

# Error Management Course Agenda

- Learn basic concepts to understand error management process and work
- Requirement engineering and management
- Agile methods and testing
- Test design & execution & error reporting
- Test Planning & Management
- Test Automation
- Continuous Integration & Testing
- Understand how and why testing is important



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- This material is for general training for Test Design and management
- Material is more supportive in class room
- Material will be updated during courses
- FreeNest Portable Project Platform is used to demonstrate things only in practice.  
This is not limiting usage for material for other training environments (I hope 😊)

# Verification & Validation

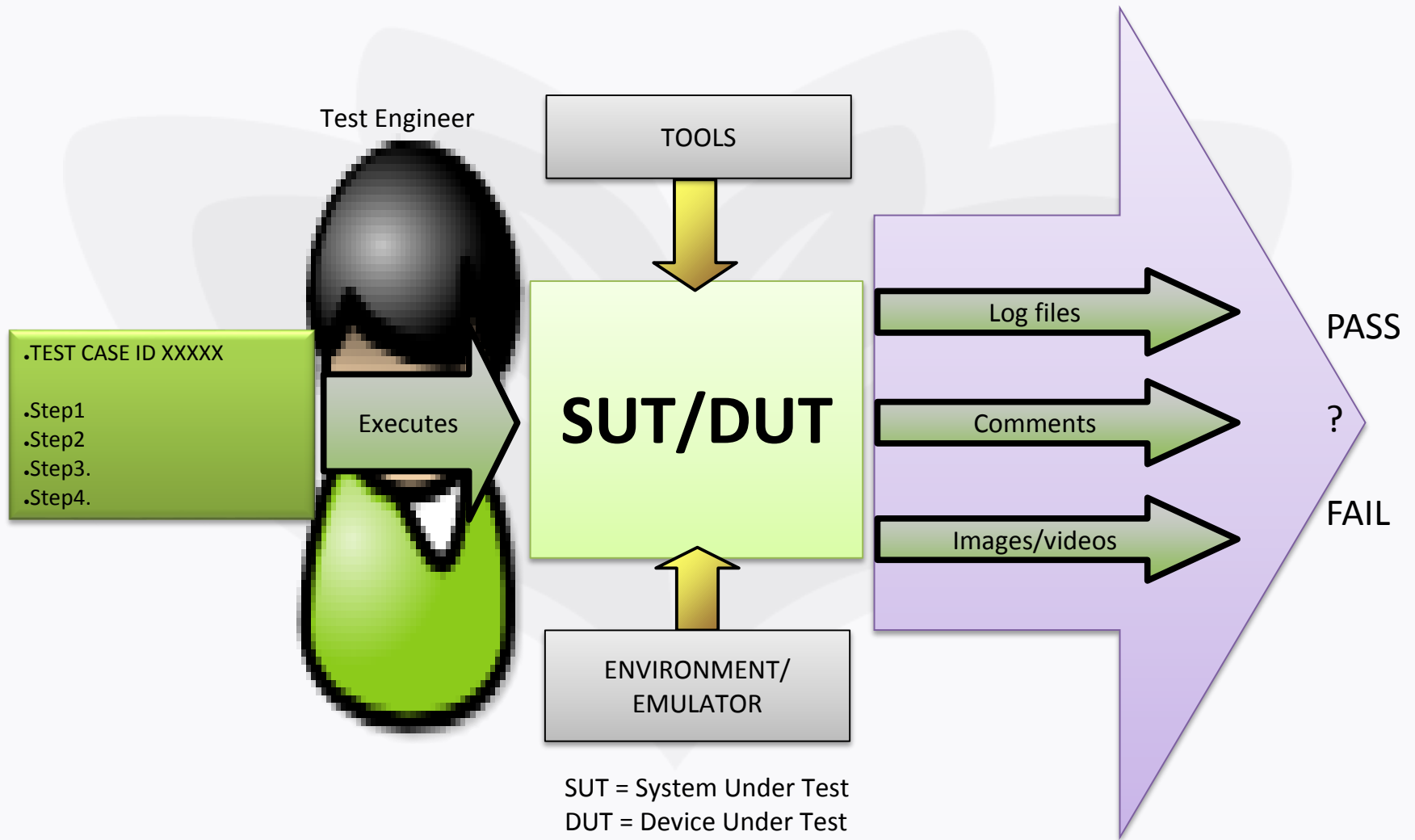
Validation = Are we building the right product?

Verification = Are we building the product right?



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# Test Execution and results



# Bug ?



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# Anomaly / Poikkeama

- Mikä tahansa tilanne, joka poikkeaa odotuksista, määrittämisistä, suunnitteluasiakirjoista, käyttäjävaatimuksista, standardeista yms. tai jonkun näkemyksestä tai aikaisemmista kokemuksista.
- Poikkeamia voi löytyä katselmoinnin, testauksen, analyysin tai käännöksen aikana tai vasta ohjelmistotuotteen käytön aikana.
- Poikkeamia voi esiintyä myös tuotteeseen liittyvissä asiakirjoissa.
- Muut käsitteet vika [defect] , poikkeama [deviation], virhe [error], vika [fault], häiriö [failure], havainto ja ongelma [problem].



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# Defect / Vika (ISTQB)

- A flaw in a component or system that can cause the component or system to fail to perform its required function, e.g. an incorrect statement or data definition. A defect, if encountered during execution, may cause a failure of the component or system
- Bug = Defect



# Concepts

Failure – Fault – Defect - Bug - Incident – Failure - Error

Example forum thread:

<http://www.allinterview.com/showanswers/36257.html>

Take a look for ISTQB syllabus:



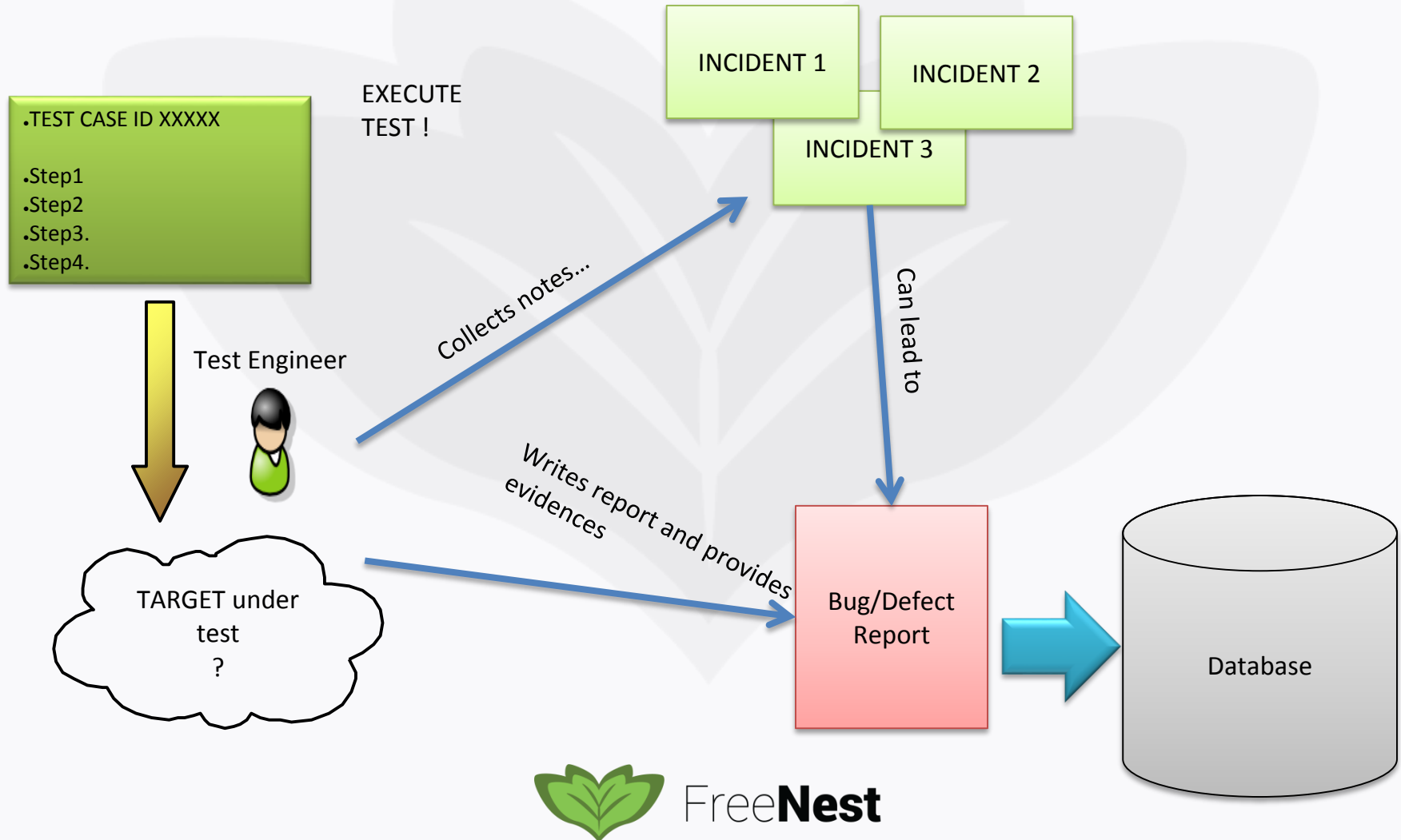
# Worst Bugs ?

