



Enhancing Peer Review at NIH



<http://enhancing-peer-review.nih.gov/>

Advisory Committee to the Director 12/7/2007

Lawrence A. Tabak, D.D.S., Ph.D.
On behalf of:
SC WG on Peer Review



Enhancing Peer Review at NIH



Acknowledgements

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Kerry Brink

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Jeremy Berg

Keith Yamamoto

Membership of ACD and SC WG's



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**A Self-Study by the NIH
in Partnership with the Scientific Community
to Strengthen Peer Review in
Changing Times**

Principles Behind the Study

- **The increasing breadth, complexity, and interdisciplinary nature of biomedical science are creating new challenges for the system used by NIH to support biomedical and behavioral research**
- **Peer review is a key component of this system**

The Charge:

“Fund the best science, by the best scientists, with the least administrative burden...”

Study has been driven by two Working Groups

ACD WG on Peer Review

- **Keith Yamamoto, Ph.D., UCSF, Co-Chair, ACD, Boundaries Report**
- **Lawrence Tabak, D.D.S., Ph.D., NIDCR, Co-Chair**
- **Syed Ahmed, MD, MPH, Dr. PH, MWC COPR**
- **Bruce Alberts, Ph.D., UCSF, Chair, Boundaries Report**
- **Mary Beckerle, Ph.D., U. Utah, ACD**
- **David Botstein, Ph.D., Princeton, ACD**
- **Helen Hobbs, M.D., UTSW, HHMI**
- **Erich Jarvis, Ph.D., Duke**
- **Alan Leshner, Ph.D., AAAS, ACD**
- **Philippa Marrack, Ph.D., Natl. Jewish Med., HHMI, Boundaries Report**
- **Edward Pugh, Ph.D., U. Penn., PRAC**
- **Tadataka Yamada, M.D., Gates Foundation, ACD**

Ex officio

- **Norka Ruiz Bravo, Ph.D., OD/OER**
- **Toni Scarpa, M.D., Ph.D., CSR**

SC WG on Peer Review

- **Jeremy Berg, Ph.D., NIGMS, Co-Chair**
- **Lawrence Tabak, D.D.S., Ph.D., NIDCR, Co-Chair**
- **Marvin Kalt, Ph.D., NIAID**
- **Story Landis, Ph.D., NINDS (Co-chair EAWG)**
- **Roderic Pettigrew, Ph.D., M.D., NIBIB**
- **Norka Ruiz Bravo, Ph.D., OD/OER (Co-chair EAWG)**
- **Toni Scarpa, M.D., Ph.D., CSR**
- **Lana Skirboll, Ph.D., OD/OSP**
- **Brent Stanfield, Ph.D., NIDDK**
- **Jane Steinberg, Ph.D., NIMH**
- **Betty Tai, Ph.D., NIDA**

Ex officio

- **John Bartrum, OD/OB**
- **Jack Jones, Ph.D., Acting CIO**
- **Catherine Manzi, OGC**
- **Jennifer Spaeth, OD**



