

TED演讲者: Will Marshall | 威尔·马歇尔

演讲标题: The mission to create a searchable database of Earth's surface | 创造地球表面可检索数据库的任务

内容概要: What if you could search the surface of the Earth the same way you search the internet? Will Marshall and his team at Planet use the world's largest fleet of satellites to image the entire Earth every day. Now they're moving on to a new project: using AI to index all the objects on the planet over time -- which could make ships, trees, houses and everything else on Earth searchable, the same way you search Google. He shares a vision for how this database can become a living record of the immense physical changes happening across the globe. "You can't fix what you can't see," Marshall says. "We want to give people the tools to see change and take action."

你能想像像搜索互联网一样搜索地球表面吗? 马歇尔和他在Planet的团队将使用世界上最大的卫星舰队, 每天对整个地球进行成像。现在他们正在开启一个新项目: 使用AI来记录地球上所有物体随时间的变化——这可能使船只, 树木, 房屋和地球上的其他一切变得都可以搜索, 就像搜索谷歌一样。他分享了一个愿景, 即这个数据库如何能够生动地记录全球范围内发生的巨大物理变化。“你无法修复你看不到东西,” 马歇尔说, “我们希望为人们提供改变和采取行动的工​​具。”

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Four years ago, here at TED, I announced Planet's Mission 1: to launch a fleet of satellites that would image the entire Earth, every day, and to **democratize** access to it.

4年前,就在TED的讲台上, 我公布了地球任务1号: 一个为了每天拍摄地球全貌 而发射一系列卫星的任务, 并让大众能获得这些信息。[00:12]

The problem we were trying to solve was simple.

我们要解决的问题很简单。[00:25]

Satellite **imagery** you find online is old, **typically** years old, yet human activity was happening on days and weeks and months, and you can't fix what you can't see.

网上你能找到的卫星 图片很旧,甚至早就过时了, 但是人类活动每天、每周、每月都在发生, 我们不能解决自己看不见的问题。[00:27]

We wanted to give people the tools to see that change and take action.

我们想要给人们工具去 看见变化,并且采取行动。[00:36]

The beautiful Blue **Marble** image, taken by the **Apollo** 17 astronauts in 1972 had helped **humanity** become **aware** that we're on a **fragile** planet.

阿波罗17号的宇航员在1972年 照下了美丽的蓝色星球图片, 帮助人们了解到,我们生活在一个脆弱的星球上。[00:40]

And we wanted to take it to the next level, to give people the tools to take action, to take care of it.

我们想要继续这项事业, 为人们提供保护地球的工具。[00:49]

Well, after many Apollo projects of our own, launching the largest fleet of satellites in human history, we have reached our target.

在完成了多个我们自己的阿波罗任务, 发射了人类历史上数量最多的一组卫星后, 我们完成了既定目标。[00:54]

democratize: vt.使民主化;使大众化/vi.民主化;大众化 **imagery**: n.像;意象;比喻;形象化 **typically**: adv.代表性地;作为特色地 **Marble**: n.大理石;大理石制品;弹珠/adj.大理石的;冷酷无情的 **Apollo**: n.阿波罗(太阳神);美男子 **humanity**: n.人类;人道;仁慈;人文学科 **aware**: adj.意识到的;知道的;有...方面知识的;懂世故的/ **fragile**: adj.脆的;易碎的

Today, Planet images the entire Earth, every single day.

今天,Planet每天都在 记录着地球的全貌。[01:05]

Mission accomplished.

任务完成。[01:09]

(Applause) Thank you.

(掌声) 谢谢。[01:10]

It's taken 21 rocket **launches** -- this **animation** makes it look really simple -- it was not.

这个任务经历了21次火箭发射—— 这个动画让整个过程看起来 很轻松——但事实并非如此。[01:15]

And we now have over 200 satellites in **orbit**, downlinking their data to 31 ground stations we built around the planet.

现在我们有超过200个卫星 在轨道上环绕运行, 将搜集到的数据发送到31个全球站点。[01:24]

In total, we get 1.5 million 29-megapixel images of the Earth down each day.

每天,我们总计得到150万张 29兆像素的地球表面图片。[01:32]

And on any one location of the Earth's surface, we now have on average more than 500 images.

并且,在地球表面任意一点, 我们现在拥有平均超过500张图片。[01:38]

A deep stack of data, **documenting immense** change.

一组巨大的数据, 记录着巨大的改变。[01:44]

And lots of people are using this imagery.

很多人在使用这些图片。[01:49]

Agricultural companies are using it to improve farmers' crop **yields**.

农业企业用他们来提高农民的产量。[01:51]

Consumer-mapping companies are using it to improve the maps you find online.

