Internet of Things in Power

Electrical Power Utilisation and Safety

Presented by
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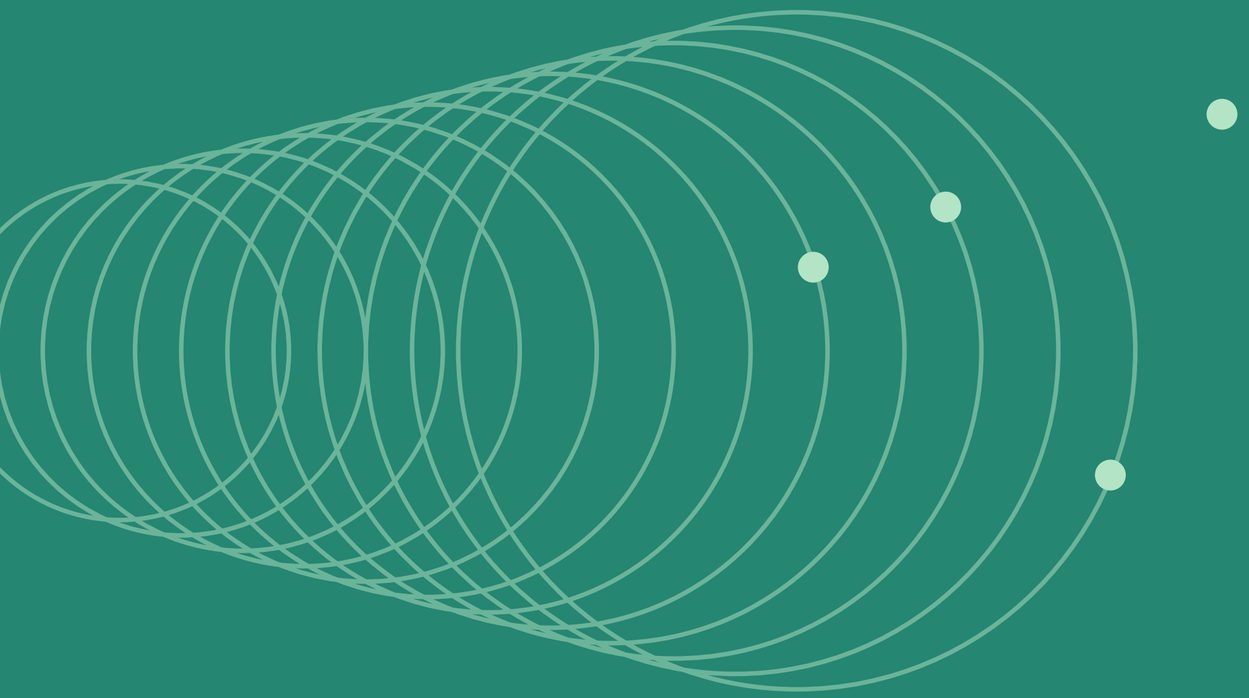
Agenda



Introduction

IoT in Power Sector

IoT in Energy distribution

Case Studies

Challenges

Opportunities

Introduction

An IoT is a network that connects uniquely identifiable ‘Things’ to the Internet. The ‘Things’ have sensing/actuation and potential programmability capabilities. Through the exploitation of unique identification and sensing, information about the ‘Thing’ can be collected and the state of the ‘Thing’ can be changed from anywhere, anytime, by anything.

Drivers of IOT

Inexpensive and high-power sensors and communications

Maturity and standardization of cloud computing, artificial intelligence and security

Explosion of IOT

Standardization of TCP/IP and use of IPv6

Components of IOT

Edge Devices	IoT Hub	Storage	Analytics	Actions and Presentation
• Disparate devices and technology • Devices used to generate real time data	• Entry point for the data into the platform • Exit point for all the commands to actuators	• Incoming datasets are stored in a variety of data storage methods	• Wide variety of data analytics is performed on the data	• The final component that contains a variety of applications, dashboards, integration with ERP applications, and variety of alerts & decisions
• Sensors • Gateways	• Data Hub • Event Hub • Service Bus • External data sources	• SQL Database • No-SQL Database • Blob Storage • Document Storage	• Stream Analytics • Machine Learning • Other Algorithms	• Apps • Notifications • Dashboard • Integration services

THE IOT IN POWER SYSTEM

Write a specific company problem here

Briefly elaborate on the identified problem.

