

I.A

# Prédire un accord de prêt bancaire

Loic **DUMAY**  
Zhihao **CHEN**  
Emmanuel **ROSE**

Maxence **HENNEKEIN**  
Louis **LEMOINE**



x

# TeAm Am@ng US

x

## Préambule

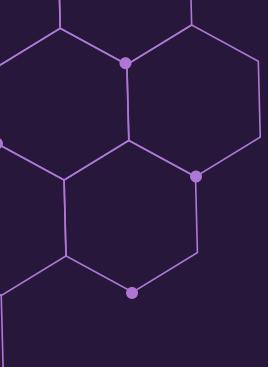
### Le besoin :

- **Nous avons des données qui classent si le client peut avoir un prêt ou non selon les caractéristiques qu'il contient**

### La solution:

- **créer un modèle qui essaie de prédire si un client a droit à ce prêt ou non.**





x

# TeAm Am@ng US

## De quoi va t-on parler ?

x

**01      LES DONNÉES**

**02      LA RÉPONSE AU CLIENT**

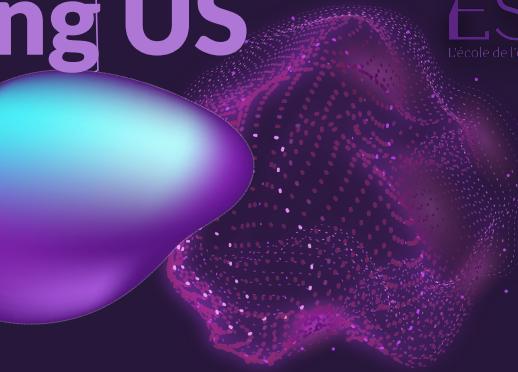
**03      PRÉSENTATION DES MODÈLES**

**04      DÉMONSTRATION**



## 01

# LES DONNÉES



# Team Amazing US

x

## Les données de base

	age	job	marital	education	default	balance	housing	loan	contact	day	month	duration	campaign
0	58	management	married	tertiary	no	2143	yes	no	unknown	5	may	261	1
1	44	technician	single	secondary	no	29	yes	no	unknown	5	may	151	1
2	33	entrepreneur	married	secondary	no	2	yes	yes	unknown	5	may	76	1
3	47	blue-collar	married	unknown	no	1506	yes	no	unknown	5	may	92	1
4	33	unknown	single	unknown	no	1	no	no	unknown	5	may	198	1

## Suppression des données

	age	job	marital	education	default	balance	housing	loan	contact	day	month	duration	campaign	pdays	previous	poutcome	Target
0	58	management	married	tertiary	no	2143	yes	no	unknown	5	may	261	1	-1	0	unknown	no
1	44	technician	single	secondary	no	29	yes	no	unknown	5	may	151	1	-1	0	unknown	no
2	33	entrepreneur	married	secondary	no	2	yes	yes	unknown	5	may	76	1	-1	0	unknown	no
3	47	blue-collar	married	unknown	no	1506	yes	no	unknown	5	may	92	1	-1	0	unknown	no
4	33	unknown	single	unknown	no	1	no	no	unknown	5	may	198	1	-1	0	unknown	no
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45206	51	technician	married	tertiary	no	825	no	no	cellular	17	nov	977	3	-1	0	unknown	yes
45207	71	retired	divorced	primary	no	1729	no	no	cellular	17	nov	456	2	-1	0	unknown	yes
45208	72	retired	married	secondary	no	5715	no	no	cellular	17	nov	1127	5	184	3	success	yes
45209	57	blue-collar	married	secondary	no	668	no	no	telephone	17	nov	508	4	-1	0	unknown	no
45210	37	entrepreneur	married	secondary	no	2971	no	no	cellular	17	nov	361	2	188	11	other	no



# Team Amazing US

## Importance théorique

x

Importance en %	
age	5.795034
marital	2.615462
education	3.476249
default	0.223050
balance	14.564262
housing	4.518890
loan	1.312084
month	10.610606
duration	40.010065
campaign	5.309925
pdays	4.638283
previous	2.969819
poutcome	3.956271

L'importance de ces données est-elle pertinente ?

Cible : Compte à terme (Target)

Le client à accepter ?

# Team Amazing US

## Conversion des données

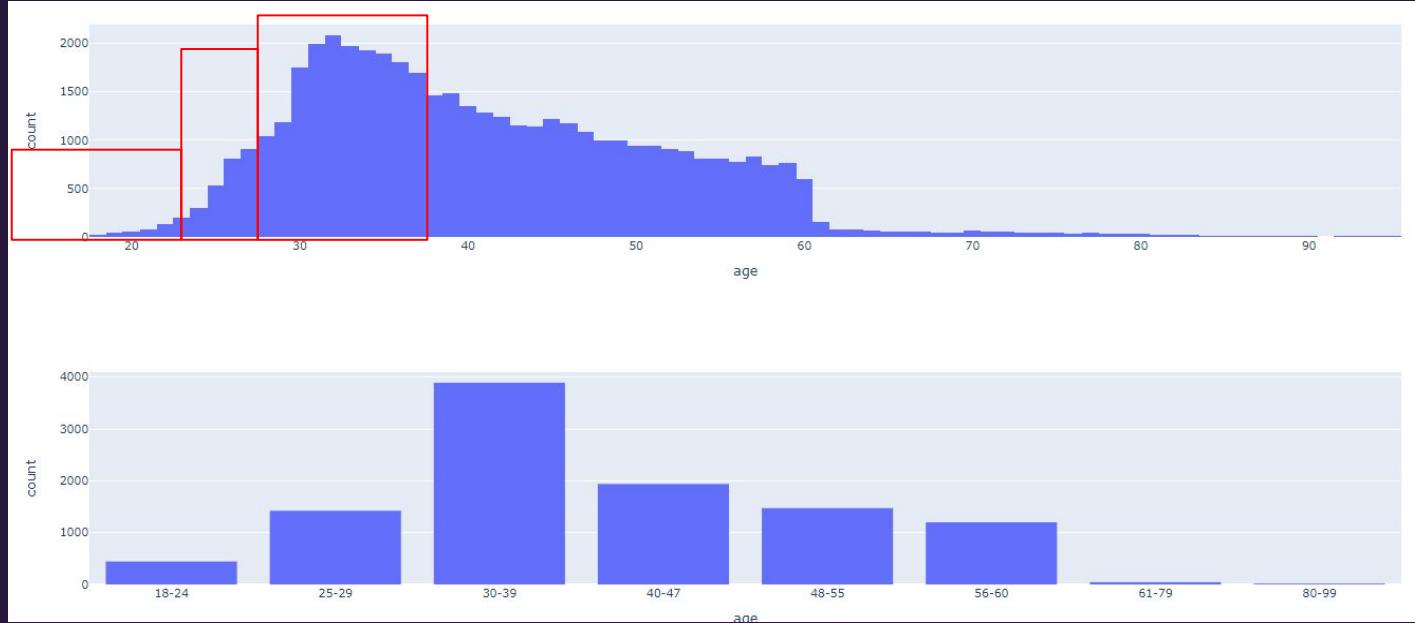
	age	marital	education	default	balance	housing	loan	month	duration	campaign	pdays	previous	poutcome	Target
41487	1	0	0	0	108	0	0	9	169	1	-1	0	0	1
40887	1	0	1	0	608	0	0	8	267	1	-1	0	0	1
43637	1	0	0	0	348	0	0	5	443	4	-1	0	0	1
42274	1	0	1	0	608	0	0	11	210	1	93	1	1	1
40744	1	0	0	0	108	0	0	8	167	1	-1	0	0	1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
42727	8	1	0	0	775	0	0	1	164	4	96	3	1	1
44262	8	1	0	0	775	0	0	7	860	2	177	7	1	1
44420	8	1	0	0	775	0	0	8	476	2	13	9	1	1
33699	8	2	1	0	2282	0	0	4	207	17	-1	0	0	1
41663	8	1	2	0	0	0	0	10	215	1	-1	0	0	0





