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STANDING COMMITTEE ON INFORMATION TECHNOLOGY (2007-2008)

FOURTEENTH LOK SABHA

MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY

(DEPARTMENT OF INFORMATION TECHNOLOGY)

[Action taken by the Government on the Recommendations/Observations of the Committee contained in their Forty-Ninth Report (Fourteenth Lok Sabha) on Functioning of Centre for Development of Advanced Computing (C-DAC)]

SIXTY-FIRST REPORT

सत्यमेव जयते

LOK SABHA SECRETARIAT
NEW DELHI

July, 2008/*Ashadha,* 1930 *(Saka)*

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Presented to Lok Sabha on 22 July, 2008
Laid on the Table of Rajya Sabha on 22 October, 2008

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CIT No. 194

Price : Rs. 40.00

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Shri Nikhil Kumar — *Chairman*

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12. Shri Lalmani Prasad

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17. Shri Tathagata Satpathy

18. Smt. Rubab Sayeda

19. Shri K.V. Thangka Balu

20. Shri P.C. Thomas

21. Shri Kinjarapu Yerrannaidu

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* *Vice* Kunwar Jitin Prasad ceased to be a member on being inducted to the Union Council of Ministers on 7th April, 2008.

@ *Vice* Shri Prem Kumar Dhumal ceased to be a member on resignation from Lok Sabha on 7th Jan., 2008.

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23. Shri Ravi Shankar Prasad

24. Shri Dara Singh

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$27. Dr. C.P. Thakur

$28. Shri Rajkumar Dhoot

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30. Shri Rajeev Chandrasekhar

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2. Shri P. Sreedharan — *Joint Secretary*

3. Smt. Sudesh Luthra — *Director*

4. Shri P.C. Koul — *Deputy Secretary*

$ Nominated *w.e.f.* 21 May, 2008.

INTRODUCTION

I, the Chairman Standing Committee on Information Technology (2007-2008) having been authorised by the Committee to submit the Report on their behalf, present this Sixty-first Report on Action Taken by the Government on the Recommendations/Observations of the Committee contained in their Forty-ninth Report (Fourteenth Lok Sabha) on 'Functioning of Centre for Development of Advanced Computing (C-DAC)' relating to the Ministry of Communications and Information Technology (Department of Information Technology).

2. The Forty-ninth Report was presented to Lok Sabha on 21 August, 2007 and laid on the Table of Rajya Sabha on the same day. The Department furnished their Action Taken Notes on the Recommendations/Observations contained in the Forty-ninth Report on 29 February, 2008.

3. The Report was considered and adopted by the Committee at their sitting held on 16 July, 2008.

4. For facility of reference and convenience, Recommendations/ Observations of the Committee have been printed in bold letters in the Report.

5. An analysis of Action Taken by the Government on the Recommendations/Observations of the Committee contained in their Forty-ninth Report (Fourteenth Lok Sabha) is given at **Annexure**.

New Delhi;
16 *July,* 2008
25 *Ashadha,* 1930 *(Saka)*

NIKHIL KUMAR,
Chairman,
Standing Committee on
Information Technology.

CHAPTER I

REPORT

This Report of the Standing Committee on Information Technology deals with the action taken by the Government on the recommendations/ observations of the Committee contained in their Forty-ninth Report (Fourteenth Lok Sabha) on 'Functioning of Centre for Development of Advanced Computing (C-DAC)' pertaining to the Ministry of Communications and Information Technology (Department of Information Technology).

2. The Forty-ninth Report was presented to Hon'ble Speaker on 03.08.2007 and to Lok Sabha on 21.08.2007 and was laid on the Table of Rajya Sabha on the same day. It contained 23 recommendations/ observations.

3. Action Taken Notes in respect of all the recommendations/ observations contained in the Report have been received and categorised as under:—

   (i) Recommendations/Observations which have been accepted by the Government:—

Para Nos. : 1, 2, 3, 8, 13, 15, 16, 17, 18, 19, 20, 21 & 22

<div align="right">

Total : 13
Chapter - II
</div>

  (ii) Recommendation/Observation which the Committee do not desire to pursue in view of the reply of the Government:—

Para No. : 9   Total : 1
<div align="right">Chapter - III</div>

(iii) Recommendations/Observations in respect of which replies of the Government have not been accepted by the Committee and which require reiteration:—

Para Nos.: 4, 5, 6, 7, 12, 14 & 23   Total : 7
<div align="right">Chapter - IV</div>

(iv) Recommendations/Observations in respect of which replies are of interim nature:—

Para Nos. : 10 & 11   Total : 2
                                                       Chapter - V

4. The Committee trust that utmost importance would be given to implementation of the recommendations/observations accepted by the Government. In cases, where it is not possible for the Department to implement the recommendations in letter and spirit for any reason, the matter should be reported to the Committee with reasons therefor. The Committee further desire that Action Taken Notes on the recommendations/observations contained in Chapter-I and final action taken replies to the recommendations contained in Chapter-V of this Report should be furnished to them at an early date.

5. The Committee will now deal with the action taken by the Government on some of their recommendations.

I.   **Meetings of Governing Council/Committees of C-DAC**

Recommendation (Paragraph No. 3)

6. Noting the long gaps in the meetings of various bodies entrusted with guiding and facilitating C-DAC *viz*. the Governing Council, the Technical Advisory Committee and the Coordination Committee and the adverse effect this might be having on the functioning of C-DAC, the Committee in their Forty-ninth Report had disapproved the laxity and disinterest being shown by the Department. The Committee impressed upon the Department that there should be frequent meetings of these bodies at regular intervals so as to ensure that decisions on major issues were not delayed and the problems/difficulties being faced by C-DAC were not allowed to linger on to the detriment of national interest.

7. In their action taken note the Department have stated that the recommendations of the Committee have been noted for action. In addition, C-DAC have been asked to submit urgent issues for decision on file, so that these may be expedited.

8. The Committee note with satisfaction that at last the Department have started appreciating the need for quick decision making in matters pertaining to a premier research institution like C-DAC. It is inexplicable as to why the system of obtaining 'on file' decisions in matters of urgency was not being resorted to, hitherto, as this is one of the basic tenets of administration and decision making. The Committee hope that now when the system of 'on file' approval

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has been put in place, issues of pressing importance and urgent matters having a bearing on the functioning of C-DAC will be attended to by the Department without any time lag.

