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 O PCle Memory Bandwidth (GB/s) O SDR 0 Δ O Δ O SGRAM 0 40 Vendor 0 AMD Intel 20 **△** NVIDIA 0 00 O A O 0 60 44 40 2 -A A 40 Δ 0.2 0.1 2002 2003 2005 2006 2007 2010 2011 2012 2016 2017 2018 2019 2020 2022 2001 2009 2021 2024 1998 1999 2000 2004 2008 2013 2014 2015 2023 1997 Launch