ABOUT THE STRUCTURE SENSOR:

The Structure Sensor is the world’s first 3D sensor for mobile devices. It gives mobile devices a new sense – the ability to not just capture the world as two-dimensional images, but to actually understand it in three dimensions.

The Structure Sensor isn’t a 3D object scanner. It’s a hardware platform that gives developers the ability to easily create applications that take advantage of a 3D sensor on an iOS device for the first time ever. This enables a completely new set of mobile applications, including:

- 3D mapping of indoor spaces for instant measurements and virtual redecoration.
- Augmented reality (AR) games where virtual objects interact precisely with the geometry of the physical world, including occlusions.
- Body scanning for fitness tracking and virtual clothes fitting.
- Virtual reality games using 3D environments imported from the real world.
- And, finally, 3D object scanning for easy 3D content creation. With the Structure Sensor, 3D scanning no longer requires a dedicated hardware device; rather, it’s simply an app that uses the Structure Sensor’s depth stream as its foundation.

Unlike previous 3D sensors, which were designed to connect to game consoles and computers, the Structure Sensor has been designed from the ground up to go mobile: compact dimensions, mobile-optimized range, no external power source required for operation, and a precision bracket that lets it quickly and securely attach to an Apple iPad with Lightning connector.

The Structure Sensor was launched on Kickstarter in September 2013. The campaign raised nearly $1.3M from over 3500 backers in 45 days. As a result, the Structure Sensor became the 6th most successful Kickstarter technology category project ever.

Soon after the completion of the Kickstarter campaign, the Structure Sensor was named a Popular Science “Best of What’s New” gadget for 2013, and was recognized as a 2014 CES Innovations Award Design & Engineering Honoree.

HOW IT WORKS:

The Structure Sensor uses structured light to capture depth data. Structured light uses a laser projector to cast a precise pattern of thousands of invisible infrared dots onto objects and spaces. It then uses a frequency-matched infrared camera to record how the pattern changes, thereby understanding the geometry of those objects and spaces. As a result, the Structure Sensor can generate a VGA depth stream at 30 frames per second, with each pixel representing an exact distance to a real-world point.
DEMO APPS:

The Structure Sensor will ship with demo apps so it can be used right out of the box. These demo apps include: Object Scanner for scanning objects in 3D to export to 3D printers and 3D modeling programs; Room Capture for capturing entire rooms as interactive 3D models; and Fetch, an augmented reality game that turns the real world into a game world.

DEVELOPERS:

The Structure Sensor will arrive with the Structure SDK, which lets developers create apps that tap into 3D depth data on an iOS device for the first time. Developers will be able to build their apps in Xcode, and launch them on the Apple App Store. Developers can download sample source code for the demo apps that will ship with the Structure Sensor.

The Structure Sensor has also been designed for hackability. A special USB Hacker Cable lets it connect to any device with a standard USB port, including Android tablets. Open source drivers for Android, Windows, Linux and OS X will be available, as well as CAD specs for easy creation and 3D printing of custom brackets to attach the Structure Sensor to nearly any device.

STRUCTURE SENSOR FACTS:

Performance
- **Depth sensing range**: 40 centimeters to 3.5 meters
- **Frame rate**: 30-60 frames per second
- **Resolution**: 640x480
- **Precision**: 1% of measured distance (typical)
- **Battery life**:
  - Integrated lithium polymer battery – doesn’t use iPad battery
  - 3-4 hours of active sensing, 1000+ hours standby

Materials & Design
- Anodized aluminum chassis
  - Doubles as a thermal core to maintain optimal operating temperature
- Chemically-hardened glass surface for durability and a high-quality depth image
- Compact dimensions: The smallest 3D sensor on the market with room-scanning range

iPad Attachment Bracket
- Available brackets attach the Structure Sensor quickly and securely to most iPads with Lightning connector (iPad 4th generation, iPad Air, iPad mini with Retina display)
- Precision anodized aluminum latch
- Aligns the iPad’s high-res camera with the Structure Sensor to allow apps to seamlessly combine color and depth
**Supported Devices**

- Works with iPads with Lightning connector
  - Supported iPads: iPad 4th generation, iPad Air, iPad mini with Retina display
  - Other iOS devices with Lightning will work, such as the iPhone 5/5C/5S. However, they are not officially supported at this time
- Works with any device with a standard USB port
  - Includes desktop computers like Macs and PCs, Android devices and others
  - Requires optional USB Hacker Cable

**Structure SDK**

- Low-level & high-level APIs for access to depth data on an iOS device for the first time
- Lets developers create apps in Xcode
- Lets developers launch apps on the App Store

**Hackability**

- Optional USB Hacker Cable for use with any device with a standard USB port
- Open source drivers available for Android, Windows, Linux and OS X
- Will work with OpenNI 2+ on Android, Windows, Linux, and OSX
- Available CAD specs let anyone design and 3D print their own brackets to mount the Structure Sensor almost anywhere
- Uses four standard metric screws for simple attachment

**OCCIPITAL AND STRUCTURE SENSOR HISTORY:**

Occipital is fundamentally a software company that now creates hardware, too. After being one of the first companies selected to join TechStars, we decided to focus on mobile computer vision, or more simply, giving mobile devices the ability to understand the world through their cameras.

We launched RedLaser (acquired by eBay in 2010) and then 360 Panorama (the first application to enable 360-degree panorama capture in realtime).

In November 2011, we conceived of the idea for the Structure Sensor after playing with a Microsoft Kinect 3D sensor plugged into a high-end desktop CPU. We mapped a small indoor environment using the sensor and some prototype software. After tripping over the Kinect’s cord a few times, we realized that needing a high-end desktop CPU meant that this amazing technology was never going to make its way to everyday life. So we set out to create the Structure Sensor, and with it, a new chapter for mobile computer vision.

Building the Structure Sensor took 18 months of amazing dedication.
COMPANY DESCRIPTION:

Occipital makes the Structure Sensor and 360 Panorama. Occipital focuses on making advanced computer vision technologies simple enough for everyday use. Occipital is based in Boulder, CO and San Francisco, CA.

For more information, visit Occipital on the Web at http://occipital.com and http://structure.io.

CONTACT:

Adam Rodnitzky
Director of Marketing
adam@occipital.com
(415) 816-5719