

Status of the Embedded GPU Space



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Robert Foss

@memcpy_io

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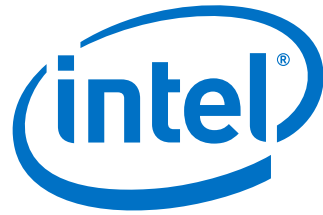




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Vendors

Vendors

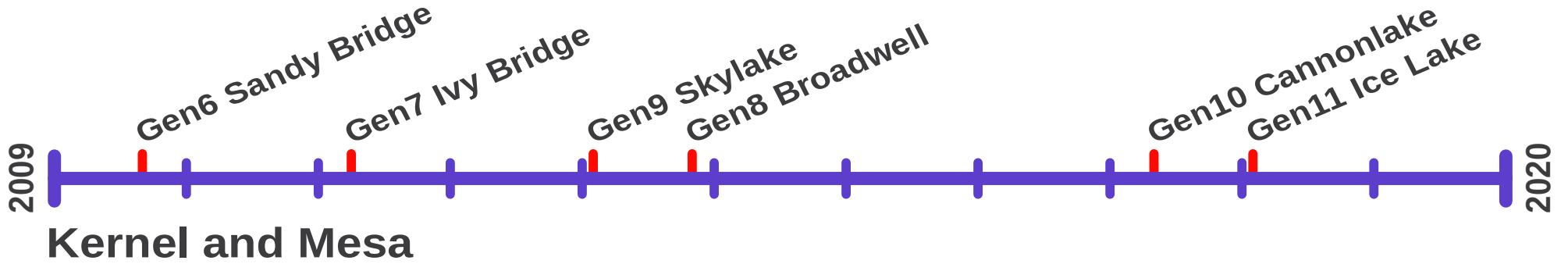


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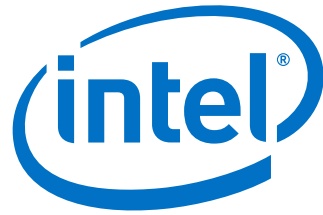
Intel



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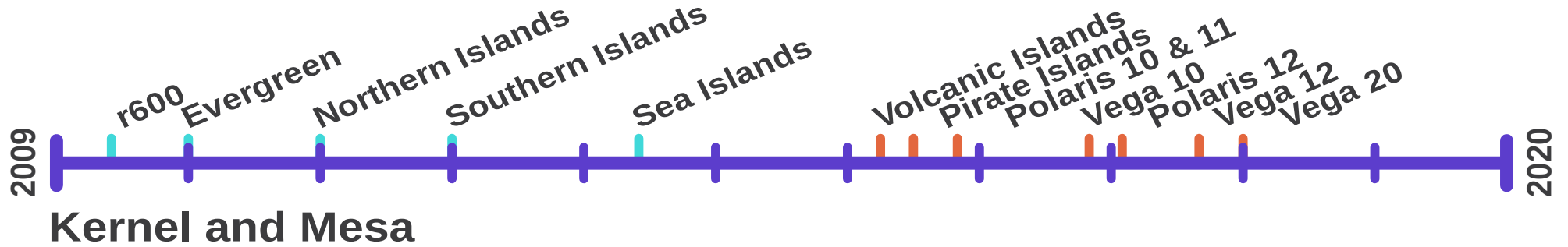


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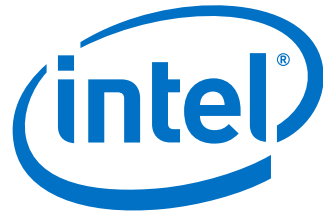
AMD



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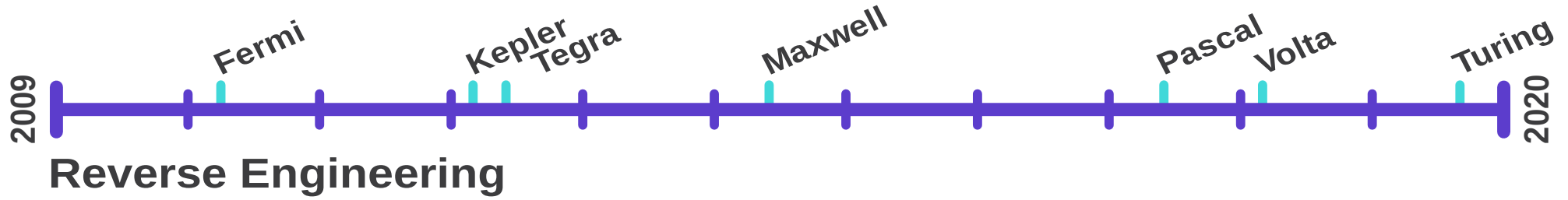


