



TECHNIQUE D'ESTIMATION DU WORKING SET BASEE SUR LE PML (PAGE MODIFICATION LOGGING)



Mémoire de fin d'études

Soutenu et présenté par :

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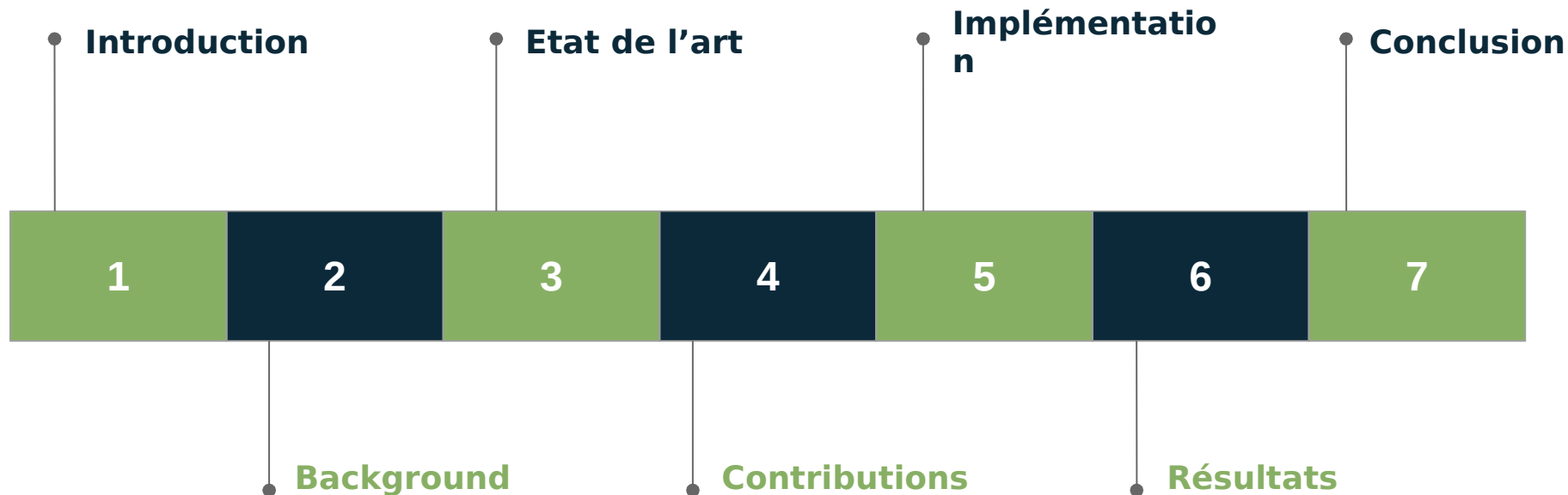
En vu de l'obtention du :

**Diplôme d'Ingénieur en Conception, option Génie
Informatique**





Grandes étapes



1

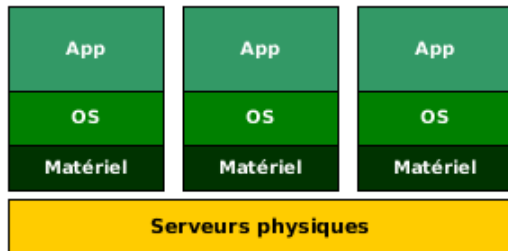
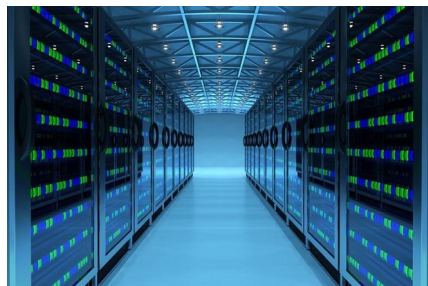
Introduction

- Situer le contexte
- Exposer la problématique
- Expliquer les motivations
- Présenter les objectifs

