



Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning

Report to Domain Expert Committee (e-Content)

2nd May 2016

***A Project Under
National Mission On Education Through ICT (NMEICT)***



www.ide.iitkgp.ernet.in

***Sponsored by
Ministry of Human Resource Development ,
Govt. of India***

Outcome of the project and Achievement so far

1. Outcome-based Curricula for 177 UG level Engineering Courses covering 6 Engineering Disciplines: CE; EE; ME; ECE; CSE; Chem. E and First Year Courses as a model curricula → over all **80% development completed**
2. Open Source Web-based Pedagogy Framework tool for designing, reviewing, monitoring and publishing Outcome-based Curricula → **Open accesses web based Tools completed**
www.ide.iitkqp.ernet.in
3. All Universities / Institutions are able to use the above developed web-tool to develop their own Outcome based curricula / adapt / adopt the curricula already being developed nationally → **More than 2000 faculty members have already registered for development of their own courses**
4. Conduct Training Programmes for more than 5000 Engineering Faculty members of different institutions across the country for Instructional System Design, Pedagogy, out come based Curriculum Design → **Around 4000 faculty members of various institutions have been trained by the Project tem**

Major Deliverables of the Project and Status

	Deliverables	Status as on April 2016
1	Outcome-based Curricula for 177 UG level Engineering Courses covering 6 Engineering Disciplines: CE; EE; ME; ECE; CSE; Chem. E and First Year Courses	<ul style="list-style-type: none">▪ 12 courses are completed and released for open access▪ 6 course Review completed pending final modification by developer▪ 78 courses completed in 40 units and domain review is going on.▪ 90% of the development of 81 courses are completed
2	Open Source Web-based Pedagogy Framework tool for designing, reviewing, monitoring and publishing Outcome-based Curricula	Completed
3	Conduct Training Programmes for more than 5000 Engineering Faculty members of different institutions across the country for Instructional System Design Pedagogy Out come based	Around 4000 faculty members of various institutions have been trained in Pedagogy by the Project team of IIT Kharagpur

Impact of Pedagogy Project

- ❑ The developed web-tool is used for faculty development program under TEQIP-II. More than 1000 faculty members are already resistor for development of their own courses.
- ❑ All Universities / Institutions are able to use the IIT Kharagpur web-tool to develop their **own Outcome based curricula** / **adapt** / **adopt** the curricula already being developed nationally.
- ❑ **One of the most encouraging development of this unique project is the very rapid (many folds) growth in the demand for training in Pedagogy by all Institutions and TEQIP's insistence for such training for every faculty.**
- ❑ Many Institutions that received training under this project have succeeded in getting NBA accreditations at first attempt.

Open Source Web-based Pedagogy
Framework tool for designing, reviewing,
monitoring

www.ide.iitkgp.ernet.in

Administrative Details

1	Executing Agency	Centre for Educational Technology, IIT Kharagpur (Anchor) <u>Partner Institute: (14)</u> IIT Delhi, IIT Bombay ,IIT Guwahati, IIT Roorkee, NIT Trichi, BIT Mesra, NIT Warangal ,NIT Durgapur ,NIT Rourkela, SVNIT Surat, Amrita University, SASTRA University, IIIT Hyderabad IIIT Bangalore,
2	Total Cost of the Project as approval by MHRD	Total Rs. 16.0 Crores
3	Project Sanction no & Date Project Control No.	F.16-36/2009-DL dated 19th February,2013 ARE04061212597
4	Funds released so far	Rs.3,59,44,500.00; 2) Rs.69,57,000.00; 3) Rs.34,78,500.00 Total=Rs.4,63,80,000.00
5	Duration of the Project	3 Years
6	Date of starting	April, 2013

Financial

A. Financial Outlay as per DPR

	Year-1	Year-2	Year-3
Non Rec. [Rs in Lakhs]	30.00	15.00	15.00
Rec. [Rs in Lakhs]	770.00	385.00	385.00
Total	800.00	400.00	400.00

B. Funds released so far: **Rs.463.80 Lakhs**

C. Total Expenditure as on Feb. 2016: **Rs.445.30 Lakhs**

D. Balance as on Feb. 2016 : **Rs.18.50 Lakhs**

E. Fund required Immediately

Rs. 430.00 + Rs.117.60= Rs. 547.60 Lakhs

	Head	Amount [in Lakhs]
A	Fund Required for course Development	430.00
B	Fund required for Software development, Project Staff Salary, Workshop, TA/DA etc	117.60
	Total Fund requirement by March 2016 (A+B)	547.60

Sr. No.	Institute Name	No. of course	Total committed amount	Fund to be released by march 2016	Fund required during December 2016
1	IIT Guwahati	12	77.94	35.3	28.9872
2	IIT Delhi	9	63	27.8	24.19
3	IIT Roorkee	27	144.7	65	34.14
4	NIT Trichi	6	42	12.7	23.79
5	NIT Warangal	27	145.66	62.7	36.8088
6	NIT Durgapur	10	63.94	32.7	16.2096
7	NIT Rourkela	2	11.98	5.01	3.9124
8	SVNIT Surat	13	91	36.5	38.54
9	IIIT Hyderabad	4	28	10.1	12.62
10	Amrita University	7	49	18.8	26.28
11	Sastra University	11	77	27.8	39.37
12	BIT Mesra	12	48.86	22.4	7.8568
13	IIT Kharagpur	36	158.87	67.4	87.97
14	MNNIT Allahabad	1	7	5.79	1.21
	TOTAL	177	1008.95	430	381.8848

Summary Of Budget / Expenses

- ❑ Commitment for Course Development= 1008.95 L
- ❑ *Already paid* = 197.065
- ❑ *To pay immediately* = 430.00
- ❑ *To pay by December, 2016* = 381.8843
- ❑ Budget need for workshop, conference
TA/DA, equipment, software development
salary etc. = 365.835
- ❑ *Already spent* = 229.735
- ❑ *Available in hand* = 18.50
- ❑ *Immediately needed* = 117.067
- ❑ 2016-17 Requirement = 430.0+117.067+381.8843
= 928.951 Lakhs

Thank You

E-PG Pathshala: About the Project

Project

MHRD, under NME-ICT, has allocated funds to the UGC for development of e-content in 77 subjects at postgraduate level.

Subjects

Social Sciences, Arts, Humanities, Natural & Mathematical Sciences, linguistics and languages

Named as

E- PG Pathshala

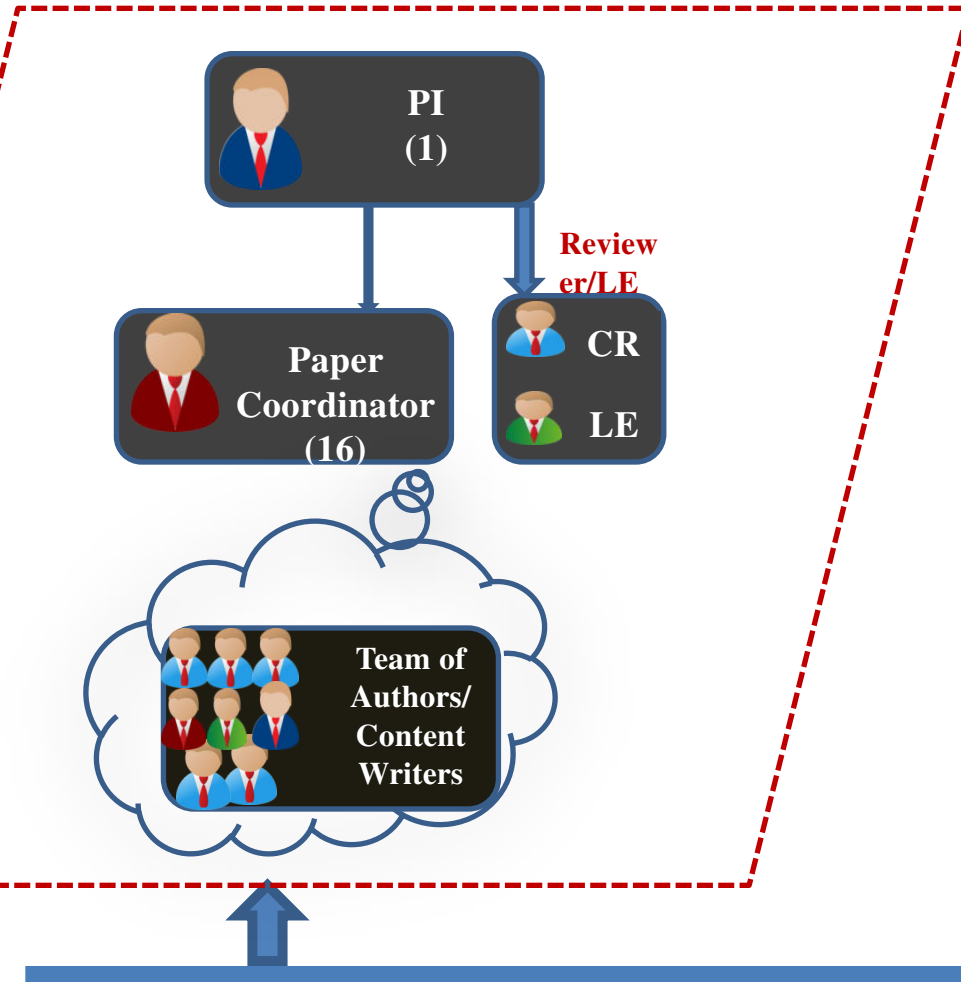


A Brief Overview on Project

- Assigned Work: Development of e-Content for 77 subject
 - Project Awarded to UGC on June, 2011.
 - Total Project Cost is Rs 84 Crore.
 - Funds released to INFLIBNET is Rs. 30 Crore for the disbursement of fund to the PI's institute
 - E-Content Development Charge per subject = 1.12 Crore
(7 Lakhs per paper. 1 Subject = 16 Papers)
(Rs 17,500-20,000 per module for all 4 quadrants)
- (As compared to Rs 31,000 (includes Rs 2,000 for transcription) approved by PAB in 27th meeting of PAB on 19th March, 2014)

Execution Process

Team



INFLIBNET/ Web Development Team

The block contains the **Pathshala** logo (पाठशाला) and the **INFLIBNET** logo, indicating the digital infrastructure and web development support for the project.

Volume of work

Volume of a subject

1 Subject = 16 Papers*

1 Paper = 30-35 Modules (1 hour each)

Total modules = $16 \times 35 = 560$

Volume of a module

1 Module = 1 topic comprising of

- a) e-text = textual material (8-10 pages)
- b) Self- learning = audio / video component (30 mins)
- c) Self assessment = Questions
- d) Learn More = further reference material

* 4 core paper of each semester (2Yr course)

$77(\text{Subject}) \times 16(\text{Paper}) \times 35(\text{Module}) = 43120$ (Modules) (Approx.)

E-PGPathshala: Status

- No of subjects identified: 77
- No of subjects where content is being developed: 73
- No of Modules received - 5600+ (Four quadrants)
- No of e-Text Modules received - 8600+ (e-Text)

E-PGP & MOOCs

- No of courses ready in four quadrants: 100 (To be ready by July, 2016 – MOOCs compliant)
- No of courses ready(50%) with four quadrant: 100 (To be ready by Dec-16 - MOOCs compliant)
- Workshop of all paper coordinators – Mid May -2016



THANK
You!



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Domain Expert Committee Meeting

Agenda

- ▶ Introduction
- ▶ Update of Virtual Labs Phase-II
- ▶ Status of Outreach/Integration activities
- ▶ Update of RT Labs Project
- ▶ Request for the release of next installments for Phase-II (Rs 27.60 Crores + Rs 20.69 Crores)

Motivation



Physical Distances
Limit Doing
Experiments



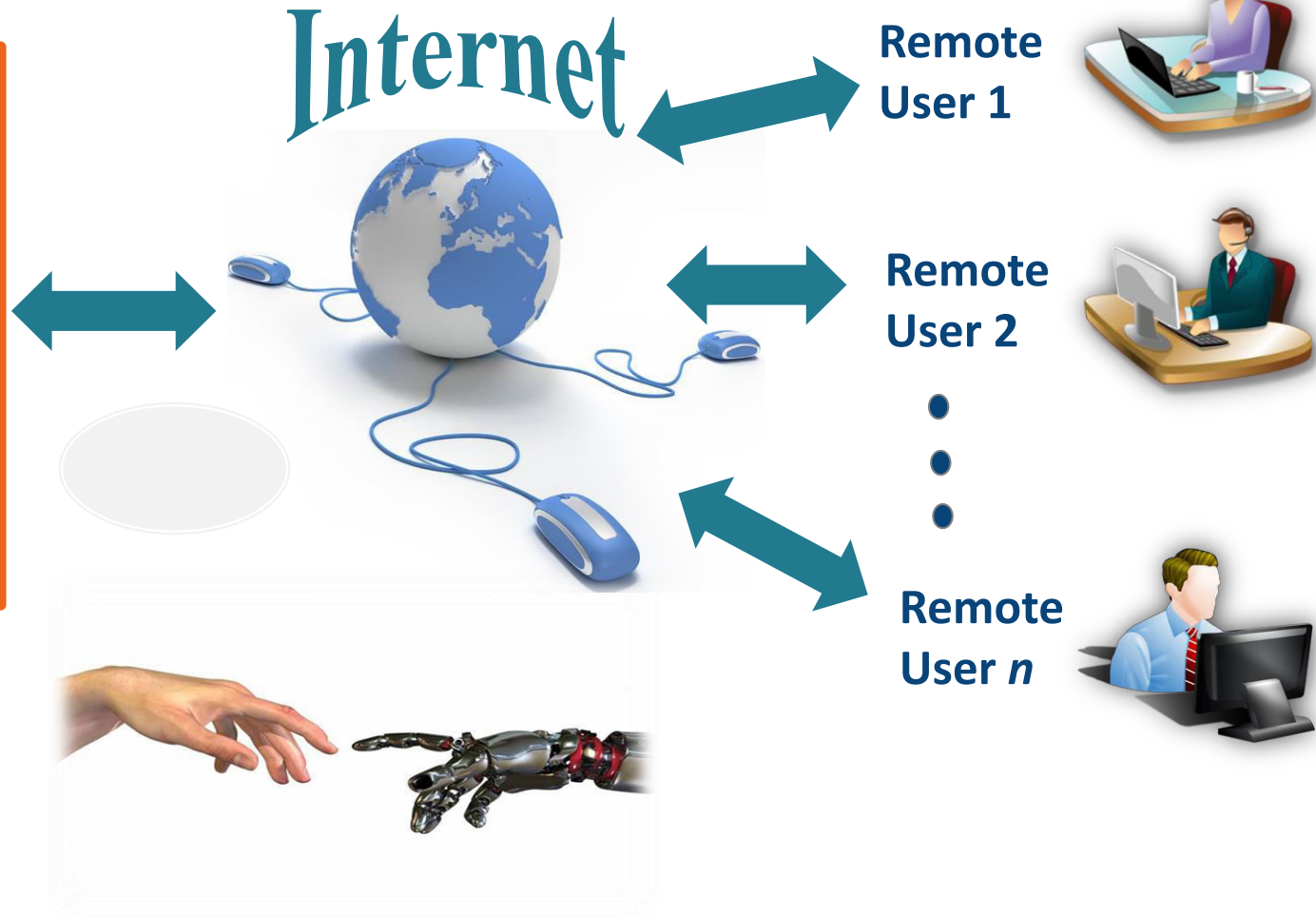
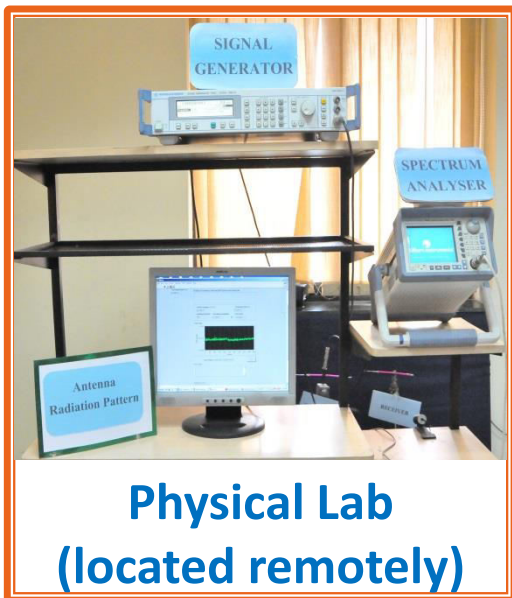
Sharing of Costly
Equipment



Proliferation of
Quality Labs



The Basic Idea



Objectives of the Virtual Lab Project

- To provide **remote-access to labs** in various disciplines of Science and Engineering.



- To cater to **students** at the UG level, PG level as well as to research scholars.

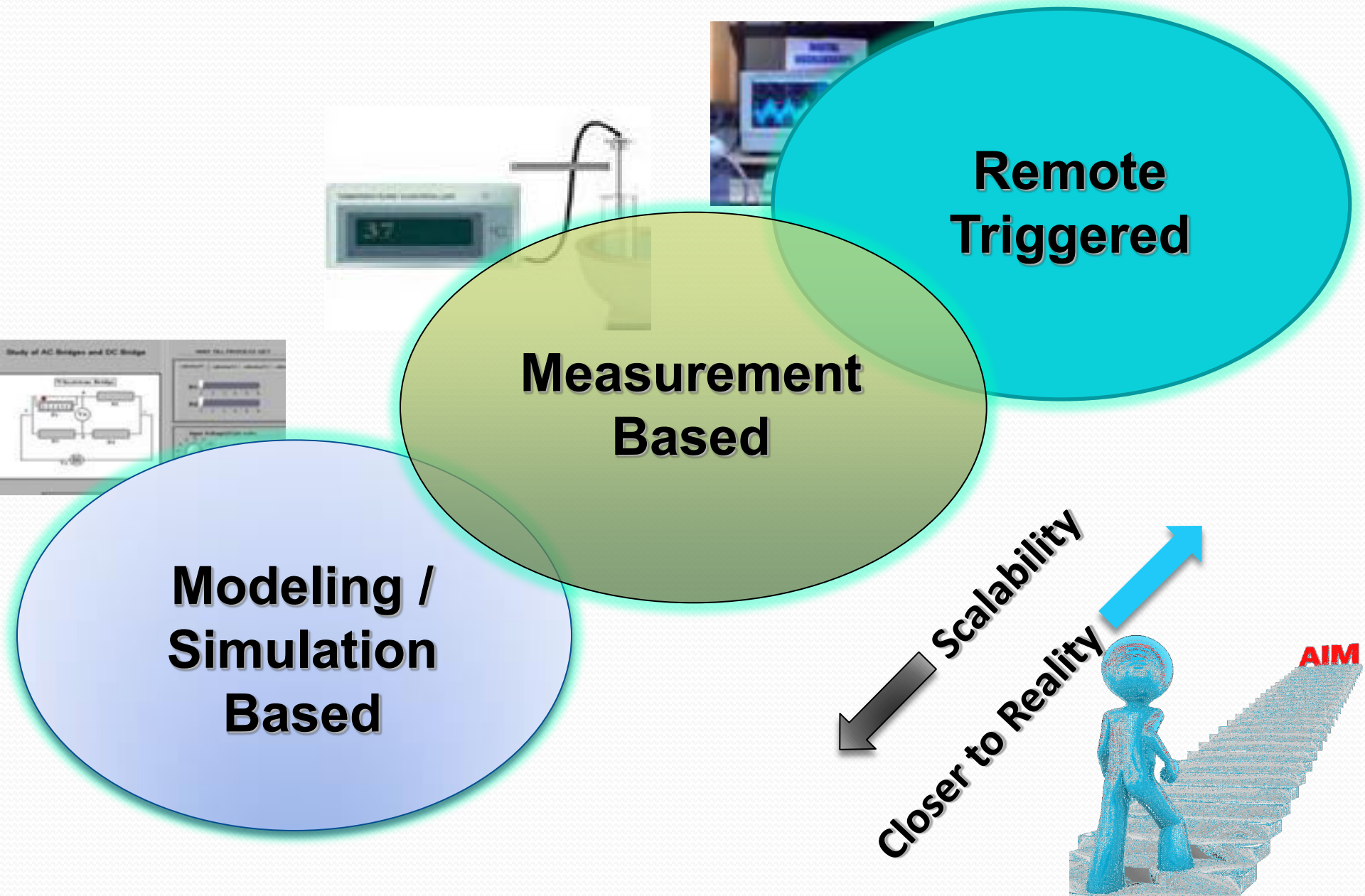


- To enable the students to learn at their **own pace**, and to arouse their **curiosity**.



