MIPI Automotive Workshop

15 November 2022

Live Virtual Event
Welcome and Introduction to MIPI Alliance

Peter Lefkin
MIPI Alliance Executive Director
About MIPI Alliance

In 2003 MIPI Alliance was formed to standardize camera and display interfaces.

MIPI Alliance has developed more than 50 specifications covering the full range of interface applications needed for mobile devices.

Today's MIPI Member Ecosystem

- Automotive OEMs / Tier 1 suppliers
- Application Processor Developers
- Device OEMs
- Consumer Electronics (Cameras, Tablets, PCs/Laptops, Peripherals, Wearables)
- Software Providers
- Test Equipment Companies
- Test Labs
- IP and VIP Providers

Percentage of members active in automotive sector 48%

415+ members
Number of countries 30
MIPI Specifications Leveraged Beyond Mobile

Fundamentally, usage rights are granted to members royalty free for implementation of MIPI specifications from all MIPI members.

50+ Current specifications
MIPI Members in Automotive

https://www.mipi.org/members-in-automotive
MIPI and the Mobile Gs . . . Including Automotive

First camera phone

MIPI Alliance forms

CSI/DSI protocols evolve.

New PHYs emerge for different requirements

MIPI establishes Automotive WG
MIPI in Automotive

Cameras, displays, audio, sensors, storage, RFFE for 5G, Wi-Fi, Bluetooth, NFC

Reuse & extend well-proven protocols == reduced NRE/cost
Intra-box usage has been limited due to lack of native long-reach PHY

SPECIFICATIONS IN AUTOMOTIVE

Most MIPI interfaces are implemented as "short reach" (~15 to ~30cm+)

- CSI-2
  Camera Serial Interface protocol
  Protocol for cameras, lidar, radar sensors

- DSI-2
  Display Serial Interface protocol
  Protocol for smartphone, IoT and automotive displays

- C-PHY SerDes
  3-phase physical layer for CSI-2 & DSI-2
  Short-reach physical layer for cameras and displays

- D-PHY SerDes
  Differential physical layer for CSI-2 & DSI-2
  Short-reach physical layer for cameras and displays

- I3C
  Control and data bus protocol and interface
  Sensor and general-purpose data and control interface within a module

- RFCE
  RF control protocol
  Front-end control within a wireless module

- UniPro for JEDEC UFS
  Data transport protocol for UFS over M-PHY
  Transport protocol for UFS storage

- M-PHY SerDes for JEDEC UFS
  Differential physical layer for UFS storage
  Short-reach physical transport for UFS storage

- A-PHY SerDes
  Long-reach (up to 15m) asymmetrical physical layer (released Sep 2020)
# Today’s Presentations & Speakers

<table>
<thead>
<tr>
<th>Introductions and Q&amp;A</th>
<th>Moderator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>James Goel, Chair of the MIPI Technical Steering Group and Co-Vice Chair of the MIPI Display Working Group</td>
</tr>
</tbody>
</table>

### MASS (07:10-08:00)

<table>
<thead>
<tr>
<th>Session 1 + Q&amp;A</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIPI Automotive SerDes Solutions: What's New in the MASS℠ Connectivity Framework</td>
</tr>
<tr>
<td>Presented by Ariel Lasry, Vice Chair of the MIPI A-PHY Working Group</td>
</tr>
</tbody>
</table>

### A-PHY (08:15-09:30)

<table>
<thead>
<tr>
<th>Session 2 + Q&amp;A</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIPI A-PHY®: Continuing to Drive Innovation for In-Vehicle Connectivity</td>
</tr>
<tr>
<td>Presented by Raj Kumar Nagpal, Co-Chair of the MIPI A-PHY Working Group</td>
</tr>
</tbody>
</table>

### SECURITY (09:45-10:30)

<table>
<thead>
<tr>
<th>Session 3 + Q&amp;A</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIPI CSI-2® Security Framework: A New Approach for End-to-End Protection of Camera Data Streams</td>
</tr>
<tr>
<td>Presented by Rick Wietfeldt, Co-Chair of the MIPI Security Working Group</td>
</tr>
</tbody>
</table>
Many Ways to Learn More . . .

Ask questions
Reach out to admin@mipi.org

Join the Automotive Mailing List
www.mipi.org/automotive-news
Stay up to date on new MASS specifications, automotive resources and educational events.

FOLLOW THE BLOG
mipi.org/blog

Thank you for your time
Peter Lefkin
Executive Director
peter.lefkin@team.mipi.org