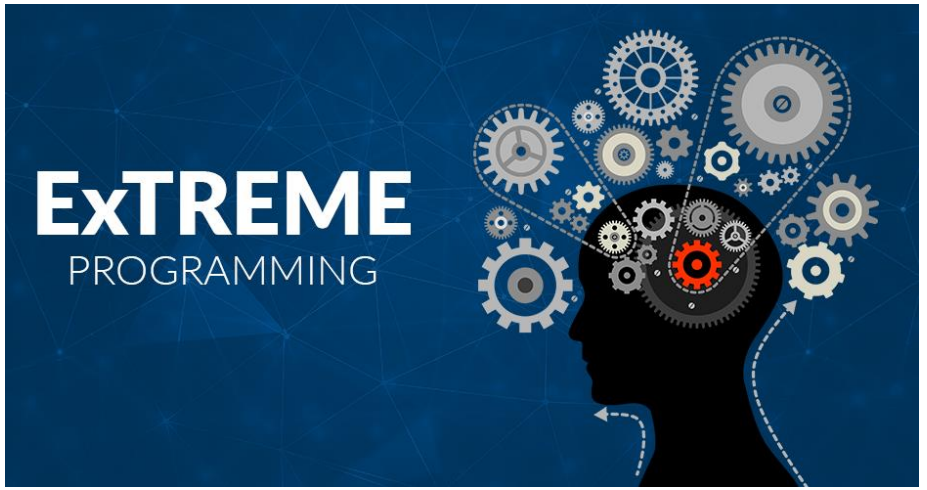
Introduction to Kanban

GenMan Solutions

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

Scrum: Has Strict Rules



Extreme Programming: Has Strict Practices

Introduction to Kanban

GenMan Solutions

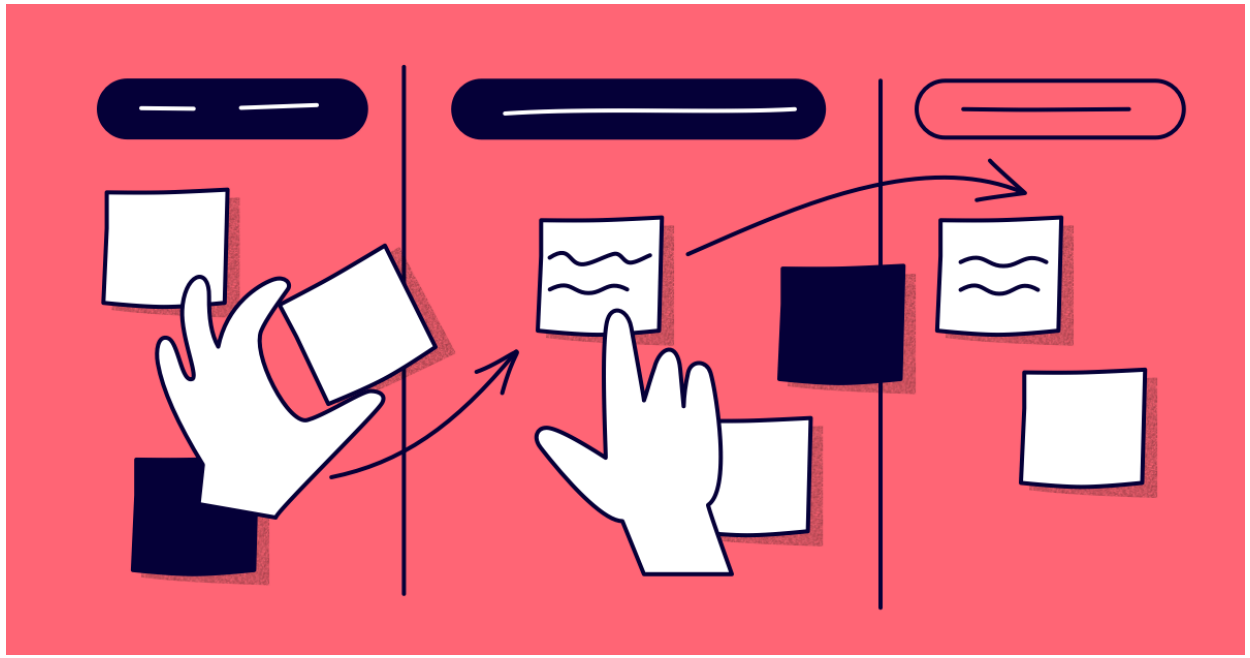
Kan 看 ban 板

- Kan = Card
- Ban = Signal

TOYOTA

Identified bottlenecks in the car making process using Kanban

Introduction to Kanban

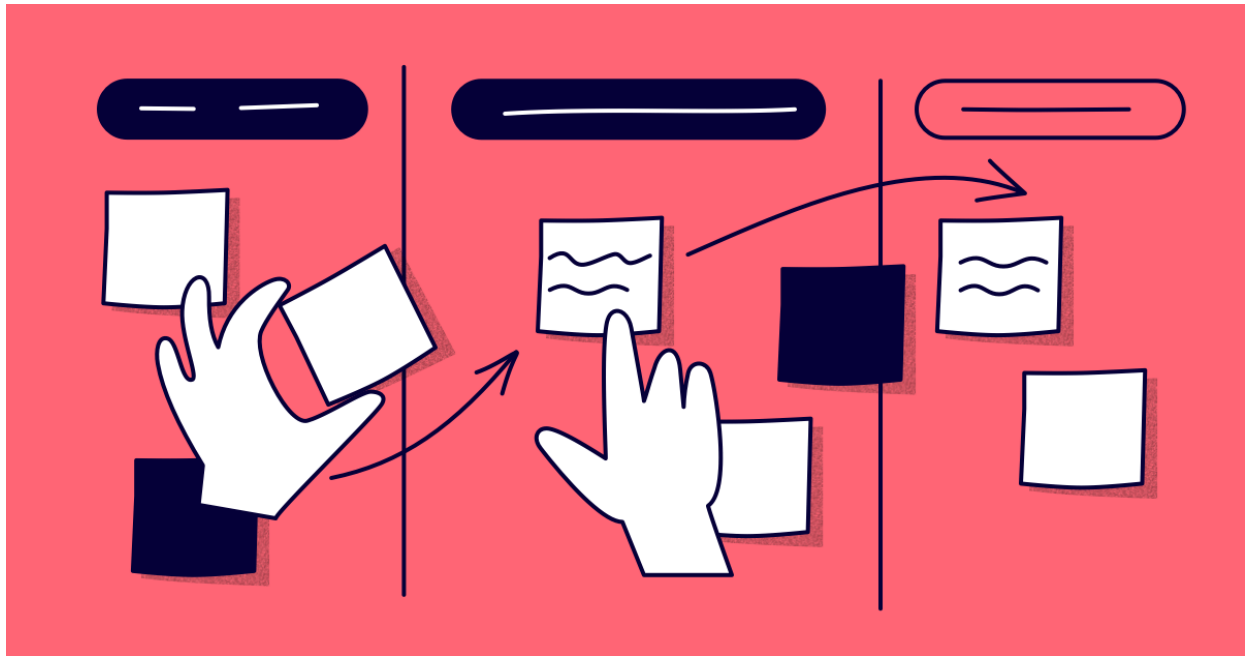


Visualizing the workflow

to

achieve process improvement

Introduction to Kanban



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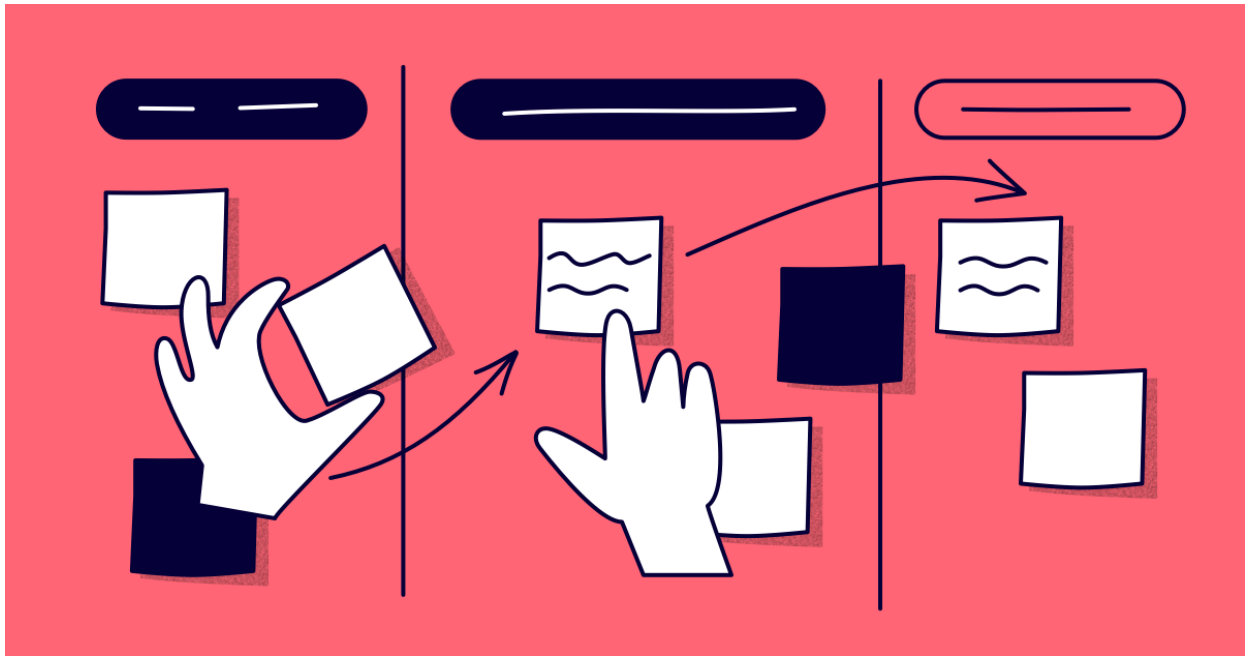


Visualizing the workflow

to

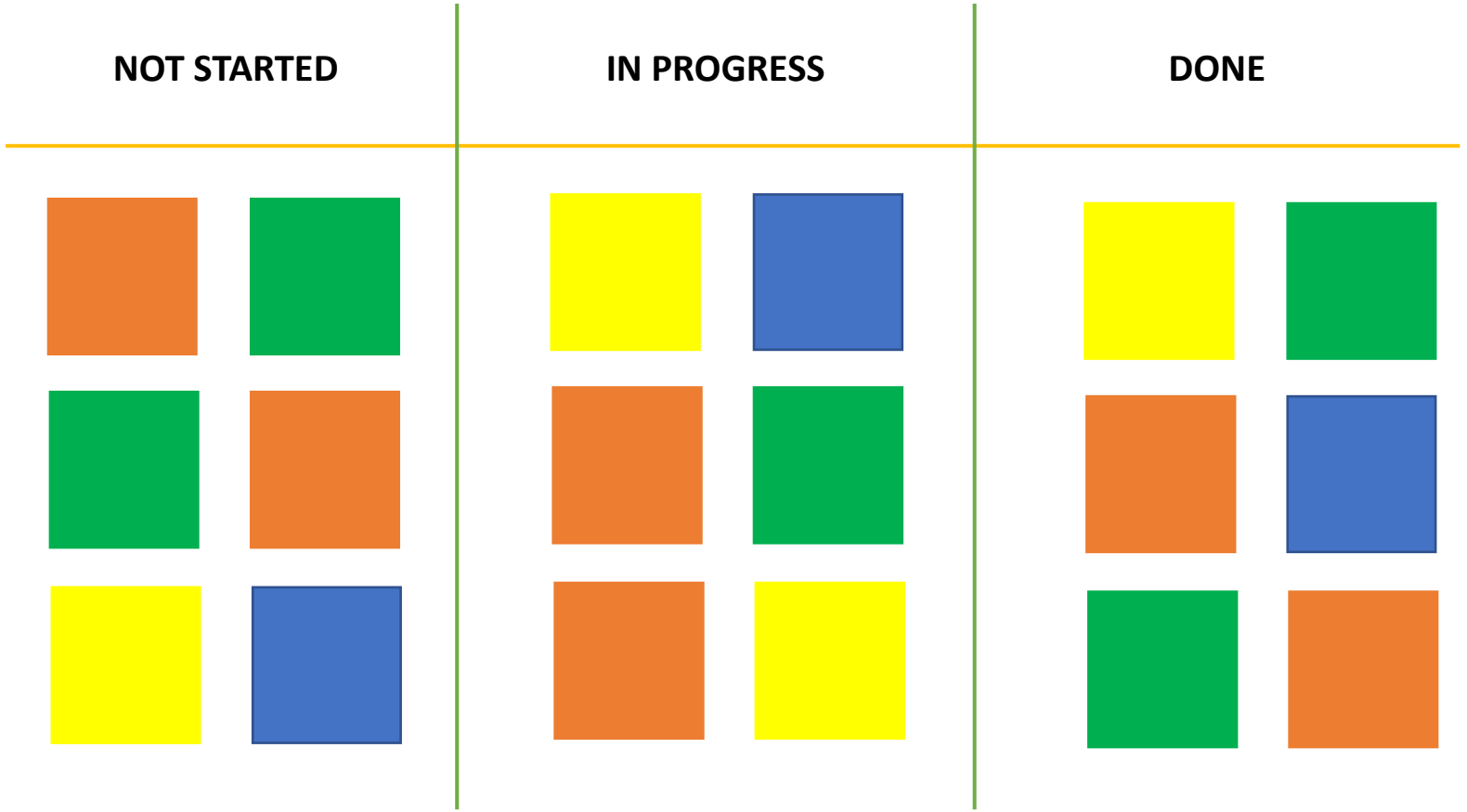
achieve process improvement

Limitin progress

M low

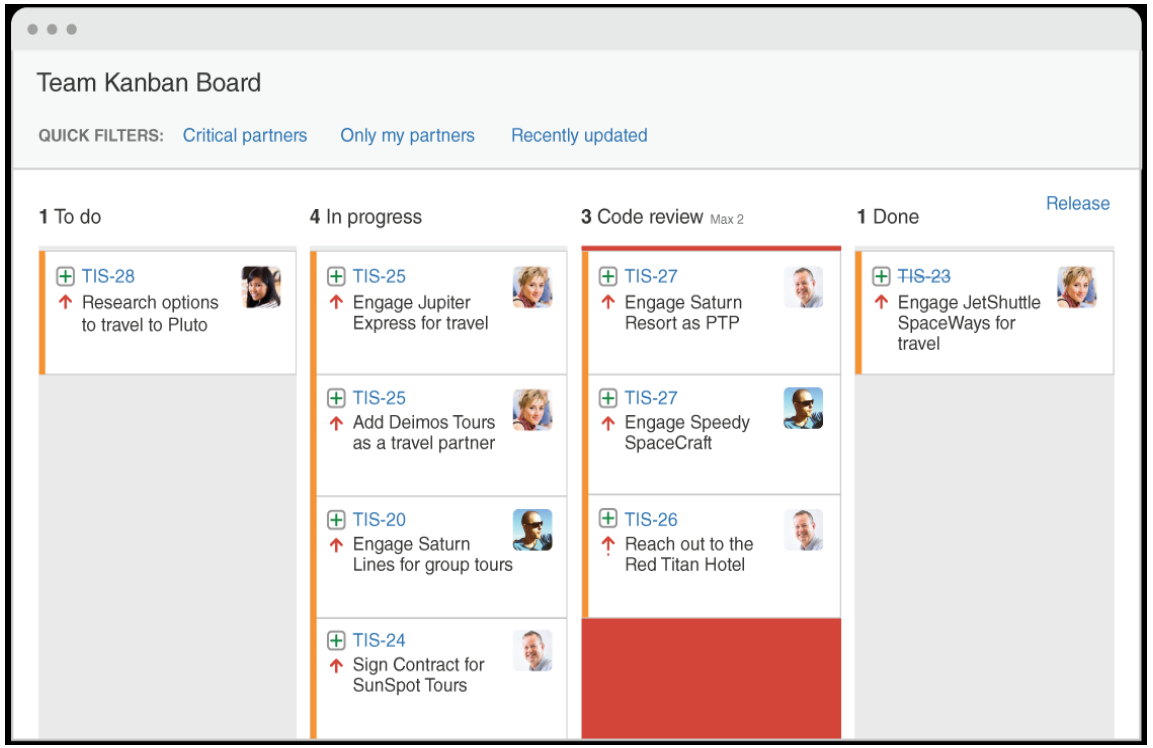
Impleme ack loops

Kanban Board



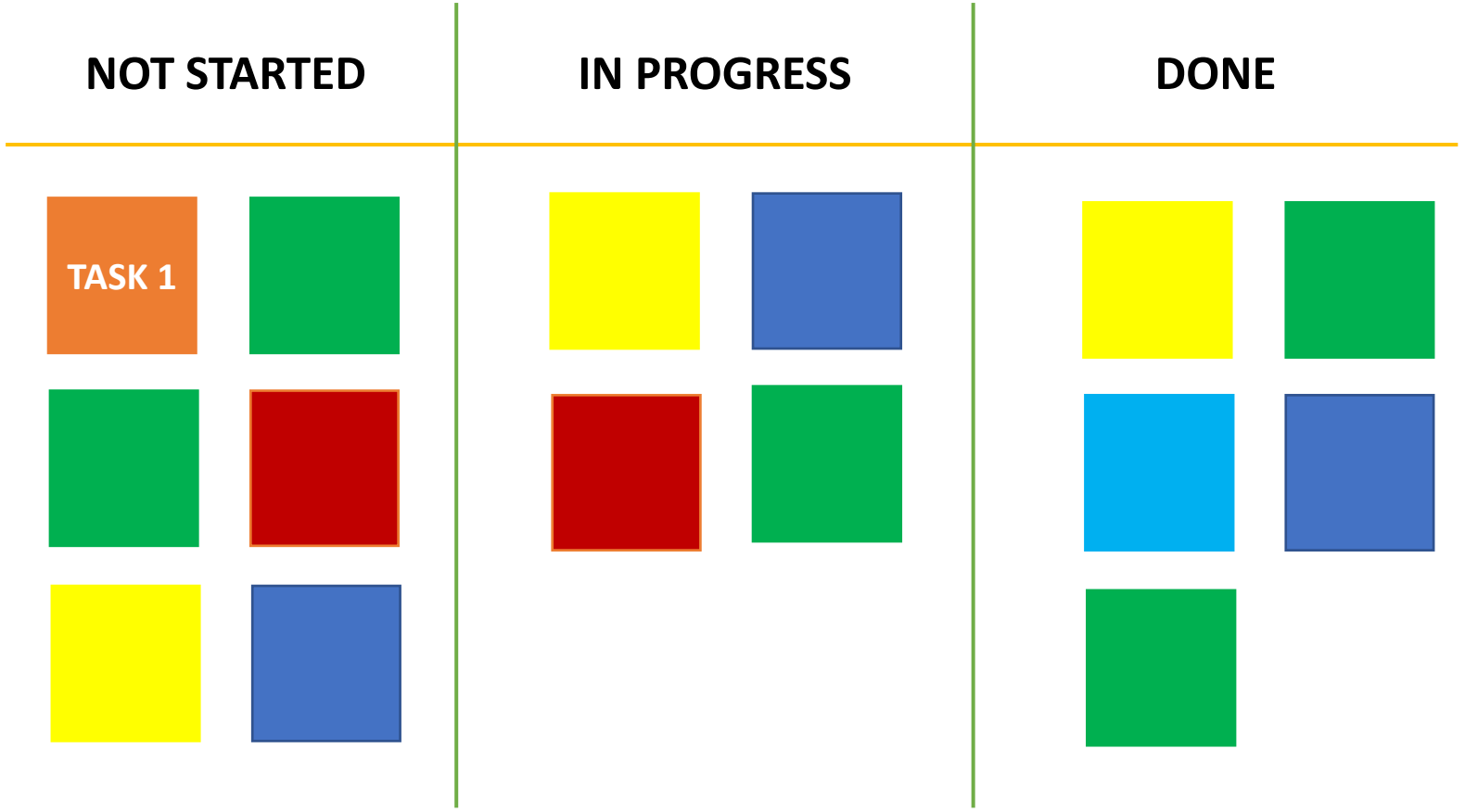
Kanban Board

Physical Kanban Board



Software Based Board

Kanban Board



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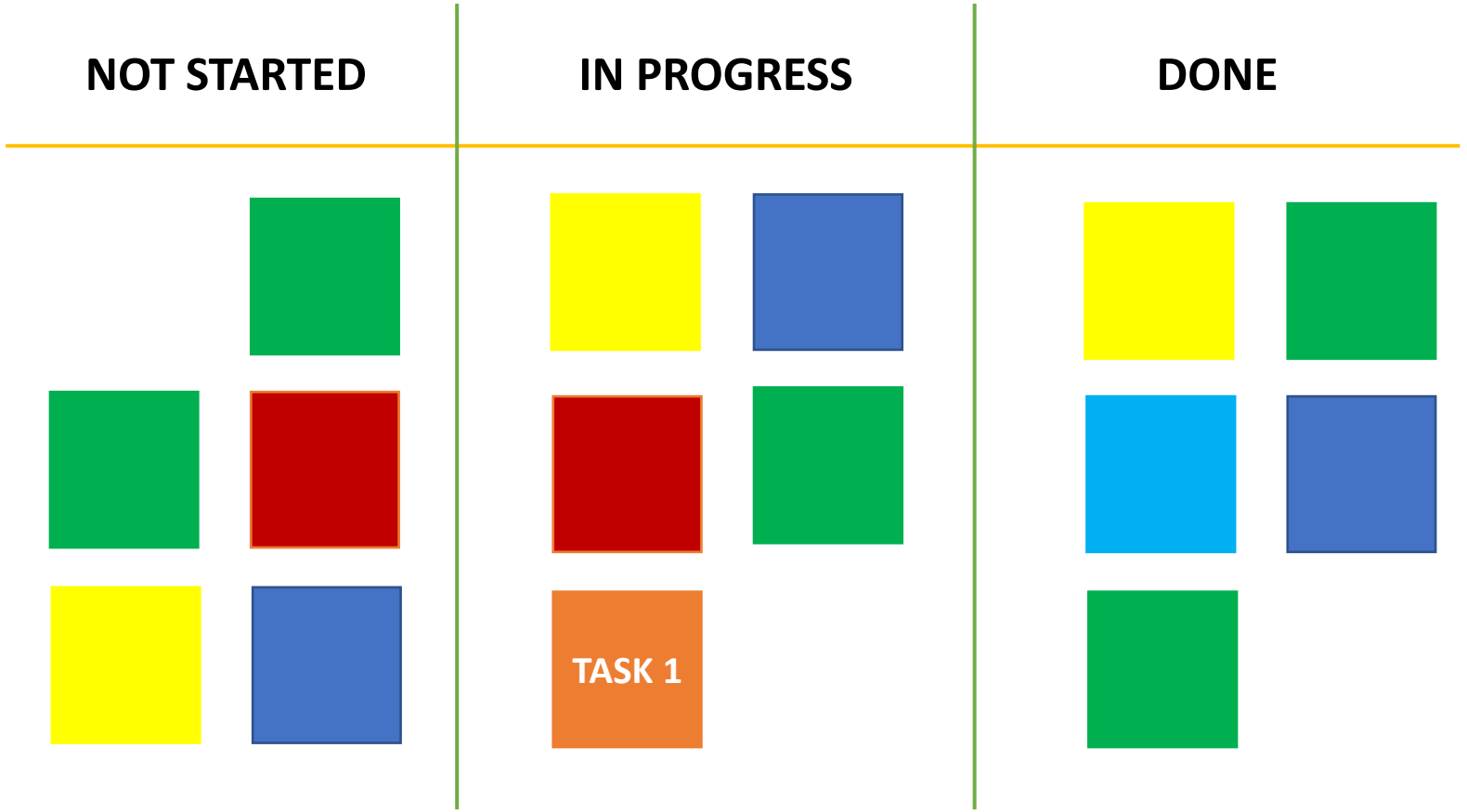