商业地图公司用他们来 提高地图的精度。[01:56]

launches: n.汽艇(launch的复数)/v.[航]发射;下水;投入(launch的单三形式) **animation**: n.活泼;生气;激励;卡通片绘制 **orbit**: n.轨道;眼眶;势力范围;生活常规/vi.盘旋;绕轨道运行/vt.绕...轨道而行 **documenting**: n.文件编制 **immense**: adj.巨大的, 广大的;无边无际的;非常好的 **Agricultural**: adj.农业的;农艺的 **yields**: n.生产量,投资效益(yield的复数形式)/v.[经]生产;投降,[力]屈服(yield的三单形式)

Governments are using it for border security or helping with disaster response after floods and fires and earthquakes.

政府用他们来监管边疆安全, 或是应对自然灾害, 比如洪水、火灾或地震。[02:01]

And lots of NGOs are using it.	很多非政府组织也在用它们[02:08]
So, for tracking and stopping deforestation .	去追踪并阻止森林砍伐,[02:09]
Or helping to find the refugees fleeing Myanmar .	帮助找到逃离缅甸的难民,[02:13]
Or to track all the activities in the ongoing crisis in Syria , holding all sides accountable .	或追踪叙利亚危机中的活动,以令各方势力负责。[02:16]
And today, I'm pleased to announce Planet stories.	今天,我有幸能够宣布 Planet stories的上线。[02:24]
open an account and see all of our imagery online.	创建一个账户,就能在网上看到所有的图片。[02:30]
It's a bit like Google Earth, except it's up-to-date imagery, and you can see back through time.	这是一个实时版的 Google Earth,你还可以看到历史数据。[02:34]
You can compare any two days and see the dramatic changes that happen around our planet.	你可以比较任何两天,然后发现我们的星球发生的巨大改变。[02:40]
Or you can create a time lapse through the 500 images that we have and see that change dramatically over time.	或者你可以用这500张照片 创建一个延时视频,去显示该地点随着时间 发生的巨大变化,[02:46]
deforestation: n.采伐森林;森林开伐 refugees: 难民 fleeing: vt.逃离(flee的ing形式)/vi.突然消失(flee的ing形式) Myanmar: n.缅甸(东南亚国家) Syria: n.叙利亚共和国 accountable: adj.有责任的;有解释义务的;可解释的 up-to-date: adj.最新的,最近的;现代的,新式的 lapse: n.(一时的)走神,判断错误 dramatically: adv.戏剧地;引人注目地/adv.显著地,剧烈地	
And you can share these over social media.	你还可以把它们 分享到社交网络上。[02:53]
It's pretty cool.	很强大的工具。[02:57]
(Applause) Thank you.	(掌声) 谢谢。[02:58]
We initially created this tool for news journalists , who wanted to get unbiased information about world events.	我们最初为新闻工作者 创造了这个工具,因为他们想得到对于世界 不带偏见的信息。[03:02]
But now we've opened it up for anyone to use, for nonprofit or personal uses.	但现在我们把它向公众开放,作为非盈利或个人用途。[03:07]
And we hope it will give people the tools to find and see the changes on the planet and take action.	我们希望这个工具能够让人们 发现地球发生的变化,并做出改变。[03:12]
OK, so humanity now has this database of information about the planet, changing over time.	那么人类现在有了这个不断变化的 地球数据库。[03:18]
What's our next mission, what's Mission 2?	我们的下一个任务是什么呢? [03:24]
In short , it's space plus AI.	简而言之,就是空间加上人工智能。[03:26]
What we're doing with artificial intelligence is finding the objects in all the satellite images.	我们利用人工智能 检索卫星图片中的事物。[03:29]
The same AI tools that are used to find cats in videos online can also be used to find information on our pictures.	网上用来在视频中标记猫狗的AI工具,同样可以用来处理我们的照片。[03:34]
initially: adv.最初,首先;开头 journalists: n.新闻记者(journalist的复数) unbiased: adj.公正的;无偏见的 nonprofit: adj.非赢利的;不以赢利为目的的 In short: 总之;简言之	
So, imagine if you can say, this is a ship, this is a tree, this is a car, this is a road, this is a building, this is a truck.	想象这里有艘船,这里有棵树,这是辆车,这是条路,这是个大楼,这是个卡车。[03:43]
And if you could do that for all of the millions of images coming down per day, then you basically create a database of all the sizable objects on the planet, every day.	如果你能够对 每天产生的几百万张图片 这样处理,就基本上创造出了一个数据库,包含了地球上每天存在的有形事物。[03:51]
And that database is searchable .	并且这个数据库是可以被搜索的。[03:59]
So that's exactly what we're doing.	这就是我们在做的事。[04:02]
Here's a prototype, working on our API.	这是一个使用了我们API的原型。[04:04]
This is Beijing.	这是北京。[04:06]
So, imagine if we wanted to count the planes in the airport.	如果我们想要统计机场的飞机数量,[04:08]
We select the airport, and it finds the planes in today's image, and finds the planes in the whole stack of images before it, and then outputs this graph of all the planes in Beijing airport over time.	只需要选择机场,程序就会检索出今天照片中的飞机,和以前所有照片中的飞机,然后它生成了这张标记了 北京机场飞机的统计图。[04:11]
Of course, you could do this for all the airports around the world.	当然,你可以对世界上 任何一个机场这样操作。[04:23]
And let's look here in the port of Vancouver .	让我们来看看温哥华的一个港口。[04:27]
sizable: adj.相当大的;大小相当的 searchable: adj.可被搜查的;透过搜查能找到的 outputs: n.[计]输出;[经]产出;[经]产量(output复数)/v.生产;制造(output的第三人称单数) airports: n.[航]机场;[航]航空港(airport的复数形式) Vancouver: n.温哥华(加拿大主要港市)	
So, we would do the same, but this time we would look for vessels .	我们用同样的流程来统计船只。[04:30]
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So, we zoom in on Vancouver, we select the area, and we	放大并选中温哥华,搜索这片区域,然后我们搜索船

