Agile Project Management: Agile, Scrum, Kanban & XP

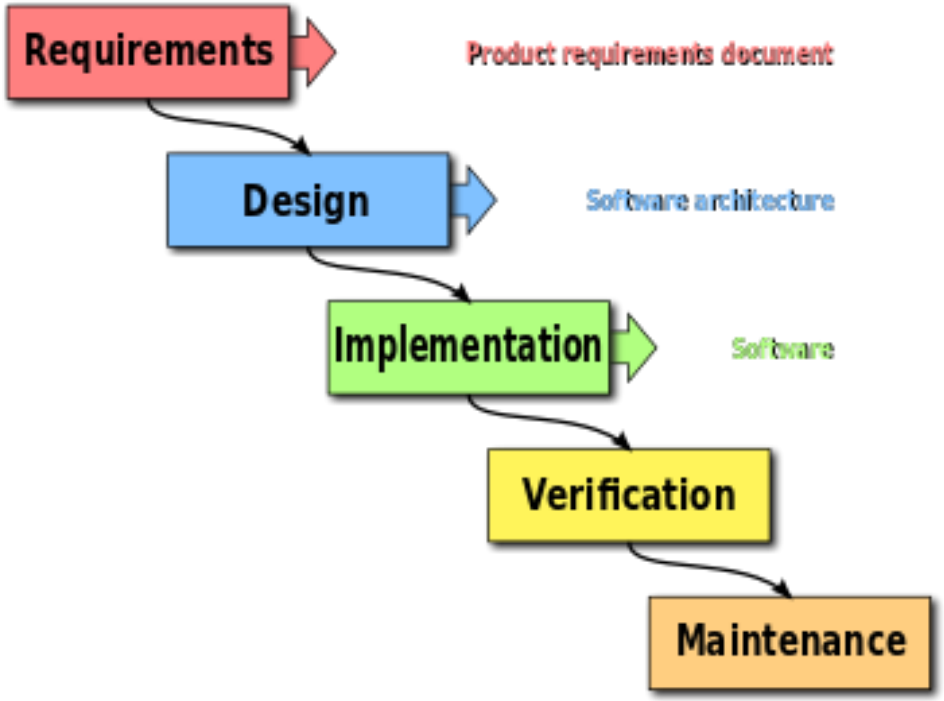
By GenMan Solutions

Project Management: Need for change

- Time bounded
- Requires definitive effort
- Needs to be well planned
- Must be completed within the assigned budget

Project Management: Need for change

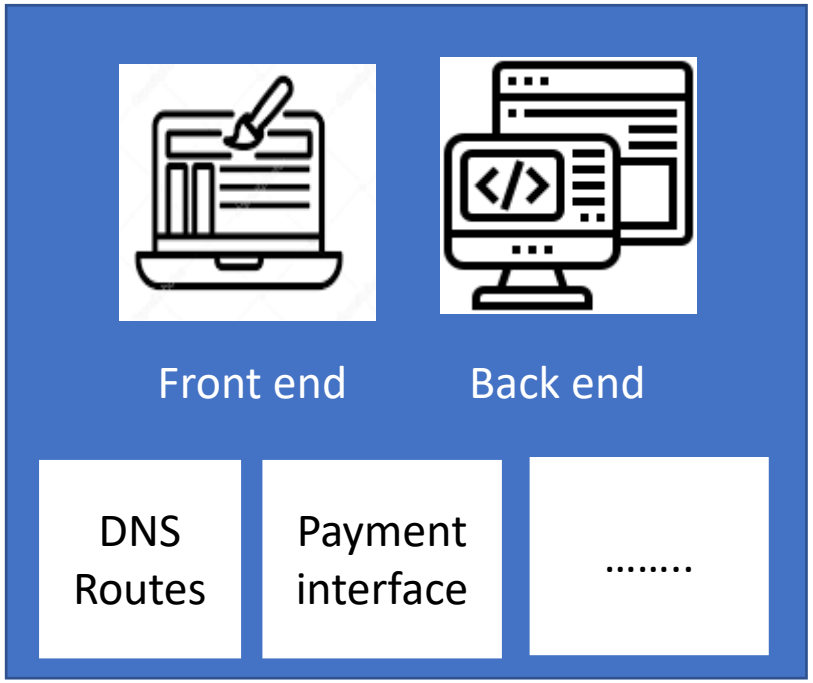
Processes can’t be left behind



Waterfall Model

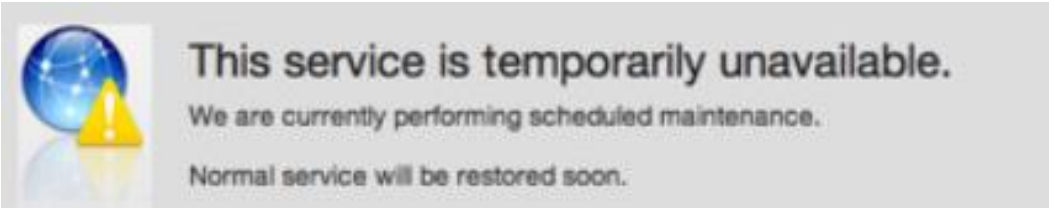
Project Management: Need for change

Flaws and weaknesses in historical approaches to project management and the requirements in the current period



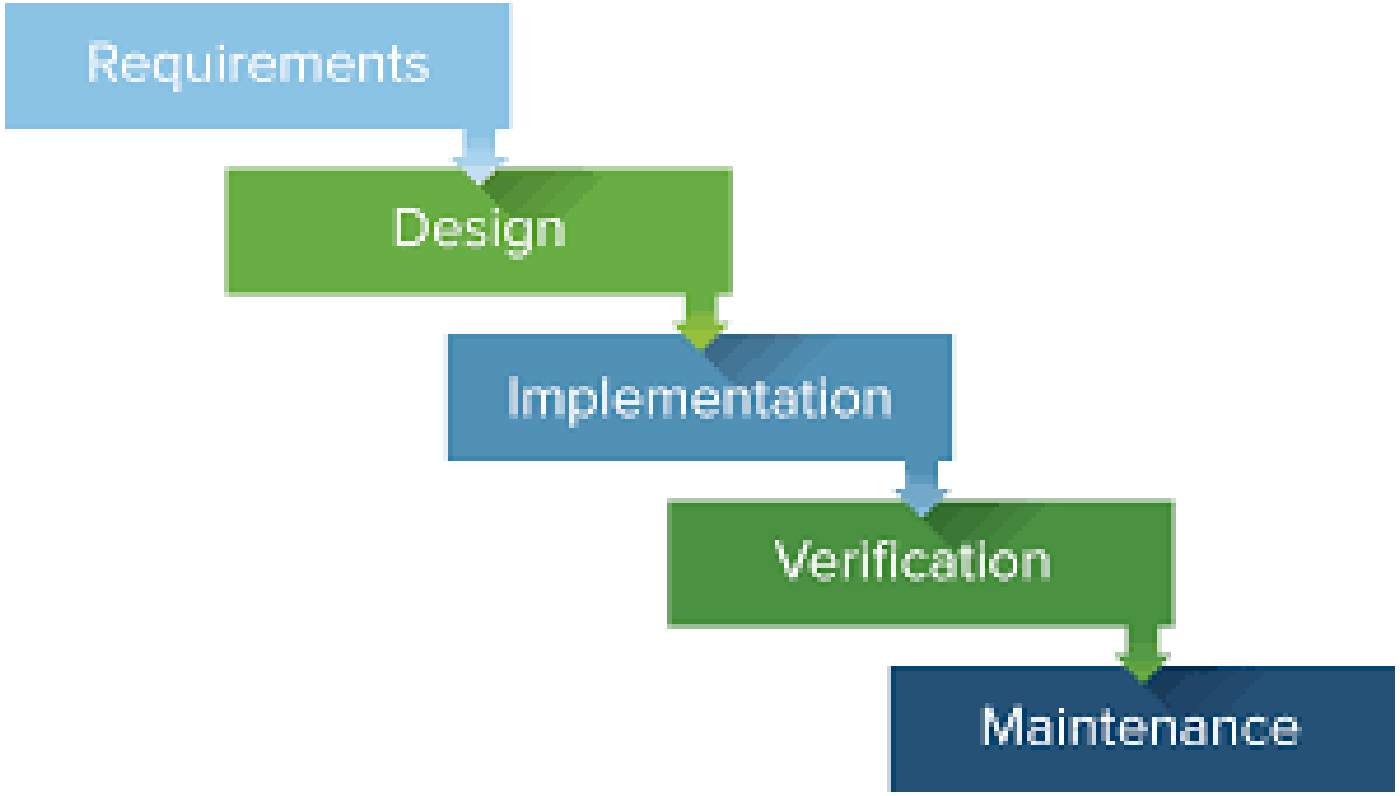
Example: Any Mobile Application

Time required to push changes



Project Management: Need for change

Waterfall Model



Project Management: Need for change

What is Agile?

What is Agile?

- Iterative approach to Software delivery
- Delivering faster in less time and less money
- Ability to create and quickly respond to change
- Philosophy to rapidly deploy an application
- Fully loaded tool-kit
- Just a mindset or way of thinking

Manifesto for Agile Software Development

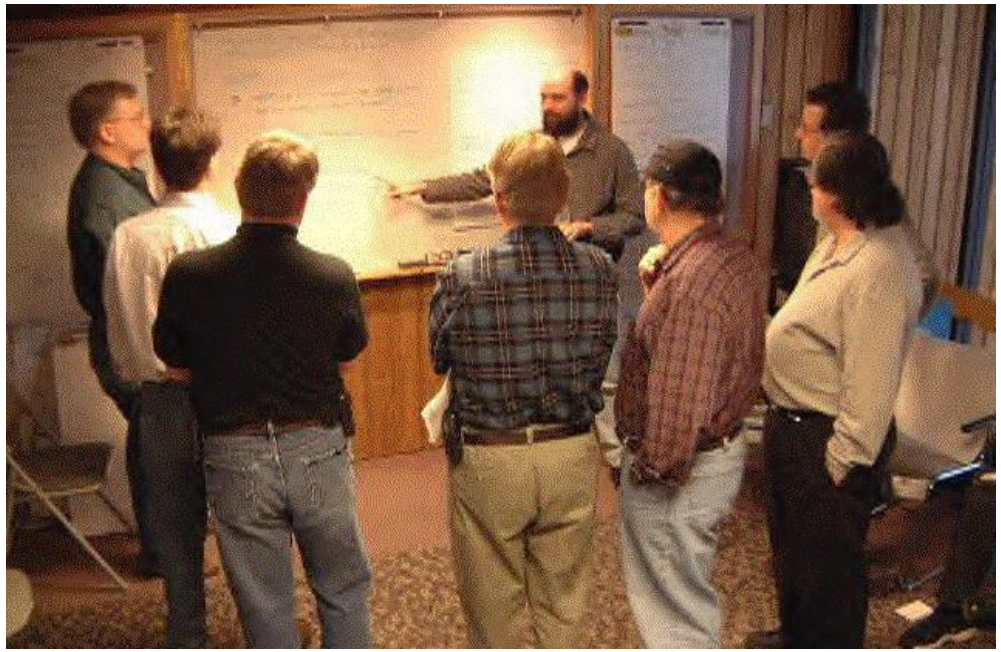
We are uncovering better ways of developing
software by doing it and helping others do it.
Through this work we have come to value:

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

That is, while there is value in the items on
the right, we value the items on the left more.

Source: https://agilemanifesto.org/

Agile Manifesto & Principles



Agile Manifesto & Principles

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Agile Manifesto

Agile Principles

Agile Alliance:
www.agilealliance.org

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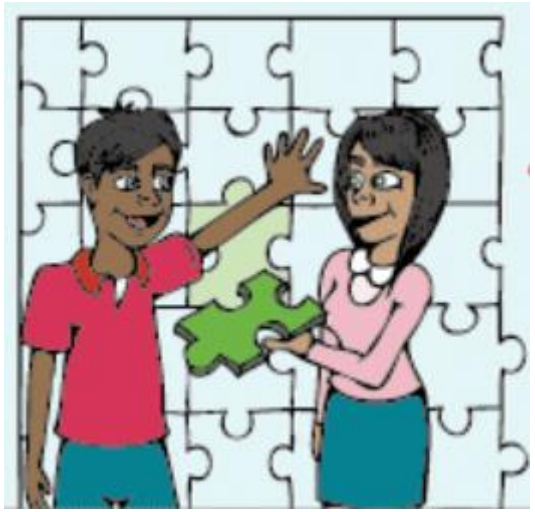
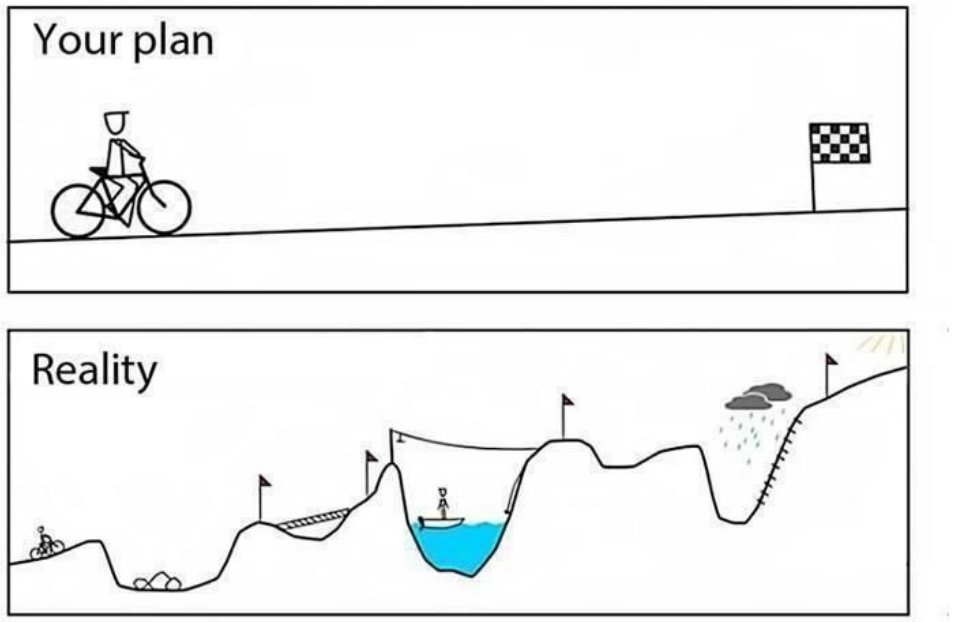
Working software over comprehensive documentation



<u>Customer collaboration</u> over contract negotiation



<u>Responding to change</u> over following a plan

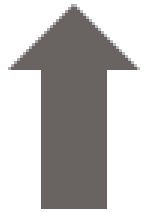
Agile Principles

Customer Satisfaction

Welcome Change

Deliver Frequently

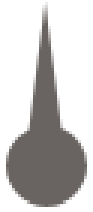
Working Together



Motivated Team

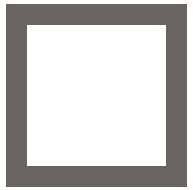
Face-to-Face

Working Software

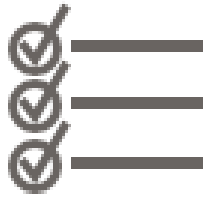


Constant Pace

Good Design

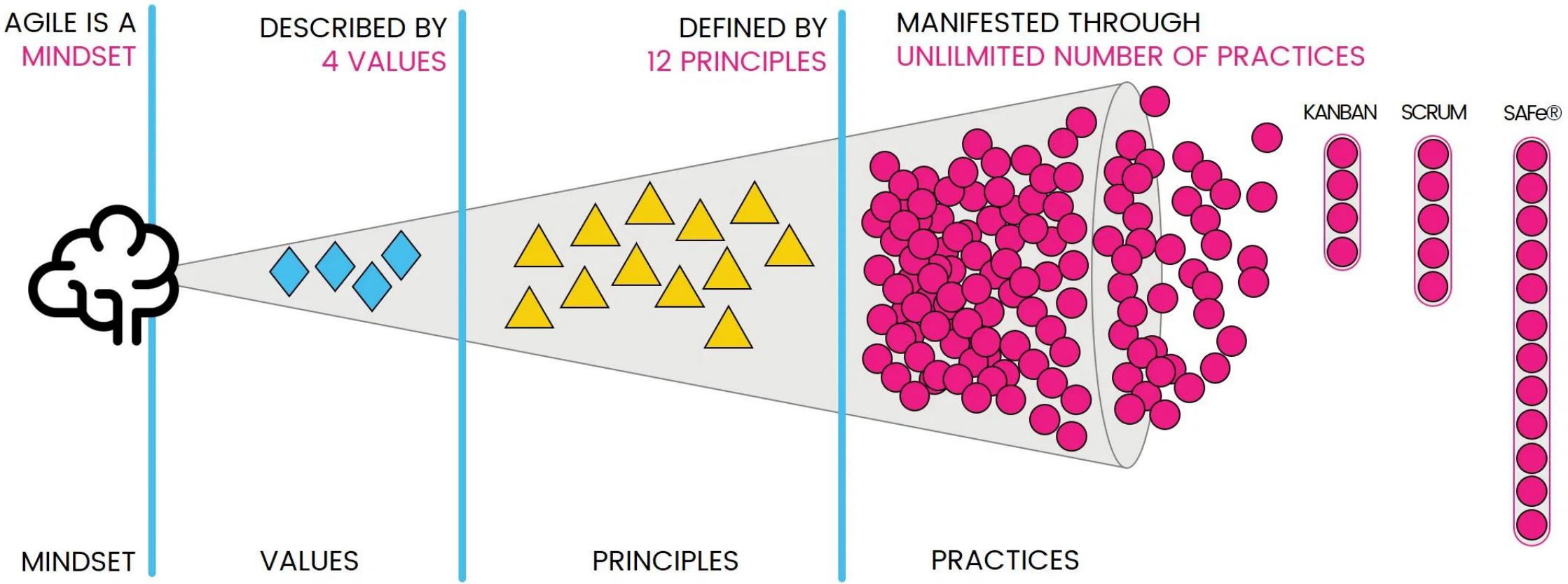


Simplicity



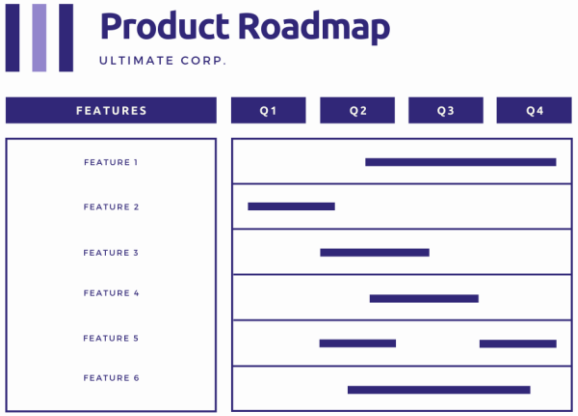
Self Organization

Reflect and Adjust



Adapted from Ahmed Sidky's Agile Mindset

Agile Principles



Customer Collaboration over contract negotiation ?

Violating our principle that says the developers should be working with the business owners every day?

The Agile test

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1. Does what we're doing at this moment support the early and continuous delivery of valuable software?
2. Does our process welcome and take advantage of change?
3. Does our process lead to and support the delivery of working functionality? Are the developers and the product owner working together daily?
4. Are customers and business stakeholders working closely with the project team?
5. Does our environment give the development team the support it needs to get the job done?
6. Are we communicating face to face more than through phone and email?
7. Are we measuring progress by the amount of working functionality produced?
8. Can we maintain this pace indefinitely?
9. Do we support technical excellence and good design that allows for future changes?
10. Are we maximizing the amount of work not done — namely, doing as little as necessary to fulfill the goal of the project?
11. Is this development team self-organizing and self-managing? Does it have the freedom to succeed?
12. Are we reflecting at regular intervals and adjusting our behavior accordingly?

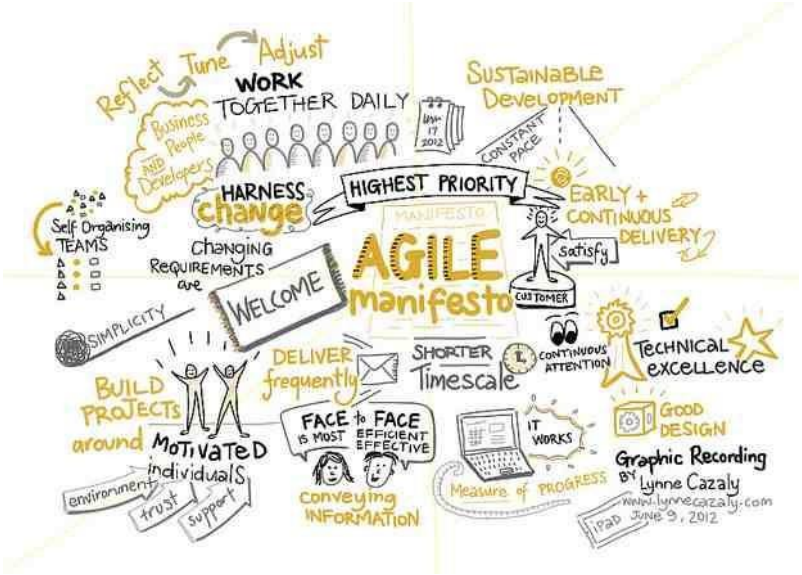
What Agile is not?

Agile is not…

- A specific way of doing software development
- A framework, standard or a process
- An end-goal by itself
- An excuse to stop reducing documentation or an opportunity to eliminate planning
- One size fits all
- Scrum—Scrum follows Agile principles
- Kanban—Kanban applies Agile principles
- Limited to software developments

Agile Overview Summary

- Refers to any process that aligns with the concepts of Agile Manifesto
- Based on incremental delivery and iterative approach
- Encourages constant feedback from the end users
- Deliver value faster and foster the ability to better respond to market trends



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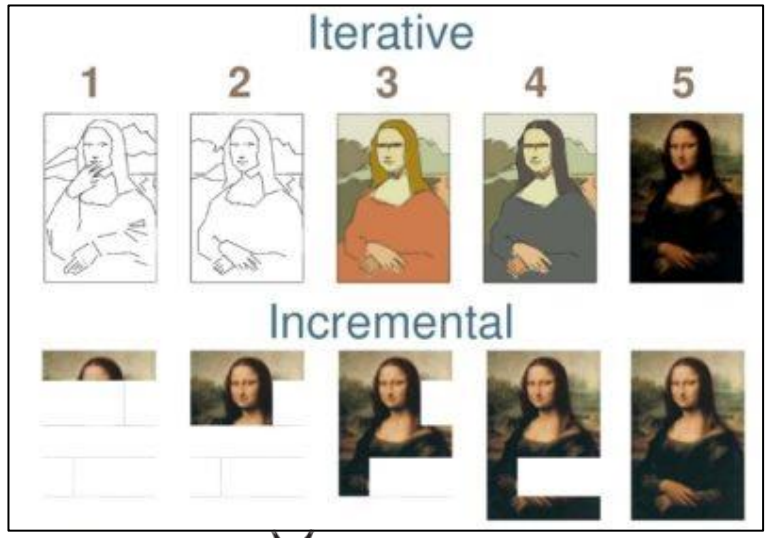

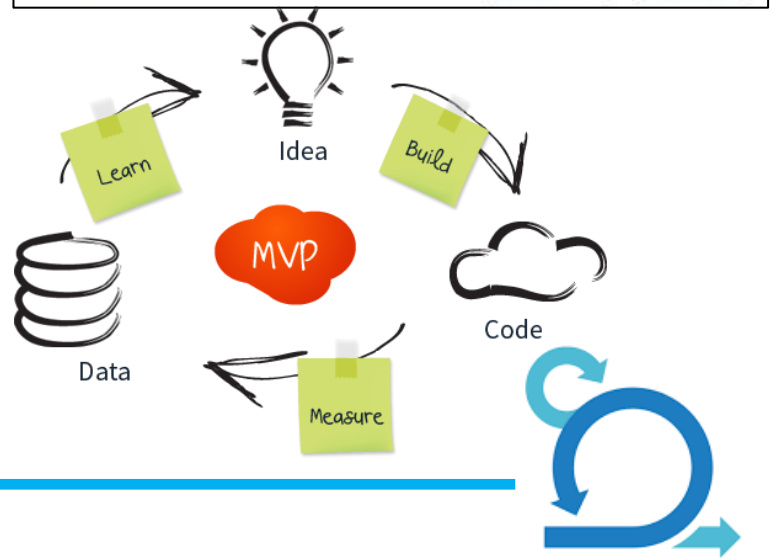

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Differences and Similarities: Waterfall vs Agile

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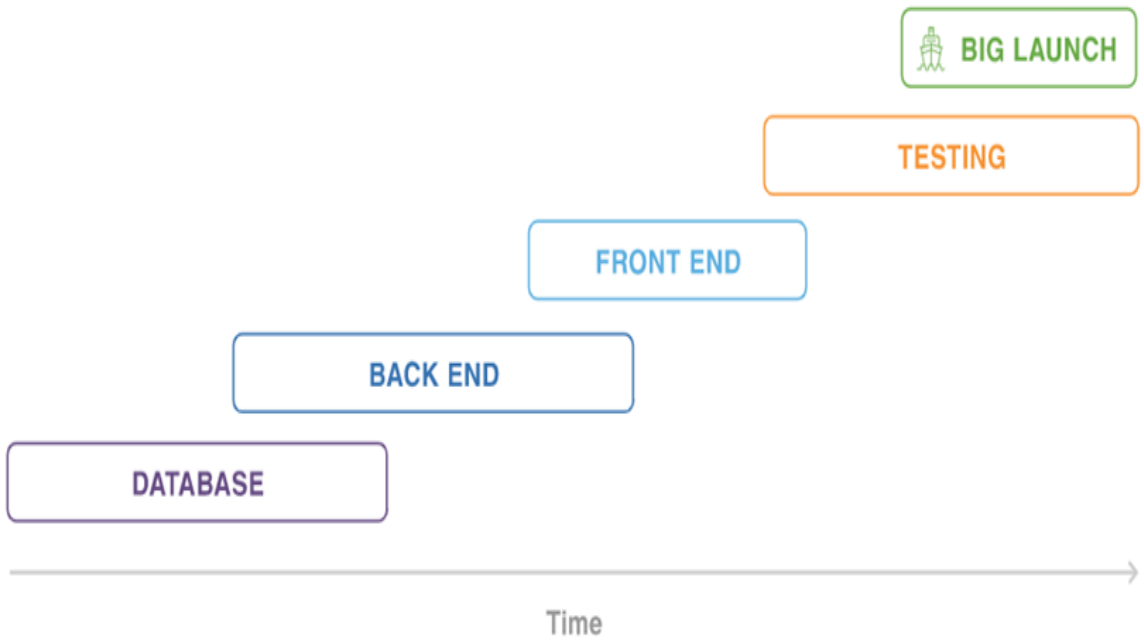
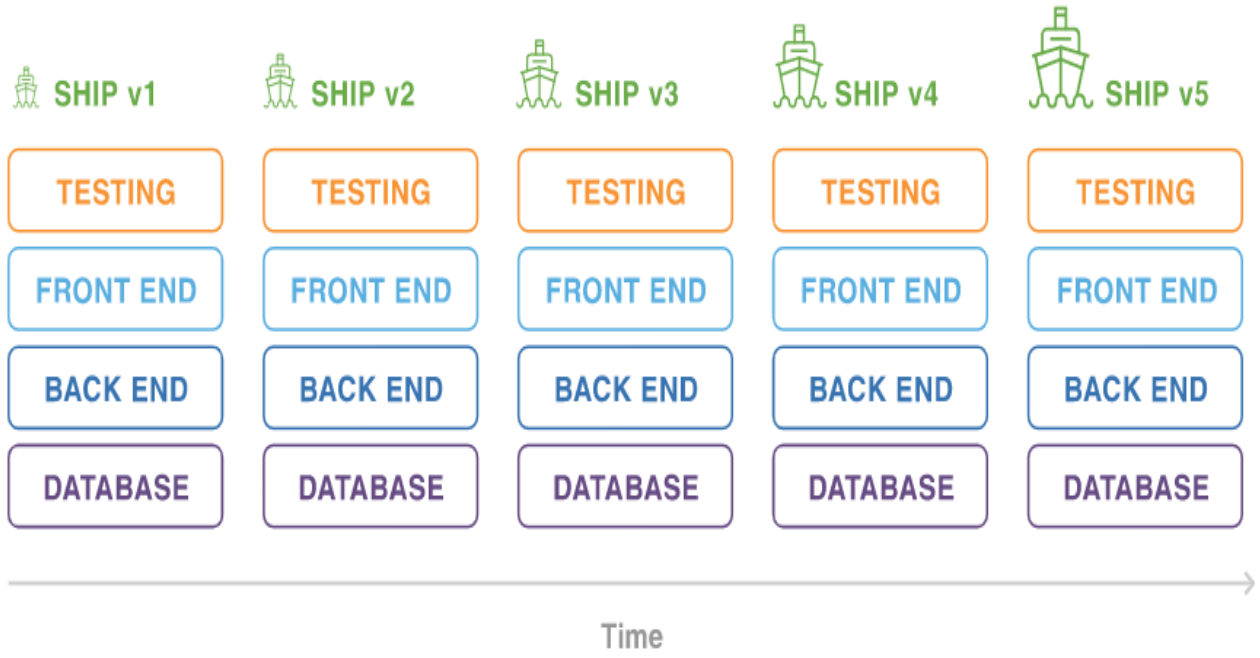
Waterfall



- Built in phases
- Painful to revisit previous phases
- High dependency on critical paths
- Customer can’t interact with product until it’s fully complete

Differences and Similarities: Waterfall vs Agile

Agile Project Management: Build, deliver, learn, and adjust



- Follows iterative approach
- Regular feedback intervals
- Iterations resolve blocking issue & let you interact with the product
- Quickly adapt new requirements/changes
- Shared skillset among the team

Differences and Similarities: Waterfall vs Agile

	Waterfall	Agile
Sequential	X	
Flexible		X
Accommodates change		X
Defined requirements	X	
Deliver quality products	X	X
Continually evolving		X
Rigid process	X	

Which one to choose: Waterfall/Agile?

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Use Waterfall if…….

- You **don't expect changes in scope** and you're working with **fixed-price contracts**
- The project is very simple or **you've done it many times before**
- **Requirements are very well known and fixed**
- **Customers know exactly what they want in advance**
- You're working with **orderly and predictable projects**

Use Agile if…….

- The **final product isn't clearly defined**
- The clients/stakeholders **need the ability to modify the scope**
- You **anticipate any kind of changes** during the project
- **Rapid deployment** is the goal

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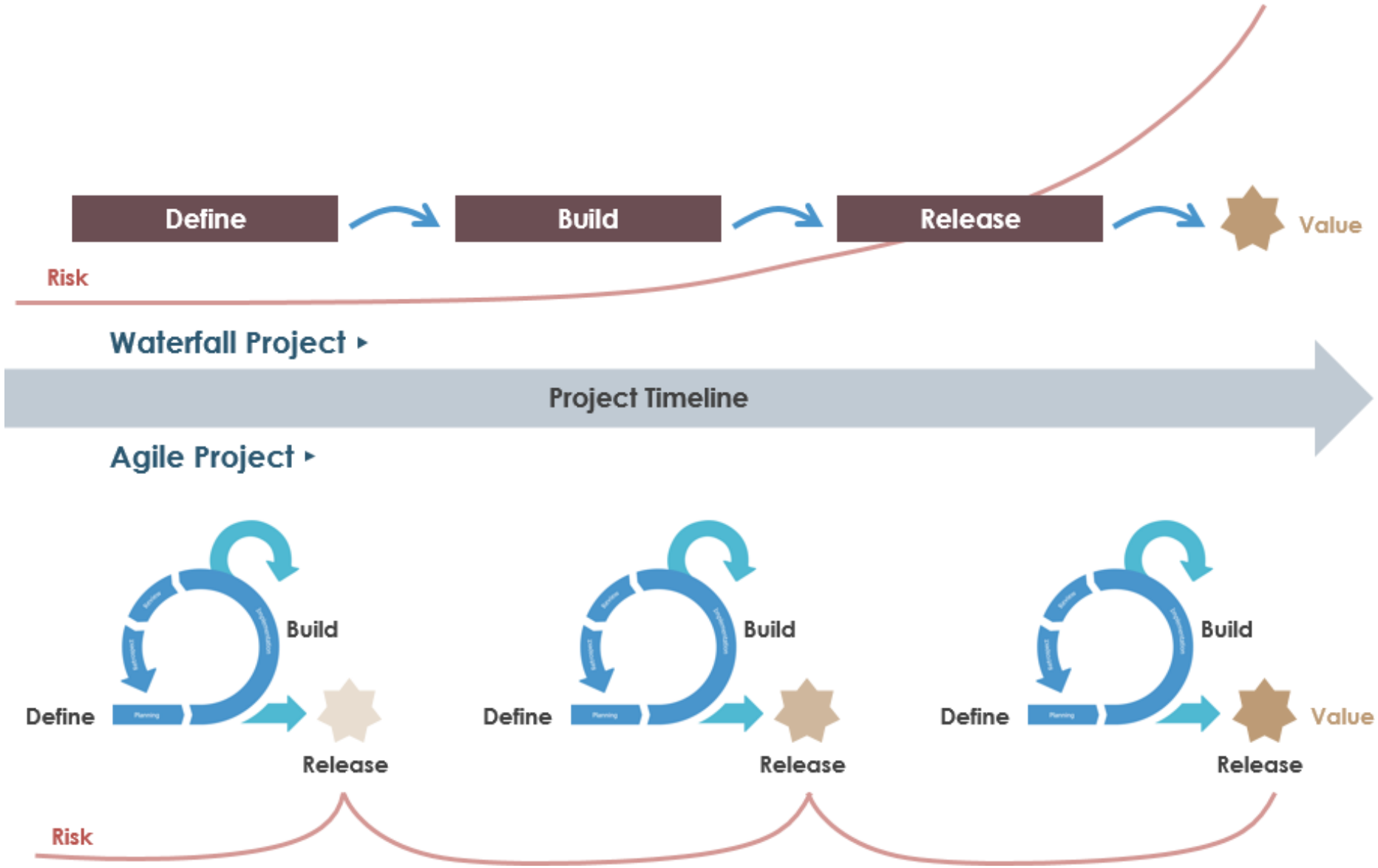

Failing fast is fine, but succeeding early is better. Disciplined Agile makes navigating a wealth of knowledge simple so you can identify solutions sooner. We call this guided continuous improvement.

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Advantages & Disadvantages of Agile

Advantages of Agile

- Change is embraced
- End-goal can be unknown
- Faster, high-quality delivery
- Strong team interaction
- Customers are heard
- Continuous improvement

Disadvantages of Agile

- Planning can be less concrete
- Team must be knowledgeable
- Time commitment from developers is required
- Documentation can be neglected

Introduction to Key Agile Concepts

Introduction to Key Agile Concepts

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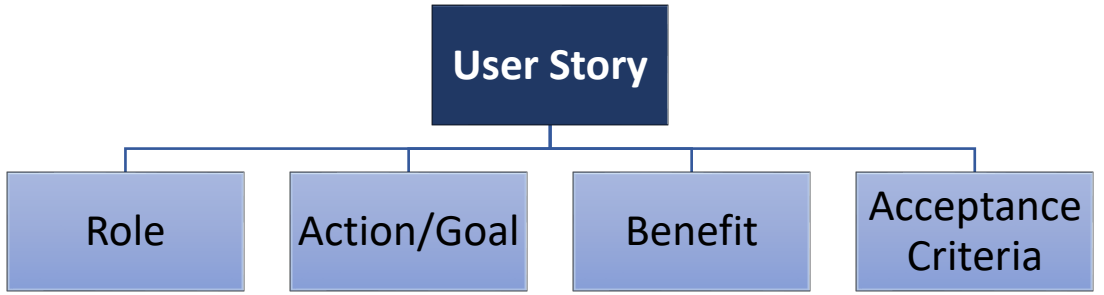
User Story

- Work divided into functional increments called “user stories
- Short description of a feature from the perspective of the person who desires the new capability
- User story should be potentially shippable
- Size of a user story is measured in story points



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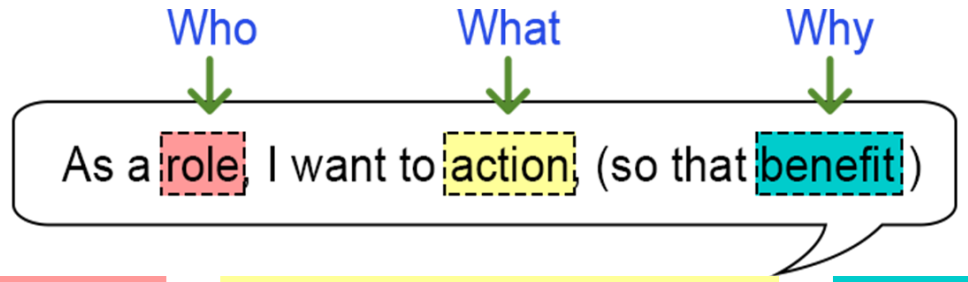
User Story



Role

The user should be an actual human who interacts with the system

•Be as specific as possible

•The development team is NOT a user

Action

The behavior of the system should be written as an action

•Usually unique for each User Story

•Describes intent & not the feature

•The "system" is implied and does not get written in the story

•Active voice, not passive voice ("I can be notified"

Benefit

The benefit should be a real-world result that is non-functional or external to the system

•Many stories may share the same benefit statement

•The benefit may be for other users or customers, not just for the user in the story.