- To provide a complete **Learning Management System** that includes web-resources, video-lectures, animated demonstrations and self evaluation.

Types of Virtual Labs



Intended Users



- ✓ **College students** who do not have access to good lab-facilities.
- ✓ **High-school students** whose inquisitiveness will be triggered, possibly motivating them to take up higher-studies.
- ✓ **Different engineering colleges** who can benefit from the content and related teaching resources.
- ✓ **Researchers in different institutes** who can share / collaborate equipment and resources.

Participating Institutes



IIT Delhi



IIT Bombay



IIT Kanpur



IIT Kharagpur



IIT Madras



IIT Roorkee



IIT Guwahati



IIIT Hyderabad



Amrita University



Dayalbagh University



NITK Surathkal

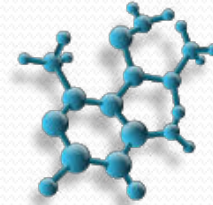
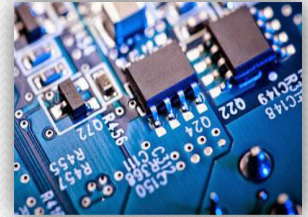


COE Pune



Broad Areas of Virtual Labs

- **Electronics and Communication Engineering**
- **Computer Science and Engineering**
- **Electrical Engineering**
- **Mechanical Engineering**
- **Civil Engineering**
- **Chemical Engineering**
- **Biomedical and Biotechnology Engineering**
- **Chemical Sciences**
- **Physical Sciences**



All areas of Science and Engineering are covered

Website: www.vlab.co.in



VIRTUAL LABS

Home

An MHRD Govt of India Initiative

An Initiative of Ministry of Human Resource Development (MHRD)
Under the National Mission on Education through ICT

Name of Lab

Broad Area

Any

Search



PARTICIPATING INSTITUTES



IIT DELHI



IIT BOMBAY



IIT KANPUR



IIT KHARAGPUR



IIT MADRAS

Objectives of the Virtual Labs:

- To provide remote-access to Labs in various disciplines of Science and Engineering. These Virtual Labs would cater to students at the undergraduate level, post graduate level as well as to research scholars.
- To enthuse students to conduct experiments by arousing their curiosity. This would help them in learning basic and advanced concepts through remote experimentation.
- To provide a complete Learning Management System around the Virtual Labs where the students can avail the various tools for learning, including additional web-resources, video-lectures, animated demonstrations and self evaluation.
- To share costly equipment and resources, which are otherwise available to limited number of users due to constraints on time and geographical distances.

Announcements

- [Click here for the Lab Feedback Form.](#)
- [Virtual Labs on YouTube.](#)
- [Click here for NCs Registration.](#)
- [Click here for NCs Login.](#)
- [Click here for VLab](#)

One common website to access all Virtual Labs



Value Add in a Nutshell



On-demand Labs

[learn at own pace]

Integrated Learning

[contents at one place]

Self - Evaluation

[pre /post lab quiz]



Virtual
Labs
An MHRD Govt of India Initiative

Animation/Video Tut

[better insight]

Freedom to make mistakes

[can experiment with experiments]

Virtual Labs - A Complete Learning Management System

Objectives of Phase-II Project (1)

The primary focus of the Second Phase of the Virtual Labs project is to reach out all potential users of Virtual Labs, in order to address the following issues:

- To **maintain and upkeep** the existing operational virtual labs.
- To **port** Virtual Labs to a **common platform** and host it on a **national server**.
- To create a '**single package**' of simulation-based Virtual Labs to be distributed to users.
- To engage **private agencies for outreach** of Virtual Labs: (i) awareness about labs and (ii) usage of labs. **cont.....**

Objective of Phase-II Project (2)

- To **identify the gap areas** between the typical syllabi of technical universities and the existing labs and to develop additional labs/experiments to fill these gaps.
- To **convert labs** not based on **free and open source technologies** to open source.
- To **port** the existing labs to **mobile platforms**.
- To identify and work with **government, private agencies and professional bodies** for granting 'Certificate to users of Virtual Labs'.

Funding of the Project

Name of the Project	: Virtual Labs Phase-II
Funding Agency	: MHRD, Govt. of India
Duration of the project	: Aug, 2014 – Aug, 2017 (3 Years)
Fund sanctioned for the project	: Rs 68.99 Crores (Rs 23.50 + Rs 22.36 + Rs 23.13)
Fund received as 1 st Installment	: Rs 20.69 Crores (@ 30 % of Rs 68.99 Crores)

Funds were disbursed
as per given table :

Institute's Name	Fund Transferred (In Lacs Rs)
IIT Delhi	62.92
IIT Bombay	158.87
IIT Kanpur	47.08
IIT Kharagpur	145.64
IIT Roorkee	47.08
IIT Guwahati	81.05
IIIT Hyderabad	780.66
Amrita University	153.03
Dayalbagh University	62.92
NITK Surathkal	57.64
COE Pune	93.72
Total	1690.61

Latest
Utilization
Certificate of
Phase-II has
been
submitted to
MHRD
on
25 Feb 2016

FORM GFR-19A

PROVISIONAL UTILISATION CERTIFICATE

(From 03.08.2014 To 31.12.2015)

Title of the project: "Virtual Labs (Phase-II)" (RP02923)

S.No	Letter No.	Amount	
1.	F.16-35/2009-DL Dt. 11.06.2014	20,69,00,000.00	Certified that out of Rs. 20,69,00,000/- of grants-in-aid sanctioned in favour of Registrar IIT Delhi under this Ministry/ Department letter/ order No. given in the margin and Rs. NIL on account of unspent balance of the previous year, a sum of Rs.16,63,64,771/- has been utilized for the purpose of research for which it was sanctioned and that the balance of Rs.4,05,35,229/- will be adjusted towards the grants-in-aid payable during the year i.e. 2015-16.
	TOTAL	20,69,00,000.00	

2. Certified that I have satisfied that the conditions on which the grants-in-aid was sanctioned have been fulfilled/are being fulfilled and that I have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned:-

Kinds of checks exercised

1. Cash Book
2. Ledger
3. Bank Reconciliation
4. Payment Voucher

h 2014/16
Principal Investigator
K Thyagarajan

निदेशक भा. प्रौ. सं.दि. की ओर से
For & on behalf of the Director, IIT Delhi

Prof. Nareesh
Head of the Institute
सह-संकायाध्यक्ष (अनुसंधान एवं विकास)
Associate Dean (Research & Development)
भारतीय प्रौद्योगिकी संस्थान दिल्ली
Indian Institute of Technology Delhi
हौज़ खास, नई दिल्ली-110016
Hauz Khas, New Delhi-110016

A.R. (IRD A/cs)
MOHD. SHAMIM
Assistant Registrar (Accounts-R&D)
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110016

UTILISATION CERTIFICATE

For the Financial Year 2014-15
(From 01.04.2015 To 31.03.2016)

Title of the project: "Virtual Labs (Phase-II)" (RP02923)

S.No	Letter No.	Amount	
		Nil	Certified that out of Rs. NIL of grants-in-aid sanctioned in favour of Registrar IIT Delhi under this Ministry/ Department letter/ order No. given in the margin and Rs.4,28,48,007.00 on account of unspent balance of the previous year, a sum of Rs.32,10,459.00 has been utilized for the purpose of research for which it was sanctioned and that the balance of Rs.3,96,37,548.00 will be adjusted towards the grants-in-aid payable during the next year i.e. 2016-17.
	TOTAL	Nil	

2. Certified that I have satisfied that the conditions on which the grants-in-aid was sanctioned have been fulfilled/are being fulfilled and that I have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned:-

Kinds of checks exercised .

1. Cash Book
2. Ledger
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Principal Investigator
(K Tyagarajan)

Head of the Institute

A.R. (IRD A/cs)

10/3/25/15

Latest Utilization Certificate of Phase-II

Outreach Status

Deliverables of Project

The target year wise usage for Phase II shall be as follows :

1st year (Aug 2014-July 2015)

Nodal Centers using Virtual Labs (end of 1st year) = **300**

No. of usage for 1st year = **6, 48,000**

Two reviews by an expert panel

2nd Year (Aug 2015-July 2016)

New Nodal Centers added to Virtual Labs (during 2nd year) = **22**

Total number of Nodal Centers (end of 2nd year) = 300(1st Year) + 22(new) = **322**

No. of usage for 2nd year = **6, 95,500**

Cumulative total number of usage = **13, 43, 520**

Two reviews by an expert panel

3rd Year (Aug 2016-July 2017)

New Nodal Centers added to Virtual Labs (during 3rd year) = **33**

Total number of Nodal Centers (end of 3rd year) = 322(2nd Year) + 33(new) = **355**

No. of usage for 3rd year = **7, 66,800**

Cumulative total number of usage = **21, 10,320**

Two reviews by an expert panel

Outreach	Activity	Nos. Proposed for 1st + 2nd Year (Half)	Nos. Achieved
	Nodal Centers	311	329
	Workshops	77	515
	Usages	6,71,760	9,18,611

Integration	Activity	Nos. Proposed for 1st + 2nd Year (Half)	Nos. Achieved
	FOSS Migration	60	81
	Labs porting to Mobile Platform / Level 6 integration	60	72
	Single Packages of VLabs	90	35

VLEAD	Activity	Nos. Proposed for 1st + 2nd Year (Half)	Nos. Achieved
	Hosting of Labs on Cloud	40	72

Institute Name	Number of NCs Planned	NCs Authorized till March, 2016	Usages Projected	Actual Usages Achieved	Workshop Planned	Workshop organized
IIT-D	26	70	56,160	1,15,303	7	73
IIT-R	26	35	56,160	27,920	7	30
IIT-G	16	18	34,560	37,476	7	10
AMRITA	61	82	1,31,760	2,01,117	7	80
IIT-K	26	19	56,160	80,561	7	13
IIT-B	26	42	56,160	1,06,126	7	127
DAYALBAGH	26	11	56,160	62,500	7	20
IIIT-H	26	3	56,160	51,367	7	42
IIT-KGP	26	8	56,160	38,724	7	36
NIT-K	26	14	56,160	1,22,859	7	21
COE, Pune	26	27	56,160	74,658	7	63
Grand Total	311	329	6,71,760	9,18,611	77	515

Mid-term Review

1st Review

21 March 2015, IIT Delhi

- Prof. Ajay Chakrabarty
IIT Kharagpur
- Prof. G. K. Suraishkumar
IIT Madras
- Dr M Sasikumar
C-DAC Mumbai
- Prof. Arun Kumar
IIT Delhi
- Prof. Om Damani
IIT Bombay

2nd Review

17 Oct 2015, IIT Delhi

- Prof. Ajay Chakrabarty
IIT Kharagpur
- Dr M Sasikumar
C-DAC Mumbai
- Dr. Saurabh Jain
IIST Indore
- Dr. Anil Kumar Ahlawat
KIET, Ghaziabad
- Dr. K D Verma
MHRD

3rd Review

9 April 2016, IIT Delhi

- Prof. G. K. Suraishkumar
IIT Madras
- Prof. Arun Kumar
IIT Delhi
- Prof. Om Damani
IIT Bombay
- Dr. Pradip Chanda
MHRD

Methodology for counting usages

METHODOLOGY FOR COLLECTING OUTREACH USAGE DATA

The outreach include following activities for collecting outreach usage data on actual basis

S. No.	Activity	No. of Usages
1	Number of Vlabs experiments performed at Nodal Centers	
2	Online Lab-wise usage form	
3	Number of attendees in workshops	
4	Cloud data usage	
5	FDP / CEP / QIP at respective institutes	
6	Others (Please specify)	
Total Usages		

EOI from NITs

- **National Institute of Technology Meghalaya**
- **National Institute of Technology Durgapur**
- **National Institute of Technology Mizoram**
- **National Institute of Technology Arunachal Pradesh**
- **Malaviya National Institute of Technology Jaipur**
- **National Institute of Technology Jalandhar**
- **National Institute of Technology Raipur**
- **National Institute of Technology Kurukshetra**
- **National Institute of Technology Goa**

Decisions/Advice from DEC

- ❖ Request for the release of 2nd installment (Aug 2015-July 2016) for Phase-II i.e. Rs 27.60 Crores.
- ❖ Request for the release of 3rd installment (Aug 2016-July 2017) for Phase-II i.e. Rs 20.69 Crores.
- ❖ Validity of the project till August, 2017.
- ❖ Title to be modified to “Virtual Labs Phase-II (Outreach, Integration and Maintenance of Virtual Labs)”.

Deliverables of Project

The target year wise usage for Phase II shall be as follows :

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No. of usage for 1st year = **6, 48,000**

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No. of usage for 3rd year = **7, 66,800**

Cumulative total number of usage = **21, 10,320**

Two reviews by an expert panel

Overall Budget Breakup

S.No.	Items	Budget			Total (in Lacs)
		First Year (in Lacs)	Second Year (in Lacs)	Third Year (in Lacs)	
1	Deployment and Outreach	264.5	289.03	319.39	872.92
2	Integration and Maintenance	861	928	1001.7	2790.7
3	Development of new experiments (300 expt. x 3 Lacs / expt.)*	300	300	300	900
4	Honoraria	40	40	40	120
5	Central platform Engineering	587.5	566.05	490.88	1644.43
6	Data Centre	34.515	50.43	98.15	183.095
7	Software License	200	0	0	200
8	Reviews / Mid-term evaluations/Internal Workshops	62.67	62.67	62.67	188.01
Total		2350.185	2236.18	2312.79	6899.16

*Virtual Labs... A Journey
from Concept to Reality*

Thank You !

Back up Slides

Approximate Fund Utilization

S.No.	Items	Budget for First Year (in Lacs Rs)	
		Projected Fund	Actual Disbursement
1	Deployment and Outreach	264.5	232.76
2	Integration and Maintenance	861	757.68
3	Central Platform Engineering	587.5	515.17
4	Data Centre	34.52	9
5	Software License	200	176
Total		1947.52	1690.61

Overall Budget Breakup

S.No.	Items	Budget			Total (in Lacs)
		First Year (in Lacs)	Second Year (in Lacs)	Third Year (in Lacs)	
1	Deployment and Outreach	264.5	289.03	319.39	872.92
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6	Data Centre	34.515	50.43	98.15	183.095
7	Software License	200	0	0	200
8	Reviews / Mid-term evaluations/Internal Workshops	62.67	62.67	62.67	188.01
Total		2350.185	2236.18	2312.79	6899.16

Budget for Outreach of Virtual Labs

Name of the Institute	First Year			Second Year			Third Year		
	Number of Usage	W/S	Budget (Lacs)	Number of Usage	W/S	Budget (Lacs)	Number of Usage	W/S	Budget (Lacs)
IIT Delhi	54000 (25 NCs)	2	23.5	58320 (27NCs)	2	25.73	64800 (30 NCs)	2	28.49
IIT Bombay	54000 (25 NCs)	2	23.5	58320 (27NCs)	2	25.73	64800 (30 NCs)	2	28.49
IIT Kanpur	54000 (25 NCs)	2	23.5	58320 (27NCs)	2	25.73	64800 (30 NCs)	2	28.49
IIT Kharagpur	54000 (25 NCs)	2	23.5	58320 (27NCs)	2	25.73	64800 (30 NCs)	2	28.49
IIT Roorkee	54000 (25 NCs)	2	23.5	58320 (27NCs)	2	25.73	64800 (30 NCs)	2	28.49
IIT Guwahati	32400 (15 NCs)	2	21.1	36720 (17NCs)	2	23.33	43200 (20NCs)	2	26.09
IIIT Hyderabad	54000 (25 NCs)	2	23.5	58320 (27NCs)	2	25.73	64800 (30 NCs)	2	28.49
Amrita University	129600 (60 NCs)	2	31.9	133920 (62NCs)	2	34.13	140400 (65NCs)	2	36.89
Dayalbagh University	54000 (25 NCs)	2	23.5	58320 (27 NCs)	2	25.73	64800 (30 NCs)	2	28.49
NITK Surathkal	54000 (25 NCs)	2	23.5	58320 (27NCs)	2	25.73	64800 (30 NCs)	2	28.49
COE Pune	54000 (25 NCs)	2	23.5	58320 (27NCs)	2	25.73	64800 (30 NCs)	2	28.49
Total	648000 (300NCs)	22	264.5	695520 (322NCs)	22	289.03	766800 (355NCs)	22	319.39

NOTE: 25 NCs x 3 Experiments per Lab x 30 Students per lab x 3 years x 4 Branches = 27,000 Usages per Semester (or 54,000 Usages per year)

EXPENSE	AMOUNT (Lacs)
Manpower: 3 field engineers per Institute	4 L x 3 (person) = Rs 12 L (Salary Rs 4 Lacs per annum per person)
Honorarium for Nodal Coordinators	Rs 12* x 1000 x 25 = Rs 3 L
Workshops	Rs 6 x 2** x 1000 x 25 = Rs 3 L
Consumables (Stationery / Printing / Publicity material / Internet)	2.5 L
Miscellaneous expenses	2.0 L
Travel	1 L
Total	23.5 L

* Cost for 1 usage = Rs 12/- per student as per AICTE norms.

