

ESIP Energy and Climate WG: Dynamic Decision Tools Catalog and Community of Practice



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ESIP Energy and Climate WG: Working Team



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White Paper: Dynamic Decision Support Tools Catalog and Community of Practice, http://wiki.esipfed.org/index.php/Energy_and_Climate

ESIP Winter 2012 Energy and Climate Workshop and White Paper: Energy Projects



- Federal agencies, project proponents and NGO concerns regarding site selection
 - Need a framework and methods to assess risks and environmental impacts
- Current state of the Decision Support Tools
 - Lack of transparency (models and data) and other issues
 - Business requirements for a Dynamic decision tools catalog and community of practice
- Proposed framework for ESIP role
 - Engage Academics, Industry, Fed agencies, and NGOs
 - Cross sector understanding of needs
 - Facilitate a community dialog and discussion
 - Maintain decision tools catalog
 - Facilitate partnerships in further tool development

Renewable Energy Projects Site Selection (Solar, Wind, Geothermal)

- Stakeholders
 - Federal agencies and Project proponents
 - Research scientists
 - Infrastructure planners and developers
 - NGOS/Others concerned with environmental and ecological impacts
- Current Concerns
 - Solar energy installations can threaten wildlife and detract from nearby historic buildings
 - Wind turbines can pose threats to wildlife and air traffic, interfere with radar operation near military installations

Key Stakeholder Needs

- Stakeholder Engagement
 - User centered design and stakeholder engagement throughout the project cycle
 - comprehensive and sustainable frameworks and methods for access to actionable information
- Decision Support Tools Transparency and Quality Control
 - Eliminate lack of transparency to varying degree about models used and the underlying data
 - Provide clear documentation and standardized quality control and comparison of models
- Data Access and Exploitation
 - Access to relevant data from disparate data sources with ability to download or transform data
 - E.g., OpenEI applications offer data; but don't allow users to “play” with it
 - Consistent framework for data access and use
 - DOE apps for solar, geothermal, and wind power siting (power generated, federal/state rebates and incentives)
 - Greater institutional commitment from data owners to maintain state of the art platforms and services

Key Stakeholder Needs (Cont'd)

- Interoperability
 - Approach coordinated among agencies and organizations
 - Cross-referencing and interoperability
- Open Source
 - Free redistribution, distribution in source code and compiled format, allow modifications and derived works, technology neutral
 - Many software/tools developed within the government are not open source
 - May be beneficial to publish the application development work to facilitate wider usage.
- Mobile and Social Networking Platforms
 - Access to decision support tools via mobile devices/location awareness
 - A solution in a highly distributable format, e.g., Facebook

Enabling Technologies: Semantic Web

- To assess potential environmental and human impacts requires discovery and effective use of interdisciplinary data, information, and tools
- Can use “semantic aggregators” for gathering information from several different sources
- Enables content “curation”, where in addition to gathering information, the aggregator tool organizes, categorizes and ranks content by relevance
- Semantics web development requires domain expertise, use cases, and a methodology to proceed with knowledge extraction

Enabling Technologies: Drupal

- Open source Web Content Management Framework used to create basic websites to a full feature portal to support an online community
- Widely utilized to create portals within the scientific community to catalog and share science artifacts
- extensive administration and user interface, custom content types, versioning, taxonomy support, search support, a template and theme system
- has been used for document/data/metadata management, and is well suited for community based frameworks. Examples: NASA JPL DAAC, and DOE Bioenergy KDF)

Dynamic Decision Tools Catalog

- A matrix of decision tool functions and features
- Listing of base data layers, their source, and follow on adjustments to the data layer that are component to the decision tool
- Tracking of updates to decision tools
- Keeping a tally of applications of each decision tool
- Contact information for decision tools
- User requirements
- Metadata about the decision tools
- Use cases
- Collaborative environment
- Mapping tools to user applications
- Connecting tools to datasets
- How to better utilize and maximize the value of this tool
- Gap analysis

ESIP Community of Practice

- Fed Agencies, NGOs, Users
 - Provide requirements, current implementations, and feedback
- Tool developers
 - Engage in defining/refining the proposed architecture
 - Develop a classification of the types of functions decision tools may perform
 - Populate the catalog
- Academic and Research Community
 - Innovate to update or create new decision tools that can address unmet user needs
 - Engage in education and awareness

ESIP can facilitate a partnership between developers and users

Project Plan

- Phase 1
 - Prototype by January 2013
 - Sponsorship from AWWI and ESIP
 - ESIP member universities - graduate student interns
- Phase 2
 - Operational system
 - Agency sponsorship
 - Pilots