

# Rust (in production) Without Fear

**RustConf 2026**

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# The Journey to "Tier-1 language"

- Today: Rust sits among C++, C#, TypeScript as the best supported languages for internal development at Microsoft
- What does it take to make Rust prod-ready at MS?
- Great Windows ecosystem compatibility
- Developer tooling
- Quality workflows (test, cov, san, SA, CodeQL, Dependabot)
- A long list of ES tools & workflows that needed to be made Rust-aware
- Secure Supply Chain builds
- Compliance and SDL requirements (Windows + Linux)

# Paved Path for Rust



**1ES:** Paved Path for Rust engineering systems



**Crate security** in enterprise environment

- Internal crate registry (feeds, policies, quarantine, docs)
- Crate publishing workflows (public, private)
- Crate review/evaluation & audit



**Microsoft Rust SDK**

- Toolchain acquisition (Dev / CI)
- Compiler toolchains (various hosts/targets), ancillary dev tools
- Support hybrid projects (C++/Rust/C#)
- ES workflows & services
- Release qualification testing
- Docs, samples, guidance, skills
- Servicing & longer support cycles



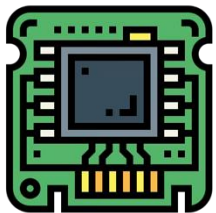
**Agentic workflows** Rust-aware

# Introducing “codegen\_UTC”

- The need for a **Windows-first compiler codegen** for Rust
- **MSVC** is *the* platform compiler for Windows
- We wrote a new codegen backend using the same interface rustc uses for LLVM, GCC, etc.
  - codegen\_llvm, codegen\_gcc, codegen\_craneflight, ... codegen\_UTC
  - rustc + codegen\_UTC + **MSVC** backend (“UTC”)
- **Native Platform Evolution** (unified codegen platform for C++ and Rust)
- Seamless **Rust/C++ interop** for hybrid projects
- **Cross-language** inlining and optimization
- Post-link **compliance** and **servicing** (APIscan, Hotpatch)
- **Binary hardening** and **code security** features (SDL)
- Enhanced **DevEx** and **Debugging**
- **Production-ready** since earlier this year
  - **Self hosted** since Rust 1.90 on x64/aarch64 **Windows**
  - Already **over 100 MS project repos** build with codegen\_UTC (more switching every week)

# Microsoft Cloud runs on Rust

- Azure infra & core services
  - [Azure SDK](#) for Rust
- M365 services
  - [Oxidizer SDK](#)
- [Copilot](#) 🤖 tech stack & services
- Bare-metal, firmware, drivers, Linux, Windows



# 2026 - Are we Rust-ready yet?

- YES, from Edge to Cloud, Rust is everywhere at Microsoft!
- What's **your** Rust journey?
- A bunch of **MS Rustaceans** are here on-site 🙌
- Let's talk!