

**Certification Program
for
Oceanographic Professionals :
A Needs Assessment Study**

**Leslie Rosenfeld
Deidre Sullivan
Tom Murphree**

**Marine Advanced Technology Education Center
Monterey, CA**

**Presentation to the ORRAP Industry and Education Sub-Panels
30 April 2007
Washington, D.C.**

Title Development of a Certification Program for Oceanographic Professionals (CPOP)

Lead Institution Marine Advanced Technology Education (MATE) Center
Monterey Peninsula College

PIs Deidre Sullivan, MATE Center (dsullivan@mpc.edu)
Leslie Rosenfeld, Ph.D., consultant (l.rosenfeld@sbcglobal.net)
Tom Murphree, Ph.D., consultant (tom_murphree@yahoo.com)

Funding NOAA's National Ocean Service + Office of Oceanic and Atmospheric Research

Period October 2006-September 2007 (initial)
October 2007-September 2008 (anticipated)

Web sites CPOP Project: <http://marinetech.org/cpop/>
MATE Center: <http://marinetech.org/>



MATE
M A R I N E
A D V A N C E D
T E C H N O L O G Y
E D U C A T I O N
C E N T E R



Motivation

Assessing oceanographers' qualifications has become more difficult and more important due to:

- 1. Increased complexity and multidisciplinary nature of oceanography**
- 2. Increase in operational oceanography activities**
- 3. Increased public attention to the ocean and ocean issues**

Goals

Investigate professional certification for oceanographers as a means to:

- 1. Enhance professional development**
- 2. Aid in development of ocean-related workforce**
- 3. Improve ocean-related education**
- 4. Assist users of oceanographic products & services**

Objectives

- 1. Assess the need for a CPOP**
- 2. Prepare report on need for, and pros and cons of, a CPOP**
- 3. Develop overview plan for a CPOP, if warranted by assessment**
- 4. Investigate with U.S. Department of Labor the possibility of establishing a specific occupational title for oceanographers**