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User Story

Acceptance Criteria

- Should be testable
- Should be clear and concise
- Everyone must understand
- Should provide user perspective

Who is Responsible for Writing Acceptance Criteria?

When Should User Story Acceptance Criteria Be Written?

How Should You Format User Story Acceptance Criteria?

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User Story Examples

•As a [**customer**], I want [**shopping cart feature**] so that [**I can easily purchase items online**].

•As a [**manager**], I want to [**generate a report**] so that [**I can understand which departments need more resources**].

•As a [**customer**], I want to [**receive an SMS when the item is arrived**] so that [**I can go pick it up right away**].

As a [**manager**], I want to be able to [**understand my colleagues progress**], so I can [**better report our success and failures**].

A good user story should be: **INVEST**

•“I” ndependent (of all others)
•“N” egotiable (not a specific contract for features)
•“V” aluable
•“E” stimable (to a good approximation)
•“S” mall (so as to fit within an iteration)
•“T” estable (in principle, even if there isn’t a test for it yet)

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Example of a good User Story

As an **[online visitor]**, I want to **[add products in my shopping cart]** so that **[I can purchase multiple products at one go]**

Acceptance Criteria [Abstract]

- Products can be added to the cart
- Products can be removed from the cart.
- Shopping cart will be empty initially
- Shopping cart will be empty after purchase
- Products can be added with multiple quantities in the cart
- Shopping cart will show the total product breakdown quantity and cost with grand total

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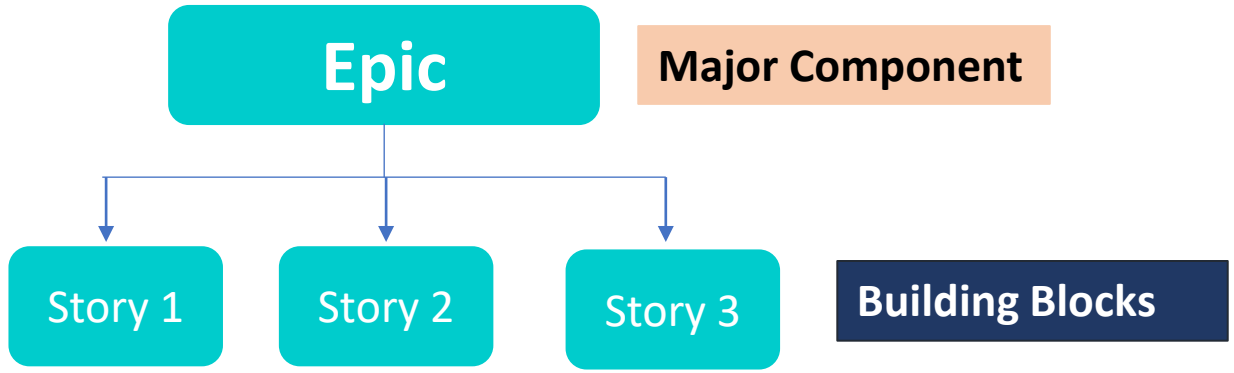
Epic

- Series of user stories with a broader strategic objective
- A large user story that cannot be delivered as defined within a single iteration or is large enough that it can be split into smaller user tasks/user stories
- No standard format to represent epics



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Epic Example: Selecting Marketing Campaigns

1: As a VP Marketing, I want to review the performance of historical promotional campaigns so that I can identify and repeat profitable campaigns.

1a: As a VP Marketing, I want to select the timeframe to use when reviewing the performance of past promotional campaigns, so that …
1b: As a VP Marketing, I can select which type of campaigns (direct mail, TV, email, radio, etc.) to include when reviewing the performance of past so that …

1b1: As a VP Marketing, I want to see information on direct mailings when reviewing historical campaigns so that...
1b2: As a VP Marketing, I want to see information on TV ads when reviewing historical campaigns so that...
1b3: As a VP Marketing, I want to see information on email ads when reviewing historical campaigns so that...
and so on for each type of ad campaign.

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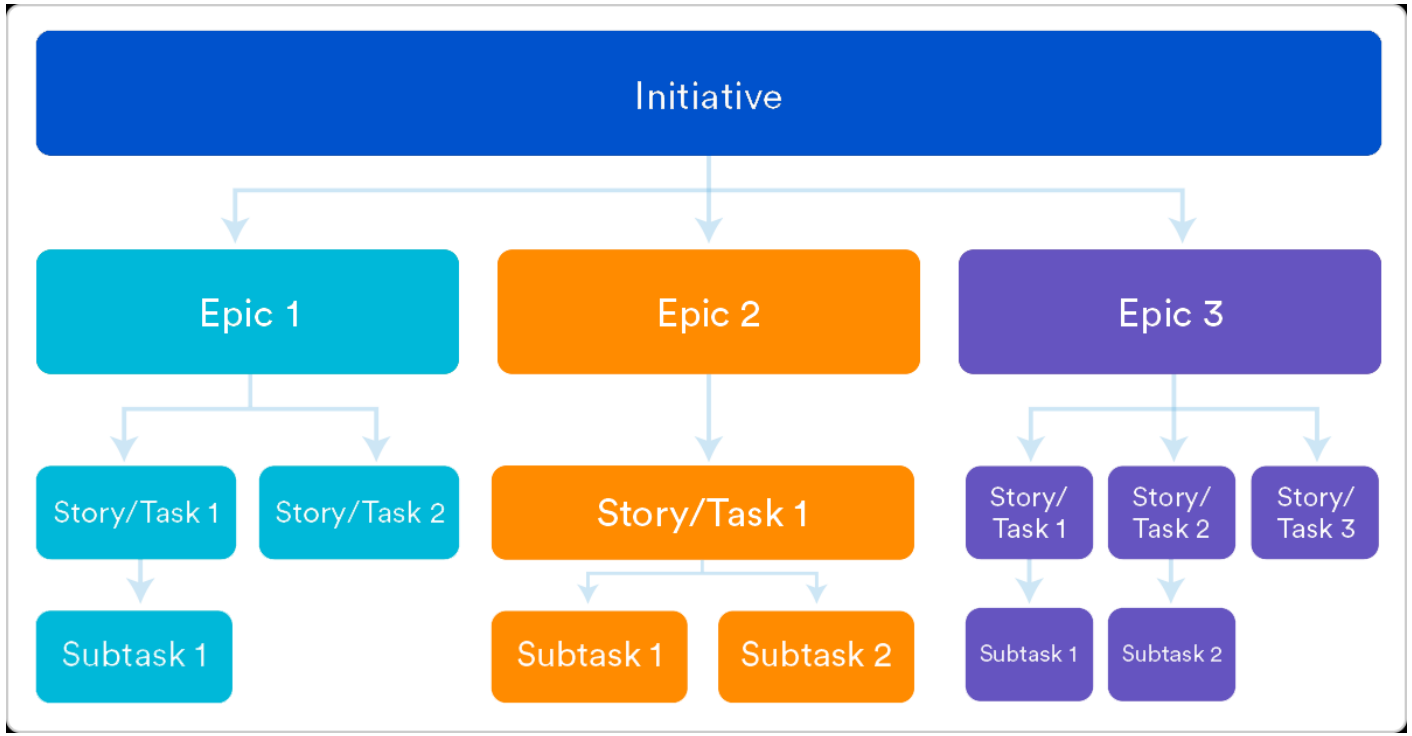
Initiatives

- Initiatives are collections of epics that drive toward a common goal
- The product roadmap is expressed and visualized as a set of initiatives plotted along a timeline
- Completion of epics will lead to the completion of the initiative



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Themes

- Themes are large focus areas that span the organization
- A theme is an organization goal that drive the creation of epics and initiatives

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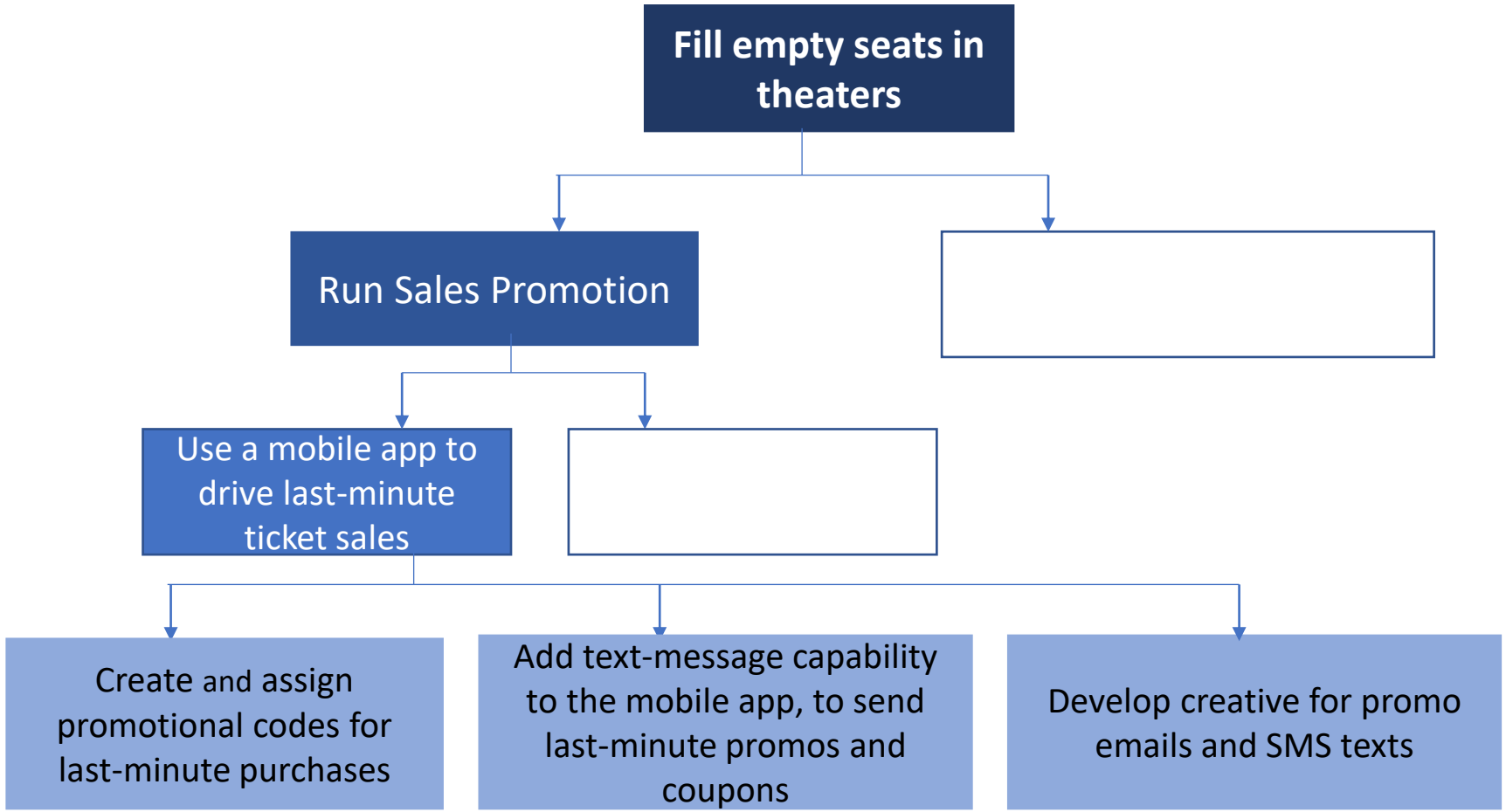
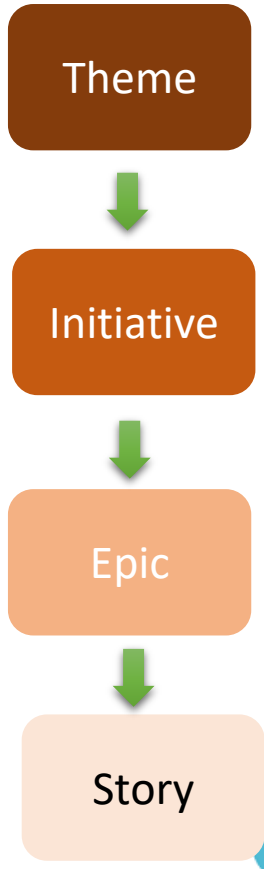
Theme, Initiatives, Epic & Story





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Benefits of Using the Theme-Initiative-Epic-Story Development Framework

- It allows for more strategically sound decisions
- It improves performance monitoring and timeline estimates
- It keeps the team focused on key goals

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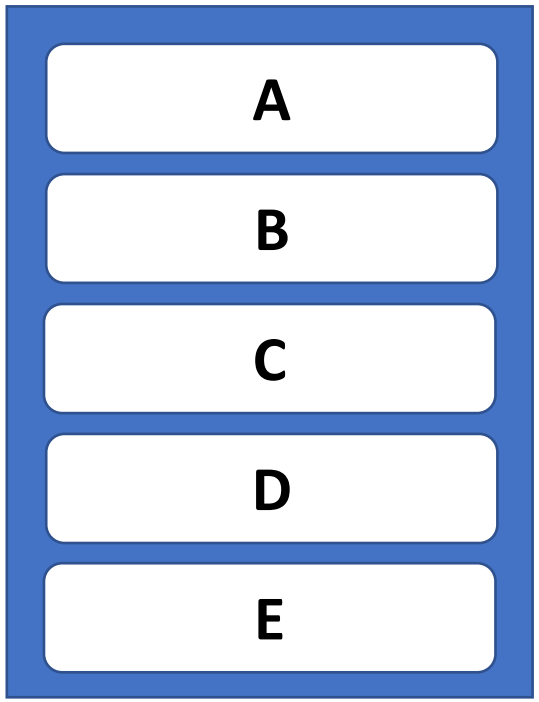
Product Backlog



- Lists & Prioritizes the task-level details to execute a plan- To do list!
- Includes user stories, new features, changes to existing functionalities, bug fixes, and other tasks like infrastructure changes etc.
- Single source of requirements that defines the product
- Contains short description of functionality desired in the product
- Can be represented in physical form or in electronic form
- Owned & maintained by the product owner
- User Stories is the most common format
- Dynamic in nature: addition, deletion and reordering of requirements possible

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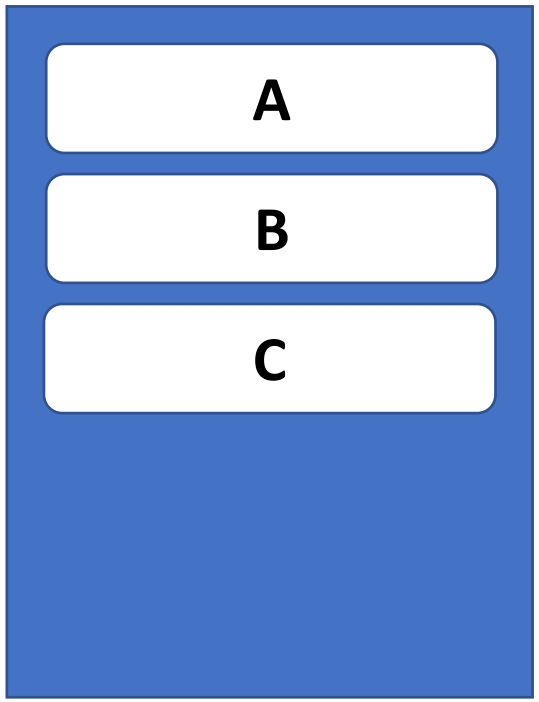
Product Backlog



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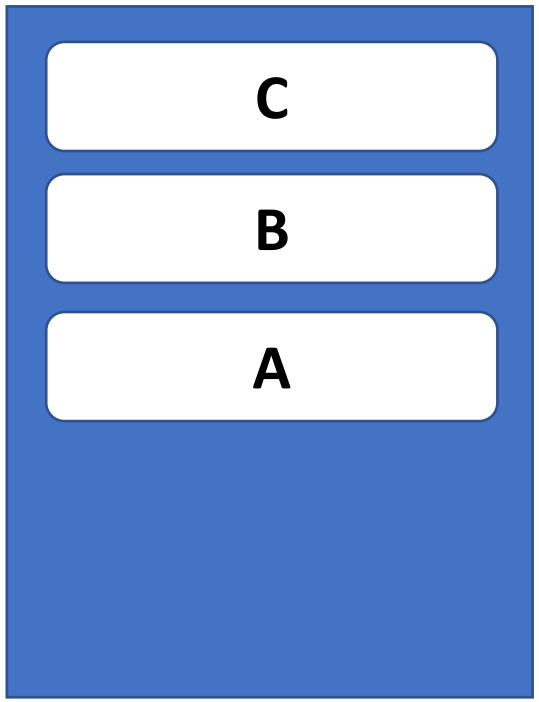

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Difference Between a Product Backlog and Product Roadmap

From Product Vision to Backlog

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Difference Between a Product Backlog and Product Roadmap

	Product Roadmap	Product Backlog
Content	High-level: themes and epics or outcomes and goals	Task-level: user stories and defects
Audience	Executive team (and other stakeholders)	Primary for product and development teams
Intent	Convey a strategy	Conveys tactical steps in execution of plan
Time Frame	Varies, typically ~3 Months	1 or 2 sprints

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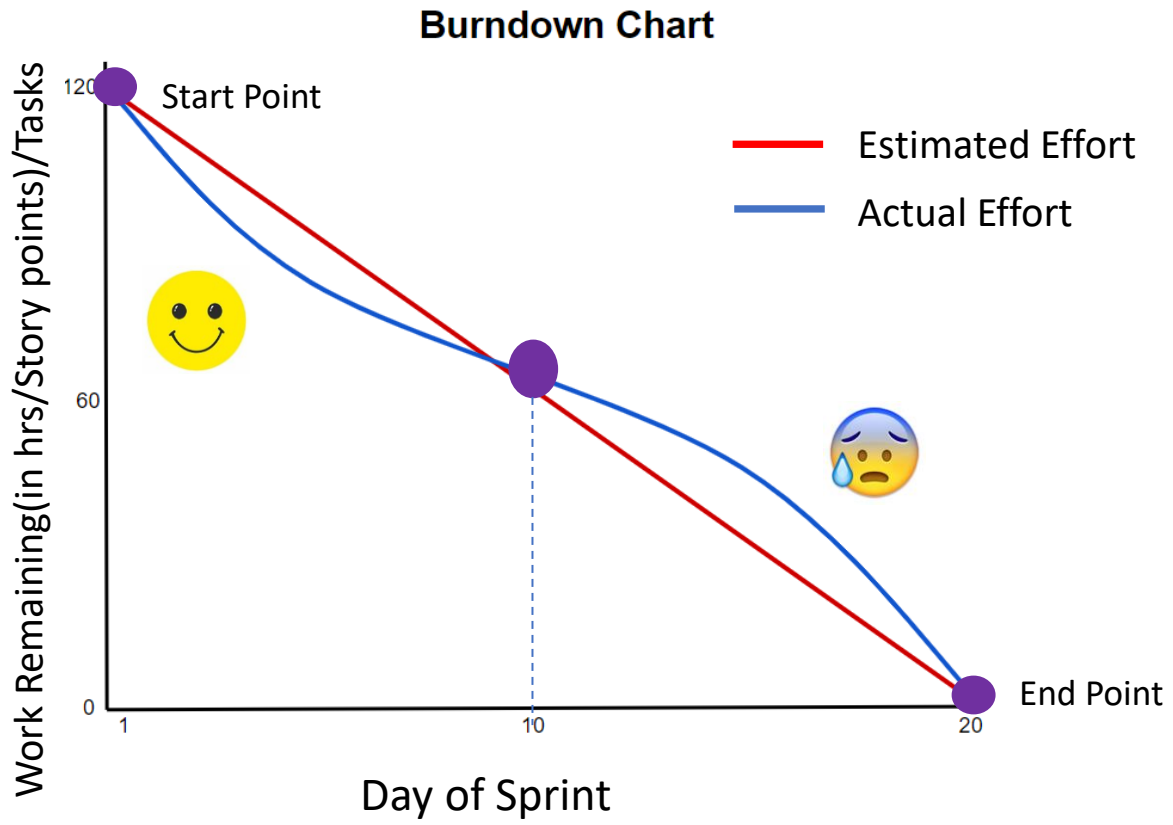
Burn down Chart

A burndown chart is a visual display of work completed and remaining in a project, sprint, or iteration



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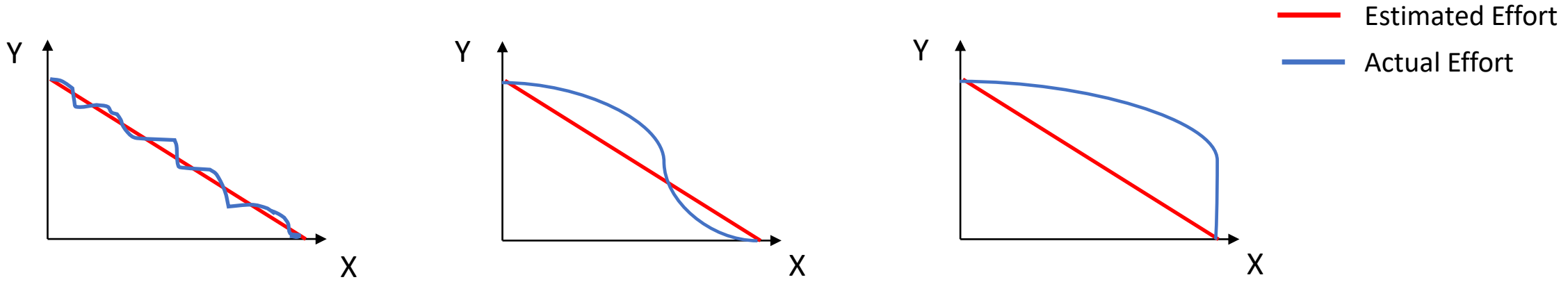
Burn down Chart



Introduction to Key Agile Concepts

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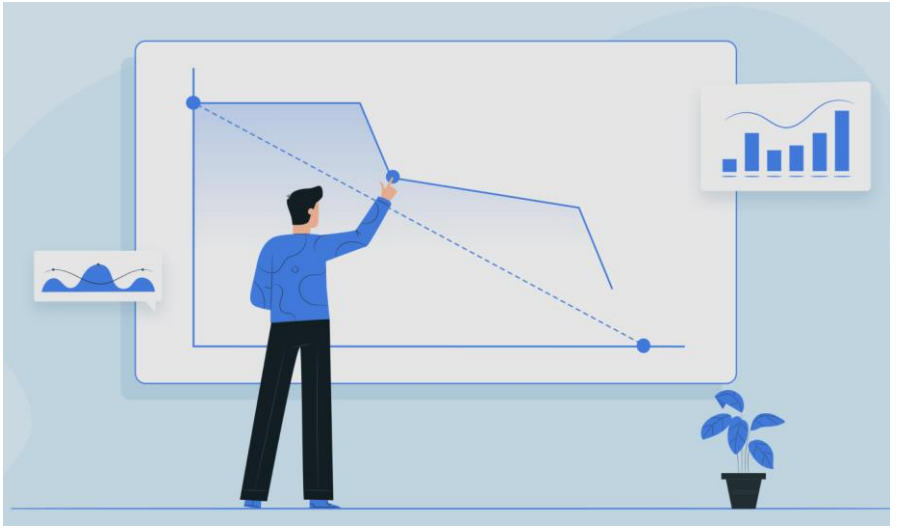
Burn down Chart

Benefits

- Simple & easy way to track team's progress
- Timely prevention of issues
- Helps keep the team motivated



Introduction to Key Agile Concepts

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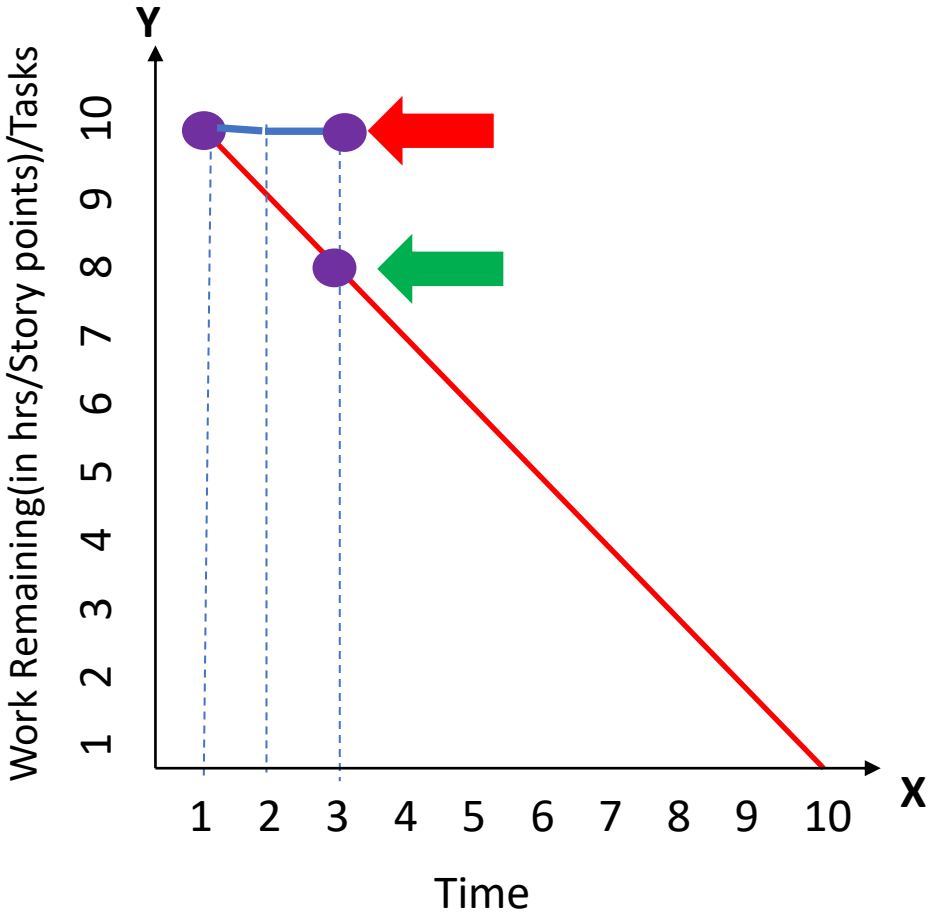
Burn down Chart

Creating Burn down Chart

Mike, a project manager is asked to create a burndown chart for a project by his leadership to know how things progressing based on what was planned.

<u>Project has 10 tasks to complete in 10 days</u>



Introduction to Key Agile Concepts

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Minimum Viable Product (MVP)

It is the version of a new product that allows a team to collect the maximum amount of validated learning about customers with the least amount of effort.

- Agile Alliance

Why MVP

- Release a product to the market as quickly as possible
- Test an idea with real users before committing a large budget to the product's full development
- Learn what resonates with the company's target market and what doesn't

Introduction to Key Agile Concepts

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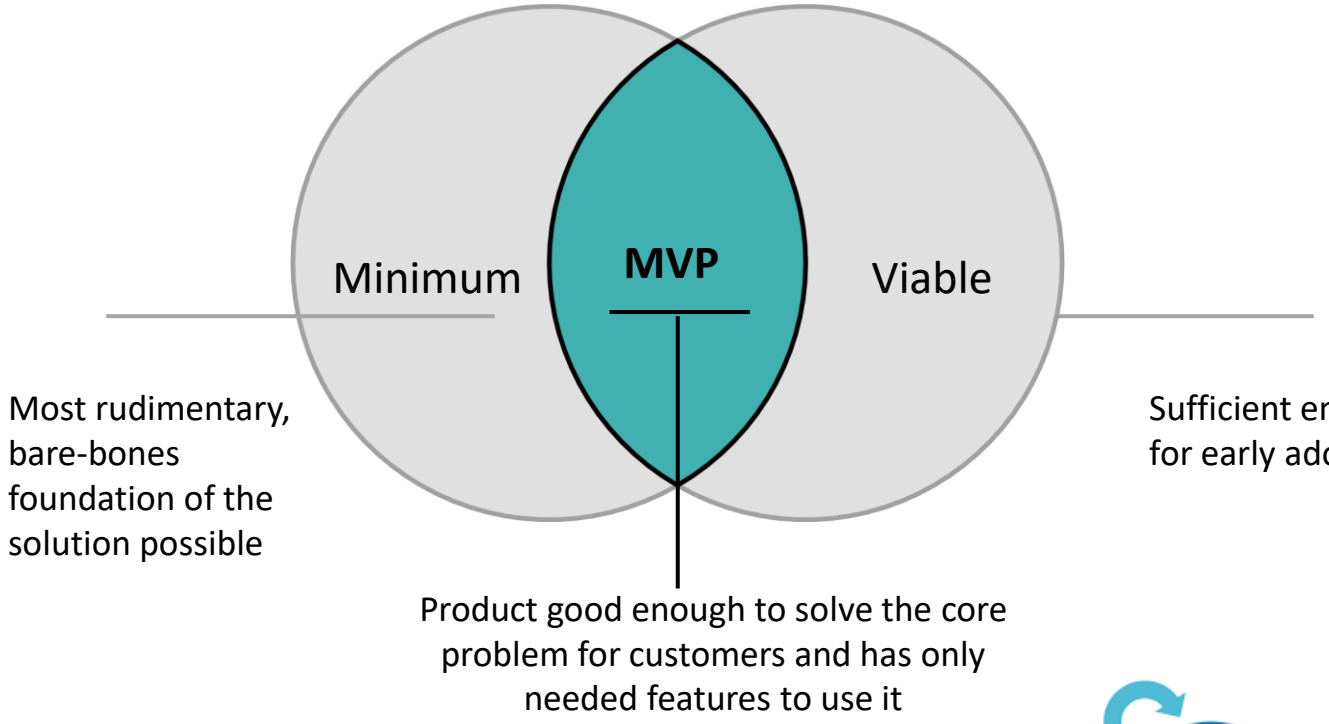
It is the version of a new product that allows a team to collect the maximum amount of validated learning about customers with the least amount of effort.

- *Agile Alliance*

Minimum + Viable Product



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Minimum Viable Product (MVP)

Why MVP?

- Release a product to the market as quickly as possible
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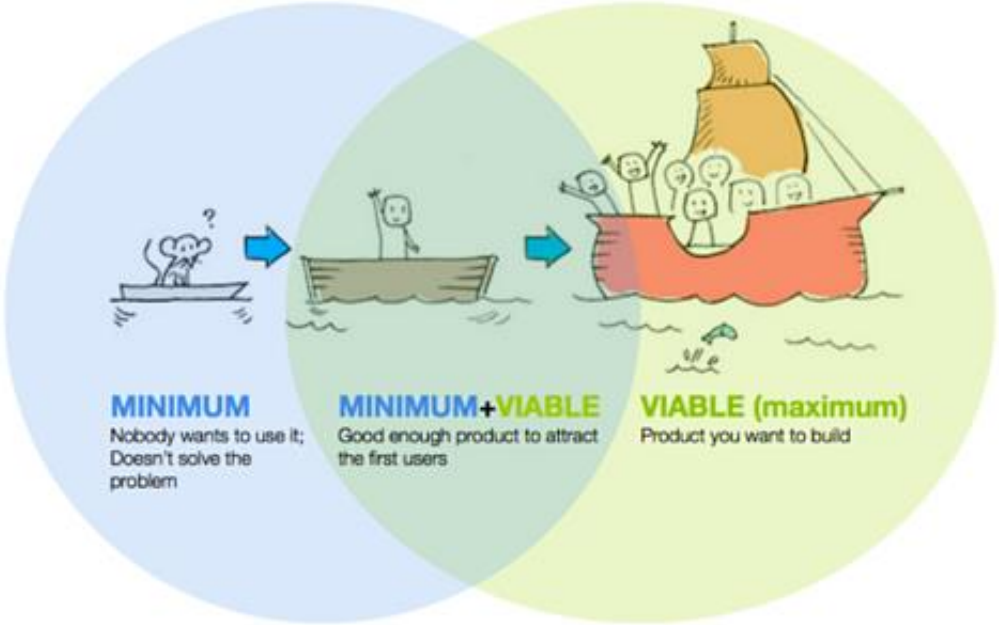

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Minimum Viable Product (MVP)

Use case:

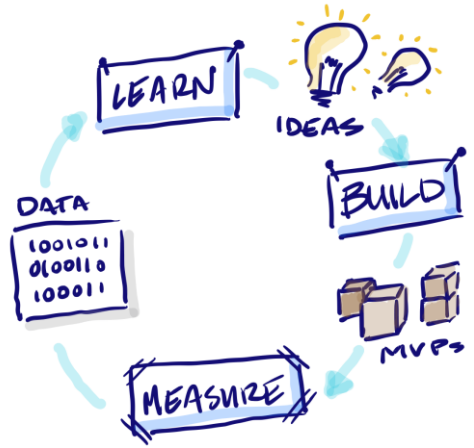
Your target audience needs a specific means of transport, but they are not sure if they want to buy a premium product right away.

What do you do then?