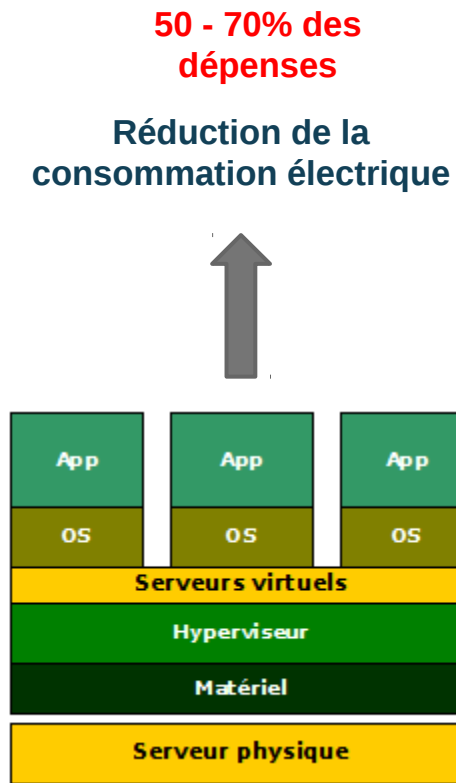


Contexte

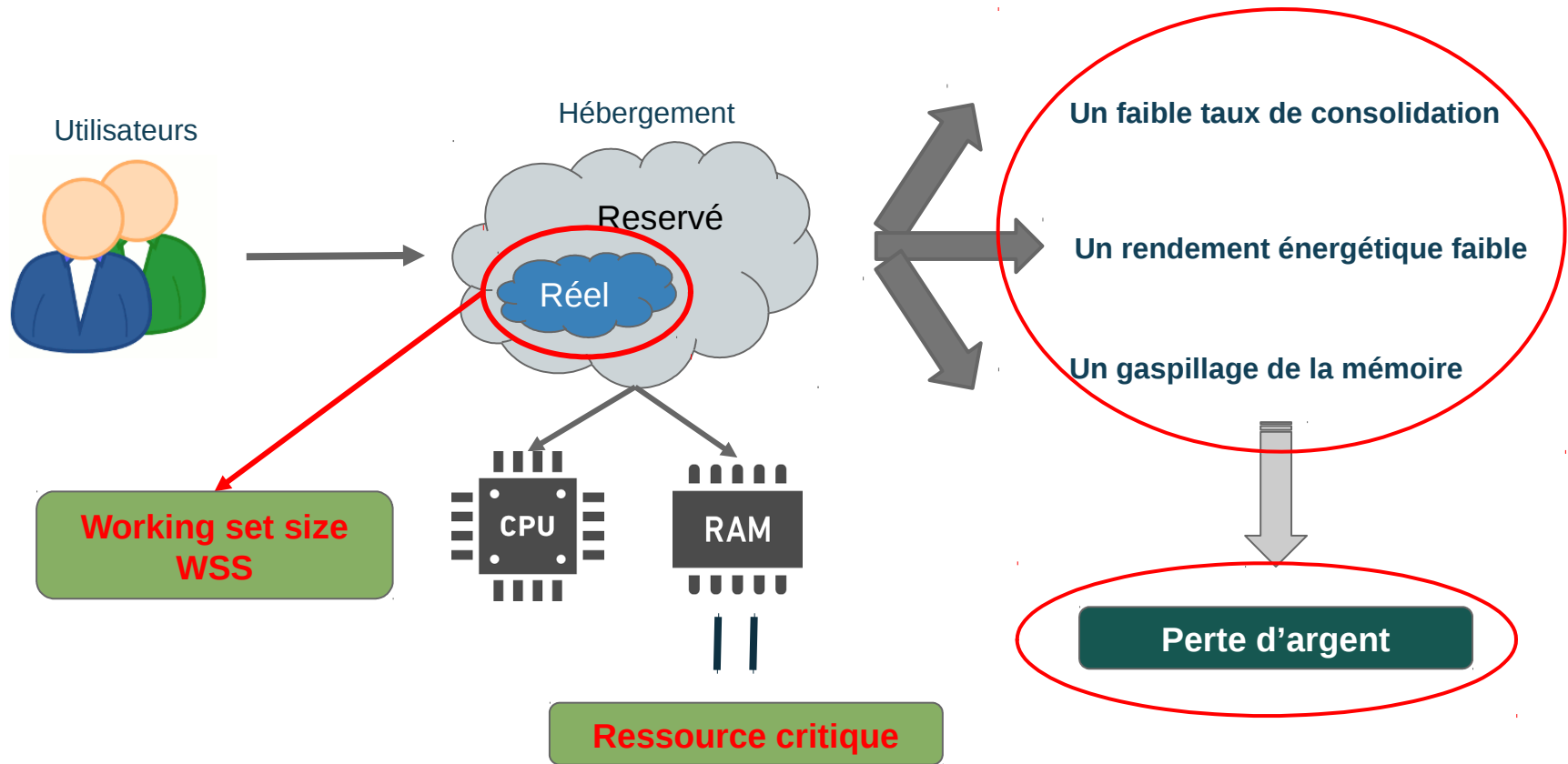
Datacenter



Virtualisation



Contexte





Problématique

Problème d'estimation
du WSS

Techniques existantes

Inconvénients

- ☐ Lenteur
- ☐ Indisponibilité momentanée
- ☐ Etc.