- [http://en.wikipedia.org/wiki/List\\_of\\_software\\_bugs](http://en.wikipedia.org/wiki/List_of_software_bugs)

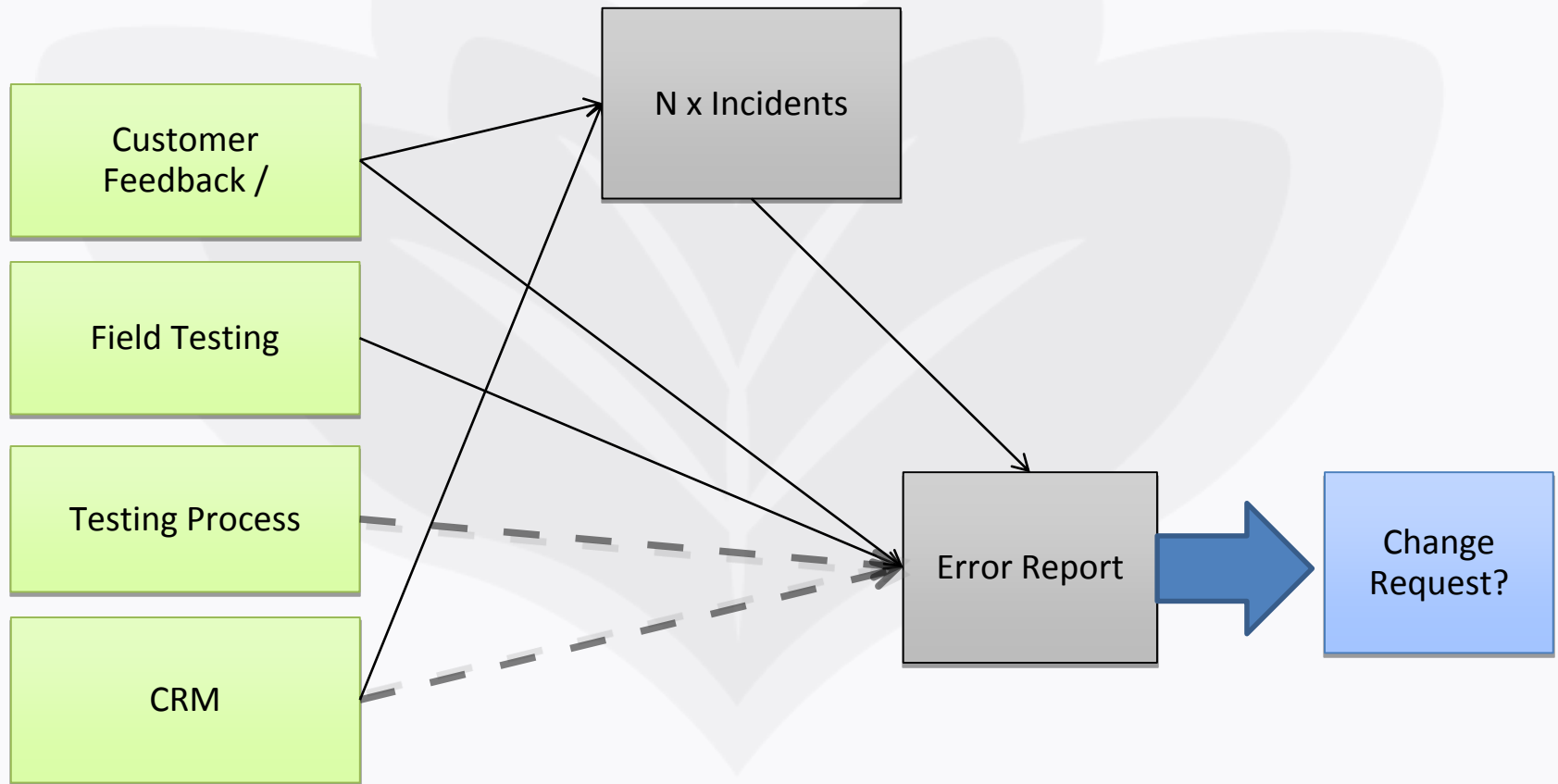


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# Test Case execution and error reporting?

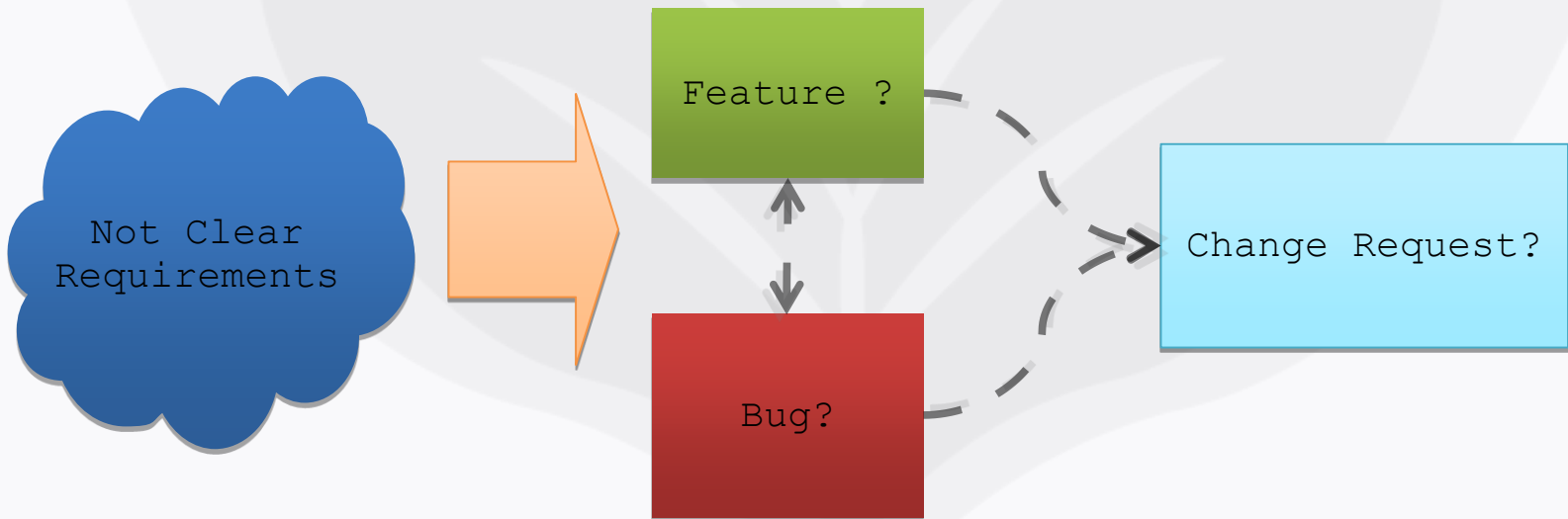


# Sources for error report



# Change Management

Sometimes founded defect during testing can lead to change requests



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# Error/Bug/Defect Report

- .Defect/Burg/Error ID
- .Reporter
- .Time
- .Founded where
- .Which way?
- .Test Case
- .Test Setup/Configuration
- .Describe scenario?
- .Attachments? Picture/Log/etc..

Id1

Error  
Database

Id2

Id3

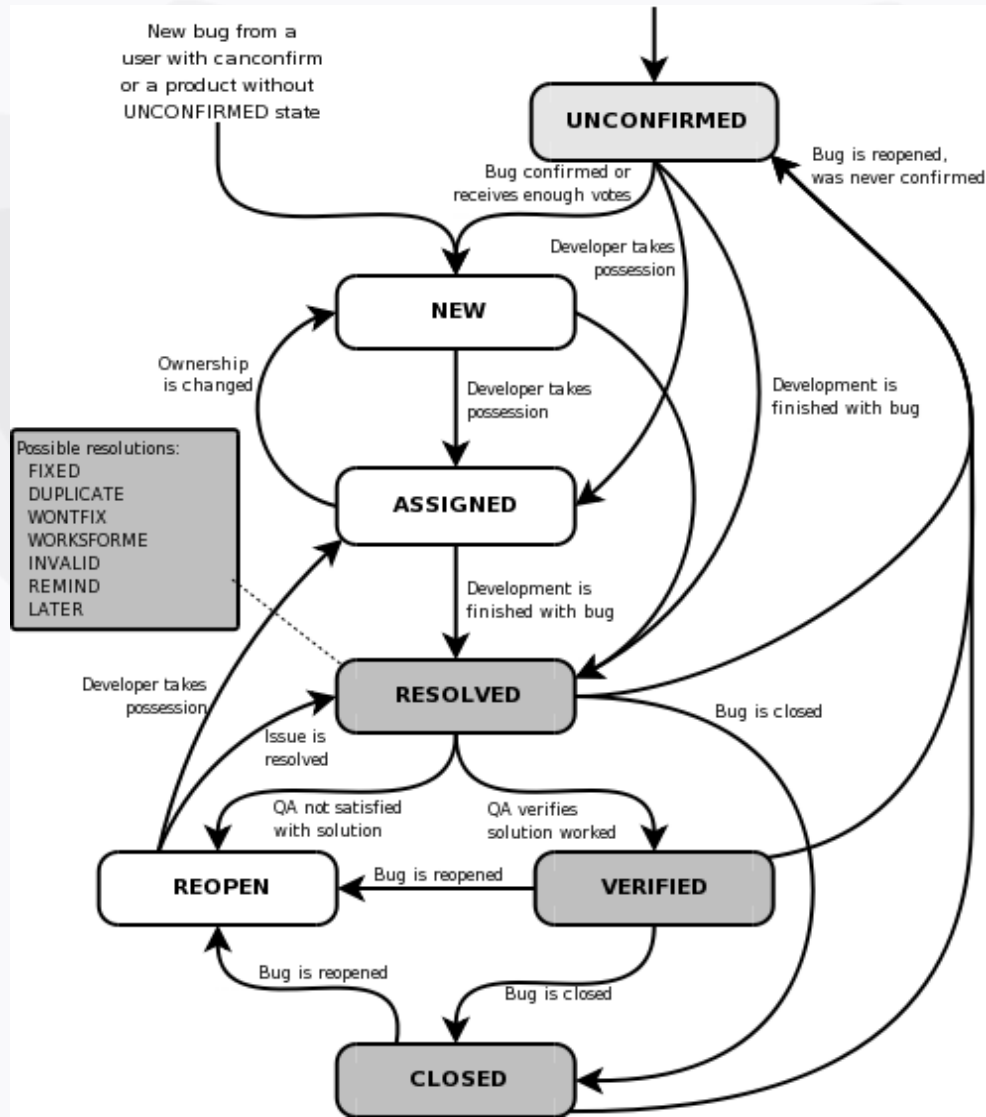
Id4

Id5

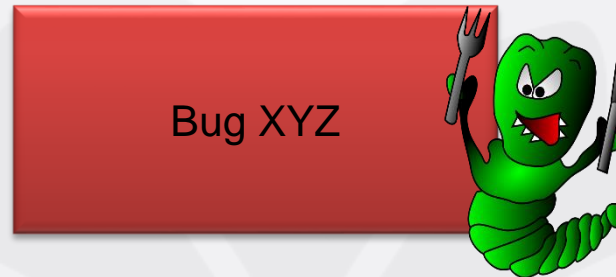


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# Management Process



# Issue/Defect/Bug metadata



Status?

