PARALLEL PATHS OF ENGAGEMENT
AUTOMOTIVE INDUSTRY OUTLOOK

CENTER FOR AUTOMOTIVE RESEARCH
2020 AUTOMOTIVE OUTLOOK WEBINAR

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Mike Jackson serves as Executive Director, Strategy and Research of the Original Equipment Suppliers Association (OESA). Jackson has more than 20 years of progressive experience in market forecasting, strategic planning and management consulting. Jackson is a recognized global industry expert, thought leader and public speaker on light vehicle sales and production, manufacturer strategies and OEM product planning. Jackson assists an extensive membership of automotive suppliers, affiliate members and industry stakeholders to anticipate market dynamics, enhance competitiveness and mitigate risk to achieve business success.

Jackson is a highly sought after public speaker, regularly presenting to executive leadership teams and industry conferences throughout North America and around the world. He is frequently quoted by leading print, radio and television media on the industry and light vehicle sales and production dynamics while also serving to represent the voice of automotive supplier community.

Mike Jackson previously directed the North American Vehicle Production forecasting practice at IHS Markit for more than 15 years. As a global product planning and strategy expert in the automotive/mobility sector, Jackson served as subject matter expert on the North American market for a global client base of automakers and all levels of the supply chain with a deep knowledge of the industry and global markets.

Jackson previously held senior strategy roles for electrical system supplier Alcoa Fujikura, Ltd. (AFL) and French-based automotive interior supplier, Faurecia. Jackson gained international experience during a multi-year stay, living and working in Germany, developing language fluency. Jackson holds a degree in management strategy from Eastern Michigan University and also earned his M.B.A. in international marketing from Wayne State University. Jackson is also a member of the Federal Reserve Bank of Chicago’s Automotive Roundtable.
Championing the business interests of the automotive OE supplier community:
Founded in 1998, the Original Equipment Suppliers Association (OESA), serves as the voice of the automotive supplier and a valuable resource for member organizations. Throughout the supply chain and on legislative and regulatory issues, OESA represents the collective voice of suppliers.

Exclusively for automotive suppliers:
Supplier membership is exclusive to original equipment automotive suppliers that directly provide components, tools, materials and services to the OE light vehicle industry.

Strength in numbers:
Membership is comprised of over 500 member firms, including over 400 Tier 1, 2, and 3 automotive suppliers with North American OE sales that range from $10 million to $5 billion. Another 100 Affiliate member firms support the supplier community with thought leadership and vital industry analysis.

Led By supplier industry executives:
OESA’s interests are guided by a board of directors consisting of CEOs from member companies of all sizes.

Trusted Forums for industry executives eager to lead well:
OESA conducts an extensive range of curated member events and councils designed to bring expert insights from thought leaders, access to decision makers and informed discussions from executive peer group councils to foster your success.

Staff that works for members:
Members enjoy direct access to a staff of dedicated association employees in Detroit and Washington, D.C.
Roadmap

• Market Outlook
• Industry In Transition
• Takeaways
When Do You Expect the Economic Recovery to Start?

- Q2 2020: 3.9%
- Q3 2020: 44.2%
- Q4 2020: 40.4%
- Q1 2021: 7.7%
- Q2 2021: 1.9%
- Q3 2021: 1.9%
What Will an Economic Recovery Look Like and What will Determine its Shape?

**“W” recovery**
- Near-term rebound derailed as outbreak returns in Fall
- Double down on more robust, far reaching efforts to recoup

**“V” recovery**
- Quick rebound despite widespread impact
- Less intrusive plans needed to course correct and restart

**“U” recovery**
- Downturn is deeper and impact is extended
- Scope of needed actions grows

**“L” recovery**
- Downturn persists, recovery stalls
- Requires long-term strategies to retrench
How have you changed your production in response to the announced OEM shutdowns and/or decreased demand?

For operations affected, from today how long are you planning on idling for?

The information contained in this report is considered proprietary and its use is solely intended for OESA members.
What are your biggest challenges heading into the restart of operations?

