संख्या

No.11(1)/2022-HCC(TDIL)-Part(3)

दिनांक

Date 30.03.2022

ADMINISTRATIVE APPROVAL

Subject : Administrative Approval for implementation of the Sub Project 'VIDYAAPATI: Bidirectional Machine Translation Involving Bengali, Konkani, Maithili, Marathi, and Hindi' under the Project titled 'National Language Translation Mission (NLTM) : BHASHINI'.

Implementing Agency: IIT,Bombay – Consortium Leader and (a) C-DAC,Kolkata (b) C-DAC,Pune (c) Goa University (d) Indian Institute of Technology Patna (e) Indian Statistical Institute Kolkata (f) Jadavpur university,Kolkata (g) Jawaharlal Nehru University, Delhi as Consortium Members.

The undersigned is directed to refer to this Ministry's letter of No.11(14)/2018-HCC(TDIL) dated 13.10.2021 conveying the Administrative Approval for the implementation of the Project titled 'National Language Translation Mission (NLTM) : BHASHINI' by Digital India Corporation (DIC), C-DAC, R&D Institutions for research through call for proposals and Other Implementing Agencies (To be identified) with the total outlay of the project of Rs. 495.51 Crore (Rupees four hundred ninety-five crore fifty one lakh only) as Grants-in-aid from Ministry of Electronics and Information Technology (MeitY). The duration of the projects is 36 months. The start of the Mission will be the date of the first release of Grant-in-aid. However, disbursement may go beyond the duration of the Mission.

2.   Now, the undersigned is directed to convey the Administrative Approval for the implementation of the sub-project namely 'VIDYAAPATI: Bidirectional Machine Translation Involving Bengali, Konkani, Maithili, Marathi, and Hindi' under the Project titled 'National Language Translation Mission (NLTM) : BHASHINI' to be implemented by IIT,Bombay – Consortium Leader and (a) C-DAC,Kolkata (b) C-DAC,Pune (c) Goa University (d) Indian Institute of Technology Patna (e) Indian Statistical Institute Kolkata (f) Jadavpur university,Kolkata (g) Jawaharlal Nehru University, Delhi as Consortium Members at the total outlay of the project is Rs. 9,55,98,000/- (Rupees nine crore fifty-five lakh ninety-eight thousand only) as Grants-in-aid from Ministry of Electronics and Information Technology (MeitY) for a period of 03 years. The details of the project are at Annexure– I.

3.   The standard terms and conditions governing the Grants-in-aid are enclosed at Annexure II.

4.   This issues with the approval of Secretary, MeitY vide computer no. 3083435 dated 29.03.2022 and concurrence of Integrated Finance Division, MeitY vide computer no. 3083435 dated 07.02.2022.

(Sandeep Kumar Ambasta)
Deputy Director

Copy to:
1.   Pay & Accounts Officer, Pay & Accounts Office. MeitY.
2.   Office of Principal Director of Audit, Scientific Department, Shamnath Marg, Civil Lines, Delhi – 110 054.
3.   Finance Division. MeitY.
4.   DDO, MeitY (two copies).
5.   Chief Investigator, Co-Investigators and Head of Implementing Agencies of the Projects.
6.   Economic Advisor, MeitY.
7.   Shri Vijay Kumar, Scientist 'F', MeitY.
8.   Shri Rajeshwar Singh Janwar, Scientist 'E', MeitY.
9.   Shri Bharat Gupta, Scientist 'D', MeitY and Sanction File.

(Sandeep Kumar Ambasta)
Deputy Director

Annexure – I to the Administrative Approval No. 11(1)/2022-HCC(TDIL)-Part(3) dated 30.03.2022.