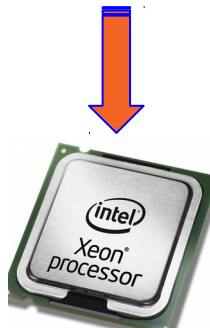
- Imprécision : sur/sous estimation
- Nécessitent beaucoup de ressources : surcharge des processeurs
- Nécessitent la modification du système des serveurs virtuels : intrusives



Comment estimer
le working set
sans dégradations
de performances?



Motivations & Objectifs



Faciliter l'obtention
des statistiques de
working set

P M L

Page Modification Logging

But

Intérêt

- Solution basée sur le mécanisme du PML = Solution **matérielle**
- Solution existantes = Approches **logicielles**
- Aucun travail de recherche sur le PML

Objectifs

- Étudier l'architecture actuelle du PML et ressortir les limites
- Proposer une architecture qui sied mieux au problème
- Définir un algorithme s'appuyant sur cette nouvelle architecture
- Evaluer et comparer

2

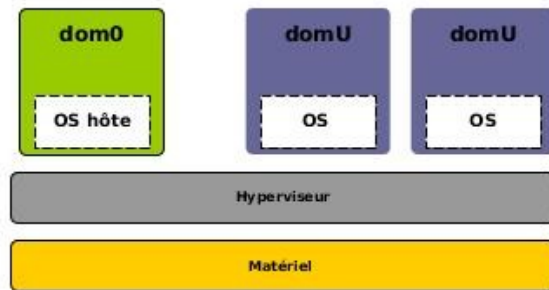
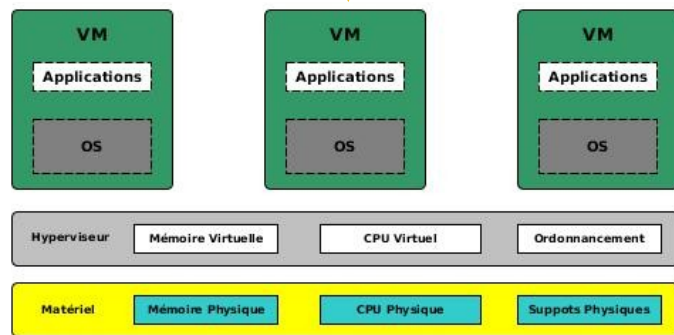
Background

- Présenter les notions liées à la virtualisation
- Présenter le PML



Généralités sur la virtualisation

Virtualisation = ensemble des techniques qui permettent de faire fonctionner simultanément sur une seule machine physique (machine hôte) plusieurs systèmes d'exploitation appelés machines virtuelles (VM)



