Natural Systems Institute

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Preface

Background

In the 1980's, with the first comprehensive gathering of data on global warming, tangible effects of population growth began to be firmly associated with the actions of industrial society. Meeting the demands of a growing population for material goods was beginning to be seen as a two-way street. The concept of a "better life" was beginning to look like a relative one—briefly better, relative to the past, but frighteningly better, relative to a very uncertain future.

Because few listened when something might have been done about it, we are now confronted with global warming as an observable, highly threatening fact. Like many other massive events, it took a long time to gain strength, and it will take longer to lose it. It is still in a strengthening pattern, and it is hard to see how that will change in the foreseeable future.

In spite of world-wide awareness, population growth also is still in an accelerating phase. The population of the world is now 6.46 billion and rising. Just 50 years ago it was 2.76 billion. Despite the fact that almost all developed nations are at replacement-level birth rates—or lower—world population is still on a steep incline because of high birth rates in developing countries. Before world population begins
to level off, we can expect to see the number rise to over 10 billion—barring catastrophic events.

And catastrophic events are distinct possibilities, growing in probability every year, all because of population growth. A better life for a growing population—even eliminating poverty, as the September 2005 issue of Scientific American argues as a goal—means more energy to be produced and more resources to be processed. Without sustainability, this can only mean unchecked resource depletion and uncontrolled greenhouse gas emissions. Both will generate disasters at an accelerating rate.

Global population growth and the problems it has induced—from resource depletion to global warming—are arguably the most serious threats ever to our civilization. But as we finally commit to confronting them, technologies now just evolving will put awesome new capabilities at our disposal. We may yet be able to escape the worst ravages, perhaps even bring better quality of life to our descendents. The question is, will our political decision makers have the wisdom to avail themselves of the right tools at the right time? Will we be able to avoid the worst of projected disasters and make best use of the new technologies? Decision makers will need the best of creative thinking from the science community—and from a design community prepared to contribute.

The evidence is that decision makers are not using—or receiving—the full range of advice they need. Advice that offers proactive, constructive, creative options for action is not being heard. The design community must assume new responsibilities and reinvent itself to fill this void. In so doing, it will have to rethink matters of education, research and professional activity, and it will have to prove to leaders that design thinking is a critically valuable asset.

Preface, *continued*

Relevant Trends

Trends initiated by emerging technologies, changing environmental conditions, and evolving social change will have real impact on the situation. Among such trends are:

Food Production on Land
Food production for a growing population is an absolute requirement. In the last 50+ years, beginning with the green revolution that virtually saved India from starvation, the rise in food production has outstripped population growth. But arable land per capita continues to decrease—by 2050, it will have decreased over 62% since the 1960's—and productivity cannot increase indefinitely.

Food Production at Sea
The oceans, once thought to be a limitless food source, are fast becoming a depleted resource. Stocks of wild finfish and shellfish are declining alarmingly. The fishing industry is turning more and more to deep-water species to replace them, often with little knowledge of the biology of the replacement species.

Water Resources
Already in many parts of the world, water supplies are reaching levels of insufficiency. Complicated by agricultural needs for irrigation and the needs of urban centers becoming megacities, the fresh water resources of our lakes, rivers and subsurface aquifers are subsiding. In 2003, 9,500 children were dying daily from insufficient or contaminated water supplies. One-third of the world's population, by some experts' analysis, live in water-stressed countries now, with two-thirds of the world to share their dilemma by 2050.

Mineral Resources
Mineral resources are approaching finite limits, exhausted in some locations, more difficult to extract in others. While supplies of some minerals are in no immediate danger, others are under severe pressure. Oil is a resource of vital concern, with production expected to peak in this decade or shortly thereafter. The Hubbert Curve, long-used as a predictive tool in the petroleum industry, when coupled with modern corrective tools, predicts that we are reaching worldwide peak production now and face a reduction in production of approximately 3% per year very soon. Not only will that oil production have to be replaced as an energy source, additional energy sources will have to be found to keep pace with the population curve.

Population Movement
In an interesting paradox, the countryside is becoming less—not more—inhabited as we add to the population. The people are moving from the country to the cities. As of this year, 2005, the world is more urban than rural for the first time. In the next fifteen years 300 million rural Chinese will move to the cities. In 1950, only two cities in the world, Tokyo and New York City, were over 10 million in size. By 1975 there were 4 such megacities, and by 2003, there were 20. By 2015 there will be at least 22. In China alone there are between 100 and 160 cities with over 1 million inhabitants (America has 9, and Eastern and Western Europe together have 36). Cities are complex, sophisticated systems, but their managers will need all the skill they can command to deal with the great urban migration.

Preface, *continued*

Climate Change
Climate and weather patterns are changing. Some regions are simply getting drier or wetter, but the greatest damage will come from sustained, severe droughts and intense, prolonged flooding. The problem is change: ecosystems confronted with wetter or drier conditions for periods far longer than the environment or its inhabitants are prepared.

Rising Ocean Levels
Ocean levels are rising. Temperature rise under global warming is greatest at the poles, and polar melting is accelerating. Melting icebergs have little effect on rising water levels because the ice is already floating, but ice melting on land, such as in Greenland and Antarctica, will contribute to rising water levels, and the thermal expansion of water as it is heated a degree at a time will also contribute. The Inter- governmental Panel on Climate Change in its 2001 report, estimates a 45 cm (18 inch) mean rise by the end of the century with a low estimate of 9 cm (3.5 inches) and a high estimate of 88 cm (35 inches). Many of the world's major cities are on ocean coasts or waterways close to the oceans.

Storm Violence
The increased heat energy created by global warming is feeding more violent storms. Storms over the water will increase in number and in violence. Storms over land, although less subject to the stimulation of ocean heat, will draw from the weather systems that build over the oceans and move readily onto land. All but the regions most remote from the coasts will be influenced. Category 4 and 5 levels can be expected increasingly for hurricanes, cyclones, typhoons and tornados.

Moving Ecological Zones
On a longer scale, climate changes are moving the zones in which species can live. Warmer winters, earlier springs and hotter summers are changing key environmental characteristics crucial for species' survival, even existence; and as ecological zones migrate northward (or southward in the southern hemisphere), they will do so at a pace too fast for plant species to follow. When species disappear, others dependent on them are also affected, and ecosystems disintegrate. Biodiversity will decrease and extinctions will take place.

Increasing Expectations
The growing availability and capabilities of communications such as cellular telephones, satellite and cable TV, and the Internet across the country (and the world) are providing people with daily knowledge of living conditions, problems, products, threats and services everywhere. The media are creating growing avenues for fast communication between protectors and populace. They are also educating the populace on the state of conditions and creating expectations that both fuel demand and create willingness to change.

Internet Penetration
Computer use and Internet access grow exponentially every year. Information of encyclopedic detail can be obtained more and more easily, and complex, sophisticated processes can be used remotely. Access to high-quality communications and sophisticated computer tools are increasingly available to individuals and groups anywhere. In the United States, Internet penetration has reached 67%.

Preface, *continued*

Emerging Technologies
The pace of technological change continues to accelerate, bringing new science to commercial, institutional and industrial uses at an ever quickening pace. Most notable among many fields, major technological innovations can be expected in the new disciplines of molecular nanotechnology, robotics and the biosciences.

New Relationships
Greater public mobility and access to information is changing the nature of association for many individuals and organizations. Organizations that once operated in isolation are now players in a common environment. Sometimes the emerging relationships are competitive, sometimes cooperative. New forms of relationship can be expected and created as conditions evolve.

Project Statement

Using Structured Planning methodology, develop a proposal for a Natural Systems Institute as a 21st century evolutionary response of zoos, aquaria, conservatories and other specialized institutions to the realities of global warming and growing human population pressure on the environment. The proposal should:
1. integrate formerly separated fields into an ecologically based, whole-systems approach to the study, exposition and preservation of nature.
2. extend mandates for public education, community involvement, and active participation in the monitoring and maintenance of the environment.
3. network institutes into national, regional and global systems responding to the natural ranges of plants and animals.

Goals

As general guidelines a proposal for a Natural Systems Institute should:
- Explore a full range of possibilities, paying especial attention to appropriate technologies and user needs.
- Consider both high- and low-tech concepts as they are appropriate.
- Include ideas for content, form and structure—including procedures, policies, events, activities, organizational concepts and relevant relationships.
- Explore revolutionary as well as evolutionary ideas.
- Consider the educational process through which individuals and groups learn to participate in the Institute and use its resources.
- Accommodate all users of the system, from implementation to adaptations and provide for them in the design. Thoroughness is a step toward system integrity.
- Consider potential costs and funding thoughtfully; the proposal should not incorporate unnecessary frills, but it should not sacrifice effectiveness for low cost.
- Treat the design problem as design from the inside out; users' operational needs come first, with every attempt possible made to satisfy them in some way, even when tough design decisions must be made.
- Conceive the properties and features of the Institute and its operations as means to build trust and cooperation with the community and complementary institutions.
- Consider the project as one component of four demonstrating advanced design thinking and showing how it can be extended to decision making at the policy planning level.

Preface, *continued*

Overall, the solution should:

- Assume that the proposal can be acted upon as it is conceived. Do not under-propose on the assumption that a concept might be politically opposed.
- Demonstrate what might be achieved. The value of the proposal is in its ideas, not its certain attainability. Ideas that might not be fully attainable under today's conditions may be incrementally achieved tomorrow—if they are known.

About Structured Planning

Structured Planning is a process for finding, structuring, using and communicating the information necessary for design and planning activities. It is a front-end process for developing concepts thoroughly and cohesively.

A number of projects have been undertaken with it and used to further its development. Among nearly 100 of these, an early published project for Chicago's transit authority (CTA) was Getting Around: Making the City Accessible to Its Residents (1972). In 1983, the House of the Future project won the Grand Prize in the Japan Design Foundation's First International Design Competition. In 1985, the design of a habitation module for Space Station was undertaken for NASA. In 1987, the Aquatecture project won the Grand Prize again in the Japan Design Foundation's Third International Design Competition. In 1991, Project Phoenix on global warming was honored as Environmental Category Grand Winner in Popular Science magazine's "100 Greatest Achievements in Science and Technology" for the year. In 1993, two award winning projects, NanoPlastics and Aerotecture, were widely publicized in Europe and Japan; in 1995, the National Parks project developed plans for the future of the U. S. National Park Service. In 2001, Access to Justice, a project sponsored by the National Center for State Courts, was implemented for use in state courts across the United States, and in 2005, four projects on Home, Play, Work and Health were finalists in four of the five competition categories for Denmark's INDEX Awards, the world's richest design prizes. As the process has evolved, it has become an increasingly useful planning tool for products, systems, services, processes and organizations. It is now being used commercially.

A diagram of the process, shown below, outlines the activities that make up Structured Planning and the working documents and final products that are produced along the way. The following general description follows the diagram. Where products of the process are discussed here in the abstract, it is possible to see specific examples produced for this project in the appendices that accompany this report.

I Project Definition

The Structured Planning process begins with Project Initiation and the production of a Charter. This is a "brief" that serves as an initial communication vehicle between client and planners. It contains background, context, basic goals, a project statement that cuts to the heart of the planning task, resources to be used, and an initial set of issues to be investigated.

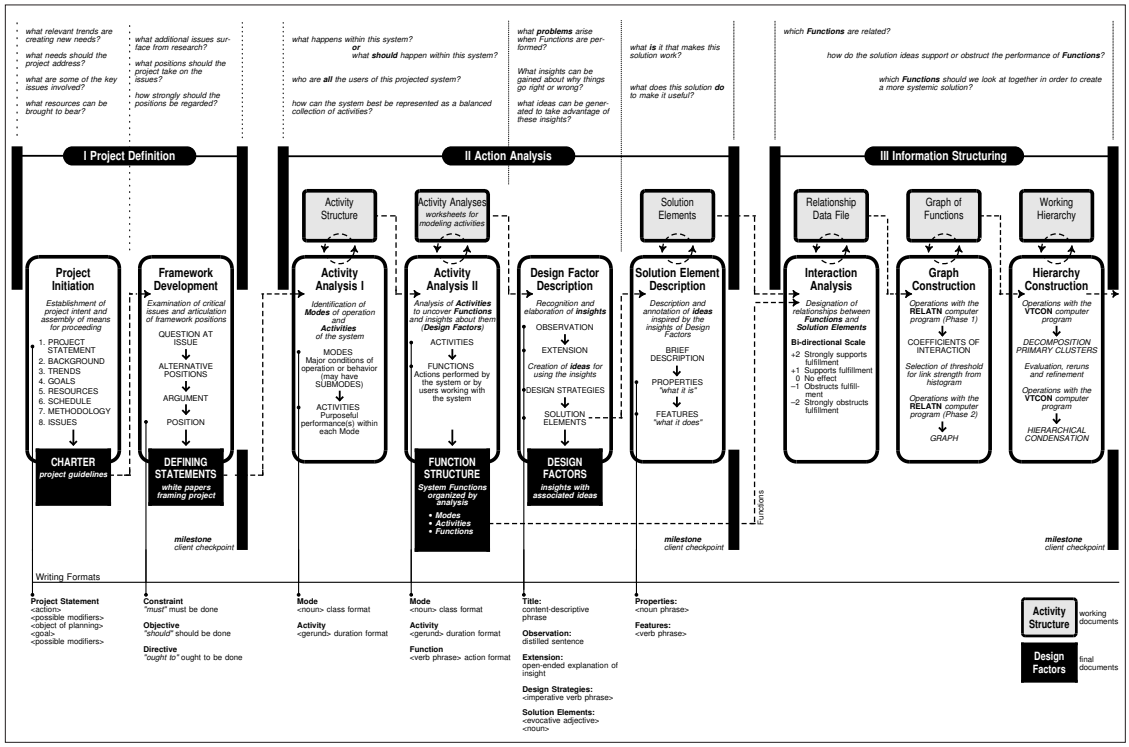
Defining Statements are mini "white papers" produced in the Framework Development portion of Project Definition. They focus the project within the direction of the Charter, concentrating on the issues and arguing specific directions that the project should follow with regard to them. Together with the Charter, they define the project.

II Action Analysis

Any system can be viewed as a complex entity working with its users in different ways appropriate to its modes of operation. To plan effectively, a planning team must recognize these Modes, identify Activities that occur within them, and isolate the Functions that the users and system are intended to perform

About Structured Planning, *continued*

The Structured Planning process: phases I through III.



within each Activity. The result of the Activity Analyses conducted is a Function Structure.

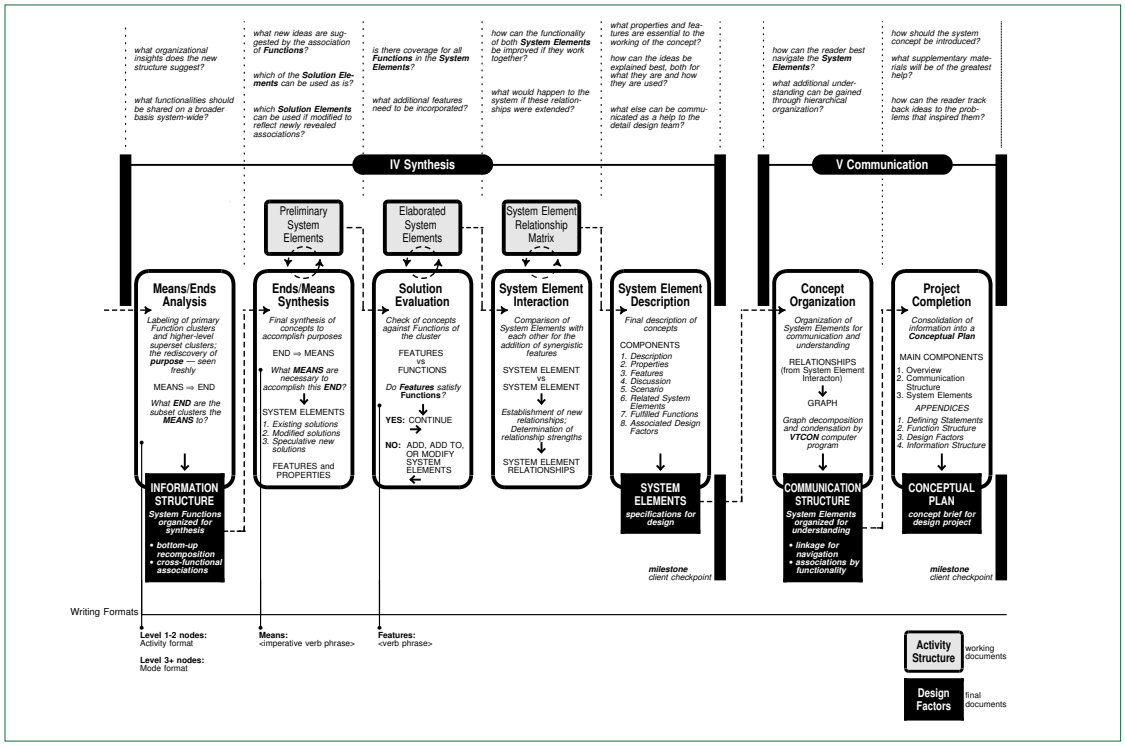
Half of the purpose of Action Analysis is the enumeration of Functions. The other half is the development of information about these Functions that reveals insight about what happens as they are performed. During Action Analysis, insights are sought about why things go wrong in performing some Functions, and how other Functions manage to be performed well. These insights are uncovered in the Design Factor Description procedure and developed in documents that become part of a qualitative knowledge base. Activity Analyses record information at the Activity level; Design Factors document insights and ideas associated with Functions.

To capture as fully as possible the ideas suggested on Design Factors, Solution Element documents are written in the Solution Element Description portion of Action Analysis. These are one-page documents designed to capture enough detail about ideas to give them substance when they are needed later. They have three important sections: "Description" -- a short explanation, "Properties" -- what the idea is, and Features -- what the idea does. The Solution Element form is the tool used for committing ideas to paper.

The product of Action Analysis is three sets of critical information: a set of Functions (the Function Structure), a set of insights (Design Factors) and a set of preliminary ideas

About Structured Planning, *continued*

The Structured Planning process: phases IV through V.



(Solution Elements).

III Information Structuring

Paradoxically, as useful as the Function Structure is for establishing coverage, it is not the best form of organization for developing concepts. Reorganizing information for use in concept development is the job of two computer programs, RELATN and VTCON.

The controlling factor for whether two Functions are associated from the planning standpoint is not whether they are categorically "related" in some manner, but whether a significant number of their potential solutions are of concern to both. Which Solution Elements are of concern to each Function is established in an Interaction Analysis procedure.

The RELATN program then uses this information in a Graph Construction process to establish links between Functions.

Another program, VTCON, completes the information structuring process. The graph establishes paths through the Functions by linking them when they are related, but, unlike a road map, a graph is not naturally arranged nicely for visual comprehension. In the Hierarchy Construction activity, VTCON finds clusters of highly interlinked Functions and organizes them into a semi-lattice hierarchy, a very general form of hierarchy most appropriate for planning. The hierarchy is called an Information Structure.

About Structured Planning, *continued*

IV Synthesis

In its form from the VTCON program, the Information Structure is simply a hierarchical organization. Nodal points do not have names. The task of Means/Ends Analysis is to create labels for all nodal points in the hierarchy. Moving bottom-up from the known Functions in the bottom level clusters, the question is asked, “To what end are these Functions means?” The answering purpose, in turn is grouped with its sibling nodes and viewed as means to a higher level end. The process continues to a completely labeled Information Structure.

The process is then reversed as a top-down, structured brainstorming procedure: Ends/Means Synthesis. In this process, the planning team asks of high level nodes, “what means do we need to meet this end?” As means are established, they are treated in turn as new ends for which means must be found, until the means become concrete enough to be described as final elements of the system (System Elements). Solution Elements originally conceived for the Functions involved are constantly reviewed as possible end products. New ideas, however, are encouraged, and original ideas are modified or combined in the light of the means that evolve.

During Solution Evaluation, features of the System Elements are evaluated for their contribution to fulfillment of Functions in their part of the Information Structure. If there are unfulfilled Functions, this is the signal to return to the Ends/Means process for additional development.

System Element Interaction compares System Element with System Element in a search for additional synergies that can contribute to systemic qualities. More than simply recognizing relationships, the planning team proactively seeks out ways for System Elements to work together -- to the extent of modifying one, the other, or both. Changes are incorporated in the properties and features of the individual System Elements.

The last task, System Element Description, completes the write-up of System Elements as specifications, including a succinct description, all relevant properties and features, and extensive Discussion and Scenario sections that contain detailed expositions of the ideas in both conceptual and operational terms.

V Communication

Because the result of the Structured Planning process is a complex system, usually with a number of System Elements, a Communication Structure is frequently included as an aid to understanding. This is created during Concept Organization by the VTCON program from an assessment of how important the System Elements are to each other’s operation. Using this structure, the reader can understand the system and navigate its concepts with greater efficiency.

The product of the Structured Planning process, assembled in the Project Completion section, is a Conceptual Plan, made up of an Overview that provides background and introduces the system, the System Elements that describe the ideas and their relationships,

About Structured Planning, *continued*

and Appendices that contain all relevant support information, including the Defining Statements, Design Factors, Function Structure and Information Structure.