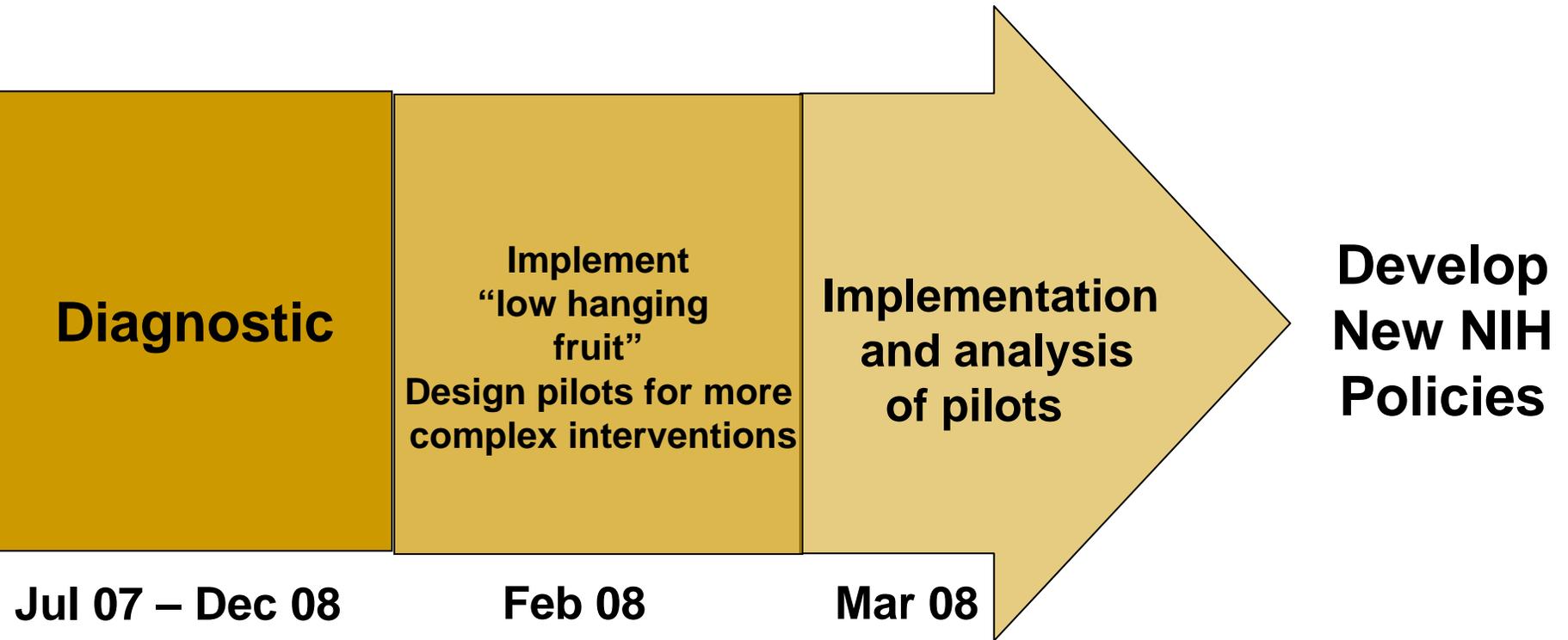
center for
scientific review

Some Current CSR Initiatives

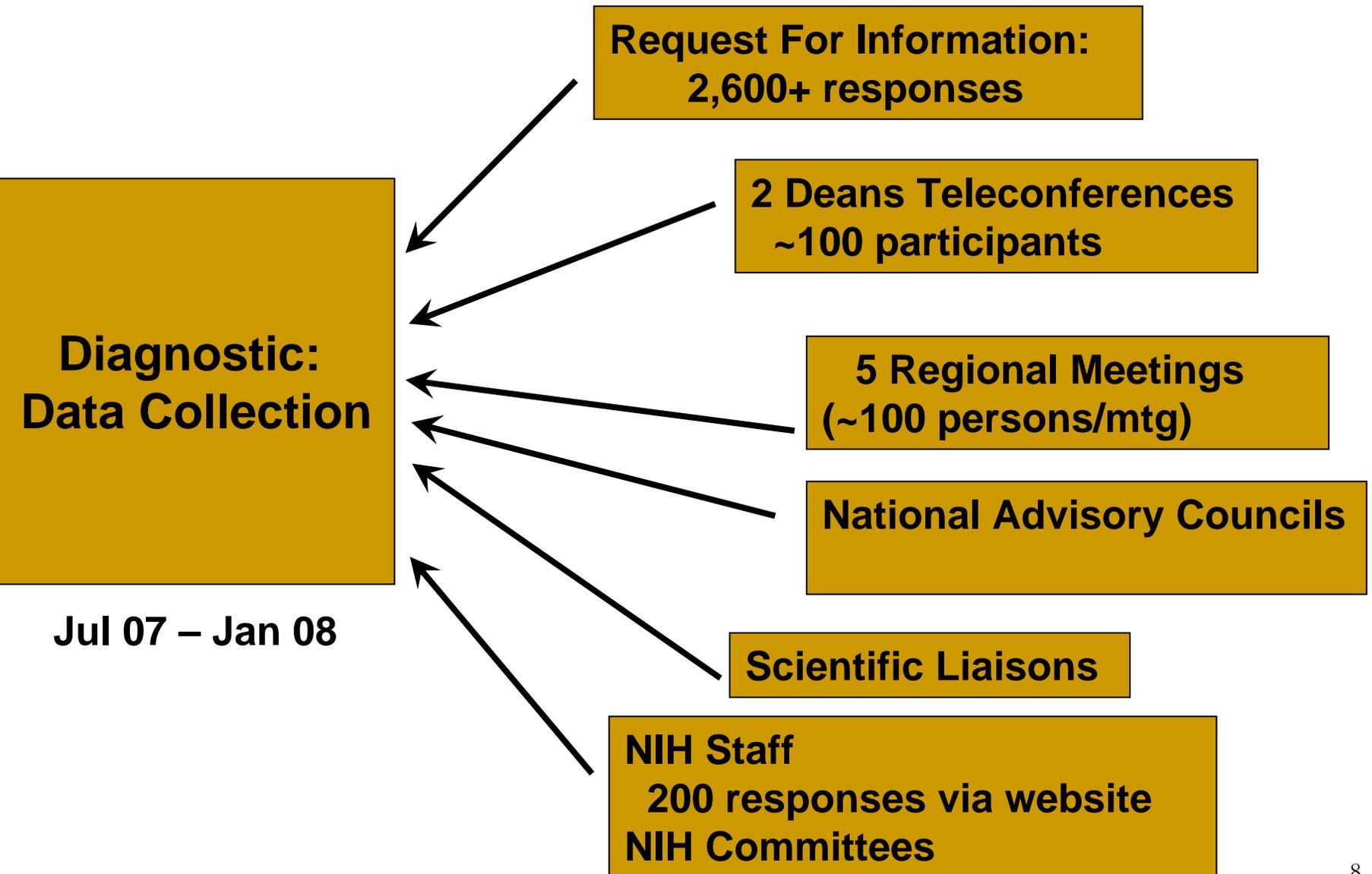
1. **Shortening the Review Cycle**
2. **Immediate Assignment of Applications to IRGs**
3. **Realignment of Study Sections**
4. **Electronic Reviews**
5. **Shortening the Size of Applications**

