

MAIDEN FLIGHT

The world's first "abortion drone" will deliver pills to Poland this weekend





📷 It's coming. (Women on Waves)

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WRITTEN BY

Cassie Werber

OBSESSION

Borders

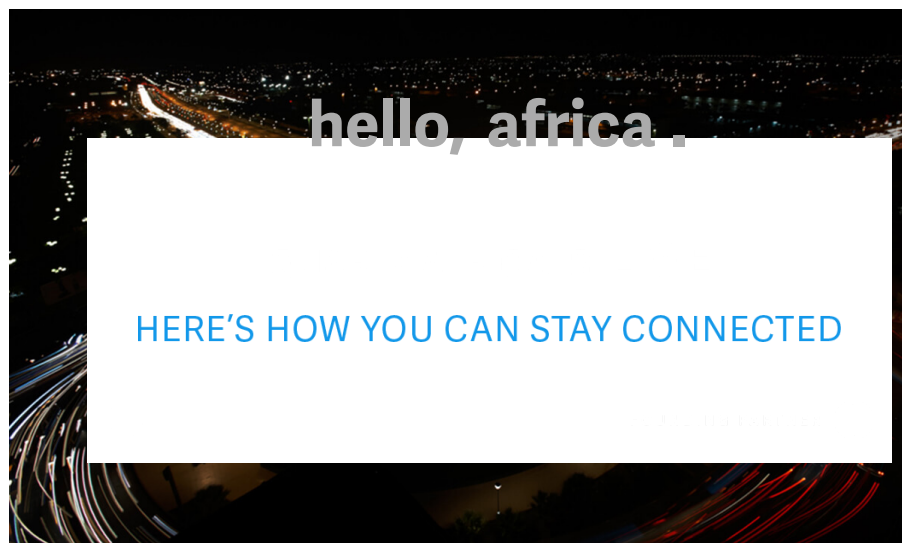
June 24, 2015

Słubice, a town in western Poland, is only a few hundred meters from neighboring Germany, with the River Oder flowing between the two countries and a bridge connecting them.

But when it comes to abortion law, the places could hardly be further apart. In Germany, abortion is legal and accessible. In Poland, it's against the law except in the most extreme cases: rape, incest, when the life of woman is in danger or the fetus damaged. Doctors can refuse to perform abortions even in such cases.

Enter the abortion drone. Four campaign groups are planning to fly a small drone loaded with packages of medical abortion pills across the river on Saturday June 27, where it will be received by local campaigners.

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Because the drone weighs less than 5 kg, is not being used for commercial purposes, and will remain in sight of the person flying it, it doesn't contravene German or Polish law.

The drone will carry enough medication for two or three women. But campaigners hope it will also deliver a message about inequality. Women on Waves, one of the charities involved, has run ships in which abortions are carried out offshore from countries—including Poland—that make them unobtainable.

Poland's restrictive abortion law sets it apart from the rest of Europe, along with Ireland and Malta, which also criminalize the practice. A recent Amnesty International report criticized Ireland for breaching women's human rights through its blanket ban, which is even more restrictive than Poland's law.

The drone delivery will also make very visible something that happens anyway. Women in countries where abortion is illegal still obtain them, either by traveling abroad, buying these same pills on the internet, or seeking out "backstreet" practitioners.

Put simply, the laws don't work to eliminate or even reduce abortions. "Highly restrictive abortion laws are not associated with lower abortion rates," says the Guttmacher Institute, an NGO with a remit to advance sexual and reproductive health and rights, which also calculated that in 2008, 47,000 women died as a result of unsafe abortions worldwide.

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CONSTELLATION CONSOLATION

Inside the race to create the next generation of satellite internet



📷 Elon Musk is just getting started. (Reuters/Mario Anzuoni)

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WRITTEN BY

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OBSESSION

Space Business

June 24, 2015

Is the sky big enough for two multi-billion dollar satellite internet projects? In the next two years, we'll find out if entrepreneurs driven by human betterment—one looking up at the heavens and humanity's future, the other looking down to the earth's neediest—can share a shot at creating the next big space product.

The two contenders, Greg Wyler's OneWeb and Elon Musk's SpaceX, both say that within the next three years they will build, launch and operate hundreds, if not thousands, of satellites flying in a low orbit around the earth to provide broadband internet. It's an ambitious attempt to double the number of satellites orbiting earth—and succeed at a business that tends to break companies.

“This is intended to generate a significant amount of revenue and help fund a city on Mars.”

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Industry insiders say this race has taken on the aspect of a feud: In 2014, Wyler and Musk discussed collaborating (paywall) on this effort before a shake-up left them on opposite sides. Wyler's new company is funded by Musk's rival in space, Virgin Galactic's Richard Branson, and Qualcomm, while Musk raised \$1 billion from

Google, which had previously considered working with Wyler on satellite internet.

