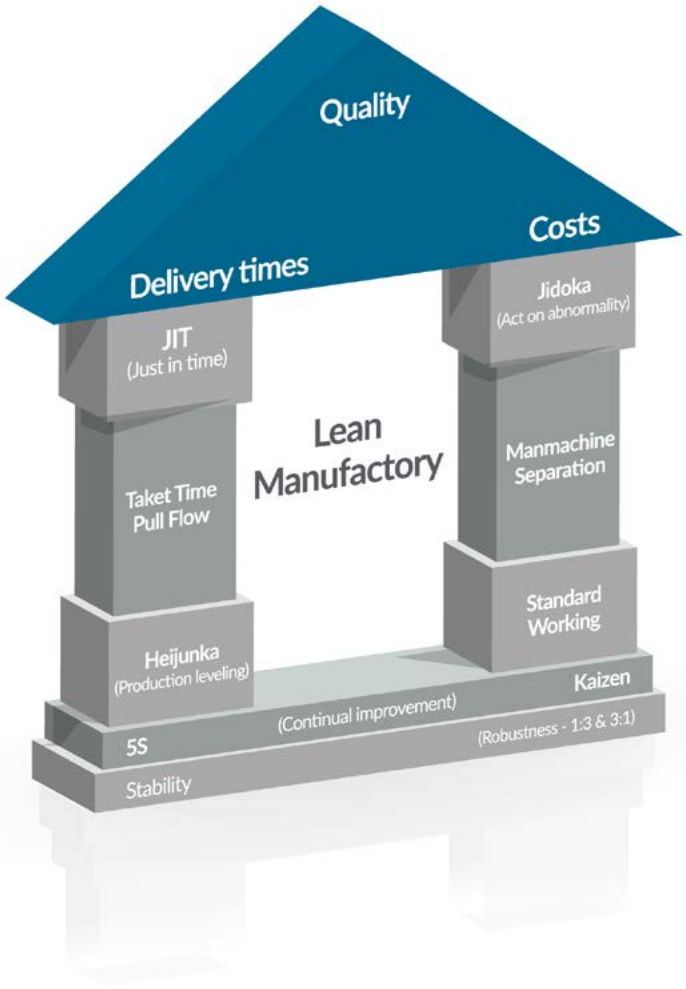
Lean Manufacturing

Essentially, **Lean** is centered on making obvious what adds value by reducing everything else.

Lean manufacturing is a management philosophy derived mostly from the **Toyota Production System** (TPS) (hence the term Toyotism is also prevalent) and identified as **"Lean"** only in the 1990s.

TPS is renowned for its focus on reduction of the original Toyota seven wastes to improve overall customer value, but there are varying perspectives on how this is best achieved. The steady growth of Toyota, from a small company to the world's largest automaker, has focused attention on how it has achieved this success.



Source: https://en.wikipedia.org/wiki/Lean_manufacturing

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Lean

Lean manufacturing or **lean production**, often simply "**Lean**", is a systematic method for the elimination of waste ("Muda") within a manufacturing system.

Lean also takes into account waste created through overburden ("Muri") and waste created through unevenness in work loads ("Mura").

Working from the perspective of the client who consumes a product or service, «value» is any action or process that a customer would be willing to pay for.

*Fuente: https://en.wikipedia.org/wiki/**Lean**_manufacturing*

Lean Principles

Lean development can be summarized by seven principles, very close in concept to **Lean Manufacturing Principles:**

- Eliminate waste.
- Amplify learning.
- Decide as late as possible.
- Deliver as fast as possible.
- Empower the team.
- Build integrity in.
- See the whole.

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Agile

When starting a new project, the traditional way was: gather a team, book a conference room, and plan the whole project upfront. If something changes, you're in trouble and in software development, that "something" changes all the time.

This called for a new project management philosophy, one that embraces the shifting nature of project requirements and so **Agile** was born. Instead of coming up with a BIG plan and hoping nothing unexpected happens, **Agile** allows you to change a project's direction on the go.

The **Agile** approach consists of many overlapping methodologies and **Kanban** is one of them.

JIT

Just-in-time (JIT) manufacturing, also known as just-in-time production or the **Toyota Production System** (**TPS**), is a methodology aimed primarily at reducing flow times within production as well as response times from suppliers and to customers.

Following its origin and development in Japan, largely in the 1960's and 1970's and particularly at **Toyota.**

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Kaizen

Kaizen, Japanese for "improvement".

When used in the business sense and applied to the workplace, **Kaizen** refers to activities that continuously improve all functions and involve all employees from the CEO to the assembly line workers.

It also applies to processes, such as purchasing and logistics, that cross organizational boundaries into the supply chain. It has been applied in healthcare, psychotherapy, life coaching, government, banking and other industries.

Lean Thinking

Lean thinking is a business methodology that aims to provide a new way to think about how to organize human activities to deliver more benefits to society and value to individuals while eliminating waste.

The term lean thinking was coined by James P. Womack and Daniel T. Jones to capture the essence of their in depth study of Toyota's fabled Toyota Production System.

Lean thinking is a new way of thinking any activity and seeing the waste inadvertently generated by the way the process is organized by focusing on the concepts of:

- Value.
- Value streams.
- Flow.
- Pull.
- Perfection.

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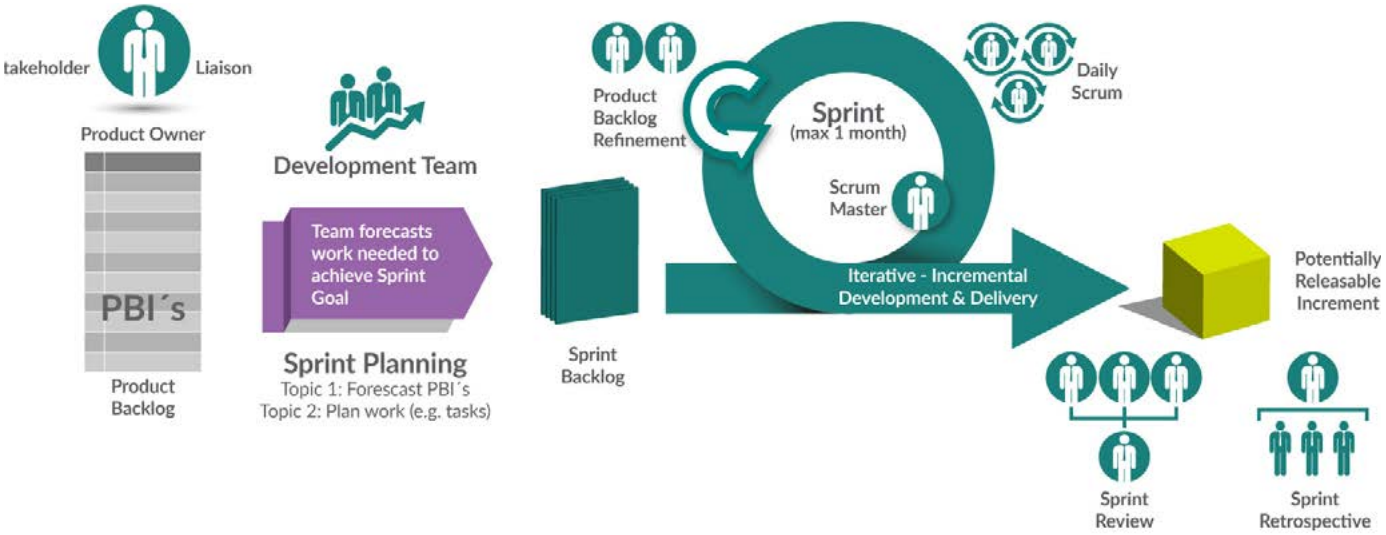
Scrum

Scrum is a framework for developing and sustaining complex products. Consists of **Scrum's roles,** events, artifacts, and the rules that bind them together. **Ken Schwaber** and **Jeff Sutherland** developed Scrum.



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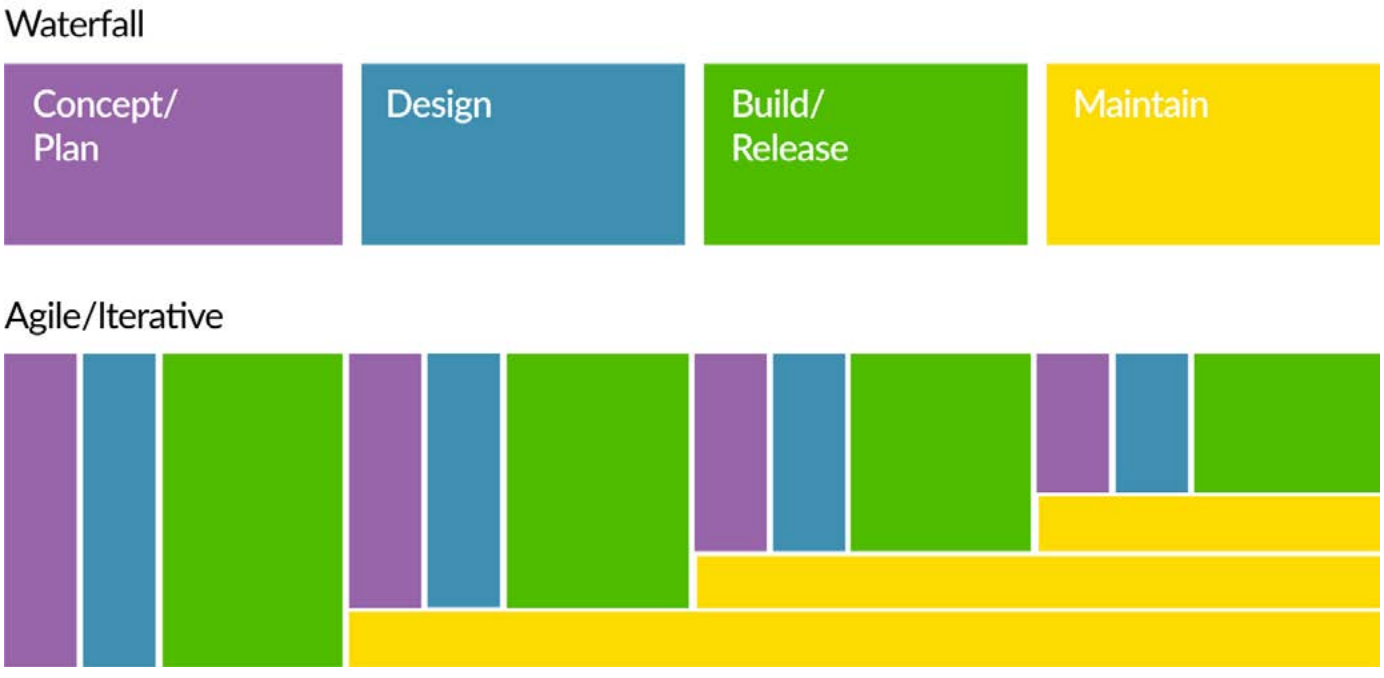
Waterfall vs Agile



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Kanban (Development)

Kanban is a method for managing knowledge work which balances the demand for work to be done with the available capacity to start new work.

Intangible work items are visualized to present all participants with a view of the progress of individual items, and the process from task definition to customer delivery.