New, Fixed, Tested, Closed

Origin/location?

Priority?

Severity?

Target?

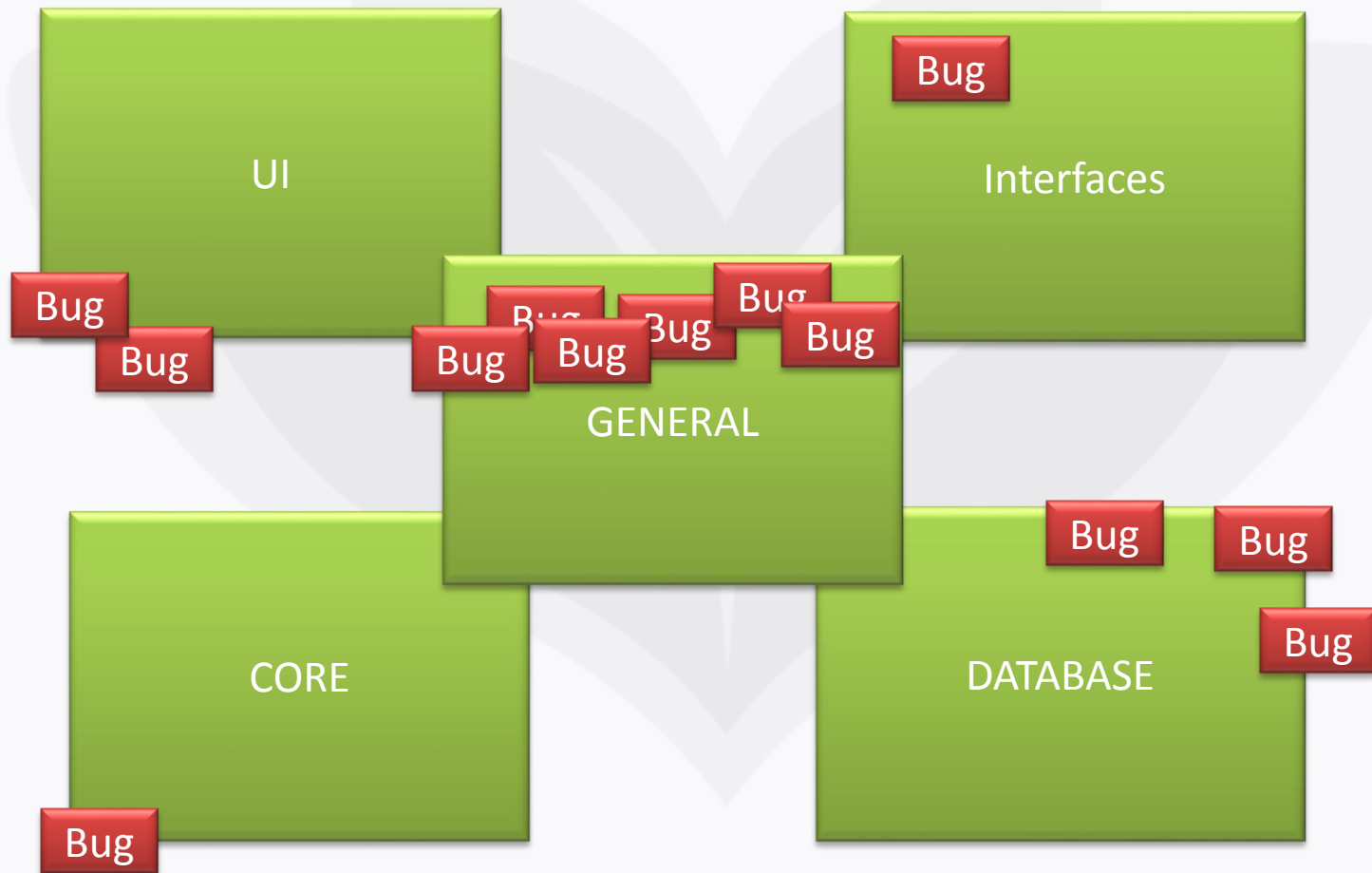
# Error/Defect/Issue/Bug Management

<http://www.glpi-project.org/?lang=en>

Bug Database

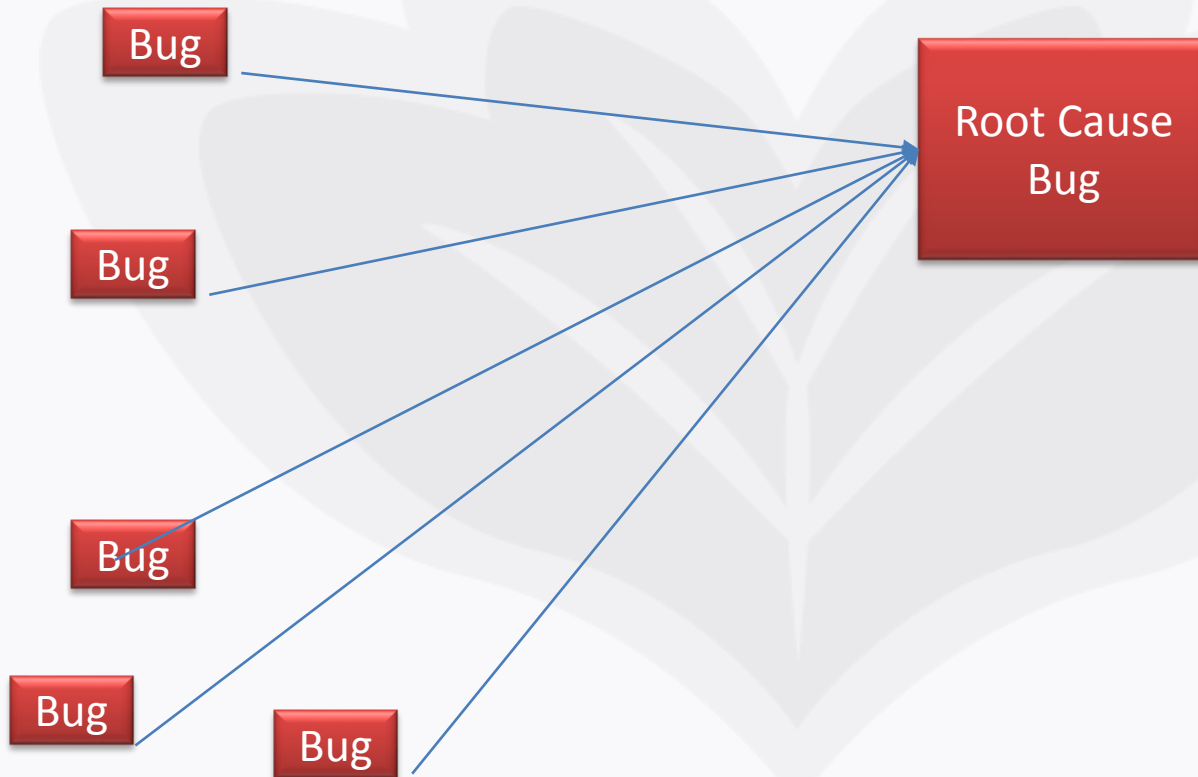


# Bugs and product



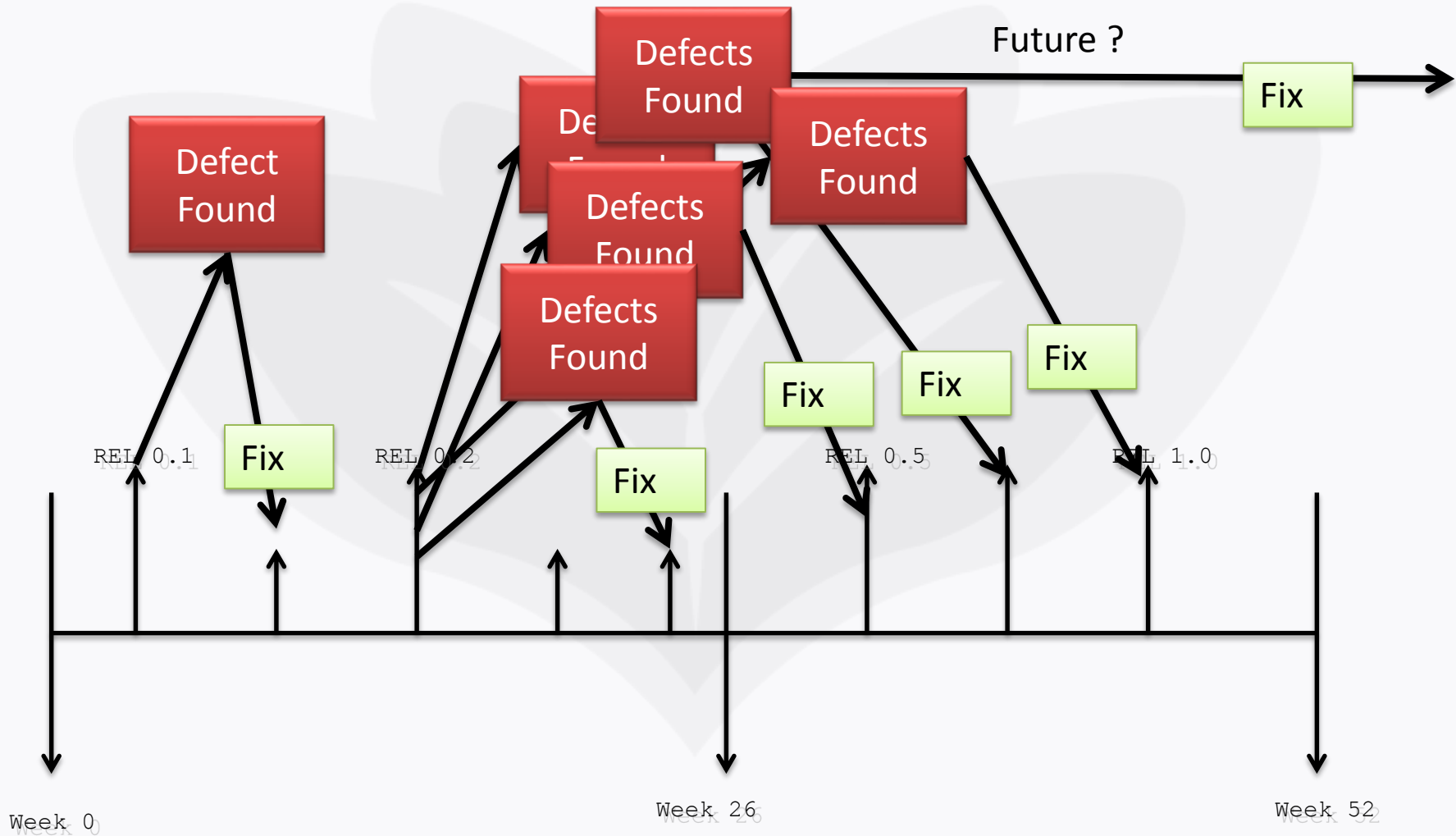
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# Duplicates... and root cause bug



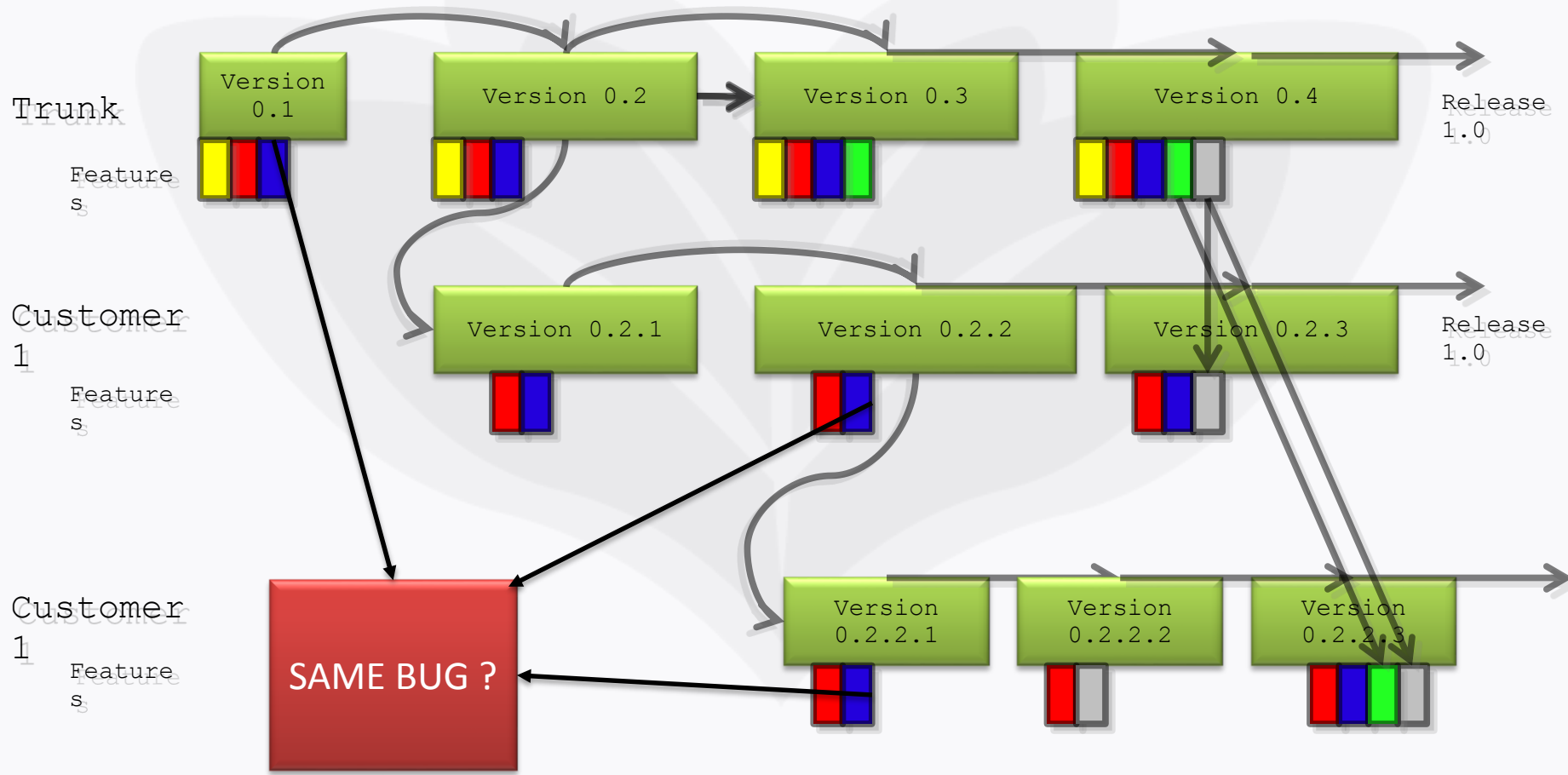
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# Finding and Fixing bugs



