

R-Evolution

A Story of Rust Adoption

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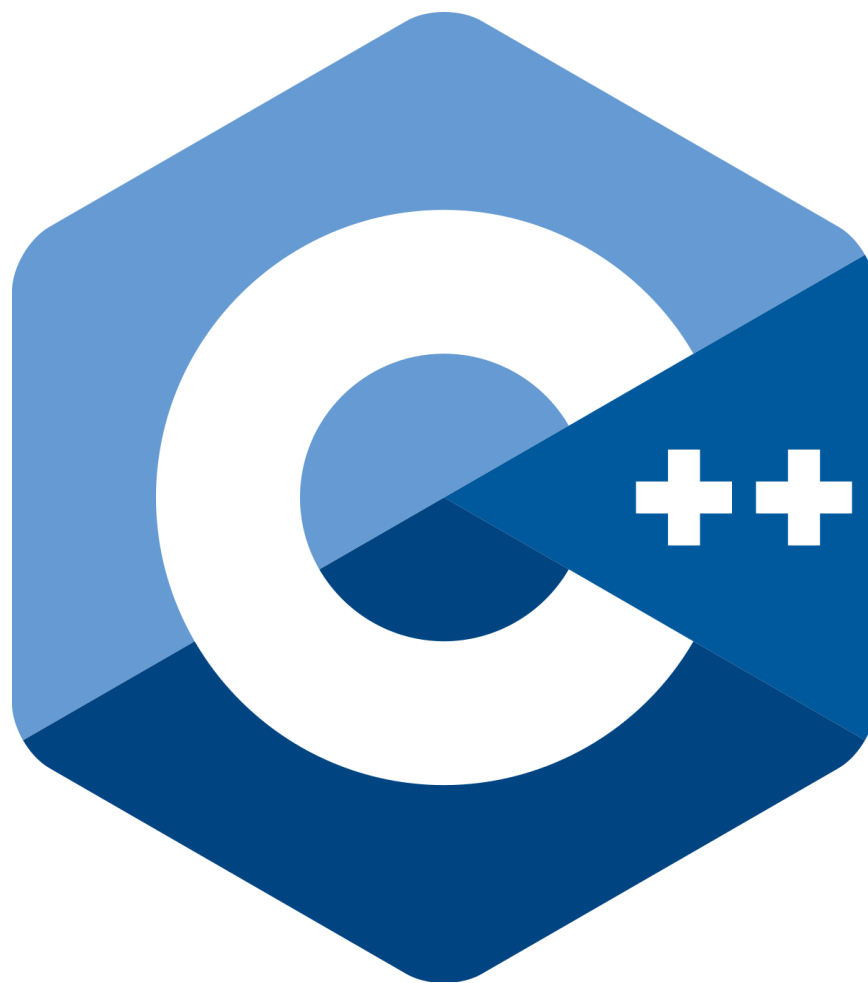
Microsoft