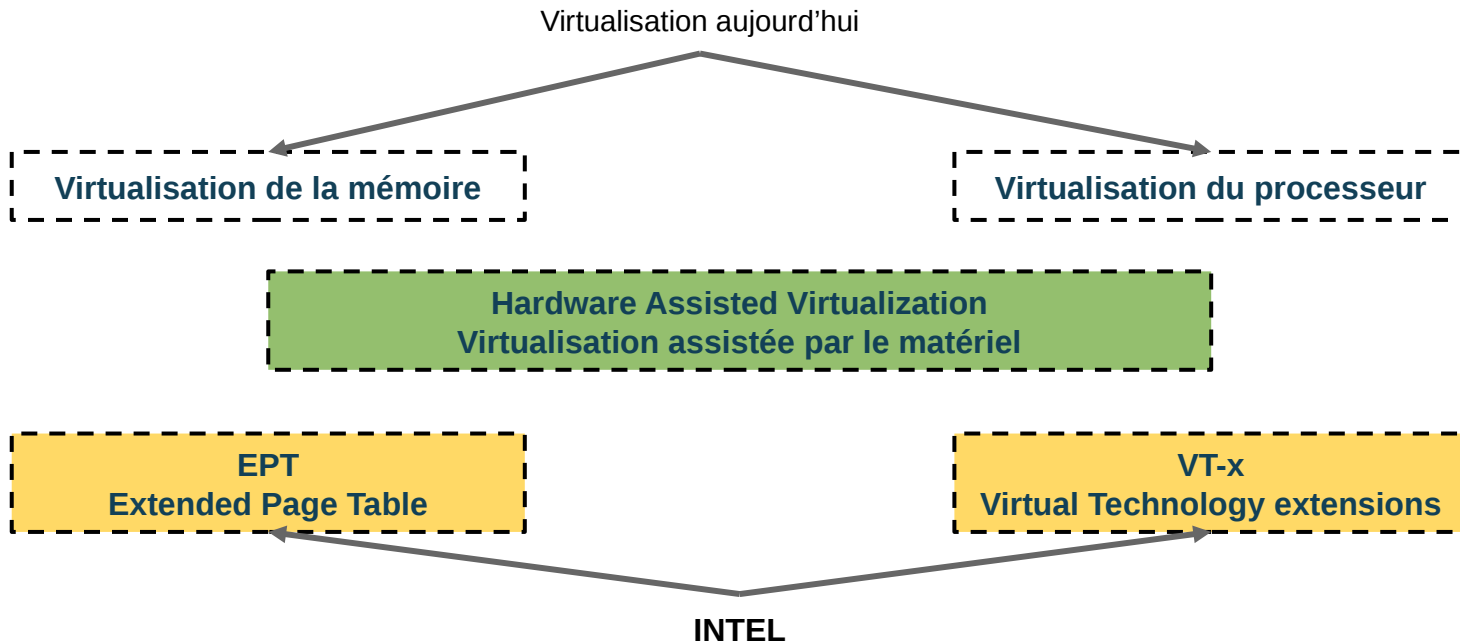
Xen

- Assez populaire
- Utilisé par Amazon dans ses datacenters
- Code adapté pour le PML

Outil logiciel qui permet de faire tourner les VMs sur la machine hôte

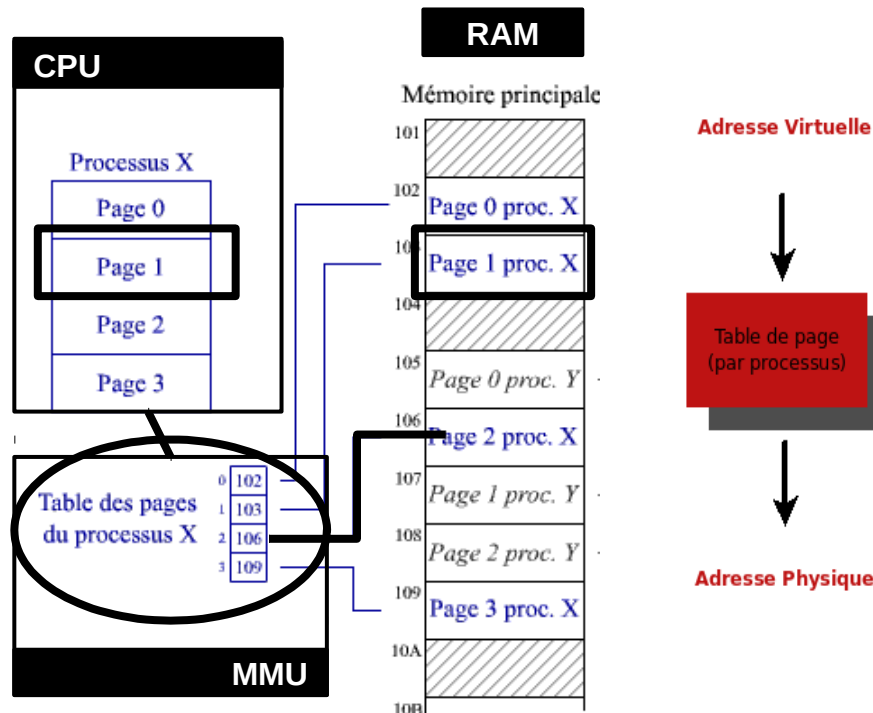


Virtualisation assistée par le matériel

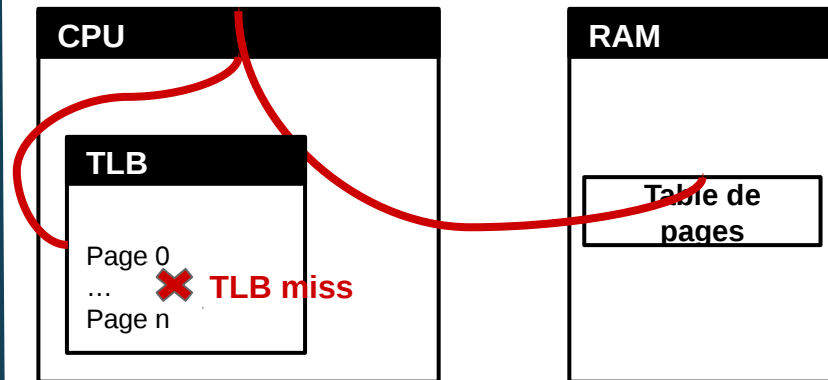




Virtualisation de la mémoire : Environnement natif



Translation Lookaside Buffer





Virtualisation de la mémoire : Environnement virtualisé (EPT)



