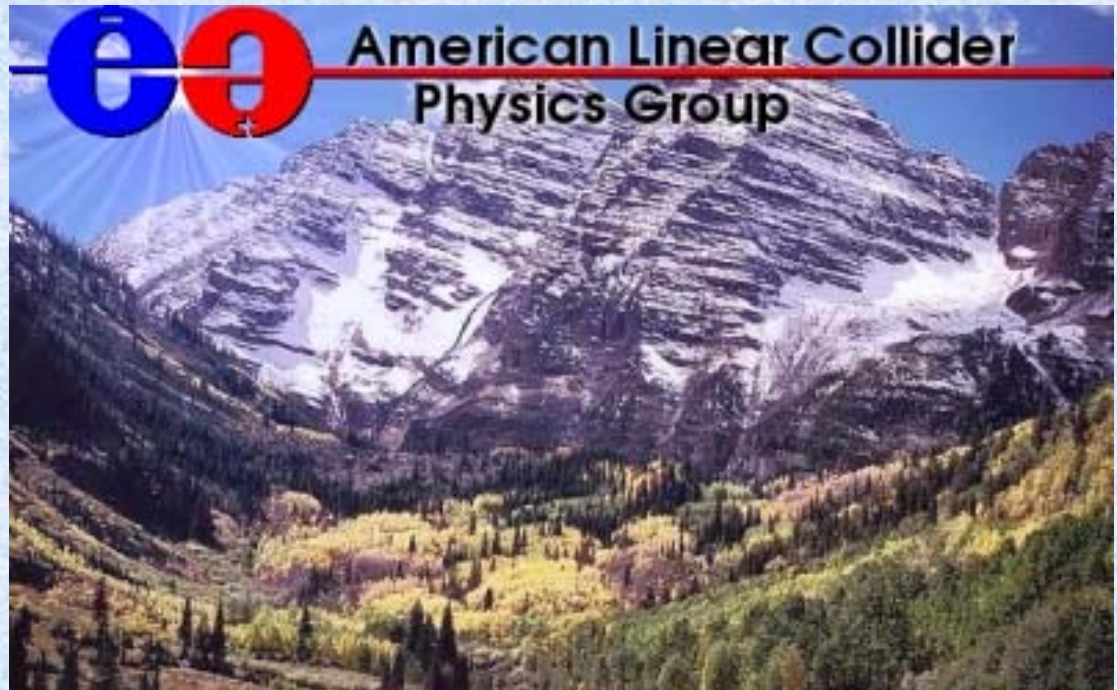


Concluding Remarks

2005

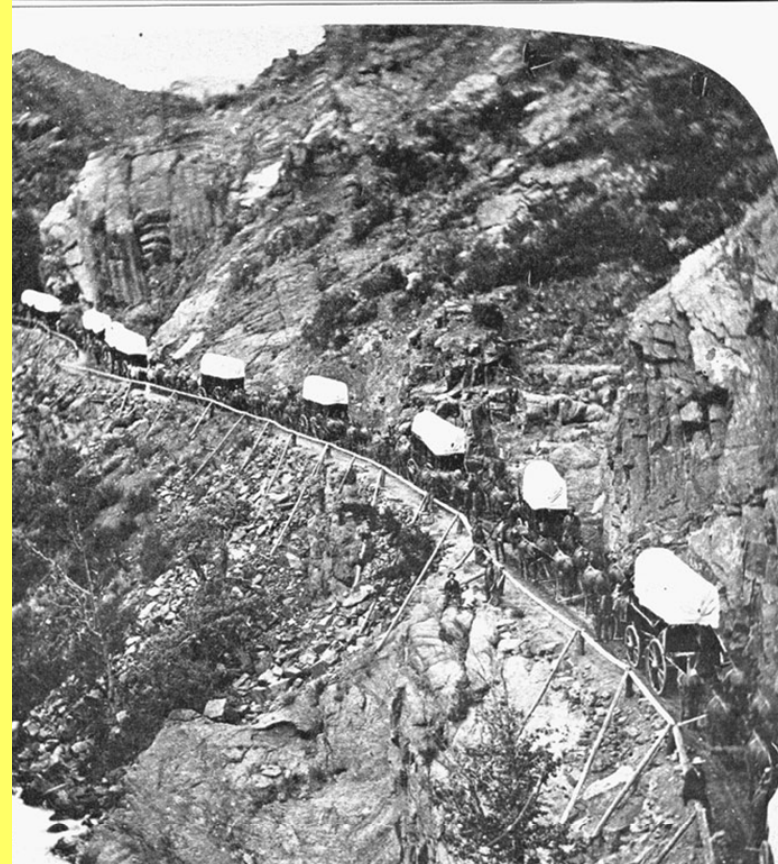
ILC

Physics and Detectors
Workshop
at Snowmass



Seeking the Treasure

- Nearly 150 years ago, people came to Colorado from around the world in search of gold buried in the Rocky Mountains