II.   Strengthening Corporate Office of C-DAC

Recommendation (Paragraph No. 4)

9. The Committee in their Forty-ninth Report while observing that C-DAC's proposal for augmentation of manpower in its Corporate Office submitted to the Coordination Committee on 23 June, 2005 was responded to nine months later with the comments that the matter required to be referred to the Ministry of Finance, had pointed out that nothing tangible had been done in the matter and recommended that the Department should take up the matter with the Ministry of Finance without any further delay. The Committee had also suggested that as an interim measure C-DAC should suitably redeploy its personnel so as to strengthen its Corporate Office.

10. The Department in their action taken note have stated that the matter was discussed in the 24th meeting of the Governing Council (GC) held in November, 2007 and the GC has recommended a sub-Committee to examine the matter. Further, as an interim measure, C-DAC has appointed a few members on contract basis for the Corporate Office.

11. In their earlier Report, the Committee had observed that C-DAC had submitted the proposal for augmentation of manpower in its Corporate Office way back in June, 2005. Nine months later it was told that the proposal required to be referred to the Ministry of Finance. Further action taken thereon was not reported to the Committee. The Department have now made an about turn two and half years later by stating that the matter was discussed in the GC and it has recommended that a sub-Committee may examine it. It has also been stated that C-DAC has appointed a few members on contract basis for its Corporate Office as an interim measure. Thus, nothing concrete has been done during the last three years or so to judiciously attend to the manpower shortage being faced by C-DAC in its Corporate Office. The Committee are unhappy to note the dilly-dallying by DIT on such an important issue. The Committee disapprove of this state of affairs and desire that conclusive action be taken in the matter within a period of six months so that a premier institution engaged in research and development in information technology does not suffer due to administrative inaction.

III.   Funding of C-DAC

Recommendation (Paragraph Nos. 5 & 14)

12. Having noted that the grossly reduced allocations to C-DAC against funds sought over the years had resulted in slow down of progress/ achievements in several core Research and Development programmes, the Committee, in their Forty-ninth Report, had while expressing their concern over this trend asked the Department of Information Technology to consider the pending and future proposals of C-DAC for release of funds with due promptitude and diligence.

13. The Committee having further noted the severe shortage of supercomputing resources in the country due to shortage of funds, infrastructure and manpower, had recommended that the Department should provide C-DAC with adequate funds and infrastructural facilities for the purpose of development of requisite supercomputing resources.

14. The Department in their action taken note have stated that the allocations for C-DAC for the Financial Year 2008-09 have been increased. In addition to core grants, C-DAC has also been provided with additional funds *via* sponsored research projects.

15. It has been further stated that C-DAC is being provided with adequate financial support for building the High Power Computing Systems. The Government have also approved the fund requirements for creating the Research and Development infrastructure for C-DAC at five locations. The fund allocations for the financial year 2008-09 have also been increased. In addition to core grants, C-DAC has been provided with additional funds.

16. Having examined in detail the Demands for Grants of the Department for 2008-09 in their Fifty-eighth Report, the Committee are not inclined to agree fully with the reply of the Department. C-DAC has been allocated Rs. 94.00 crore against a sum of Rs. 249.00 crore sought by it for the year 2008-09. This is in no way any major improvement over the allocations made vis-a-vis allocations sought in the previous years for an organization. Undoubtedly, paucity of funds can prove detrimental in cutting edge technology and high obsolescence areas where timely and critical quantum of investment is of the essence. Also, the country is reportedly faced with a severe shortage of supercomputing resources. The Committee, therefore, desire that the Department should spare no effort to get adequate funds for the C-DAC so that lack of resources does not hamper its work in the remaining years of the Eleventh Plan. On its part, C-DAC should strive

for newer and varied means of internal resource generation through stepped up Research and Development efforts.

IV.   **Manpower Attrition**

Recommendation (Paragraph Nos. 6 & 7)

17. In their Forty-ninth Report while voicing their concern over the alarmingly high rate of attrition in scientific and technical categories of employees of C-DAC, the Committee had in the interest of functioning of C-DAC and with a view to retaining the best scientific talent asked the Department to take up the matter with the Ministry of Finance for special salary compensation/allowance, scheme/package for personnel deployed in such high end technology areas.

18.   In their action taken note the Department have stated that the proposal of setting up of adjunct entity has been approved in principle by the Governing Council (GC) in its 24th meeting held in November, 2007. It also contains components of incentivization to manpower of C-DAC, based on the turn-over/profits of the adjunct entity.

19. It has been further stated that some items pertaining to staff benefits are receiving attention and were tabled in the 24th GC meeting for approval. The GC suggested further examination of the staff benefits.

20. The Committee note that some items pertaining to the staff benefits had been placed before the Governing Council for approval which, however, has suggested further examination of these benefits. The Committee feel that somehow the serious problem of attrition of skilled manpower from C-DAC is not being correctly appreciated by the Department and its attitude towards resolving this problem is somewhat casual. The Committee feel that it is high time the Department attended to the problem of high attrition rate in the C-DAC with the sincerity and earnestness it deserves and come up with cogent solutions without wasting any further time.

V.   **Setting Up of Commercial Arm of C-DAC**

Recommendation (Paragraph No. 8)

21. Having been informed that C-DAC was working on a proposal for setting up of a commercial arm for quite some time as it would be helpful in achieving an effective tie-up between Research and Development and commercialization and enhanced lab to market efforts, the Committee in their previous Report had exhorted DIT to take a decision on the proposal of C-DAC without any further delay.

22. In response, the Department in their action taken note have informed that preparatory work relating to setting up of Adjunct Corpus Entity for marketing and commercialization was completed. The proposal was presented to DIT and the Governing Council (GC). The GC in its 24th meeting accorded in principle approval to bring-in place the Corporate Entity as proposed.

23. The Committee note that in pursuance of their recommendation, a beginning has been made in the direction of fructifying the commercial arm of C-DAC. In view of the immense benefits that will be accruing to C-DAC with its own commercial arm being functional, the Committee desire that DIT should go all out in making this entity a reality at the earliest.

VI. High Performance Computing

Recommendation (Paragraph Nos. 10 & 11)

24. Observing that there was a crucial delay in commissioning of 5 Teraflops (TFs) systems which were subsequently upgraded to 10 Teraflops (TFs), the Committee in their Forty-ninth Report had emphasised that C-DAC should attach highest priority to such projects and complete them on time and wanted the DIT to be supportive of all such endeavours of the C-DAC.

