News from the Embedded GPU Space

COLLABORA

Robert Foss

@memcpy_io

Open First

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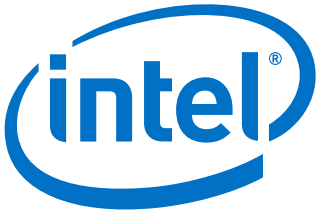
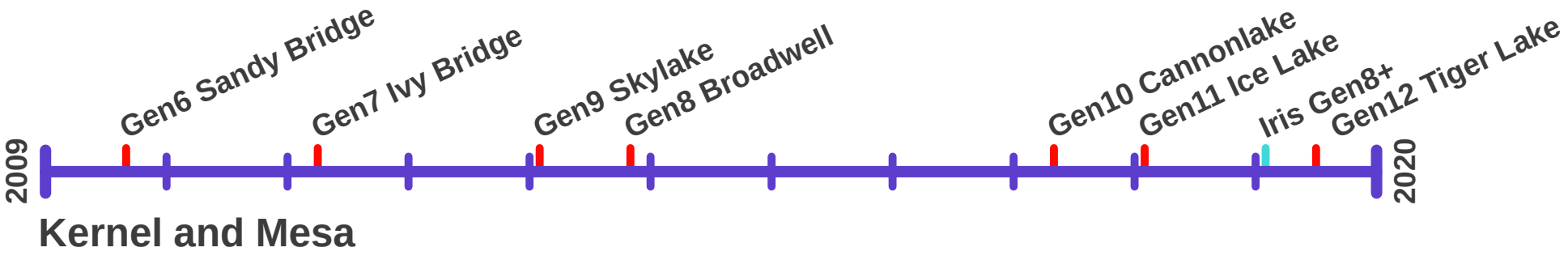
Vendors

Vendors



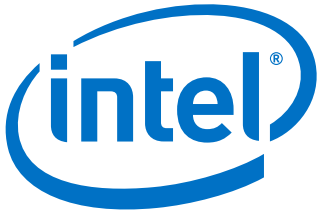
Vendors

Intel



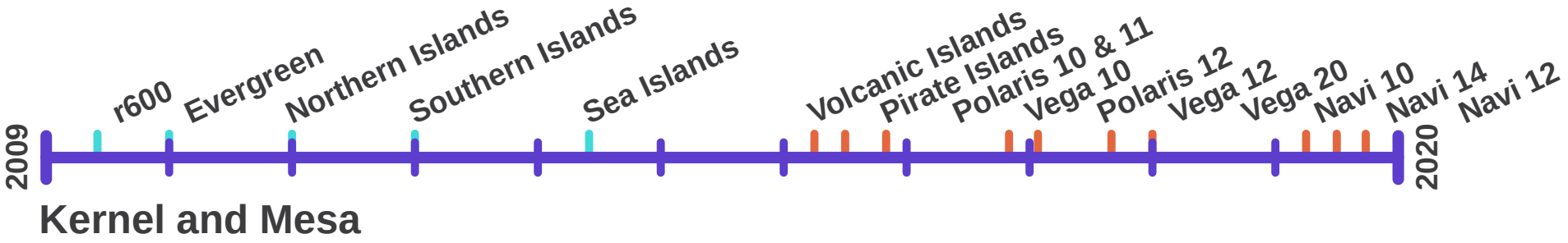
Kernel and Mesa

Vendors



Vendors

AMD



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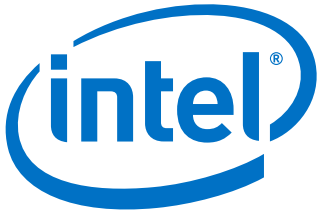