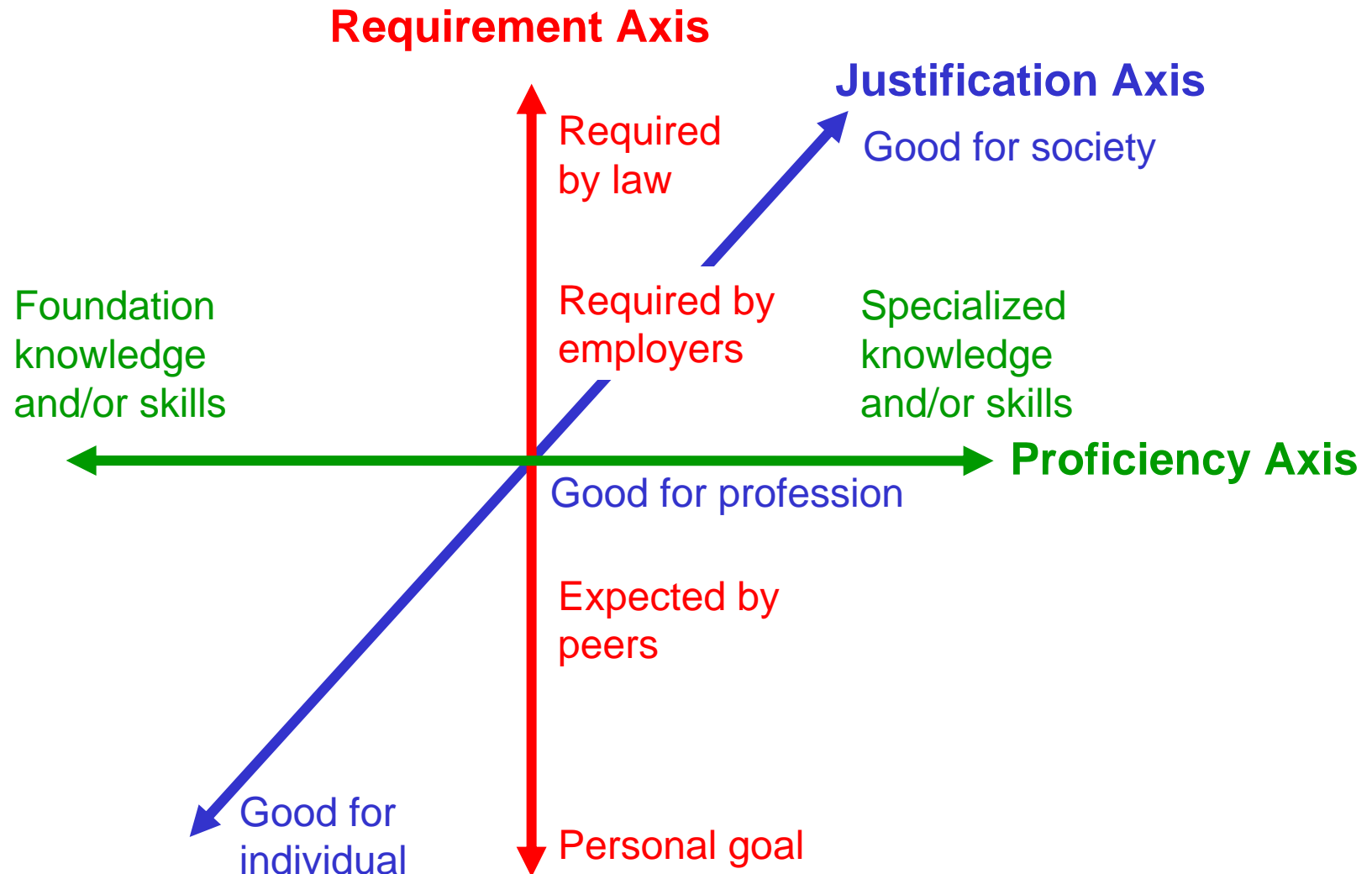
Potential Benefits of a CPOP

- 1. Definition of a professional body of knowledge**
- 2. Accepted standards for determining qualifications**
- 3. Aid in evaluation of job applicants, employees, and peers**
- 4. Broadening of career opportunities**
- 5. Increase in professionalism by encouraging professional development and advancement**
- 6. Establishment and maintenance of standards of professional practice and ethical conduct**
- 7. Increase in awareness, understanding, confidence, and reliance on oceanographic community by users of oceanographic products & services (e.g., regarding consulting, testimony, support for operations, policy, education)**
- 8. Increased role for professional societies in promoting oceanography and oceanographic professionals**

