



# Scalar Efficiency SIG Meeting

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# Agenda

- Load/store pair
- Infrastructure
  - Instruction database format
  - Toolchains & targets
  - Discuss processor types / metrics / workloads

# Load/store pair

- Presentation by Christoph
  - Discussion and Q&A

# Instruction database format

- Presented Google Sheet format last month
- Text format suggested to manage concurrent work. See [prototype](#)
  - Instruction data specified in YAML files.
  - Vendors can be separate.
  - Script aggregates into Asciiidoc table.

# Toolchains & targets

- Developing container with toolchains
  - Singularity container system

Table 1. Toolchains/Targets

	Ecosystem	Version	Arch	Abi	Flags
RTOS	LLVM	18.0	rv32ima_zba_zbb_zbs_zca_zcb_zcmp_zcmt	ilp32	-Os
	GCC	13.2	rv32ima_zba_zbb_zbs_zca_zcb_zcmp_zcmt	ilp32	-Os
	LLVM	18.0	rv64ima_zba_zbb_zbs_zca_zcb_zcmp_zcmt	lp64	-Os
	GCC	13.2	rv64ima_zba_zbb_zbs_zca_zcb_zcmp_zcmt	lp64	-Os

	Ecosystem	Version	Arch	Abi	Flags
Embed Rich OS	LLVM	18.0	rv32imaf_zba_zb b_zbs_zca_zcb_z cf_zcmp	ilp32f	-Os
	GCC	13.2	rv32imaf_zba_zb b_zbs_zca_zcb_z cf_zcmp	ilp32f	-Os
	LLVM	18.0	rv64imaf_zba_zb b_zbs_zca_zcb_z cf_zcmp	lp64f	-Os
	GCC	13.2	rv32imaf_zba_zb b_zbs_zca_zcb_z cf_zcmp	lp64f	-Os
App Rich OS	LLVM	18.0	rv64gcv_zba_zbb _zbs_zcb	lp64d	-Ofast
	GCC	13.2	rv64gcv_zba_zbb _zbs_zcb	lp64d	-Ofast

# Workloads

Class	Name	Version	Status
RTOS	Zephyr (examples TBD)	3.6.0	Done
	Embench IoT	1.0	Done
	Coremark	Pro	Not started
Embedded Rich OS	Linux Kernel	TODO	Not started
	??	TODO	Not started
App Rich OS	SPEC CPU	2017	Done*
	AOSP (userspace)	TODO	Not started
	Linux Kernel	TODO	Not started
	V8	TODO	Not started
	V8 (Sunspider)	TODO	Not started — discussion needed
	V8 (Octane)	TODO	Not started — discussion needed
	V8 (Speedometer)	TODO	Not started — discussion needed

# Analysis

- Script that estimates code size savings by finding/replacing instruction sequences
  - In progress: validate against compiler results from `XThreadMemPair`



# Processor classes

- [See Draft](#)