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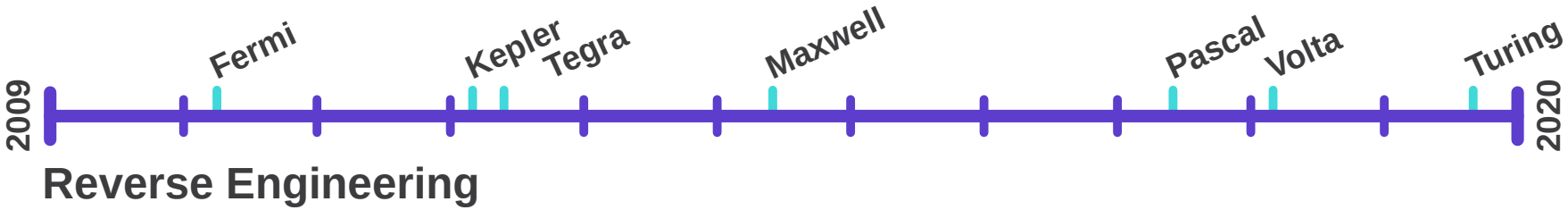
NVidia



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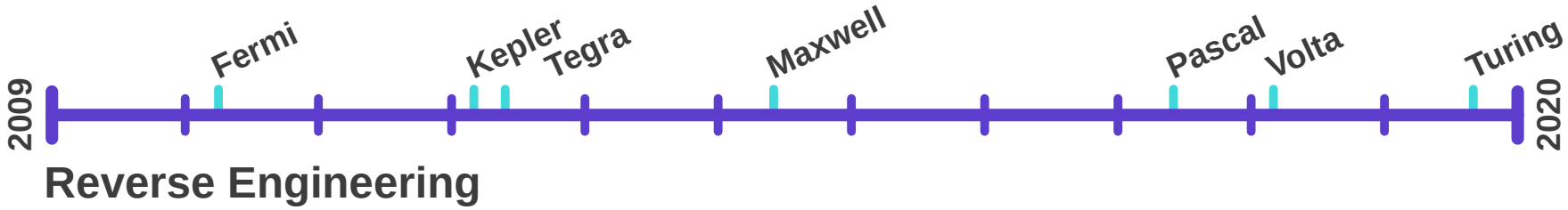
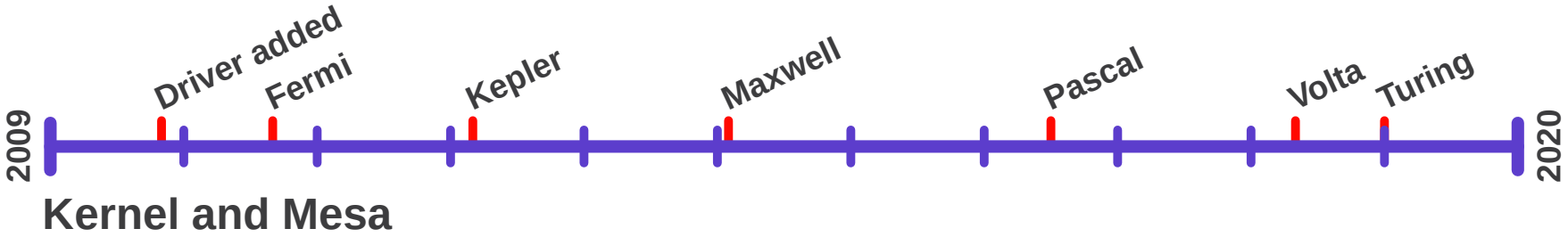
NVidia





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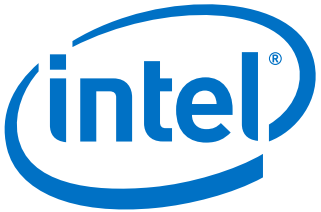

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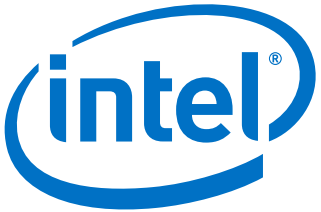