Team members "pull" work as they have capacity, rather than work being «pushed» into the process when requested.

Kanban in the context of software development provides a visual process management system that aids decision making concerning what to produce, when to produce it, and how much to produce.

Although the method originated in software development and IT projects, the method is more general in that it can be applied to any professional service, where the outcome of the work is intangible rather than physical.

The method was inspired by the **Toyota's** Production System and by **Lean Manufacturing.**

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Bad Reasons to Choose Kanban

- Seems easier, kinder, gentler.
- Don't really have to change stuff … like Scrum makes you do.
- Failed at Scrum.
- Just because!

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History

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Kanban means "visual indicator" in Japanese.

The Kanban system of production relies upon a visual system to communicate status.

Developed by Toyota in the 1940's

After understanding the **just-in-time** supply chain management methods of the grocery store industry, **Toyota** decided to adapt its production methods using the **Kanban** system it designed.

TOYOTA

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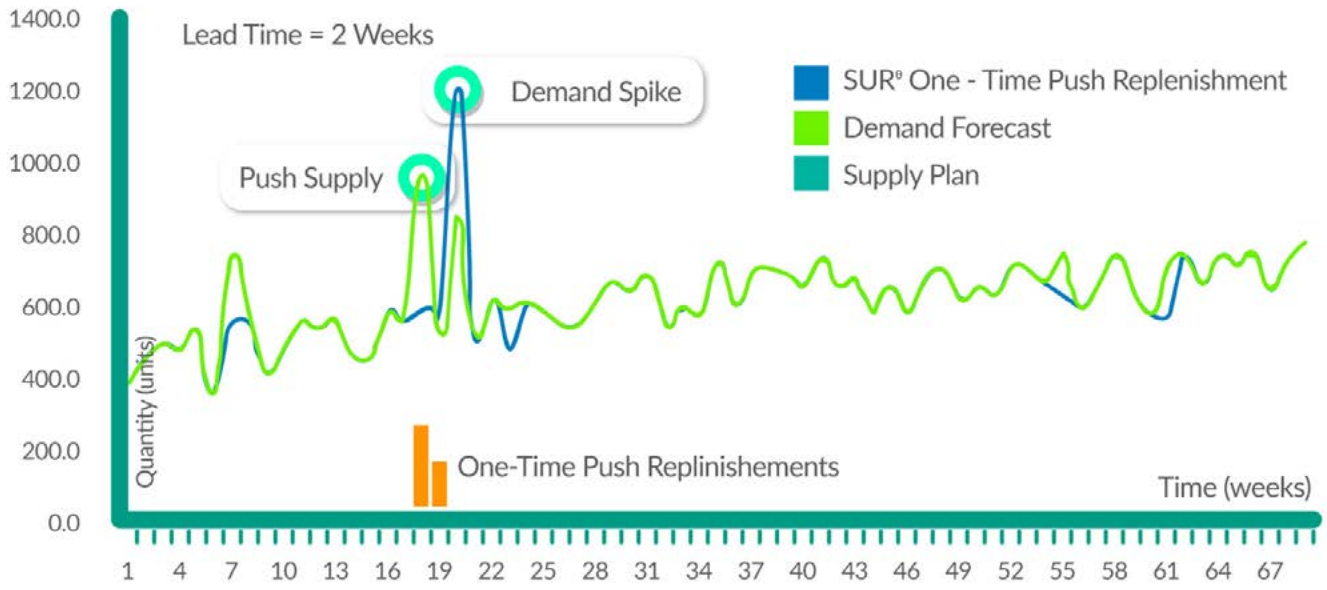
Designed to Match Inventory to Demand, Not Supply



Rather than ordering parts and holding them on inventory, **Toyota** designed a system to match its ordering to its sales.

Relies on Improved Communication

Kanban depends on different operational and production areas being aware of the state of affairs across the organization.

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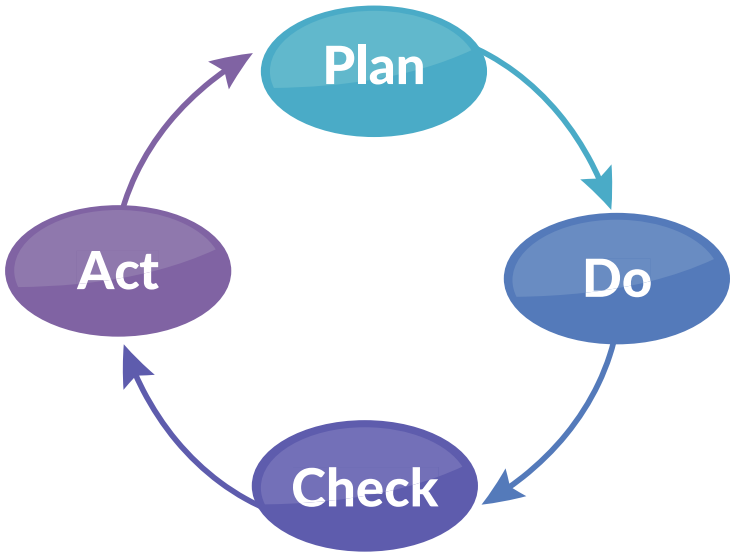
Generates Less Quality Failure



Using a cycle of Planning, Doing, Checking, and Acting, a **Kanban** process is one of continuous improvement.

Increases Production

By reducing the backlog of production items in the queue which may not be in market demand, anyway, and by reducing the number of failures (also called **Kanban**), the system increases overall production efficiency.

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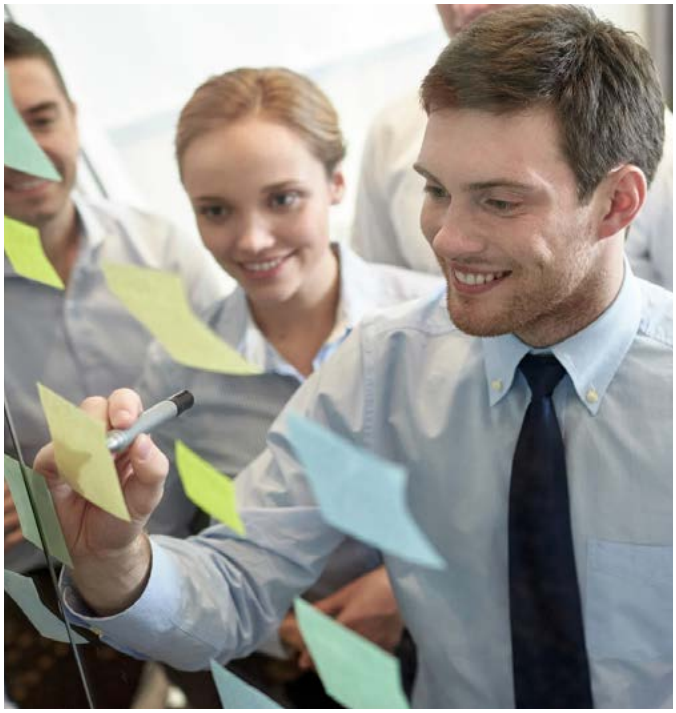
History

- Developed by **Taichi Ohno at Toyota** in 1940's.
- Inspired by storage techniques used by supermarkets.
- Demand controlled system where replenishment happened based on market conditions.
- Based on a pull based system rather than a push based one.
- Use of visual signals was essential to the system.



1962 to 2001

*"The two pillars of the Toyota production system are just-in-time and automation with a human touch, or autonomation. The tool used to operate the system is **Kanban".***

- Taiichi Ohno, Toyota.

Toyota's Six Rules

Toyota have formulated six rules for the application of **Kanban**:

1. Later process picks up the number of items indicated by the **Kanban** at the earlier process.
2. Earlier process produces items in the quantity and sequence indicated by the **Kanban**.
3. No items are made or transported without a **Kanban**.
4. Always attach a **Kanban** to the goods.
5. Defective products are not sent on to the subsequent process. The result is 100 % defect-free goods.
6. Reducing the number of **Kanban** increases the sensitivity.

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Kanban

Kanban (看板) (literally signboard or billboard in Japanese) is a scheduling system for **Lean Manufacturing** and **Just-in-Time Manufacturing.**

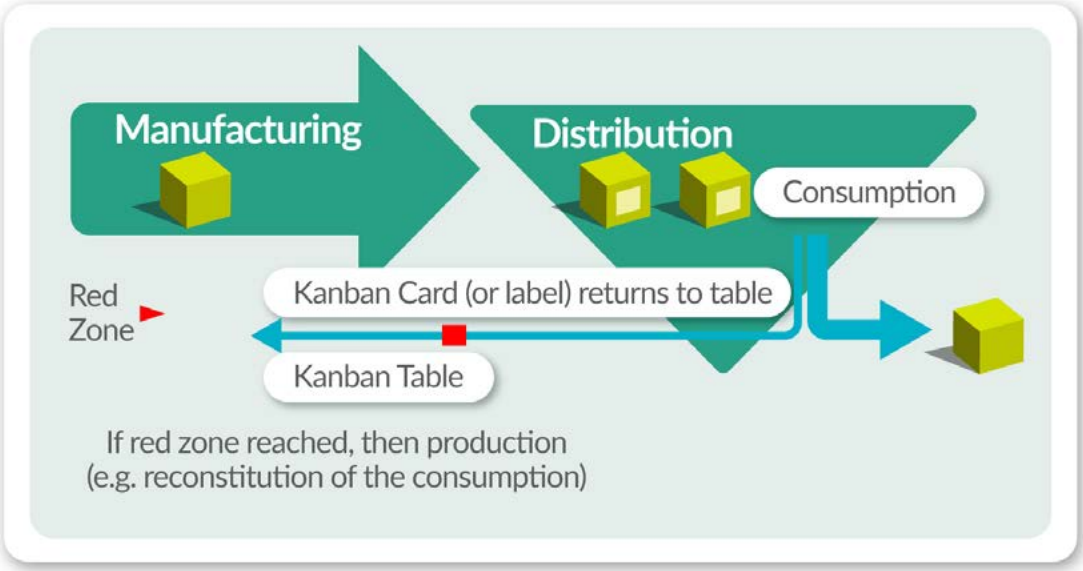
Kanban is an inventory-control system to control the supply chain. **Taiichi Ohno**, an industrial engineer at **Toyota**, developed **Kanban** to improve manufacturing efficiency. **Kanban** is one method to achieve **JIT**.

This article is about the **Lean** *manufacturing process. Source: https://en.wikipedia.org/wiki/***Kanban**

Kanban systems combined with unique scheduling tools, dramatically reduces inventory levels, increases turns, enhances supplier/customer relationships and improves the accuracy of manufacturing schedules.

Kanban aligns inventory levels with actual consumption; a signal is sent to produce and deliver a new shipment when material is consumed.

These signals are tracked through the replenishment cycle and bring extraordinary visibility to suppliers and buyers.



By **Kanban**_*principles.jpg: Jean-Baptiste Waldner derivative work: Jbarta (This file was derived from* **Kanban** *principles.jpg:) [CC BY-SA 2.5 (http://creativecommons.org/licenses/by-sa/2.5)], via Wikimedia Commons)*

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The Core Practices of Kanban

- Visualize the Workflow.
- Limit your Work in Progress (**WIP**).
- Manage the Flow.
- Implement Feedback Loops.
- Make Process Policies Explicit.
- Improve Collaboratively, Evolve Experimentally (using models/scientific method).

