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Upstream 1st: Tools and workflows for multi kernel version juggling of short term fixes, long term support, board enablement and features with the upstream kernel

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Having maintained a distribution agnostic reference kernel (Yocto), an operating system vendor kernel (Wind River) and finally a semi-conductor kernel (Xilinx), there are a lot of obvious workflows and tools that are used to deliver kernels and support them after release.

The less than obvious workflows (and tools) are often related to distro kernel tree maintenance and balancing the needs of short term fixes (often security related), with a model that allows long term support, all in trees that may be carrying specific features or board support that are destined for upstream eventually. Many methods to juggle these demands are ad-hoc or specific to the various distros.

If a tree is not (somewhat) history clean, and patch history is not tracked over time, moving to a new kernel version, understanding why a change was made or debugging a problem are made much harder.

All the competing demands are coupled with the need to have development supported with the goal of getting changes into the mainline kernel. Understanding the technical solutions (tools), workflows (tools + social) and how to support the community at large to reduce everyone's workload is often given limited time. Stepping back and looking at the different solutions that maintainers are using may highlight common patterns and opportunities to collaborate/standardize on various techniques. Less-than-ideal solutions are also valuable as lessons learned and are worth sharing.

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Yes

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