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Introduction

The root of the problem

The world's population is steadily increasing and causing significant stress on the environment. As populations increase and take up more land and use more resources, the world has fewer natural spaces and a rising number of areas shaped by man. Unfortunately, people are just now realizing the environmental effects of recent centuries' industrial progress.

Global warming:
Anthropogenic vs. natural cycle

There is scientific debate about the actual causes of many environmental issues (whether they are part of a natural cycle or caused by man), but the world can no longer wait for the discussion to catch up. Global warming, also termed anthropogenic global warming, refers to the theory that increasing temperatures are the result of a strengthening greenhouse effect caused primarily by man-made increases in carbon dioxide and other greenhouse gases.

Environmental issues can be found virtually anywhere in the world. The devastation caused by Hurricane Katrina was a result of a number of different factors mostly relating to people's impression on the region, including climate change, increased water temperatures, rising ocean levels, poorly engineered levees, moving ecological zones, Mississippi waters used for irrigation, and population density.

Global warming is a reality, and there is considerable evidence that humans are at least part of the cause. Whether or not it is entirely anthropogenic is irrelevant; governments and the public must act immediately to try to reverse (or at least slow down) humans' contribution to the problem.

Species depletion: More land for humans means less land for other species
Man's infringement on ecological systems, as well as humans' desire to exploit other species for their own use, is extinguishing many fragile organisms and ecosystems. Many people are aware of the declining numbers of Siberian Tigers, African Elephants and Bald Eagles, but few are aware of all of the thousands of microorganisms and less prominent plant and animal species that are decimated each day. As humans convert more natural spaces into man-made spaces (housing developments, office buildings, etc.), they are evicting the native species, either causing that species to migrate, become endangered, or even extinct.

Man has attempted to combat their infringement on the environment by creating "natural spaces" with varying degrees of success. One of the most common types is zoos. Zoos, for the most part, bring animals from all over the world and put them in cages, trying to best emulate their natural environments in confined spaces due to limited amounts of valuable property. However, zoos are primarily built for people's benefit, located in or near cities where vast numbers of people can "learn" about animals and their habitats.

Similarly, aquaria bring species of underwater plants and animals from the world over to a central location for the public's benefit. While aquaria have recently been more successful

Introduction, *continued*

and innovative at integrating ecosystems in a singular space, they still primarily focus on entertainment.

Third types of "natural space" organizations are national parks and wildlife refuges. In each, groups and governments have set aside plots of land to try to preserve natural ecosystems and help species to flourish. While vitally important to the preservation mission, they fall short in addressing some of the larger issues affecting global warming, are unsuccessful in influencing other areas of the world to adopt similar practices, and are not able to effectively educate the public at large of how they can make changes in their everyday lives to help environmental causes.

How the Natural Systems Institute will work

In order to address the environmental problems related to global warming and rising populations, the Natural Systems Institute (NSI) will be a multidisciplinary organization that will focus on whole natural systems, including plants, animals, air, water, and people and how they all can work in harmony. This holistic approach will strive to preserve entire ecosystems, not just a singular facet, and teach people how to live in conjunction with local and global ecosystems. The NSI will conduct their own research, but will primarily focus on recognizing the expertise of people and organizations and connecting them.

Partnerships

The NSI will be an organization that unifies different disciplines around specific projects through bi-directional, inter-institutional relationships. These relationships will provide the NSI with funding, resources, and information that will be collected into a central database for the benefit of all partner organizations. The NSI will additionally aim to leverage the competencies of other organizations in order to increase its body of knowledge and expertise. In return, the NSI will help already existing organizations (zoos, parks, forest preserves, etc.) in creating more educational, viable, and environmentally productive programs.

How will the NSI succeed?

The NSI will be a non-governmental, non-profit organization that will attempt to predict environmental issues and proactively seek out and react to them. The NSI will individually assess each situation to determine what the problems are, how urgent the matter is, and what needs to be done to rectify past/current problems or avert future problems.

The NSI will be an interdisciplinary organization, relying on a variety of experts from different areas of expertise in order to successfully address all types of environmental issues. It will include experts in meteorology, anthropology, agricultural science, astronomy, biology, chemistry, physics, geography, policy analysis, economics, engineering, geology, ecology, and history of climate, among others. The NSI will not only employ and recruit volunteers from individuals in these sciences, but also will create a physical and organizational environment where all of these types of people can work together on projects.

Introduction, *continued*

"Think locally, act globally"

The organization will have a central office, with local and regional branches located throughout the world. The local branches will enable the NSI to pursue its worldwide mission: to stop and ideally reverse environmental problems caused by man. It will develop innovative programs that will research the causes of current, past, and future issues; educate the general public, policy-makers, and influential people on how they will make a difference; and inspire the world's population to take part in the cause.

The central headquarters will determine the broad goals and values of the NSI, but the individual branches will have significant control over their local projects. All future branches will be started in as many communities as possible where there is a social and/or environmental need, where the NSI can make a difference, and where the resources are able to support the location. When a new branch opens, it will create a network of local experts in order to create a solid position in that area and begin its research. Once it has successfully done this, it will begin its community outreach programs to involve the local public.

Each branch will primarily concentrate on local issues, becoming experts in the communities, and will then be able to share that information with the global headquarters and other local branches in order to create a large network of information sharing and expertise.

Organization

The NSI will compose of a group of leaders, both at the local and global level, with a strong system of checks & balances from other departments and experts. Therefore, the organizational structure will include both NSI employees and outside individuals with a vested interest in the institution. They will decide on appropriate uses of technology, standardizing methods and units of measure, and how to deal with environmental and social issues.

The organizational structure of the NSI will be divided into two main branches:

1. Research and Operations
2. Outreach and Management

The former will focus specifically research initiatives and all of the related operational activities, such as identifying issues, carrying out research projects, coordinating research, expert and community discussions, cataloging research and data, and all of the internal responsibilities associated with the scientific side of the organization.

The management and outreach branch will take the scientific research and disseminate it to the rest of the world through engaging media and techniques. The methods for accomplishing this goal will be done through publications, community programs, donor relations, and projects to connect the NSI with communities.

System Elements

Research & Operations

Formal Expert Discussions
- Expert Lunches
- Scientific Conferences
- Lecture Series

Informal Discussions
- Salon
- Speed Dating

Research Knowledge Net
- Artifact Reference Manual
- Data Cat

Environmental Assessment Program
- Eco-Survey
- Habitat Watch

NSI Headquarters
- Strategy Space
- Store
- Environmental Practices
- Environment and Space Design
- The Fishbowl

Toolkit
- Eco Cards

Research Roundtable

NSI Alliance Network

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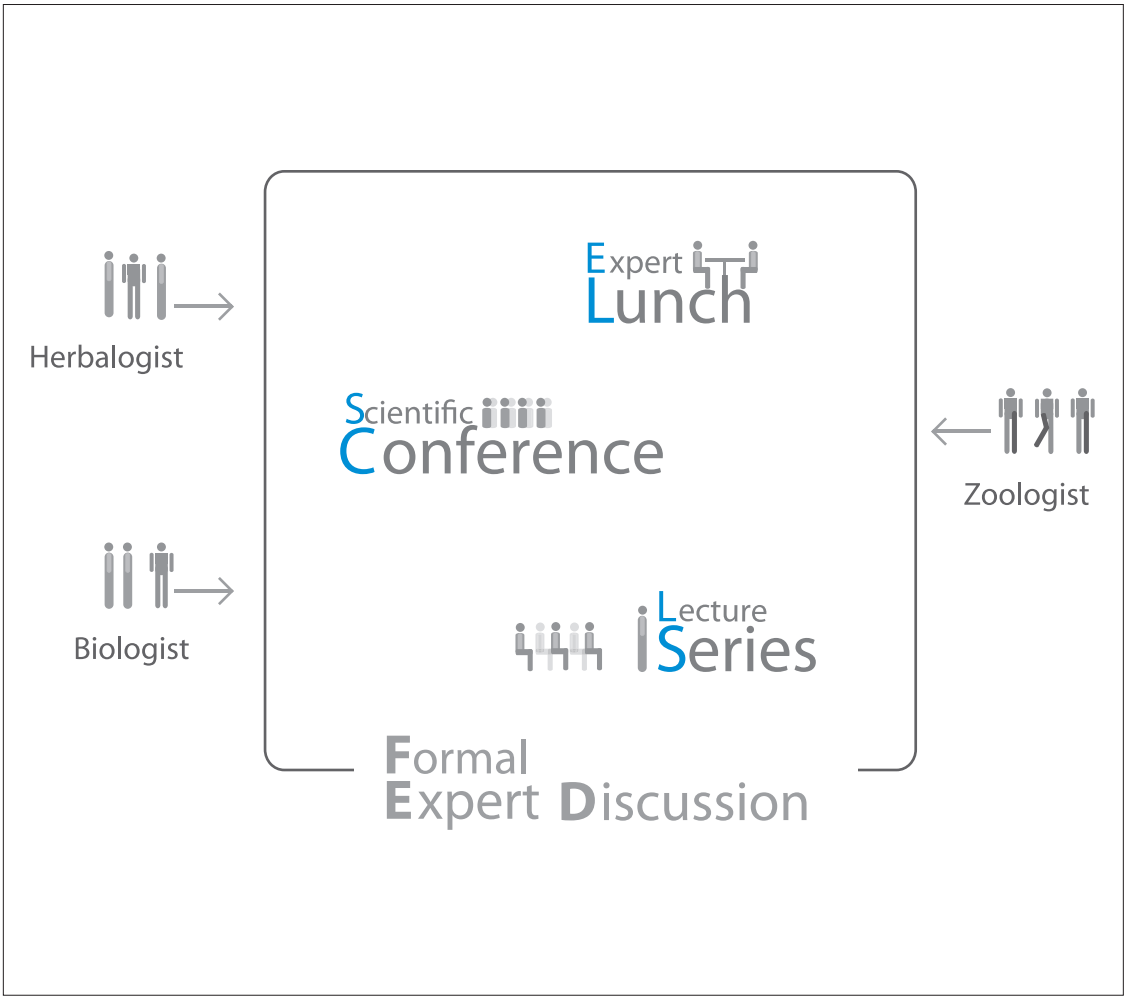
Formal Expert Discussions

Organized discussions between experts in different fields to share their knowledge with each other.



Properties:

1. A series of professional get-togethers
2. A program to foster internal communication within the NSI

Features:

1. Enables experts across different fields to share ideas with one another
2. Facilitates peer-to-peer education
3. Brings in external speakers

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Formal Expert Discussions, *continued*

Jan, the marine biologist, first heard about the NSI at a Scientific Conference near his undergraduate university. As a student in biology, he was intrigued by the conference theme of marine biology and decided to attend the three day conference. He attended many of the lectures and participated in the workshops, solidifying his passion for studying marine ecosystems, which has since become his profession.

He regularly attends local **Expert Luncheons,** ***as he is one of the leading marine biologists specializing in migratory fish species and their ecosystems in the world. The NSI is very happy to have him whenever he is available, and even relies on him to be a regular speaker at the*** **Lecture Series.**

The **Formal Expert Discussions** at the NSI is a program organized by the **Office of Event Planning** to support internal communications and exchange of ideas. It is composed of three different components: **Expert Lunches**, **Scientific Conferences**, and an NSI **Lecture Series**.

Expert Lunches are organized by the **Office of Event Planning** and involve a group of experts in different fields volunteering to lead lunchtime hour-long discussions on an academic or career-related topic they are passionate about. Other NSI scientists and staff may join any of the tables and participate in the discussion. The goal of such meetings is not only to facilitate the sharing of knowledge and ideas, but also to foster mutual understanding between different departments and personnel within the NSI.

Scientific Conferences is the broad term applied to NSI-organized conferences on specific scientific topics that range anywhere from one to five days long. These conferences are a joint effort on the part of the **Office of Event Planning** and the interested research group or field. Every effort will be made to invite the leading experts in the field to speak about their experiences and discoveries, and to include interactive workshops in order to foster creativity and relationships.

The **Lecture Series** at the NSI will be a recurring event organized by the **Office of Event Planning** and will feature the work of one or two important experts each time. The topic of the lectures will be timely and directly tie into news or new ecological developments. NSI locations around the world will be able to receive live broadcasts of the lectures through the NSI intranet. Prerecorded content can easily be accessed from the internal website for those who were not able to experience the live broadcast.

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Formal Expert Discussions, *continued*

Fulfilled functions:

1. Host events
3. Host seminars
7. Give interviews
8. Host people
10. Develop stories
15. Publish articles
19. Disseminate knowledge
21. Engage scientists
29. Present mission & research
33. Foster continuous relationship
36. Import ideas/information
37. Export ideas/information
39. Share information
79. Interview
111. Define issue
112. Describe issue
117. Make problem known
119. Communicate strategy
128. Identify complementary research activities
129. Identify complementary competencies
149. Identify issues
161. Distribute literature
166. Conduct classes
167. Offer activities
168. Interpret content
169. Stimulate interest
174. Promote NSI awareness
181. Conduct classes
184. Maintain partners

Associated Design Factors:

18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
25. Partners do not align with NSI
31. Unable to set up partners
55. NSI values are misunderstood
65. Cannot identify complimentary research activities
66. Identify too many complimentary research activities

Subset Elements:

Expert Lunches
Scientific Conferences
Lecture Series

Related Elements:

Informal Expert Discussions
NSI Alliance Network

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Informal Discussions

Informal discussions held at the NSI, where experts and community members from a variety of fields are invited to come and converse about current issues.

Properties:

1.Regular meetings and/or workshops at the NSI
2. Experts in biology, ecology, anthropology, etc. are invited to attend
3. Different meetings for experts and communities

Features:

1. Central location for experts/community members from diverse fields to meet and discuss issues
2. Discussions help NSI gain deeper understanding of issues and how they might be remedied

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Informal Discussions, *continued*

Jan takes part in the informal discussions as often as he can when he is in the neighborhood of an NSI branch. He enjoys meeting experts and community members and learning from their experiences.

He finds the* Express Information *sessions very helpful, since it is a very fast way to learn about a lot of different fields of study. He has met several people there whom he never thought could be helpful to marine biology, but have given him some fabulous insights into anthropological and astronomical effects on marine life. Even though not every conversation is immediately useful, each time he attends he comes home with a list of people whom he can contact in case he has a question relating to their field of expertise.

Jan attends NSI* Salon *sessions in order to get into very deep discussions about certain topics. He has attended both expert sessions, as an expert, but also community salons where he was one of the community members. He finds that the observations and insights gathered there are often invaluable not only in his work for the NSI, but also in his outside practice. He is able to take the lessons that other disciplines have learned and apply them to his study of migratory fish species.

The primary function of the informal discussions is to create a forum for people from many different fields to talk about local and global issues resulting from global warming and overpopulation. People within specific disciplines are usually able to keep abreast of discoveries within their field.

However, there is rarely communication between different (and seemingly unrelated) fields, which leads to compartmentalization and hinders the creation of systemic global solutions.

There will be two types of informal discussions at the NSI:

1. Express Information
2. Salon

Please see the following pages for further details.

R

Informal Discussions, *Express Information*

Regularly scheduled informal gatherings of experts to discuss current environmental issues through brief encounters.

Properties:

1. Similar to speed dating
2. Regular meetings at NSI
3. Experts have brief (5 minute) one-on-one conversations
4. Individuals who want to have further discussions can arrange future meetings
5. Longer discussion findings will be relayed back to the NSI for further consideration.

Features:

1. Experts in the field are able to speak personally about issues that they face with regard to environmental concerns
2. Everyone is able to participate
3. Informal
4. After brief conversation, individuals will know if they have anything interesting in common to talk about and can arrange further meetings
5. Designed to spread knowledge from person-to-person and inspire individuals, as well as informing the NSI

Informal Discussions, *Express Information*

Express Information sessions will be produced by the NSI in order to disseminate knowledge from person-to-person in an informal and meaningful manner. Speed dating is not a way to get to know a person intimately, but a way to quickly gather information to know if someone might want to meet again with another person. This format will be very useful for the NSI in bringing together individuals from various backgrounds to quickly determine if there are correlations between different fields. **Express Information** sessions will not be used for social or dating purposes.

The NSI will produce two different types of **Express Information** sessions. The first will be aimed at experts in the fields of biology, chemistry, and other sciences. The second will center on individuals from the surrounding community. The format for both will be the same: There will be a theme that all discussions should center on. Half of the participants will remain in the same seats for the entire night, while the other half will move to a new seat every 5 minutes (monitored by a timekeeper). The discussions will center on this specific topic, but each person will speak about that topic from their particular area of expertise or interest. With four minutes thirty seconds remaining in each meeting, the participants speaking with each other will decide if their topic warrants further discussion and will arrange to continue their conversation further.

The NSI will ask that the topics that are collaborated on between participants be reported back to them with the findings.

R

Informal Discussions, *Salon*

A regularly scheduled informal gathering of multidisciplinary experts/community members to discuss current environmental issues.

Properties:

1. Informal gatherings of experts/community members
2. Group discussions about present, past, and future environmental issues
3. Meets as often as possible, ideally at least 4 times per year
4. Makes recommendations to NSI about current issues

Features:

1. Experts/community members from multiple disciplines are able talk about issues from their perspective and juxtapose their ideas next to those of people from other fields
2. Informal, yet critical to NSI (from both scientific and community perspectives)
3. Designed to spread knowledge and inform the group

R

Informal Discussions, *Salon*

As the NSI is incorporating and soliciting knowledge from many different disciplines, discussion among all of these disciplines will be vitally important. The NSI will have several channels to do this, one of which will be the NSI salon.

The French word “salon” means lounge or living room, and came to mean a gathering of people or an art exhibition space. We will focus on the second definition, as exhibited in the salons of Paris in the late 19th and early 20th centuries, where great minds of the time came together periodically to discuss their art, current events, or anything that was interesting or troubling them. They were essentially informal gatherings of friends who came together to talk. One of the most famous was the salon that included Gertrude Stein, Ernest Hemingway, F. Scott Fitzgerald, and others.

The NSI will take this model and create a forum for great minds and community members to come together to discuss topics relating to the NSI, the environment and conservation. These people will be invited to join and will create a network of experts that hopefully will help:

1. identify issues
2. discuss reasons for issues
3. propose solutions
4. advise NSI about actions they can take
5. involve community
6. suggest steps public can take

There will be two **Salons** per NSI branch. The first will be a **Salon** of experts, invited to attend based on their experience and expertise. The panel chosen will not be exclusively scientists, but will also incorporate people from other disciplines, such as architects, journalists, psychologists, community leaders, etc. who can offer insights. Each session will be facilitated by a discussion leader (different facilitator each time) who will decide on the topic of discussion and keep the conversation flowing. There will also be a representative of the NSI whose responsibility will be to take detailed notes on the meeting and report back to the NSI management.

The second **Salon** will be the community salon, which will be very similar to the salon of experts, with the exception that instead of experts, the salon will be comprised of community members. This will be open to everyone, with an expert or NSI employee serving as the facilitator.

R

Informal Discussions, *continued*

Fulfilled functions:

1. Host events
3. Host seminars
10. Develop stories
20. Engage policy-makers
21. Engage scientists
22. Engage students
27. Synthesize ideas
35. Identify needs
39. Share information
128. Identify complementary research activities
129. Identify complementary competencies
154. Interpret findings
179. Inform of conditions
192. Redefine interpretations

Associated Design Factors:

2. Determine what you know, what you don't know
18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
24. Language barrier
32. Message unclear to audience
50. Difficult to determine which opportunity should be pursued
52. Conditions are unknown to policy-makers
55. NSI values are misunderstood

Subset Elements:

Express information
NSI Salon

Superset Elements:

Office of Event Planning

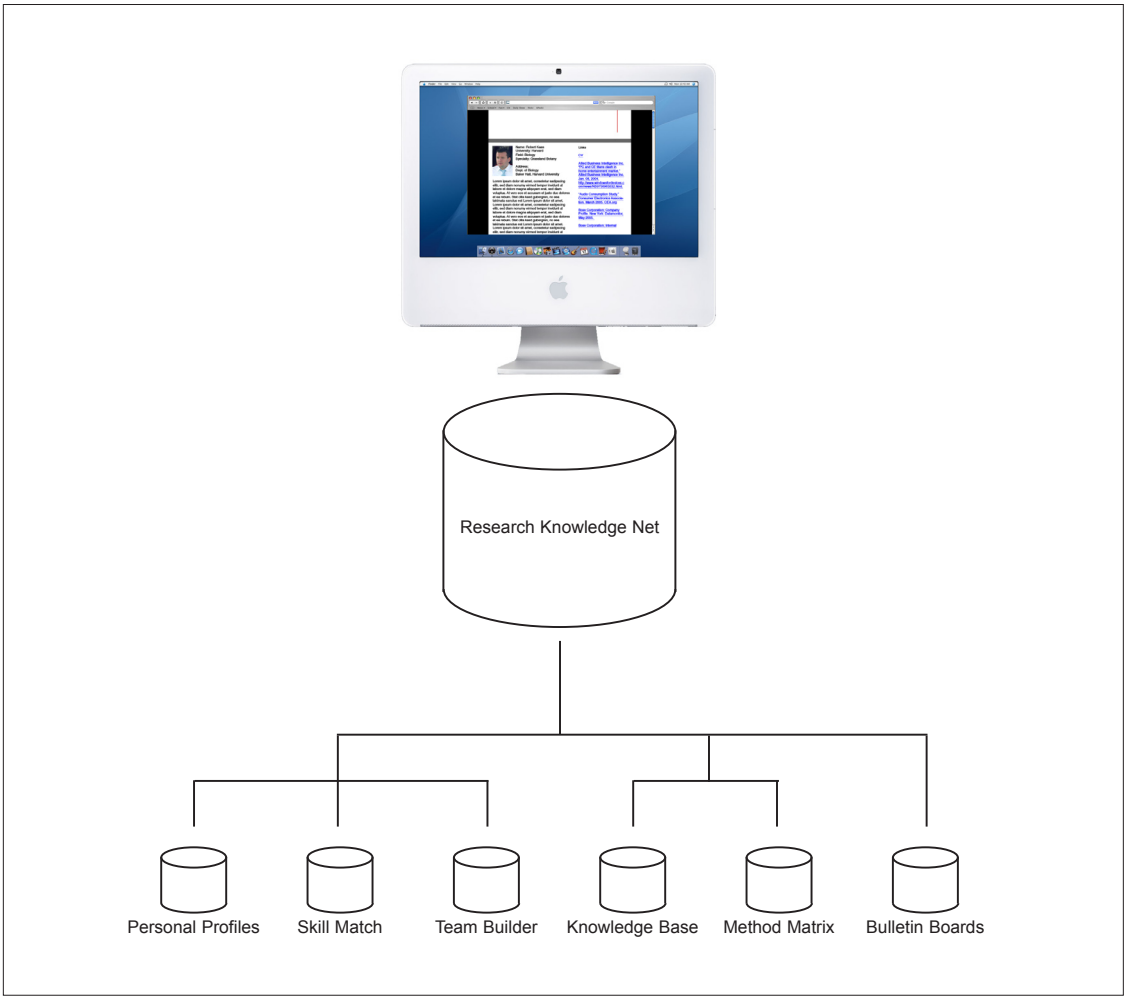
Related Elements:

Fundraising Roadshow
Donor Lecture Series
Lecture Series
NSI International Film Festival

R

Research Knowledge Net

The digital repository of NSI's institutional knowledge, available online.



