Session Outline

Day 5 : 25 Apr 2025

1730 – 1830	**Session 05: Communicating Value Proposition of Technology/ IP Assets. Introduction to technology marketing**	Anu Narasimhan Premnath V
1830– 1930	**Session 05: Introduction to enabling policies**	Aravind Chinchure

Session 5 :
Introduction to Enabling Policies

Aravind
Chinchure

Who's Speaking

Aravind Chinchure
PhD

Aravind Chinchure, PhD in Physics, has 30 years of expertise in R&D, technology transfer, innovation, IP, startups, and policy. He is a Visiting Faculty at IISER Pune, serves on Manipal University Jaipur's Board, and is Founder & CEO of QLeap Academy, which develops leaders in Industry 4.0 and innovation.

Affiliation

- Founder, QLeap Academy
- Ex-Assistant Vice President – Innovation, Reliance Innovation Leadership Center, Reliance Industries
- Ex-CEO, Deshpande Startups

Topics

- Introduction to Key Enablers
- Policy
- Processes
- Promotion
- Partnership
- People

nature

ESSAY | 14 April 2025

How the United States became a science superpower — and how quickly it could crumble

US global dominance in science was no accident, but a product of a far-seeing partnership between public and private sectors to boost innovation and economic growth.

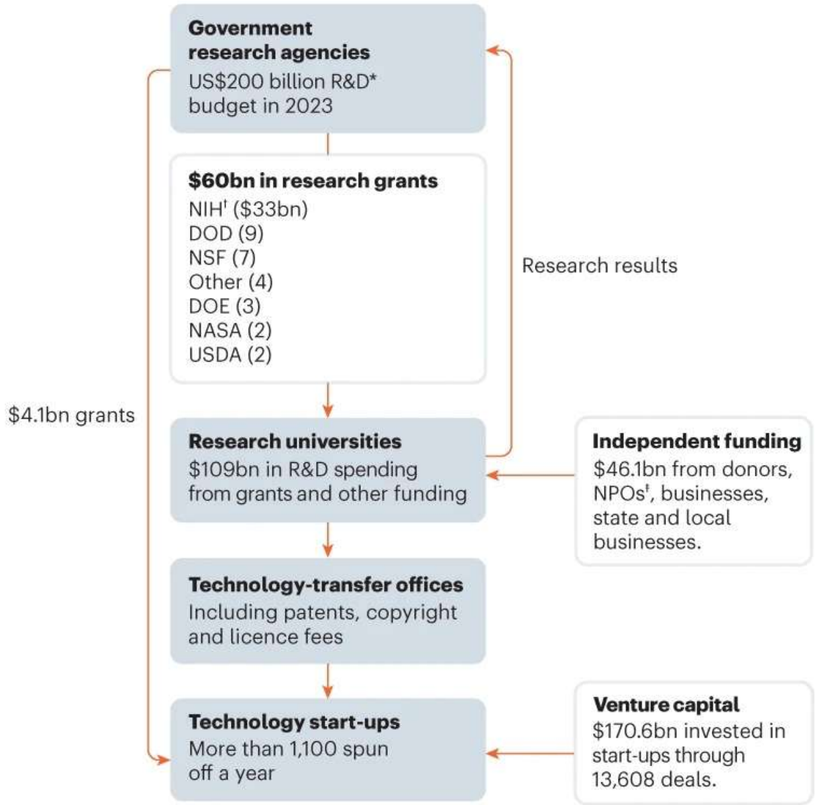
By Steve Blank

What makes the US ecosystem so powerful is the university research: it's the engine for creating start-ups and jobs. **In 2023, US universities licensed 3,000 patents, 3,200 copyrights and 1,600 other licenses to technology start-ups and existing companies.** Such firms spin off **more than 1,100 science-based start-ups each year**, which lead to countless products.

https://www.nature.com/articles/d41586-025-01146-4

US RESEARCH ECOSYSTEM

US government funding fuels university research, leading to innovation, patents, start-up organizations and private-sector investment, driving economic and technological growth.



*Research and development; †NIH: US National Institutes of Health, DOD: US Department of Defense, NSF: US National Science Foundation, DOE: US Department of Energy, USDA: US Department of Agriculture †Non-profit organizations

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The Importance of Technology Transfer & The Need for Enablers

Why Technology Transfer Matters (More Than Ever)

- Translating research discoveries into tangible benefits for society and the economy.
- Driving innovation and competitiveness for institutions and the nation.
- Generating resources to reinvest in further research and education.
- Enhancing the relevance and impact of academic and scientific work.
- **Contributing to national priorities** (e.g., Make in India, Digital India, & other missions).

The TT Journey: Opportunities and Challenges

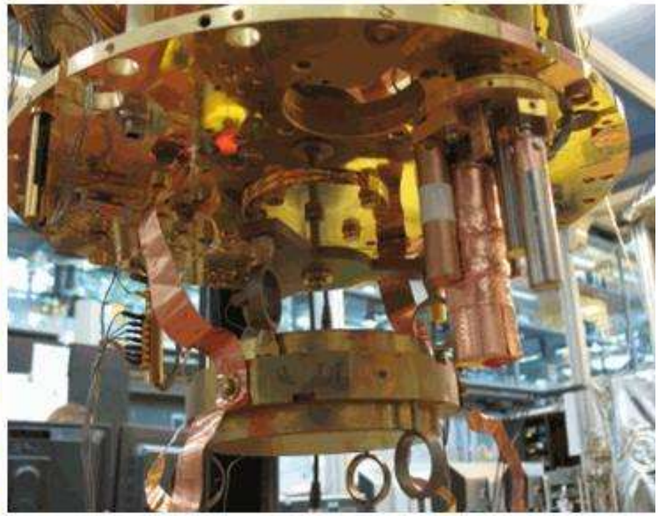
- TT is a **multi-faceted** and often **challenging process.**
- It involves **diverse stakeholders** with **different motivations.**
- Requires **bridging** the gap between the **academic and commercial worlds.**
- **Success is not accidental;** it depends on having the **right elements in place.**
- **Identifying and strengthening these "enablers" is crucial for effectiveness and success.**

What are the foundational “enablers” needed to ensure technology transfer is both effective and successful?

My first experience of technology development and transfer (1999-2001)

SRD1000 measurement systems

Device to Measure Temp from 1 K to 1 mK



#		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
material		W	Be	$Ir_{80}Rh_{20}$	$Ir_{92}Rh_{08}$	Ir	$AuAl_2$	$AuIn_2$	Cd	Zn	Al	In	V	Pb
Tc	[mK]	15	21	30	65	98	145	208	520	850	1180	3400	4900	7200
Wc	[mK]	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<1	<1	<2	<4	<4	<20	<6
Uc	[%]	<0.3	<0.3	<0.3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

2001 - 2025

Reflecting on my quarter-century of direct and indirect association with IP and Tech Transfer, what is the deepest insight I have gained into what makes TT both effective and successful?

The 5 Ps of Successful Technology Transfer

Policy: The essential rules and guidelines that govern TT activities. (The Foundation)

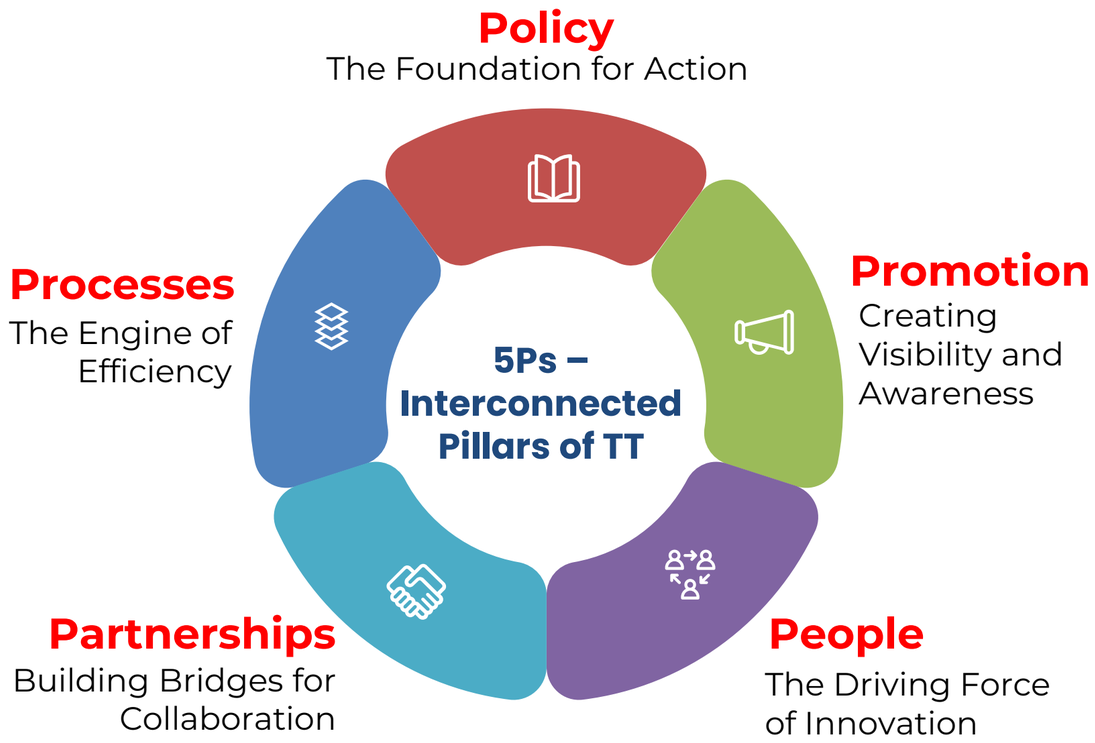
Processes: The operational workflows for moving technologies from lab to market. (The Engine)

Promotion: Effectively communicating the value of research and technologies. (The Showcase)

Partnerships: Building crucial relationships with external stakeholders. (The Bridges)

People: The individuals whose creativity, expertise, and collaboration drive TT. (The Human Capital)

Focusing on these enablers empowers TT and IP offices to be more effective & successful.



