# Remote Operations (RemOp) Workshop

- **Some historical background**
  - Motivation, ICFA document, Cornell workshop
- **Remote Operations Workshop scenario assumptions**

- **Structure, working groups, charges and concerns**
- **Working Group I: Remote Operations Experiments**
  - Summary of "grassroots RemOp experiments"
- **Working Group II: Social Issues and Operations**
  - Summary of "operations concerns"
- **Working Group III: Engineering Issues**

- **GAN/RemOps within context of beam studies and experiments**

- **On web at** `http://www.rhichome.bnl.gov/RemOp`

# A Little History...

- **Fundamental Motivation**
  - A global collaboration to construct, commission, and operate a future large accelerator facility in a highly-distributed manner, maintaining active operations involvement by all member labs.
  - Driven even harder by linear collider community after Snowmass 2001

- **ICFA Involvement**
  - March 2000: ICFA Task Force studying proposal from Albrecht Wagner
  - December 2001: Task Force reports

- **Cornell Workshop**
  - March 21–23 2002
  - Elaboration of basic concepts, initial discussions
  - Overall questions, tools, and social issues

# Remote Operations scenario assumptions

- **Future large accelerator complex (presumably linear collider)**
- **Built at single site lab, by many other contributing labs**
- **Every lab maintains expertise for contributed piece**
- **Operations, Accelerator Physics "experts" are distributed**
  - Central thrust of "Remote Operations", technical and social
- **Site lab hosts maintenance, infrastructure staff**
  - Coordination and long-term relationships on- and off-site
- **During commissioning/startup, many experts move on-site**
- **Consensus/concession: Less efficient, but may be required for political and financial reasons for international collaboration**
- **SNS somewhat similar, but unlike SNS model in long-term operation**

# Working group charges and concerns

- **57 total attendees, 20 institutions**
- **Working Group I: Remote Operations Experiments**
  - ≈15 attendees
  - Charge: Discuss and evaluate concrete examples of Remote Operations Demonstration Projects for accelerators and experiments.
- **Working Group II: Social Issues and Operations**
  - ≈35 attendees
  - Charge: Bring together an eclectic mix of experts and skills to explore the scope of remote operations solutions, social and collaborative aspects. Include/consider perspectives of operations groups.
- **Working Group III: Engineering Issues**
  - ≈8 attendees
  - Charge: Examine remote operation of accelerator hardware subsystems, commissioning and operations. Will hardware perform well enough without on-site experts? What level of on-site engineering expertise is necessary to assure effective facility operation?

# WGI: Remote Ops Experiments

- **General baseline: dodge hairy political questions**
  - But strongly recommend an international coordination body
- **Tabulated existing and possible GAN experiments**
  - Dominated by current "grass-roots" efforts
- **Reviewed functionality of required elements**
  - Console design, information flow
  - Video, audio, elogs, chat-like GUI environment
- **What GAN/RemOps benefits are there for existing accelerators?**
  - Many accelerators operate "remotely" already
  - *But* there are community benefits to improving technologies
  - A serious exercise, larger scale, is still desirable

# Grassroots RemOps Experiments

- **Speadsheet including columns such as host lab, experiment, goals, timescale, collaboration, benefits, limitations, requirements, controls, cost, contact, status**
- **Ranged from TTF/Cornell emittance measurements to SNS SRF commissioning, from CMS virtual control room to SPS luminosity monitor testing**
- **6 of the 23 items listed were RHIC beam experiments!**
  - Obviously Fulvia's presence was felt
  - One reason we're here: more on this later
- **Virtual Operations Coffee Klatsch**
  - Interconnect main control rooms at major accelerators
  - Perhaps the most telling demo of them all, even though you can't quite wake up and smell the coffee

# WGII: Social Issues and Operations

- **Driven very much by operations and social scientists present**
  - But lots of discussions of "collaboratory" technologies
- **Methods and use scenarios: who does what?**
  - Enabled by Judy Olsen from Univ Michigan
  - Drawing diagrams: how do we do beam experiments? How does that change in terms of who talks to whom remotely?
- **Social issues**
  - Privacy, Reciprocity, Trust
  - Ease of Use / Agreed Rules of Road
  - Culture / Adoption / Training
  - Tools are great, but will they make our lives easier?
- **Security...**
  - (Perhaps the less said, the better)

# Summary of "operations concerns" deliverable

- **Many items of concern, some more relevant than others**
  - Staff makeup: differs even among US labs
  - Training and documentation (Beam experiment documentation?)
  - Language/cultural differences (chromaticity?)
  - Working relationships with support groups
  - Information flow (the "post-it" problem)
  - Shift coordination and rotation
  - How to deal with bargaining vs contract?
  - Normalized compensation: right down to chairs and coffee pots
- **TV cameras in control rooms are not desirable**
  - Yet RHIC installing some to improve meetings
  - PHENIX, STAR, RHIC Main Control: will daily meetings work?
  - A better example: Main Control and Instrumentation buildings
- **Conclusion: attempt virtual MCR coffee klatsch**
  - Even Bob Mau (FNAL) likes this one!

# GAN/RemOps: beam studies and experiments

- **Fundamental question: Is pain worth the cost?**
  - Videoconference experience among all members already
  - Nothing quite like being immersed in a community
  - *But* control rooms are becoming increasingly wired
- **RHIC controls/local operations is ideal test case**
  - A possible real benefit at a very low cost
  - Remote beam studies probably enabled best at RHIC
  - *But* Beam experiment time is already precious; remote operations guaranteed to be inefficient at first
  - It's not that we don't want you to come visit, but...
- **The natural intermediate stage: remote data analysis**
  - Online collaborative analysis improves chances of good data
  - A demonstrated need with collaborative beam studies