Create the most basic version of the Product

↓

Gather feedback on your product



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Minimum Viable Product (MVP)

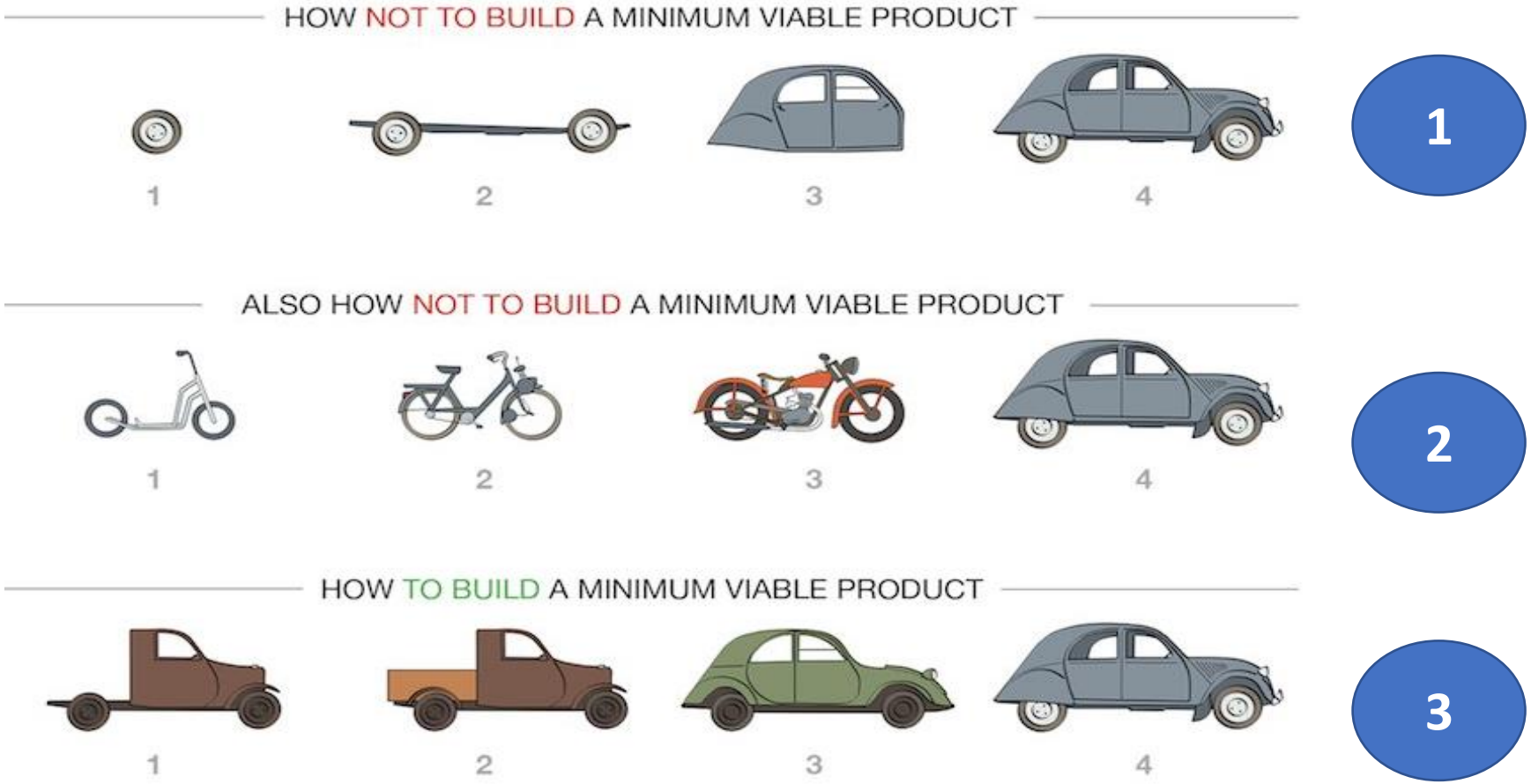


image source: http://www.expressiveproductdesign.com/

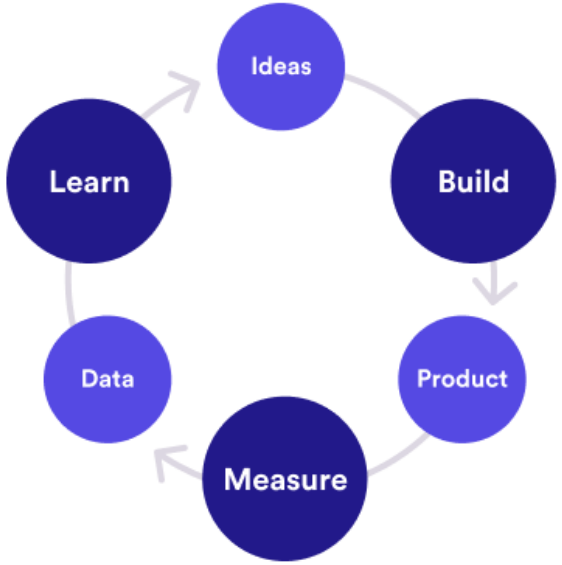
Introduction to Key Agile Concepts

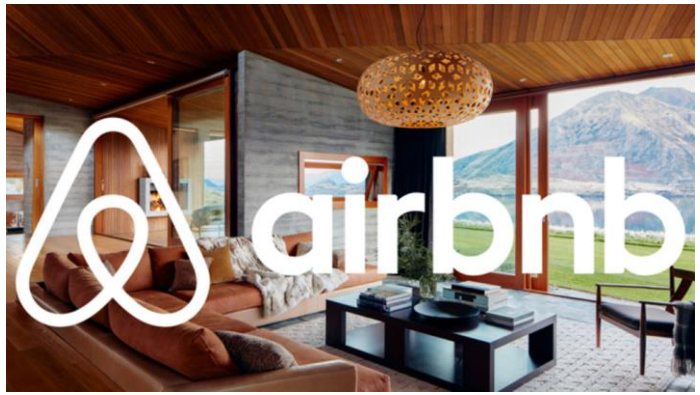
GenMan Solutions

Minimum Viable Product (MVP)

Important points to be noted:

- Make sure your planned MVP aligns with your business objectives
- Identify specific problems you want to solve for your users
- Product must be viable
- MVP is based on iterative process of building





facebook

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Velocity

At the end of each iteration, the team adds up effort estimates associated with user stories that were completed during that iteration. This total is called velocity.

- Agile Alliance

Velocity = Units of work completed in a given timeframe

Unit of work can be hours or user stories or story points

Typically measured in iterations or sprints, or weeks

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Velocity

Sprint 1

User Stories	Story Points	Status
A	3	Complete
B	5	Incomplete
C	8	Complete

Velocity = 3 + 8 = **11** Story Points/ Sprint

Sprint 2

Velocity = **13** Story Points/ Sprint

Sprint 3

Velocity = **6** Story Points/ Sprint

Average velocity: (11+13+6)/3= 10 Story Points/Sprint

For the next sprint, the product manager should
pick up User Stories equivalent or not more than 10 story points

Introduction to Key Agile Concepts

Velocity

Total Story points against remaining User Story (A) : 60

Average Velocity (B) : 10 Story Points/ Sprint

Forecast for the remaining effort for the Project: A/B = 60/10
= 6 Sprints with each sprint of 10 story points

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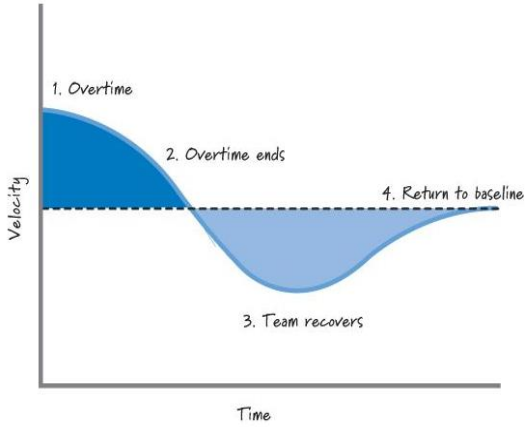
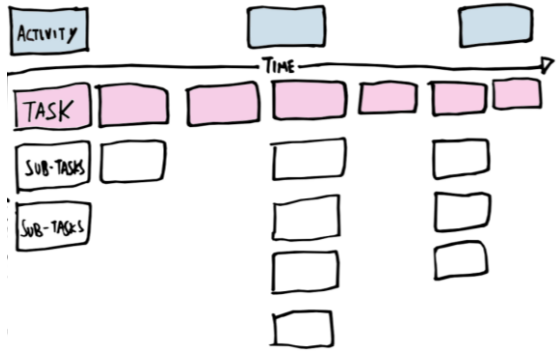
Velocity

Failing to bring a story to completion



Velocity see-sawing



Decomposition of User Stories

Accurate Estimation

Introduction to Key Agile Concepts

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Estimation

38+19 is about 60

For reasonable guess, you estimate basis what you know or see

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Agile Estimation

Traditional Estimation	Agile Estimation
Efforts were estimated	Business values or Complexity is estimated
Unit: Hours	Unit: Story Points or bucket
Estimation is done in task level	Estimation is done in user story level
Provides absolute estimate	Provides relative estimate
Estimates once done are not revised	Estimates are revisited in every iteration

Introduction to Key Agile Concepts

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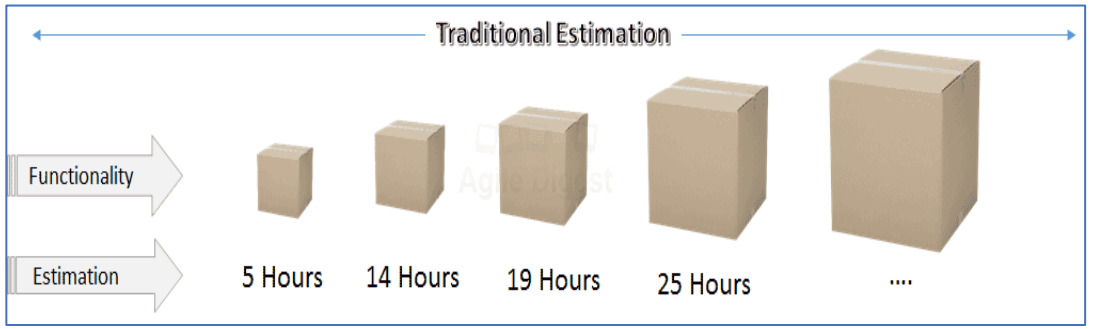

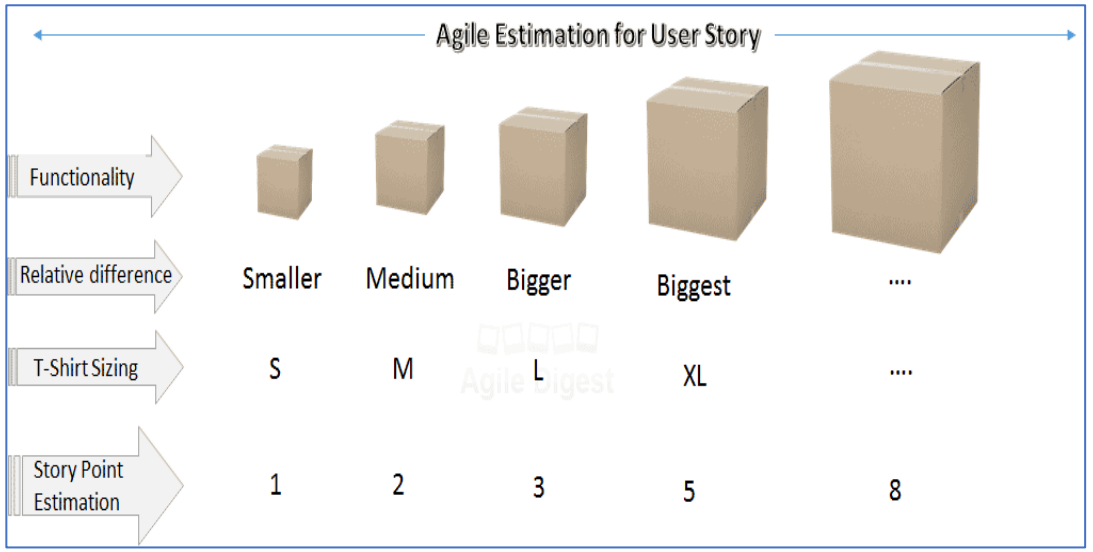

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Agile Estimation

Story Points

3 Story Points: Study Room
5 Story Points: Bedroom 1 and Bedroom 2
8 Story Points: Kitchen

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Agile Estimation

Influencing Factors of Story Point :

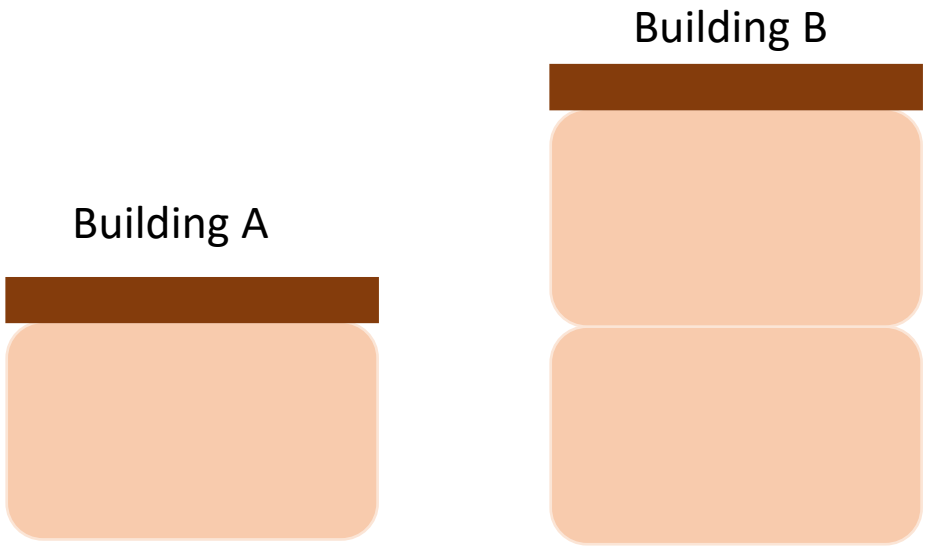
- Business Value
- Complexity
- Risks
- Dependencies
- Amount of work

Image Source: Dilbert.com

Introduction to Key Agile Concepts

Agile Estimation: But why relative estimation?

Illustration 1



1 Story vs 2 Story

Which one is taller?
Which one is more complex?
Which would take more time to build?
Which would cost more?
How much money?
How much time?

Introduction to Key Agile Concepts

Agile Estimation: But why relative estimation?

Illustration 2

100 Story vs 101 Story

What about these
Which building is taller?
Which one is more complex?
Which would take more time to build?
Which would cost more?
How much money?
How much time?

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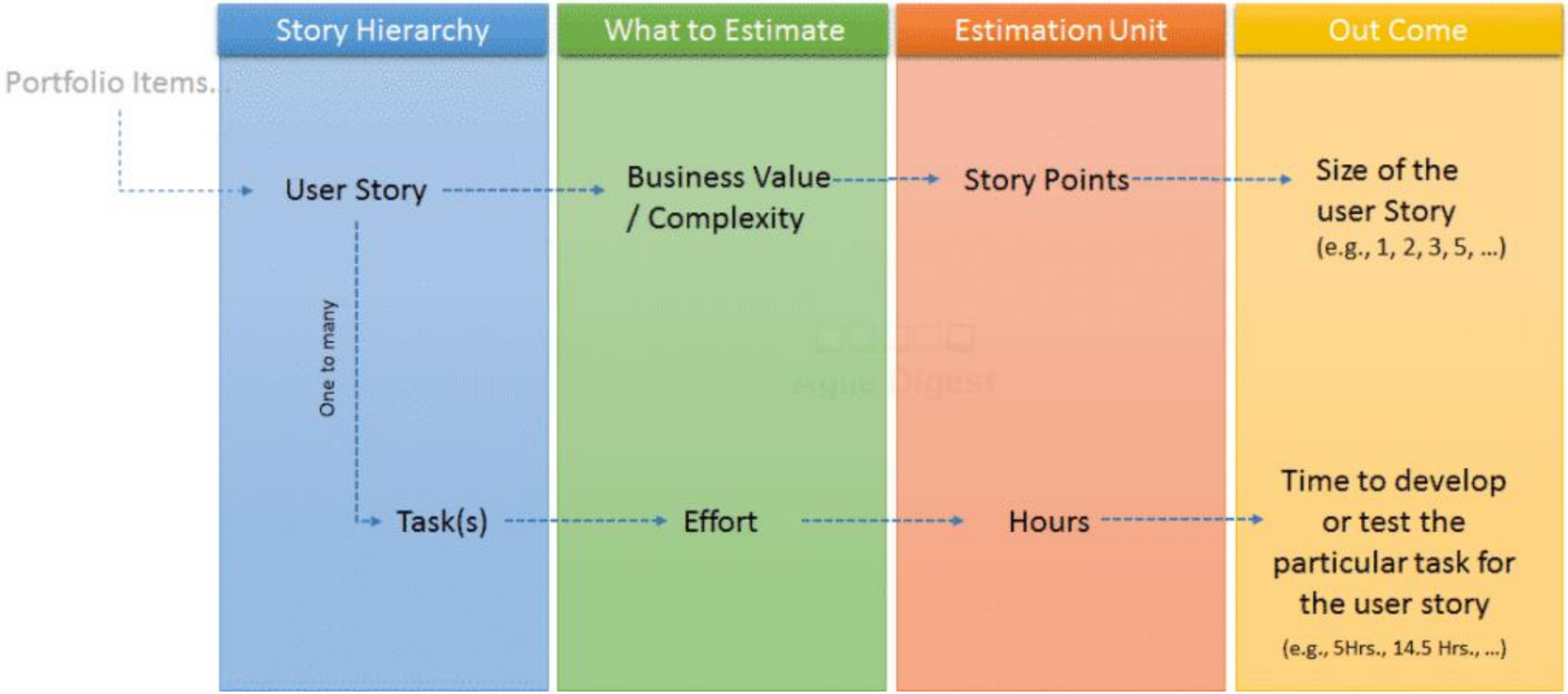
Estimation



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Agile Estimation

Agile Estimation is a team sport

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Agile Estimation

Agile Estimation is a team sport

Estimation methods include:

- T-shirt sizes (XS, S, M, L, XL) or the
- Fibonacci sequence (1, 2, 3, 5, 8, 13, 21, 34, etc.)

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Agile Estimation

T-shirt sizes (XS, S, M, L, XL)

Introduction to Key Agile Concepts

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Agile Estimation

Fibonacci sequence

1,2,3 is equivalent to 10,20,30

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89… and so on.

0+1=1
1+1=2
1+2=3

Introduction to Key Agile Concepts

Agile Estimation

Fibonacci sequence

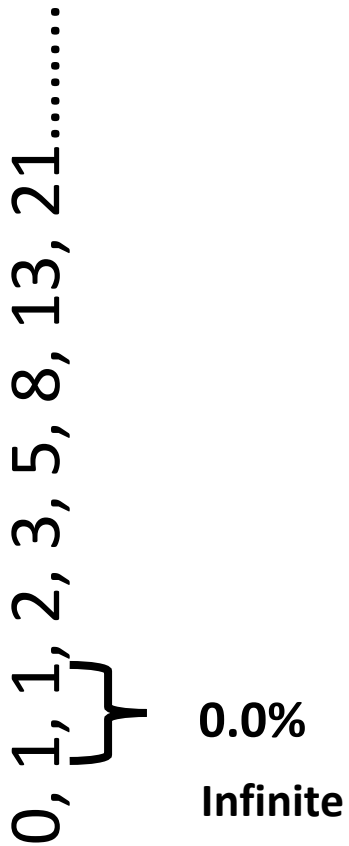
0, 1, 1, 2, 3, 5, 8, 13, 21……

Infinite

Introduction to Key Agile Concepts

Agile Estimation

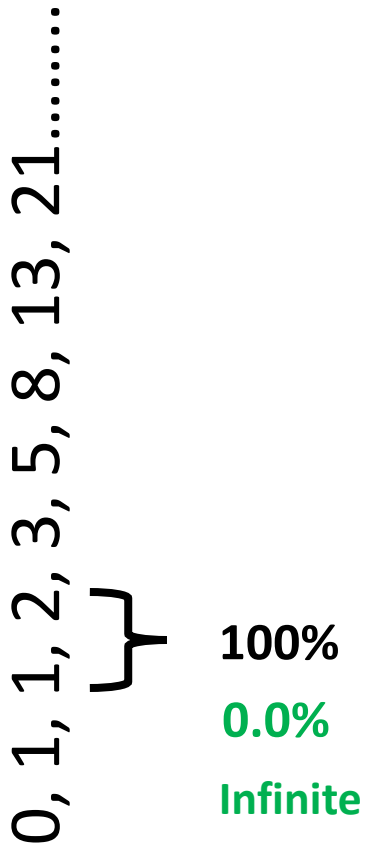
Fibonacci sequence



Introduction to Key Agile Concepts

Agile Estimation

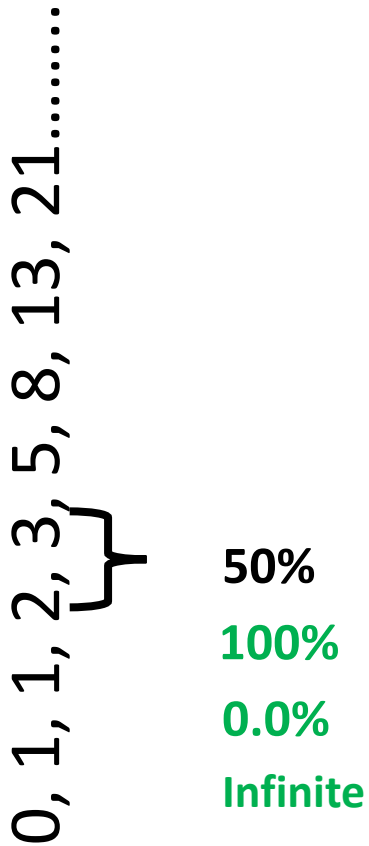
Fibonacci sequence



Introduction to Key Agile Concepts

Agile Estimation

Fibonacci sequence



50%

100%

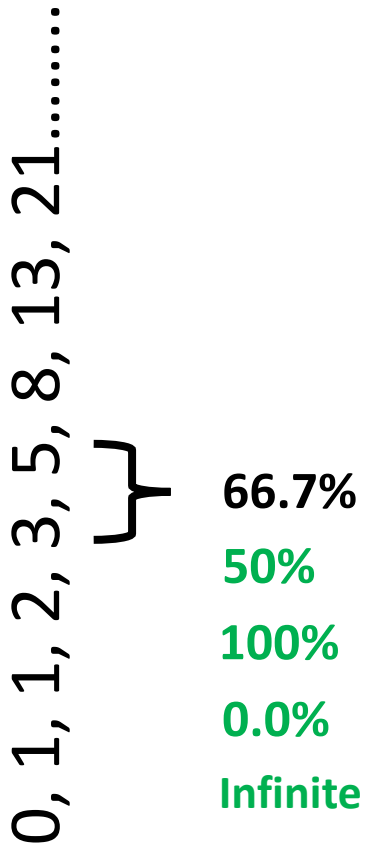
0.0%

Infinite

Introduction to Key Agile Concepts

Agile Estimation

Fibonacci sequence



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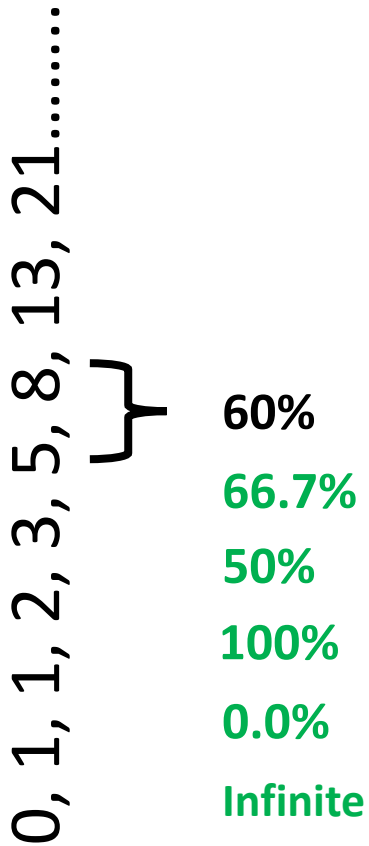
Agile Estimation

Fibonacci sequence



60%

66.7%

50%

100%

0.0%

Infinite

Introduction to Key Agile Concepts

Agile Estimation

Fibonacci sequence

0, 1, 1, 2, 3, 5, 8, 13, 21……

62.5%

60%

66.7%

50%

100%

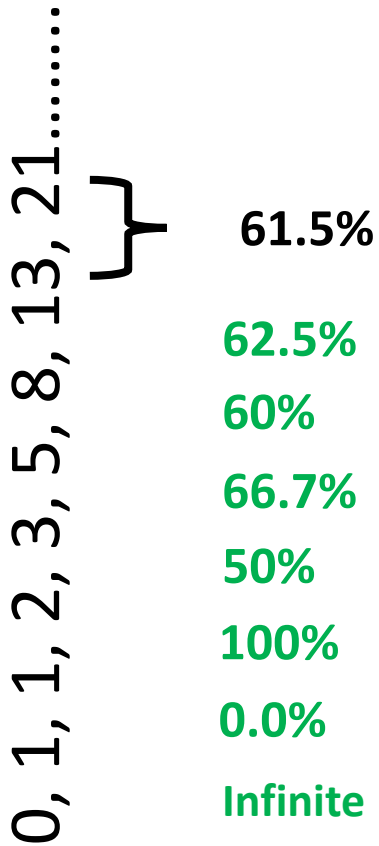
0.0%

Infinite

Introduction to Key Agile Concepts

Agile Estimation

Fibonacci sequence



61.5%

62.5%

60%

66.7%

50%

100%

0.0%

Infinite

Introduction to Key Agile Concepts

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Agile Estimation

Fibonacci sequence

In Agile Estimation, slightly modified version of Fibonacci estimation is used

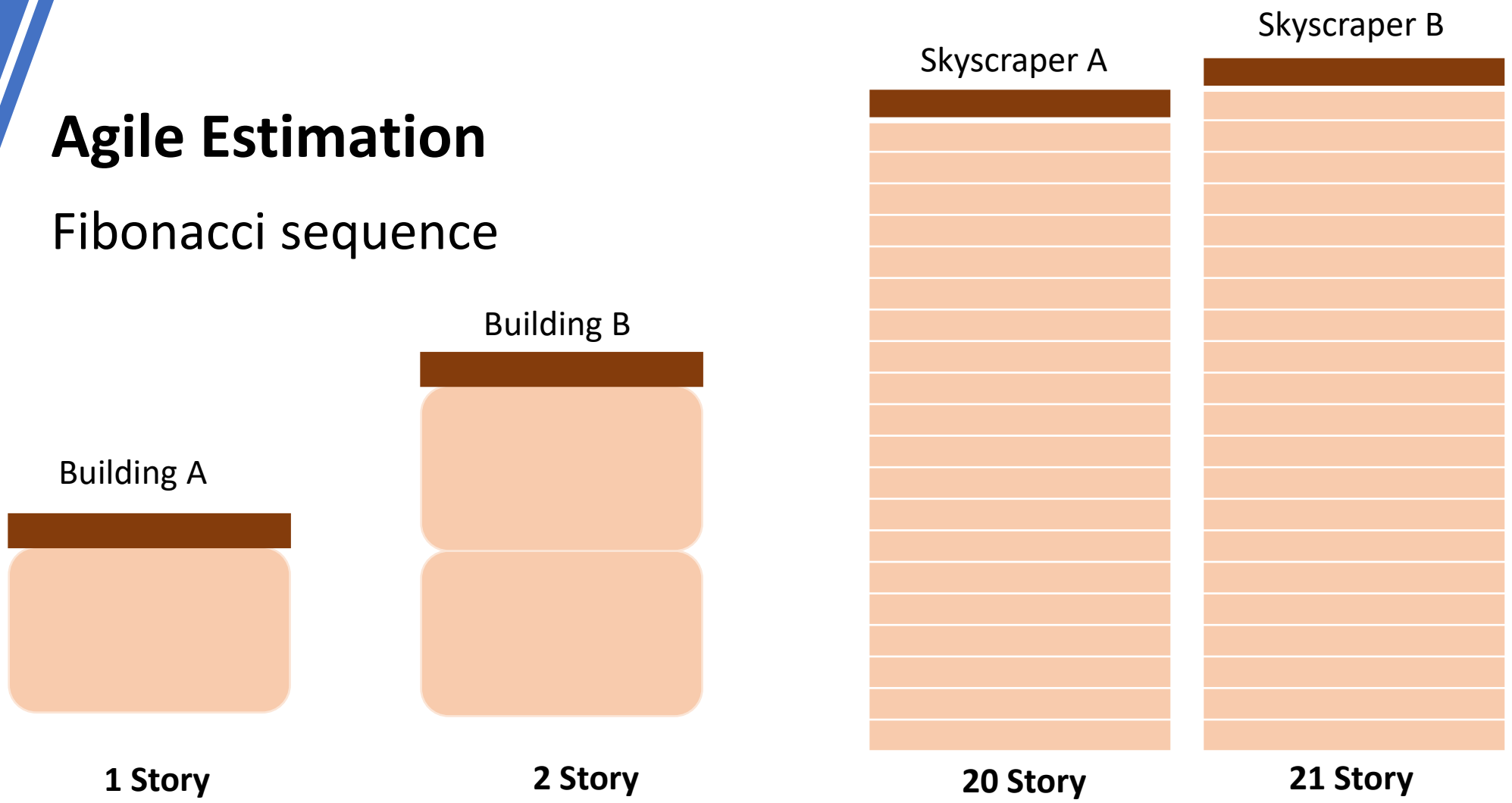
1, 2, 3, 5, 8, 13, 21, 34, 55, 89… and so on.

Why Use the Fibonacci Sequence for Agile Estimation?

Introduction to Key Agile Concepts

Agile Estimation

Fibonacci sequence



Story Points are Relative

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1 – QUICK TO DELIVER AND MINIMAL COMPLEXITY. AN HOUR
Example: add field to a form

2 – QUICK TO DELIVER AND SOME COMPLEXITY. MULTIPLE HOURS
Example: Add parameter to form, validation, storage

3 – MODERATE TIME TO DELIVER, MODERATE COMPLEXITY, POSSIBLE UNKNOWNS
Example: Migrate somewhat complex static CSS into a CSS pre-processor

5 – LONGER TIME TO DELIVER, HIGH COMPLEXITY, LIKELY UNKNOWNS
Example: Integrate with third-party API for pushing/pulling data, and link to user profiles in platform

8 – LONG TIME TO DELIVER, HIGH COMPLEXITY, CRITICAL UNKNOWNS
Example: Overhaul the layout/HTML/CSS/JS of a web application

13 – LONG TIME TO DELIVERY, HIGH COMPLEXITY, MANY CRITICAL UNKNOWNS
Example: Migrate application from an outdated data store to new DB technology and ORM

21 – YOU'RE DOING THIS WRONG. 😉

Introduction to Key Agile Concepts

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Agile Estimation Techniques for user story

- Delphi
- Wide Band Delphi
- Complexity Bucket
- Estimation Poker

Introduction to Key Agile Concepts

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Agile Estimation Techniques for user story

- Delphi
- Wide Band Delphi
- Complexity Bucket
- **Estimation Poker**

Estimation/Planning Poker

Scrum Master can help coordinate the estimation

Product Owner explaining all the aspects of the story requirement, dependencies, acceptance criteria and business value

Developers, testers, mutually discussing

- Amount of work
- Associated Risks
- Technical Changes
- Dependencies
- Complexities
- And the value

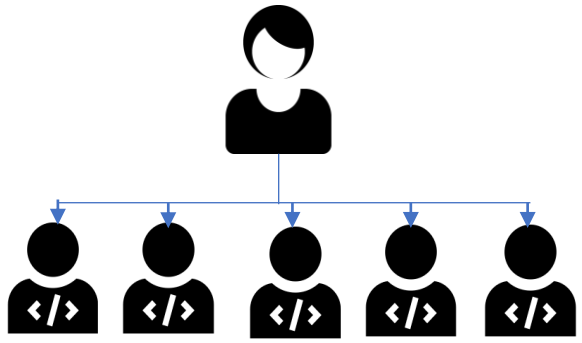
Estimation/Planning Poker

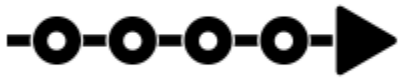
1, 2, 3, 5, 8, 13, 21, ...

Scrum

Scrum is a process framework used to manage product development and other knowledge work.

- Agile Alliance

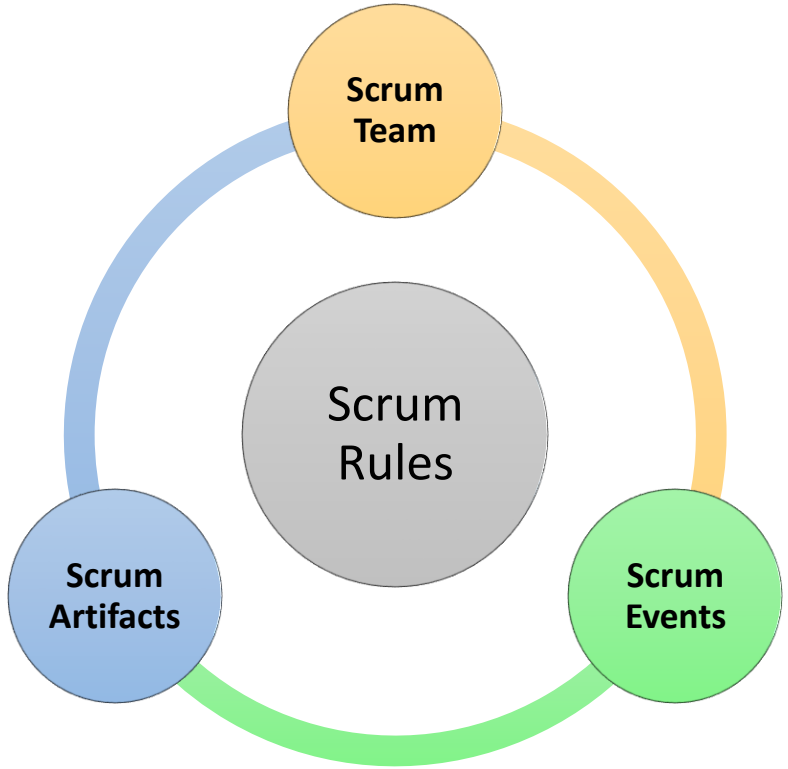




Scrum

Scrum is a set of rules for structuring the team, processes and techniques for making the development process agile..

4 components of Scrum Framework



Scrum

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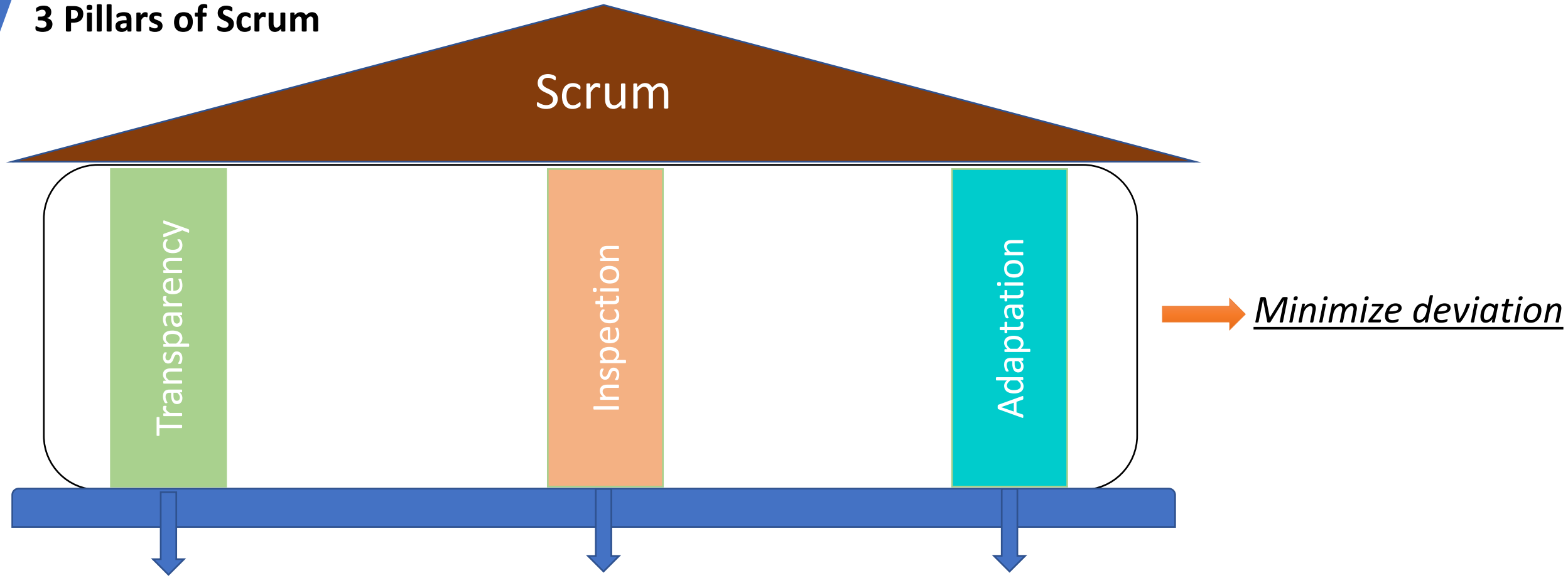
3 Pillars of Scrum



Scrum

Scrum Team

Product Owner

Development Team

Scrum Master

Scrum

Product Owner

Responsibility

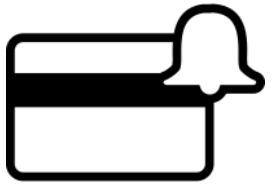
- Maximize the total value of work done by the development team
- Product backlog management

Development Team

Scrum

Product Owner

amazon



Task 1

Task 2

Task 3

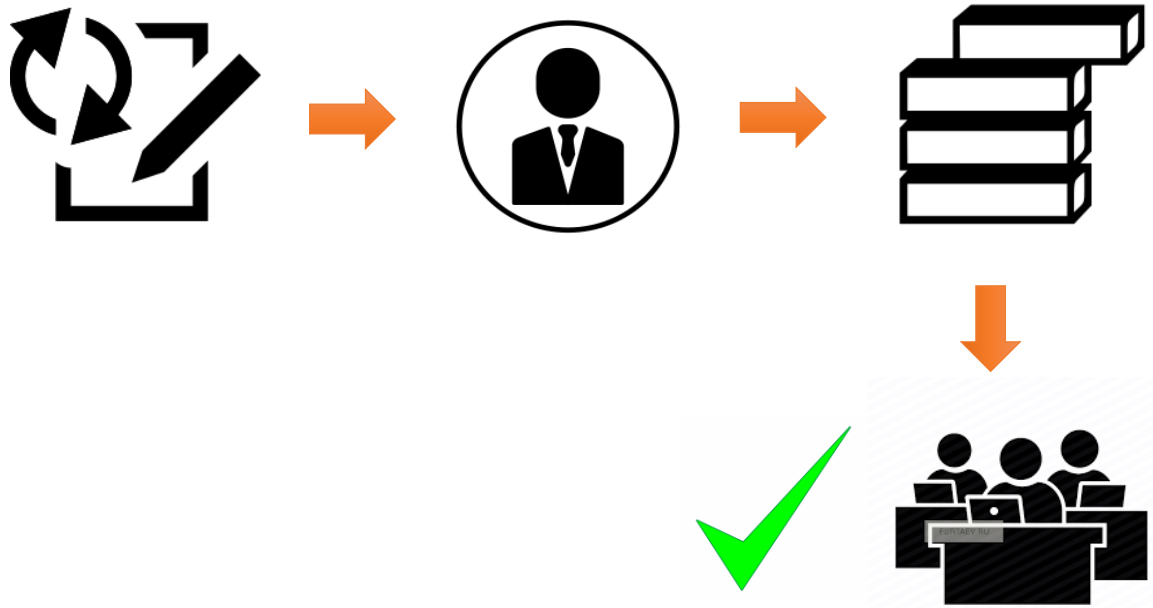
.....