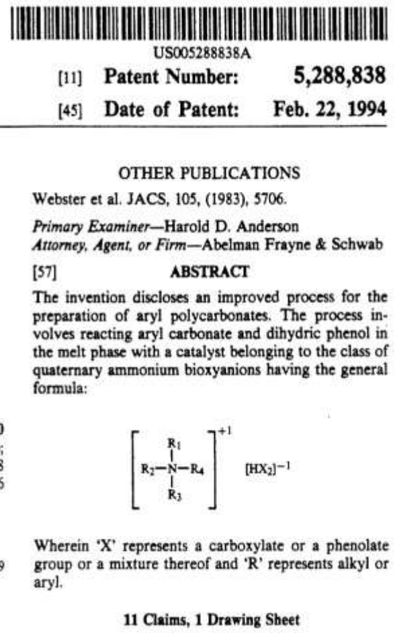
In today’s session, I will be focusing primarily on policy and processes.

1. POLICY

The Foundation for Action

Patent Portfolio on Polycarbonates

Dr S Sivaram



US005288838A

United States Patent [19]
Sivaram et al.

[11] **Patent Number: 5,288,838**
[45] **Date of Patent: Feb. 22, 1994**

[54] **PREPARATION OF POLYCARBONATES WITH BIOXYANION CATALYST**

[75] Inventors: **Swaminathan Sivaram; Jagdish C. Sehra; Venkat S. Iyer,** all of Maharashtra; **Ishwar S. Bhardwaj; Sheo Satish,** both of Gujarat, all of India

[73] Assignee: **Council of Scientific & Industrial Research,** New Delhi, India

[21] Appl. No.: **865,951**

[22] Filed: **Apr. 9, 1992**

[51] **Int. Cl.**[5] **C08G 64/30**
[52] **U.S. Cl.** **528/199;** 528/196; 528/198
[58] **Field of Search** 528/199, 198, 196

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,442,854 5/1969 Curtius etal. 528/199

FOREIGN PATENT DOCUMENTS

1110736 4/1968 United Kingdom .

OTHER PUBLICATIONS

Webster et al. JACS, 105, (1983), 5706.

Primary Examiner—Harold D. Anderson
Attorney, Agent, or Firm—Abelman Frayne & Schwab

[57] **ABSTRACT**

The invention discloses an improved process for the preparation of aryl polycarbonates. The process involves reacting aryl carbonate and dihydric phenol in the melt phase with a catalyst belonging to the class of quaternary ammonium bioxyanions having the general formula:

Wherein 'X' represents a carboxylate or a phenolate group or a mixture thereof and 'R' represents alkyl or aryl.

11 Claims, 1 Drawing Sheet

Over twenty five US patents in the broad area of polycondensation chemistry

Over 15 million dollars of income through patent licensing fee, royalties, research and consulting fee to NCL between 1994 to 2002

This patent led to over ten years of very productive and exciting research in the area of polycarbonates, resulting in several PhD thesis, publications and industrial partnership with GE plastics. This also established the principle of "organic catalysis" for polymer synthesis

Source: Dr RA Mashelkar

National Chemical Laboratory

Source: Dr RA Mashelkar

Emergence of India as a global R&D hub

Raghunath Mashelkar
President, Global Research Alliance

Aravind Chinchure
Chair Professor of Innovation and Entrepreneurship, Symbiosis International University

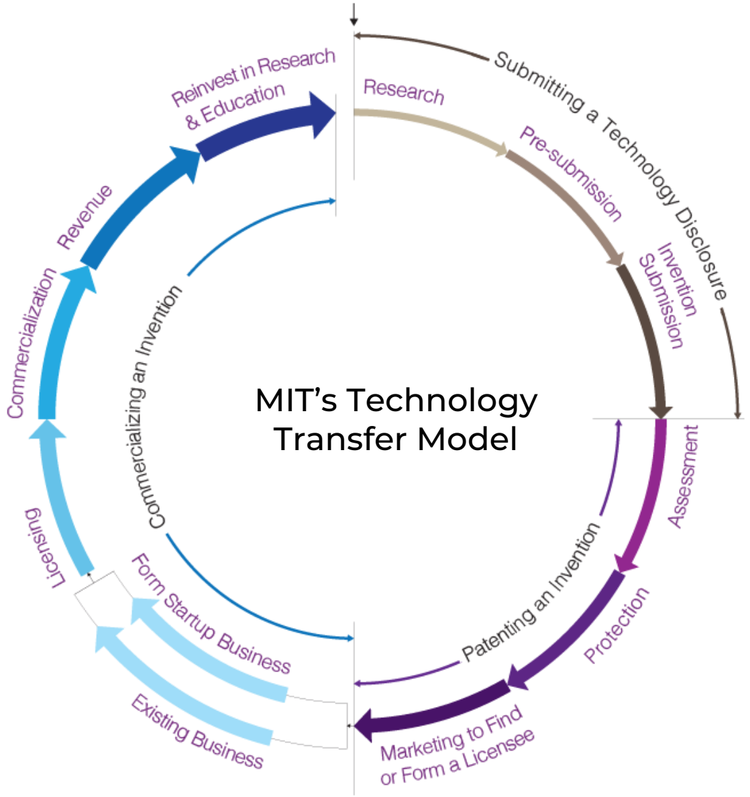
IndiaNow BUSINESS AND ECONOMY
IBEF

Table 1: Percentage contribution of US-granted patents from Indian MNC R&D centres to their global entity

Companies	Share of US-granted patents from Indian R&D centre to the overall global contribution in % 2003	Share of US granted patents contribution from Indian R&D centre to the overall global contribution in % 2013
Novell	≈ 4%	28%
Symantec	Negligible	24%
Adobe	Negligible	15%
Honeywell	Negligible	11%
Oracle	Negligible	10%
Texas Instruments	≈ 3%	9%
Cisco	Negligible	5%

Policy: The Foundation for a Robust TT Ecosystem

- **Policies provide the essential rules, guidelines, and framework**
- They bring clarity, predictability, and legitimacy to TT activities
- Well-defined policies incentivize participation and manage expectations
- Critical for both internal stakeholders (researchers, staff) and external partners (industry, investors)
- A strong policy environment minimizes ambiguity and potential disputes



Intellectual Property (IP) Policy

Core Function: Defines ownership, protection, and management of IP created at the institution.

Key elements

- Clear IP Ownership Rules (Institution vs. Creator).
  - Example: University IP Policy states inventions using significant university resources are owned by the university.
- Obligation and Process for Invention Disclosure
- Procedures for IP Protection (Patents, Copyright, etc.)
- Inventor Rights, Responsibilities, and Recognition.
- Handling IP in Collaborations and Sponsored Research.

Why it Matters: **Provides legal certainty and incentivizes creators to disclose valuable innovations.**

Policy provides a clear path for evaluation, potential of patenting by the university, and defines rights in the commercialization process (e.g., revenue sharing).

IP Policy Example

Table of Contents

Source: Aravind Chinchure

Technology Transfer Policy: Key Elements

Core Function: Translates the value of intellectual property into tangible financial returns and impact.

Key Elements:

- Guidelines for Negotiating Licensing Terms (Fees, Milestones, Royalties).
  - *Inventor Priority:* Policy may give inventors the first option or priority in licensing the technology if they intend to form a startup around it with *flexible licensing terms by a*voiding overly restrictive clauses (e.g., "only non-exclusive allowed" or "assignment not allowed etc.).
- Policy on University Equity in Spinout Companies.
- Clear Formula for Calculating and Distributing Net Revenue.
- Requirements for Licensee Reporting and Compliance Monitoring.

Why it Matters: The policy ensures that the university receives a fair financial return and facilitates pathways to market by allowing flexibility needed for commercial development.

Revenue Sharing Policy

Core Function: Determines how income from IP commercialization is distributed.