25. The Department in their action taken note have stated that C-DAC is working with renewed energy and vigour for commissioning of the next generation High Power Computing (HPC) System of PARAM. Towards this, component procurement process has been initiated, site preparation is in progress, in house designing and building of a sub-system has been completed.

26. From the reply of the Department it is apparent that the next generation HPC system of PARAM is yet to see the light of the day. During the examination of the Demands for Grants 2008-09 of the Department, it was observed from the Outcome Budget of the Department that November, 2008 is the timeline for installation, commissioning and testing of 10-20 Teraflop Systems. The Committee cannot but once again highlight the importance of the Project and trust that C-DAC and DIT would take all necessary measures and complete the next generation HPC System of PARAM within the stipulated time.

Recommendation (Paragraph No. 12)

27. In their previous Report, the Committee, having noted that delay in supply of critical components by the vendors of C-DAC alongwith

financial constraints, led to crucial delay in commissioning of 5 Teraflops (TFs) System (subsequently upgraded to 10 Teraflops System) had desired that DIT/C-DAC should take suitable action against such defaulting vendors.

28. The Department in their action taken note have stated that C-DAC has held meeting with vendors regarding availability of processors at very senior levels to share its concerns and appraise itself on roll out plans.

29. The Committee note that C-DAC has held meeting with the vendors to address the problem of delay in availability vis-a-vis announcements of processors at times by vendors. However, the Committee are not satisfied with the efforts being made by C-DAC, in view of the crucial importance of the Project. Defaults of such serious nature merit more concrete action than merely meeting with the vendors at senior levels to share C-DAC's concerns. The Committee, therefore, once again stress upon the C-DAC to take adequate and effective measures to assure timely supply of critical components for the next generation HPC System of PARAM series.

VII. Grid Computing

Recommendation (Paragraph No.15)

30. Having observed that C-DAC's national grid 'GARUDA' initiative had got delayed due to various reasons, chief amongst them being delay in building a culture of grid computing and stabilization of grid, the Committee in their previous Report had impressed upon C-DAC that it should take all possible care and measures to avoid any further delay in the project and in future adopt a proactive approach towards such projects of great national importance.

31. The Department in their action taken note have stated that the Proof-of-Concept (PoC) GARUDA initiative has achieved its objectives without further delay, and is now being used for Grid enablement of applications, tools and utilities.

32. It has been further stated that C-DAC has recently hosted the 3rd IEEE International e-Science and Grid Computing Conference during December 10-13 at Bengaluru. This has provided valuable inputs and has reinforced enthusiasm amongst researchers in India.

33. The proposal for the main phase of Garuda initiative is being finalized in consultation with the Experts. The lessons from the PoC phase are being incorporated into this proposal.

34. The Committee note with satisfaction that the Proof of Concept (PoC) GARUDA project has been completed without any further delay and is now being used for Grid enablement of applications, tools and utilities. Furthermore, the proposal for the main phase of GARUDA initiative is being finalized in consultation with the Experts and the lessons from the PoC Phase are being incorporated into it. The Committee feel that though a beginning has now been made in the right direction, a lot still needs to be done to make the GARUDA initiative a practical success. The Committee desire that C-DAC should, in view of the lessons gained from the past experience, work in right earnest to implement GARUDA without any time and cost overruns.

VIII. Health Informatics

Recommendation (Paragraph No. 23)

35. In their previous Report, the Committee having noted the efforts of C-DAC in the direction of evolving a Rural Health Management Information System for Primary Health Care, had opined that a Rural Health Management Information System would go a long way in improving the reach, spread and efficacy of the primary health care. The Committee had, therefore, desired top priority to this venture by C-DAC/ DIT and had also desired to be apprised of the road map charted out for the expeditious fructification of the system at the earliest.

36. The action taken notes submitted by the Department are silent in relation to the Rural Health Management Information System for Primary Health Care and its present status.

37. The Committee take exception to the Department not furnishing a specific reply to the aforesaid recommendation. The Rural Health Management Information System has all the potential of changing the face of the Primary Health Care in the rural areas. They, therefore, desire that they should be apprised of the action taken in pursuance of their recommendation at the earliest.

CHAPTER II

RECOMMENDATIONS/OBSERVATIONS WHICH HAVE BEEN ACCEPTED BY THE GOVERNMENT

Recommendation (Paragraph Nos. 1 & 2)

The Centre for Development of Advanced Computing (C-DAC) is an autonomous body of the Department of Information Technology (DIT) registered under Societies Registration Act, 1860. C-DAC has been carrying out research and development in Information Technology, electronics and associated areas for more than one and a half decade. The Committee find that the endeavours of C-DAC can be broadly classified into high performance computing, grid computing, multi-lingual computing, software technologies and professional electronics, cyber security and cyber forensics, health informatics and education and training. The Institution is today operating from 11 centres and laboratories across the country with an organizational strength of about 2200 personnel. The Committee's observations arising out of examination of C-DAC are dealt with in the succeeding paragraphs.

The Committee are happy to note that starting from its initial mission of building indigenous supercomputers, this premier national institution has progressively grown to build an ecosystem and institutional framework for innovation, technology development skills, delivery plans, collaboration, partnership and market orientation in a number of niche areas of national importance and market relevance in Information & Communication Technologies and Electronics. That C-DAC has produced several practical tools, technologies, products and services to meet the needs of small and medium enterprises and other industrial players in the country and end users in science and technology, manufacturing and service sectors, Government, health, development and strategic sectors etc. is indeed satisfying.

Action Taken by the Government

Department is grateful for kind observations. C-DAC shall continue its endeavors to meet its objectives and nation's expectations.

Recommendation (Paragraph No. 23)

The Committee note that the Governing Council (GC), the Technical Advisory Committee (TAC) and the Coordination Committee (CC) headed by the Minister of Communications and Information Technology, Director General, CSIR and Secretary DIT respectively, form the core of governing structure of C-DAC. The Governing Council is responsible for taking major decisions and overall supervision of C-DAC while Technical Advisory Committee provides technological directions and suggestions to them. The Coordination Committee deliberates on policy matters and operational and financial issues on behalf of the Governing Council and the Department of Information Technology. Undoubtedly, these bodies have a major role in guiding C-DAC. They are also the much needed interface between this autonomous society and various arms of Government and other bodies. Furthermore, they are also the bodies mandated with solving the problems faced by C-DAC and also facilitating their efforts in frontier sciences. The Committee, however, note that the Governing Council met only four times in the last five years while the Technical Advisory Committee and the Coordination Committee met two and six times respectively since their constitution in January, 2004. The Committee feel that this is more than casual approach of the Department towards this premier research and development institute of the country. They are unable to comprehend as to how C-DAC would be able to meet earmarked targets and achieve excellence in its mandated areas in absence of proper guidance, direction, supervision and facilitation. This laxity and lack of interest is all the more unacceptable since the endeavours of C-DAC are in frontier IT technologies where time is of utmost essence. The Committee, therefore, impress upon the Department that there should be frequent meetings of these bodies at regular intervals so as to ensure that decisions on major issues are not delayed and the problems/difficulties being faced by C-DAC are not allowed to linger on to the detriment of national interest.