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Five Main Properties of Kanban

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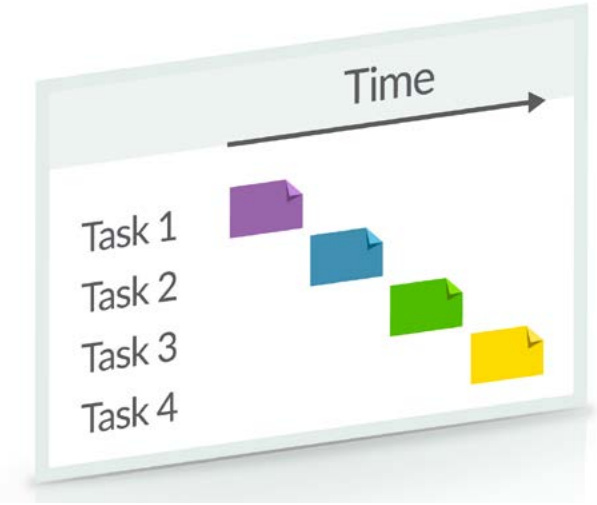
Manage the Workflow

The flow should be continuous and managed for instances where team boards reflect unanswered challenges.

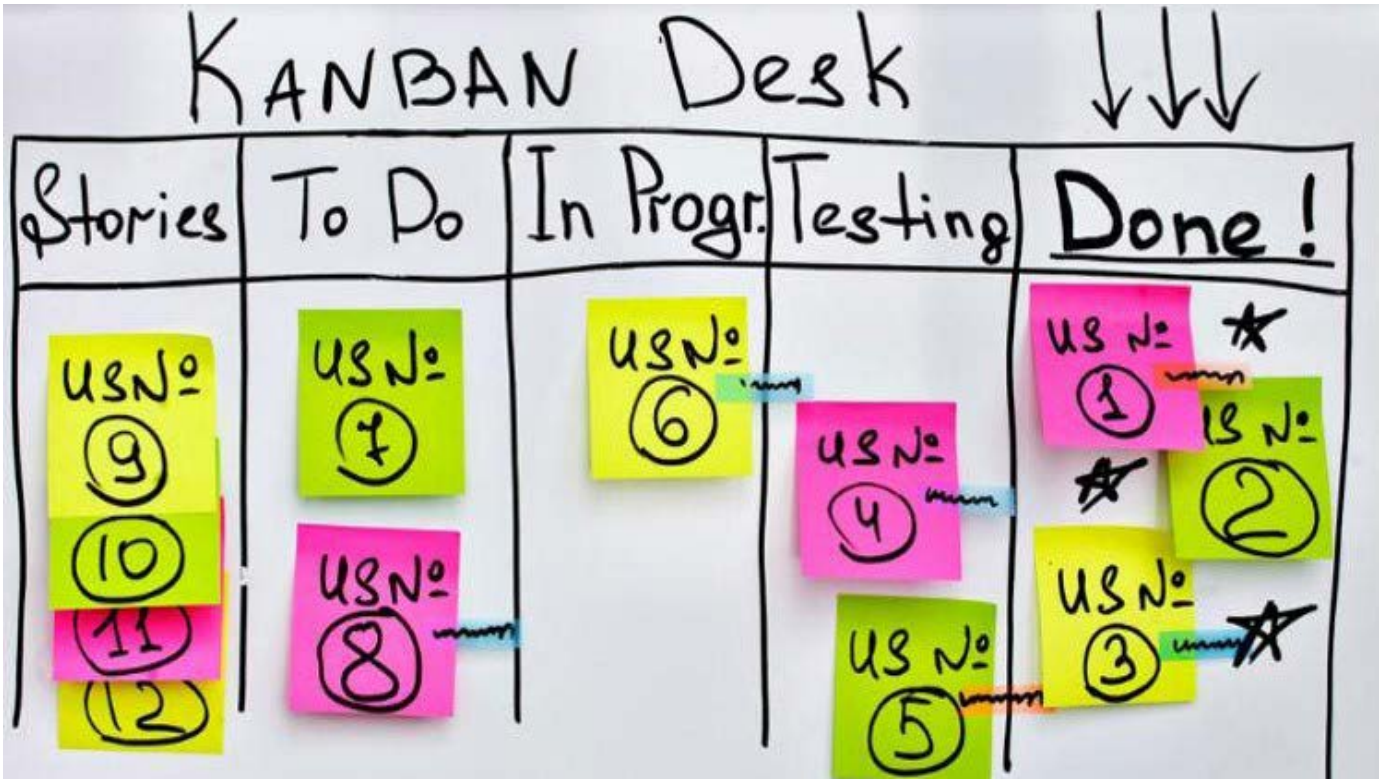
Limit the Work Underway

At each stage of production, the work should be made as efficient as possible.



Visualize the Workflow

Team boards show where the value stream is at a team level.



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Define the Process

Accurately and iteratively define the process and be sure that everyone can understand it.

Improve as a Team

Kanban systems rely upon every member of the work team understanding where the production cycle is at a given time and constantly seeking and relaying improvement opportunities.

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Theory of Restrictions

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Constraints Exist by Nature in Any System

There are limitations in every system, due to physics, regulation, dollars or process weakness.

Identifying Constraints Allows You to Make Decisions About Them

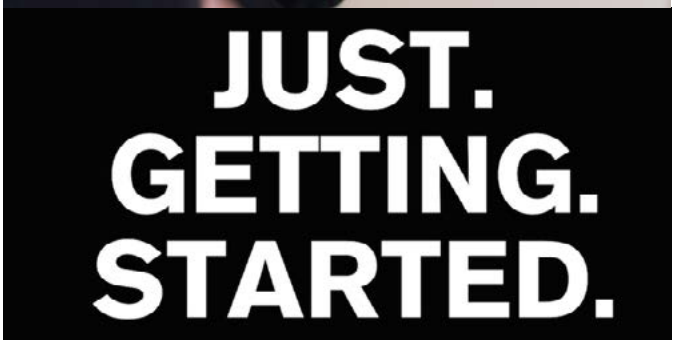
Only when the constraints are understood and explored can they be addressed logically and efficiently.

Exploiting Constraints Can Improve Efficiency

Addressing constraints based on facts will improve efficiency and profit.

All Other Decisions Hinge Upon Constraint Decisions

Once a decision about addressing a constraint has been achieved, other decisions cannot infringe upon the new process.



Loop

The process improvement system is continuous and iterative. It should constantly be flowing in a loop to keep improvements up to date.

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What is Kanban?

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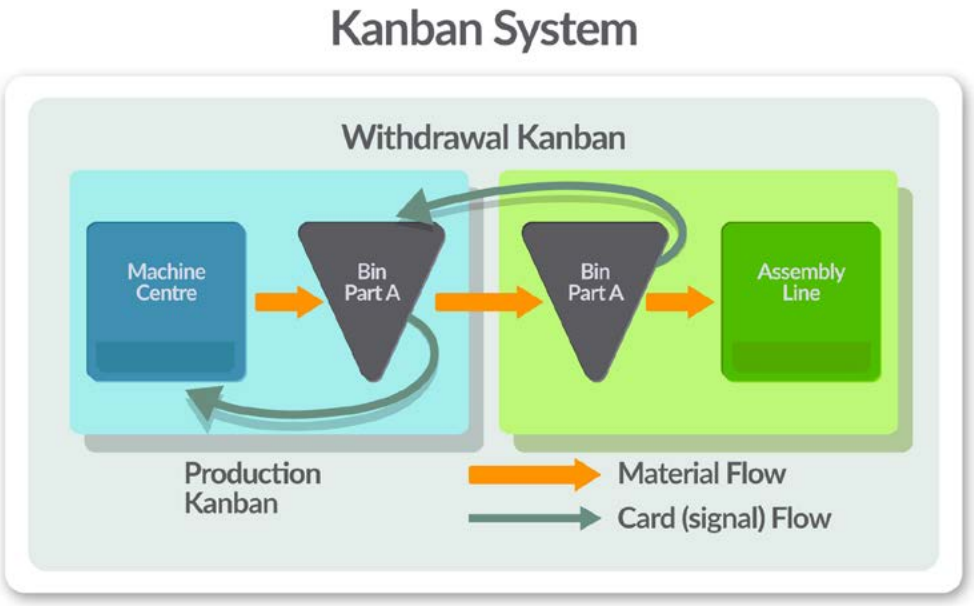
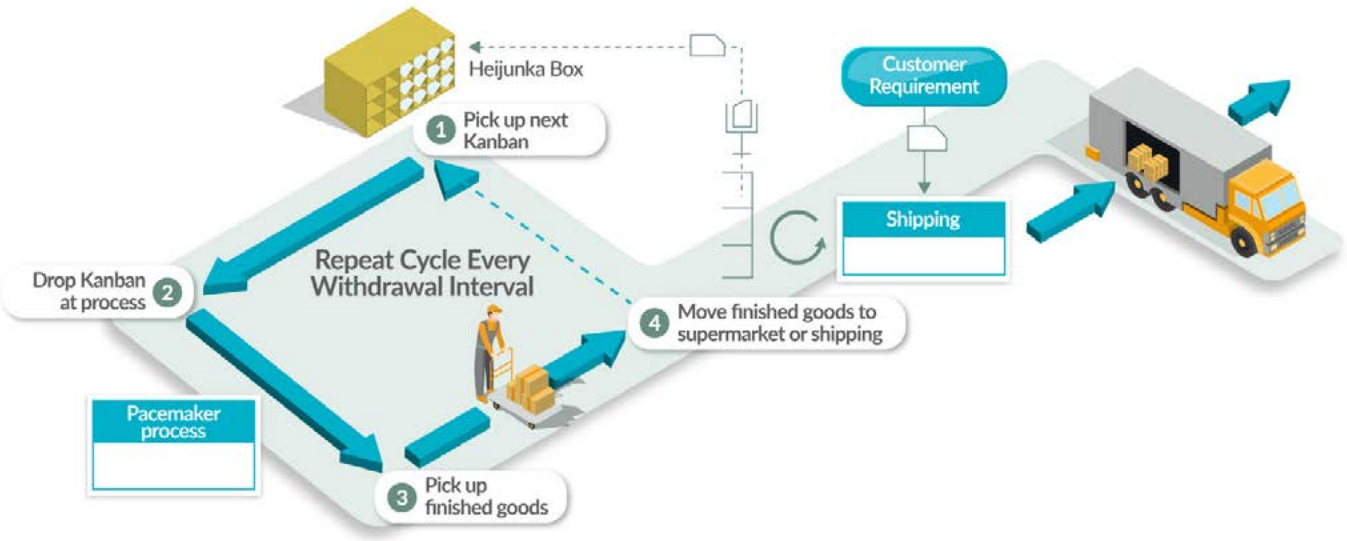
A Scheduling System That Allows for Just in Time Delivery

By its nature, **Kanban** systems allow for better use of resources, allocation and availability to supply and delivery to customers.



An Inventory Control System

Rather than manufacturing goods and "pushing" them to the customer, hoping for Sales to reduce inventory, Toyota created a system that "pulls" manufactured goods as they are required.



