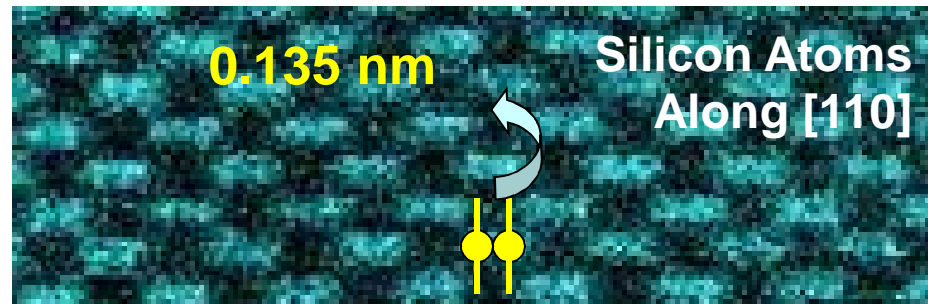
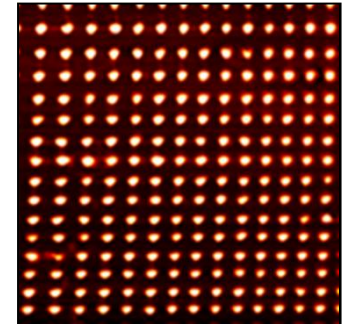
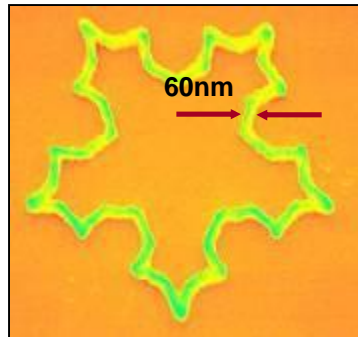


Northwestern University Atomic and Nanoscale Characterization Experimental (NUANCE) Center

Vinayak P. Dravid

Professor, Materials Science & Engineering
Director, NUANCE Center
Northwestern University,
Evanston, IL



NU Atomic and Nanoscale Characterization Experimental (NUANCE) Center:

www.nuance.northwestern.edu

(East Corridor Cook Hall, Silverman Hall)

NIFTI

(Nanoscale Integrated
Fabrication,

EPIC

(Electron Probe
Instrumentation Center)

Keck-II

(Keck Interdisciplinary
Surface Science)

Testing and Instrumentation)

AFMs/DPN
NSOM/f-s Laser
Nano-indentor
E-beam litho

SEMs/TEMs/SPF

XPS
ToF-SIMS
Nicolet FTIR
Confocal Raman

Dr. G. Shekhawat
Dr. Mirela Mustata (PD)

AEM: Drs. Shuyou Li, 1 PD
SEM: Ben Myers, Eric Miller
TEM: Dr. Jinsong Wu
Cryo-/Bio/Soft: Reiner Bleher, Eric Roth

Dr. Xinqi Chen

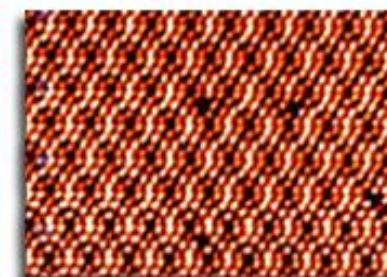
Business Manager:
Jasmine Walker

Program Assistant
Mary Pat Doyle



NUANCE: *Facts and Figures*

- Over 20 major instruments, > \$15 Million
 - *Electron/ion/light microscopy, scanning probe & surface science*
- 8 technical staff (7 PhDs, 1 MS (PhD), 1 BS), 1 Business manager and 1 program assistant
- > 110+ faculty affiliate users
- > 630+ student/postdoc users
- > Several dozen industries and IL colleges



Instrumentation acquisitions supported by:
NSF-MRI, NSF-IMR, NU NSEC through
State of IL, Keck Foundation, NU

Facility Online Manager (FOM®)