- During the past two weeks, our world-wide community (more than 668) has come once again to the Rockies, planning for discovery of a modern-day treasure
 - the nature of the Universe



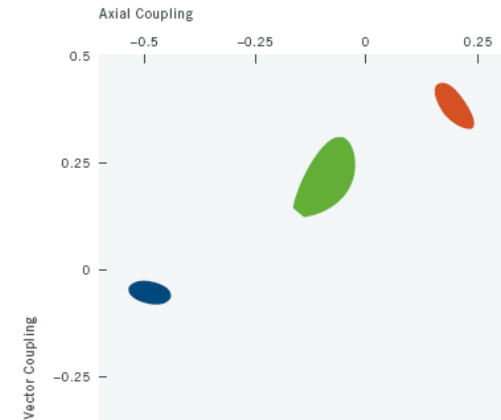
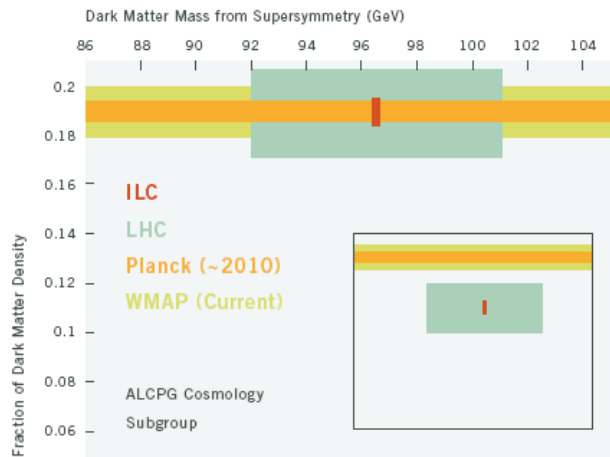
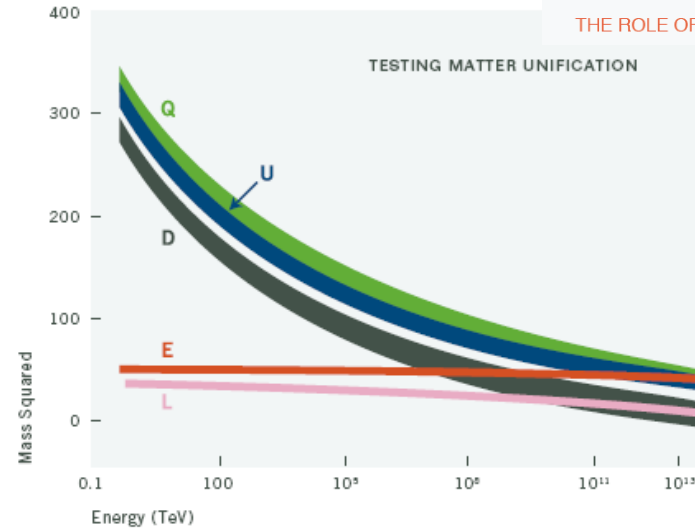
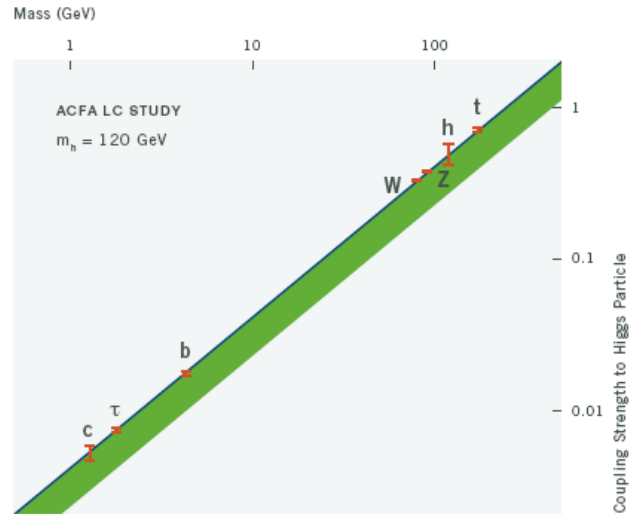
Mysterious Universe