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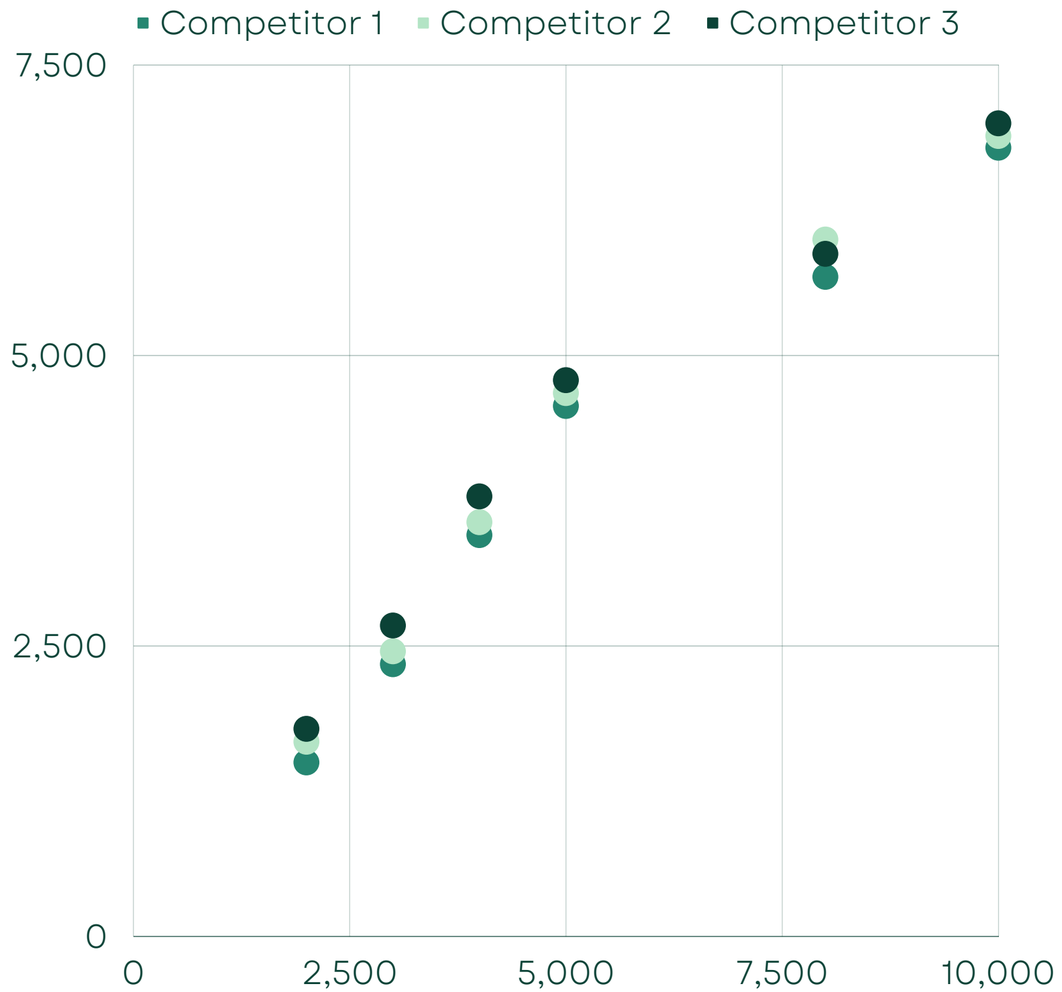
Competitor Analysis

Write a significant observation between the company and its competitors

Briefly elaborate on the observation



Source: Add your references here.