Properties:

1. Database-driven repository of research information, methods, human capital within NSI and its partner institutions.

Features:

1. Personal Profiles
2. Skill Match
3. Team Builder
4. Knowledge Base
5. Method Matrix
6. Bulletin Boards

R

Research Knowledge Net, *continued*

Since Jan, the marine biologist, has worked on projects with the NSI in the past, he has access to the* Research Knowledge Net *and has a* Personal Profile *listed there. Next year, Jan will lead a project in conjunction with the Save Our Wild Salmon Coalition, working to help return wild salmon to the Columbia and Snake Rivers.

In order to put together this project, he will use the* Research Knowledge Net *for a variety of uses. Firstly, he will use the* Knowledge Base *as part of his secondary research, in order to be fully prepared for the project. He will primarily use it to ensure that he is up-to-date with all of the past and current trends in this fragile ecosystem.

Once he has determined (with the NSI) what exactly the goal of the project will be, he will use the* Artifact Reference Manual *and* Data Cat *to do further research on past projects and how to differentiate his project. Additionally, he will use the* Method Matrix *to formulate a plan on how to structure the project, as well as collect and catalog specimens.

The last significant procedure before the project commences is finding the right team to help him. He will soon post a message to the* NSI Bulletin Board *to announce the project and generate interest. Based on these responses, he will use the* Skill Match *and* Team Builder *to not only find those interested, but match a variety of skill sets to ensure that his project is successful.

The NSI **Research Knowledge Net** is the digital heart of the organization. As the NSI's intranet, it acts as a repository for institutional knowledge as well as as a tool.

The **Research Knowledge Net** is home to the **Artifact Reference Manual** and **Data Cat**, a database of collected artifacts that the NSI maintains as a central catalog for all of the specimens that it has stored. In addition to the database, the **Artifact Reference Manual** also contains a how-to section on how to best to collect and preserve samples collected in the field. **Data Cat** is a software program that catalogs data.

Each staff member has a **Personal Profile** on the **RKN** that has their contact information, picture and areas of expertise. In addition to their basic curriculum vitae information, the **Personal Profile** also contains information on all projects that the individual has been associated with as well as a personal bibliography if the individual has published any research.

The **Research Knowledge Net** also features a **Skill Match** feature that allows users to search for other by skill set. This enables those seeking to form interdisciplinary teams to search for potential contributors with desirable skill sets.

Team Builder is a feature designed to help scientists build teams with the help of **Skill Match** and **Personal Profile** by specifying the criteria they are looking for and then returning results via search.

The **Knowledge Base** is one of the key components of the **Research Knowledge Net**. It is an archive of past, present and near-future research efforts that the NSI conducts. It stores all aspects of the research, from

R

Research Knowledge Net, *continued*

teams to protocols and from data to results. As a searchable database, it allows later users to quickly access research that might be relevant to their efforts. It is also a way for scientists to share their work easily.

The **Method Matrix** seeks to document the methods of research that scientists use for the NSI. It is especially important in capturing the interdisciplinary methods that are used in NSI sponsored research projects.

Bulletin Boards are a way for NSI staff to converse with each other online.

R

Research Knowledge Net, *continued*

Fulfilled functions:

36. Inventory resources
57. Update NSI resource database
123. Identify complementary research activities
124. Identify complementary competencies
137. Document operation
173. Show NSI contents
190. Maintain website
192. Publish

Associated Design Factors:

7. Lacking knowledge to use tools
8. Data is not recorded
32. Unable to set up partners
35. Archive resources to preserve database capacity
62. Analysis tools inappropriate for data
63. Unable to identify which metrics are most useful for measuring a given activity
65. Unable to create an appropriate research protocol to manage the collection of data
66. Cannot identify complimentary research activities
67. Identify too many complimentary research activities
74. Unable to identify appropriate issues to be monitored and analyzed

Subset Elements:

Artifact Reference Manual
Data Cat
Personal Profiles
Skill Match
Team Builder
Knowledge Base
Method Matrix
Bulletin Boards

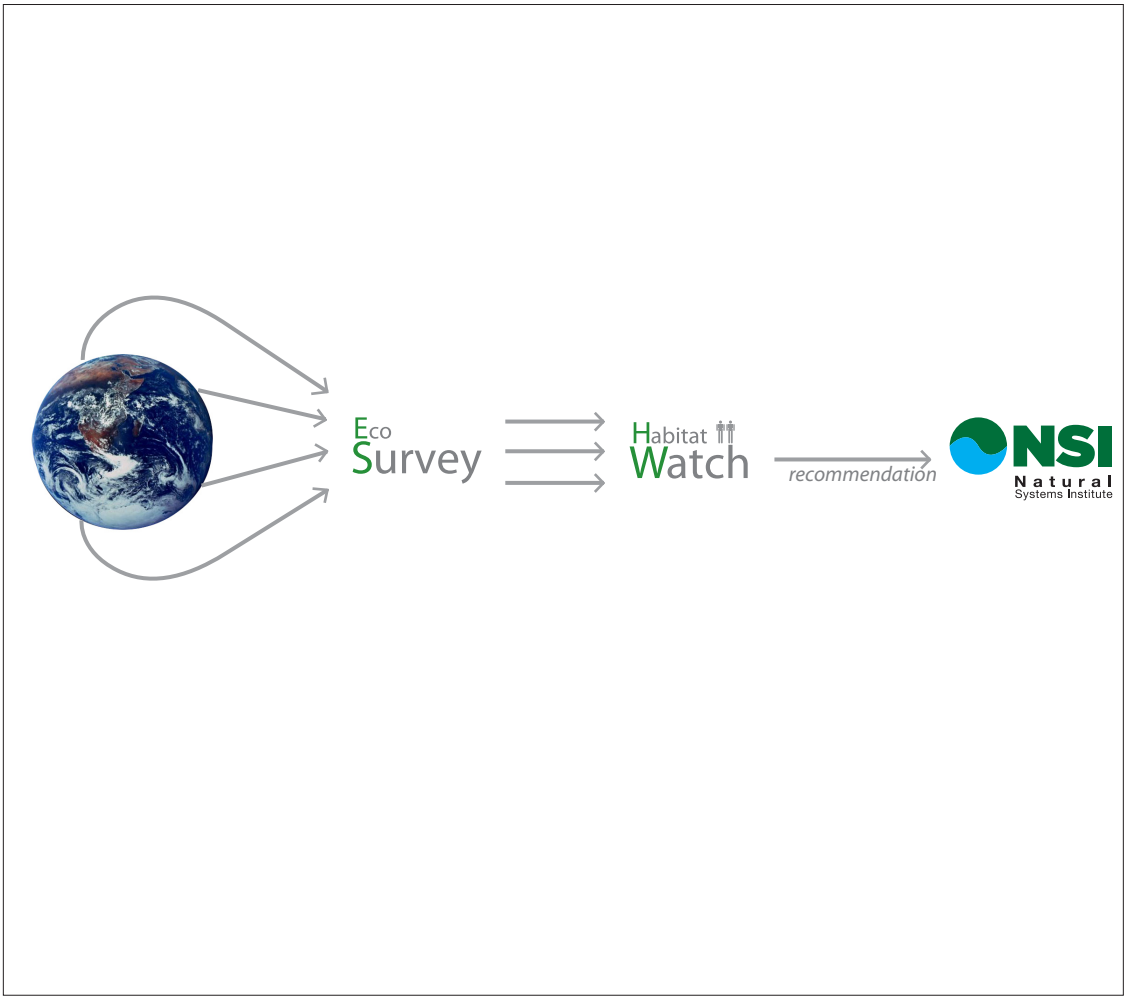
Related Elements:

Eco-Survey
Habitat Watch
Toolkit

R

Environmental Assessment Program

A way to assess the severity of stress on an ecosystem.



Properties:

1. Group of scientists and experts commissioned/ employed by the NSI
2. Assess ecosystem
3. Assess factors causing stress on ecosystem
4. Survey area and local communities to determine short-term effects
5. Project long-term effects on local and global ecosystem
6. Work with local governments
7. Make recommendations to NSI about how it should proceed

Features:

1. A way of surveying and assessing ecosystems in distress
2. Provides information about ecosystems
3. Helps NSI to know where it should concentrate its efforts
4. Makes all of NSI knowledgeable about global trends

R

Environmental Assessment Program, *continued*

The NSI's* Environmental Assessment Program *has been busy as a result of the last hurricane season. In particular, the* EAP *has begun to contribute to the study of the New Orleans and how (and if) it will recover from the damage inflicted by Hurricane Katrina. Dr. Stephen Price, an atmospheric scientist at the NSI, is just one scientist within a larger group looking at the total ecosystem impact of the storm. The first step of the process was to complete an Eco-Survey of the New Orleans ecosystem and the results are not good. Much of the marshland surrounding the city has been severely damaged, which means that much of an ecosystem that was already under assault from human activity has now been further damaged by nature. Evidence, in the form of washed up marshballs, testifies to the fact that some marshy areas east of the Mississippi River lost 25 percent of their land areas in Hurricane Katrina, which came ashore more than 100 miles east of New Orleans. Some within the* Habitat Watch *group are already advocating diversion projects that might help the marshland recover more quickly. However, software modeling from the* Eco-Survey *toolkit have indicated that it would take 50 years to restore 5,000 to 10,000 acres to sustainability. Unfortunately, Hurricane Katrina destroyed millions of acres. The future looks grim for the* Habitat Watch *team, but they are committed to helping New Orleans get back on its feet.

The NSI will conduct research projects on its own facilities, but also throughout the world where there is a determined need. In order to know which projects it will undertake, groups in charge of environmental assessment programs will be commissioned by the NSI to conduct research projects in order to determine the severity of the problem. At the NSI, the group who will oversee these projects is called the **Habitat Watch**. This will be a group of people (experts and support personnel) located at the NSI headquarters who:

1. Research areas of ecological distress using **Eco-Survey**
2. Commission research projects
3. Organize research projects
4. Compile and arrange reports
5. Perform initial triage to determine the most pressing issues
6. Make recommendations to senior NSI officials

Eco-surveys are a set of tools that Interpret metrics to provide information about ecosystems. They are the software programs and assessment tools that members of the **Habitat Watch** use to determine the severity of a problem and the importance of a particular ecosystem.

In addition, they will often take part in the surveys themselves as representatives from the NSI. They will coordinate with the NSI's partners to conduct these surveys and ensure that all necessary experts are present for effectively assessing the situation.

Once the information from specific ecosystem research has been compiled, the **Habitat Watch** group passes the information on to the appropriate NSI officials in the **Strategy Roundtable** and makes recommendations about how to proceed.

R

Environmental Assessment Program, *continued*

Fulfilled functions:

111. Define issue
128. Identify complementary research activities
129. Identify complementary competencies

Associated Design Factors:

5. Environment is not appropriate to monitor
26. Projects not timely
33. Missing criteria to determine significance of data
46. Ecosystem cannot be repaired
50. Difficult to determine which opportunity should be pursued
53. Unable to locate desired area
73. Unable to identify appropriate issues to be monitored and analyzed

Subset Elements:

Habitat Watch
Eco-Survey

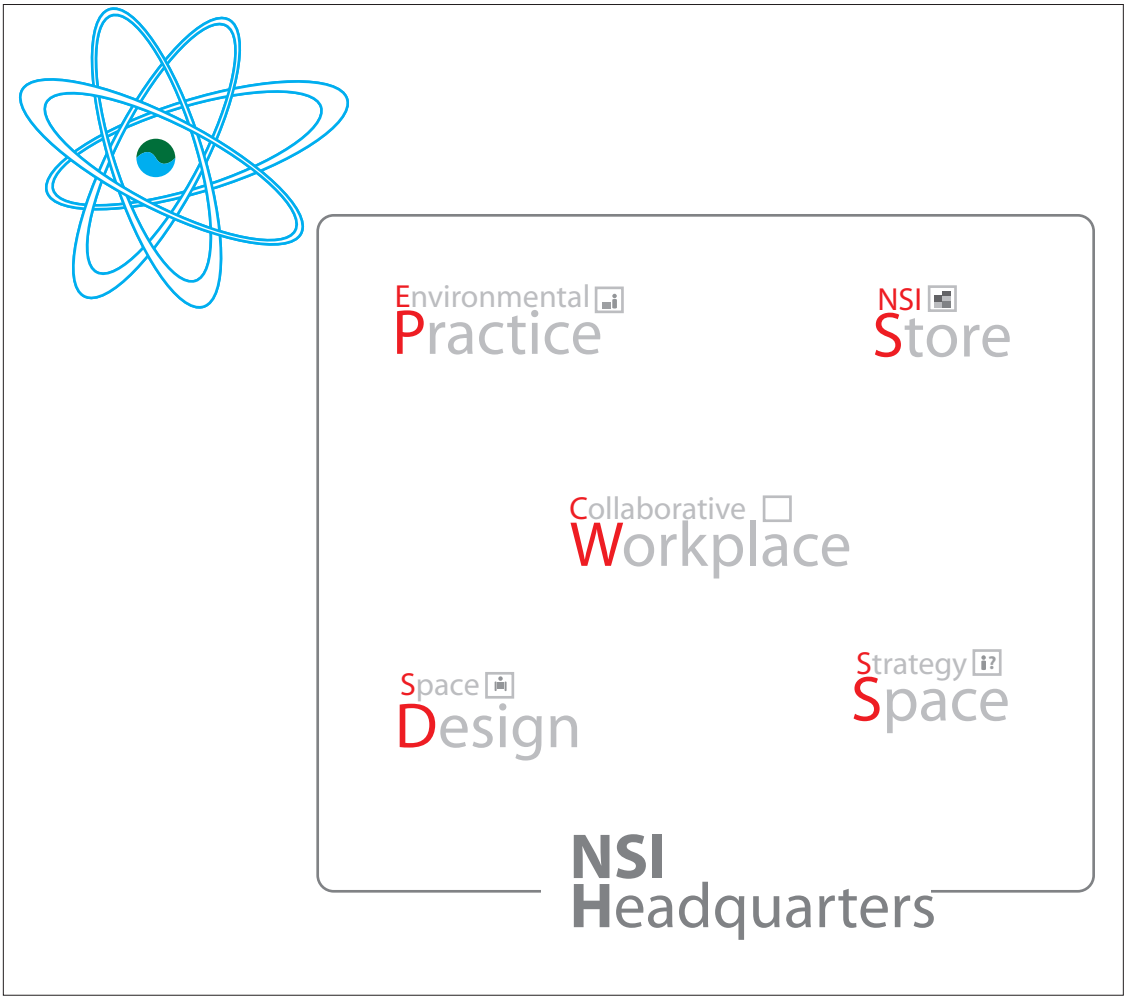
Related Elements:

Research Knowledge Net

R

NSI Headquarters

Programs and facilities governed by the main NSI office that all NSI branches will adhere to.



Properties:

1. Environmental practices
2. Environment & space design
3. Store
4. Strategy space
5. Collaborative workspace called **The Fishbowl**

Features:

1. Ensures that all NSI branches work in unison
2. Functions that all NSI branches will adhere to, no matter the size or funding of the particular space

R

NSI Headquarters, *continued*

As Dr. Stephen Price walks through the doors of the NSI's headquarters, he marvels at the building that he goes to work in every day. Constructed in the most ecologically sound manner possible, mandated by the NSI's environmental practices, the building consumes only 25% of the energy that comparable structures do, and it is made almost entirely out of natural materials whose manufacture has a minimum impact on the environment. He walks by the store, which in addition to selling the usual plush toys to hordes of screaming children also sells scientific books and the like for more adult audiences interested in ecosystems preservation.

He reaches a security door and swipes his card. On the other side of the doors is The Fishbowl, the collaborative space in which most of the NSI staff work. Designed by the environmental space and design group, the Fishbowl is where much of the work of the NSI gets done. Its open structure, glass walled work spaces, meeting rooms and common areas allow staff to interact with each other and exchange ideas much better than if they were walled off from one another. As he makes his way to the Strategy Space for his first morning meeting, he passes a group of biologists and chemists discussing the potential impact of a large benzene spill in China on river habitats. Inside the Strategy Space, some of the members of the Strategy Roundtable are already milling about, waiting to get started on planning the next six months of NSI's operations

All NSI branches will be similar in certain ways. Due to size and funding, not all will be able to do primary research or other programs. However, all branches must be able to sustain the spatial programs described here, as well as maintain their physical site. These programs are designed to coincide with the NSI's core values, viz. interdisciplinary discussion, respect for the environment, and community outreach.

NSI Headquarters, *Environmental Practices*

Guidelines to ensure that the NSI does as little physical harm to the environment as possible. Also a consulting service that can be purchased by outside individuals/groups/organizations.

Properties:

1. Set of practices/rules/guidelines about ecological architecture and spaces
2. Group of expert employees of the NSI's central office dedicated to finding newest and best practices regarding waste management, electricity consumption, etc.
3. Environmental practice counselors
4. Publication with descriptions and implementation guidelines

Features:

1. Make sure that the NSI is not hurting environment it is trying to help
2. Help others practice environmentally-sound activities

The NSI must subscribe to environmentally-sound practices in their environment. Those in charge of environmental practices will assist all branches of the NSI. For example, any branch erecting a new building will consult the **Environmental Practices** group for the required architectural elements that it must include. The **Environmental Practices** group will also consult NSI branches on waste management, electricity consumption, alternative energy sources, resource management, and other ways of creating minimal impact on the environment.

As the environmental practices guidelines will be a comprehensive listing & description of all of the best, current methods of limiting people's impact on the environment. It will not only explain what these practices are, but how to implement them.

In addition to this publication, the NSI will also work as consultants to individuals, groups, organizations, and governments on how to best utilize current technologies to help the environment in reducing people's impression on the world's resources.

NSI Headquarters, *Environment and Space Design*

A style guide to creating educational and compelling spaces.

Properties:

1. Style guide
2. Group who designs, updates style guide, and creates spaces

Features:

1. Make spaces educational and compelling for visitors
2. Ensure messages are clear to public
3. Ensure commonality among NSI branches

The NSI must subscribe to environmentally- The environment and space design team will be located at the **NSI Headquarters** and will be responsible for creating a style guide for all NSI branches. This style guide will ensure that the NSI message is clear, educational, compelling, and understandable to the public. It will contain guidelines on signage, exhibit spaces, overall design and look, types of content, etc.

The main purpose for the environment and space design desk is to ensure that the public is able to clearly see the NSI's mission, its projects, the world's problems, and how they can help.

NSI Headquarters, *NSI Store*

A store located on NSI grounds where people can purchase educational materials related to the NSI's mission.

Properties:

1. Physical and online store
2. Sell educational items for purchase

Features:

1. Make takeaways available for public
2. Stimulate interest in NSI programs outside the NSI

Where possible, the NSI will have a small store or gift shop (or even corner of the main building) that will sell items for purchase. It will contain films, documentaries, books, computer programs, and other educational materials.

The purpose of the **NSI Store** is to create a reliable place where people can go to purchase items to learn more about ecology and environmental issues. It will not be a store filled with stuffed toys and other non-educational materials.