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NVIDIA

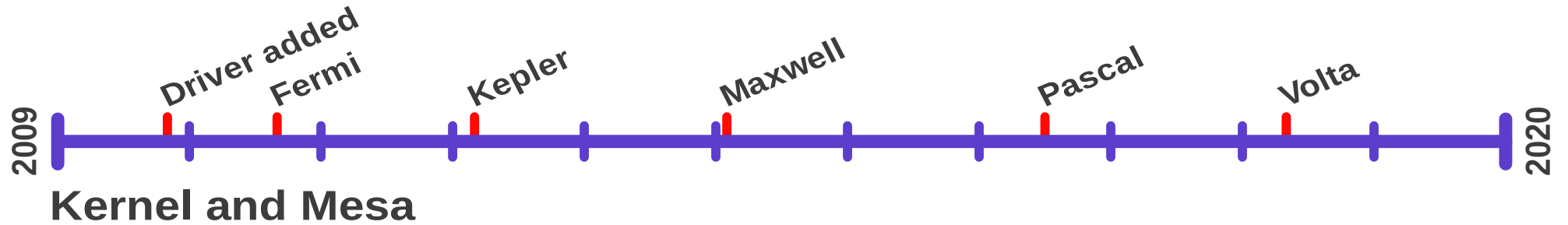
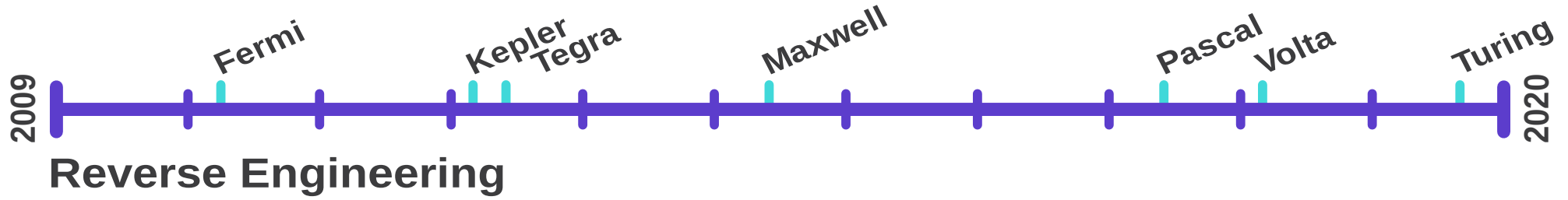


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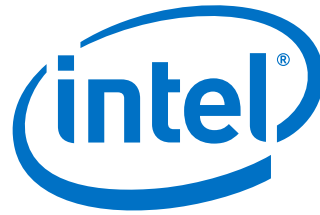
NVIDIA



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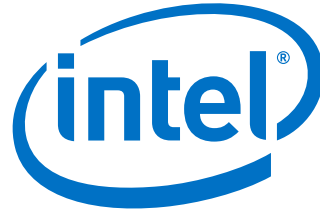
Vendors



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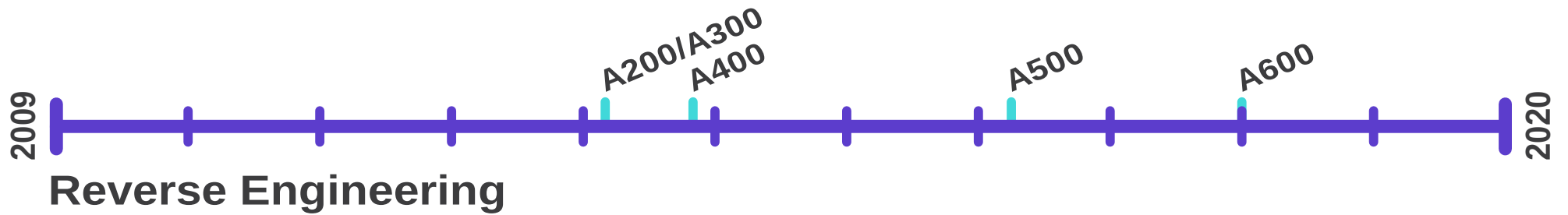