## Simplification des données

Colonne age :



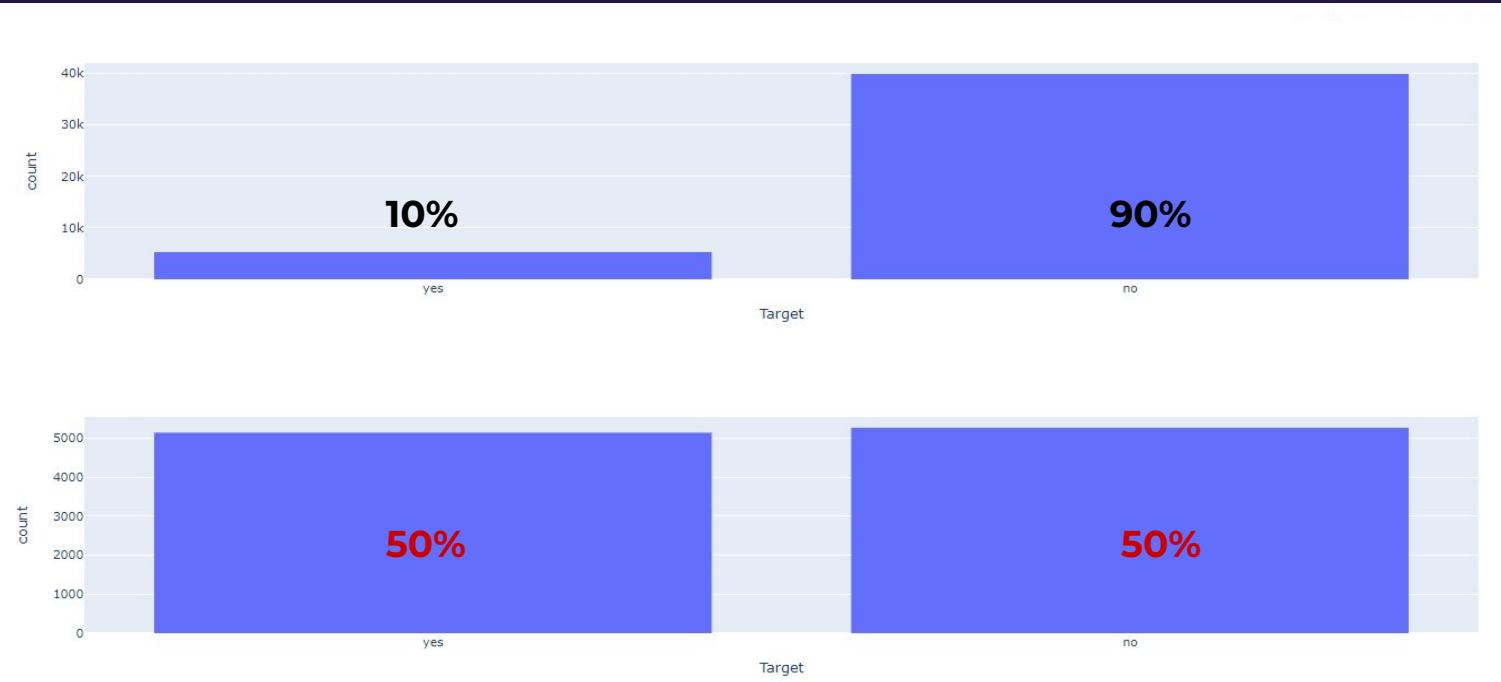
# Team Among US

Colonne durée de communication avec le client en seconde :



# Team Amazing US

## Equilibrage des données (simplification) :



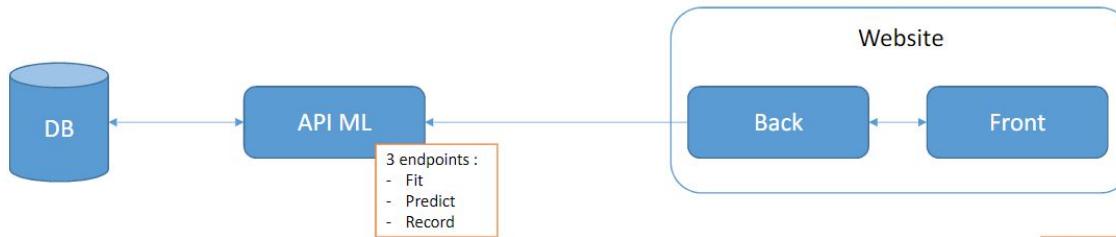
## 02

# LA RÉPONSE AUX SPÉCIFICATIONS CLIENT



## 02 Applicatif

Architecture proposée :



