IEEE Consumer Electronics Society

2016 Consumer Electronics Show

Image Capture Devices

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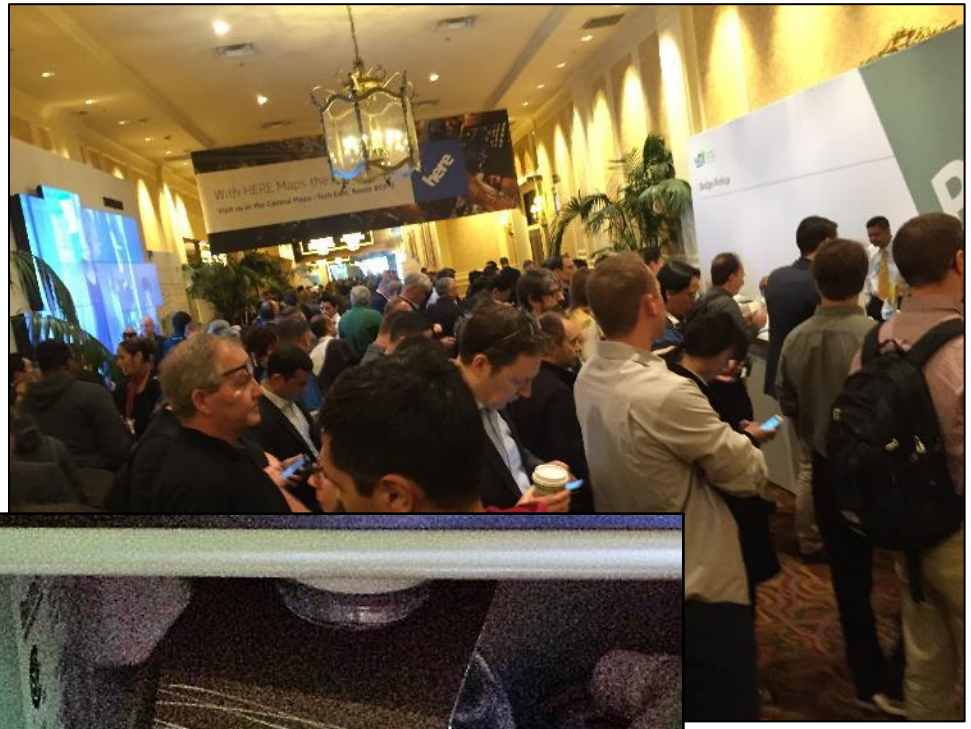
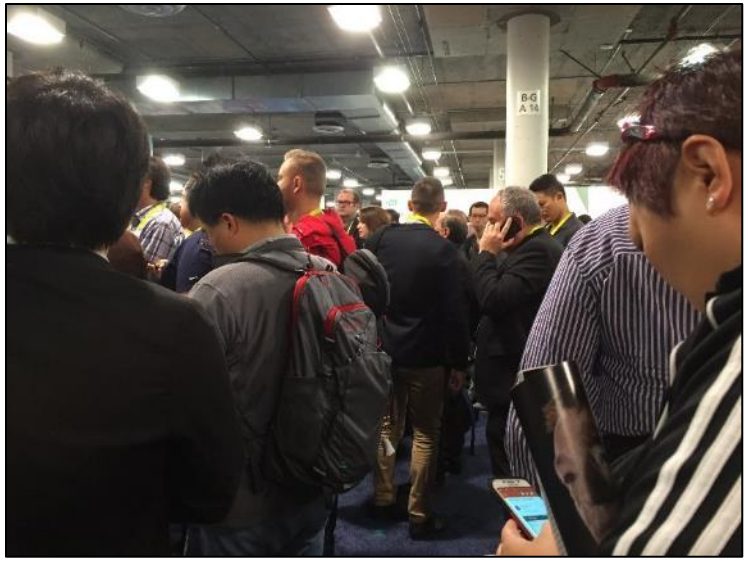
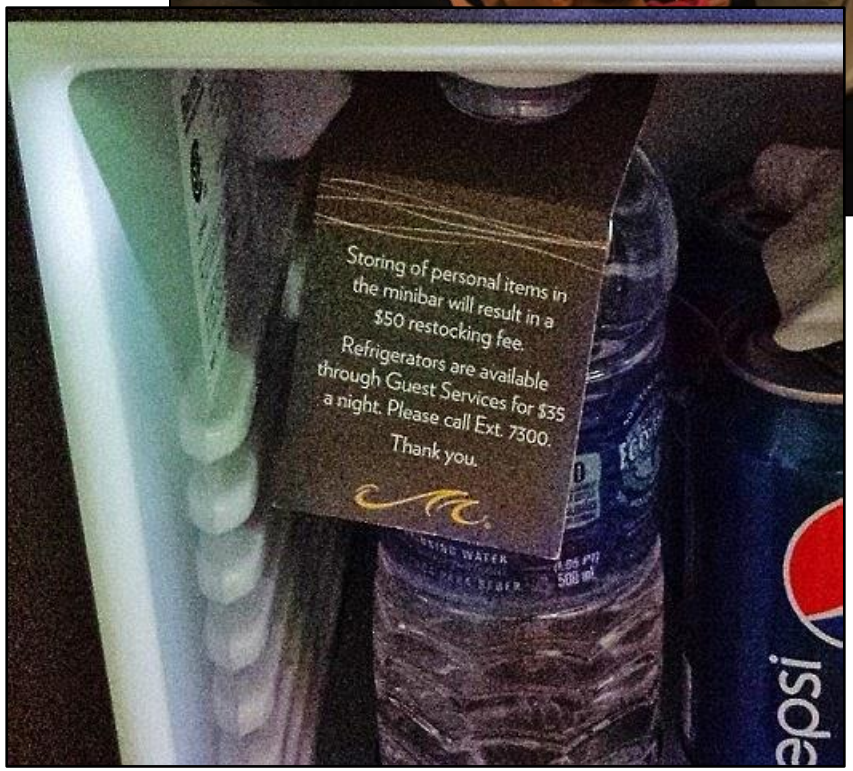
Housekeeping