Number of usage = 1000

Cost for 1 Nodal Coordinator = Rs 12,000* /- per year

** Rs 6/= per student per workshop, two workshops planned in a year.

Budget for Integration and Maintenance

Name of the Institute	No. of Labs	No. of Engineers	1st Year (in Lacs)	2nd Year (in Lacs)	3rd Year (in Lacs)	Total (in Lacs)
IIT Delhi	6	7	48	51.5	55.35	154.85
IIT Bombay	11	13	83	89.5	96.65	269.15
IIT Kanpur	3	4	30	32	34.2	96.2
IIT Kharagpur	20	23	142	153.5	166.15	461.65
IIT Roorkee	3	4	30	32	34.2	96.2
IIT Guwahati	9	11	71	76.5	82.55	230.05
IIIT Hyderabad	20	23	142	153.5	166.15	461.65
Amrita University	20	23	142	153.5	166.15	461.65
Dayalbagh University	6	7	48	51.5	55.35	154.85
NITK Surathkal	5	6	42	45	48.3	135.3
COE Pune	11	13	83	89.5	96.65	269.15
TOTAL	114	134	861	928	1001.7	2790.7

Budget for Integration and Maintenance

*1 Engineer per 1 lab for Integration, 1 Engineer per 7 labs for maintenance,

*Maintenance budget includes funds for the New RT Labs, in addition to the existing lab

Manpower Required: 134 Engineers for Integration & Maintenance
1st year

Salary : Rs 5 Lacs per annum per engineer

Internet usage : Rs 5 Lacs per Institute

Travel cost : Rs 2 Lacs per Institute

Consumables : Rs 1 Lac per lab

Total = $5 \times 134 + (5 + 2) \times 11 + 1 \times 114 = \text{Rs } 861 \text{ lacs}$

Budget for Central Platform Engineering

Items	Budget (in Lacs)			
	First Year	Second Year	Third Year	Total
Salaries and Manpower	353.8	389.18	321.07	1064.05
Equipment	63.4	0	0	63.4
Consumables	24	26.40	29.04	79.44
Collaborations	25	27.50	22.69	75.19
Travel and Events	44.67	49.14	54.05	147.86
Sub Total	510.87	492.22	426.85	1429.94
Contingency @15%	76.63	73.83	64.03	214.49
Grand Total	587.50	566.05	490.88	1644.43

JUSTIFICATION OF BUDGET FOR REVIEWS / MID TERM EVALUATIONS / INTERNAL WORKSHOP

Travel / stay of experts (Rs 23,000 x 5 experts) = Rs 1,15,000

Honoraria of experts (Rs 4,000 x 5 experts) = Rs. 20,000

Total = Rs. 1,35,000 / discipline (for 5 experts)

New Experiments = 1,35,000

Integration = 1,35,000

Outreach = 1,35,000

Total for (New Experiments + Integration + Outreach) = $3 \times 1,35,000 = 4,05,000$

Total for 9 disciplines = 36,45,000 (One review per year)

Travel / stay for Lab developers (Rs.23, 000 x 114) = Rs. 26,22,000
(including old and new labs)

Total (experts for 9 disciplines + All lab developers) = Rs 62,67,000 / year

Region-wise Nodal Centers

Maharashtra	42	North East	18
Kerala	35	Andhra Pradesh	8
Telangana	34	Delhi	1
Uttar Pradesh	18	Chhattisgarh	1
Karnataka	8	Himachal Pradesh	1
Gujarat	17	West Bengal	4
Haryana	15		
Punjab	9		
Madhya Pradesh	9		
Uttarakhand	7		
Goa	5		
Tamil Nadu	32		
Rajasthan	3		

Internal Timeline

Virtual Lab Phase-II Timeline

	Jan – Mar	Apr – Jun	Jul – Sep	Oct - Dec
2014			PICs/DNC meeting in Jul	“Single package” 3 rd release in Dec (35 VLabs)
			“Single package” 1 st release in Jul (17 VLabs)	Addition of new Nodal Centers as per commitment
			“Single package” 2 nd release in Sep (30 VLabs)	Finalization of the Cloud to host VLabs
			Addition of new Nodal Centers as per commitment	Workshop for outreach
			Hiring of Maintenance and Integration Engineers	Sprint sessions for integration
			Identification of gap areas and development of new experiments	Evaluation of new experiments by subject experts
			Finalize details of timeline for migration to FOSS	Identification of agencies for outreach (CDAC etc)
				Initiate migration to FOSS

Virtual Lab Phase-II Timeline

	Jan – Mar	Apr – Jun	Jul – Sep	Oct - Dec
2015	1 st Review Meeting In Jan (all PICs/DNCs to participate)	“Single package” 5 th release in Mar (60 VLabs)	2 nd Review Meeting In Jul (all PICs/DNCs to participate)	“Single package” 7 th release in Mar (80 VLabs)
	“Single package” 4 th release in Mar (50 VLabs)	Addition of new Nodal Centers as per commitment	“Single package” 6 th release in Mar (70 VLabs)	Addition of new Nodal Centers as per commitment
	Addition of new Nodal Centers as per commitment	Migration to FOSS (30 Labs)	Addition of new Nodal Centers as per commitment	Migration to FOSS (50 Labs)
	Migration to FOSS (25 Labs)	Migration to Mobile platform (30 Labs)	Migration to FOSS (40 Labs)	Migration to Mobile platform (50 Labs)
	Migration to Mobile platform (25 Labs)	Workshop for outreach	Migration to Mobile platform (40 Labs)	Workshop for outreach
	Initiate “VLab Certification”			

Virtual Lab Phase-II Timeline

	Jan – Mar	Apr – Jun	Jul – Sep	Oct - Dec
2016	3 rd Review Meeting In Jan (all PICs/DNCs to participate)	“Single package” 8 th release in Mar (100 VLabs)	“Single package” 9 th release in Mar (110 VLabs)	“Single package” 8 th release in Mar (120 VLabs)
	“Single package” 8 th release in Mar (90 VLabs)	Addition of new Nodal Centers as per commitment	Addition of new Nodal Centers as per commitment	Addition of new Nodal Centers as per commitment
	Addition of new Nodal Centers as per commitment	Migration to FOSS (70 Labs)	Migration to FOSS (80 Labs)	Migration to FOSS (90 Labs)
	Migration to FOSS (60 Labs)	Migration to Mobile platform (70 Labs)	Migration to Mobile platform (80 Labs)	Migration to Mobile platform (90 Labs)
	Migration to Mobile platform (60 Labs)	Workshop for outreach	Workshop for outreach	
				4 th Review Meeting in Jul (all PICs/DNCs to participate)

Virtual Lab Phase-II Timeline

	Jan – Mar	Apr – Jun	Jul – Sep	Oct - Dec
2017	5 th Review Meeting In Jan (all PICs/DNCs to participate)	“Single package” 13 th release in Mar (120+ VLabs)		
	“Single package” 12 th release in Mar (120+ VLabs)	Addition of new Nodal Centers as per commitment		
	Addition of new Nodal Centers as per commitment	Migration to FOSS (120 Labs)		
	Migration to FOSS (100 Labs)	Migration to Mobile platform (120 Labs)		
	Migration to Mobile platform (100 Labs)	Workshop for outreach		
			6 th Review Meeting In Jan (all PICs/DNCs to participate) and Project Closure	

1st PRSG constitution



Sanjeet Kumar <sanjeetkumar.iitd@gmail.com>

Fwd: Members of PRSG for Virtual Lab

1 message

Ranjan Bose <rbose.iitd@gmail.com>

Thu, Oct 8, 2015 at 2:04 PM

To: Sanjeet Kumar <sanjeetkumar.iitd@gmail.com>

----- Forwarded message -----

From: "KushalDevVerma US" <kdverma.edu@nic.in>

Date: Oct 8, 2015 10:31 AM

Subject: Members of PRSG for Virtual Lab

To: <rbose.iitd@gmail.com>

Cc:

Sir,

Joint Secretary (TEL) and Mission Director (NMEICT) has approved the PRSG for Virtual Lab with following members:-

1. Prof. Ajay Chakrabarty, IIT Kharagpur
2. Dr. M. Sasikumar, Associate Director, C-DAC Mumbai
3. Dr. Anil Kumar Ahlawat, KIET, Ghaziabad
4. Dr. Saurabh Jain, Indore Institute of Science & Technology
5. Shri K. D. Verma, Under Secretary (TEL) – from TEL Bureau, M/o HRD

The formal order will follow in this regard

Thanking You

(K. D. Verma)
Under Secretary (TEL)
M/o HRD

Letter to MHRD for Maintenance Funds of RT Labs



Department of Electrical Engineering
INDIAN INSTITUTE OF TECHNOLOGY
Hauz Khas, New Delhi, India 110016

Dr. Ranjan Bose
Professor

Phone: +91-11-2659-1048
Fax: +91-11-2658-1606
Email: rbose@ee.iitd.ac.in

Feb 18, 2016

**Letter for
Maintenance
funds for RT
Labs has
been
submitted to
MHRD
on
18 Feb 2016**

To
Mission Director,
NMEICT,
MHRD, Shastri Bhawan,
New Delhi

Subject: Release of funds for maintenance of Remote Triggered Labs

Dear Sir,

Kindly refer to the 'Virtual Labs Remote Triggered Labs' project, approved by MHRD. As per recommendation of recent PRSG held on 17 October 2015 at IIT Delhi, all the remote triggered labs should be kept in up-and-running condition. The funds required to maintain all the labs is ₹ 7.35 Crores. The minutes of meeting (MoM) is enclosed herewith for your reference.

Therefore, you are requested to kindly sanction ₹ 7.35 Crores to keep in up-and-running condition.

Please let me know if you need any other information from me. My contact no. is 9818253072.

Thank you,
Sincerely,

Prof Ranjan Bose, Co-PI, Virtual Labs Project

CC: (1) Deputy Secretary, MHRD, Department of Higher Education (TEL Division)

(2) Under Secretary (TEL), MHRD, Department of Higher Education

Kemal
23/2/16

FOSSEE: Adoption of Free and Open source Software for Education (www.fossee.in)

PI: Prabhu Ramachandran

Indian Institute of Technology, Bombay

Presentation to the Domain Expert Committee
May 2, 2016



Project Objectives

- Increase use of Free/Open Source Software in education
- Minimise use of proprietary/commercial software in education

Project Investigators

- Prabhu Ramachandran (AE)
- Mani Bhushan, P Sunthar and Kannan Moudgalya (ChE)
- Siddhartha Ghosh (CE)
- Supratik Chakraborty, Varsha Apte, Krishna S (CS)
- Madhu Belur, Maryam Shojaei and Kumar Appaiah (EE)
- Jayendran Venkateswaran and Ashutosh Mahajan (IEOR)
- Shivasubramanian Gopalakrishnan (Mech.)
- N.K. Khosla (MEMS)

Motivation

- Save institutional and Government money
- Enable freedom in Software usage
- Use of FOSS makes students and teachers better programmers

GOI Policy on FOSS

- Gazette notification D.O. No. 1(3)/2014-EG II (Vol. I), Dated 29 April 2015.
- Policy on Adoption of OSS

Problems

- Limited awareness
- Reluctance to shift
- Lack of Support
 - Teaching aids
 - Documentation
 - Answering questions

Software Promoted



COMPUTATIONAL
FLUID DYNAMICS

Software Promoted



OR TOOLS

FOSS Tools for Operations Research



eSim

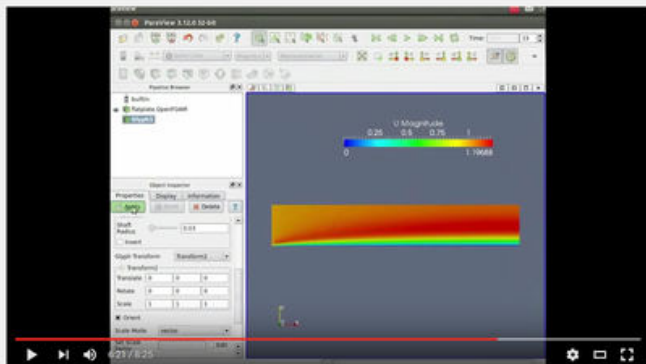
A Free and Open source EDA tool

Software Promoted



How we promote FOSS

Spoken Tutorials



Flow over a flat plate - English



Spoken-Tutorial IIT Bombay



1,202

+ Add to Share ... More



Up next

Autoplay



Contour plot of a 2D Velocity Field in Paraview (Import .dat File)

R.A. Tech
414 views



boundary layer over a flat plate

Purkaj Prasad
202 views



Introduction to SnappyHexMesh - English

Spoken-Tutorial IIT Bombay

1,770 views



Exporting geometry from Salome to OpenFOAM - English

Spoken-Tutorial IIT Bombay

2,290 views



Generating Mesh using snappyHexMesh - English

Spoken-Tutorial IIT Bombay

2,622 views



Downloading and installing Salome - English

Spoken-Tutorial IIT Bombay

4,732 views



paraview demo

Han-Wen Chen

1,094 views

Support on Forums

FOSSEE Forum

The screenshot shows the FOSSEE Forum website interface. At the top, there is a navigation bar with the FOSSEE logo, the text "FOSSEE Forums", and links for "Ask a question", "Notifications", and a user profile "vineeta123". Below this is a search bar labeled "Google Custom Search".

The main content area features four category cards:

- Scilab-arduino**: Includes a "View previous questions" button and an "Ask a question" button.
- DWSIM**: Includes a "View previous questions" button and an "Ask a question" button.
- esim**: Includes a "View previous questions" button and an "Ask a question" button.
- FOSSEE Laptop**: Includes a "View previous questions" button and an "Ask a question" button.

Below these cards is a large blue button labeled "View all previous questions." and a counter showing "113 Questions".

The "Recent questions" section contains a table with the following data:

No.	FOSS	Question	Date	Views	Answers	User
1	DWSIM	How to install and run DWSIM on MAC AIR?	25-04-26	15	0	dprao
2	Scilab	Debug a function plot	25-04-26	36	2	rinkley
3	OpenFOAM	How to plot a graph in Open foam	24-04-26	32	1	KVK

Textbook Companions

FOSSEE TBC



Login | Register

Home Resources About Us Search Events Feedback Toolbox Help Forum Contact Us

- Textbook Companion Project
 - Internship
 - Guidelines for Coding
 - Honorarium
 - FAQs
 - Completed Books
 - Books in Progress
 - Book Search
 - Book Proposal
 - Download Codes
 - Internship Forms
- Textbook Companion Review
- Lab Migration Project
- Spoken Tutorials
- Workshop Statistics
- Scilab on Garuda Cloud
- Scilab on Aakash

FOSSEE

- OpenFOAM®
- eGangotri

Waiting for analytics.spoken-tutorial.org...

Download Codes

Category

Control Theory & Control Systems

Title of the book

Automatic Control Systems (Written by B. C. Kuo And F. Golnaraghi)

About the Book

- **Author:** B. C. Kuo And F. Golnaraghi
- **Title of the Book:** Automatic Control Systems
- **Publisher:** Princeton Hall Of India Private Limited, New Delhi
- **Year:** 1995
- **Edition:** 7

About the Contributor

- **Contributor Name:** Arpita V Huddar, B.Tech (pursuing), Electronics Engineering, NIT Karnataka
- **College Teacher:** S.Rekha
- **Reviewer:** Sonarya Tatikola, IITB

[Download](#) (Download the Scilab codes for all the solved examples)

[Download PDF](#) (Download the PDF file containing Scilab codes for all the solved examples)

Title of the chapter

7. Time Domain Analysis of Control Systems

[Download](#) (Download the Scilab codes for all the solved examples from the Chapter)

Example No. (Caption):

Please select...

Software Development

Osdag-0.16.2 3d viewer ('pyqt4' backend)

Input dock

Connecting members
Connectivity *

Beam section *

Column section *

f_u (MPa) *

f_y (MPa) *

Factored load
Shear force (kN) *

Bolt
Diameter (mm) *

Type *

Grade *

Plate
Thickness (mm) *

Height (mm)

Width (mm)

Weld
Thickness (mm) *

Output dock

Bolt

Shear capacity (kN)	<input type="text" value="28.974"/>
Bearing capacity (kN)	<input type="text" value="58.384"/>
Capacity of bolt (kN)	<input type="text" value="28.974"/>
No. of bolts required	<input type="text" value="9"/>
Bolt group capacity (kN)	<input type="text" value="260.766"/>
No. of rows	<input type="text" value="5"/>
No. of columns	<input type="text" value="2"/>
Pitch (mm)	<input type="text" value="60.0"/>
Gauge (mm)	<input type="text" value="40.0"/>
End distance (mm)	<input type="text" value="40.0"/>
Edge distance (mm)	<input type="text" value="40.0"/>

Plate

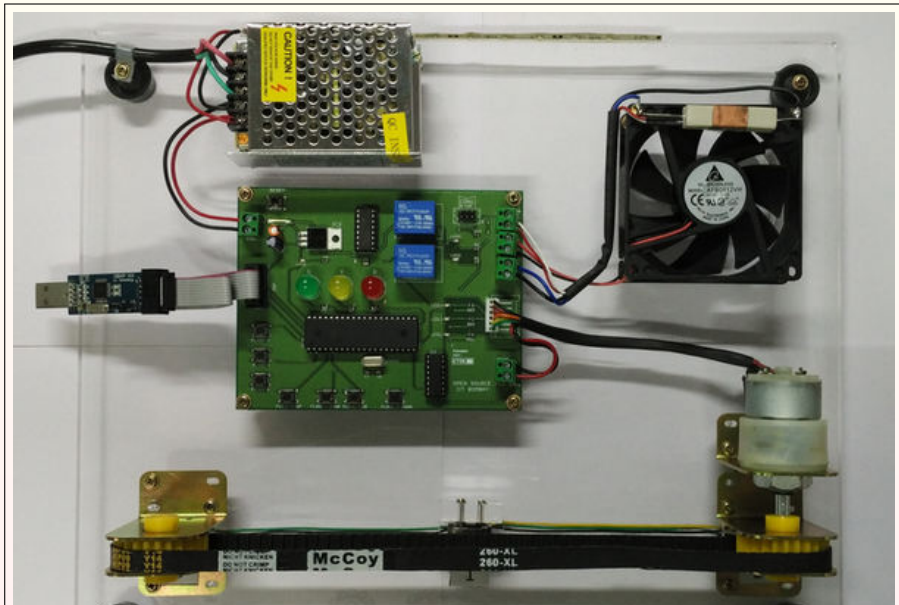
Height (mm)	<input type="text" value="320.0"/>
Width (mm)	<input type="text" value="120.0"/>
Moment demand (kNm)	<input type="text" value="21.429"/>
Moment capacity (kNm)	<input type="text" value="74.473"/>