Action Taken by the Government

The recommendations of the Committee have been noted by the Department for action.

In addition, C-DAC has been asked to submit urgent issues for decision on file, so that these may be expedited.

Comments of the Committee

(Please *see* Paragraph No. 8 of Chapter I)

Recommendation (Paragraph No. 8)

The Committee have been informed that C-DAC is working on a proposal for setting up of a commercial arm for quite some time now. According to C-DAC it will be helpful in effective tie up between R&D and commercialisation and enhance lab to market efforts. For this purpose, it hired the services of a reputed technology consultancy agency and subsequently presented the core concept and ideas of this proposal to DIT in April, 2007. Further, the Committee are informed that contours and shapes of the proposed commercial arm are still being worked out. The Committee exhort DIT to take a decision on the proposal Of C-DAC without an further delay. The Committee feel that in view of the desirability of this lab to market interface and as an interim measure C-DAC ought to utilize some Government organizations who are already rendering commendable services in marketing research outputs.

Action Taken by the Government

Preparatory work relating to setting up of Adjunct Corporate Entity for marketing and commercialization was completed. The proposal was presented to DIT and Governing Council (GC). The GC in its 24th meeting accorded in principle approval to bring in place the corporate entity as proposed.

Comments of the Committee

(Please *see* Paragraph No. 23 of Chapter I)

Recommendation (Paragraph No. 13)

The Committee further note with serious concern that the 10 Gbps interconnect project could not be completed by C-DAC as per stipulated deadline *i.e.* December, 2006 and had to be staggered. This is not a healthy state of affairs, particularly when it concerns project of high value to the developmental efforts of the country. The Committee, therefore, desire that a time bound schedule be presented to them about the operationalisation of the 10 Gbps interconnect system.

Action Taken by the Government

HPC is one of the thrust areas of C-DAC, and has delivered PARAM series of High Performance Computers with the support of DIT.

C-DAC is working with renewed energy and vigour for commissioning the next generation HPC systems. Work on building next generation HPC system of PARAM series with architectures involving multi-core multi-threaded processors, inter-connects with lower latencies and standard interfaces, hybrid systems with accelerators, associated software stack, libraries, tools for programming and debugging, algorithms which exploit underlying architecture for specific applications, three tier storage architecture scalable to Petabytes of low latency, File Systems, etc. — is progressing. Towards this, component procurement process has been initiated; site preparation is in progress; in-house designing and building of sub-systems completed (such as PARAM Net III HPC interconnect, Reconfigurable Computing System accelerators, and overall design of the facility including mechanical, EMI, thermal aspects).

As regards delays in the availability *vis-a-vis* announcements of processors at times by vendors, C-DAC has held meetings with vendors at very senior levels to share its concerns and appraise itself on roll out plans.

C-DAC has completed the development of 10 GB/Sec interconnect system. It is targeting synchronized operationalization of the same with the commissioning of new HPC system.

Recommendation (Paragraph No. 15)

The Committee note that C-DAC have initiated the national grid GARUDA with noble objectives, notably sharing of high-end computational resources, addressing the requirements of emerging High Performance Computing applications and creating a collaborative framework for solving applications. The Project has, however, got delayed due to various reasons, chief amongst them being delay in building a culture of grid computing and stablisation of grid. C-DAC has submitted that these primary constraints are being resolved by arranging workshops and demonstrating advantages of Grid computing. The Committee feel that C-DAC should have adopted a more proactive approach and planned workshop, courses and grid partners meets before hand to avoid such a situation. Apparently, C-DAC has failed to visualise these eventualities, which is unfortunate. Timely steps in this regard would have created adequate environment and generated enthusiasm in grid partners. Therefore, the Committee would like to impress upon C-DAC that it should take all possible care and measures to avoid any further delay in the project and in future adopt a proactive approach towards such projects of great national importance.

Action Taken by the Government

The Proof-of-Concept (PoC) Garuda project has achieved its objectives without further delay, and is now being used for Grid enablement of applications, tools and utilities.

C-DAC has recently hosted the 3rd IEEE International e-Science and Grid Computing Conference during December 10-13 at Bangalore. This has provided valuable inputs and has reinforced enthusiasm amongst researchers in India.

The proposal for the main phase of Garuda initiative is being finalized in consultation with the Experts. The lessons from the PoC phase are being incorporated into this proposal.

Comments of the Committee

(Please *see* Paragraph No. 34 of Chapter I)

Recommendation (Paragraph No. 16)

C-DAC with wide experience in R&D in Communications & Information Technology and electronics is delivering multi-level/ multi-layered cyber security solutions. In furtherance of its objectives in the field of cyber security it has also developed and released some products and tools. However, the Committee have been informed that C-DAC tools are more useful for offline detection and still lack capability to tackle cyber crimes online. Beside, C-DAC admitted during the evidence before the Committee that these tools/technologies still lack international standards. This is not a happy situation at all. More so, when India is faced with serious and continuous threats of cyber crimes against her and various law enforcement & forensic agencies of the country are increasingly looking to C-DAC for solutions. Therefore, it becomes all the more pertinent for C-DAC to timely develop multiple application cyber security technologies and tool of international standards. The Committee would impress upon C-DAC to priortise 'cyber security' area and develop robust technologies to safeguard Indian cyber installations against cyber crimes of all kinds.

Action Taken by the Government

C-DAC is focused on developing tools and technologies for network infrastructure protection, cyber forensics and authentication & identification systems to prevent cyber crimes and facilitate effective investigation of cyber crimes.

To help cyber users including critical information infrastructure to mitigate incidents relating to cyber security, DIT has set up Indian Computer Emergency Response Team (CERT-ln). It issues appropriate advisories from time to time and helps in designing secure networks and systems with appropriate technologies and tools.