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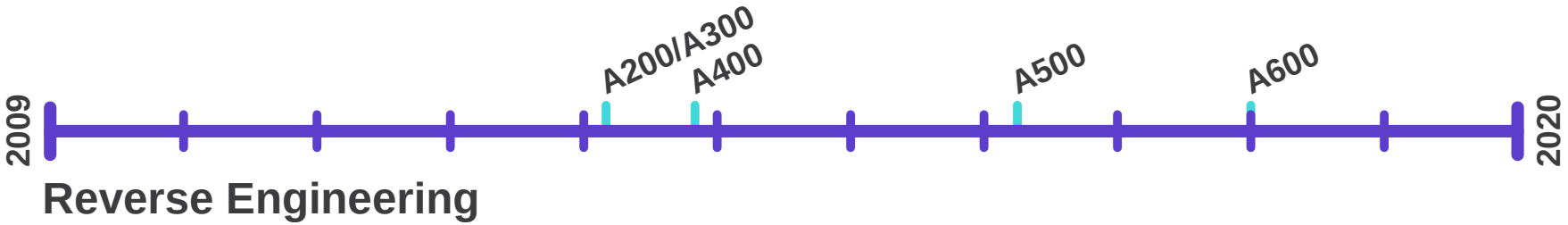
Qualcomm



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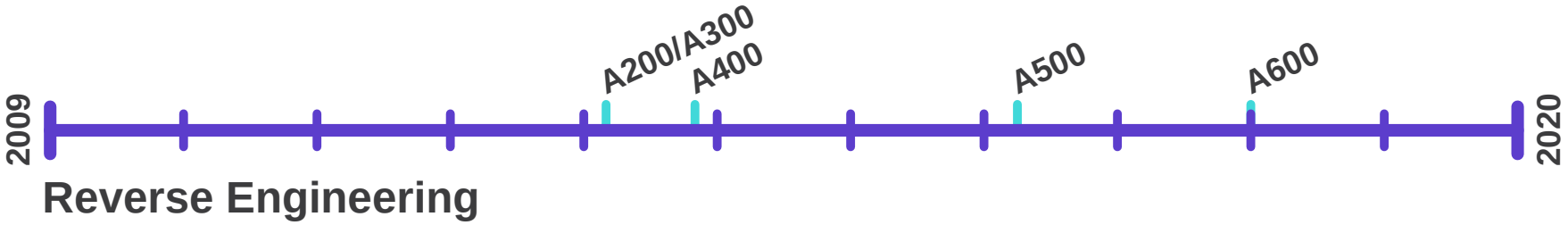

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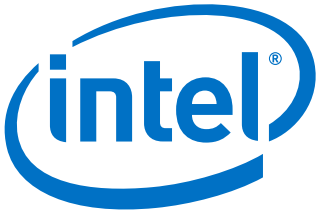

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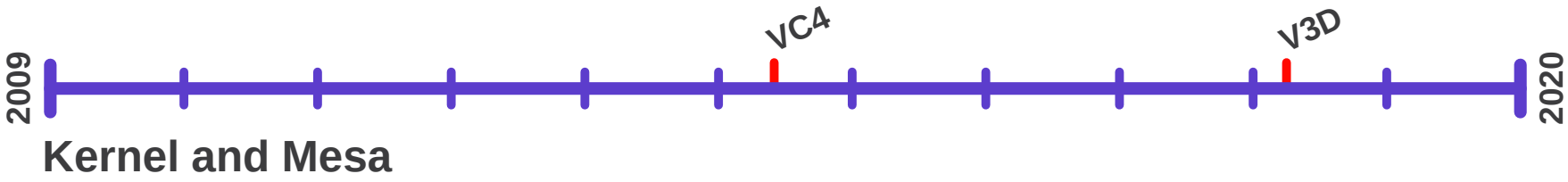
Broadcom