- Comments made are the views of **me** (Bill Orner) and do not express the opinions of IEEE.
- Only covering Image Capture devices.
- Only covered emerging products, did not cover mature product areas, etc.
- This presentation is not an endorsement of any product.
- I have 1 minute per slide and will talk fast. Slides will be available online soon.

Welcome to CES!



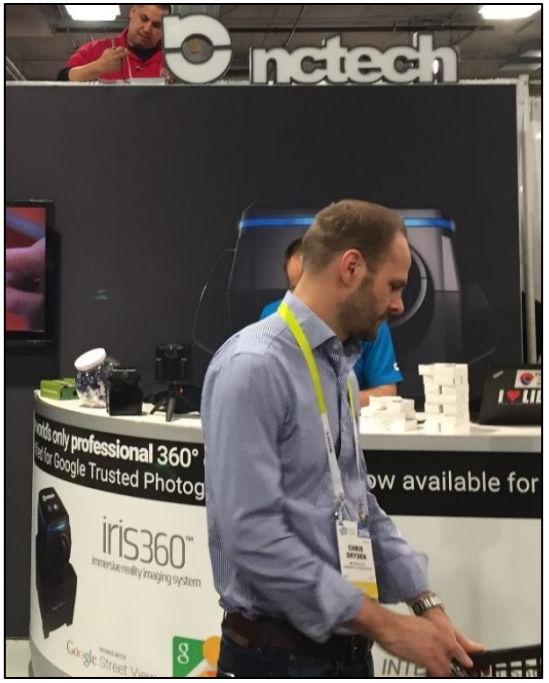




Spherical Cameras – Retrofit

- Intermediate “rig” solution until integrated cameras are available.
- Captures generate multiple large files.
- Cameras need to be frame synchronized.
- Requires post processing, mostly used in commercial applications (TV, VR Gaming, Mapping, etc.).

