

Appendix C.
Descriptions of Elements, Outputs and Outcomes for each audience

Audiences (1–5)	Elements (a–k)	Outputs If we accomplish each element, they will deliver the following	Outcomes If we continue to accomplish each element, then in 5-7 years they will affect change in the following
1. Consortium	a. Internships	Student workforce to support consortium research (1a)	A well-prepared & diverse (gender, race, training) pool of students for seismology related careers (1a)
			Enhancement and encouragement of the next generation of the IRIS community (1a)
		Exposure to potential graduate students (1a)	Integration of internship program as a component of IRIS culture (1a)
		Database of potential graduate students (1a)	
	b. Encouraging and enabling E&O efforts within the community	Community awareness E&O issues and support for E&O activities (1b)	Advancement of IRIS E&O goals through coordination of broader impacts and funding across the IRIS community (1b)
		Increased member preparedness to participate in E&O activities (1b)	Increased public support for seismology research and education (1b)
	c. Sabbaticals In Seismology	Workforce to support consortium research (1c)	Enhanced connections between EA and research communities(1c)
		Creation of faculty research opportunities (1c)	Increased faculty foundation in seismology (1c)

Appendix C (Continued).

Descriptions of Elements, Outputs and Outcomes for each audience

Audiences (1–5)	Elements (a–k)	Outputs If we accomplish each element, they will deliver the following	Outcomes If we continue to accomplish each element, then in 5-7 years they will affect change in the following
2. Undergraduate students and faculty	a. Internships	A pool of well-prepared students for graduate school in seismology (2a)	A well-prepared & diverse (gender, race, training) pool of graduate students for seismology related careers (2a) Encouragement and integration of the next generation of the RIS community (2a)
	d. Professional Development	Increased faculty foundation in seismology and their preparedness to teach about it. (2d)	Improved student appreciation and comprehension of seismology content (2d)
	e. Instructional material and tool development and enhancement	A collection of resources to convey seismological observations (seismological data, tools, activities and instrumentation) (2e)	Improved ability for faculty to teach and enhanced student appreciation and comprehension of seismology content (2e)
3. Students and teachers Grades 5-12	d. Professional development	Increased teacher foundation in seismology and their preparedness to teach about it. (3d)	Improve students appreciation and comprehension of seismology content (3d)
	e. Instructional material and tool development and enhancement	A collection of resources to convey seismological observations (seismological data, tools, activities and instrumentation) (3e)	Instructional sequences for seismology content (3e)
	f. Seismographs in Schools	Empowering teachers to use educational seismographs and seismic data for instruction nationwide (3f)	Improved ability for teachers to convey and enhanced student appreciation and comprehension of seismology content (3e) An organizational framework for coordination and advocacy of educational seismology across the country (f)

Appendix C (Continued).

Descriptions of Elements, Outputs and Outcomes for each audience

Audiences (1–5)	Elements (a–k)	Outputs If we accomplish each element, they will deliver the following	Outcomes If we continue to accomplish each element, then in 5-7 years they will affect change in the following
4. General Public	e. Educational materials and tool development and enhancement	A collection of resources to convey seismological observations (seismological data, tools, activities and instrumentation) (4e)	Enabling more people to participating in monitoring Earth’s changes through seismology (4e)
	g. Museum Displays	National set of regionalized seismology displays (4g)	Improve the public’s awareness, appreciation and comprehension of seismology and the process of science (4g,4h)
	h. Lectureship	Annual tour of prominent seismologists at public venues across the US (4h)	
	i. DBIS/Media	A collection of 90 second video clips on cutting edge geophysics research (4i)	Increased public support for seismology research and education (4i,4j)
	j. General Outreach	IRIS presence at key functions such as AAAS days, NSF Family days etc. (4j)	
5. GeoEd Community	k. E&O Collaborations	Collaborations with major research initiatives, museums, educational institutions, and professional organizations to integrate and communicate seismology content and educational resources (5k)	National leadership and content-based expertise in seismology education as part of Earth System Science (5k)

Appendix D.

Outputs, their measures, and the availability of a range of assessment data for each measure

Audiences (1-5)	Outputs	Measurement of outputs	Data Availability
1. Consortium	Student workforce to support consortium research (1a, 1c)	Tracking of internship projects, presentation abstracts, and hosts perceptions	Yes
	Exposure to potential graduate students (1a)	Percentage of internship alumni that attend graduate school at the institution that hosted them	Yes
	Database/access to pool of potential graduate students (1a)	Web statistics e.g. downloads of announcement of intern abstracts at AGU	Partially
	Community awareness E&O issues and support for E&O activities (1b)	Community awareness & perception of E&O efforts and issues	No
	Increased member preparedness to participate in E&O activities (1b)	# of broader impact collaborations through IRIS member proposals: Criterion 2	Yes
		Survey of community E&O activities and alignment with E&O Program goals	No
		# of faculty volunteering at IRIS E&O activities	Yes
	Workforce to support consortium research (1c)	Documentation of EA faculty research experience	Yes
2. Undergraduate students and faculty	A pool of well-prepared & diverse (gender, race, training) students for graduate school in seismology (2a)	Applicant & intern attributes	Yes
		Student perception & attitudes	Yes
		Host perceptions	Yes
	Increased faculty foundation in seismology and their preparedness to teach about it. (2d)	Faculty participation, perceptions, comprehension, & activity usage	Partially
	A collection of resources to convey seismological observations (seismological data, tools, activities and instrumentation) (2e)	Website statistics	Yes
		Number of and sum of activities	Partially
		Use of resources (printed, software, data)	No

Appendix D (Continued).

