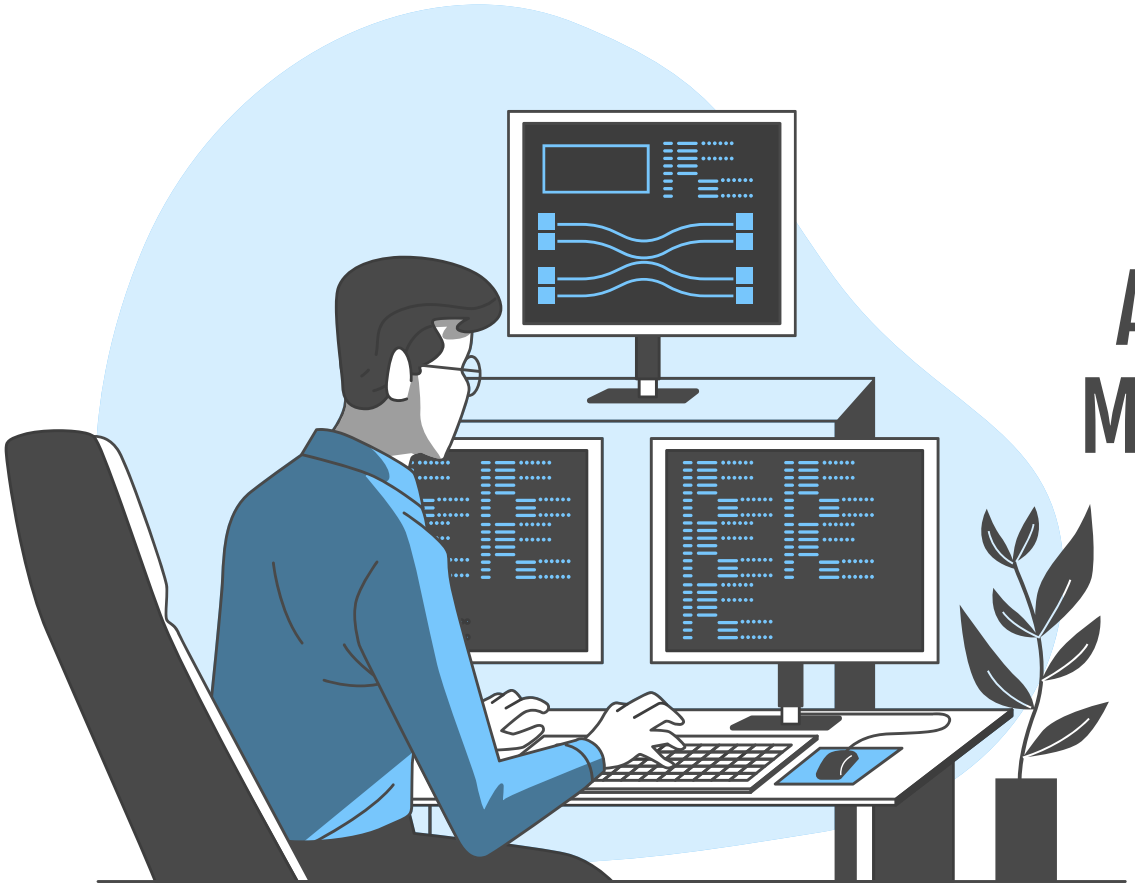

AirQu: Air Quality Monitoring Device System

Group A7

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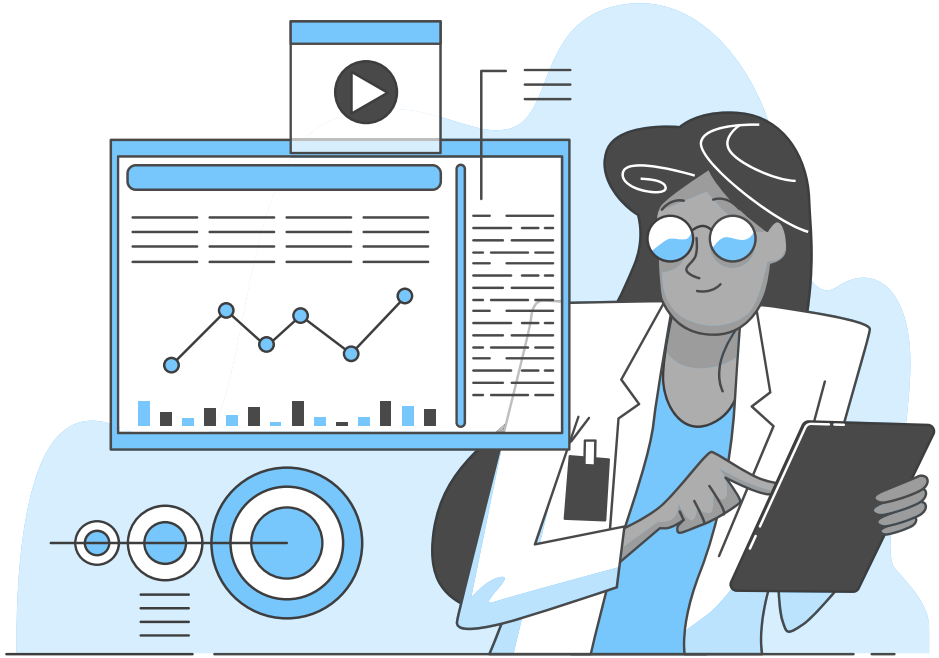
02 Hardware & Software Implementation Details

03 Test Results & Evaluation

04 Conclusion



01

Introduction to the problem & solution

Problem Introduction

Di era ini, polusi udara merupakan masalah yang serius bagi kesehatan masyarakat. Pertumbuhan industri yang cepat dan peningkatan aktivitas kendaraan BBM menyebabkan pelepasan polutan berbahaya di udara. Dampak buruknya tidak hanya terbatas pada kesehatan pernapasan manusia, tetapi juga merugikan sistem kardiovaskular serta merusak ekosistem alam.