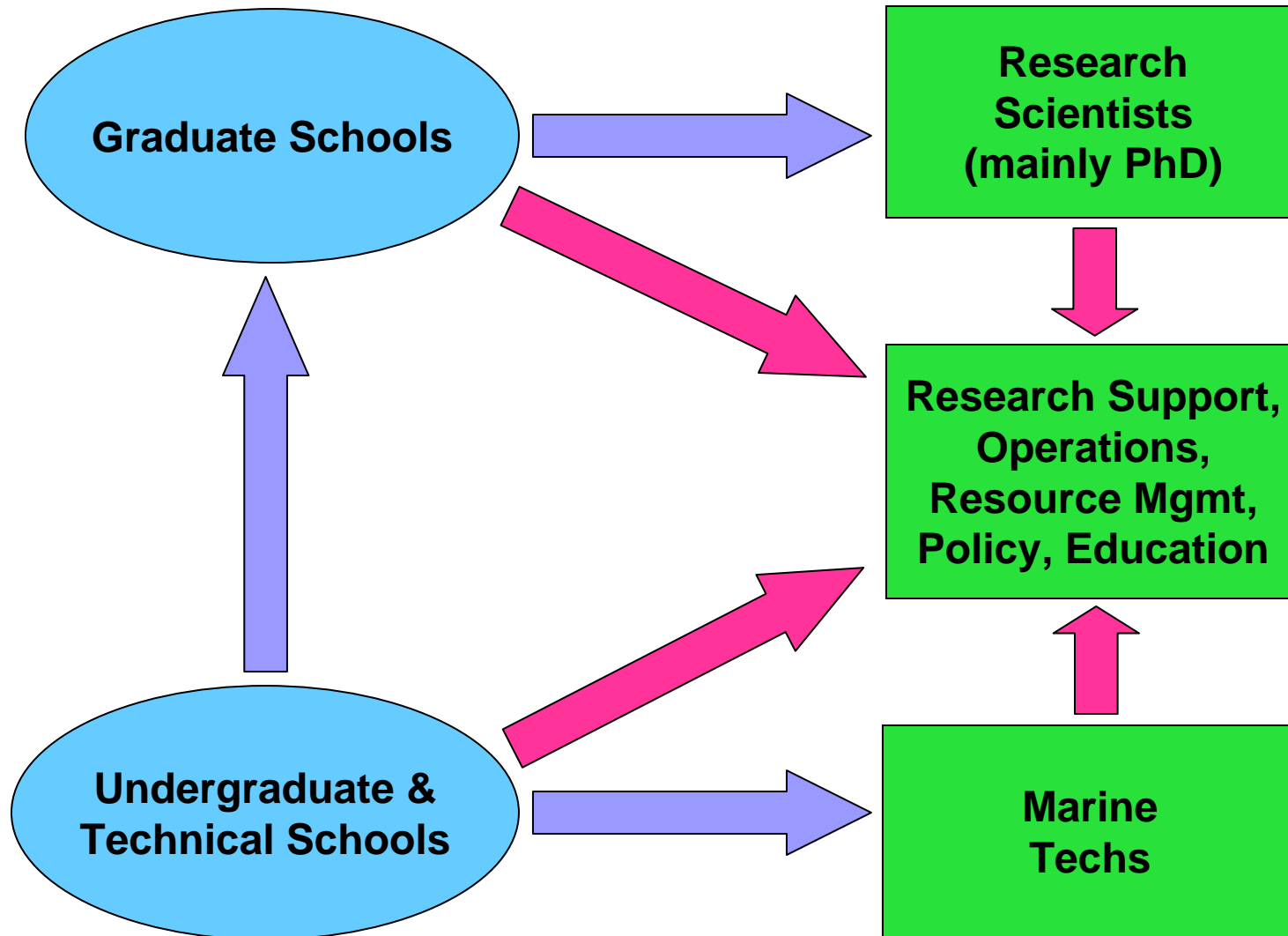
Questions to Be Answered and Potential Obstacles

1. Who will use certification and how (e.g. employers, customers, general public, peers)?
2. Certification in related professions driven by need for confidence in products & services that affect health, safety, budgets, property values, environmental quality, laws and regulations, national security, etc. Do these types of needs apply to oceanography?
3. Should focus be on traditional oceanography subdisciplines, or other areas such as ocean related data management, geospatial technology, resource management, policy, etc? How many types of certification are appropriate for the broad diversity of oceanographers?
4. How many proficiency levels of certification are appropriate?
5. How should certification be administered and by what organization?
6. Should accreditation of education programs be considered?
7. Skepticism about need for, and impacts of, a CPOP
 - a. Subjective, qualitative assessments
 - b. Unnecessary hurdle in career advancement

