Memory Bandwidth over Time 10,000 -**Memory Bus type** O DDR O DDR2 O DDR3 O DDR4 Δ O EDO VRAM O GDDR2 2,000 O GDDR3 0 O GDDR4 1,000 -O GDDR5 ○ GDDR5X O GDDR6 O GDDR6X O HBM O HBM2 O HBM2E 200 O HBM3 O LPDDR4X O LPDDR5 100 AA O SDR Memory Bandwidth (GB/s) SGRAM 0 Δ O Δ O Vendor 0 40 AMD Intel ▲ NVIDIA 20 0 00 0 4440 0.2 0.1 2001 2002 2005 2006 2007 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 1999 2008 2024 1998 2000 2003 2004 2022 2023 1997 Launch