Key Elements:

- Clear Formula for Revenue Distribution (Inventors, Department, Institution).
  - The revenue sharing policy dictates the distribution. After deducting pre-defined expenses, a significant percentage (e.g., 40-60%) of the first tier of revenue goes to the inventors
- Definition of "Net Revenue" (What Expenses are Deducted).
- Process for Allocating Inventor Shares (for multiple inventors).
- Principles for Reinvestment of Institutional Share (e.g., back into research/TT).

Why it Matters: Incentivizes inventors and provides resources for future innovation.

The inventors receive a substantial financial reward, motivating them and others to engage in TT. The remaining funds are allocated to their department and the university, often reinvested in research infrastructure or TT office operations as per policy.

Robert Langer receives Dr. Paul Janssen Award

Award honors “scientists who have made a transformational contribution toward the improvement of human health.”

Department of Chemical Engineering
February 13, 2024

Dr. Langer has authored more than 1,600 research paper. He also has over 1,495 issued and pending patents worldwide. Dr. Langer’s patents have been licensed or sublicensed to over 400 pharmaceutical, chemical, biotechnology and medical device companies.

MIT Professor Bob Langer, a chemical engineer by training, is known among life-sciences entrepreneurs as "the Edison of Medicine." A scientist's h-index score measures how often other scientists cite his papers. For a scientist who has run a lab for 20 years, an h-score of 20 is good... 40 is great... 60 is remarkable. Bob Langer's h-score is 230 – the highest of any engineer ever. The Langer Lab's discoveries have translated into both clinical and commercial success. His lab has given rise to 40 companies – 39 of them either acquired or still in existence, with a collective market value of over $50 billion.

Policy for Spinout Companies

Core Function: Provides a framework for creating new ventures based on university IP.

Key Elements:

- Process for Spinout Formation and University Approval.
- Terms for Licensing University IP to the Spinout (Equity, Royalties).
- Guidelines on University Equity Stake (often flexible/negotiable).
- Permissible Faculty/Staff Involvement in Spinout Management (with COI management).
- Potential University Support Mechanisms (Incubation, Mentorship).

Why it Matters: Enables a key pathway for commercialization and economic impact.

The university licenses the IP to the student-led startup, taking an agreed-upon equity stake as per the policy. The policy allows the professor to serve as a technical advisor while managing their university commitments.

Policy for Faculty & Student Entrepreneurship

Core Function: Encourages and supports entrepreneurial activities beyond formal spinouts.

Key Elements (Faculty):

- Recognition of Entrepreneurship in Career Progression
- Guidelines on Time Commitment to External Ventures.
- Management of Conflicts of Commitment and Interest.

Key Elements (Student):

- Clarification of IP Ownership for Student Projects (especially independent work).
- Permissible Use of University Resources.
- Academic Recognition or Flexibility for Entrepreneurial Pursuits.

Why it Matters: Enables a key pathway for commercialization and economic impact.

These policies incentivize faculty to apply their knowledge commercially and empower students to pursue their entrepreneurial ideas, enriching the overall innovation ecosystem.

Conflict of Interest (COI) Policy

Core Function: Identifies, discloses, and manages potential conflicts arising from external activities.

Key Elements (Faculty):

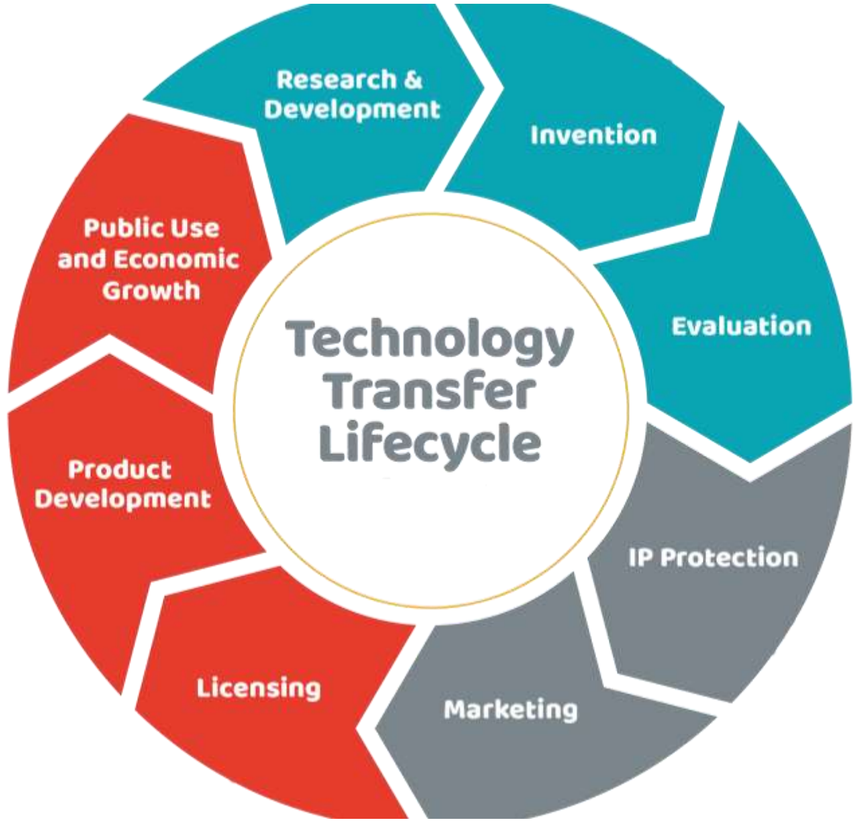
- Clear Definition of Reportable Interests (Financial, Roles in Companies)
- Mandatory Disclosure Requirements for Faculty and Staff.
- Process for Reviewing Disclosures and Identifying Conflicts.
- Development and Implementation of Management Plans.
- Guidelines on Conflicts in Research and Technology Transfer Contexts.

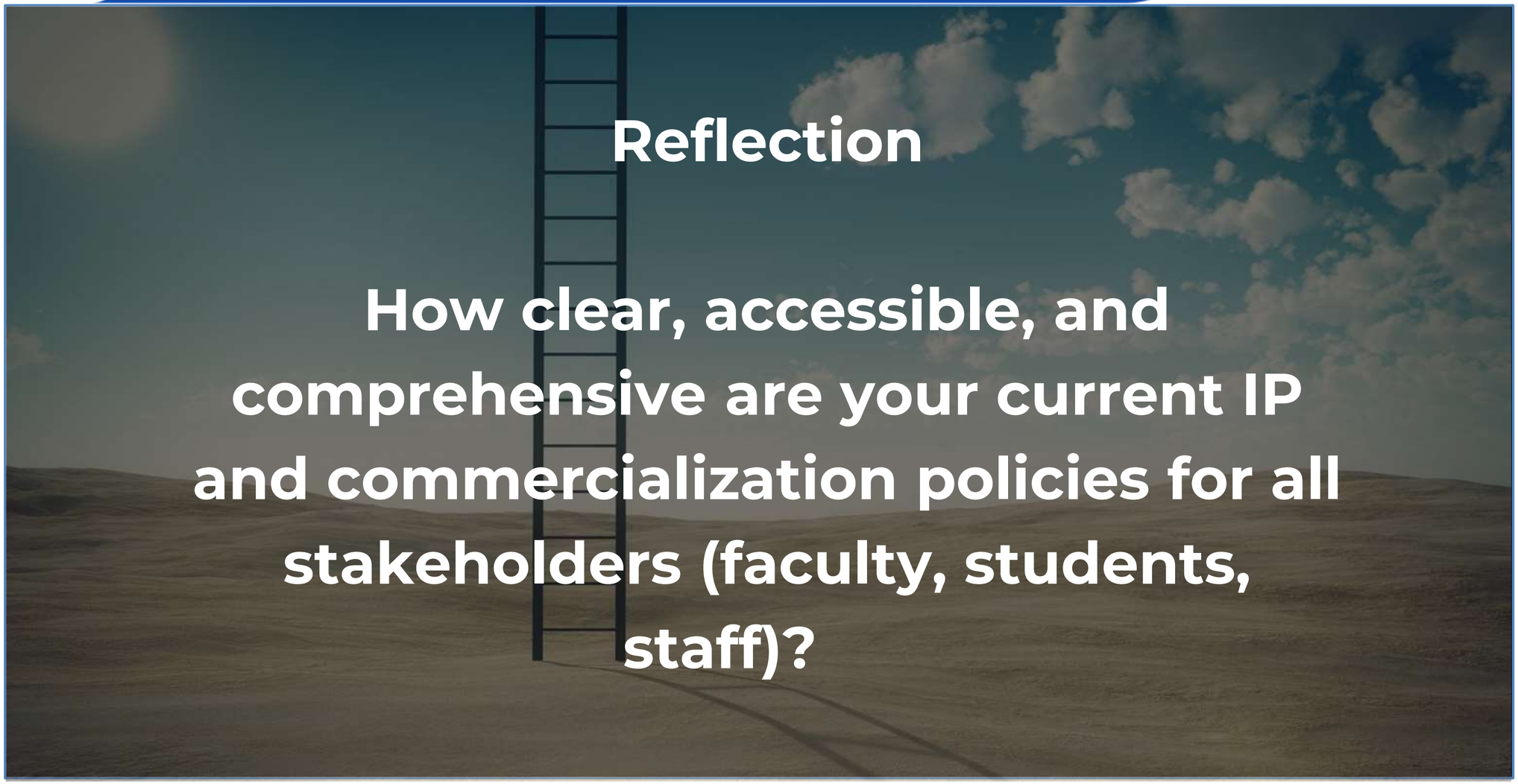
Why it Matters: Maintains institutional integrity, objectivity in research, and public trust.