3-D Credentialing Space / Spectrum

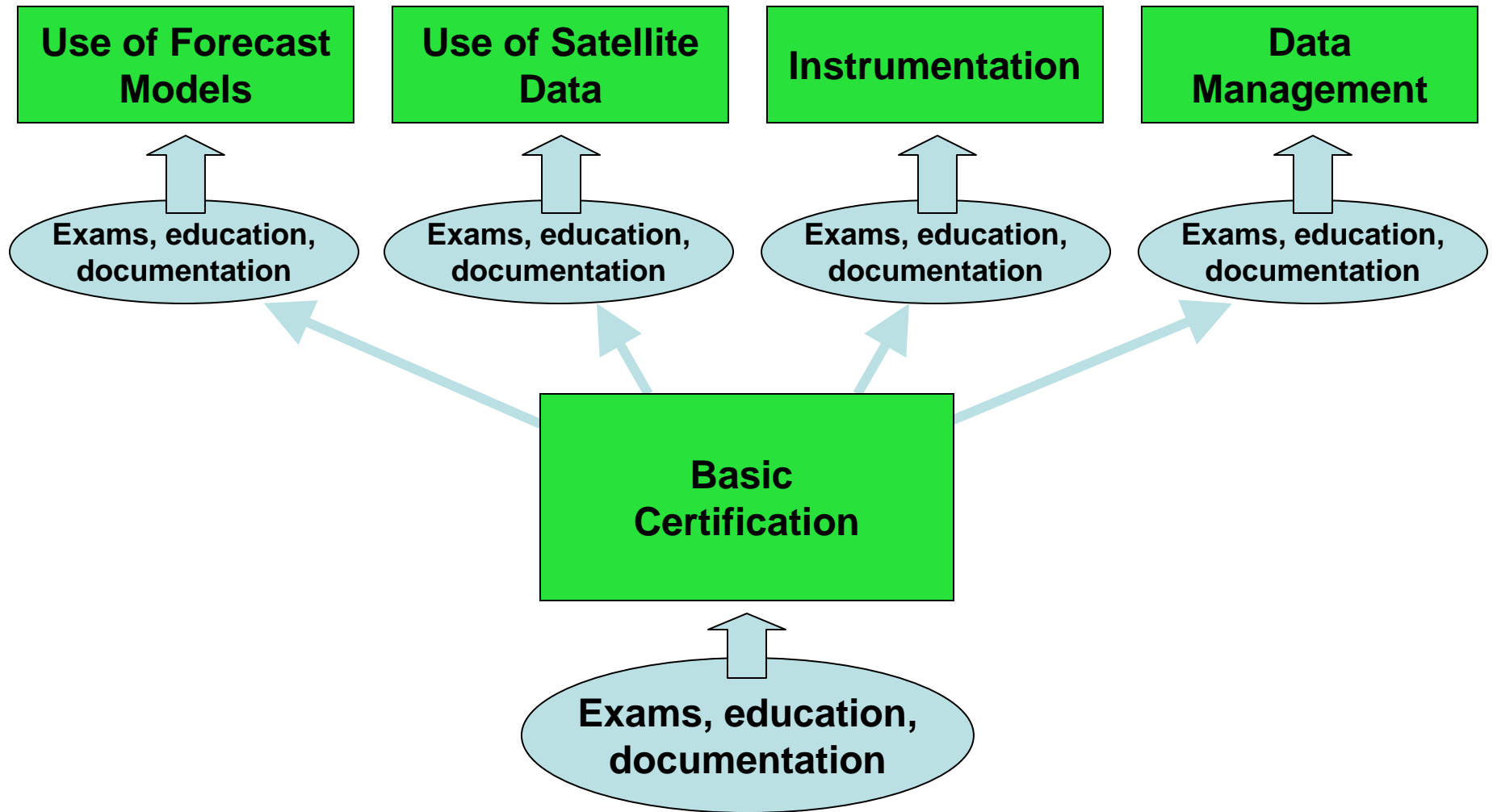


Education, Career Paths, and Certification



 More standardized path & assessment processes	 Less standardized path & assessment processes ⇒ may benefit from certification
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Examples of Possible Levels and Types of Certification



