



ETERNAL UNIVERSITY


Institution's Innovation Council



Activity Report


Expert talk on "Process of Innovation Development & Technology Readiness Level (TRL)" & "Commercialisation of Lab Technologies & Tech-Transfer"


1.	Academic year	:	2023-2024
2.	Program driven by	:	IIC Calendar Activity
3.	Quarter	:	Semester 1-Quarter II
4.	Program/Activity Name	:	Expert talk on "Process of Innovation Development & Technology Readiness Level (TRL)" & "Commercialisation of Lab Technologies & Tech-Transfer"
5.	Program type	:	Level-1: Expert Talk
6.	Program Theme	:	Innovation and Design Thinking
7.	Duration of the activity (in hrs)	:	02
8.	Start Date	:	15-05-2024
9.	End Date	:	15-05-2024
10.	Number of Student Participants (Minimum 50 Students)	:	40
11.	Number of Faculty Participants	:	15
12.	Number of External Participants, If any	:	01
13.	Expenditure Amount, If any	:	na
14.	Remark	:	--
15.	Mode of Session Delivery	:	Online
16.	Objective (100 letters)	:	To understand the Technology Readiness Levels (TRLs)
17.	Benefit in terms of Learning/Skill/ Knowledge obtained (150 letters)	:	Understood the types and benefits of using TRLs in technological development
18.	Video URL (EU YouTube channel)	:	
19.	Photographs (only 2) (max size 2 MB)	:	Uploaded on IIC portal
20.	Overall report of the activity (PDF, max 2MB)	:	Uploaded on IIC portal



INSTITUTION'S INNOVATION COUNCIL
Ministry of Education, Government of India


IIC ID
 IC201912387


Eternal University (U-0182)


Star Ratings (AY 2022-23)



 About My Institute


 Manage Activity


 e-Learning Resources


 **Handholding and Capacity Development**


 IIC Consortium


 Mentor-Mentee Scheme


 Impact Lecture Scheme

 Innovation Ambassador

 Innovation & Start-up Support

 Referral & Linkage

 Help Desk

 Information Dissemination

Orientation & Mentoring sessions
 Quarterly Progress Meetings
 Organise IIC calendar activity
 I&E Training & Exposure Visit

Progress Monitoring & Impact Measurement
 Guidance
 Handholding Support

Organise IIC calendar activity
 Plan and deliver two IIC calendar activity for each mentee IIC through an external experts identified by the mentor institute
[View Guidelines](#)

Sr.No.	Session Details	Session Date & Time	Meeting Link	Expert Name	Expert Designation	Contact Info	IIC Activity Name	Activity Brochure / Schedule	Action
1	Session 1	2024-5-15 3:15 PM	https://meet.google.com/war-jtod-zrx	Dr Siddharth Vats View Speaker Profile	IIC President and Additional HoD and Associate Professor	N/A	30669	Preview	Participation Status * Participated
2	Session 2	2024-7-10 2:00 PM	https://meet.google.com/jpb-tkhn-kih	Dr Siddharth Vats View Speaker Profile	Associate Professor and Additional HoD	N/A	30611	Preview	Participation Status * Participated

meet.google.com/war-jtod-zrx?pl=1&authuser=1

Sharing <https://bitindia.gov.in> to meet.google.com

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View tab: bitindia.gov.in

Siddharth Vats (You, presenting) | Presentation audio

Stop presenting

		TRL	
Drugs (including Drug Delivery)	Proof of Concept Established	TRL-4	Efficacy, & safety of candidate drug formulation is demonstrated in a defined animal model (Results of formulation studies, pharmacokinetic studies & ADME, PD, safety of candidate formulations at preliminary level and efficacy in <i>in-vivo</i> disease model)
Regenerative Medicine	Proof of Concept Established	TRL-4	Candidate Optimization and Non-GLP <i>in vivo</i> Demonstration of Activity

Nasib Gollen

Sashi Tarun

Manoj Kumar Yadav

Dr. Nareesh Kumar

Swati Bajpai

Siddharth Vats

Mute all

Add people

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IN MEETING

Contributors 7

Siddharth Vats (You) Meeting host

Siddharth Vats Your presentation

Dr. Nareesh Kumar

Manoj Kumar Yadav

Nasib Gollen

Sashi Tarun

Swati Bajpai

3:01 PM | war-jtod-zrx

Type here to search

Go to Settings to activate Windows

15-May-24

IIC-IMSEC

**INSTITUTION'S
INNOVATION
COUNCIL**
(Ministry of Education Initiative)



“Our aim is to establish IMSEC, as an advanced developing innovation center to promote entrepreneurial ideas and products that contribute to societal change”.

