BIG BEACON MANIFESTO

People of Earth...

We live on a planet of nearly 7 billion people, and the growing impacts of technology on our lives—both positive and negative—become more obvious with each passing year. Powerful forces have been unleashed that are changing the way we communicate, the way we learn, the way we think, and how and where we work.

Concern about the consequences and sustainability of our old-school style problem-solving approaches is rising.

In the coming years,

much of the excitement of finding ways to help others and make a difference will come from

(one)

the mastery and marshalling of technology in service to people through new products, new services, new markets, new institutions, new situations, new places

plus

(two)

doing so with a heightened sensitivity to and understanding of human values, intentions, behaviors, and consequences.

These opportunities are everywhere around us.

They appeal to a broad spectrum of the curious, the adventurous, and the public-spirited of the next generation. They excite the next Steve Jobs and Max Levchin, the next great tech entrepreneur. They appeal to the next Bill Drayton and Emily Pilloton, the next impactful social entrepreneur.

These opportunities resonate with those who would join Engineers Without Borders, for example, to bring reliable clean water supplies to villages in Central Africa.

They energize those who desire to create the next app, gizmo, process or system that we simply cannot live without.

These aspirations are authentic and meaningful, and many would like to pursue them.

They naturally lead to seeking an education in engineering, computer science, or some other technologically related field.

But those who come to school in search of the excitement of creating cutting edge technology or helping people through engineering find something else.

They find an educational system stuck in a rut,

a rut not of the 1990s or 1980s,

but a rut of the 1950s.

In the era of the internet and the tablet computer,
those who wish to be educated
in order to change a technological world
find an education system developed during
the heyday of manual switchboards
and Hollerith keypunches.
In a world of collaboration and teamwork,
they find schools with individuals learning alone.
In a world of cool product and service design,
sensitivity to the voice of the customer,
and attention to the needs of those in the developing world,
they find a math-science death march and rigid curricula,
taught in impersonal lecture halls,
with an emphasis on one right (largely technical) answer.

The practicing engineer trained in this system survived its excesses, but he or she knows intimately how outdated it is. The practicing engineer today has witnessed a world shifting beneath his or her own education, a world in which more technological change has taken place recently than in all of prior human history. These practitioners love their chosen profession and wish an education for today's young person that shares the joy and passion today's practicing engineer found only after graduation.

Some courageous educators

strive to overcome this educational rut, but inertia, culture, and bureaucracy inside colleges and universities around the world keep the old system in place. However, it no longer serves the students it attempts to educate, the parents or governments who pay the bills, the employers who hire the students, or the society that uses the services the employer provides.

These courageous educators

serve students at substantial risk to themselves and their careers, and they deserve support, but often their efforts are isolated and, as such, unsustainable.

The system needs to change,
but the status quo
steadfastly resists effective transformation,
and change efforts to date have been
inadequate, ineffective, or both.

The status quo will not go easily, but go it must.

The technological forces changing our world have illuminated a new path, a path leading to a *whole new engineer*, an engineer appropriate to our time and the foreseeable future, appropriate to the eager young people of our world, appropriate to those who wish to join the excitement of our times actively, directly, wholeheartedly, and now. Therefore, we come together, in the light of growing awareness and heightened urgency, and shine a big beacon upon needed change.

Here's our big beacon manifesto

to shine that light.

We recognize that engineers are not left-brained equation solvers working in isolation from human needs, challenges, and opportunities. Engineers are whole-brained, whole-bodied human beings —whole new engineers— who come fully assembled, ready for some of the most important collaborative action of our times.

The whole new engineer

1. Finds joy in engineering and in life.

The whole new engineer

2. is open,
trusted,
and trusting.

The whole new engineer

3. is authentically connected with others.

The whole new engineer

4. is powerfully present to possibilities in the moment.

The whole new engineer

5. is mindful, observant, and an effective listener.

The whole new engineer

6. has the courage to initiate, fail, and initiate again.

The whole new engineer

7. is technically competent and agile.

The whole new engineer

8. is broadly educated and curious.

The whole new engineer

9. is a team player, a collaborator, and a community builder.

The whole new engineer

10. is a designer, a creator, and a sustainer.

The whole new engineer

11. is emotionally and socially aware and competent.

The whole new engineer

12. is a reflective thinker and a self-directed and persistent learner.

Engineering education is not a mind-numbing math-science death march that casts aside thousands of capable young people who might otherwise have made effective engineers.

It is a joyful, trusting process that delights in serving student aspirations, learning, and growth, unleashing the potential of each individual.

A whole new
engineering education

13. is a joyful and challenging experience.

A whole new
engineering education

14. trusts students, believing they are resourceful, creative, and whole.

A whole new
engineering education

15. connects with students by fostering a sense of community.

A whole new engineering education

16. encourages diverse student aspirations and increases student autonomy and choice.

A whole new
engineering education

17. accommodates diverse learning styles.

A whole new
engineering education

18. fosters agile technical competence in a changing world.

A whole new
engineering education

19. fosters concern for human values and ethics.

A whole new
engineering education

20. encourages pervasive collaboration and teamwork.

21. celebrates action in the world and values failure that results in learning.

A whole new
engineering education

22. values educators who are servant teachers.

A whole new
engineering education

23. listens to and collaborates with all stakeholders

24. walks the talk of the whole new engineer.

Effective educational change (educational rewire) is not

(1) a class-by-class process of content or pedagogical reform,

or

(2) something that awaits new research.

It is an emotional and cultural process using known methods in a way that practically, systematically, and sustainably promotes the dual vision of the whole new engineer and a whole new e engineering education.

25. questions, listens, and is mindfully present to the possibilities of effective action.

26. engages the willing, and embraces the once unwilling as soon as they are open to change.

27. uses exemplars of authentic student engagement to change hearts then minds.

Educational rewire

28. is a personal, emotional, and cultural process that depends upon changing language and story.

Educational rewire

29. Uses incubators and pilots to permit innovation and respect faculty governance .

30. is a process of open innovation that collaboratively disrupts the status quo.

31. unleashes students in service to their education, and unleashes teachers in service to students.

Big Beacon

is a movement, shining a light on needed change.

Big Beacon

is empowering people to come together, points of light near and far, large and small, to shine a collective beam seen around the world.

Acting together,

we are more powerful than those who would act alone.

Acting together,

we collaboratively disrupt a system that has defied change for many years.

Acting together,

we illuminate culture and emotion and pathways to effective change, cutting through the fog of a broken system. Beam by sweeping beam, the fog lifts. In the clearing daylight, together we unleash a whole new engineering education and

we bring forth generations of whole new engineers to the benefit of the people of Earth.

BIG BEACON

A Movement to Transform Engineering Education