Data and Methods

- 1. Collect and analyze data from:**
 - a. Meetings with ocean-oriented professional societies (AGU, AMS, ASLO, MTS, TOS)**
 - b. Certification programs in similar fields (meteorology, hydrography, environmental science and engineering, ecology, GIS, lake and wetlands science and management, geology, fisheries)**
 - c. Surveys of employees, employers, and users of ocean products & services (consulting, oil, and other companies; federal, state, and local government; NGOs; oceanography program alumni)**
 - d. Facilitated workshop**

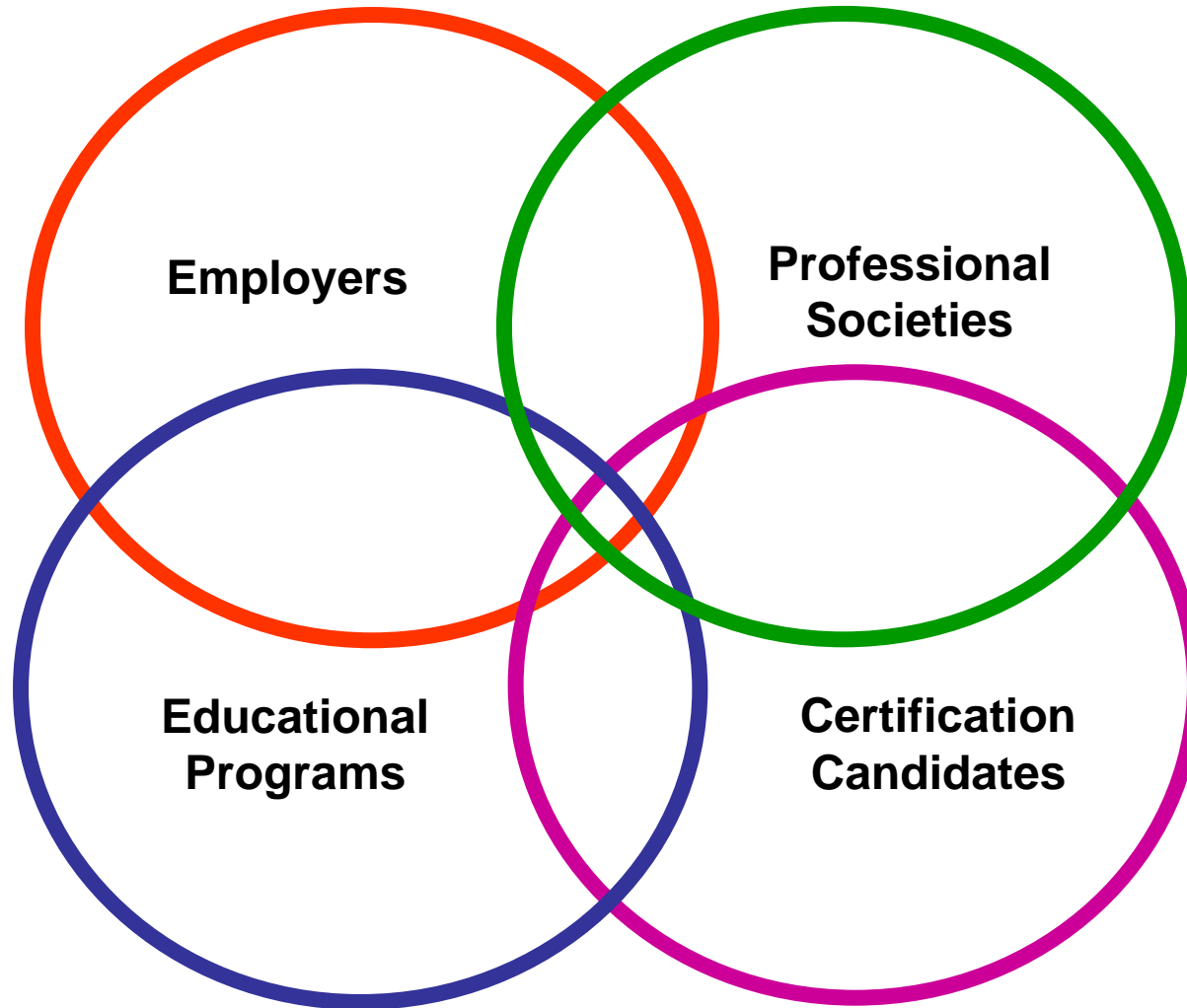
- 2. Coordinate and collaborate with professional societies and other organizations, including government agencies, on related efforts in:**
 - a. Education**
 - b. Professional development**
 - c. Professional standards**
 - d. Certification**