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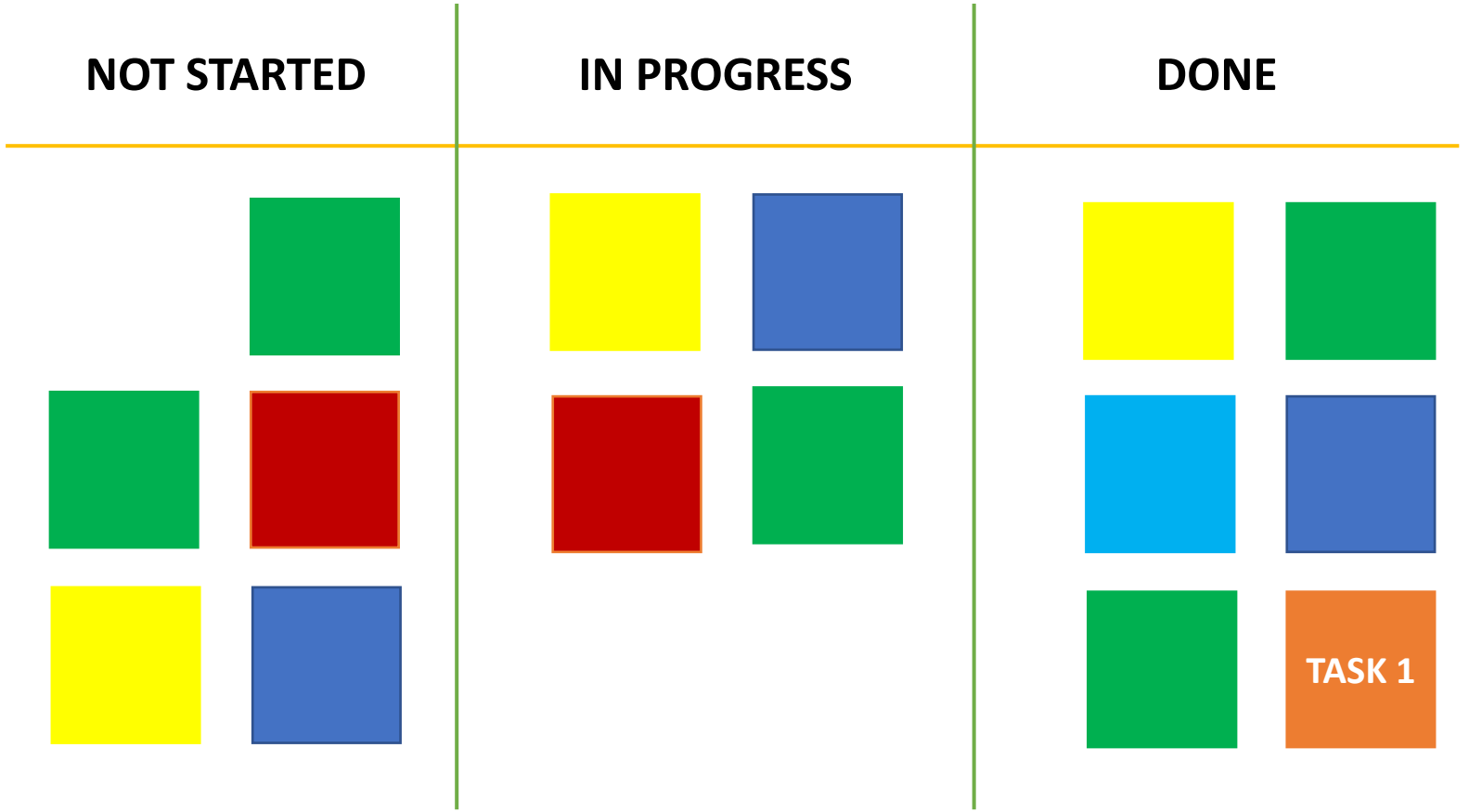

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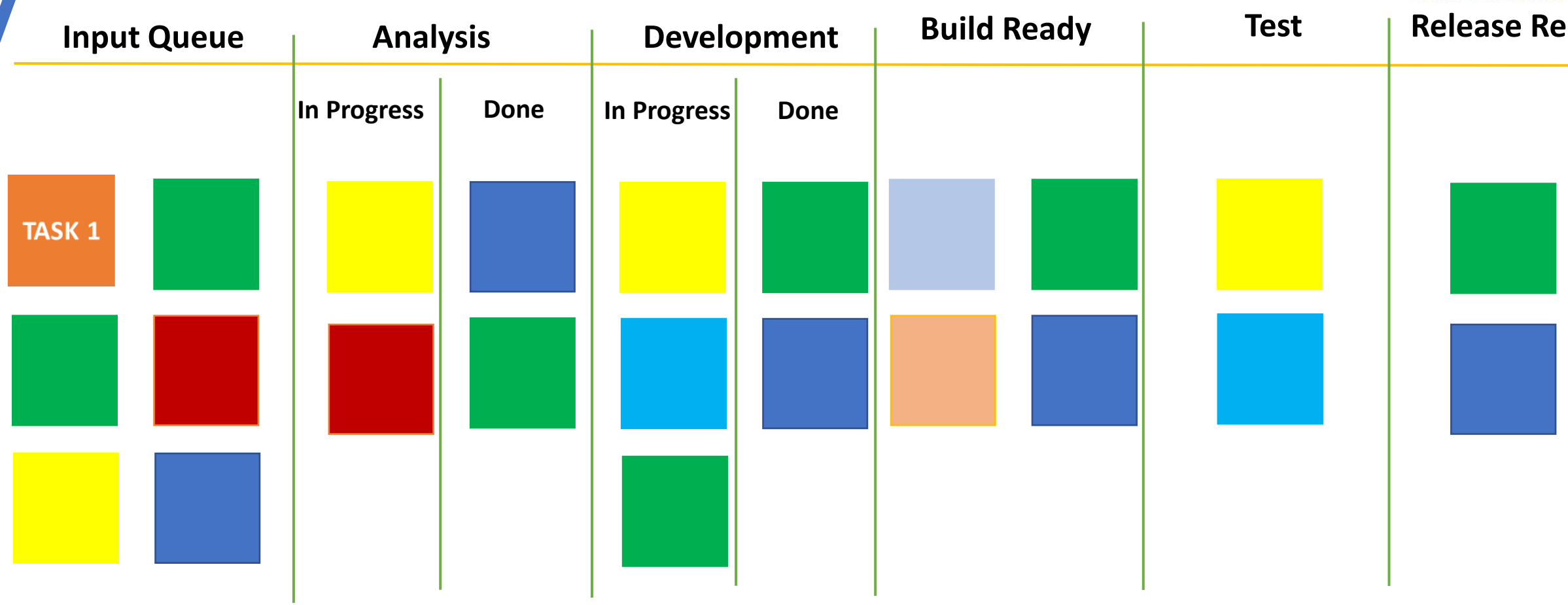
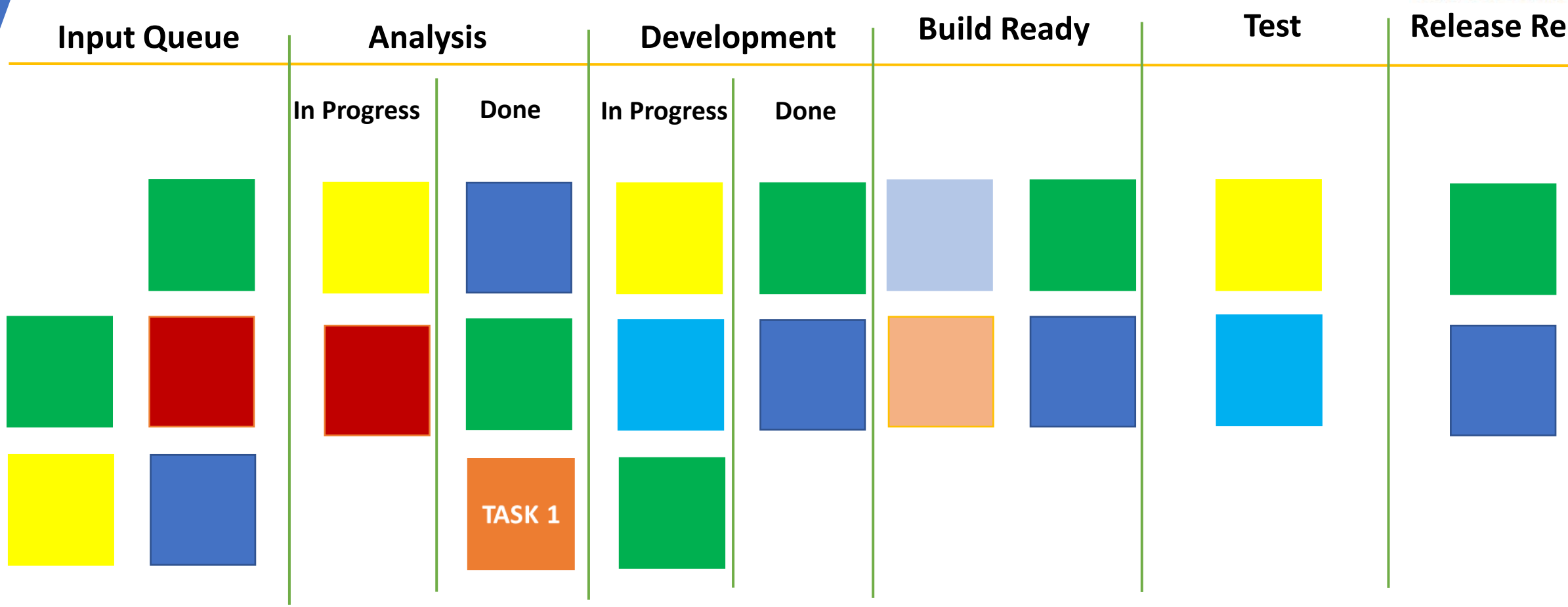


Board Reference: David Anderson's "Kanban"

Kanban Board



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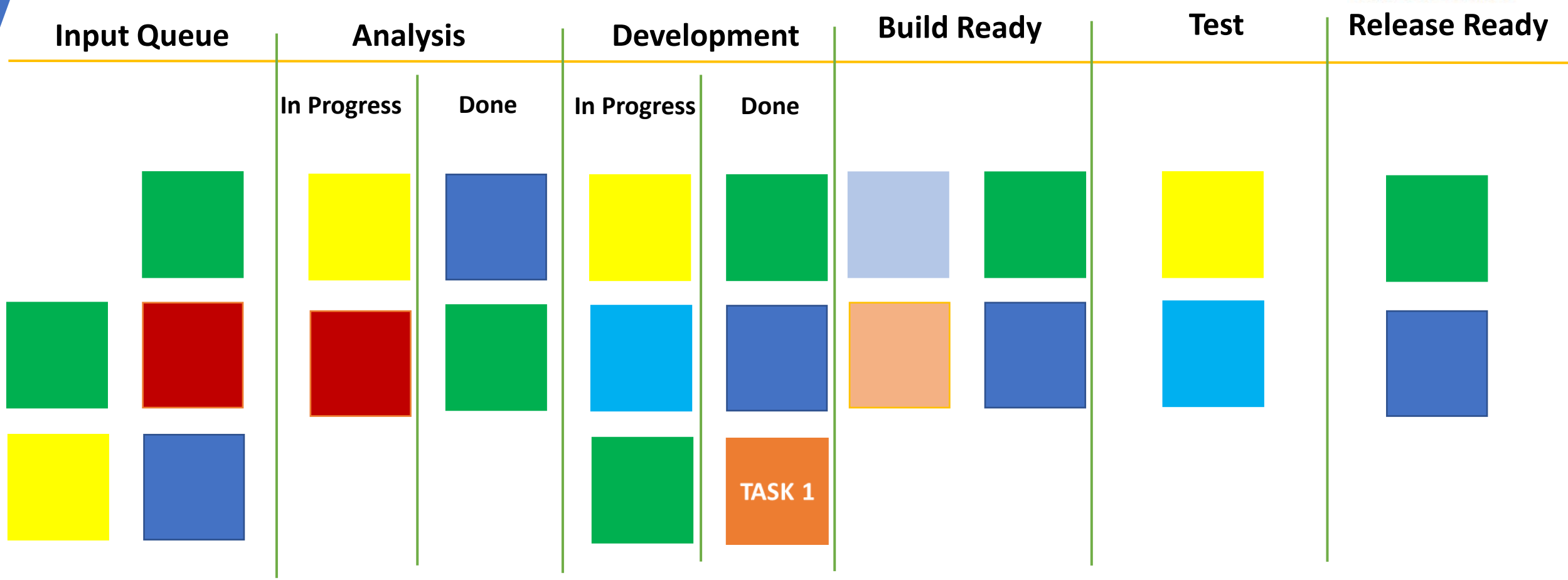

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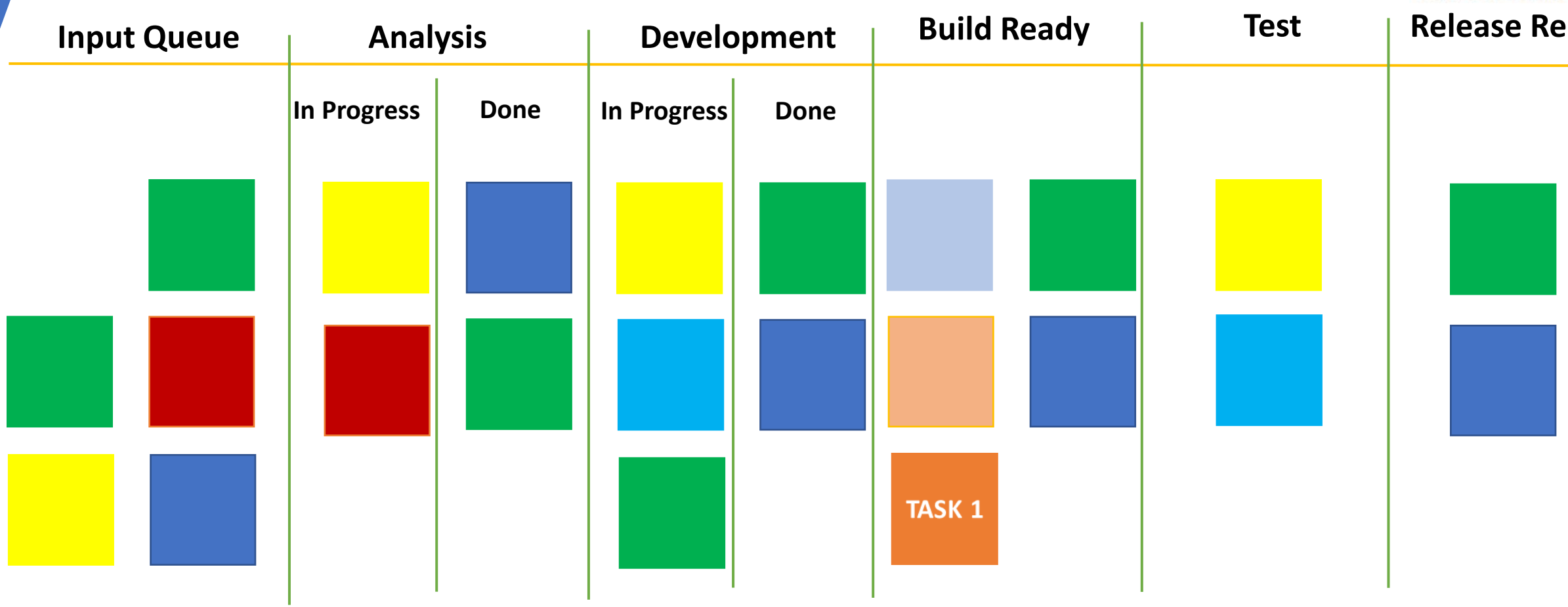

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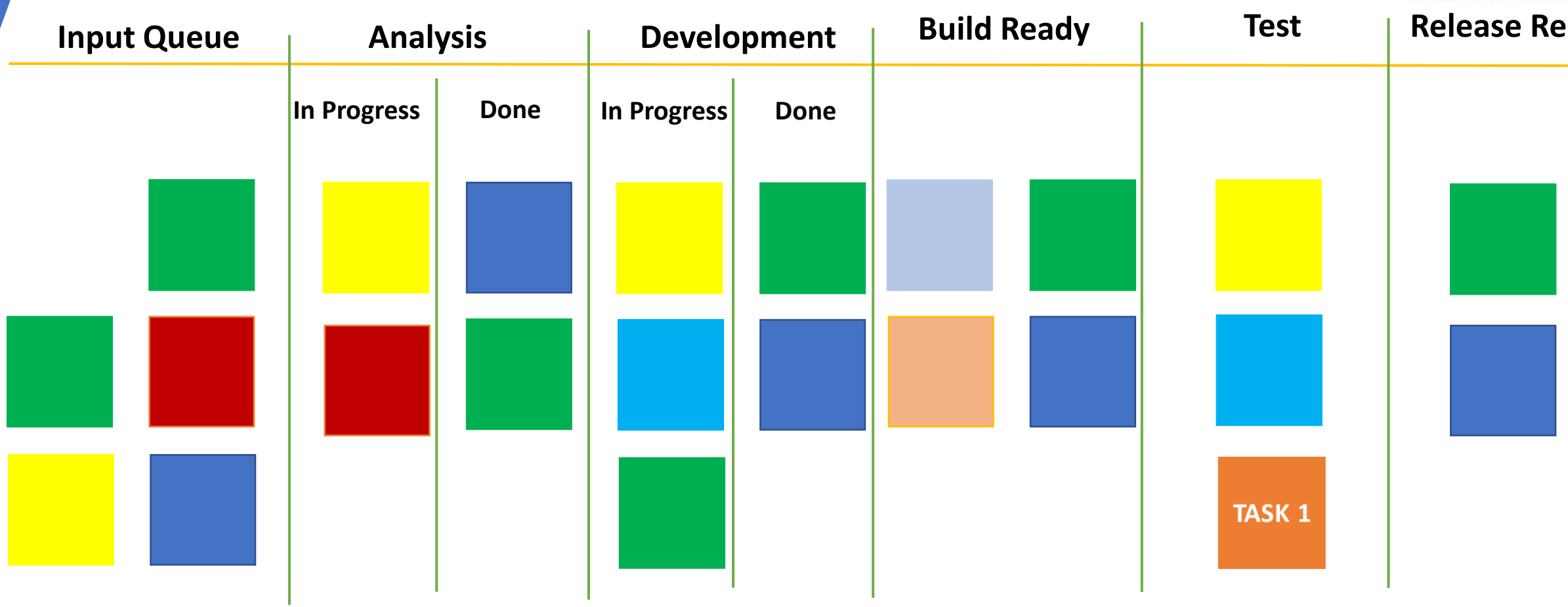

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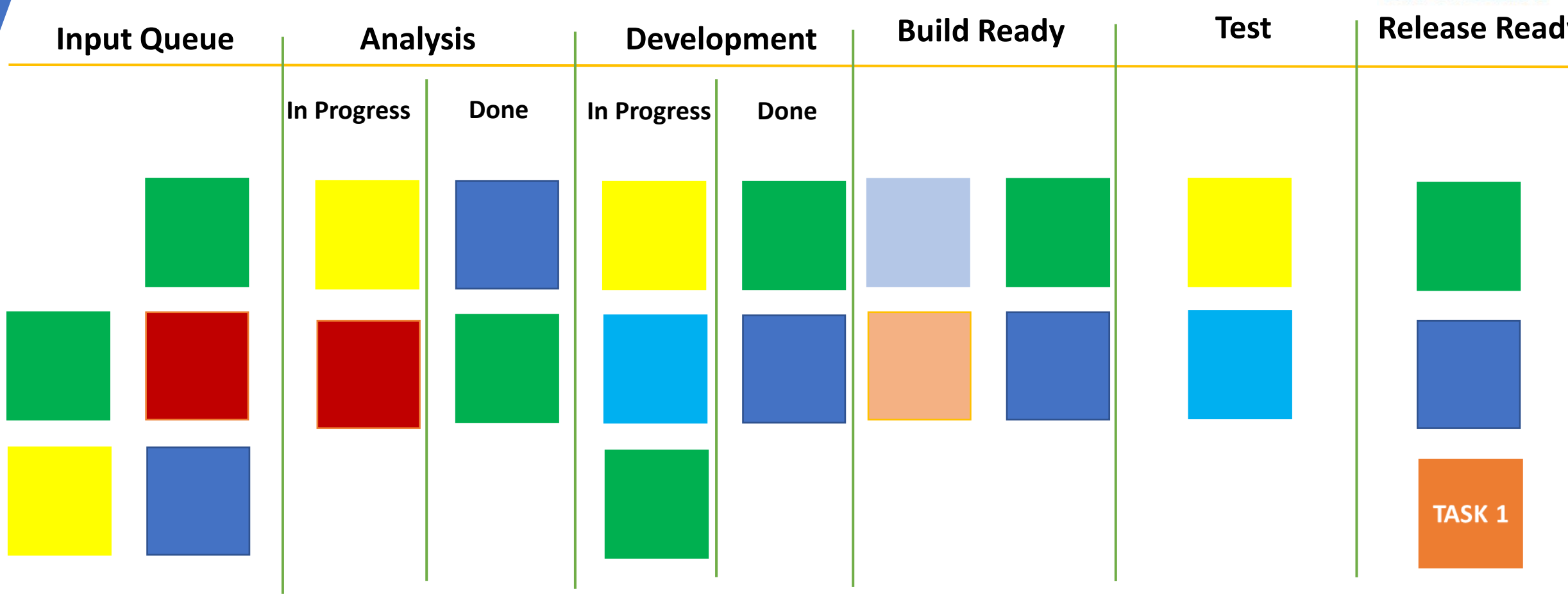