Weld

Shear demand (kN/mm)	<input type="text" value="799.821"/>
Weld strength (kN/mm)	<input type="text" value="1060.477"/>

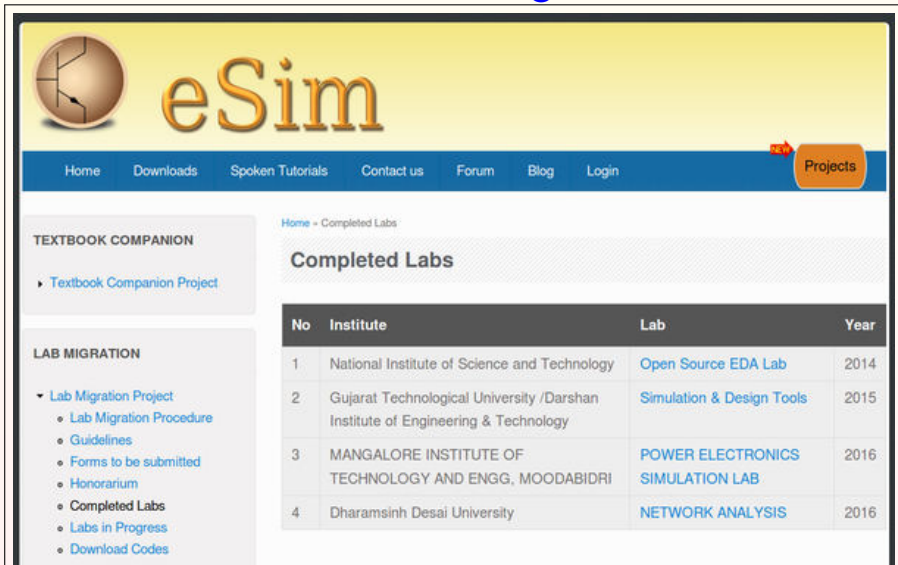
Wed, 20 Jan 2016 17:20:25 INFO : Overall finplate connection design is safe
Wed, 20 Jan 2016 17:20:25 DEBUG : *****End Of design*****
Wed, 20 Jan 2016 17:44:41 INFO : Overall finplate connection design is safe

Hardware Dev/Interfacing



Lab Migrations

FOSSEE Lab Migration



The screenshot shows the eSim website interface. At the top left is a logo of a globe with circuit traces. The main header contains the text 'eSim'. Below this is a blue navigation bar with links for Home, Downloads, Spoken Tutorials, Contact us, Forum, Blog, and Login. A 'Projects' button is highlighted in orange on the right side of the navigation bar. The main content area is divided into two columns. The left column contains two sections: 'TEXTBOOK COMPANION' with a link to 'Textbook Companion Project', and 'LAB MIGRATION' with a dropdown menu containing links for 'Lab Migration Project', 'Lab Migration Procedure', 'Guidelines', 'Forms to be submitted', 'Honorary', 'Completed Labs', 'Labs in Progress', and 'Download Codes'. The right column features a breadcrumb trail 'Home - Completed Labs' and a section titled 'Completed Labs' which contains a table with four rows of data.

No	Institute	Lab	Year
1	National Institute of Science and Technology	Open Source EDA Lab	2014
2	Gujarat Technological University /Darshan Institute of Engineering & Technology	Simulation & Design Tools	2015
3	MANGALORE INSTITUTE OF TECHNOLOGY AND ENGG, MOODABIDRI	POWER ELECTRONICS SIMULATION LAB	2016
4	Dharamsinh Desai University	NETWORK ANALYSIS	2016

Workshops

Statistics




Conferences

Statistics



Advertisements

Scilab-Arduino Workshop



July '15 03 July '15 04

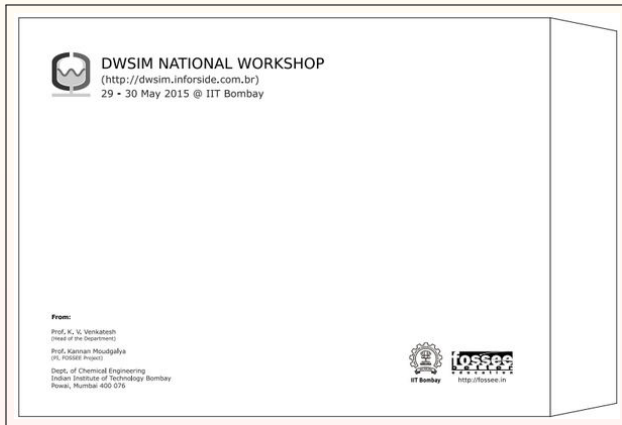
Arduino is an open source microcontroller board and an electronic prototyping platform, popular in industry. Scilab is an open source, user friendly, state of the art, computational engine. This workshop is devoted to the control of an Arduino board from Scilab. The workshop kit will include an Arduino Uno board, a shield containing sensors and actuators, and necessary documentation. Participants will learn to perform embedded system experiments on the Arduino board using Scilab code and also through the GUI based simulation environment, Xcos.

The following experiments will be performed:

- LED Blink
- RGB LEDs
- Light intensity measurement
- DC motor control
- Pushbutton
- Relay
- Potentiometer
- Temperature sensor
- Using different sensors
- Receive data through any modbus compatible device
- Demos on some industrial applications ... and more

LH 101 **Register here:**

Postal Campaigns

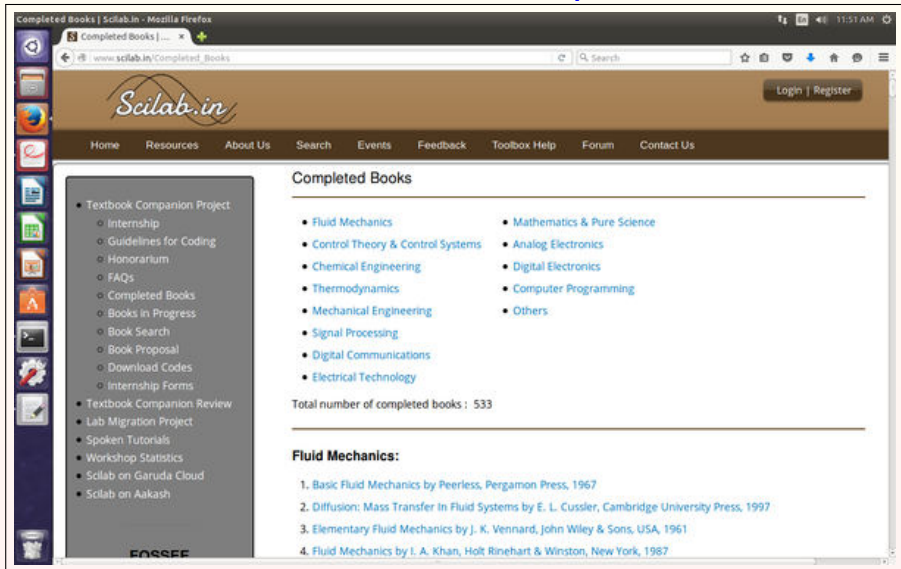


Partner Institutes

- IIT Kharagpur: documentation for several important open source software engineering tools
- Thiagaraja College of Engineering, Madurai - organizing and disseminating information about FOSS
- To add more partners with Committee's approval

Our Projects

Scilab Textbook Companions



The screenshot shows the Scilab.in website interface. At the top, there is a navigation bar with the Scilab.in logo and a 'Login | Register' button. Below the navigation bar is a horizontal menu with links: Home, Resources, About Us, Search, Events, Feedback, Toolbox Help, Forum, and Contact Us. The main content area is titled 'Completed Books' and features a list of book categories and a list of specific books under the 'Fluid Mechanics' category.

Completed Books | Scilab.in - Mozilla Firefox

Completed Books | ...

www.scilab.in/Completed_Books

Scilab.in

Login | Register

Home Resources About Us Search Events Feedback Toolbox Help Forum Contact Us

Completed Books

- Textbook Companion Project
 - Internship
 - Guidelines for Coding
 - Honorarium
 - FAQs
 - Completed Books
 - Books in Progress
 - Book Search
 - Book Proposal
 - Download Codes
 - Internship Forms
- Textbook Companion Review
- Lab Migration Project
- Spoken Tutorials
- Workshop Statistics
- Scilab on Garuda Cloud
- Scilab on Aakash

FOSSIE

- Fluid Mechanics
- Control Theory & Control Systems
- Chemical Engineering
- Thermodynamics
- Mechanical Engineering
- Signal Processing
- Digital Communications
- Electrical Technology
- Mathematics & Pure Science
- Analog Electronics
- Digital Electronics
- Computer Programming
- Others

Total number of completed books : 533

Fluid Mechanics:

1. Basic Fluid Mechanics by Peerless, Pergamon Press, 1967
2. Diffusion: Mass Transfer In Fluid Systems by E. L. Cussler, Cambridge University Press, 1997
3. Elementary Fluid Mechanics by J. K. Vennard, John Wiley & Sons, USA, 1961
4. Fluid Mechanics by I. A. Khan, Holt Rinehart & Winston, New York, 1987

Scilab: Textbook Companions

- Contributors are students from across the nation
- Honorarium and certificates to contributors

Scilab: Lab Migration

- Migrate labs using proprietary software
- Migrated 40 Matlab based labs to Scilab
- Another 19 labs are under progress
- [Scilab Lab Migration Weblink](#)

Scilab on Cloud

The screenshot displays the Scilab on Cloud web interface. The browser address bar shows `cloud.scilab.in/#`. The page header includes the Scilab logo and navigation links like "Contact us" and "Scilab.in". On the left, there is a sidebar with a "Category" dropdown set to "Signal Processing", a "Book" dropdown set to "10. Schaums Outlines Sign...", and a "Chapter" dropdown set to "1. Signals and Systems". Below this, an "Example" dropdown is set to "1.31 - first derivative of the s...".

The main content area features a code editor with the following Scilab code:

```
clear;
close;
clc;
t=-10:0.1:10;
a=2;
//x(t)=u(t)-u(t-a)
s=[zeros(1,find(t==0)-1) ones(1,find(t==0)-1) zeros(1,length(t)-find(t==a)+1)];
subplot(2,1,1)
plot(t,x)
xlabel('x(t)','t')
subplot(2,1,2)
plot2d(t(1:end-1),diff(x))
xlabel('diff(x(t))','t')
//x(t)=t*u(t)-u(t-a)
d=diff(x);
figure
subplot(2,1,1)
plot(t,ab)
xlabel('x(t)','t')
subplot(2,1,2)
plot2d(t(1:end-1),diff(ab))
xlabel('diff(x(t))','t')
```

Below the code editor is an "Execute" button. A modal window is overlaid on the code editor, containing two plots. The top plot, titled `x(t)`, shows a step function $x(t)$ that is 0 for $t < 0$ and 1 for $t \geq 0$. The x-axis is labeled `t` and ranges from -10 to 10. The y-axis ranges from -1 to 1. The bottom plot, titled `diff(x(t))`, shows the derivative of $x(t)$, which is 0 for $t < 0$ and has a sharp spike at $t = 0$ with a height of 1. The x-axis is labeled `t` and ranges from -10 to 10. The y-axis ranges from 0 to 2. A "Download" button is located at the bottom left of the modal window. In the bottom right corner of the page, there is a "Report bug / Give feedback" button.

Scilab on Cloud

- User can modify codes & parameters and check the results
- Accessible on multiple browsers
- Such free service is not available for Matlab
- Accessible on mobile devices

SVNIT, Surat saved money by shifting to Scilab

--- Forwarded msg. From: Dr. Ashish Panchal <akp@eed.svnit.ac.in>
Date: Wed, 4 Dec 2013 23:54:14 +0530
To: belur@iitb.ac.in

Dear Sir,

In the year 2009-2010, S V National Institute of Technology had initiated the procedure for procuring MATLAB. In the mean time, Prof. M Belur and his team came to SVNIT Surat and introduced about similar freeware Scilab. They conducted introductory workshops/tutorials for the faculty and students. Thereon, the work was successfully transferred to Scilab instead of MATLAB. Hence the procurement of MATLAB tool boxes etc. were drastically reduced and we could save lot money because of introduction of such a freeware.

With regards.

Panchal Ashish K., Assoc. Prof.

Electrical Engineering Department, SVNIT

Ichchanath, Surat-395007

Gujarat, India.

Scilab: Other Achievements

- AICTE project evaluation committee saved about Rs. two crores in FDPs by promoting FOSS
- Trained hundreds of students, faculty
- First Scilab India Conference in 2014

Scilab: Work Planned

- Scale up Lab Migration activity
- Complete additional Textbook Companions
- Version control for Textbook Companions (like wikipedia)
- Organize Scilab conferences

Python Textbook Companions

https://try.fossee.in/user/SHTQTRSPXRQ/notebooks/Python-Textbook-Companions-for-Schools/Physics_Textbook_Part-I_for_class_10

File Edit View Insert Cell Kernel Widgets Help

Python 2

```
x = linspace(x0, x1, 100)
y = linspace(y0, y1, 100)

x, y = meshgrid(x, y)

Ex, Ey = E_total(x, y, charges)
streamplot(x, y, Ex, Ey, color='g')
draw()

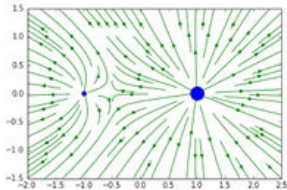
print "Positive charge is indicated by blue circle. Negative charge is indicated by red circle\n"
print "Change the magnitudes of the charges using the sliders"

interact(plot_field_lines, q1_value=(-20,20,0.1), q2_value=(-20,20,0.1))
```

q1_value 0.6
q2_value 5.1

Positive charge is indicated by blue circle. Negative charge is indicated by red circle

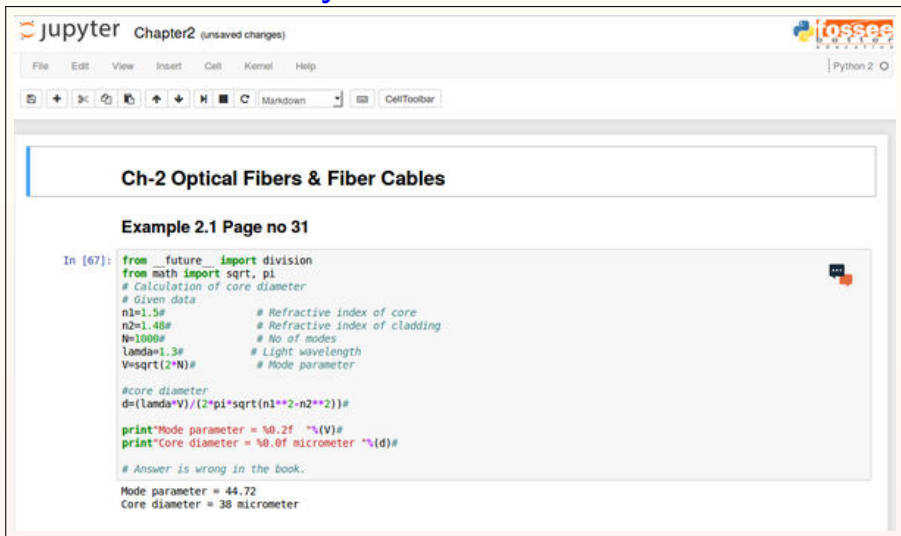
Change the magnitudes of the charges using the sliders



Python: Textbook Companions

- Make it easy for users of textbooks to start using Python
- To improve the documentation available for Python

Python on Cloud



The screenshot shows a Jupyter Notebook window titled "Chapter2 (unsaved changes)". The interface includes a menu bar (File, Edit, View, Insert, Cell, Kernel, Help) and a toolbar with various icons for cell operations. The notebook content is as follows:

Ch-2 Optical Fibers & Fiber Cables

Example 2.1 Page no 31

```
In [67]: from __future__ import division
from math import sqrt, pi
# Calculation of core diameter
# Given data
n1=1.5#           # Refractive index of core
n2=1.48#         # Refractive index of cladding
N=1000#          # No of modes
lamba=1.3#       # Light wavelength
V=sqrt(2*N)#     # Mode parameter

#core diameter
d=(lamba*V)/(2*pi*sqrt(n1**2-n2**2))#

print"Mode parameter = %0.2f "%(V)#
print"Core diameter = %0.0f micrometer"%(d)#

# Answer is wrong in the book.

Mode parameter = 44.72
Core diameter = 38 micrometer
```

Python: Other Achievements

- 51 Spoken Tutorials in Python created
- More than 40,000 trained using these
- 378 Textbook Companions, 219 under progress
- 7 SciPy India conferences (2009 – 2015)
- SDES: Software Development Techniques for Engineers and Scientists

Python: Work Planned

- Scale up Python Textbook Companion
- Improve Yaksh and support its use in ST project
- Create advanced/updated Spoken Tutorials
- Python for Schools and Colleges

OpenFOAM



COMPUTATIONAL FLUID DYNAMICS

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Textbook Companion Project

[> Textbook Companion Project](#)

Lab Migration Project

[> Lab Migration Project](#)

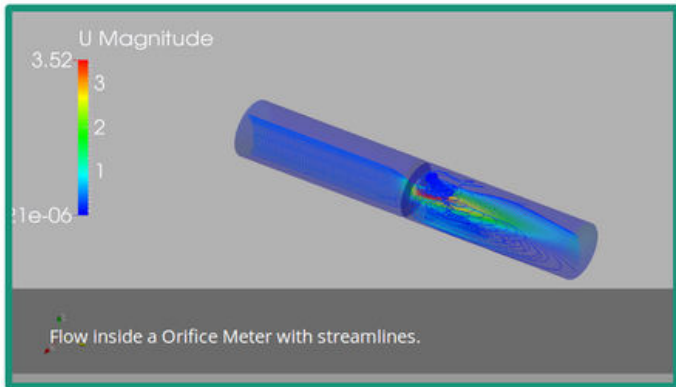
Workshops

[> Completed Workshops](#)

Spoken Tutorial

[> Spoken Tutorial](#)

[Log In/Register](#)



fossee
better

OpenFOAM: Achievements

- CFD toolbox, equivalent to Ansys Fluent, Star CCM
- 19 Spoken Tutorials for self study
- First User Symposium held on 27 February 2016

OpenFOAM: Work Planned

- Develop GUI for OpenFOAM
- Scale up Lab Migration activities
- Create Advanced level tutorials for OpenFOAM
- Write a book on OpenFOAM through Spoken Tutorials

eSim

The screenshot displays the eSim software interface. On the left is a vertical toolbar with various icons. The main workspace is titled "Plotting-2" and contains a graph of Current (I) versus time. The graph shows four periodic current waveforms in blue, green, red, and yellow, each with a peak current of approximately 4.2, 3.8, 4.2, and 3.8 respectively. The time axis ranges from 0.000 to 0.040. To the right of the plot is a "Transient Analysis" control panel with a "List of Nodes" (V(1), V(3), V(4)), a "List of Branches" (all), and a "Function" field. Below the plot is a console window showing system information.