Proyek ini muncul sebagai respons terhadap kebutuhan mendesak akan sistem pemantauan kualitas udara yang lebih baik dan terpadu. Dengan memahami bahwa tantangan ini melibatkan pemahaman mendalam tentang berbagai parameter lingkungan, termasuk suhu, kelembaban, tekanan, dan resistansi gas. Oleh karena itu, kelompok kami mengusulkan sebuah proyek sistem pemantauan kualitas udara untuk mengatasi permasalahan tersebut.

02

Hardware & Software Implementation Details

Hardware

Desain hardware kami melibatkan ESP32, lampu LED, buzzer, protoboard, LCD, kabel jumper, dan sensor BME680. Menggunakan komunikasi I2C, kami menghubungkan pin SDA dan SCL dari BME680 ke GPIO21 dan GPIO22 pada ESP32. Antarmuka LCD juga menggunakan I2C, dengan bantuan protoboard untuk penyambungan yang rapi. ESP32 berperan sebagai pemroses pusat, mengumpulkan data dari BME680, di mana pemanas sensor memicu reaksi dengan gas VOC, mengubah aliran arus listrik. ESP32 berkomunikasi dengan LCD untuk data real-time dan mengaktifkan LED serta buzzer untuk memberikan peringatan ketika kualitas udara melebihi batas tertentu.

Software

Desain software kami, tertulis dalam satu file .ino, memprogram ESP32 untuk berinteraksi dengan BME680 dan antarmuka serial LCD. ESP32 dan Blynk environment disiapkan dengan liibrary yang diperlukan, seperti Adafruit untuk sensor dan LiquidCrystal untuk komunikasi I2C pada LCD. Sensor BME680 akan terus mengumpulkan data yang dikirimkan ke ESP32 pada interval tertentu, kemudian ditampilkan pada LCD dan aplikasi Blynk. Ketika pembacaan mencapai ambang tertentu, ESP32 memicu LED dan buzzer.

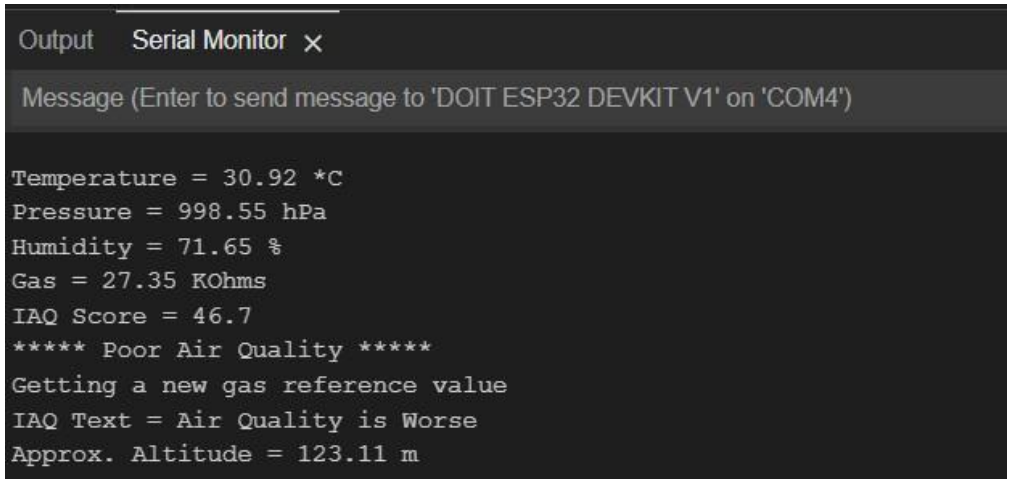
03

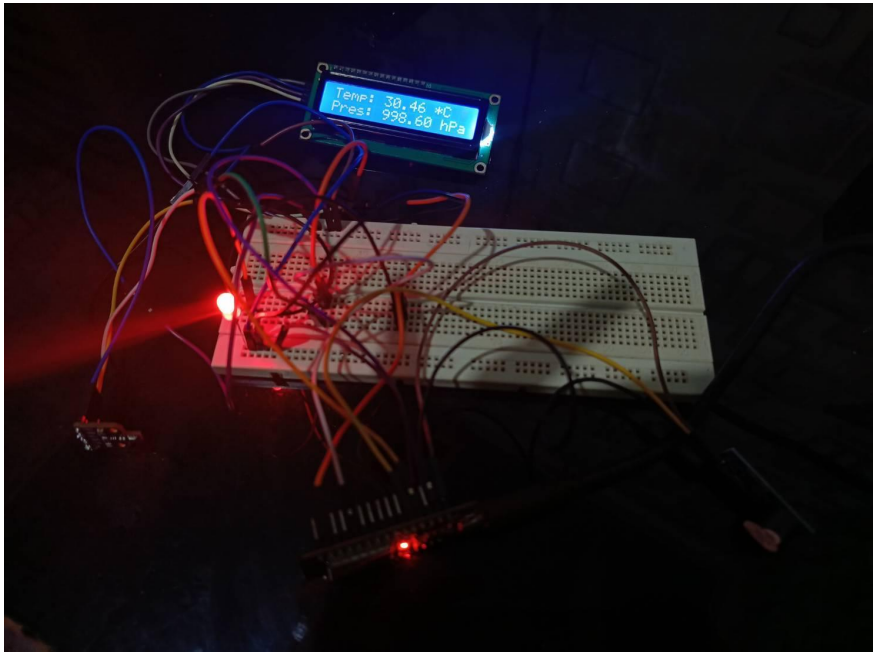
Test Result & Evaluation

Testing

01 Verifikasi Awal Sensor

Untuk memastikan keakuratan tampilan data di serial monitor.