Recommendation (Paragraph No. 17)

It is heartening to note that in pursuance of their objective of making technology available to public at large in their own native language C-DAC is actively working towards design, development and deployment of technologies/solutions in the field of multilingual computing. An estimated 15-20 million users are benefiting from C-DAC's GIST-Graphics and Intelligence based Script Technology for last over one and a half decade. The Committee, however, note that the multilingual products of C-DAC are yet to find favour with most of the State Governments. C-DAC is facing some difficulties in this regard, these *inter-alia* include lack of standardisation & lexical resources. As for the reasons, firstly only a few states have standardised on some of the C-DAC's multilingual products because their requirement is a mix of products and tools and secondly, the states have alternative option to use products from MNCs. To overcome these constraints C-DAC plans standardisation meetings and establishing linguistic resource development centres. The Committee are of the view that besides standardisation meetings, these matters should be actively taken up with the respective state governments to enlist their support not only in evolving common standards but also establishing linguistic resources in respect of all scheduled languages. Further, if necessary these matters may be raised in inter-state fora like National Development Council, Ministers' level meetings, Conference of Secretaries, etc. C-DAC, on its part ought to also customise its products to the requirements of respective states.

Action Taken by the Government

Standardization in respect of Input, Storage and Display is of vital importance for wider proliferation of language technology products and solutions in India, especially in the context of National E-Governance Plan (NeGP). The standardization activity of language technology products and solutions are being conducted at apex level by Department of Information Technology (DIT) and C-DAC is closely associated with this activity by providing inputs and suggestions to various Standardization Committees. Through DIT's initiative a national level committee under Bureau of Indian Standard (BIS)

named 'Indian Language Technologies and Products Sectional Committee (LITD-20) has been formed in which C-DAC is one of the members.

C-DAC is also closely collaborating in association with DIT on various other international standards bodies such as UNICODE, W3C, IDN, and ICANN. This will ensure Indian language representation in evolving international web technology and information exchange standards.

Recommendation (Paragraph No. 18)

The Committee also feel that C-DAC should take further initiatives in extending the benefits of multilingual computing to common man. They would like C-DAC to accord due priority to Speech Recognition and Text to Speech projects as in the present scenario they can be of immense utility to the people at large. The Committee would also like the Department to not only monitor these projects continuously but also ensure that they suffer in no way due to paucity of funds or other impediments.

Action Taken by the Government

This is a major thrust area of CDAC.

Speech to text and text to speech initiatives in respect of Indian Languages represent the next generation research frontier of Indian Language Computing.

Recognizing that the area is of great importance, DIT has been funding projects on building resources like speech corpora for various Indian languages. Many Centres of C-DAC are involved in this. Accelerated efforts are planned during the 11th Plan.

Recommendation (Paragraph No. 19)

The Committee have been informed that working in language technology area requires computational as well as linguistic skills and it is difficult to get relevant manpower. The general trend being that freshers are not keen in working in domain specific language technology. C-DAC has submitted that these constraints may be overcome by starting computational linguistics programme in Universities & C-DAC centers, etc.. The Committee are of the opinion that C-DAC should tie-up with Universities for respective languages and provide necessary support in

starting computational linguistics programmes on a priority basis. Additionally, with support from the Department, C-DAC may establish development labs/centres at the campus of Universities for training and recruiting the requisite manpower beside development of linguistic tools/technologies so that this critical resource for multilingual computing is available in abundance.

Action Taken by the Government

DIT through its 'Specialized Manpower Development in Language Technology' programme has introduced Masters Programme in Computational Linguistics /Knowledge Engineering and PG Diploma programme in Language Technology at 8 institutions across the country. C-DAC under this project has already initiated PG Diploma in Language Technology.

Recommendation (Paragraph No. 20)

The Committee have taken note of some reports projecting an estimated demand for 8,50,000 IT professionals and 1.4 million ITES-BPO professionals by 2010. However, in the current scenario due to various reasons, many graduates coming out of academic institutions are unable to meet the IT industry's requirements. The Committee have been informed that C-DAC with the help of about 50 training centres is offering various education and training programmes to build and enhance skills in critical areas of Information Technology, therefore, playing an important role in making available skilled workforce. Further, C-DAC is conducting various industry oriented education programmes and looking at the growing demand from industry, they are open to expand their training network to make available greater number of skilled manpower to the IT industry. However, large scale increase in its activities may not be viable with existing infrastructure. C-DAC is, therefore, looking into the mode of e-learning solutions in this area. The Committee appreciate the coordinated efforts of C-DAC and the vital role being played by C-DAC in creating high quality manpower for ICT industry. They would, however, simultaneously like to impress upon C-DAC to further expand its network of training centres by expeditiously including more and more authorised training centres in it. Further, in view of the huge estimated demand of the industry, C-DAC should start e-learning courses without any further delay. The Department, on their part, should make available adequate funds to C-DAC for this purpose so that the valuable initiatives of C-DAC in this direction bear fruits forthwith. The Committee would like to be kept informed about steps taken in this direction.

Action Taken by the Government

C-DAC expands its Authorised Training Centre (ATC) network by inviting applications for setting up ATCs through advertisement on its Web-site. A transparent selection process is in place. The quality of education / training through ATCs is ensured . Five new ATCs have been added recently.

The C-DAC courses emphasize on training as well as hands on experience. As regards e-Learning courses, Pune had earlier offered e-Vidyapeeth with moderate success. C-DAC Hyderabad has been offering pilot-level courses on Core Competency in Software Process Management (CCSPM) and Certificate Course on Cyber Security (CCCS) in e-Learning mode.

The Department, under its new Scheme of Manpower Development for Software Export Industry, has supported CDAC to (i) expand the state-of-art facility for advanced IT training programmes (CDAC, DVLSI, WiMC, DESD), (ii) create a National On-Line System for Bench-Marking of Graduate Engineers in Information Technology for self assessment, supervised learning and placement in the Industry, and (iii) impart Advanced Training for engineering faculties in the areas of Information Technology.

Recommendation (Paragraph Nos. 21 & 22)

The Committee note with appreciation the laudable contributions of C-DAC in the field of health informatics and related fields. A small but significant beginning has been made in developing remote software diagnostic assistance for cancer patients in rural areas of Kerala through Regional Cancer Center, Thiruvananthpuram. The Committee are sure that C-DAC will ensure a quick dissemination of this Scheme to other parts of rural India.

The development of Ayusoft Solutions is another feather in the cap of C-DAC. The Committee are sure that C-DAC will take this project to its logical conclusion by spreading knowledge of the ancient system of Ayurved to every corner of the globe so that the mankind benefits therefrom.