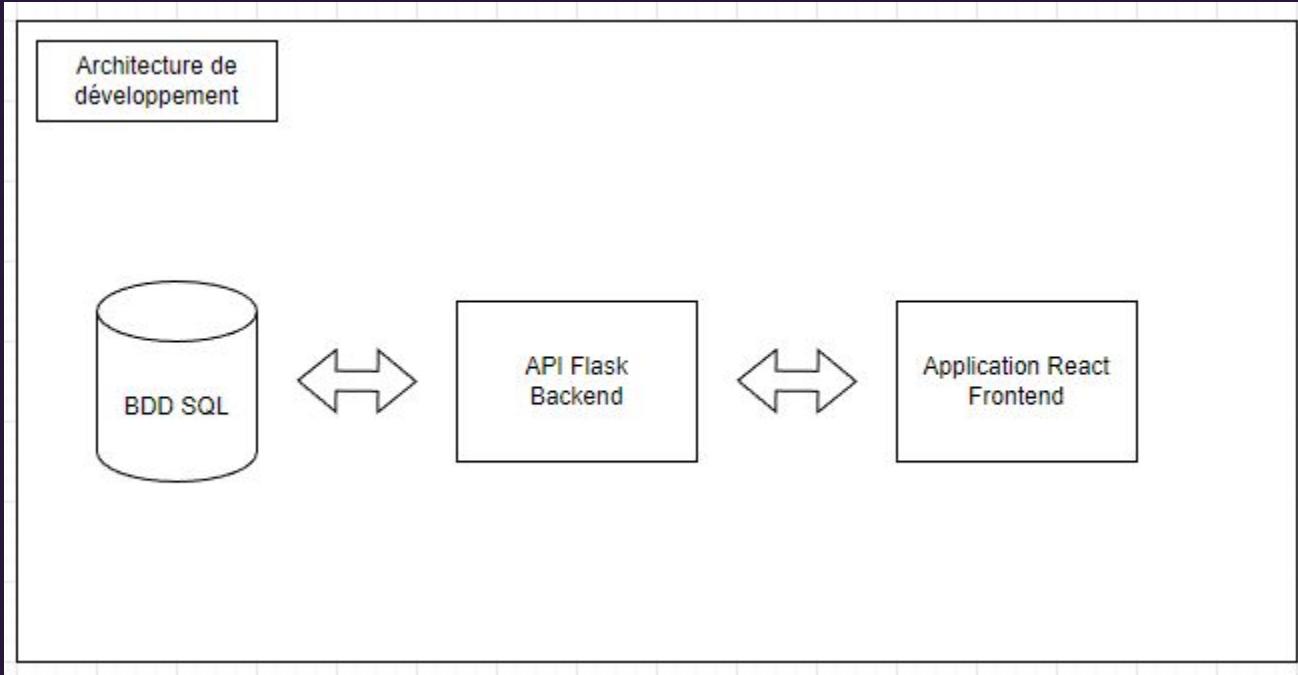
Architecture :  
Microservice

Langage :  
Python

Stack :  
- SQLite (BDD)  
- API : fastapi  
- Web : Dash

# Team Amazing US

## 02 Applicatif

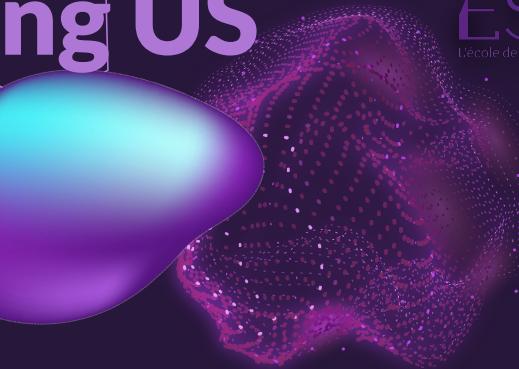


# 03

## Présentation des modèles



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x



## 03

# Présentation des modèles

## RandomForestClassifier

```
rf = RandomForestClassifier(n_estimators = 100, random_state = 23, max_features = 2)
rf.fit(X=x_train, y=y_train)
print_score(rf)

Score train : 100.0 %
Score test : 84.59692898272553 %
```

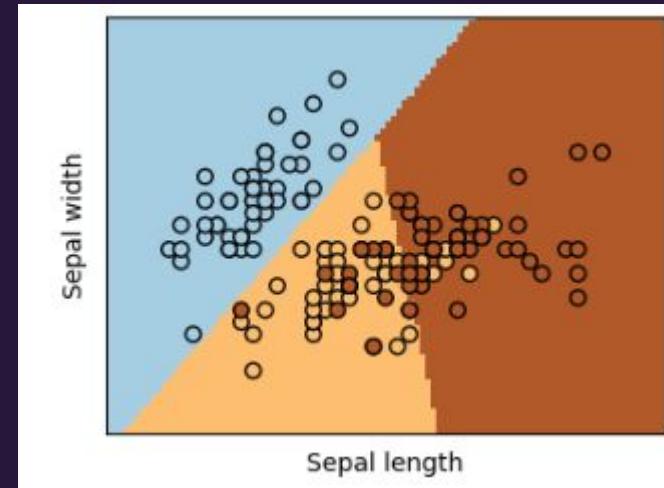


03

## Présentation des modèles

Logistic Regression 3-class Classifier

```
Score train : 49.00407967362611 %
Score test : 51.77543186180422 %
```





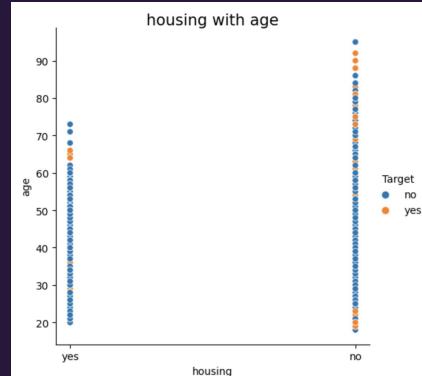
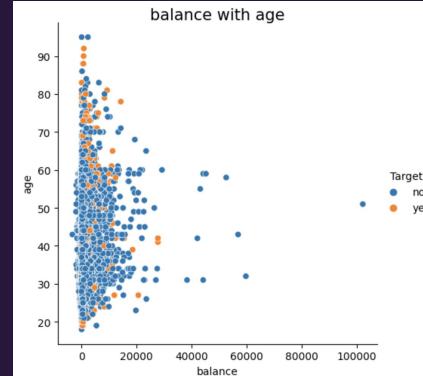
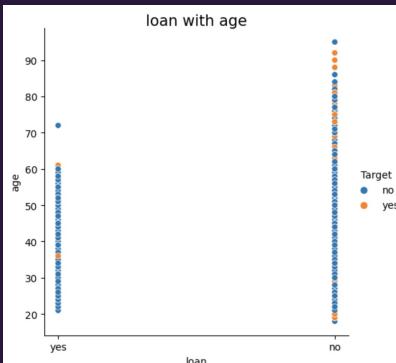
## 03

# Présentation des modèles

## GradientBoostingClassifier

```
In [50]: clf = GradientBoostingClassifier(n_estimators = 100, random_state = 23, max_features = 2)
clf.fit(X=x_train, y=y_train)
print_score(clf)

Score train : 83.95728341732661 %
Score test : 83.92514395393475 %
```



# 04 DÉMONSTRATION



15/10/2022



+



19/22



## 04 Démonstration





## 04 Démonstration



Le projet est actuellement open-source :

Grâce à l'open-source, le projet est disponible  
sur GitHub.com à l'adresse suivant :

[https://github.com/lдумay/esiee\\_2022\\_ia\\_tp\\_banque](https://github.com/lдумay/esiee_2022_ia_tp_banque)