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# Release & Configuration Management and Bugs ?



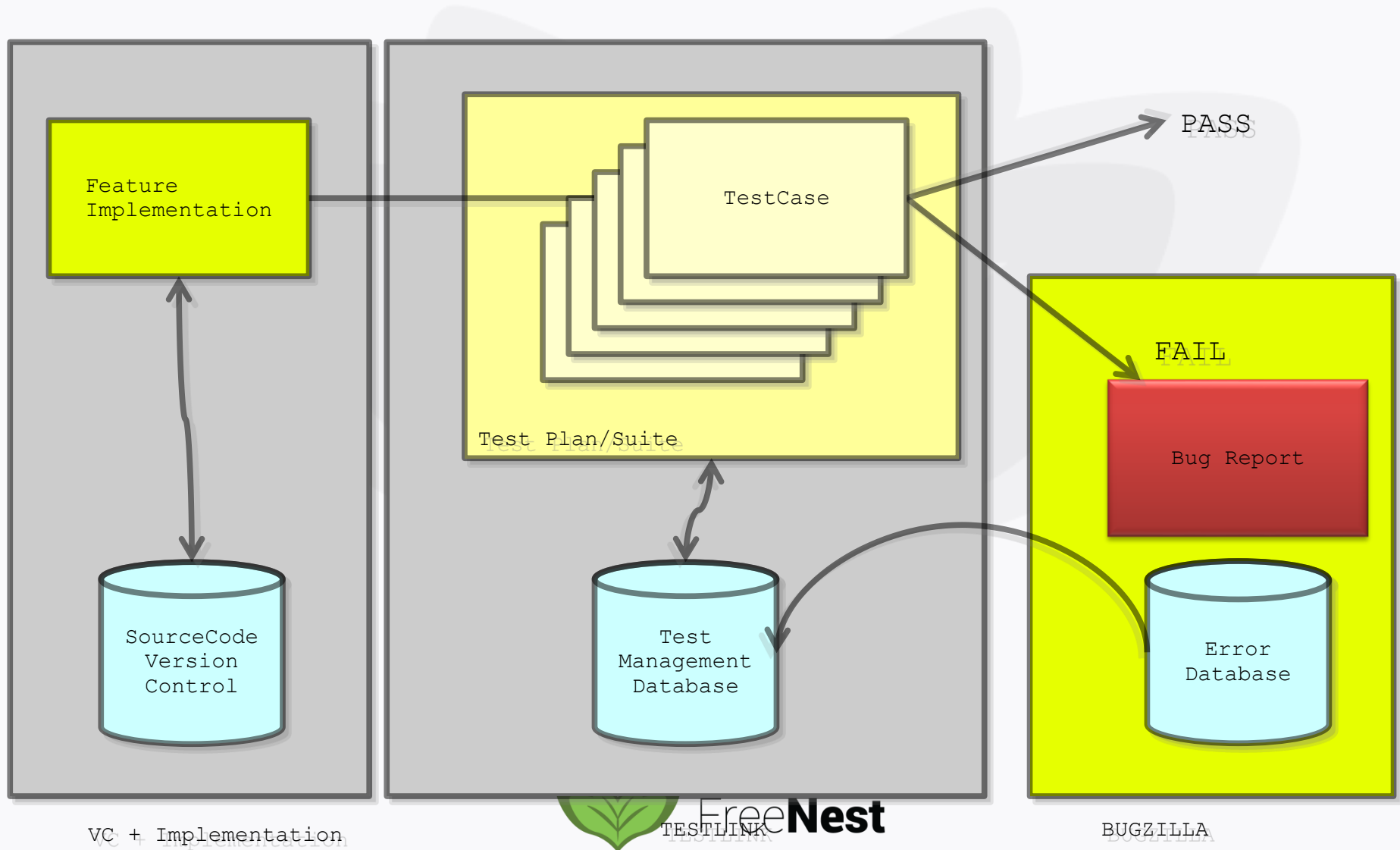
# Common Issue/Bug/Defect Trackers

- [Several open source and commercial versions on market](#)
- [http://en.wikipedia.org/wiki/Comparison\\_of\\_issue\\_tracking\\_systems](http://en.wikipedia.org/wiki/Comparison_of_issue_tracking_systems)
- You should know JIRA 😊 <https://www.atlassian.com/software/jira>
- <http://www.softwaretestingclass.com/top-10-free-open-source-bug-tracking-systems/>



