Intel® RealSense™ Update for ROS-I Community Meeting

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Why Intel® RealSense™ Technology?

Industry-leading Depth-sensing Technology

- Developing and selling vision processing technology for 12+ years
- Shipped and designed into working solutions for 3M+ units

Intel® RealSense™ Technology

- Multiple stereo-based products to align to your specific needs
- On-board vision processor for calculation of depth
- High quality, competitively priced depth cameras
- Designed into thousands of products worldwide

Intel® RealSense™ Software

- **Intel® RealSense™ SDK 2.0** is cross-platform open-source software supporting all of our cameras
- ROS 1 & ROS 2 wrappers
- Easy integration with 3rd party software providers
Two Paths to Market

**Intel® RealSense™ Depth Camera D400 Series**
Recommended for: **Evaluators, Makers, Education, Interchangeability, Volumes <10Ku**

**Intel® RealSense™ Depth Module D400 Series with Intel® RealSense™ Vision Processor D4 Board**
Recommended for: **Lowest cost, Blend camera into ID, Volumes >10Ku**
Refocused on Robotics Market

- Intel leadership decided to realign the Computer Vision resources to a robotics focus
- In aligning to the new strategy, the decision was made to stop development in LiDAR, Facial Authentication, and Tracking technologies
- We discontinued LiDAR, Facial Authentication, and Tracking products and shifted our development focus to Stereo depth cameras
## Camera Roadmap

<table>
<thead>
<tr>
<th>Ideal Operating Ranges</th>
<th>2022</th>
<th>2023</th>
<th>2024+</th>
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<tbody>
<tr>
<td><strong>Range (50cm – 10m)</strong></td>
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<td><strong>Range (50cm – 6m)</strong></td>
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<tr>
<td>D455: WFOV, IM Global Shutter Depth &amp; RGB</td>
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<td>D455 Derivatives</td>
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<tr>
<td>D450: WFOV, IM Global Shutter Depth &amp; RGB</td>
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<tr>
<td><strong>Range (50cm – 3m)</strong></td>
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<tr>
<td>D435: WFOV, Global Shutter Depth, 2MP RGB</td>
<td>D435: WFOV, Global Shutter Depth, 2MP RGB, with IR Pass Filters</td>
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<tr>
<td>D435i: WFOV, IM Global Shutter Depth, 2MP RGB, IMU</td>
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<tr>
<td>D430: WFOV, Global Shutter</td>
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<tr>
<td>D415: Rolling Shutter, 2MP RGB</td>
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<tr>
<td>D410: Rolling Shutter</td>
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<tr>
<td><strong>Range (7cm – 50cm)</strong></td>
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<tr>
<td>D405/D401: Short Range &lt;50cm, IM Global Shutter Depth &amp; RGB</td>
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<td><strong>New Products</strong></td>
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<td><strong>In Development</strong></td>
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*Next Gen*
### Intel RealSense ROS2 support

- Full ROS2 with MetaData for Humble will be added by EOY 2022, including dynamic kernel module support (DKMS) for Ubuntu 22.0.

- Moving forward, with RealSense focus on AMR, feature enhancements will be addressed for ROS2, available at [https://github.com/intelrealsense/realsense-ros/tree/ros2-beta](https://github.com/intelrealsense/realsense-ros/tree/ros2-beta)

### Main features introduced in ROS2 beta
- Efficient inter-process communication (zero copy)
- Enable / disable of sensors in runtime (i.e., stop / start)
- Enable / disable of filters in runtime (i.e., pointcloud, depth alignment, etc)

<table>
<thead>
<tr>
<th></th>
<th>Foxy</th>
<th>Galactic</th>
<th>Humble</th>
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<tbody>
<tr>
<td>ROS2 Wrapper</td>
<td>Dec 2020</td>
<td>Jul 2021</td>
<td>Dec 2022 (with MD)</td>
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<tr>
<td>3.1.3 → 4.51</td>
<td>3.2.2 → 4.51</td>
<td>4.53</td>
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<tr>
<td>LibRealSense2</td>
<td>2.41 → 2.51</td>
<td>2.41 → 2.51</td>
<td>2.53</td>
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