search for ships.	只,[04:33]
And it outputs where all the ships are.	就会得到船只的情况。[04:39]
Now, imagine how useful this would be to people in coast guards who are trying to track and stop illegal fishing.	想象一下这将为负责 追踪并组织非法捕鱼的 海岸保卫人员提供多么大的帮助。[04:41]
See, legal fishing vessels transmit their locations using AIS beacons .	合法的捕鱼船只 用AIS灯塔传达他们的位置,[04:47]
But we frequently find ships that are not doing that.	但我们经常发现违反规则的船只。[04:52]
The pictures don't lie.	图片不会撒谎。[04:56]
And so, coast guards could use that and go and find those illegal fishing vessels.	所以,海岸保卫人员可以利用这个信息 来发现非法船只。[04:58]
And soon we'll add not just ships and planes but all the other objects, and we can output data feeds of those locations of all these objects over time that can be integrated digitally from people's work flows.	我们将会很快加入不局限于 飞机船只的其他对象,并且我们可以生成这些地点的 对象数据流,从人们的工作流程中 进行数字化集成。[05:02]
In time, we could get more sophisticated browsers that people pull in from different sources.	未来我们还可以建立一个 更复杂的浏览器,让人们放入不同来源的信息。[05:13]
vessels: n.血管(vessel的复数);船舶;容器 beacons: n.[水文]指向标;[交]信号灯(beacon的复数)/v.照亮,指引 (beacon的第三人称单数) frequently: adv.频繁地,经常地;时常,屡次 feeds: n.[畜牧]饲料;一餐(feed的复数)/v.提供(feed的第三人称单数形式);饲养 integrated: adj.综合的;完整的;互相协调的/v.整合;使...成整体(integrate的过去分词) digitally: adv.数位 sophisticated: adj.复杂的; 精致的; 久经世故的; 富有经验的/v.使变得世故; 使迷惑; 篡改(sophisticate的过去分词形式) browsers: n.[计]浏览器(browser的复数) pull in: 进站;吸入;提到警察局	
But ultimately, I can imagine us abstracting out the imagery entirely and just having a queryable interface to the Earth.	但是最终,我们可以把图像完全抽象化, 产生一个可检索的地球表面界面。[05:18]
Imagine if we could just ask, "Hey, how many houses are there in Pakistan?"	想象一下我们可以这样问, "巴基斯坦有多少栋楼房? [05:25]
Give me a plot of that versus time."	对时间做个统计图。" [05:29]
"How many trees are there in the Amazon and can you tell me the locations of the trees that have been felled between this week and last week?"	"亚马逊有多少树? 还有从上周到这周 倒下的树的地点?" [05:31]
Wouldn't that be great?	这不是很棒吗? [05:38]
Well, that's what we're trying to go towards, and we call it "Queryable Earth."	这就是我们想要达到的目标, 我们叫它 "可检索地球"。[05:40]
So, Planet's Mission 1 was to image the whole planet every day and make it accessible.	地球任务1号负责 每天记录地球表面的图像, 并对大众开放。[05:44]
Planet's Mission 2 is to index all the objects on the planet over time and make it queryable.	地球任务2号负责 对地球上所有事物编码, 生成检索信息。[05:50]
Let me leave you with an analogy .	不妨这样类比,[05:56]
Google indexed what's on the internet and made it searchable.	Google把互联网上的事物编码, 建立了搜索引擎,[05:58]
abstracting: n.文摘/v.[图情]摘要(abstract的现在分词) versus: prep.对; 与...相对; 对抗 Amazon: 亚马逊; 古希腊女战士 felled: 伐倒木 analogy: n.类比; 类推; 类似 indexed: adj.编入索引的;有索引的/v.为...编索引;把...编入索引;指示(index的过去分词)	
Well, we're indexing what's on the Earth and making it searchable.	我们要将地球上所有事物编码, 同样方便大家查询。[06:02]
Thank you very much.	非常感谢! [06:06]
(Applause)	(掌声) [06:07]
indexing: n.[图情]标引;[数]指标化;编制指数/v.指出(index的ing形式);编入索引中	

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