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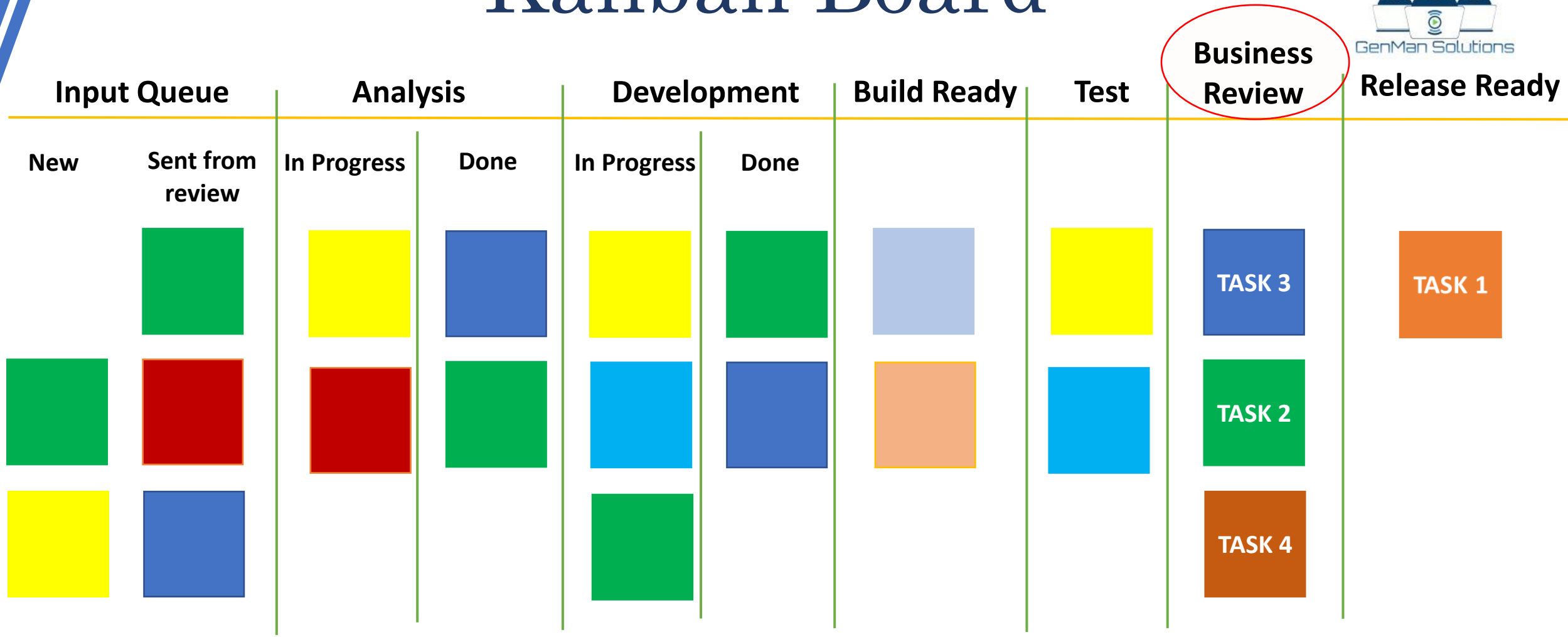

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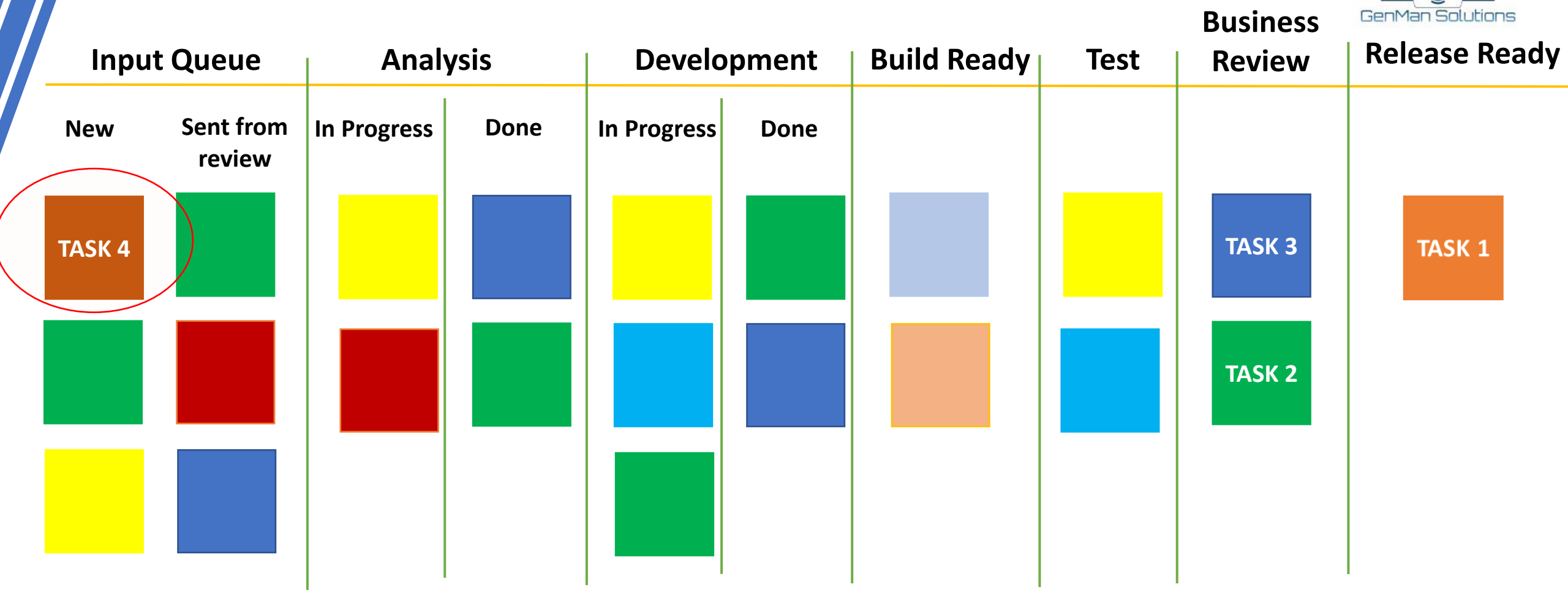

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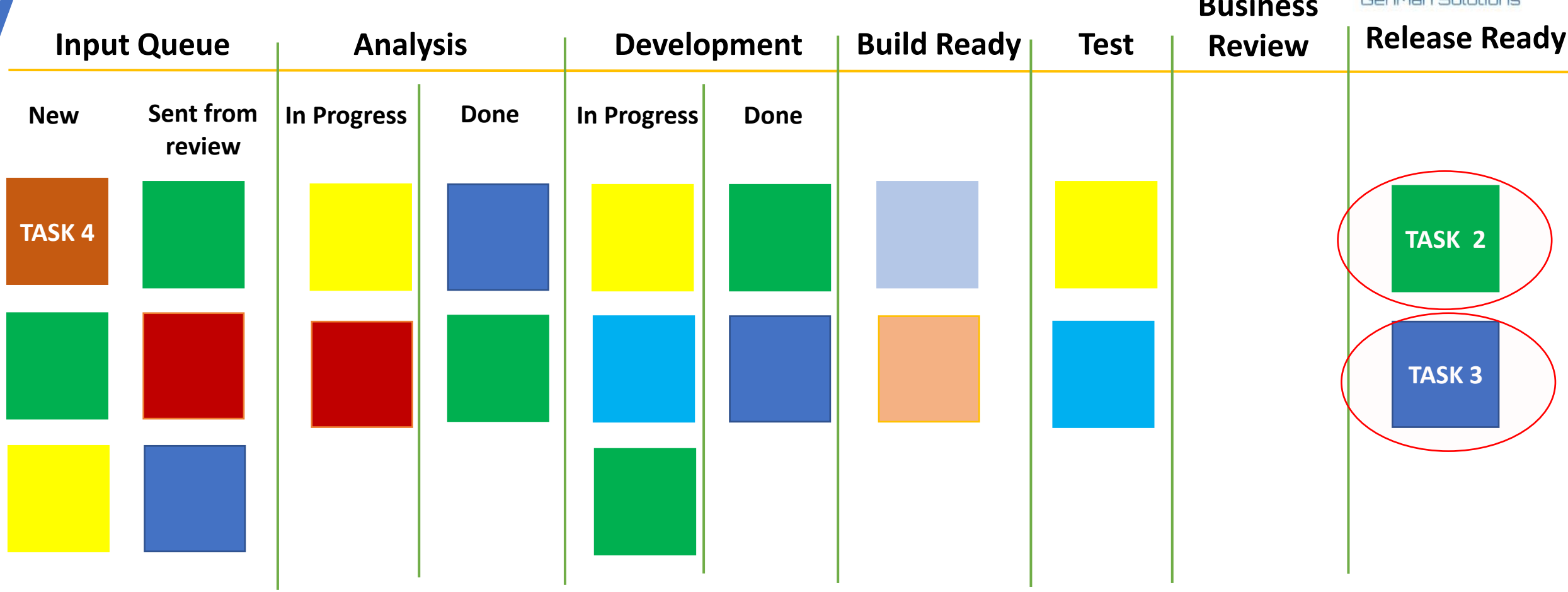

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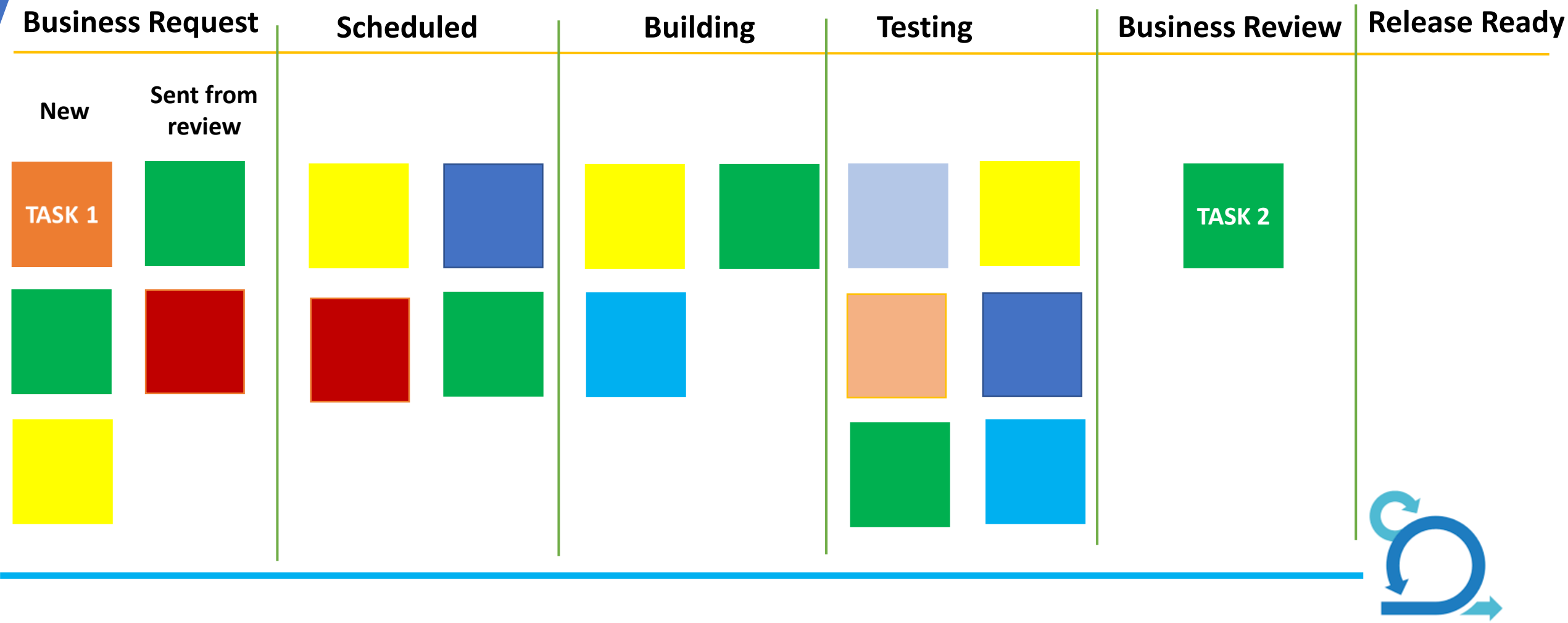
Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



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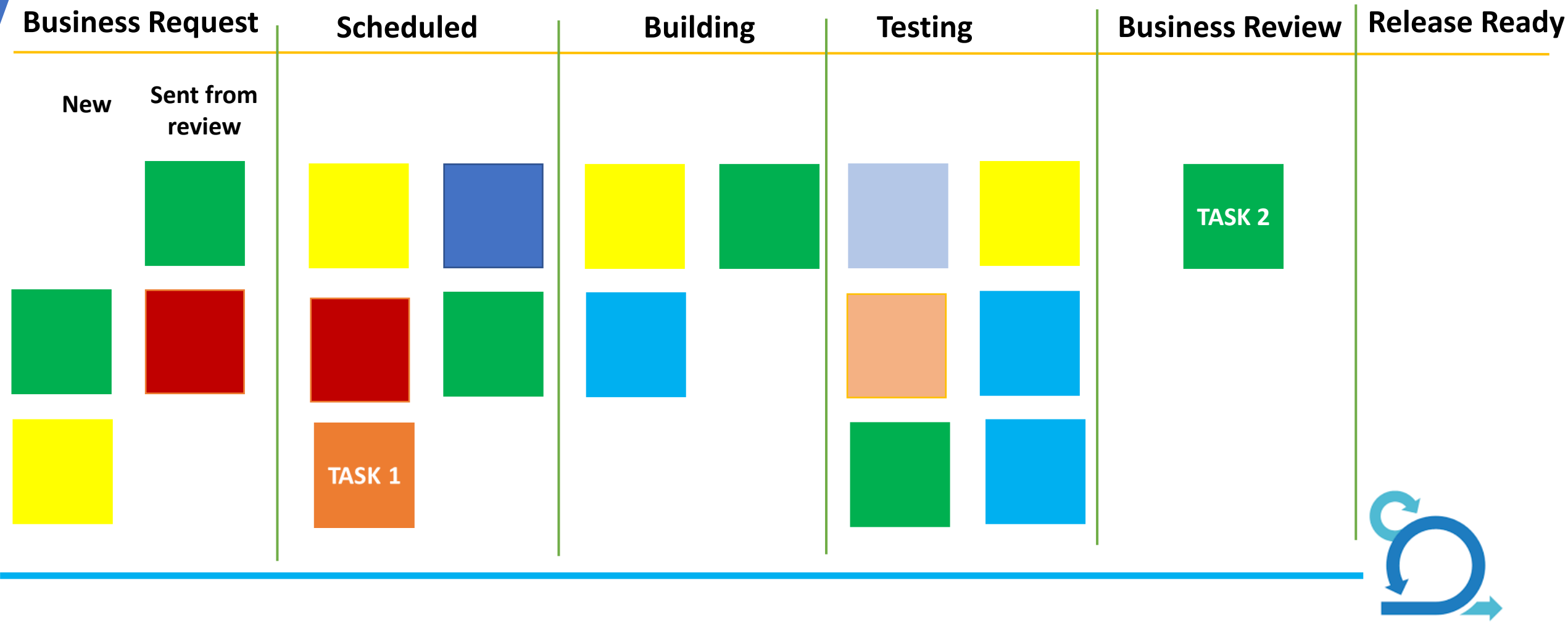

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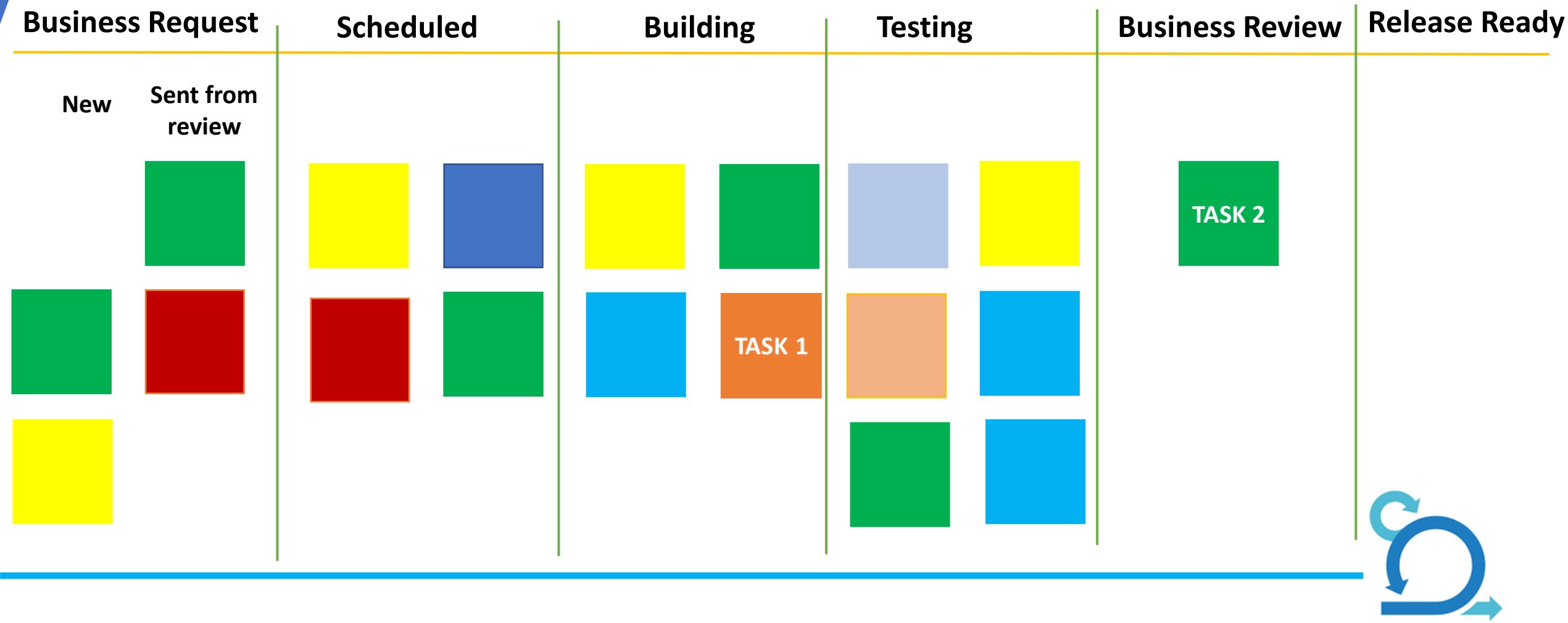

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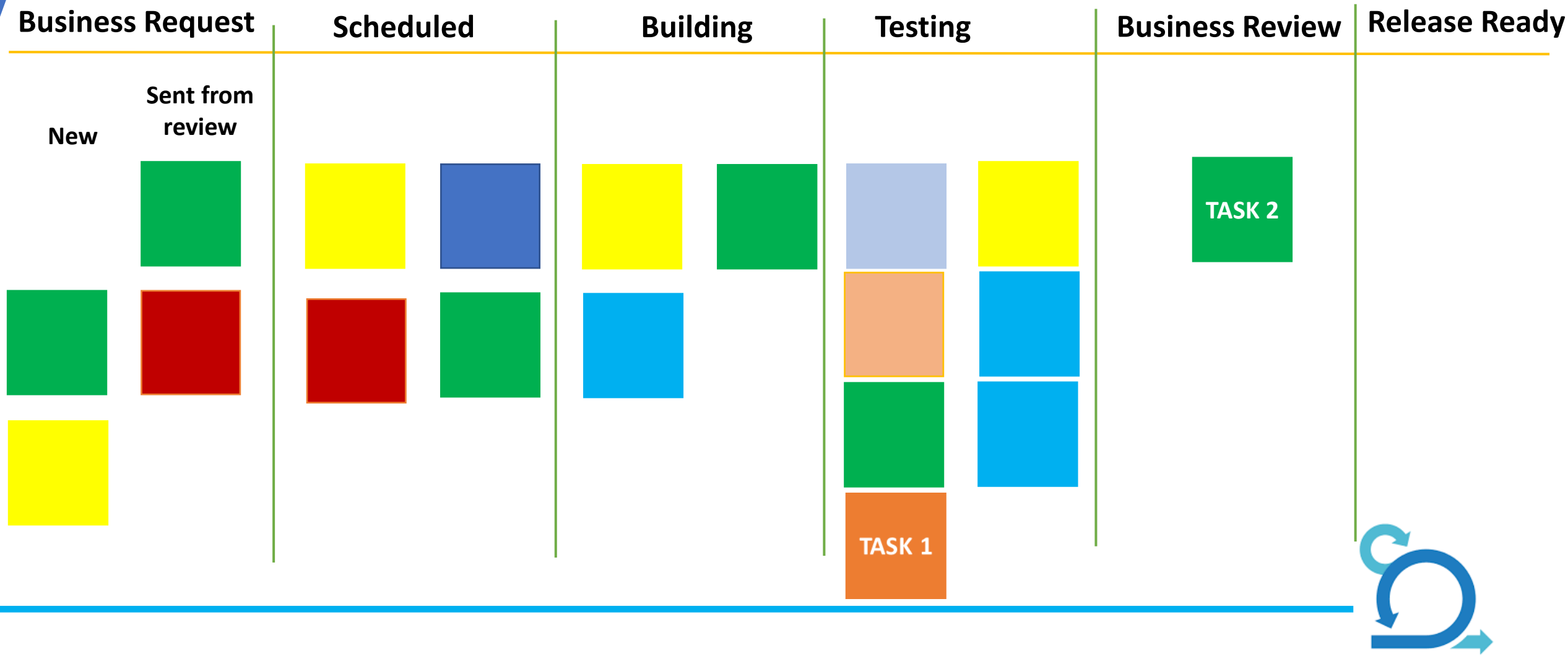

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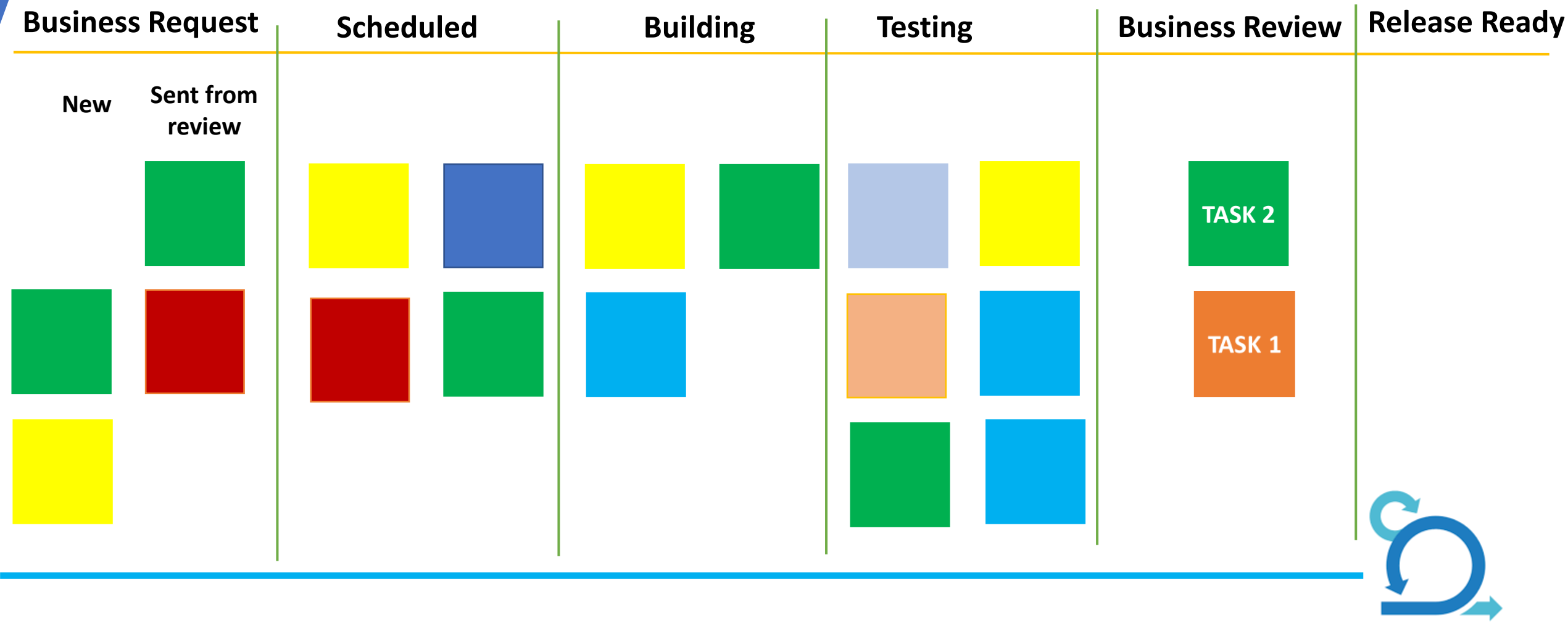