NSI Headquarters, *Strategy Space*

A space at the NSI set aside for community meetings, events, and other discussions with public/scientists

Properties:

1. Room or hall for discussions

Features:

1. Permanent space that is always available for discussion
2. Welcoming space that invites people to come

The NSI is founded on people from different disciplines coordinating, and the NSI must continue to encourage interdisciplinary discussions. The **Strategy Space** will be located inside the NSI branch building that will always be available for experts, scientists, community members, and others outside the NSI to congregate and discuss current issues relevant to the NSI. All events, whether expert or community based, will be held in these spaces.

R

NSI Headquarters, *The Fishbowl*

Common workspace at NSI for collaboration on projects.

Properties:

1. Philosophy concretized in physical work spaces and operational structure
2. Open offices, glass-walled work spaces, meeting rooms, common areas, open meetings, regular discussions

Features:

1. Promotes discussion
2. Free dialogue about projects
3. Promotes holistic projects
4. Everyone can know what everyone else is doing and learn from them

The Fishbowl is a governing philosophy that guides the NSI that is concretized in its work spaces and operational structure. People can watch others through glass-walled laboratories; people have spaces to talk and collaborate; employees are encouraged to attend meetings run by departments other than their own; in short, nothing is secret, the NSI "owns" everything, and everyone can learn from everyone else.

NSI Headquarters, *continued*

Fulfilled functions:

1. Host events
11. Generate media coverage
12. Communicate benefits
13. Host static exhibits
14. Prepare traveling exhibits
21. Engage scientists
22. Engage students
23. Coordinate local projects
25. Recruit organizations
26. Recruit people
29. Present mission and research
30. Illustrate benefits for partners
39. Share information
57. Provide support
69. Convert structures
117. Make problem known
126. Counseling
135. Integrate ideas
154. Interpret findings

Associated Design Factors:

14. Ambiguous ROI
17. Costly Outreach

Subset Elements:

Donor integration plan
Pitch in a Box
Fundraising Roadshow
Lecture Series
Thank You Pack
Donor List
Donor Awards
E-commerce function on **Website**

Related Elements:

Micro-grants
Sponsored competitions
Volunteer Fundraisers

R

Toolkit

A collection of proven research processes and methods for conservation that is centrally located, easily accessible over the internet, and searchable.

Properties:

1. A collection of proven research processes and methods
2. A physical and virtual repository of information
3. A searchable database

Features:

1. Enables researchers and scientists to find frameworks that will help them interpret their data
2. Facilitates learning
3. Codifies the NSI's research techniques

R

Toolkit, *continued*

Candace Brooks takes her primary school class on a field trip to the NSI regional center in London. Her kids explore the exhibits and learn about northern Atlantic climate, the Wicken Fen natural reserve near Cambridge, and the many problems that still need to be addressed by scientists. At the* Store*, several kids buy a set of storybooks about environmental issues, narrated by* Aeneas the Earthworm*. Candace spies an interesting box of* Eco Cards*, which, after further exploration, she purchases as a potentially useful tool for some of the high school students to help them with their science projects.

Her fellow teachers in Bristol are appreciative of the gift and immediately incorporate the* Eco Cards *into their library. The* Eco Cards *are visually engaging and easy for the students to use. Several end up borrowing the* Eco Cards *to work on science projects, and the school purchases several more sets from the NSI online store.

Five years later, the NSI introduces a new set of* Eco Cards *with new methods and ideas. Schools all over the world, including Candace Brooks' school, snatch up these sets to add to their libraries, as students have found them to be invaluable for planning experiments and studies.

The **Toolkit** was developed to aid research groups in collecting, analyzing, and synthesizing their research by providing a set of tested methods with which to frame information. Frameworks in the **Toolkit** are developed by a group of researchers who analyze various aspects of a multitude of research efforts and find similarities in those that were successful. The **Toolkit** is constantly being amended as new frameworks and methods are developed and codified.

The **Toolkit** is freely available from the NSI **Website** for any interested individual to peruse and experiment with.

While the **Toolkit** is primarily intended for use by professional researchers and academics, the methodologists also developed a simplified corollary tool, called **Eco Cards**, that is commercially available. **Eco Cards** are a compact collection of cards that functions effectively as a reference manual or recipe book for researchers and students who need inspiration when designing a research project. Each card describes and depicts an important ecological research method that has been proven effective in past NSI research. Each card describes the method, a couple specific projects that utilized that method, and provides contact information for the NSI-affiliated scientists who are experts on the matter.

Part of the NSI's mission is to spread the word about sustaining ecosystems in ways that create public value. The **Eco Cards** are a way to educate the unaffiliated scholars, designers, and researchers about the possibilities when attacking a research problem. They spread ideas in digestible chunks and enable the user to take further action to learn more details about each method. The **Eco Cards** are not only a way to connect people to information, but also people to other people who have similar research interests and aspirations, fostering a global community of ecological researchers.

R

Toolkit, *continued*

Eco Cards are meant to be a commercial item that would appeal to a wide research audience, simultaneously educating and promoting the NSI cause. Students and teachers alike can purchase them from the **NSI Store** or **Website**.

R

Toolkit, *continued*

Fulfilled functions:

19. Disseminate knowledge
21. Engage scientists
22. Engage students
27. Synthesize ideas
34. Develop strategy
36. Import ideas/information
37. Export ideas/information
38. Synthesize information
39. Share information
55. Create protocol
57. Provide support
84. Identify strategy
87. Devise method
95. Organize data
102. Define interpretation method
105. Analyze data
142. Document operation
150. Set methods/metrics
152. Analyze data
153. Synthesize data
176. Inform of options
191. Develop new techniques
192. Redefine interpretations
193. Design new strategies

Associated Design Factors:

3. Unable to formulate research plan
7. Lacking knowledge to use tools
28. Students don't care
33. Missing criteria to determine significance of data
56. Options are unclear
64. Unable to create an appropriate research protocol to manage the collection of data

Subset Elements:

Eco Cards

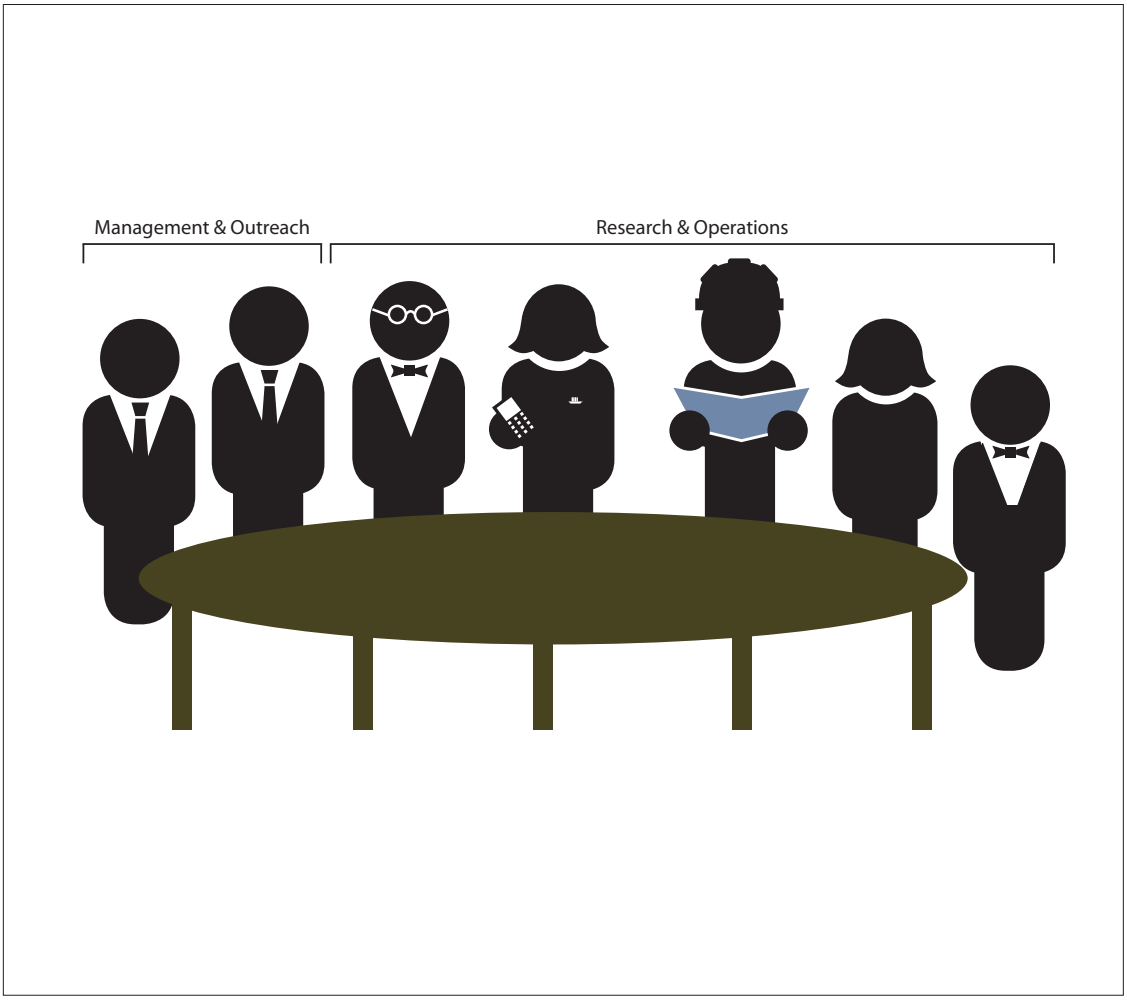
Related Elements:

Office of Communications
Office of Outreach and Education
Research Knowledge Net

R

Research Roundtable

The body charged with setting the direction of NSI's scientific research efforts. It has multiple roles, a governance model and executive powers.



Properties:

1. Seven member board with 5 scientists each representing one of NSI's areas of scientific research and 2 members of executive management.
2. NSI Research Roundtable Charter

Features:

1. Sets science strategy for NSI
2. Plans execution of science strategy for NSI
3. Allocates funding for NSI science operations
4. Analyzes fund & capital expenditures for scientific operations
5. Identifies areas where collaboration between research disciplines may make an improvement in scientific understanding.
6. Ensures that research competencies in integrated groups are matched optimally.
9. Sets standards, goals for integrated research
10. Analyzes integration to improve efficiency

Research Roundtable, *continued*

Dr. Stephen Price, an atmospheric scientist has just been appointed the rotating presidency of NSI's **Research Roundtable*****. He is an eight year veteran of the organization and has had significant exposure to NSI's operations and knows many of the staff personally. However, he is relatively inexperienced at science policy planning, despite his extensive expertise in planning his own research. NSI is a different kind of research organization, emphasizing the integration of different disciplines into research activities to create a systems based approach to science.***

Dr. Price's new job is complicated by the fact that the **Research Roundtable** ***is coming up on its biannual policy review, which he is expected to lead his colleagues through. Fortunately for him, NSI has excellent frameworks in place to help him through his upcoming job.***

Dr. Price's first task will be setting the science strategy for the next year. The events of Hurricane Katrina have generated a lot of discussion within NSI and Price is keen to capitalize on the interest of his colleagues. However, he needs to reach a consensus view within the **Research Roundtable** ***group, so he follows the*** **Strategy Facilitator** ***framework to bring everyone on the committee on board through a series of iterated presentations and negotiations. The*** **Research Roundtable** ***only needs to go through two rounds to reach agreement before they begin the planning process.*** **Policy Planner** ***is a step-by-step process that NSI has institutes to guide the scientists, who are not by their nature policy wonks, through the process of delivering a coherent policy plan that can be communicated to the entire organization.***

As part of the NSI's 2005 science policy planning, a sub group of the **Research Roundtable** ***is conducting an analysis of*** **Fund and Capital** ***allocation analysis throughout the entire organization to ensure that every affected group will have the tools that they need to complete the plan at their disposal. Once that is finished, the entire*** **Research Roundtable** ***will come together to review, through the*** **Research and Skill Match** ***processes, the potential for collaboration between groups. Dr. Price is particularly interested in getting the atmospheric scientists at NSI working together with the marine biology group to determine the effects of hurricanes like Katrina on wetlands areas.***

After six weeks of intensive work, the **Research Roundtable's** ***work is almost at an end. All that remains is the implementation of their plan. As it is rolled out to the entirety of NSI, individual*** **Research Roundtable** ***members are beginning to fan out within the organization with*** **Research Aligner** ***checklists from the integration plan. Once these checklists come back, they will be run through the*** **Integration Optimization** ***framework to see if Dr. Price's efforts are being accepted. Initial results look good, with only a few problems requiring minor adjustments in the integration plan.***

Research Roundtable, *continued*

The Natural Systems Institute's **Research Roundtable** is designed to focus exclusively on the organization's research activities. As such, it consists mainly of scientists. Five representatives from each one of NSI's scientific divisions are the principal voting members of the board. Two representatives from the NSI's executive branch serve in a advisory capacity on management matters and as liaisons between the **Research Roundtable** and the **Executive Board**. The roles and responsibilities of the **Research Roundtable** are laid out in the group's charter and are incorporated into the bylaws of the NSI.

The **Research Roundtable** is responsible for research related strategy development, policy planning, fund and capital allocation, integration steering and optimization. Each of these responsibilities has procedural frameworks in place to guide the work of the **Research Roundtable**.

Research Roundtable, *continued*

Fulfilled functions:

1. Strategy Facilitator
3. Policy Planner
6. Fund Analysis
7. Capital Analysis
11. Research Match
12. Skill Match
13. Research Aligner
20. Integration Optimization

Associated Design Factors:

1. Unable to set hypothesis
3. Unable to formulate research plan
23. Interdepartmental relationships
43. Convince decision-makers
58. Inefficient integration
59. Inability to establish desired outcomes
60. Conflicting competencies
64. Unable to create an appropriate research protocol to manage the collection of data
65. Cannot identify complimentary research activities
66. Identify too many complimentary research activities
71. Unable to determine appropriate standards
73. Unable to identify appropriate issues to be monitored and analyzed

Subset Elements:

Strategy Facilitator
Policy Planner
Fund Analysis
Capital Analysis
Research Match
Skill Match
Research Aligner
Integration Optimization

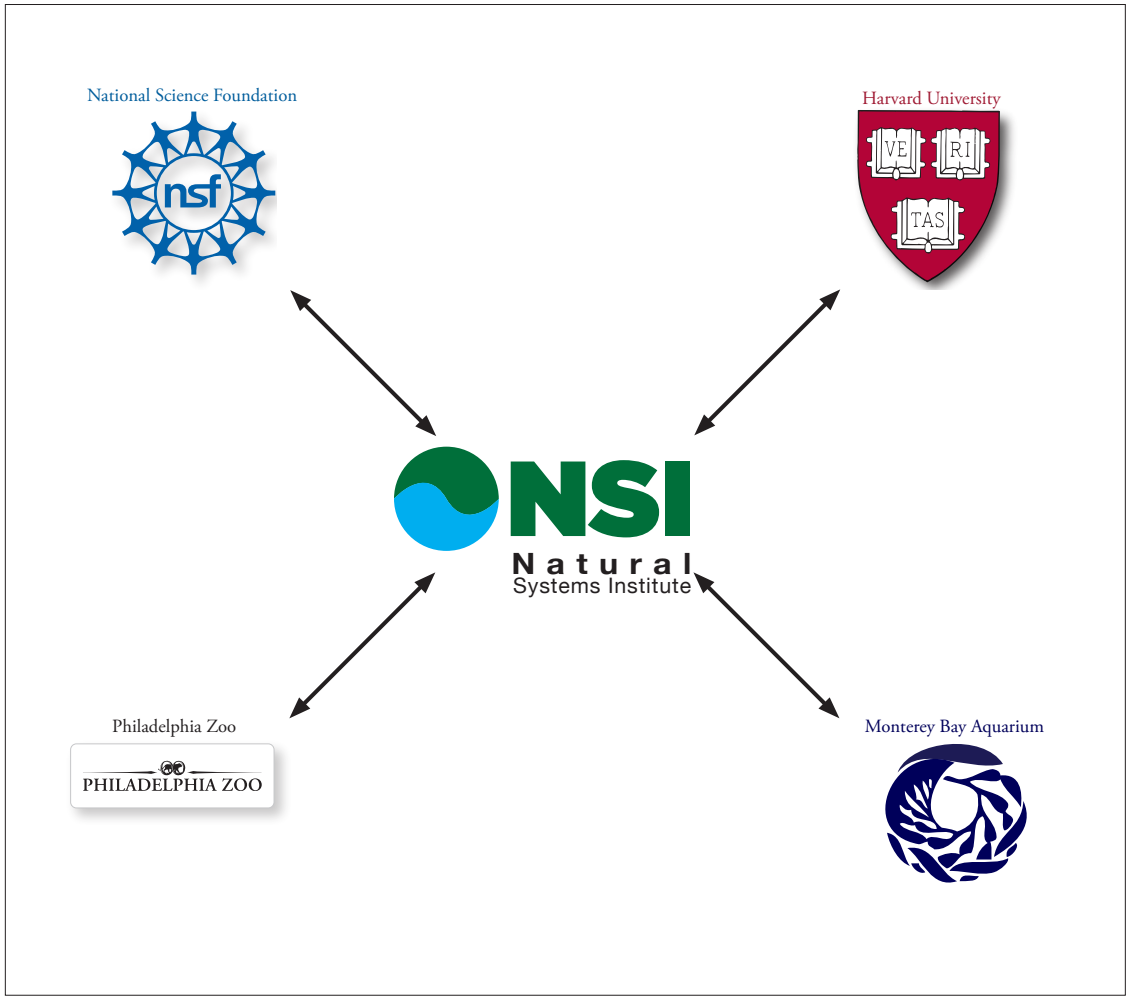
Related Elements:

DocOp
Management Memory
Analysis Aide
Synthetic Management
Standards Objectives

R

NSI Alliance Network

The network of institutions and organizations that collaborate with the Natural Systems Institute on conducting its ecosystems-based research and advocacy.



Properties:

1. A network of institutions and organizations
2. A tool to help a person or organization get to know other people, organizations, and their projects
3. A web-based software program
4. An informal contract between participating organizations

Features:

1. Enables institutions and organizations with common interests and goals to work together on projects
2. Enables institutions and organizations to share information with each other
3. Helps facilitate cooperation, knowledge-sharing, and effective policy campaigns

R

NSI Alliance Network, *continued*

Dr. Stephen Price was in Monterey, CA visiting the Monterey Bay Aquarium, a member of the* NSI Alliance Network*. Dr. Price's job was to recruit scientific staff at Monterey Bay for NSI projects. His pitch was simple: we'll fund the research that the aquarium can't, and we'll allow you to publish it. The* Alliance Network *is at the heart of what NSI does. In reflection of the ecosystems it studies, the NSI acts as a part of a larger system of institutions and organizations dedicated to understanding the natural world around us. The NSI occupies a niche because it is solely dedicated to understanding the world around us in terms of systems. As such, it brings together researchers, organizations, institutions and others by providing them a common place to connect, collaborate and contribute to the field. Dr. Price is there to explain just this to the research staff to see if they will submit proposals for research in which they are looking for expertise that the NSI can put them in touch with. At the end of the meeting, Price has a good idea of the candidates for funding. One scientist wants to study the effect of El Niño on the migratory habits of whales. Price knows the perfect atmospheric scientist over at Harvard to match him up with. Another fruitful collaboration is going to take place, thanks to NSI.

The **NSI Alliance Network** is a web of connections between environmentally-oriented institutions and organizations who are interested in sharing information, collaborating on projects, and being resources for each other. Participating organizations set up profiles on the **NSI Alliance Network website** and have access to many tools that facilitate information exchange, such as file-sharing software, message boards, discussion groups, chat-rooms, and databases. Each participating organization makes parts of its own local area network accessible directly to the **NSI Alliance Network** and each network participant has an access code and password associated with it. Thus, the **NSI Alliance Network** is a forum for secure communication between partners separated by time and distance.

R

NSI Alliance Network, *continued*

Fulfilled functions:

17. Create website
19. Disseminate knowledge
21. Engage scientists
20. Engage policy-makers
23. Coordinate local projects
24. Coordinate global projects
25. Recruit organization
26. Recruit people
27. Synthesize ideas
28. Identify organizations & people
30. Illustrate benefits for partners
32. Ask for resources
33. Foster continuous relationship
34. Develop strategy
35. Identify needs
36. Import ideas/information
37. Export ideas/information
38. Synthesize information
39. Share information
40. Teach courses at partner institutions
41. Inventory resources
47. Establish support needs
56. Identify and contact appropriate actuator
57. Provide support
58. Requisition support
81. Connect resources
113. Coordinate findings
117. Make problem known
118. Set strategy
119. Communicate strategy
125. Emergency support
127. Training
128. Identify complementary research activities
129. Identify complementary competencies
145. Quarter personnel
161. Distribute literature
169. Stimulate interest
170. Link facilities
174. Promote NSI awareness
176. Inform of options
177. Present NSI values
178. Show NSI contents
179. Inform of conditions
180. Link facilities
181. Conduct classes
182. Assign project responsibility
190. Compare uses and goals
191. Develop new techniques

Associated Design Factors:

16. Conflicting Agendas
21. Ill-feeling towards NSI
25. Partners do not align with NSI
31. Unable to set up partners
44. Scarce resources
51. Requires too many resources
65. Cannot identify complimentary research activities
66. Identify too many complimentary research activities
67. Don't have the necessary tools to set up the operation
68. Don't have the human resources to set up the operation

Related Elements:

Office of Institutional Relations

System Elements

Outreach & Management

Publications
- Alive
- The Nest
- Journal
- Magazine
- Website
- Public Education Pamphlets

Donor Relations
- Lecture Series
- Donor List
- Donor Tiers
- E-commerce Website
- Fundraising Roadshow
- Donor Awards
- Thank You Pack
- Pitch in a box

Environmental Action Initiative
- Scholarship program
- Micro Grants
- Starter Kits
- Distributed Volunteer Research

NSI Leaders Program
- Scouts
- Explorers
- Generations
- Corps
- Family Adventures
- Leader Course Packs
- **Certificate**

Policy Desk

Strategy Roundtable

Event Planning Office

Face of NSI

Marketing Desk

Office of Communications

Community Liaisons

Public Relations Desk

O

Publications

Print and online material directed toward the community in order to recruit new members and inform current members.