Virtualisation du processeur : Intel VT-x

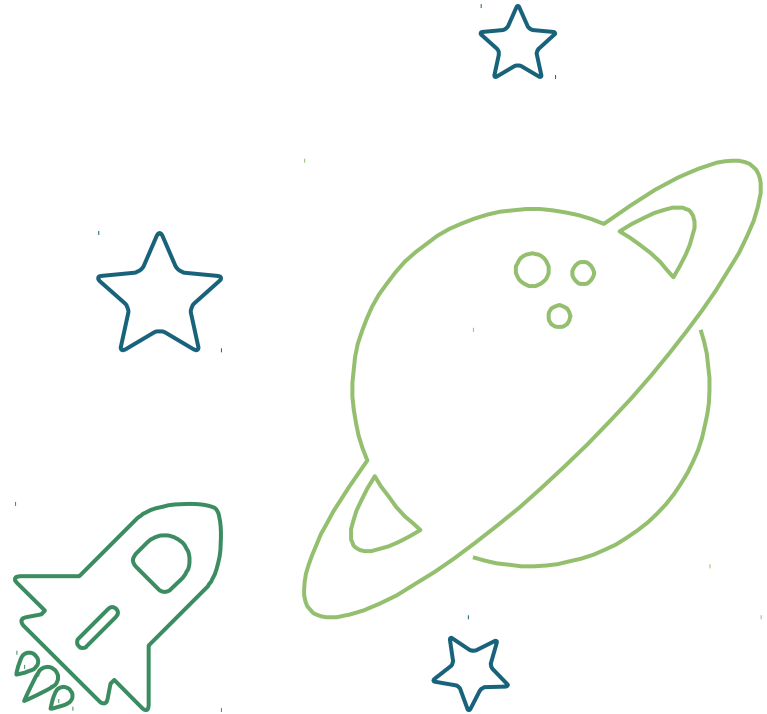


PML : Page Modification Logging

BIG CONCEPT

T

Bring the attention of your audience over a key concept using icons or illustrations





In two or three columns

Yellow

Is the color of gold, butter and ripe lemons. In the spectrum of visible light, yellow is found between green and orange.

Blue

Is the colour of the clear sky and the deep sea. It is located between violet and green on the optical spectrum.

Red

Is the color of blood, and because of this it has historically been associated with sacrifice, danger and courage.



A picture is worth a thousand words

A complex idea can be
conveyed with just a
single still image,



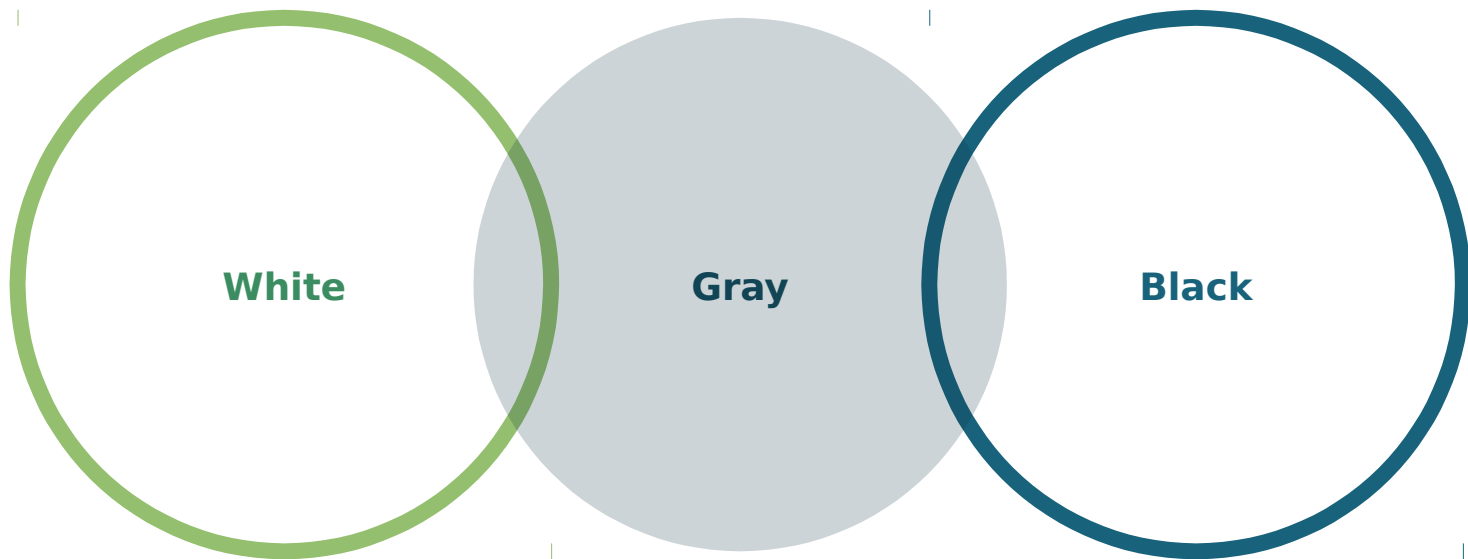
Want big impact?

