VR, Why Should You Care?
The VR industry will grow into a major global marketplace by 2021

**FORECAST: Global VR Headset Shipments**

*By Category*

- Smartphone-powered headsets
- PC-powered Headsets
- Game console-powered headsets

Source: BI Intelligence Estimates
Have are we doing?

WHO LEADS THE VIRTUAL REALITY RACE?

Worldwide unit shipments of AR and VR headsets in 2017 (in thousands)*

VR software and services revenue

2016: $0.3B | 2017: $1.3B

 NOTE: * excluding simplistic headsets that do not have technology built in, e.g., Google Cardboard
 ** Facebook acquired Oculus VR, maker of the Oculus Rift virtual headset, in March 2014
Why Virtual Reality?

- Diminishing Return – Hitting the Growth Limit

Display

CPUs, GPUs & APs

Telecommunication
Why Virtual Reality?

- New UX – Saving Cost & Time

Be Anywhere

Do Anything

Be Anything

Time

Space
Changes VR will bring
What are the challenges?

- Relatively Low Consumer Adoption

<table>
<thead>
<tr>
<th>Reasons that US Internet Users Are Not Interested in Owning a Virtual Reality Headset, by Age, March 2017</th>
<th>18-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Just not interested</td>
<td>43%</td>
<td>39%</td>
<td>53%</td>
<td>54%</td>
<td>51%</td>
<td>67%</td>
<td>53%</td>
</tr>
<tr>
<td>Too expensive</td>
<td>65%</td>
<td>52%</td>
<td>46%</td>
<td>51%</td>
<td>32%</td>
<td>32%</td>
<td>43%</td>
</tr>
<tr>
<td>I've heard it causes motion sickness</td>
<td>22%</td>
<td>19%</td>
<td>20%</td>
<td>14%</td>
<td>8%</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Lack of content</td>
<td>22%</td>
<td>19%</td>
<td>14%</td>
<td>12%</td>
<td>9%</td>
<td>6%</td>
<td>12%</td>
</tr>
<tr>
<td>Poor quality of content</td>
<td>5%</td>
<td>5%</td>
<td>4%</td>
<td>3%</td>
<td>2%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>3%</td>
<td>8%</td>
<td>5%</td>
<td>5%</td>
<td>20%</td>
<td>12%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Note: n=926 ages 18+
May 10, 2017

www.emarketer.com
What You Should Consider

- Quality of Experience
  - 90+ Frames Per Second
  - Display Resolution
  - Lens Specification (Magnification – FOV)
  - Network Latency and Data Transfer Rate
  - Sensor Latency and Accuracy
Reducing Cybersickness caused by VR

- Hardware Guideline
  - Display, Lens, Sensor, Network Specifications
- Software Guideline
  - Content Creation – Best Practice Guide
  - Human Factor Analysis