Prof. Dr. Vikram Bali
(Director IMSEC)



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Under the aegis of IMS Society, Ghaziabad



Report Summary

Sponsored By	IIC-IMSEC
Department of	All Department
In Collaboration With	IIC and IQAC and KIT Kanpur, Eternal University, Himachal Pradesh; MERI Delhi, MIT Bulandshahr
Academic Session/Semester	2023-2024
Objective	Fostering the culture of Innovation
Coordinator	Dr. Siddharth Vats
Speaker	Dr Siddharth Vats
Date	15-May-2024
Event Type	Talk cum Webinar
Title	Understanding Technology Readiness Levels (TRLs)
Report Prepared By	Dr. Siddharth Vats

Dr Siddharth Vats
President IIC



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5.	Appendix if any	NA



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Understanding Technology Readiness Levels (TRLs)

15 May 2024
2:00 PM

Participatory Institutes:

KIT Kanpur

Eternal University

Marathwada Institute of Technology, Bulandshahr

MERI, Delhi

Speaker: Dr Siddharth Vats,
Additional HoD, Associate Professor,
Department of BioTechnology,
IIC President
IMS Engineering College





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Report of the Event

Introduction

On May 15, 2024, Dr. Siddharth Vats, Additional Head of the Department of Biotechnology at IMS Engineering College, Ghaziabad, delivered an insightful talk on "Understanding Technology Readiness Levels (TRLs)". The event, held at [Insert Venue Details Here], attracted students, faculty members, and industry professionals interested in the practical applications and implications of TRLs in technological development and innovation.

Speaker Background

Dr. Siddharth Vats is a distinguished academic and researcher with extensive experience in biotechnology. As the Additional HoD at IMS Engineering College, he has been instrumental in advancing the department's research capabilities and fostering industry-academia collaborations. His qualifications and expertise made him the ideal speaker for this talk.

Key Points from the Talk

What are Technology Readiness Levels (TRLs)?

Dr. Vats began by defining TRLs, explaining that they are a systematic metric/measurement system used to assess the maturity level of a particular technology. Developed by NASA in the 1970s, TRLs provide a framework for understanding the progress of a technology from concept to full deployment.

- **Definition:** TRLs are a method of estimating the maturity of technologies during the acquisition phase of a program.
- **Importance:** TRLs help in identifying the maturity of a technology and its readiness for integration into larger systems, thereby facilitating risk management and resource allocation.

The Nine Levels of TRLs

Dr. Vats provided a detailed explanation of each of the nine levels, using a visual ladder graphic to illustrate the progression.

1. **TRL 1:** Basic principles observed.
 - **Description:** Initial scientific research begins; examples might include paper studies of a technology's basic properties.
2. **TRL 2:** Technology concept formulated.



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- **Description:** Invention begins; once basic principles are observed, practical applications can be formulated.
- 3. **TRL 3:** Experimental proof of concept.
 - **Description:** Active research and development (R&D) is initiated, including analytical studies and laboratory studies.
- 4. **TRL 4:** Technology validated in the lab.
 - **Description:** Basic technological components are integrated to establish that they will work together.
- 5. **TRL 5:** Technology validated in the relevant environment.
 - **Description:** The basic technological components are integrated with reasonably realistic supporting elements so they can be tested in a simulated environment.
- 6. **TRL 6:** Technology demonstrated in the relevant environment.
 - **Description:** The prototype is tested in a relevant environment.
- 7. **TRL 7:** System prototype demonstration in the operational environment.
 - **Description:** Prototype near or at planned operational system, demonstrating all critical technical and operational functions.
- 8. **TRL 8:** System complete and qualified.
 - **Description:** Actual system completed and qualified through test and demonstration.
- 9. **TRL 9:** Actual system proven in the operational environment.
 - **Description:** Actual application of the technology in its final form and under mission conditions.

Applications of TRLs

Dr. Vats highlighted the diverse applications of TRLs across various fields, with a focus on biotechnology.