*Étant soutenu, le dépôt du projet peut évoluer.  
Cependant, les versions sont enregistrées  
sous la forme de release.*



# Merci !

Loic **DUMAY**  
Zhihao **CHEN**

Maxence **HENNEKEIN**  
Louis **LEMOINE**  
Emmanuel **ROSE**



# CONTENTS OF THIS TEMPLATE



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<b>DATA</b>	To view this template correctly in PowerPoint, download and install the fonts we used
<b>IT</b>	An assortment of graphic resources that are suitable for use in this presentation
<b>FORMS</b>	You must keep it so that proper credits for our design are given
<b>COLORS</b>	All the colors used in this presentation
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# OUR COMPANY

Mercury is the closest planet to the Sun and the smallest one in the Solar System. This planet's name has nothing to do with the liquid metal, since Mercury was named after the Roman messenger god

# WHAT ARE WE WORKING ON?

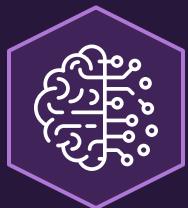
\*



## DEVELOP

Mercury is the closest planet to the Sun and the smallest of them all

\*



## IMPROVE

Venus has a beautiful name and is the second planet from the Sun

\*

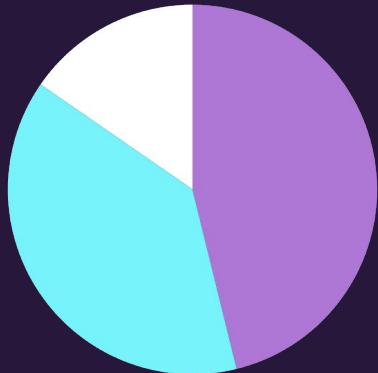


## EXCELL

Despite being red, Mars is actually a cold place. It's full of iron oxide dust



# BUDGET



**46% MARS**

Mars is cold

**38% VENUS**

Venus is hot

**15% JUPITER**

Jupiter is big



**\$10,000,000**



**ASSEMBLE**



**BUILDING**

Follow the link in the graph to modify its data and then paste the new one here. [For more info, click here](#)



**5,000,000**

Big numbers captivate your audience's attention

# **9h 55m 23s**

Jupiter's rotation period

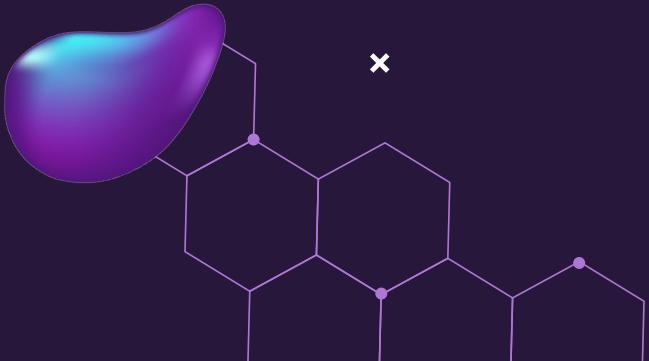
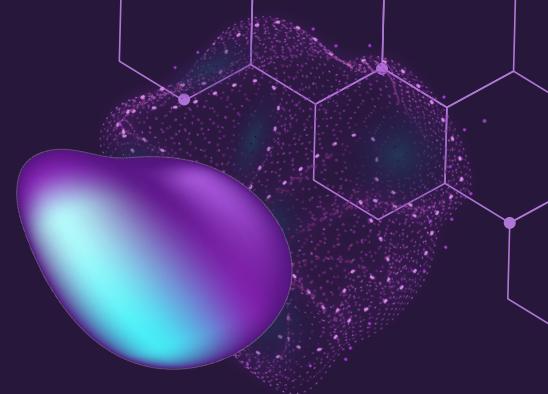


