

Industry-Academia-Research/Government Interface (IARGI)

A FICCI-MFPI Initiative

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Preamble

- **Public-Private Partnerships gaining importance.**
Eg : Industry-Academia-Research/Government Interface (IARGI)
- **One way for industries to enhance their technological innovation capabilities and develop new applications is to collaborate with universities and public knowledge institutes.**
- **Intended for longer-term basic research (LTBR) by academics in close contact with industrial researchers in areas with a good potential for innovation and challenging scientific questions.**



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- **Industrial partner and FICCI/MFPI/CSIR together finance an IARGI.**
- **IARGI provides an insight into how fundamental science can add to innovation, and, ultimately, commercialization in industries/firms.**
- **IARGI is developed, managed, and executed by CSIR/MFPI and could provide a tool to help shape the (open) innovation process from a basic science perspective.**

- In moving frontiers of knowledge, universities are important contributors to technological innovation, thru basic/applied research.
- Generic links b/w universities & industry like graduate recruitment, scientific publications or patents add to innovation capacity of companies.
- However, organized relationship, such as IARGI, for contract research, consultancy etc. play an important role in driving the innovation processes.
- IARGIs also realized by establishing a research lab at/near academic premises, for more collaborative research and longer-term relationships. (Eg : Godrej R & D Center at ICT).
- Every IARGI is a research program, consisting of multiple projects and different in that within a PPP, a company can be connected to several *univ*'s distributed in a regional network (in contrast to global distribution).
- FICCI/MFPI/CSIR serve as link b/w universities and companies.

Aims & Objectives of IARGI

- **Generated knowledge should find its way more efficiently & effectively to existing industries and entrepreneurs.**
- **MFPI/CSIR along with FICCI support commercialization and entrepreneurship.**
- **IARGI is intended for LTBR by MFPI/CSIR scientists in close contact with industrial & academic researchers in areas with a good potential for innovation, challenging scientific questions.**
- **In other words, joint research that might yield groundbreaking innovations.**



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- **To contribute more visibly to a knowledge based economy without compromising high scientific standards.**
- **Scientific quality is ultimate determinant for project funding. Industries “buy” their access to knowledge generated from program & also get access to MFPI/CSIR network.**
- **An IARGI can be “open/closed” type. In a closed program, all projects are already defined & research consortium is established when application is submitted.**
- **In open program, a program proposal is written after which a call for research project proposals is organized.**



Advent of Open Innovation & Need for IARGI

- **Deconcentration in “corporate research” is accompanied by decline in in-house fundamental research.**
- **Instead of keeping all knowledge internal and secret, industries now link to external sources of knowledge.**
- **This is partly brought about by increasing complexity of technological developments.**
- **Industrial innovation is increasingly dependent on R&D outsourcing and ability to participate in strategic alliances, especially for large companies.**



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- **In Open innovation paradigm, R&D is treated as an open system.**
- **With this devpmt., role of MFPI/CSIR in R&D ecosystem has changed & IARGI is a response to need of industries for fundamental knowledge & new ideas.**

Structure of *IARGI*

- Corporate R&D labs should act more like science parks & incubators & seek strategic alliances.
(Eg: A firm hired a pilot plant for carbon fibers at NAL, Bangalore).
- In-cash contribution from industry - at least 50% of the total research project costs.
- Minimum feasible size of an IARGI ~ Rs 50 lacs (1 Post-doc, 2 Ph.Ds or PAs; chemicals, travel, conferences/workshops, 3 yrs).
- Award of programs on the basis of peer review assessment and FICCI/MFPI/CSIR committee.