The plan might require an independent researcher to oversee any further university research related to the licensed technology, ensuring objectivity and preventing perceived bias, thus upholding the institution's integrity.

Policy as an Enabler: Key Takeaways

- Policies provide the necessary structure, clarity, and incentives.
- They must be clear, accessible, and aligned with institutional goals.
- Proactive management of potential conflicts is crucial.
- Fair revenue sharing motivates participation.
- Regularly reviewing and updating policies is essential for relevance.
- Strong policies empower the TT office and the entire innovation ecosystem.





2. PROCESSES

The Engine of Technology Transfer

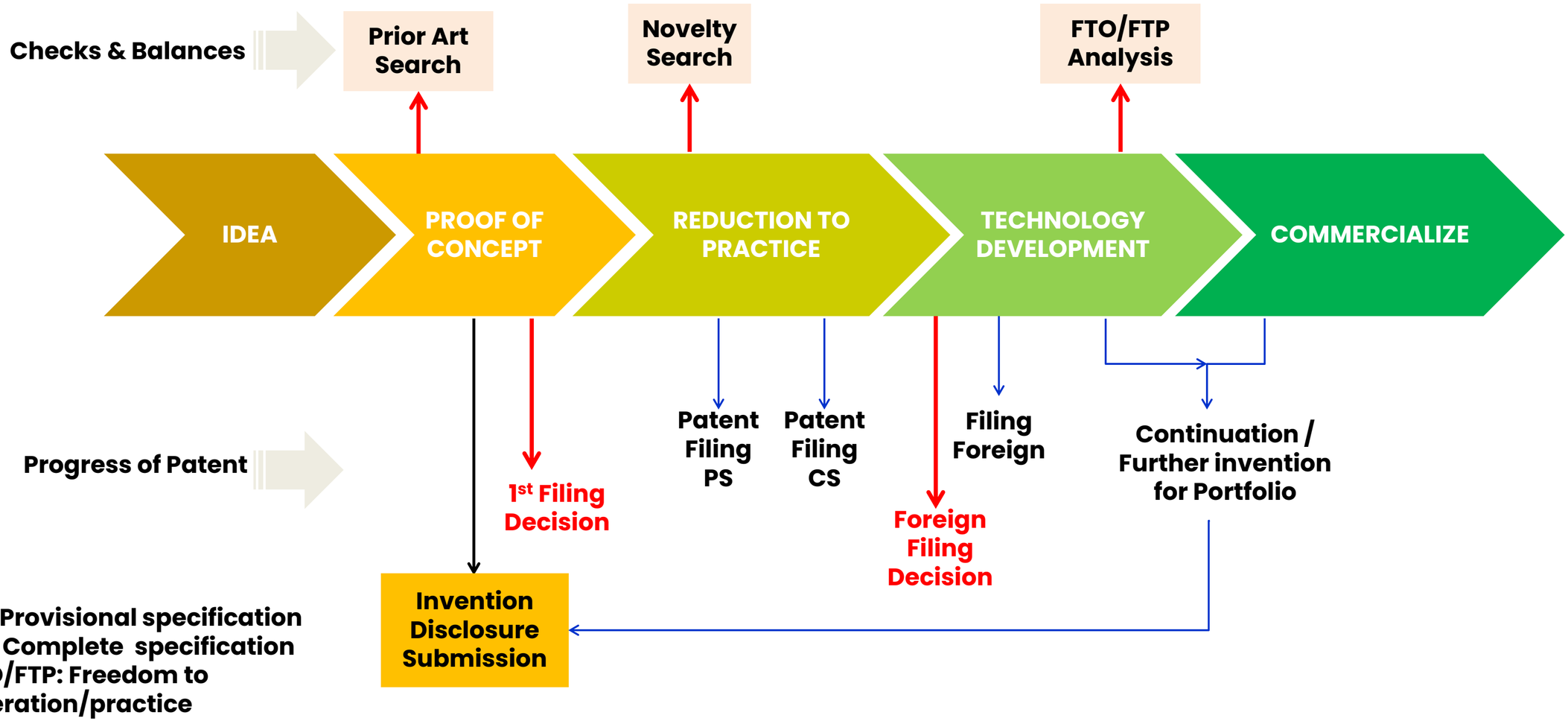
Prof Gregory Winter, MRC, Cambridge

Sir Greg Winter

Nobel Prize in Chemistry 2018
for the phage display of peptides
and antibodies,
former Master of Trinity College,
founder of CAT, Domantis and
Bicycle Therapeutics

Prof. Gregory Winter is a Nobel Laureate and highly successful serial entrepreneur. He has 400+ patents to his name and founded two unicorn companies. His IP has generated more than £1bn in royalties.

Idea to Market



Stage 1: Creation & Identification (From Lab to Disclosure)

Invention Disclosure Process:

- Making it easy for researchers to submit new ideas/findings.
- Clear forms (online/offline) and accessible submission points.
  - User-friendly online invention disclosure portal.
- Training and awareness for researchers on what and when to disclose

Initial Assessment:

- Rapid review for completeness and initial potential.
  - A commitment to rapid initial review
- Quick decision on whether to proceed to detailed evaluation.
- Timely communication back to the inventors.

Researcher Consultation:

- Structured meetings to understand the invention in detail.
- Discussing potential applications and inventor aspirations.

Within a week, the TT office contacts the lead inventor to schedule a detailed discussion, keeping the process moving swiftly from initial idea to TT/IP office engagement.

Stage 2: Protection (Securing Intellectual Assets)

Detailed Evaluation (Technical & Market):

- Engaging internal/external experts for thorough technical review.
- Market research to understand commercial landscape and potential.

Prior Art Search & Patentability Analysis:

- Systematic searching of existing IP and literature
- Expert analysis to determine if the invention meets patentability criteria (Novelty, obviousness, utility).

IP Strategy Development:

- Deciding on the best protection route (patent, copyright, trade secret).
- Identifying key jurisdictions for protection based on market analysis.

Filing & Prosecution Management:

- Working with patent attorneys to draft and file applications.
- Managing communication and responses to IP offices globally.
- Tracking deadlines and ensuring compliance.

The TT/IP office efficiently manages the drafting and filing of the patent application through the external firm, ensuring the invention is protected according to the developed strategy.

Stage 3: Commercialization (Bringing Technology to Market)

Technology Marketing & Outreach:

- Creating compelling marketing materials (summaries, presentations).
- Identifying and contacting potential licensees/partners directly.
- Utilizing online platforms and participating in industry events.

Confidentiality Management:

- Standardized process for quickly putting NDAs in place.
- Secure sharing of confidential information.

Partner Evaluation & Due Diligence:

- Assessing the capabilities and resources of potential commercial partners.
- Understanding their market position and interest.

Negotiation & Agreement Finalization:

- Structured process for negotiating license or spinout agreements.
- Defining terms (royalties, milestones, equity).
- Efficient internal approval workflows for agreements.

Spinout Support Process:

- Guidance on company formation, business planning, and funding pitches.
- Connecting entrepreneurs with mentors and resources.

The efficient process for initial contact, confidentiality, and information sharing facilitates timely evaluation by the potential licensee, moving closer to a potential licensing agreement for implementation.

Stage 4: Post-Closing & Impact (From Market to Impact)

Agreement Monitoring & Compliance:

- System for tracking license milestones, royalty payments, and reporting requirements.
- Regular communication with licensees/spinouts.

Revenue Collection & Distribution:

- Processes for receiving and verifying income.
- Transparent and timely distribution of revenue according to policy.