Typical paced withdrawal in a plant environment.

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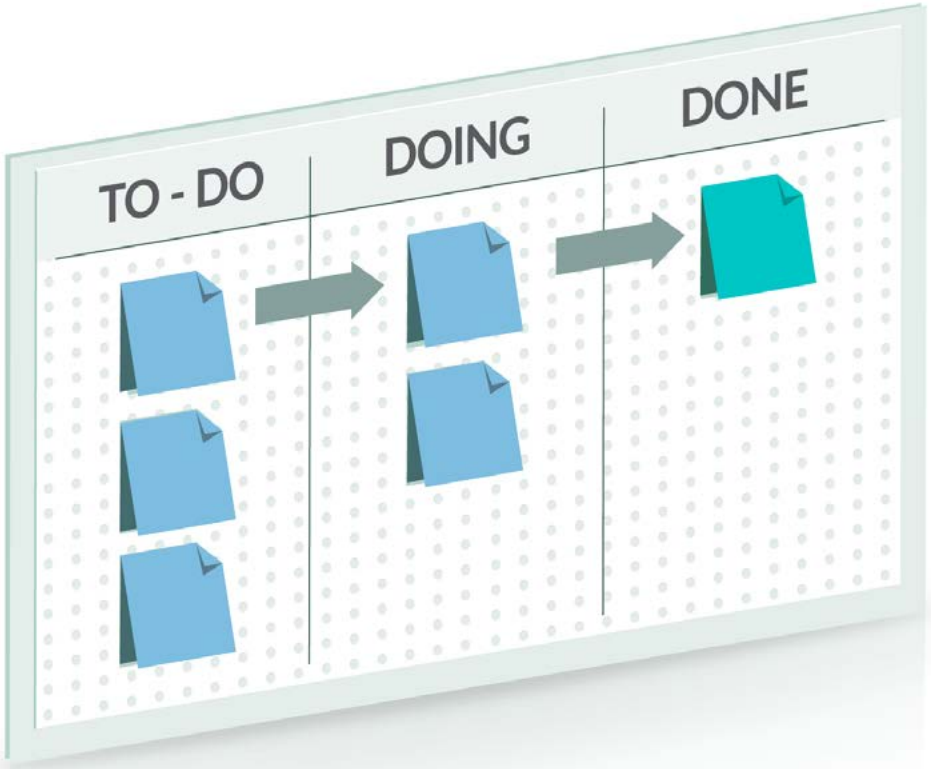
A Way to Improve Productivity in an Organization

Controlling for error and aligning production with demand reduces waste at every level of an organization and can dramatically reduce costs.

A System to Use in Many Frameworks

Kanban can be implemented in your personal life, in almost any company or organization, and across any process.



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Value Flow Map

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Identify Where You Start

In a programing project, the beginning is a blank slate except there are always constraints! Identify the resources you are starting with.

Define the Steps in Between

Specify the steps in between start and finish that will achieve the goal.

Identify Production Requirements (Finished Product)

Know what the project requirements are before defining the path to get to them.

Value Stream Maps Change by Nature

Be warned! By their nature, value stream maps change over time and with changing requirements and changing resources.

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Implementing Kanban

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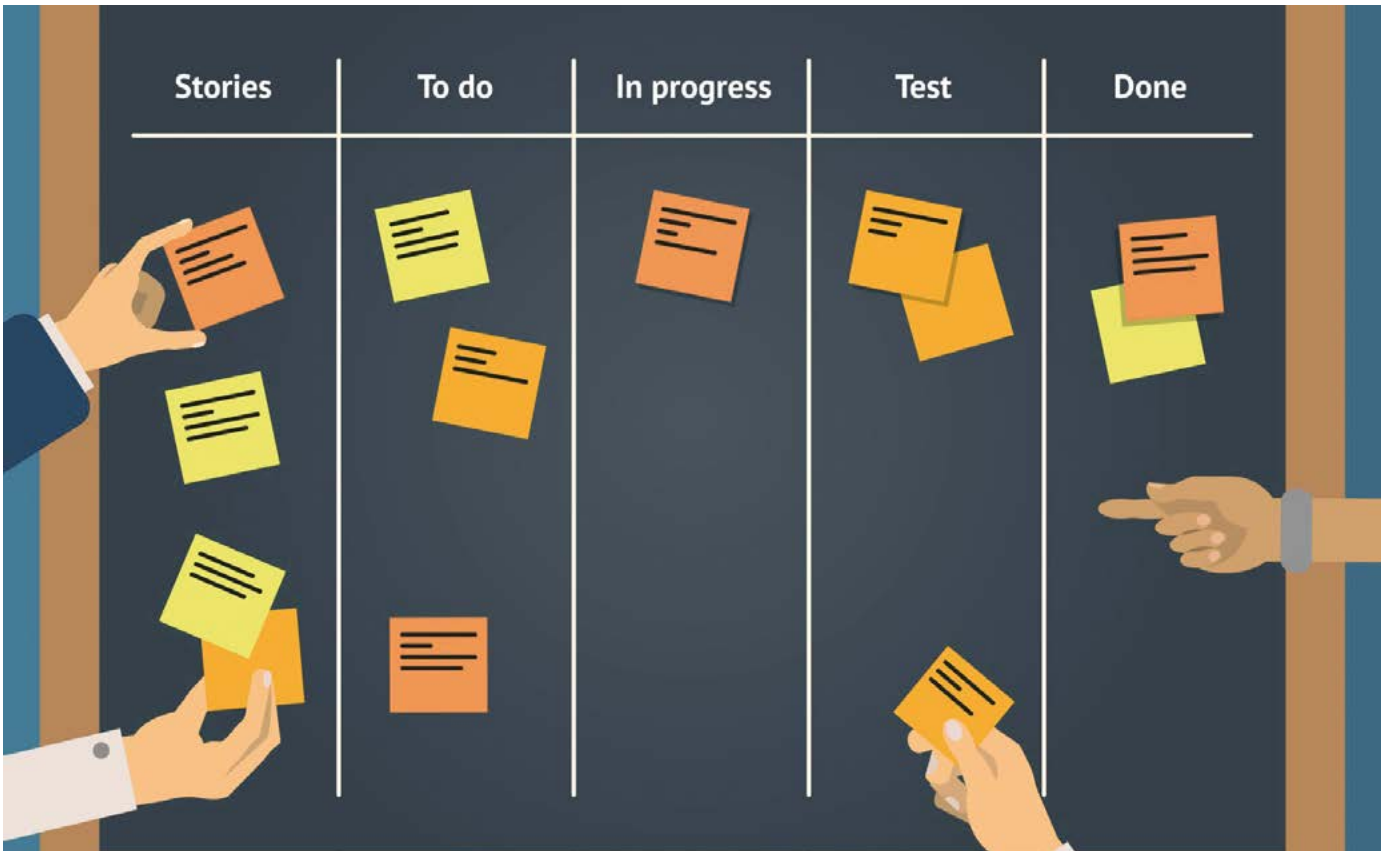
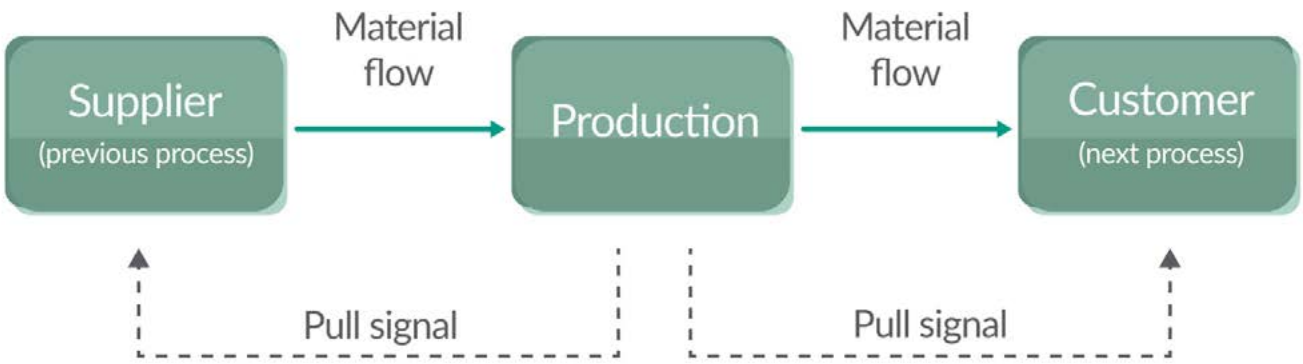
Card Walls

The card wall is the primary organizing method for keeping a project moving.



Pulls and Pushes

Ensure that your process is respecting pull signals, rather than push signals.



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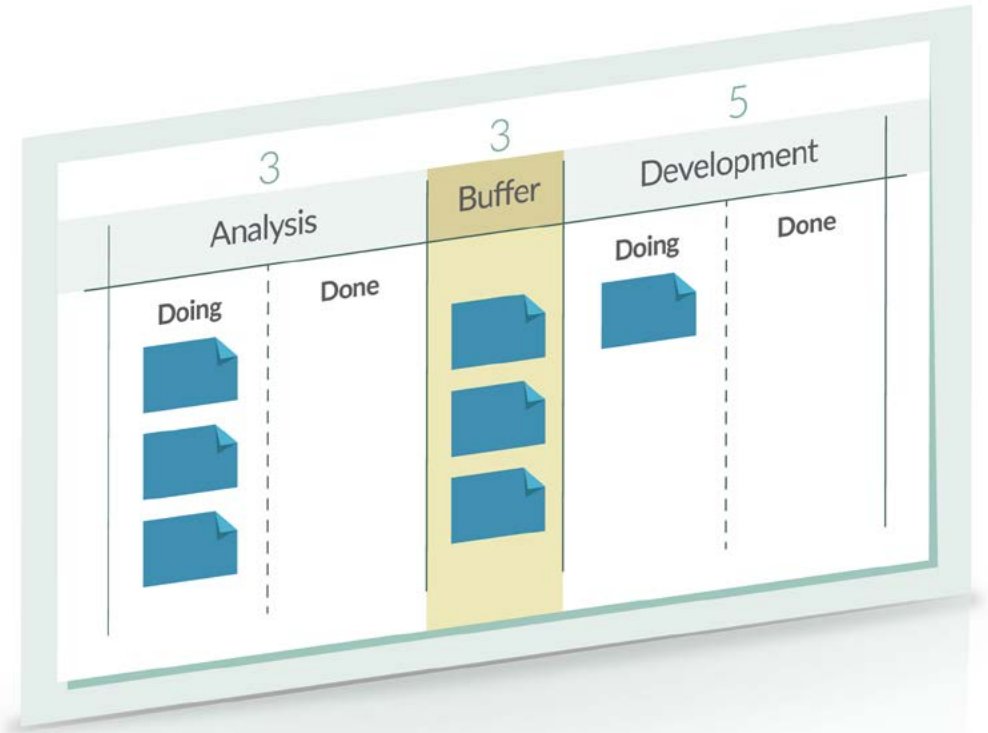
Workflows

Defining workflows is a time consuming effort that requires full participation. It is more than worthwhile.

