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K S Group of Institutions



# K. S. INSTITUTE OF TECHNOLOGY

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#14, Raghuvanahalli, Kanakapura Road, Bengaluru – 560109



## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

A Report on

# An Expert Talk on “Technology Readiness level and Manufacturing Readiness level”



### Introduction

An Expert Talk on Technology Readiness Level (TRL) and Manufacturing Readiness Level (MRL) was organized with the objective of creating awareness about technology maturity assessment and commercialization readiness. The session aimed to bridge the gap between academic research and industrial implementation by introducing structured evaluation frameworks.

In today's innovation-driven ecosystem, it is essential to assess not only the novelty of an invention but also its practical feasibility and scalability. The expert talk focused on explaining how TRL and MRL frameworks help researchers systematically evaluate the progress of their technologies from conceptual stages to full-scale deployment. The session provided clarity on integrating technical validation and manufacturing preparedness to improve commercialization success.

### Resource Person

Dr. Vijay Singh

IP Manager & Licensing, IPTEL, IISc

Dr. Vijay Singh delivered an insightful and comprehensive lecture drawing from his expertise in intellectual property management and technology licensing. His experience in evaluating and commercializing research outputs provided valuable industry-oriented perspectives to the participants.



## **Participants Details**

The expert talk witnessed enthusiastic participation from 51 faculty members, including both internal and external participants from various engineering colleges. Additionally, 40 students attended the session, demonstrating keen interest in understanding technology maturity and commercialization frameworks. The diverse academic background of the participants enriched the interaction and discussions during the session.

## **Session Summary**

The expert talk began with an overview of Technology Readiness Level (TRL), a systematic framework used to assess the maturity of a technology. The resource person explained the nine TRL stages, beginning from basic scientific principles (TRL 1) to fully operational systems deployed in real-world environments (TRL 9). Each level was elaborated with practical examples to help participants clearly understand the progressive validation process. The importance of structured experimentation and documentation at each stage was emphasized.

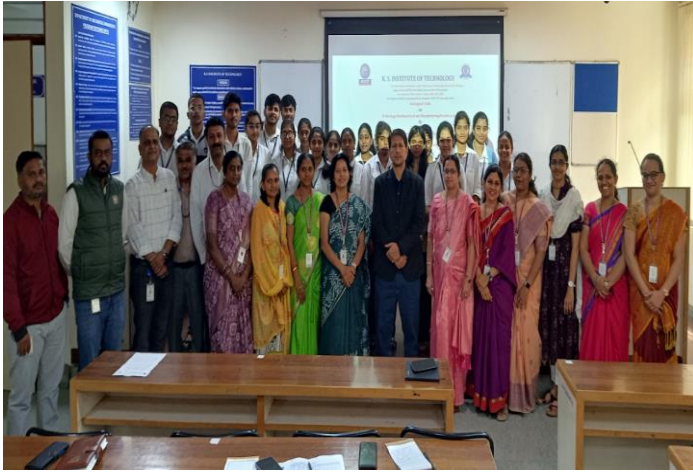
The session highlighted that many academic research projects remain confined to early TRL stages due to limited focus on prototype development and field validation. The speaker stressed the need for researchers to plan projects with scalability and industry applicability in mind. He explained how TRL assessment helps in identifying technological gaps and reduces uncertainty before commercialization. The significance of testing in relevant environments rather than controlled laboratory conditions was discussed in detail.

The discussion then transitioned to Manufacturing Readiness Level (MRL), which focuses on assessing production capability and large-scale implementation feasibility. While TRL measures technical maturity, MRL evaluates manufacturing processes, quality control, supply chain robustness, cost optimization, and workforce readiness. The speaker clarified that a technology can reach a high TRL but still fail in commercialization if manufacturing systems are not prepared. Therefore, synchronization between TRL and MRL is essential for successful technology transfer.

Real-world case studies were presented to demonstrate the consequences of neglecting manufacturing readiness. The expert emphasized early industry collaboration, pilot production runs, and process validation to ensure smooth transition from research to commercialization. He also explained how funding agencies and investors evaluate readiness levels before supporting projects. Proper readiness assessment increases credibility and attracts industrial partnerships.

In addition, the session addressed the strategic role of TRL and MRL in institutional innovation ecosystems. The speaker encouraged faculty members to incorporate readiness assessment in project proposals and research planning. He explained how structured readiness evaluation can improve the success rate of grant applications and collaborative research initiatives. The importance of cross-disciplinary collaboration in advancing readiness levels was also highlighted.

Furthermore, the expert discussed the relevance of TRL and MRL frameworks in national innovation policies and technology incubation centers. He emphasized that systematic maturity assessment reduces technical and financial risks, thereby enhancing commercialization potential. Participants were guided on how to self-assess their ongoing projects using TRL and MRL metrics. The session concluded with an interactive discussion, where faculty members and students clarified their doubts and explored practical implementation strategies.



## Conclusion

The Expert Talk on TRL and MRL was highly informative and practically oriented. It provided participants with a structured understanding of assessing technology maturity and manufacturing preparedness. The session successfully emphasized the importance of aligning research activities with commercialization goals.

Faculty members and students gained valuable insights into systematically advancing research outputs toward industry readiness. The session strengthened awareness about risk reduction, scalability planning, and strategic innovation management. Overall, the expert talk significantly contributed to fostering a commercialization-oriented research culture within the institution.

## EO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
<b>An Expert Talk on “Technology Readiness level and Manufacturing Readiness level”</b>	3	2	3	2	2	2	2	2	3	3	3	2	2

**Coordinator**

**HOD-ECE**

**Principal**