02

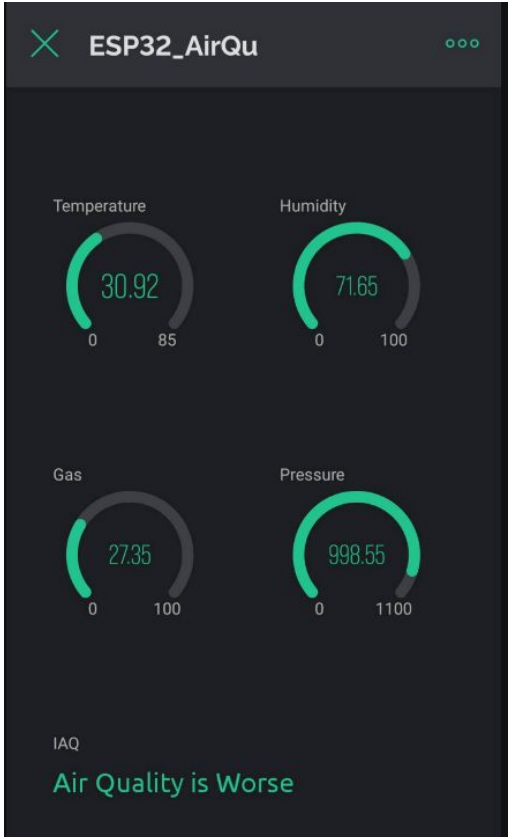
Uji Fungsi LED dan Buzzer

Untuk memverifikasi fungsi LED dan buzzer sesuai kondisi yang telah ditetapkan.

03

Uji Integrasi dengan Blynk 2.0

- Untuk memastikan data yang muncul pada layar LCD sama dengan data di aplikasi Blynk
- Melihat seberapa cepat data di aplikasi Blynk memperbarui nilai-nilai yang ditampilkan di LCD.



Result

Hasil tiga uji coba pada rangkaian utama dengan platform Blynk sesuai harapan dan kriteria yang telah ditentukan. Selama pengujian, sistem memastikan operasional yang optimal dan integrasi real-time dengan Blynk. Dalam hasil pengujian tersebut, proyek IoT "AirQu: Sistem Pemantauan Kualitas Udara" berhasil mengintegrasikan hardware dan software, membentuk sistem pemantauan kualitas udara pintar. Sistem ini mampu membaca data dari sensor BME680 dan menampilkannya pada layar LCD serta perangkat pengguna melalui Blynk. Dilengkapi dengan indikator LED sesuai dengan kondisi IAQ dan buzzer yang memberi peringatan saat kualitas udara memburuk, sistem ini efektif memberitahu pengguna untuk mencegah potensi masalah kesehatan.

04

Conclusion

Conclusion

Secara keseluruhan, proyek kami telah berhasil menghasilkan solusi yang efektif untuk memantau kualitas udara di dalam ruangan. Dengan menggunakan sensor BME680, ESP32, LCD display, indikator LED, buzzer, dan Blynk, sistem ini mampu memberikan data kualitas udara secara akurat dan real-time, termasuk suhu, kelembaban, gas, tekanan, dan indeks kualitas udara (IAQ). Integrasi yang solid antara perangkat keras dan perangkat lunak, ditambah responsifnya indikator LED dan peringatan suara dari buzzer, menunjukkan bahwa sistem ini berhasil mencapai tujuan-tujuan yang ditetapkan, memberikan kemudahan penggunaan melalui aplikasi Blynk, serta memberikan pemberitahuan yang cepat terhadap perubahan kualitas udara.

Thanks!

KERENN!!!

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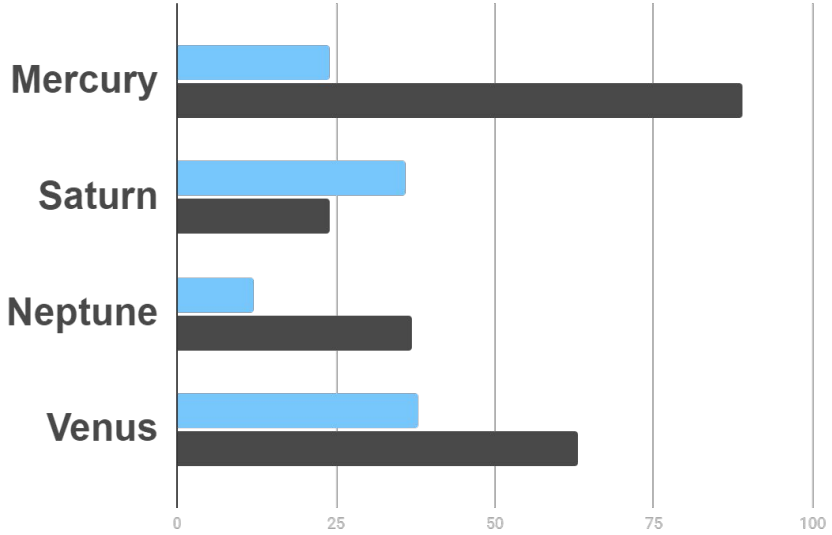
Main Competitors

	Mercury	Jupiter	Venus	Neptune
	✗	✗	✗	✗
	✗	✓	✗	✓
	✓	✗	✓	✗
	✓	✓	✗	✗

Market Research

Evolution



To modify this graph, click on it, follow the link, change the data and paste the resulting graph here