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Qualcomm

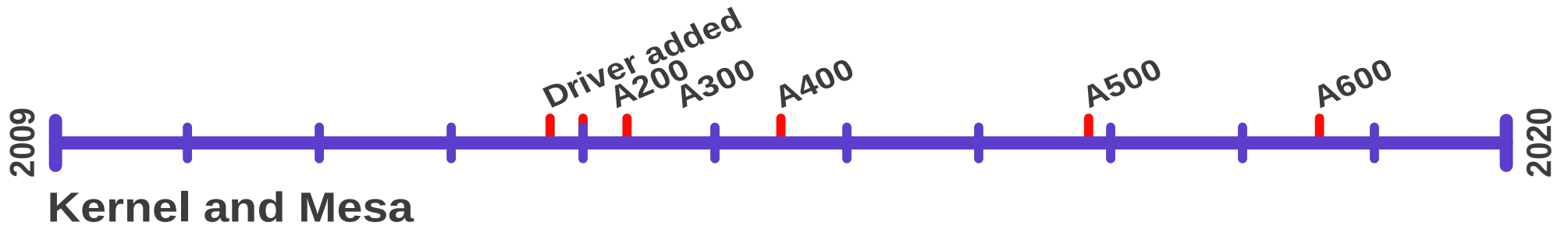
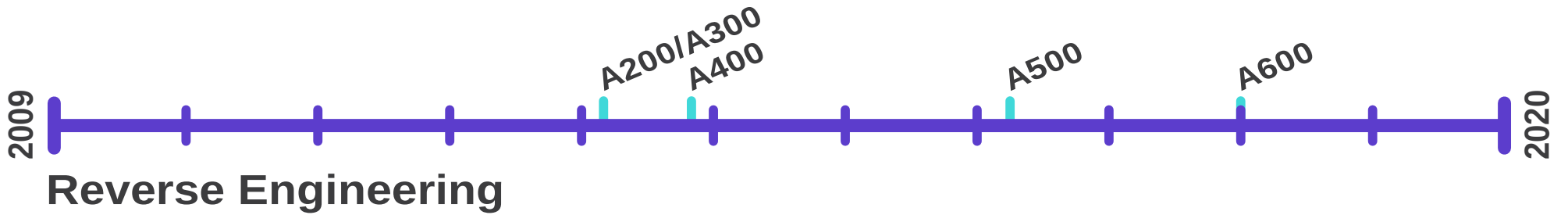


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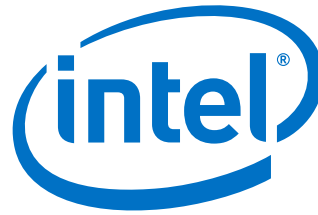
Qualcomm



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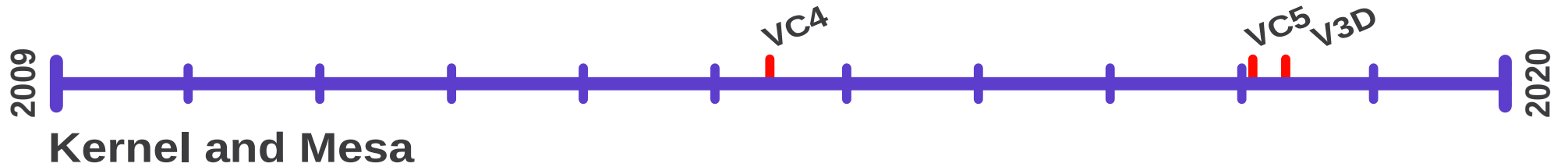


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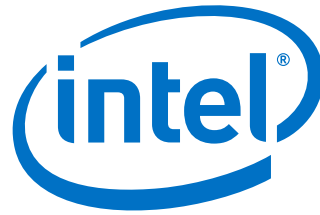
Broadcom