Properties:

1. Informational pieces printed on recycled paper and distributed via email
2. Widely distributed among communities
3. Written by NSI employees, volunteers, scientists, and interested individuals
4. Statistics, stories, opinions, etc.
5. Community-directed design and content
6. A series of publications with different content and style targeted at different communities of readers/users
7. Printed and online materials

Features:

1. Recruit new members
2. Inform non-members and members
3. Inspire people to help with the NSI's mission
4. Spark discussion in the community
5. Synthesize data
6. Disseminate knowledge
7. Inform public and scientists of findings and developments
8. Inspire people to become involved in species preservation and conservation
9. Describe situations

O

Publications, *continued*

Jan, the marine biologist, is heavily involved in creating NSI publications. The results from his area of expertise demonstrate so many of the environmental issues that are relevant to the environment and the NSI that he is a heavily-relied upon resource for creating content for its publications. In addition, his relations with the communities in which he has conducted research has given him significant experience in dealing with the public. Through his featured articles in* The Nest*, he is well-recognized throughout the NSI.

He had written many articles for both* "Alive" *and the* Ecology Monitor *long before his current involvement in the NSI. For* "Alive"*, he has written articles that deal with the effects of eating too much salmon or other fish due to increased mercury levels. For the* Ecology Monitor *he wrote a series of in-depth scientific articles about where that mercury was coming from, including details about how much and what types of fish it was affecting.

While Jan still contributes some articles to the NSI's publications, he is currently involved in reaching out to experts around the world and encouraging them to contribute their knowledge and research. He is widely respected both in marine biology and has become somewhat of a celebrity due to his many appearances on news programs.

Since his name is trusted by both the scientific community and the public, Jan also contributes to many of the publications that are intended for the public. For example, he annually contributes his findings to the P*ublic Education Pamphlet *and the* Guidelines of Environmental Practices*, intended to provide simple-to-use information for people and how they can contribute to the NSI's mission (or at least mitigate their detrimental impact on the environment).

As a side note, he also reads the adventures of* Aeneas the Earthworm *to his children before bedtime, showing them the values of reading and protecting the environment.

The NSI will produce and contribute to different publications and online materials in order to inform and inspire a great number

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Publications, *continued*

The nest
Natural System Institute 2005
Febuary , 2006
1 | 2 | 3 | 4 | 5

Congratulation!
Stephen Price has new baby!

What up!
Inside our nest ? P.2
who next?? P.2
Cali' Party picture P.5
New NSI (stories and pic-ture) P.4
NSI commentary ! P.6

Will we overcome Global warming ?
By James Togue

THE NSI's latest story, a one-part report by Jan Gustaffsson, a member of the NSI board of scientists, uncovers a million-dollar contract signed by Peru government to retain the services of an American law firm to lobby for charter change in the U.S. government.

Wow,The contract was signed by National Security Adviser Norberto Gonzales Jr. on Dec 20th, the same day that Mrs. Arroyo delivered her State of the Nation Address and announced that "it is time to start the great debate on global change."

The NSI has copies of the contract and other disclosure documents filed with the U.S. Department of Justice by Venable LLP, the U.S. law firm that will get paid $75,000 per month plus expenses for one year. We got in touch with Venable, who confirmed the contract's existence but declined to give details. None of the government officials we talked to, however, have any knowledge of the contract, which was apparently made in great haste and secrecy.

Thank Goodness for Little NSI Podluck?
By Fenton

Reasons to be cheerful, part who's counting. It's Thanksgiving-adjacent in the conference room and Randy, Moye, Fenton, James, and Tom reveal what they're thankful for – when they remember that's the topic. James wears his crown of thorns in honor of his being crucified last week, but he, sir, is no Jesus Christ.

There's talk of WOW's potluck lunch and Martha Stewart and her Desperate Housewives psycho pharmacist guest (James rattles off the guy's résumé, soarily). Randy says he's thankful for mint chocolate chip ice cream, Moye wonders if it tastes like toothpaste, and Fenton thinks Listerine should come out with an array of ice cream flavors.

There's mention of Maureen Dowd's lockjaw, and curiosity about who could have written Nicole's novel. Everyone but Tom, who has never watched an episode, is thankful for Lost, and the fabulousness of the recent installment in particular; now Fenton wants to see who lives on the backside of Wisteria Lane. And thanks are given for Prison Break's leading-up-to-commercial cliffhangers.

Mention of the impending AMA's brings up Madonna, of course, and this time her lyrics come under harsh scrutiny, which leads to female bullies, Bush's waning popularity, politics, GOP vs Dems, and then Fenton brings out a calming gadget, causing less than a second of quiet. The gang says no thanks to the upcoming gay trade on Wife Swap, but sends props and best wishes to Christina Aguilera for marring an ugly man, who must be the most thankful of all this holiday.

1 | 2 | 3 | 4 | 5

of people of its mission, practices, and goals. The NSI will produce subscription-based materials, items for purchase and free handouts; publications for internal and external use; and for experts and lay people.

In addition, the NSI will contribute articles to other publications with which it partners in order to spread the word even further and support those partners' goals. Examples might include "Recycling International", "The New York Times", "Abrys", "International Journal of Science & Technology" and "Green Futures".

Publications will be written by experts, professors, NSI employees, community members, and others closely involved with the NSI and its mission. It will be important for all of these different groups to contribute to different publications, as they are all vital in recruiting new constituents to further the NSI's mission. The NSI will actively seek out people in a variety of fields to write articles for its publications, building a pool of contributors who are interested in writing articles and calling on them in order to continually produce engaging and ground-breaking material.

All publications will be written and edited at the NSI, but printed at an outside printing press.

The Nest is a publication that will be produced and distributed monthly via email to all NSI employees and regular volunteers. Its intent will be to inform and inspire the contributing members of the NSI through articles about the state of the organization, current projects, future projects, success stories, etc. It will also contain information relevant to personnel, upcoming events, news, etc. Employees will be asked to write articles, as well as volunteers and outside individuals who have ideas and opinions to contribute to the internal operations of the NSI. It will include material that will be common to all NSI branches, but also local information specific to a particular site and community.

The **Public Education Pamphlet** will be a brief, three-fold piece of recycled paper that will be handed out at NSI events and other NSI functions to community members. It will be produced yearly and contain information such as statistics and issues with regard to the environment, the NSI mission and how it is helping the environment, current NSI projects, testimonials of what others have done, how to get involved, etc. The NSI will print thousands of these each year, but not because they will be randomly handed out and wasted. They will not be passed out on the street or in other locations where people are not going to pay attention to them (and throw them on the ground or in the

Publications, *continued*


Bringing Back those Childhood memories

Natural Ingredients: Method grows vessels from one's cells

What the Body Remembers: A Touch Brings Back Memories

By Andrew Lam, Pacific News Service

ALIVE NEWSLETTER

garbage as soon as they get them), but will be distributed in situations where people will be more likely to take the time to study and read the information. Additionally, they will spark interest and incite participation through compelling design and powerful content.

"Alive" is another type of free publication distributed throughout communities, but will contain more detailed information and will be more selectively given out. It will be an 8-10 page document, produced quarterly, that will be distributed to all friends of the NSI. It will be sent through the mail, and closely resemble universities' alumni publications that give information about outstanding members and accomplishments, news, vital information, and projects. It will be written by a Publications Desk staff member, whose responsibility will be to solicit articles and compile information.

The NSI Magazine will be much broader in scope and content, in order to appeal to the general public. It will be produced at the NSI and distributed monthly via subscriptions and newsstands and will focus heavily on environmental and ecological news. The staff writers, as well as guest writers, will essentially be reporters, documenting worldwide events and how they relate to the NSI, environmental issues, and ecological trends. It will be approximately 80 pages, and contain advertisements whose practices are environmentally friendly, in addition to NSI generated content.

The readership will comprise mostly of those who believe strongly in environmental causes (at least initially), but will have broad appeal and become a leading source for anyone looking to gain insight into global trends in relation to ecology and preservation of the environment. It will therefore be a popular magazine with wide distribution, not an esoteric scientific journal.

In order to reach the important audience of children ages 3-10 (who will lead the next generation's environmental cause), the NSI will publish a series of books centered on the character **Aeneas the Earthworm.** Each book will tell the story of Aeneas' latest adventures in ecology as he travels the world making discoveries and helping people to act responsibly. There will be one set of books published for those who are being read to or who have an elementary level of reading, and one set for those a little more mature.

The **NSI Scouts** will contribute to the content of the Aeneas the Earthworm series, based on their experiences and adventures.

The **NSI Website** will be continually updated and will contain current information for both scientists and lay people.

The NSI will produce a subscription-based quarterly scientific journal that will be targeted at scientists called **Ecology Monitor**. It will be similar to *Nature* or *Science*, in that it will be highly technical, representing the latest research and results and written by experts whose findings constitute a fundamental breakthrough in the field of ecology and environmental science. It will therefore become a primary resource for the latest

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Publications, *continued*

trends in ecology.

The **Environmental Practices** group will semi-annually publish its **Guidelines of Environmental Practices** (see section under NSI HQ) that will be an essential resource for environmentalists, architects, and the public at large.

All publications' mission is to inform, educate, and inspire people.

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Publications, *continued*

Fulfilled functions:

6. Publish articles
10. Develop stories
16. Create newsletter
17. Create website
18. Publish others' work
19. Disseminate knowledge
36. Import ideas/information
37. Export ideas/information
39. Share information
115. Create document
116. Distribute document
158. Convey NSI images
168. Interpret content
171. Translate information
172. Instill values
173. Present NSI image
174. Promote NSI awareness
175. Advertise NSI experience
194. Create media
197. Publish

Associated Design Factors:

15. Beneficial medium
21. Ill-feeling towards NSI
27. Public support
28. Students don't care
29. Target audience
32. Message unclear to audience
36. Insufficient sources
38. No interested recipient
43. Convince decision-makers
52. Conditions are unknown to policy-makers
55. NSI values are misunderstood

Subset Elements:

The Nest
Public Education Pamphlets
"Alive"
NSI Magazine
Aeneas the Earthworm
Website
Ecology Monitor
Guidelines of Environmental Practices

Related Elements:

NSI Leaders Program
Eco Cards
Environmental Action Initiative
NSI International Film Festival
Scholarship program

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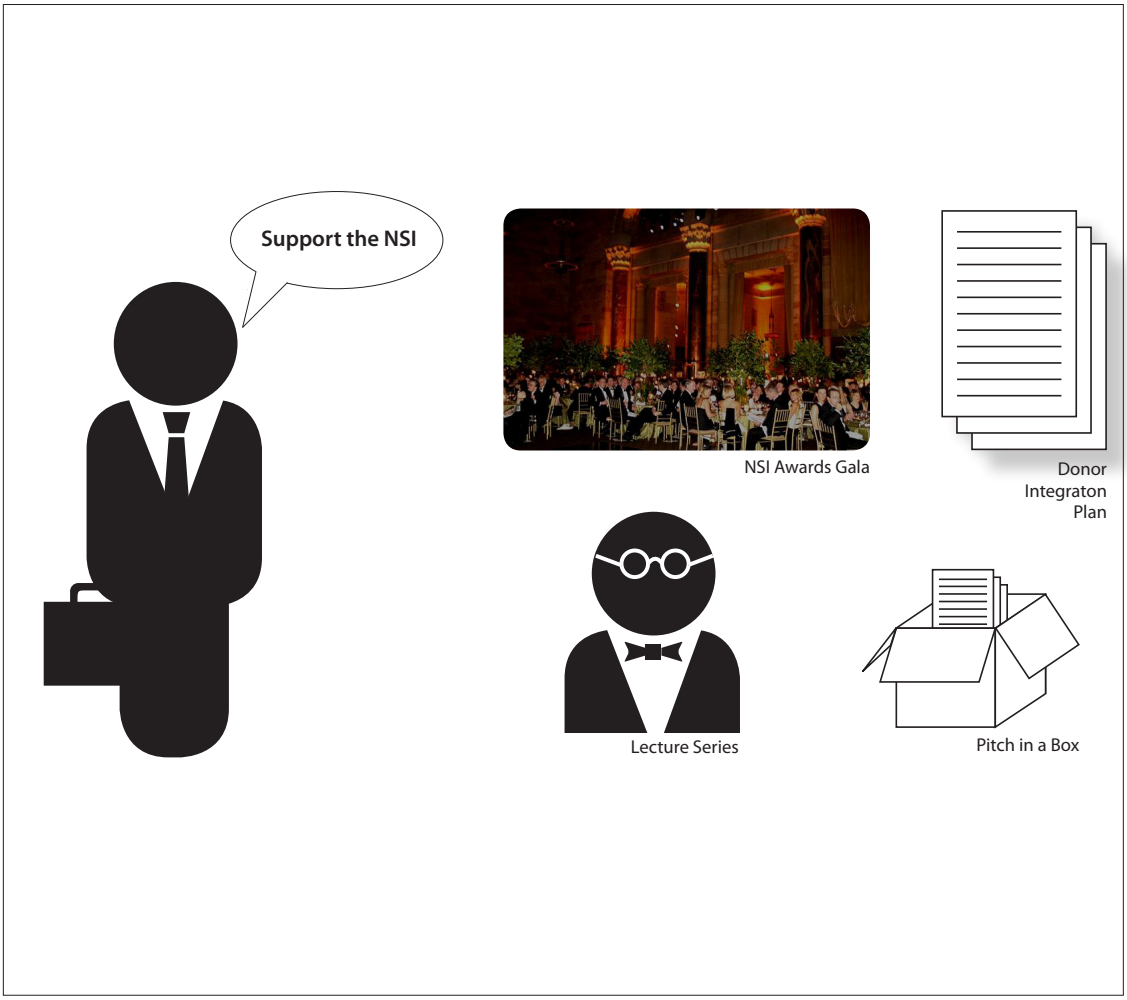
Office of Donor Relations

Department responsible for recruiting new donors and maintaining current donor relationships.



Properties:

1. Team of NSI employees whose responsibilities center on donor relations
2. Organize events to recruit new donors
3. Individually recruit donors
4. Arrange events for current donors

Features:

1. Acquire new donors
2. Maintain current donor relationships

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Office of Donor Relations, *continued*

Dr. Stephen Price has had a long week. It is the end of the Natural Systems Institute's annual fundraising drive and as one of the full time scientists at the NSI, he has been working on recruiting donors for the coming year.

The NSI's approach to donor relations is one of the things that attracted Dr. Price to the NSI in the first place. The organization's commitment to raising funds as well as donor's participation in the Institute is what sets it apart from many other groups. Dr. Price spent Monday morning explaining just this to a group of potential donors at a fundraising breakfast. The **Donor Integration Plan** ***as he explained to his audience, "is about more than just donating money. It allows you, the donors, to become part of what we are trying to achieve at the*** **Natural Systems Institute.***" Dr. Price went on to explain to the audience that donors could devote time as well as money if they wished. He cited one recent example of a group of time donors that managed to convince the City of Milwaukee to begin renewing the Menomenee River Valley. Originally a shallow marsh, the Menomonee River Valley was filled over time with a variety of materials and adapted for industrial use. These past uses helped create a set of negative perceptions that the Valley's environmental conditions would be too expensive to correct, which in turn discouraged new investments in the redevelopment of the Valley. The NSI volunteers worked with the City of Milwaukee, the Wisconsin Department of Natural Resources (WDNR), the U.S. Environmental Protection Agency and the U.S. Geologic Survey to conduct scientific investigations of the Valley's soils and groundwater. The investigation led to a much better understanding of the existing conditions, and to the conclusion that widespread, high levels of contamination are not present, and the environmental issues that do exist in the Valley are manageable.*

Tuesday's donor relations session focused on how current NSI donors could expand the pool of people willing to give time and money to the organization. Over lunch, explained the **NSI Pitch in a Box,** ***which is a complete starter kit for those who wish to help the NSI recruit donors. It contains information and materials that train donor volunteers how to solicit donations for the NSI. He, along with a member of the*** **Donor Relations Desk** ***fielded questions about how the kit is best used. Some questions asked about how to approach new donors, while others focused on how best to apply this kit in a variety of situations. He suggested that new donors could make payments via the NSI's*** **e-commerce function** ***on the web site in response to a question about payment methods.***

Wednesday's lunch was a nice break for Dr. Price. As a speaker in the **Donor Lecture Series** ***he gave visiting donors a slide show of his most recent work on the role that volcano eruptions play in global warming. This was a special treat designed to bring donors and the***

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Office of Donor Relations, *continued*

scientists of the NSI closer together.

Thursday was the toughest day of the week for Dr. Price. This was the day that he held* Fundraising Roadshow *presentations for potential large donors. Normally this presentation of the Natural Systems Institute and its mission was something that traveled from city to city, but this was a special case. He held four two hour sessions over the course of the day, in which he went into great detail about the NSI and what it does for potential donors. Fortunately, things went well and three of the four groups that he presented to agreed to make significant monetary contributions to the NSI for 2006.

***As Friday finally rolled around, Dr. Price looked forward to the* Donor Awards *gala, where contributors would be honored for their work and contributions to the NSI. He reflected that the* Thank You Pack *would make a nice gift and hoped that the whole event would add members to NSI's* Donor List.**

As the NSI is a not-for-profit organization, it will depend on donations from individuals and groups in the form of time, money and other resources in order to carry out its mission. These donors will be vital to the success of the NSI, and the NSI will involve them in ways that few organizations do. The **Donor Relations Desk** will oversee all donor-related activities.

Generally, people either donate their time or money to an organization, but not both. Many donors who pledge money might get their name mentioned in a few places in the organization, but do not actively participate in the day-to-day workings of the facilities. Through the **Donor Integration Plan**, the NSI will ask for further donor involvement in the form of volunteering time in order to more deeply involve as many people as possible. Simple projects will be organized for donors on specific days that they can perform in a single day so that they have a product of their work at the end of the day. This might be in the form of a clean-up day in a community, planting trees, etc. The donors will thus be integral to the NSI in both their contributions and setting an example for others. In this manner the NSI will also be able to efficiently maintain their donors since there will be continual interaction between the two parties.

The first step in acquiring necessary resources for projects with respect to donations is recruiting the donors. On a grass roots level, the **Pitch in a Box** is a tool that any member of the NSI can use to help recruit new donors. The **Donor Relations Desk** will set up the materials in the **Pitch in a Box**, including a prepared set of topics to speak about, promotional materials, pamphlets, and information on how to donate. Ideally, if anyone wants to help the NSI recruit a new donor, they can use the **Pitch in a Box** to make a presentation and leave them with takeaways. Anyone wanting to do this, however, must gain clearance from the **Donor Relations Desk** to ensure that the presenter is well-prepared and that the NSI can follow-up with the audience.

Additionally, there will be an organized tour called the **Fundraising Roadshow** that will be similar to an investment roadshow, but aimed at recruiting new donors. A speaker and one or two other members of the **Donor Relations Desk** will set up a tour of places and dates where they will give presentations

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Office of Donor Relations, *continued*

about the state of the organization and how people can help. The pre-prepared presentation will cover aspects of what the NSI is, how it functions, some of its current projects, etc., in order to spark interest and encourage people to aid in the NSI's mission and work. The NSI will ideally be able to coordinate this project with its multiple sites so that local people can talk to local people.

If these participants or anyone would like to learn more about the NSI, there will also be a **Lecture Series** at the NSI also aimed at recruiting new donors. This program will be similar to the **Fundraising Roadshow**, but will be held at NSI sites and will have the advantage of being able to show visitors all of the projects and facilities that the NSI operates. Additionally the **Lecture Series** differs from the **Roadshow** in that each presentation will be focused on a specific topic. The series will therefore cover how a number of topics relate to each other. The **Lecture Series** will be coordinated with the **Events Planning Office** and the **Community Liaison**.

Once an individual or group donates to the NSI, the **Donor Relations Desk** will send out a **Thank You Pack** that will contain materials about what their donation accomplished, but also what the next steps are and how they can further contribute to the cause.

The **Donor Relations Desk** will maintain a **Donor List** that will keep tabs on past donors and trends in donations to help them target new donors. The Desk will also divide donors into different tiers in order to keep better track of who is doing what for the organization. From these tiers, the NSI will grant the prestigious semi-annual **Donor Awards** for money, resource, and time donations. In order to facilitate donations, the NSI's website will have an E-commerce function that will allow donors to pledge money quickly and easily.