- **Biotechnology:** TRLs are used to gauge the development stages of new drugs, medical devices, and biotechnological processes. This ensures that technologies are mature enough before large-scale production or clinical trials.
- **Engineering and Aerospace:** TRLs are critical in the development of new engineering solutions and aerospace technologies, ensuring reliability and safety before deployment.
- **Software Development:** In software engineering, TRLs help in assessing the maturity of software systems and their readiness for full-scale implementation.

Impact of TRLs

Dr. Vats emphasized the benefits of using TRLs in technological development:

- **Streamlining Innovation:** By providing a clear framework for technology development, TRLs help streamline the innovation process.
- **Reducing Risks:** TRLs assist in identifying and mitigating risks at various stages of development, ensuring that technologies are mature enough for the next phase.

- **Optimizing Resources:** By assessing the readiness level of a technology, resources can be allocated more efficiently, focusing on technologies that are closer to deployment.

Audience Engagement

Dr. Vats engaged the audience with real-world examples and case studies, illustrating how TRLs have been successfully applied in various projects. The interactive session included a Q&A segment where attendees posed questions about specific TRL applications in their fields of interest.

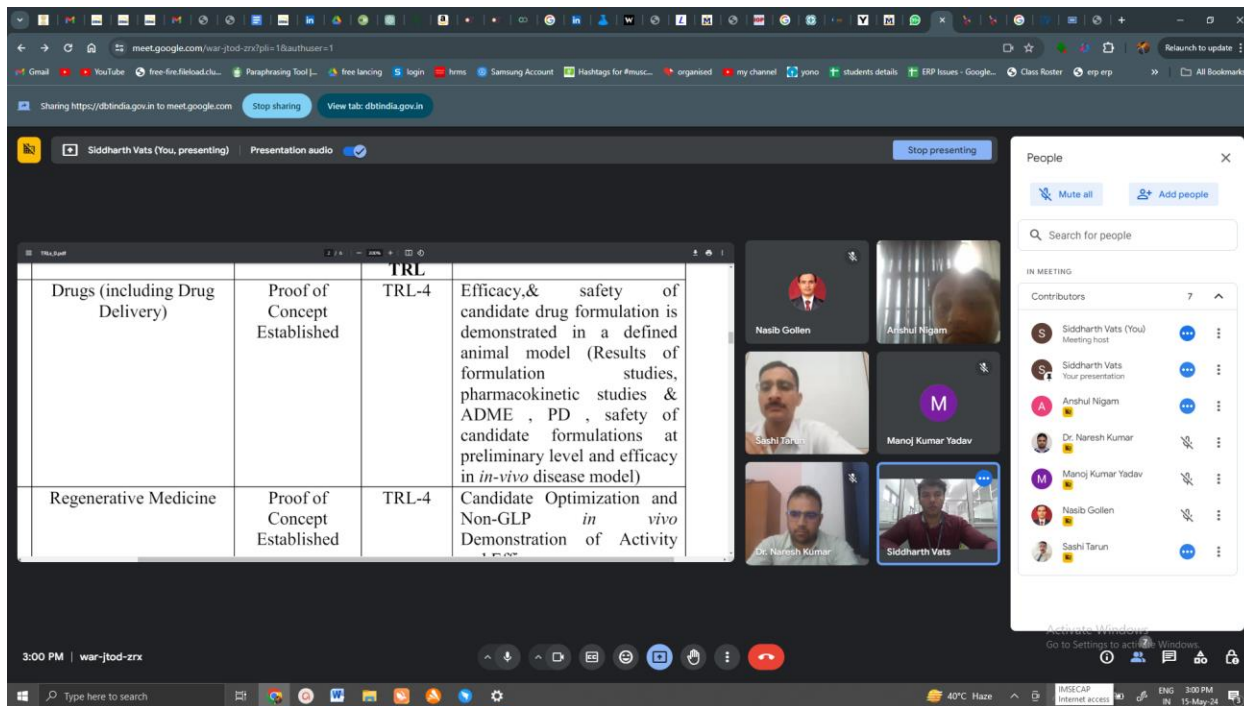
Five other Mentee institutes and their IIC teams with all its members also joined the talk namely

KIT Kanpur, Eternal University, Himachal Pradesh. MIT Bulandshahr and MERI Delhi.

Acknowledgements

The Department of Biotechnology at IMS Engineering College, Ghaziabad, extends its gratitude to Dr. Siddharth Vats for sharing his expertise and to all attendees for their participation. Special thanks to the organizing committee for their efforts in making this event a success.

