



Humanitarian Engineering **CHALLENGES**
bridging the
global divide

**with sustainable and
collaborative solutions**

Mark Henderson, Director, GlobalResolve

FRESHMAN (2013/2014)

Revised 7/25/12

Intro to Engineering Design I EGR 101 (3)	Calculus for Engineers I MAT 265 (3)	First-Year Composition ENG 101 (3)	General Chemistry I (or Science Elective) CHM 113 (4)	Success in Tech & Innov CTI 101 (1)	= 14 CH
Intro to Engineering Design II EGR 102 (3)	Calculus for Engineers II MAT 266 (3)	First-Year Composition ENG 102 (3)	University Physics I: Mechanics PHY 121 (3)	Critical Inquiry in Engineering (L) EGR 104 (3)	= 15 CH

SOPHOMORE (2014/2015)

Fall Multi-disciplinary Project EGR 201 (3)	Engineering Fundamentals I (3)	Engineering Materials & Mfg (3)	Engineering Statistics EGR 280 (3)	Calculus for Engineers III MAT 267 (3)	= 15 CH
Spring Multi-disciplinary Project EGR 202 (3)	Engineering Fundamentals II (3)	Compute Modeling (3)	Modern Differential Equations MAT 274 or 275 (3)	History of Engineering HST 318 (3)	= 15 CH

JUNIOR (2015/2016)

Fall Concentration Project (3)	Concentration (3)	Sci Elective (or Chem 113) BIO 187, CHM 116, GLG 101/3, PHY 131/2 (4)	General Studies (HU/SB) (3)	Secondary Focus Area (3)	= 16 CH
Spring Concentration Project (3)	Concentration (3)	Linear Algebra MAT 343 (3)	General Studies (HU/SB) (3)	Secondary Focus Area (3)	= 15 CH

SENIOR (2016/2017)

Capstone Project I (L) EGR 401 (3)	Concentration (3)	Concentration Math or Science (3)	General Studies (HU/SB) (3)	Secondary Focus Area (upper div) (3)	= 15 CH
Capstone Project II EGR 402 (3)	Concentration (3)	Concentration (3)	General Studies (upper div) (HU/SB) (3)	Secondary Focus Area (upper div) (3)	= 15 CH

Concentrations:
 Curriculum
 mechanical
 electrical
 robotics
 automotive
 manufacturing
 humanitarian



GlobalResolve

Resolving Problems in the Developing World

1. Co-Create Quality of Life Solutions in the Developing World
2. Incubate and Scale Solutions for Economic Impact
3. Empower Students

2014-15
 200 students
 40 projects
 10 countries



Project	Community Location
Biochar agriculture improvement	Peru
Solar PV micro-grid	Ghana
River-powered washing machine	Ghana
Water filter	India
Solar cargo bike	Ghana
Fish smoker redesign	Ghana
Water wheel transportation	India
Low cost housing	Bolivia
Greenhouse construction	Peru
Bike Smoothie	Mexico
Drip Irrigation	Nicaragua
.. and others	



The GlobalResolve Methodology

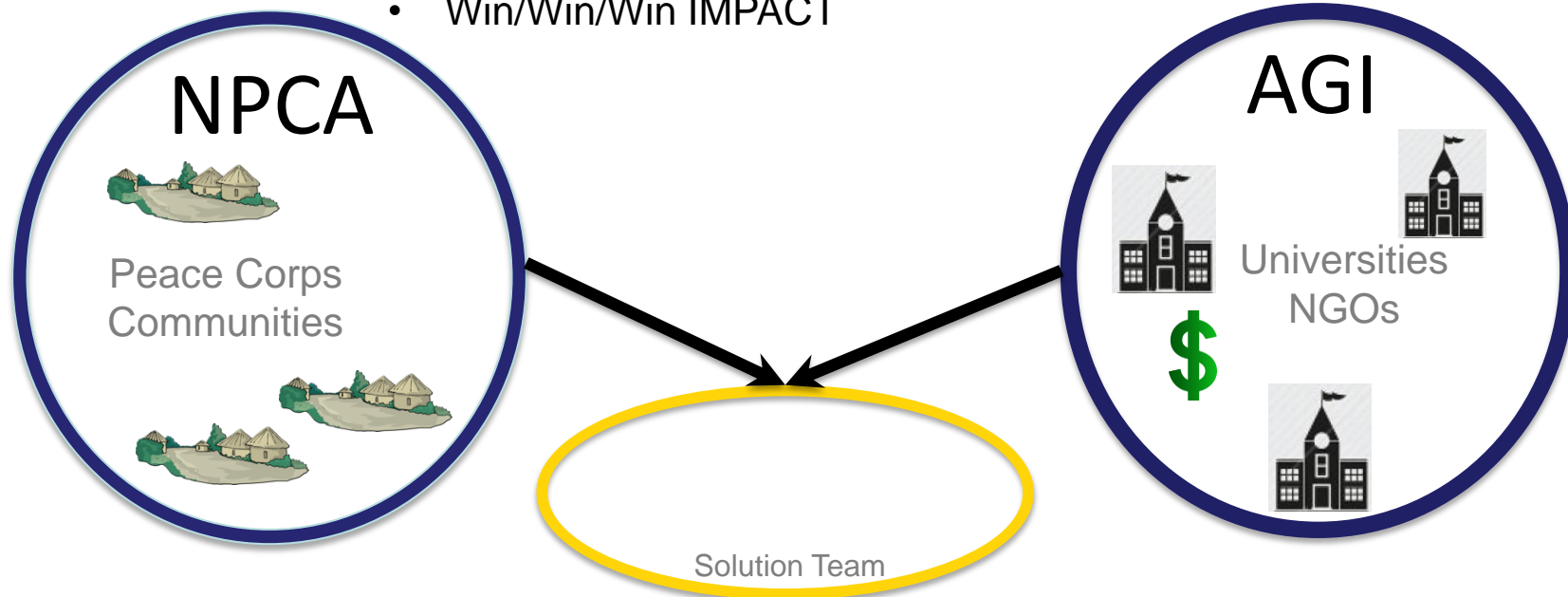
- Define a Problem
 - CHALLENGES: Language, Communication, Trust**
 - Work with the Community in Need
- Create a Team
 - CHALLENGES: Cost, Diverse Disciplines**
 - Students, faculty, researchers, community, NGOs, others
 - Sometimes we travel; sometimes not
- Co-Create a Solution
 - CHALLENGES: Time, Culture, Local Experts**
 - Project in collaboration with the community
- Implement the Solution
 - CHALLENGES: Cost, Long-term Sustainability**
 - Long-term commitment

OUR SOLUTIONS

- **PARALLEL PROJECT COURSES**
 - Gives diverse mixed pool, 2 parallel project courses, same time, same place, different prerequisites
- **CERTIFICATE IN HUMANITARIAN ENGINEERING**
 - Attracts more and diverse students
- **PARTNERING**
 - NGOs and host Universities connect locally

DEVELOPING THE ALLIANCE FOR GLOBAL IMPACT (AGI) WITH THE NATIONAL PEACE CORPS ASSOCIATION (NPCA)

- Provide a Solutions service to NPCA with Member Universities to create Solution Teams
- AGI Headquartered at ASU Polytech School
- Win/Win/Win IMPACT



Roll out date is subject to funding

GlobalResolve

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ASU IRA A. FULTON SCHOOLS OF
engineering
ARIZONA STATE UNIVERSITY