Proposal for Implementation of e-Governance at Wildlife Institute of India

Introduction

Established in 1982, the mission of the Wildlife Institute of India is for: nurture the development of wildlife science and promote its application for the cause of conservation.

The Institute has an elaborate field based wildlife research programmes addressing biological, management and human dimension aspects, conforming to national conservation priorities. Networking, publishing and sharing information of value between all land-users and stakeholders so they have a place in conservation planning.

The Institute conducts rigorous postgraduate course and in-service, long (Forest Officers) and short (Forest Officers, Custom Officers, University teachers, Army Officers) term courses aimed at developing a cadre of wildlife professionals.

Objective for e-Governance at WII

1. To provide reliable and updated information on wildlife resources in the country with special reference to species of conservation importance.

2. To provide comprehensive information on Protected Area Network in the country.

3. To enhance technical skills and capabilities of the network of stakeholders in the field of wildlife informatics.

4. To electronically publish ENVIS bulletins, Newsletters, Annual reports, Technical and Scientific reports for wider dissemination.

5. To automate academic, administrative and financial services of the Institute.

6. To disseminate information on Internet and Intranet for stakeholders and general public.

Information Technology Infrastructure at WII

Information Technology, Remote Sensing and Geographic Information System facility is hallmark of WII for providing technology relevant for wildlife research, education and training. The facility is available for 24 hours to the faculty members, trainees/researchers/students and collaborators working with the Institute. Large number of Desktop Computer configured with updated Operating Systems and specialized analytical software for data processing and research purposes are made available in the dedicated lab. The computer facility is provided by wide array of hardware setup connected to Local Area Network (LAN). There are Intel Pentium Xeon

servers for Internet, Intranet, database management and library automation services; workstations; Storage Area Network (SAN) and more than 300 nodes. Wi-Fi connectivity is provided in Hostels, Guest House, Classrooms, Auditorium, Board Room and Porta Cabin. The Institute has 15 Mbps (1:1) internet leased line connectivity. All the computers of the Institute are provided with internet and mailing services.

The Geo-informatics Laboratory i.e. Geographic Information System, Remote Sensing and Global Positioning System (GPS) technology at WII caters to research and training program of the Institute, and also the demand from field managers. The laboratory is equipped with software such as ArcGIS, ERDAS Imagine, Idrisi, GRASS and several open source software for landscape level analysis. A dedicated team is available for providing support and training in IT and Geo-informatics. Module on Remote Sensing and GIS is conducted for M.Sc, PG Diploma and Certificate Courses at WII, and hands-on training are also provided to other graduate, post-graduate students and interns.

The Institute has established two units of Video Conferencing (VC) Systems. The VC facility comprises of Polycom HDX 8000 VC systems with high definition cameras and 42" LED displays. These are based on IP and connected to the Institute's internet leased line. These systems are been regularly used for conducting lectures, meetings, classes, interviews and presentations within the country and abroad. The VC systems is helpful in exposing WII students and faculty for wider knowledge acquisition and also reduce the cost of conducting courses and workshops.

Present Status of Computerization in WII

1. **Academic & Research Activities:** The Institute offers diverse training courses that address both professional and non-governmental agencies. Record of all research projects, ongoing & completed, such as name of the project, date of initiation/completion, name of Project Investigator and research scholars and summary of research findings are maintained electronically.

2. **Protected Areas Database:** The WII came up with a unique framework of conservation planning that divided the entire country into 10 zones and 27 biotic provinces having 691 Protected Areas. The database (spatial and aspatial) provides information on the conservation status of animal species, biogeographic regions, administrative units, habitat types and the network of protected areas in India, in a variety of formats for an extensive bibliographic support for wildlife research. The database is in MS Excel and the map information is in GIS domain using ArcGIS/ERDAS.

3. **Tiger Monitoring Database:** The information and data provided by the various tiger reserves are organized as digitized maps and tabular form electronically which need to shared securely with officials of Forest Department.

4. **Library:** The Institute's library is a repository of literature in the field of Wildlife Science. It has its own database of books, journals, reprints, maps developed on LibSys software. All the documents are barcoded for efficient circulation/ retrieval control.

5. **EIA Studies:** The Institute developed a software EIA ~ TRACK (Research, Advisory and Consultancy Kit). It is an integrated decision support system which provides an integrated framework for easy access to environmental legislation, tools of data analysis, rule based assessment, multi-criterion decision support and environmental database for a broad range of development projects.

6. **Wildlife Forensic**: The Institute has a state-of-the-art forensic laboratory for strengthening the Wildlife Forensic Capabilities so as to support the enforcement agencies in the proper implementation of the Indian Wildlife (Protection) Act, 1972 in controlling the illegal wildlife trade.

7. **Herbarium:** The WII herbarium has a collection of more than 5000 specimen. The partial database is presently maintained in MS Excel.

8. **Audio-Visual:** Database of photographs/videos are maintained in MS Excel.

9. **Administration:** Partial computerization of admin activities *viz.* leave records, employees information, Agenda and Minutes of WII committees, inventory.

