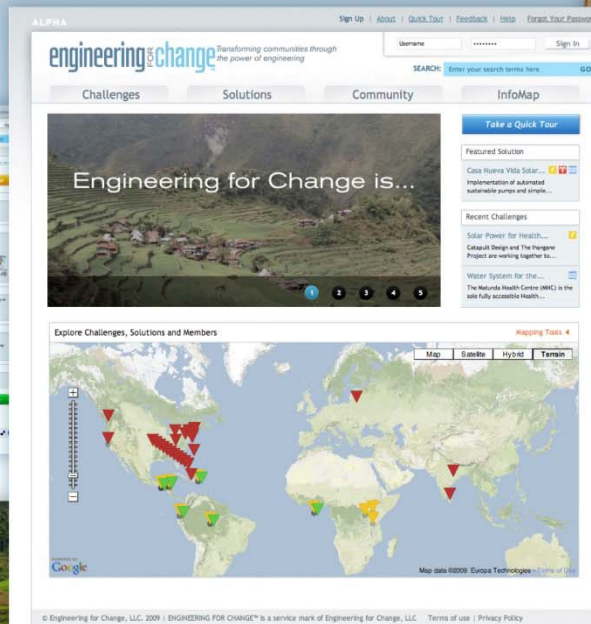


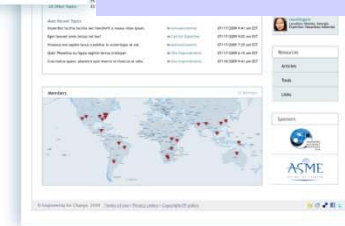
# engineering FOR change

*Transforming communities through  
the power of engineering*



**Sustainable Engineering  
in the Eastern  
Mediterranean**

**Larnaca, Cyprus  
March 2010**



In 2004 Professor CK Prahalad at the University of Michigan published “The Fortune at the Bottom of the Pyramid,” a book that argues the need for market-based approaches to poverty alleviation

This re-frames the picture of global poverty

- Represents a \$5 trillion market
- Aid recipients → consumers, producers, franchisers and distributors
- A thriving informal economy
- Innovation and entrepreneurship is ubiquitous-most of the world's poor work for themselves

Improving the lives of the world's poor invariably involves the full input of engineering.

One inexpensive, effective product or technology has more potential for worldwide impact – to provide clean water, food, shelter, and income – than any other development approach.

## Design Principles

- Develop appropriate solutions, not technologies  
developing “with” rather developing “for”
- Consider the context  
economic, environmental, cultural...
- Make technology transparent  
simple to use, make, maintain... open source
- Design for DIY  
co-creation; build local capacity, skills, knowledge
- Embrace market approaches  
design for extreme affordability; source locally

# 7 Driving Forces Impacting Engineering for the Developing World

## 1 Globalization

The social and economic integration of the world's people and resources, creates new investment in social projects and product markets.



# 7 Driving Forces Impacting Engineering for the Developing World

## 2 Micro-Finance

The exponential rise in non-profit and for-profit micro-lending to entrepreneurs is providing much needed capital to individual entrepreneurs and jumpstarting economic activity.



# 7 Driving Forces Impacting Engineering for the Developing World

## 3 Mobile Phones

BOP markets have experienced a surge over the last ten years in mobile phone adoption, making it the most prevalent Information-Communication Technology device in BoP markets and spurring novel uses for information sharing.



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# 7 Driving Forces Impacting Engineering for the Developing World

## 4 Renewable, Off-Grid Energy

Just as mobile phones leapfrogged the wires, small renewable energy projects are beginning to proliferate, reducing the BOP market's reliance on energy grids and helping the world's poor climb the energy ladder.



## 7 Driving Forces Impacting Engineering for the Developing World

# 5 Social Entrepreneurship

A new class of social entrepreneurs are attracting funding from foundations and corporations to develop market-based solutions to the problems of the world's poor.

## 7 Driving Forces Impacting Engineering for the Developing World

## 6 Corporate Social Responsibility

A majority of the world's largest corporations are now measuring the impact of their business activities on social and environmental issues as part of their performance, and funding products and projects that improve that performance.



# 7 Driving Forces Impacting Engineering for the Developing World

## 7 New Models of Innovation

Open source frameworks first pioneered in the software domain are increasingly being applied to hardware innovation. In addition, businesses are increasingly experimenting with ‘trickle up innovation’-products designed for the crucible of low-cost, low energy, low materials BOP market are being introduced into developed markets at disruptive price points.