1.	Title of Project:	VIDYAAPATI: Bidirectional Machine Translation Involving Bengali, Konkani, Maithili, Marathi, and Hindi
2.	Implementation Agencies:	• IIT Bombay – Consortium Leader • C-DAC-Kolkata • C-DAC-Pune • Goa University • Indian Institute of Technology Patna • Indian Statistical Institute, Kolkata • Jadavpur University, Kolkata • Jawaharlal Nehru University, Delhi
3.	Chief Investigator:	Prof. Pushpak Bhattacharyya *(IIT Bombay)*
4.	Co-Investigator:	• Prof. Sudip Kumar Naskar *(Jadavpur University, Kolkata)* • Prof. Niladri Sekhar Dash *(Indian Statistical Institute, Kolkata)* • Prof. Jyoti D. Pawar *(Goa University)* • Prof. R. S. Gad *(Goa University)* • Shri Ramdas Karmali *(Goa University)* • Prof. Preethi Jyothi *(IIT Bombay)* • Prof. Malhar Kulkarni *(IIT Bombay)* • Prof. Girish Nath Jha *(Jawaharlal Nehru University, Delhi)* • Prof. Asif Ekbal *(IIT Patna)* • Shri Asok Bandyopadhyay *(C-DAC Kolkata)* • Ms. Barnali Pal *(C-DAC Kolkata)* • Shri. Bibekananda Kundu *(C-DAC Kolkata)* • Ms. Lenali Singh *(C-DAC Pune)* • Ms. Shradha Kalele *(C-DAC Pune)*
5.	Background/Nature of Project:	
	Being a multilingual country, the significance of language technology is very high in India. Machine Translation (MT) is a critical aspect of it. NLP technologies are the key to connecting billions of people around the globe to access and avail the facilities, provisions, learning resources, knowledge, and benefits of the internet in multifarious domains like education, agriculture, commerce, climate, and so on. The Government of India has undertaken initiatives for building machine translation systems, cross-lingual search engines, speech processing technologies, OCR, etc. across a number of Indian languages. The current proposal	

	aims to develop a multidomain text-to-text machine translation system in synchrony with speech consortia to facilitate bidirectional translation between: Hindi - Bengali, Konkani, Maithili, Marathi.
6.	**Broad Objectives of the Project:**

	R&D:
	
	• To build a high-quality Machine Translation (MT) system for translation from Hindi to Bengali, Konkani, Maithili, Marathi, and vice versa. Domains of Priority: Governance & Policy including Judiciary, Science & Technology, Education, Healthcare, Agriculture, Climate, Tourism.
	• To increase the content in Bengali, Konkani, Maithili, and Marathi languages on the Internet substantially in the domains of public interest, particularly, Governance and Policy, Science and Technology, Education, Health, Agriculture, etc.
	• To create linguistically annotated data in Bengali, Konkani, Maithili, Marathi languages (Named Entity, Multiwords, and POS tagging).
	• To create an evaluation framework consisting of
	   ○ Adequacy & Fluency scores, reaching the target of 60% of translations being in 3-4-5 range i.e. good-very good-excellent level, leading to machine-aided translation requiring 50% effort compared to ab-initio human translation.
	   ○ BPE-BLEU is a BLEU score computed on BPE units of the machine output and reference translations, with the aim of a score of around 40.
	   ○ Correlation between Adequacy & Fluency on one hand and BPE-BLEU on the other (Bahubhashak Pilot showed us that a. and b. above are positively correlated with correlation coefficient hovering around 0.75).
	• To create a post-editing model trained on machine output and post-edited output which is adequate and fluent.
	
	Engineering:
	
	• The source code will be made open-source.
	• NMT models will be trained using OpenNMT like environments.
	• Keeping in view an enormous amount of hyperparameter tuning, Grid like frameworks will be used.
	• An Android/iOS application will be developed. Edge computing vis-a-vis server computing will be deeply investigated in the context of Android/iOS application development.
	• As the project progresses, cloud computing is expected to take over the training of the model and deployment completely. Engineering of the system for cloud compatibility will be an important engagement.
	• The left and right compatibility of VIDYAAPATI respectively with ASR and TTS will be ensured.