- Recent discoveries have revolutionized our picture of the Universe – with numerous, critical, unanswered questions
 - What is its nature and what are its components?
 - What are matter, energy, space and time?
 - How did it get here and what is the future?
- While we have many remarkable theoretical models, we are without a comprehensive theoretical understanding of what we observe.
- Experiment must now take the lead.
- Particle Physics has never been so compelling

ILC Discovery Opportunities

DISCOVERING THE
QUANTUM UNIVERSE

THE ROLE OF PARTICLE COLLIDERS



Advances in Physics at Snowmass

Higgs

LHC/ILC
Connections

Supersymmetry

Cosmological
Connections

Beyond the
Standard Model

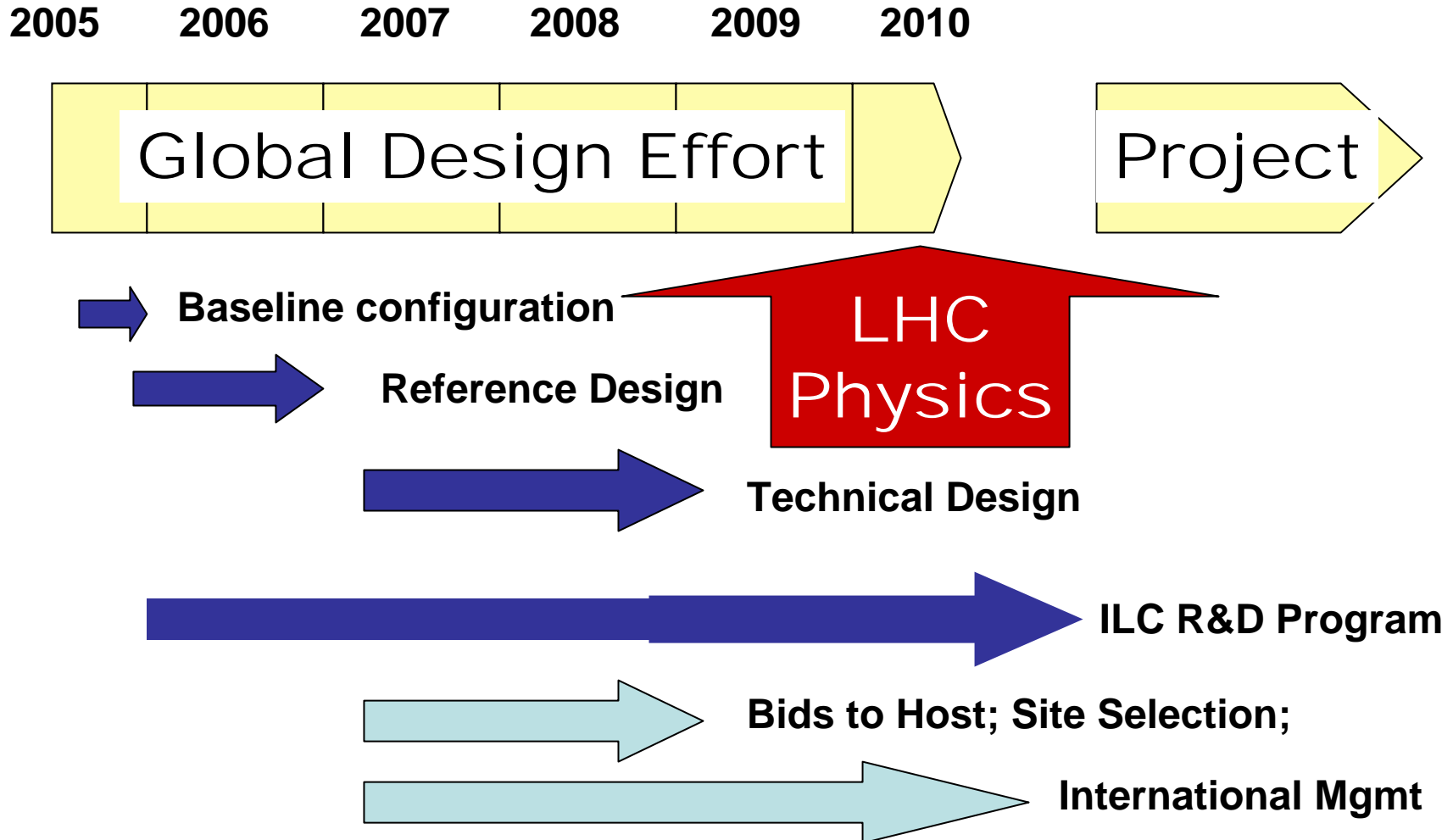
Radiative
Corrections
(Loopfest)