Queues and Buffers

Because **Kanban** limits work in progress, a bottleneck can become depleted, ceasing work distribution. By inserting a buffer, the flow can be better managed.



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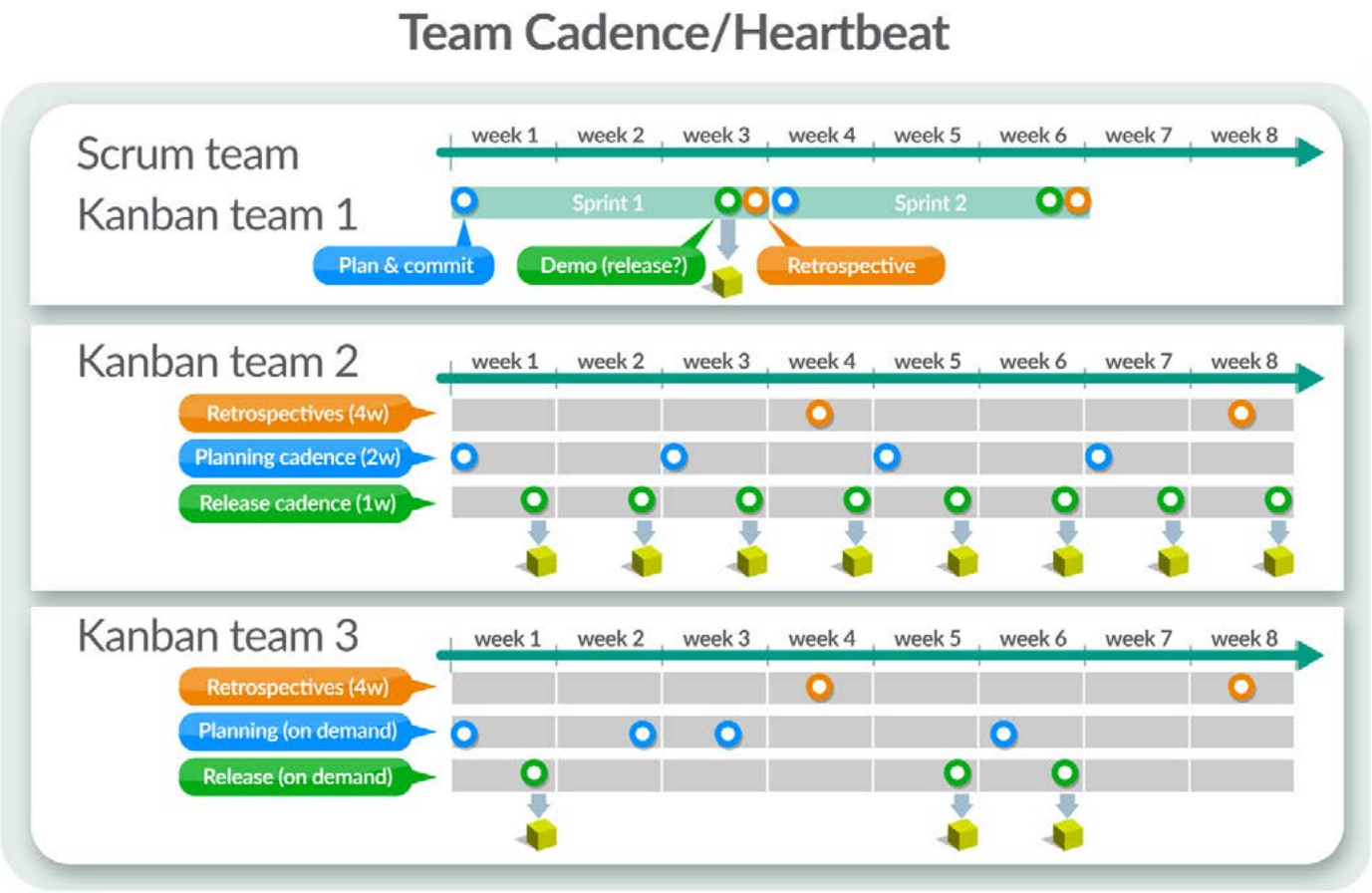
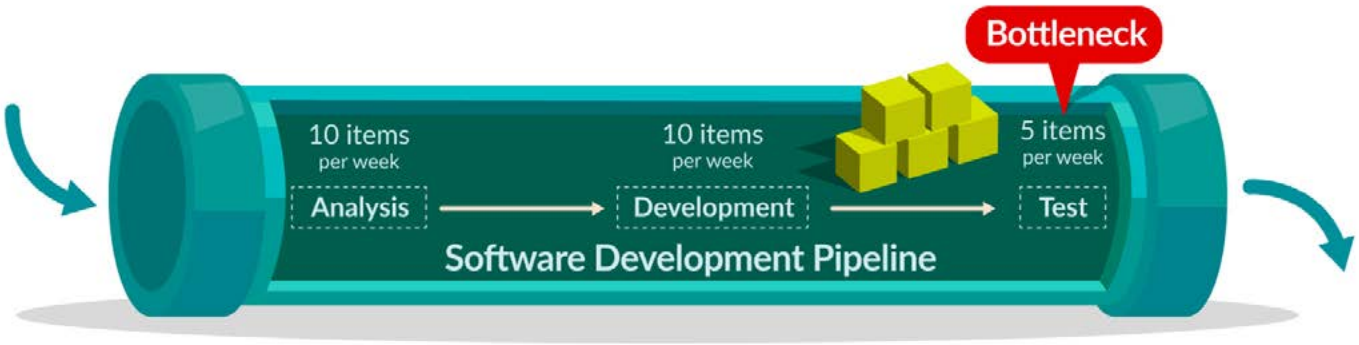
Cadences

Once a team is fully implemented, **Kanban** will give them a feel for the flow and pace of their development cycle. Then they can reliably forecast how long work will take to complete.



Bottlenecks

When **WIP** shows growth, there is a bottleneck and a buffer needs to be constructed.



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Metrics in Kanban

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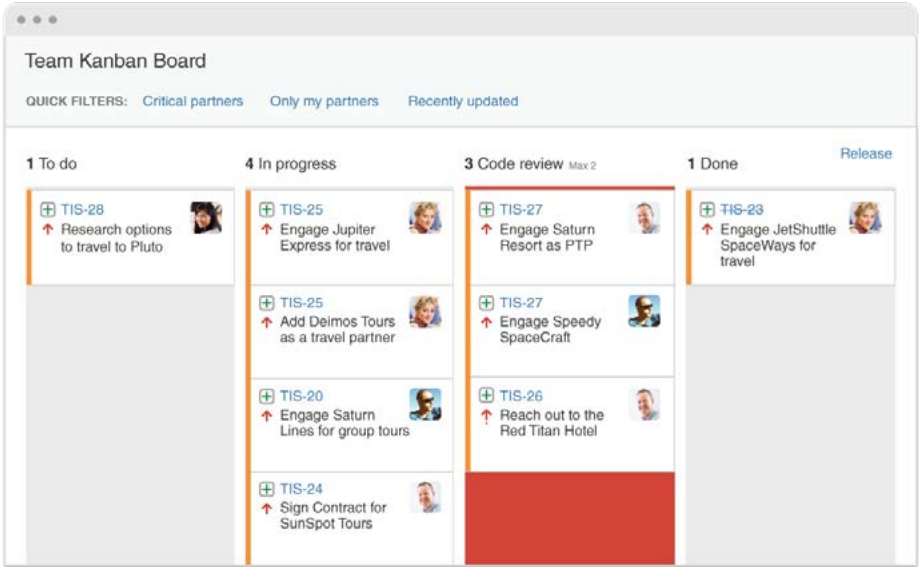
Kanban Metrics

Kanban systems rely upon every member of the work team understanding where the production cycle is at a given time.

Tracking Work

Work must be tracked reliably and in a system that is simple for all to access.

Card boards may not be realistic in today's mobile workforce but there are apps and programs which do the same thing.



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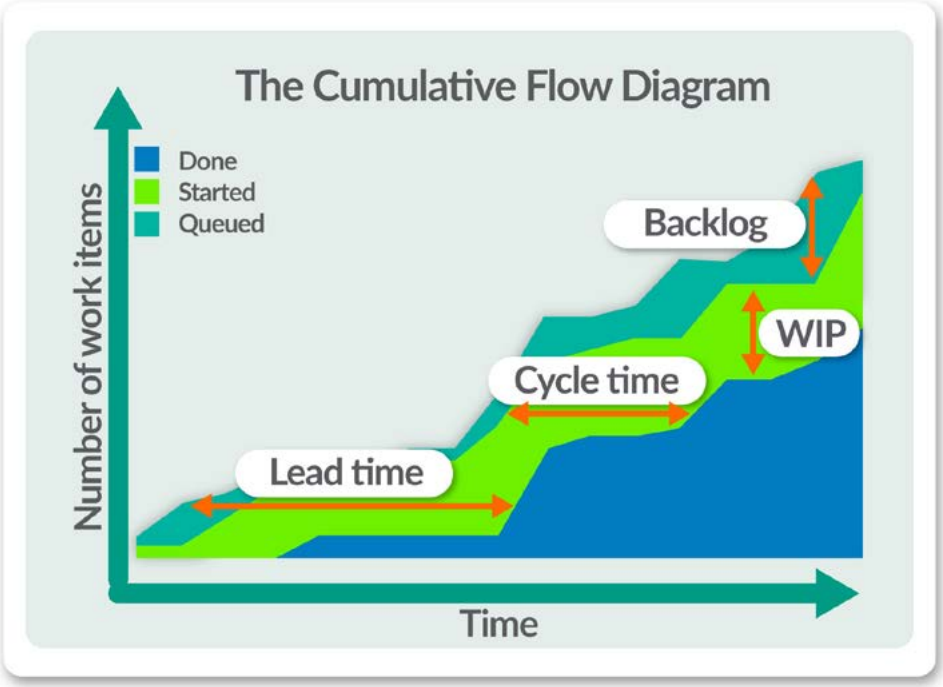
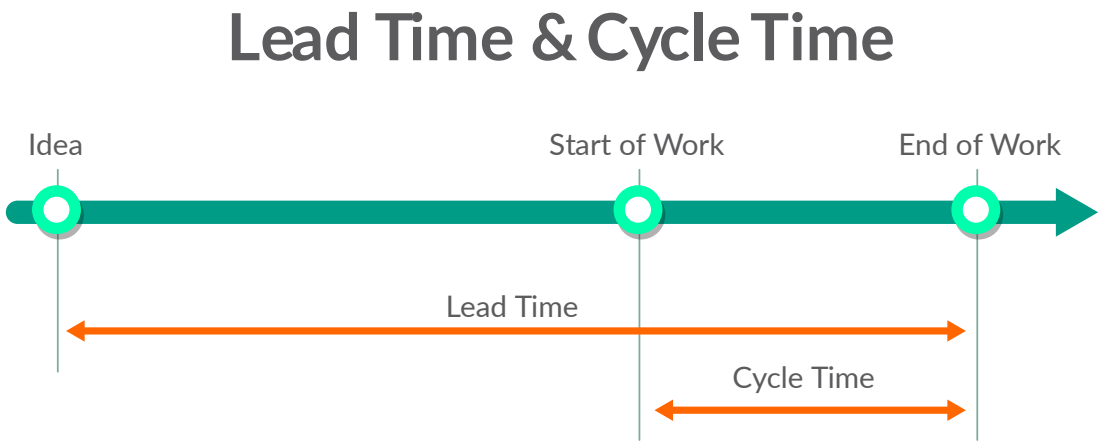
Cumulative Flow Design

Understanding the flow from the beginning to the end and where each time is inside that flow is the heart of managing **Kanban**.