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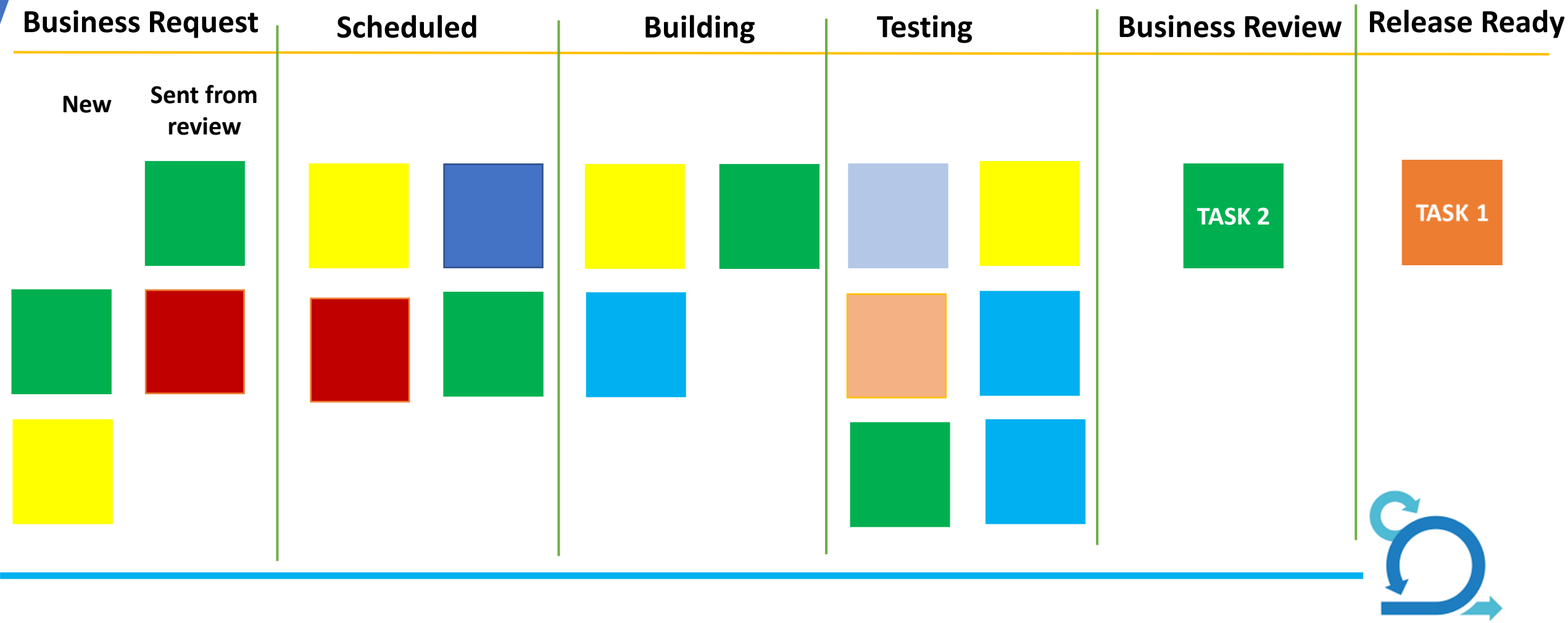

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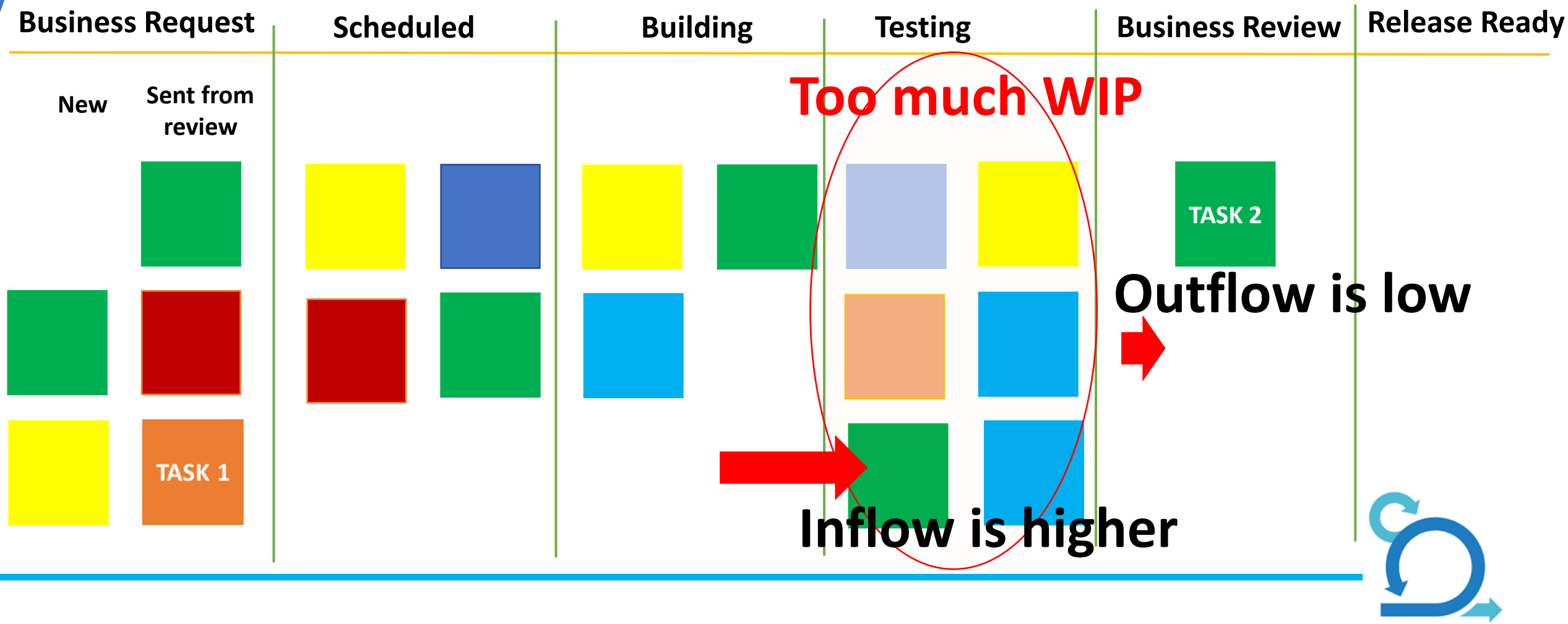
Finding inefficiencies/issues in the process



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

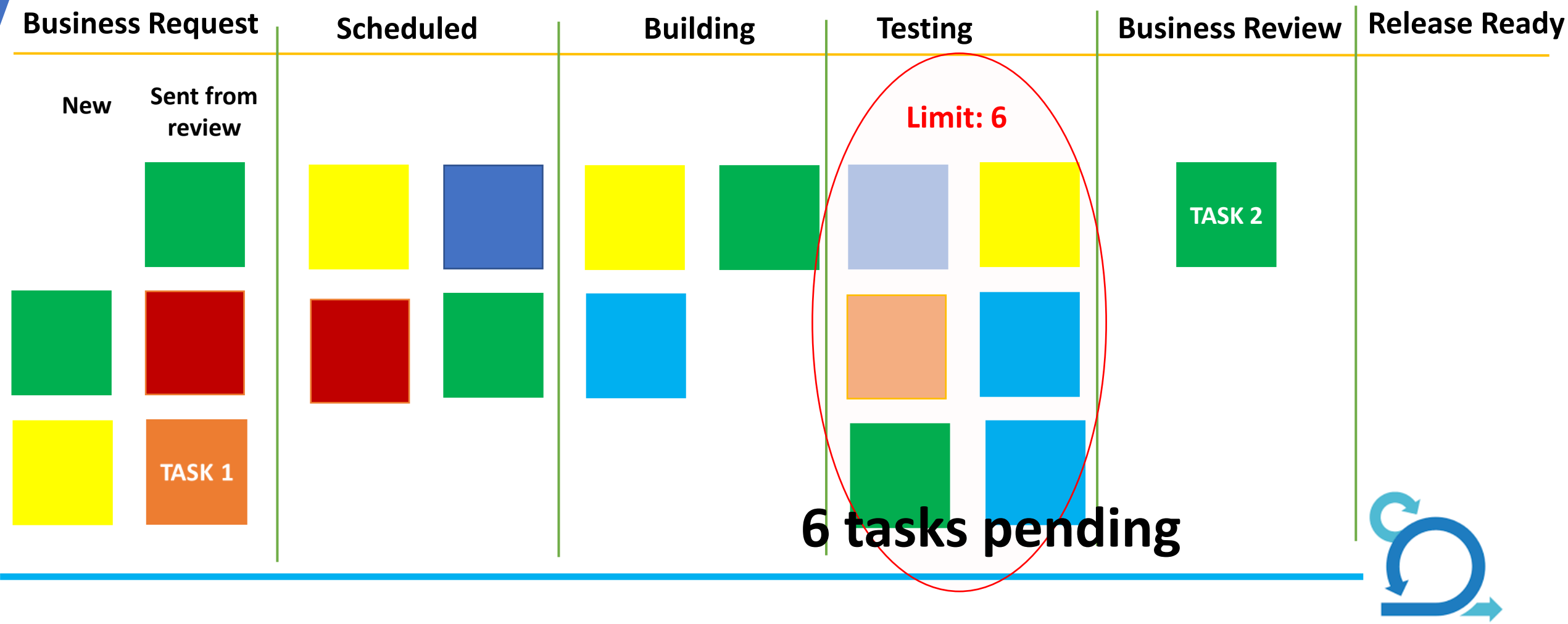
Limiting the WIP

- 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

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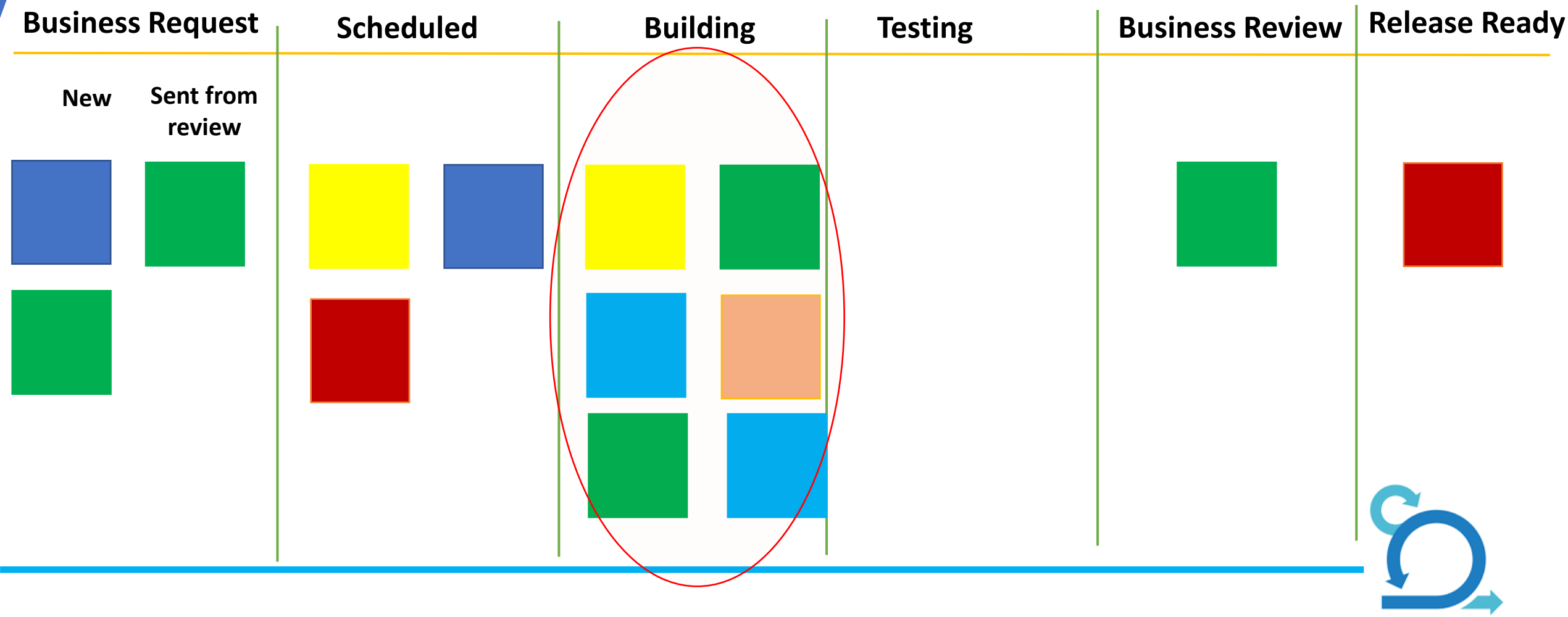
Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

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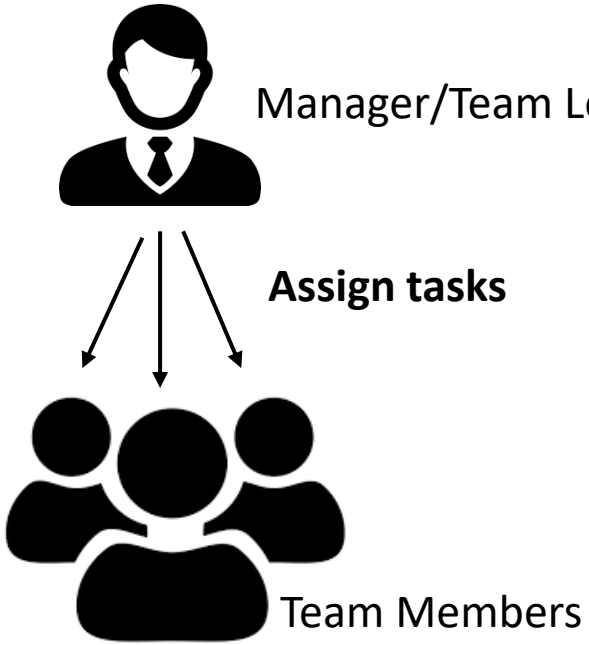
Managing the Flow

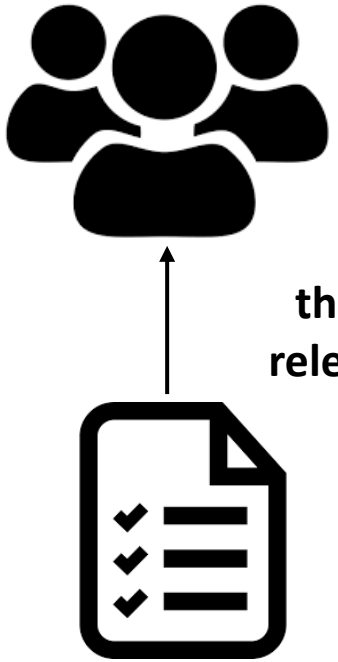
Kanban

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

Push based system



Pull based system



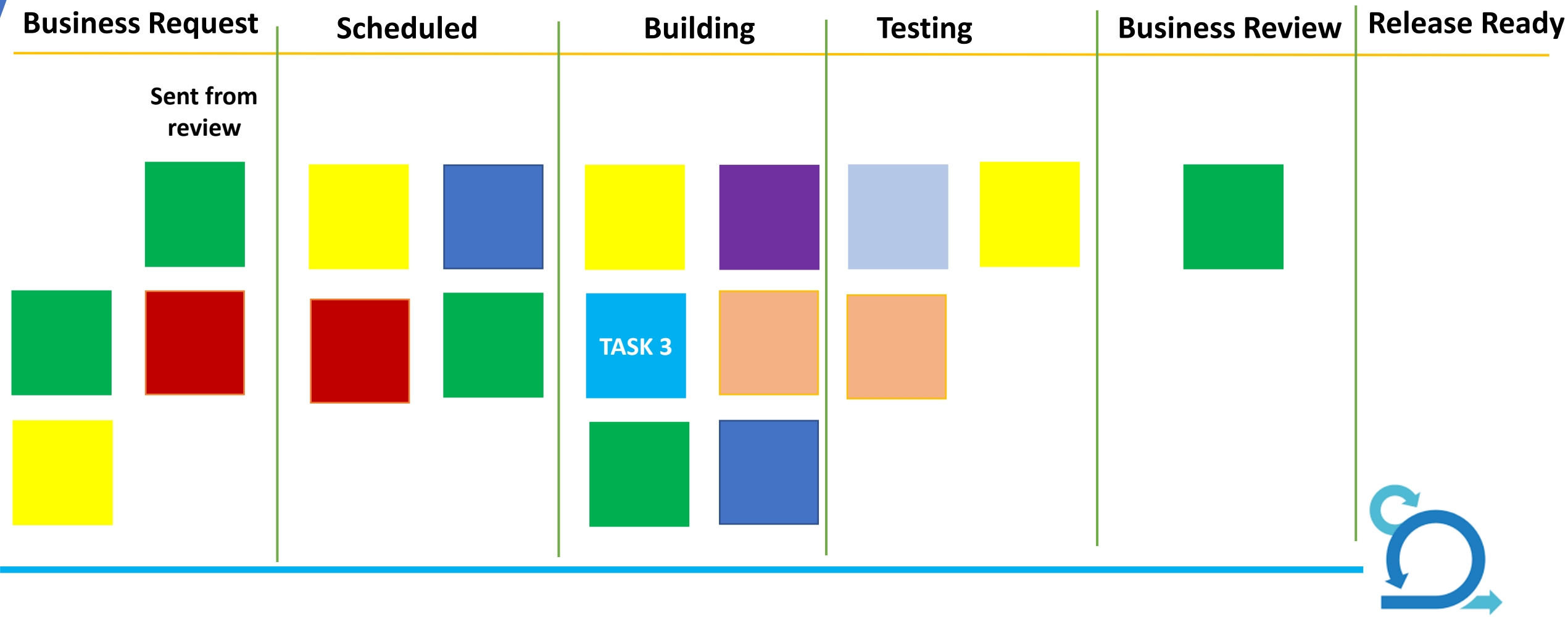
- Optimizes the work flow
- Reduces lead time
- Reduces over load on worker

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

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**	

Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process

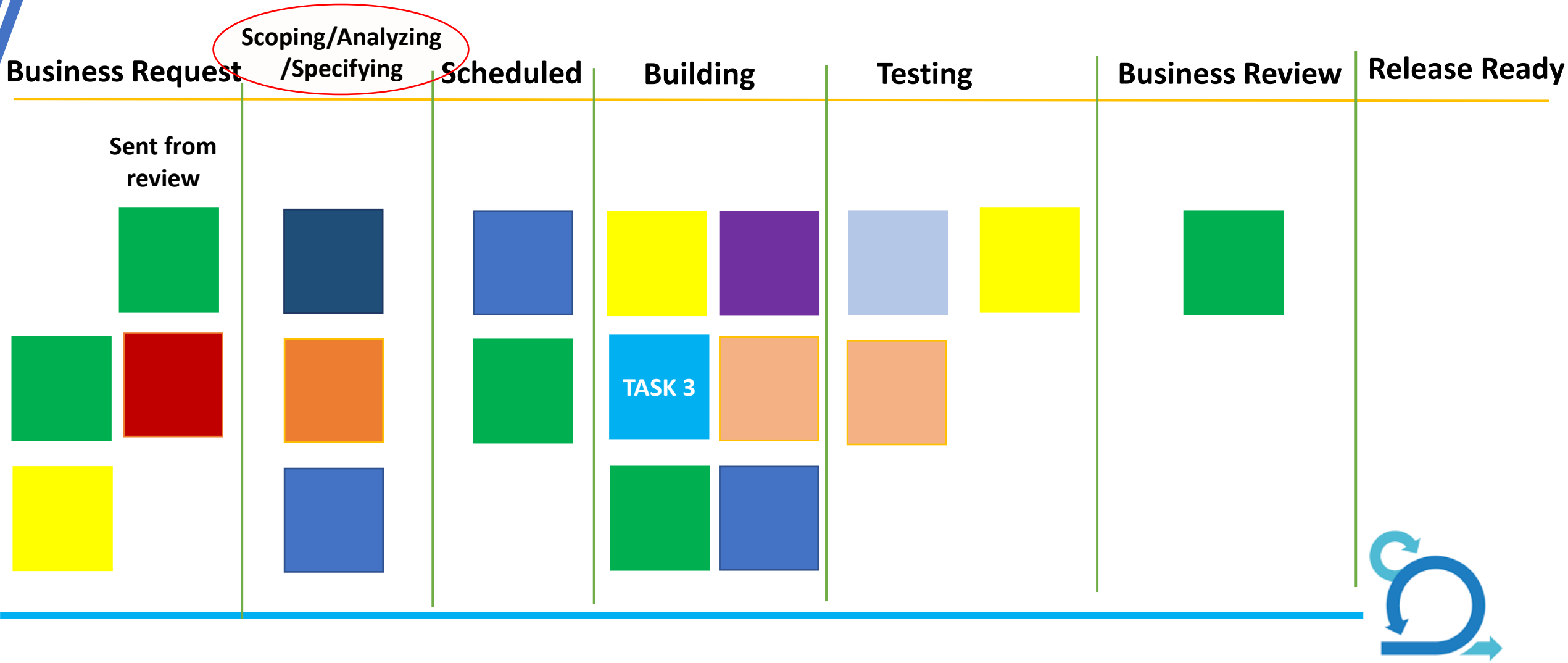
Issue: Task is taking longer time than it should be