7.	**Deliverables/Expected outcome in physical terms (as applicable):**
	• Bidirectional MT system: Hindi - Bengali, Konkani, Maithili, Marathi. • Mobile App, Web-service, and APIs of the MT systems. • Linguistic Resources:

- o Domain-wise size:
  - Governance and Policy including Judiciary: 50%
  - Education: 30%
  - Rest (Science and Technology, Healthcare, Agriculture, Climate, Tourism, etc.): 20%
  - Parallel corpora for each language pair (Hindi - X, where X is one of
  - Bengali, Konkani, Maithili, Marathi) of approximate size 25K parallel sentences will be created. (This is as per MEITY's instruction; 10% of the data will be created by the consortium and 90% by the DMU)
  - MW, NE, and POS tagged corpus of approximate size 25K sentences of each language among Bengali, Konkani, Maithili, and Marathi.
- Open-source: code, data, and models will be available to the community for development and utilization. The source code will be released under the license AGPLv3 or Mozilla-v2. The Data will be released under CC-BY 4.0 license. The data and the models will be uploaded to the ULCA.
- Evaluation metrics and framework.
- Deployment strategy in language technology.

8.	Duration of Project:	3 Years

9.	Milestones:	

Year 1:
- Creation of project documentation explaining project plan and system specifications
- Adaptation / Enhancement of required modules
- Tie-ups with start-ups for parallel corpora creation
- Corpora creation of 25K parallel sentence pairs for each language pair (Hindi - Bengali, Konkani, Maithili, Marathi)
- Identifying and collecting domain-specific parallel corpora from additional sources (apart from start-ups)
- Creation of MW, NE, and POS tagged corpora of size 25K for each language
- Development of pre/post-processing logic for machine translation
- Machine Translation system building with an available corpus
- Data benchmarking for selected domains
- Designing evaluation framework
- Designing user interface
- Further exploring improvements in modules
- Adequacy and Fluency score- Bengali: 40% sentences, Konkani, Maithili: 30% sentences, Marathi: 60% sentences being in the 3-4-5 (good-very good-excellent) range; subword BLEU score of 10-15.
- Performing need gap analysis and identifying potential partnering organizations (for technology usage)
- Tie-Ups with Government / Non-Government organizations for project deployment

- Designing metrics to gauge product rollout effectiveness
- MT models with expected performance better than available open-source models at ULCA.

Year 2:
- Improving developed engines and modules
- Parallel corpora collection for selected domains (apart from start-ups)
- Refinement of NMT models, model training, tuning, testing; thorough evaluation
- Benchmark Data for selected domain
- Evaluation framework
- Adequacy and Fluency score- Bengali: 50% sentences, Konkani, Maithili: 50% sentences, Marathi: 60% sentences being in the 3-4-5 (good-very good-excellent) range; subword BLEU score of 10-15
- Further working on college (and other potential users) reach out exercise
- Beta run of college reach out (and other potential users) process (before pan India roll out)
- Deployment of technology on available servers for a beta run
- Obtaining feedback from potential users on developing technology as a viable product

Year 3:
- Improving developed engines and modules
- Validation of obtained sample corpus
- Model training, tuning, testing; thorough evaluation
- Adequacy and Fluency score of Bengali, Konkani, Maithili: 60% sentences, Marathi: 70% sentences being in the 3-4-5 (good-very good-excellent) range; subword BLEU score of 20-25
- MT system building with an available corpus
- Deployment of system and feedback
- Benchmark Data for selected domain
- Finalizing Evaluation framework
- Pan India roll out of developed tech solutions
- Continuous monitoring of user experience and incorporation of user feedback to improve the final product

| 10. | Agency with which link up is established/proposed: | Educational Institutes wishing to impart education in local languages, Agricultural. tourism, finance organizations engaged in localization, Govt. bodies. For example, **Proposed for Marathi:**
• Discussion started with NASSCOM for Eng to Marathi MT roll out.
• Initial round for discussion held with Maharashtra State Innovation Society.
• Colleges like DKTE Society's Textile and Engineering College onboarded for Bahubhashak pilot.
• Consultants from the University of Missouri onboarded for Eng to Marathi MT roll out. |

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11.	Likely End User(s):	• The stakeholders of Educational Institutes like students, teachers, and online courses. • The stakeholders of the Judiciary like advocates, judges, law practitioners. • The stakeholders of the eGovernment services. • The stakeholders of the Healthcare sector like doctors, patients, medical practitioners. • The stakeholders of the Agriculture sector like farmers, traders, educators, etc. • Commercial entities operating in various domains. • Corporates and start-ups working in language translation or other related domains • Commercial agencies for making their advertisements in different languages • Language academies of the respective states, literature societies, citizens of the country • Translation theorists, researchers of cross-lingual and multilingual NLP • Citizen of the country