Scrum

Organization also provides authority to a Product Owner..

Product Owner

Product Owner

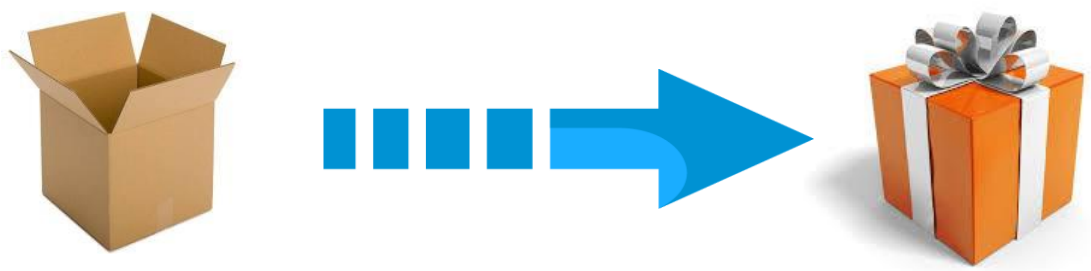


Scrum

Development Team

Responsibility

- Deliver a potentially releasable product at the end of each Sprint



Authority

- How the work would be done is left to the development team

Scrum

Development Team

Characteristics of Scrum Development Team

- It is **cross-functional,** no external dependency

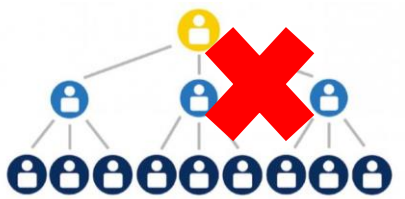
- It is **self-organizing**

Scrum

Development Team

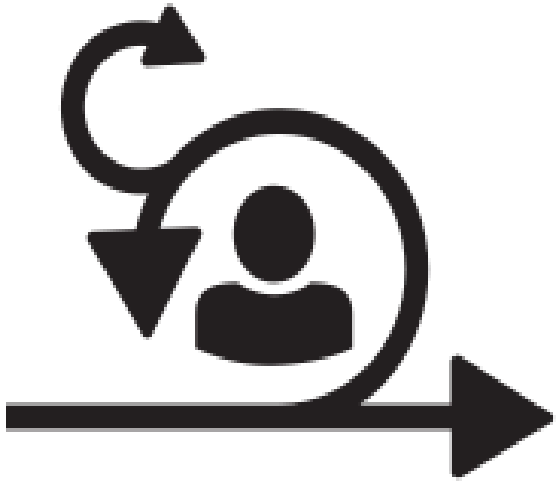
Characteristics of Scrum Development Team

- **No titles and sub teams** within the development team



- Team size: A team of **3 to 9 team members** is good

Scrum



Scrum Master

Responsibility

- Ensure proper practical implementation of all concepts
- All Scrum related things such as maintaining the product backlog, helping the development team create high value products etc.
- Facilitating Scrum Events
- Ensure Scrum Artifacts are properly maintained
- Single point of contact to understand Scrum

Scrum

GenMan Solutions

Scrum Events

- Sprint
- Sprint Planning
- Daily Scrum
- Sprint Review
- Sprint Retrospective

Scrum

GenMan Solutions

Features of Scrum Events

- **Regular:** Events can be monthly/weekly/daily

Scrum

GenMan Solutions

Features of Scrum Events

- **Time boxed:** limit on the duration of these events

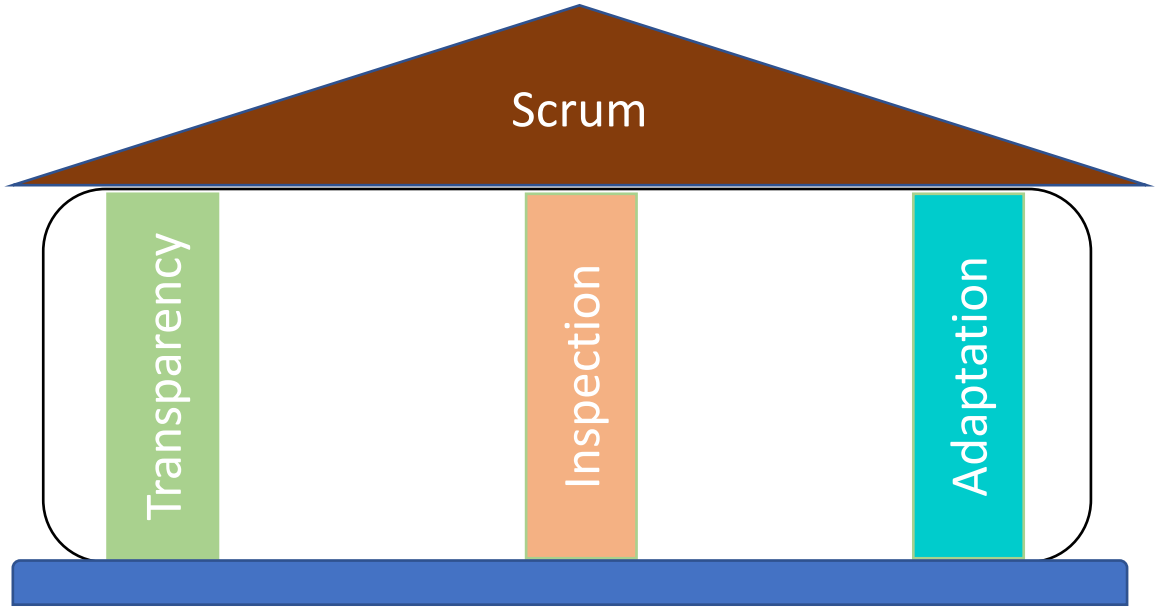
Daily Scrum is a 15- minutes meeting

Scrum

GenMan Solutions

Features of Scrum Events

- Based on three pillars of transparency, inspection & adaptation



Scrum

GenMan Solutions

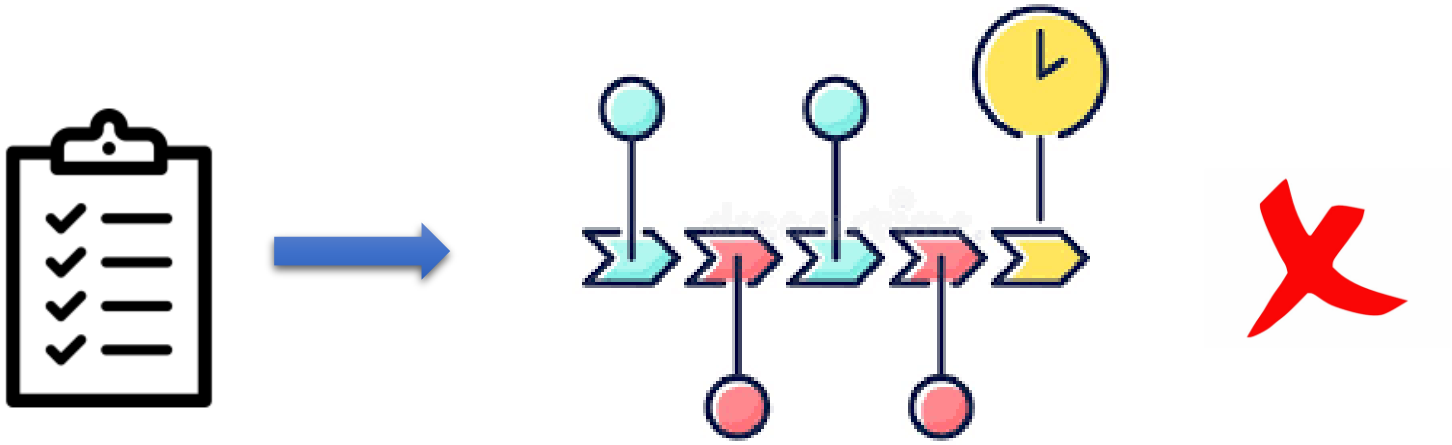
Sprint

Product Owner

amazon

Scrum

Sprint



Scrum

Sprint

----------X Days (<=30)----------

(SPRINT)

Product Increment

SPRINT 1

-X Days (<=30)-

Product Releasable

Product Increment

SPRINT 2

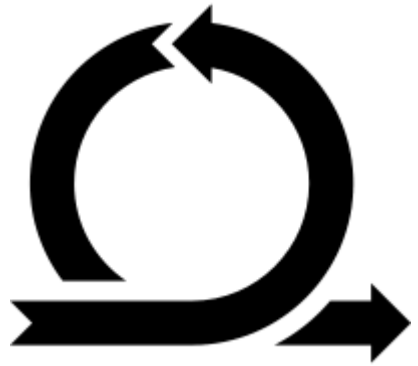
-X Days (<=30)-

Product Releasable

Scrum

Sprint Planning

- Sprint planning happens **once in each Sprint**
- Entire Scrum Team: Product Owner, Scrum Master & Development Team must be a part of the event
- Time box for the event is 8 hours (upper limit)
- Two agendas
  - **What is to be done** in this Sprint
  - Establish **how it will be done**



Scrum

Sprint Planning

Product Backlog

Product Owner

Sprint Backlog

Product Owner discusses the product backlog with the development team

What is to be done?

- **Team Velocity:** How much work development team was able to do in the previous few sprints
- **Estimation Poker**

How it will be done?

- Plan is not fixed, it evolves as more clarity increases
- Development team will come up with the plan

Scrum

Daily Scrum

Daily Scrum is a 15-minutes event done everyday

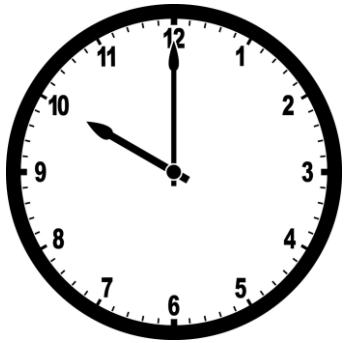
Same place, same time

- Event is primarily for the **Development Team**
- **Scrum Master** facilitates the event
- **Product Owner** can attend the event (not necessary)

- Daily Scrum is implementation of two pillars of scrum: Regular inspection & early adaptation

Scrum

Daily Scrum Meeting



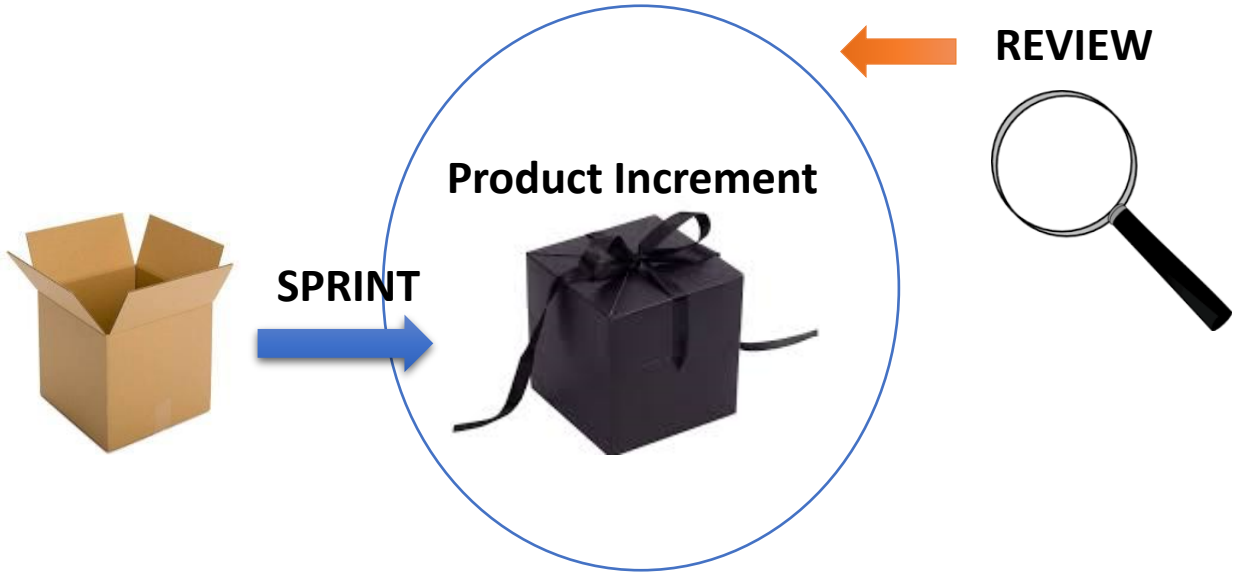
15-minutes everyday
Same place, same time

3 important questions in Daily Scrum

- What did I do yesterday?
- What will I do today?
- Any difficulties or impediments stopping me from the Sprint goal?

Scrum

Sprint Review



Attendees

- **Entire Scrum Team**: Product Owner, Scrum Master, the Development Team & other stakeholders

Objective

- Help the scrum team work more effectively
- Increase transparency within the team and between other stakeholders and Scrum team

Time box for the event is 4 hours or less

Scrum

Sprint Review

What happens in Sprint Review?

1) Product Owner invites all attendees

2) Product Owner highlights completed & not-completed items

3) Development team shares Sprint experience, highlight challenges
Development team demonstrates completed item
Stakeholders may ask questions on the demonstrated item

4) Product Owner opens the backlog & initiate discussion on what to do next.
Priorities, budgets, timelines & capabilities etc. are discussed.

5) At the end of Sprint Review**, Product Owner** should have updated backlog

Scrum

Sprint Retrospective

Scrum Team does this event

Agenda
Inspect the performance of the team

What went well?

What went wrong?

At the end of Scrum Retrospective, Scrum Team should know:

- Area of improvements
- Plan of working on them

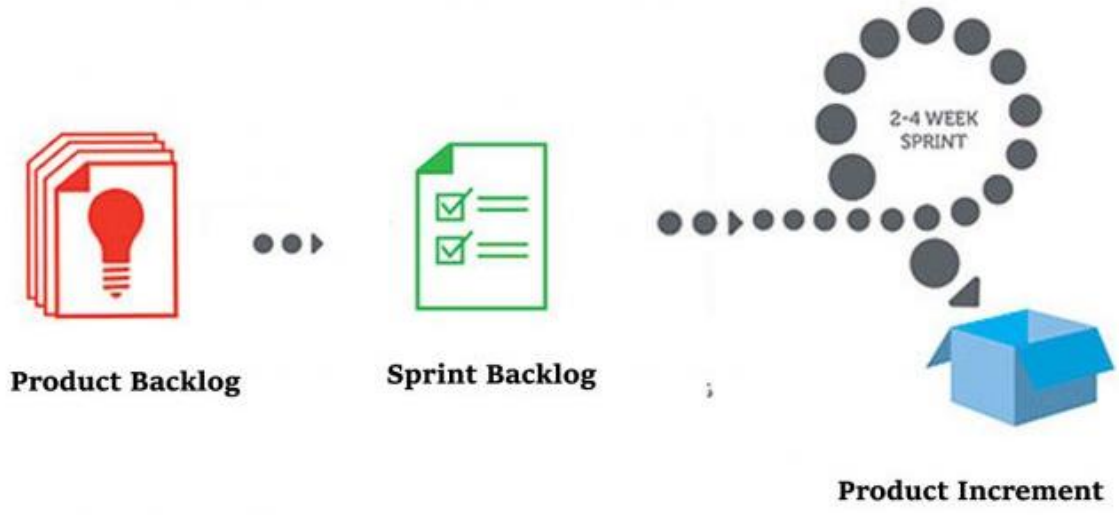
Inspection & Adaptation of Scrum Team

Scrum

GenMan Solutions

Scrum Artifacts

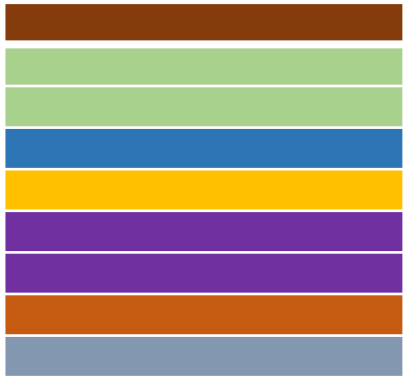
- Product Backlog
- Sprint Backlog
- Increment



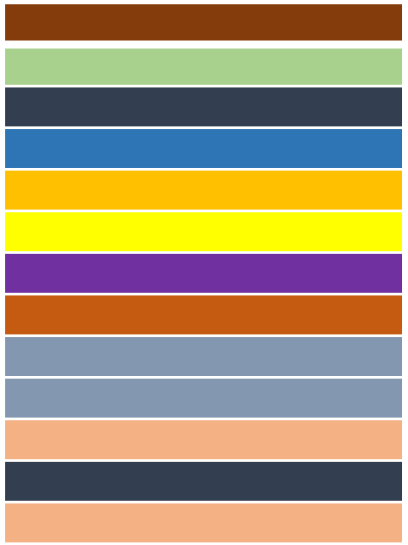
Scrum

Product Backlog

At the initial stage of starting the process



At a later stage when requirements changes



Add details to new requirements

Product Owner

Development Team

Product Backlog Refinement

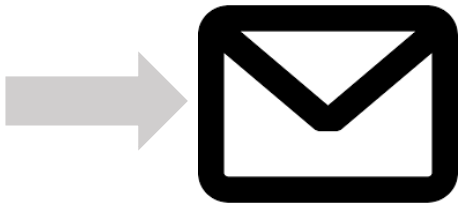
Ever Evolving

Never Fixed

Scrum

Product Backlog

Business Team



Raw requirements

Product Owner

Order No.	Requirement Name	Requirement Details	Estimated Business Value	Estimated Effort	Ready?
1					
2					
3					
4					

Development Team

Scrum Master

Backlog Refinement <= 10% of the capacity of the development team

Scrum

Sprint Backlog

Product Backlog

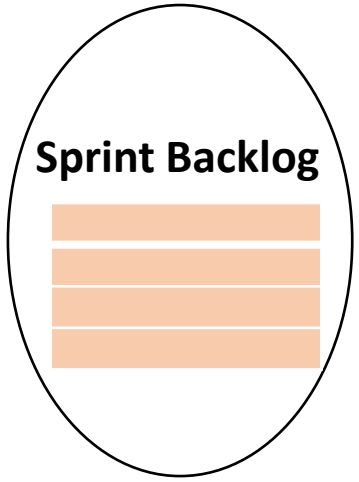
Product Owner discusses the product backlog with the development team

Sprint Backlog

Sprint Planning Event
Sprint Review Event

Scrum

Sprint Backlog



- **Daily monitoring of Sprint Backlog** is done in the Daily Scrum
- **Owned by the development team**
- Any **deviation from the goal should be highlighted** to the Product Owner & Stakeholders immediately

GenMan Solutions

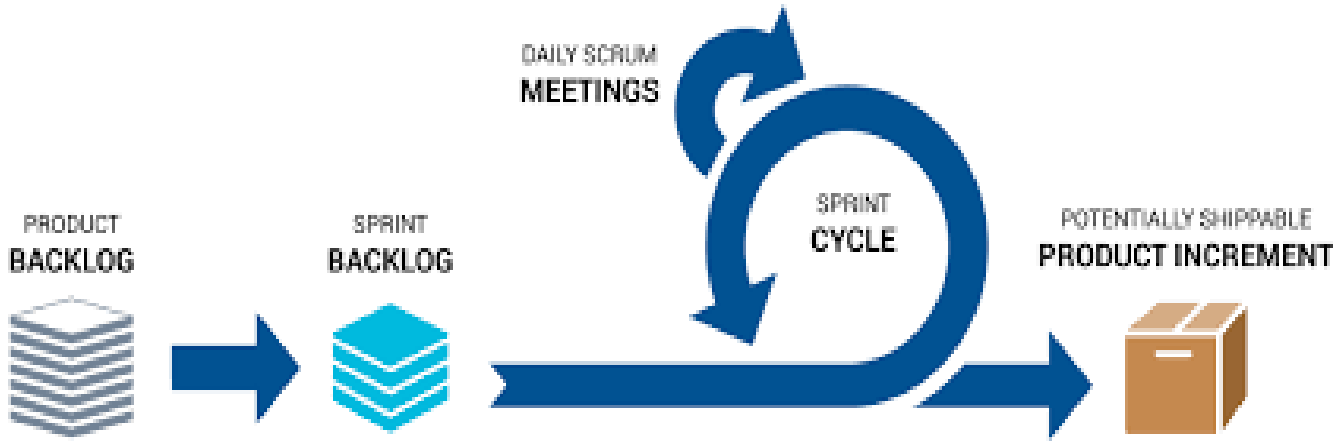
Scrum

Scrum

Increment

Increment is the **final releasable product**

- It should be **usable**
- It should be **inspectable**
- It should **include increments of previous sprint**



Definition if “Done”

GenMan Solutions

Advantages & Disadvantages of Scrum

Advantages of Scrum

- More transparency and project visibility
- Increased team accountability
- Easy to accommodate changes
- Increased cost savings
- Faster Delivery
- Customers are heard

Disadvantages of Scrum

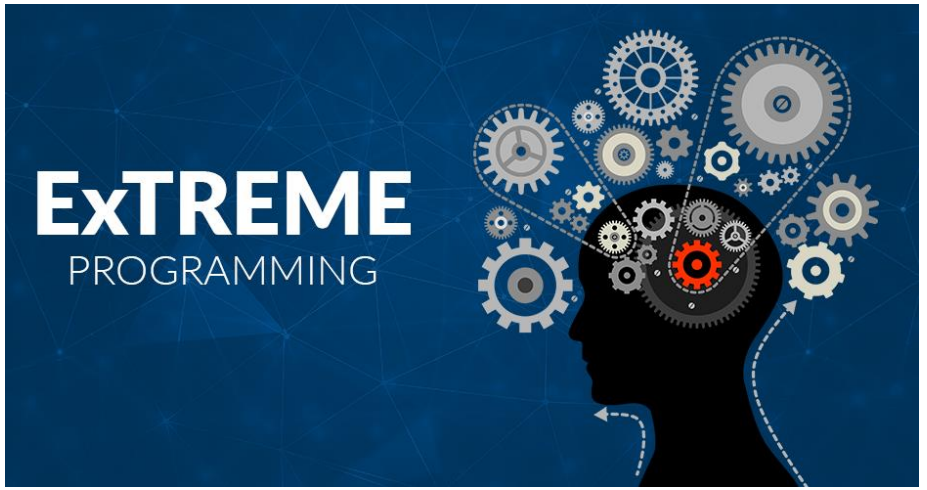
GenMan Solutions

- Risk of scope creep
- Team requires experience and commitment
- The wrong Scrum Master can ruin everything
- Poorly defined tasks can lead to inaccuracies

Introduction to Kanban

Flexible & **easy to implement** method for **process improvement**

Scrum: Has Strict Rules



Extreme Programming: Has Strict Practices

Introduction to Kanban

GenMan Solutions

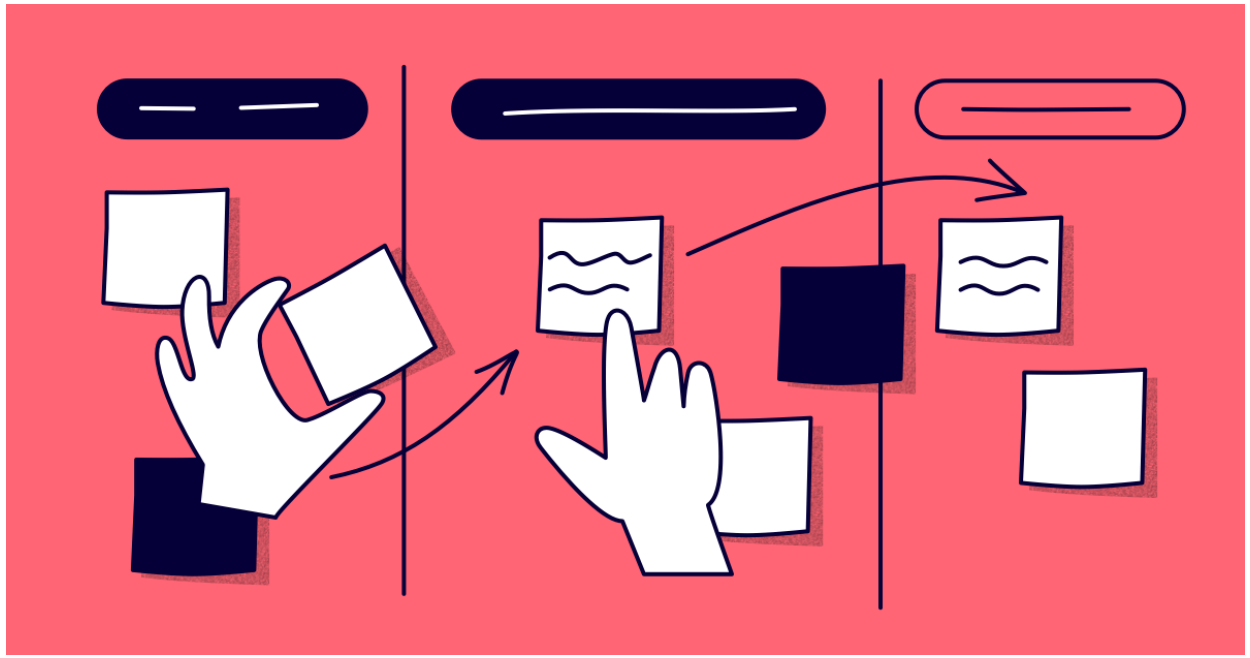
Kan 看 ban 板

- Kan = Card
- Ban = Signal

TOYOTA

Identified bottlenecks in the car making process using Kanban

Introduction to Kanban

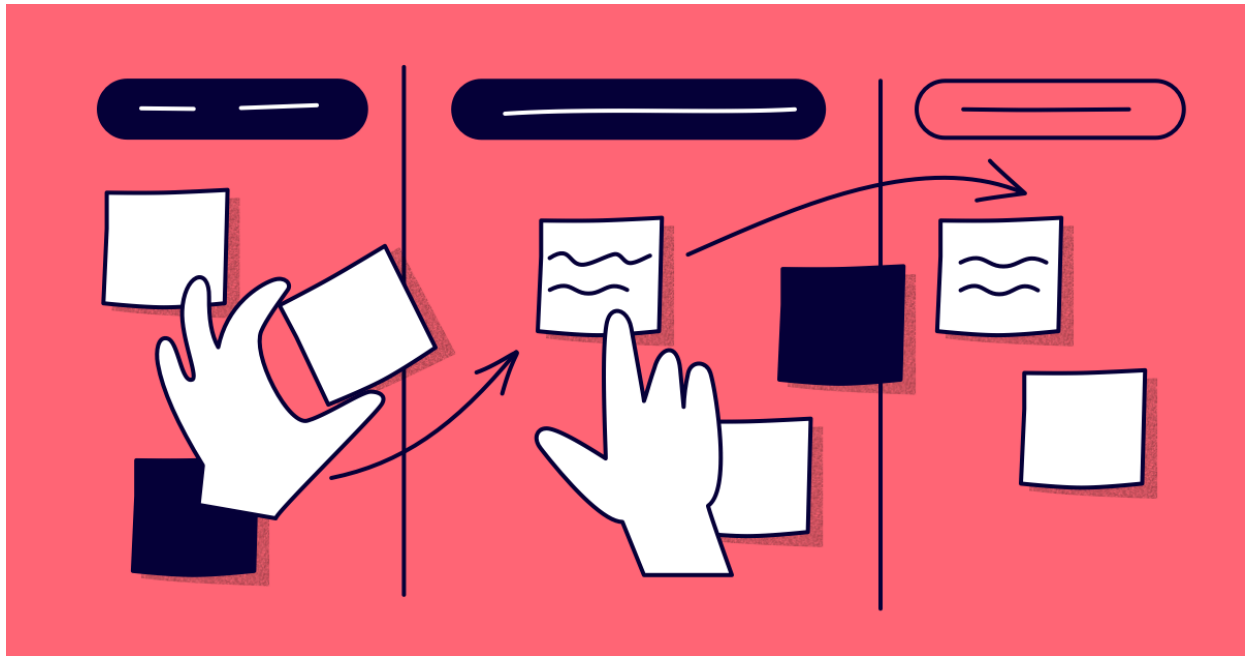


Visualizing the workflow

to

achieve process improvement

Introduction to Kanban



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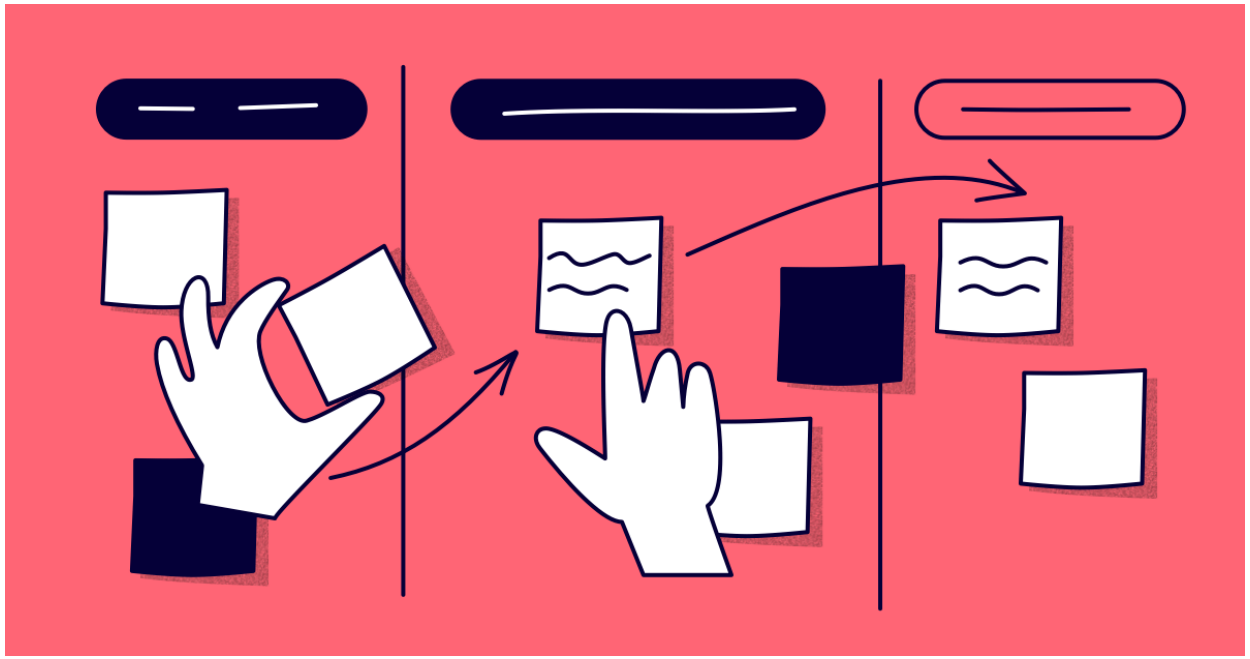
Introduction to Kanban