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Wtd. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy of customer start-up times</td>
<td>1.85</td>
</tr>
<tr>
<td>Accuracy of customer release volumes</td>
<td>1.95</td>
</tr>
<tr>
<td>Shelter in place mandates interfering with restart</td>
<td>3.39</td>
</tr>
<tr>
<td>Availability of PPE</td>
<td>3.44</td>
</tr>
<tr>
<td>Threat of contamination disrupting or causing supply outages</td>
<td>3.46</td>
</tr>
<tr>
<td>Implementation of / operating under new health and safety protocols</td>
<td>3.52</td>
</tr>
<tr>
<td>Hourly employees unwilling to return to work</td>
<td>3.78</td>
</tr>
<tr>
<td>Threat of internal facility contamination</td>
<td>3.87</td>
</tr>
<tr>
<td>Logistics Challenges</td>
<td>4.23</td>
</tr>
<tr>
<td>Financially Distressed suppliers</td>
<td>4.31</td>
</tr>
</tbody>
</table>

Comments:

- Many hourly deferred to stay home to collect unemployment based on new stimulus proposal rather than coming to work....
- Using paid volunteers for now.
- We have procedures in place to operate safely according to guidelines. To date no supplier has indicated an issue to supply us. Major disruption is the customers release schedules. Other concerns are disruptions due to unknowns.

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Production Planning: Breakeven and Year-End Estimates

Considering North America light duty vehicle production, estimate the required 2020 industry volume needed to achieve breakeven in your North American operations?

2020 Median breakeven level = 15.0 million units of production.

Suppliers estimated breakeven from start of 2020, now 3.0 million units above revised NA production 12.0 million unit range.

Historical Breakeven (Millions of Units)
- 2019 = 14.7
- 2018 = 15.0
- 2017 = 14.5
- 2016 = 14.3
- 2015 = 13.5
- 2014 = 12.7
- 2013 = 12.0
- 2012 = 11.0
- 2011 = 10.5
- 2010 = 10.0

Source: IHS Markit (History, Sales and Production); IHS Markit (Sales Forecast)
Peaks and Valleys

North America Vehicle Production Cycles

<table>
<thead>
<tr>
<th>Cycle (In Years)</th>
<th>3</th>
<th>5</th>
<th>7</th>
<th>9</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boom</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valley to Peak Chg. (Mils. L-Axis, Pct. Chg. Rt. Axis)</td>
<td>4.9</td>
<td>4.3</td>
<td>5.4</td>
<td>5.8</td>
<td>0.9</td>
<td>9.2</td>
</tr>
<tr>
<td><strong>Bust</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak to Valley Chg. (Mils. Lt. Axis, Pct. Chg. Rt. Axis)</td>
<td>-6.4</td>
<td>-2.6</td>
<td>-1.7</td>
<td>-7.8</td>
<td>-5.6</td>
<td></td>
</tr>
</tbody>
</table>

Source: Wards, LMC Automotive, IHS-Markit, Authors’ Calculations
Supplier Concern Scenarios

Timing issues are not only the most disruptive, but also the most likely

Within your supply chain, over the next 12 months, rate the likelihood of occurrence and the severity that each of the following possible scenarios would have on your business.

Rating scale for both probability and severity is 1-7, with 7 being highly probable and very severe
What is your greatest internal risk in meeting customer production requirements?

- Lead times: 36 responses
- Labor Issues: 19 responses
- Production Issues: 11 responses
- Launch Related Issues: 9 responses
- Quality Related Issues: 8 responses
- Capacity Issues: 8 responses
- Supply Base Issues: 7 responses
- Financial Distress: 4 responses
- Inventories: 4 responses
- Tariff Issues: 3 responses
- Cost Related Issues: 3 responses

What is your greatest supply chain risk in meeting customer production requirements?

- Timing/Delays: 33 responses
- Input Good Shortages: 21 responses
- Quality Issues: 12 responses
- Financial Distress: 12 responses
- Capacity: 11 responses
- Geopolitical Risks: 9 responses
- Tariffs: 5 responses
- Innaccurate Forecasts: 4 responses
- Costs: 3 responses
- Data Security: 2 responses
- Technology Issues: 2 responses

Over the past year have you witnessed an increase in distress within your supply base?