Data and Methods

- 3. Investigate education programs created to meet emerging requirements for ocean workforce, including:**
 - a. MS program in Operational Oceanography at Rutgers**
 - b. Master of Geosciences Certificate in Ocean Observing Systems at Texas A&M**

- 4. Research standards and organizations that accredit scientific certifications**
 - a. National Organization of Competency Assurance / National Commission for Certifying Agencies**
 - b. Council of Engineering and Scientific Specialty Boards**
 - c. ASTM International (formerly American Society for Testing and Materials)**

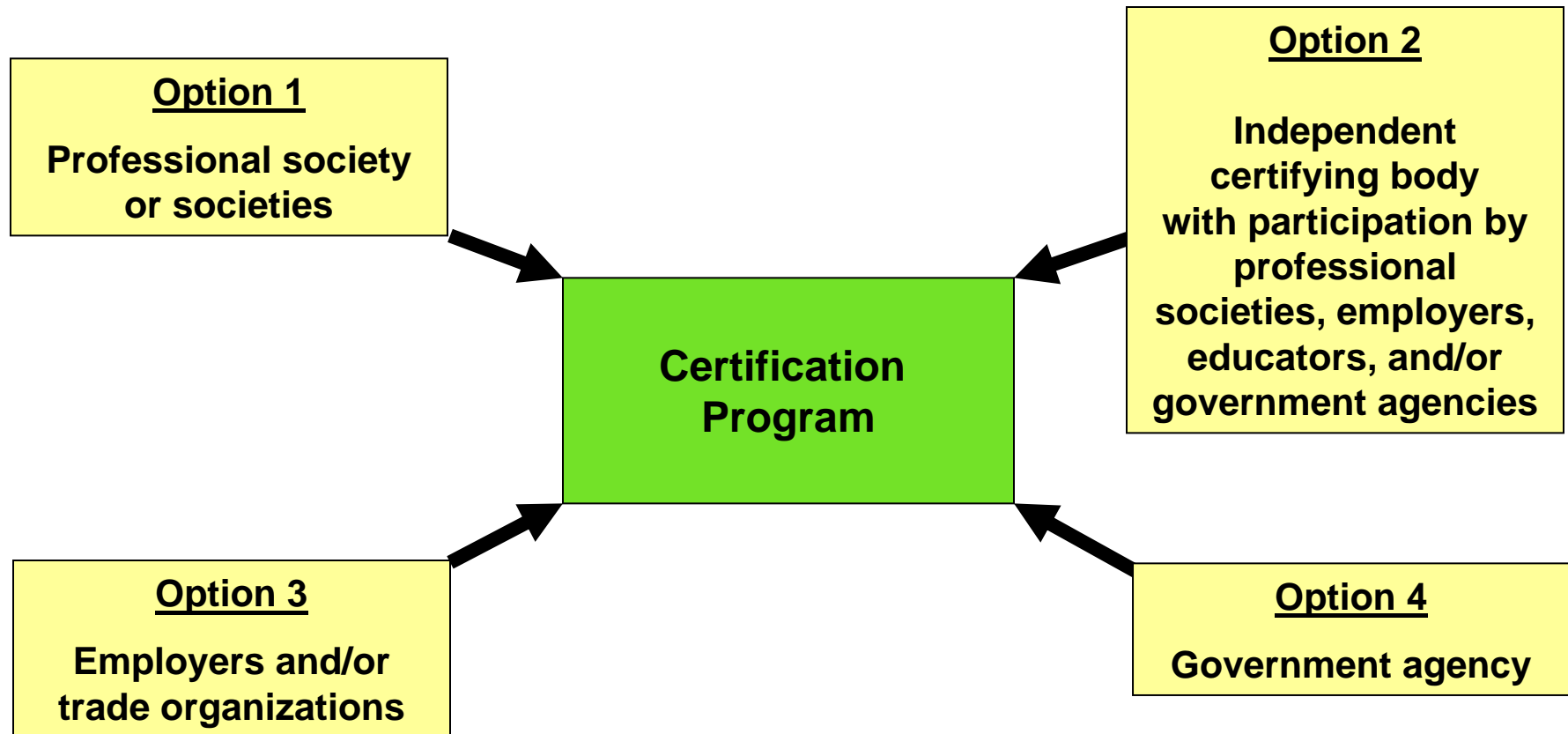
Development and implementation of a certification program requires involvement of several types of organizations and individuals