$20K

Gross Revenue in the Sector

10%

Sector Growth

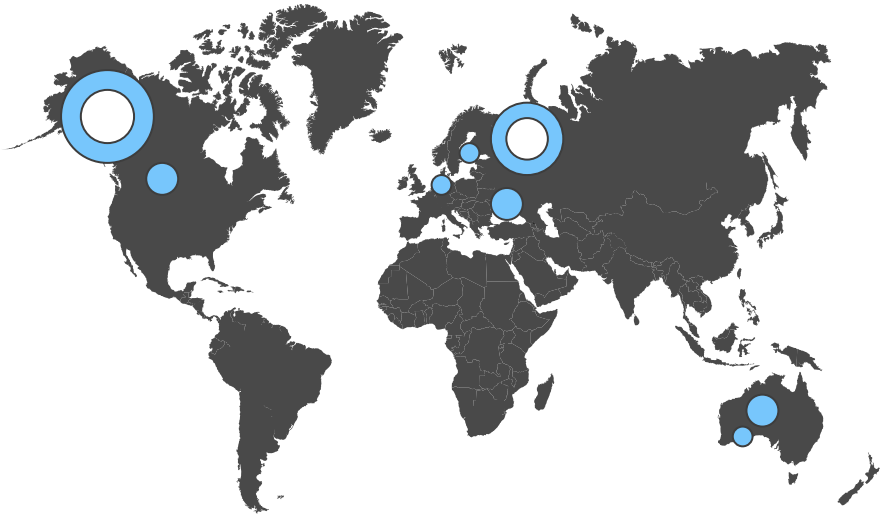
“This is a quote, words full of wisdom that someone important said and can make the reader get inspired.”