Action Taken by the Government

C-DAC is implementing another project in Tamil Nadu for providing telemedicine services to cancer patients. The referral Cancer Institute,

Adyar, Chennai is being connected through the telemedicine network with seven peripheral centers to provide cancer detection and patient follow-up services. Encouraged by success of Onconet pilot project by C-DAC in Kerala, a roll-out project for establishing a telemedicine network connecting 100 peripheral centers with 25 Regional Cancer Centres in the country has been approved by the Ministry of Health & Family Welfare.

Besides India, AyuSoft is being deployed in other countries such as Norway, Brazil and UK. Moreover, "Global Information Hub on Integrative Medicine", an initiative of 54 Commonwealth countries is planning to host AyuSoft on their web-site at Malaysia for access by international community.

CHAPTER III

RECOMMENDATIONS/OBSERVATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN VIEW OF THE REPLY OF THE GOVERNMENT

Recommendation (Paragraph No. 9)

One such organization that comes into the mind of the Committee in this context is the National Research Development Corporation (NRDC), an organization under the Department of Scientific & Industrial Research, Ministry of Science and Technology. NRDC is stated to be wholly dedicated to transfer of technologies from R&D laboratories to industry covering the entire spectrum of industrial technologies. NRDC is also stated to be engaged in the development, promotion and commercialization of the R&D results/ technologies emanating from Research Institutes/ Universities/ Industries, etc. Similarly, the Antrix Corporation Limited, the commercial arm of Department of Space is also stated to be working successfully for the promotion and commercial exploration of products and services from Indian Space Programme since 1992. The Committee are of the opinion that, pending the formation of its own commercial arm, C-DAC should explore tying-up with such/similar organisations for commercialisation of their technologies.

Action Taken by the Government

Preparatory work relating to setting up of Adjunct Corporate Entity for marketing and commercialization was completed. The proposal was presented to DIT and Governing Council (GC). The GC in its 24th meeting accorded in principle approval to bring in place the corporate entity as proposed.

CHAPTER IV

RECOMMENDATIONS/OBSERVATIONS INRESPECT OF WHICH REPLIES OF THE GOVERNMENT HAVE NOT BEEN ACCEPTED BY THE COMMITTEE AND WHICH REQUIRE REITERATION

Recommendation (Paragraph No. 4)

During the examination of the subject, C-DAC pleaded before the Committee that its headquarters (Corporate Office) need to be strengthened with suitable staffing at various levels. According to C-DAC, this will help the body to effectively undertake mission mode programmes leveraging the resources of groups/Centres across the country. The Committee find force in the demand raised by the Organisation. The Committee find it relevant to point out here that after the merger of three organisations, *viz.*, Electronics Research & Development Centre of India (ER&DCI), National Centre for Software Technologies (NCST) and Mohali Centre of the Centre for Electronics Design & Technology of India (CEDTI), C-DAC is undergoing a consolidation phase, as the merger has increased the number of units under C-DAC and their presence across country. These factors also necessitate a strong Corporate Office for effective supervision of the units as well as co-ordination among them. The Committee have been informed that C-DAC has submitted a proposal for manpower requirement for the Corporate Office to the Coordination Committee, which is headed by the Secretary, DIT, way back on 23 June, 2005. After about nine months, C-DAC have been informed that the matter required to be referred to the Ministry of Finance. Since no further inputs in the matter have been provided by the Department in the written information submitted to the Committee or during their oral evidence, it can very well be assumed by the Committee that nothing tangible has been done in this regard during the last 16 months. The Committee are constrained to point out that a premier scientific body like C-DAC certainly deserved a better handling. The Committee, therefore, recommend that the Department should now atleast take up the matter with the Ministry of Finance without any further delay. Meanwhile C-DAC should also take interim measures to strengthen its Corporate Office by way of suitable redeployment so that effective functioning of the Organisation is not hampered. The Committee would like to be informed about the progress made in this matter.

Action Taken by the Government

The matter was discussed in the 24th meeting of Governing Council (GC) held in November 2007. The GC has recommended a sub-committee to examine the matter.

As an interim measure, C-DAC has appointed a few members on contract basis for the corporate office.

Comments of the Committee

(Please *see* Paragraph No. 11 of Chapter I)

Recommendation (Paragraph No. 5)

The Committee note with concern that the Government have not been considering the financial requirements of C-DAC with due seriousness. Against sums of Rs. 46 crore, Rs. 87 crore, Rs. 90 crore and Rs. 127 crore sought by C-DAC during the years 2004-05 to 2007-08 respectively, only Rs. 43 crore, Rs. 60 crore, Rs. 67.5 crore and Rs. 78 crore respectively have been allocated to them. C-DAC has submitted that reduced allocation of funds *vis-a-vis* projections have resulted in slow down of progress/achievements in some areas like Grid Computing, shared e-science resources/facilities and pace of other core R&D programmes. Further, it has been stated that in many high technology and high obsolescence areas, timely and critical quantum of investments is necessary. The Committee are full in agreement with C-DAC and express their unhappiness over the way DIT has been deciding upon the funds requirements of C-DAC. The Committee would like to make it clear to the Department that in frontier areas of supercomputing and related matters the R&D scenarios are changing rapidly. Hence, delay in provision of funds and infrastructure have the portents of causing irreparable losses. The Committee, therefore, expect that DIT will consider the pending and future proposals of C-DAC for release of funds with due promptitude and diligence.

Action Taken by the Government

The allocations for CDAC for the FY 2008-09 have been increased.

In addition to core grants, C-DAC has also been provided with additional funds *via* sponsored R&D projects.

Comments of the Committee

(Please *see* Paragraph No. 16 of Chapter I)

Recommendation (Paragraph No. 6 & 7)

During the course of the examination of C-DAC the Committee also found that one of the major reasons behind the slippages in the performance is the inability of C-DAC to attract and retain talent in current market conditions. During the years 2004-06, the attrition rates varied between 5 to 38% at various centres of C-DAC. The attrition rates in scientific and technical categories of employees was stated to be very high. The differential salary compensation between C-DAC and the Industry is the main factor behind this problem. A proposal from C-DAC regarding performance linked incentive and rewards did not find favour with DIT in view of the Ministry of Finance guidelines. The Committee cannot but express their grave concern over this issue.