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

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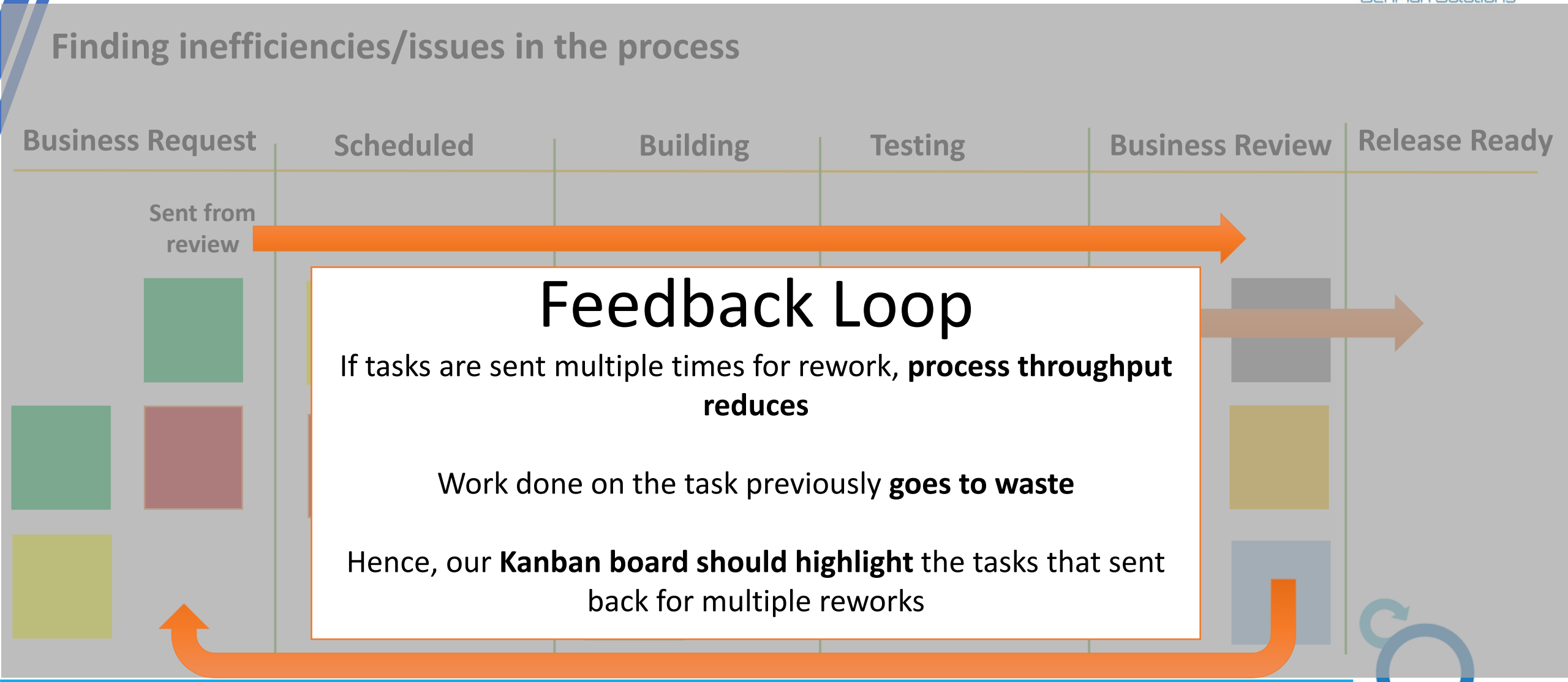
Kanban Board



Feedback Loop

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

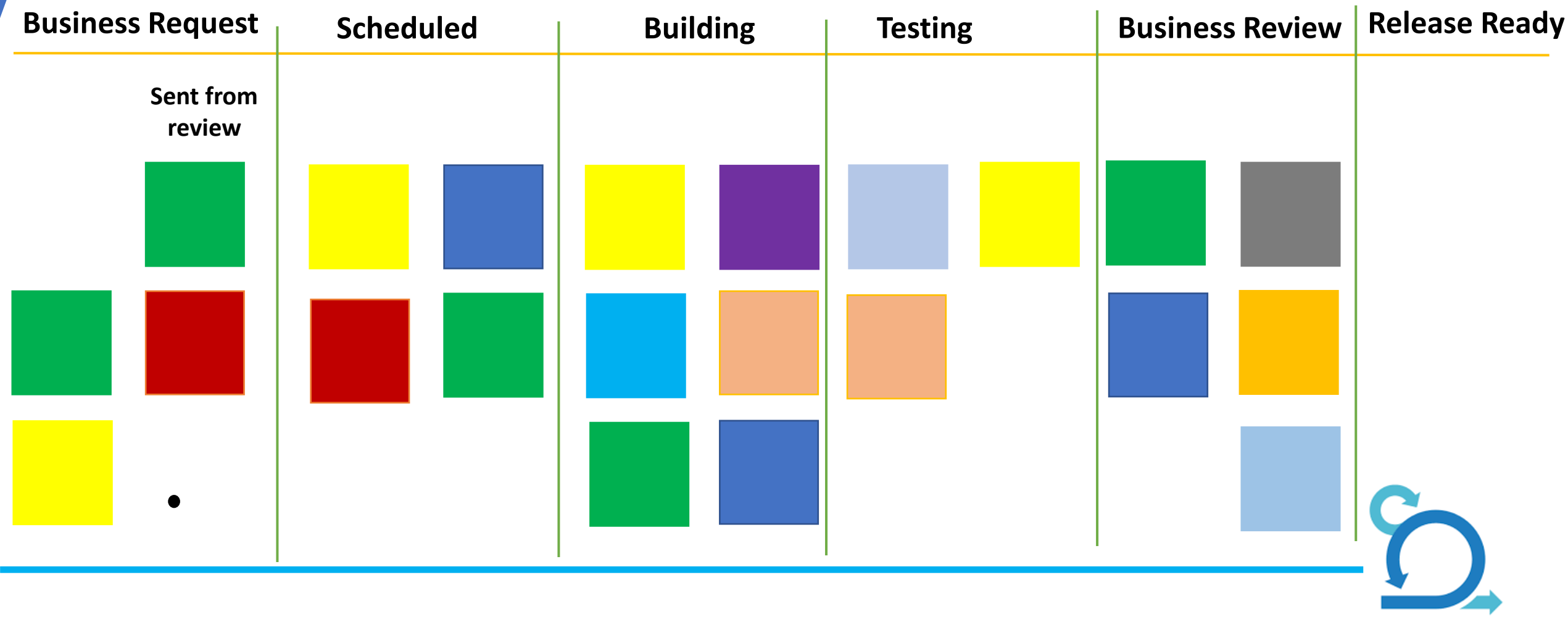
Work done on the task previously **goes to waste**

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

Kanban Board

GenMan Solutions

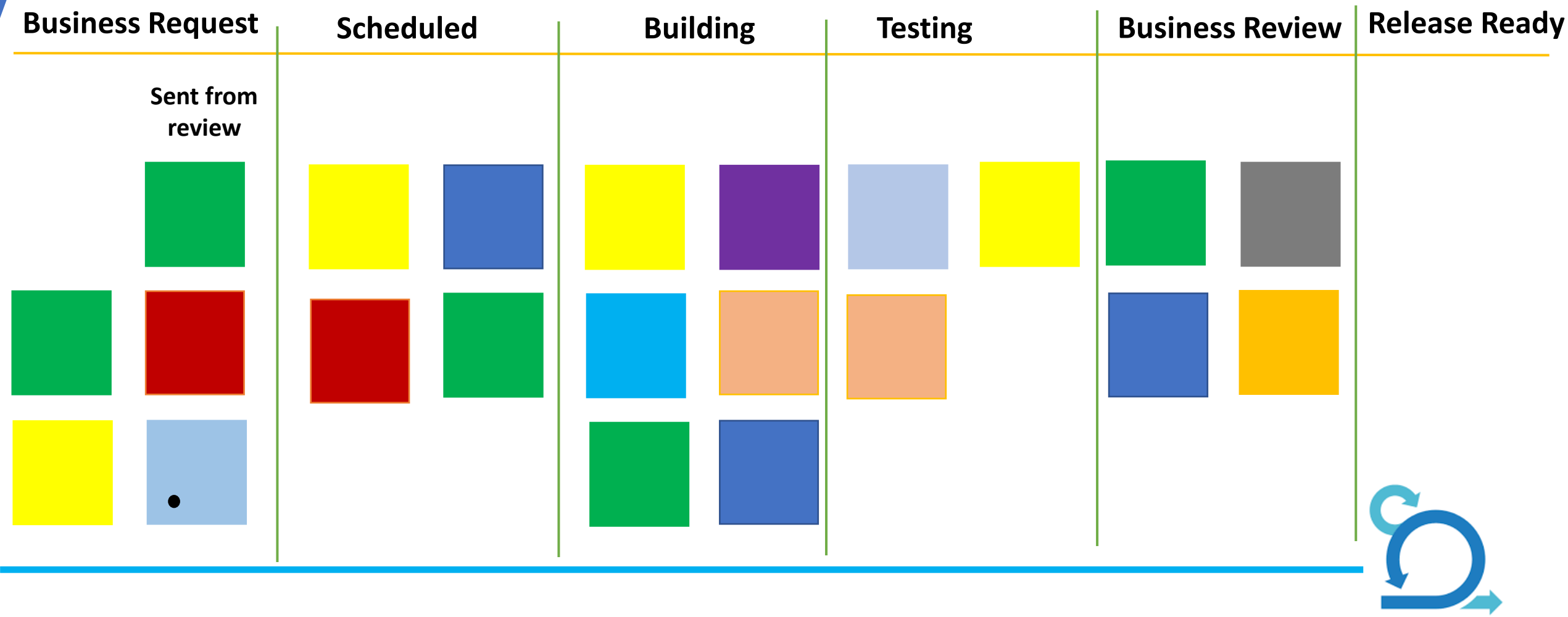
Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

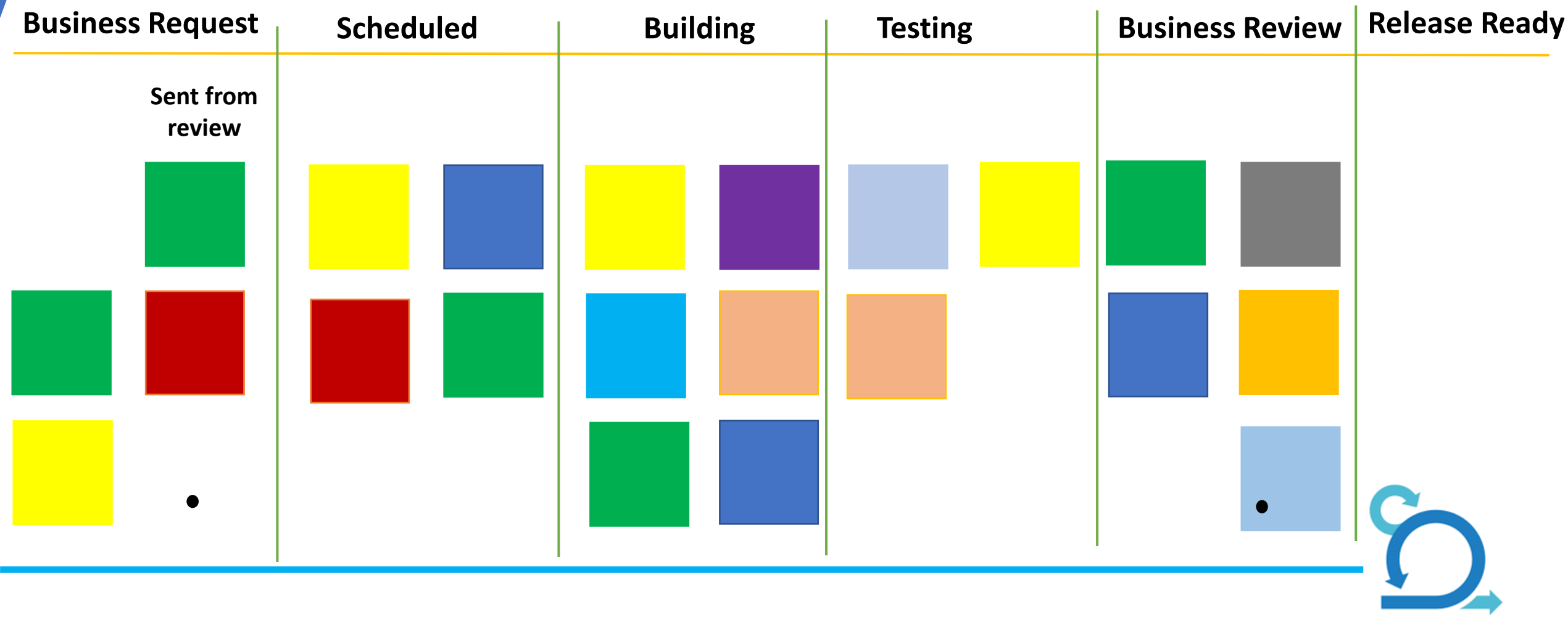
Finding inefficiencies/issues in the process



Kanban Board

GenMan Solutions

Finding inefficiencies/issues in the process



Kanban

GenMan Solutions

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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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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

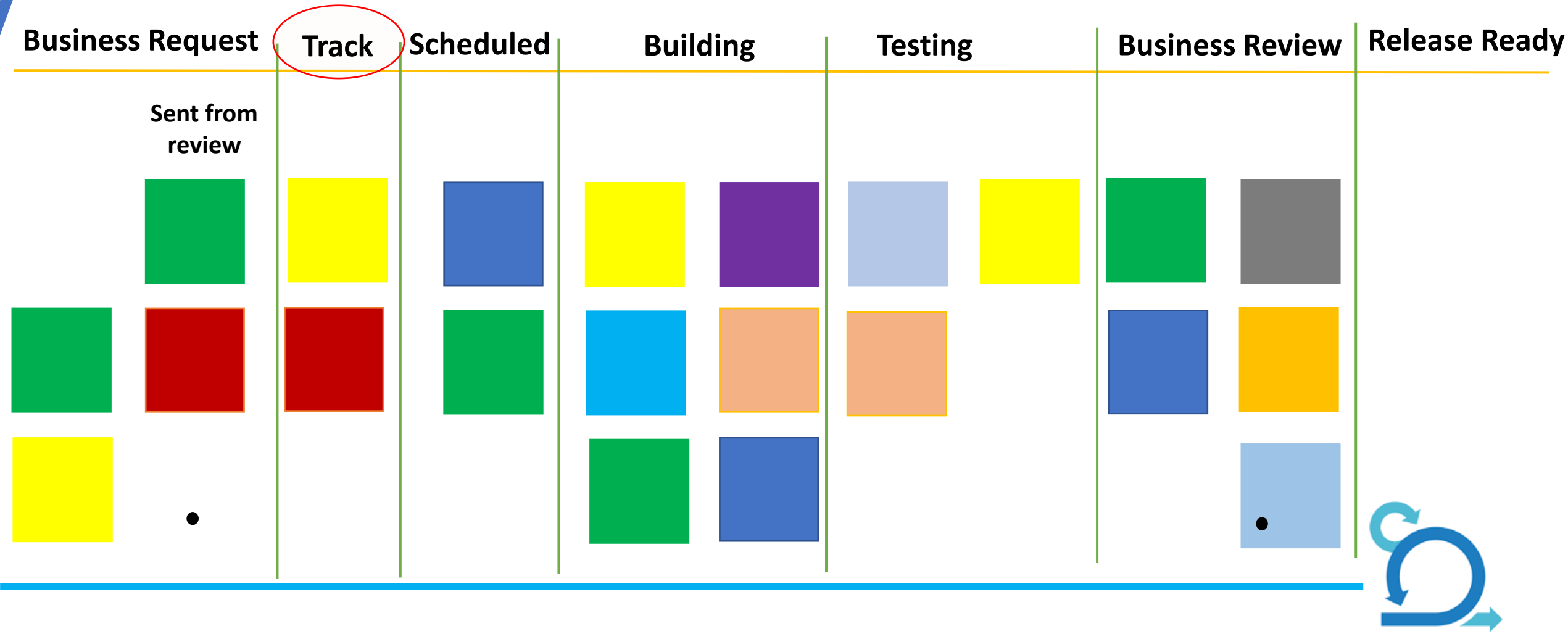
Finding inefficiencies/issues in the process

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

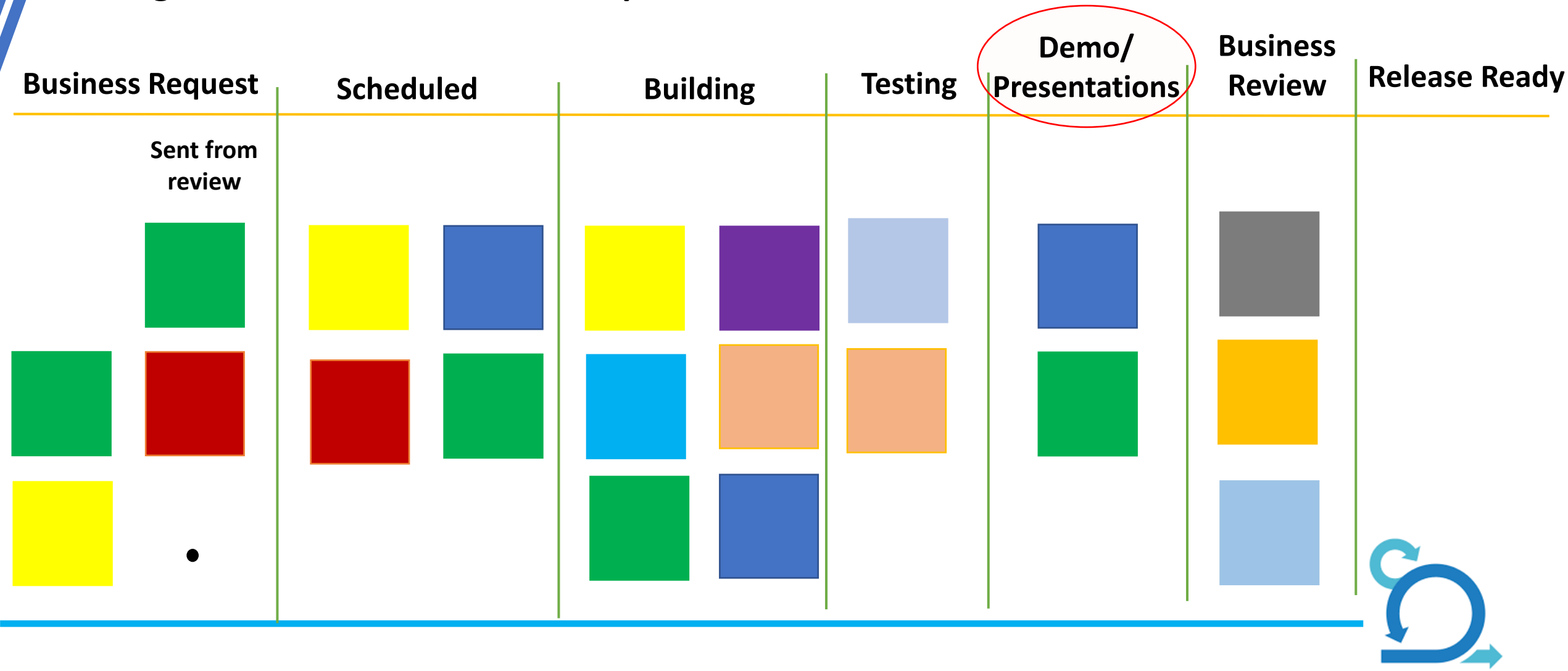
Finding inefficiencies/issues in the process

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

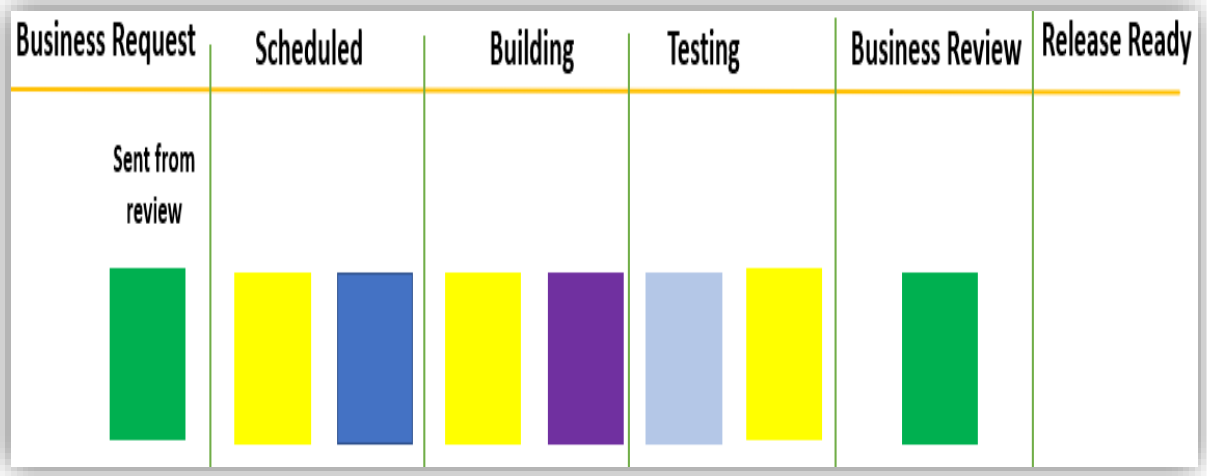
Sl. no.	Situation	Suggestion
4	**Having a lot of external dependencies**	Develop a practice of regular follow ups on tasks listed in “Tracking” column No need of a WIP limit on this column
5	**Team required to work on non-product features**	Create a task for such features and keep a track on the same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

Defining “Done”

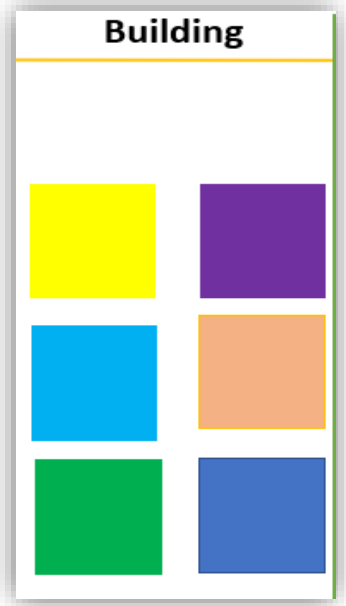
Kanban

Defining “Done”