# **333,000**

The Sun's mass compared to Earth's

# **386,000 km**

Distance between Earth and the Moon



x

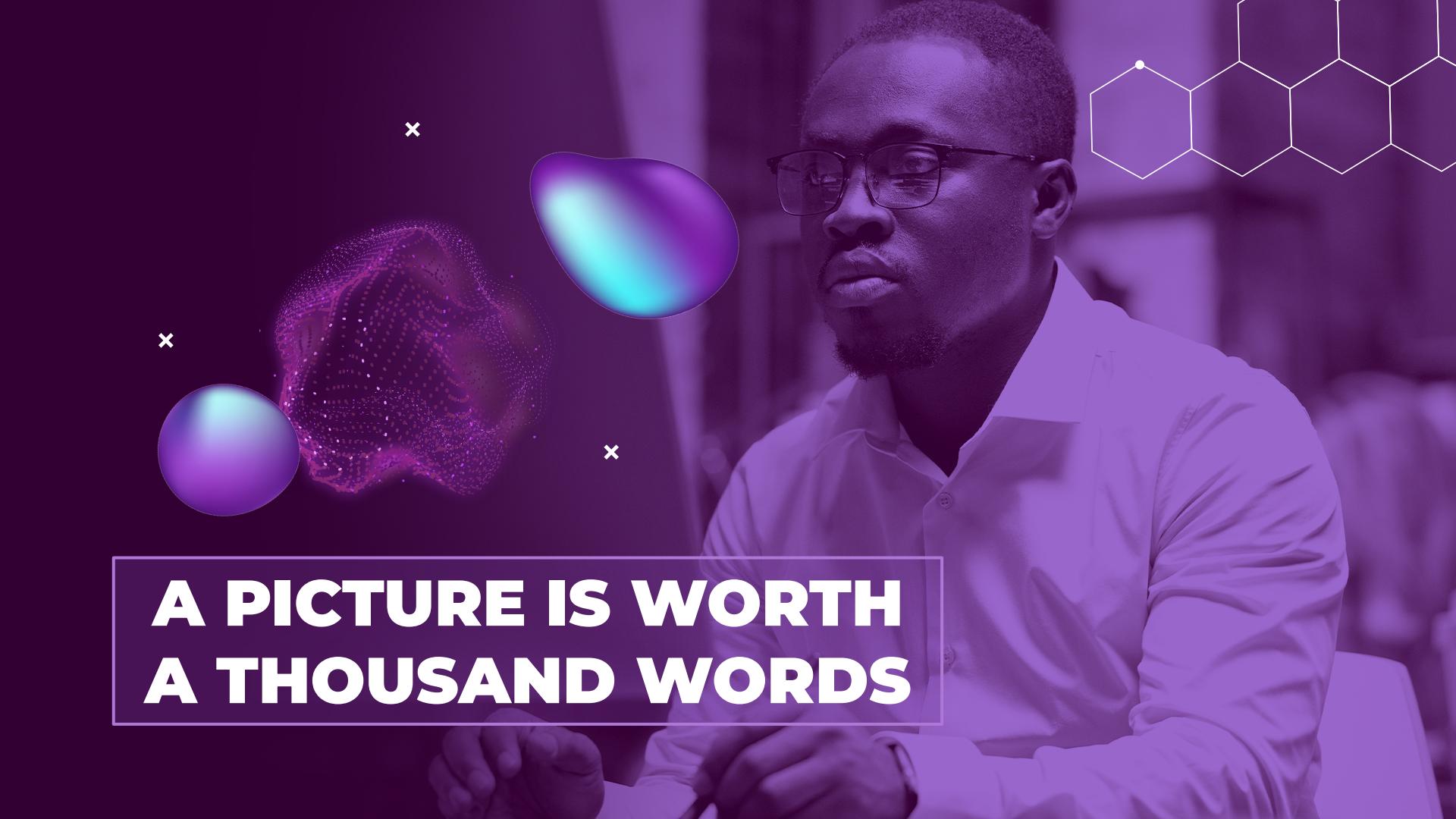
# AN IMAGE REINFORCES THE CONCEPT

Images reveal large amounts of data, so remember: use an image instead of a long text. Your audience will appreciate it



x



A photograph of a Black man with short hair and glasses, wearing a white lab coat, sitting in a laboratory setting. He is looking slightly to his left. Overlaid on the image are several scientific and abstract elements: a 3D wireframe model of a brain, three glowing spheres (one large blue sphere on the left, one medium purple sphere above it, and one small white sphere to the right), four small white 'x' marks scattered around the brain model, and a partial chemical structure of a polycyclic aromatic hydrocarbon (PAH) molecule in the top right corner.

**A PICTURE IS WORTH  
A THOUSAND WORDS**

# OUR NUMBERS

x



**50%**



## MANPOWER

Mercury is the closest planet to the Sun and the smallest of them all



**30%**



## DEVELOPMENT

Venus has a beautiful name and is the second planet from the Sun

x



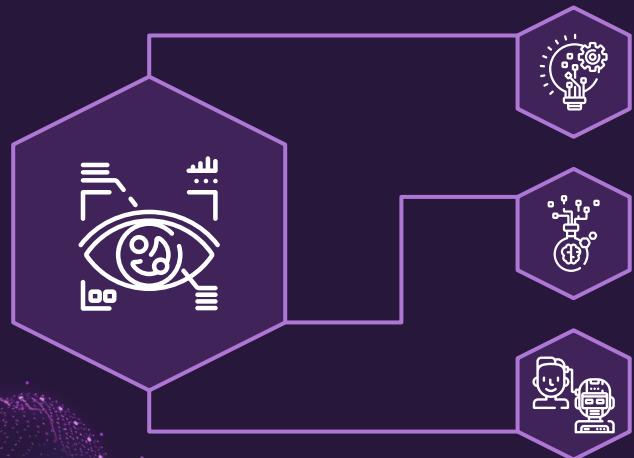
**20%**



## EXPANSION

Despite being red, Mars is actually a cold place. It's full of iron oxide dust

# PROJECT GOALS



## GOAL 1

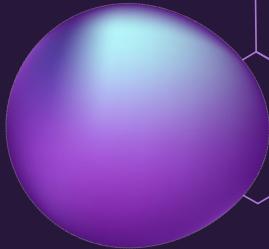
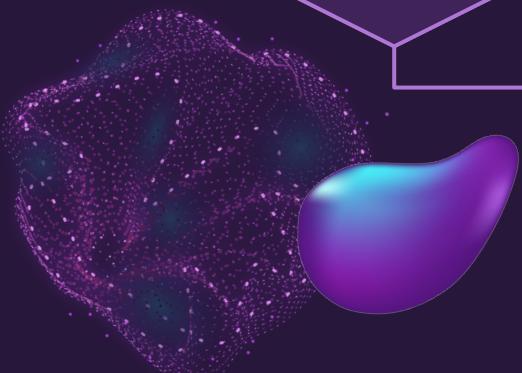
Mercury is the closest planet to the Sun

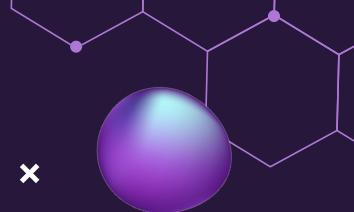
## GOAL 2

Venus is the second planet from the Sun

## GOAL 3

Earth is the third planet from the Sun





# PREDICTED RESULTS



**300**

New employees next year



**\$30,000**

Expected income for 20XX



Follow the link in the graph to modify its data and then paste the new one here. **For more info, click here**

x

# AI IN A NUTSHELL

Do you know what helps you make your point crystal clear?

Lists like this one:

- ◆ They're simple
- ◆ You can organize your ideas clearly
- ◆ You'll never forget to buy milk!

And the most important thing: the audience won't miss the point of your presentation

x

x



# DESKTOP MOCKUP

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## ARTIFICIAL INTELLIGENCE (AI)

TECHNOLOGY CONSULTING

Here is where your presentation begins

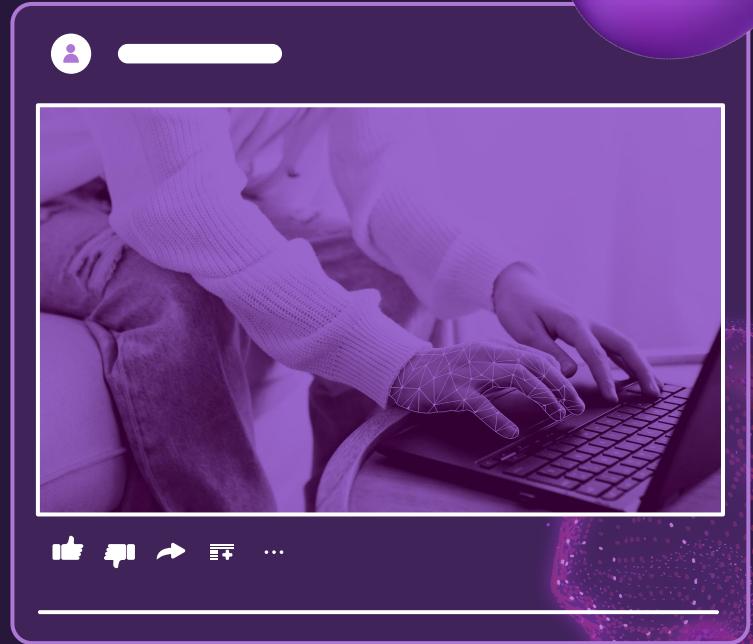




# SNEAK PEEK

Mercury is the closest planet to the Sun and the smallest one in the Solar System—it's only a bit larger than the Moon. The planet's name has nothing to do with the liquid metal, since Mercury was named after the Roman messenger god





