

Host Utilities



ORGANIZER



India SMART UTILITY Week 2025

Supporting Ministries



Session : Disruptive Innovations for Utilities UNLOCKING THE INTELLIGENT UTILITY WITH GEN AI

Presented By
DHEERAJ GANGADHARAN, ASSOCIATE MANAGER

PRESENTATION GUIDELINES

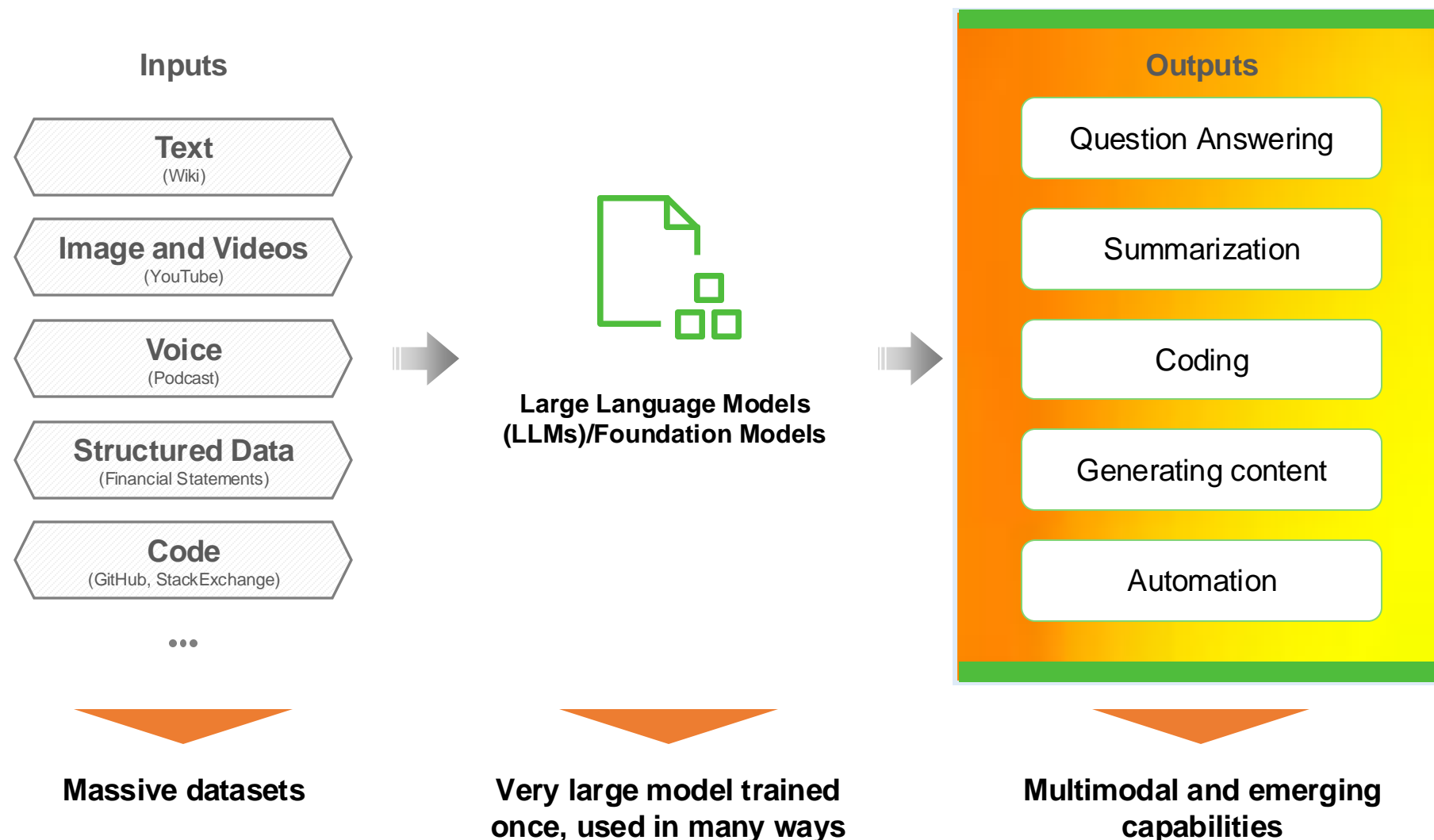


India
SMART UTILITY
Week 2025

ISGF
India Smart Grid Forum

- **Presentation Time**: The total time for presentation is 7 mins. You are requested to be present on-time as per your session slot.
- **Presentation Format**: All the presenting speakers are required to give a presentation as per the PPT Format. (Maximum 7 Slides). Please note that the additional presentation slides cannot be added in the shared PPT format.

Generative AI is a type of artificial intelligence that can learn from and mimic large amounts of data to create content such as text, images, music, videos, code, and more, based on inputs or prompts.



Artificial Intelligence Market is on a remarkable growth trajectory, with expectations to soar from **USD 177bn** in 2023 to **USD 2,745bn** by 2032.