From the materials submitted by the Department the Committee have observed several instances where projects and research activities of C-DAC suffered due to the large scale attrition of skilled manpower from its various centres/laboratories. The rapid growth per-se in the IT Sector and the resultant demand of skilled manpower which has created a situation of huge shortage of manpower in IT sector has further aggravated the situation. Therefore, in such a background, there is an inherent need to somehow incentivise employees to avoid attrition and resultant work delays. The Committee are of the opinion that once the commercial arm of C-DAC is in place, C-DAC with approval of concerned authorities may consider sharing certain percentage of revenue generated by the commercial arm as incentive among its technical staff. In the interest of functioning of C-DAC and with a view to retaining the best scientific talent, the Department should also take up the matter with Ministry of Finance for special salary compensation/allowance, scheme/package for personnel deployed in such high end technology areas. At the same time C-DAC should also take steps like creating a conducive and strongly motivational work environment , providing challenging assignments, providing some kind of patent sharing arrangement with adequate bonds/ conditions and restructuring of their human resource policy to attract and retain talent. The Committee would like to be informed about the decisions taken in this regard at the earliest.

Action Taken by the Government

Proposal of setting up of adjunct entity has been approved in principle by the Governing Council (GC) in its 24th meeting held in November 2007. It also contains components of incentivization to

manpower of C-DAC, based on the turn-over/profits of the adjunct entity.

Some items pertaining to staff benefits are receiving attention and were tabled in the 24th GC meeting for approval. GC suggested further examination of the staff benefits.

Comments of the Committee

(Please *see* Paragraph No. 20 of Chapter I)

Recommendation (Paragraph No. 12)

The Committee also desire that DIT/C-DAC should take suitable action against such defaulting vendors. They would like to be informed of the precise action taken in the matter.

Action Taken by the Government

HPC is one of the thrust areas of C-DAC, and has delivered PARAM series of High Performance Computers with the support of DIT.

C-DAC is working with renewed energy and vigour for commissioning the next generation HPC systems. Work on building next generation HPC system of PARAM series with architectures involving multi-core multi-threaded processors, inter-connects with lower latencies and standard interfaces, hybrid systems with accelerators, associated software stack, libraries, tools for programming and debugging, algorithms which exploit underlying architecture for specific applications, three tier storage architecture scalable to Petabytes of low latency, File Systems, etc. — is progressing. Towards this, component procurement process has been initiated; site preparation is in progress; in-house designing and building of sub-systems completed (such as PARAM Net III HPC interconnect, Reconfigurable Computing System accelerators, and overall design of the facility including mechanical, EMI, thermal aspects).

As regards delays in the availability *vis-a-vis* announcements of processors at times by vendors, C-DAC has held meetings with vendors at very senior levels to share its concerns and appraise itself on roll out plans.

C-DAC has completed the development of 10 GB/Sec interconnect system. It is targeting synchronized operationalization of the same with the commissioning of new HPC system.

Comments of the Committee

(Please *see* Paragraph No. 29 of Chapter I)

Recommendation (Paragraph No. 14)

The Committee note that there is a serious short supply of supercomputing resources in the country. The Committee have been informed that various steps proposed to be taken takes to meet the supercomputing resources requirement like building large supercomputing facilities, Grid enabling HPC infrastructure, etc.. However, C-DAC submitted that it is facing some constraints like non-availability of necessary infrastructure, funds and skilled professionals in this regard and have taken up the matter with DIT. Further, the Committee have been informed that utilization of PARAM Padma is approximately 70%. The Committee are of the opinion that since India is a leading light in IT revolution, more and more multi national corporations (MNCs) involved in high end research are making it as their R&D base. To further boost R&D activities by Government and private sector, varied infrastructural support is needed and supercomputing facilities are one among them. However, the Committee note with concern that the country is facing severe shortage of supercomputing resources. To aggravate the situation further, C-DAC are facing shortage of funds, infrastructure and skilled manpower and therefore are seriously constrained in meeting the requirements of supercomputing resources. In the opinion of the Committee this situation deserves to be remedied forthwith. The Committee, therefore, recommend, even at the cost of repetition that the Department should provide C-DAC with adequate funds and infrastructural facilities for the purpose of development of requisite supercomputing resources. Further C-DAC on its part should make efforts to attract talents in supercomputing field by tying-up with institutions of excellence and also take necessary steps for optimum utilization of Super Computing Resources presently available with it.

Action Taken by the Government

C-DAC is being provided with adequate financial support for building the HPC systems. Government has also approved the fund requirements for creating the R&D infrastructure for C-DAC at five locations. The fund allocations for the financial year 2008-09 have also been increased. In addition to core grants, C-DAC has been provided with additional funds *via* sponsored R&D projects.

C-DAC, through the Grid initiative project — Garuda, is partnering with the leading academic and research institutes that are working in HPC, Grid Computing, and related areas. This has sensitized the researchers in the participating institutions about the opportunities in this area and has also enabled C-DAC to attract a few professionals into its core team.

Towards optimum utilisation of HPC resources, CDAC, in addition to its own HPC resources, is making available the resources at Grid partner institutions to researchers.

Comments of the Committee

(Please *see* Paragraph No. 16 of Chapter I)

Recommendation (Paragraph No. 23)

Last but not the least, the Committee have noted the efforts of C-DAC in the direction of evolving a Rural Health Management Information System for Primary Health Care. Inspite of concerted attempts of Government the primary health care in rural areas is not only in crying need of better management but of complete overhaul. A Rural Health Management Information System will go a long way in improving the reach, spread and efficacy of the primary health care and in the process the lot of teeming millions in our rural areas. The Committee desire top priority to this venture by C-DAC and DIT. They would like to be apprised of the roadmap charted out for the expeditious fructification of the System at the earliest.

Action Taken by the Government

C-DAC is implementing another project in Tamil Nadu for providing telemedicine services to cancer patients. The referral Cancer Institute, Adyar, Chennai is being connected through the telemedicine network with seven peripheral centers to provide cancer detection and patient follow-up services. Encouraged by success of Onconet pilot project by C-DAC in Kerala, a roll-out project for establishing a telemedicine network connecting 100 peripheral centers with 25 Regional Cancer Centres in the country has been approved by the Ministry of Health & Family Welfare.

Besides India, AyuSoft is being deployed in other countries such as Norway, Brazil and UK. Moreover, "Global Information Hub on

Integrative Medicine", an initiative of 54 Commonwealth countries is planning to host AyuSoft on their web-site at Malaysia for access by international community.