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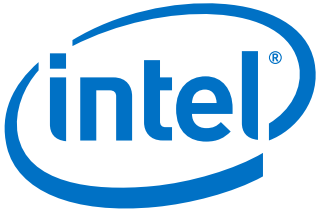
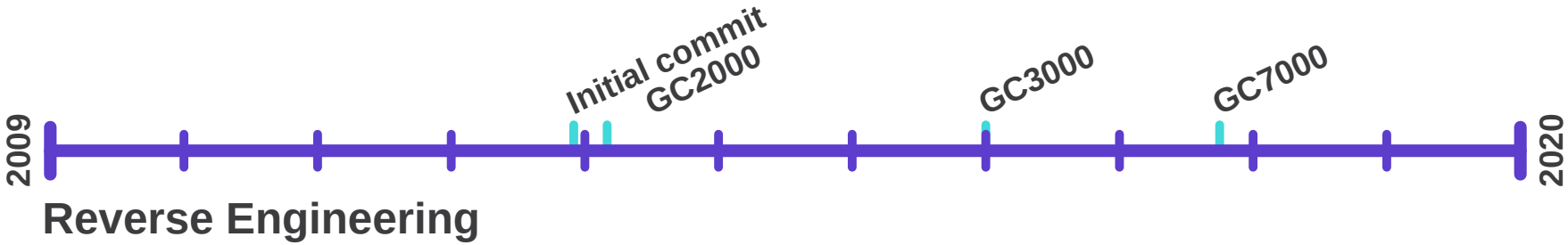


Vendors

Vivante



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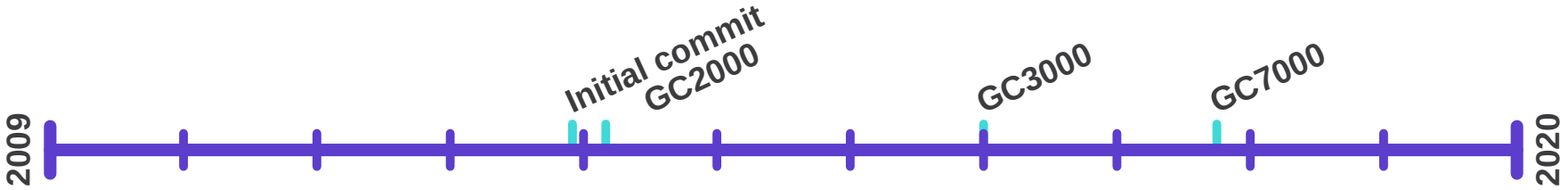
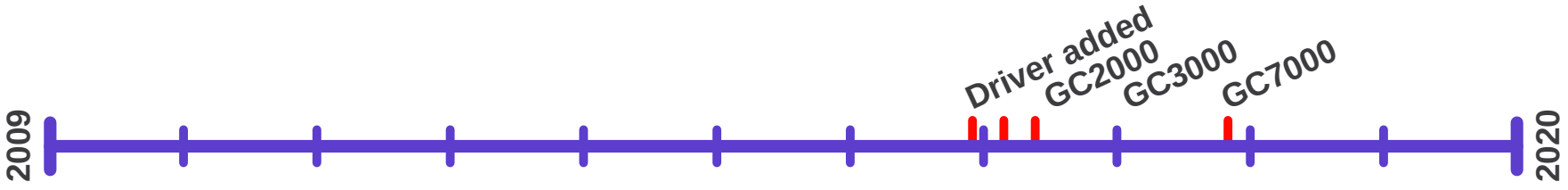


