Humanity's biggest problems

- **Extreme poverty**
  - Billions don't have clean water, sanitation, food, micro-nutrients, shelter, education, opportunity

- **Disease**
  - Billions will die from malaria, cancer, HIV, TB, cholera, diarrhoea or be crippled by polio, Alzheimer's, arthritis, river blindness, etc

- **Unsustainable growth and finite resources**
  - Fossil fuels, rainforests, mined fertilizer, rare earths – even uranium won't last forever
Keys to solving them

- **Money**
  - Obviously. Pays for wages, equipment, resources

- **Cheap clean energy**
  - Fixes major problems – can desalinate seawater, irrigate deserts, extract minerals from oceans or asteroids, capture CO2, end climate change

- **Emerging tech**
  - Next-gen drugs, solar cells, turbines, cars, aircraft, engines, meta-materials, fusion reactors, biotech, genetics, robotics, nanotech, smart grids, AI
So a $2Tn supercomputer might help

- Over two billion interconnected PCs
  - Each 10x more powerful than Deep Blue, the IBM supercomputer which beat Garry Kasparov
  - Typically over 95% idle at any given time
- Over two billion mobile devices
  - Each more powerful than a PC from ten years ago
  - Spend most nights just watching a battery charge
- Over $1Bn of computing wasted daily
  - Even at trivial price of 1c/hr per machine
How to harness it?

• Offer to buy the surplus compute power
  • Been tried, doesn't work for home users – a few pennies per day doesn't impress anyone
  • PC power only valuable *en masse*, not individually

• Ask for volunteered resources
  • Only works for popular science projects
  • Growth is flat; all the science fans are taken
  • New projects dare not compete for volunteers
Over $2Bn-worth of PC time already donated to science in last decade
By less than 0.1% of PC owners
It's not a technical problem
It's not a technical problem

It's a marketing problem
How to persuade the other 99.9%?
Charity Engine sells the surplus PC time, then shares the profits as charity donations and random prizes.
Huge cash rewards for helping the world's top charities, no effort required – what's not to like?

503,187
like this
Even if the user doesn't win a prize, they're always computing for good
Silent, low-energy background task – about same as charging two phones

![Chart showing CPU usage and energy consumption for different tasks]
Result: world's cheapest, greenest computing platform – all from spare capacity nobody was using anyway
Tech press already aware

Idle home PCs could raise cash for Charity Engine
By Mark Ward
Technology correspondent, BBC News

Spare Some Idle CPU Cycles For Charity This Season

Ethical Supercomputing
Michael Feldman
January 12, 2012

Charity Engine: The Even Cheaper Cloud Supercomputer?
by Matthew Weinberger on 1.6.12

Charity Engine: The Ethical Supercomputer That Can Win You $10,000
The Charity Engine team

• Mark McAndrew, CEO
• Mark Roberts LLB MBA, CLO
• Robert Pearce MBA ACCA, CFO
• Regis Dubois, CTO
• Phil Robertson, CMO
• Matt Blumberg, lead tech contractor
• Tristan Olive, tech contractor
• Rytis Slatkevičius, tech contractor
• Jonathan Brier, community liaison
Advisors and industry recognition

- Prof David Anderson, BOINC Director, UC Berkeley
- Prof Stephen Wolfram, Wolfram Research
- Anil Hansjee, ex-head of M&A, Google EMEA
- Michael Geer, previously founder of Badoo
- Andrew Romans, General Partner, The Founders Club
- Dr Ethan Siegel, astrophysicist and award-winning blogger
- Dr David Gorski, oncologist and award-winning blogger
- Andreas Bauer, MD, four40 Ventures Ltd

- Smarta 100 Award, Accelerate 250, CTC Best Cloud Pitch, Member of International Desktop Grid Federation, HPC UberCloud Experiment and Cloud Advisory Council
Current situation

- Partnered with two Asian grids of several million office PCs each, more supply than we can handle
- Distributed storage feature coded for us by UC Berkeley, will backup huge datasets (eg. Wikipedia) and power a CE-branded peer-to-peer CDN
- Mathematica being ported with Wolfram Research, CE to be trialled as a Windows 8 'live tile' on Dell PCs
- Android version just coded, will allow CE to harness over 500m idle smartphones when charging at night
- Two secret sauce apps that guarantee earnings from any unsold capacity: Project ce3 makes 0.75c/hr on GPUs, Project ce5 makes 0.25c/hr per CPU core
Next steps

• The killer app: a distributed web-crawler
  • “If everyone starts running a distributed indexing system, searching would certainly improve drastically.” - Brin & Page, 1998
  • Perfect low-CPU task for mobile
  • Multiple IP addresses can crawl anywhere

• Go big on the marketing
  • Every PC guaranteed to earn, time to grow
  • Need 1000s more public PCs