Projects

- RC
- BJT_amplifier
- bridgeRectifier
- flipflop
- CMOS_inverter

Plotting-2

Current (I) →

time →

Transient Analysis

List of Nodes:

- V(1)
- V(3)
- V(4)

List of Branches:

- all

Plot

Function:

Clear Plot Function

Examples:

- Addition: $V(1) + V(2)$
- Subtraction: $V(1) - V(2)$
- Multiplication: $V(1) * V(2)$
- Division: $V(1) / V(2)$
- Comparison: $V(1) vs V(2)$

Welcome NgSpice-1 Plotting-2

```
[INFO]: Workspace : /home/user/eSim-Workspace
[INFO]: The current project is /home/user/Installed-Software/FreeEDA/Examples/bridgeRectifier
[INFO]: Ngspice simulation is called : /home/user/Installed-Software/FreeEDA/Examples/bridgeRectifier
[INFO]: PythonPlotting is called : /home/user/Installed-Software/FreeEDA/Examples/bridgeRectifier
```

eSim: Achievements

- Used for schematic creation, PCB design and simulation
- 2 Lab Migrations
- 8 Textbook Companions

eSim: Work Planned

- Thorough testing of the GUI to make it a more stable and powerful EDA Tool
- Create basic, intermediate and advanced Spoken Tutorials
- Conduct several live workshops
- Conduct a massive campaign to train engineering students

OR-Tools



The screenshot shows the OR Tools website in a browser window. The address bar shows 'or.fossee.in'. The navigation menu includes 'Textbook Companion', 'Lab Migration', 'SELF Workshops', 'Resources', and 'About'. A search bar is located in the top right corner. The main header features the OR TOOLS logo (a 3D cube) and the text 'FOSS Tools for Operations Research'. There are 'Login' and 'Register' links. The central content area displays a simulation titled 'Queue in front of a Billing counter' with a line graph showing queue length over time. The graph parameters are 'Customer id= 25, Q-length=1'. To the right of the graph is a black box with the text 'Simulation of Queue at Billing Counter in a Super Market.' Below the main content, there are sections for 'Welcome to OR Tools', 'News and Events', and 'Scipy India 2014'. The 'Scipy India 2014' section mentions Prof. Jayendran Venkateswaran's presentation on 'Solving Optimization Problems using Python/PuLP'.

or.fossee.in

Textbook Companion Lab Migration SELF Workshops Resources About

OR TOOLS
FOSS Tools for Operations Research

Login Register

Queue in front of a Billing counter

Customer id= 25, Q-length=1

Queue-length

Time

Simulation of Queue at Billing Counter in a Super Market.

Welcome to OR Tools

News and Events

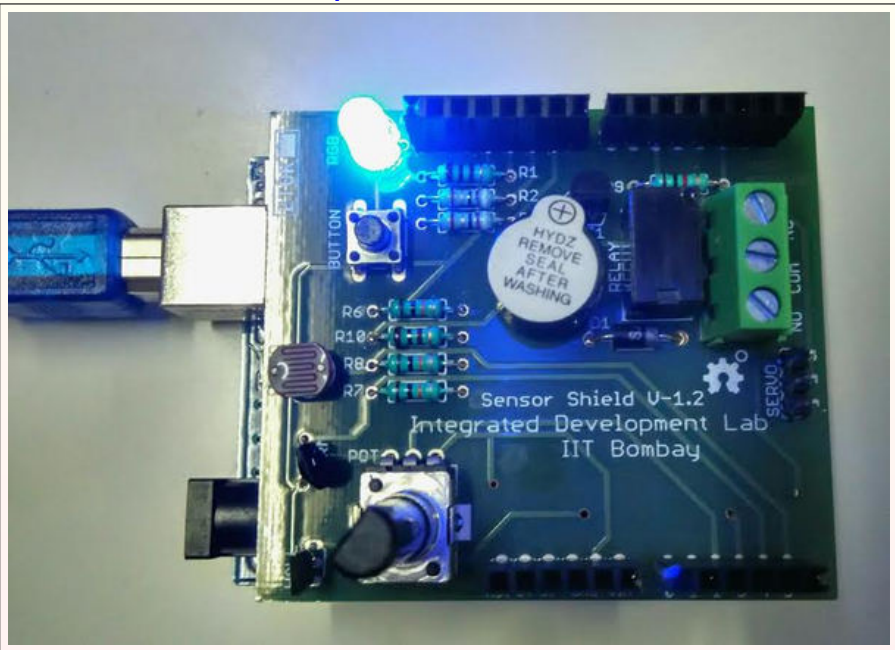
Scipy India 2014

Prof. Jayendran Venkateswaran, PI of OR Tools gave a presentation on "Solving Optimization Problems using Python/PuLP".

OR-Tools: Achievements

- 5 Textbook Companions
- 2 Spoken Tutorials
- Scilab optimization toolbox

Open Hardware



Open Hardware

- The cost of building and testing new hardware is significant
- An open hardware builds on already trusted design
- Saves money, ideal for institutions and startups
- Scilab-Arduino and OpenPLC are open hardware

Scilab-Arduino Workshop



Scilab-Arduino: Achievements

- 10 experiments
- 2-Day workshop conducted
- Trained more than **150** participants

Scilab-Arduino Book

Microcontroller experiments through Arduino, Scilab & Xcos

The make-in-India drive cannot succeed with software alone; a good mastery of hardware is equally important. Research and Development in both software and hardware have to go hand in hand to establish a world standard manufacturing industry. To excel in manufacturing, industrial automation is indispensable. Microcontrollers form the basis of industrial automation.

This book explains how to interface the popular open source microcontroller Arduino Uno board with a computer, running MS Windows or Linux. It explains how one can do this through open source software Arduino Integrated Development Environment (IDE). It also explains how one can effectively use the state of the art open source computational engine Scilab. The use of the graphical programming environment Xcos of Scilab is illustrated. Using the code that comes with this book, one can learn to work with LEDs, LDRs, DC Motors, Push Buttons, Thermistors and Servo Motors. Easily available low cost hardware, such as an Arduino Uno board and a Shield containing sensors and actuators have been used in all demonstrations.

This book is the result of the work done by the FOSSEE (free and open source software for education) team, IIT Bombay. FOSSEE has been promoting popular open source software through collaborative activities, such as Textbook Comparisons, Lab Migration and Spoken Tutorial. The Arduino experiments of this book have been validated on the affordable, but versatile, FOSSEE Laptop. The FOSSEE project is supported by the National Mission on Education through ICT, MHRD, Government of India.

ISBN 13 978 81 9233 087 0



SHROFF PUBLISHERS & DISTRIBUTORS PVT. LTD.

Microcontroller experiments through Arduino, Scilab & Xcos



Manas Ranjan Das
Indrajyoti Anon
Samarudh Kulkar
Rajesh Kulkarni
Srikant Patilkar
Rupak Rokade

Tanmayee Joshi
Sudhakar Kumar
Kiranmayee Madhusudan
Paavni Shukla
Sonal Singh
Kannan H. Moudgalya

Scilab-Arduino Book

- Microcontroller experiments using Arduino and Scilab
- Published by Shroff Publishers, Mumbai
- Used for conducting workshops, self learning

OpenPLC



OpenPLC

- Developed for educational purposes
- Useful to teach the concepts of Ladder Logic

Open Hardware: Work Planned

- Support for more experiments in digital domain
- Interfacing Arduino with Python & Julia
- IOT with Arduino and raspberry pi
- Interfacing with real time simulator using OpenModelica
- Designing modular PLC board to create a generic platform

SC/PAB suggests other FOSS

- SC Meeting on 4 December 2010 recommended promotion of other FOSS equivalents
- PAB, January 2011 directed FOSSEE to identify commercial software for which open source equivalents need to be developed
- PRSG meeting held on 7 Sept. 2012 suggested that FOSSEE should also work on other FOSS systems

Sandhi



Sandhi

Visual Programming Language and Editor

Sandhi - New Software Developed

- Open Source alternative to LabVIEW
- Programmers from all the partner institutions of the Virtual Labs project trained by Sandhi team

Sandhi: Work Done

- Completed lab: 1, under progress : 6
- Xcos on web
 - User interface built using Javascript, as a proof of concept
 - A few Xcos palettes made available
- Xcos on desktop
 - Able to build and edit backend of Xcos through Eclipse IDE

Sandhi: Work Planned

- Make the Xcos web interface fully functional and usable
- Make Xcos desktop more user friendly and add more blocks

You have 2 question(s) left in Mid Term Quiz

00:14:42

Question Navigator

1

2

Python count number of vowels with Dict (Code)

(Marks : 1.0)

Define a function called `CountVowels(s)` which takes one string argument. Your function should count the number of vowels in the string passed as argument and return a dictionary which has the vowel as its key & the count of that vowel as associated value. Assume that string passed as argument will always be in lower case.

For Example `CountVowels("aeiou")` should return `{'a':1, 'e':1, 'i':1, 'o':1, 'u':1}` For Example `CountVowels("aaeeiiioouu")` should return `{'a':2, 'e':2, 'i':2, 'o':2, 'u':2}`

Note: You do not have to print anything, neither you have to make the function call. Just define the function to perform the required operation & click on check answer. Also, note that the function name should exactly be as mentioned above.

Language: python

```
1 def CountVowels(s):
2     a_no = 0
3     e_no = 0
4     i_no = 0
5     o_no = 0
6     u_no = 0
7     if 'a' in s:
```

Yaksh (Online Test) - New Software Developed

- Currently supports Python, C, C++, Java, Scilab and Bash
- Used for SDES, T10KT
- Useful tool for recruitment of programmers

Osdag



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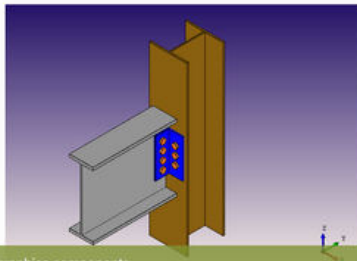
OSDAG

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- [Motivation](#)
- [Objectives](#)
- [Events](#)
 - [Upcoming Events](#)
 - [Past Events](#)

FOSSEE

- [Scilab](#)

[in/acknowledgement](#)



3D visualization of graphics components

Home

Osdag is a cross-platform free and open-source software for the design (and detailing) of steel structures, following the

Osdag - New Software Developed

- Cross-platform GUI, for design of steel structures
- Follows the Indian Standard IS:800(2007)
- Interactive GUI, provides 3D visualisation of the designed component

Osdag: Work Planned

- Redefining the user interface for multiple projects
- Reformatting the design report
- Organising a pre-launch workshop
- Creating Spoken Tutorial videos for installation and basic usage
- Launching a few modules for the general public use

Scilab-Toolboxes - New Software

- PAB: raise the level of Scilab to Matlab
- Ongoing improvement of toolboxes
 - Image processing
 - Signal processing
 - Communication systems
 - Optimisation
 - System identification
 - Control Systems
 - Scilab2C
- Use existing industry standard open source libraries for development

Scilab-Toolboxes: Work Planned

- Future toolbox development in DSP, Computer Vision, Wavelets, Symbolic Math
- Current and future toolbox development aims at UG academic and research requirements

Summary of Activities (Phase II)

Item	Committed (1st Year)	Achieved (1st Year)	Committed (2nd Year)
Textbook Companions + Lab Migrations	300	400	350
New FOSS	0	3	3
Conferences + Live Workshops	4	11 (2 C + 9 W)	5
Postal Campaigns	10	11	15
Partner Institutes	5	2	5

Budget for three years

Head	I yr	II yr	III yr	Total
Salaries ⁰	1.05	1.40	1.80	4.25
Honorarium for textbook companion creators ¹	0.60	0.88	1.05	2.53
Collaborating partner institutions ²	0.50	1.00	1.50	3.00
Travel ³	0.20	0.25	0.30	0.75
Postal campaign expenses ⁴	0.10	0.15	0.20	0.45
Other promotional expenses (stalls, media)	0.15	0.20	0.25	0.60
Conferences and workshops ⁵	0.20	0.25	0.30	0.75
Equipment	0.15	0.20	0.25	0.60
Web hosting expenses	0.05	0.10	0.15	0.30
Consumables	0.13	0.15	0.20	0.48
Other FOSS systems to be taken up for promotion ⁶	0.00	0.50	1.00	1.50
Contingency	0.10	0.15	0.20	0.45
Coordinator's honorarium	0.08	0.10	0.15	0.33
Total	3.31	5.33	7.35	15.99

Current Financial Status

Details	Amount (Cr)
Amount received on 09-06-2014	4.45
Amount spent and committed	4.436
Cash in hand	0.014

- 45 people employed by FOSSEE

FOSSEE Vision

- Facilitate independence from proprietary monopolies
- Spread FOSS in a much bigger way
 - Government organizations
 - Schools
 - More curricular changes

Thank you!

Talk to a Teacher

Teachers empowerment, students empowerment,
and integration of tools for empowerment
(synchronous delivery)

IIT Bombay:

Kannan M. Moudgalya, D. B. Phatak

IIT Kharagpur:

Raja Datta

**Domain Experts Committee Meeting
23 November 2015**



Outline

- ▶ **Budget and project components**
- ▶ **Plan vs. delivery**
- ▶ **Requests to this committee**
- ▶ **Brief description of T10KT and Spoken Tutorials**



Components

1. **10,000 Teacher Training Programme (T10KT)**
2. **Spoken Tutorials**



10,000 Teacher Training Programme: Deliverables

1. **Conduct 15 courses**
 - ▶ 9 at IIT Bombay
 - ▶ 6 at IIT Kharagpur
2. **Train 1,50,000 teachers**
3. **Establish 10 Nodal Centres**
4. **Establish 500 Remote Centres**



Spoken Tutorials: Deliverables

1. **Create 5,000 Spoken Tutorials of 10 minute duration each**
2. **Train 1,50,000 students and faculty**



T10KT Training Alone: Planned vs. Delivered

		Planned	Delivered
13-14	No. workshops	3+1	4+2
	No. trained	40,000	56,377
14-15	No. workshops	3+2	5+2
	No. trained	50,000	49,407
Total	No. trained	90,000	1,05,784



T10KT Overall: Planned vs. Delivered

	Planned (3 years)	Delivered (< 2 years)
People trained	1,50,000	1,05,784
Nodal Centres	10	0
Remote Centres	500	350

We are at about the midpoint of this project!



Spoken Tutorials: Planned vs. Delivered

		Planned	Delivered
13-14	No. trained	50,000	2,44,215
	ST creation	1,100	1,140
14-15	No. trained	50,000	4,52,199
	ST creation	2,200	1,960
Total	No. trained	1,00,000	6,96,414
	ST creation	3,300	3,130



Overall Budget (in lakh)

	I Year	II Year	III Year	Total
IITB	5557	3879	3937	13373
IITKgp	1299	1893	2637	5829
Total	6856	5772	6574	19202



Details of funds received

Year	Date of receipt	Amount recommended by SC (Rs. crore)	Amount Released (Rs. crore)
1	6 Feb. 2013	30%	57.60
2	18 Sept. 2014	57.60	20.00

- ▶ The SC (27-28 May 2014) recommended the release of Rs. 57.60
- ▶ Rs. 20 crore was released in Sept. 14
- ▶ Rs. 10 crore was released in January 2016
- ▶ We are waiting for funds



Current proposal

- ▶ **Deliver one synchronous course in each of IIT Bombay and IIT Kharagpur for T10KT - as against $3+2=5$ in DPR**
- ▶ **Deliver Spoken Tutorials as proposed earlier**
- ▶ **Shift to MOOCs**



Modified budget for T10KT

	Approved		New	
	IITB	IITKgp	IITB	IITKgp
No. of Courses	Three	Two	One	One
Equipment	50	100	10	10
Salary	300	200	100	60
Consumables	100	100	20	20
Nodal centres	250	0	0	0
Remote centres	600	0	50	0
10K workshops	1887	1258	629	629
Coordinator W/S	75	50	25	25
Publicity/sponsor	50	50	10	10
Travel	60	50	20	15
Contingency	100	100	30	30
MOOCs effort	0	0	94	94
Coord. honorarium	25	25	15	15
Total	5237	1299	1003	908



MOOCs Calculation for T10KT

	IITB	IITKgp	
Creation of 4 new MOOCs at each IIT	44	44	9 lakh for creation and 2 lakh honorarium
Repurposing to create 2 MOOCs	16	16	6 lakh for creation and 2 lakh honorarium
Running 6 courses first time	24	24	Honorarium (1), TA (1.5), staff (1.5) = 3.5 lakh for each course
MOOCs workshops	10	10	2 workshops at each IIT
Total	94	94	



Revised Calc. - Spoken Tutorials

Head	Approved	New	Comments
Deliverables as in the second year of DPR	382	382	
Efficacy studies for backward states/districts	0	10	2 Ph.Ds and an assistant
Repurposing to create MOOCs	0	48	6 courses at the rate of Rs. 8 lakh per course
Running MOOCs, first time	0	24	6 courses at the rate of Rs. 4 lakh per course
Conducting one workshop	0	5	
Total	382	469	



Overall budget - requested now

	Approved		New	
	IITB	IITKgp	IITB	IITKgp
T10KT	5237	1299	1003	908
Spoken Tutorial	382	0	469	0
Total	5619	1299	1472	908