Top / Quantum
Chromodynamics

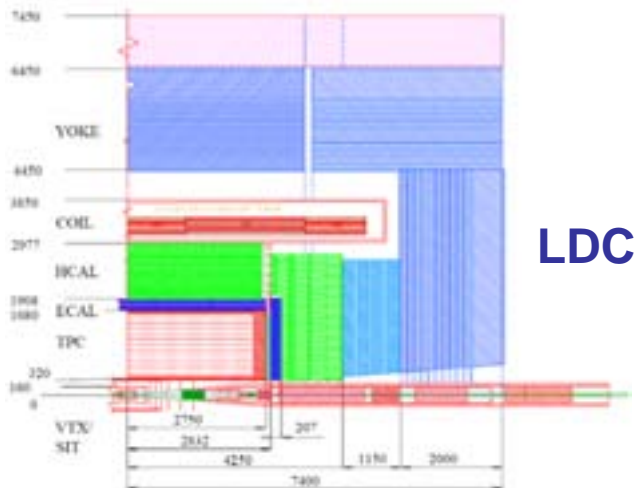
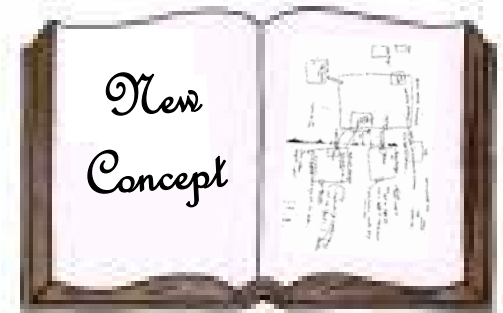
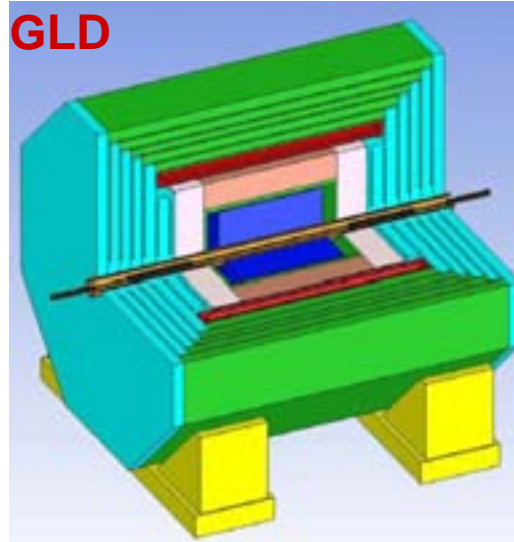
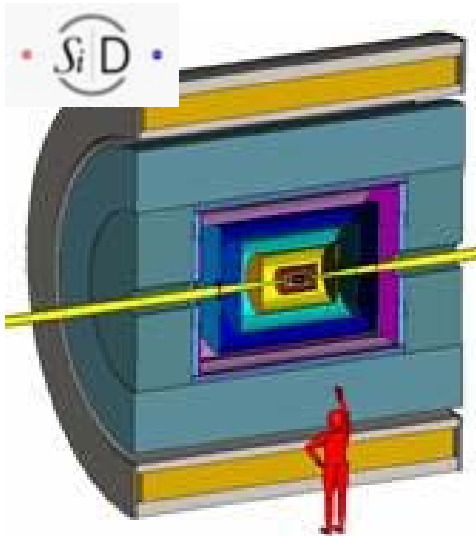
Global Design Initiative