Visualizing the workflow

to

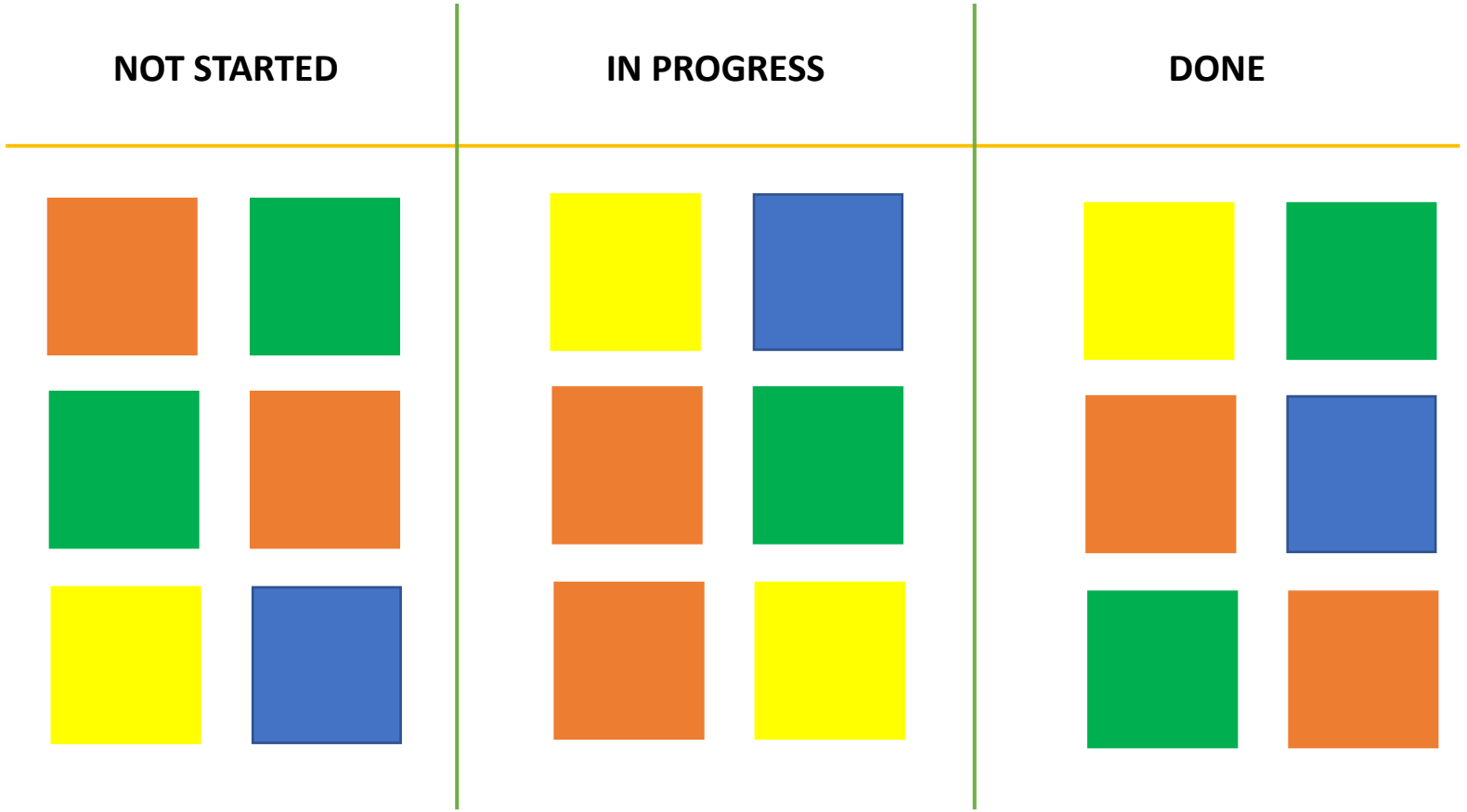
achieve process improvement

Limitin progress

M low

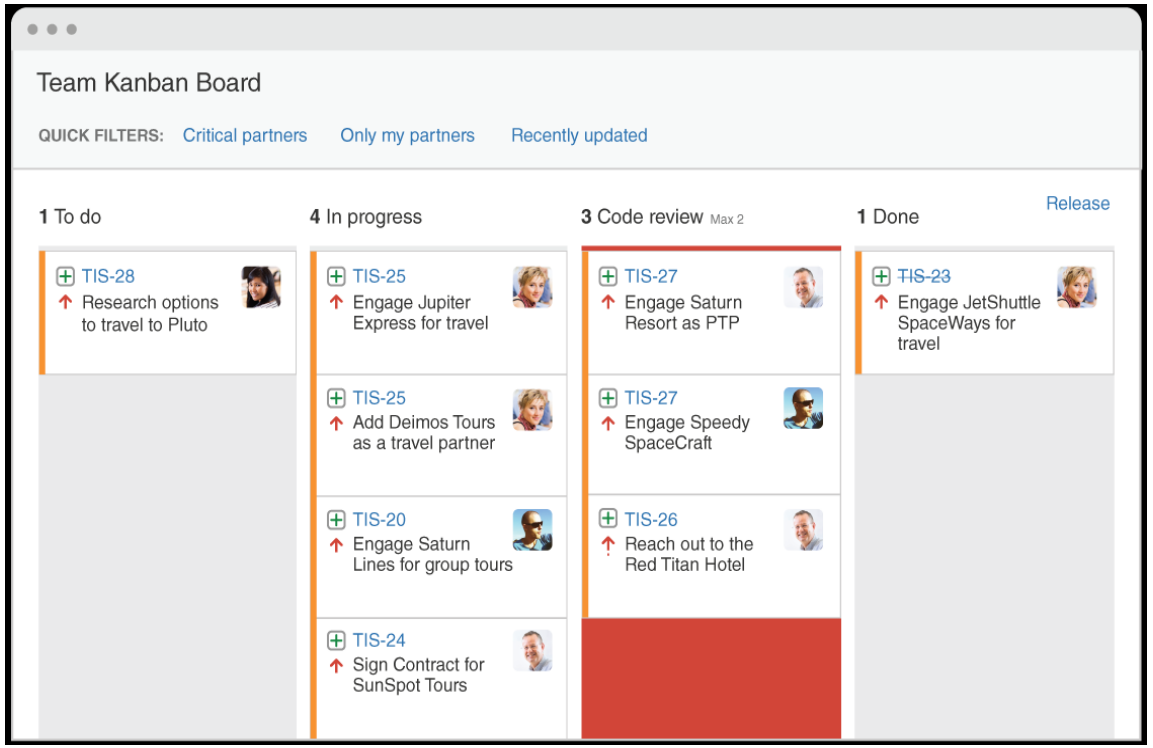
Impleme ack loops

Kanban Board



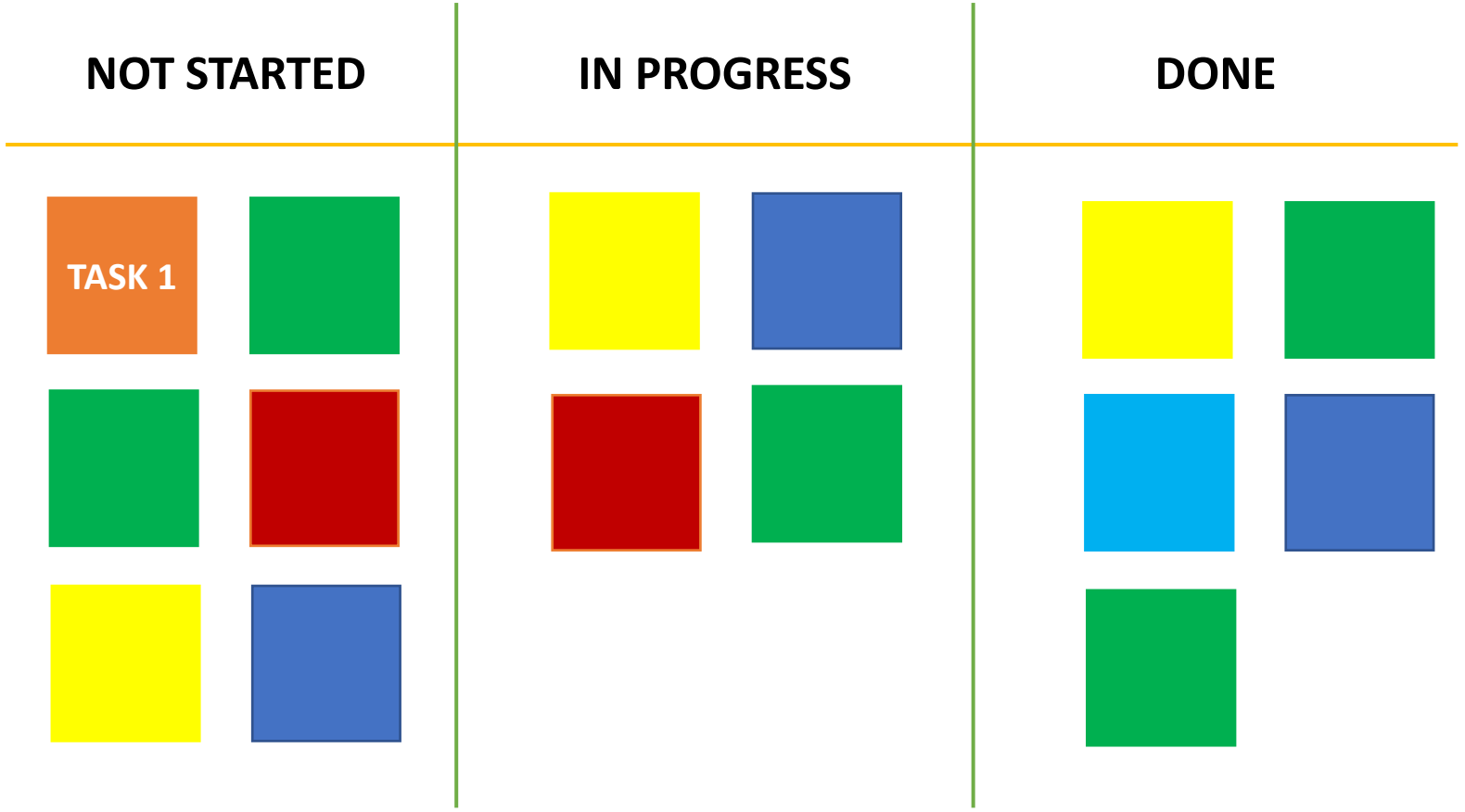
Kanban Board

Physical Kanban Board

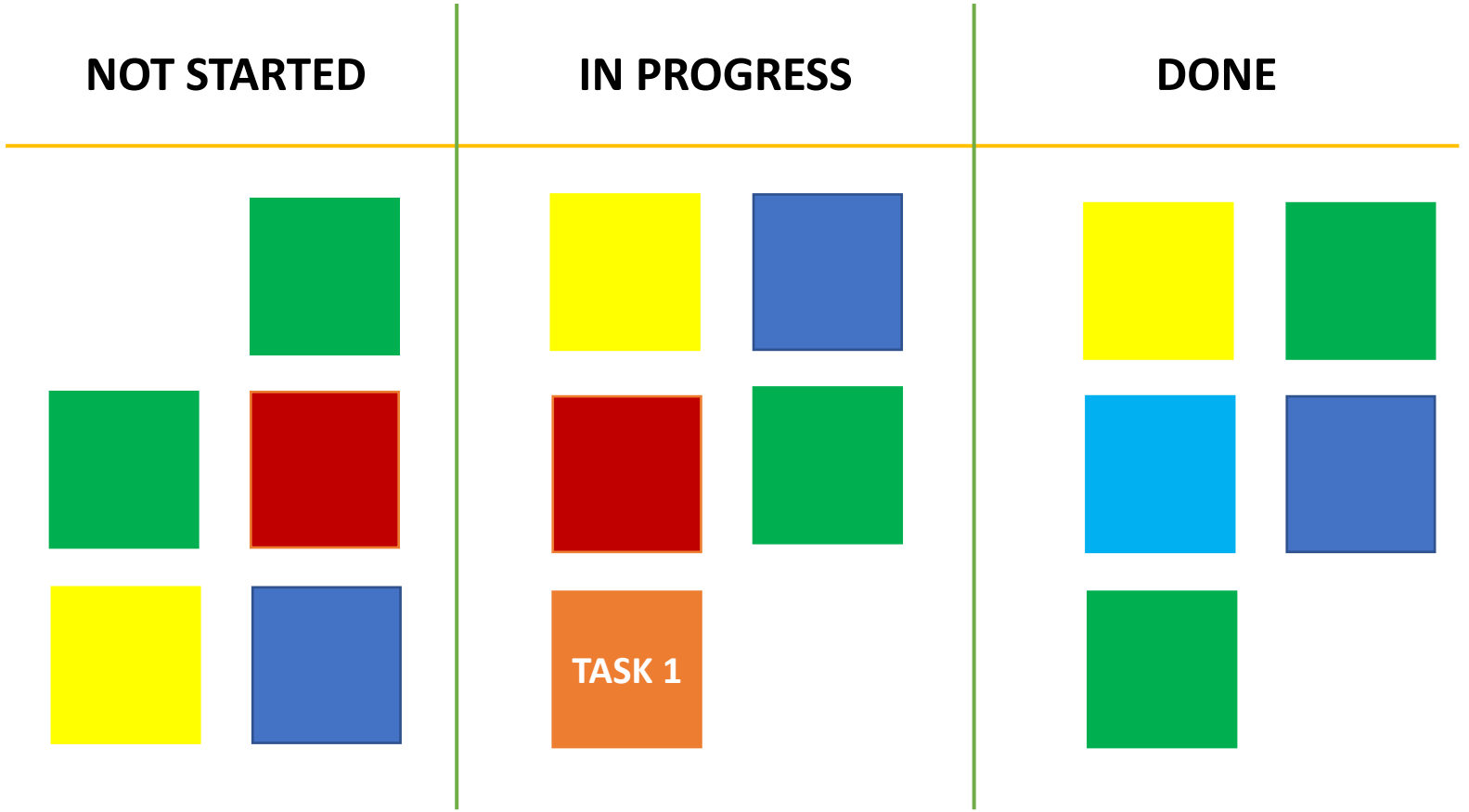


Software Based Board

Kanban Board



Kanban Board



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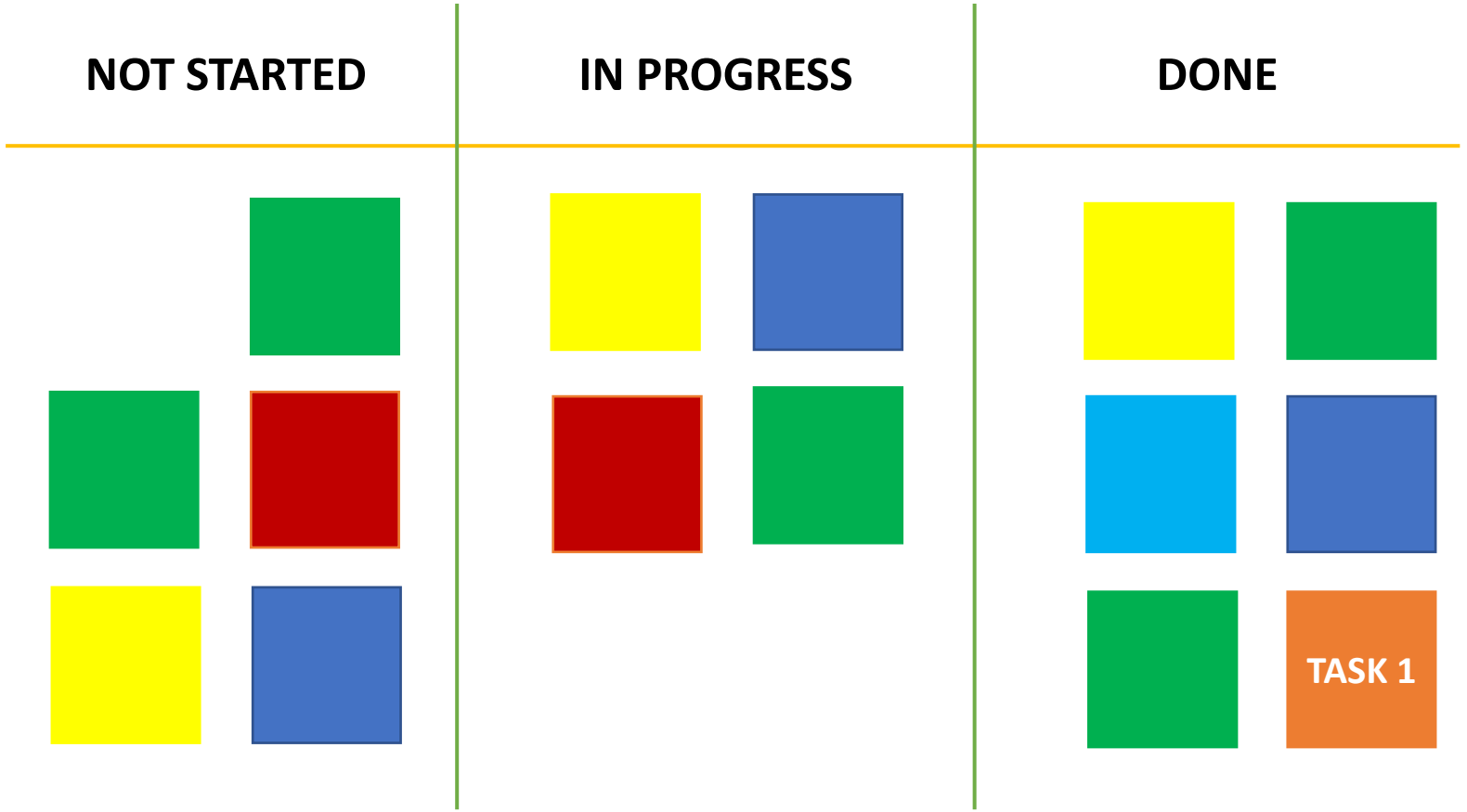

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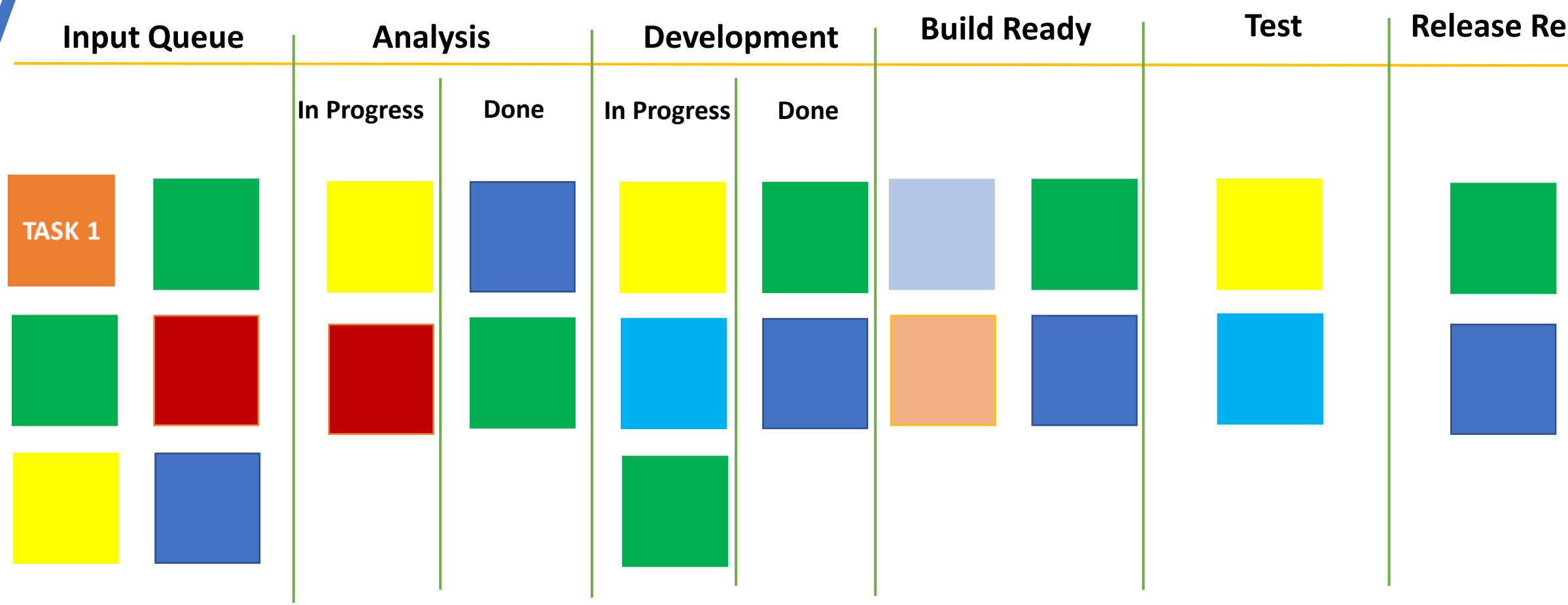
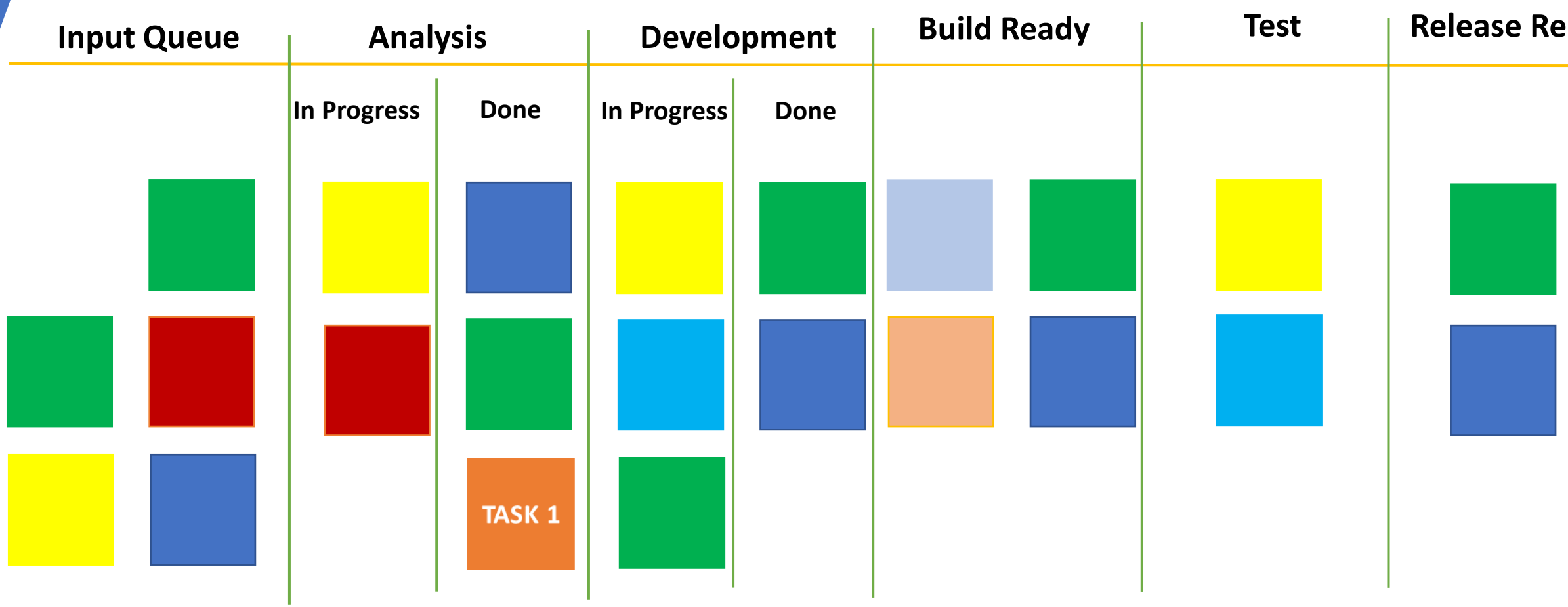


Board Reference: David Anderson's "Kanban"

Kanban Board



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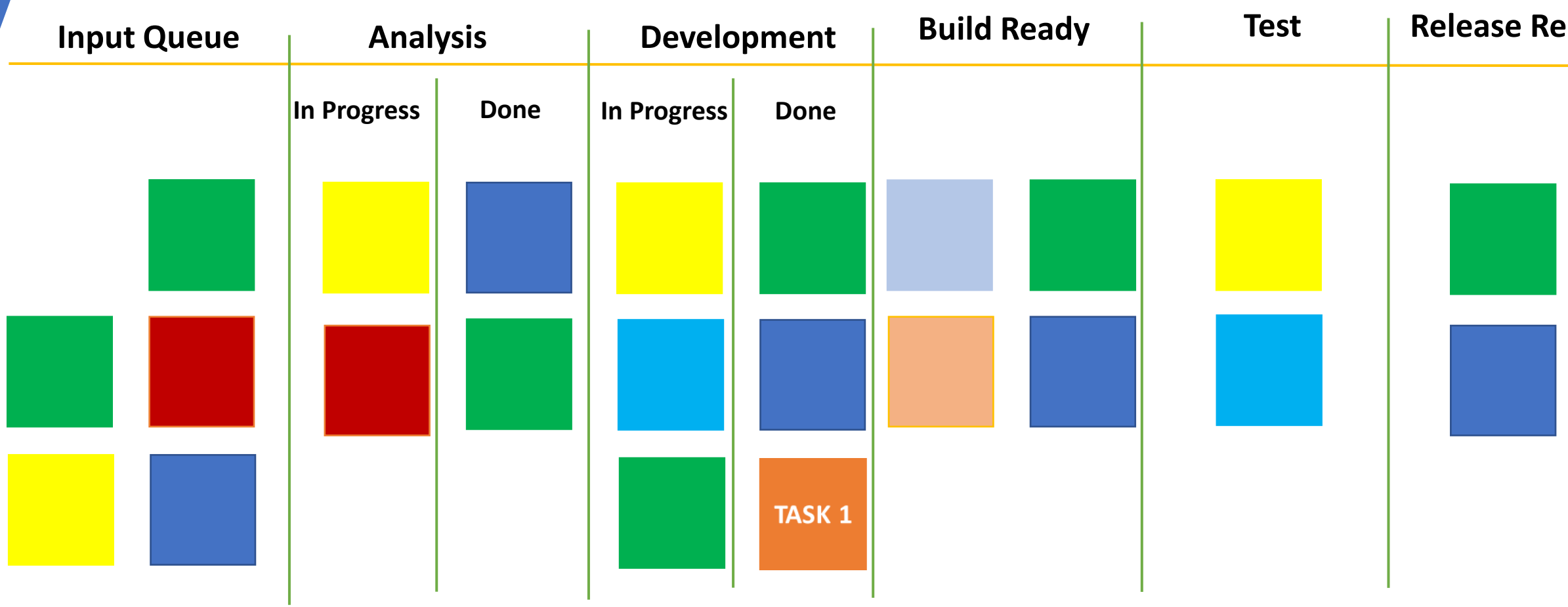

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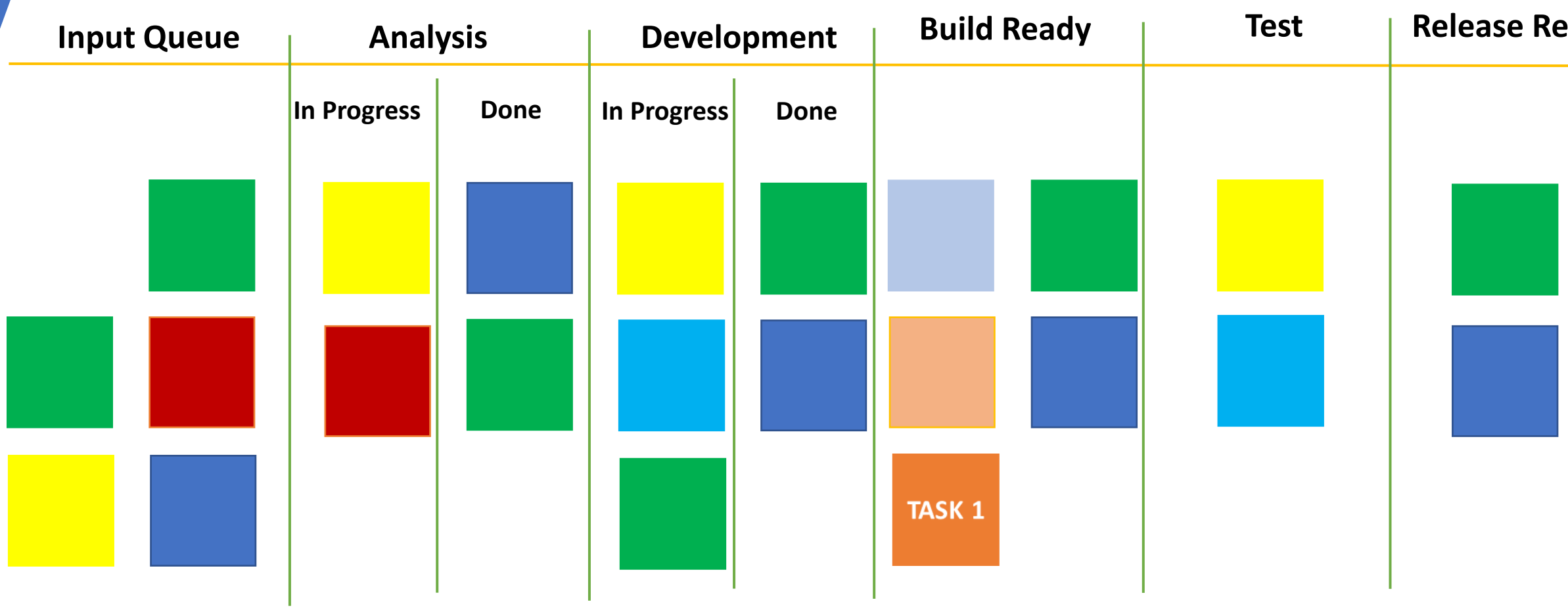

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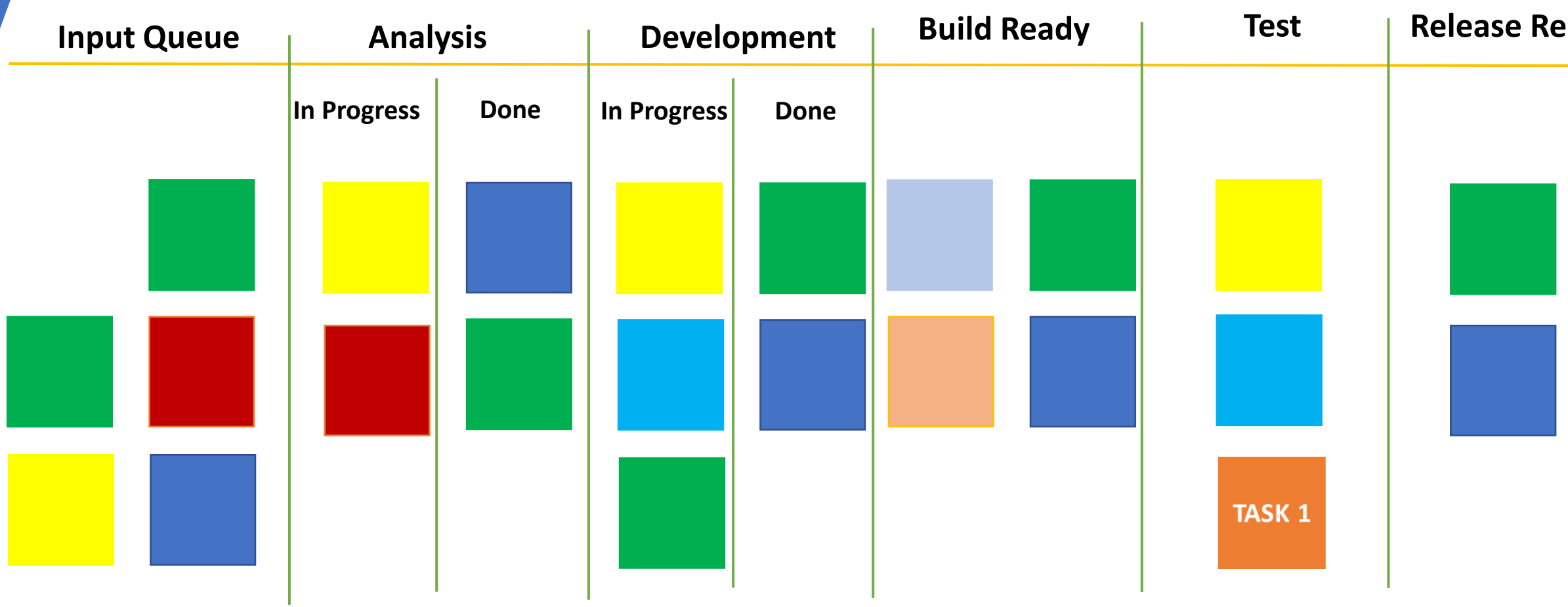

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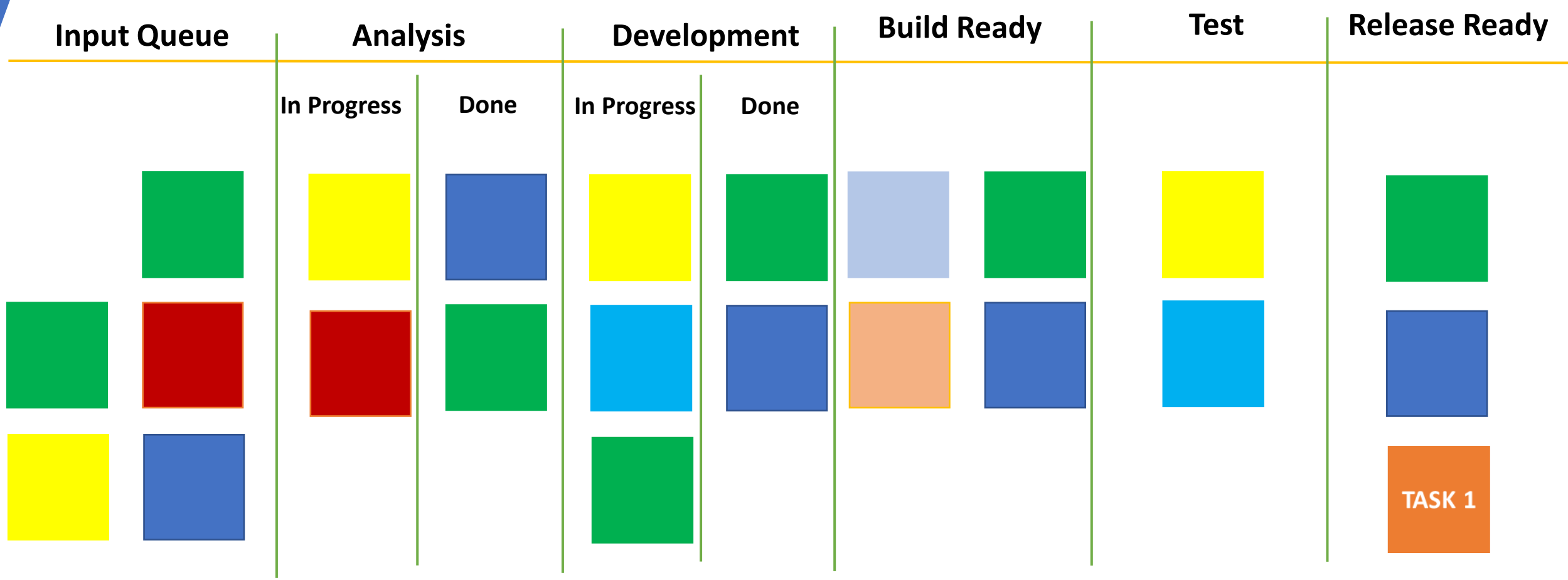

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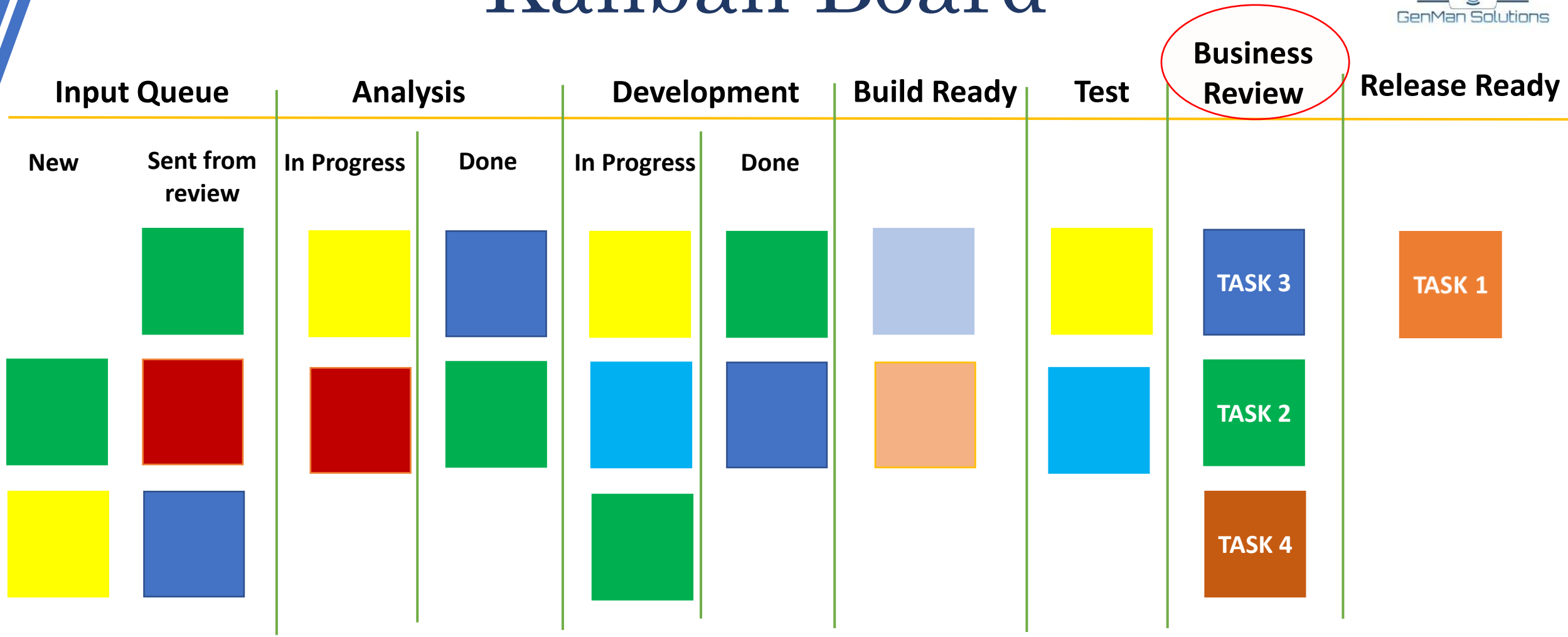

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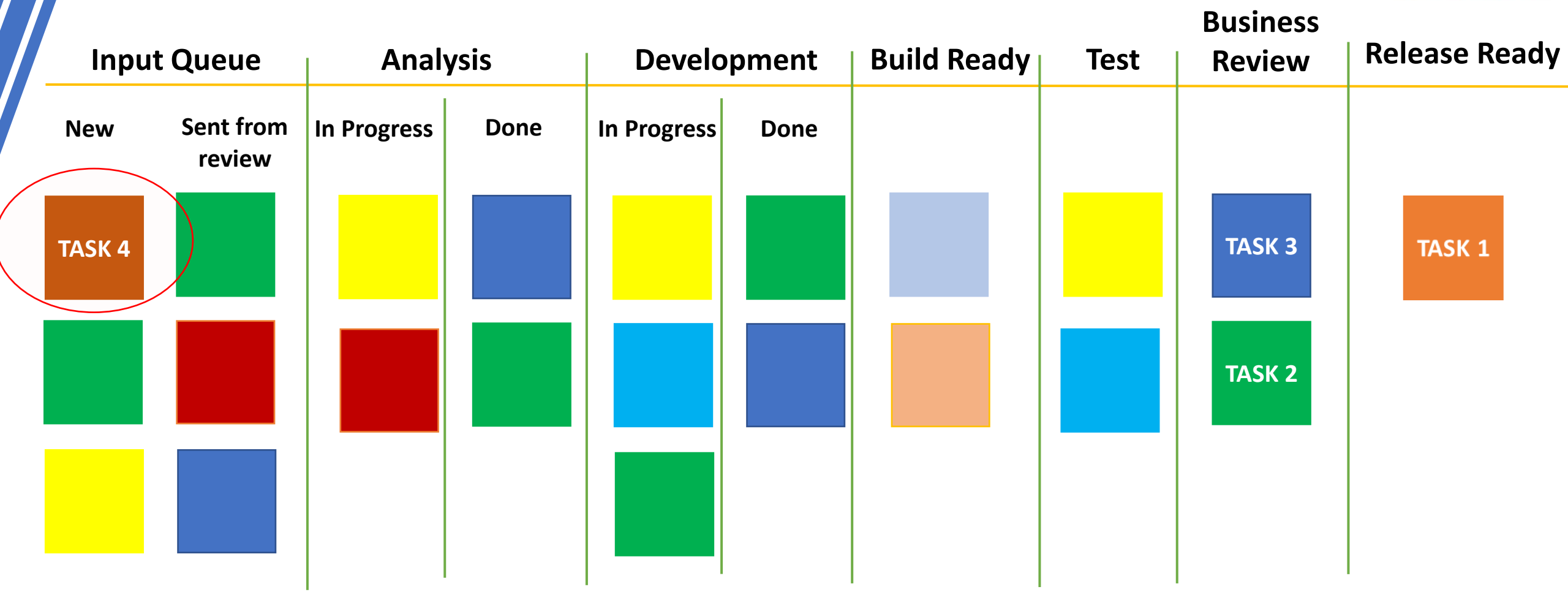

