

## **TECHFEST 2023-2024**

### **Urban Futurism: Building Smart Cities**

Smart cities are urban areas that utilise technology and data to improve the quality of life for residents, enhance sustainability, and optimise resource management. They integrate various technologies, such as Internet of Things (IoT), artificial intelligence (AI), big data analytics, and renewable energy systems, to create more efficient and connected urban environments.

Urban planning plays a crucial role in the development of smart cities. It involves designing and organising urban spaces to accommodate the needs of the population while considering factors like infrastructure, transportation, housing, public services, and environmental sustainability. In the context of smart cities, urban planning focuses on leveraging technology and data-driven insights to improve city operations and enhance the overall urban experience.

#### **Transforming Urban Spaces: Advancing Smart Cities for Sustainable and Inclusive Future**

As the world becomes increasingly urbanised, the need for smart and sustainable urban planning has become imperative. This Ideate competition aims to address the challenges faced by cities in their journey towards becoming smart cities, focusing on innovative solutions that enhance urban planning, optimise resource management, and improve the quality of life for residents. Participants are encouraged to explore various aspects of smart cities and propose novel ideas to tackle the complex urban issues.

#### **Problem Statement :**

The participants are required to identify and propose innovative solutions to one or more of the following challenges in smart cities and urban planning:

1. Efficient Transportation and Mobility
  - Developing intelligent transportation systems to reduce traffic congestion, enhance public transportation networks, and improve the overall mobility experience.
  - Designing innovative solutions for last-mile connectivity, shared mobility, and multimodal transportation to encourage sustainable and efficient commuting

2. Sustainable Energy Management:

- Designing and implementing smart grids, renewable energy solutions, and energy-efficient systems in buildings to reduce carbon footprint and enhance energy sustainability.
- Exploring innovative approaches to integrate renewable energy sources, energy storage systems, and demand-response mechanisms for efficient energy management.

3. Data Analytics and Urban Intelligence:

- Utilising data analytics, IoT sensors, and real-time monitoring to gather insights on urban patterns, resource consumption, and environmental parameters for informed decision-making in urban planning.
- Developing data-driven models and algorithms for predictive analysis, optimised resource allocation, and effective urban management.

4. Enhancing Citizen Engagement and Governance:

- Designing digital platforms and tools to promote citizen participation, transparency, and collaboration in urban planning processes.
- Exploring innovative methods to engage diverse communities, ensure equitable access to services and resources, and empower citizens in shaping the future of their cities.

5. Resilience and Climate Adaptation:

- Developing strategies and technologies to enhance urban resilience against climate change, natural disasters, and other environmental challenges.
- Designing resilient infrastructure, green spaces, and water management systems to mitigate risks and ensure long-term sustainability.

## Research Options:

Participants are encouraged to consider the following research options while addressing the problem statement:

1. Case Studies:

Analyse and draw insights from existing smart city initiatives around the world, examining their successes, challenges, and lessons learned.

2. Technology Integration:

Explore the integration of emerging technologies such as AI, blockchain, autonomous systems, and edge computing in urban planning for enhanced efficiency and sustainability.

3. Social and Economic Impact:  
Investigate the social and economic implications of smart city initiatives, including affordability, job creation, social equity, and inclusivity.
4. Policy and Regulatory Frameworks:  
Examine the policy and regulatory aspects that support the development and implementation of smart city projects, considering privacy, data governance, and ethical considerations.
5. User-Centric Design:  
Focus on human-centred approaches in urban planning, considering the needs, preferences, and behaviour of city residents to ensure user acceptance and adoption of smart city solutions.
6. Funding and Financing Models:  
Explore innovative funding mechanisms and public-private partnerships to support the implementation of smart city projects and ensure long-term financial sustainability.

## **Conclusion:**

This Problem Statement challenges participants to think critically, propose innovative ideas, and conduct research on various aspects of smart cities and urban planning. The goal is to foster sustainable, inclusive, and technologically advanced urban environments that improve the quality of life for citizens. Through interdisciplinary research and creative thinking, participants have the opportunity to contribute to the transformation of cities into smart and resilient spaces for the future.

## **Report Format :**

- Title
- Abstract
  1. Objectives
  2. Beneficiaries (For Whom)
  3. Value of Results (Usage)
- Background
- Statement of Problem
  1. Succinct definition of problem addressed (follows from material in the background section)

- Research
  1. Present Methods of tackling the problem (if any)
  2. Proposed Solution
  3. Alternate solutions/approaches
  4. Novelty of Approach: How is/will your solution be better than the existing products that address the same problem?
- Technical Report
  1. Description of concepts, theories and/or approach involved in the proposed solution
  2. Technical aspect of the proposed solution
  3. Detailed technical specifications and pictorial representations (block diagrams/ flow chart)
  4. Description of the flow of operations demonstrating key features and functionality
  5. Performance estimate of the solution
  6. Experimentation/Verification done to establish the workability of the above
  7. A link to the video of the working model/ prototype
- Results
  1. Actual findings, significant output of tests and analysis (Must be readable)
  2. Include problems encountered, credibility of results, accuracy estimates
  3. Pros and cons of your solution
  4. Utility of results
- A link of the Google Drive Folder which contains Pictures and Video of the working model/ prototype.
- Application
  1. Your idea as a solution to the problem
  2. Additional applications
  3. Benefits to the users
- Future prospects, research in it and further development (in brief)
- Any other details: (Patent/Business plan etc.)