Industry Analysis

Write a significant observation on recent industry trends

Briefly elaborate on the observation

Source: Add your references here.

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Proposed Solutions

	Factor/Criteria # 1	Factor/Criteria # 2	Factor/Criteria # 3
Proposed Solution # 1	Write here	Write here	Write here
Proposed Solution # 2			
Proposed Solution # 3			
Proposed Solution # 4			

Challenges

Investments

require investment to unlock the monetary and societal benefits. IoT investments at generation plants and transmission and distribution networks

Regulations

regulatory framework will have to address: cybersecurity, data privacy and interoperability.

workforce retraining

open up new jobs in higher skill areas like hardware designers, software engineers, data scientists and others.

Customer Expectations

to encourage electricity users to adopt these technologies and to enjoy the benefits of IoT in terms of lower electricity bills and higher reliability.

Challenges (in depth)

01 

Investments

Investment will be required to realise the monetary and societal benefits of IoT deployment and rollout. To increase reliability, efficiency, and emissions, IoT investments at generation plants and transmission and distribution (T&D) networks would have to be supported by government-owned utilities. Investment in IoT could become a cost of doing business for independent power producer (IPP) plants.

02 

Regulations

Cybersecurity is a moving target, and policymakers may be paralysed into either adopting draconian standards that lead IoT initiatives to stall because they are unimplementable, or setting the bar too low. Policymakers must establish criteria for the collection, storage, access, and use of this data. Regulatory organisations can facilitate the quick and easy deployment of IoT by defining standards for IoT device and system interoperability.

Challenges (in depth)

03

Workforce Training

Large technological advances result in significant productivity gains and market disruptions, resulting in significant labour force dislocations. IoT has the ability to eliminate some repetitive professions while creating new jobs in higher skill sectors such as hardware designers, software engineers, data scientists, and others. Satisfying this need would necessitate a significant shift in workforce education and training.

04

Customer Expectations

The difficulty will be to persuade middle- and lower-tier electrical customers to adopt these technologies and reap the benefits of IoT, such as cheaper electricity prices and improved reliability. The issue for utilities is to ensure that investments in IoT ultimately result in lower tariffs for middle- and lower-tier consumers, regardless of whether the investment is for operational optimization, asset performance management, or customer engagement.