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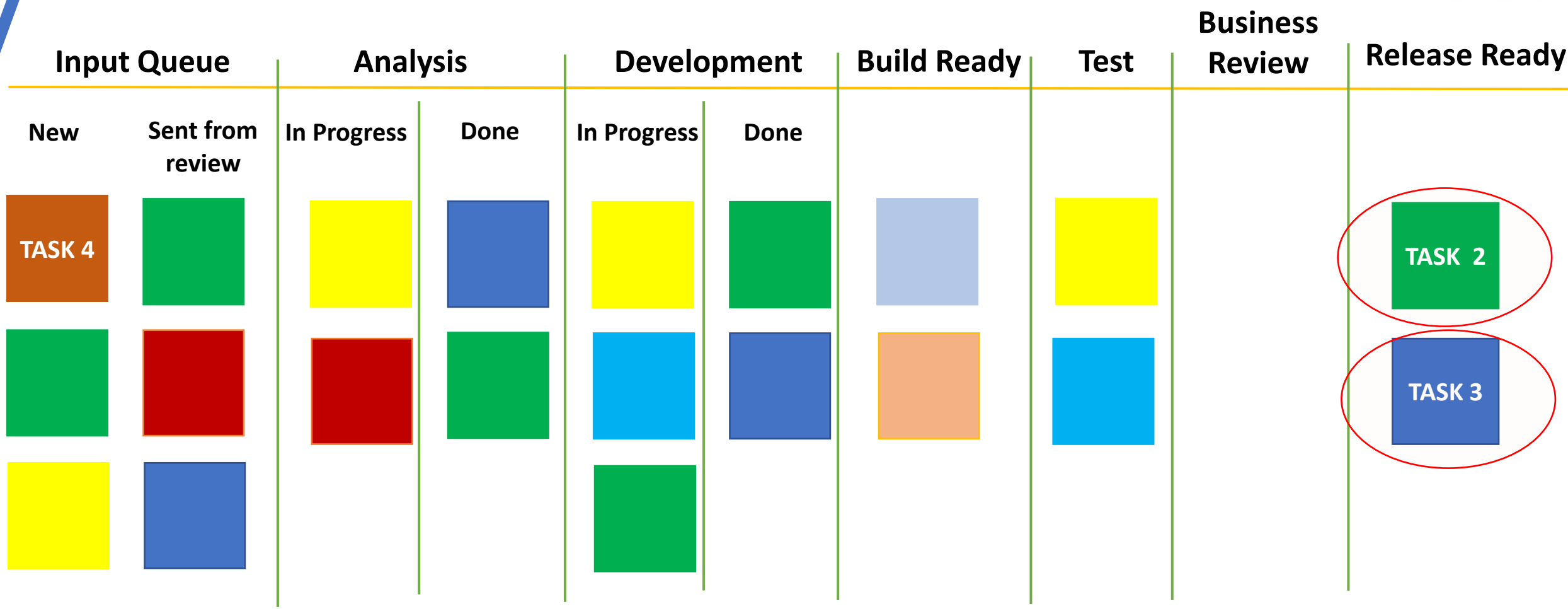

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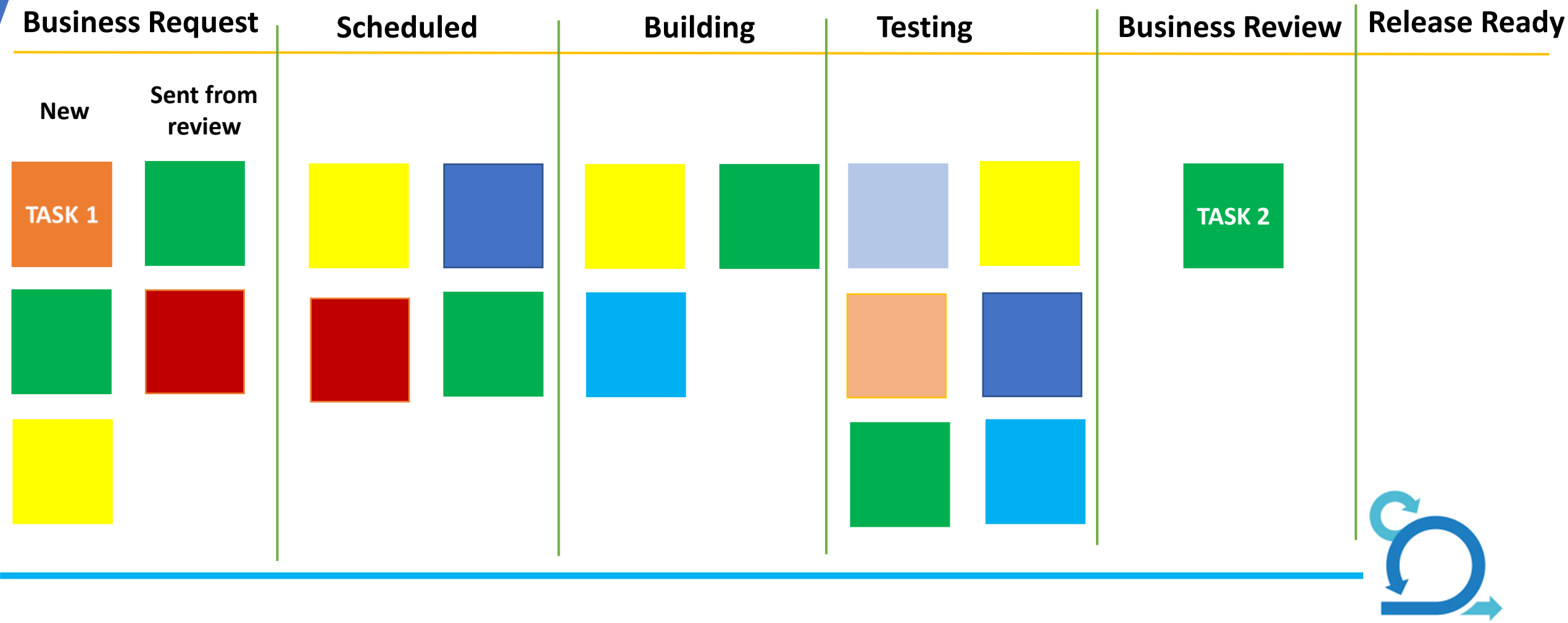
Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban Board

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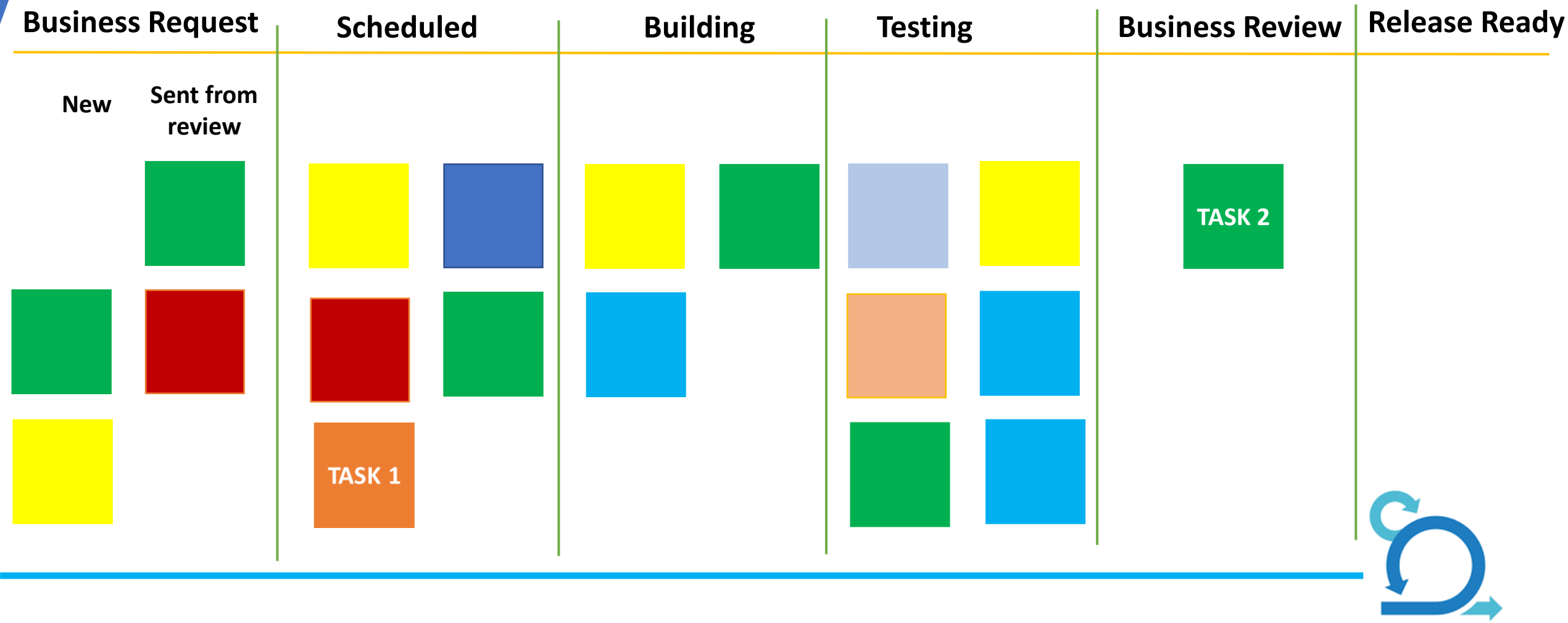

Kanban Board

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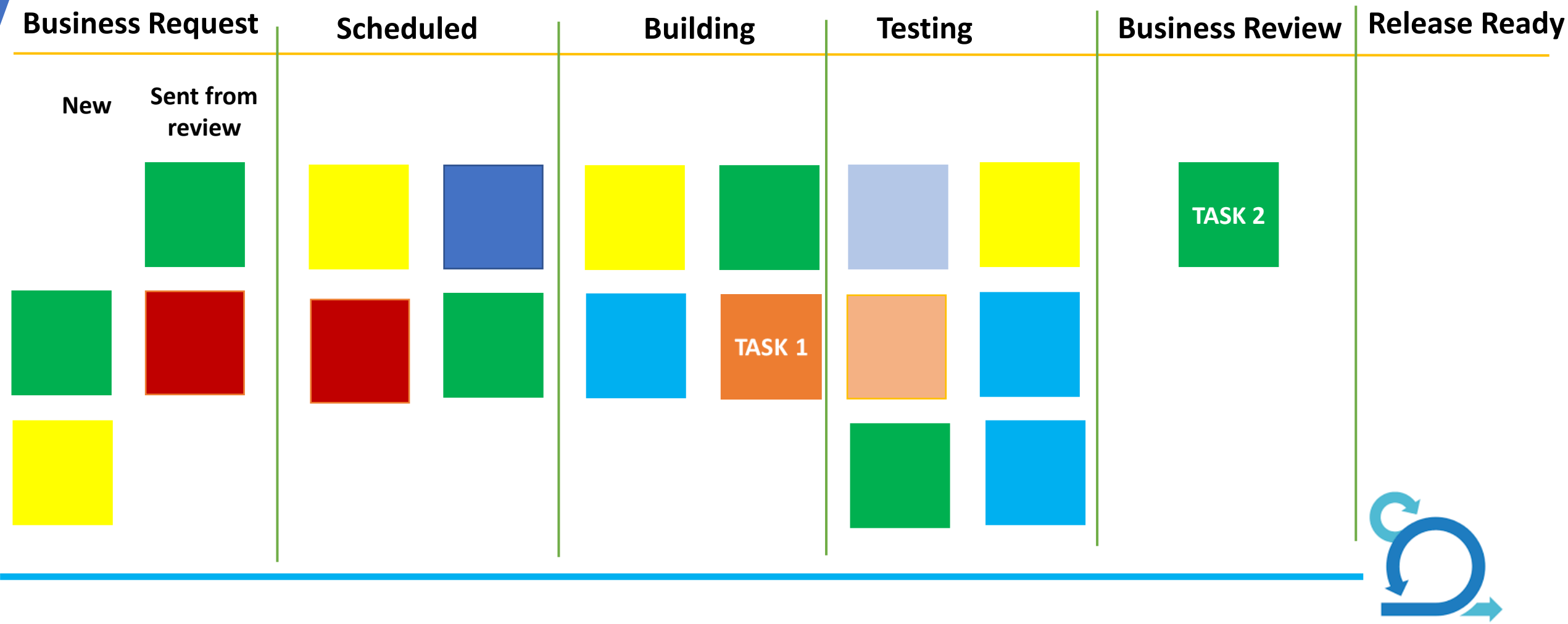
Finding inefficiencies/issues in the process



Kanban Board

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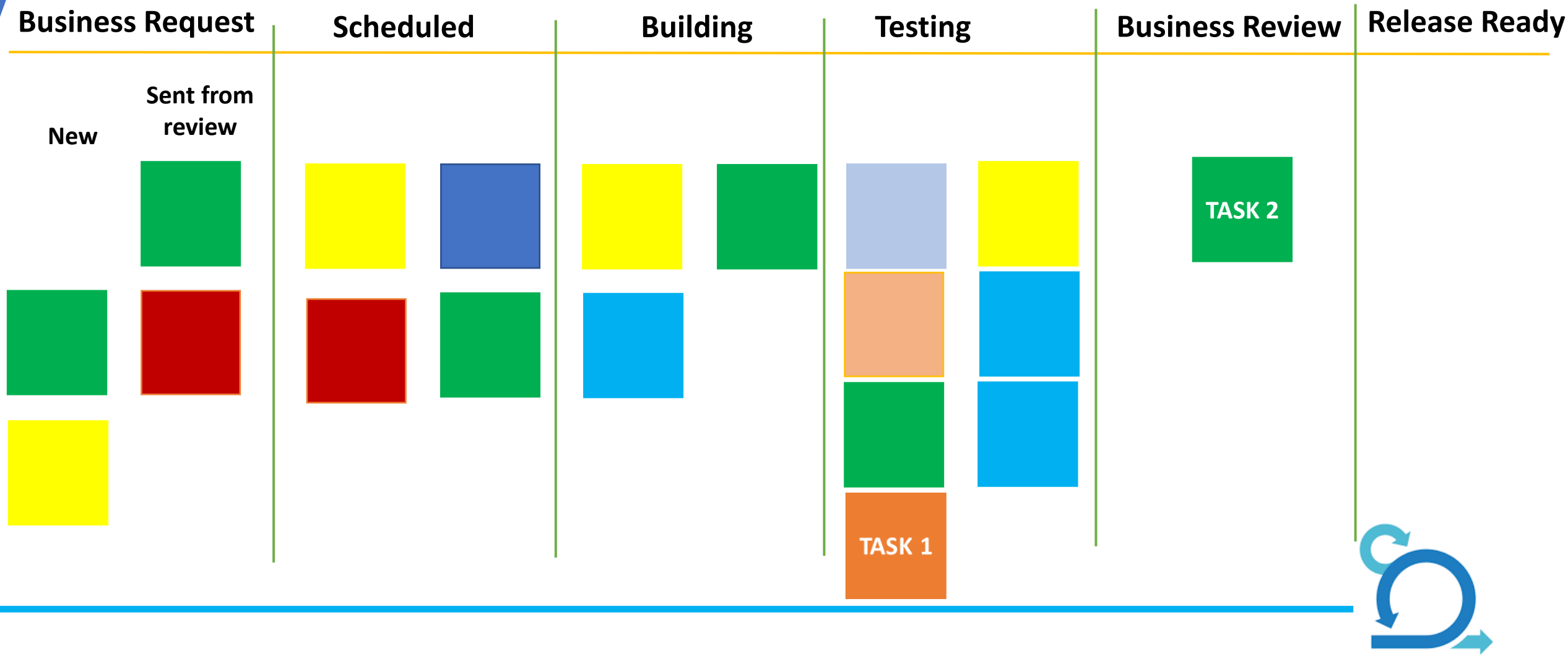
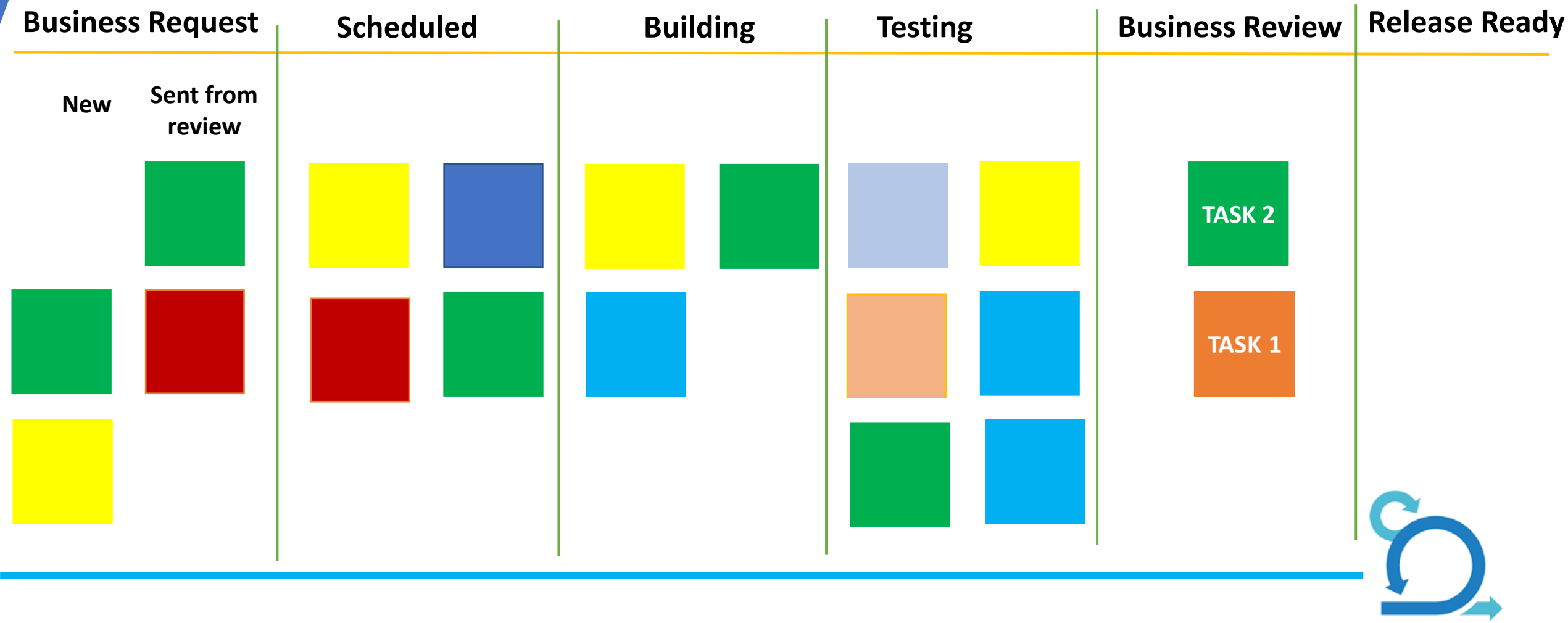
Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

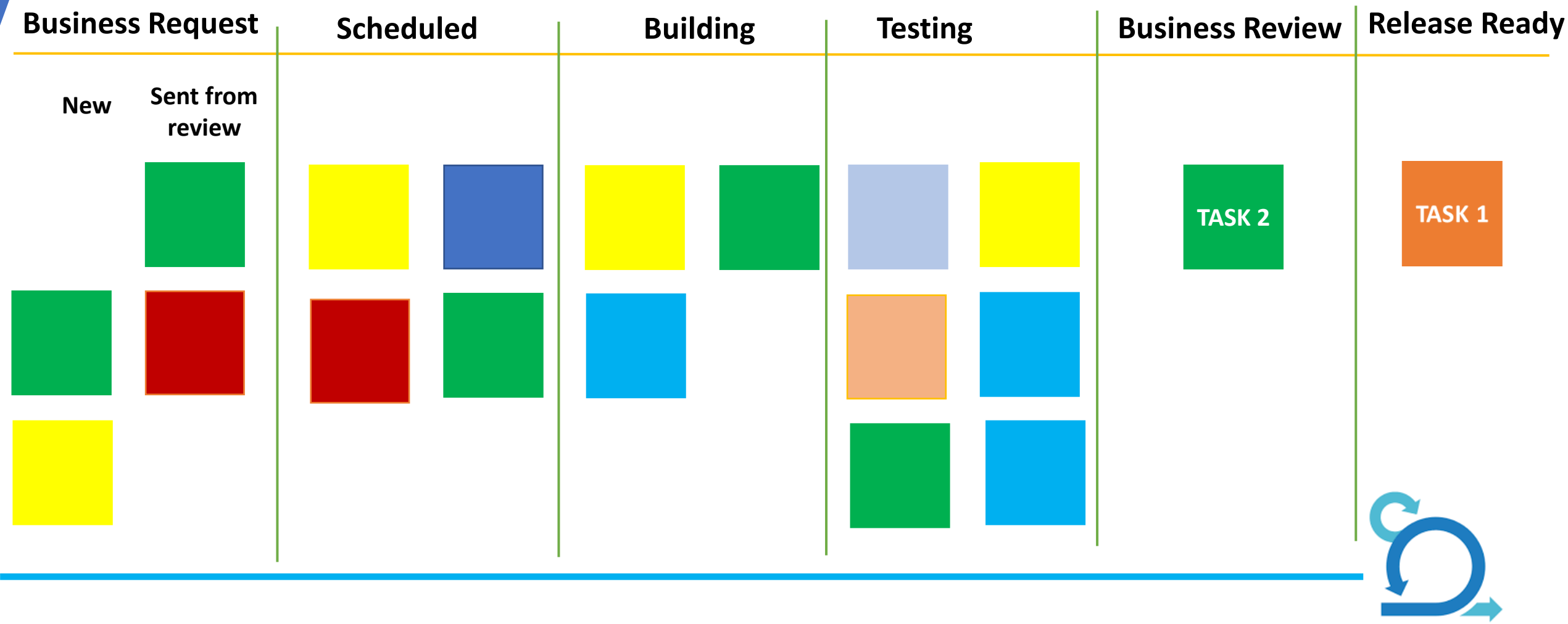
Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

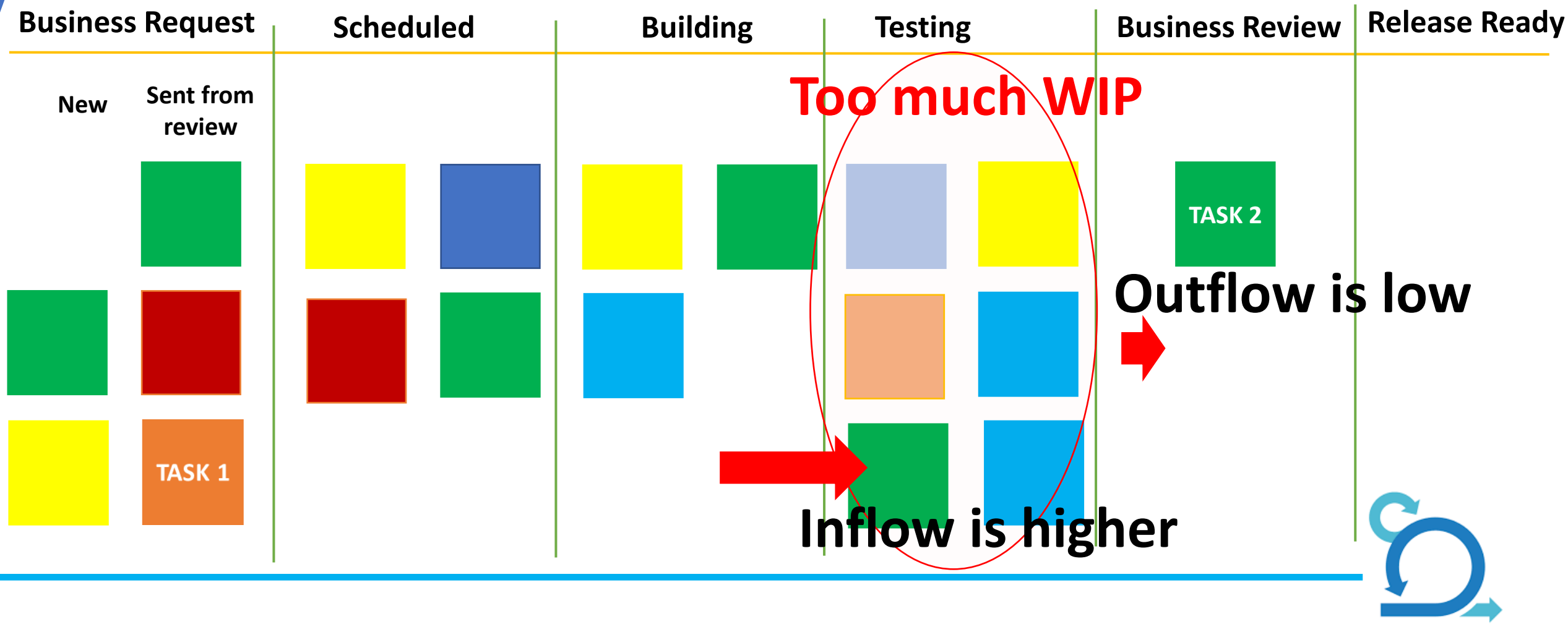
Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process

Sl. no.	Situation	Suggestion
1	Too much work in progress(WIP) on a single stage **Limiting the WIP**	More team members need to work on that stage (for e.g. testing stage in this scenario) instead of any of the previous stage

Kanban Board

GenMan Solutions

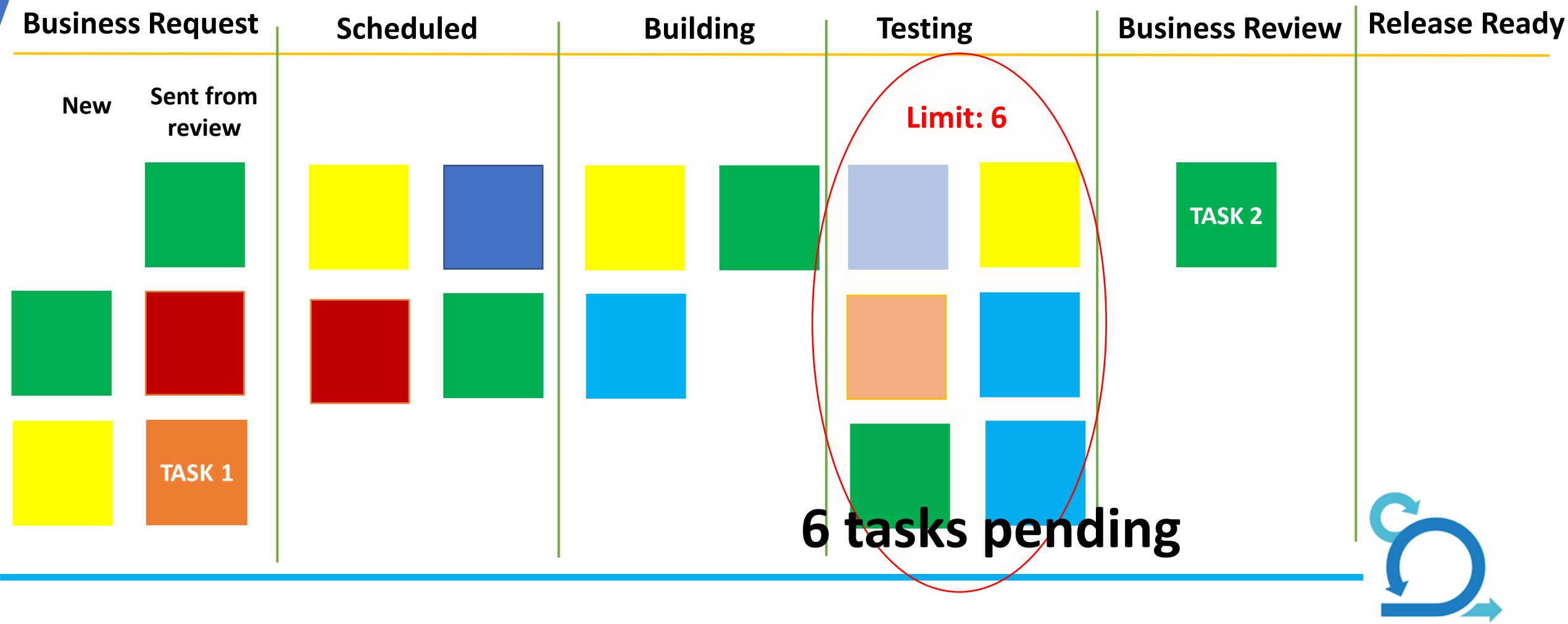
Limiting the WIP

- A **limit is set on the maximum number of tasks** that can be present in a column or that step at a time
- No further inflow into the step until the pending tasks in that step are cleared

Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

Limiting the WIP

- A **limit is set on the maximum number of tasks** that can be present in a column or that step at a time
- No further inflow into the step until the pending tasks in that step are cleared
- WIP limits can be set on all the steps
- How do we decide what limit to set?

Kanban Board

GenMan Solutions

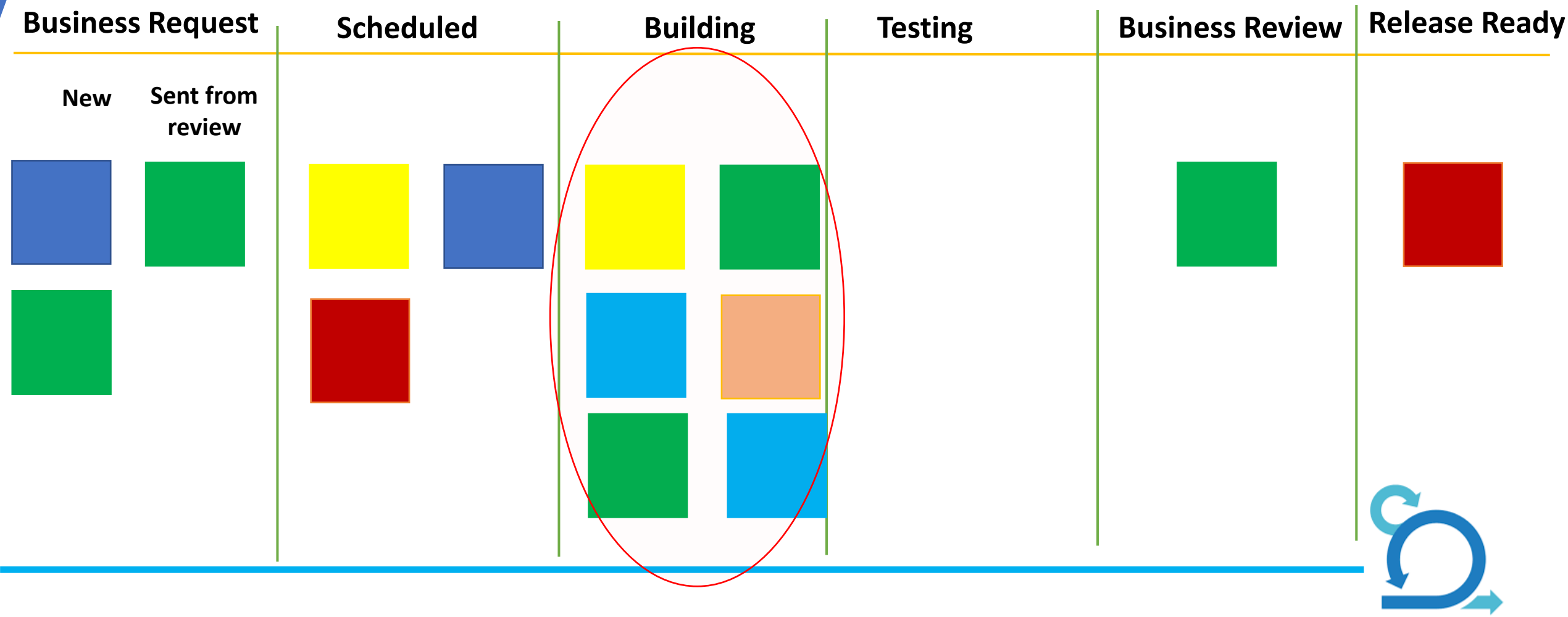
Finding inefficiencies/issues in the process

Sl. no.	Situation	Suggestion
1	Too much work in progress(WIP) on a single stage **Limiting the WIP**	More team members need to work on that stage (for e.g. testing stage in this scenario) instead of any of the previous stage
2	**Under utilization of resources** Pending tasks not moving to the next step	

Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



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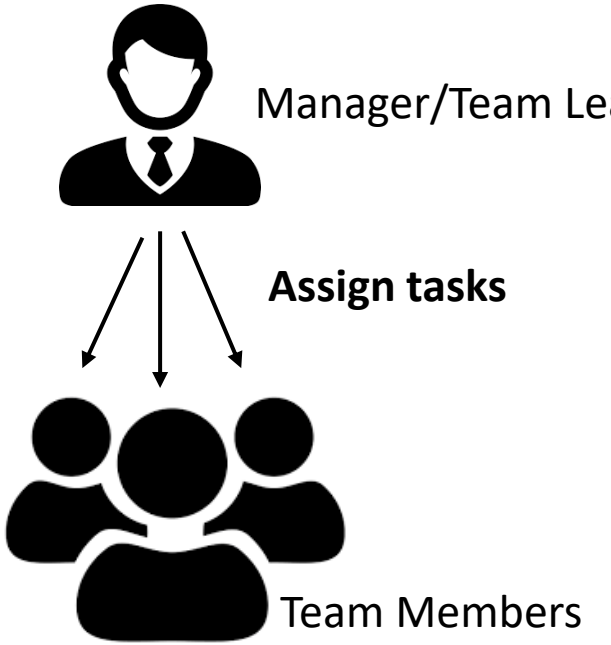
2	**Under utilization of resources** Pending tasks not moving to the next step	Reallocate the resources somewhere else where they can be utilized optimally

Managing the Flow

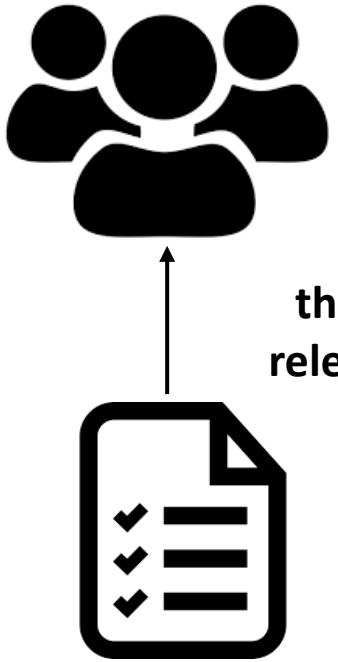
Kanban

Kanban is also known as a **Pull based system**

Push based system



Pull based system



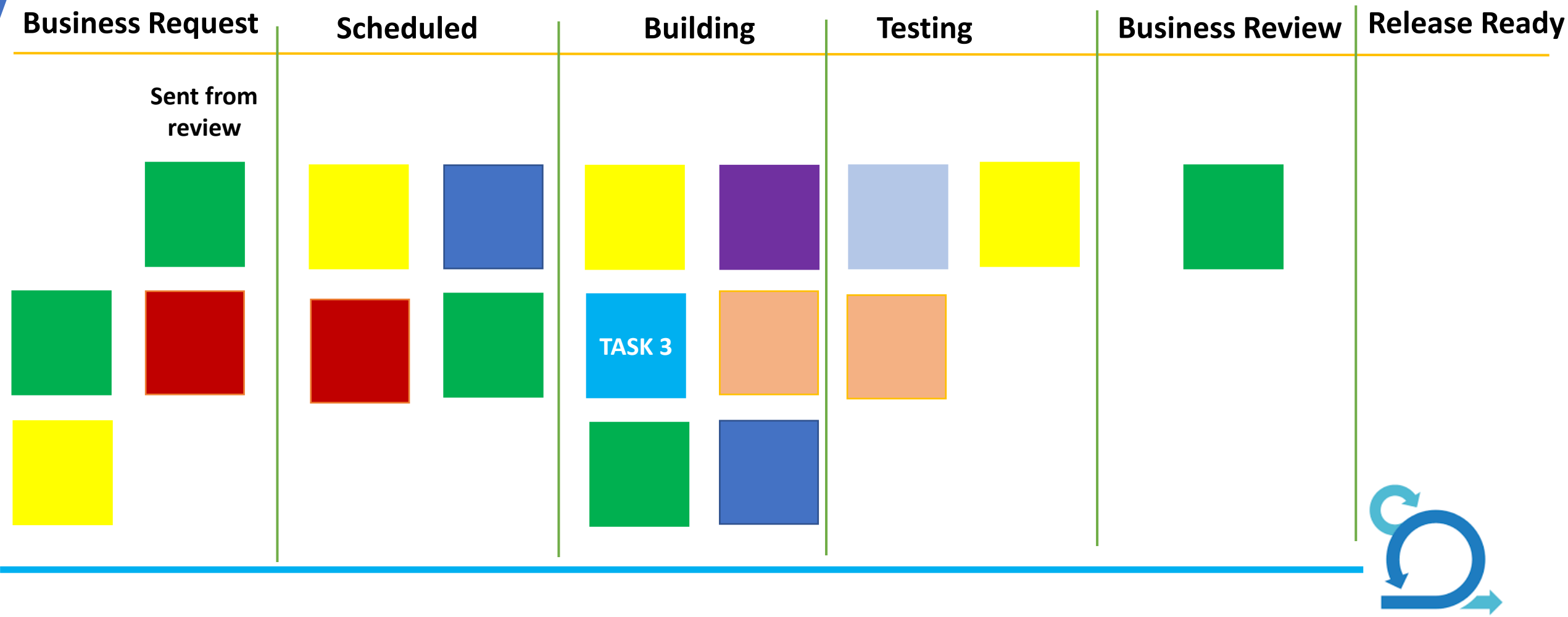
Team members can themselves pull the most relevant tasks out of the list of tasks to be done