Define done for each feature



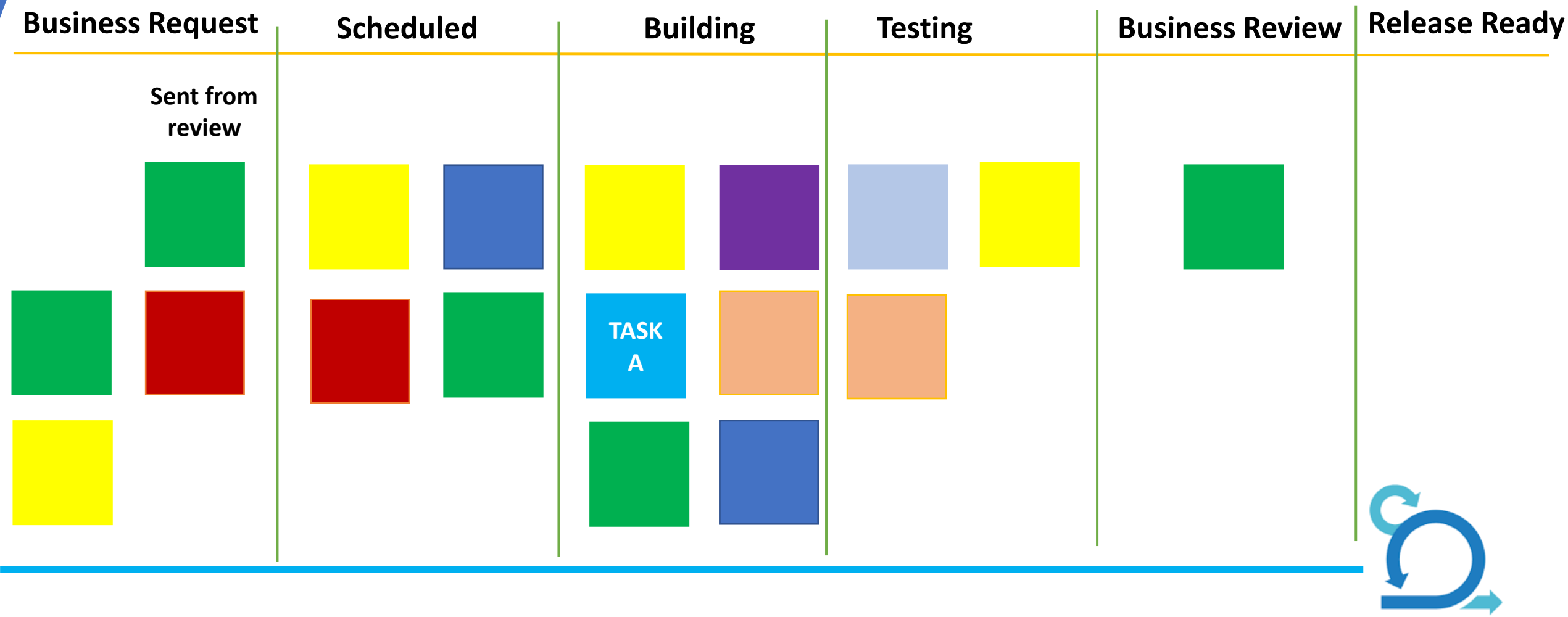
Define completion for each step



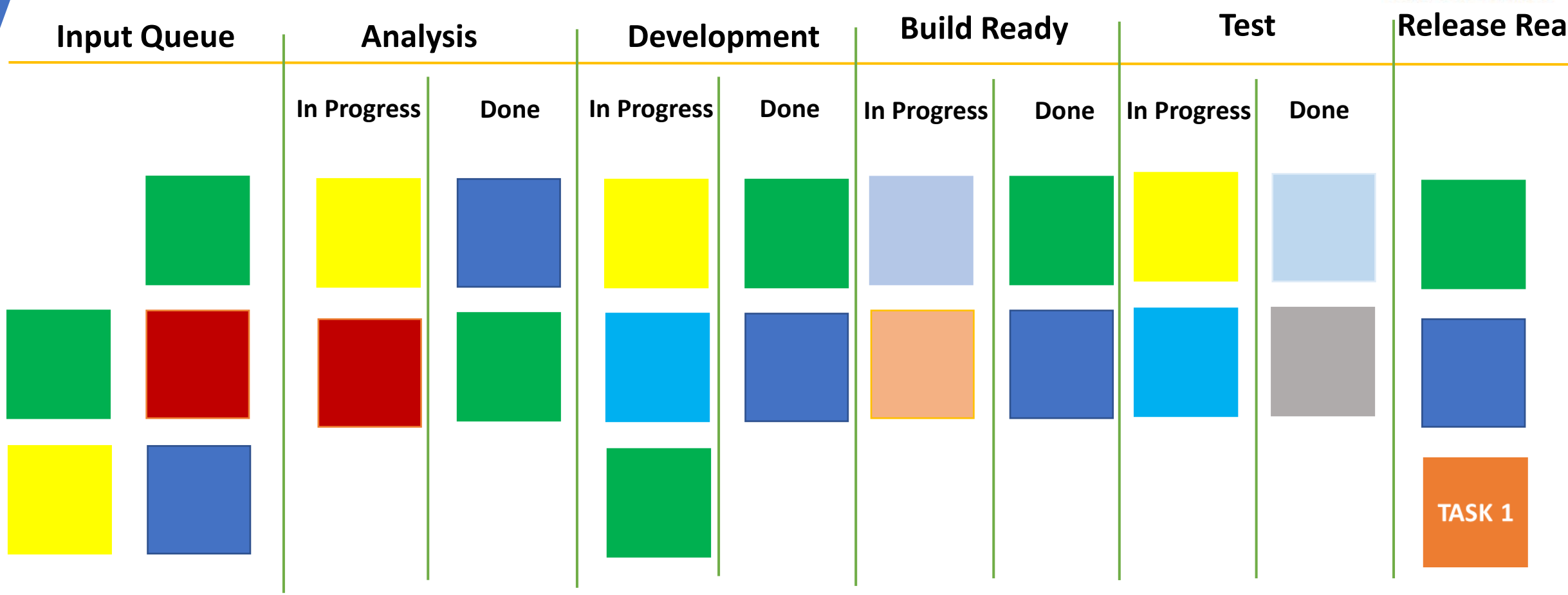
Kanban

GenMan Solutions

Finding inefficiencies/issues in the process

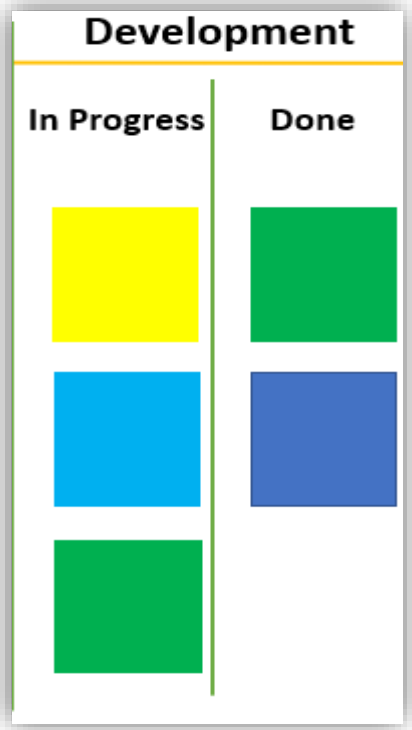


Kanban


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

Kanban

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

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 lon g will be?
- Who will g the meeting?
- What wil ed in the meeting ?

Kanban is flexible with no such rules

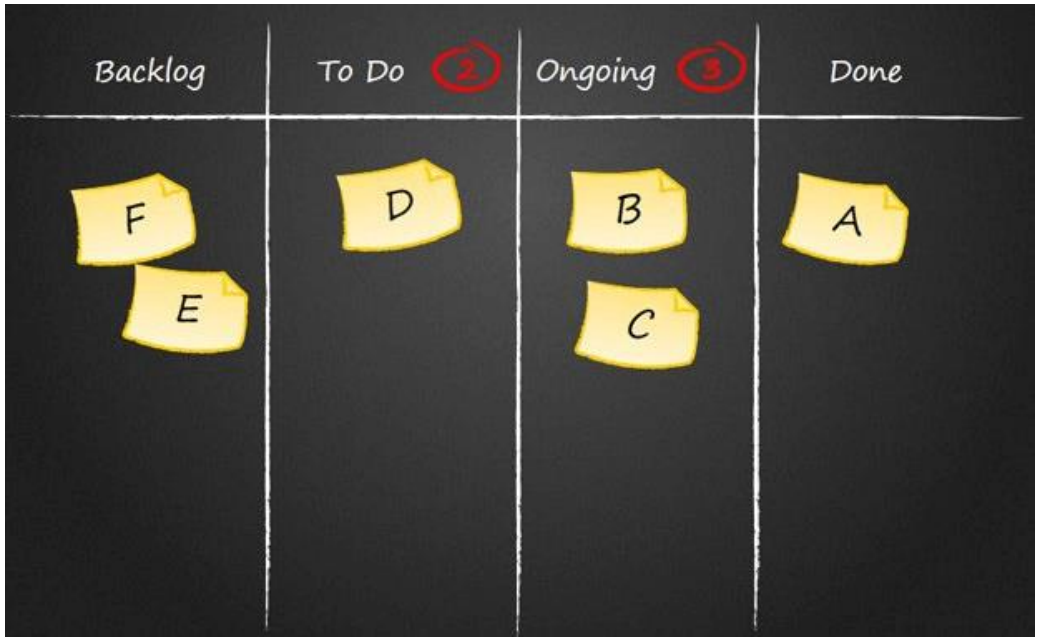
- **Any team member can run the meeting** even a fresher
- **No fixed duration of the meeting**, depends on the team's experience
- Daily stand up is the **time to get the board up-to-date, identify issues, highlight problems** if any etc.

Specifying rules

Specifying rules

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

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

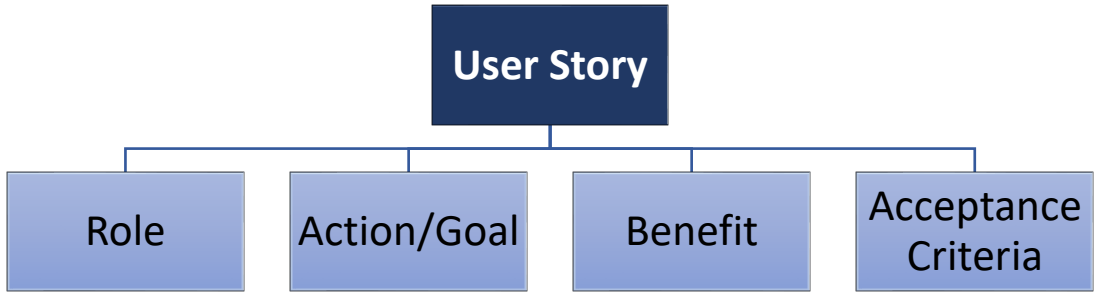


Introduction to Key Agile Concepts

Introduction to Key Agile Concepts

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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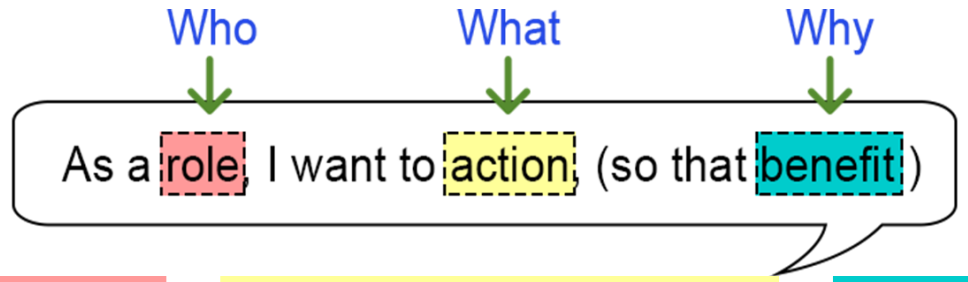
User Story



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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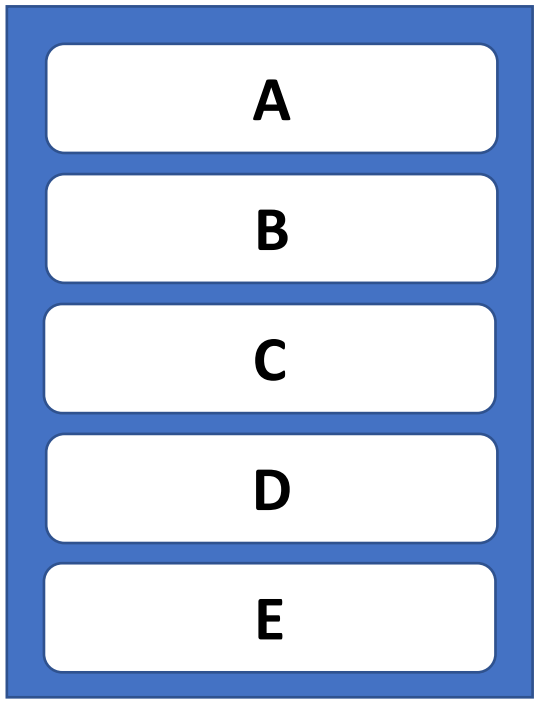
Product Backlog



- 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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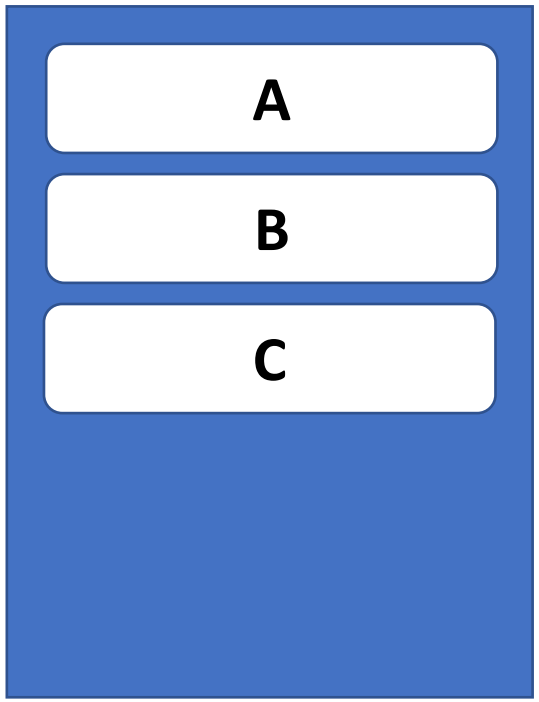
Product Backlog



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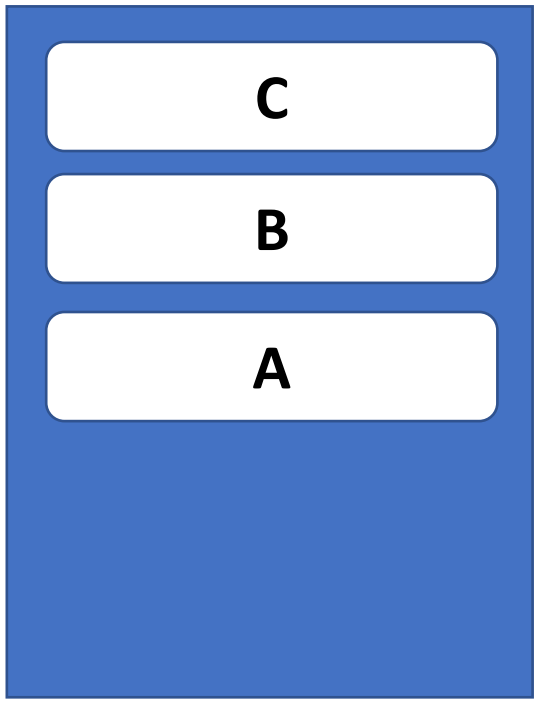

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Difference Between a Product Backlog and Product Roadmap

From Product Vision to Backlog

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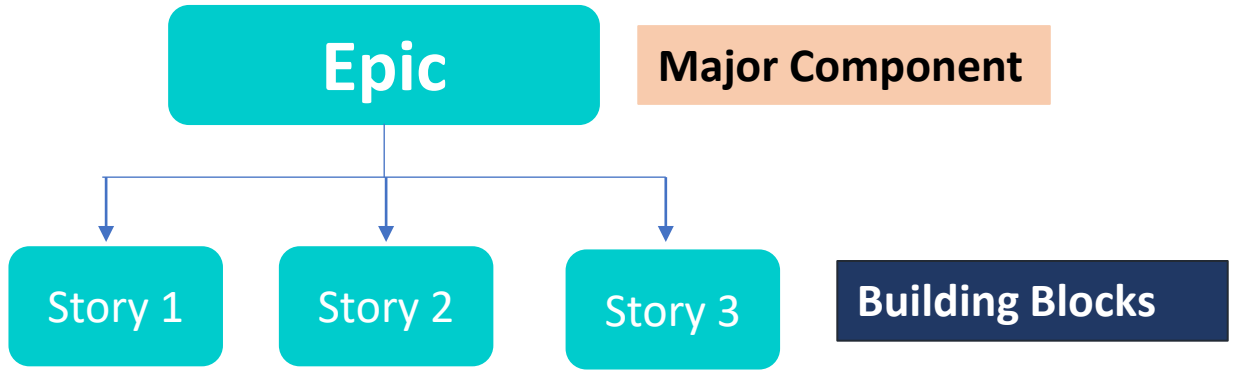
Difference Between a Product Backlog and Product Roadmap

	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

Introduction to Key Agile Concepts

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.

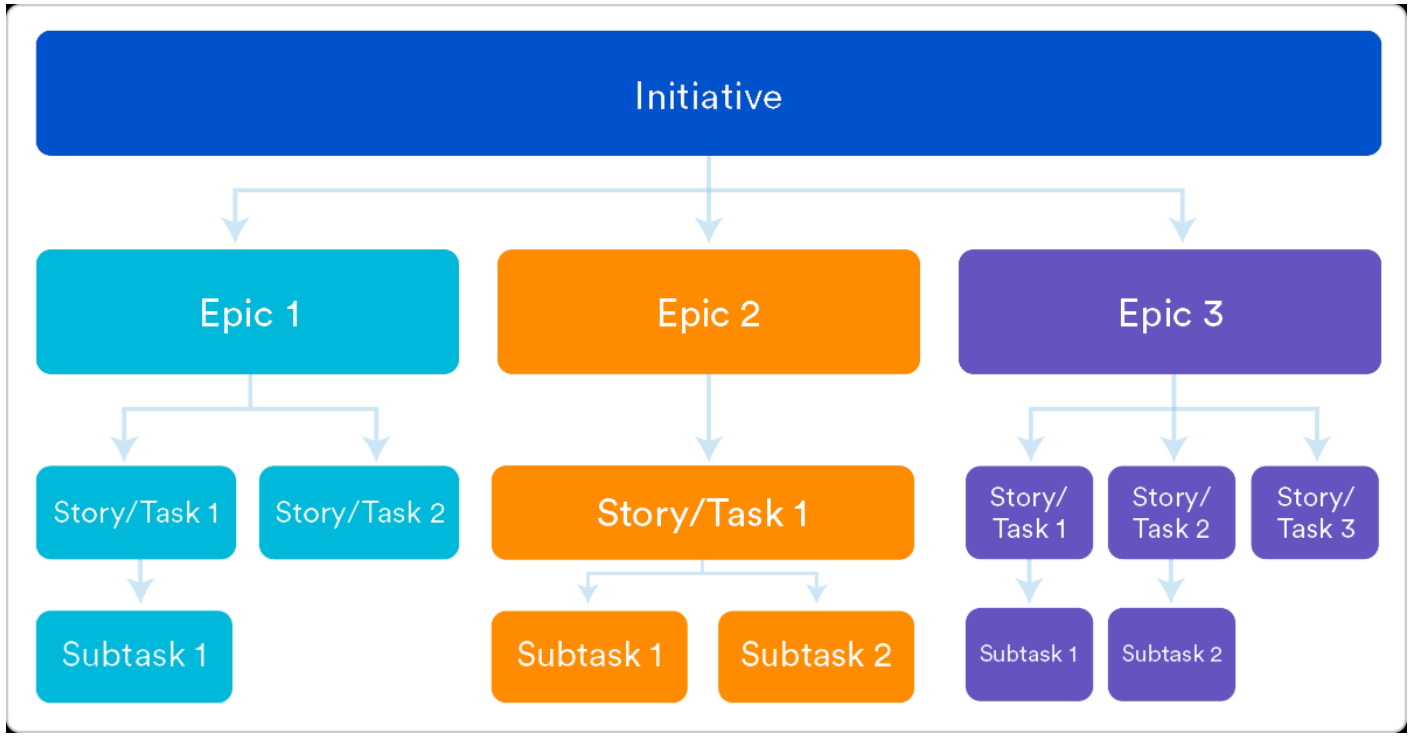
1a: As a VP Marketing, I want to select the timeframe to use when reviewing the performance of past promotional campaigns, so that …
1b: As a VP Marketing, I can select which type of campaigns (direct mail, TV, email, radio, etc.) to include when reviewing the performance of past so that …

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.