—Someone Famous

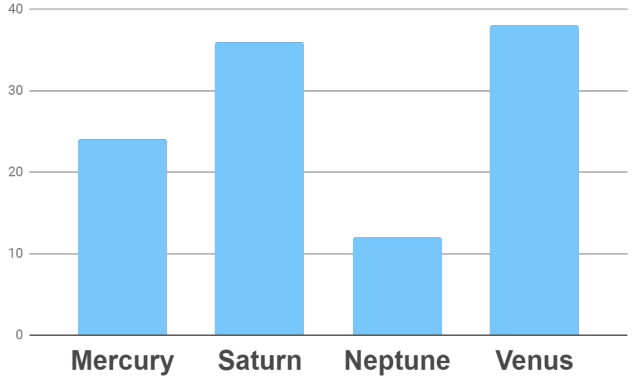
Awesome Words

Analysis

Outreach



Top Rated Values



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333,000.00

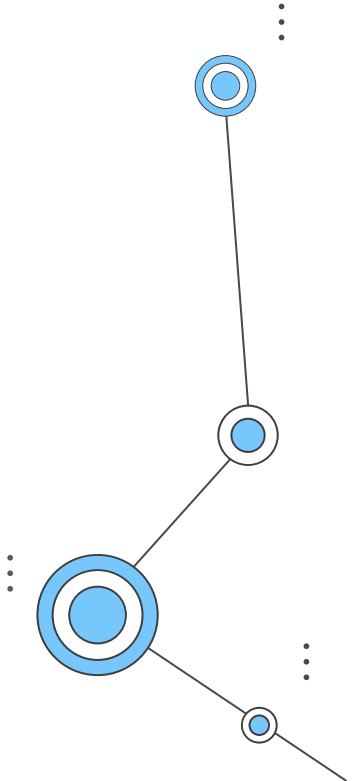
earths is the sun's mass

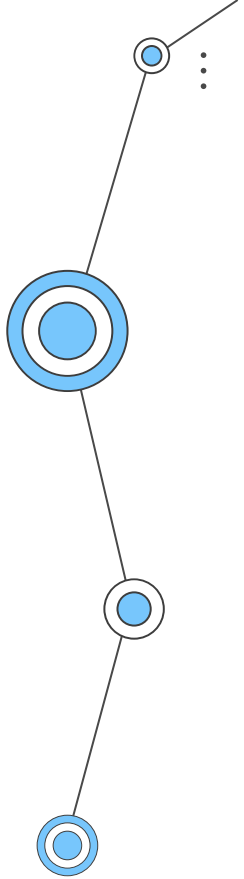
24h 37m 23s

is Jupiter's rotation period

386,000 km

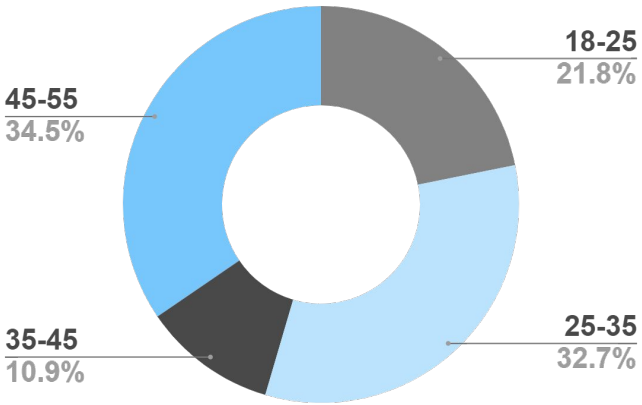
is the distance to the Moon





Target

Age



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Gender

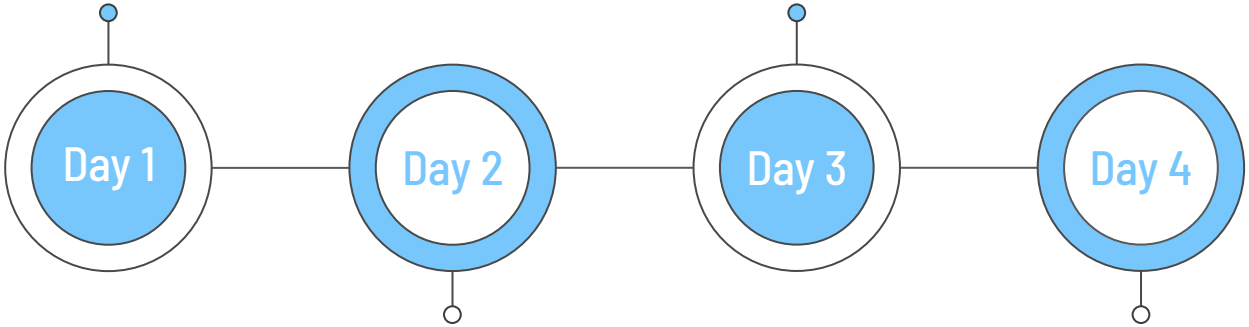
Interests

- Security
- Usability
- Interface

Our Process

Mercury is the closest planet to the Sun

Venus is the second planet from the Sun



Jupiter is the biggest planet in the Solar System

Neptune is the farthest planet from the Sun

Whoa!

This could be the part of the presentation where you can introduce yourself, write your email...

Our Consultants

John James

Venus is the second planet from the Sun

Jane Patterson

Mercury is the closest planet to the Sun

Joe Doe

Neptune is the farthest planet from the Sun

Our Partners

Mercury

Mercury is the closest planet to the Sun

Jupiter

Jupiter is the biggest planet of them all

Neptune

Neptune is the farthest planet from the Sun

Saturn

Saturn is the ringed one and a gas giant

Mars

Despite being red, Mars is actually a cold place

Venus

Venus is the second planet from the Sun

Testimonials

Helena James

“Mercury is the closest planet to the Sun”

Jenna Doe

“Jupiter is the biggest planet of them all ”

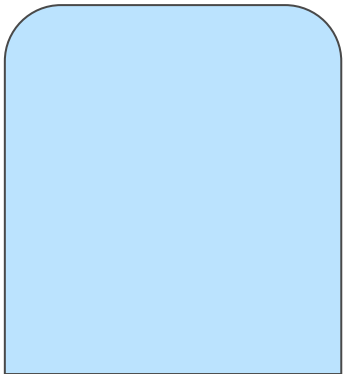
Mary Patterson

“Neptune is the farthest planet from the Sun”