### **Eligibility:**

- Individuals or teams from the following categories are allowed:
  1. Students/research scholars of authorised institutions (students have to show their Valid College/School ID)
  2. Upto 3 years old college pass-outs.
- A team is allowed to have a maximum of 4 members.
- If the participating team feels that their idea requires more participants in their team, they can forward their request, with suitable reasons, to xxxxxxxx@techfest.org with the subject "Ideate XXX: Team number increase request"

## Evaluation:

1. **Creativity and Novelty:** How novel is the idea? How different is it from the current solutions available? The innovation must be ingenious and novel in its area of application and should have a high potential for leaving an impact on the society.
2. **Originality:** The innovation should not, by any means, include copied or stolen work. Such applications will be disqualified immediately.
3. **Performance**
4. **Cost/Market Value and Acceptance**
5. **Durability and Usability:** Durability of the prototype/method proposed.
6. **Implementation Ability:** Is the solution implementable as described? Is it repeatable? Is the solution feasible for diverse and changing conditions?
7. **Scalability:** Is the solution scalable to a higher level, how easy is it to scale up and what are the factors affecting it?
8. **Potential of Impact:** How does it benefit society? The scale of problem that it solves, intensity of the solution and number of people catered from the solution directly and indirectly.
9. **Design:** Has the design been taken into consideration? How optimised is the product?
10. **Ergonomics** (if the team decides to make a well-designed product) In case of any discrepancies, the decision of the Organizers or Judges will be final and binding on all.

## Shortlisting:

Top 15 teams will be selected and will get the chance to present their model/idea in the Final Round of Ideatexxxx, Techfest, IIT Bombay. Participants will get a slot for presenting their model/idea to the Judges based on which they will be evaluated. These teams will be selected by a panel of judges.

## General Rules:

1. Every team has to register online on our website for the competition. A Team ID will be allocated to the team on registration which shall be used for future references.
2. A team can register at any point of time before 24th October 2020 and submit the final abstract and video (as mentioned in the structure).
3. The decision of the organizers or judges shall be treated as final and binding on all. Techfest has all the rights to verify the identity and accuracy of the details provided by the participants.
4. No responsibility will be held by Techfest, IIT Bombay for any late, lost or misdirected entries.
5. The idea presented by the teams should be original (not protected by means of patent/copyright/technical publication by anyone else).



6. Note that at any point of time the latest information will be that which is on the website. However, registered participants will be informed through mail about any changes on the website.
7. All modes of official communication will be through the Techfest e-mail.

### **Registration and Submission:**

The Participants have to register on the official Techfest Website and fill all the necessary details. [www.techfest.org](http://www.techfest.org) ->Competitions-> Ideates ->Ideatexxx -> Explore More -> Register -> Fill all your details - > Now you must create/Join a team.

### **Abstract Submission:**

Teams are required to submit one report to [Ideatexxx@techfest.org](mailto:Ideatexxx@techfest.org). This report should contain the idea they are looking forward to work on.

### **Project Report Submission:**

The project report should be mailed to with the subject 'Ideate: "xxx" Project Report: (for e.g. Ideate: "xxx" Project Report: ID). The report must be submitted in PDF format only mailed to [ideatexxx@techfest.org](mailto:ideatexxx@techfest.org)

### **Certificate Policy:**

Only those teams that are shortlisted for the finals and also give a final presentation about their work during Techfest 2022-23 would be awarded an e-Certificate of Participation. The top 5 entries from this event would be provided with a Certificate of Excellence.

### **Prizes:**

The prize money will be awarded to top 3 winners via NEFT and will be processed within 30 working days after receiving the prize money from sponsors. Winners have to mail the following information (immediately after the announcement of results) to [akshat@techfest.org](mailto:akshat@techfest.org)

FORMAT OF MAIL : Subject: XXXXX - (example-xxxx, xxxx,x Position)

Body of mail:

1. Account Holder's Name
2. Account Number
3. Bank name and Branch name.
4. IFSC Code

**TIMELINE:**

Last Date of Registration	30th October,2023	Participants need to register before this date
Abstract Report Submission	10th November,2023	Submission of First Draft Report
Shortlisting of the Abstracts	20th November,2023	Declaration of shortlisted teams to work for presentation reports
Final Report Submission	15th December, 2023	Submission of final project report has to be submitted before this date
Final Presentation	27th December, 2023	Teams will present their idea at Techfest IIT Bombay before the judging panel