Reverse Engineering



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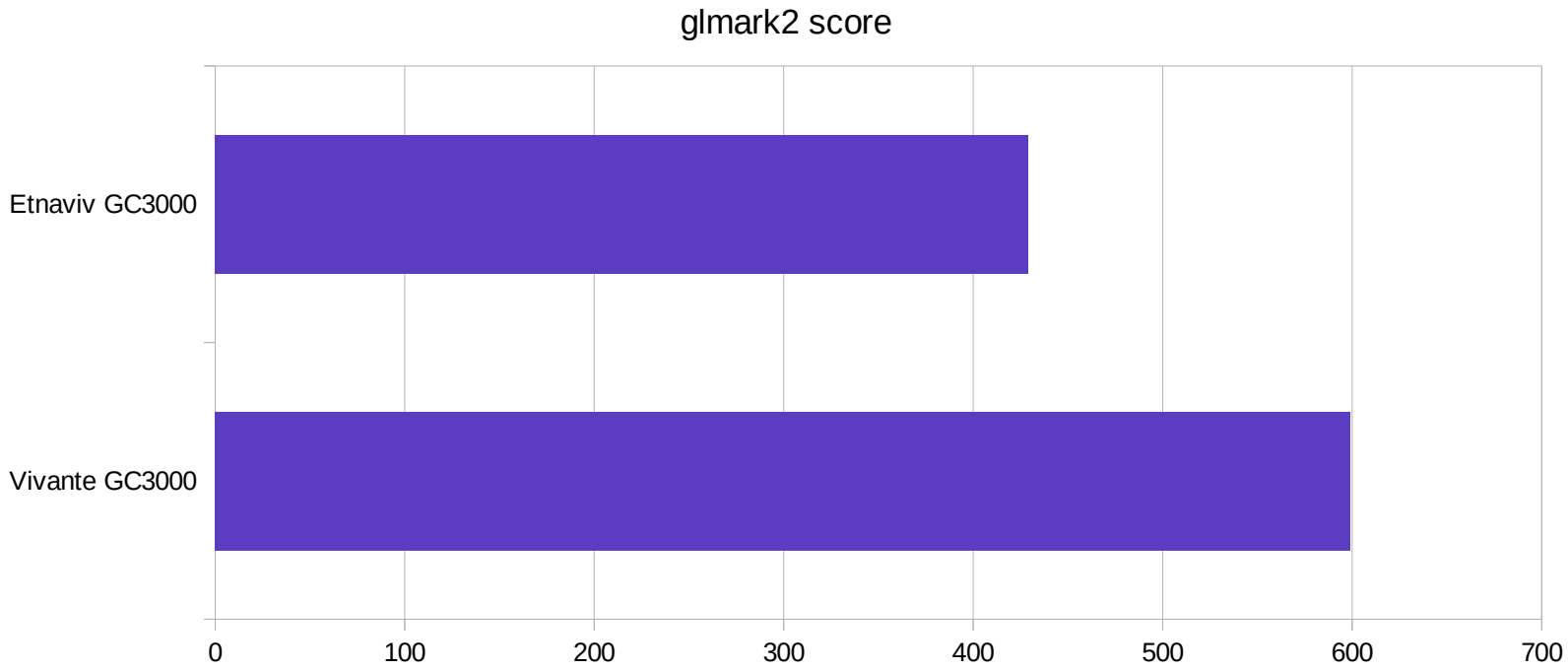