Dr. Shuyou Li

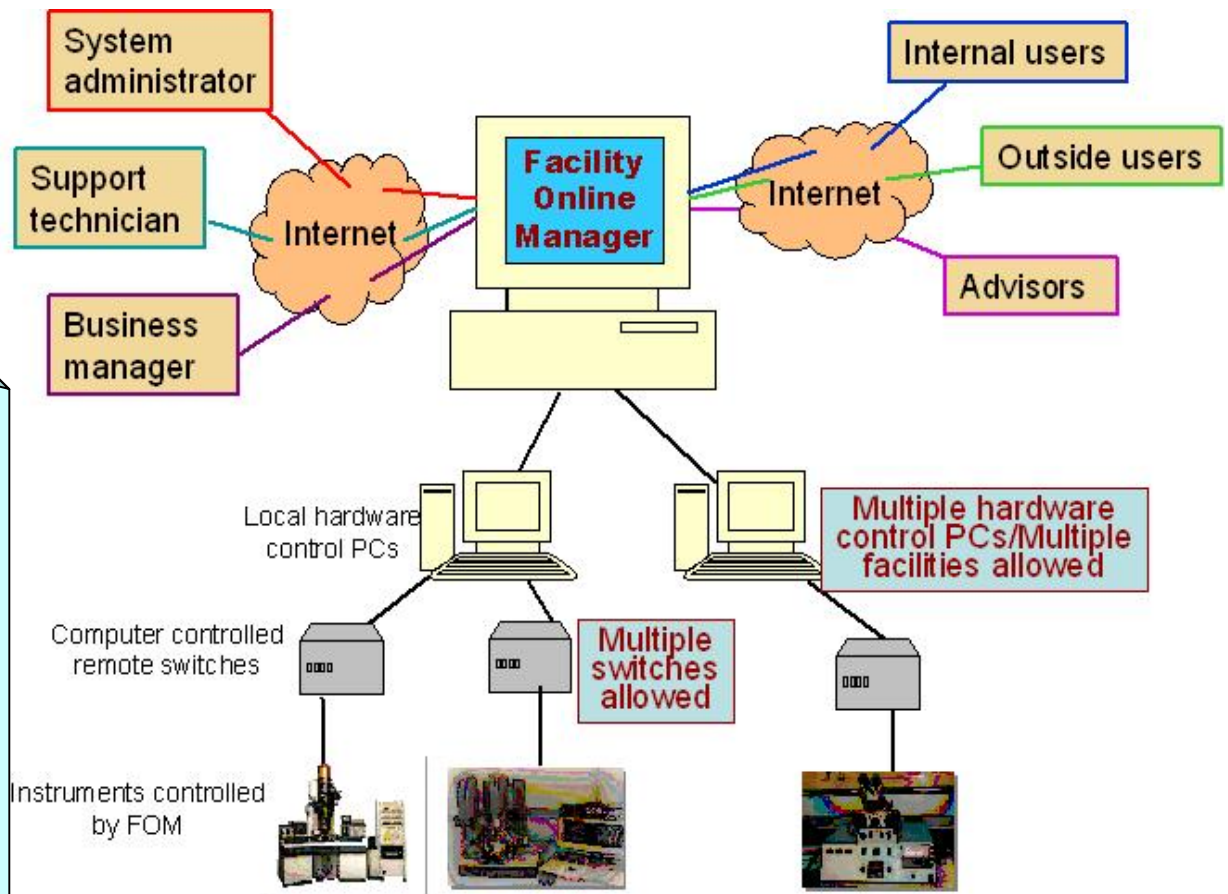
Prof. Vinayak P. Dravid

An Online, Operational & Fiscal Management System for Shared Facilities



Some features of FOM

- **Easy-to-use user interface**
- **EVERYTHING online**
New user application, Reservation, Logon/Logoff, Activity reports, Billing, Equip administration, user management
- **Control hardware switches from internet**
- **8hr user and 24 hr user control**
- **Embedded email listserv to various groups of users**
- **Embedded inventory management online**
- **Embedded safety/manual documentations**
- **Reports for Advisors**
- **Various statistic reports for facility administrator**
- **Support multiple facilities with the same SQL server**
- <http://www.fom.northwestern.edu/>