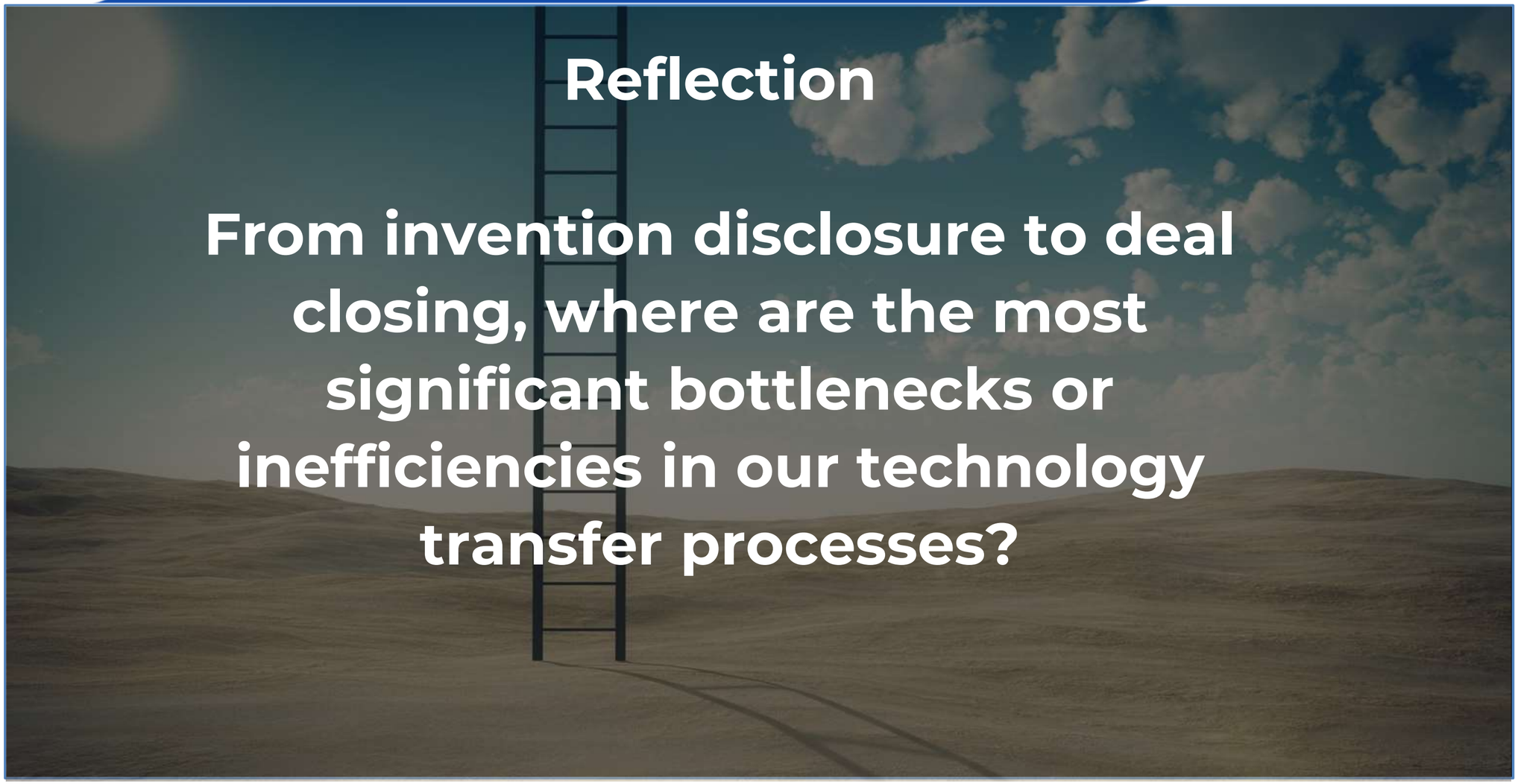
Impact Measurement & Reporting:

- Defining metrics for economic, social, and environmental impact.
- Collecting data from licensees, spinouts, and other sources.
- Reporting on TT outcomes to stakeholders (university leadership, government, public).

The collected data is used to report on the significant social impact of the technology transfer in the university's annual report, demonstrating the real-world benefits enabled by the TT processes.

Processes as an Enabler: Key Takeaways

- Well-defined processes are essential for operational efficiency
- They ensure consistency and reduce delays in the TT pipeline.
- Transparency in processes builds trust with researchers and partners.
- Continuous improvement of processes is vital for adapting to change.
- Efficient processes free up TT staff time for strategic activities.
- Optimizing processes leads to greater success in translating research into impact.

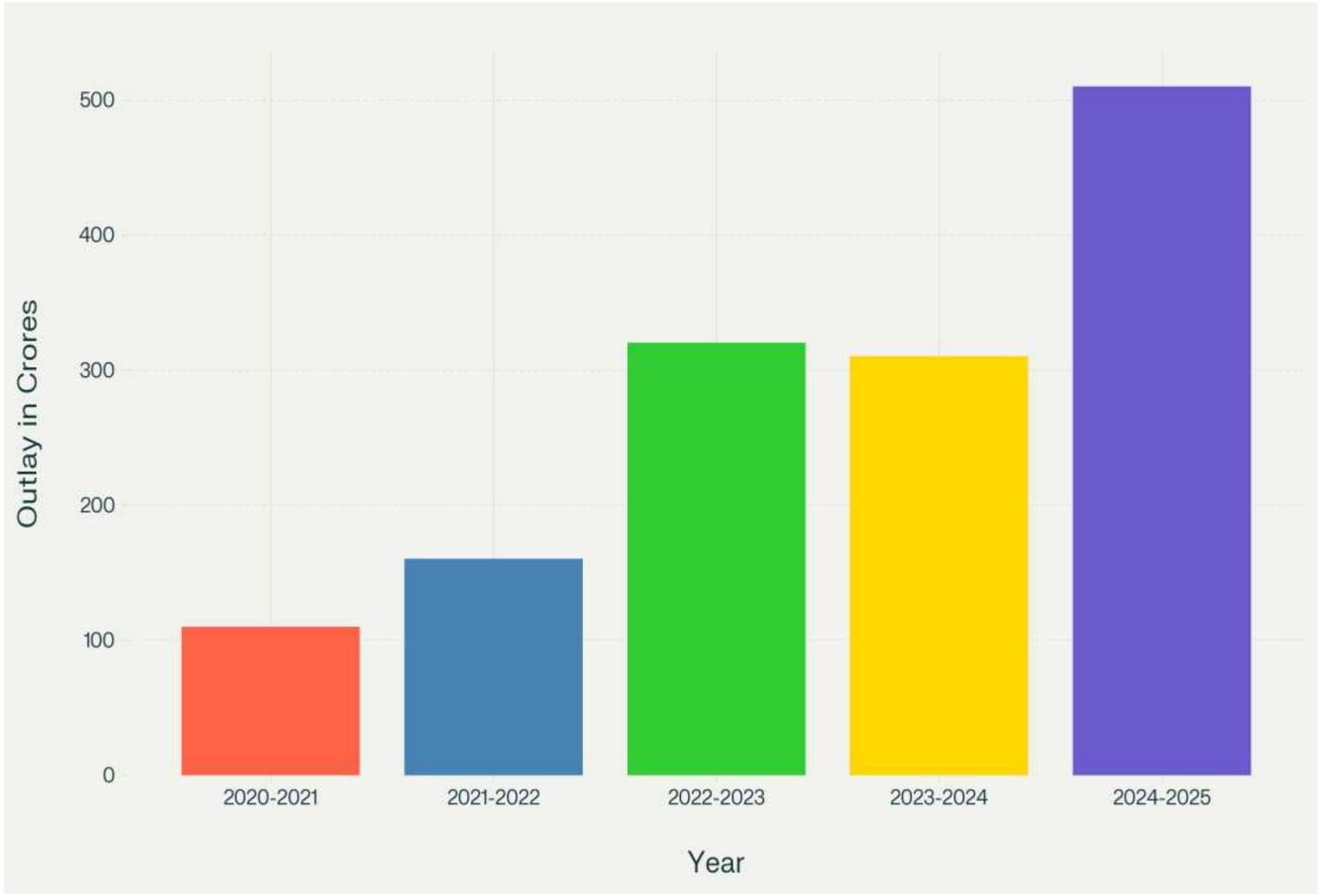


Which Indian institution has shown remarkable transformation in the last three years?