The Gen AI market size is expected to show an annual growth rate (CAGR 2025-2030) of **41.52%**, resulting in a market volume of **US\$356.05bn** by 2030.

In the last 10 months, more than **50%** of over 1,400 organizations surveyed have **ramped up their investment in Generative AI**



The Global **Generative AI In Utilities Market** size is expected to be worth around **~USD 1.33 Billion** by 2033



The market will grow at a **CAGR of 34%** during the forecast period from 2024 to 2033.



Approximately **40%** of utility and energy companies have **allocated a dedicated team** and budget for **exploring Generative AI capabilities**



A significant **54%** of executives see generative AI as a critical tool in the advancement of green energy projects

Utilities need to empower large customers to effectively achieve their sustainability and operational goals by offering innovative solutions such as demand response programs, virtual power purchase agreements, energy management platforms, and tailored energy efficiency services.



Prosumers now want clean, reliable, and affordable energy, as well as innovative products and services, and they expect to be a click away from personalized human experience. Utilities need to focus on 360° Value Management for customers.



To keep pace with the dual forces of grid modernization and the energy transition, utilities must revamp their capital project processes to enhance end-to-end efficiency. Additionally, integrating EV fleet services to accelerate decarbonization presents a critical opportunity to seamlessly adopt Gen AI technology.



Utilities must be equipped to navigate an increasingly complex regulatory landscape riddled with challenges and will require robust business and regulatory intelligence. Optimizing energy production and seamlessly integrating renewable energy sources are now essential. Simulating operational scenarios will play a critical role in achieving these goals.



From an Energy Trading standpoint, Market Analysis and Strategy Optimization, real-time risk mgmt., autonomous trading (via bots and trading models), and contracts and portfolio mgmt. are vital functional areas, and all these can be assisted/managed by Gen AI implementation.

PRESENTATION ON THE TOPIC (1/2) (1 Min)



India
SMART UTILITY
Week 2025

ISGF
India Smart Grid Forum

| Theme/Category | Key Impact Areas | Business Value |
|--------------------------------|---|---|
| Operations and Maintenance | <i>Project Design and Prioritization Augmented Asset Inspection & Preventive Maintenance Load Forecasting Work Order Correction</i> | <i>Reduced O&M costs and downtime</i> |
| Grid Optimization & Resilience | <i>Augmented Asset Integrity Management Augmented Damage Assessment Automated Field Job closeouts Power Outage Management</i> | <i>Enhanced Grid Stability and Efficiency</i> |
| Customer Engagement | <i>Customer Chatbot & Enhanced Contact Center Intelligent Billing Management Optimized Marketing Sales Lead Assistant</i> | <i>Higher Customer Engagement and Satisfaction</i> |
| Energy Markets | <i>Commodity Market Analysis Automated Contract Management Automated Settlements</i> | <i>Improved Market Forecasting and Revenue Optimization</i> |
| Sustainability | <i>Carbon Credits Management Supply Chain Decarbonization Augmented ESG Reporting</i> | <i>Accelerate alignment with ESG Goals and Compliance</i> |

PRESENTATION ON THE TOPIC (2/2) (1 Min)



India
SMART UTILITY
Week 2025

ISGF
India Smart Grid Forum

Generative AI holds immense potential, but unreliable outputs, security threats, legal pitfalls, and ethical misuse can turn innovation into a liability if not managed wisely!

POSSIBLE RISKS



Unreliable Outputs

The reliability and credibility of models and their outputs may be compromised due to:

- Bias & Discrimination
- Lack of Traceability & Explainability
- Insufficient Transparency & Disclosure
- Inadequate Quality & Accuracy



Liability & Compliance

The usage of tools may present risks related to contractual obligations or regulatory breaches, including:

- Intellectual Property Rights
- Regulatory Compliance
- Contractual Obligations
- Product Liability
- Consumer Protection



Privacy & Security

Utilizing models and applying their outputs may lead to:

- Security Vulnerabilities
- Unauthorized Exposure of Confidential or Personal Information



Unethical Usage

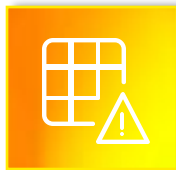
Tools may be exploited in harmful or unethical manners, resulting in:

- Disinformation & Large-Scale Misinformation
- Harm to Vulnerable Populations
- Malicious & Adversarial Misuse

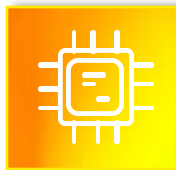
MITIGATION STEPS



Define and communicate a Responsible AI vision and guiding principles, endorsed by the C-suite and establish a structured governance framework



Ensure adherence to existing laws, regulations, and Responsible AI policies and Implement a risk management framework



Develop and integrate AI tools and methodologies that uphold fairness, accountability, and privacy, and embed these principles into AI systems