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# Test & Error Management



# Mantis

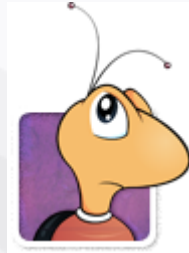


<http://www.mantisbt.org/>



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# Bugzilla



<http://www.bugzilla.org/>

Bugzilla Bug 305134 - Remove FeedView from Firefox 1.5 - Mozilla Firefox 1.0- (Build 2005082813) - Gecko 1.8b4

Bugzilla Version 2.19.1+

Bugzilla Bug 305134 Description: Remove FeedView from Firefox 1.5 Last modified: 2005-08-28 01:41 PDT

Search page Enter new bug

Bug#: 305134 alias: Hardware: All Reporter: Ben Goodger (use ben at mozilla)

Product: Firefox OS: All Add CC: slav@spencop.net, avel@pika.org, bugs.mano@sent.com, bugtrap@psychotowol, bugzilla@dougweb.org

Component: RSS Discovery and Preview Version: unspecified Priority: normal Severity: normal Target Milestone: --

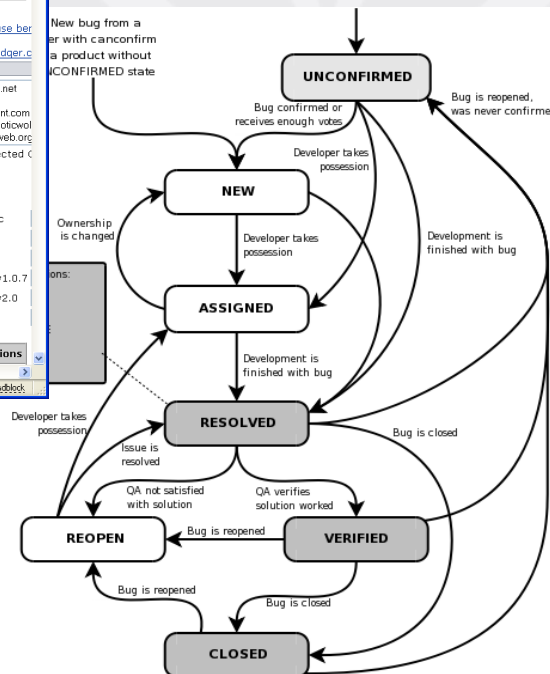
Status: RESOLVED Resolution: FIXED Assigned To: dot org for email (bugs@bengoodger.com) QA Contact: nobody@mozilla.org

URL: Summary: Remove FeedView from Firefox 1.5

Status: Whiteboard: Keywords: fixed1.0

Attachment Type Created Size Flags Actions

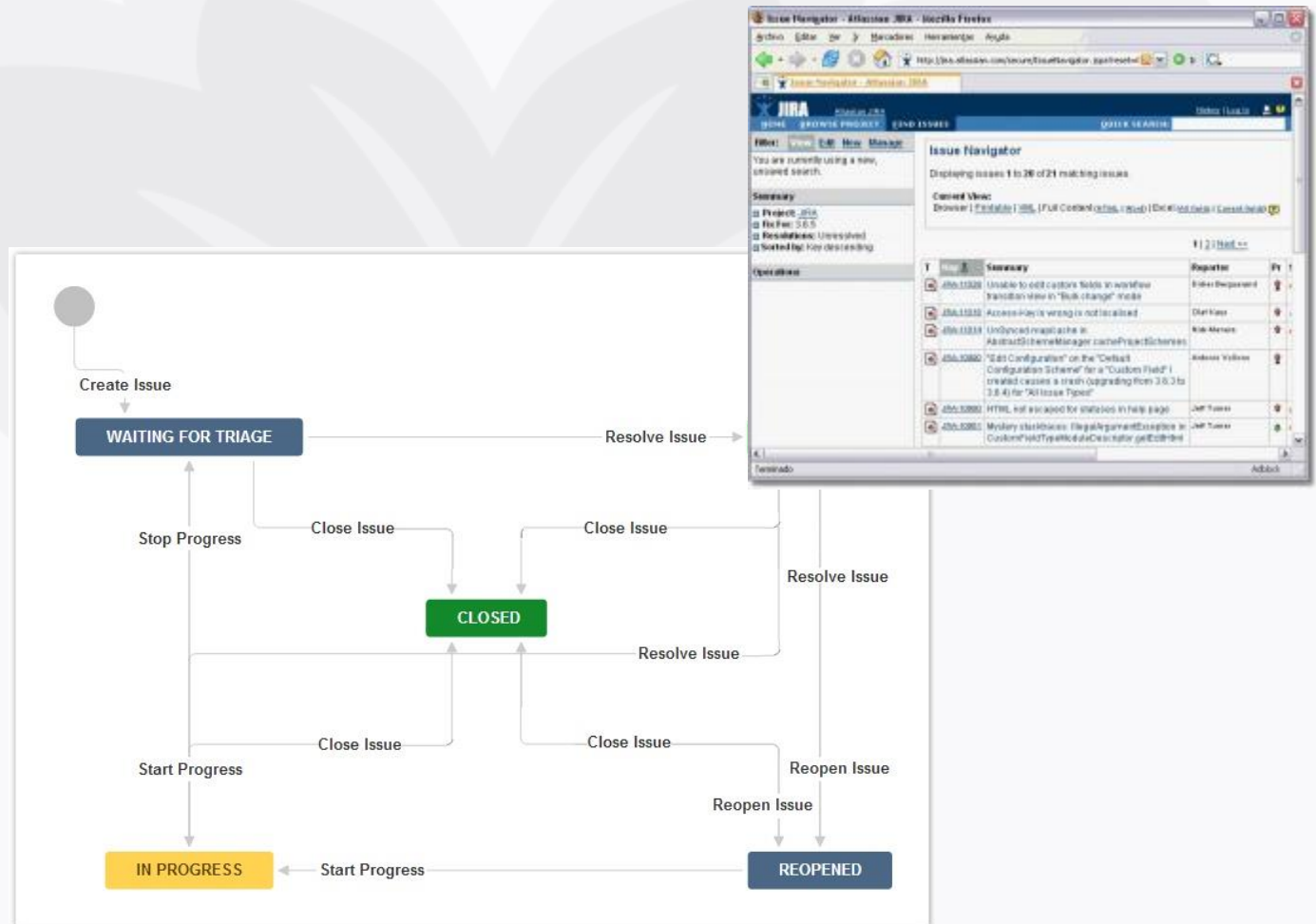
Terminé bugzilla.mozilla.org





<https://confluence.atlassian.com/display/JIRA/JIRA+Documentation>

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# Bugzilla as example

- What is Bugzilla?

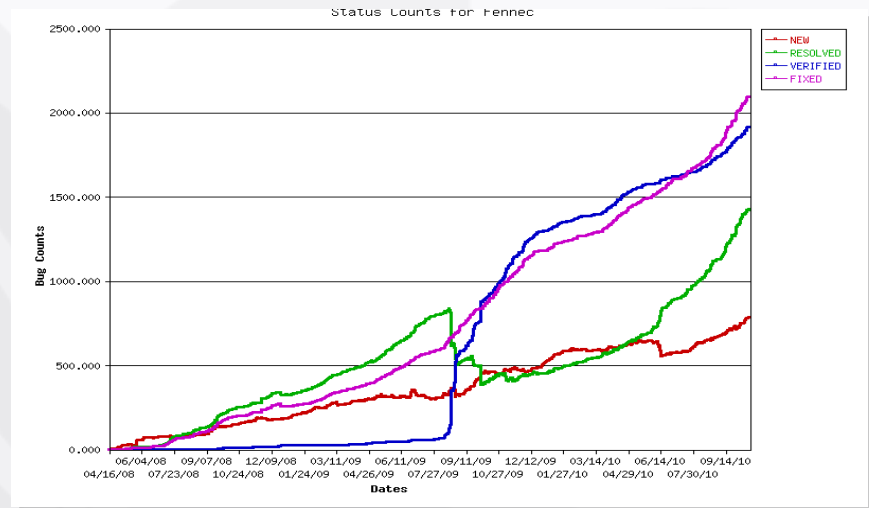
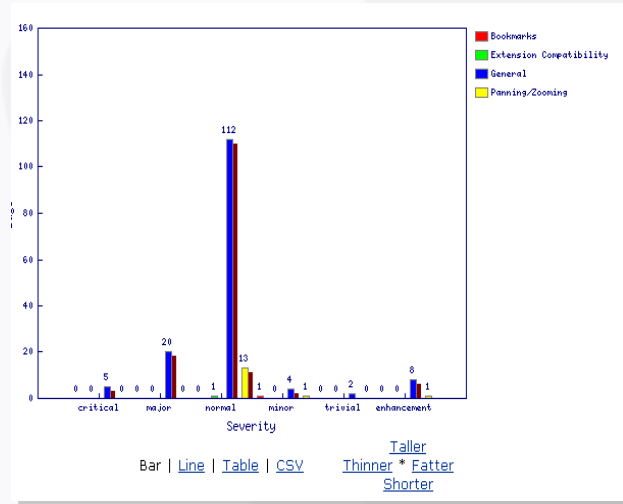
Bugzilla is a "Defect Tracking System" or "Bug-Tracking System". Defect Tracking Systems allow individual or groups of developers to keep track of outstanding bugs in their product effectively. Most commercial defect-tracking software vendors charge enormous licensing fees. Despite being "free", Bugzilla has many features its expensive counterparts lack. Consequently, Bugzilla has quickly become a favorite of thousands of organizations across the globe.