## SNEAK PEEK

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# **TYPES OF AIs**

<b>NAME</b>	<b>TYPE</b>	<b>FUNCTION</b>
My Journey	Artistic	Creates images
Super Desk	Writer	Creates texts
Solver	Mathematician	Solves complex problems
Develop AI	Programmer	Programs web pages

# PROJECT STAGES

x

Venus is the second planet from the Sun

Despite being red, Mars is very cold

Jupiter was named after a Roman god



x

## STAGE 1



## STAGE 2



## STAGE 3



x



# TIMELINE

x



Earth is the planet  
with life

x



Saturn is a  
ringed planet



## DAY 1

Despite being red,  
Mars is a cold place



## DAY 2



## DAY 3

Jupiter doesn't  
have a solid surface



## DAY 4

X

# OUR PARTNERS

# JOHNSON

The Moon is Earth's  
only natural satellite



# TECH PEK

Earth is the planet  
where we all live

x

**DOE'S**

Mars was named  
after a god

x

# PETPER

Jupiter doesn't have  
a solid surface

x

# ENGEEN

Saturn was named after a Roman god

# MERIDIAN

Neptune is far away  
from us

# OUR LOCATION



## SILICON VALLEY, SF

Despite being red, Mars is actually a cold place. It's full of iron oxide dust, which gives the planet its reddish cast



# OUR TEAM



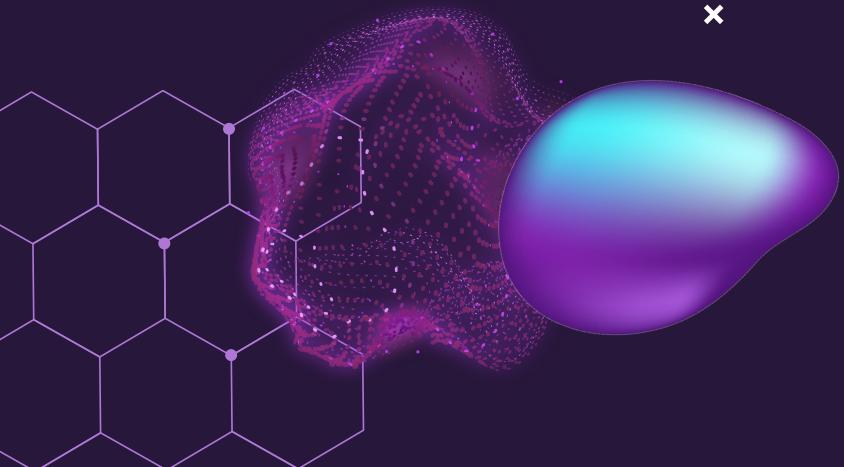
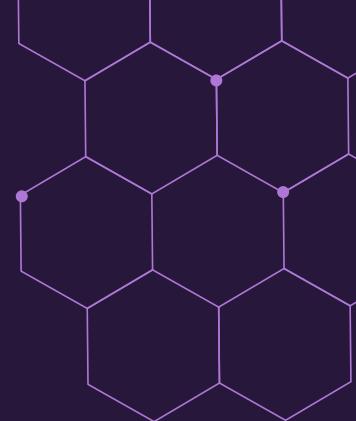
## TIMMY JIMMY

You can speak a bit about  
this person here



## DANA JONES

You can speak a bit about  
this person here



# THANKS!

DO YOU HAVE ANY QUESTIONS?

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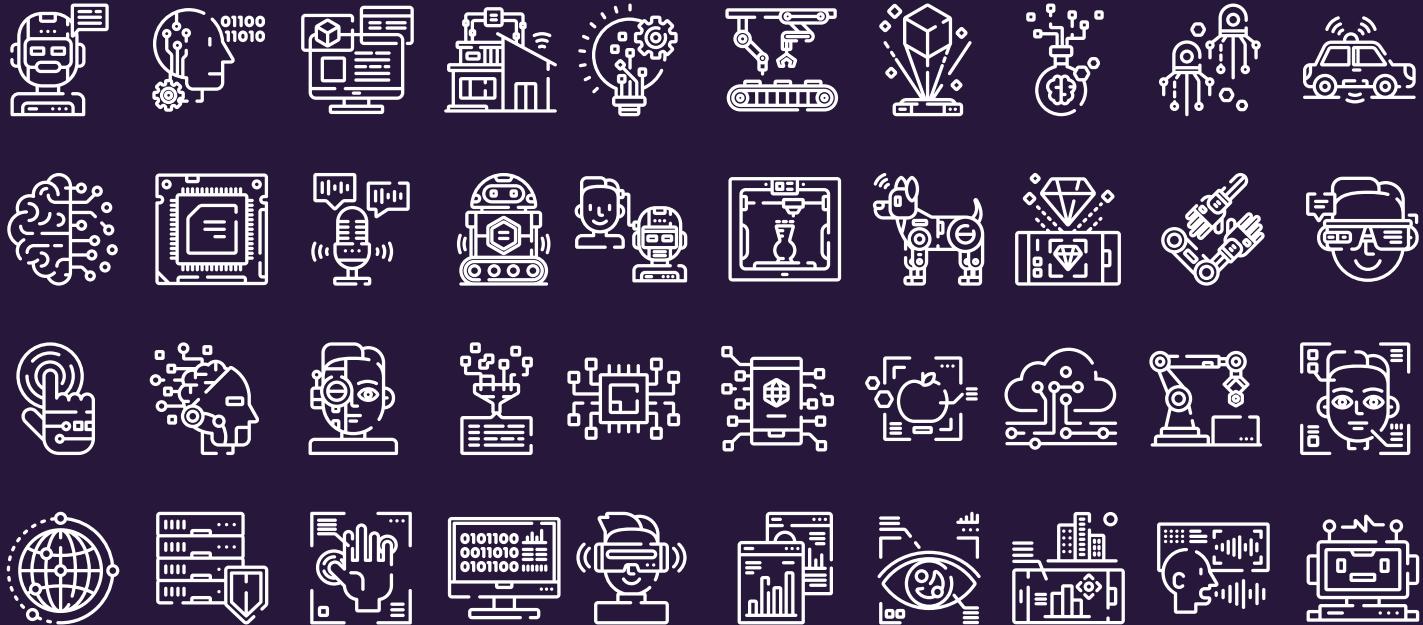


# ICON PACK

x



+

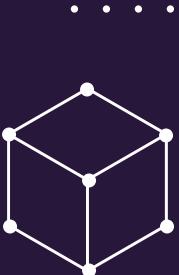


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## VECTORS

- Gradient metaverse concept twitch banner



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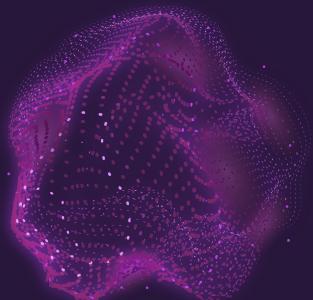
- ◆ Futuristic ai tech instagram posts collection