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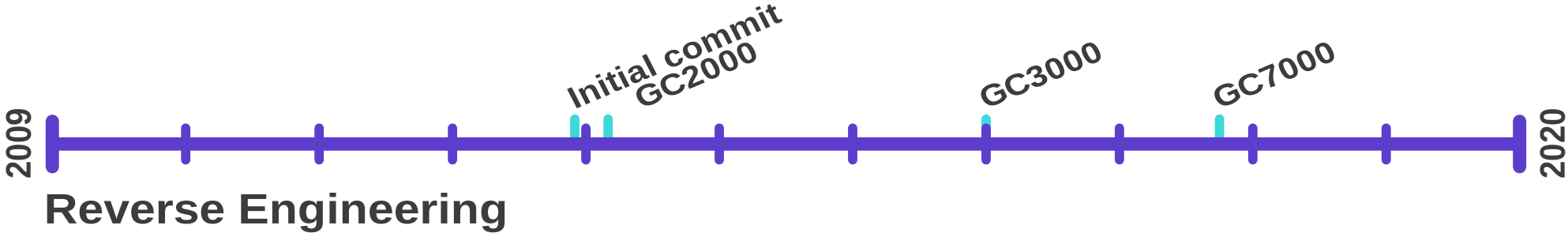


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Vivante

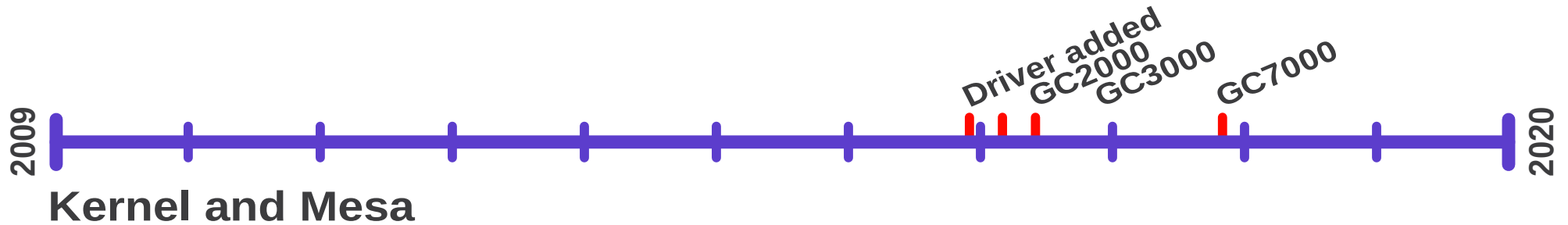
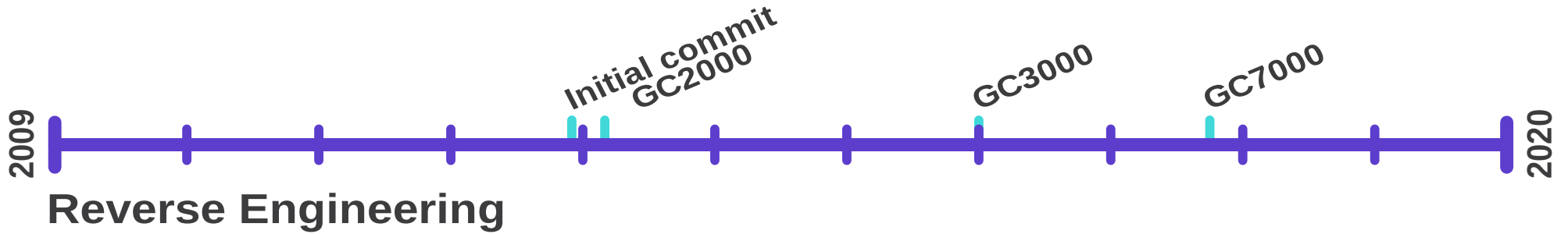