10. **Finance**: The payroll and finance accounting is partially maintained electronically.

Present Data Holding and Usage

WII is maintaining large volume of GIS data and non-spatial data emanating from Research Projects, 18 Tiger Range States, 47 Tiger Reserves and Protected Areas of India. Presently, on a regular basis we are using these datasets for responding to queries made by the National Tiger Conservation Authority, Forest Advisory Committee and Standing Committee of the National Board for Wildlife.

Given below is the table showing the volume of data presently WII is holding and the total volume of data envisaged in the next five years.

S.N.	Description	Data Volume in Terabytes (TB)		
		Present	**Increment per annum**	**Total in next 5 years**
1.	Research Projects	3.0	0.5	5.5
2.	Tiger Project	15.0	3.0	30.0
3.	PA Network	0.5	0.1	1.0
4.	Wildlife Databases	3.0	2.0	13.0
Total Data Volume		**21.5**	**5.6**	**49.5**

Future Requirement for e-Governance

1. **Academic & Research Activities**: All information on research projects is to be made available on intranet/internet in a dynamic mode. Online application and enrollment information for M.Sc., Diploma, Certificate and other courses to be made easily accessible to the public.

2. **Protected Area Database:** To establish linkages with stakeholders and with other data centres, so as to have an on-line inflow and outflow and sharing of data and information. The spatial database is in the process of conversion in web based GIS system using ERDAS Apollo software.

3. **Tiger Monitoring Database**: The project tiger database needs to be made accessible online for state forest departments.

4. **Library:** Need for development of digital library for online access of library information. The current version of Libsys is required to be upgraded.

5. **EIA Studies:** The information on training, client support, collaborative research and other professional initiatives with national and international agencies and learning resources needs to be made online.

6. **Wildlife Forensic:** Complete computerization of all previous wildlife cases and reference database is to be developed and made available on intranet. Large number of cases across India are referred by enforcement agencies and courts which need to be insensitized for internal use.

7. **Herbarium:** The WII Herbarium was established in 1986 with a view to create a facility for identification of plant specimens collected from the field by the faculty, researchers and students of WII. A computerized web based database on the plants of conservation value as well as flora of different protected areas in the country needs to be developed which will be shared online with public.

8. **Audio-visual:** The Audio-Visual (AV) Unit is engaged in developing in-house multimedia based learning resources for use in teaching, training, research and extension activities of WII. It has a huge collection of films/videos/slides/ photographs which needs to be digitally developed for quick retrieval.

9. **Research and Training Laboratory**: The inventory management system for field training equipments, analytical and immobilization instruments needs to be developed for better management. The specimen database also needs to be developed.

10. **Wildlife Policy Research**: Information on Wildlife Action Plan, Wildlife conservation strategy, eco-tourism needs to be computerized with provision for future interactive phase.

11. **Administration**: All the administration related work *viz.* personal information, biometric based attendance and leave management software, inventory management, file tracking system, grievance redressal, vigilance matters, court cases, parliamentary questions and agenda/minutes of the Governing Body, WII-Society, Training, Research and Advisory Council (TRAC) and Finance Committee meetings needs to be developed into a searchable database.

12. **Finance:** Complete computerization of payroll and finance accounting is required to be developed.

Over the years WII has been able to generate a huge database which is being used for taking significant decisions on conservation development projects. Management of this database will be extremely important for taking policy decisions in the area of conservation and ecologically compatible development in the time to come.

For the successful implementation of e-governance process at WII, all the Academic and Administration activities of the Institute are required to computerized in an integrated manner. This requires enhancing the Information Technology facility of the Institute in terms of hardware and software.

A comprehensive list of computer hardware and software requirement is given in the **Annexure-I**.

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S.No.	Category	Total requirement at WII	To be replaced (Procured before 2008-09)	Not to be replaced (Procured after 2008-09)	Additional requirement	Final Requirement from MoEFCC	s
	I	II	III	IV	V	VI (Col III + Col V)	
A. Desktops Computers + MS-Office + UPSs							
	Employees						
1	Group-A	36	29	6	1	**30**	Out of the total 36 Desktops requirement, 29 are for replacement which were procured before 2008-09 and 1 additional Desktop for new Faculty.
2	Group-B	9	7	2	0	**7**	Out of the total 9 Desktops requirement, 7 are for replacement which were procured before 2008-09.
3	Group-C	69	59	10	0	**59**	Out of the total 69 Desktops requirement, 59 are for replacement which were procured before 2008-09.
	Facilities						
1	GIS Lab	0	0	0	0		
2	Computer Lab	33	9	17	7	**16**	Out of the total 33 Desktops requirement, 9 is for replacement which were procured before 2008-09 and 7 additional requirement.
4	DTP Lab	3	3	0	0	**3**	Out of the total 3 Desktops requirement, all 3 are for replacement which were procured before 2008-09.
5	Library	2	0	0	2	**2**	Out of the total 2 Desktops requirement, these two desktops are for general user to search.
6	Researchers/Students Room	32	0	0	32	**32**	Out of the total 32 Desktops requirement, all 32 are for newly created place for researchers/students.
7	Forensic Laboratory	14	13	1	0	**13**	Out of the total 14 Desktops requirement, 13 are for replacement which were procured before 2008-09.
8	Class Rooms (M.Sc., Certificate & Diploma), Porta Cabin & Auditorium	5	4	0	1	**5**	Out of the total 5 Desktops requirement, 4 are for replacement which are procured before 2008-09 and one additional requirement.
9	Hostel (New)	5			5	**5**	Out of the total 5 Desktops requirement, 5 are for replacement which were procured before 2008-09.
10	Hostel (Old)	3			3	**3**	Out of the total 3 Desktops requirement, 3 are for replacement which were procured before 2008-09.
11	Guest House	2			2	**2**	Out of the total 2 Desktops requirement, 2 are for replacement which were procured before 2008-09.
	TOTAL	**213**	**124**	**36**	**53**	**177**	