Wyler won't comment on SpaceX, but he told Quartz that his "hat is off to everyone in the communications industry working to bring broadband around the world." Elon Musk and SpaceX officials declined to comment on the satellite project.

"Part of the issue is the original filings that Musk made were in late June last year, when he was still in discussion with Wyler about collaborating," Tim Farrar, a satellite industry consultant who worked on Teledesic, a failed 1990s satellite internet play, told Quartz. "Wyler feels that Musk took his idea while they were still discussing collaboration, went to make a major filing behind his back, and stole his idea."

The filing Farrar is discussing—with the International Telecommunications Union, which regulates the global use of the radio frequencies used by satellites—is part of the twist in this tale: The rules governing how satellites talk to their customers on earth may force the two companies to work together if they both raise enough money to put their satellites aloft.

Priority Package

Wyler's ace in the hole is that he filed first, in 2012 and 2013, for an ITU license to transmit along a band of radio frequencies called the Ku band, which are uniquely-suited to satellite transmissions because they work best with the latest generation of satellite antennae, replacing bulkier satellite dishes. Combined with cheaper satellites flying closer to earth, engineers believe that it is possible to solve the high-lag problem that plagues current satellite internet.

Under the first-come, first-serve rules governing the ITU, if Wyler can get his satellites up and operating on those frequencies by the end 2019, he has the rights to use them, and there's not much the ITU can do to force him to cooperate with anyone else who wants to operate on that frequency on a global level. That license, along with his expertise, had first Google, then SpaceX and ultimately Virgin Galactic, Qualcomm and Airbus ready to join Wyler's operation.



📷 Greg Wyler, founder of One Web (OneWeb)

Since Wyler's filing, at least six other projects have registered satellite constellations in the hope he misses his deadline. The most interesting project, known as STEAM, for a 4,000 satellite internet constellation, was filed by Norway's telecommunications regulator in June 2014.

This is the filing Farrar was referring to; its particulars match what is known about SpaceX's plans for a satellite

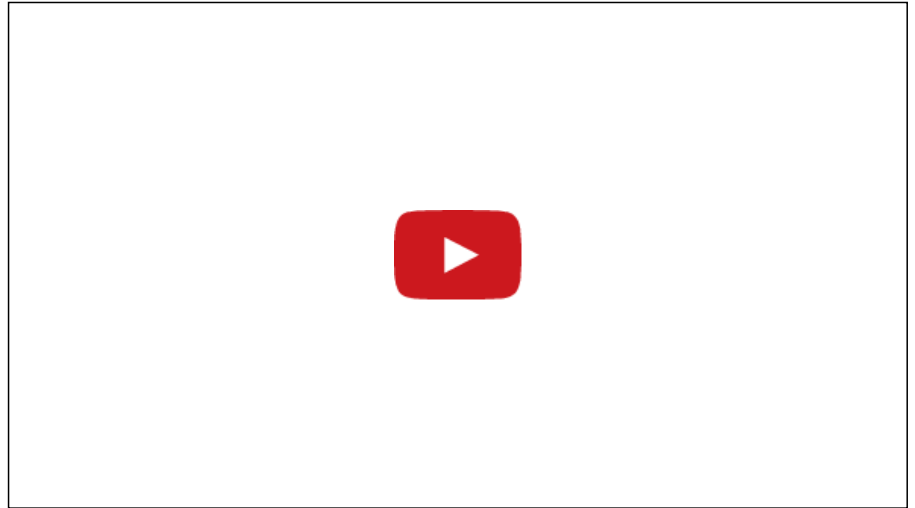
constellation, and industry speculation is that the constellation was registered by SpaceX. Musk has said that the company filed at the ITU, though a spokesperson declined to comment when asked if the company was behind the STEAM registration. (It is common for companies to register satellite spectrum through national telecom regulators without revealing their identities.)

Though the ITU is designed to resolve transmission conflicts for international satellites, every country can make rules about the spectrum in its jurisdiction. And in the US, the Federal Communications Commission has a different approach than the ITU: If two licensees want to use the same spectrum to transmit to people in the US, the FCC will broker its own deal between the two if the companies can't resolve the problem themselves—the ITU priority essentially evaporates.

So, while SpaceX isn't first in line, it can force OneWeb to share its spectrum within the US—the most lucrative market for satellite internet—by demonstrating that SpaceX could also develop the spectrum commercially. That is why the company requested permission from the FCC to launch two test satellites next year to develop its constellation.

Execution matters

And so the race is on to get those satellites into orbit. A week after SpaceX's filing proposed flying six to eight satellites by the end of 2016, OneWeb and Airbus Space and Defense announced they would create a joint venture to manufacture 648 150 kg satellites—at a pace of four a day. Wyler tells Quartz he expects to be “beta testing” a small version of his constellation by 2017.