Lead Time

Being able to predict the lead time for a particular team on a particular task is very important to prevent bottlenecks.



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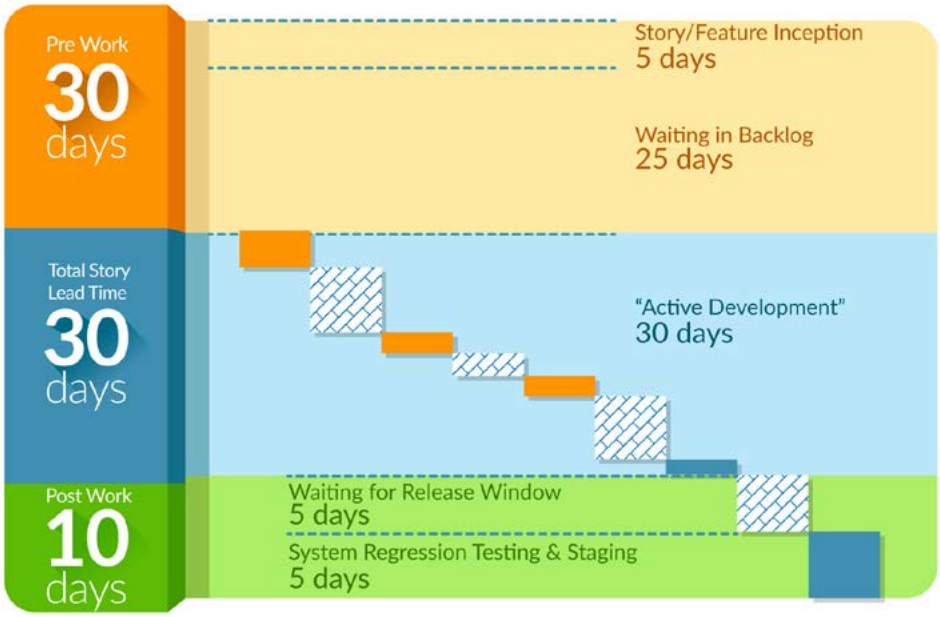
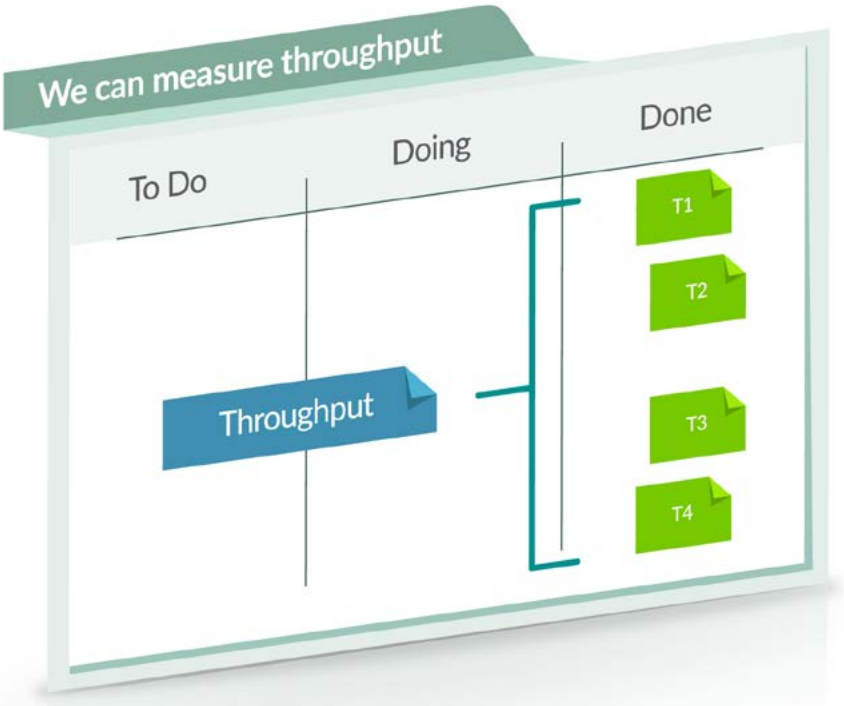
Trends

Analyzing workflow trends can help in planning capacity and allocating resources.



Throughput

The most critical measurement is throughput.



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Optimizing Your Kanban

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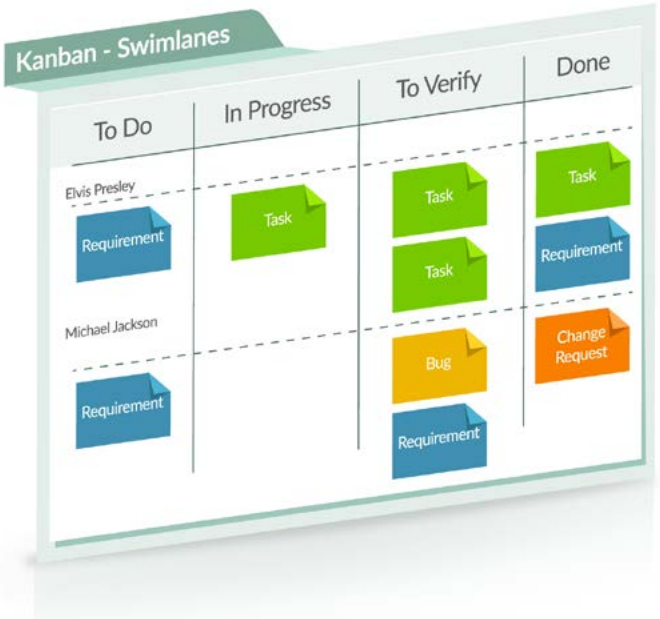

Scaling Kanban

Kanban scales from a team level up to an organizational level, with each team having its own board and the senior management overseeing an organizational board.

Three Types of Improvement Opportunities

Three basic types of process improvements are possible:

1. Removing bottlenecks.
2. Reducing waste.
3. Increasing consistency.

Minimizing Waste: Just-In-Time Production

What it is

- Management philosophy.
- "Pull" system though the plant.
- Hydraulic Push Systems.

What it does

- Attacks waste.
- Exposes problems and bottlenecks.
- Achieves streamlined production.

What it requires

- Employee participation.
- Industrial engineering/basics.
- Continuing improvement.
- Total quality control.
- Small lot sizes.

What it assumes

- Stable environment.

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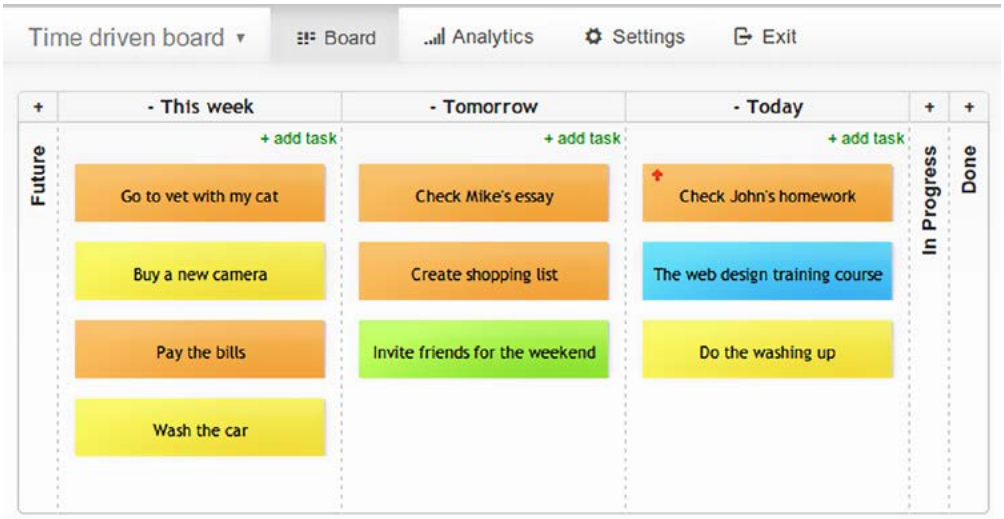
Estimations

Kanban systems rely upon every member of the work team understanding where the production cycle is at a given time.

Class of Service

Standard and fixed delivery dates keep production stable. Expedites disrupt flow, as do undefined delivery dates.



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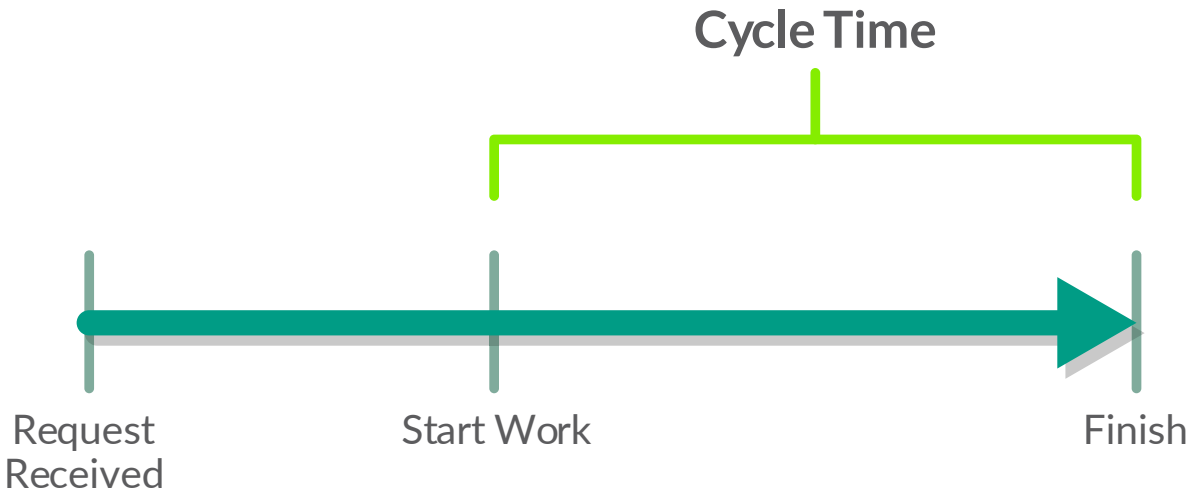
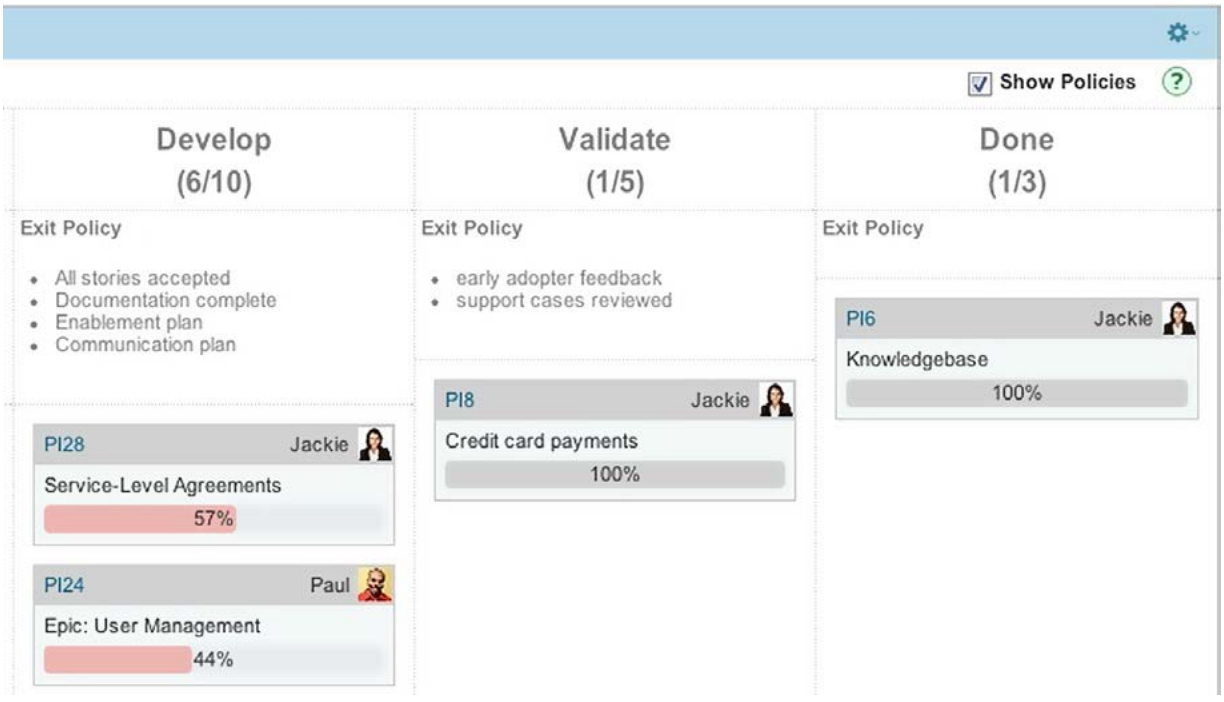
Service Level Agreements