The Steering Committee WG is coordinating their efforts with CSR's initiatives

Project Phases



Project Phases



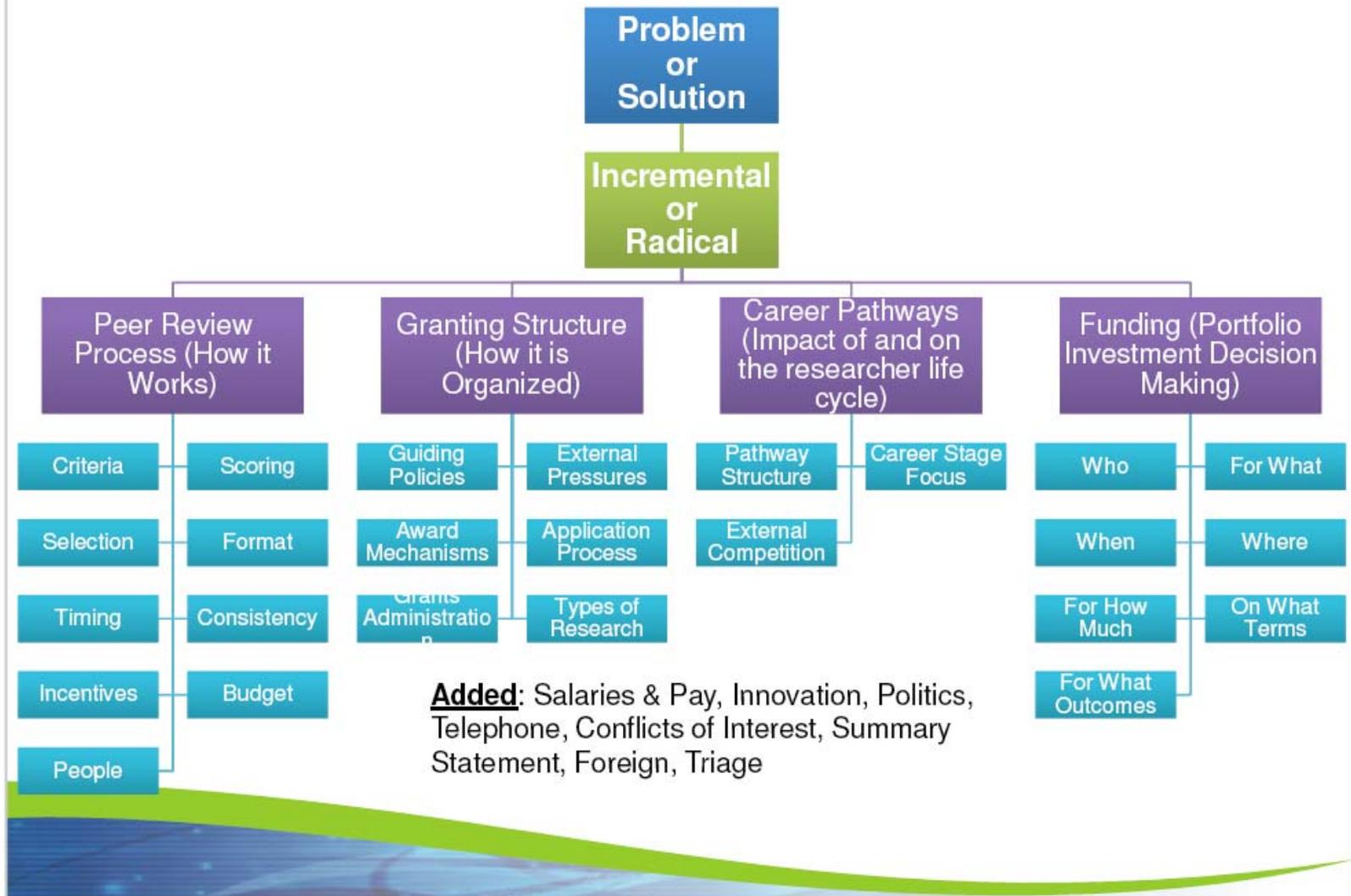
Project Phases

**External Synthesis:
Request for Information**

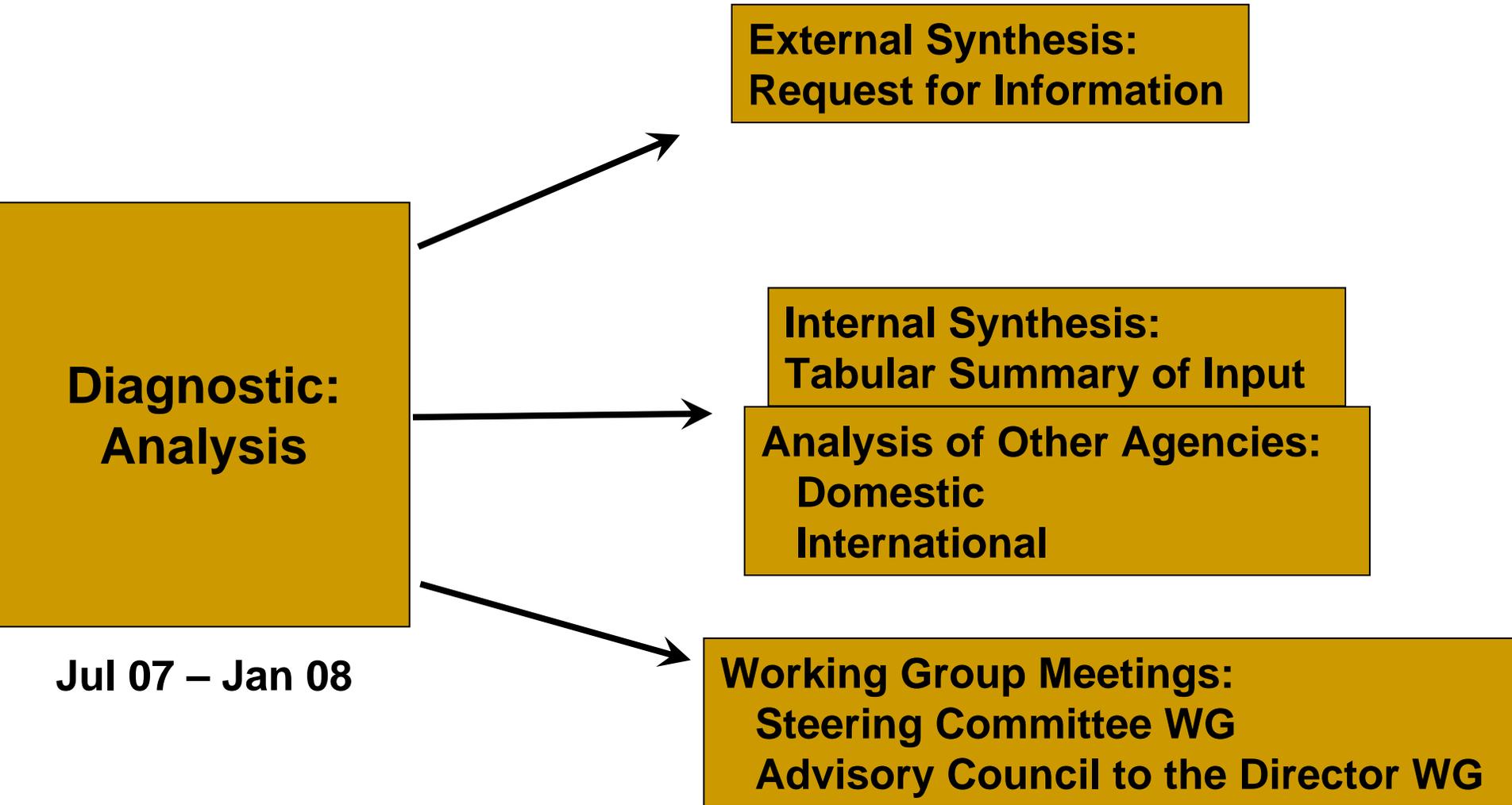
**Diagnostic:
Analysis**

Jul 07 – Jan 08

Final Coding Schema



Project Phases



Project Phases

**Diagnostic:
Analysis**



**Report results of analysis to:
NIH Steering Committee and
ACD
NIH ICD
NIH Committees**

Jul 07 – Jan 08



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Additional Emerging Themes*

***A summary of what we have heard from the community and potential solutions from both the community and the WG's. These are not presented in any priority order and are presented only to facilitate discussion. The community has been told that the selection of ideas for follow-up is not predicated on the “village vote”**

Emerging themes: Administrative Burden

- **Challenges:**
 - **Too many applications in the system**
 - **low A0 success rates-
“clogs” queue**
 - **Feedback remains
ambiguous about
applications that are not
competitive**

Emerging themes: Administrative Burden

■ Challenges:

- Too many applications in the system
 - low A0 success rates-
“clogs” queue
 - Feedback remains ambiguous about applications that are not competitive

■ Suggested Solutions:

- *Pre-application for A0's to provide rapid identification of non-competitive applications*
- *Limit applications to a single submission only*
- *Employ administrative re-review for those applications that have correctable deficiencies*