12. Total Budget outlay (year wise): Rs.9,55,98,000/- (Rupees nine crore fifty-five lakh ninety-eight thousand only)

Particulars	Year-1	Year-2	Year-3	Grand Total (Rs. in Lakhs)
Capital Equipment (high-end GPU server)	87.00	1.00	1.00	89.00
Consumable (including Stores)	8.50	8.25	8.00	24.75
Manpower	177.36	195.10	213.05	585.51
Travel & Training	16.00	14.20	14.00	44.20
Contingency	16.00	15.20	15.20	46.40
Corpora Creation	96.90	2.50	2.5	101.90
Overhead (8% excl. CapEx)	25.18	18.82	20.22	64.22
Grand Total	426.94	255.07	273.97	955.98

Institute wise Budget:

IIT, Bombay

Rs.in Lakhs

Particulars	Year1	Year2	Year3	Total
Capital Equipment (high end GPU Server)	20.00	1.00	1.00	22.00
Consumable (including Stores)	1.00	1.00	1.00	3.00
Manpower	38.40	42.24	46.08	126.72
Travel & Training	3.00	3.00	3.00	9.00
Contingency	4.00	4.00	4.00	12.00
Corpora Creation and Cloud Comp.	14.30	2.50	2.50	19.30
Overhead (8% excl. CapEx)	4.86	4.22	4.52	13.60
Grand Total	85.56	57.96	62.10	205.62

C-DAC, Pune

Rs.in Lakhs

Particulars	Year1	Year2	Year3	Total
Capital Equipment (high end GPU Server)	3	0	0	3
Consumable (including Stores)	0.5	0.25	0	0.75
Manpower	27.84	30.62	33.51	91.97
Travel & Training	1	0.2	0	1.2
Contingency	1	0.2	0.2	1.4

Corpora Creation	11.8	0	0	11.8
Overhead (8% excl. CapEx)	3.37	2.5	2.7	8.57
Grand Total	48.51	33.77	36.41	118.69

Goa University

Rs.in Lakhs

Particulars	Year1	Year2	Year3	Total
Capital Equipment (high end GPU Server)	20.00	0.00	0.00	20.00
Consumable (including Stores)	1.00	1.00	1.00	3.00
Manpower	42.60	46.86	51.12	140.58
Travel & Training	3.00	2.00	2.00	7.00
Contingency	2.00	2.00	2.00	6.00
Corpora Creation	23.60	0.00	0.00	23.60
Overhead (8% excl. CapEx)	5.78	4.15	4.49	14.41
Grand Total	97.98	56.01	60.61	214.59

IIT, Patna

Rs.in Lakhs

Particulars	Year1	Year2	Year3	Total
Capital Equipment (high end GPU Server)	20.00	0.00	0.00	20.00
Consumable (including Stores)	2.00	2.00	2.00	6.00
Manpower	21.00	23.10	25.20	69.30
Travel & Training	3.00	3.00	3.00	9.00

Particulars	Year1	Year2	Year3	Total
Contingency	3.00	3.00	3.00	9.00
Corpora Creation	0.00	0.00	0.00	0.00
Overhead (8% excl. CapEx)	2.32	2.49	2.66	7.47
Grand Total	51.32	33.59	35.86	120.77

ISI Kolkata

Rs.in Lakhs

Particulars	Year1	Year2	Year3	Total
Capital Equipment (high end GPU Server)	4.00	0.00	0.00	4.00
Consumable (including Stores)	1.00	1.00	1.00	3.00
Manpower	9.60	10.56	11.52	31.68
Travel & Training	1.50	1.50	1.50	4.50
Contingency	1.50	1.50	1.50	4.50
Corpora Creation	11.80	0.00	0.00	11.80
Overhead (8% excl. CapEx)	2.032	1.164	1.242	4.44
Grand Total	31.432	15.724	16.762	63.92

Jadavpur University

Rs.in Lakhs

Particulars	Year1	Year2	Year3	Total
Capital Equipment (high end GPU Server)	15.00	0.00	0.00	15.00
Consumable (including Stores)	1.00	1.00	1.00	3.00
Manpower	7.20	7.92	8.64	23.76