Awards

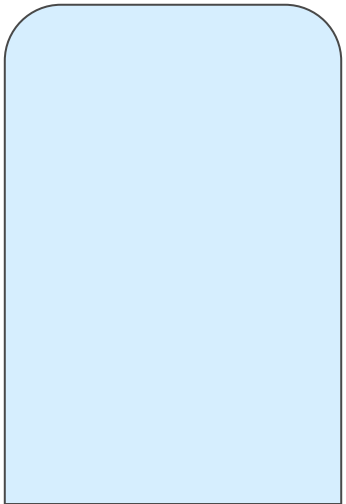
Venus

Venus is the second planet from the Sun



Mercury

It’s the closest planet to the Sun

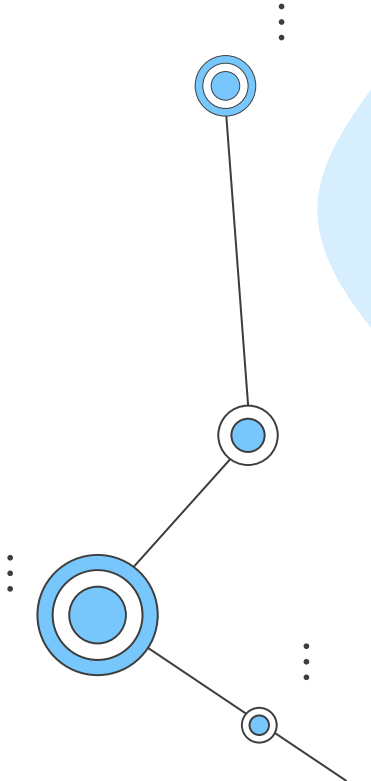


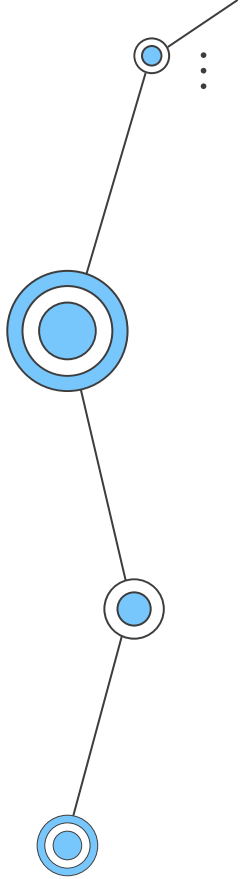
Jupiter

Jupiter is the biggest planet of them all

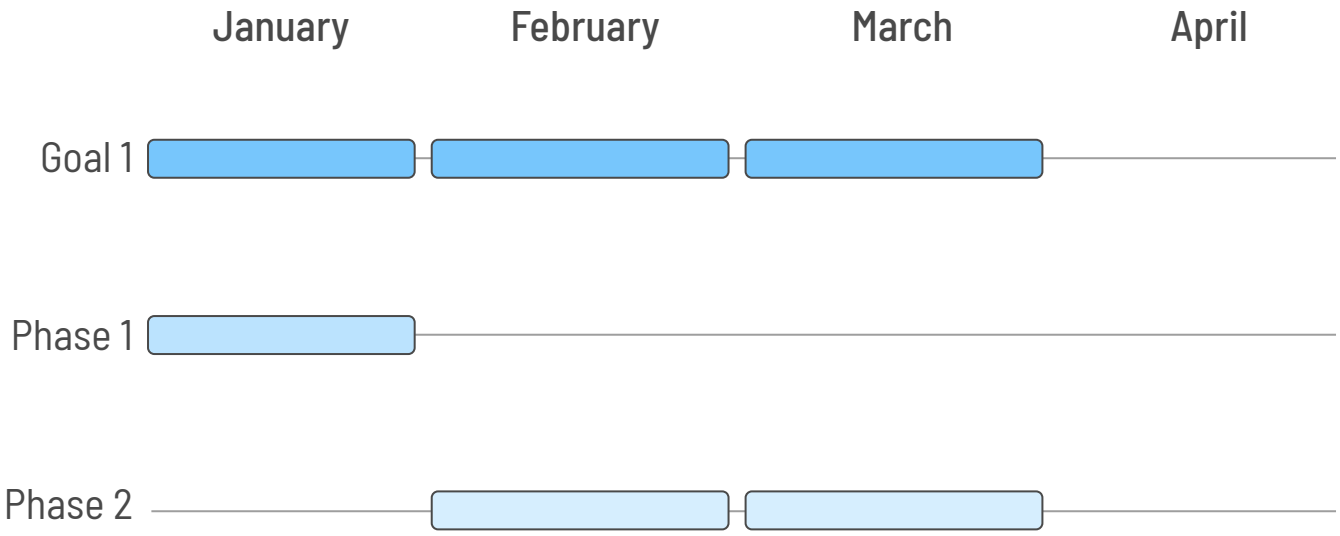
498,300,000

Big numbers catch your
audience's attention





Upcoming Goals



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- 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

A Picture Is Worth a Thousand Words

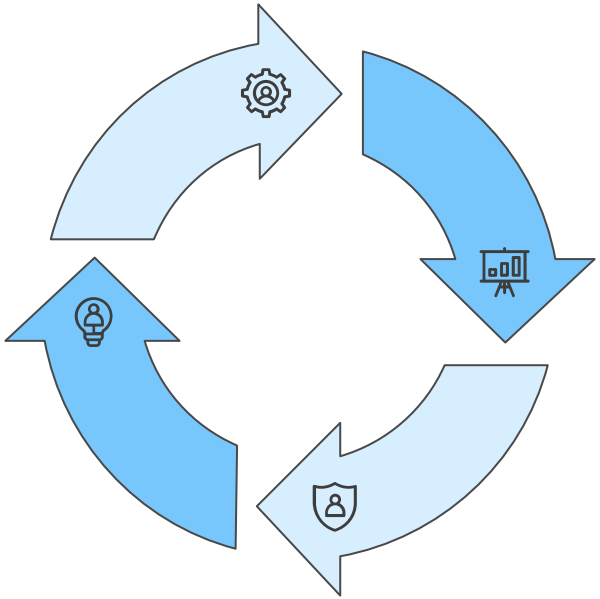
Infographics Make Your Idea Understandable...

Mercury

Mercury is the closest planet to the Sun

Jupiter

Jupiter is the biggest planet of them all



Neptune

Neptune is the farthest planet from the Sun

Saturn

Saturn is the ringed one and a gas giant

...And the Same Goes for Tables

	Mass (earths)	Diameter (earths)	Gravity (earths)
Mercury	0.06	0.38	0.38
Mars	0.11	0.53	0.38
Saturn	95.2	9.4	1.16

Maybe You Need to Divide the Content

01

Neptune

Neptune is the farthest planet from the Sun and the fourth-largest in the Solar System

02

Jupiter

Jupiter is the biggest planet in the Solar System and the fourth-brightest one

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Pana

Amico

Bro

Rafiki

Storyset

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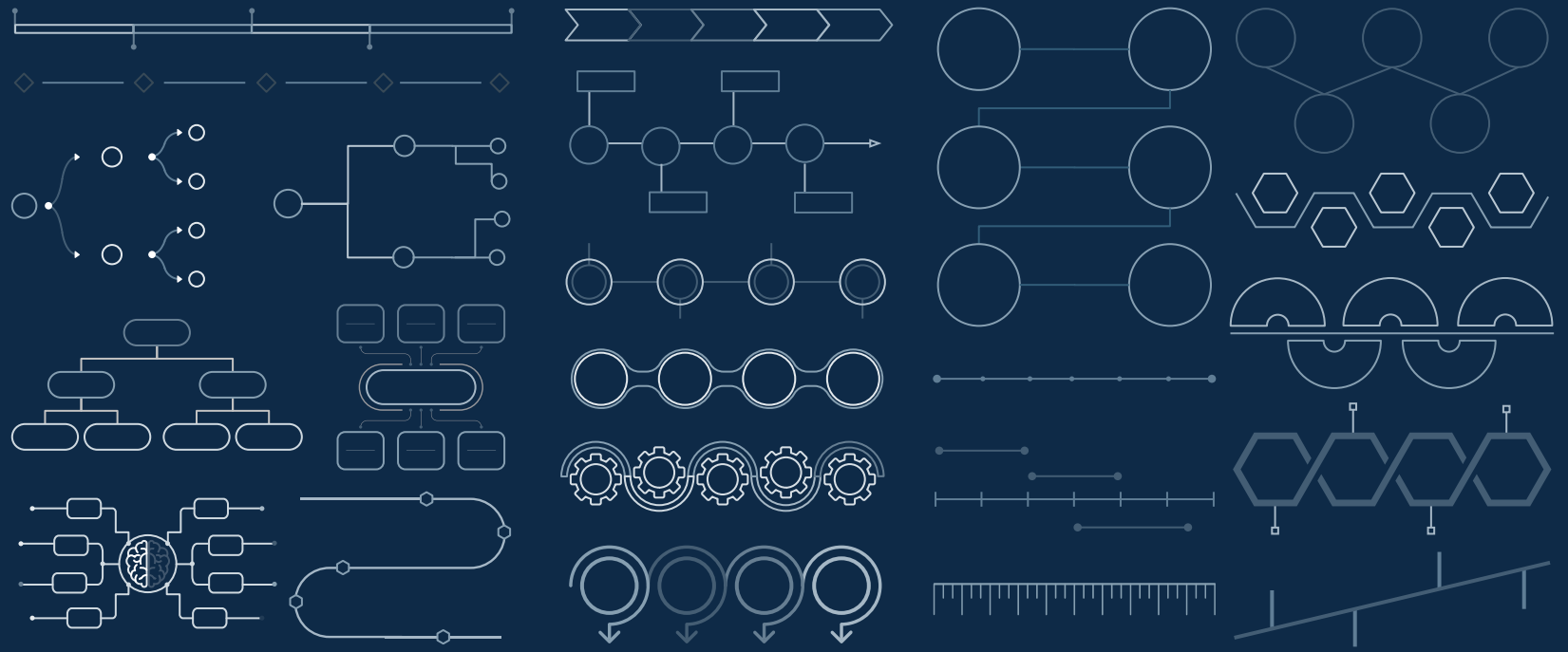