Comments of the Committee

(Please *see* Paragraph No. 37 of Chapter I)

CHAPTER V

RECOMMENDATIONS/OBSERVATIONS IN RESPECT OF WHICH REPLIES ARE OF INTERIM NATURE

Recommendation (Paragraph No. 10 & 11)

The core competency of C-DAC is stated to have been developed in High Performance Computing (HPC) which is very much evident from the kind of progress/achievements shown by C-DAC in developing advanced computing infrastructure in the country over the years. The Committee observe that in pursuance of its objective of developing high end computing resources, C-DAC was assigned the project of commissioning 5 Teraflops (TFs) systems by December, 2005. However, this project was delayed and subsequently targets were revised for upgraded 10 Teraflops (TFs) systems. This crucial delay and non achievement of target was besides financial constraints, due to delay in supply of critical components by the vendors of C-DAC.

The Committee are disappointed to learn that C-DAC has missed the target of commissioning 5 Teraflops (TFs) systems. It is even more worrisome when technology is changing very fast and any delay can seriously jeopardise a project and subsequently result in not only cost overruns but also costly delays in nation building efforts which cannot be quantified. The country is already facing shortage of advanced computing infrastructure and in such a background any slippage in development of new infrastructure is disappointing. The Committee, therefore, emphasise that C-DAC should attach highest priority to such projects and complete them on time, if not before. The Committee also expect DIT to be fully supportive of all such endeavours of C-DAC so that there is no scope for any slippages.

Action Taken by the Government

HPC is one of the thrust areas of C-DAC, and has delivered PARAM series of High Performance Computers with the support of DIT.

C-DAC is working with renewed energy and vigour for commissioning the next generation HPC systems. Work on building next

generation HPC system of PARAM series with architectures involving multi-core multi-threaded processors, inter-connects with lower latencies and standard interfaces, hybrid systems with accelerators, associated software stack, libraries, tools for programming and debugging, algorithms which exploit underlying architecture for specific applications, three tier storage architecture scalable to Petabytes of low latency, File Systems, etc. — is progressing. Towards this, component procurement process has been initiated; site preparation is in progress; in-house designing and building of sub-systems completed (such as PARAM Net III HPC interconnect, Reconfigurable Computing System accelerators, and overall design of the facility including mechanical, EMI, thermal aspects).

As regards delays in the availability *vis-a-vis* announcements of processors at times by vendors, C-DAC has held meetings with vendors at very senior levels to share its concerns and appraise itself on roll out plans.

CDAC has completed the development of 10 GB/Sec interconnect system. It is targeting synchronized operationalization of the same with the commissioning of new HPC system.

Comments of the Committee

(Please *see* Paragraph No. 26 of Chapter I)

New Delhi;
16 *July,* 2008
25 *Ashadha,* 1930 *(Saka)*

NIKHIL KUMAR,
Chairman,
Standing Committee on
Information Technology.

APPENDIX

STANDING COMMITTEE ON INFORMATION TECHNOLOGY
(2007-2008)

MINUTES OF THE TWENTY-SIXTH SITTING
OF THE COMMITTEE

The Committee sat on Wednesday, the 16th July, 2008 from 1500 hrs to 1720 hrs in Room No. G-074, Parliament Library Building, New Delhi.

PRESENT

Shri Nikhil Kumar — *Chairman*

MEMBERS

Lok Sabha

2. Shri Abdullakutty

3. Shri Nikhil Kumar Choudhary

4. Shri Sanjay Shamrao Dhotre

5. Shri Narahari Mahato

6. Shri G. Nizamuddin

7. Shri Sohan Potai

8. Shri Badiga Ramakrishna

9. Shri Tufani Saroj

10. Shri K.V. Thangka Balu

11. Shri P.C. Thomas

Rajya Sabha

12. Shri Praveen Rashtrapal

13. Shri Dara Singh

14. Shri A. Vijayaraghvan

15. Dr. C.P. Thakur

16. Shri Gireesh Kumar Sanghi

<div align="center">SECRETARIAT</div>

1. Shri P. Sreedharan   —   *Joint Secretary*

2. Smt. Sudesh Luthra   —   *Director*

3. Shri P.C. Koul   —   *Deputy Secretary*

4. Shri D.R. Mohanty   —   *Under Secretary*

<div align="center">WITNESSES</div>

MINISTRY OF INFORMATION AND BROADCASTING

Sl.No.	Name	Desingation
1.	***	***
2.	***	***
3.	***	***
4.	***	***
5.	***	***
6.	***	***
7.	***	***
8.	***	***

2. At the outset, the Chairman welcomed the members of the Committee and the representatives of the Ministry of Information & Broadcasting to the sitting of the Committee.

3. ***   ***   ***   ***

4. The Chairman, then, thanked the witnesses for appearing before the Committee as well as for furnishing valuable information desired by the Committee.

A verbatim record of the proceedings has been kept.

The witnesses, then, withdrew.

5. The Committee, then took up the following Draft Reports for consideration and adopted the same:—

(i)   ***   ***   ***   ***

(ii) Draft Report on Action Taken by the Government on Recommendations/Observations of the Committee contained in their Forty-ninth Report on 'Functioning of Centre for Development of Advanced Computing (C-DAC)'.

6. The Committee then decided to present the above Reports to the Hon'ble Speaker under Direction 71 (A) of the Directions by the Speaker, Lok Sabha. The Committee, also, authorised the Chairman to finalise the above Draft Reports and present the same to the Speaker on a date convenient to him.

The Committee, then, adjourned.

*** Matter not related to this report

ANALYSIS OF ACTION TAKEN BY GOVERNMENT ON THE
FORTY-NINTH REPORT (FOURTEENTH LOK SABHA)

[*Vide* Paragraph No. 5 of Introduction]

(i)   Recommendations/Observations which have
        been accepted by the Government:

        Paragraph Nos. : l, 2, 3, 8, 13, 15, 16, 17, 18,
        19, 20, 21 & 22

                                        Total : 13
                            Percentage : 56.5

(ii)   Recommendation/Observation which the
        Committee do not desire to pursue in view of
        the Replies of the Government:

        Paragraph No. : 9

                                        Total : 01
                            Percentage : 4.5

(iii)   Recommendations/Observations in respect of
        which replies of the Government have not been
        accepted by the Committee and which require
        reiteration:

        Paragraph Nos. : 4, 5, 6, 7, 12, 14 & 23

                                        Total : 07
                            Percentage : 30.4

(iv)   Recommendations/Observations in respect of
        which replies are of interim nature:

        Paragraph Nos. : 10 & 11

                                        Total : 02
                            Percentage : 8.6