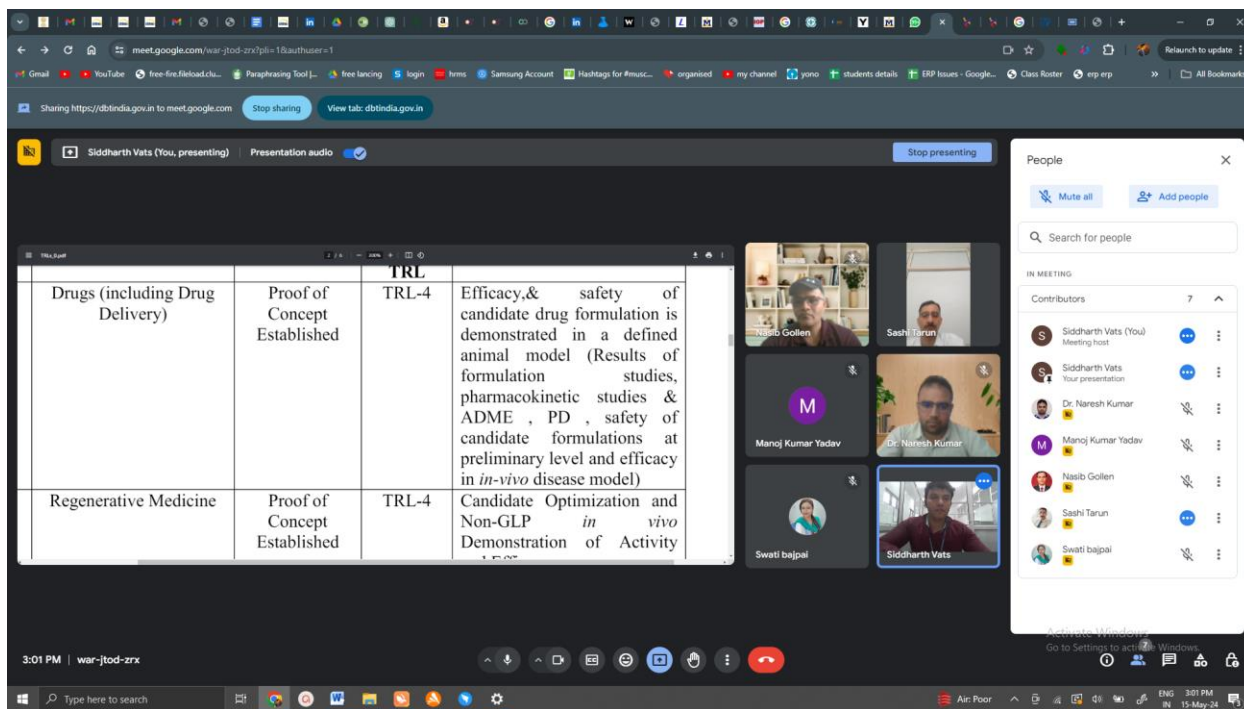
Photographs of the Event



The screenshot shows a Google Meet interface during a presentation. The main window displays a slide with the following content:

		TRL	
Drugs (including Drug Delivery)	Proof of Concept Established	TRL-4	Efficacy, & safety of candidate drug formulation is demonstrated in a defined animal model (Results of formulation studies, pharmacokinetic studies & ADME, PD, safety of candidate formulations at preliminary level and efficacy in <i>in-vivo</i> disease model)
Regenerative Medicine	Proof of Concept Established	TRL-4	Candidate Optimization and Non-GLP <i>in vivo</i> Demonstration of Activity

On the right side of the screen, there is a grid of participant video feeds. Visible participants include Nasib Gollen, Anshul Nigam, Sashi Tarun, Manoj Kumar Yadav, Dr. Naresh Kumar, and Siddharth Vats. A 'People' sidebar on the far right lists all participants, including Siddharth Vats (Meeting host), Siddharth Vats (Your presentation), Anshul Nigam, Dr. Naresh Kumar, Manoj Kumar Yadav, Nasib Gollen, Sashi Tarun, and Swati Bajpai.



This screenshot shows the same Google Meet session at a later time. The presentation slide remains the same as in the first image. The participant grid on the right now includes Swati Bajpai, who was not visible in the first screenshot. The other participants (Nasib Gollen, Anshul Nigam, Sashi Tarun, Manoj Kumar Yadav, Dr. Naresh Kumar, and Siddharth Vats) are still present. The 'People' sidebar on the right also reflects these changes, listing Swati Bajpai at the bottom.