- We now have a “laboratory” for the ILC
- the GDE
- A globally coordinated effort is moving us towards our goal to produce the tool we need to explore the grand questions of the Universe

The GDE Plan and Schedule



Concept Efforts are Growing



GDE – Near Term Plan

- **Schedule**

- **Begin define Configuration (Snowmass Aug 05)**
- **Baseline Configuration Document by end of 2005**

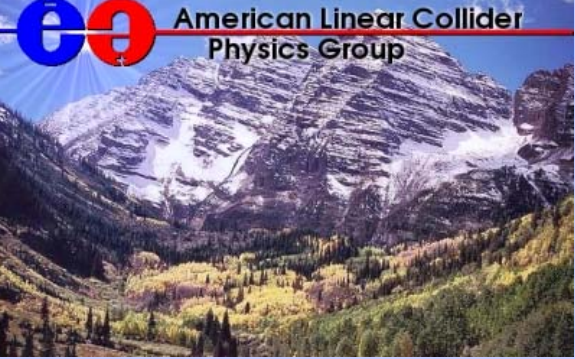
- **Put Baseline under Configuration Control (Jan 06)**
- **Develop Reference Design Report by end of 2006**

- **Three volumes –**

1) Reference Design Report

**2) Shorter glossy version for non-experts
and policy makers**

3) Detector Concept Report



GDE Timeline

machine

end of 2005

Baseline Configuration Document

end of 2006

Develop Reference Design Report

3 volumes: i.) RDR (machine)
ii.) Detector Concept Report
iii.) Exec Summary

detectors

R&D Report

Detector Outlines (Mar, 2006)
→ Detector Concept Report

{ Physics
Detectors



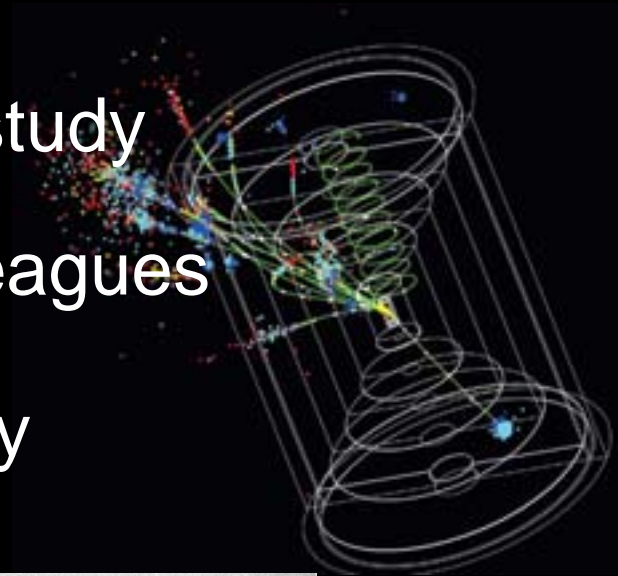
Detector Outline Documents

- To be completed in Spring 2006 by each detector concept team, and submitted to WWS.
- **Contents**
 - Description of the detector concept
 - Performance estimates wrt physics benchmarks
 - Required R&Ds and their status
 - Rough costing estimate
- Real detector CDR not far away (in 2 years)