**Total funds requested now
= Rs. 2377 lakh = 23.77 crore**



Thanks



ईडीआरपी मिशन / EdRP Mission

यतींद्र नाथ सिंह / Yatindra Nath Singh
भा प्रौ सं कानपुर / IIT Kanpur

वेब: <http://home.iitk.ac.in/~ynsingh>

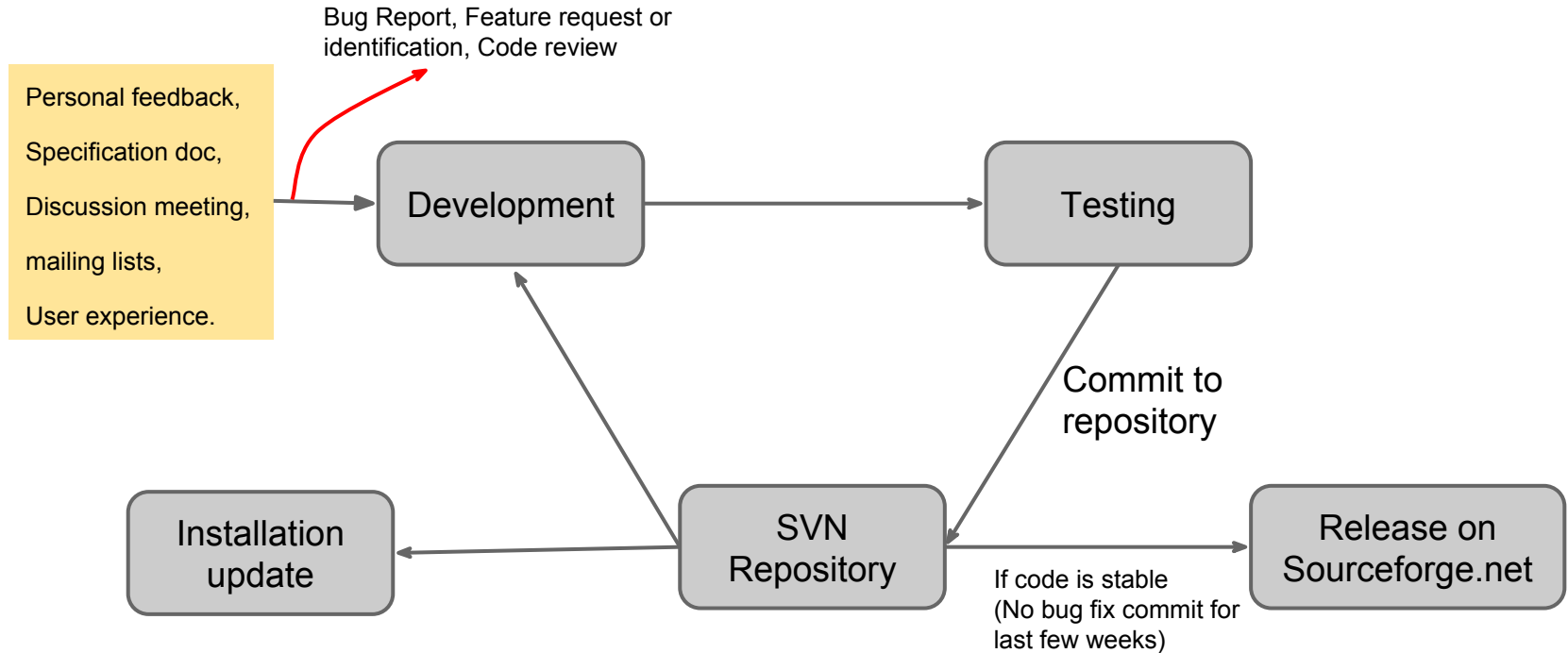
ईमेल: ynsingh@iitk.ac.in

Purpose

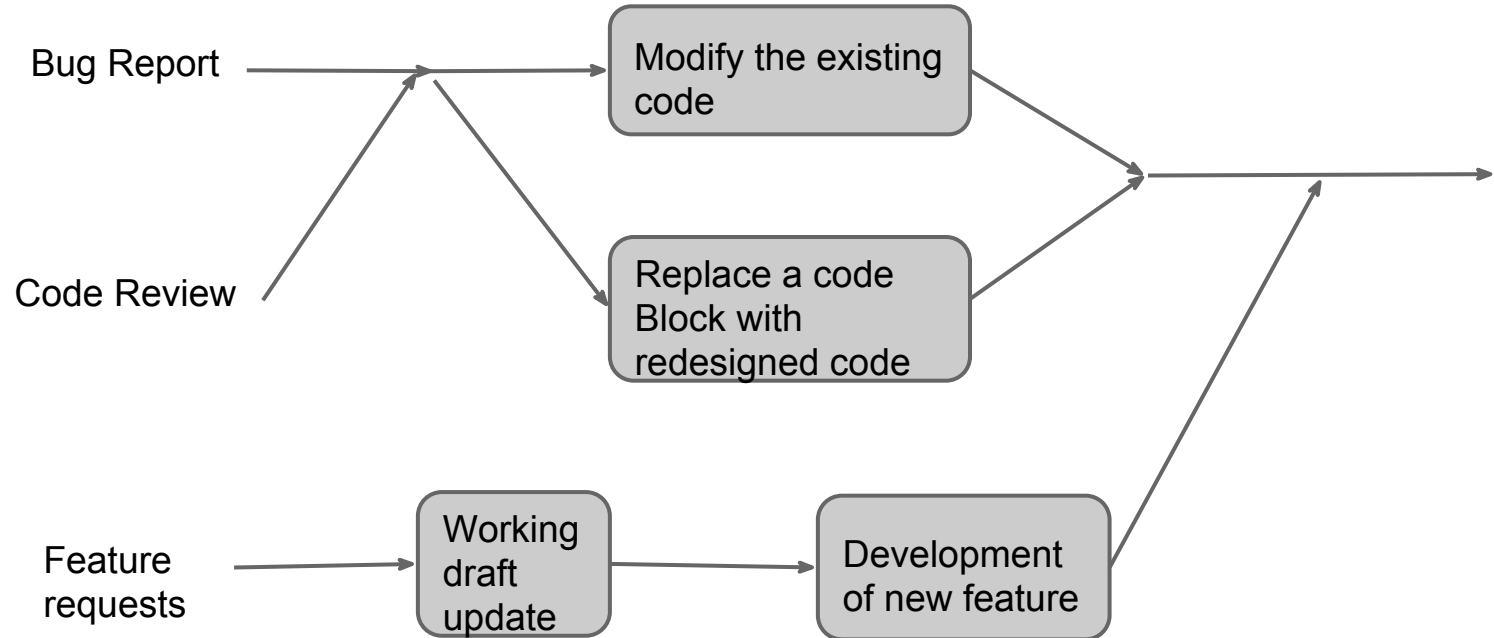
- To develop various software systems (usually web based applications) to support academic and administrative processes in academic institutes.

- Started in 2009 as pilot - IITK, DEI, IITR, NITH, AVV
- 2010 - main phase started - AMU, SMVDU, IGNOU, JMI - new partners added.
- Partners added at NMEICT meetings.

Development Philosophy - Agile methodology



Development process



Current Status

- The project work is stalled. Most of partners withdrawn from project after depositing the code in repository.
- Through other minimal resources - Brihaspati-3 running as service at <http://brihaspati.nmeict.in/>
- Financial Management System - BGAS - in use at about 35 institutions

Systems currently operational

File Edit View History Bookmarks Tools Help

Inbox - ysingh69@gmail.com - Gmail x ReportPresentations - Google Drive x PresentationStdComm-20140303 - ... x AS Login in Brihaspati x +

202.141.40.215:8080/brihaspati/servelet/brihaspati/template/BrihaspatiLogin.vm;jsessionid=C745A94996758C485F57C5E08712986A

rajiv ramaswami

Brihaspati 3

THE VIRTUAL CLASSROOM

There are now two more installation running. In case of loading, use them. [option-1](#), [option-2](#).
If you are depressed, you are living in the past. If you are anxious, you are living in the future. If you are at peace, you are living in the present. -
"Lao Tzu".

NEWS HEADLINES

Postdoc positions in Cloud computing and SOA [More](#)

[More News >](#)

List Of Sessions in Brihaspati Sync

No session has been announced till now

- Registered Course List
- Online Registration
- Open Access Courses
- Institute Admin Registration
- Registered Institute List
- FAQ List
- Parent Registration
- Authenticate From Brihaspati Server

Traffic on site is normal. You may login.
No. of users active on the system, during last login:
1
Time taken during last login (in seconds): 8.251513

language

Email (User)

Password

- Forgot Password
- Reset Activation URL

For Guest Access, user is 'guest' and password is 'guest'

Sign in with:

Opensource component development supported by Elearning Division, MCIT, IIT Kanpur, and NMEICT, MHRD.
Opensource development available for download at Sourceforge.net
For problems at this site, send email to ETRG, IIT Kanpur
For reporting bugs, suggestion, feature request, and maintenance support, post at brihaspati_ERP_mission@yahoo.com
Copyright © 2002-2014 ETRG, IIT Kanpur

Powered By Based on Open Source Brihaspati at

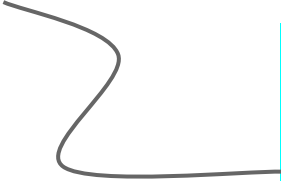
Join Now

ENG 23:37
US 01-03-2014

Brihaspati-3

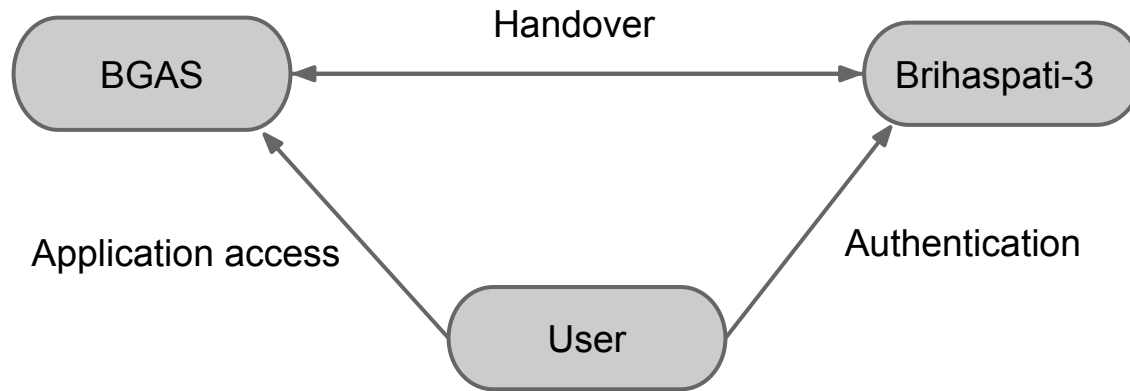
- Learning management system
- Multilingual (हिंदी / urdu / English and 23 other languages)
- Includes
 - online examination
 - course content sharing
 - collaborative content authoring
 - marks upload/view
 - Assignment submission
 - Group based learning support

- Management interface for main admin, institute admin
- disk quota management
- User information



Institute_course_program
Email_id (alternate)
User_id (Email Id)
Password Hash
Institute_program_rollno

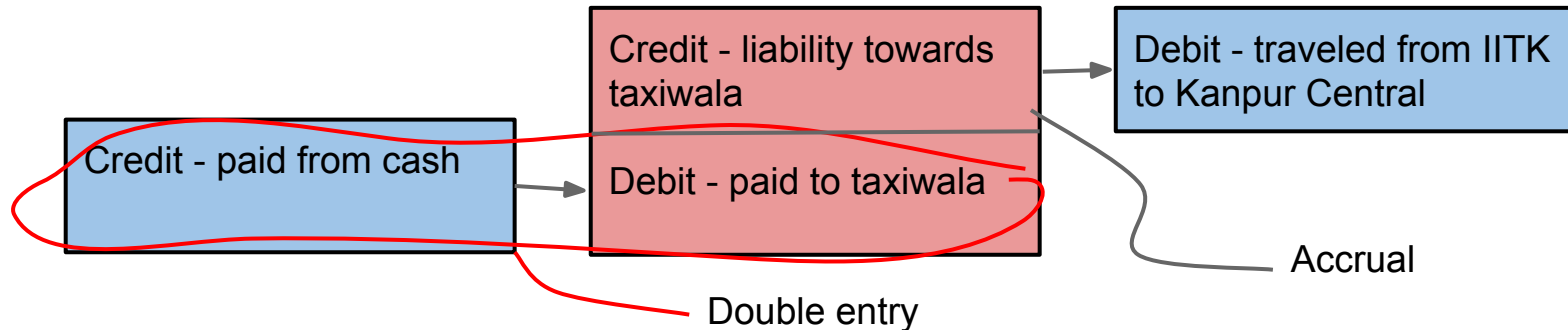
- Remote authentication interface for other application



BGAS - Brihaspati General Accounting System

- Since April 2013, effort started based on the received requirements.
- Double entry, fund based accrual accounting

Example Entries



Brihaspati General Accounting System

VH ([change](#))
 Acc. Name : bgasvh
 FY : 01 Apr 2013 - 31 Mar 2014
 Date : Sunday, 02 March 2014

Balance Sheet MHRD Format

[Print Preview](#)

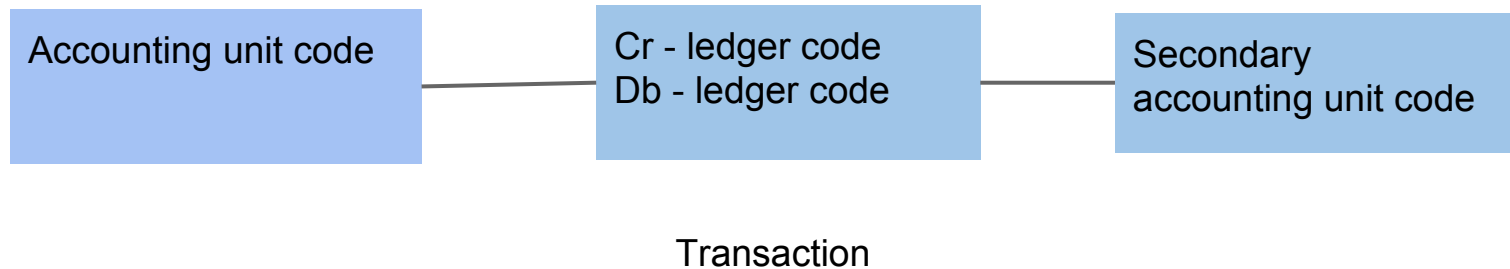
• Previous Year's data does not exist.

Entry Date From To Entry Date

	Schedule	Current Year	Previous Year
Sources Of Funds			
Own Fund	1	Cr 4864570.21	0
Reserves and Surplus	2	Cr 12853029.02	0
Total		17717599.23	0.00
Application Of Funds			
Fixed Assets	3	Dr 199543.00	0
Investment	4	Dr 18000.00	0
Current Assets	5	Dr 17500056.23	0
Total		17717599.23	0.00
Notes On Accounts	5		

- Open-source 'Webzash' taken as base.
- modified and enhanced.
- New features
 - New balance sheet format
 - New schedule formats
 - Three format for chart of accounts - Standard, bare minimum, detailed as per standard.

Concept of transaction between two entities



Conventional design: Accounting unit code and ledger codes are mixed up.

Clean separation - leads to easier processing of data.

For a/c unit code, ledger code specification - committee chaired by CCA constituted.

- includes Finance persons from various organizations.
- Secondary accounting unit code - structure left to individual user organizations. Uniformity in them not needed.
- Currently supported in BGAS

Secondary Accounting Unit

- code (e.g., employee code, vendor code, student roll no.)
- PAN No., Bank Details.
- Depending on type of entity - more information.
- Code decided by user institutes

- Start and end dates for report - flexible.
- Depreciation of assets - automatic calculation
- Year end closing
 - Automatic transfer of (income-expenditure) to General Reserve.
 - Opening of next year assets and liabilities - automatic based on closing balances.

Other systems

- LibMS - was in use in AMU before AMU team stopped functioning due to lack of resources.
- PMS - financial part - subsumed in BGAS.
Activity management part in Brihaspati3.
- MGMS - a kind of financial management system, now subsumed in BGAS.
- Data visualization - subsumed in Brihaspati3 as integrated analytics component.

Ongoing work

Basically three aggregates

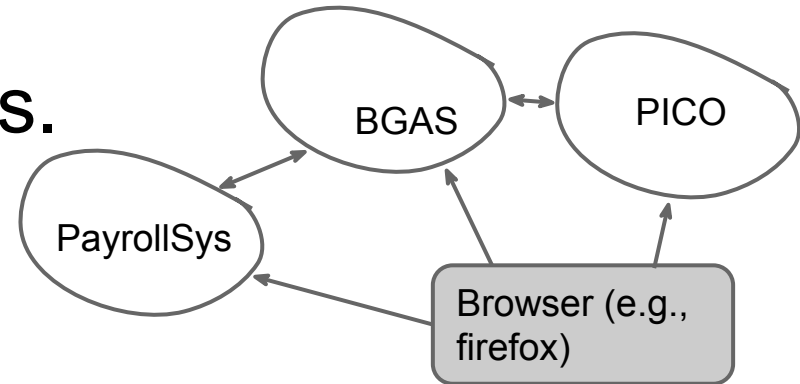
- Academic Management System - build around Brihaspati
- Financial Management System - build around BGAS
- LibMS - it is available as functional module in opensource. But institutes can also opt for other Lib Mgt Systems also e.g., Koha.

Ongoing Work

took over by
IITK after
SMVDU

Took over by IITK
from JMI working
together

- Integration of **PayrollSys**, **PICO**, **StuFeeMgtSys** with BGAS.
- Integration of remote handovers and seamless transfers.
- Secure data sharing APIs.



Installations*

- IIT Kanpur - Shiksha Sopan
- NITIE Mumbai
- CU Gujarat
- DEI Agra
- SPA Vijayawada

*We are currently interacting with them on regular basis, older ones are not listed.

Statistics

- 13085 worldwide downloads of code from Sourceforge.net
- 18613 user on <http://brihaspati.nmeict.in>
- 5941 course areas
- 268 institute partitions.
- 35 installations of BGAS in Various institutes
- Direct checkouts from subversion repository - not known
- Statistics from other institutional installations of Brihaspati-3 not known.

What is needed?

- Extension of project for one year from date of grant of extension.
- Release of grant for the extension period
 - Approx ₹50 lakhs (with only online workshops)
 - Approx ₹76 lakhs (with four offline workshops at IITK)

Why extension needed?

- Users at other installation
 - not paying for support, initial hitch.
 - Once operations are stable, they the contributions will come.
- Feedback from the users - need to update the software system on continuous basis.
- If possible, identify few institutes
 - give them funds in second year.
 - They should sign MoU with IITK and give money to IITK for support.
 - Once institutes pays, they can be questioned on adaption of these systems. Initial hesitation can be taken care of.

Budget requirement

Manpower (@20K average for 15 developers)	36 lakhs
Travel	3 lakhs
Training	24 lakhs (considering the travel expanses of the participants) / Nil*
Equipments (PC upgradation + batteries for UPS etc.)	5 lakhs
Contingency (AMC of machines+UPS+Batteries)/ consumables	4 lakhs
Overhead (5%) for DoRD	3.6 lakhs /1.44* lakhs
Total required	75.6 lakhs/49.44* lakhs

* if Online training is opted in lieu of offline training

URLs

<http://brihsvn.iitk.ernet.in/repos> - source code repository

<http://brihaspati.nmeict.in/> - Brihaspati-3 installation

<http://brihsvn.iitk.ernet.in/~brihaspati/BGAS> - BGAS test installation

<http://educontent.iitk.ernet.in/> - test installation of all the products.

<http://sourceforge.net/projects/brihaspati> - Global code distribution site.

<http://14.139.62.116/pico> - Test installation of PICO at JMI, Delhi (older version)

Scheduled Workshop

BVM Engineering College, Vallabh Vidyanagar,
Gujarat 10-12 May 2016.

Part online, part offline.

For offline, expanses are borne by host.