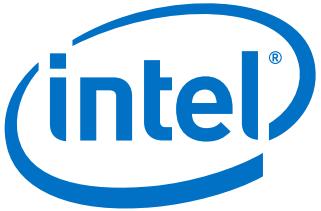
Vendors

AMD

arm

BROADCOM

Imagination


intel

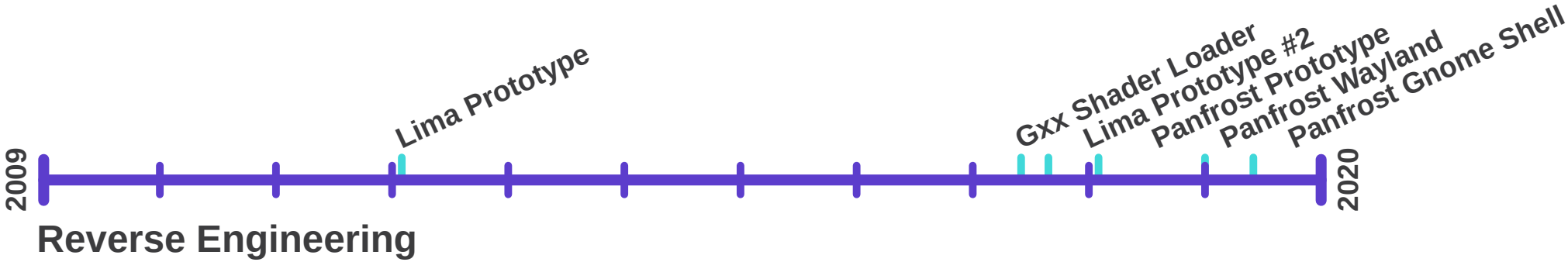
NVIDIA

QUALCOMM

VIVANTE

Vendors

ARM


Lima Prototype
Gxx Shader Loader
Lima Prototype #2
Panfrost Prototype
Panfrost Wayland
Panfrost Gnome Shell
2009
2020
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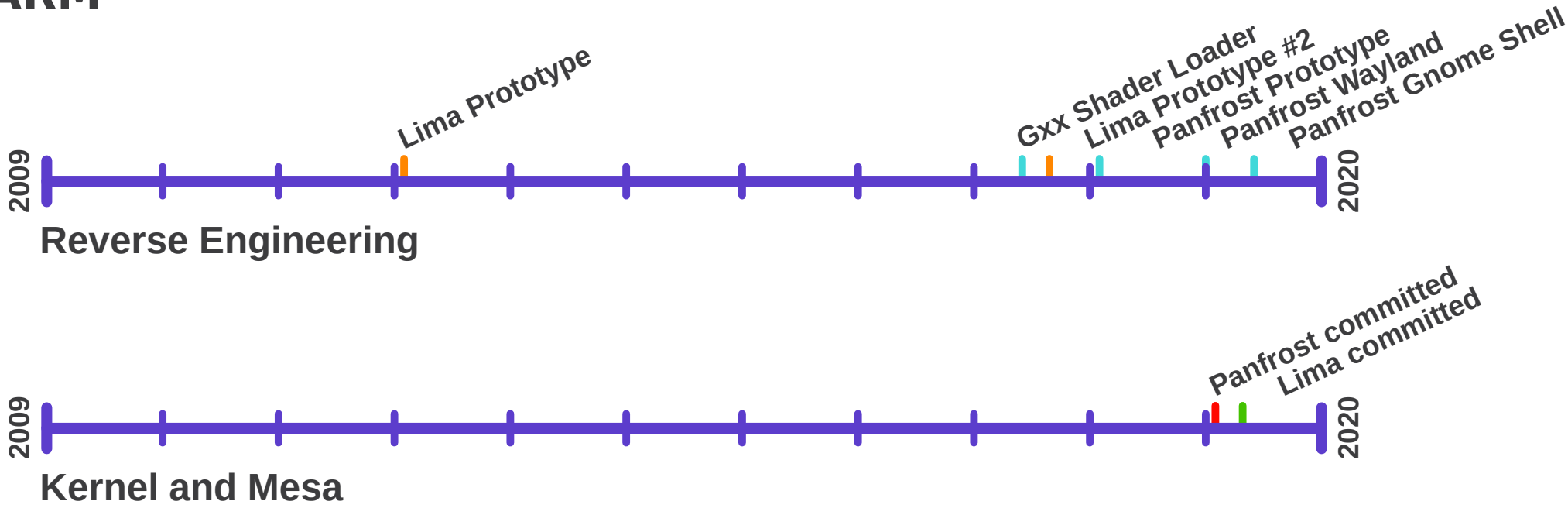
Vendors

ARM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What Comes Next

Compute

- OpenCL

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- OpenCL
  - Qualcomm & freeedreno support in progress
  - NVidia & nouveau support in progress
  - Vivante & etnaviv support in progress

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  - Vivante & etnaviv support in progress
- Vulkan Compute
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- SYCL
  - High level & built on top of OpenCL

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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

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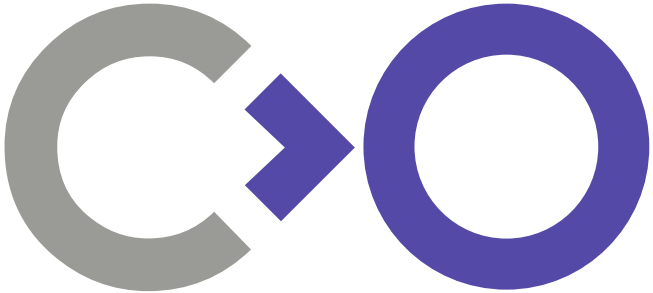
- Long-term support
  - Up to 20 year old drivers currently supported
- High performance & conformance
- Much simpler debugging
- Old hardware receives new features



Thank you!