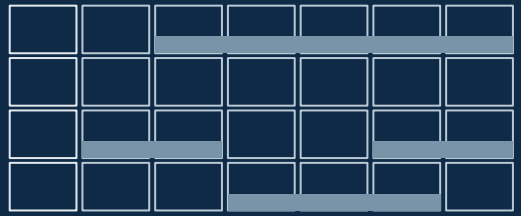

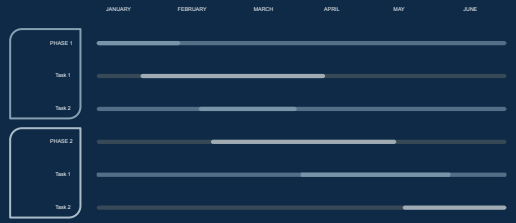
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FEBRUARY
MARCH
APRIL
MAY
JUNE
PHASE 1
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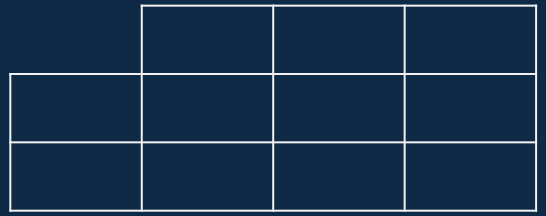
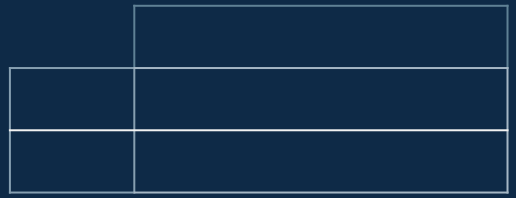
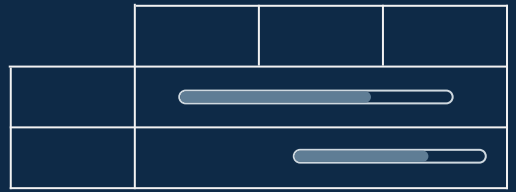
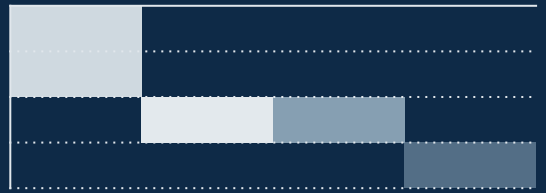
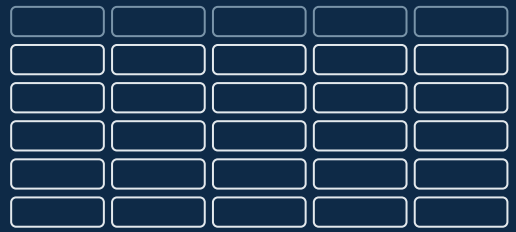
Task 1
Task 2