Travel & Training	1.50	1.50	1.50	4.50
Contingency	1.50	1.50	1.50	4.50
Corpora Creation	0.00	0.00	0.00	0.00
Overhead (8% excl. CapEx)	0.90	0.95	1.01	2.86
Grand Total	27.10	12.87	13.65	53.62

C-DAC, Kolkata

Rs.in Lakhs

Particulars	Year1	Year2	Year3	Total
Capital Equipment (high end GPU Server)	0.00	0.00	0.00	0.00
Consumable (including Stores)	1.00	1.00	1.00	3.00
Manpower	11.52	12.67	13.94	38.13
Travel & Training	1.50	1.50	1.50	4.50
Contingency	1.50	1.50	1.50	4.50
Corpora Creation	11.80	0.00	0.00	11.80
Overhead (8% excl. CapEx)	2.19	1.33	1.44	4.96
Grand Total	29.51	18.00	19.38	66.89

Jawaharlal Nehru University

Rs.in Lakhs

Particulars	Year1	Year2	Year3	Total
Capital Equipment (high end GPU Server)	5.00	0.00	0.00	5.00
Consumable (including Stores)	1.00	1.00	1.00	3.00
Manpower	19.20	21.12	23.04	63.36
Travel & Training	1.50	1.50	1.50	4.50
Contingency	1.50	1.50	1.50	4.50
Corpora Creation	23.60	0.00	0.00	23.60
Overhead (8% excl. CapEx)	3.74	2.01	2.16	7.92
Grand Total	55.54	27.13	29.20	111.88

13.	Special terms and conditions:

- At the end of one year, models should be more accurate than available open-source models on the ULCA platform which is a mandatory Condition for project continuation else the projects can be shortly closed.
- In the case of research proposals, if performance criteria are met at the end of one year, PI may request additional funding for more corpus creation in the form of a new proposal which can be considered depending on the availability of funds.
- ULCA API based Data and Models should be made available in open source by maintaining the GitHub Repository by the concerned Researcher/Consortia/Ekstep/other contributor and then be ported from GitHub onto the Bhashini platform by the DevOps team of DIC. Source code should be released under an open-source license, and it should be downloadable, compiled, installed along with necessary data by anyone without any registration/permissions. The data to be released under CC-BY 4.0 license with attribution to NLTM, shall be used for any purpose by all.
- The corpus funded to R&D under the Mission should be newly created and of Gold Standard and independent of the data to be developed under DMU. The process and methods to be developed to avoid duplication of data. The PI is responsible to collect all data required to meet their promised performance. However, PI may leverage the

data developed by DMU, if applicable. The data source should be declared prior to the collection for avoiding data duplication among various stakeholders under the Mission. And, the corpus funded under the Mission is to be utilised for the generation of unique corpus only. The process to ensure this should be automatic through the platform. The three expert committees mentioned in the Mission Document will lay guidelines to ensure coordinated data development under the mission. The committees will be set up by MeitY and will function in close coordination with NHLT. These committees will also work on the development of more benchmarks in discussion with Consortia e.g. domain-specific etc.

14.	Project Review & Monitoring:	EC Committee will continue to work as PRSG
15.	Benefits:	

- Multi-domain Machine Translation systems for translation between Indian languages and between English and Indian languages
- Increase in the linguistic resources for NLP of the Indian languages
- Increased research in the field of Indic-NLP
- Trained Manpower (Researchers, Linguists) capable of working on Indian Language Technology
- Help in the development of Speech-to-speech machine translation systems
- Increased collaboration between academia, start-ups, and government organizations leading to ecosystem development
- Increase the content in Indian languages on the Internet
- Education in mother tongue
- Access to global information in native languages for organizations and also for common people of the country.
- Elimination of language barrier in communication

16.	Stages for Release of Payment:

Pre-condition status of implementation: Issue of Administrative Approval and as per quantitative roadmap

Documentation to be supplied by Implementation Agency: Acceptance to the terms and conditions of GIA, special terms and conditions for the Mission project, Progress Report, UC

Amount to be Released: As per the recommendation of PRSG for release followed by the availability of fund and as proposed by Programme Division

TERMS AND CONDITIONS GOVERNING GRANT-IN-AID

I) Terms & conditions governing Grants-in-aid for funding R&D Projects

I. Applicability

These terms & conditions apply to the institutions who receive Grants-in-aid from MeitY for undertaking R&D projects.