In order to determine an estimate for completion, reduce the possibility of bottlenecks and keep work flowing, an **SLA** should be implemented.



Policies

The agreed upon workflow translates into policy, allowing each team to perform their tasks with full knowledge of what their responsibilities are.



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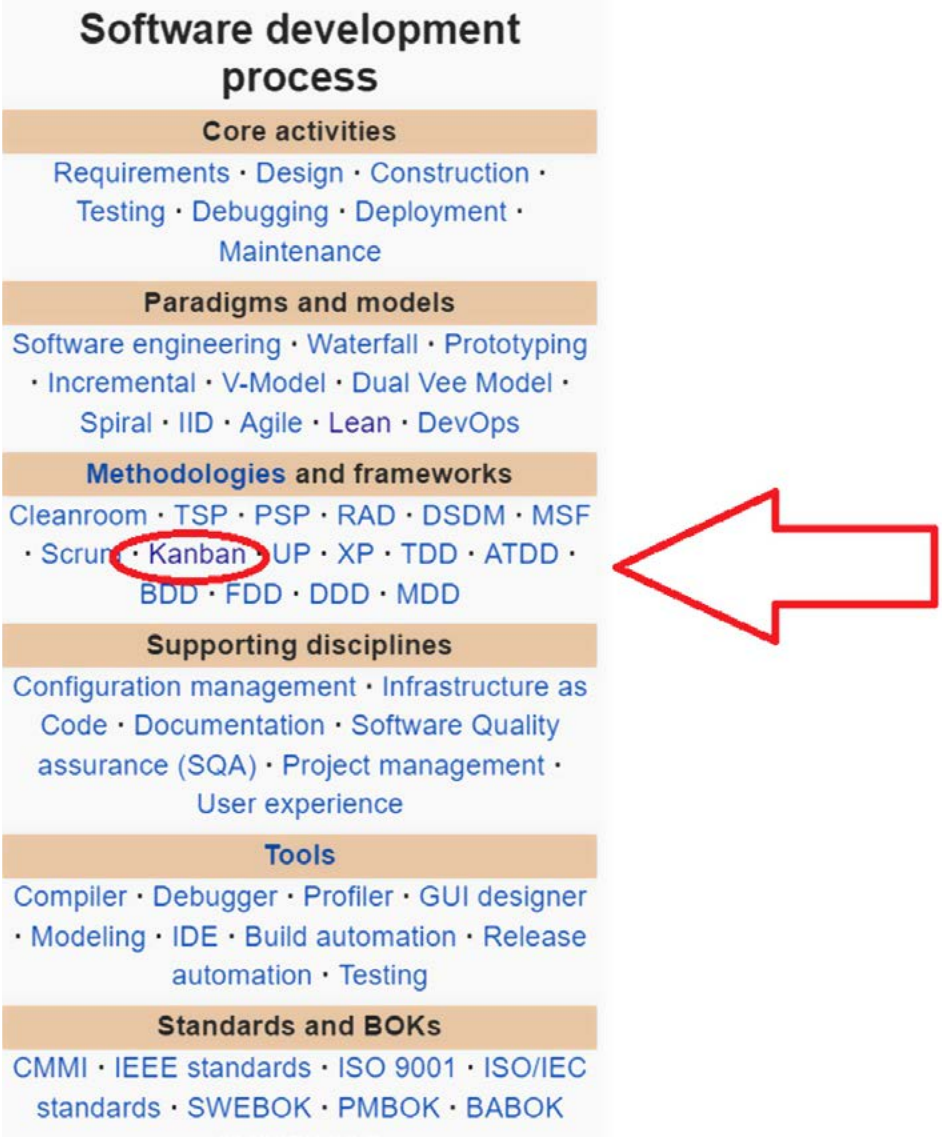
Agile Software Development



Resources

https://getKanban.com/pages/free-version

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Bottleneck

A constraint in the system that limits the flow of work.

Identifying bottlenecks makes it easier to reduce their impact and provides a mechanism for controlling work flowing through the process.

What's wrong with the current system?

- Burnout.
- Frequent bugs on production.
- Complaints about productivity.
- Low throughput.
- Leads to vague sprint planning.
- Too much work stuffed into one sprint.
- Unidentified bottlenecks.

Eliminate Waste

Lean philosophy regards everything not adding value to the customer as waste (Muda). Such waste may include:

- Partially done work.
- Extra processes.
- Extra features.
- Task switching.
- Waiting.
- Motion.
- Defects.
- Management activities.

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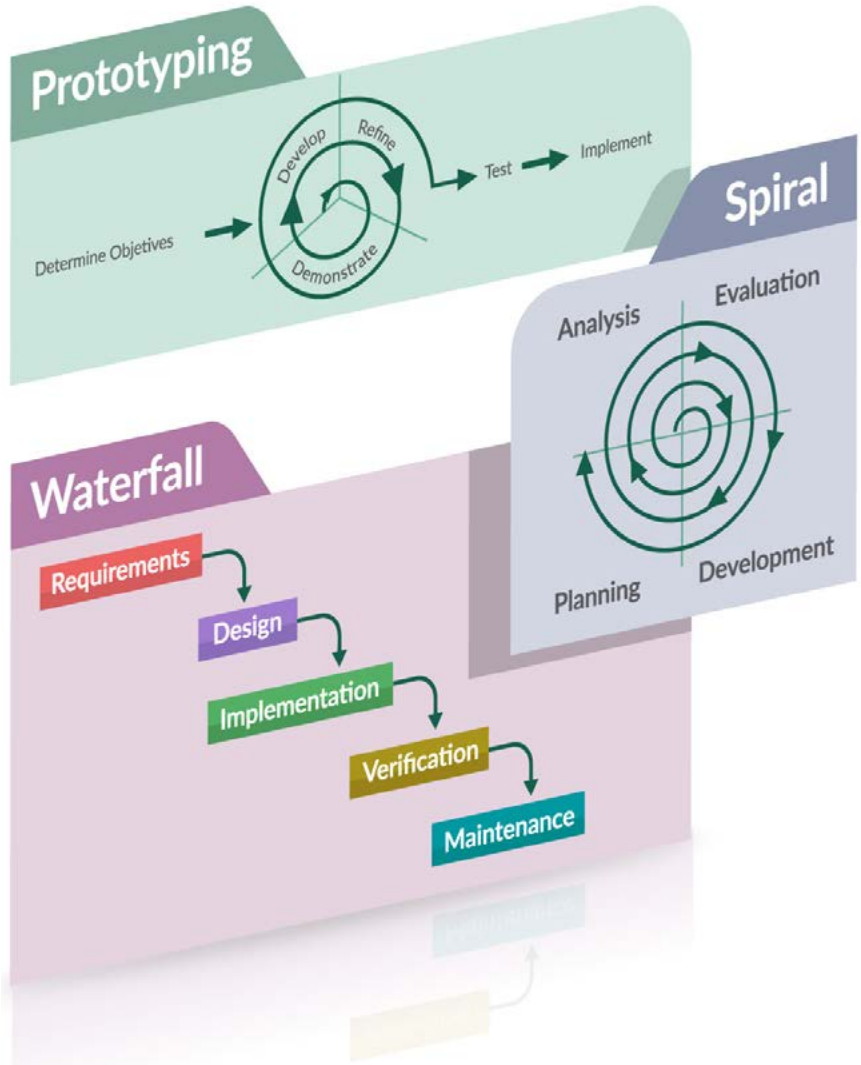
Software Development Patterns Mashed Together

By Beao Old waterfall: Paul Smith [Public domain], via Wikimedia Commons.



Visual Management

A philosophy that work is better managed through visual systems, such as **Kanban**, than text-based lists or spreadsheets.

The philosophy posits that visualizing work as it's being done better reveals problems at earlier stages, leading to lower cost solutions.

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Blocker

An internal or external factor preventing progress, thereby limiting the ability for the work to move from one phase in your process to the next.

Task Switching

Also known as Context Switching or Multitasking.

Shifting attention between multiple pieces of work. Limiting task switching can allow a person to work more efficiently by minimizing the amount of time required to redirect cognitive function to a new activity.

Process

- **Process**

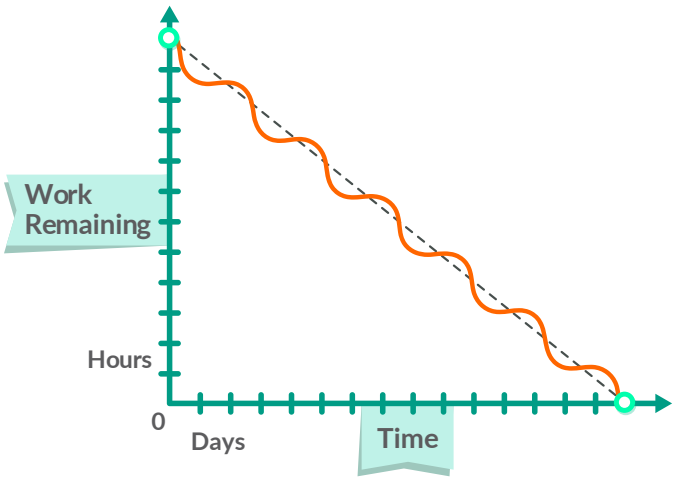
The series of actions, steps or stages that a piece of work goes through to be considered "done."