- Optimizes the work flow
- Reduces lead time
- Reduces over load on worker

Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban

GenMan Solutions

Finding inefficiencies/issues in the process

Sl. no.	Situation	Suggestion
1	Too much work in progress(WIP) on a single stage **Limiting the WIP**	More team members need to work on that stage (for e.g. testing stage in this scenario) instead of any of the previous stage
2	**Under utilization of resources** Pending tasks not moving to the next step	Reallocate the resources somewhere else where they can be utilized optimally
3	**Task is taking longer time than it should be**	

Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process

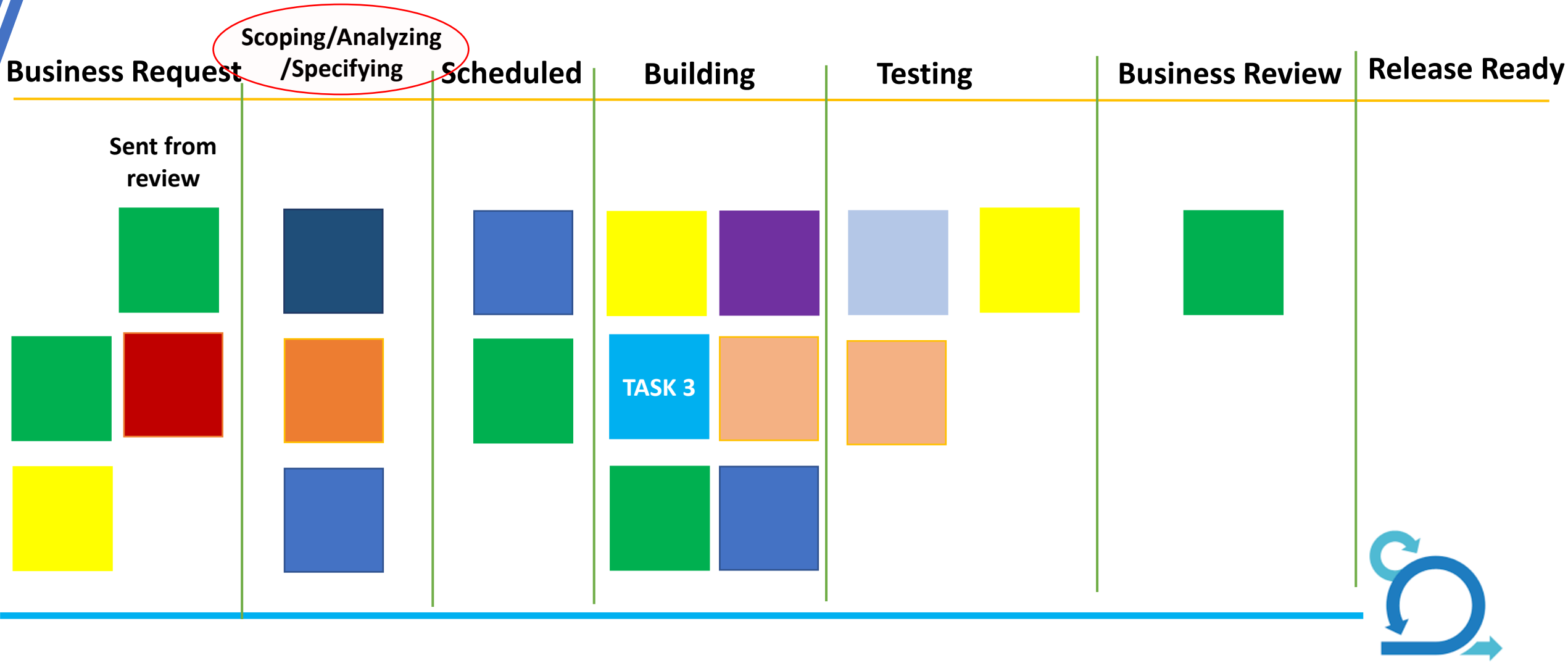
Issue: Task is taking longer time than it should be

Reason	Suggestions
Unequal sized tasks	Break down the task into smaller sized tasks

Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process

Issue: Task is taking longer time than it should be

Reason	Suggestions
Unequal sized tasks	Break down the task into smaller sized tasks
Task is stuck due to some bug or issue	Keep a regular track of the board

Kanban

GenMan Solutions

Finding inefficiencies/issues in the process

Sl. no.	Situation	Suggestion
1	Too much work in progress(WIP) on a single stage **Limiting the WIP**	More team members need to work on that stage (for e.g. testing stage in this scenario) instead of any of the previous stage
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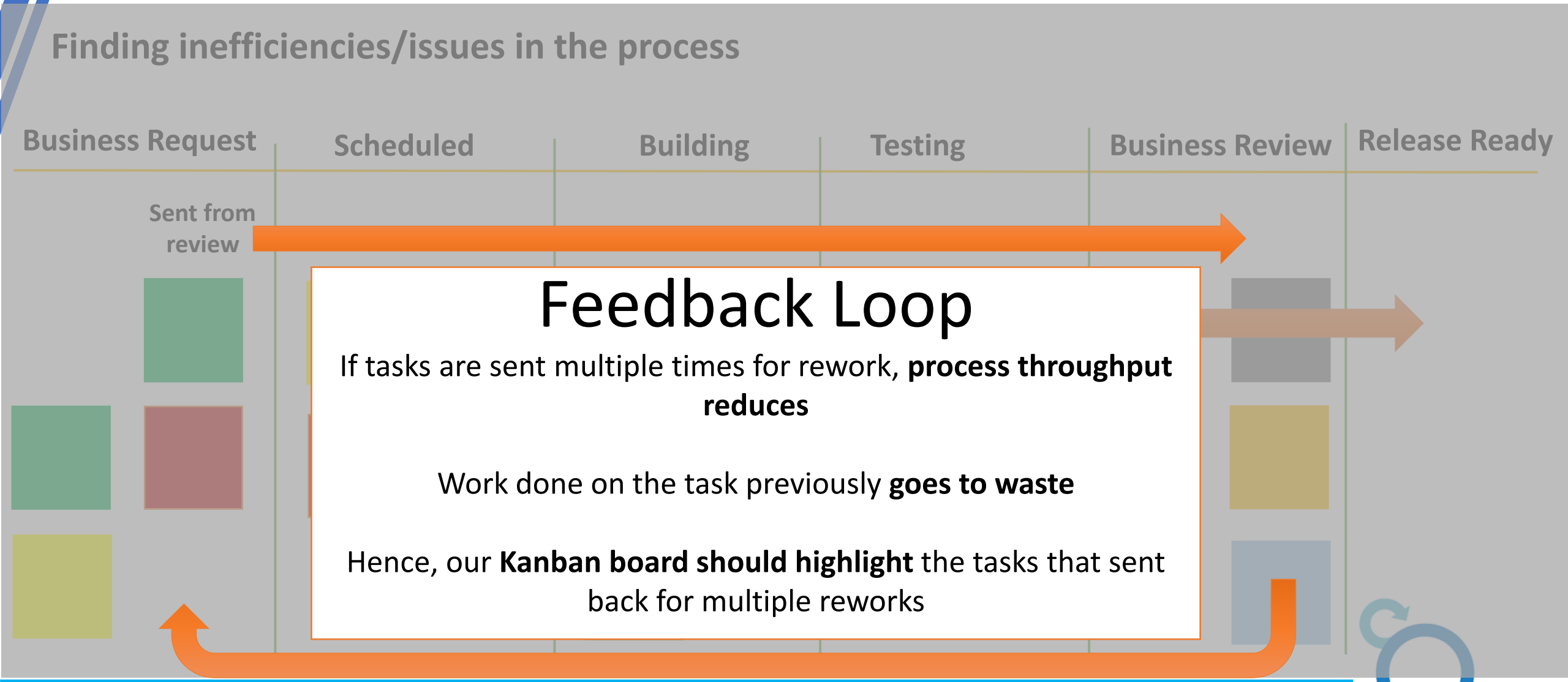
Kanban Board

GenMan Solutions



Feedback Loop

If tasks are sent multiple times for rework, **process throughput reduces**

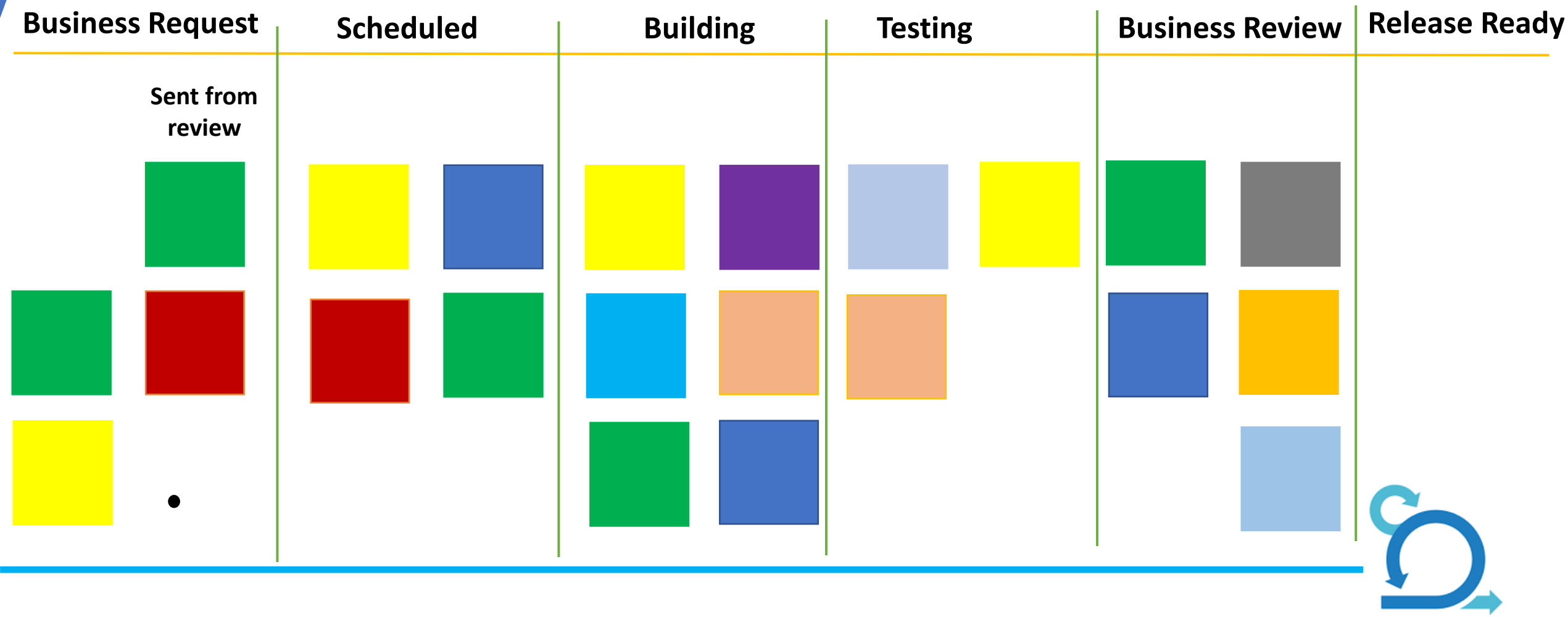
Work done on the task previously **goes to waste**

Hence, our **Kanban board should highlight** the tasks that sent back for multiple reworks

Kanban Board

GenMan Solutions

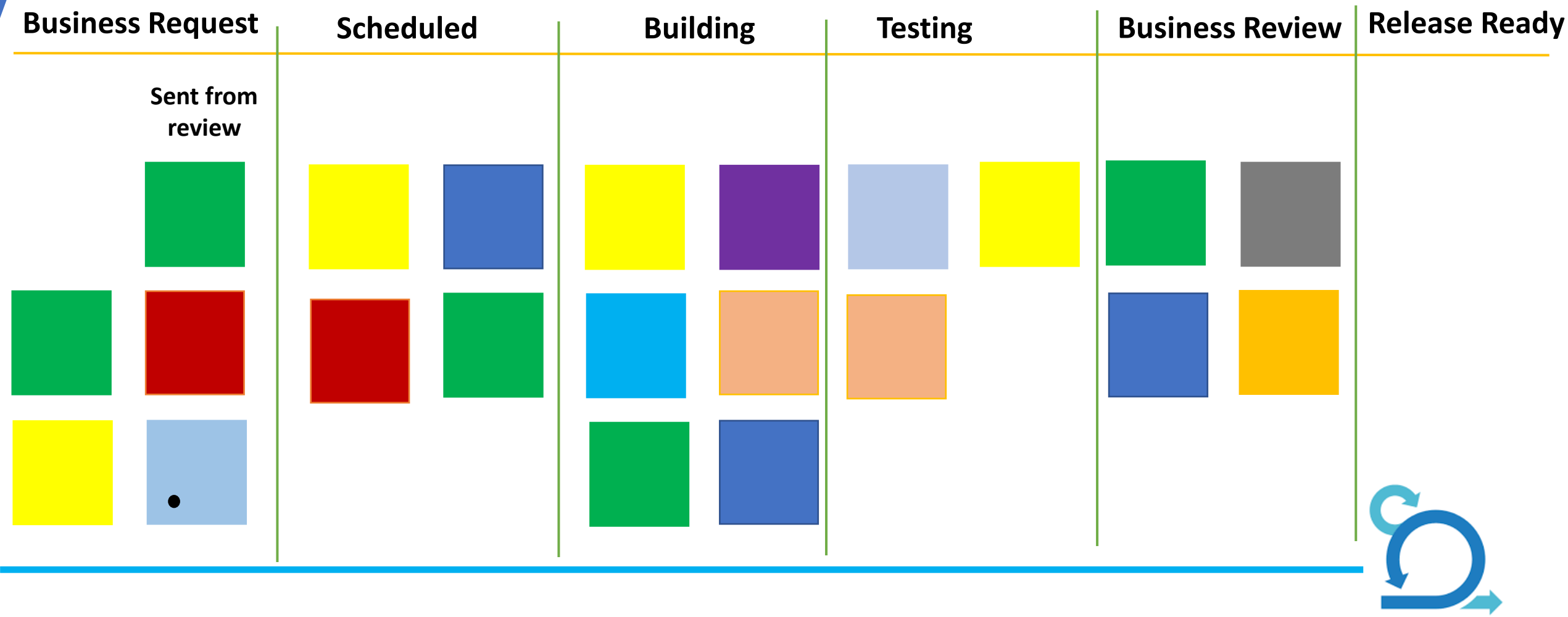
Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

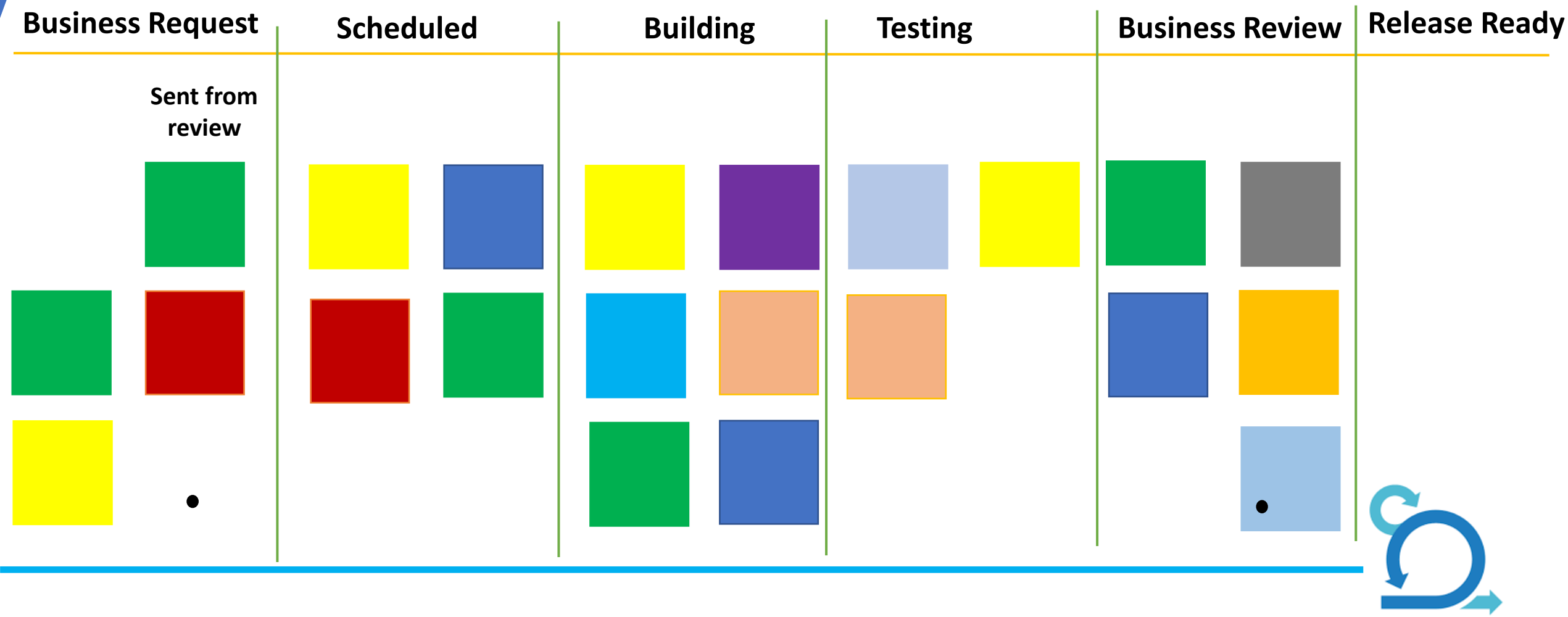
Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban

GenMan Solutions

Finding inefficiencies/issues in the process

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2	**Under utilization of resources** Pending tasks not moving to the next step	Reallocate the resources somewhere else where they can be utilized optimally
3	**Task is taking longer time than it should be**	Keep a regular track of the board Break down the task into smaller sized tasks
4	**Multiple feedback loops**	Make a mark on the task for the number of rounds that task is going for rework

Kanban

GenMan Solutions

Finding inefficiencies/issues in the process

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1	Too much work in progress(WIP) on a single stage **Limiting the WIP**	More team members need to work on that stage (for e.g. testing stage in this scenario) instead of any of the previous stage
2	**Under utilization of resources** Pending tasks not moving to the next step	Reallocate the resources somewhere else where they can be utilized optimally
3	**Task is taking longer time than it should be**	Keep a regular track of the board Break down the task into smaller sized tasks
4	**Multiple feedback loops**	Make a mark on the task for the number of rounds that task is going for rework Find optimum WIP limit for your review step

Finding inefficiencies/issues in the process

Kanban

GenMan Solutions

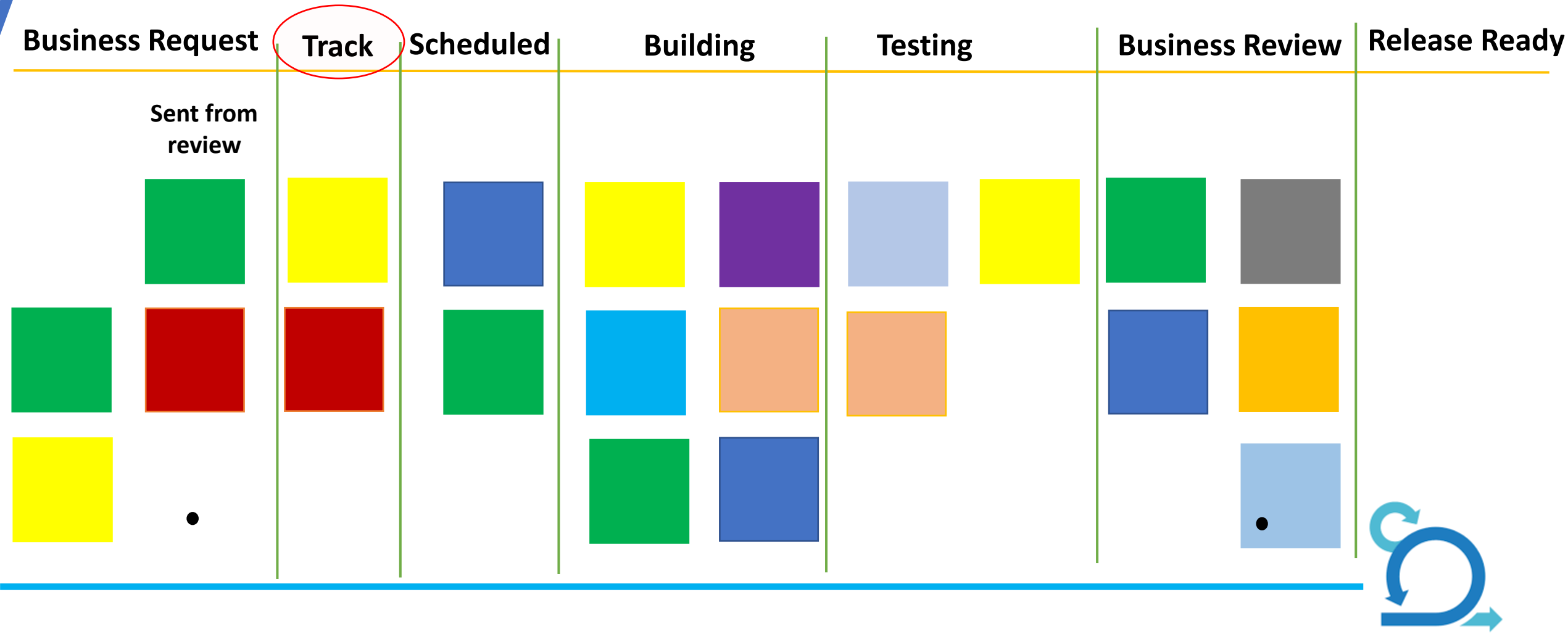
Finding inefficiencies/issues in the process

Sl. no.	Situation	Suggestion
4	**Having a lot of external dependencies**	

Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban

GenMan Solutions

Finding inefficiencies/issues in the process

Sl. no.	Situation	Suggestion
4	**Having a lot of external dependencies**	Develop a practice of regular follow ups on tasks listed in “Tracking” column No need of a WIP limit on this column

Kanban

GenMan Solutions

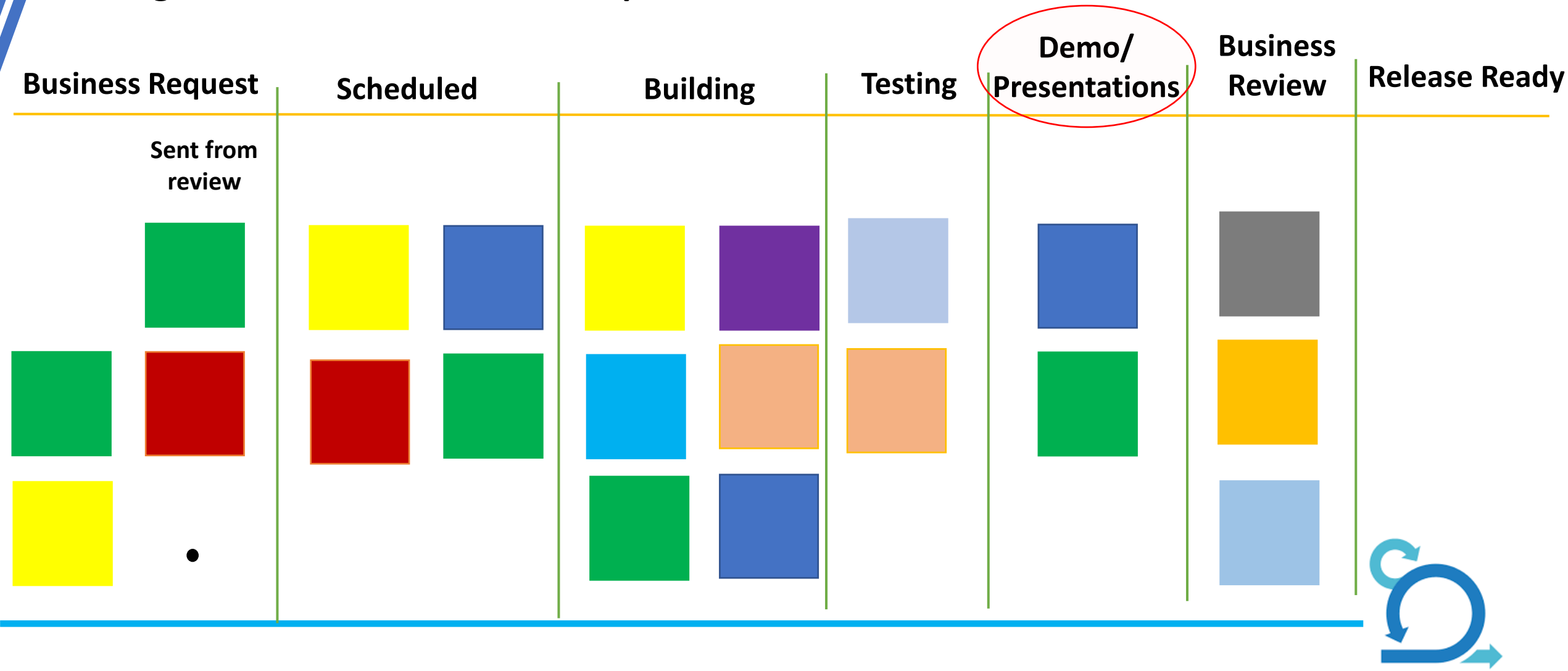
Finding inefficiencies/issues in the process

Sl. no.	Situation	Suggestion
4	**Having a lot of external dependencies**	Develop a practice of regular follow ups on tasks listed in “Tracking” column No need of a WIP limit on this column
5	**Team required to work on non-product features**	

Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban

GenMan Solutions

Finding inefficiencies/issues in the process

Sl. no.	Situation	Suggestion
4	**Having a lot of external dependencies**	Develop a practice of regular follow ups on tasks listed in “Tracking” column No need of a WIP limit on this column
5	**Team required to work on non-product features**	Create a task for such features and keep a track on the same
6	**Automate/Upgrade tasks**	Add such improvement tasks also on the board

Kanban

GenMan Solutions

Finding inefficiencies/issues in the process

Sl. no.	Situation	Suggestion
4	**Having a lot of external dependencies**	Develop a practice of regular follow ups on tasks listed in “Tracking” column No need of a WIP limit on this column
5	**Team required to work on non-product features**	Create a task for such features and keep a track on the same
6	**Automate/Upgrade tasks**	Add such improvement tasks also on the board
7	**Assigning work to new person**	Assign the new person to the slowest step

GenMan Solutions

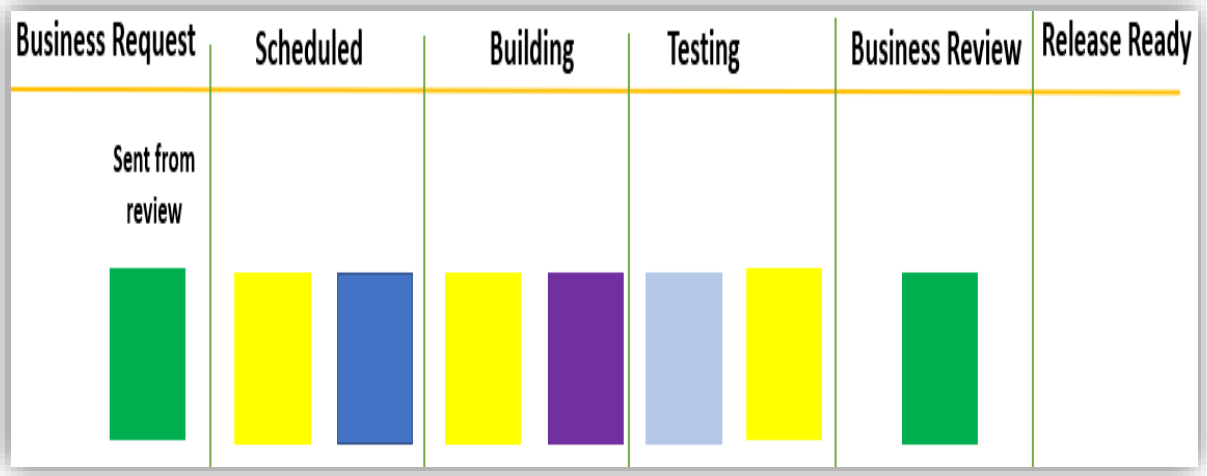
Defining “Done”

Kanban

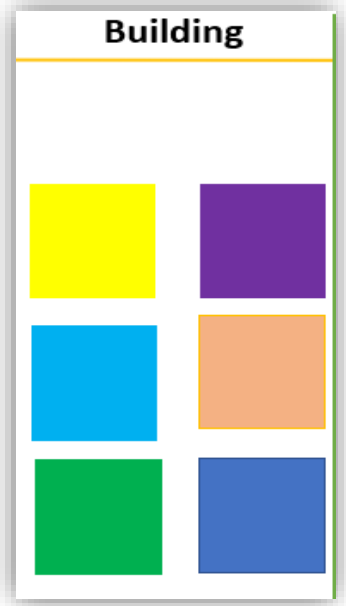
GenMan Solutions

Defining “Done”

Define done for each feature



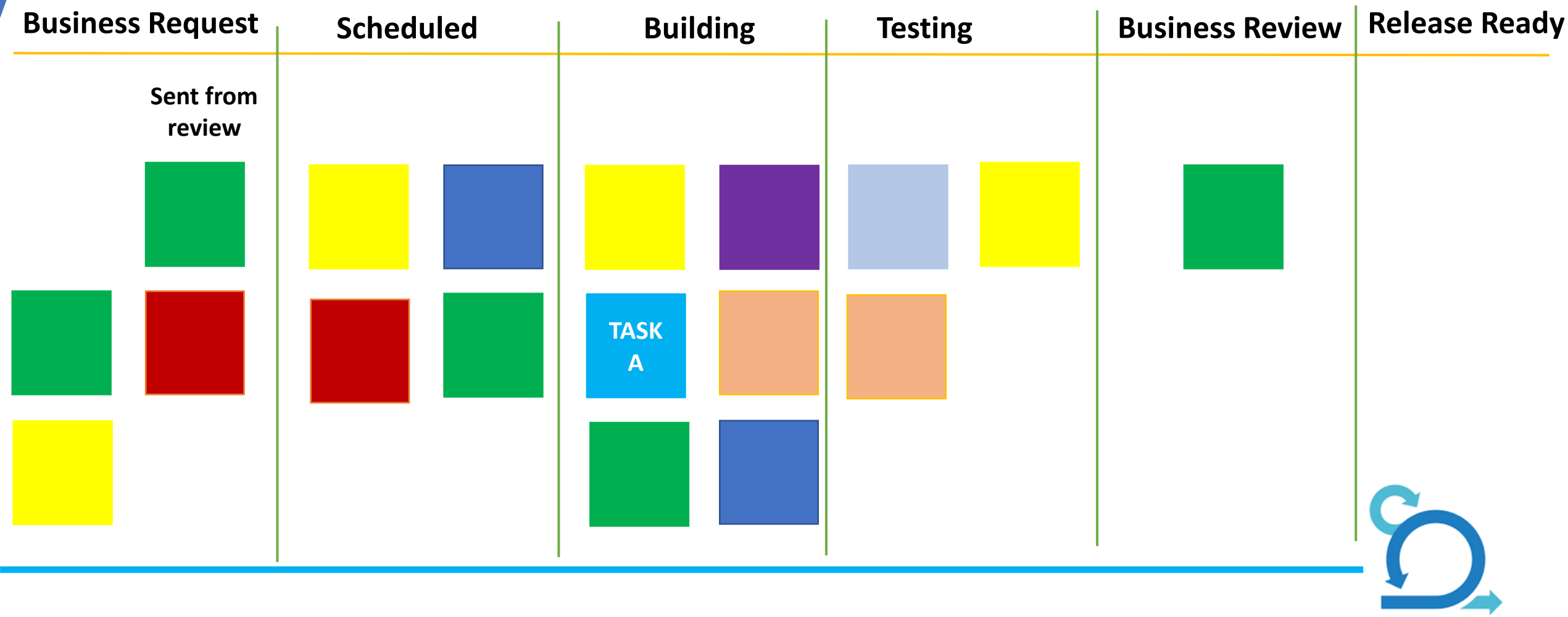
Define completion for each step



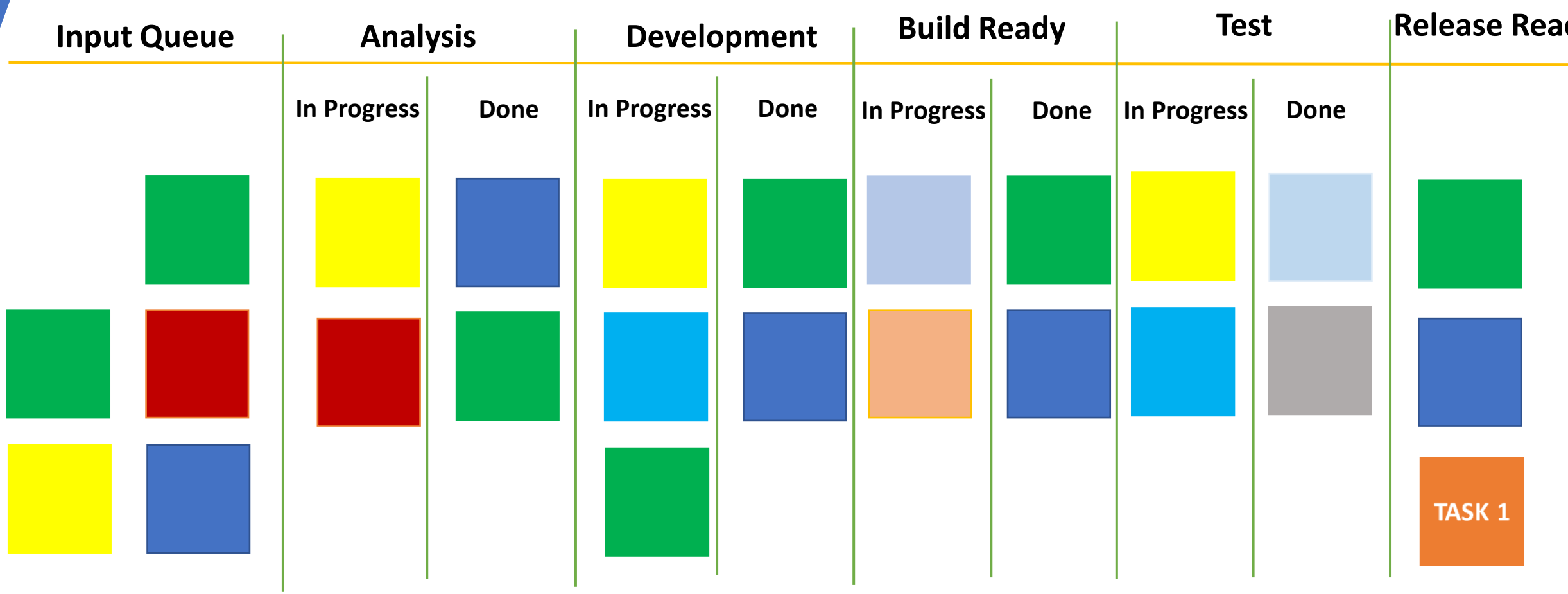
Kanban

GenMan Solutions

Finding inefficiencies/issues in the process



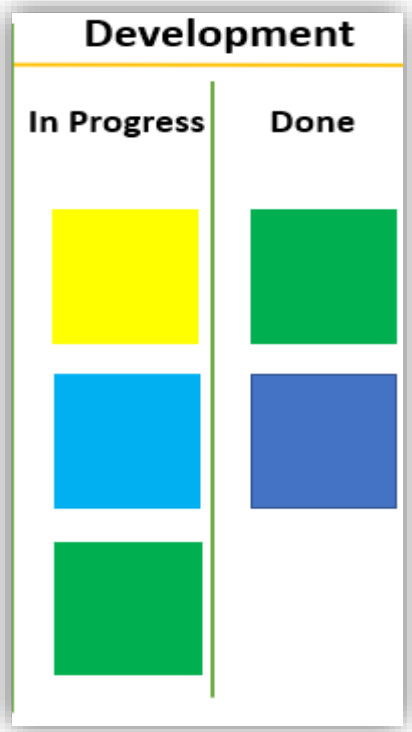
Kanban


Input Queue
Analysis
In Progress
Done
Development
In Progress
Done
Build Ready
In Progress
Done
Test
In Progress
Done
Release Ready
TASK 1

Kanban

GenMan Solutions

Define completion for each step



- If a step is complete on a task, it does **not necessarily mean that the task moves to the next step**
- **Task will simply sit in the done column** of the previous step
- Do not have separate WIP limits for sub columns “In progress” and “Done”
- **Write "Done” rules as notes** on the Kanban board
- **Always check if the rules for “Done” were met** in the previous step or not

GenMan Solutions

The Daily Standup

The Daily Standup

Not a review meeting or demo of features built or discussion about the product etc.