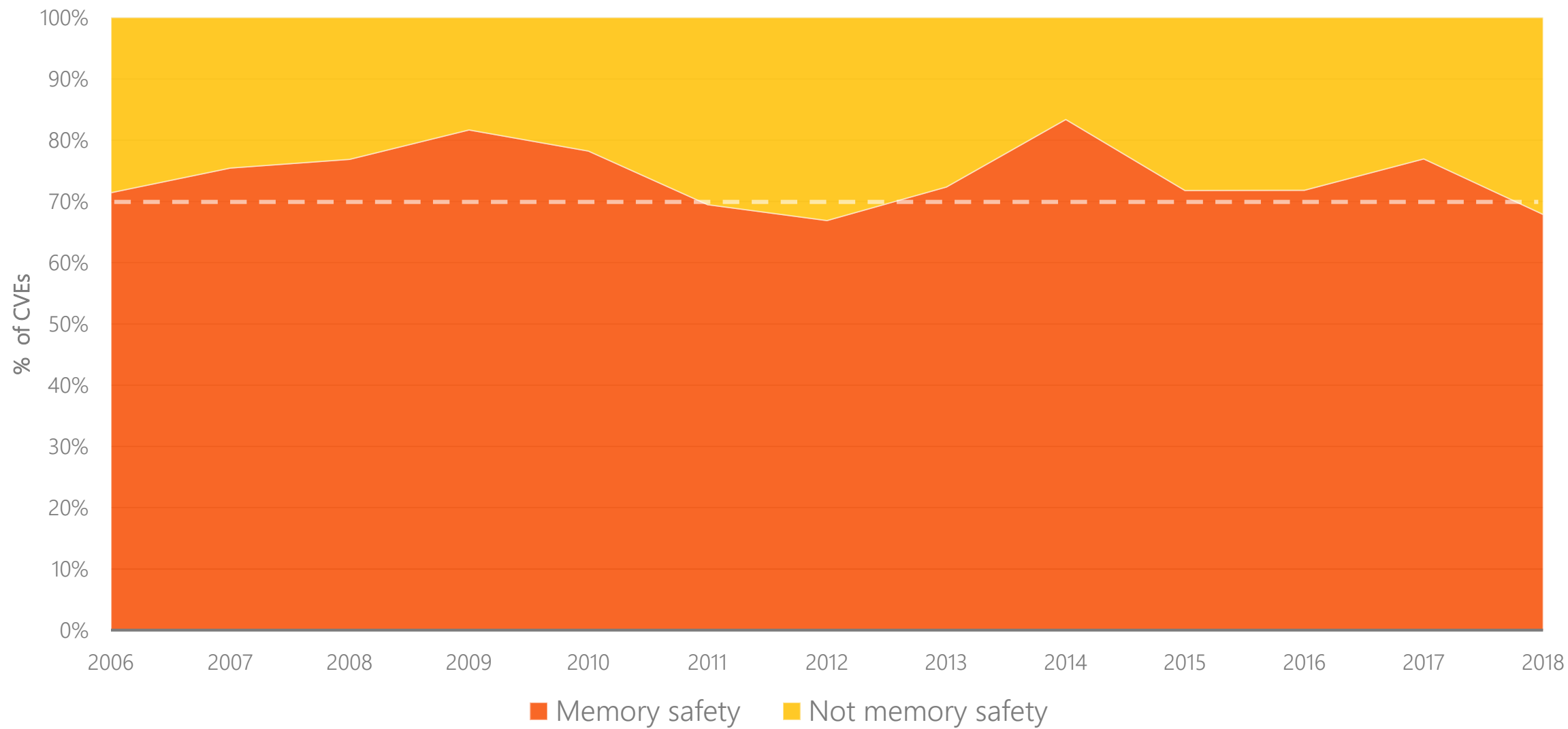
The Problem



At the core of this
problem...