II. Definition

In these instructions:

1) The "institution" means any technical, scientific or academic establishment where research work is carried out through funding by MeitY. (including R&D Laboratories, Autonomous Scientific Societies etc.)

2) "Inventor" means researcher/ employee of the Institution whose duties involve carrying out scientific or technical research work in an R&D project funded by MeitY.

3) "Intellectual Property Rights" include patents, trademarks, registered designs, copyrights and layout design of integrated circuits.

III. General Conditions

(1)   The grant is for undertaking the specific project as approved by MeitY and shall be subject to the following conditions:

    (i)   The grant shall be spent for the project within the specified time

    (ii)   Any portion of the grant which is not ultimately required for expenditure for the approved purposes shall be duly surrendered to MeitY.

(2)   For a project being executed by MeitY grant, Application by grantee institution for any other financial assistance or receipt of grant/loan from any other Agency/ Ministry/ Department for the same project should have the prior permission/approval of MeitY.

(3)   The grantee institution is not allowed to entrust the implementation of this project for which Grants-in-aid is received, to another institution and to divert the Grants-in-aid received from MeitY as assistance to the later institution. However available IP core etc. could be procured with due payment of license fee as per the recommendations of PRSG.

(4)   The investigator(s) should not enter into collaboration with a foreign party (individual/ academic institution/ industry) in execution of this project without prior approval of MeitY.

(5) The grantee institution(s) shall make all efforts to protect the Intellectual property Rights (IPR) being generated through the research project and follow the section "Guidelines for IPR" as laid by MeitY.

(6) The grantee institution, while undertaking the technology transfer/commercialization activities, shall follow the procedure laid down by their own institution. In case there is no such procedure/framework within the grantee institution, a transparent mechanism based on the guidelines indicated at section "Guidelines for Technology Transfer/ commercialization" of MeitY shall be followed.

(7) In case the grantee institution does not license the patent/ commercialise the technology within a period of 5 years from the time of obtaining the patent/ development of technology, the grantee institution will make available the patent/technology in public domain for usage by Indian companies/ MSMEs/ start-ups/ entrepreneurs/ citizens.

(8) The Grantee institution should indemnify MeitY from any legal and/ or financial encumbrance arising out of any infringement of IPR/ licensing of IPR/ technology transfer/ commercialization.

(9) Any dispute on any matter related to the implementation of the project, the decision of the Secretary, MeitY, shall be final and binding on the grantee institution.

(10) MeitY reserves the right to modify these terms and conditions governing the grant-in- aid from time to time reflecting the directions of the Government of India.

IV. Monitoring & Review of the project
MeitY shall appoint a Project Review and Steering Group (PRSG) composed of representatives from MeitY and other experts to periodically review and monitor the technical and financial status of the project. PRSG will periodically monitor the project in all respects including technical and financial progress of the project.

V. Acquisition & Management of Assets

(1) The grantee institution shall maintain an audited record in the form of a register in the prescribed proforma for permanent, semi-permanent assets acquired solely or mainly out of the MeitY grant. The applicable procedures for procurement shall be followed for acquisition of assets.

(2) The assets referred to above will be the property of MeitY and should not, without prior sanction of MeitY, be disposed off or encumbered or utilised for the purposes other than those for which the grant has been sanctioned

(3) The grantee institution shall send a list of assets referred above to MeitY at the end of each financial year as well as at the time of seeking further instalments of the grant;

(4) Should at any time grantee institution cease to exist, such assets etc., shall revert to MeitY;

(5) At the conclusion/ termination of the project, the Government of India will be free to sell or otherwise dispose of the assets which are the property of the Government. The Institution shall render to the Government necessary facilities for arranging the sale of these assets. The Government of India has the discretion to transfer the assets to the concerned institution or any other institution if it is considered appropriate.