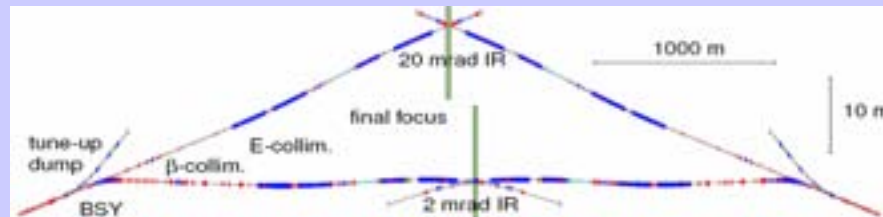
See <http://physics.uoregon.edu/~lc/wwstudy/concepts/outline-specs>

Physics and Detector Simulations

- Our R&D efforts, particularly the study of the detector concepts, depend heavily on the support of our colleagues doing the simulation effort
- We are being well served by many efforts, under the leadership of
 - Ties Behnke
 - Norman Graf
 - Akiya Miyamoto
- This is hard work, and critical



Case for Two Complementary Detectors



- Confirmation and Scientific Redundancy
- Complementarity, Collider Options
- Competition
- Efficiency, Reliability, Insurance
- Sociology, Scientific Opportunity
- Historical lessons

http://physics.uoregon.edu/~lc/wwstudy/concepts/draft_1.3.doc

We must continue to develop our understanding of the value of two complementary experiments, and to express it convincingly to our colleagues

Detector R&D

- **WWS has created a Detector R&D Panel**
 - collect information on projects world-wide
 - strengthen coordination and prioritization
- **R&D Panel preparing the R&D report to accompany the GDE machine Baseline Configuration Document late this year**
 - supported by concepts and R&D teams
- **Test beam planning**

University Detector R&D in US

This year was the third year of support for detector R&D from the agencies, organized by the USLCSG and the ALCPG



American Linear Collider
Physics Group

FY05 LCDRD funding:

\$700,000 from DOE

\$117,000 from NSF

24 projects

25 universities

Proposal process for FY06 will begin in the fall

Tale of Two Colliders

- There has been much discussion here on the relationships between the LHC and the ILC
- The success of the LHC will be a big boost to our field and to our aspirations
- We are now moving ahead aggressively in our preparation for the ILC experimental program
- Once we have collisions at the ILC, an exciting synergy with the LHC will be realized

Our Workshop has been VERY fruitful

- Studied and advanced the compelling physics case
- Refined the accelerator design
- Advanced our plans for the experiments through discussions and calculations of detector R&D and concept design
- Engaged broader community through education and outreach
- Having the full community together (physics, detectors, machine) has led to significant progress at the interfaces between the efforts

Proceedings

- Files of all talks should be linked on the web pages
 - Conveners – please follow up
 - Agendas on web page will be used to organize written submissions
- Proceedings will be published by SLAC on CD and on the SLAC Electronic Conference Proceedings Archive ([eConf](#))
- See the Proceedings link for detailed instructions and page limits
 - <http://www-conf.slac.stanford.edu/snowmass05/>
- The CD produced with written contributions will include talk transparencies – conveners!
- **Deadline -- November 30**

Future Meetings

- **Vienna, Austria** **14-19 November, 2005**
– ECFA Study
- **Frascati, Italy** **7-10 December, 2005**
– GDE meeting
- **Bangalore, India** **9-14 March, 2006**
– LCWS 2006 (joint with GDE)
- **North America** **Next summer**
– Joint GDE / ALCPG meeting

Approaching the Treasure

- Many positive steps in the past few years
- The pace is picking up
- We have come far, but have a lot of work left
- Let's do it!
- Thank you all for making this regional workshop a global success