<http://www.bugzilla.org/>

<http://www.bugzilla.org/installation-list/>

# Reporting and metrics



Component	Severity						Total
	critical	major	normal	minor	trivial	enhancement	
Bookmarks	.	.	.	1	.	.	1
Extension Compatibility	.	.	1	.	.	.	1
General	5	20	112	4	2	8	151
Panning/Zooming	.	.	13	1	.	1	15
Total	5	20	126	6	2	9	168

[Bar](#) | [Line](#) | [Table](#) | [CSV](#) [Edit this report](#)

# CMMI Process Framework

CMMI – covers "error management" in several process areas

SP3.2 Analyze Verification results

Typical Work Products: Trouble reports

- Analyze the verification data on defects
- Record all results of the analysis in a report
- Provide information on how defects can be resolved (including verification methods, criteria, and verification environment) and initiate corrective action

Project Monitoring and Control

SG2 Manage Corrective Action to Closure

SP2.1 Analyze Issues

SP2.2 Take corrective Action

SP2.3 Manage corrective Action

SG2 Validate Product or Product Components

SP2.2 Analyze Validation Results. Change request management & Configuration Management process

SG2 Track and Control Changes

SP2.1 Track Change Requests

SP2.2 Control Configuration Items



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# SW Project vs Open Source

Open Source – Crowd Sourcing

SW Release tested without coordination by group of volunteers

Release tested by customer

Field Testing

Test Group



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# Release Management

- [http://en.wikipedia.org/wiki/Configuration\\_management](http://en.wikipedia.org/wiki/Configuration_management)
- [http://en.wikipedia.org/wiki/Release\\_management](http://en.wikipedia.org/wiki/Release_management)

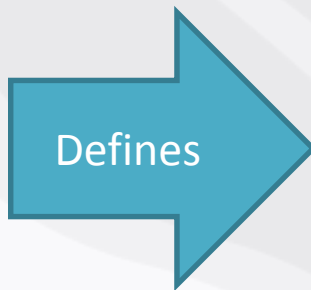
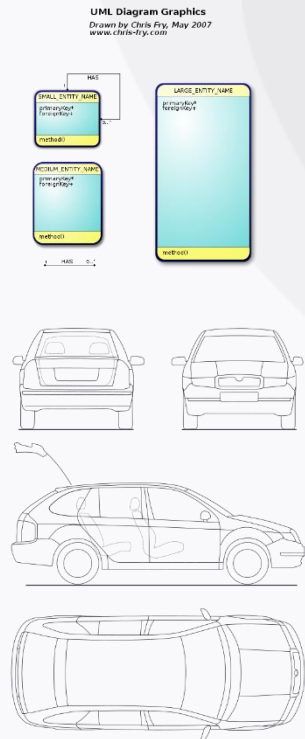


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# Test Designer ?

- Designer for test cases (has substance knowledge)



Test Case

Step 1  
Step 2  
Step 3

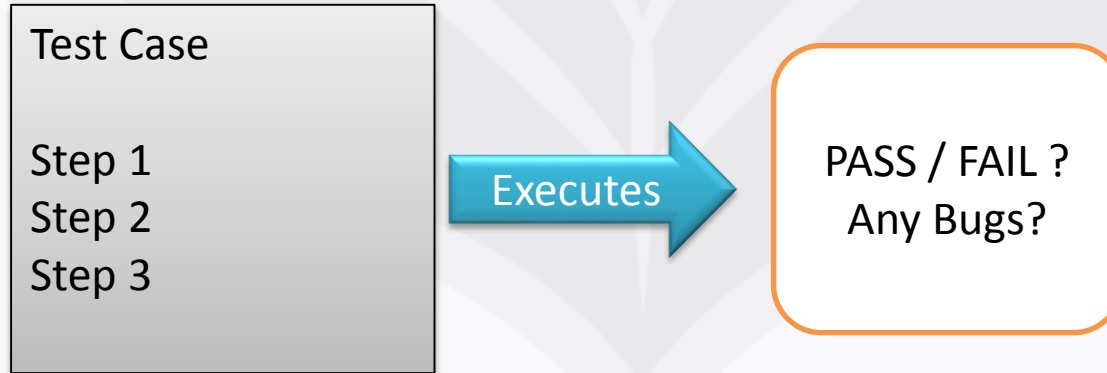


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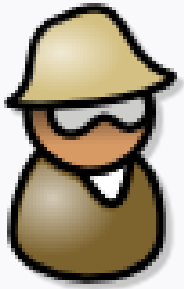


# Tester ?

- Executes testing
- Creates reports and defect/bug/incident reports

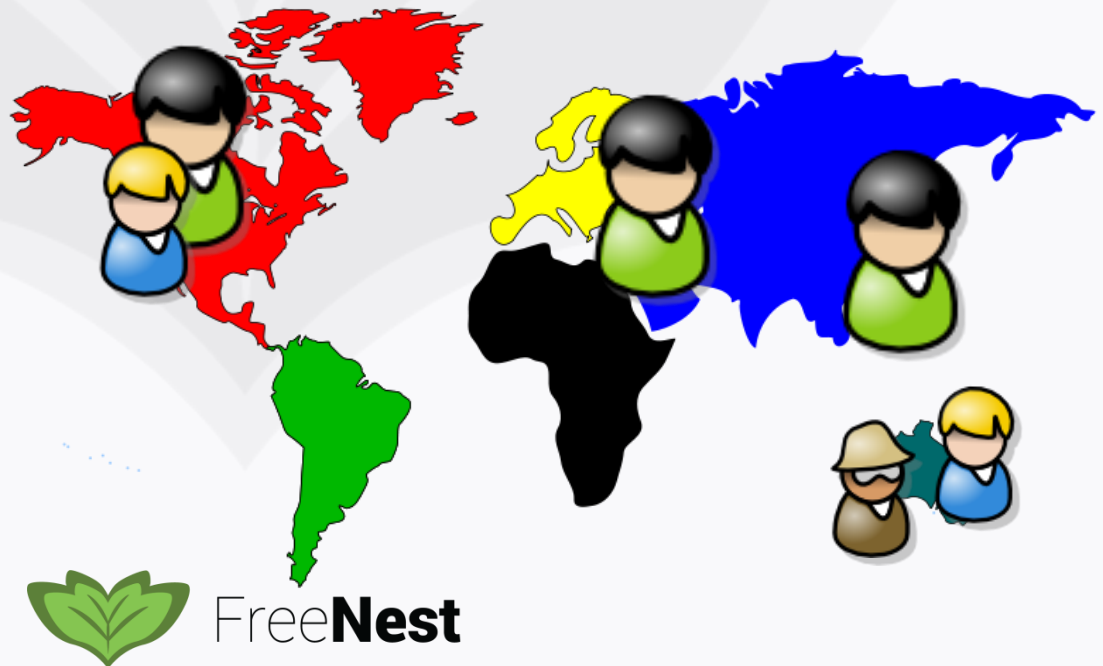






# Test Manager ?

- Has control over testing process and resources
- This role exists in large projects and product lines
- Testing Strategy
- Management
- Master Test Planning



# Test Management

- Reporting
- Executed Test case
- Not executed
- Blocked
- Who / Where / What?
- Founded bugs