धन्यवाद

Thank You



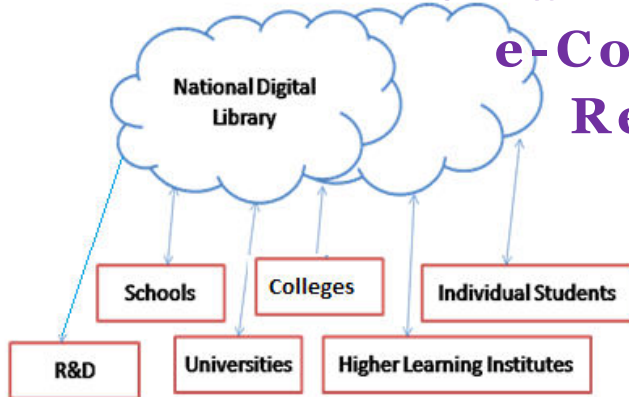
Development of National Digital Library of India

Towards Building a National Asset



A PILOT PROJECT

Project Brief: 02-MAY-2016
Domain Expert Committee on
e-Content, Pedagogy &
Related Activities



Presented by

Prof. PARTHA PRATIM DAS

ppd@cse.iitkgp.ernet.in

Joint PI, NDL Project, NME-ICT, MHRD

Indian Institute of Technology, Kharagpur



Agenda

2

- Scope, Status & Challenges
- PRSG
- Target: FY 16-17
- Fund Requirements



Scope

3



NDL – A Pilot Project: Scope

4

- NDL is a pilot project of 3-year duration
- Start: April, 2015
- Scope of the pilot project
 - Creation of a 24X7-enabled Infrastructure suitable for 10,000 Concurrent Users
 - Harvesting IDR (Institutional Digital Repository) of 100 Contributing Institutes
 - Integrate contents from eLearning repositories like INFLIBNET, NPTEL, NCERT, DLI, NMEICT projects
 - Participatory adoption by 100 Participating Institutes
 - Host 1000 LMS Courseware



Status

5

**PORTAL
CONTENT SOURCES
CONTENT PIPELINE
METADATA STANDARD
SYSTEM STATUS
AWARENESS DRIVE & EVENTS
USER REGISTRATION**



Portal Status

6

- NDL Portal (<https://ndl.iitkgp.ac.in>) gone live in Feb'16 with
 - 24X7 infrastructure
 - ✦ Partial server capacity (about 30% of planned)
 - ✦ Partial access bandwidth (about 50% of planned)
 - English and Vernacular (Hindi & Bengali) User Interface
 - 11 lakh+ content
 - 36 Harvested IDRs from Contributing Institutes
 - Contents of INFLIBNET, NPTEL, NCERT, DLI & a few NMEICT projects
 - Contents of couple of international publishers
 - Got users from about 150 Participating Institutes registered



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“The higher educational institutions should assimilate knowledge from all sources and disseminate it for benefit of the masses in order to strengthen their own foundation.”

- Rabindranath Tagore

SNLTR
Digitization of literary works by Rabindranath Tagore




NDL Project Office Inauguration: Apr'15



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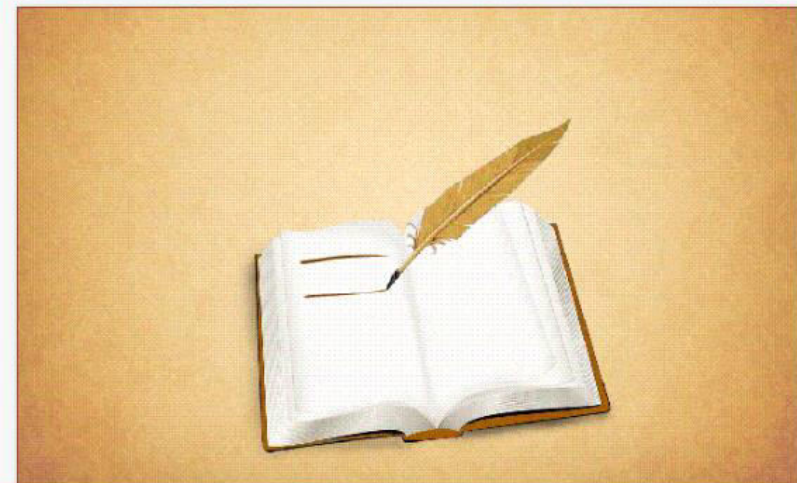
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- Source: PhET Interactive Simulations
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Gupta, L. C.

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- Kumar, Anil 122
- Nagarajan, R.

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Source: IIT Bombay
Author: Mazumdar, C. | Hossain, Z. | Nagarajan, R. | G...
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Abstract: SmRuSn3 is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two
Mazumdar, C. | Hossain, Z. | Nagarajan, R. | Godart, C. | Dhar, S. K. | Gupta, L. C. | Padalia, B. D. | Vijayaraghavan, R.
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Indian Academy of Sciences

[Double Magnetic Transition And Anomalous Magnetoresistance In Er₂Si₂Ni₃Si₅ SUB](#)

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Author: Mazumdar, Chandan | Nagarajan, R. | Nigam, ...
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Abstract: Synthesis and magnetic properties of a new material, Er₂Si₂Ni₃Si₅ SUB, are reported here. This compound exhibits a double magnetic transition (T_{SM} SUB~4K and 3K) as revealed by heat ca
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[Valence Instability In Eu\(Pd_{1-x}Si_x\)₂Si₂ SUB: The Global Phase Diagram](#)

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Author: Segre, C. U. | Croft, M. | Hodges, J. A. | Murga...
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Title: Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn₃

Author: MAZUMDAR, C; HOSSAIN, Z; NAGARAJAN, R; GODART, C; DHAR, SK; GUPTA, LC; PADALIA, BD; VIJAYARAGHAVAN, R

Abstract: SmRuSn₃ is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two inequivalent Sm sites and Sm ions at only one of them are in VF state while the Sm ions in the other site orders magnetically. Our (119)Mossbauer studies show a quadrupolar splitting at the Sn site, consistent with the noncubic symmetry of the Sn site. A broadening of the Mossbauer spectrum is seen due to magnetic ordering of the material. The transferred hyperfine field at Sn site at 4.2 K is small. (C) 1996 American Institute of Physics.

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Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn₃

Author	Mazumdar, C. ♦ Hossain, Z. ♦ Nagarajan, R. ♦ Godart, C. ♦ Dhar, S. K. ♦ Gupta, L. C. ♦ Padalia, B. D. ♦ Vijayaraghavan, R.
Source	IIT Bombay
Content type	Text
Publisher	AMER INST PHYSICS
File Format	HTM / HTML
Language	English

Subject Other cerus3

Abstract

SmRuSn₃ is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two inequivalent Sm sites and Sm ions at only one of them are in VF state while the Sm ions in the other site orders magnetically. Our (119)Mossbauer studies show a quadrupolar splitting at the Sn site, consistent with the noncubic symmetry of the Sn site. A broadening of the Mossbauer spectrum is seen due to magnetic ordering of the material. The transferred hyperfine field at Sn site at 4.2 K is small. (C) 1996 American Institute of Physics.

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JOURNAL OF APPLIED PHYSICS,79(8)6349-6351
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<http://dx.doi.org/10.1063/1.361996>
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Transport, magnetic, and ^{119}Sn Mössbauer studies on magnetically ordered valence fluctuating compound SmRuSn_3

Chandan Mazumdar, Z. Hossain, R. Nagarajan, C. Godart, S. K. Dhar et al.

Citation: *J. Appl. Phys.* **79**, 6349 (1996); doi: 10.1063/1.361996

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Intermediate valency of Eu in a cubic intermetallic compound $\text{Ce}_{0.5}\text{Eu}_{0.5}\text{Pd}_3$
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Interface and Mn valence effects in ferromagnetic insulating multilayers based on Mn and tin oxide
J. Appl. Phys. **103**, 07D129 (2008)

Charge states of strongly correlated 3d oxides: from typical insulator to unconventional electron–hole Bose liquid
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Source: Project OSCAR
Author: Sahasrabudhe, Sameer
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Abstract: Using a ring magnet, make a card sheet fan turn round-and round.Do the magnet and the fan rotate in the same direction?
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Magnetic Moment in Magnetic Field I

Source: NPTEL
 Author: Das, Prof. Ranjan
 Lecture | UG and PG
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Abstract: Principles and Applications of Electron Paramagnetic Resonance Spectroscopy by Prof. Ranjan Das, Department of Chemical Sciences, Tata Institute of Fundamental Research, Mumbai. For more details on NPT View more



Magnetic Moment in Magnetic Field II

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Source: NPTEL
 Author: Rangarajan, Prof. G.
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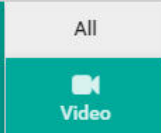
Abstract: Condensed Matter Physics by Prof. G. Rangarajan, Department of Physics, IIT Madras. For more details on NPTEL visit http://nptel.iitm.ac.in



Floating magnet

Source: Khan Academy
 Self Learning
 ENG

Abstract: The discovery of magnetism. What can we do with this invisible force?





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 Author: Ponnaikko, M.
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BEN 📄 📄
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Lecture 10: Red-black Trees, Rotations, Insertions, Deletions


Source: MIT OpenCourseWare
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Lecture 18: Probability Introduction

Source: MIT OpenCourseWare
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Abstract: Gives an overview of probability, including basic definitions, the Monty Hall problem, and strange dice games.
- 

Lecture 2: Asymptotic Notation; Recurrences; Substitution, Master Method

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Address bar: [https://ndl.iitkgp.ac.in/home.php?nav=browse-source&part&&part&&part&source="KrishiKosh%20-%20Indian%20National%20Agricultural%20Research%2](https://ndl.iitkgp.ac.in/home.php?nav=browse-source&part&&part&&part&source=)

National Digital Library | Browse | Search | Language | Partha

Source icons: KrishiKosh, NCERT, NPTEL, DLI, IIT Kharagpur

Search results: 49,654 results found in 0.268 secs

Hide filters

Refine browse results

- Author
- Language
- File Format
- Learning Resource Type
- Educational Level
- Difficulty Level
- Educational Degree

- Studies on Physiological Parameters Confering Higher Productivity in Cotton Hybrids and Their Parents**

Source: KrishiKosh - Indian National Agricultural Research S...
 Author: Ashvathama, V.H
 Research | UG and PG
 ENG [PDF] [Print]
- Relative Efficiency Of Urea, Ammonium Sulphate And Calcium Ammonium Nitrate And Studies On Techniques To Inc...**

Source: KrishiKosh - Indian National Agricultural Research S...
 Author: Rao, E.V.S.Prakash
 Research | UG and PG
 ENG [PDF] [Print]
- Agricultural Marketing In India : Preliminary Guide To Indian Fish Fisheries Methods Of Fishing And Curing**

Source: KrishiKosh - Indian National Agricultural Research S...
 Author: Alfred Stefferud
 Reading | UG and PG
 ENG [PDF] [Print]
- Lipid Biosynthesis In Mammary Gland Of Cattle And Buffalo**

Source: KrishiKosh - Indian National Agricultural Research S...
 Author: Garg, Manohar Lal
 Research | UG and PG

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- रिजल्ट रिफाइन करें
- लेखक
 - विषय
 - स्रोत
 - भाषा
 - फाइल फॉर्मेट
 - शिक्षण वस्तु प्रकार
 - शिक्षा स्तर
 - कठिनाई स्तर
 - शैक्षिक उपाधि

- महात्मा गांधी और स्व-निर्भरता**
स्रोत: NCERT
Reading | XI and XII
HIN
- महात्मा गांधी और राष्ट्रीय आंदोलन**
स्रोत: NCERT
Reading | XI and XII
HIN
- नौकर**
स्रोत: NCERT
Reading | V to VIII
HIN
- स्वतंत्रता की और**
स्रोत: NCERT
Reading | I to IV
HIN





Basic Statistics Page



Browser tabs: Indian Inst, Zimbra, NDL: Part, NDL: Stati, NDL: Part, Magnetis, Handbook, CRCnetBA, Acoustics, Transport, Parthapratim

Address bar: <https://ndl.iitkgp.ac.in/statistics-wrapper.php>

Other bookmarks: Other bookmarks

NDL: Statistics (2016-05-01)

- Basic Statistics
- Usage Statistics
- NDL Contents
- NDL Contributors

NDL users

Users from **257** institutions have been registered with NDL

Number of users who have activated their accounts	33,903
Number of users who have not activated their accounts	181,989
Total number of registered users	215,892

Site usage (by registered users only)

Number of currently logged-in users	4
Number of sessions where the user stayed in the site more than <input type="text" value="30"/> minutes	34,468
Number of users who visited the site more than <input type="text" value="5"/> times	1,869

Server statistics (since 2016-05-01 18:51:10)

Server	Average hits / second	Response time (in sec)	Content accessed
1	0.02175439	0.96050482	5
		2.89987608	2

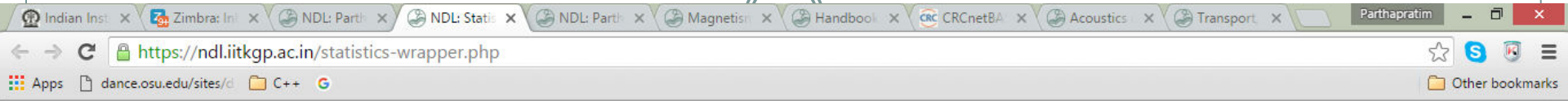
Waiting for ndl.iitkgp.ac.in...

Taskbar: Windows, File Explorer, Outlook, Chrome, Firefox, Edge, Opera, Dropbox, TeX, VLC, Skype, PowerPoint, Paint

System tray: Network, Volume, Date/Time: 7:40 PM 5/1/2016



Content Statistics Page

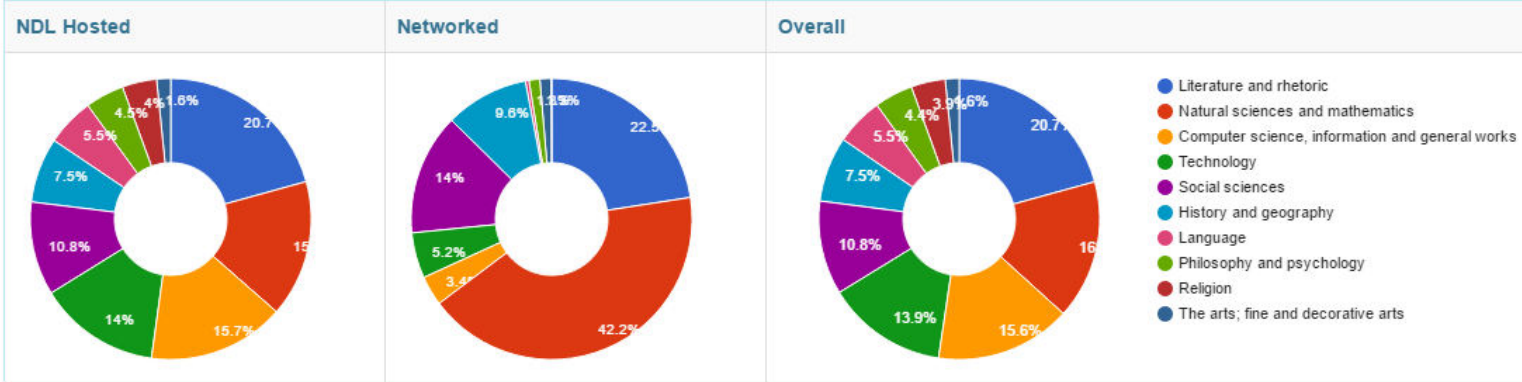


NDL: Statistics (2016-05-01)

- Basic Statistics
- Usage Statistics
- NDL Contents
- NDL Contributors

Use graph view : ON

Subject-wise Content Distribution



Learning Resource Type-wise Content Distribution



Waiting for ndl.iitkgp.ac.in...





User Feedback Page



Browser tabs: Indian Institute of Techno, Zimbra: Inbox (913), NDL: Partha, NDL: Statistics, Parthapratim

Address bar: [https://ndl.iitkgp.ac.in/home.php?nav=search&part=महात्मा%20गांधी&part&&page=1&part&source="](https://ndl.iitkgp.ac.in/home.php?nav=search&part=महात्मा%20गांधी&part&&page=1&part&source=)

National Digital Library | Browse | Search | Language | Partha

Feedback

You are in search page, please help us with providing feedback on different features of this page

Select Page-Category: Search
 Select Feature: Search Result

Feedback: Search, Browse by Source, Browse by Type, Browse by Subject, Content, Account, Other

[Add](#)

[Close](#)

- Refine search results
- Author
 - Subject
 - Source
 - Language
 - File Format
 - Learning Resource Type
 - Educational Level
 - Difficulty Level
 - Educational Degree

नौकर
 Source: NCERT
 Reading | V to VIII
 HIN

स्वतंत्रता की और
 Source: NCERT
 Reading | I to IV
 HIN

Abstract: यह अध्याय महात्मा गांधी जी की जीवनी पर आधारित है। महात्मा गांधी जी आश्रम में तथा अपने पुरे जीवन में, जीवन के प्रति जिस मूल्यवर्ग को मान्यता देते थे और उनकी पालन करते थे उसका वर्णन मिलता है।

Abstract: इस अध्याय में हमारे राष्ट्रपिता महात्मा गांधी के भारत चोरो आंदोलन पर आधारित एक इतिहास का कहानी है।

Footer: About | FAQ | Disclaimer | Help | Statistics | Feedback | Social | Sponsor | Contact



Content Pipeline

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- Another 16 IDRs harvested and ready to go Live
- IIT-JEE Question Papers & Answers (8 years) ready to go Live
- Satyajit Ray Redbook archive ready to go Live
 - 39 Cinematography Redbooks of Ray goes public first time
- Metadata of OECD curated and put on test server (<https://ndl-test.iitkgp.ac.in>)
 - UNESCO/OECD to review and approve for making Live
- LibriVox (audio books) site crawled and metadata curated: Live by May'16



Metadata Standard



27

- Ver-1 of NDL Metadata Schema Manual published (www.ndlproject.iitkgp.ac.in/)



Systems Status

28

- 2nd lot of servers ordered
- Disaster Recovery system
 - Site (at Kolkata Centre of IIT Kharagpur) preparation started
 - System architecture and server capacity planning started
 - Access bandwidth request initiated



Awareness Drive & Events



29

- 5 Workshops on NDL familiarization and IDR setup conducted across the country
- Contributing & Participating Institute support
 - Hand-holding Contributing Institutes to set up IDR and making IDR harvestable
 - Hand-holding users of Participating Institutes
 - ✦ Registration
 - ✦ Usage
 - ✦ Query response