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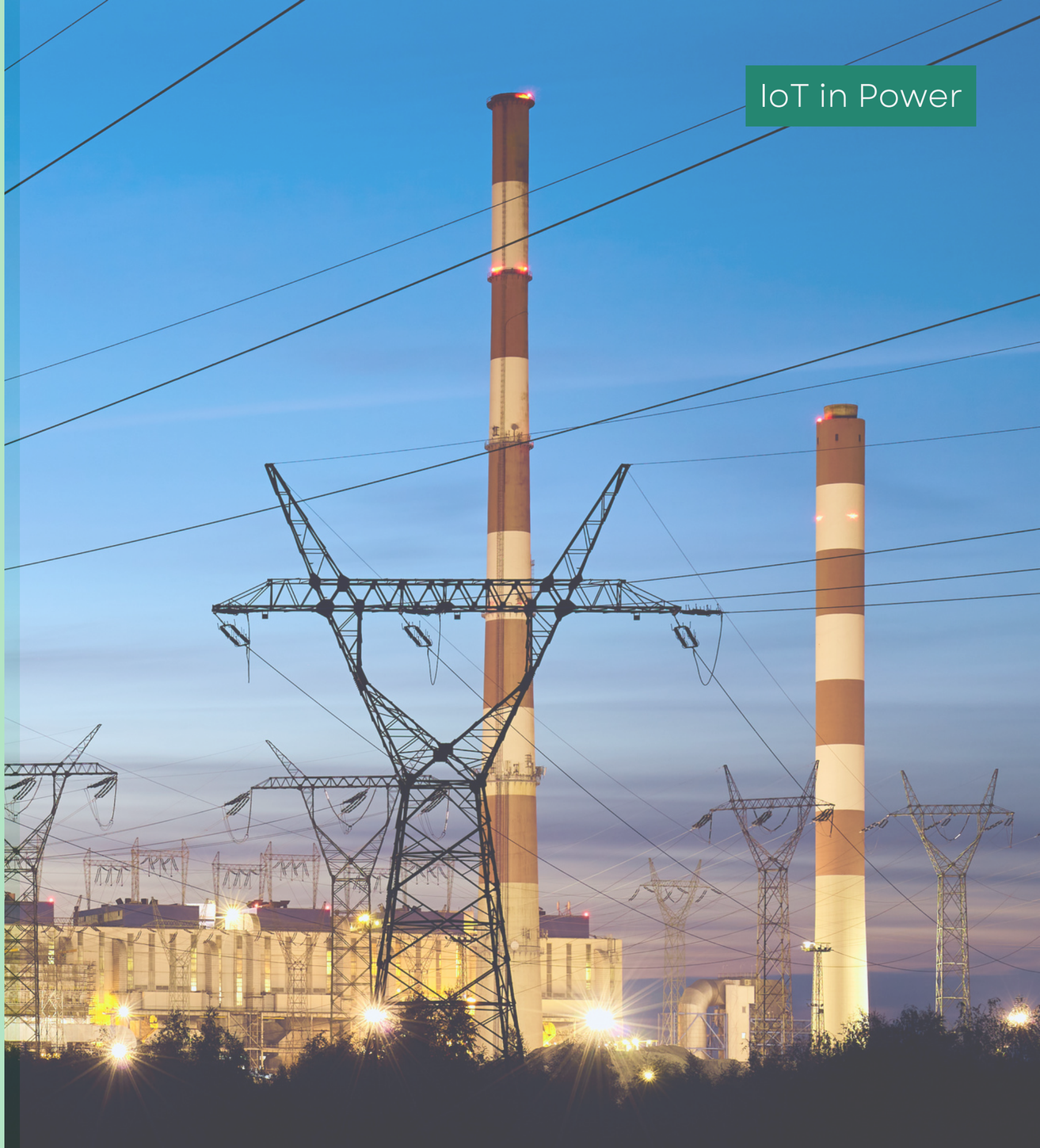
How IoT helps Energy Distribution Industry?

- Equipment Maintenance
- Burglary detection & Dynamic Charging
- Environment friendly power Management
- Power Rerouting and Restoring

Equipment Maintenance

Sensors included in IoT enable utilities to monitor the performance of power plants and other resources such as transformers.

This data can be used to manage the hardware throughout both its uptime and personal time activities



Iot in Energy distribution

Burglary detection & Dynamic Charging

Detecting electricity theft via wiretapping becomes easier for experts.

Along with this arrangement, smart metres enable energy companies to track the amount of electricity consumed by residences over time.

Iot in Energy distribution

IoT in Power

Environment friendly power Management

The generation of electricity from non-environmentally favourable power assets pollutes the metropolis.

Nonetheless, endless riches are completely dependent on climate conditions, making them variable in nature.

Iot in Energy distribution

Power Rerouting and Restoring

Power transmission cables frequently fail due to rapid changes in weather and overloading.

In such instances, a community may experience a blackout until the problem is identified and rectified.

Iot in Energy distribution

Opportunities

- In Asia’s power sector, grids are plagued with unreliable service and are struggling to upgrade power systems to keep up with high demand growth rates.
- The Internet of Things (IoT), billed as the next industrial revolution or Industry 4.0, has the potential to significantly transform the power sector by optimizing operations, managing asset performance, and engaging customers to lower energy cost.
- The power sector is already reaping benefits from early consumer-oriented IoT applications: smart meters and smart thermostats.

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Whiteboard Page

Copy a note, drag to the board, and write your ideas.

Copy a note, drag to the board, and write your ideas.