Design of IARGI Program

Six Basic Conditions

- **Fundamental research by MFPI/CSIR personnel in close cooperation with researchers from one or more industries.**
- **Partners jointly formulate the research objectives.**
- **Industries finance at least half of the program budget in cash.**
- **Each program budget amounts to at least Rs. 50 lacs.**
- **Every program proposal is to be assessed for its scientific quality by independent referees.**
- **Agreements are made about the intellectual property rights & disclosure of information.**

Execution of an IARGI Program

- **A formal reporting scheme consisting of progress meetings with all partners, progress reports, & exchange of researchers.**
- **Mirror projects & project leaders at company; every project has a contact person at company that is available for discussions, inventions, & access to infrastructure.**
- **This person also takes care of in-company embedding of the knowledge.**
- **Education of IARGI researchers through trainings.**
- **Informal meetings are a relevant aspect of knowledge transfer**

Experiences Elsewhere

- **PPP had gained in popularity among researchers from academia, industry, research agencies & other stakeholders.**
- **How to measure if your program is successful?**
 - **For FICCI/CSIR/MFPI, an IARGI is successful if it results in scientific publications, in human capital (trained PhDs & Post-docs), and if the firms acquired relevant new knowledge that facilitated their innovations (patents etc.)**
 - **Cash contribution from industry increased, hence may be concluded that PPP is a successful instrument**

Who are the scientists involved in IARGI?

- We can see that
 - scientists who are most successful in obtaining basic research grants, are also most successful in an **IARGI**
 - Most researchers prefer a traditional academic publishing career over a career that is open to producing commercial outputs.
 - scientific excellence is significantly associated with the generation of successful commercial outputs.
- IARGI “utilizes” what comes naturally to basic researchers, w/o expecting them to become all application-driven scientists or entrepreneurs.
- However, awareness by the researchers for the application perspective is desired to facilitate communication.

Knowledge Transfer

- **Realized through publications & invention disclosures, tacit knowledge thru formal meetings & reports, exchange of students in laboratories, and informal bilateral contacts.**
- **we can distinguish three kinds of relationships b/w industry & academia that drive innovation process:**
 - **Technology transfer mechanisms, human mobility & inter-organizational relationships.**
 - **Establishing mirror projects & project leaders at company as contact persons for academic researchers.**
 - **Problem-solving sessions & scientific cases with realistic data from companies.**
 - **A stay of PhD students & post-docs for longer period (months) at a company to apply knowledge**



Mechanisms to meet expectations of both parties on outcome of IARGI

- **Industry is involved in writing of program proposal (closed or open IARGI) to fix main lines of research.**
- **Agreements about goals, confidentiality are discussed during first meetings to build confidence/trust among participants.**
- **Awareness among researchers about objectives & significance of IPR protection to understand a company's strategy.**
- **IPR to companies & make revenues thereof available to inventors for research purposes.**

Experiences from Industrial Partners

- **Biggest asset of IARGI is contact that occurs b/w experts from different perspectives, all working on same problem.**
- **Real exchange of knowledge does not occur via reports & books but via people.**
- **PhD students do not remain in their own laboratories but undertake internships at participating companies.**
- **Senior scientists (contact persons) from industry, spend a day once in two weeks in laboratory of their scientific partner.**
- **Secret of ARIP lies in one-stop shopping that gives industry to have access to entire research community of a given broad area.**



Experiences from Academics

- **Academic community was somewhat skeptical at start of IARGI in the beginning.**
- **Researchers feared a potential loss of academic freedom and less budget for free basic research.**
- **Once researchers are involved in an IARGI, several other benefits appear**
 - **Extension of network & potential for new relations, collaborations, & funding**
 - **Access gained to new infrastructure & expertise.**
 - **Access to realistic data for their models**
 - **Feeling for issues at stake in companies, understanding of their strategies, & awareness for patent opportunities**
 - **Training of young researchers in an industrial environment**
 - **Motivating connection b/w fundamental research & use of this knowledge by industry.**
- **Researchers get inspired to convert their fundamental research results into industrial practice.**

Conclusions

- **Universities & Research Institutes are important source of knowledge & human capital.**
- **As such, they have a stake in the innovation process.**
- **Ultimately their scientific breakthroughs often are basis of new technology related products.**
- **With many firms embracing open innovation, they increasingly rely on inter-organizational relationships like PPP collaborations as tool to enhance their innovation capacity.**



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- **At fundamental level, Public research organization & Academic institution can contribute to innovation process w/o compromising their core activity of research and teaching, respectively.**
- **If scientific excellence is pursued success will follow automatically.**
- **Thus an IARGI Program (particularly MNCs with R&D laboratories & Univs) can contribute more visibly to knowledge-based economy.**



**Thank you for
kind attention**