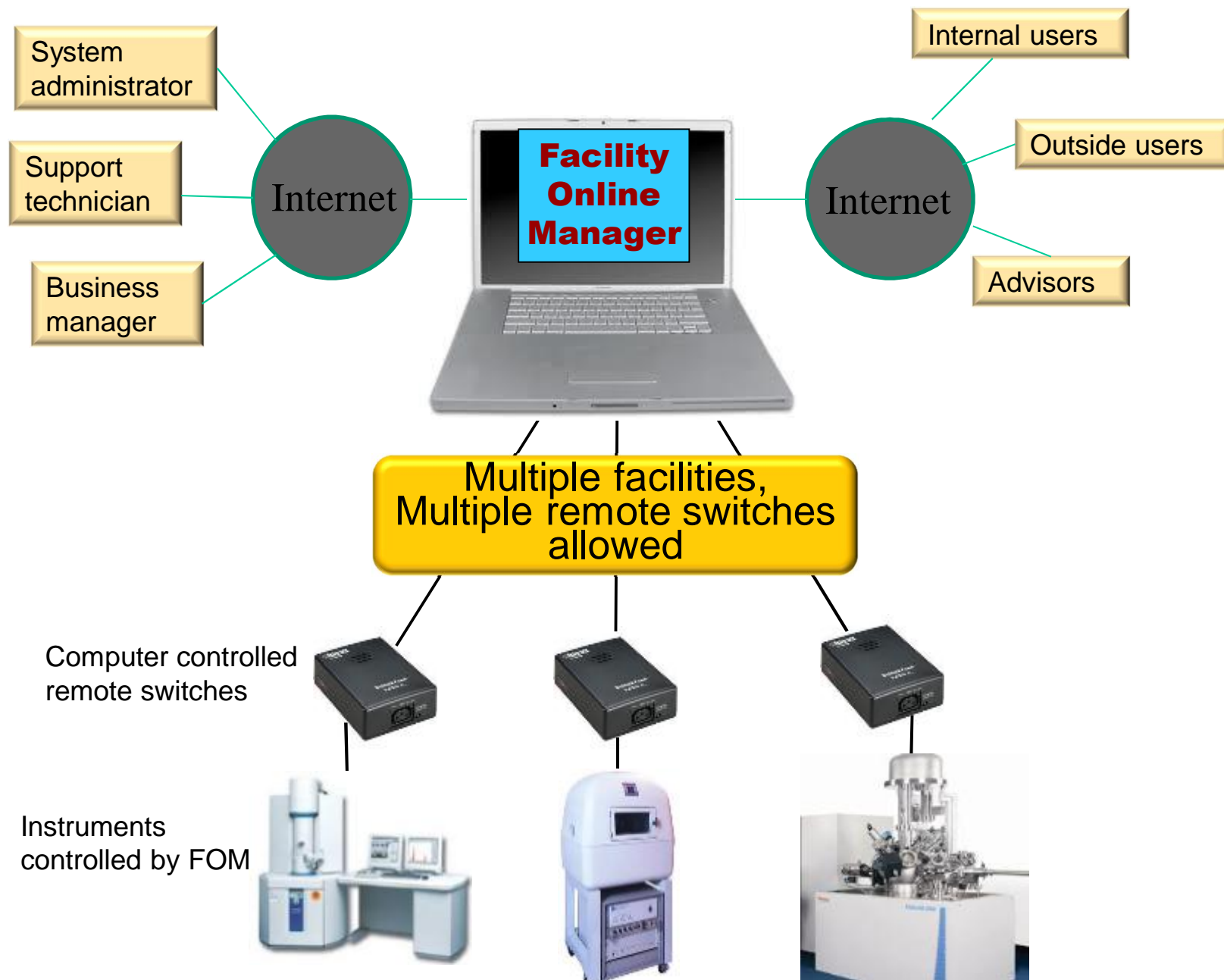
*FOM® software has been copyrighted by Northwestern University: 2005
Licensed to dozens of institutions, and numerous NU facilities*



Access control and data sharing with FOM®

- Remote reservation of beam time
- Reliable access control
- Data sharing and security
- Cyber-collaboratory
- Billing and invoice tracking