# The Need

- Four(4) billion of the world's population lives without basic needs such as clean water, electricity or safe sanitary conditions.
- Engineering professionals are vitally concerned with creating a safer, healthier and more sustainable planet ... yet many have not found the opportunity to engage.
- Barriers to meeting fundamental needs often have to do with ... limited access to technical know-how ... and the inability to share information and collaborate on workable solutions.
- Imagine what could be achieved if organizations or individuals working “on the ground” had easy access to existing solutions and engineers and problem solvers around the world who are capable and willing to collaborate in designing a solution?

Crowd-Sourcing

Visualization Tools

Mobile Tech

Open Source Platform

## Leveraging Technology to Facilitate “Working Together”

Video Tech

Online Collaborative  
Tools

Social Media

Virtual Connectivity

Asset Mapping

# What is Engineering for Change?

Engineering for Change is an online platform that aims to facilitate the discovery, development and implementation of engineering solutions addressing quality of life challenges in under-served communities in the US and around the world.



Designed for engineers, other problem solvers, socially responsible organizations and the local communities, Engineering for Change is a unique online/virtual environment that enhances **connectivity, knowledge-sharing, learning and problem solving** for a humanitarian purpose.

## Engineering for Change: Vision & Solution

- Mobilize engineering professionals, aspiring engineers, engineering associations, academic centers, development agencies and local communities around a common goal of providing sustainable solutions that improve the quality of life in underserved communities.
- Serve as a “network” that brings volunteer engineers across professions together to work as virtual teams with local organizations and communities
- Aggregate content and be an open knowledge source for a range of workable solutions for meeting basic community needs
- Be a resource for developing effective solutions that could be re-purposed in other communities

## Engineering for Change: Vision and Solution (cont'd)

The vision will be attained by:

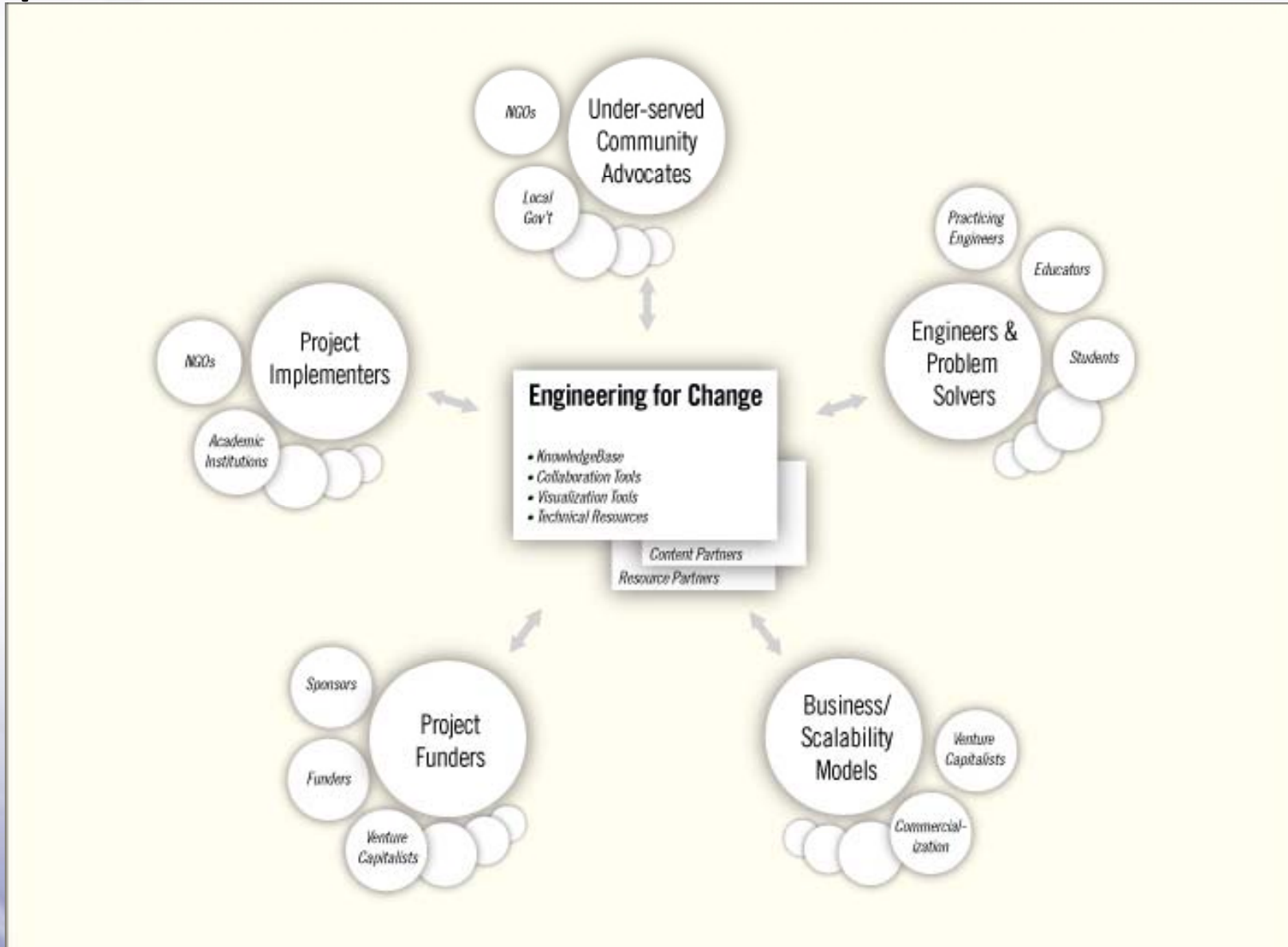
- Offering engineers and others with a compelling, robust and easy-to-access environment for contributing their technical skills and know-how to particular challenges of their interest
- Providing organizations working “on the ground” with an easy-to-access environment for aggregating/harnessing technical skills and intellectual capital around specific quality of life challenges
- Creating a highly networked, scalable and user friendly online environment that incorporates cutting-edge web/mobile technologies for communicating searching, mapping and visualization capacities