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Vivante

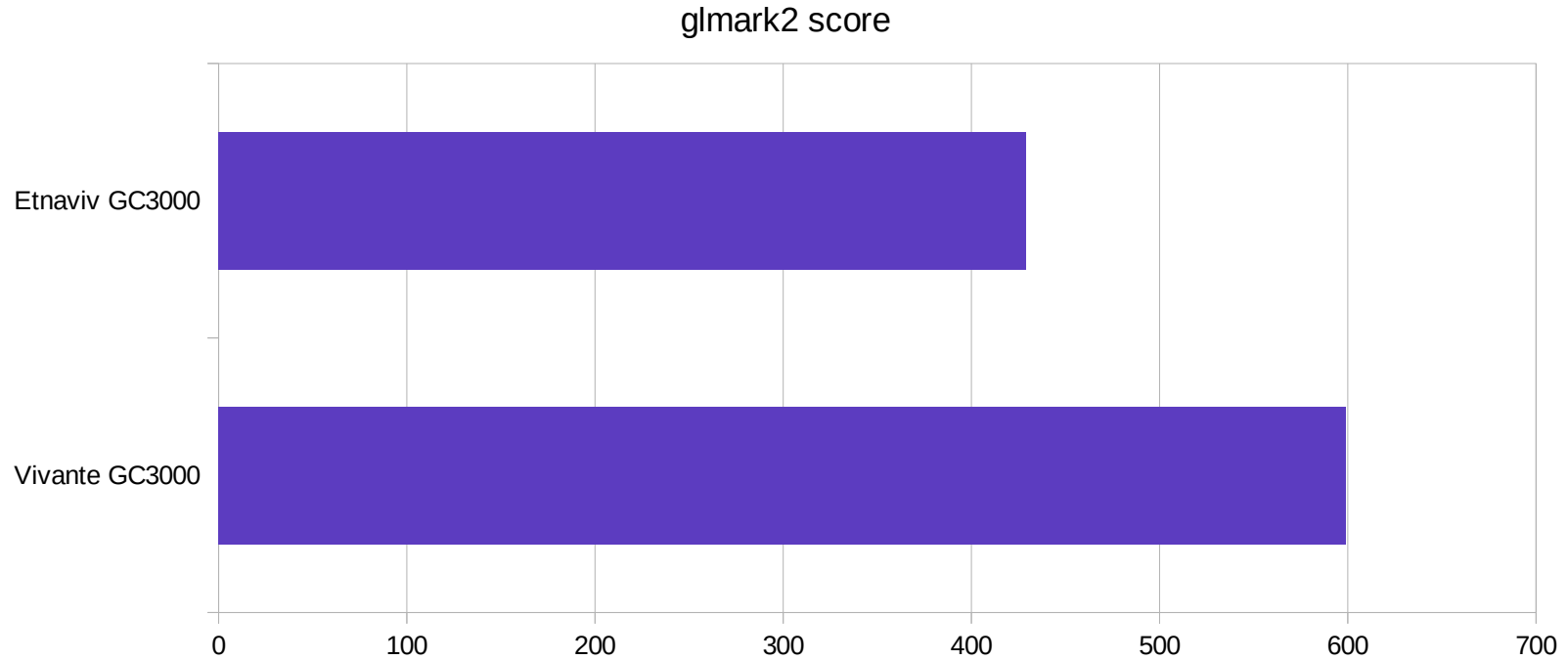


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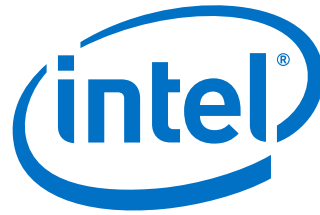
Vivante



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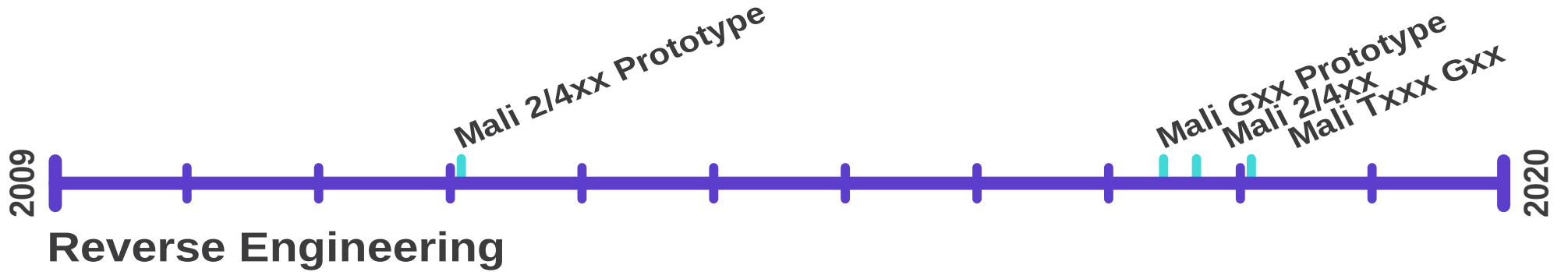