## ICONS

- ◆ Icon pack: Artificial intelligence

## IMAGES

- ◆ Black man working with a computer
- ◆ Male technician repairing computer motherboard on wooden desk
- ◆ Woman in dress on pink background
- ◆ Medium shot smiley man posing with glasses
- ◆ Hands typing on laptop keyboard



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Pana



Amico



Bro



Rafiki



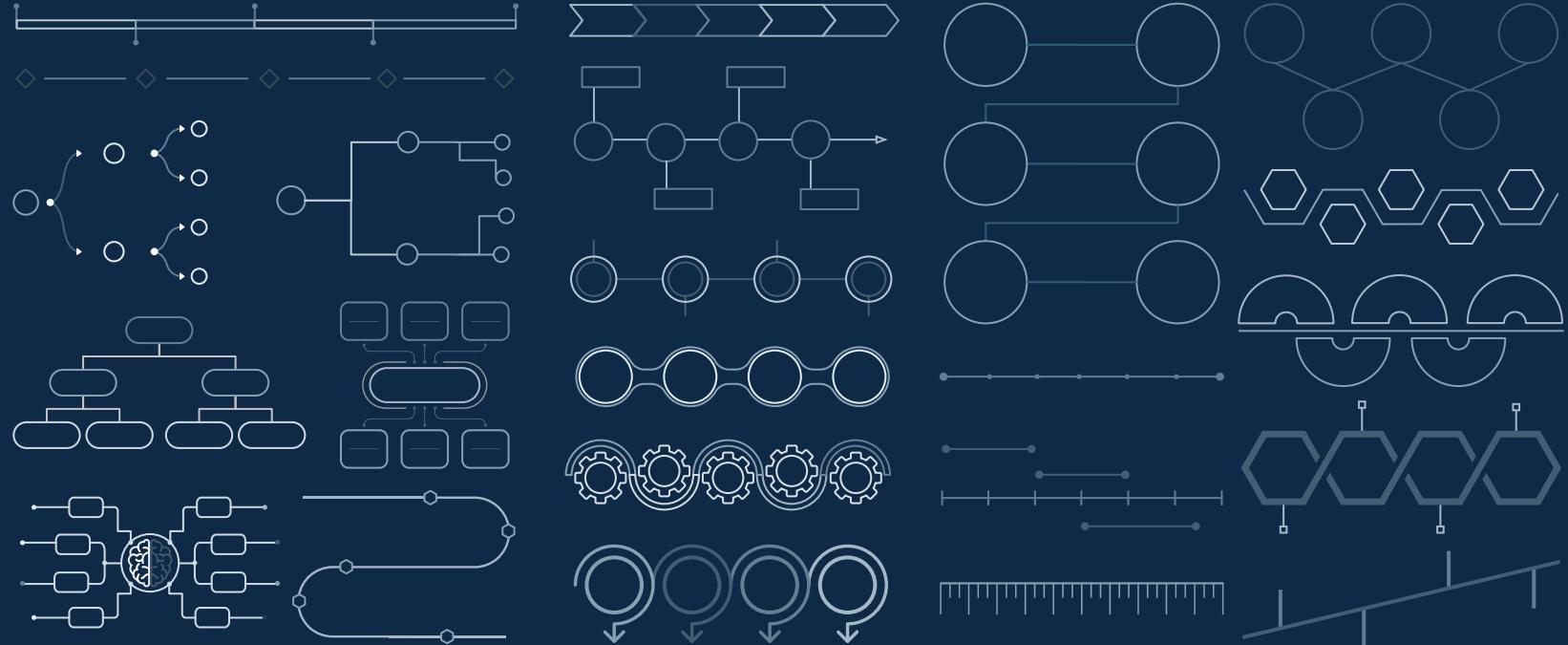
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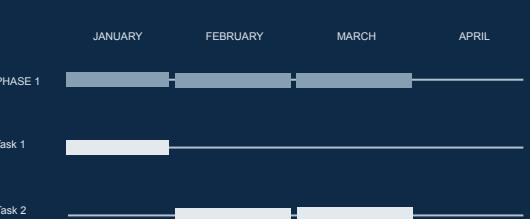
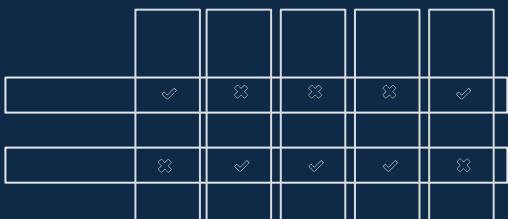
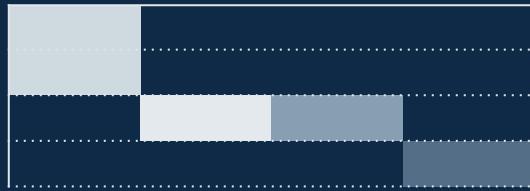
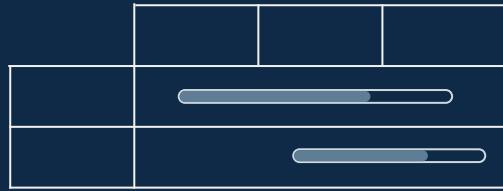
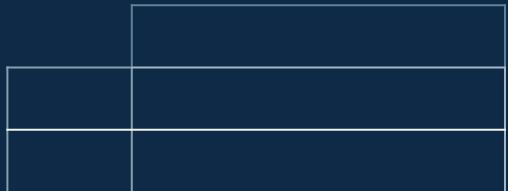
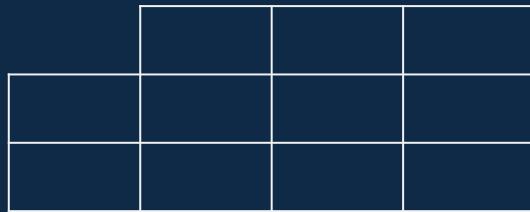
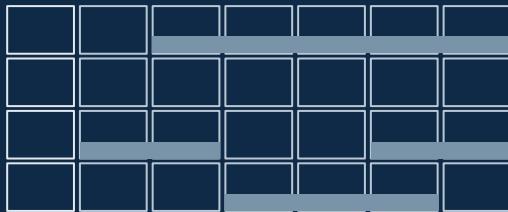
# Use our editable graphic resources...