Scope and Focus

- 1. Identify priority needs:**
 - a. Needed by whom**
 - b. Needed in what specific areas of oceanography**
 - c. Needed for what purposes**
 - d. Potential methods for implementation**
- 2. Determine focus areas from data collected. Potential areas:**
 - a. Certification for bachelors and masters level oceanographers (Is there a need to address research oceanographers whose credentials and professional development may already be established by Ph.D. and peer reviewed publications?)**
 - b. Certification in scientific, technological, and/or operational aspects of oceanography vs other areas**
- 3. Will address both the pros and cons of a CPOP**
- 4. Will prepare overview plan for a CPOP, if warranted. Detailed plan, if needed, will be prepared in subsequent project.**

Options for Managing a National Certification Program



Option 2 recommended by ASTM International (ASTMI, 2006. *Standard Practice for Assessment of Certification Programs for Environmental Professionals: Accreditation Criteria*).

Summary of Information on Related Programs

- 9 certification programs
- 1 licensing program
- 1 chartered accreditation program

Sponsor	Govt. entity (2); professional society (7); independent agency (2)
Start Year	1957-2004
Recognizing Organizations	States, courts, Council of Engineering and Scientific Specialty Boards, EPA, Air Force, Univ. Consortium of GIS, Natl. State Geog. Info. Council, port authorities, NOAA, Army Corps of Engineers
No. of people Certified	51 - 1600; ~5000 professional geologists
Fees	1st time: \$100 - \$600; renewal: \$35-\$200

Summary of Information on Related Programs

Education Requirements	None; bachelor's, bachelor's with certain courses; B.S.; bachelor's in engineering; master's
Experience Requirements	2 – 16 yrs; 5 yrs is most common. For some, M.S. may be used to substitute for 1-2 yrs; Ph.D. for 2-3 yrs.
Test Requirements	None (5); oral (1); written (2); written or oral (1); written and oral (2)
Other Requirements	References; technical report; sign code of ethics; membership in a professional society; essay
Continuing Requirements	Point system for professional development activities (6)
Recertification Interval	5 yrs (6); 3 yrs (1); 1 yr (2); none (2)

Potential Benefits to ORRAP

- 1. Increased visibility of ocean-related careers**
- 2. Identification of factors affecting recruitment and retention of employees**
- 3. Certification may aid in attracting and identifying better qualified employees**
- 4. With workforce needs identified, educational programs may be better able to meet those needs**

Assistance Requested From ORRAP

- 1. Help us identify companies to which to send surveys**
- 2. Encourage companies to participate in surveys and workshops**
- 3. Share experiences and ideas concerning the development of the ocean workforce and certification of oceanographic professionals**