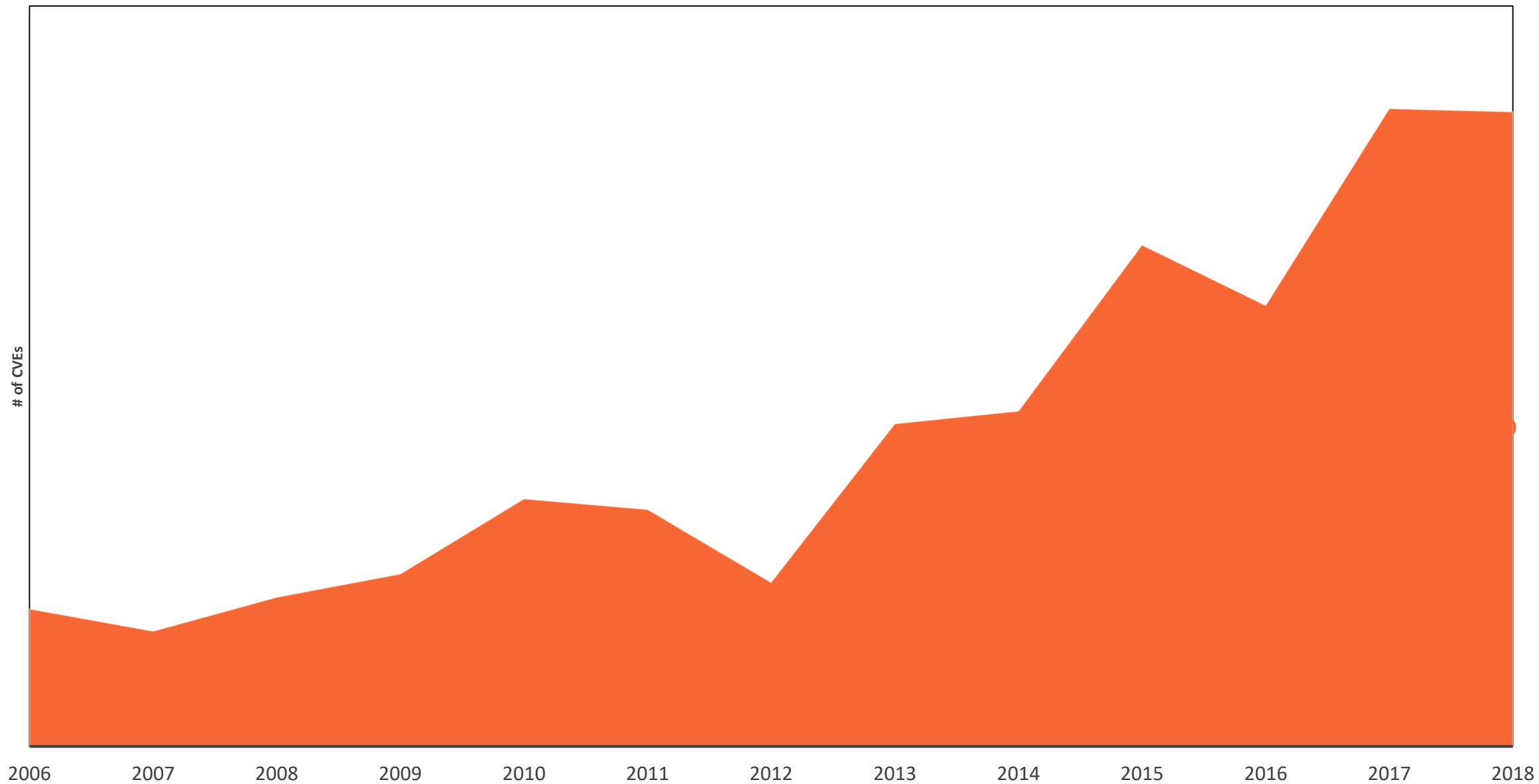
How much
does this cost?



\$150,000

How many issues
per year?

468!



Can the cost be
even higher?



Wana Decrypt0r 2.0

×



Ooops, your files have been encrypted!

English

What Happened to My Computer?

Your important files are encrypted. Many of your documents, photos, videos, databases and other files are no longer accessible because they have been encrypted. Maybe you are busy looking for a way to recover your files, but do not waste your time. Nobody can recover your files without our decryption service.

Can I Recover My Files?

Sure. We guarantee that you can recover all your files safely and easily. But you have not so enough time. You can decrypt some of your files for free. Try now by clicking <Decrypt>. But if you want to decrypt all your files, you need to pay. You only have 3 days to submit the payment. After that the price will be doubled. Also, if you don't pay in 7 days, you won't be able to recover your files forever. We will have free events for users who are so poor that they couldn't pay in 6 months.

How Do I Pay?

Payment is accepted in Bitcoin only. For more information, click <About bitcoin>. Please check the current price of Bitcoin and buy some bitcoins. For more information, click <How to buy bitcoins>. And send the correct amount to the address specified in this window. After your payment, click <Check Payment>. Best time to check: 9:00am - 11:00am GMT from Monday to Friday.