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Office of Donor Relations, *continued*

Fulfilled functions:

5. Host awards
8. Host people
28. Identify organizations & people
29. Present mission & research
30. Illustrate benefits for partners
32. Ask for resources
33. Foster continuous relationship

Associated Design Factors:

14. Ambiguous ROI
17. Costly Outreach

Subset Elements:

Donor Integration Plan
Pitch in a box
Fundraising Roadshow
Lecture Series
Thank You Pack
Donor List
Donor Awards
E-commerce function on Website

Related Elements:

Micro Grants
Nature Cup

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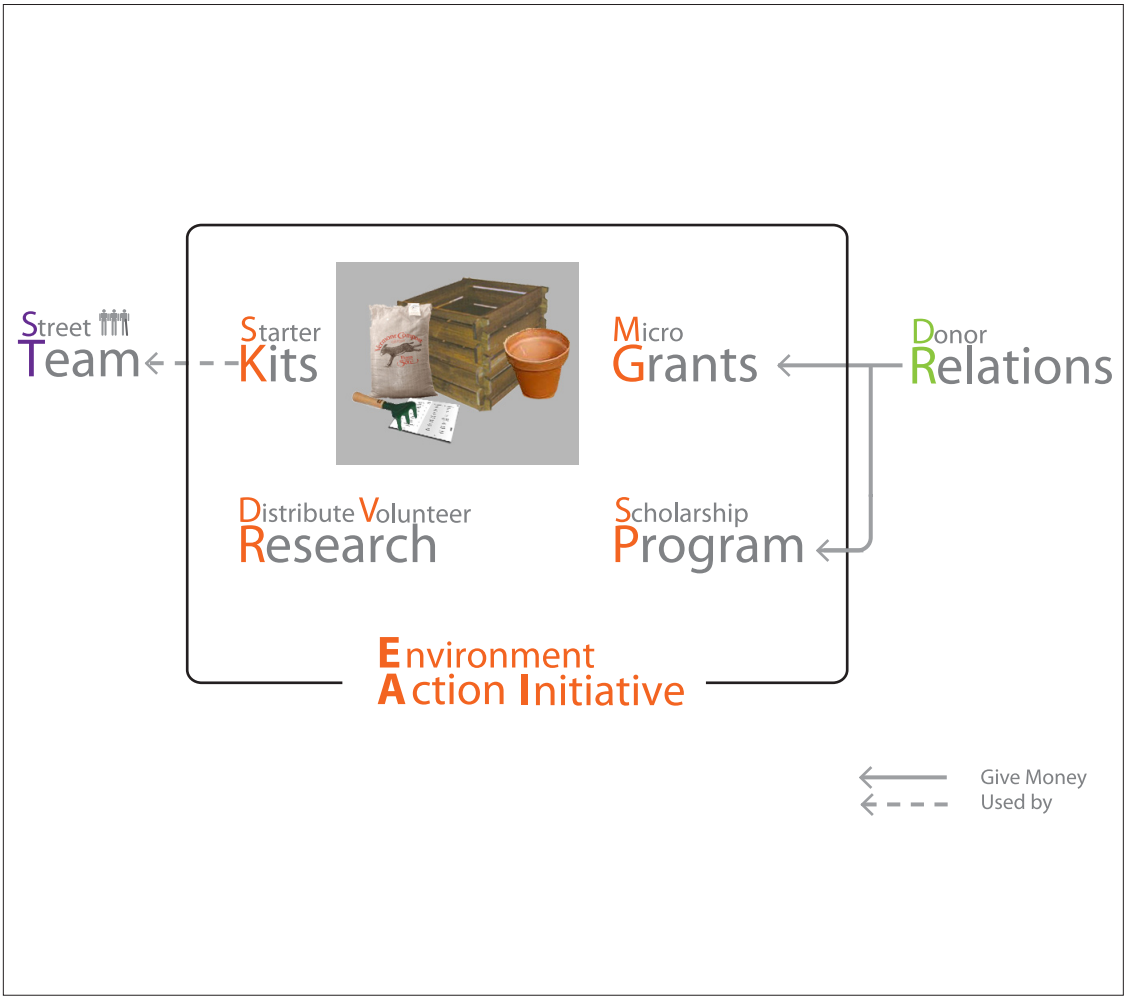
Environmental Action Initiative

A group of programs specifically targeted at empowering communities to participate in research and projects that improve the health of the earth.



Properties:

1. Cluster of educational initiatives for the community
2. A commitment to outreach

Features:

1. Provides members in the community with resources to pursue their interests in environmental work
2. Empowers the public to get involved with environmental action

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Environmental Action Initiative, *continued*

Candace Brooks first learned about the* Natural Systems Institute *in a speech given by renowned architect and environmental thinker William McDonough. On the NSI* Website*, she found that there were many opportunities to get her students involved in environmental service. Besides teaching a section on current sustainability issues and basic ecology, Candace also challenges her students each year to design and propose a simple research or restoration project for the* Micro Grant *competition. Last year, her students won for the first time, and received a $5000 grant to study the effects of pollution on - and actively clean up - the River Avon system. With the grant money, the school was able to buy a new set of science tool and laboratory instruments, as well as waders for the students, not only for the river system study, but also for the other science labs in the school. Candace also attended an awards event at the NSI regional office in London with a few of her top students, and traveled to Beijing for the* NSI International Film Festival *last year.

Candace has spread the word about NSI to the rest of the teachers and administrators in her school system. Recently, one of the alumni from the local high school was awarded a* Scholarship *from the NSI to study Plant Sciences as a fourth year student at Oxford University. Candace was particularly proud, even though she was never this student's teacher, because she recalled the day when the student came to her classroom at the end of the school day to ask her about the NSI* Environmental Action Initiatives*.

Outside of her role as teacher, Candace and her husband have actively participated in* Distributed Volunteer Research *for the NSI. For their region, this has primarily entailed collecting water samples from the river, labeling them, and sending them to the Swiss NSI office every month. All of the materials are provided by the NSI each cycle and include detailed background information about the project and instructions on when to collect, from where, and how to look for the best samples.

Someone else in her community learned about the* Starter Kits *that the NSI distributes and obtained a set of the "Compost Kit" for her neighborhood. An avid gardener for many years, Candace was delighted to discover that keeping a compost bin was so easy and rewarding; her vegetables have never been healthier, tastier, or more abundant! Some other neighbors in her community choose to get the "Solar Kit" in order to install solar panels on their roofs and save money on their energy bills. Candace and her husband are very interested in acquiring this* Starter Kit *as well—if only they had the time!

The **Environmental Action Initiative** is a strategic program in the Office of Outreach and Education, aimed at putting the power to change the world in the hands of communities and young people. It includes several different sub-initiatives that provide opportunities for various members of a

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Environmental Action Initiative, *continued*

community. These include a **Scholarship** Program for undergraduate students, **Micro Grants** for community members to conduct their own ecological research, **Starter Kits** that make it easy for communities to improve the health of their local surroundings, and a **Distributed Volunteer Research** initiative.

The **Scholarship Program** is funded by the **Office of Donor Relations** and provides full tuition for two juniors or seniors within the NSI region who are studying any one of the following disciplines: Earth Science, Plant Science, Environmental Science, Earth Systems, Ecology, or Evolutionary Biology. These students may apply online for the highly competitive scholarship and must demonstrate a long-standing commitment to bettering the state of the environment. The **Scholarship** provides full tuition for an academic year, and students cannot reapply. However, upon being **NSI Scholars**, they have access to NSI people and resources.

Micro Grants are small sums of money awarded to individuals or groups who are interested in conducting ecological research on a local level, with the stipulation that the NSI will share the rights to the results of the research with the grantee(s). Grant money will be provided by the NSI donors and will cover budgets of up to $30,000 per year. Applications and proposals must be submitted via the NSI website. **Micro Grants** are appropriate for short-term research projects that require limited resources. Only new research projects will be accepted; continuing applications will not be accepted.

Starter Kits are packages of materials and information that the NSI provides communities in order to get them started on improving their environment. For example, the NSI might give away free compost **Starter Kits** that provide compost bins, earthworms, and instructions on how to maintain the compost pile and reap its benefits.

Distributed Volunteer Research is a way to get important research done with the help of a large number of volunteers. NSI and affiliated scientists may never have enough manpower to collect samples from every beach on the Pacific Coast of the United States, but they can increase their sample collection by enlisting the help of interested volunteers and distributing the research tasks among these volunteers. This research effort intends to use the power of numbers to broaden the scope of the scientific process and enable the NSI to gather as much data as needed. As a result, the NSI will be able to have a much more detailed understanding of the environments it monitors.

O

Environmental Action Initiative, *continued*

Fulfilled functions:

9. Identify audiences
12. Communicate benefits
19. Disseminate knowledge
22. Engage students
23. Coordinate local projects
24. Coordinate global projects
26. Recruit people
28. Identify organizations & people
29. Present mission & research
32. Ask for resources
33. Foster continuous relationship
37. Export ideas/information
39. Share information
56. Identify and contact appropriate actuator
58. Requisition support
72. Identify opportunities
77. Execute plan
91. Gather data
92. Gather sample
97. Establish monitoring range
100. Collect samples
116. Distribute document
117. Make problem known
119. Communicate strategy
123. Allocate funding
127. Training
151. Collect data
159. Convey NSI rules
161. Distribute literature
167. Offer activities
169. Stimulate interest
172. Instill values
174. Promote NSI awareness
177. Present NSI values
182. Assign project responsibility
193. Design new strategies
194. Publish

Associated Design Factors:

11. Unskilled observers
17. Costly Outreach
18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
27. Public Support
28. Students don't care
29. Target Audience
40. No appropriate actuators available
51. Requires too many resources
66. Identify too many complimentary research activities
68. Don't have the human resources to set up the operation

Subset Elements:

Micro Grants
Starter Kits
Distributed Volunteer Research

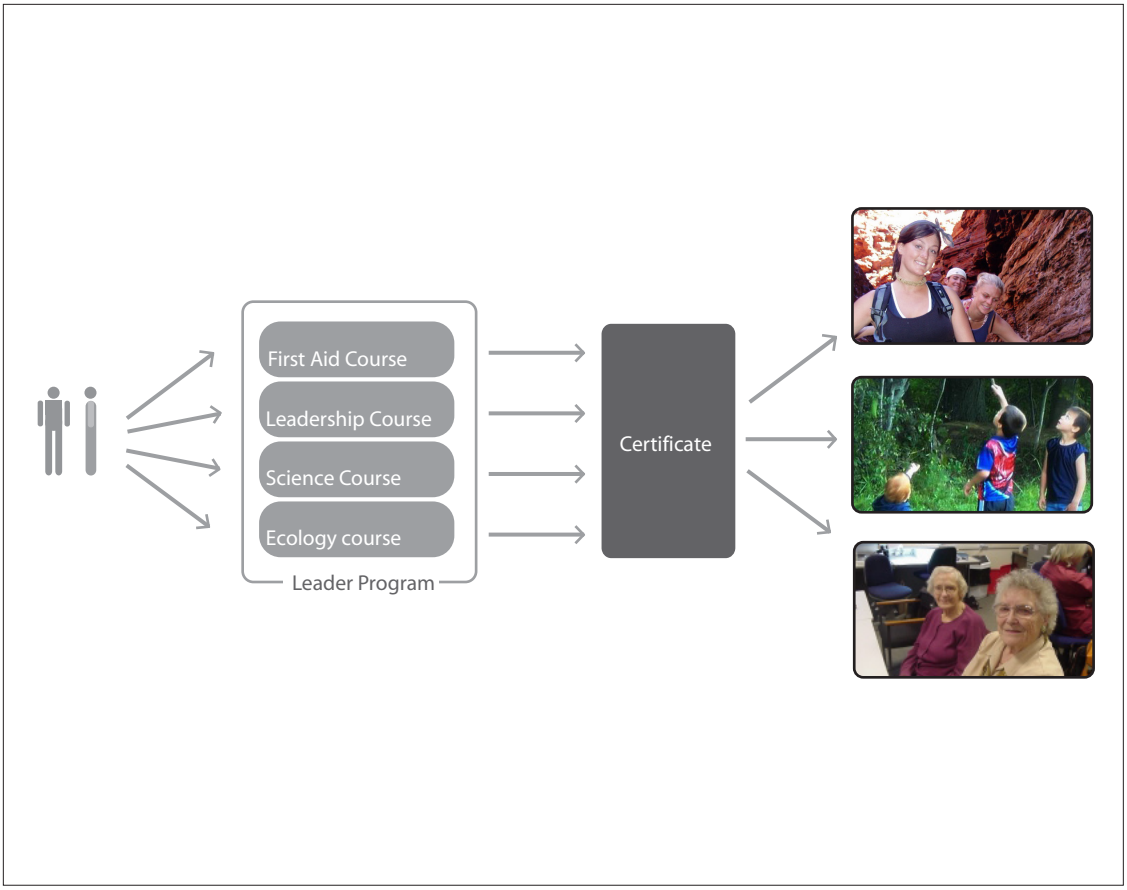
Related Elements:

Leaders Programs
Event Planning Office
Community Liaisons

O

NSI Leaders Program

A curriculum for preparing people to become leaders of the NSI Family Adventures, NSI Scouts, NSI Explorers, NSI Corps, and NSI Generations. Offering courses in leadership training, wilderness maintenance, first aid, team-building, counseling and teacher-training, the **NSI Leaders Program** provides Leaders with the in-depth knowledge and skills that they will need to not only lead NSI programs, but also pass on the knowledge.



Properties:

1. Training program for leaders of NSI groups
2. Collection of volunteers and full-time NSI employees
3. Classes held at local educational institutions
4. Led by a core group of NSI employees in Office of Outreach and Education

Features:

1. Prepares volunteers and NSI employees to lead groups of kids and adults in a number of outdoor activities, including camping and hiking
2. Teaches team-building
3. Teaches wilderness first aid along with methods for teaching safety

O

NSI Leaders Program, *continued*

Jennifer was fifteen when her mother enrolled her in the local chapter of the* NSI Explorers*, where she and a group of ten other teenagers met twice a month for one year to perform a variety of activities, including backpacking trips, trail restoration, snow camping, community service at local zoos, canoeing and fishing trips, with various scientific studies of water, soil, flora and fauna along the way. She learned to see the natural world through new eyes and became keenly aware of how so many everyday activities destroy little pieces of the environment. At school, she started an environmental action group at her high school called Jersey Shores, which actively participated in cleaning up and protecting the beach ecologies along the New Jersey coast from contamination and erosion.

Now that she is eighteen and a high school graduate, Jennifer is eager to postpone her enrollment in college for one year in order to give back to the community. She will start a nine month internship in the New York office of the Natural Resources Defense Council and is currently training to become an* Leader *for an* NSI Scouts *group. For the next month, she will meet with other aspiring* Leaders *and take intensive courses in Wilderness First Aid, Leadership Theory and Group Dynamics, Team-building, Plant and Animal Ecology, Ecosystems, Research Methods, In-field Teaching Methods, and History and Ecology of the Adirondacks. The curriculum includes three overnight trips to different preserves and parks in New York , including a four-day backpacking trip in the Adirondacks.

At the end of the course, she will receive a* Certificate *as well as a* Leader Course Pack *for the* NSI Scouts*, which provides recommended activities and projects, safety reminders, cheat sheets, local resources, maps, etc. Other fellow leaders may receive similar course packs for leading* NSI Corps *and* NSI Generations*.

A major goal of the NSI is to educate the public and get them involved with sustaining their natural surroundings through hands-on experience and appreciation. In order to do this, the NSI must maintain a talented and skilled core group of program **Leaders** that continually educate interested volunteers and past program participants, as well as scientists who will be guest teachers/leaders, to lead new groups of participants into the field. These **Leaders** will need to grasp a basic understanding of the ecology of the region, master wilderness safety skills, develop counseling skills, and be able to inspire and empower people of all ages to become leaders.

The **NSI Leaders Program** will have a permanent staff within the Office of Outreach and Education's Program Desk that is charged with the tasks of recruiting candidates, writing application forms, reviewing applicants, and teaching the courses. It is unique from other outdoor leadership and science training programs in that tuition is covered entirely by the NSI's endowment; to avoid an overflow of students, the Program Desk limits the size of the candidate pool via a rigorous application process. Graduates of the program receive a **Certificate** and may subsequently reapply to be a program Leader as often as they want

O

NSI Leaders Program, *continued*

without retaking courses, so long as they skip no more than one; Wilderness First Aid must be taken every two years regardless of activity. These Certificates may also be used to pass out of certain courses at other institutions teaching offering similar curricula.

NSI Family Adventures are a series of 1- to 2-week long trips to various exotic locations around the world where either the local community leaders have done an exceptional job at creating environmentally sustainable communities and infrastructure, or there is a rare species of plant or animal, or habitat, whose survival is endangered. Families, including children as young as 5 years old, participate in various service activities and explore local culture and recreation. **Leaders** will develop programming for specific age groups in order to engage all levels of intellectual capacity; adults will have the opportunity to hear lectures and conduct experiments with experts in the field, and children will discover the joy of understanding how ecosystems work through hands-on projects.

NSI Scouts are the youngest age groups of children who participate in an outdoor leadership and science program that teaches them the basics of ecology, how climate works, how pollution affects the environment, and how to recreationally appreciate natural environments. The **Scouts** range in age from 8 to 14, with age groups separated by 2 year intervals. They conduct community service tasks and simple science experiments in the field while performing a variety of fun outdoor activities, such as fishing, boating, hiking, and camping.

NSI Explorers is the teenaged version of **NSI Scouts**, with ages ranging from 14 to 18. **Explorers** get involved more deeply with the science behind ecological processes, design their own community service projects, as well as experience more challenging outdoor recreation, such as snow-camping, snowshoeing, and multi-day backpacking trips.

NSI Corps is a service-oriented program that connects adults of all ages with environmental service opportunities across the globe. Interested individuals can find a database of international opportunities and apply on the **NSI Corps** website by specifying the areas of work they are interested in—areas such as trail maintenance, ecosystem restoration, urban planning, environmental education, activism, sustainable farming, appropriate technologies, etc.—and the countries they would prefer. The Programs Desk has a dedicated staff that utilizes a powerful database to review applicants and match them up with available opportunities. International governments work closely with local NSI offices and participating organizations to determine the financial, education, and professional benefits that each **NSI Corps** volunteer will obtain. **NSI Corps** members serve for 1-2 years at a time.

NSI Generations is a localized adult ecology and environmental service program. Welcoming adults of all ages, these groups of 10-12 people meet weekly to perform various activities, including trail maintenance, beach clean-ups, species analysis and collection, pollution testing, etc.
here, system elements

O

NSI Leaders Program, *continued*

Fulfilled functions:

19. Disseminate knowledge
22. Engage students
26. Recruit People
27. Synthesize ideas
29. Present mission and research
31. Describe needs
33. Foster continuous relationship
37. Export ideas/information
39. Share information
40. Teach courses at partner institutions
42. Collect data
43. Process data
44. Determine condition
88. Choose environment
91. Gather data
92. Gather sample
93. Record data
94. Preserve sample
95. Organize data
96. Travel to site
110. Evaluate information
118. Set strategy
119. Communicate strategy
125. Emergency support
126. Counseling
127. Training
128. Identify complementary research activities
149. Identify issues
155. Set standards
156. Establish goals
157. Enforce standards
159. Convey NSI rules
161. Distribute literature
166. Conduct classes
167. Offer activities
169. Stimulate interest
170. Link facilities
177. Present NSI values
186. Recruit
189. Evaluate programs
191. Develop new techniques
193. Design new strategies
194. Create media
195. Maintain website
197. Publish

Associated Design Factors:

17. Costly Outreach
18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
27. Public Support
28. Students don't care
55. NSI values are misunderstood
68. Don't have the human resources to set up the operation

Subset Elements:

NSI Scouts
NSI Explorers
NSI Corps
NSI Generations
Certificate
Leader Course Pack

Related Elements:

Environmental Action Initiative
Event Planning Office
Community Liaisons

O

Policy Desk

Works on behalf of the Natural Systems Institute to influence the government to ensure that an ecosystems approach is incorporated into governmental policy on all levels.

Properties:

1. Full time research and lobbying staff
2. Washington D.C. office, K street
3. Interdisciplinary staff of policy makers, scientists and lobbyists

Features:

1. Policy Tracking: Monitors the state of current and proposed governmental regulations
2. Policy Advising: Delivers pertinent scientific, policy and public opinion research to stakeholders.
3. Policy Engagement: Interacting with the significant participants in the policy planning process

O

Policy Desk, *continued*

After months of lobbying the Senate Environment and Public Works Committee, the* Policy Desk *has finally gotten Dr. Stephen Price in front of the committee to talk about global warming and the its effects on the US economy. The* Policy Desk *had spent the last year and a half* Policy Tracking *existing particulate matter and ozone air quality standards as it the debate wound its way among subcommittees before reaching the main committee. As a witness to the Senate on the matter, Dr. Price was* Policy Advising *on behalf of the NSI with the hope of creating a greater role for the organization during the* Policy Engagement *process. With him Dr. Price had brought a number of pieces of evidence showing that improvement in air quality standards in major metropolitan areas would have a beneficial effect not only on the environment as a whole, but on public health as well.

The Natural Systems Institute recognizes that a shift in the way ecosystems are used, studied and managed cannot be accomplished without the aid of government. As a result it has a special desk within the **Office of Communications** focused exclusively on public officials and policy issues.

The **Policy Desk** works on behalf of the NSI to influence the government to ensure that an ecosystems approach is incorporated into governmental policy on all levels. As the NSI is at its heart a scientific advocacy organization, it seeks to influence policy through research and and activism. As a result, it is a registered lobbying group.