A Case study

भारतीय प्रौद्योगिकी संस्थान रूड़की
Indian Institute of Technology Roorkee

R&D Growth



Policy and Support

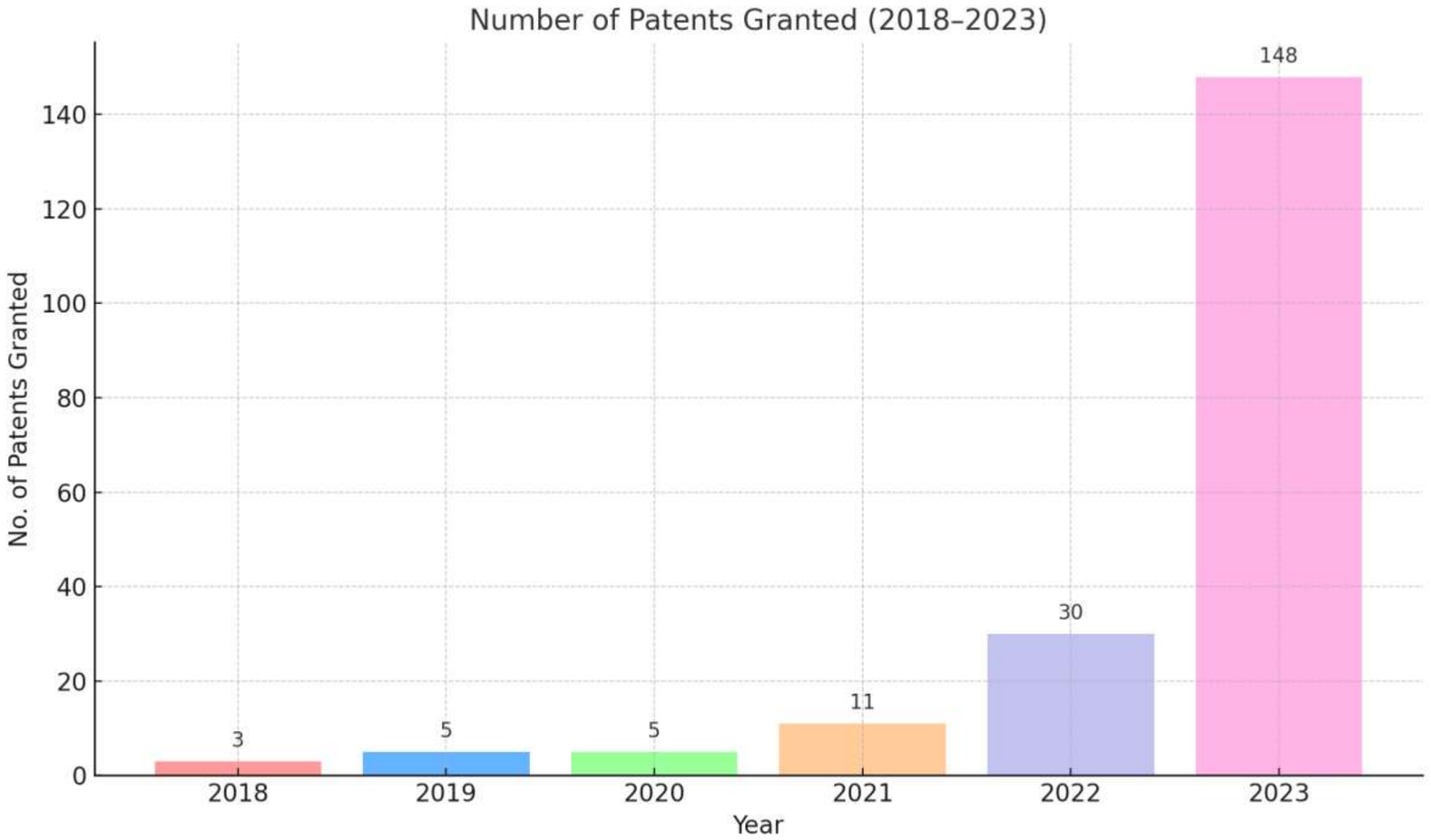
Seed Funding Schemes

- Kickstart early-stage research
- **Faculty Initiation Grant (FIG)** of **20 Lakhs**
- Initiation of **Sustainable Development Goals (SDGs)** in seed funding schemes to encourage more impactful research
- Potential increase in FIG amount from **20 lakhs to 25 lakhs** with industry contribution to increase industry-academia partnership and deployment of research on the ground

Support schemes& IP Policies

- Faculty-friendly and industry-aligned policies.
- Includes **Intellectual Property Rights Policy (IPR Policy), Faculty Entrepreneurship Policy (FEP), Faculty Led Startup Scheme, Matching Grant, SMILE, Technology Readiness Level Booster (TRLB)**

Patents Granted



R&D Growth

भारतीय प्रौद्योगिकी संस्थान रूड़की
Indian Institute of Technology Roorkee

In the last three years

New products /services/processes created - **157**
New services/products/novel drugs in the market or use by the industry – **74**
International academic collaborations - **1236**
Number of national collaborative projects executed with industry – **2851**
Scientists from R&D lab/Industry/Academia under exchange programs - **824**

Incubation
200+ Startups
TIDES & iHUB
Industry Accelerator
AARTI (Automotive and Allied Technology and Research Innovation) Foundation

Last one year	
Patent Granted	**147**
Technologies Transferred	**29**

Faculty Entrepreneurship: 52

Dr Akshay Dvivedi is a professor in the Mechanical and Industrial Engineering department at IIT Roorkee, where he also holds the **Dean of Sponsored Research and Industrial Consultancy** position. He has 25 years of extensive experience in both academia and industry. He is a **co-founder of a startup** that works for environmental causes. He serves as the Managing Director of AARTI Foundation, the industry accelerator of IIT Roorkee. *He has published over 200 research papers, 20 books/chapters* ***and holds 13 patents with 8 Technology Transfers.***

CONCLUSION

Embracing the 5Ps for Impact

The 5 Ps: Your Roadmap to Impact

- Successful Technology Transfer is not just about great research; it's about mastering the enablers.
- Policy, Processes, Promotion, Partnerships, and People – strengthen these pillars.
- Focus on clarity, efficiency, visibility, collaboration, and empowering individuals.
- By strategically addressing the 5 Ps, you build a robust and effective TT ecosystem.

Your work is vital in translating knowledge into real-world impact for India.

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Contact Us

https://www.low-carbon-innovation.org/

https://www.venturecenter.co.in/

https://www.techtransfer.online/

ttonline@venturecenter.co.in

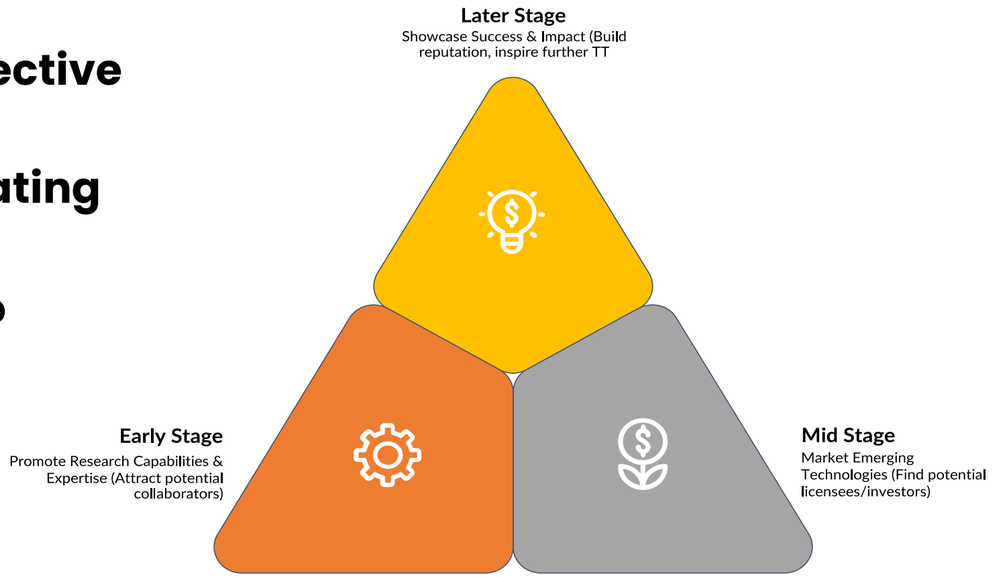
3. PROMOTION

Getting Noticed

Promotion: Getting Noticed

Promotion: Making Innovation Shine:

- Research impact stays hidden without effective promotion.
- It's about visibility, awareness, and generating interest.
- Connects your innovations with those who need them.
- Turns discoveries into opportunities.



You are the Storytellers:

- The TT office plays a crucial role in crafting and sharing these stories.
- Translate complex research into understandable benefits.
- Build relationships with marketing, communications, and external media.
- Consistent and targeted communication is key.

Creative Promotion - Ideas

- **"Faculty Friday" Features:** Short videos/posts highlighting a researcher & their work on social media.
- **Interactive Tech Portal:** User-friendly website showcasing available technologies with clear tags & search.
- **Industry "Discovery Days":** Focused events where companies meet researchers in specific fields.
- **Impact Spotlights:** Short, compelling stories (text/video) on successful commercialized technologies & their real-world benefits.

Reflection

How effectively are you currently showcasing our research strengths and marketable technologies to relevant industry sectors and potential partners?