- *Use a two score system to provide merit review of application as received and to assess the “potential” of an amended application if all deficiencies were redressed*
- *Provide checkbox to identify those applications that are not recommended for resubmission - “NRR”*

Emerging themes: Administrative Burden (cont.)

■ **Challenges:**

- **Too many mechanisms -
leads to confusion; gaming**

- **Investigators spend too much
time writing applications**

Emerging themes: Administrative Burden (cont.)

■ Challenges:

- Too many mechanisms - leads to confusion; gaming
- Investigators spend too much time writing applications

■ *Suggested Solutions:*

- *Collapse mechanisms by complexity and scale; points along career pathway*
- *Shorten length of application*
- *Assume greater risk by funding higher percentage of early career investigators*
- *“Cherry pick” our own by creating Select NIH Investigator Award*

Select NIH Investigator Award

- **Recognizes outstanding scientists with high impact in their field**
 - **Nominated by NIH following successful renewal of R01 2 times**
 - **Award made on basis of shortened application with greater emphasis on prior accomplishment and potential impact of proposed work**
 - **Investigator agrees to commit minimum of 51% effort to program and to serve on study section if asked**
 - **Award made for 7 years with option for administrative extension for 3 years for a total support period of 10 years**
 - **No more than 5% (?) of R01s will fall into this category**

Emerging themes: Support for Investigators at different stages of career development