VI. Utilization of Grants and Audit

(1) The grantee institution should maintain a separate audited account for the project. If it is found expedient to keep a part or whole of the grant in a bank account earning interest, the interest, thus earned, should be reported to MeitY. The interest so earned will be treated as a credit to the grantee institution to be adjusted towards future installment of the grant; MeitY or its nominee/s will have the right of access to the books and accounts of the grantee institution for which a reasonable prior notice would be given

(2) The grantee institution shall render an audited statement of accounts and utilization certificate to MeitY every year. The audited statement of accounts relating to grants given during financial year together with the comments of the auditor regarding the observance of the conditions governing the grant should be forwarded to the MeitY within six months following the end of the relevant financial year;

(3) The utilisation of grant for the intended purposes will be looked into by the Auditor of grantee institution according to the directives issued by the Government of India at the instance of the Comptroller and Auditor General and the specific mention about it will be made in the audit report;

(4) The grantee institution shall render progress-cum-achievement reports at intervals of not exceeding six months on the progress made on all aspects of the project including expenditure incurred on various approved items during the period.

(5) The grantee institution will refund unspent balance in addition to the interest, if any accrued on the unspent balance in the total outlay of the project.

(6) The Ministry or Department will be at liberty to take appropriate action under the Rule 212(1) of GFR 2005 relating to utilization of funds in the specified time

and where such certificate is not received from the grantee within the prescribed time (reference General Financial Rules 2005).

VII. Guidelines for managing IPRs:

1. The IPR arising out of sponsored project(s) will be with grantee institution(s). While the patent may be taken in the name(s) of inventor(s), the institution(s) shall ensure that the IPR is assigned to institution(s). In cases where the funding/resourcing of researchers have been done jointly with other organizations, the IP rights would be appropriately shared among them.

2. The Government of India/ Government bodies (including its PSUs, Government autonomous societies & section 25 companies) shall have the right to obtain a royalty- free license for the Intellectual Property for deployment/use of the same for non-commercial purposes. However, in case, IP is proposed for commercial usage, the terms of licensing may be mutually agreed with the grantee institution(s) possessing IPR.

3. The grantee institution shall submit the financial requirements for filing of IPR as part of the R&D proposal. The contingency head could be used for provisioning of the expenditure for filing of IPR with a ceiling of Rs. 15 Lakhs for the cost of initial filing, but excluding for the annuity fee. International Patent filing will be permitted. The amount will be released based on the recommendations of PRSG constituted by MeitY for the concerned project. If, for any reason, it is not possible to meet the expenses from the project grant, like in the case of the need for filing of IPR arising after the closure of the project, an application may be made separately by the institution to MeitY for sanction/ reimbursement of the expenses incurred in filing of the IPR.

4. The grantee institution shall inform MeitY about the patents filed/obtained and IPR arising out of the R&D project on an annual basis over the project duration and subsequent 5 years period after the project closure.

5. The grantee institution shall provide information to MeitY about trading/ selling/ transferring /licensing the IP rights, within a period of 6 weeks from conclusion of the agreement relating to such a commercial event.

6. The grantee institution shall take appropriate licence in case of export of 'Special Chemicals, Organisms, Materials, Equipment and Technologies' (SCOMET) items as per the prevailing provisions of Foreign Trade Policy from Directorate General of Foreign Trade, under Department of Commerce, Government of India.

7. As the R&D is supported by public funds, the grantee institution should ensure that the interests of India and its citizens are fully protected, while licensing patents/transfer or commercialization of technology.

8. The institution is permitted to retain the benefits and earnings arising out of the IPR for plough back to pursue research/research related activities.

9. Notwithstanding the above, MeitY reserves the right to take over ownership of the rights of the Intellectual property arising out of this project, in the interest of Indian sovereignty, without any compensation to the grantee institution.

VIII. Guidelines for Technology Transfer/commercialization:

The Grantee institution may use the following guidelines in case there is no laid down Procedure within their own institution:

(1) The transfer of technology may normally be undertaken by the central office of the grantee institution equipped to handle legal issues with regard to technology/ IP licensing.