Spherical Cameras – Many Sensor



- Camera performs real time image stitching, computationally intensive!
- Most image processor solutions only support 2 sensors.
- Power consumption is very high.

Spherical Cameras – Dual Sensor

- Ideal consumer solution.
- Image stitching implemented in camera.
- Processor chips catching up with consumer desire.
- Playback tools not yet mature.
- Major enabler for UGC for virtual reality.

Single Sensor Sports Cam

- Market becoming more crowded and segmented.
- 4K video is a base requirement.
- High frame rates necessary for sports.
- Image quality a major differentiator, typically a post purchase discovery.
- Many “copycat” products entering market with questionable quality.

Life Capture

- Capture everything, figure out later what is interesting.
- Must trade off power and storage capabilities for resolution and/or frame rate.
- Sensors can assist in determining when interesting events are occurring.
- Dash-cam and Police-cam the instantly successful products.

Safety/Computer Vision

- Computer vision used to identify important events in video.
- Image DSP's and OpenCV are major enabling technologies.
- Used extensively in military, law enforcement and security.
- Inexpensive silicon enabling migration into consumer market.

Telepresence

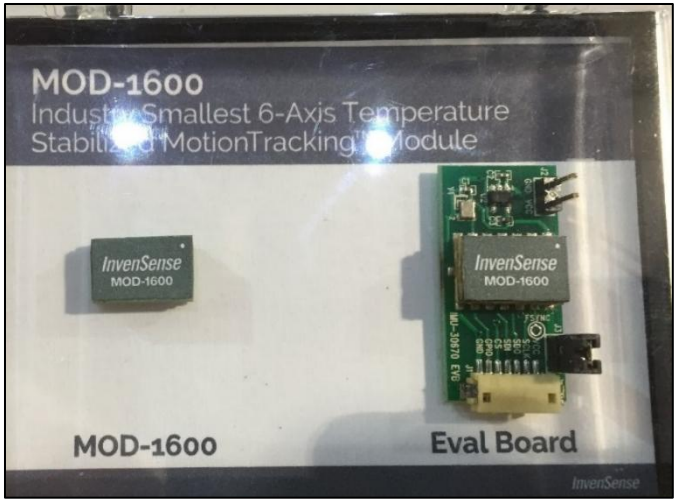
- Improving telepresence experience.
- Enables viewer to move visual focus as they would desire, similar to being in room.

Drones

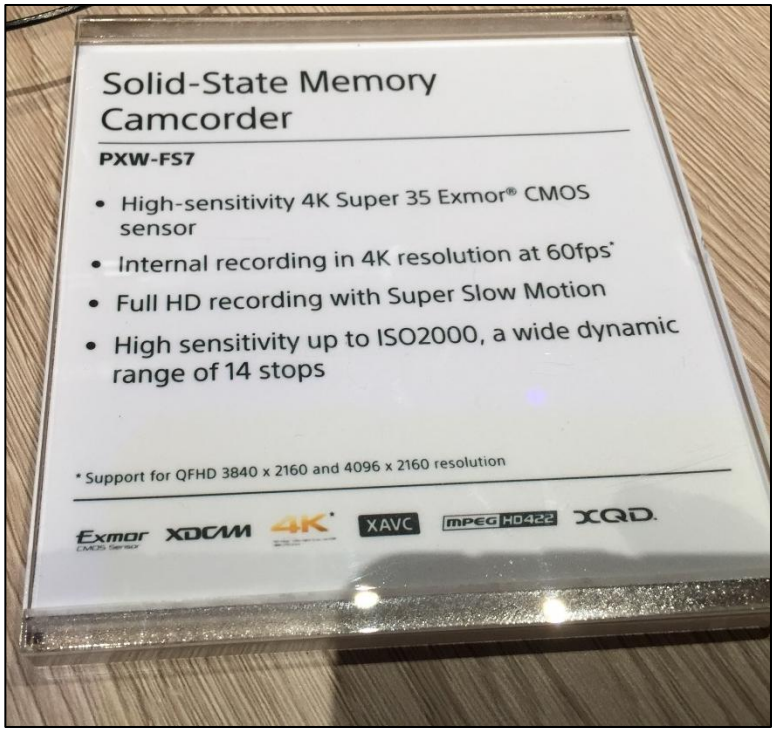
- Quantity of companies with drone products was overwhelming!
- All drone products need gyro's, GPS, distance sensors, wireless communications, complex multi-phase motor controllers, power supplies, computer vision systems, ***LOTS*** of software!
- Drones are a great new business for the electronics industry!