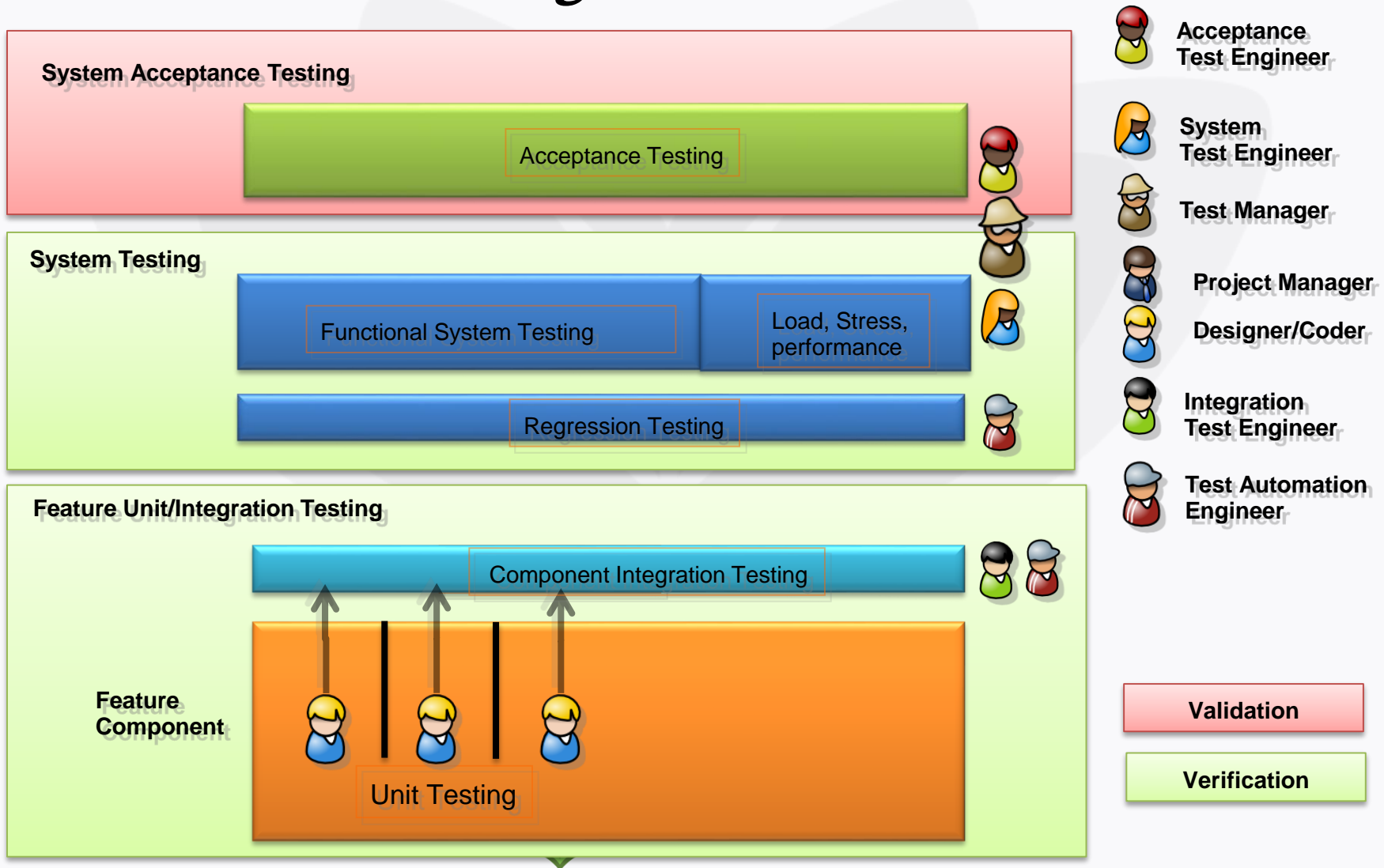
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# Test Engineer ?

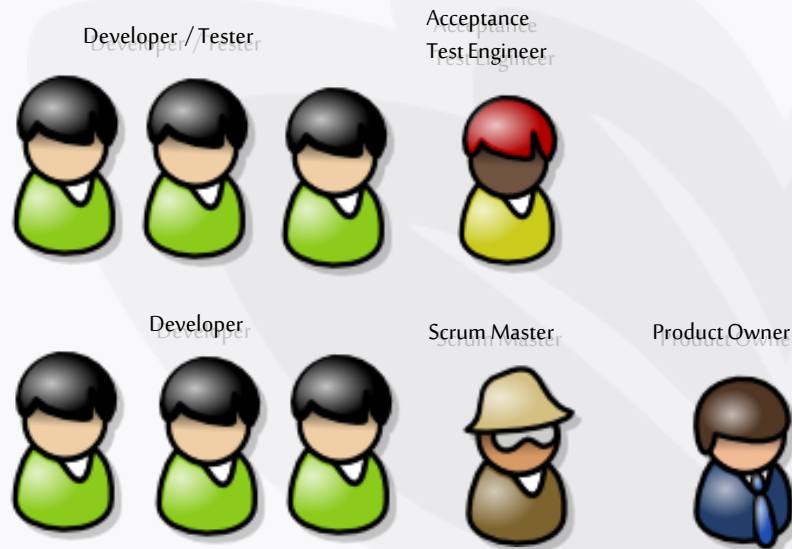


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# Example Product verification & validation organization

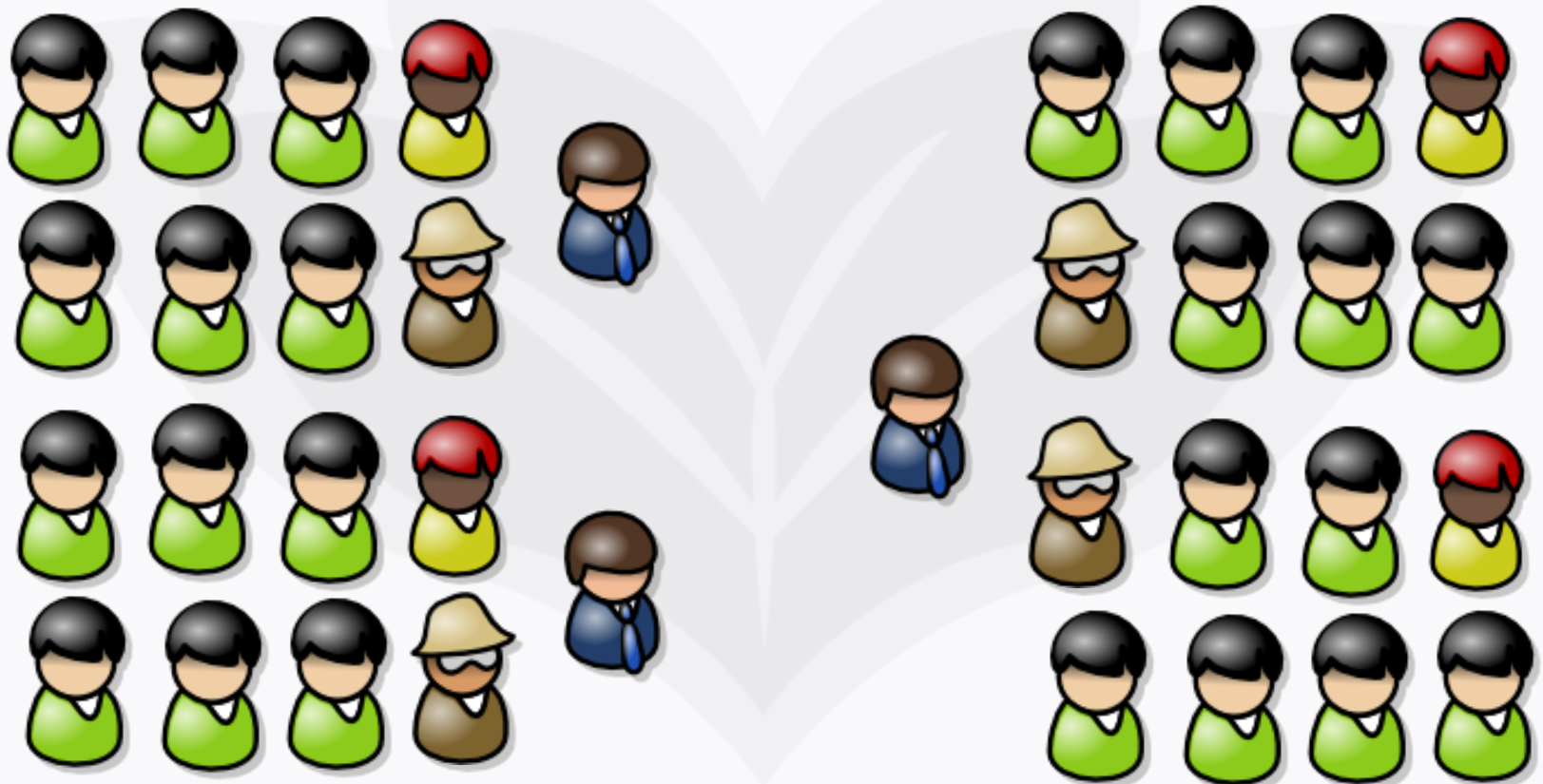


# Agile Team and testing



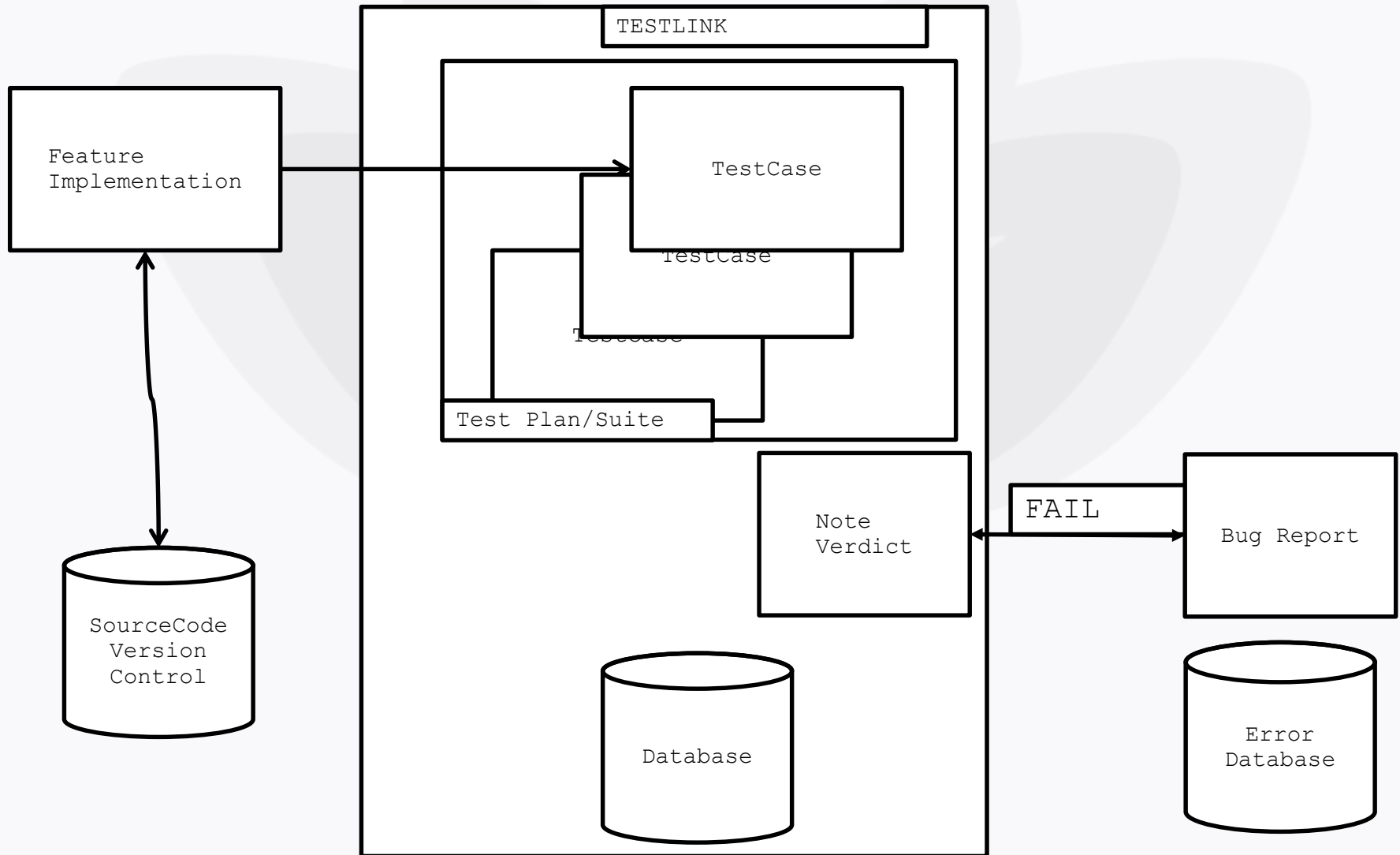
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# Large Agile organization