Introduction to Key Agile Concepts

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



Introduction to Key Agile Concepts

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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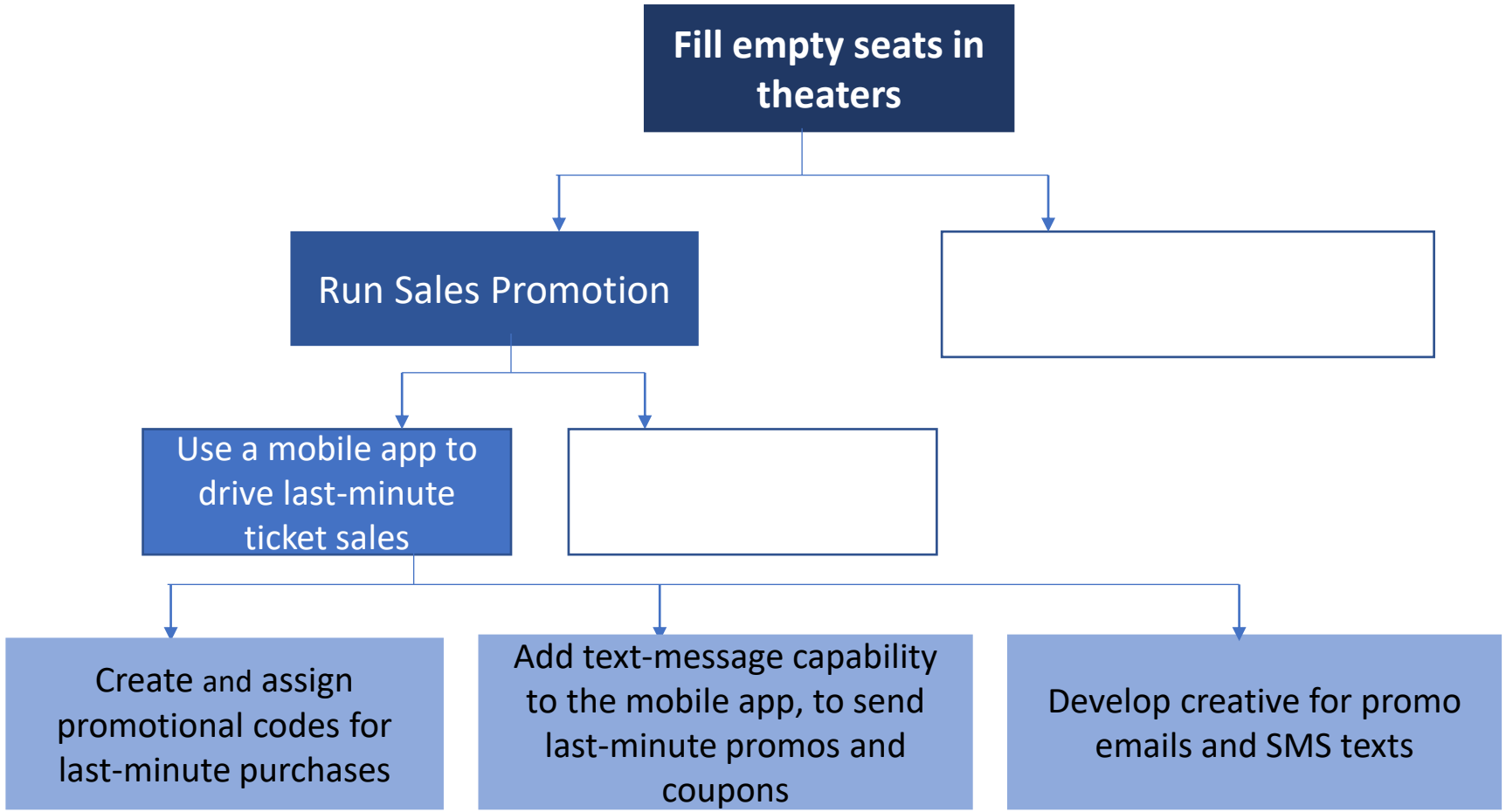
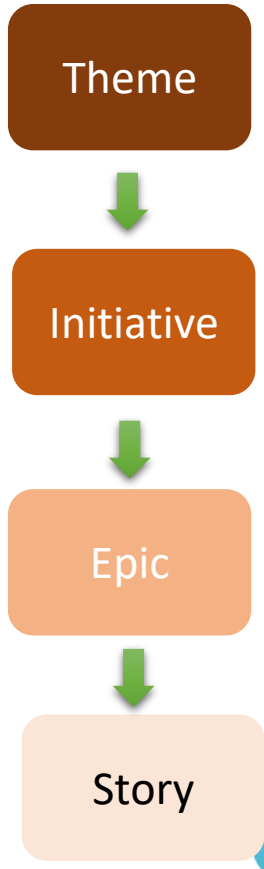
Theme, Initiatives, Epic & Story





Introduction to Key Agile Concepts

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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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

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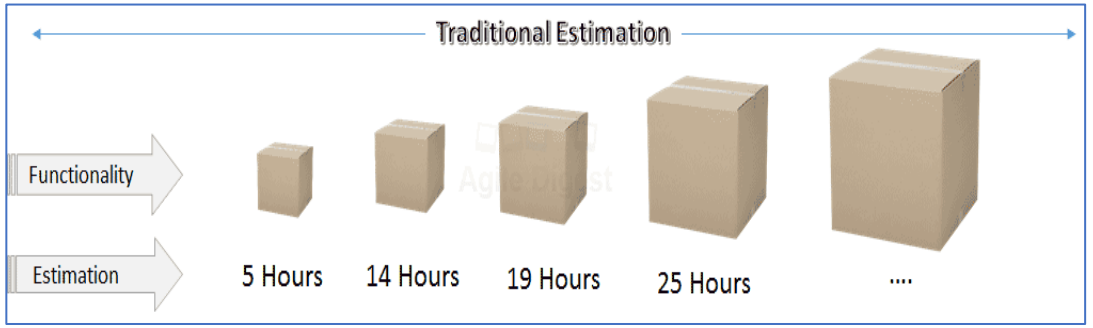

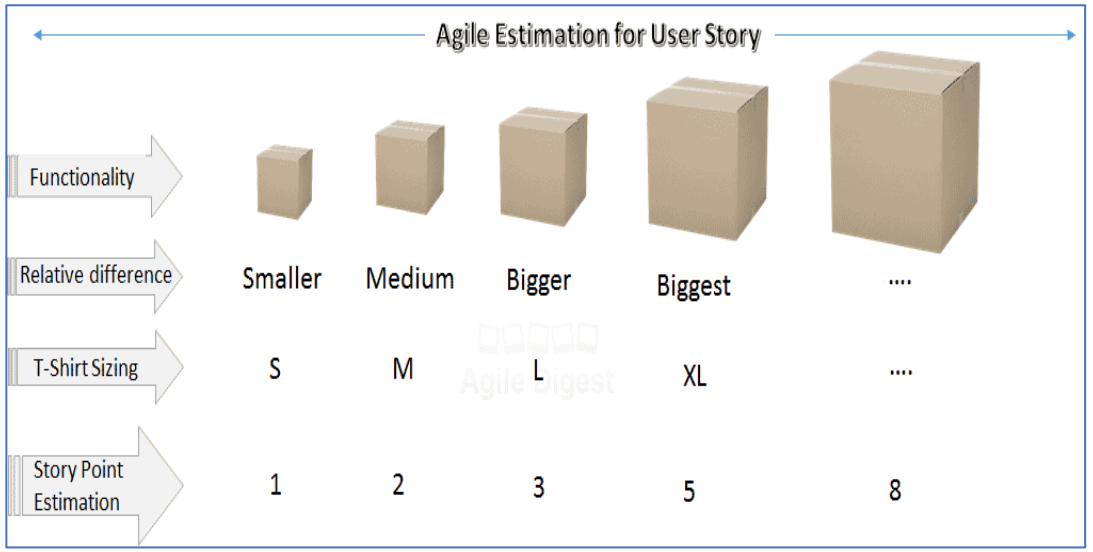

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Agile Estimation

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 :

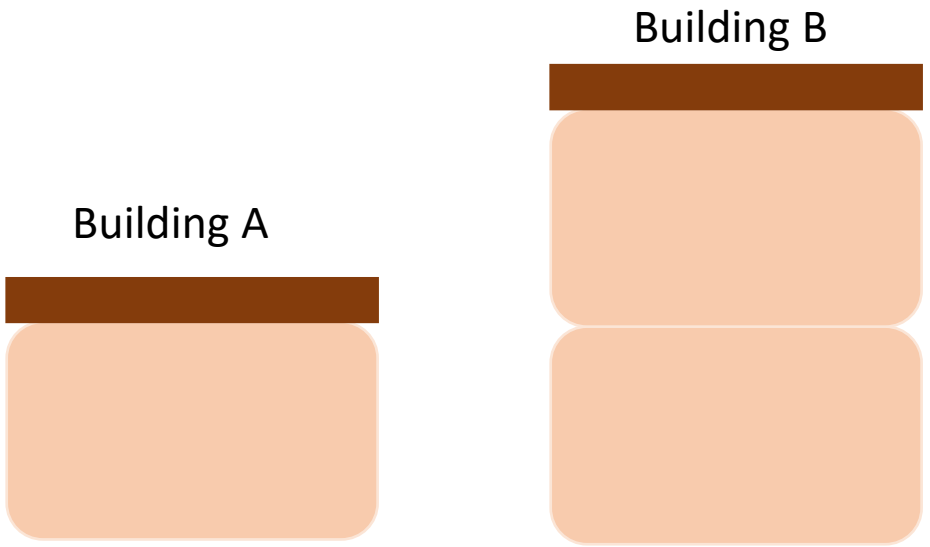
- Business Value
- Complexity
- Risks
- Dependencies
- Amount of work

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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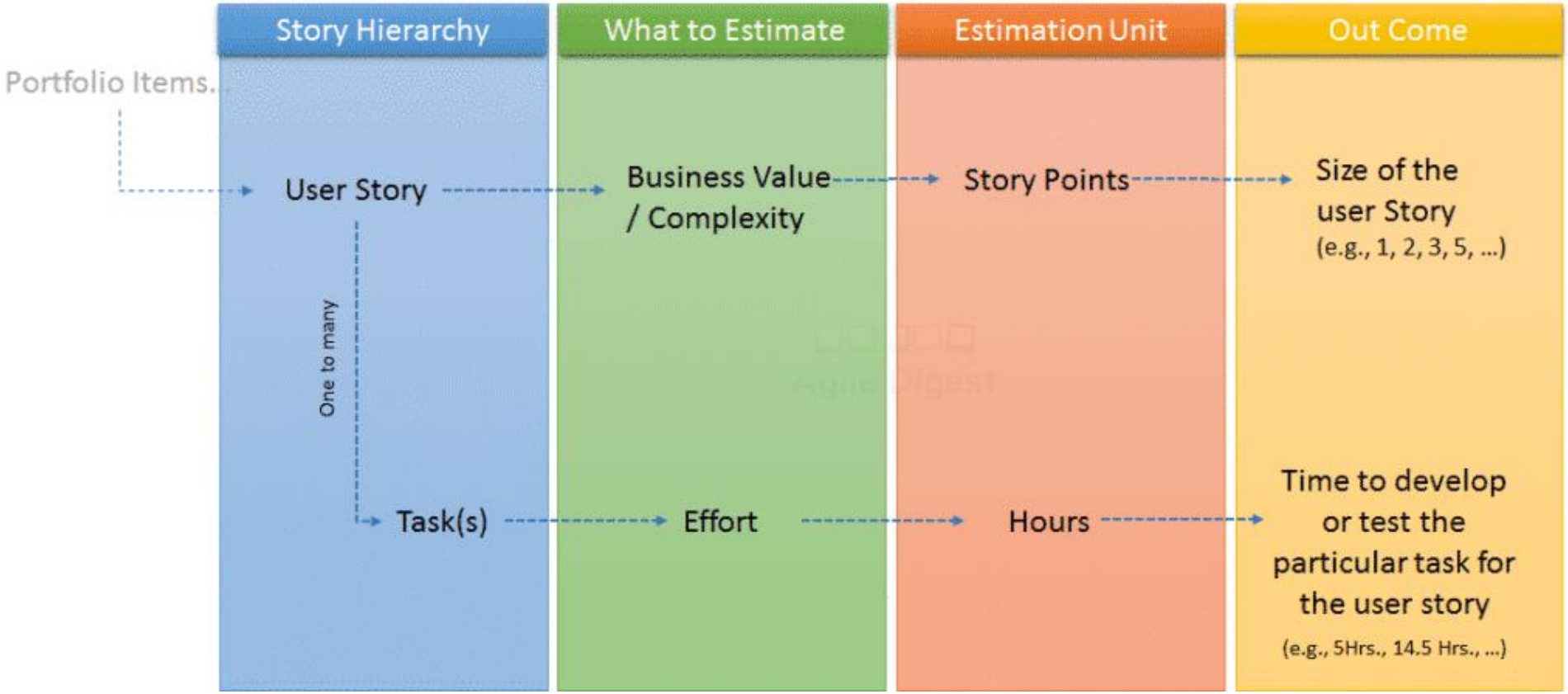
Estimation



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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)

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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

0, 1, 1, 2, 3, 5, 8, 13, 21……

0.0%

Infinite

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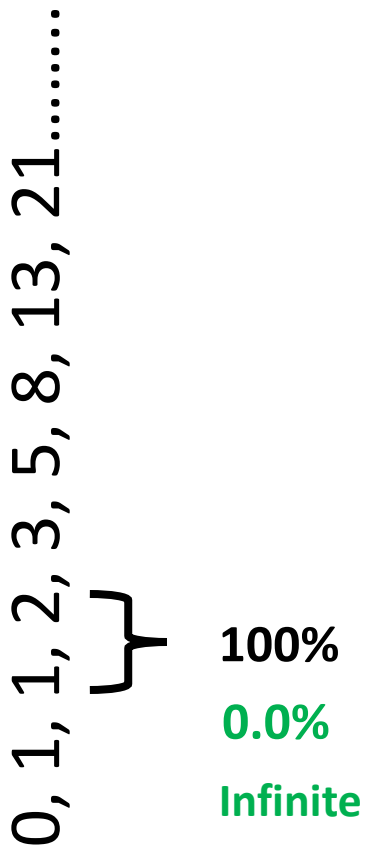
Agile Estimation

Fibonacci sequence



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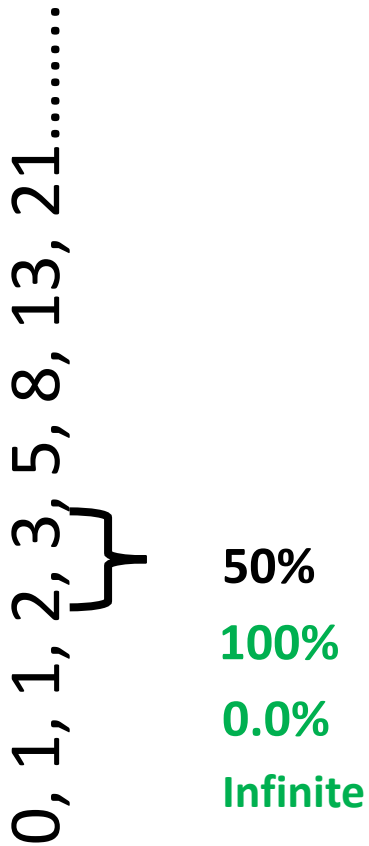
Agile Estimation

Fibonacci sequence



50%

100%

0.0%

Infinite

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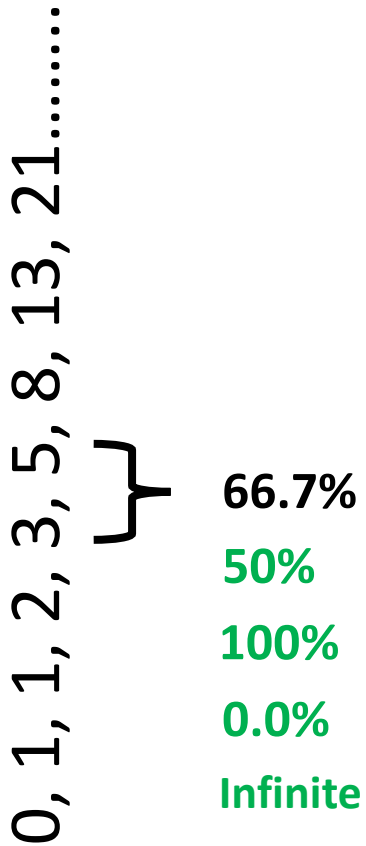
Agile Estimation

Fibonacci sequence



66.7%

50%

100%

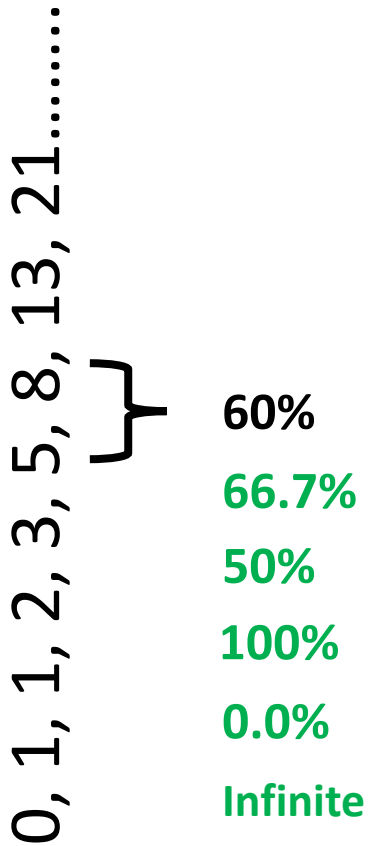
0.0%

Infinite

Introduction to Key Agile Concepts

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%

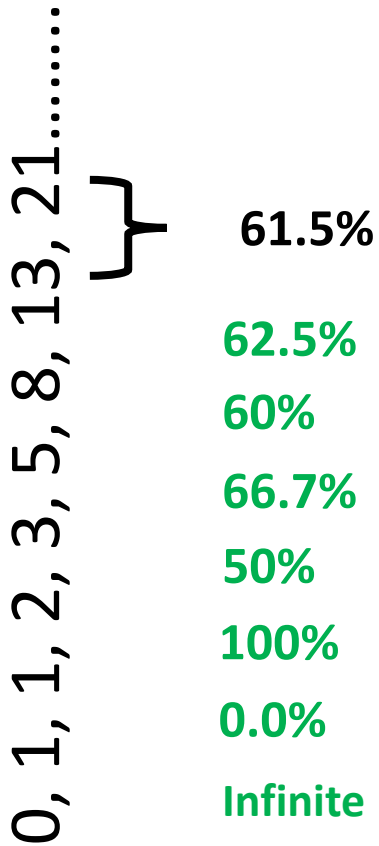
0.0%

Infinite

Introduction to Key Agile Concepts

Agile Estimation

Fibonacci sequence



61.5%

62.5%

60%

66.7%

50%

100%

0.0%

Infinite

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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?

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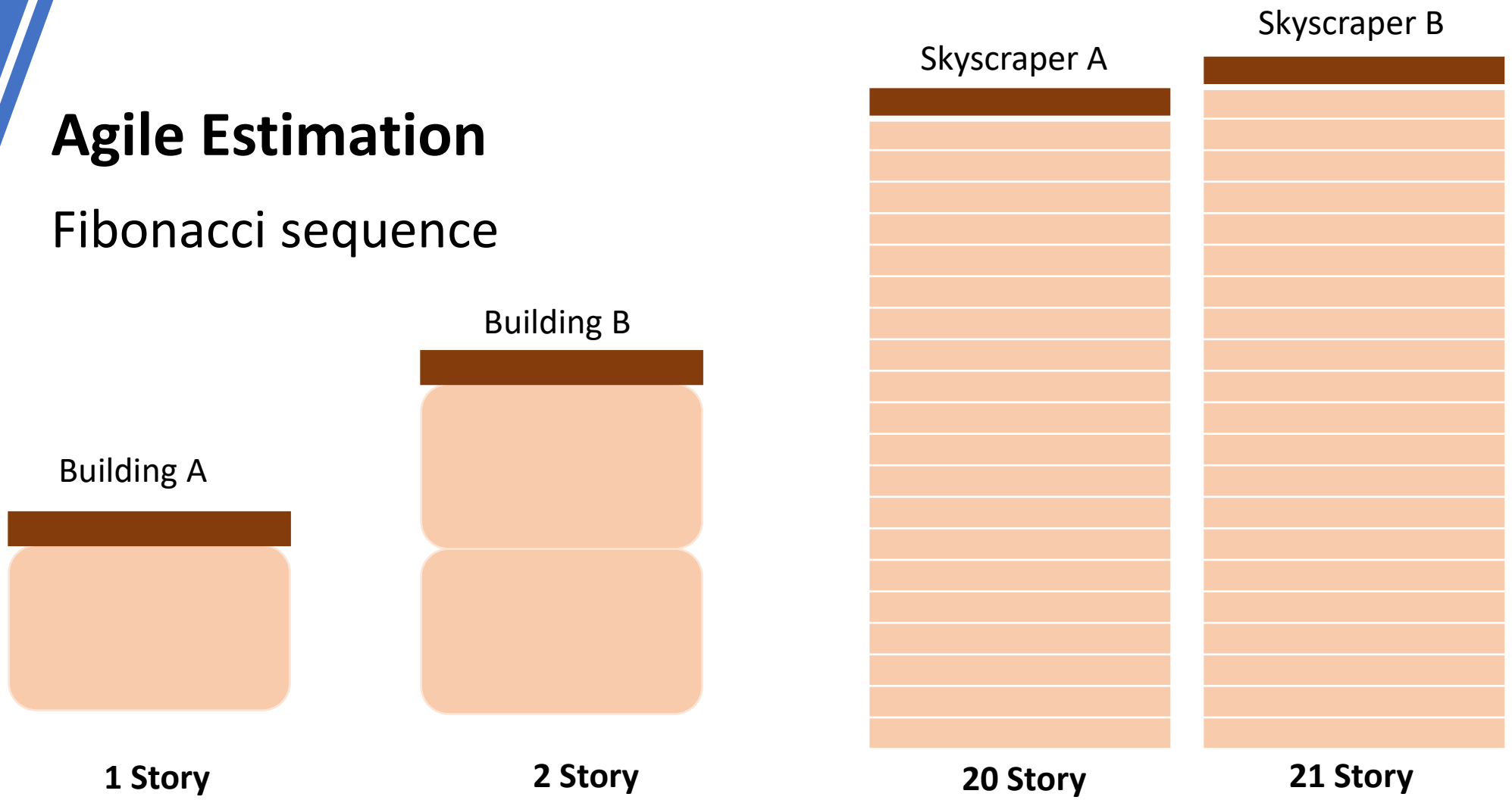
Agile Estimation

Fibonacci sequence



Story Points are Relative

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

GenMan Solutions

Agile Estimation Techniques for user story

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

Introduction to Key Agile Concepts

GenMan Solutions

Agile Estimation Techniques for user story

- Delphi
- Wide Band Delphi
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- **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

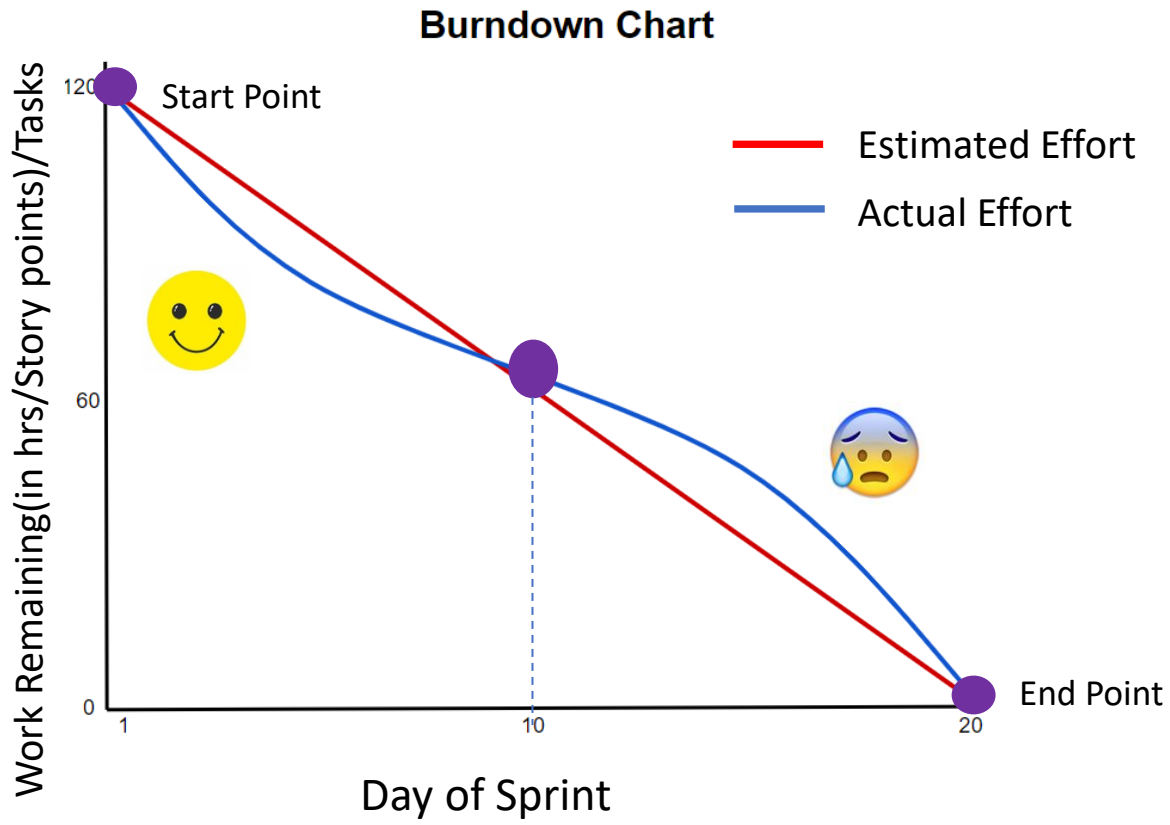
Estimation/Planning Poker

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

Introduction to Key Agile Concepts

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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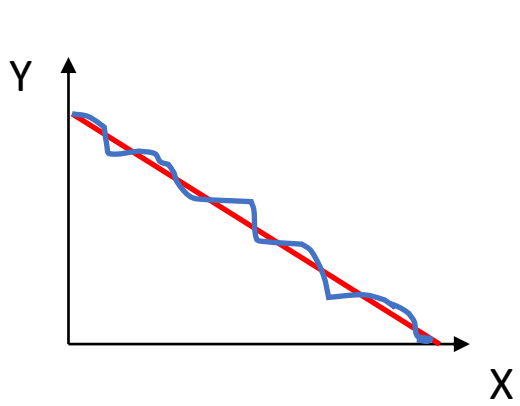
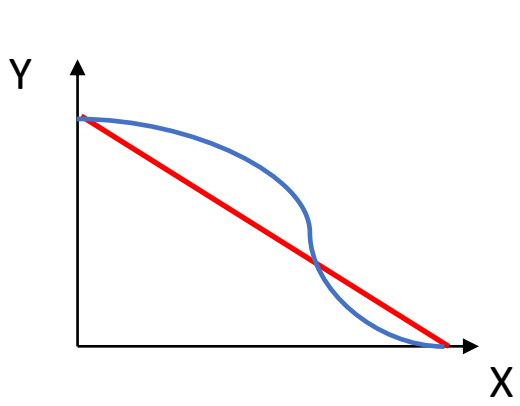
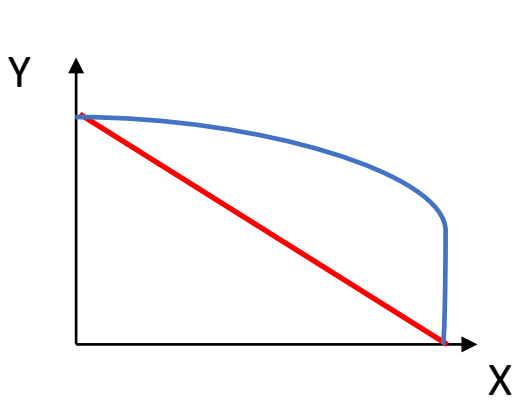
Burn down Chart