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ARM

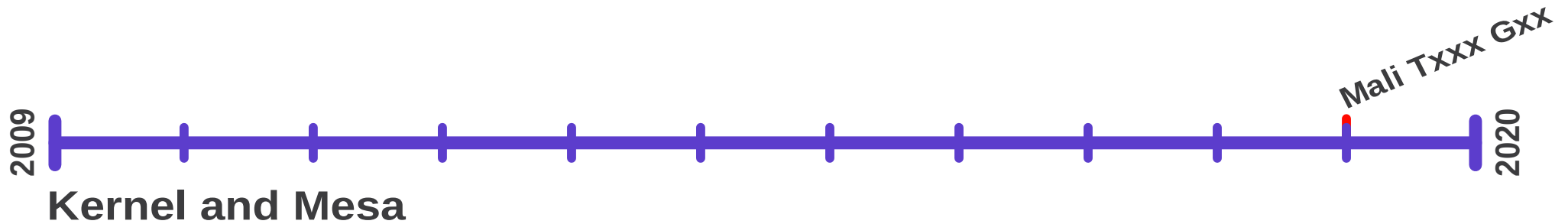
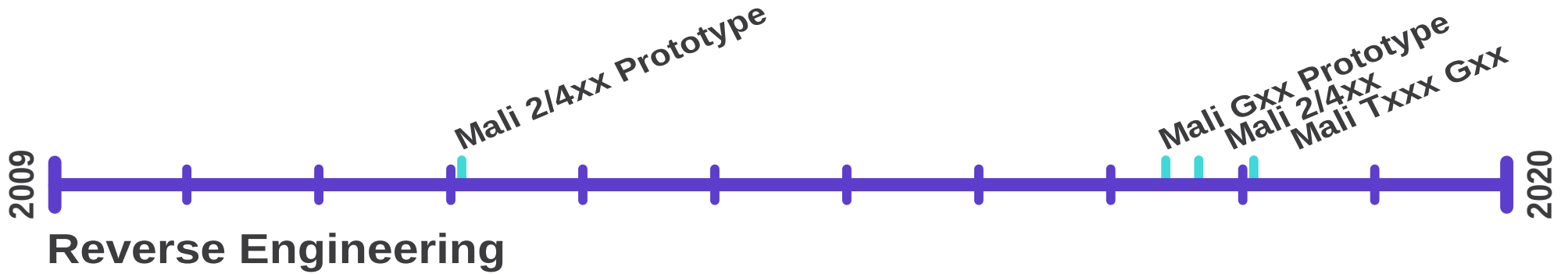


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ARM



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What Comes Next

Compute

- OpenCL

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- OpenCL
 - Qualcomm & freedreno support in progress
 - NVidia & nouveau support in progress

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- OpenCL
 - Qualcomm & freedreno support in progress
 - NVidia & nouveau support in progress
- Vulkan Compute
 - Supported by Intel and AMD

Compute

- OpenCL
 - Qualcomm & freedreno support in progress
 - NVidia & nouveau support in progress
- Vulkan Compute
 - Supported by Intel and AMD
- SYCL
 - High level & built on top of OpenCL

ARM



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ARM

- Panfrost driver
 - Targeting Midgard architecture, T-6/7/8xx GPUs
 - Targeting Bifrost architecture, Gxx GPUs

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- Panfrost driver
 - Targeting Midgard architecture, T-6/7/8xx GPUs
 - Targeting Bifrost architecture, Gxx GPUs
- Lima driver
 - Targeting Utgard architecture, 2/3/4xx GPUs

ARM

- Demo @ booth
 - 4-280



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Big Picture

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- Some drivers are very mature

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- Community drivers share common codebase



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- Reverse engineering takes 0-7 years



Big Picture

- Some drivers are very mature
- Community drivers share common codebase
- Reverse engineering takes 0-7 years
- Compute still on the way





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Why Open Source?

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- Long-term support



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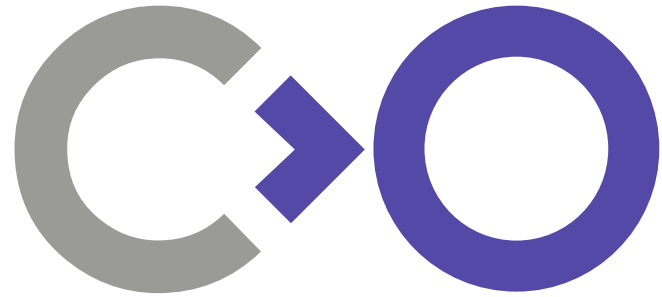
- Long-term support
 - Up to 20 year old drivers currently supported
- High performance & conformance
- Much simpler debugging



Why Open Source?

- Long-term support
 - Up to 20 year old drivers currently supported
- High performance & conformance
- Much simpler debugging
- Old hardware receives new features





Thank you!



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