The **Policy Desk** has three primary responsibilities:

- **Policy Tracking**: Monitoring the state of current and proposed governmental regulations that affect the environment. This also includes monitoring the enforcement of current legislation.
- **Policy Advising**: Contributing to public debate about current and proposed environmental regulation. Includes delivering pertinent scientific, policy and public opinion research to stakeholders.
- **Policy Engagement**: Interacting with the significant participants in the policy planning process, from elected and appointed officials to interest groups. Cultivating these relationships is designed to ensure that NSI's voice is heard.

The **Policy Desk** is separated from the **Marketing** and **Public Relations** desks due to the differing missions of each of the three groups. The **Marketing and Public Relations Desks** are focused on public opinion, while the **Policy Desk** is tasked with promoting the mission of NSI exclusively among policy makers.

O

Policy Desk, *continued*

Fulfilled functions:

19. Disseminate knowledge
20. Engage policy makers
28. Identify organizations and people
29. Present mission and research

Associated Design Factors:

18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
24. Language barrier
25. Partners do not align with NSI
27. Public Support
28. Students don't care
29. Target Audience
32. Message unclear to audience
55. NSI values are misunderstood

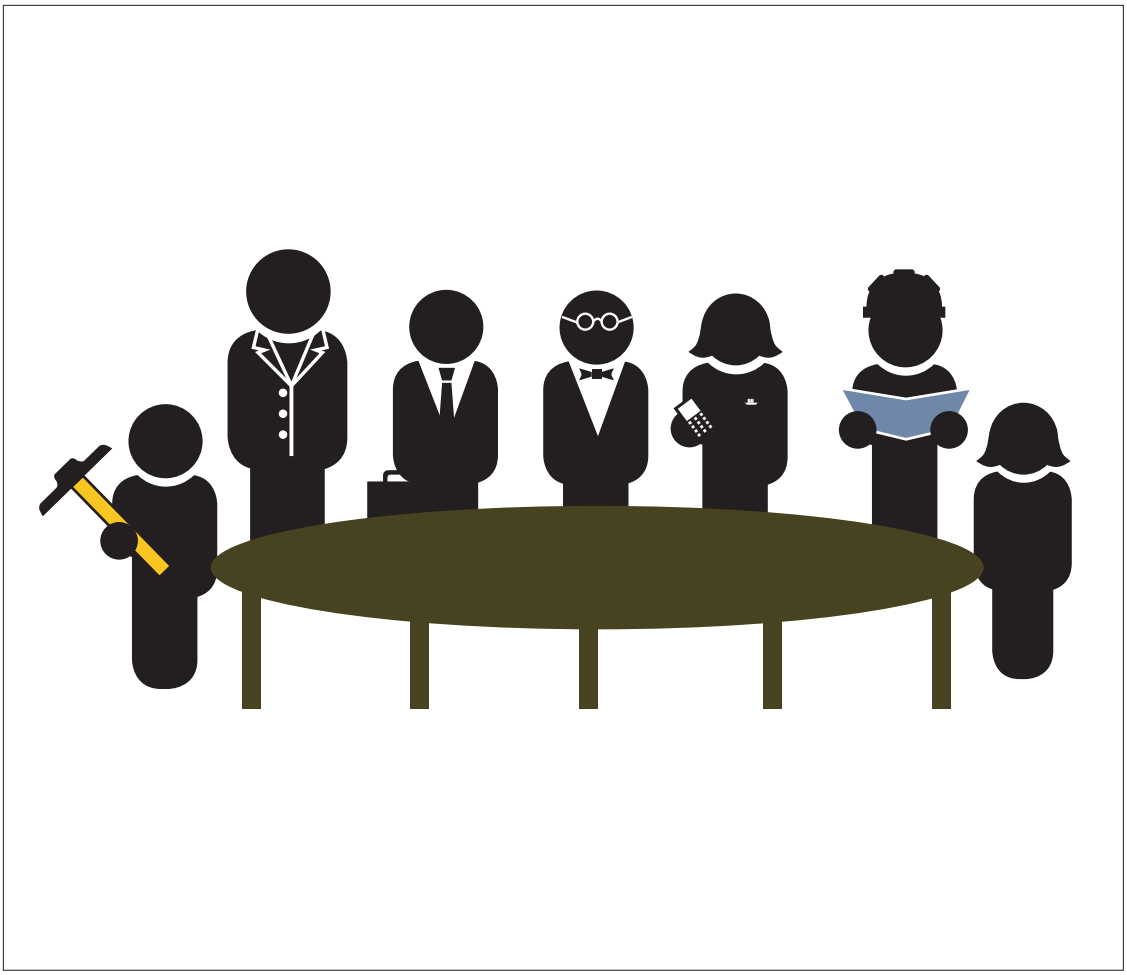
Related Elements:

Office of Donor Relations
Office of Event Planning
Marketing Desk
Public Relations Desk

O

Strategy Roundtable

Similar to the way an executive board works in a corporation, the Strategy Roundtable is charged with steering the NSI. It sets goals and standards for both the management and science components of the organization.



Properties:

1. Regularly meeting group
2. NSI Charter governs the procedures and operations of the Strategy Roundtable
3. Composed of the Office and Department heads from throughout the organization

Features:

1. Sets overall strategy for NSI across all departments
2. Plans execution of NSI organizations strategy
3. Allocates funding for NSI operations
4. Analyzes fund expenditures for operations
5. Allocates capital resources of NSI operations
6. Sets standards and goals for projects.

O

Strategy Roundtable, *continued*

When Jan was doing his post-graduate research in marine biology, the* NSI Headquarters *commissioned him to study andromous fish species in and around Washington state. Since the previous year he had done significant research on the catadromous eels of the genus Anguilla, he was chosen to be the leader of the research team in Washington. This entailed weekly meetings with the local NSI branch in Olympia, where he presented his findings, problems, and intended plan for the week via conference call with the* Strategy Roundtable*. He also received feedback from the participating members of each meeting, especially how his project should proceed based on past projects, concurrent sister projects, and the vision of the future.

Based on Jan's outstanding research and valuable results, the NSI has based subsequent projects on this work and often consults him regarding migratory fish species.

The **Strategy Roundtable** is an interdisciplinary management body that steers the strategic direction of the NSI's operations. Composed of representatives from all the operational subunits of the Natural Systems Institute, the **Strategy Roundtable** reflects the Institute's commitment to holistic methods. Each Office and Department head has a seat at the table and corresponding responsibilities.

The **Strategy Roundtable** is responsible for the overall steering of the NSI. In this capacity, it oversees both the management of the Institute as well as its science operations. It sets overall goals for the organization and the standards by which the achievement of those goals will be measured. The roles and responsibilities of the **Strategy Roundtable** are laid out in the group's charter and are incorporated into the bylaws of the NSI.

Additionally, the **Strategy Roundtable** is responsible for:

- Policy planning: Rules and regulations for NSI operations.
- Funding and Capital Allocation: Budget and capital management for all parts of the organization
- Training Oversight: Ensuring that all NSI employees are properly trained to execute their responsibilities
- Set Standards: Establish benchmarks for organizational and group performance
- Establish Goals: Goal setting for each group within the organization

O

Strategy Roundtable, *continued*

Fulfilled functions:

4. Create policies
6. Allocate funding
7. Allocate capital
10. Training
40. Set Standards
41. Establish goals

Associated Design Factors:

4. Lack of means to apply definition in organization
16. Conflicting Agendas
23. Interdepartmental relationships
58. Inefficient integration
59. Inability to establish desired outcomes
60. Conflicting competencies

O

Office of Event Planning

A major department within the NSI that is responsible for planning community events in order to promote greater understanding and appreciation for the natural environment.

Properties:

1. A department within the NSI
2. A group of enthusiastic, creative, proactive and organized individuals
3. A collection of sub-committees

Features:

1. Plans major environment-related events
2. Organizes and oversees the **International Film Festival** every year
3. Encompasses the NSI **Street Team**, which runs community environmental competitions
4. Works with the **Office of Donor Relations** to raise money to fund events

O

Office of Event Planning, *NSI International Film Festival*

A film festival that showcases various genres of film that all tell stories about some pressing and timely environmental issue.

Properties:

1. A showcase for the world's best films relating to environmental issues
2. A celebration of visual arts and sustainable crafts and food
3. A juried competition with several winning categories

Features:

1. Informs audience members about environmental issues while entertaining them
2. Exposes audience members to alternative product and food options that are environmentally sustainable

O

Office of Event Planning, *NSI International Film Festival*

When Candace Brooks attended the* NSI International Film Festival *in Beijing last year, she was amazed by the breadth of the event. Not only were the films varied in genera and length, attracting movie-goers of all ages and interests, but there were also numerous street fairs to explore in between film premiers and sightseeing. Her favorite was the* Sustainable Food Celebration*, a program that included a line of street vendors selling farm-fresh produce and prepared food—very much like a local farmer's market—and promotions for restaurants all over Beijing that used local and sustainably-farmed ingredients. Candace loved that she didn't have to really think about what she was eating, because she could trust that everything had been produced with the utmost care and respect for the environment. For the first time, she actually enjoyed the taste and texture of tofu when she tried it at a particular street vendor's stall, where they had just processed their organic soy beans into milk and then tofu earlier that same morning, and cooked it in a spicy bean sauce with fresh bamboo shoots.

Her favorite movie was "After the Sea," a fictional tale about a young girl in Thailand who rallied her village leaders to protect the dwindling Byrd's whale population by finding alternative professions for the numerous fishermen who make their living catching these prized animals. The young girl becomes friends with the whale leader after almost being killed by the ocean and eventually goes back to the sea to live with the clan.

Held in a different major metropolitan area in September of each year, the goal of the **NSI International Film Festival** is to educate the public and promote awareness about NSI-related issues while providing a fun and entertaining atmosphere for attendees. The **Film Festival Committee's** sole task is to make each year's film festival experience as rich as possible given the all of the cultural and socioeconomic qualities of the host city. They receive and review hundreds of submissions each year and must pick the best 50 films to show at the 12-day festival. They invite the jury members that will eventually choose the winners in each of 6 festival categories: Grand Prize, Best Documentary, Best Feature Length Film, Best Oceans Awareness Film, Best Land Awareness Film, and Best Sky Awareness Film. They are also responsible for organizing and scheduling question-and-answer sessions with the filmmakers, as well as setting up the **Environmental Photography Exhibit**, **Green Products and Crafts Fair** and the **Sustainable Food Celebration**.

The **Environmental Photography Exhibit** will be organized and curated by the **Film Festival Committee** in conjunction with a major art organization in the country hosting the film festival. The exhibit will display the work of local photographers and could highlight any number of aspects about the environment--the beauty of the natural world, flora or fauna, or the ways in which society is changing or destroying this environment. The **Green Products and Crafts Fair** will feature international and local vendors and craftspeople that make sustainable products. Examples of some appropriate commercial vendors include Patagonia, Teko Socks, New Leaf paper, Camper shoes, etc. They will sell their wares while educating

O

Office of Event Planning, *NSI International Film Festival*

shoppers about the benefits of buying green. The **Sustainable Food Celebration** is a showcase of food produced by local farms and diaries in a way that sustains the health of the land, animals and people. Restaurants and cafes that buy ingredients from these suppliers will be advertised on film festival media; many may be sponsors of the festival. These same restaurants will also set up tents in a closed-off area of a downtown street for 3 days of the festival, to vend their specialties to passerbys.

The logistics of the **International Film Festival** will resemble that of existing film festivals. Funding will come from the **Office of Donor Relations**, and local groups and organizations will provide additional support on the ground. Specific outdoor and performance companies, such as National Geographic, Patagonia, Timex, etc., will sponsor various portions of the festival. The application process will resemble the typical submission process for existing film festivals—the NSI will set up a website for submissions instructions and online payments. There will be no budget restrictions and low-budget films will be explicitly encouraged to submit.

O

Office of Event Planning, *Nature Cup*

A community competition to devise environmentally progressive solutions to everyday problems.

Properties:

1. An NSI-issued challenge to the community
2. A competition between neighborhoods

Features:

1. Utilizes group creativity to come up with innovative solutions
2. Fosters community teamwork
3. Empowers the public to improve the world around them

O

Office of Event Planning, *Nature Cup*

While in China, Candace heard a presentation at the* International Film Festival *by community leaders in the outskirts of Beijing, who, as a result of a difficult and inspiring* Nature Cup *challenge, were able to come up with an ingenious way to improve the air quality in their neighborhood and reduce overall air pollution. The Chinese government commended these community leaders for their creativity and perseverance, and vowed to test and implement the new technique throughout neighborhoods in Beijing. Candace had never heard of the* Street Team *before, but she made a mental note to go back and learn about the English* Street Teams *and which neighborhoods they had already worked with in the country.

The **Nature Cup** is a friendly neighborhood competition intended to educate communities about sustainability and challenge them to create ways to reduce, reuse, and recycle, and establish cradle-to-cradle product systems. The **Street Team** designs and organizes these competitions all over the country and, eventually, the world. For example, the **Street Team** might challenge a couple or few neighborhoods to find the best way to reduce the amount of waste they send to the dump on a weekly basis. Neighborhood leaders would rally families to come up with creative solutions and the **Street Team** would help provide whatever support and resources they might need. The incentive could be an improvement to the neighborhood that everyone would benefit from, such as installation of solar panels on every roof to reduce energy bills throughout the neighborhood.

The **Street Team** is a multi-disciplinary group of enthusiastic individuals who are passionate about teaching the public how to save the world one step at a time. Team members have experience organizing and motivating people, designing appropriate and creative challenges, and possess inexhaustible patience for interacting with competition participants.

O

Event Planning Office, *continued*

Fulfilled functions:

1. Host events
2. Advertise Institute
3. Host seminars
8. Host people
9. Identify Audiences
10. Develop stories
11. Generate media coverage
13. Host static exhibits
15. Publish articles
23. Coordinate local projects
24. Coordinate global projects
28. Identify organizations & people
29. Present mission & research
33. Foster continuous relationship
35. Identify needs
37. Export ideas/information
39. Share information
63. Communicate findings
72. Identify opportunities
73. Understand opportunity dynamics
74. Formulate plan
75. Test plan
76. Adjust plan
77. Execute plan
82. Define problem
88. Choose environment
96. Travel to site
111. Define issue
112. Describe issue
117. Make problem known
126. Counseling
149. Identify issues
158. Convey NSI images
161. Distribute literature
163. Direct visitors
167. Offer activities
168. Interpret content
169. Stimulate interest
170. Link facilities
172. Instill values
173. Present NSI image
174. Promote NSI awareness
175. Advertise NSI experience
177. Present NSI values
194. Create media
196. Create exhibits
197. Publish

Associated Design Factors:

18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
24. Language barrier
27. Public Support
28. Students don't care
29. Target Audience
32. Message unclear to audience
52. Conditions are unknown to policymakers
54. Nothing to take away from exhibit
55. NSI values are misunderstood

Subset Elements:

NSI International Film Festival
Environmental Photography Exhibit
Green Products and Crafts Fair
Sustainable Food Celebration
Nature Cup
Street Team

Related Elements:

Leaders Program
NSI Alliance Network
Public Relations Desk
Community Liaisons
Marketing Desk

O

Face of NSI

An engaging, funny, approachable, trustworthy personality who has his/her own show to teach audiences about the earth sciences in an entertaining way.

Properties:

1. A character and personality
2. An educator
3. A friendly interface between the NSI and the public

Features:

1. Travels throughout the world giving guest lectures/shows
2. Engages audiences to get them interested in ecology and the earth sciences
3. Fields questions and provides straightforward answers
4. Is featured on a weekly show (television and/or radio broadcast)

O

Face of NSI, *continued*

Candace Brooks learns from the NSI recruiting website that there is a job opening for the* Face of NSI*. Upon reading more about the job description, she emails her friend Samuel Cragen to apply. Samuel studied ecology in University and has been a Marine Pollution Advisor in London for the last ten years. At night, he works as a stand-up comedian in clubs throughout London. Candace knows that Samuel is as passionate about environmental issues as she is, and has even heard him joke about it in his comedy acts; she thought he would be perfect as the* Face of NSI*.

Already familiar with the work of the Natural Systems Institute, Samuel investigates further what the* Face of NSI *job would entail. From the job description on the website, it sounds like the NSI would give him a great deal of creative freedom to host classes and shows to teach ecology, biology and climatology to the public at a basic level. He spends several weeks brainstorming ideas, filming himself performing and teaching, and filling out the written application form before turning in his application to the* NSI Headquarters*.

The **Face of NSI** is a talented, smart, creative individual who plays the part of an educational personality or mascot for the NSI. Finding the right personality and set of performing skills may require extensive time and effort on the part of the NSI Human Resources Office, so the **Face of NSI** may not be immediately implemented in the first phases of the NSI. Rather, this character should resemble “Bill Nye the Science Guy” in dedication to environmental issues, entertainment and education, and the NSI.

The exact name of the **Face of NSI** will depend on the name of the individual chosen. Regardless, s/he will host a weekly television and radio show that enables local audience members to ask about the things they have always wanted to know about their favorite animals, mountain ranges, lakes, oceans, etc. These shows involve live demonstrations as well as multimedia presentations on the health of the environment. Rather than being a forum for persuasion, the **Face of NSI** show will focus on education and the spread of knowledge. The hope is that, as people become more educated about how their environment works, they will naturally become more aware of how their actions have direct or indirect impacts on ecological processes.

O

Face of NSI, *continued*

Fulfilled functions:

2. Advertise Institute
7. Give interviews
10. Develop stories
11. Generate media coverage
14. Prepare traveling exhibits
15. Publish articles
19. Disseminate knowledge
20. Engage policy-makers
22. Engage students
27. Synthesize ideas
29. Present mission & research
33. Foster continuous relationship
37. Export ideas/information
39. Share information
40. Teach courses at partner institutions
96. Travel to site
111. Define issue
112. Describe issue
117. Make problem known
119. Communicate strategy
158. Convey NSI image
166. Conduct classes
168. Interpret content
169. Stimulate interest
172. Instill values
173. Present NSI image
174. Promote NSI awareness
175. Advertise NSI experience
177. Present NSI values
181. Conduct classes

Associated Design Factors:

18. NSI too esoteric for general audiences
20. How do you know what you don't know?
21. Ill-feeling towards NSI
27. Public Support
28. Students don't care
29. Target Audience
32. Message unclear to audience
55. NSI values are misunderstood

Related Elements:

Office of Communications
Publications
Public Relations Desk

O

Marketing Desk

Responsible for the product, placement and promotion of the NSI brand, from the brand image to the brand experience. In doing so it seeks to equate the Natural Systems Institute with an ecosystems approach to environmental science.

Properties:

1. Full time marketing staff

Features:

1. Manages the NSI's "product", the NSI brand and how it relates to different user groups' end goals.
2. Develops and aligns expectations surrounding the brand experience
3. Through brand management, promotes brand recognition

O

Marketing Desk, *continued*

Even before Jennifer Baoban became an NSI Explorer, she was aware of the NSI as an organization because of their creative marketing techniques. Somehow, they were able to link the idea of "cool" with the practice of ecological conservation. She saw* Community Liaisons *and the Street Team around her neighborhood in their distinctive bright green t-shirts, rallying the community to improve the health of their neighborhoods and parks, getting involved with community projects, and providing support whenever it was needed. Many of these volunteers and employees were enthusiastic young adults whose passion for the environment was hard to resist.

Jennifer was particularly impressed by the attention to branding and design that the NSI placed on its image. The website, the NSI museums and exhibits, and even the* Starter Kits *all spoke to the NSI's commitment to environmental issues through their graphic design and packaging. She compared this with governmental websites and the products and services of many non-governmental organizations that seemed to have been designed with less thought and attention to visual communication. Some of her friends in high school bought and wore NSI-produced t-shirts simply because the designs were considered cool—because of the vintage-looks and the witty messages. Only upon buying them did they discover that these t-shirts were made of 100% organic cotton and printed using low-impact dyes and printing processes.

The NSI **Marketing Desk** is focused on defining the NSI brand and its attendant experiences. In this capacity, its goal is to identify an ecosystems approach to environmental science with the NSI and vice versa.

The **Marketing Desk** contributes to the sum of all points of contact with the NSI brand. It manages the brand image and through this affects the expectations associated with NSI. In practice this extends to working with the **Public Relations Desk** to ensure that all communications, whether explicit or implicit communicate the values and mission of the NSI. The **Marketing Desk's** responsibility extends into other parts of the NSI, including **Donor Relations, Outreach and Education and Event Planning**. It works with each of these departments to promote NSI's ecosystems approach.