Demo of FOM® and access

Dr. Shuyou Li
Chief Architect FOM

Manager, SPF-TEM/EPIC
NUANCE Center



Access control & data sharing with FOM®

Scheduling



Access Control

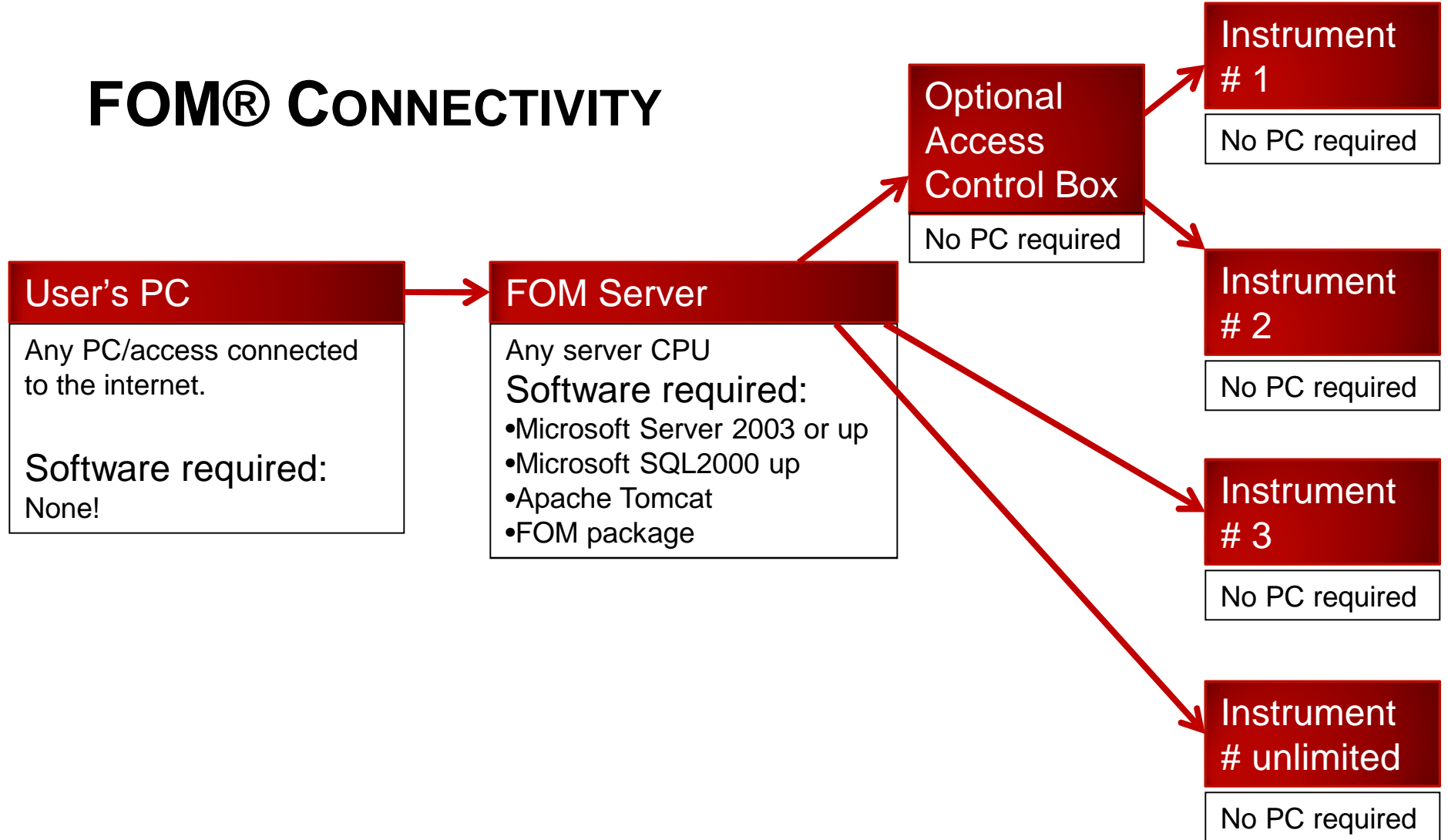


Service tracking and data share

Superior Graphite Co	Changjun Zhou	czhou@superiorgraphite.com	NUANCE_201108-12.pdf	445.00	09
Central Research Institute of Petrochemical Industry	Yu Lei	ylei@ani.gov	NUANCE_201108-11.pdf	454.67	09
Central Research Institute of Petrochemical Industry	Junling Lu	junling@ani.gov	NUANCE_201108-10.pdf	657.66	09
Florida State University	Brittni Qualizza	bqualizza@fuc.edu	NUANCE_201108-09.pdf	934.00	09

Billing & invoice tracking

FOM® CONNECTIVITY



Remote reservation of beam time

NU - FOM - Schedule

Shuyou Li



Time on server
Wednesday Oct. 26
12:53:03

- » Admin Home
- » User Home
- » TEM JEOL 2100F
- » Apply new instrur
- » Departments
- » Supervisors
- » Resources Admin
- » Maintenance Records
- » Users Admin
- » Email List
- » Collaborate & Service
- » Usage Records
- » Purchase Supplies
- » Documents
- » User Report
- » My Profile

Notes from instrument manager

TALK to the managers when you use the double tilt holder !!!

Instrument Schedule: TEM JEOL 2100F

[Day View](#) [Month View](#)

- TEM JEOL 2100F is now Down
- Reservation Limits: No later than 21 days; New reservations open hour by hour.
- Your user level on this instrument is: Instrument Manager.