- **Process Map**

A visual representation of the steps needed to complete a piece of work.

Kanban as Flow

Kanban provides a steady flow of tasks that reach 100 % completion by helping your team manage day-to-day development with a minimum of overhead and blocking issues.



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Definition of Done (DoD)

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How does Kanban work?

There are few basic principles in order to get the most out of your workflow.

- **Visualize what you do (your workflow):** a visualization of all your tasks and items on a board will help everyone on your team to stay on track of your job.

- **Limit the amount of work in progress (WIP limits):** set achievable goals. Balance your workflow by limiting the work in progress to prevent over commitment on amount of tasks you will be unable to finish.

- **Track your time:** Time Tracking meets Kanban method. Track your time seamlessly and evaluate your work accurately.

- **Easy to read visual indicators:** know what is going on at a glance. Card colors as Work Types, Priorities, Tags, Deadlines and more.

- **Spot bottlenecks and eliminate waste:** make the best out of Lead & Cycle Time, Cumulative Flow and Time Reports. These metrics will let you evaluate your performance, spot problems and adjust your workflow accordingly.

Principles

- Start with what you do now.
- Agree to pursue incremental, evolutionary change.
- Initially, respect current roles, responsibilities and job titles.

Other Uses

While developed for software development and software teams, the **Kanban** method (as distinct from **Kanban** in **Lean Manufacturing**) has been applied in many other areas of knowledge work. As a visualization and control mechanism, any repeatable and consistent workflow can be tracked, regardless of complexity or subject area.

Business functions that have applied **Kanban** include:

- Human resources and recruitment teams.
- Sales and marketing teams.
- Organizational strategy and executive leadership teams.
- Audit teams.
- Contracts to project execution process.
- Accounts receivable and payable processes.

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Four Key Practices

1. **Visualize the workflow:** You cannot improve what you cannot see. Knowledge work needs a way to show progress. Kanban boards are one of the ways to display progress.

2. **Lead using a team approach:** Without a team and leadership, nothing of significant value can be created or improved.

3. **Reduce the batch size of your efforts (reduce BASE):** Science and the work from **Donald G. Reinertsen** has shown that when the batch unit of work is decreased, more can be accomplished. This principle goes beyond simply Limiting Work in Progress.

4. **Learn and improve continuously:** This practice implies reflecting so that one can learn from experience, and it aligns with performing retrospectives and embracing Kaizen. In addition **Open Kanban** itself is open source and it welcomes contributions or extensions to the method.

Cycle Time

What do you count as the cycle time then? It doesn't often happen, that your employees are just sitting around with nothing to do (hopefully!). So, as the new order comes in, it will first spend some time in waiting for its implementation turn. It may be days or weeks before someone is available to actually work on this. But once they do the moment the real work on this order starts is the beginning of the cycle time, lasting until the work on it is completed.

Cycle time is a key metric for **Kanban Teams**. Cycle time is the amount of time it takes for a unit of work to travel through the team's workflow from the moment work starts to the moment it ships. By optimizing cycle time, the team confidently forecast the delivery of future work.

https://www.atlassian.com/agile/Kanban

Lead Time

The lead time starts being measured as soon as a request appears.

Whether it's a request for a new product, a feature or whatever your business works on the happy incident of a new business arriving to your headquarters is the beginning of the lead time.

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Scrumban

Scrumban is an Agile management methodology describing hybrids of **Scrum** and **Kanban** and was originally designed as a way to transition from **Scrum** to **Kanban**. Today, Scrumban is a management framework that emerges when teams employ **Scrum** as their chosen way of working and use the **Kanban** Method as a lens through which to view, understand and continuously improve how they work.

Scrumban is distinct from the **Kanban** Method in that it:

- Prescribes an underlying software development process framework (Scrum) as its core.
- Is organized around teams.
- Recognizes the value of time-boxed iterations when appropriate.
- Formalizes continuous improvement techniques within specific ceremonies.

WIP Limits

To ensure that the team is working effectively, Scrumban methodology states that a team member should be working on no more than one task at a time.

To make sure this rule is followed Scrumban uses WIP (work in progress) limit. This limit is visualized on top of the Doing section of the board (also could be on each column of that section) and means that only that number of tasks can be in the corresponding column at one time.

WIP limit is usually equal to the number of people in the team, but could be expanded based on the team work specifics.

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Scrum - Kanban

	Scrum	Kanban
Cadence	Regular fixed lenght sprints (ie, 2 weeks).	Continuous flow.
Release Methodology	At the end of each sprint if approved by the Product Owner.	Continuous delivery or at the team's discretion.
Roles	Product Owner, Scrum Master, Development Team.	No existing roles. Some teams enlist the help of an agile coach.
Key Metrics	Velocity.	Cycle time.
Change Philosophy	Teams should strive to not make changes to the sprint forecast during the sprint. Doing so compromises learnings around estimation.	Change can happen at any time.

https://www.atlassian.com/agile/Kanban

Agile and Lean Principles

Agile Principals	Lean Principals
Communications	Optimize the whole
Simplicity	Eliminate waste
Feedback	Create knowledge
Courage	Build quality in
Respect	Defer commitment
Visibility	Deliver fast
Honesty	Respect people
Realism	
Quality	

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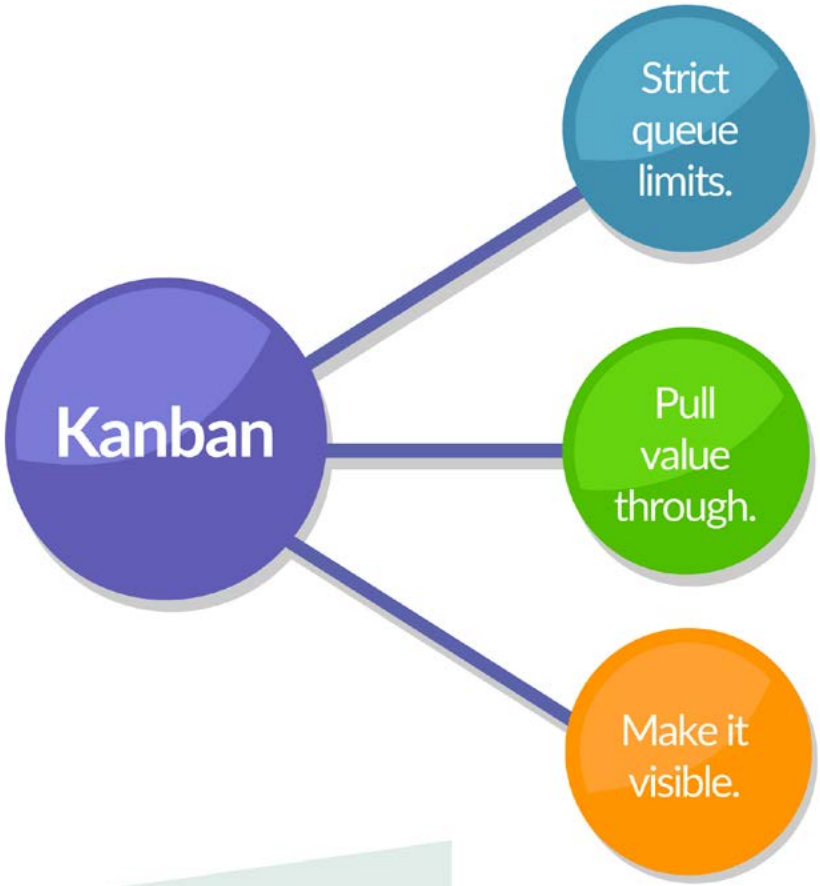
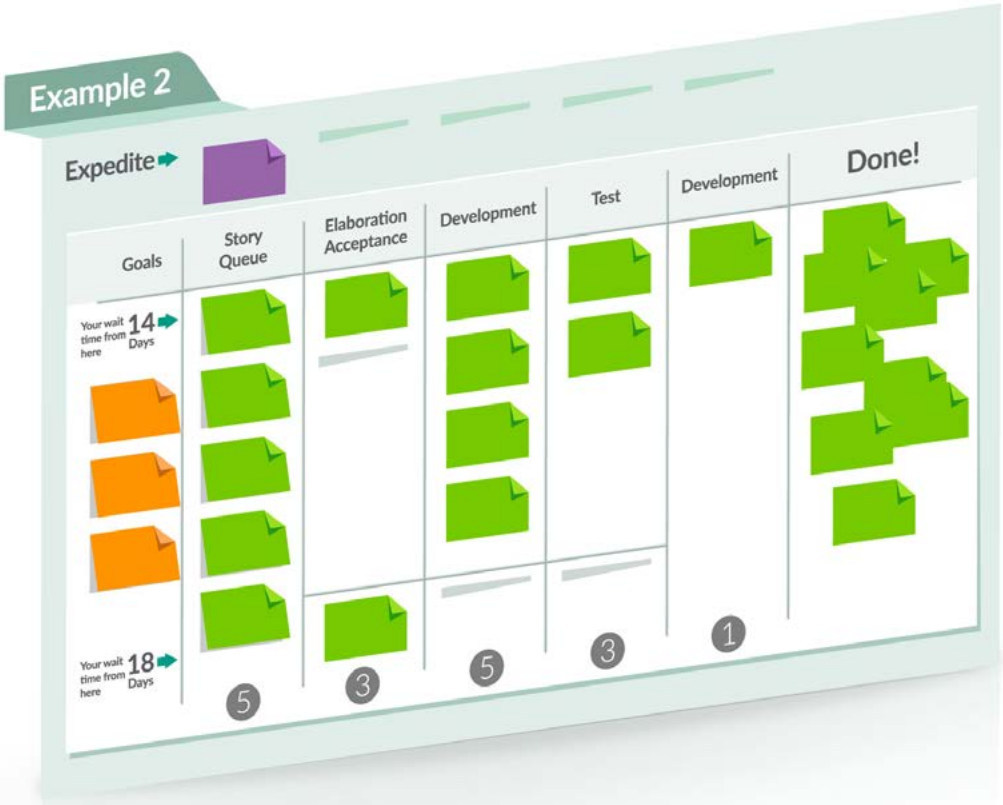
3 Rules

1. Strict queue limits.
2. Pull value through.
3. Make it visible.



Kanban



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Work In Progress (WIP)

- Create Columns for Each Step in your process.
- Pick Limits for “Active” Queues (team size divided by 2 or just be logical).
- Set “Wait” Queues to 2 or 3, keep small, Eliminate waste, get feedback.
- FIFO.
- If a slot is full, can´t start more work (A.K.A. PULL).
- Team sets Queue sizes to be most efficient, experiment.
- Designed to Limit **WIP**, More **WIP** means slower flow.

WIP

- Visible feature goals to minimize thrashing.
  - MMF = Minimal Marketable Feature.
  - or MUF = Minimal Usable Feature.
- Can Only reorder in “Wait” Queue to move MUF foward.
- Put Team Signals/Rules Above **WIP**.
- Queue & Cross Team Signals On Botton.
- Could add a Queue for External Team.
- 3 Rules: Strict Limit, Put Value, Visible.

Design of a Card

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