O

Marketing Desk, *continued*

Fulfilled functions:

6. Publish Articles
9. Identify Audiences
10. Develop Stories
11. Generate Media Coverage
15. Publish Articles
16. Create Newsletter
17. Create Website
19. Disseminate knowledge
20. Engage policy makers
22. Engage scientists
194. Create media
197. Publish

Associated Design Factors:

18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
24. Language barrier
25. Partners do not align with NSI
27. Public Support
28. Students don't care
29. Target Audience
32. Message unclear to audience
55. NSI values are misunderstood

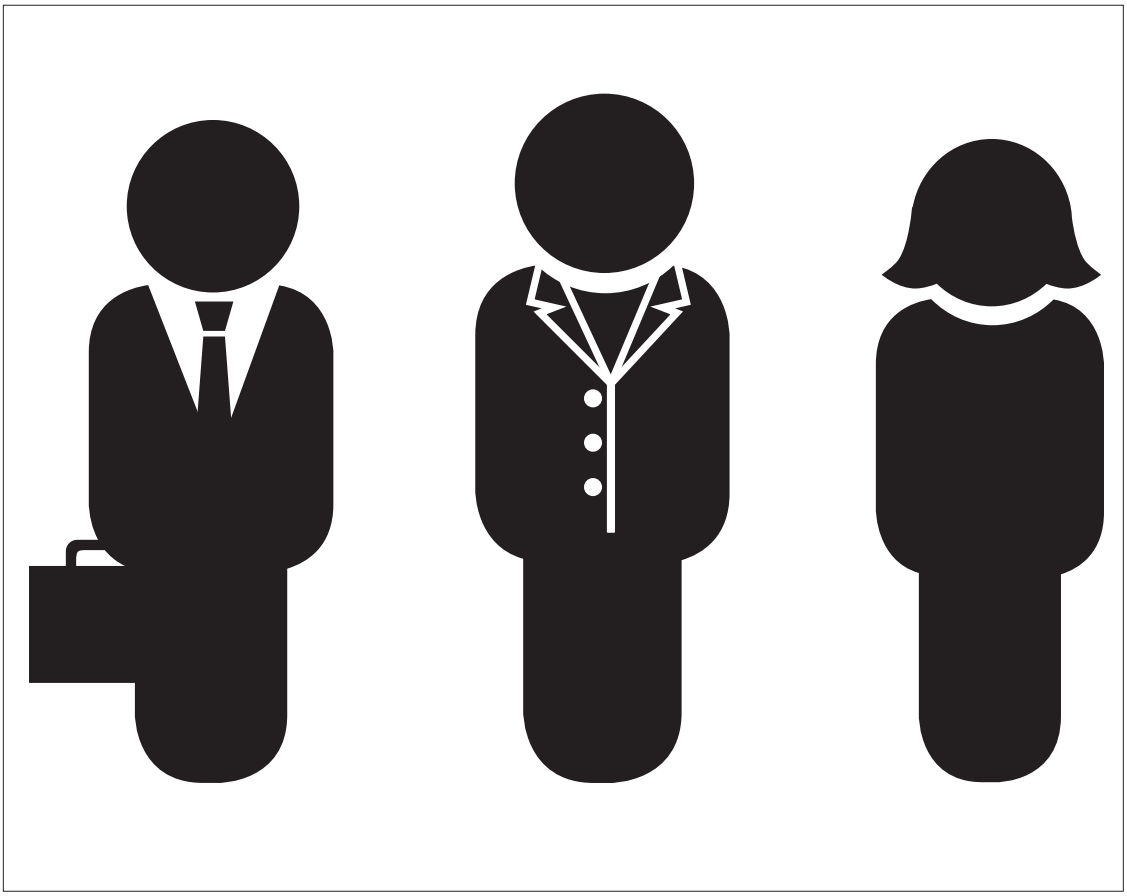
Related Elements:

Office of Donor Relations
Office of Communications
Environmental Action Initiatives
Community Liaisons
Office of Event Planning
NSI Headquarters

O

Office of Communications

Group responsible for communicating the mission, values and scientific research of the NSI to both the public and private spheres. It is charged with public relations, marketing and policy outreach conducted on behalf of the entire organization. It seeks to educate and inform about NSI's ecosystems centric approach to environmental problems.



Properties:

1. Full-time staff of lobbying, marketing and public relations professionals

Features:

1. Plans and holds press conferences and other media-oriented events to disseminate knowledge or information.
2. Develops and aligns expectations surrounding the brand experience
3. Through brand management, promotes brand recognition
4. Policy Monitoring, Advising and Engagement

O

Office of Communications, *continued*

Besides putting out cool t-shirts and marketing schemes, Jennifer Baoban had also seen the* Office of Communications *succeed in the realm of policy-making over the years. In middle school, she did a current events news report on the passing of federal laws that required all automobiles to have zero emissions. This groundbreaking legislation was attributed, in large part, to the research efforts of the NSI that demonstrated how large an effect existing fuel-burning automobiles had on air pollution. The NSI created engaging media campaigns to educate the public about this problem, and the public, in turn, helped to rally federal policy-makers to raise the bar for automobile manufacturers. Jennifer has lately been reading and hearing about an even more ambitious NSI campaign: to convince the federal government to pass a law that would require all domestic manufacturing plants to reduce their emissions to zero as well. She feels that the NSI's* Office of Communication *is influencing policy-making in an effective way—staying moderate, appealing to the sensibilities of the public, and presenting information and materials in as objective a manner as possible.

The **Office of Communications** within the Natural Systems Institute is the professional group charged with building the organization's public identity, informing and educating stakeholder audiences of the NSI's activities and monitoring, advising and engaging the policy making process at all levels of government.

O

Office of Communications, *continued*

Fulfilled functions:

6. Publish Articles
9. Identify Audiences
10. Develop Stories
11. Generate Media Coverage
12. Communicate Benefits
15. Publish Articles
16. Create Newsletter
17. Create Website
19. Disseminate Knowledge
20. Engage policy makers
22. Engage scientists
28. Identify organizations and people
29. Present mission and research
39. Share Information
173. Present NSI image
174. Promote NSI awareness
177. Present NSI values
194. Create media
197. Publish

Associated Design Factors:

18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
24. Language barrier
25. Partners do not align with NSI
27. Public Support
28. Students don't care
29. Target Audience
32. Message unclear to audience
55. NSI values are misunderstood

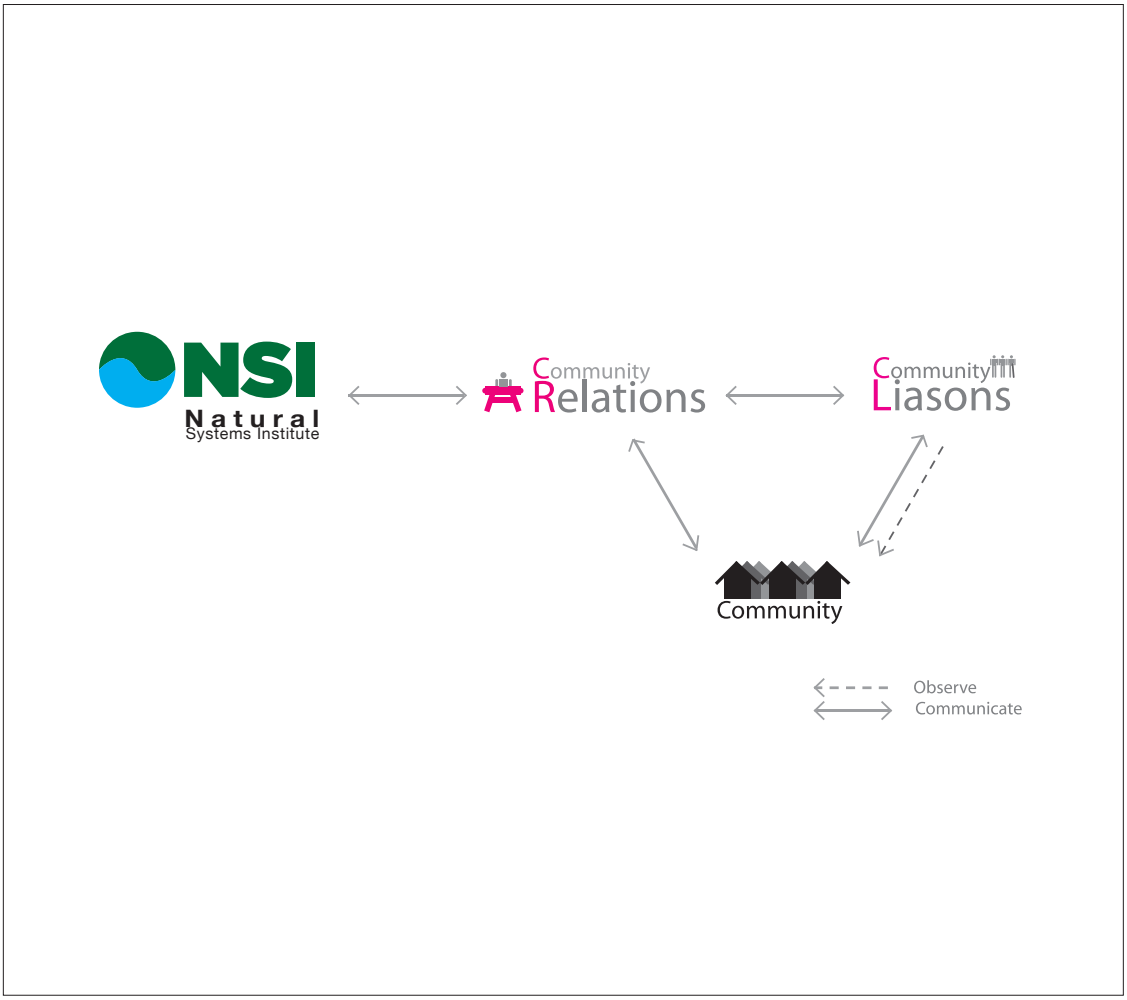
Subset Elements:

Policy Desk
Marketing Desk

O

Community Liaisons

Employees of the NSI who are responsible for connecting the community with the local NSI branch.



Properties:

1. Employee of NSI who works as a coordinator between the NSI and the community
2. Arranges NSI community activities and information sharing

Features:

1. Primary function of position is to bring NSI mission to the community and community issues to the NSI
2. Stimulates community involvement
3. Forces NSI to pay attention to community issues

O

Community Liaisons, *continued*

Jennifer Baoban worked closely with an NSI* Community Liaison *when she started Jersey Shores at her high school. Already familiar with the NSI through her Explorers experience, she met a* Community Liaison *one day when she was volunteering for a Saturday afternoon of neighborhood clean-up organized by the NSI. Jennifer told him her idea of starting up an environmental action group at her school to take care of beach ecology along the shoreline closest to her neighborhood, and the* Community Liaison *supported her project with the promise to provide her with whatever information resources were needed.

Throughout her junior year in high school, Jennifer worked closely with the* Community Liaison *to gather background reading materials on Atlantic coast ecology, as well as plan projects and outings for Jersey Shores that would be fun, educational and productive. The* Community Liaisons *found some* Distributed Volunteer Research *appropriate to the Jersey Shores, and Jennifer's group enthusiastically took up the NSI's charge. At the end of the school year, the Jersey Shores group was invited to the New York NSI office to present what they had been working on all year, and received an award for excellence in ecological conservation. Although Jennifer has since graduated from high school, Jersey Shores remains an important student group and has kept its ties with the NSI.

As community involvement is vital to the NSI's mission in order to spread its message and make a difference in the world, it will have a member of the organization that is solely responsible for connecting with the community. This **Community Liaison** will be the main link between a given community and the local branch of the NSI.

This **Liaison** will be appointed/hired by the NSI, based on their community-building skills as well as backgrounds related to science and ecology. However, if the community is not pleased with the performance of a certain **Liaison**, they will have the power to inform the NSI thusly in order to change personnel.

On the one hand, **Liaisons** will be the "bullhorn" of the NSI to the community, but will also champion of community issues to the NSI. Their primary duty will not be to organize and implement projects, but to coordinate the NSI and the community to ensure involvement.

NSI to community

The **Liaison** will have an office at the NSI which will be their home base. It is here that they will plan projects, maintain blogs and other publications, and perform day-to-day tasks.

They will report to the community relations desk, where they will get input from the NSI about projects to pursue, information to share, and overall strategy. They will receive help in implementing projects in the form of finances, advice, and other logistical matters.

Community to NSI

The **Liaison** will also relay messages from the community back to the NSI. They will be heavily involved in the community,

O

Community Liaisons, *continued*

participating in formal and informal gatherings such as fundraisers, research activities, salons, and town meetings. They should be easily recognizable in the community and maintain an open and favorable view in the minds of the community members. They will not forcefully tell people what to do in their community, but listen and make recommendations. They will not be biased on the NSI side nor the community side, but will hopefully be an impartial messenger and facilitator.

NSI / community projects coordinated by liaisons:
- Salons
- Town meetings
- Research days
- Workshops
- Seminars
- Fundraisers
- Hiring events
- Field trips to NSI
- Clean-up days
- Fun projects
- NSI school
- Voting drives
- Information booths at community events
- Local projects

O

Community Liaisons, *continued*

Fulfilled functions:

12. Communicate benefits
19. Disseminate knowledge
21. Engage scientists
22. Engage students
23. Coordinate local projects
25. Recruit organization
26. Recruit people
29. Present mission & research
33. Foster continuous relationship
36. Import ideas/information
37. Export ideas/information
39. Share information
117. Make problem known
128. Identify complementary research activities
129. Identify complementary competencies
148. Communicate between operations
161. Distribute literature
162. Make advisories
168. Interpret content
169. Stimulate interest
171. Translate information
172. Instill values
173. Present NSI image
174. Promote NSI awareness
175. Advertise NSI experience
177. Present NSI values
178. Show NSI contents
179. Inform of conditions
186. Recruit
189. Evaluate programs
193. Design new strategies

Associated Design Factors:

16. Conflicting agendas
18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
24. Language barrier
27. Public support
28. Students don't care
29. Target audience
32. Message unclear to partners
38. No interested recipient

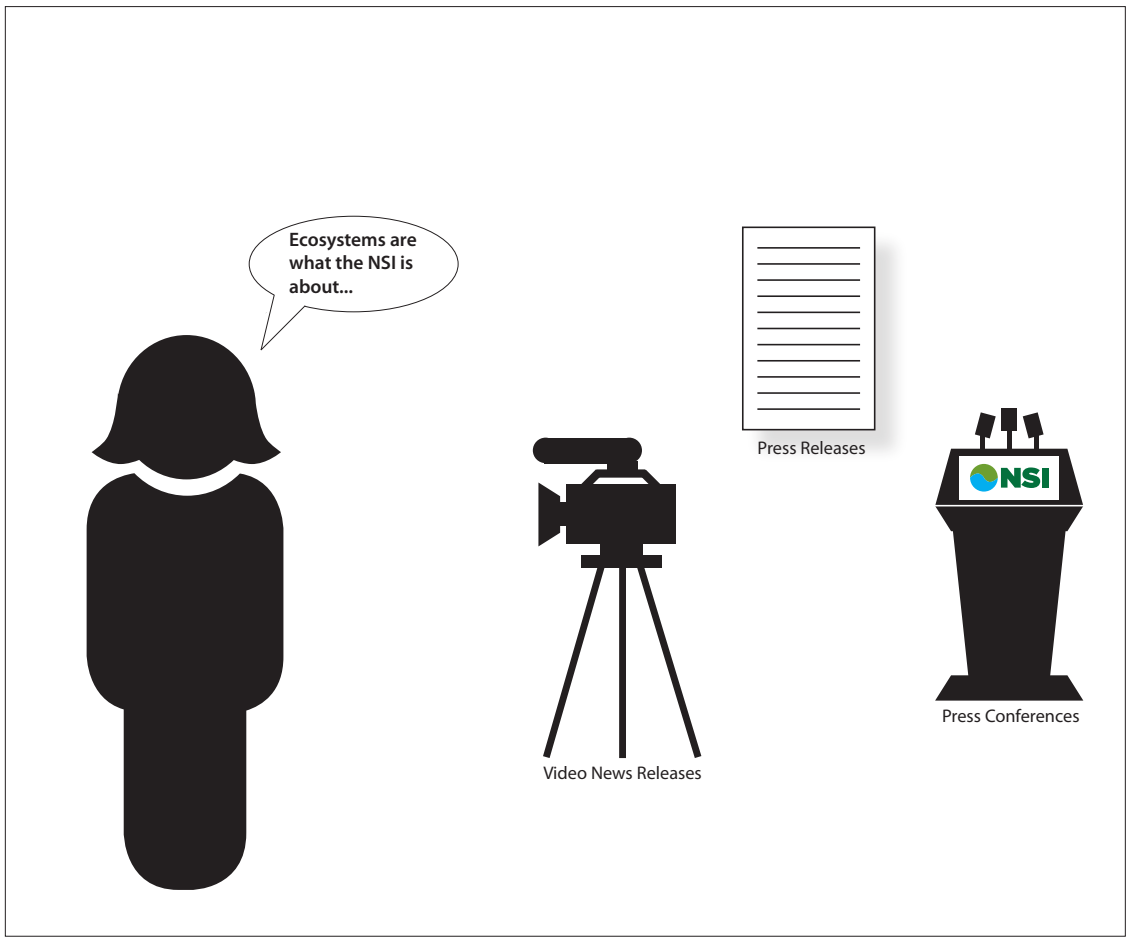
Related Elements:

Micro Grants
Nature Cup

O

Public Relations Desk

Communicates the mission, values and scientific research of the NSI to the public by interacting with media outlets to educate and promote the benefits of an ecosystems-centric approach to environmental problems.



Properties:

1. Organizational unit within the NSI that is dedicated to public relations
2. Supervises all official communications of the NSI

Features:

1. Identifies relevant audiences and tailors messages to them
2. Holds press conferences and other media events to disseminate information.
3. Creates written and broadcast news packages such as press releases, video news releases and audio news releases
4. Trains staff in media relations techniques

O

Public Relations Desk, *continued*

Jan, the marine biologist, was sitting at home last week, listening to NPR while he did some housework. He happened to hear a story about how the NSI will soon start a project in Alaska, centered on how factories are polluting the water and contributing to the demise of salmon near Anchorage. As this is his primary focus in marine biology, he decided to look at the* NSI Website *for more information. Here he was able to access data about past projects dealing with salmon, as well as video and written press releases regarding the upcoming project.

Public Relations is a small unit within the larger **Office of Communications** at the Natural Systems Institute. Its job is to educate the media and by extension the public, about the mission and work of the Natural Systems Institute.

The **Public Relations Desk** works along the traditional lines of mainstream public relations. It spends a significant amount of time on targeting its audience. This is done by keeping abreast of what is happening in the public discussion about the environment and the study thereof as well as who the major contributors to this discussion are. These contributors can be scientists, advocates, policy makers or individual citizens. The **Public Relations Desk** tracks all forms of media, from print and television to radio and Internet. This helps the **PR Desk** keep current with what is going on, but also develop messaging strategies to ensure that what the NSI has to say stands out as distinct and of high quality.

As the **PR Desk** develops media strategies, it puts them into the field by disbursing information through press releases, video news releases and audio news releases. These are sent to audience members that research determines are relevant. **PR Desk** team members cultivate professional relationships with audience to ensure that what the NSI has to say is properly understood. They also maintain their relationships with the media et al so that when the audience has a question, NSI is the first place they go for information.

In addition to targeted news releases, the **PR Desk** also creates prepackaged content pieces for distribution at planned times.

Finally, the **PR Desk** is responsible for training the public faces of the organization, such as the President, CEO and other prominent figures in techniques for handling the media and other enquirers properly.

The **PR Desk** is designed to work closely with the **Marketing Desk**, the **Policy Desk** and the **Office of Event Planning** to ensure that all public communications of the NSI speak with the same coherent voice.

O

Public Relations Desk, *continued*

Fulfilled functions:

9. Identify Audiences
10. Develop Stories
11. Generate Media Coverage
12. Communicate Benefits
19. Disseminate Knowledge
29. Present mission and research
39. Share Information
173. Present NSI image
174. Promote NSI awareness
177. Present NSI values

Associated Design Factors:

18. NSI too esoteric for general audiences
21. Ill-feeling towards NSI
24. Language barrier
25. Partners do not align with NSI
27. Public Support
28. Students don't care
29. Target Audience
32. Message unclear to audience
55. NSI values are misunderstood

Related Elements:

Office of Donor Relations
Office of Event Planning
Policy Desk
Marketing Desk

O

Conclusion

The System Elements are innovative ways that the NSI can make a difference in the world and positive affect environmental issues through science, networking, and community involvement. There are a number of additional, necessary elements of the organization, such as facilities management, hiring practices, and publication of training manuals that are not detailed here in their entirety. The reason for this is that the NSI will borrow existing operational and managerial functionalities from other successful organizations existing organizations. These functionalities will of course be included in the overall structure of the NSI and are detailed in the appendices under the Defining Statements and Solution Elements.

The System Elements discussed here represent the major ways that the NSI will carry out its mission to save the world. The two major divisions illustrate how the principles of the organization will meet the ever-increasing needs of the world's environment and peoples' impact on it. Both are vitally important.

Both branches of the NSI are essentially about gathering information, connecting people who can make valuable contributions to the organization, and packaging it in such a way so as to make it useful for others. Research and operations relies on experts to define issues and create environments where they can share their knowledge with the NSI for each other's mutual benefit. The Management and outreach branch will take the scientific, expert information and research and distribute it to the public in order to generate interest and compel them to aid the NSI, and in doing so help the world's environment.

Appendices

A: Project Charter
B: Defining Statements
C: Function Structure
D: Design Factors
E: Information Structure
F: Sample Working Forms
    2 each of the following:
        Activity Analyses
        Solution Elements
        Means/Ends Analysis
        Ends/Means Analysis
        System Element - Function Matrix
        System Element Relationships
        System Elements