New RFS -- Breakthrough Technologies

We'd like for Y Combinator to fund more breakthrough technology companies—companies that solve an important problem, have a very long time horizon, and are based on an underlying technological or scientific breakthrough. Not many people try to start these companies, so starting a company that will require a huge amount of time and money is an automatic competitive advantage. SpaceX and Tesla are great examples of what is possible.

It used to be the case that governments funded a lot of development of breakthrough technologies. The bad news is that they have mostly stopped; the good news is that the leverage of technology is such that now small startups can do what used to take the resources of nations. [1]

We think the YC model works well for these companies. We invest with infinite time horizon and are not afraid of risky-looking companies. [2] We understand software, which will be central to many of these companies. We are good at getting companies to focus on solving real problems for real customers, and not just developing technology for its own sake. And our model helps companies figure out a right-sized initial project achievable with a small amount of time and money—great companies get built with a series of small wins that compound over time, and early momentum is critical. A common failure mode of many ambitious companies is to bite off an initial project that is far too big and expensive. Finally, we know a lot about raising money, which will be a big part of the challenge for many of these companies as they mature.

Here is a list (we'll add to it over time) of some areas we're particularly

interested in, but more generally, we'll pay attention to any area where technology can make the world much better.

Energy. There is a remarkable correlation between the cost of energy and quality of life. Throughout history, when the cost of energy has come down a lot (for example, with the steam engine) the quality of life goes up a lot.

Cheap energy would do a huge amount to reduce poverty. New energy sources could also help the environment, the economy, reduce war, ensure a stable future, make food and water more abundant, and much more.

We believe economics will dominate—new sources must be cheaper than old ones, without subsidies, and be able to scale to global demand.

Nuclear energy can hit the bid, and possibly so can renewables. But pricing is the first order question.

In addition to generation, we're also interested in energy storage and transmission. 10x better batteries would enable great new things, as would the ability to easily move energy around.

AI. Relative to the [potential impact](#), it doesn't seem like enough smart people are working on this.

A lot of smart people talk about AI with a combination of awe and fear, both for good reasons. But it feels like it could be one of the dividing lines in the history of technology, where before and after look totally different.

Robotics. Robots will be a major way we get things done in the physical world. Our definition is pretty broad—for example, we count a self-driving car as a robot. Robots are how we'll likely explore space and maybe even the human body.

Biotech. It's still early, but it seems like we're finally making real progress hacking biology. There are so many directions this can go—fighting disease, slowing aging, merging humans and computers, downloading memories, genetic programming, etc.   We are certain that this is going to be a surprising, powerful and controversial field over the next several decades—it feels a little bit like microcomputers in the 1970s.

Healthcare. Healthcare in the United States is badly broken. We are getting close to spending 20% of our GDP on healthcare; this is unsustainable.

We're interested in ways to make healthcare better for less money, not in companies that are able to exploit the system by overcharging. We're especially interested in preventative healthcare, as this is probably the highest-leverage way to improve health. Sensors and data are interesting in lots of different areas, but especially for healthcare.

Food and water. At some point, we are going to have problems with food and water availability. Technology can almost certainly improve this. Great innovations are possible—we will need another advancement on the scale of what Norman Borlaug did.

Education. If we can fix education, we can eventually do everything else on this list. The first attempts to use technology to fix education have focused on using the Internet to distribute traditional content to a wider audience. This is good, but the Internet is a fundamentally different medium and capable of much more.

Solutions that combine the mass scale of technology with one-on-one in-person interaction are particularly interesting to us.

This may not require a "breakthrough technology" in the classical sense, but at a minimum it will require very new ways of doing things.

Internet Infrastructure. We can't imagine life without the Internet. We need to be sure it keeps working—this includes everything from security to free and open communication to infrastructure. The Internet is a transformative power, and we're particularly interested in applications that transform the big underpinnings of society (bitcoin is a great example!). The Internet lets people around the world coordinate action—there are almost certainly important businesses to be built around this concept.

Of particular interest to us are ways to use the Internet to fix government—for example, crowdfunding social services.

An important trend is the API-ification of everything. As more and more businesses are accessible with a web API, the Internet becomes more and more powerful.

Levers. We're interested in technology that multiplies the efforts and productivity of individuals. Robots are a great example, but this also includes areas like new programming languages, powered exoskeletons, augmented reality, etc.

Science. Science seems broken. The current funding models are broken and favor political skill over scientific genius. We need new business models for basic research. There are a lot of areas where scientific developments can have huge commercial applications—materials, neuroscience, climate engineering, and cheaper/better ways to get to space, just to name a few—and we'd love to figure out a way for it to happen. Bell Labs worked a long time ago but would probably not work in today's world.

Transportation and housing. About half of all energy is used on transportation, and people spend a huge amount of time unhappily commuting. Face-to-face interaction is still really important; people still need to move around. And housing continues to get more expensive,

partially due to difficulties in transportation. We're interested in better ways for people to live somewhere nice, work together, and have easier commutes.

As a side note, you shouldn't start a company just because it's on this list. Our hope is that someone already working on a company in one of these areas that might not have otherwise applied to YC will now consider it. The great majority of the startups we fund will continue to be the sort of Internet and mobile companies we've funded in the past, so if that's what you wanted to do before this post, keep doing it. Traditional-looking startups like Google and Facebook are obviously as important as any company one could imagine, and clearly are breakthrough technologies.

[1] To be clear, we are not interested in funding patent trolls. We only want to fund businesses that actually solve problems and create value.

[2] Related to long time horizons, if a company needs to raise a billion dollars of funding over the course of its life, that doesn't scare us—in fact, that's a plus.