Write a note here

Write a note here

Tip: Collaboration makes teamwork easier! Click "Share" and invite your teammates to fill this up.
Use this whiteboard page for bulletins, brainstorms, and other fun team ideas!

Need a timer? Find the clock symbol on the lower left and start brainstorming!

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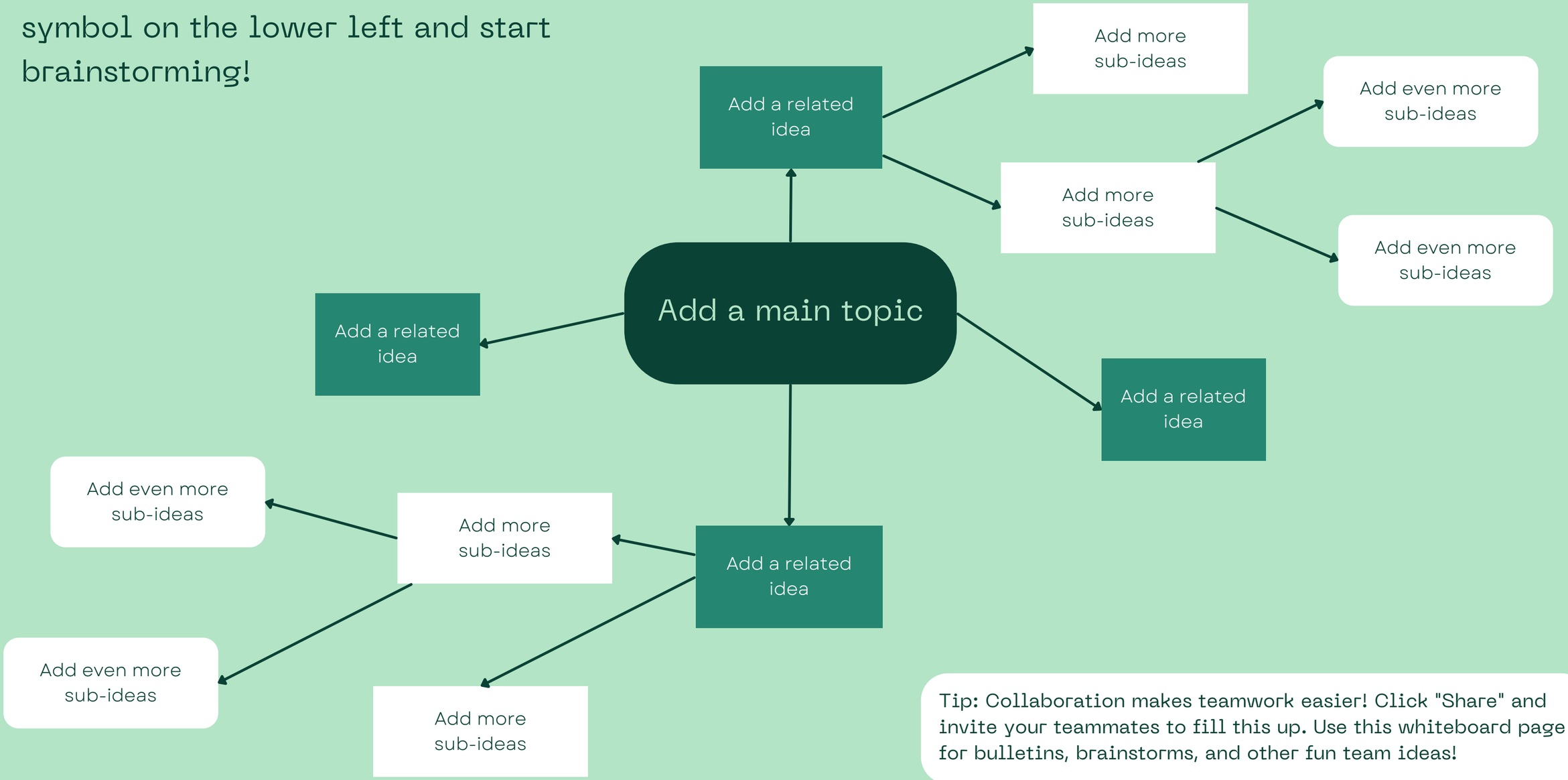

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Thank You !