Instrument Reservation

Express Logon

Previous user comment:

Consumables used:

Liquid nitrogen: liters

Negative film: pieces

Select the purpose of this reservation:

- For repair
- For maintenance
- For training
- For paid service research
- My own research
- Reserve for a user

Start time:

End time:

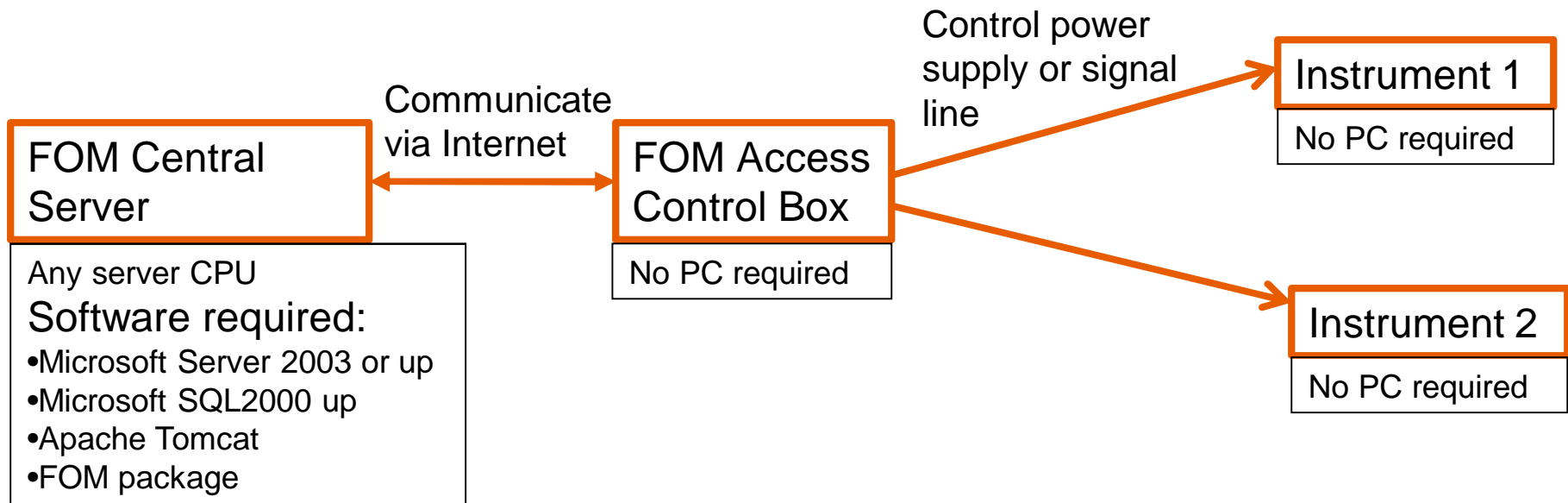
Comment:

Check if manager's assistance is needed. Additional charge may apply.

	Fri 10/28	Sat 10/29	Sun 10/30
	from midnight to 08:00		
	Rodrigo Bernal, 08:00-12:00 Mgr Assistance Needed.	08:00 - 08:30 08:30 - 09:00 09:00 - 09:30 09:30 - 10:00 10:00 - 10:30 10:30 - 11:00 11:00 - 11:30 11:30 - 12:00	08:00 - 08:30 08:30 - 09:00 09:00 - 09:30 09:30 - 10:00 10:00 - 10:30 10:30 - 11:00 11:00 - 11:30 11:30 - 12:00
	12:00 - 12:30 12:30 - 13:00	12:00 - 12:30 12:30 - 13:00	12:00 - 12:30 12:30 - 13:00
	Ho Joong Kim, 13:00-15:00 JEOL Single Tilt	Aiming Yan, 13:00-16:30 JEOL Be Tilting	13:00 - 13:30 13:30 - 14:00 14:00 - 14:30 14:30 - 15:00
	15:00 - 15:30 15:30 - 16:00 16:00 - 16:30		15:00 - 15:30 15:30 - 16:00 16:00 - 16:30