(2) The grantee institution shall constitute a Transfer of Technology (ToT) Committee for evaluation of the applications for ToT and for working the appropriate revenues expected out of the ToT

(3) Prior to seeking the expression of interest for technology transfer/ commercialization, there should be sufficient disclosure of the technical details, features and capabilities of the project through advertisement, publication on the websites of the Institution and of MeitY, and exhibitions, if any held on the related themes during the relevant period. The ToT proposal may be given wide publicity in one national daily besides in journals relating to the theme and by writing to the industry associations related to the theme.

(4) Normally, a period of 6 weeks shall be given for interested parties to file their applications relating to Expression of Interest , which may require customization based on the technology/product/service/prototype proposed to be transferred by the grantee institution.

(5) The ToT Evaluation Committee shall undertake a techno-commercial evaluation of the proposals received, adopting a 2-stage process.

(6) The ToT committee formed by the grantee institution will work out the cost of ToT on case-to-case basis considering the ground realities like i) development cost of the project ii) market demand of the technology/product iii) ability of the industry to pay for the technology iv) work involved from prototyping to packaging. The cost of capital equipment will be excluded from the total cost of development. Such an estimated cost shall be used as the Internal Bench Mark (IBM) for evaluating the ToT fee and royalty, in Stage 2.

(7) After due diligence by the ToT committee a technology transfer/ licensing agreement shall be signed which shall include license of IPRs through existing legal procedures.

(8) It is desirable that technology be transferred on a non-exclusive basis. Exclusive licensing should be in the rarest of rare cases based on sufficient justification by the ToT Evaluation Committee and approval by the Head of the institution! Competent Authority and with the approval of MeitY.

(9) The institution is permitted to retain the benefits and earnings arising out of the technology transfer/ licensing of IPRs for ploughing back to pursue research in related areas.

IX. Guidelines for publication of results
   (1) Investigators wishing to publish technical/ scientific papers based on the research work done under the project, should acknowledge the assistance received from this Department and a copy of the communicated/published paper he sent to MeitY.
   (2)
   (3) If the results of research are to be legally protected for the intellectual property, then its publication can be undertaken only after due care is taken for legal protection of the intellectual property rights.

Note:
   (1) While submitting the project proposal, a certificate of acceptance of terms and conditions and undertaking to follow the guidelines as above needs to be given by the chief investigator and endorsed by the competent authority of the institution. For any deviation from the terms & conditions and guidelines, the grantee institution will take the permission/approval of the competent authority of MeitY.

   (2) The guidelines for managing IPR and Technology Transfer/ commercialization will not be applicable for the following exceptions and specific approvals have to be taken in respect of IPR and ToT:
      (i)   The R&D projects of strategic applications:
The projects are jointly funded by/for strategic Departments like Defence, Space and Atomic Research etc.

Specific Terms & Conditions governing Grants-in-aid relating to the Consortium mode project:
Responsibilities of Consortium Leader

   i)   The MeitY Grants-in-aid will be released to the consortia leader who in turn will release the assigned funds to the consortia members based on the requirements and satisfactory performance of the consortia member and the recommendations of PRSG/ MeitY.

ii)   Consortia Leader would ensure the delivery of the end product as per specified Software Requirement Specifications (SRS).

iii) Evolve Standards and Evaluation Mechanism for modules/ sub-systems/components as well as the end product.

iv)   Evolve internal monitoring mechanisms for consortium members

v)   Integration Testing and resolving interface issues of the modules developed by CMs.

vi)   Submission of Software life cycle documents to MeitY.

vii) Obtaining individual Utilization Certificate / Statement of Account/Audited Statement of Account/ Six-monthly Financial and Technical Progress Report etc. from Consortium Members and submission of consolidated Utilization Certificate / Audited Statement of Account / Progress Report to MeitY.

Responsibilities of Consortium Members

i)   Development of modules/sub-systems/components /defined interface assigned to them

ii)   Close interaction with Consortium Leader and other Consortium Members to ensure delivery of the module.

iii) Cooperation with Consortium Leader regarding monitoring and evaluation of assigned modules/sub-systems/components /defined interface.

Submission of Utilization Certificate / Statement of Account /Audited Statement of Account/ Six-monthly Financial and Technical Progress Report etc. to Consortium Leader for submission to MeitY.