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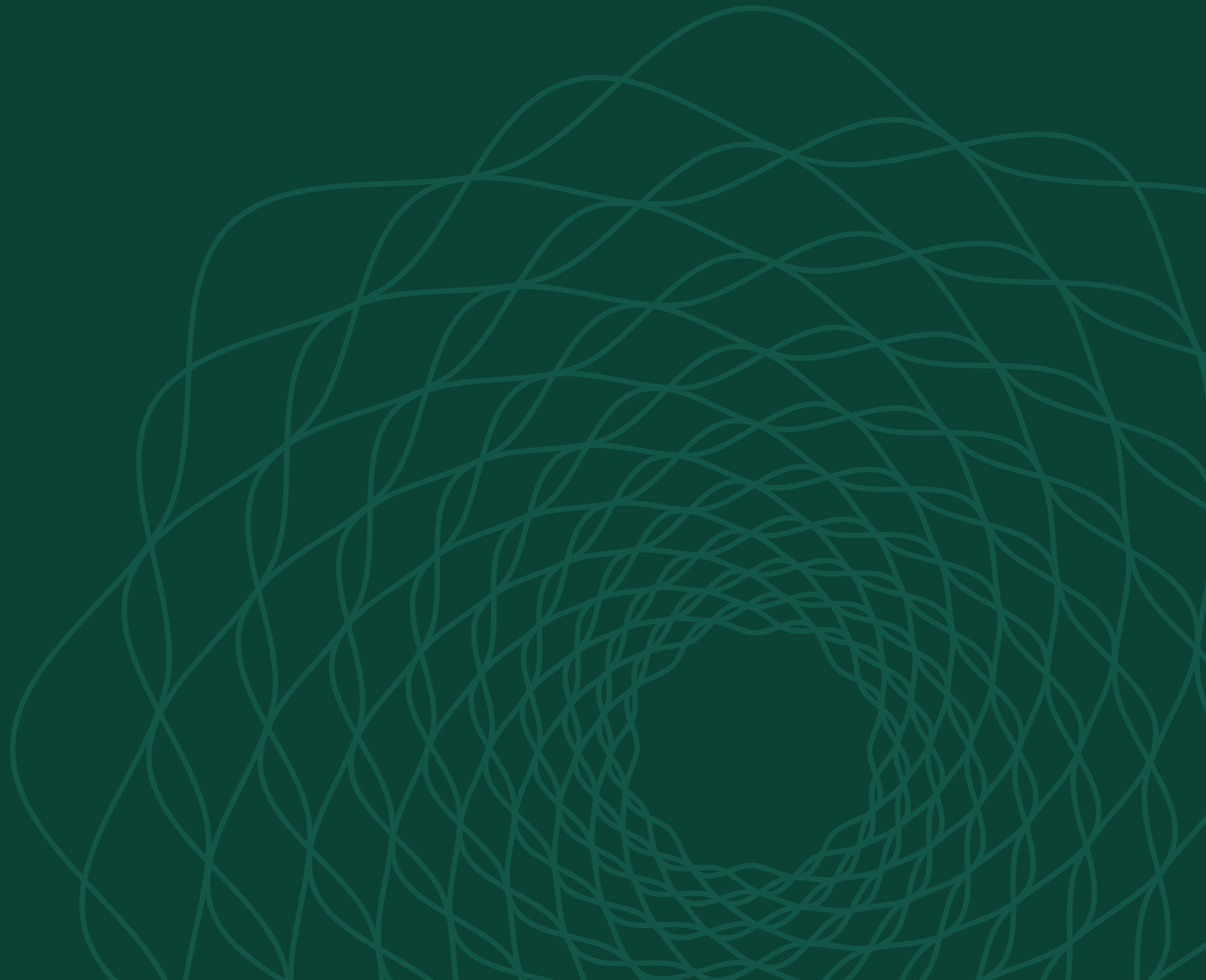