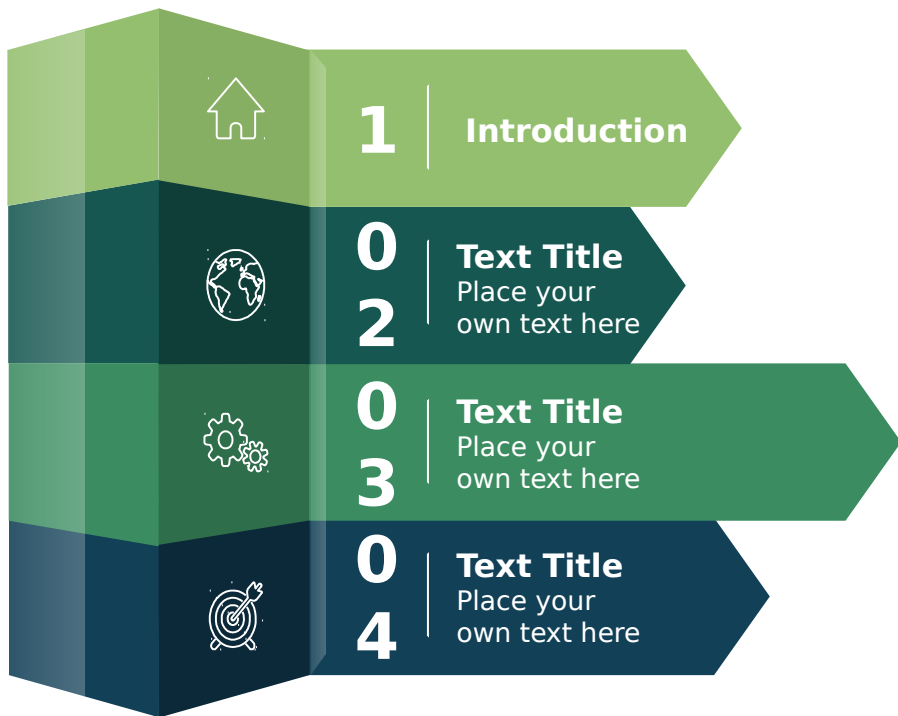
Use big image





Use charts to explain your ideas







And tables to compare data

	A	B	C
Yellow	10	20	7
Blue	30	15	10
Orange	5	24	16



Maps

89,526,1
24

Whoa! That's a big number, aren't you proud?



89,526,124\$

That's a lot of money



185,244 users

And a lot of users



100%

Total success!