Outputs, their measures, and the availability of a range of assessment data for each measure

Audiences (1-5)	Outputs	Measurement of outputs	Data Availability
3. Students & Teachers Grades 5-12	Increased teacher foundation in seismology and their preparedness to teach about it. (3d)	Teacher participation, perceptions, comprehension, & activity usage	Partially
		Workshop attendance	Yes
	Empowering teachers to use educational seismographs and seismic data for instruction nationwide (3e)	Seismograph distribution and data sharing	Yes
		Operator perception, comprehension, & usage	Yes
		Operator needs assessment	Yes
	A collection of resources to convey seismological observations (seismological data, tools, activities and instrumentation) (3f)	Website statistics	Yes
		Print material distribution	Yes
		Number of and sum of activities	Partially

Appendix D (Continued).

Outputs, their measures, and the availability of a range of assessment data for each measure

Audiences (1-5)	Outputs	Measurement of outputs	Data Availability
4. General public	A collection of resources to convey seismological observations (seismological data, tools, activities, and instrumentation) (4e)	Website statistics	Yes
		Print material distribution	Yes
	National set of regionalized seismology displays (4g)	Number of visitors	Yes
		Visitor stop-time, perceptions and comprehension	Yes
	Annual tour of prominent seismologists at public venues across the US (4h)	Number of visitors	Yes
		Venue satisfaction	Yes
		Speaker feedback	Partially
	A collection of 90 second video clips on cutting edge geophysics research (4i)	Annual count	Yes
		Distribution	?
		DBIS viewer-ship statistics	Yes
	IRIS presence at key functions such as AAAS days, NSF Family days etc. (4j)	Annual count	Yes
		Attendance estimates	Partially
	A collection of resources to convey seismological observations (data, tools, activities, and instrumentation)	Website statistics	Yes
		Print material distribution	Yes

Appendix D (Continued).

Outputs, their measures, and the availability of a range of assessment data for each measure

Audiences (1-5)	Outputs	Measurement of outputs	Data Availability
5. GeoEducation Community	Collaborations with major research initiatives, museums, educational institutions, and professional organizations to integrate and communicate seismology content and educational resources (5k)	Number and type of collaborations	Yes
		Count of community services	Yes

Appendix E.

Outcomes, their measures, and the availability of a range of assessment data for each measure

Audiences (1-5)	Outcomes	Measurement of outcomes	Data Availability
1. Consortium	A well-prepared & diverse (gender, race, training) pool of students for seismology related careers (1a)	Internship alumni tracking	Partially
	Enhancement and encouragement of the next generation of the IRIS community (1a)	Alumni participation in IRIS	No
	Integration of internship program as a component of IRIS culture (1a)	Analysis of host applications	No
		Perception of Internship program by community (e.g. on grad school applications)	No
	Advancement of IRIS E&O goals through coordination of broader impacts and funding across the IRIS community (1b)	Community awareness and use of IRIS E&O goals and programs as drivers for their own E&O efforts	No
		# and alignment of E&O activities in IRIS community supported	Yes
	Increased public support for seismology research and education (1b)	Public Policy	No
	Enhanced connections between EA and research communities (1c)	EA member perceptions	Partially
		Number of joint publications	Partially
	Increased EA faculty foundation in seismology (1c)	Number of EA publications	Partially
Faculty confidence teaching seismology		No	

Appendix E (Continued).

Outcomes, their measures, and the availability of a range of assessment data for each measure

Audiences (1-5)	Outcomes	Measurement of outcomes	Audiences (1-5)
2. Undergraduate students and faculty	A well-prepared & diverse (gender, race, training) pool of graduate students for seismology related careers (2a)	Intern attributes	Yes
		Internship alumni tracking	Yes
	Encouragement and integration of the next generation of the RIS community (2a)	Alumni participation in IRIS community	No
		Alumni perceptions of IRIS	No
		Participation in alumni reunion	Yes
	Improved student appreciation and comprehension of seismology content (2d)	Student appreciation and comprehension of content	No
	Improved ability for faculty to teach and enhanced student appreciation and comprehension of seismology content (2e)	Faculty perceptions	No
Student perceptions		No	
3. Students & Teachers Grades 5-12	Improve students appreciation and comprehension of seismology content (3d)	Student appreciation and comprehension of content	No
	Instructional sequences for seismology content (3e)	Demand for IRIS program and use of IRIS resources	No
	Improved ability for teachers to convey and enhanced student appreciation and comprehension of seismology content (3e)	Teacher perceptions	No
	An organizational framework for coordination and advocacy of educational seismology across the country (3f)	Student perceptions	No
		Survey of regional networks	No

Appendix E (Continued).

Outcomes, their measures, and the availability of a range of assessment data for each measure

Audiences (1-5)	Outcomes	Measurement of outcomes	Audiences (1-5)
4. General public	Improve the public’s awareness, appreciation and comprehension of seismology and the process of science (3g,3h)	Public perception survey	No
	Increased public support for seismology research and education (4i,4j)	Frequency of topic appearance in media	No
		Public Policy	No
	Enabling more people to participating in monitoring Earth’s changes through seismology (4e)	Web statistics	Yes
5. GeoEducation Community	National leadership and content-based expertise in seismology education as part of Earth System Science (4k)	Participation in broader science education community	Yes
		Demand for services and participation	Yes
		Community recognition	Yes