- 1=All Suppliers
- 2
- 3
- 4
- 5=No Suppliers

Predominantly timing, and labor related, yet impact of financial distress is rising

Q3 2019 OESA AUTOMOTIVE SUPPLIER BAROMETER
Roadmap

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CTA 2020 Trends to Watch

The Future of Transportation

- Multi-Modal Transportation
- C-V2X Communications
- Self-Driving Vehicle Fleets
- Electrification
Billions of dollars will be lost by many global automakers’ that invest in autonomous and electric vehicles while consumer buy-in remains low.

—AlixPartners

- Underscores Role of Opportunity Targeting
- Raises Importance of Due Diligence
- Market pressures to usher in industry consolidation
- Leverage expertise: opens door to set clear terms & limit risk
Costly EV/AV Arms Race Drives Alliances

Source: LMC Automotive
COVID-19 Automotive R&D Impact Survey

1 in 5
Respondents think the R&D impact will last longer than 12 months

only 4%
Respondents expect no reduction or delay to development projects

Tech Deployment Delays
Listed as the main impact by 54% of respondents

E-mobility Technology
The most impacted according to 22% of respondents
**Business Case:**
- Speed to Market
- Threat Mitigation
- Mutual Learning
- Block Competitors
- Scaling Potential

**Unique Selling Proposition:**
- Rugged Duty Cycle
- Premium Positioning
- Range +400 Miles
- Dimension
What are your biggest challenges/opportunities as the industry prepares for a Battery Electric Vehicle (BEV) future?

- New customers/technologies are driving innovation: 75 responses
- Program profitability: 69 responses
- We are currently capitalizing on BEVs: 42 responses
- BEV programs are changing the way we do business: 38 responses
- Our products are not aligned to BEVs: 33 responses
- We lack a clear vision on how to prepare for BEVs: 27 responses
- Regulatory challenges: 25 responses
- We will be unable to secure the necessary talent: 14 responses
- Other: 12 responses

Other Issues and Comments:
- Growing our knowledge of BEV vehicle to prepare for the new opportunities
- Uncertain how it will affect our product line
- Customer acceptance of our solutions
- Capacitating for low volume vehicles
- Market penetration of new, innovative product
- Neutral impact so far
- No clear direction by some of the OEM’s
- Over capacity vs. market demand
- Volume Uncertainty
- Infrastructure for BEV adoption, incentives for BEVs, consumer acceptance, battery costs
- Low Volume Offerings
How confident are you that global BEV production will reach a substantial portion (10% of total production) within... 

1.5  2.3  3.3  4.1

The next 2 years
2-5 years
5-10 years
10+ years

How confident are you that global BEV production will reach a substantial portion (10% of total production) within...

North America
Europe
China

Regionally speaking, where do you believe a substantial level of BEV production (10% of total production) will first occur?

North America 5%
Europe 18%
China 77%

Electrification: Supplier Outlook
The Future of Transportation Stack

Comet Labs

Source: www.wired.com
Software as Vital Industry Differentiator

**Today**

- 100 million lines of code per vehicle
- Approximately $10 per line of code
- Example: Navi system 20 million lines of code

**Tomorrow**

- > 200 - 300 million lines of code are expected
- Level 5 autonomous driving will take up to 1 billion lines of code

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Sources:
- https://spectrum.ieee.org/transportation/systems/this-car-runs-on-code
- https://www.visualcapitalist.com/millions-lines-of-code/
Roadmap

- Market Outlook
- Industry In Transition
- Takeaways
• **Capex**: Boom-Bust intensifies competition; anticipate consolidation
• **Culture**: Resilient, Collaborative, Inventive, Humble, Curious
• **Flexibility**: Liquidity is key; vital to balance ‘Core’ vs Emerging
• **Strategy**: Weather the storm + future Talent needs + M&A
• **Technology**: Grow partnering competency; Monetize on the journey
• **Stretch**: Align opportunities with capabilities, identify sweet spots

**Takeaways**