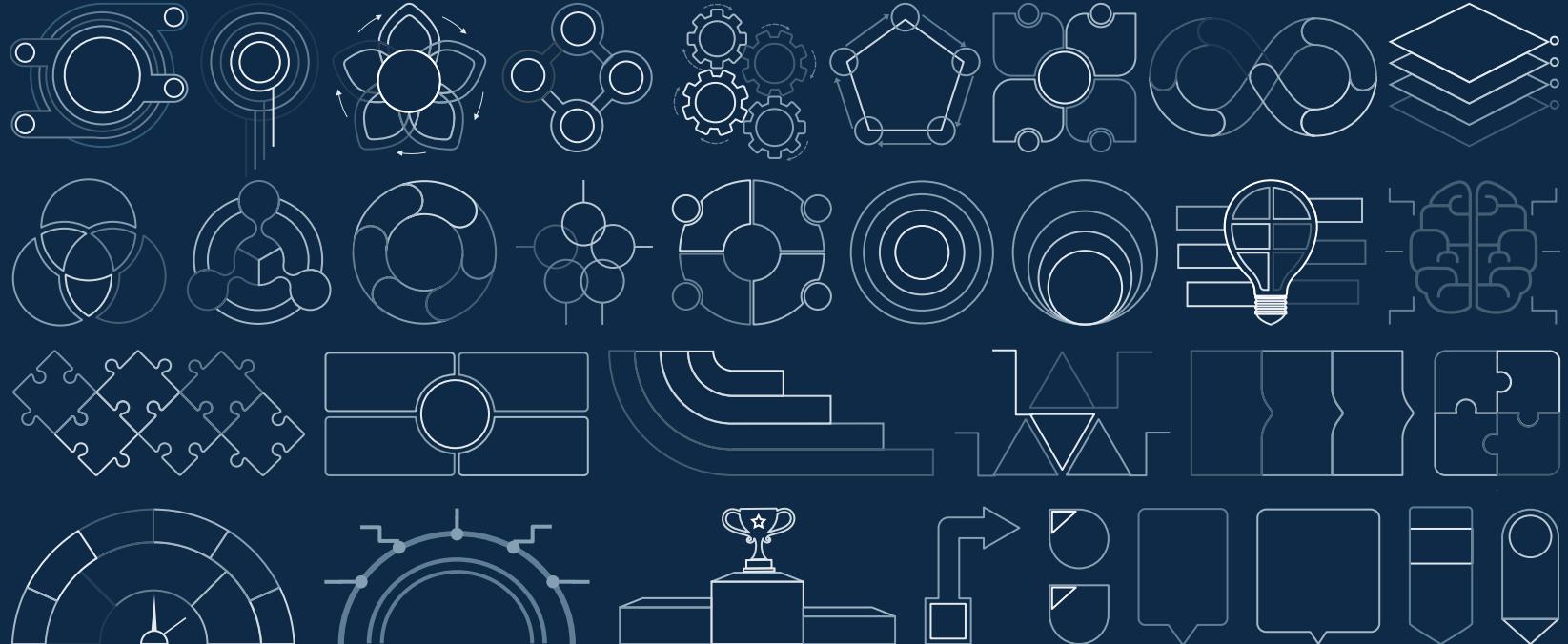
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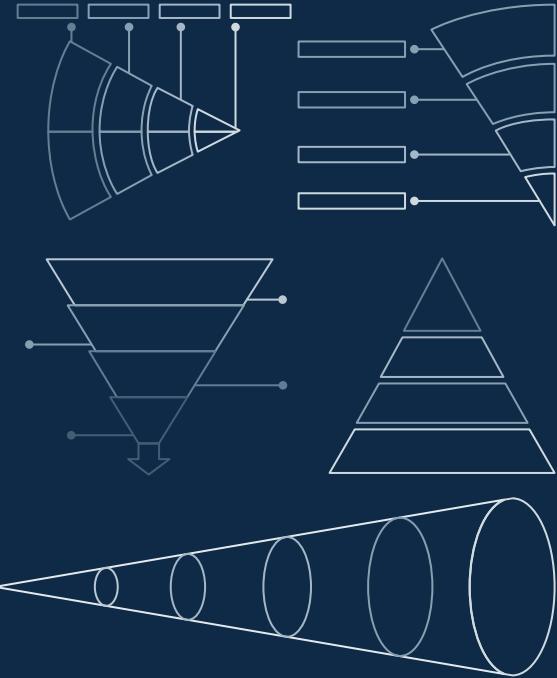
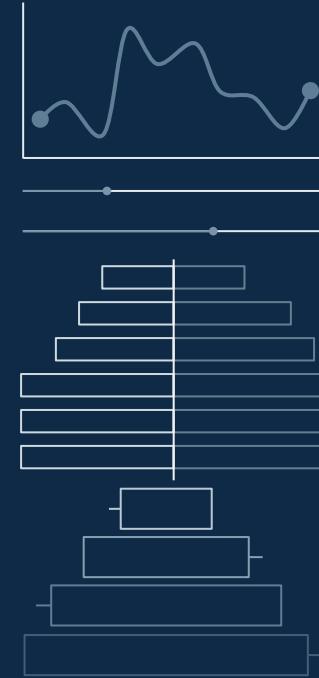
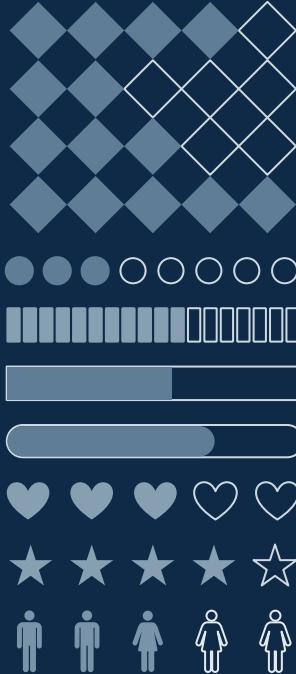
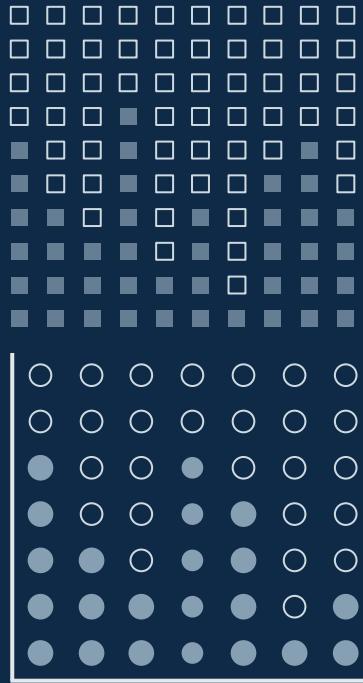












# ...and our sets of editable icons

You can **resize** these icons without losing quality.

You can **change the stroke and fill color**; just select the icon and click on the **paint bucket/pen**.

In Google Slides, you can also use **Flaticon's extension**, allowing you to customize and add even more icons.



# Educational Icons



# Medical Icons



# Business Icons



# Teamwork Icons



## Help & Support Icons



# Avatar Icons



# Creative Process Icons



# Performing Arts Icons



# Nature Icons



# SEO & Marketing Icons