# Engineering for Change will allow users to:

- Post challenges and problems
- Post and search the open source knowledgebase for solutions
- Utilize visualization tools to learn even more from the data  
enables users to view country specific data in relation to points of interest (e.g. challenge locations)
- Work collaboratively and virtually with peers  
enables on-site personnel (such as Engineers Without Borders volunteers) and off-site problem solvers to communicate, share content and form virtual teams



# Engineering for Change – Adds Value in the Social Innovation Space



# Important to Form Partnerships/Affiliations in the Social Innovation Space

- **To gain endorsements**
  - Partner organizations to “lend” their credibility through public/visible support, e.g. testimonials, use of trademarks, introductions to influential parties
- **To gain content**
  - Partner organizations to contribute projects and solutions -- and other forms of content, e.g. geographically-based data, articles, white papers, etc...
- **To gain “on the ground” implementation**
  - Partner organizations that have community action provider networks “on the ground” that are capable of implementing solutions
- **To promote awareness**
  - Partner organizations to actively promote and build awareness of Engineering for Change to their constituent groups

# ASME: Role and Involvement with Engineering for Change

- Originated idea/concept for Engineering for Change
- To date, has provided approximately \$1 million in seed funding for research, site development, marketing and legal
- A natural outgrowth and extension of ASME's mission and strategic objectives.
  - Creating a safer, healthier and more sustainable planet
  - Enabling collaboration and knowledge sharing to enable solutions
  - Providing opportunities for the engineering workforce to grow and develop
  - Promoting innovation in the energy arena, the biggest limiter to improving living conditions
- ASME's ability to “change the conversation” around the engineering profession. Creating a safer, healthier and more sustainable planet is a natural extension of the engineering profession– **Engineering for Change** will demonstrate that!
- ASME recognizes that success will depend on support and engagement of engineers from all disciplines

## Keys to Gaining Adoption of Engineering for Change

- Developing a pool of engineers from all disciplines willing to volunteer their skills
- Establishing partnerships and affiliations with NGO organizations, funders and engineering networks
  - NGOs that have direct service capacity in helping people and communities implement real quality of life improvements
  - Academic centers, social entrepreneurs, financial sponsors and organizations with a vested interest in social and economic development
- Aggregating workable solutions to a range of basic needs.
  - Many solutions to community basic needs already exist. The issue is that the information has not been aggregated in an easy to use searchable database