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# Testlink in brief



- What we can do with Testlink Tool



# Agile methods and testing

- We take branding seriously, The FreeNest Brand is our pride and joy.
- It is the message we want to send to the developer teams, customers and stakeholders.
- These guidelines must be followed in all FreeNest's print and electronic communications, marketing and informing.
- Documentation defines logo guidelines, typography and the use of colors.



# Regression Testing

- Testing of a previously tested program following modification to ensure that defects have not been introduced or uncovered in unchanged areas of the software, as a result of the changes made. It is performed when the software or its environment is Changed.

(ISTQB Syllabus)



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# Logo

- The main logo consists of two elements, the leaf and the text laying horizontally.
- You can also use the logo with the FreeNest text under the leaf, if you need. Don't do this often, the main logo should be the horizontal one.



# Logo

- You can also use the logo with dark background and white text.
- You can use the logo with the “Product Platform” text under the FreeNest if the logo itself does not open up in the context.



Free**Nest**  
Product Platform



Free**Nest**



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# Logo

## Do ...

- observe the free space around the logo.
- use the logo with black text when the background color is light.
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- use white, black or neutral backgrounds.
- respect our logos.
- keep the logo readable.

## Don't ...

- squash or stretch the logo.
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- alter the layout of the logo.
- put anything over the logo.
- change the colors of the logo.



Free**Nest**

# Brand colors

- TMNT and Leaf Green are the main colors of the brand. You can find the colors from the FreeNest logos leaf. Logos typography has the color called 666. Use these green colors with light or dark background, but do not use TMNT color behind the logo.



## **TMNT**

Hex: #5f8029

CMYK: C67 M30 Y100 K15



## **Leaf Green**

Hex: #8ec03d

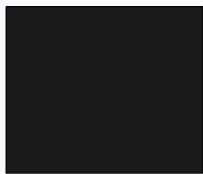
CMYK: C52 M0 Y90 K0



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- Kissa can be used as a background color for some elements. It must also be used as a text color if the background is gray (Toolbox for example).
- Gandalf is meant to be used as a text color if the background is light (Steven Seagull).
- Steven Seagull is a main background color for everything in FreeNest. It can be also used as a text color if the background is dark (Kissa for example).



**Kissa**

Hex: #1a1a1a

CMYK: C76 M67 Y0 K0



**Gandalf**

Hex: #454545

CMYK: C65 M55 Y52 K53



**Steven Seagull**

Hex: #fafafc

CMYK: C2 M2 Y1 K0



Free**Nest**

# Brand colors

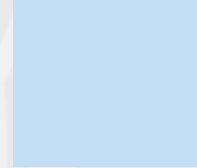
- Sad Cloud, Happy Cloud and Hazy Morning are meant to be used for other visual elements in layouts, buttons, images, illustrations etc. Use them carefully, do not let the blue shades dominate the green shades!



## **Sad Cloud**

Hex: #3b5975

CMYK: C81 M57 Y34 K21



## **Hazy Morning**

Hex: #c5dff7

CMYK: C26 M6 Y0 K0



## **Happy Cloud**

Hex: #7abaf5

CMYK: C53 M16 Y0 K0



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# Web colors

- Great success, Doing It Wrong and Fatal error are utility colors. They are used to give feedback for the user. Great Success means that everything's good. Doing It Wrong is a notice colour for noticing the user. Fatal Error is used for errors.



**Great Success**  
Hex: #7fb34b



**Fatal Error**  
Hex: #ad2a20

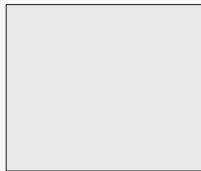


**Doing It Wrong**  
Hex: #ffc30f



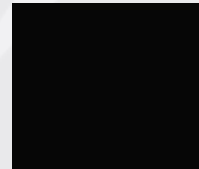
# Web colors

- 666 is the darkest shade you can use anywhere. 666 is near black. If there is necessary to use black, this color is the one.
- Toolbox and Team Board are used as a background for some elements (a toolbox or web site element background for example).



**Toolbox**

Hex: #ebebeb



**666**

Hex: #060606



**Team Board**

Hex: #c8c8c8



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# Typography

## The Roboto family

- The brand font is called Roboto. Always maintain the consistency in FreeNest software, web media, print media etc! If it's not possible to use Roboto in web, use Arial.

Roboto Condensed, *Roboto Condensed Italic*

**Roboto Bold Condensed, *Roboto Bold Condensed Italic***

Roboto Thin, *Roboto Thin Italic*

Roboto Light, *Roboto Light Italic*

Roboto Regular, *Roboto Regular Italic*

**Roboto Bold, *Roboto Bold Italic***

Roboto Black, *Roboto Black Italic*



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# Typography

## Using Roboto

- In body text you should use Thin or Light. Light can be used if Thin gets too thin and stuffy. This text is written with Roboto Light. For highlighting etc. you can use Bold or Black. Never use Italic for anything else than just short quotations and such. See the text colors in the Colors section to select right color for the right background when writing text.

FreeNest (Roboto Thin and Roboto Black)



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A large, dark green, stylized leaf graphic that serves as a background for the text. It has a central vein and several smaller veins branching out, creating a symmetrical, plant-like shape.

# FreeNest Brand



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# What is The FreeNest Brand?

- We take branding seriously, The FreeNest Brand is our pride and joy.
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Free**Nest**  
Product Platform



Free**Nest**



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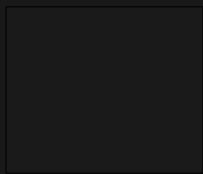
CMYK: C52 M0 Y90 K0



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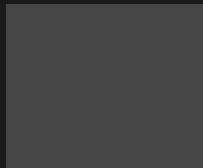
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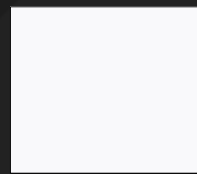
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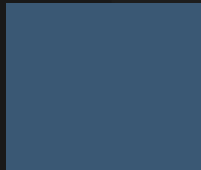
CMYK: C2 M2 Y1 K0



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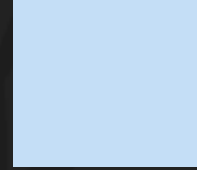
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Hex: #3b5975

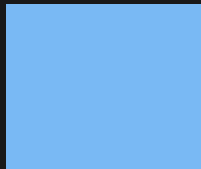
CMYK: C81 M57 Y34 K21



## **Hazy Morning**

Hex: #c5dff7

CMYK: C26 M6 Y0 K0



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Hex: #7abaf5

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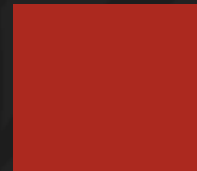
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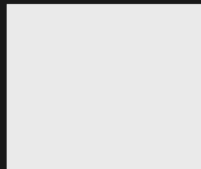
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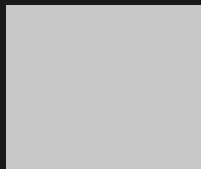
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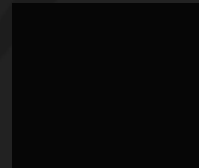
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Hex: #c8c8c8



**666**  
Hex: #060606



Free**Nest**

# Typography

## The Roboto family

- The brand font is called Roboto. Always maintain the consistency in FreeNest software, web media, print media etc! If it's not possible to use Roboto in web, use Arial.

Roboto Condensed, *Roboto Condensed Italic*

**Roboto Bold Condensed, *Roboto Bold Condensed Italic***

Roboto Thin, *Roboto Thin Italic*

Roboto Light, *Roboto Light Italic*

Roboto Regular, *Roboto Regular Italic*

**Roboto Bold, *Roboto Bold Italic***

Roboto Black, *Roboto Black Italic*



Free**Nest**



# Typography

## Using Roboto

- In body text you should use Thin or Light. Light can be used if Thin gets too thin and stuffy. This text is written with Roboto Light. For highlighting etc. you can use Bold or Black. Never use Italic for anything else than just short quotations and such. See the text colors in the Colors section to select right color for the right background when writing text.

FreeNest (Roboto Thin and Roboto Black)



Free**Nest**