- **Challenges:**
 - **Do we need different mechanisms for scientists at different stages of their careers?**
 - **Nurturing New investigators - facile entry into the system**
 - **Early career investigator review is uneven - sometimes given “extra” points by reviewers and/or ICs; other times reviewed with same rigor and expectations as established investigators**
 - **Providing “Established” investigators with stability**

Emerging themes: Support for Investigators at different stages of career development

■ Challenges:

- Do we need different mechanisms for scientists at different stages of their careers?
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■ Suggested Solutions:

- *Assume greater risk by funding higher percentage of early career investigators*
 - *Separate review for early career investigators*
 - *Eliminate category of “un-scored” applications - provide scores for all applications*
- *Create NIH-wide mechanism to allow investigators to compete for “shared resources” supplement to their grants for support of interstitial scientists*
- *“Cherry pick” our own outstanding investigators - Select NIH Investigator Award*

Emerging themes: Review(er) Quality

- **Challenges:**
 - **Current scoring system introduces false precision by process; reviewers weight different elements of an application in an uneven manner**
 - **Current evaluation focuses on weaknesses**
 - **Too much emphasis on methodology and preliminary data/ not enough on impact and innovation**
 - **Role is not to mentor applicant but to review scientific merit of the application**

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■ *Suggested Solutions:*

- *Drop second decimal point of current scoring system; Employ 7-point scale*
- *Employ matrix scoring system to evaluate different elements of an application:*
 - *Impact*
 - *Innovation*
 - *Research Plan*
 - *Investigator/environment*
 - *Service to science*
- *Score + rank using appropriate iterative process*
- *Only the merit of the application, as written, should be addressed*
- *Limit applications to a single submission only*

Emerging themes: Review(er) Quality (cont.)

■ Challenges:

- ❑ No accountability/training for reviewers/SS chairs
- ❑ Do “peers” make the best reviewers?

- ❑ Too few people decide application fate
- ❑ Different types of review required for different types of science
- ❑ Factual errors in summary statements diminish credibility of review
- ❑ Amended applications often reviewed by new reviewers leading to new issues being raised

Emerging themes: Review(er) Quality (cont.)

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■ Suggested Solutions:

- ❑ *Provide meaningful training for reviewers prior to their assignment on a study section*
- ❑ *Have each reviewer rate the reviews of their colleagues on the study section*
- ❑ *Engage professional “full time” reviewers*
- ❑ *Employ editorial board model that includes opportunity for “prebuttal”*
- ❑ *Engage reviewers for the full “life-cycle of an application*
- ❑ *Limit applications to a single submission only*

Emerging themes: Review(er) Quality (cont.)

■ Challenges:

- **Insufficient incentives for highly qualified (and busy) people to participate in the peer review process**
- **How can we re-capture the prestige of being a reviewer?**

- **How much “context” should reviewers be provided (“firewall”)**

Emerging themes: Review(er) Quality (cont.)

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- Insufficient incentives for highly qualified (and busy) people to participate in the peer review process
- How can we re-capture the prestige of being a reviewer?
- How much “context” should reviewers be provided (“firewall”)

■ *Suggested Solutions:*

- *Add time to extant grants*
- *Make service more flexible*
- *Make service mandatory (if asked) as a condition of acceptance for highly meritorious awards*
- *Consider development of a cadre of “select reviewers” with appropriate incentives*
- *Provide reviewers with NIH-wide portfolio analysis of relevant area*
- *Train SRO’s to ensure that RFA goals are clearly understood*

Emerging themes: Strains on the System Employed to Support Research

■ **Challenges:**

- **Resources are finite**
 - **Indirect costs**
 - **Support redundancy**
- **How many R01's are enough?**
 - **Are there too many overlapping R01's?**
 - **Are too many resources concentrated in the hands of too few investigators?**
- **Team Science remains undervalued**
 - **Should R01's remain the "gold standard" of investigator success?**

Emerging themes: Strains on the System Employed to Support Research

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- Resources are finite
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- Team Science remains undervalued
 - Should R01's remain the "gold standard" of investigator success?

■ Suggested Solutions:

- *Set 25% minimum effort for RPG PI's; 20% effort for "multi" PI's; 5% minimum effort for all other roles on application*
- *Create NIH-wide mechanism to allow investigators to compete for "shared resources" supplement to their grants for support of interstitial scientists*