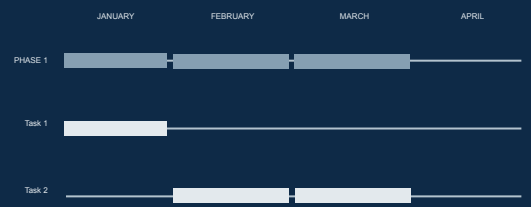








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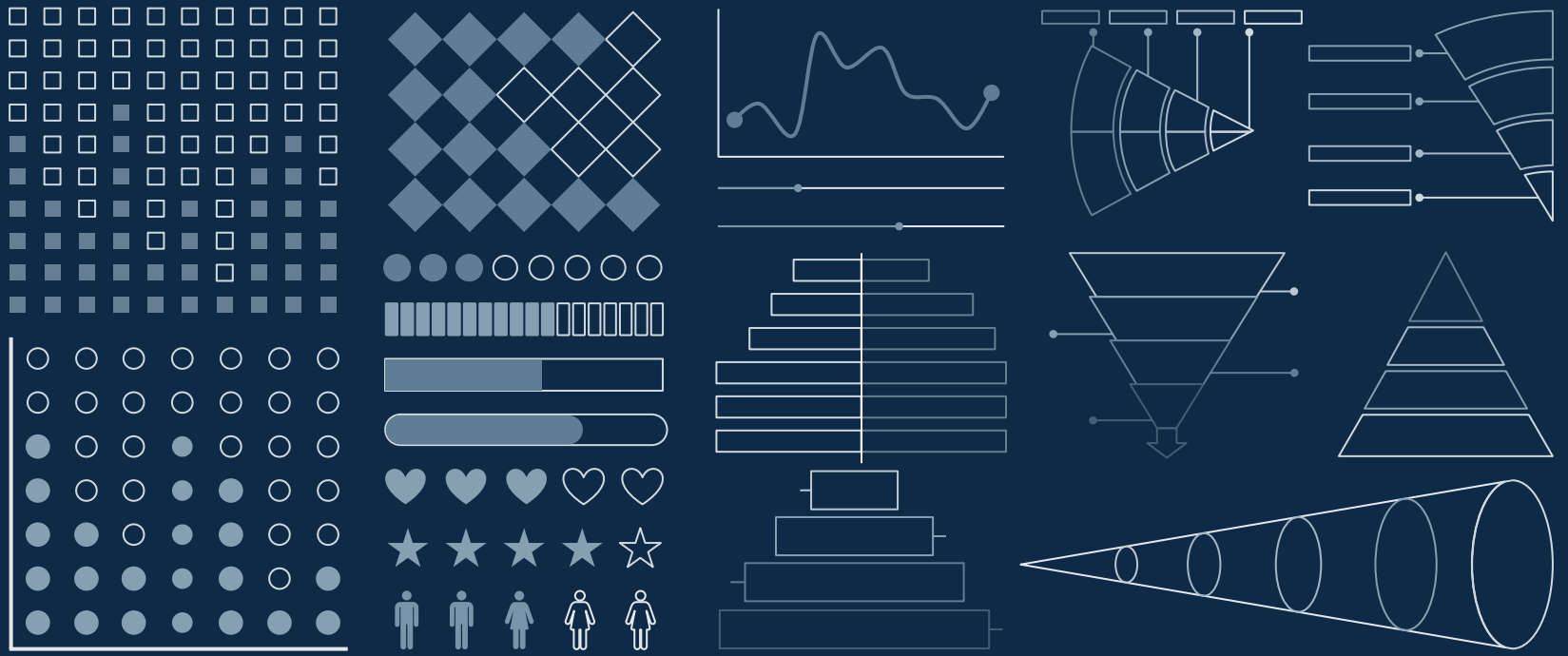
FEBRUARY
MARCH
APRIL
PHASE 1
Task 1
Task 2



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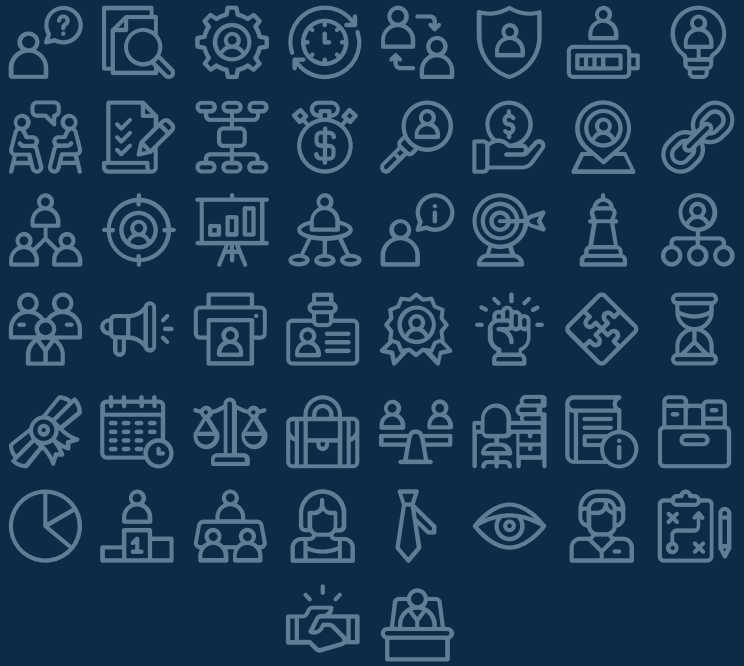

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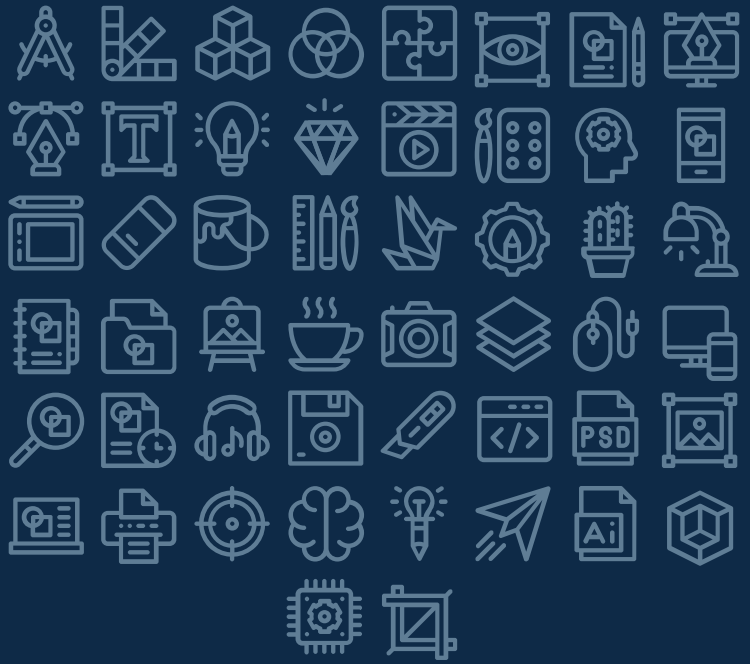

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