Scrum has rules on:

- How long will be?
- Who will the meeting?
- What will be discussed in the meeting ?

Kanban is flexible with no such rules

- **Any team member can run the meeting** even a fresher
- **No fixed duration of the meeting**, depends on the team's experience
- Daily stand up is the **time to get the board up-to-date, identify issues, highlight problems** if any etc.

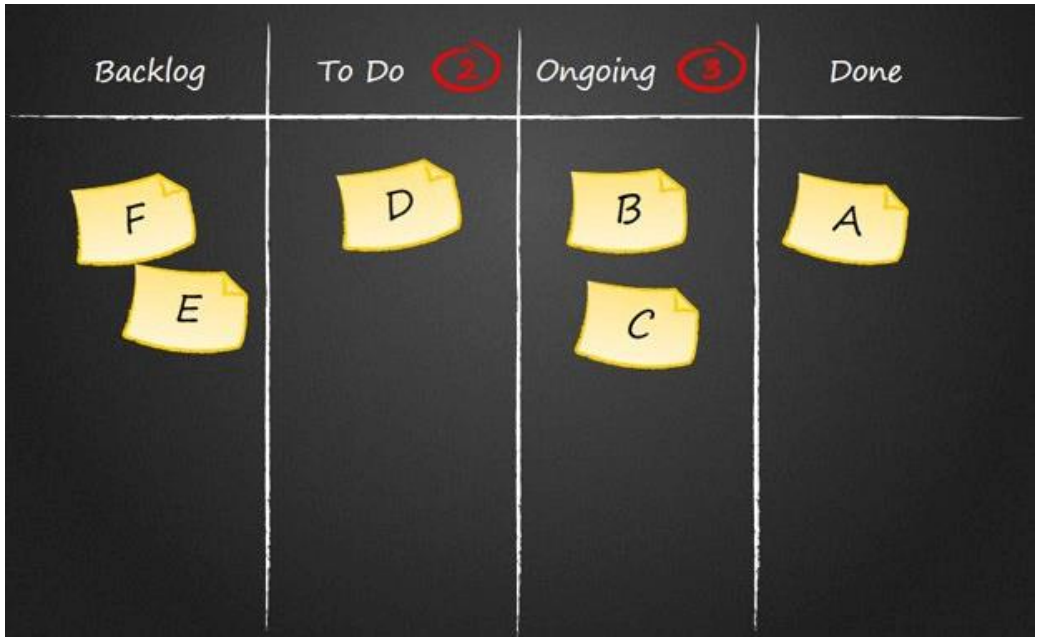
GenMan Solutions

Specifying rules

Specifying rules

Ensure **rules are explicitly mentioned** and **everyone understands** them clearly

- Writing WIP limit on top of the column
- Define “Done”



Extreme Programming (XP)

GenMan Solutions

Extreme Programming (XP) is an agile software development framework that aims to produce higher quality software, and higher quality of life for the development team. XP is the most specific of the agile frameworks regarding appropriate engineering practices for software development.

- Agile Alliance

Why is it called Extreme Programming?

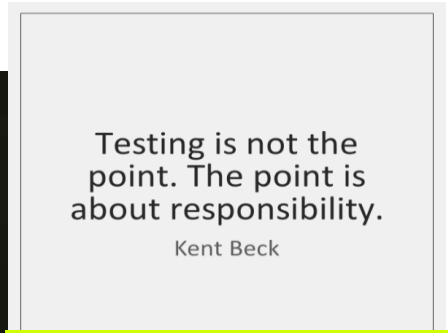
Code Review

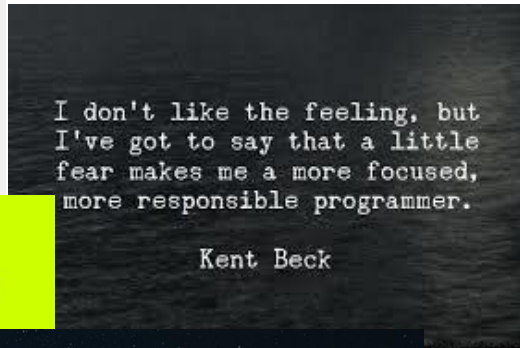
Extreme Programming (XP)

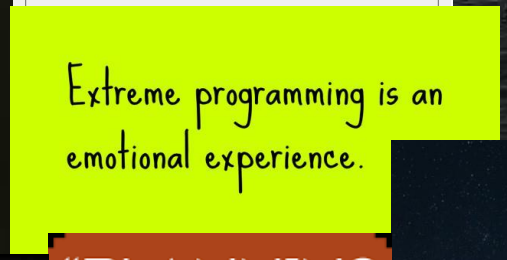
GenMan Solutions

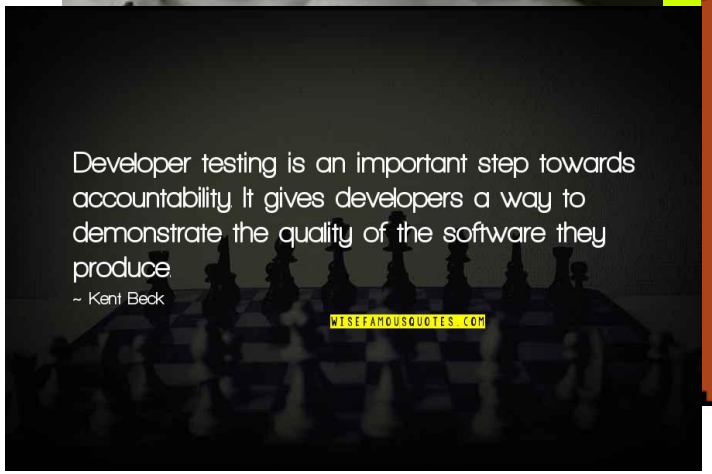
XP was introduced in 1996 by Kent beck

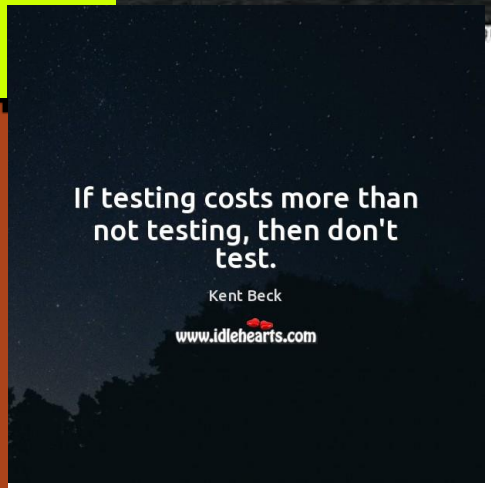
FCA
FIAT CHRYSLER AUTOMOBILES











Extreme Programming (XP)

GenMan Solutions

Extreme Programming is all about…

- Client satisfaction
- Bringing the social change
- Adaptiveness

It ran into controversy around…

- Pair programming
- Incremental design
- Scalability

Extreme Programming (XP)

GenMan Solutions

Values behind XP practices and methods

- Simplicity
- Communication
- Courage
- Feedback
- Respect

Extreme Programming (XP)

GenMan Solutions

Values behind XP practices and methods

- **Simplicity**
- Communication
- Courage
- Feedback
- Respect

Extreme Programming (XP)

GenMan Solutions

Values behind XP practices and methods

- Simplicity
- **Communication**
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Extreme Programming (XP)

GenMan Solutions

Values behind XP practices and methods

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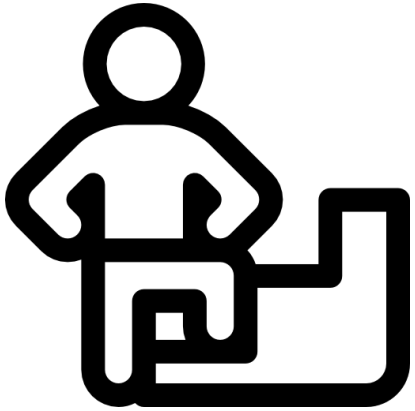


Extreme Programming (XP)

GenMan Solutions

Values behind XP practices and methods

- Simplicity
- Communication
- Courage
- **Feedback**
- Respect

Extreme Programming (XP)

GenMan Solutions

Values behind XP practices and methods

- Simplicity
- Communication
- Courage
- Feedback
- **Respect**

Extreme Programming (XP)

GenMan Solutions

Practice Exercise

The development team is organized into pairs, with each pair working in front of a single workstation.

Which of the five aspects of extreme programming do you think that this improves?

A. Communication
B. Simplicity
C. Feedback
D. Respect
E. Courage

Extreme Programming

GenMan Solutions

Mentality of Sufficiency

How would you program if you had all the time in the world?

- Write Tests
- Restructure your code often
- Talk to fellow programmers and with the customer often

Extreme Programming Practices

GenMan Solutions

Primary Practices

Part 1	Part 2
Sit Together	Stories
Whole Team	Weekly Cycle
Informative Workspace	Quarterly Cycle
Energized Work	Slack
Pair Programming	Ten-Minute Build
	Continuous Integration
	Test First Programming
	Incremental Design

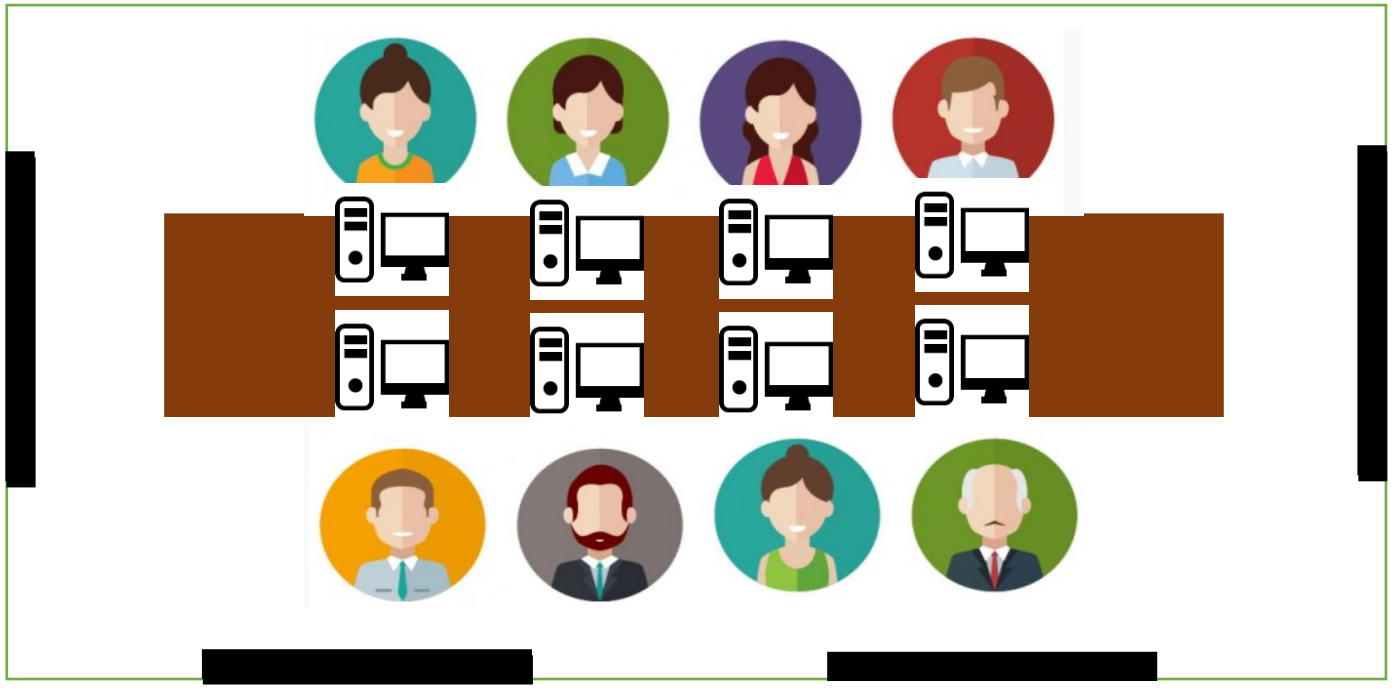
Corollary Practices : Refer to the resources section

Extreme Programming Practices

GenMan Solutions

Primary Practices

Sit Together
Whole Team
Informative Workspace
Energized Work
Pair Programming



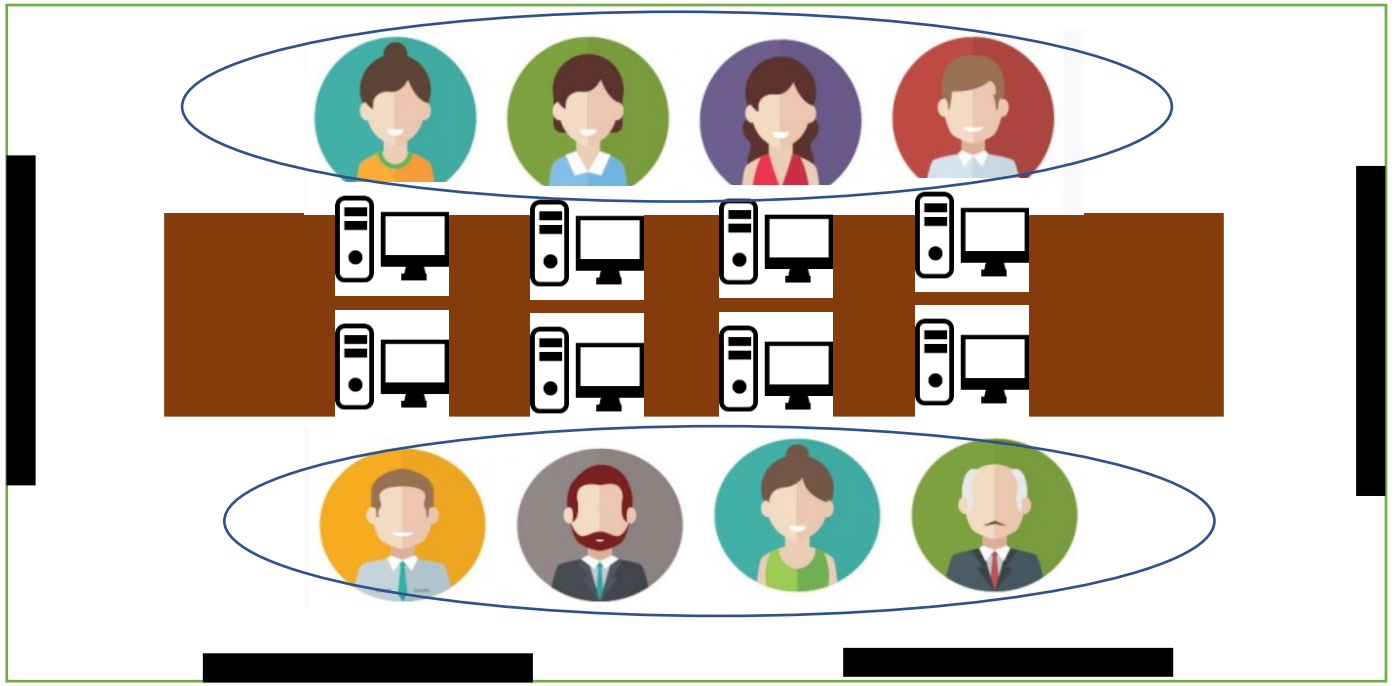
All members are accessible to each other

Extreme Programming Practices

GenMan Solutions

Primary Practices

- Sit Together
- **Whole Team**
- Informative Workspace
- Energized Work
- Pair Programming



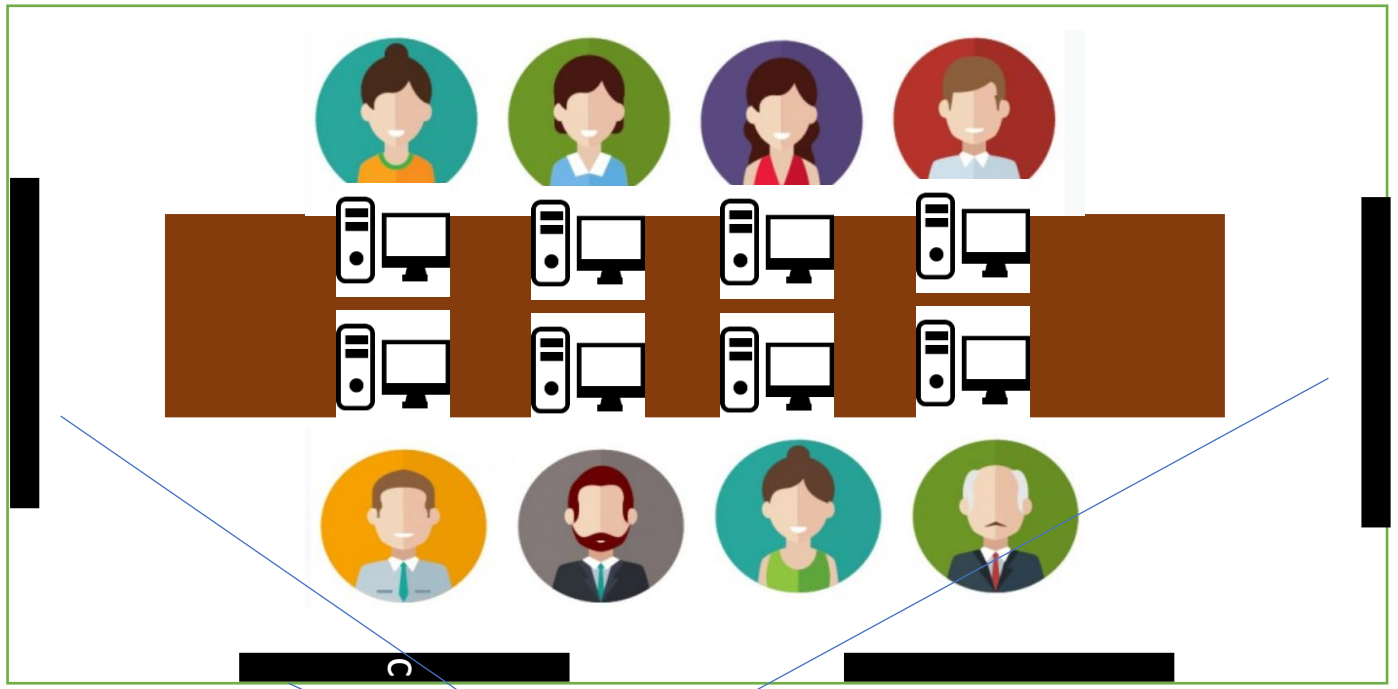
All the required skills are available to plan, develop, build, test & release

Extreme Programming Practices

GenMan Solutions

Primary Practices

- Sit Together
- Whole Team
- **Informative Workspace**
- Energized Work
- Pair Programming



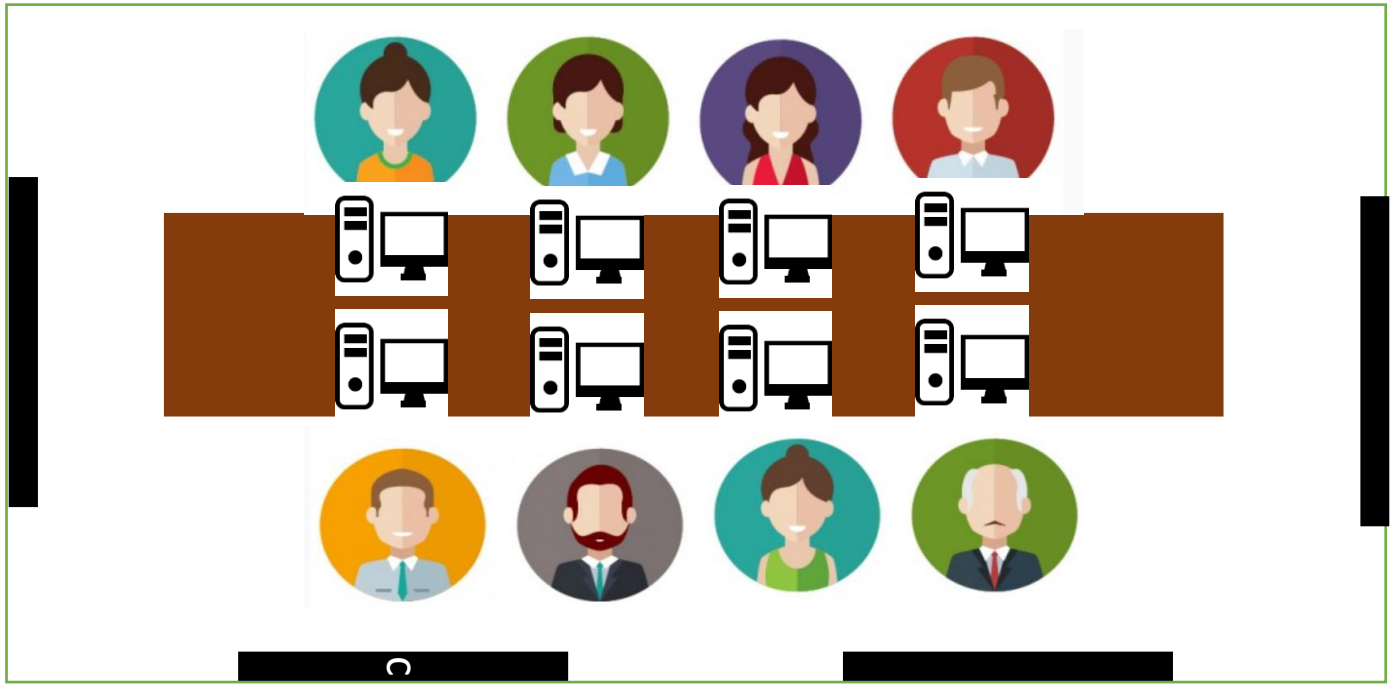
Visual & Information

Extreme Programming Practices

GenMan Solutions

Primary Practices

- Sit Together
- Whole Team
- Informative Workspace
- **Energized Work**
- Pair Programming



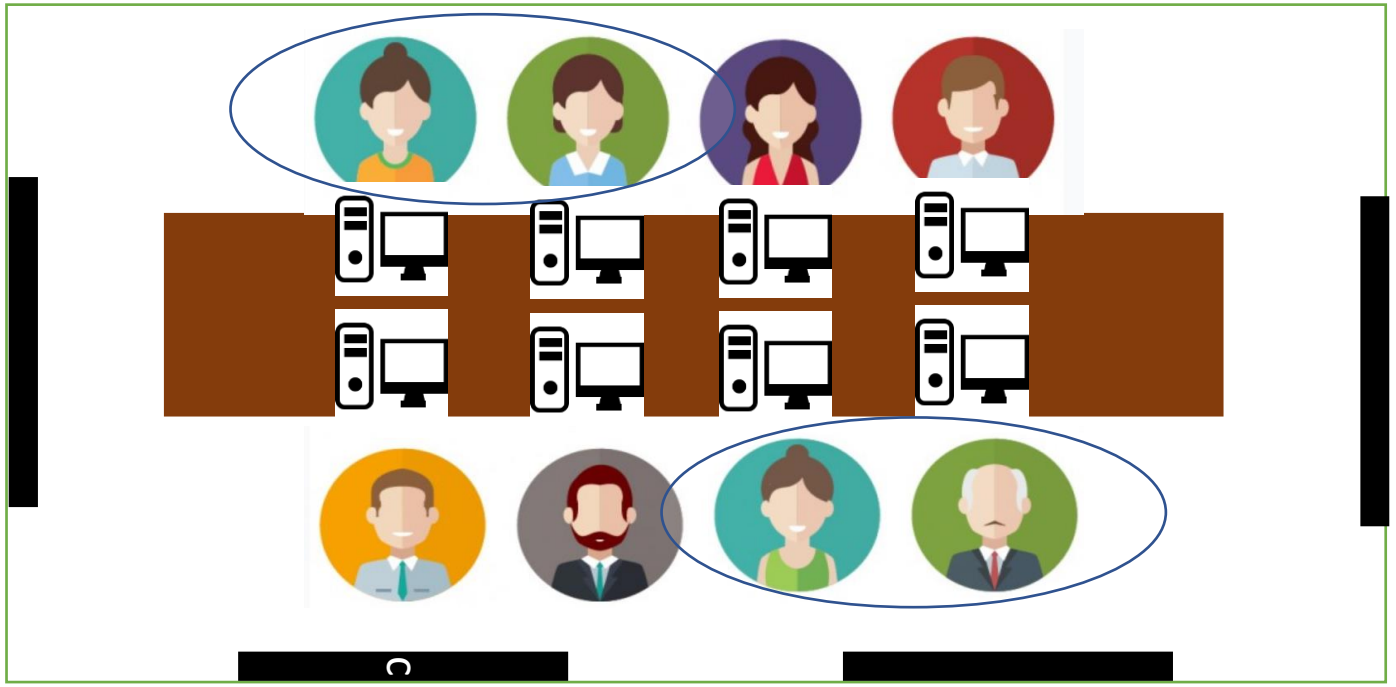
40 Hours
Sustainable

Extreme Programming Practices

GenMan Solutions

Primary Practices

- Sit Together
- Whole Team
- Informative Workspace
- Energized Work
- **Pair Programming**



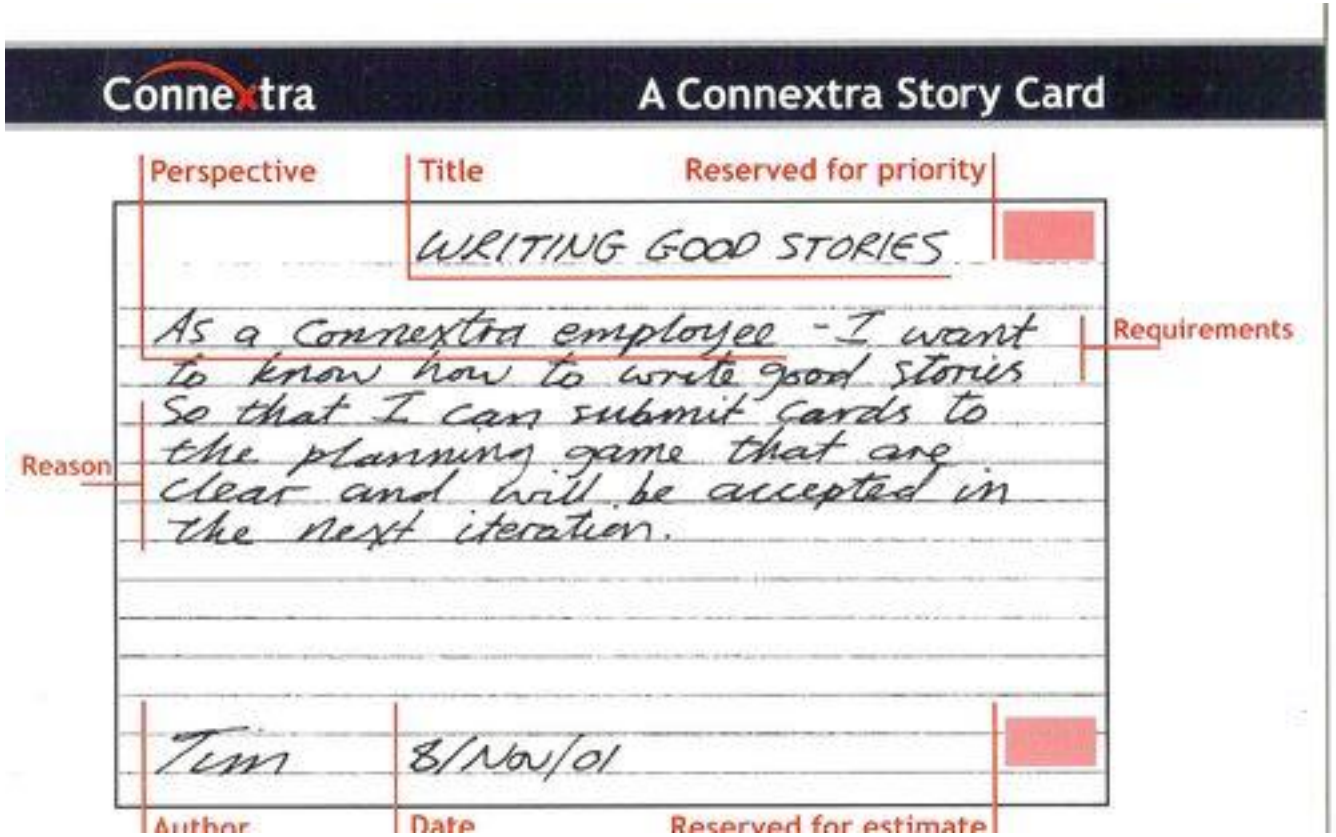
Pair Programming

Extreme Programming Practices

GenMan Solutions

Primary Practices

Stories
Weekly Cycle
Quarterly Cycle
Slack
Ten-Minute Build
Continuous Integration
Test First Programming
Incremental Design



Extreme Programming Practices

GenMan Solutions

Primary Practices

Stories
Weekly Cycle
Quarterly Cycle
Slack
Ten-Minute Build
Continuous Integration
Test First Programming
Incremental Design

Week 1	Week 2	Week 3	Week …

Extreme Programming Practices

GenMan Solutions

Primary Practices

Stories
Weekly Cycle
Quarterly Cycle
Slack
Ten-Minute Build
Continuous Integration
Test First Programming
Incremental Design

Quarter 1	Quarter 2	Quarter 3	Quarter …

Extreme Programming Practices

GenMan Solutions

Primary Practices

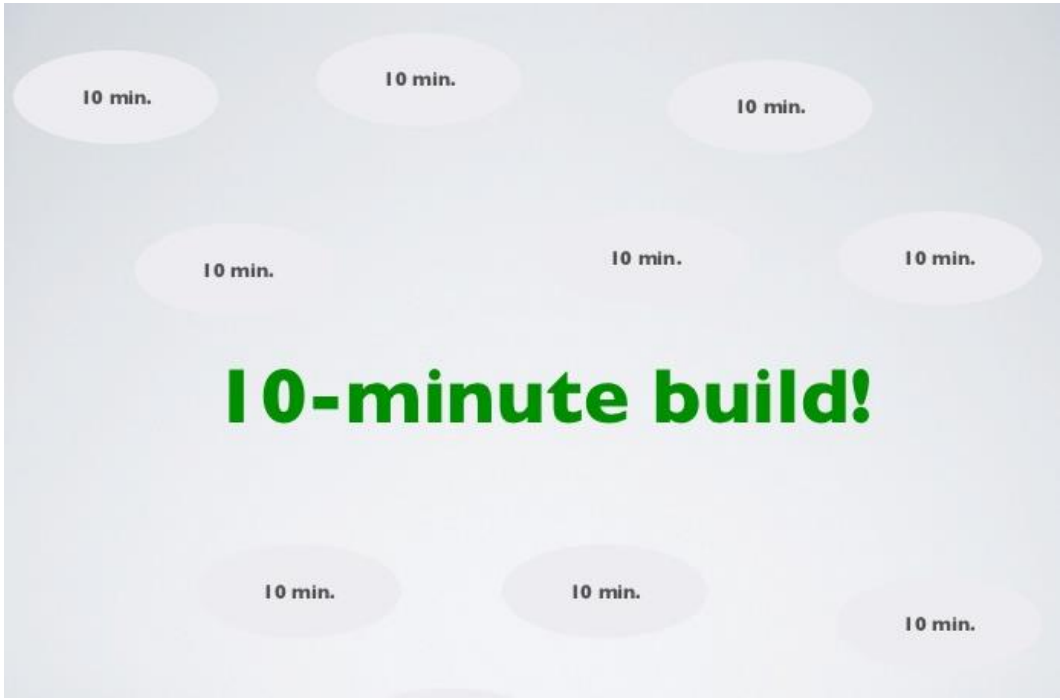
Stories
Weekly Cycle
Quarterly Cycle
Slack
Ten-Minute Build
Continuous Integration
Test First Programming
Incremental Design

Extreme Programming Practices

GenMan Solutions

Primary Practices

Stories
Weekly Cycle
Quarterly Cycle
Slack
Ten-Minute Build
Continuous Integration
Test First Programming
Incremental Design

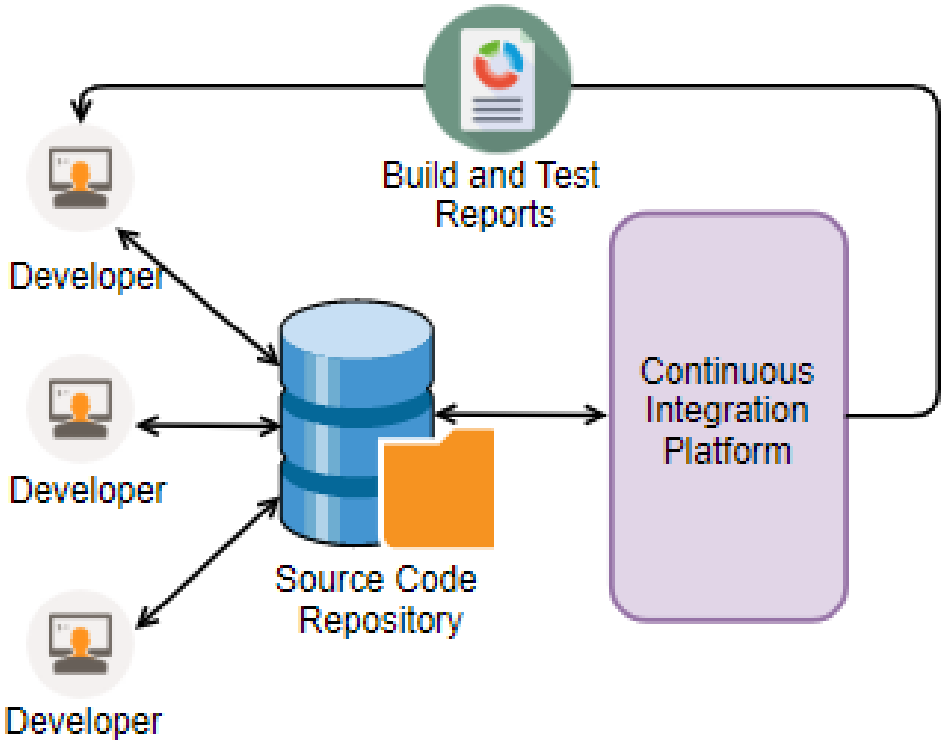


Extreme Programming Practices

GenMan Solutions

Primary Practices

Stories
Weekly Cycle
Quarterly Cycle
Slack
Ten-Minute Build
Continuous Integration
Test First Programming
Incremental Design



Asynchronous Integration and Synchronous Integration

Extreme Programming Practices

GenMan Solutions

Primary Practices

Stories
Weekly Cycle
Quarterly Cycle
Slack
Ten-Minute Build
Continuous Integration
Test First Programming
Incremental Design

develop code -> write tests -> run tests 

The practice of Test-First Programming follows the path of:

Write failing automated test -> Run failing test -> develop code to make test pass -> run test -> repeat

Extreme Programming Practices

GenMan Solutions

Primary Practices

Stories
Weekly Cycle
Quarterly Cycle
Slack
Ten-Minute Build
Continuous Integration
Test First Programming
Incremental Design