Our process is easy

first

second

last



Let's review some concepts

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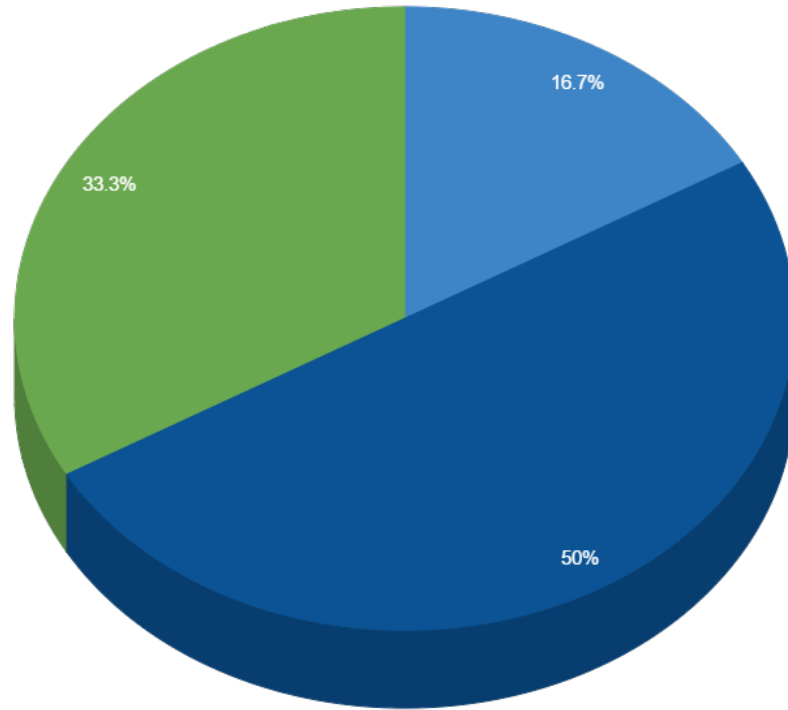
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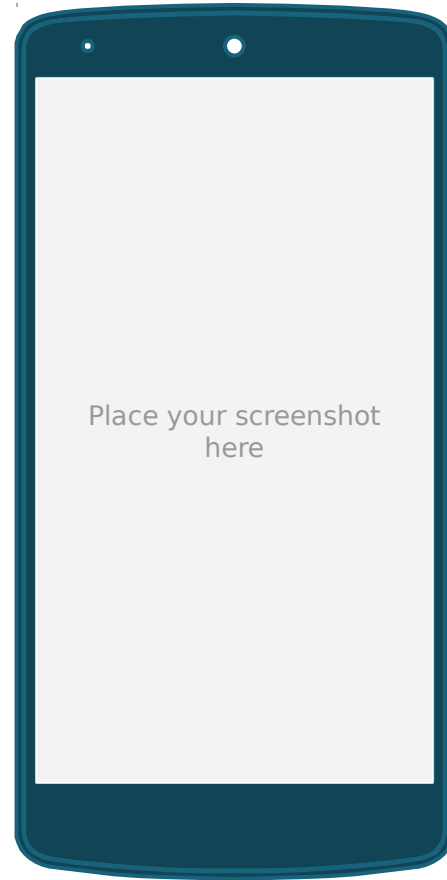
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You can copy&paste graphs from [Google Sheets](#)

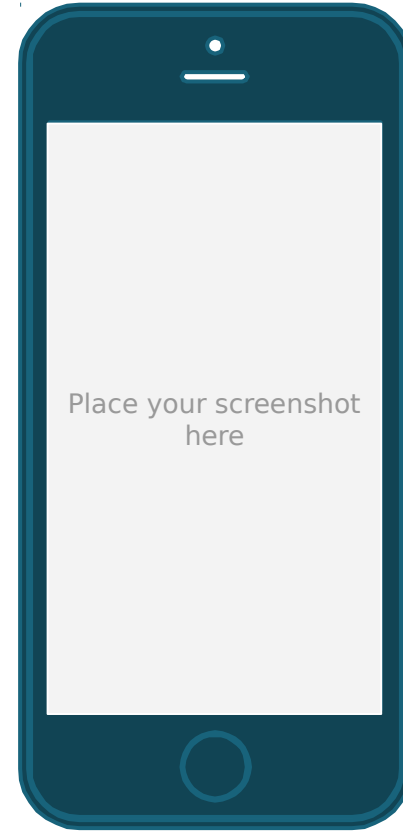
Android project

Show and explain your web, app or software projects using these gadget templates.



