Increasing the use of evaluation data collection in an EPO program

J. Taber ,W. Bohon, T. Bravo, M. Dordevic, P. Dorr,
M. Hubenthal, J. Johnson, D. Sumy, & R. Welti
Incorporated Research Institutions for Seismology
H. Davis
Technology for Learning

2017 AGU meeting

Facilitate – Collaborate – Educate

IRIS

Overview

- EPO evaluation needs in a facility
- One collaborative approach: Impact Analysis Method
- Successes, challenges, and next steps
- Critical success factors for implementation

IRIS NSF

Incorporated Research Institutions for Seismology

IRIS / IDA Stations   IRIS / USGS Stations   Affiliate Stations
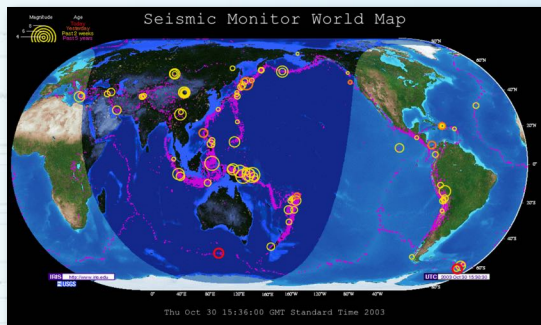Planned Stations

- Primary components
  - Global Seismic Network (with USGS)
  - Portable seismographs (PASSCAL) and other instrumentation
  - EarthScope Transportable Array
  - Data Management Center
  - Education and Public Outreach
- Over 120 member organizations and 150 educational and/or foreign affiliates
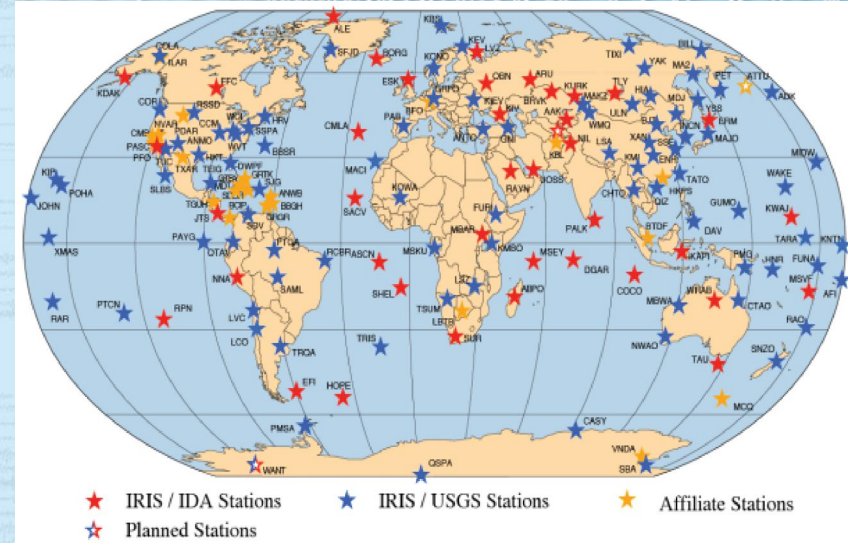
Facilitate – Collaborate – Educate

Prior IRIS EPO evaluation approach

- Internal assessment during development and implementation

- Occasional external assessment at conclusion of projects and of overall program

- Regular oversight by community steering committee

- Difficult to decide on appropriate level of evaluation for very wide range of products and services

  – Millions of website visitors for a minute

  – 15 research interns for an entire summer

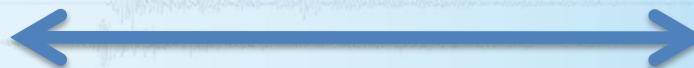 – Considerable emphasis on outreach

Positioning facility EPO programs

Education and outreach spectrum

NSF funded
education projects
(e.g. EHR)

Facility-based
EPO programs

Broader Impacts of
science proposals

Education research
Detailed external evaluation

Single PI outreach
Self reporting, counts

IRIS

Desired Outcomes of a more comprehensive approach

- Make evaluation an integral part of IRIS EPO staff's work

- Ability to state why we do the activities we do (needs assessment)

- Ability to make more evidence-based claims about our work
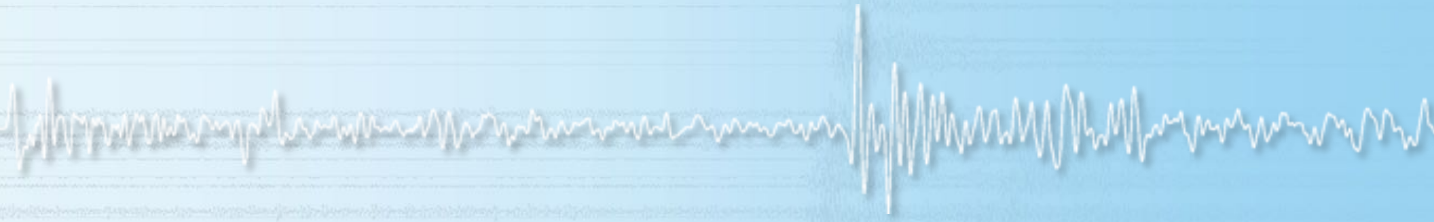
- Enhanced impact of program