Awareness Drive & Events

30

- Workshop @ INDEST Meet @ Mohali, 29/30-Apr-15
- National IDR WS @ IIT Kharagpur, 15/17-June-15
- Regional (North-East) IDR WS @ IIT Guwahati, 04/05-July-15
- National Seminar on “Emerging Trends in Academic Libraries” @ IIT Kharagpur, 21-Aug-15
- Regional (North-I) IDR WS @ IIT Roorkee, 24/25-Aug-15
- ETD 2015 India @ JNU New Delhi, 05/06-Nov-15
- 4th NKN Annual WS @ JNTU Hyderabad, 21/22-Jan-16
- Regional (West-I) IDR WS @ M S University, 28/29-Jan-16
- National VC Address over NKN, 03-Feb-16
- Regional (South-I) IDR WS @ IIT Madras, 25/26-Mar-16
- **Regional (South-II) IDR WS @ IISc, Bangalore, 20/21-May-16**
- **National Workshop for Open-Source Software for Library Management (OSSLM 2016) @ IIT Kharagpur, 13/18-Jun-16**
- **Regional (South-III) IDR WS @ IIIT, Hyderabad, 01/02-Jul-16**
- **Regional (West-II) IDR WS @ Pune University, 21/22-Jul-16**



User Registration

31

- **Controlled registration to ensure**
 - Gradual build up of load on the system
 - Security issues, if any, gets addressed with a smaller user base
 - Limited to CFTIs and institutes in NDL Workshops and VC
- **Bulk registration of users through a back-end process**
 - Too many errors (wrong e-mail id)
 - Unformatted/incomplete data
 - Institutes not sending data in time and need too much follow up
- **Self-registration for selective domains**
 - ernet, ac, res, nic, gov
 - Many users don't have e-mail id in these domains



User Registrations



32

- IITs: 16
- NITs: 21
- IISERs: 5
- IIITs: 3
- IIMs: 11
- SPA: 1
- Other CFTIs: 35
- CSIR Institutions: 5
- ICAR Institutions: 11
- Defence Organizations: 2
- Medical Institutions: 5
- State Institutions: 28
- Other Institutions: 22



Challenges & Issues

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**INSTITUTIONAL – IDR
METADATA – GENERATION, CURATION & INGESTION
SEARCH
USER REGISTRATION**



Institutional Challenges



34

- **Contributing Institution**
 - Weak IT infrastructure & poor bandwidth
 - ✦ Unstable IDRs: NDL Users facing difficulty
 - Quality issues in metadata: NDL Users facing difficulty
 - Inadequate availability of technically skilled personnel
 - Too much follow up required to resolve any issue
- **Participating Institution**
 - Bulk registration
 - ✦ Data sent had too many errors (wrong e-mail id)
 - ✦ Unformatted/incomplete data
 - ✦ Need too much follow up to send data
 - Poor bandwidth



Metadata Challenges



35

- Accurate and Indexed metadata essential for proper functioning of Search & Browse
- Contents contributed/acquired
 - Without metadata
 - With metadata
- Manual annotation time consuming and error-prone
 - Being done in a very limited scale
- Content available as image (raw scanned file)
 - Not amenable to full-text searching
- **Automation of metadata extraction**
 - Different types of contents (text / pdf / ppt / video / audio / simulation etc.) for scaling up
 - OCR Technology for Vernacular & Mixed Language contents



Metadata Challenges



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- **Metadata Generation, Curation & Ingestion is complex**
 - Compatibility with metadata standard – Schema mapping
 - Population of missing data elements
 - Anomalies in metadata field values
 - Duplicates to be detected and deleted
 - Variations of content organization between sources
 - Widely varying subject classification norms
 - Website crawling challenges
- **Automation for**
 - **Schema translation**
 - **Bulk anomalies curation**
 - **Subject classification translation**
 - **Duplicate detection and deletion**



Infrastructure Issues



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- Scaling: Planned as Pilot (DRP), Revised to Full-Scale

Item	DRP	Revised
# of Concurrent Users	10000	25000
Type of Users	Institutional	Open
Nature of Content	Only from IDR, Select sources	Several large repositories, publishers included, Nationally licensed sources
# of Content	500K (IDR), 10K purchased	5000K+



Infrastructure Issues



38

- **Bandwidth**
 - Required: 20 Gbps (Kharagpur), 10 Gbps (Kolkata)
 - Existing: 10 Gbps (Kharagpur)
- **Not included in DPR. PRSG recommended inclusion in the scope of the project:**
 - Disaster Recovery
 - IDR Service
 - ✦ Free remote IDR set-up and maintenance for various institutions



Challenges in Search



39

- Query suggestion
 - based on initial query and current corpus
- Spell checking
- Search intent expressed in natural language query
- Duplicate detection of similar but not identical contents, improving diversity in retrieved results
- Federated search framework
- Domain specific metadata and search engine organization
- Personalized ranking of search results



Challenges in UI

40

- Vernacular User Interface
 - Vernacular metadata
- User category based User Interface
- Real time transcoding of content hosting pages



Popularization Issues



41

- Willing but unable to do due to restricted registration
- Registered in back-end but user has not activated
- User activated registration but not using
 - All contents are not free
 - Some contents have access limited only respective institute
 - Content repository is limited
 - CFTI users already have access to rich repositories
- NDL not usable on mobile
- Users, especially in remote areas, do not have stable internet access and good bandwidth



PRSG

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OBSERVATIONS & RECOMMENDATIONS



PRSG Meeting

43

- Held on 9-Sep-15 at IIT Center, Kolkata
- Attended by:
 - Prof. H. P. Khincha, IISc Bangalore: PRSG Member & Chairman
 - Dr. Jagdish Arora, Director, INFLIBNET: PRSG Member
 - Prof. Uma Kanjilal: IGNOU: PRSG Member
 - Shri Pradeep Kaul, Sr. Consultant, NMEICT, MHRD: PRSG Member
 - Prof. Swapan K. Chakravorty: Kabiguru Rabindranath Tagore Distinguished Professor in the Humanities, Presidency University: Member Invitee
 - Dr. Neena Pahuja: Director General, ERNET: Member Invitee
 - Representatives of Shri A. K. Balani, Director & HOD, NKN from NIC, Kolkata



PRSG: Observations & Recommendations



44

- **Identity**
 - Logo / Name of NMEICT may be put up in NDL portal. Done.
 - NDL should buy its own domain name
 - NDL becoming a part of EduGain and EduRoam may be explored
- **Launch**
 - Restricted launch was recommended. Done in Feb-16.
- **Content**
 - IDR of Sahitya Academy should be included if possible
 - Link to NSS (National Sample Survey) and ASI (Annual Survey of Industries) of Ministry of Statistics and Programme Implementation may be explored
 - Link to Nehru Memorial Museum and Library (NMML) may be explored
- **Users / Access**
 - Shibboleth may be used to track users accurately and comprehensively



PRSG: Observations & Recommendations



45

- **Localization**
 - Cross-lingual dictionary of National Vocabulary Commission to be used for cross-lingual search
- **Personalization**
 - There was a discussion on the feature “Personalization” (“Myshelf”)
- **Statistics – <Online now>**
 - Number of concurrent users logged in to NDL should be monitored
 - Data on how many concurrent users linked IDRs/portals can handle may be collected for causal analysis of user access bottleneck
- **Data Center**
 - Data Centers coming up as a part of Government’s Digital India initiative may be used for full-scale NDL
- **Crowd-sourced Metadata**
 - During the Pilot project, experiments on crowd sourcing of metadata to curate metadata fields (such as Subject, Difficulty Level, Pedagogic Objective) that involve subject matter expertise, should be carried out.



PRSG: Observations & Recommendations



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- **Technical Aspects**

- A comparative study between NDL and other leading digital libraries by Prof. Uma Kanjilal, Dr. Jagdish Arora and Prof. P. S. Mukhopadhyay
- Security audit of the NDL portal by an external entity
- The aspects of business process continuity in case of disaster including total outage of NKN should be considered
- MoU, ratified in writing by legal experts, should be done with all external agencies whose content is sourced/ linked by NDL, including crawled external portals – underway.
- User scenarios and response to the user scenarios should be identified



PRSG: Observations & Recommendations



47

- **Disaster Recovery**
 - Servers, in sufficient numbers, to ensure business process continuity to a reasonable extent.
 - Storage, sufficiently sized, to ensure business process continuity.
 - UPS.
 - Site preparation at IIT Kharagpur Kolkata Extension Center.
 - Support for 10 GB NKN link at IIT Kharagpur Kolkata Extension Center for Disaster Recovery.
- **IDR Service**
 - IDR Service to be provided to those who are unable to develop their own



PRSG: Observations & Recommendations



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- **Budget Re-Appropriation**

- Budget under “Equipment at 100 Contributing Institutions for IDR” (Rs. 4 Cr.) will not be fully utilized as many such institutions may already have the necessary resources for the initial phase.
- PRSG therefore recommends apportioning
 - ✦ Rs. 2 Cr. for equipment for Disaster Recovery System for this Pilot project
 - ✦ The balance Rs. 2 Cr. for the IDR Service for those who are unable to develop their own



Targets

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Target for FY 16-17

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- **Systems**

- 100% planned server capacity operational
- Disaster Recovery site preparation
- Disaster Recovery server ordering
- Data Centre planning for Phase II (2018-21)



Target for FY 16-17



51

- **Content**

- South Asia Archive (National Licensing underway)
- World e-book Library (National Licensing underway)
- Journal Archives (National License)
- Contents subscribed under e-Shodh Sindhu
- Ministry of Culture
 - ✦ National Library, IGNCA, Nehru Memorial Museum and Library (NMML), etc.
- Ministry of Statistics and Programme Implementation
 - ✦ NSS (National Sample Survey) and ASI (Annual Survey of Industries)
- IEEE repository
- UNESCO
- Gandhi Heritage Portal
- Baul Archive
- Sahitya Academy
- Contents of domain-specific verticals
 - ✦ School, Medical, Law, Culture, etc.
- More harvested IDRs
- More NMEICT projects (eAcharya)



Target for FY 16-17

52

- **Software**

- NDL Mobile App
- User Interface upgradation: making it mobile-friendly
- Feature addition in User Interface
- Federated search
- Vernacular User Interface for 2 more languages
- Automation of metadata acquisition/curation

- **Search**

- Domain specific organization
- Query suggestor
- Query spell-checker



Target for FY 16-17



53

- **Enlarge User Base**
 - Expand Access
 - ✦ All CFTI
 - ✦ All Institutions
 - ✦ Colleges & Schools
 - ✦ Public
 - Collation of interest areas and personalization
 - Explore Shibboleth to track users accurately and comprehensively
 - NDL Facebook Page – Monthly update
- **IDR Service for Contributing Institutes**
 - Assist smaller institutes to set up Digital Repository by providing IDR hosting service
- **Workshops on NDL familiarization and IDR setup**
 - 5 more: 3 scheduled till Jul'16



Fund Requirements

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Utilization Certificate



**SPONSORED RESEARCH AND INDUSTRIAL CONSULTANCY
INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR
CONSOLIDATED STATEMENT OF ACCOUNTS
(RECEIPTS & PAYMENTS ACCOUNT FOR THE PERIOD 26/03/2015 TO 20/04/2016)**

Title of the Research *"Development of National Digital Library of India, towards Building a National Asset (BNA)"*

Sponsoring Agency : **MHRD, New Delhi**

Name of the Investigator-in-Charge : Prof. Partha P. Chakrabarti & Prof. Partha Pratim Das Department : Central Library

Date of Commencement : 26/03/2015

Date of Termination : 25/03/2018

Receipts			Payments							
Year	Grant	Total	Salary/Manpower/ Honorarium	Travel	Consumables	Contingency	Equipment	Misc. Expenditure/ Others	Total	Closing Balance
2014-15 *	69700000	69700000	507938	16956	84729	44406	1169598	0	1823627	67876373
2015-16	49700000	49700000	6326776	1047730	701356	1252210	38729529	1061406	49119007	68457366
2016-17	0	0	608900	203962	0	39253	1009446	185000	2046561	66410805
Total	119400000	119400000	7443614	1268648	786085	1335869	40908573	1246406	52989195	66410805

* Grants sanctioned for the FY 2014-15 received on next financial year i.e. 2015-16 through online transfer dated: 04/04/2015


Signature of PI
with Stamp

Prof. P. P. Das, PI-BNA
Department of Computer Science & Engineering
Indian Institute of Technology Kharagpur


Signature Finance Officer
with Stamp

S. K. Biswas
Sr. Finance Officer (FBPM)
Sponsored Research & Industrial Consultancy
IIT, Kharagpur-721302



Fund Requirements



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Sl. #	Item	Amount in Rs. Cr.
1.	Total Sanction (2015-18)	39.80
2.	Fund received as on date	11.94
3.	Total expenses as on 20.4.16	5.30
4.	Unspent balance as on 20.4.16 (#2-#3)	6.64
5.	Expected expenditure for FY 16-17	14.55
6.	Fund release requirement for FY 16-17 (#5-#4)	7.91



Request for Approval

57

- Re-appropriation of budget for equipment and infrastructure for:
 - Disaster Recovery
 - IDR Service
 - Scale up of Service
 - Budget
 - ✦ Already utilized: Rs. 4 Cr
 - ✦ Requirements: Rs. 3.2 Cr
- Gradual release of access to
 - All Institutes



Thank You



Budget at a Glance

59

Budget Head	26-Mar-15 to 20-Apr-16 (in Rs. Lakh)	21-Apr-16 to 31-Mar-17 (in Rs. Lakh)	Remarks
Manpower	74.43	256.00	
Travel	12.68	12.00	
Consumables	7.86	15.00	
Contingency	13.36	10.00	
Equipment	409.09	312.00	Including DR Servers & H/W
Misc. Expenditure	12.46	850.00	Includes site preparation for DR and Content Access Fee for Selected Sources
Total	529.88	1455.00	
Received	1194.00		
Closing Balance	664.12	790.88	



Content Sources



60

Institute	Vol (K)	Institute	Vol (K)
Aligarh Muslim University (IDR)	8.9	CSIR- National Institute of Oceanography (IDR)	4.7
Bharathidasan University (IDR)	7.8	CSIR-National Metallurgical Laboratory (IDR)	6.1
Central Board of Secondary Education (Content Downloaded)	4.1	Cochin University of Science & Technology (IDR: 2 Nos.)	12.2
CRC Press (Bulk data)	11	Digital Library of India (Bulk data)	501
CSIR-Central Electrochemical Research Institute (IDR)	2.5	Directory of Open Access Journals (IDR)	5.5
CSIR-National Aeronautical Laboratory (IDR)	5.8	Gokhale Institute of Politics & Economics (IDR)	16.6



Content Sources



61

Institute	Vol (K)	Institute	Vol (K)
ICRISAT (IDR: 2 No.s)	21.6	Indian Institute of Science (IDR: 2 No.s)	42.5
Indian Academy of Sciences (IDR)	88.6	Indian Institute of Technology Bombay (IDR)	16.7
Indian Association for Cultivation of Science (IDR)	0.5	Indian Institute of Technology Delhi (IDR)	5.3
Indian Institute of Astrophysics (IDR)	6.5	Indian Institute of Technology Guwahati (IDR)	0.5
Indian Institute of Geomagnetism (IDR)	0.5	Indian Institute of Technology Kharagpur (IDR)	1.7
Indian Institute of Management Ahmedabad (IDR)	10.9	Indian Statistical Institute Kolkata (IDR)	5.2



Content Sources



62

Institute	Vol (K)	Institute	Vol (K)
INFLIBNET (IDR: 3No.s, API:1)	44.5	MIT OpenCourseWare (Website Crawled)	3.0
Inter-University Center of Astronomy & Astrophysics (IDR)	3.1	NCERT (Content Downloaded)	3.2
Khan Academy (Website Crawled)	6.1	NIT Rourkela (IDR)	3.2
Krishikosh: Indian National Agricultural Research System (IDR)	49.7	NPTEL (Website Crawled)	10.3
Manipal University (IDR)	12.8	Osmania University (IDR)	24.5
Microsoft Research (Website Crawled)	5.0	PhET Interactive Simulations (Website Crawled)	0.1



Content Sources



63

Institute	Vol (K)	Institute	Vol (K)
Project OSCAR (Website Crawled)	0.4	The Physics Classroom (Website Crawled)	0.7
Raman Research Institute (IDR)	4.6	Tripura School Board (Content Downloaded)	0.1
Society of Natural Language Technology Research (IDR)	1.7	University of Mysore (IDR)	10.1
Spoken Tutorial (Bulk data)	0.7	West Bengal School Boards (Content Downloaded)	0.3
Springer E-Books (Bulk data)	105.4	West Bengal Public Library Network (IDR)	30.9
Tamilnadu Agricultural University (Website Crawled)	1.0		



Action Plan

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Action Plan/Proposal



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- Popularize NDL
 - Campaign on Social Media
 - ✦ NDL Facebook Page
 - ✦ NDL Twitter Account
 - Organize Student Contests
 - ✦ App Development – building various use-models
 - ✦ Challenge Problems – R & D problems to improve NDL
 - ✦ Content Contribution – student group with faculty coordinator
 - Institutional Channels
 - ✦ Reminders to inactive users
 - ✦ Message to users from Institute Head
 - Register with scan-copy of Institutional ID



Action Plan/Proposal



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- **System**
 - Servers ordered to be operational by Q2: FY 16-17
 - Some security issues detected, fixing going to start
 - Once security issues are resolved and new servers are operational, open registration to all
- **NDL on mobile**
 - Mobile App under development
 - Work on making User Interface mobile-friendly going to start



Action Plan/Proposal



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- **Content**
 - MHRD already initiated pan-India licensing for South Asia Archive & World e-book Library
 - MHRD already instructed publishers contracted under e-Shod Sindhu to share metadata with NDL
 - MHRD may look into possibility of pan-India licensing for popular e-contents
 - Addition of Domain vertical specific contents
- **To work out Crowd Sourcing promotion policy**



Minor Adjustments in Budget Heads



68

Approved

Head	Amount (INR Cr.)
Equipment & Office Setup for NDL at IIT Kharagpur	3.32
Equipment at Contributing Institutions for IDR Service	4.00
TOTAL	7.72

Adjustment Proposal

Head	Amount (INR Cr.)
Equipment, IDRS Service for Contributing Institutions & Office Setup for NDL at IIT Kharagpur	7.72
TOTAL	7.72

Reason:

IDR Service for Contributing Institutions are now being provided by NDL from IIT Kharagpur



Minor Adjustments in Budget Heads



69

Approved

Head	Amount (INR Cr.)
Manpower Requirement at NDL @IIT Kharagpur	4.50
Manpower Requirement at Contributing Institution	7.95
TOTAL	12.45

Adjustment Proposal

Head	Amount (INR Cr.)
Manpower and Consultant Requirement at NDL @IIT Kharagpur including support to Contributing Institution for IDR Hosting	12.45
TOTAL	12.45

Reason:

IDR Service for Contributing Institutions are now being provided and supported by NDL from IIT Kharagpur