Access Control with remote switch



Front view



Rear view





FOM[®]: *Diverse benefits for varied stakeholders*

- **University Office for Research**
 - Unified management of all shared facilities across the campus
- **University Accounting Department**
 - Easier billing process
 - Accurate billing journals on shared facility use. No more bounce-backs, no more hassle.
- **Principal Investigators**
 - Accurate reports of group activities on shared facility use
 - Solid research expense estimate for funding proposals
- **Center Directors**
 - Customized reports on shared facility use by departments, supervisors, etc.
 - Accurate reports on instrument down time and repair history
- **Instrument Manager**
 - Easier communication with various group of users
 - Streamlined user authorization and management process
 - Extremely flexible instrument use and charge policy
 - Track instrument usage records, repair history, consumable inventory, collaboration and service records. Upload/download results by collaborators
- **Student User**
 - Single login to find all available facilities on campus. No need to ask around
 - Schedule instrument use with any internet connected computer



Collaboration tracking and data sharing

NU - FOM - Collaborate Shuyou Li 



Time on server
Wednesday Oct. 26
12 : 51 : 50

- » Admin Home
- » User Home
- » Instrument sched
- » Apply new instrur

- » Departments
- » Supervisors
- » Resources Admin
- » Maintenance Records

- » Users Admin
- » Email List
- » Collaborate & Service
- » Usage Records

- » Purchase Supplies
- » Documents

Available Services
To submit service for a user, select here , and then click the link below.

NUANCE

- [Keck II Service - XPS, SIMS, FTIR, Raman, Profilometer](#)
- [TEM Service](#)

Collaboration History [Show on-going projects only](#)

Search:

Project Type	Project ID	Requested By	Request Date	
TEM Service	TEM_Service0006	Monica Kapoor(4913216, monicakapoor2013@u.northwestern.edu)	10/26/2011	<input type="button" value="Ongoing"/>
TEM Service	TEM_Service_00004	Shuyou Li(1-6723, syli@northwestern.edu)	02/17/2011	<input type="button" value="Ongoing"/>
TEM Service	TEM_Service_00003	Shuyou Li(1-6723, syli@northwestern.edu)	02/16/2011	<input type="button" value="Ongoing"/>





NUANCE Center
Exploring the *Inner Space*...

TEM SERVICE REQUEST FORM

NUANCE Center, Northwestern University, Cook Hall #1154, 2220 Campus Drive, Evanston, IL 60208

Contacts: Dr. Jinsong Wu, 1-847-491-7807, jinsong-wu@northwestern.edu; Dr. Shuyou Li, 1-847-491-6723, syli@northwestern.edu

PROJECT INFORMATION

Project ID: TEM_Service

Date: 10/30/2011

USER INFORMATION

Name: Shuyou Li

Phone Number: 1-6723

Email: syli@northwestern.edu

Advisor: NUANCE Staff Account Number: 4735000-30009506 ▾

Address:

SAMPLE INFORMATION

Sample Name:

Number of Samples:

Sample Dimension (Must check at least one): Bulk hard material Bulk soft material

Micron scale (100nm-1000nm) powder Micron scale suspension

Nano scale (1nm-100nm) powder Nano scale (1nm-100nm) suspension

Suspension/Solvent:

Possible Sample Composition:

Possible Crystal Structure:



Time on server
Sunday Oct. 30

20 : 37 : 01

» Admin Home

» User Home

» Instrument sched

» Apply new instrur

» Departments

» Supervisors

» Resources Admin

» Maintenance Records

» Users Admin

» Email List

» Collaborate & Service

» Usage Records

» Purchase Supplies

» Documents

» User Report

» My Profile

» My Accounts

» Contact Manager

Available Services

NUANCE

- [TEM Service](#)
- [Keck II Service - XPS, SIMS, FTIR, Raman, Profilometer](#)

Collaboration Details

TEM_Service0006 requested by **Monica Kapoor(4913216, monicakapoor2013@u.northwestern.edu)** on 10/26/2011

Ongoing

Notes	Document	By	Time	
Initial request	TEM_Service0006_816_20111026121446.pdf	Monica	2011-10-26 12:14:47	
An interesting paper	mka935_JPCM2010.pdf	Monica	2011-10-26 12:30:59	✗
9R7 result	sli974_9R7.zip	Shuyou	2011-10-26 12:34:00	✗

• **Users involved in this collaboration:** [Monica Kapoor](#) ✗, [Shuyou Li](#) ✗, [Jinsong Wu](#) ✗

• **Add another FOM user in the collaboration:**

• **Charge service fee, select user:** **Account:** **Service:**

• **Add comment:**

• **Attachment(Upload may take a long time. Please reduce your file size as much as possible):**

No File Chosen

Send this comment to all collaborators involved.