Evaluation choice

- Adopted the Collaborative Impact Analysis Method of Davis and Scalice, 2015

- Used by a number of NASA EPO programs

- Designed to be implemented within an existing EPO program
  - Focus on incremental improvements

Facilitate – Collaborate – Educate

Process

- Initial consultations with external evaluator (Fall 2015)
  - Assessed each project's existing evaluation plan according to rubric
- Internal staff development
  - Consultations with external evaluator, presentations, reading
- Action plans
  - Each staff member developed action plans for their projects
- Implementation
  - Staff made incremental changes to their projects to improve evaluation rigor
- Annual follow up consultations (Winter 2017)
  - Reassessment according to rubric, revised action plans, identified where external evaluator can assist in additional assessment
- Every 2-3 years
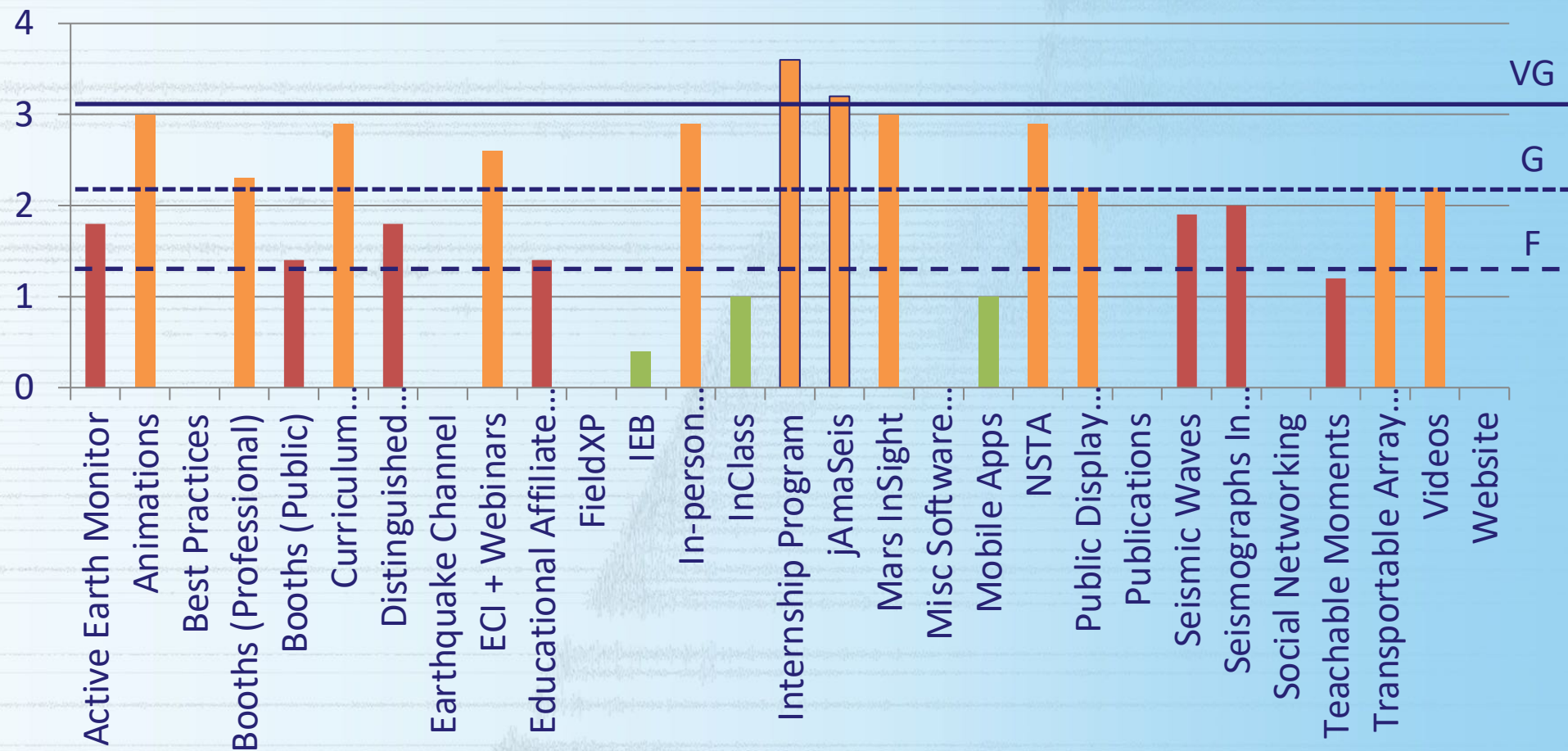 - Conduct total portfolio evaluation with external evaluator