Foster leadership commitment to position Responsible AI and equip employees with comprehensive training programs to build awareness around ethical AI

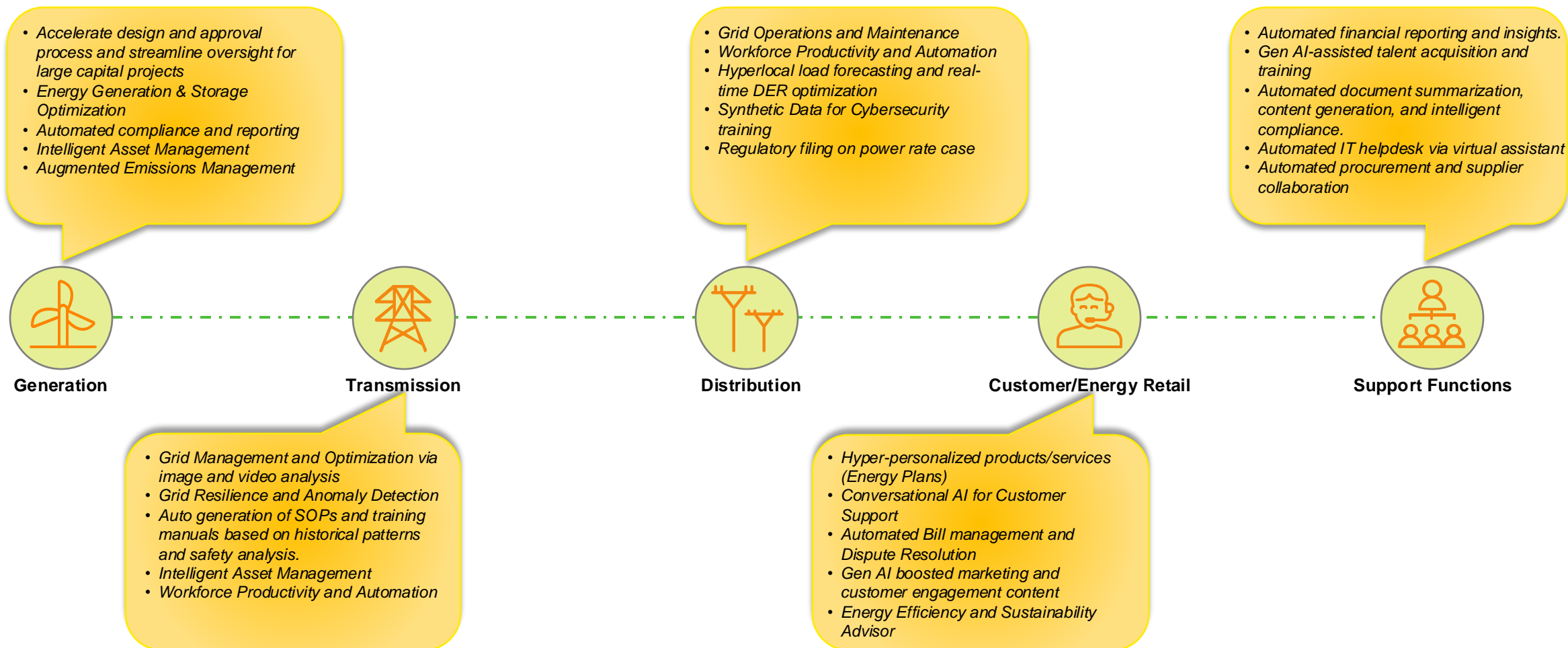
USE CASE / CASE STUDY



India
SMART UTILITY
Week 2025

ISGF
India Smart Grid Forum

We are rapidly entering an era where many facets of human work can be either significantly augmented or automated with smart usage of generative AI. Certain use cases have been identified across the value chain, but the list grows everyday...



KEY TAKEAWAYS / RECOMMENDATIONS



India
SMART UTILITY
Week 2025

ISGF
India Smart Grid Forum



Generative AI stands at the forefront of digital transformation in the utility sector, offering transformative capabilities that extend far beyond traditional AI applications



Utilities should focus on investing in AI Talent & Tools, Build Gen AI capabilities in-house and leverage Gen AI tools and models for revolutionizing their business



While the benefits are significant (from 25-50% reduction in equipment failures to 15-20% efficiency gains in system optimization), successful implementation requires careful navigation of security concerns, data challenges, and workforce adaptation.



Ensuring that AI solutions are scalable, adaptable, resilient, and aligned with long-term sustainability goals.



The industry's highly regulated nature demands a balanced approach to innovation and reliability



As utilities continue their digital evolution, a structured approach to Gen AI adoption, focusing on robust security protocols, comprehensive change management, and systematic validation frameworks, will be crucial.

Host Utilities



ORGANIZER



India SMART UTILITY Week 2025

Supporting Ministries



THANK YOU

For discussions/suggestions/queries email: isuw@isuw.in

www.isuw.in

[Links/References \(If any\)](#)