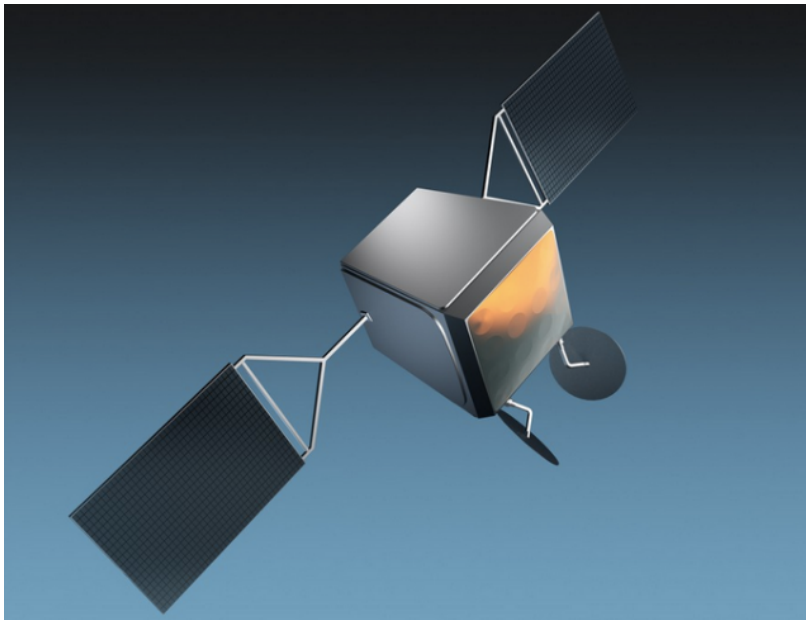


“We’re beyond, ‘Can we build it?’” he says, claiming his company is prepared to mass-produce satellites and their components to be assembled “like legos” for specific jobs, to an extent that he expects the manufacturing venture to change the industry, which has never mass-produced satellites before. “It’s not our primary business, but the cost of satellites will come down dramatically.”

The initial run of 10 satellites will be built in France, and are expected to cost about \$500,000 each by the time manufacturing ramps up, with a total system cost of \$2 billion, Wyler estimates. OneWeb has not said how much money it has raised from its partners toward the cost of the project, but it says it has plans to build a satellite factory somewhere in the US for full mass production.

SpaceX has plenty of space-manufacturing chops after designing and building its Falcon rockets and Dragon space capsules, often developing techniques to build components in-house rather than paying more for an outside supplier. The company opened an office in Seattle this year to develop its satellite division, but it is unclear how long the company will take to begin production.

Where SpaceX does have a clear advantage is getting the satellites



📷 A rendering of the OneWeb satellite, which will be smaller than a fully-grown person. (Airbus)

into space, since that is the company's primary business. It remains the lowest-cost launch provider to low-earth orbit, and one of the most flexible. OneWeb, on the other hand, will need to contract with a launch provider, most likely Arianespace, the leading European rocketry company. But Arianespace's 2017 launch slots are starting to fill up, and it remains to be decided how OneWeb will put its satellites into orbit.

Co-existence?

If Wyler is concerned about being forced into sharing American spectrum with SpaceX, he isn't showing it. "We are fully focused on building our system and enabling broadband access for everyone," he tells Quartz.

Wyler's career—at his previous satellite company, O3b, and bringing fiber-optics to Rwanda—has focused on bringing internet connectivity to low-GDP, low-density areas, places starved of "oxygen," that is, internet access that can enable economic growth. He plans to work with existing telecom companies, with OneWeb's data terminals—which will provide emit wi-fi, LTE and 3G signals—acting as another tool to provide access for customers.

Musk's ambitions could be described as humanitarian in another direction. He is outspoken about the goal behind SpaceX is developing the technology necessary for humans to be a multi-planetary species—to colonize Mars.

"The satellites constitute as much, or more, of the cost of space-based activity as the rockets do. Very often, actually, the satellites are more expensive than the rocket. So, in order for us to really revolutionize space, we have to address both satellites and rockets," Musk said at the opening of the Seattle office. "[This satellite constellation] is intended to generate a significant amount of revenue and help fund a city on Mars."

Musk's vision, like Wyler's, is of a global network that improves connectivity in rich and poor countries alike. If they are both able to launch on time—a big if in the space industry—then they may find themselves competing, within the byzantine rules of global communications, to light up countries around the world with internet access.

“I'm hopeful that we can structure agreements with various countries to allow communication with their citizens but it is on a country by country basis,” Musk said in Seattle. “Not all countries will agree at first. There will always be some countries that don't agree. That's fine.”

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