IRIS NSF

Quantitative Collaborative Impact Analysis Method

Project Phase	Fair (1)	Good (2)	Very Good (3)	Excellent (4)
Needs Assessment What is the evidence of need?	Prior experience; "Seems like a good idea"	Research on what works; Literature review on similar programs/ products/ populations/ goals	Conversation with and/or direction from stakeholders (Focus Group); Experts review the ideas/plan	Survey of or pilot with potential audience/ users about the draft program
Goals and Objectives How measurable are the goals and objectives?	General direction; Understood by team; Agenda substituting for objectives	Explicit, written; For a target audience	Objectives are SMART: Specific, Measurable, Action-oriented, Realistic, Time-bound	Logic model of inputs, outputs, and outcomes in place
Design of Project How evidence- or research-based is the design?	Series of activities; Uses what has worked before	Based on objectives; Connects to standards; Includes contingency plans for emerging needs	Thematic; Has continuity; Participatory, personalized, responsive; Uses advanced organizers	Developmental; Embeds evaluation/ reflection
Implementation How true to the design is the implementation? (fidelity)	Facilitators prepare to implement the design	Collect and use feedback during implementation	High fidelity to design OR implements contingency plans to meet objectives if needed	Participants able to monitor their own progress against objectives
Outcomes Assessment/ Methods What is the evidence of impact on BASIK?	Post only survey or reflection; Follow up survey or interview; Web stats; Anecdotes; Facilitator reports	External evaluator observes, or does case studies; Pre/post self-report survey, reflections; Post only measure (test, retrospective survey, task)	Pre/post measures (tests, performance tasks, observation); Pre/post follow-up	Comparison group studies (quasi-experimental); Experimental study (random assignment)

Davis and Scalice, 2015

After initial consultation

- ## What we expected, short and long term
  - Incremental improvement in most projects

- ## What we don't expect, long term
  - Achieve a 4 everywhere, *unless*
    - Core to the mission
    - Additional funding for enhancement/expansion
    - A gap in the literature we can uniquely fill
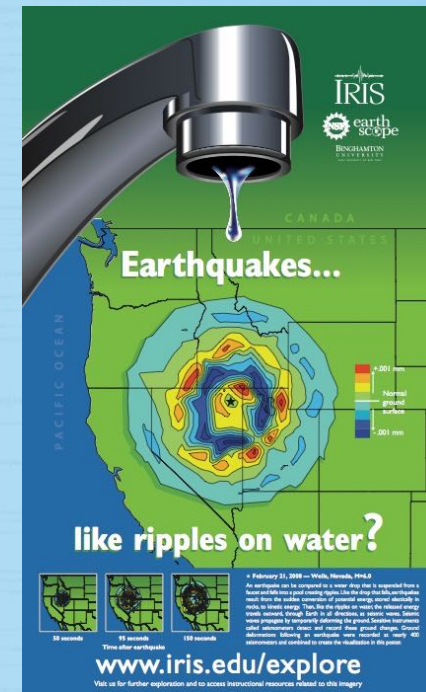
Initial Action Plan Examples

- Write SMART objectives
- Collection and analysis of new evaluation data
  - Conduct surveys: brand awareness, value of booth interactions, needs assessments (data app, Educational Affiliates), social media use
  - Software focus groups (storyboards)
  - Usability testing of software and webpages
  - Interviews of students and faculty involved in summer field program
- Review and update design criteria
- Create a logic model for project

External evaluator conclusions, 2017

- 2015 consultations led to increase in evaluation efforts by EPO team

- Data collected was used to inform, revise, or improve the work

- On-demand external evaluation supported more sophisticated evaluation efforts and time-sensitive needs

- 2017 consultations generated additional ideas for evaluation efforts

Positive Effects on IRIS EPO

- Promoted improvement, no matter the initial state
- Increased staff involvement and ownership
  - Development of staff evaluation skills
  - Common language among staff
  - Increased enthusiasm to collect and share data
  - Desire for consultations to get evaluation ideas
  - Evaluation included in all new activities
- Improved impact of products and programs
- Improved culture of information sharing
  - All evaluation reports posted on our public website

IRIS NSF

Next steps

- Make more use of our external evaluator to reduce staff load
  - Design, implement, and/or analyze surveys

- Design deeper interventions – more evidence and nature of impact

- Use the data!
  - Resource allocation/alignment & product/program development – EPO staff
  - Oversight – EPO Standing Committee
  - Provide richer reporting to NSF

IRIS NSF

Critical Success Factors

- Some existing internal evaluation expertise

- Clear leadership commitment and involvement

- Intentional cultural change

- Ongoing support from external evaluator

- Use of evaluation results for improvement and reporting

Summary

- Collaborative Impact Analysis method
    - Capacity building of project staff
- Can be initiated at any stage of a project
- Evaluation integrated in the project life cycle
    - Ongoing use of data
- More focused implementation
    - More efficient use of resources
- Greater impact on target audiences