No.	Item						Remarks
B. Workstations Computers (64 GB RAM and 2 TB HDD) + MS-Office + UPSs							
1	GIS Lab and IT, RS & GIS Professionals	24	8	7	9	**17**	Out of the total 24 Workstations requirement , 8 are for replacement which were procured before 2008-09 and 9 additional Workstations for GIS Lab and IT, RS & GIS Professionals i.e 17 Workstations are needed for replacement/new procurement
C. Laser Printers							
1	Colour Laser MFP A3 Size	2	1		1	**2**	One replacement for DTP and one new procurement for GIS Laboratory
2	Heavy Duty Monochrome Laser Printer	1	1			**1**	The existing printer was procured before 2008-09.
D. Data Centre							
1	Blade Servers (64 GB RAM and minimum 1 TB HDD	17	8		9	**17**	2 - Mail, 1 - Intranet, 2 - Spatial Database, 1 -AVD, 1 - Library, 2 - BBAMs + CCTVs, 2 - ERP, 4 - databases, 2 - Graphic. All 17 servers are to be procured. NB: 6 servers procured before 2008 and 2 rack servers are not working.
2	Rack (42U)	3	1		2	**3**	1 for servers 1 for storage 1 for DR
3	Storage (SAN)	50 TB	2 TB		50 TB	**50 TB**	30 TB for DC 20 TB for DR WII is already having 22 TB data spread across different systems.
4	Network Video Recorder (NVR)	12 TB	0	0	12 TB	**12 TB**	The Institute has at present 12 CCTV cameras for security surveillance. These cameras are attached on Institute's LAN. NVR with RAID 5 is required for the storage/ retrieval of video recordings of these cameras.
4	Automatic Tape Library (ATL) (LTO 5 or above)	1	1			**1**	For data backup. Replacement of existing tapelibrary which were procured before 2008-09
5	Tapes (LTO 5 or above)	25	0		25		Media for ATL
	Operating System						
6	Linux Server	3			3		Two for Mail server and one for Library Server
7	Windows Server	14			14		Two each for Spatial database, ERP, BBAMS & CCTV, Graphics; One each for AVD and Intranet; and 4 for database servers
E. Network							
1	Managed Switches Gigabit (24 Port with PoE and Fibre Port)	22	11	8	3	**14**	The Institute's LAN is spread across the campus in different buildings/blocks and were laid in the year 2002 and old network switches (10/100 Mbps) procured in 2002 are to be replaced with gigabit switches supporting IPv6 protocol.

2	WiFi Controller	1			1	1	Presently all the APs are managed through UTM. It is proposed to have all APs at the WII to be managed centrally through Wi-Fi Controller
3	Controller based Access Points (each AP to should minimum 50 simulteneous users)	50			50	50	Presently each AP has the capacity to cater 20 simultaneous users. It is required to replace all these APs supporting minimum 50 simultaneous users to cater needs for Auditorium, Class Rooms, Board Room, Hostels and Guest House etc.

F. Software							
1	**ERP**						**Estimated cost Rs. 50 lakhs**
	Human Resource Module						
	Leave & Attendance Management System						
	Payroll and Financial Accounting System Module						
	Inventory/Asset Managemnet Module						
	File Tracking System Module						
	File Management System Module						
	Tour Management System Module						
	Automation of Academic Cell Module						
	Facility Management System Module						
	Trainees Course Management Module						
	Research Project Management						
	Research/Forensic Managment Module						
	Audio/Video Managment Module						
2	**GIS&RS User License Software**						
	ArCGIS 10.2 - 25 user license						**Estimated cost Rs. 20 Lakhs**
	ERDAS Imagine 2014 - 25 user license						**Estimated cost Rs. 20 Lakhs**
3	**DTP**						
	Adobe CS 6 Master Collection - 5 user license						**Estimated cost Rs. 2 Lakhs**
4	**Library & Documentation**						
	LibSys 7 or above						**Estimaged cost Rs. 5.5 Lakhs**