Image Stabilization

- High resolution/frame rate image systems need mechanical or electronic image stabilization to improve viewing experience.
- Combination of MEMS sensors and servo's enable robust solutions.



Big Iron!



- High quality image capture still requires big lenses and big sensors.
- The physics of light has not changed!

Automotive

- Auto Industry representation at CES continues to expand.
- ADAS becoming mainstream.
- LiDAR solutions dropping in cost.

Enabling Companies

New silicon processors becoming available that have tremendous combinations of general purpose compute and image/vision processing capabilities.

These new silicon platforms will enable many uses and applications that haven't been possible before.

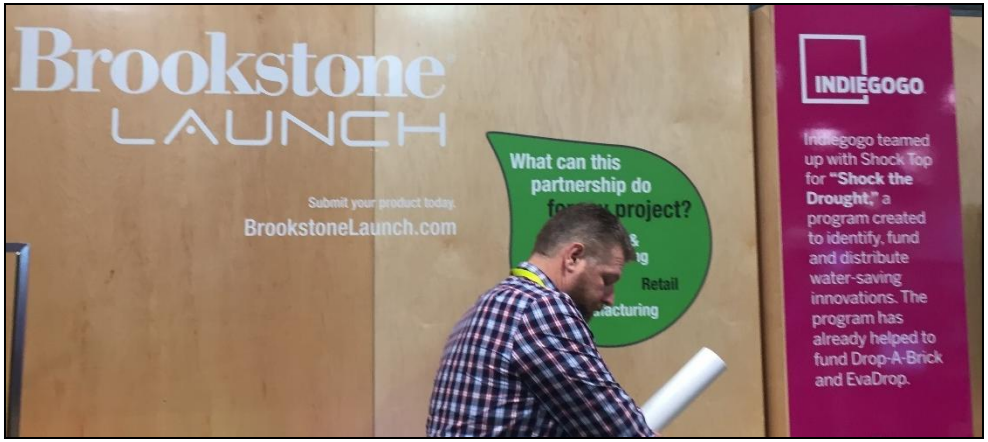
Intel CEO Brian Krzanich

<EOM>

Cool Ideas


Fitness, Sports and Biotech
CES
INNOVATION AWARDS
2016
HONOREE
BewellConnect
MyECG - Connected, Intelligent pocket Electrocardiogram
MyECG is the first wireless, connected, intelligent pocket electrocardiogram. It allows a quick and easy record of the electrocardiogram. Connected to a smartphone via Bluetooth 4.0 LE and the application BewellConnect, the user will obtain an interpretation of the data and recommendations.
MyECG


DO-RA
Intersoft
DO-RA
The idea of the project:
ACHIEVEMENTS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LAUNCH
Submit your product today.
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What can this partnership do
Retail
INDIEGOGO
Indiegogo teamed up with Shock Top for "Shock the Drought," a program created to identify, fund and distribute water-saving innovations. The program has already helped to fund Drop-A-Brick and EvaDrop.