4. PARTNERSHIP

Stronger Together

Partnerships: Stronger Together

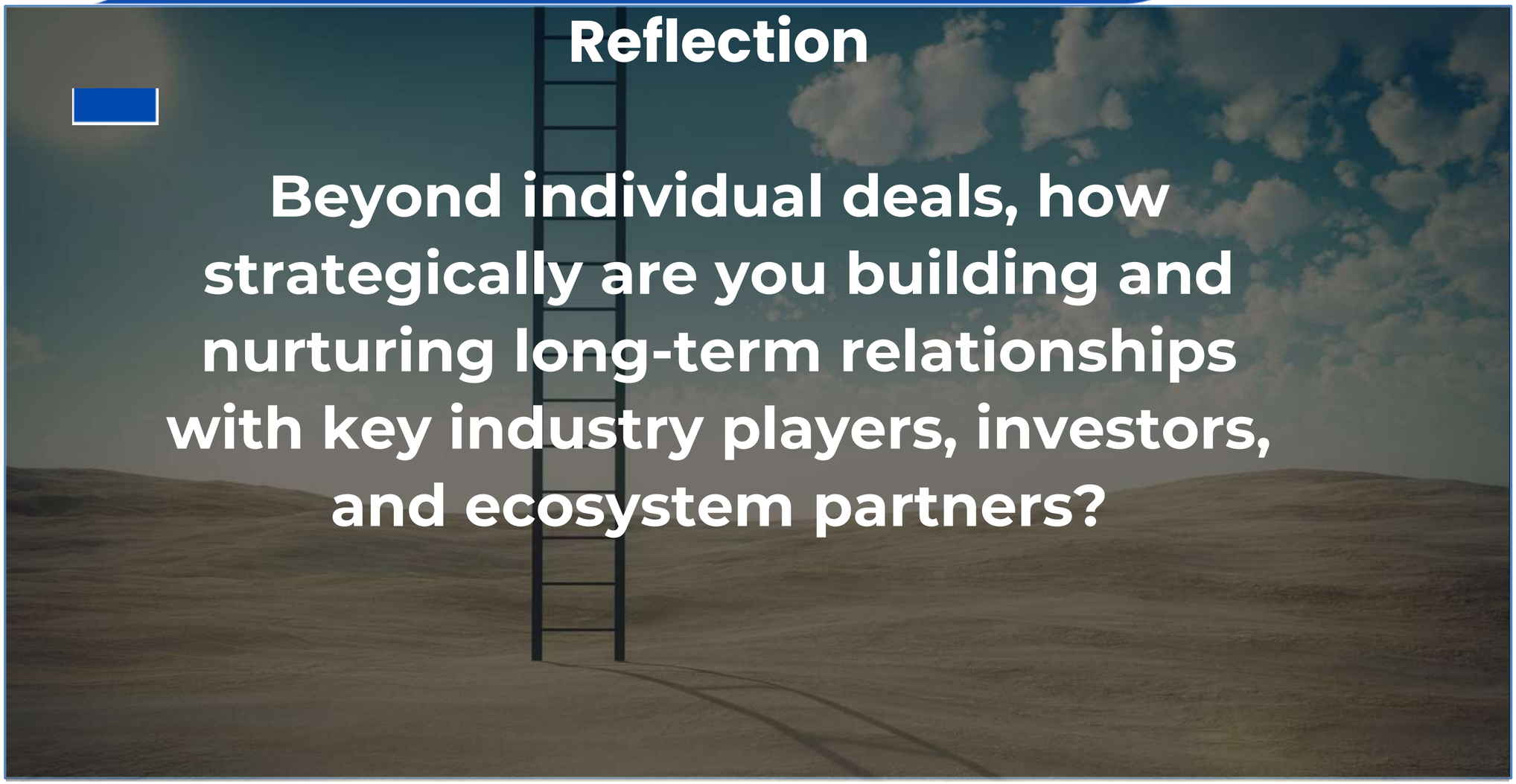
Partnerships: Building Bridges, Not Silos.

- Technology transfer is a team sport.
- Requires connecting with the outside world.
- Accesses resources, expertise, and markets you don't have internally.
- Collaboration accelerates impact.

Building Lasting Connections.

- Partnerships require effort: communication, trust, and mutual benefit.
- Identify shared goals and values.
- Nurture relationships beyond a single transaction.
- Your network is your net worth in TT.

Reflection



Beyond individual deals, how strategically are you building and nurturing long-term relationships with key industry players, investors, and ecosystem partners?

5. PEOPLE

The Heartbeat of TT

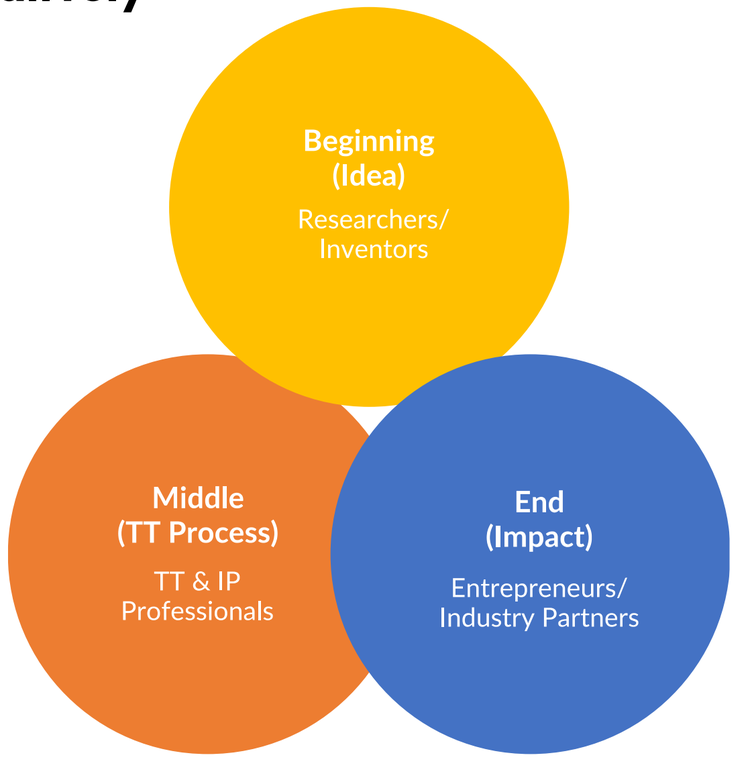
People : The Heartbeat of TT

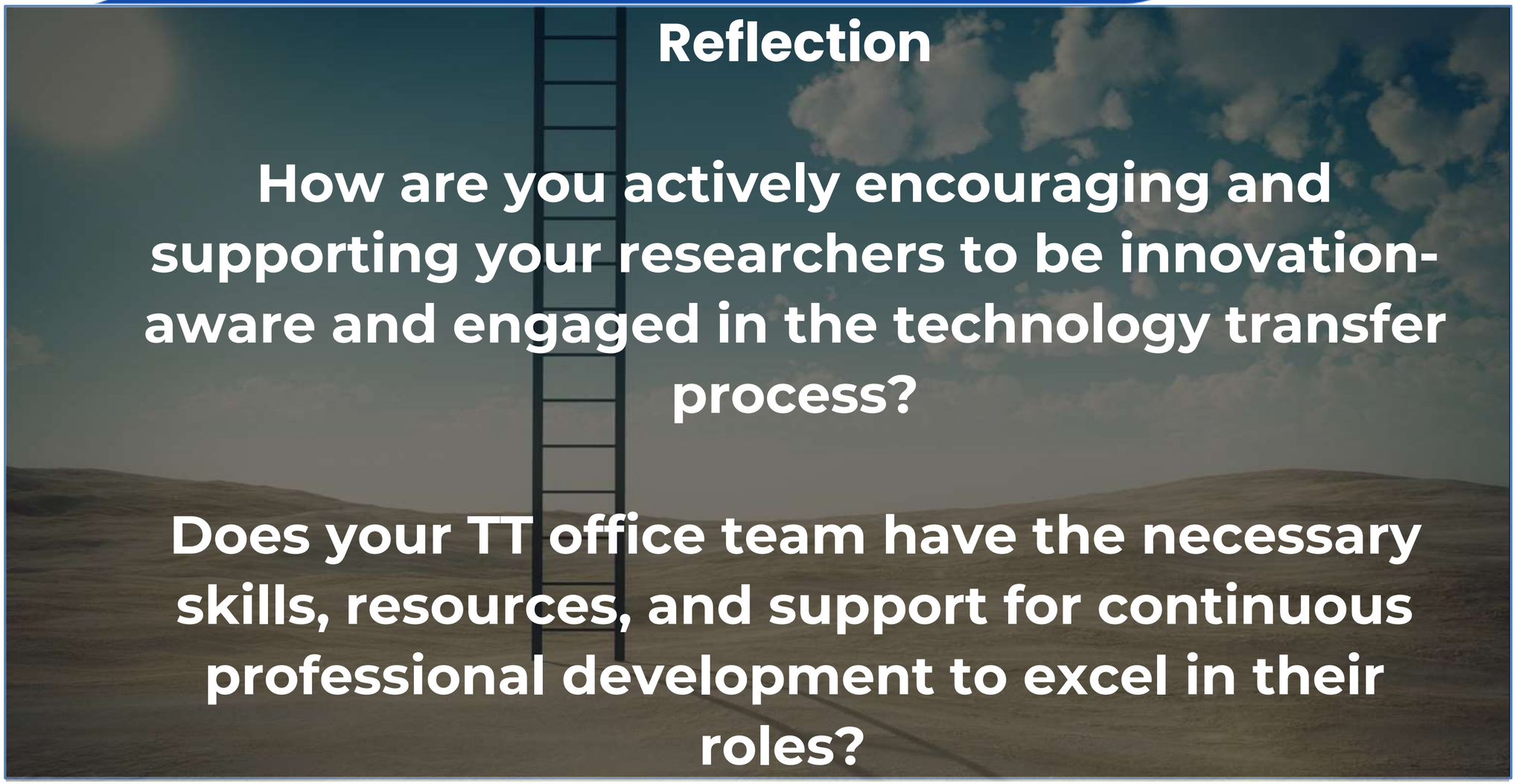
People: The Driving Force

- Policies, processes, promotion, partnerships – they all rely on people.
- The human element is critical at every stage.
- Creativity, expertise, passion, and collaboration matter most.
- Investing in people is investing in TT success.