# Measures of Success

## Engagement Measures

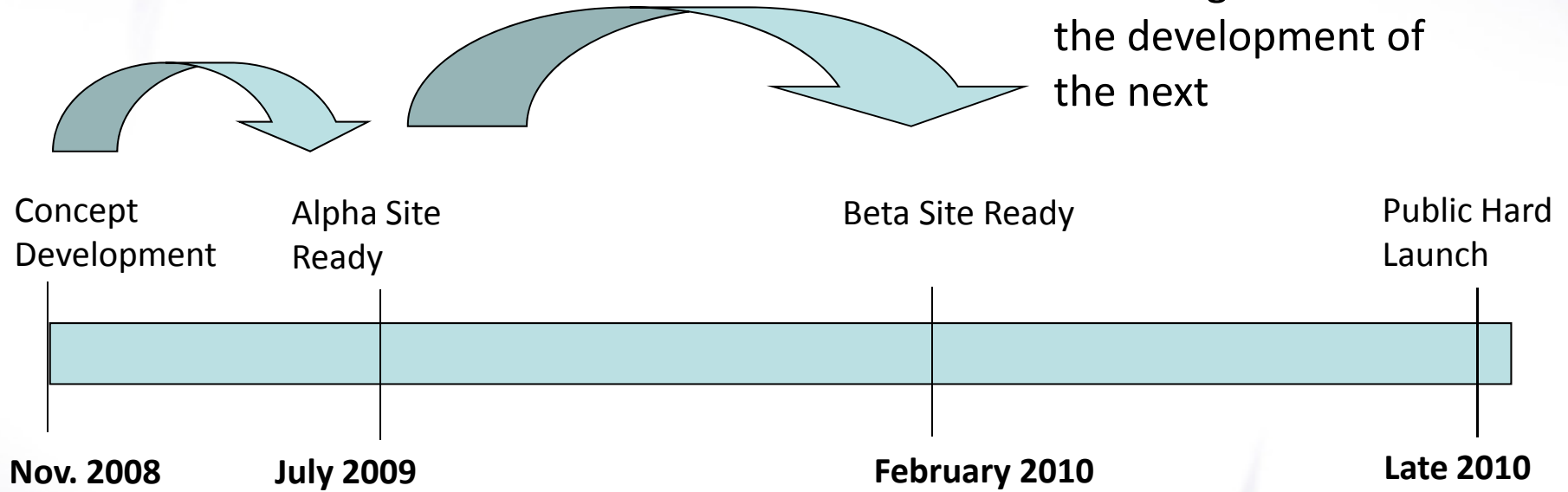
- Number of registered users – engineers, partners and communities
- Number of “active” users
- Number of challenges (projects) registered
- Number of partner NGOs utilizing Engineering for Change
- Number or quality of endorsements – from engineers, funders, NGOs, etc.
- Diversity of users (i.e. geographic, discipline, age, engineer vs. non-engineer, corporate vs. academic)

## Outcome Measures

- Successfully completed/implemented solutions that transform communities
- Number of people served and impacted
- Improved well-being of individuals in under-served communities
- Acceptance and application of retooled, repurposed and replicated solutions in other communities
- Impact on attitudes towards the role and value of the engineering profession in society

# Site Development Schedule

Each stage informs the development of the next



Scope of site functionality increases

# Interim Site

- Used to generate a community of followers
- Highlights what engineers are doing in this space
- Provide updates on the development of E4C
- Follow us on twitter, facebook, youtube and flickr
- RSS feeds for news stories

engineering FOR change™ interim site

Transforming communities through the power of engineering

subscribe to RSS

HOME ABOUT FAQ BLOG PARTNERS & SPONSORS CONTACT

Engineers Making a Difference. Engineering for Change is an online environment bringing together engineers and other problem solvers with NGOs and local communities to address basic quality of life issues such as access to clean water, electricity and proper sanitation. [Learn more >>](#)

Learn how engineers and local communities can come together to develop solutions to humanitarian challenges >

Full Launch in 2010  
In early 2010, we will launch the fully operational Engineering...  
[Read more >>](#)

Cheap, Creative and Accessible to Everyone: Inventors Show and Tell Their Ideas at Maker Faire Africa  
For two days in August, inventors, artists, builders, and community...  
[Read more >>](#)

News and Updates

[Cheap, Creative and Accessible to Everyone: Inventors Show and Tell Their Ideas at Maker Faire Africa](#)  
October 16, 2009

[Alpha Site Status Update](#)  
September 24, 2009

[Featured Member](#)  
August 17, 2009

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## Who's on Board?

- EWB-USA
- EWB-I
- IEEE
- ASCE
- AICHE
- UEF
- Autodesk
- In talks with Boeing, Caterpillar Foundation and others

# Be a Part of Engineering for Change

## How You Benefit:

- Be part of the “Early Adopter Community” and influence E4C’s future development
- Let others know what you’re doing! Be highlighted in our Blog
- Manage your projects through E4C
- Leverage crowd-sourcing and social media to meet your challenge needs
- Communicate, connect and have access to a network of key players/contacts in the development space
- Use geographically based data to contextualize the challenges/solutions

# Be a Part of Engineering for Change

## What you contribute:

- Post your projects on E4C
- Get your team mates registered and manage your projects on E4C
- Post challenges/needs
- Help us identify local partners/resources in your region
- Let us know what features/information you'd like to see on E4C
- Help us tell your success stories through the E4C Blog/Newsletter
- Use E4C to continue the conversation beyond this conference!
- Engage others and serve as local champions– develop an E4C task force to do this?

## Discussion Items:

**What can you commit to today?**

**Can we articulate identifiable targets?**

## Contact Information

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Beta site: <http://beta.engineeringforchange.org>

Sign up for updates on [engineeringforchange.org](http://engineeringforchange.org).