1. Ideal Scenario



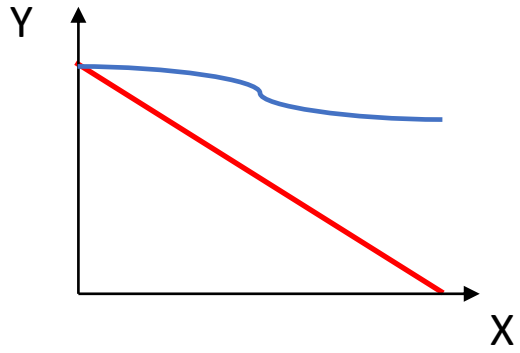
2. Still, a good scenario



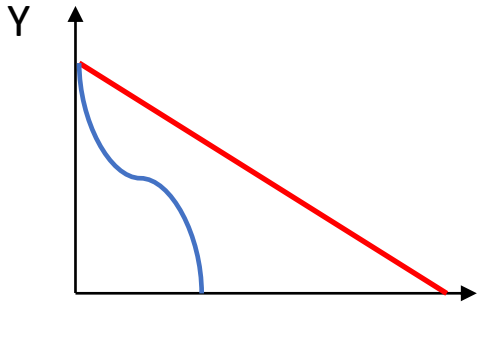
3. Decent scenario

Estimated Effort

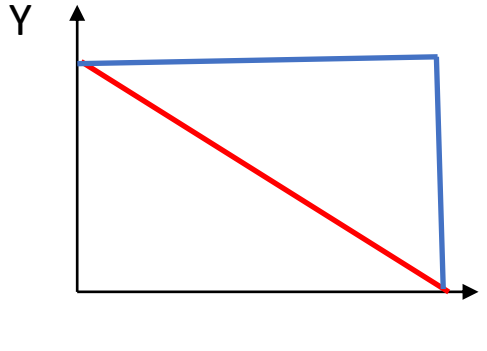
Actual Effort



4. Missed the deadline



5. There's something wrong



6. Team forgot about it

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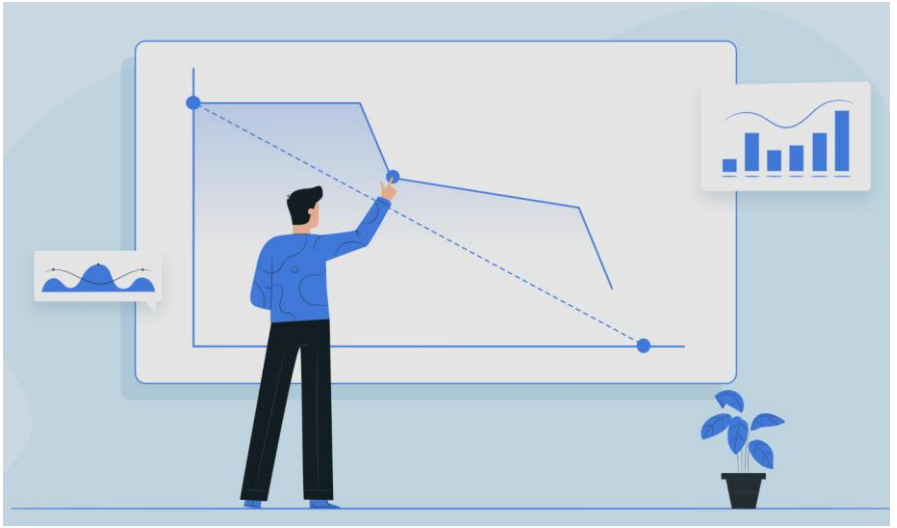
Burn down Chart

Benefits

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



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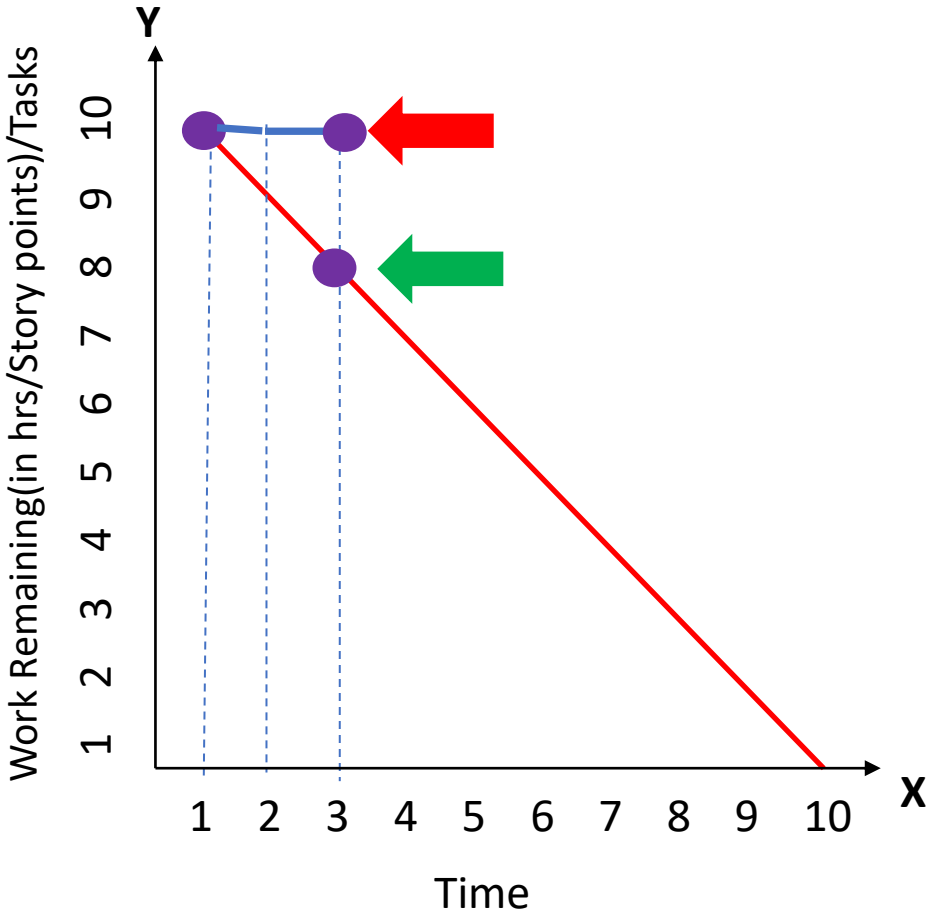
Burn down Chart

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

GenMan Solutions

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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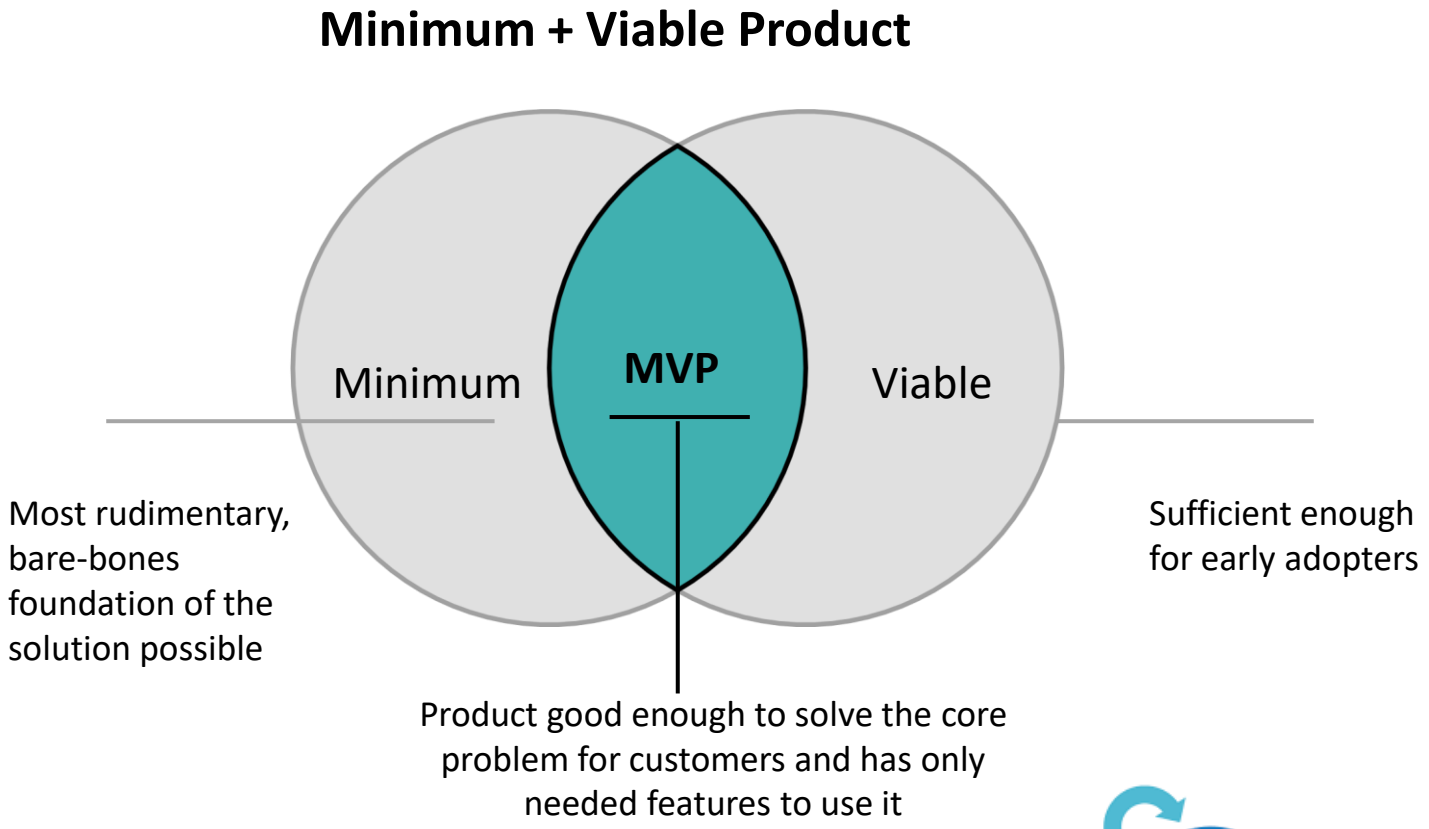
- *Agile Alliance*



Introduction to Key Agile Concepts

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Minimum Viable Product (MVP)

Why MVP?

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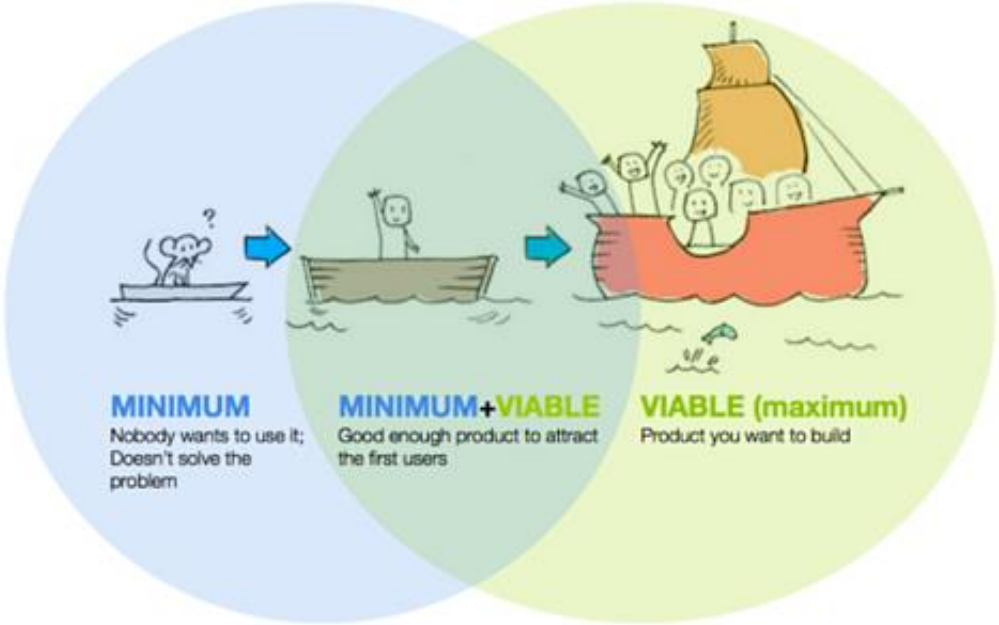


Introduction to Key Agile Concepts

Minimum Viable Product (MVP)

Use case:

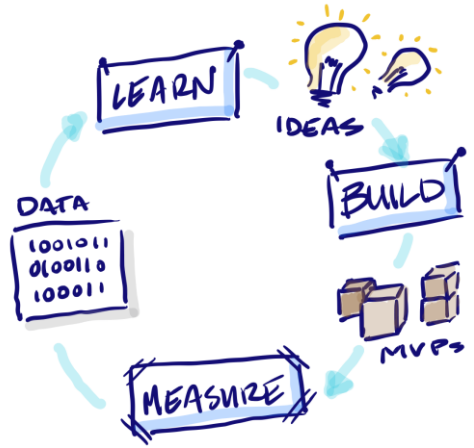
Your target audience needs a specific means of transport, but they are not sure if they want to buy a premium product right away.

What do you do then?

Create the most basic version of the Product

↓

Gather feedback on your product



Introduction to Key Agile Concepts

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Minimum Viable Product (MVP)

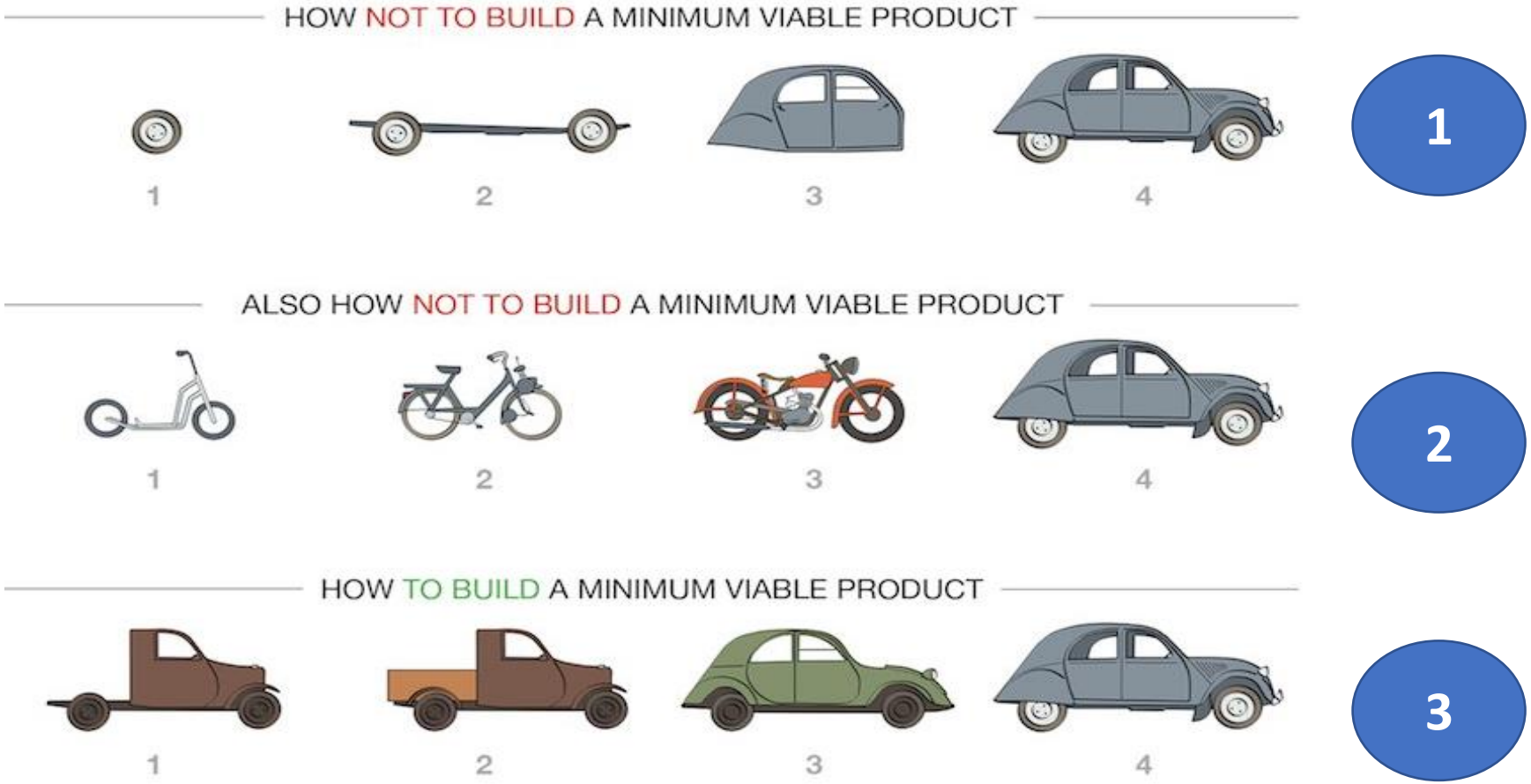

image source: http://www.expressiveproductdesign.com/

Introduction to Key Agile Concepts

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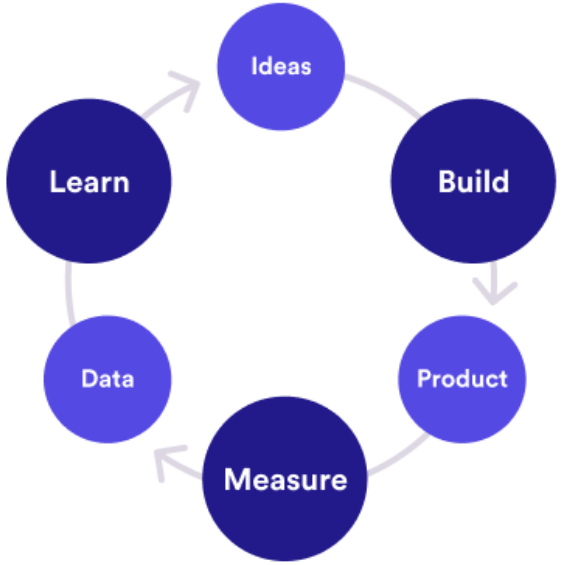
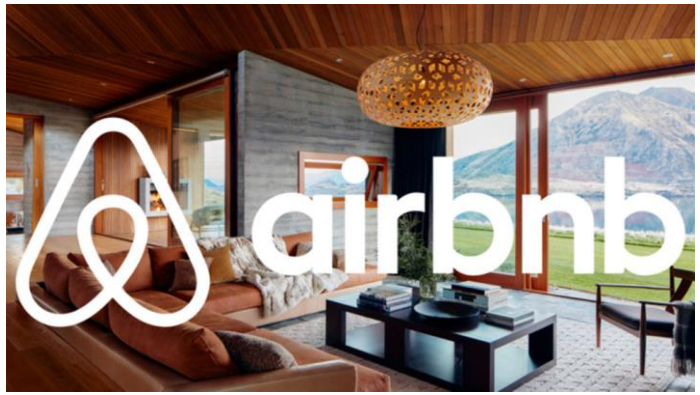
Minimum Viable Product (MVP)



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



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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.

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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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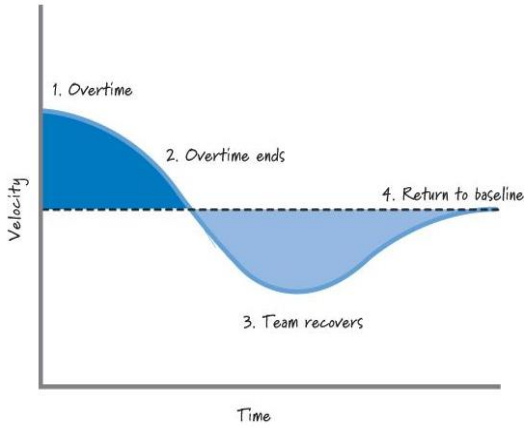
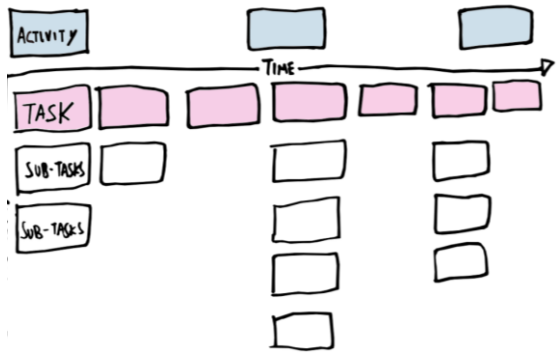
Velocity

Failing to bring a story to completion



Velocity see-sawing



Decomposition of User Stories

Accurate Estimation