People: The Ultimate Enabler.

- Passionate and skilled people overcome challenges.
- Their relationships drive partnerships and promotion.
- Their insights improve policies and processes.
- Build a people-centric approach to TT.
- Celebrate their successes!



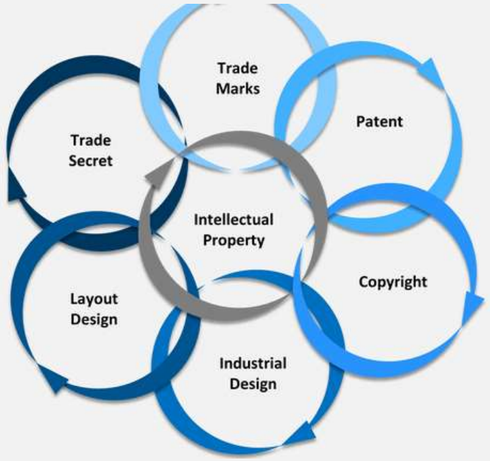


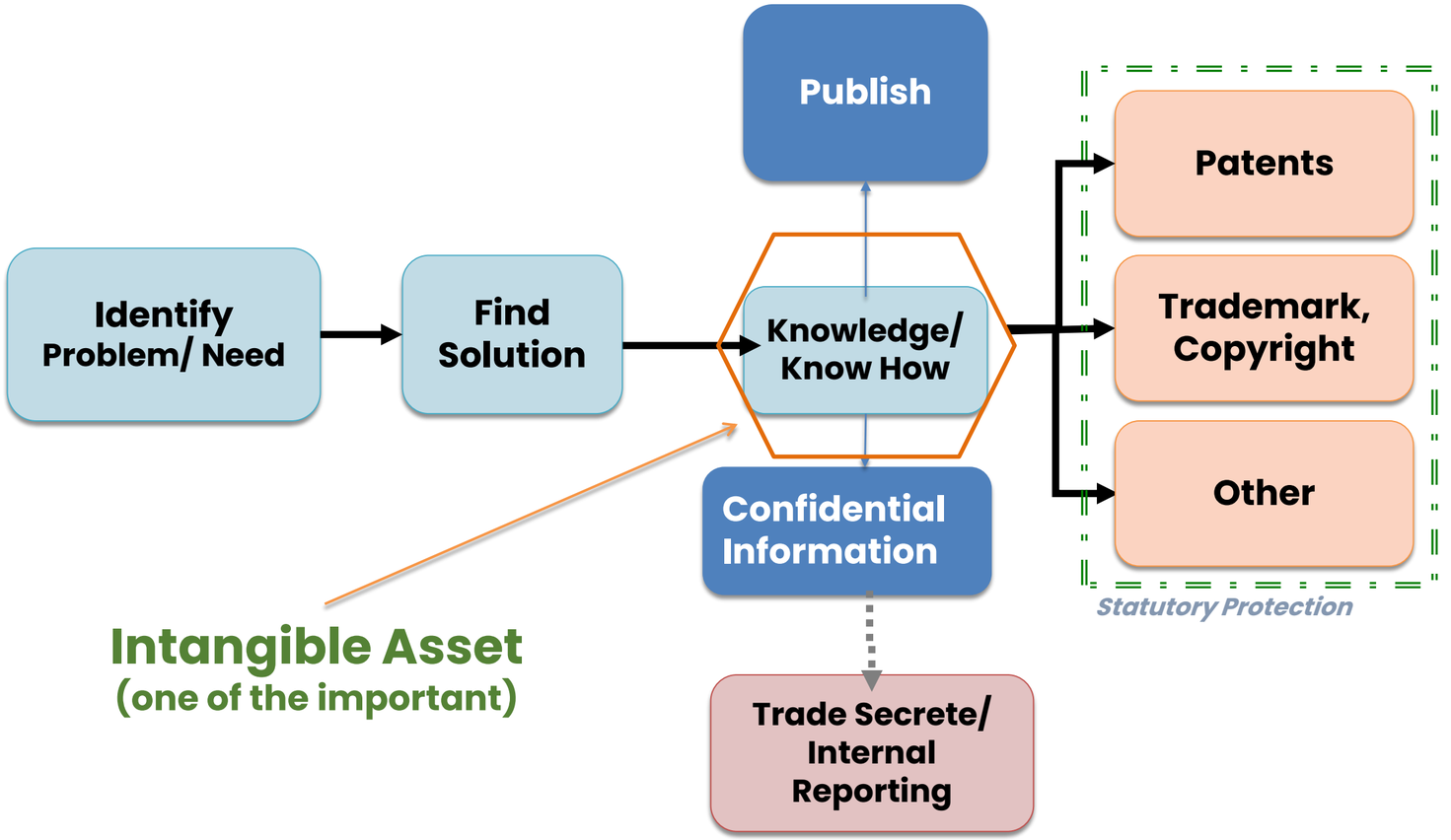
Reflection

How are you actively encouraging and supporting your researchers to be innovation-aware and engaged in the technology transfer process?

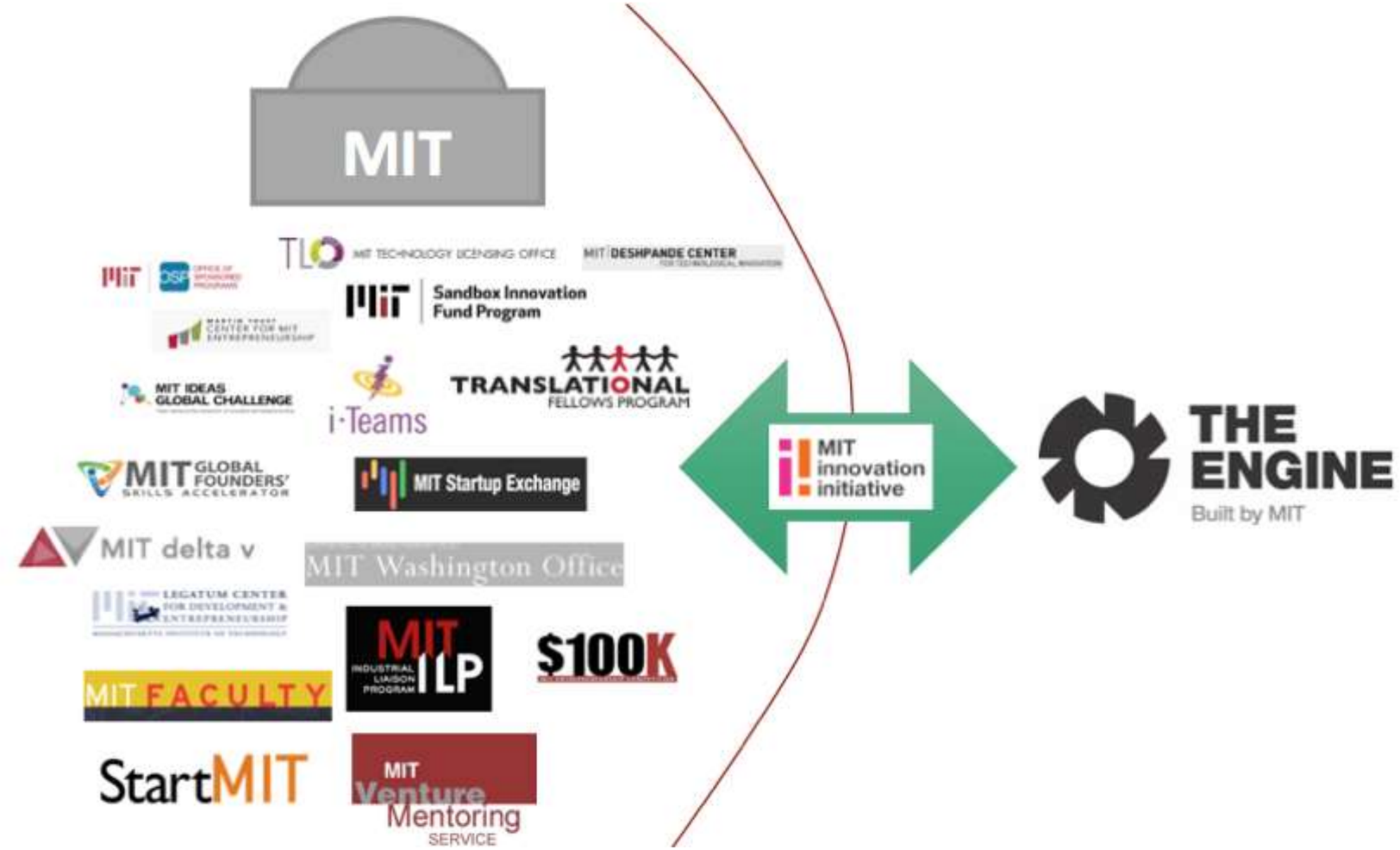
Does your TT office team have the necessary skills, resources, and support for continuous professional development to excel in their roles?

IP Creation





MIT Ecosystem



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INDUSTRIAL DEVELOPMENT ORGANIZATION

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