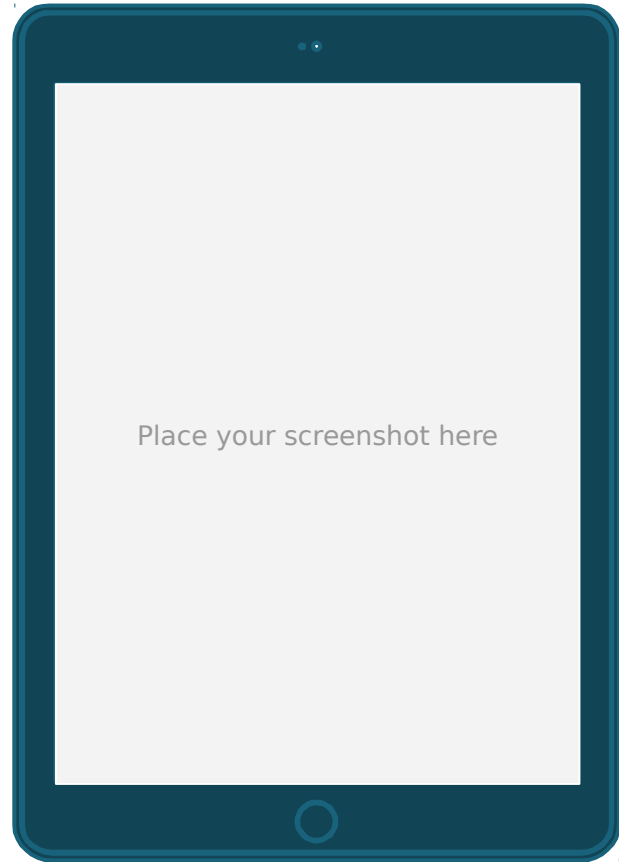
iPhone project

Show and explain
your web, app or
software projects
using these gadget
templates.



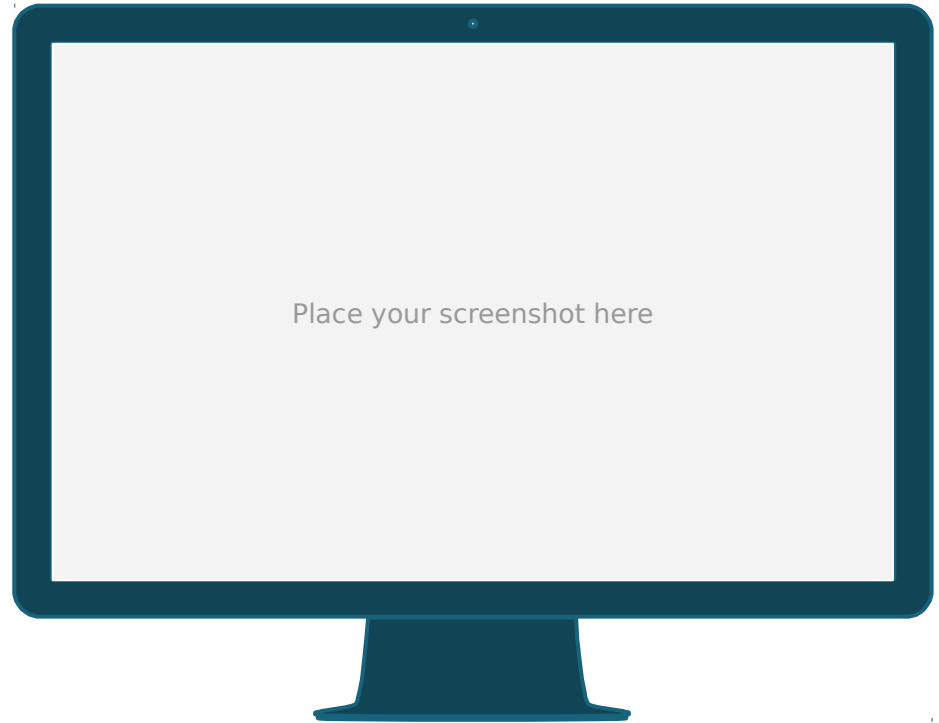
Tablet project

Show and explain your web, app or software projects using these gadget templates.



Desktop project

Show and explain your web, app or software projects using these gadget templates.



THANKS!

Any questions?

You can find me at @username & user@mail.me



Credits

Special thanks to all the people who made and released these awesome resources for free:

- Presentation template by [SlidesCarnival](#)
- Photographs by [Unsplash](#)



Presentation design

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- **Titles: Roboto Slab**
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Steel #18637b / Dark steel #114454

Light Green #94bf6e / Green #3b8d61 / Dark green #165751

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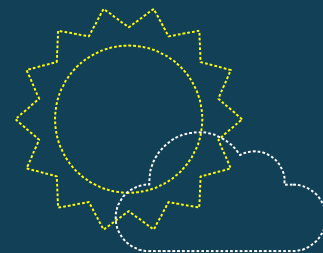
SlidesCarnival icons are editable shapes.

This means that you can:

- Resize them without losing quality.
- Change line color, width and style.

Isn't that nice? :)

Examples:





Now you can use any emoji as an icon!

And of course it resizes without losing quality and you can change the color.



How? Follow Google instructions

<https://twitter.com/googledocs/status/730087240156643328>