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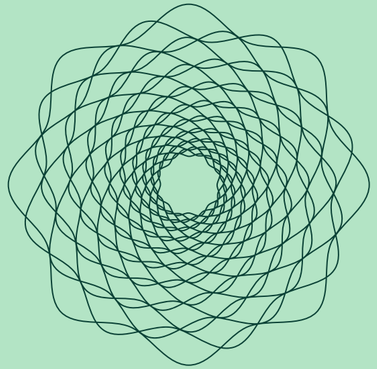
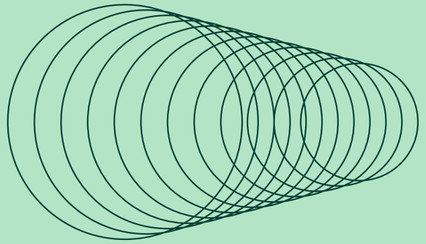
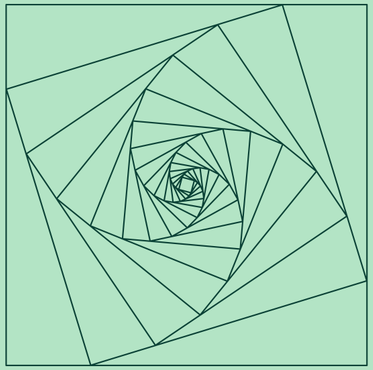
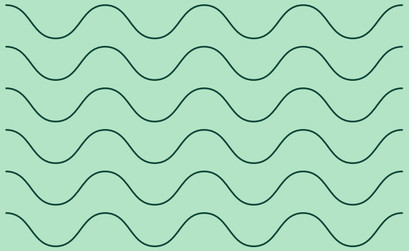
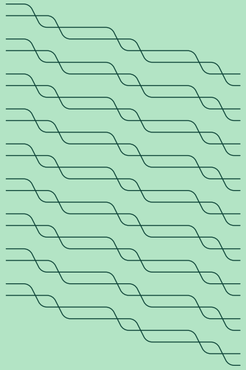
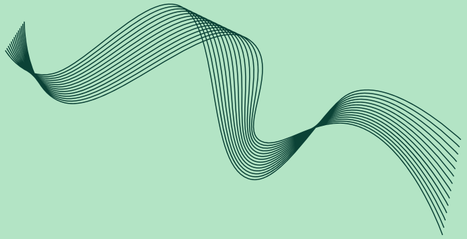
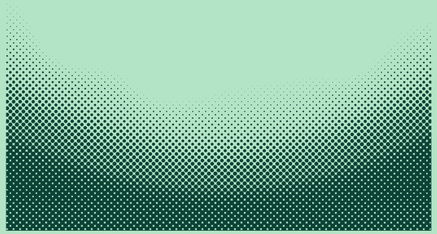
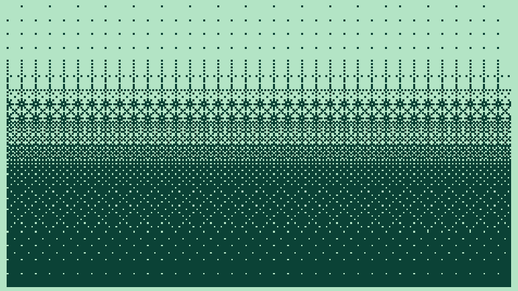
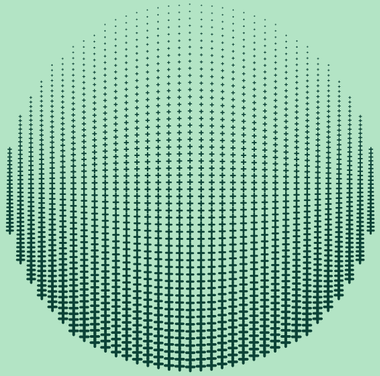

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