Payment will be raised on

5/16/2017 00:47:55

Time Left

02:23:57:37

Your files will be lost on

5/20/2017 00:47:55

Time Left

06:23:57:37

[About bitcoin](#)

[How to buy bitcoins?](#)

[Contact Us](#)

 **bitcoin**
ACCEPTED HERE

Send \$300 worth of bitcoin to this address:
12t9YDPgwueZ9NyMgw519p7AA8isjr6SMw

Copy

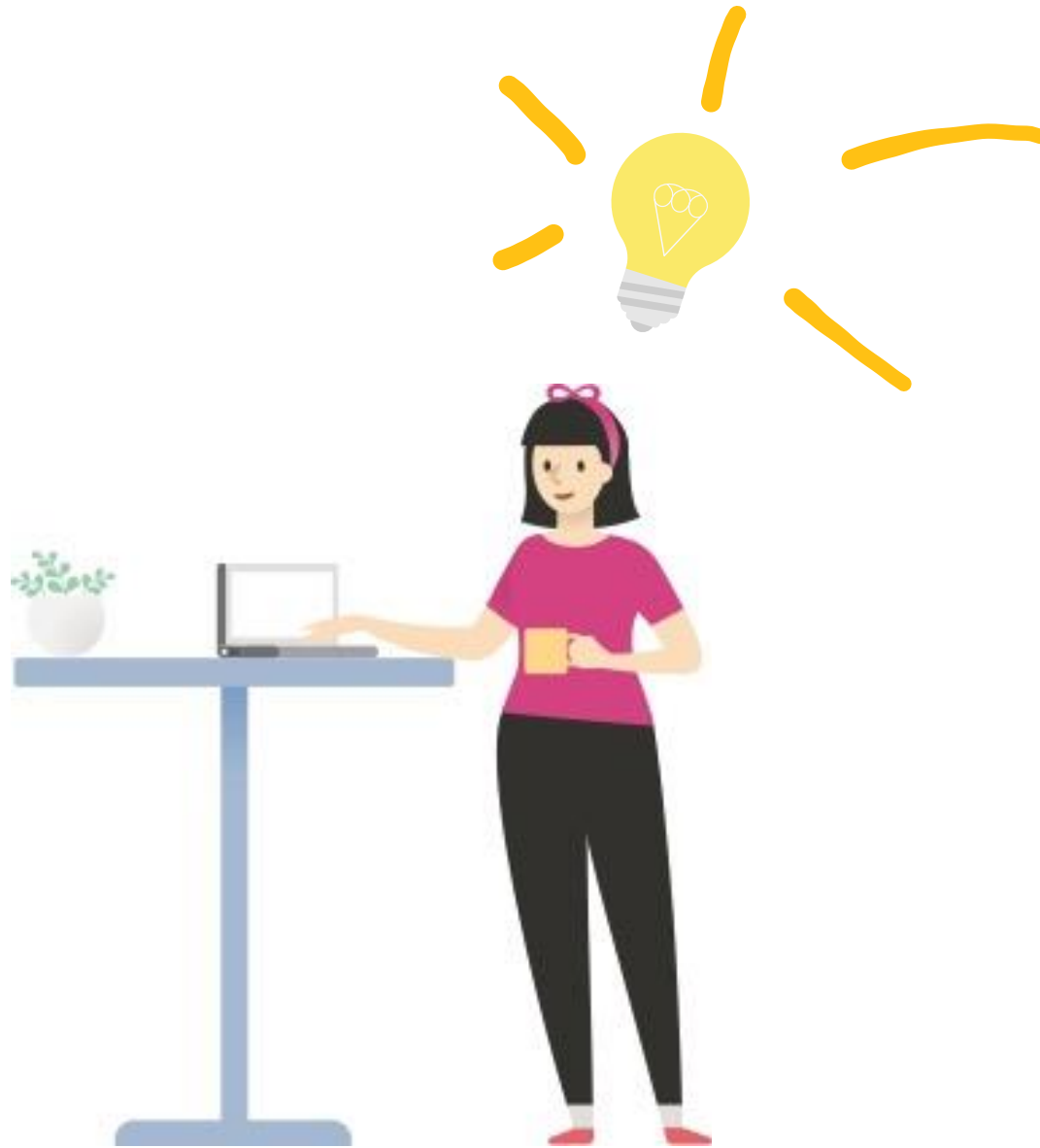
Check Payment

Decrypt

1:22 PM
9/14/2018

*\$*4,000,000,000

How do we fix this?



We need better
programmers.





We need
better analysis tools.

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We need to make these
issues impossible.



Runtime Checks



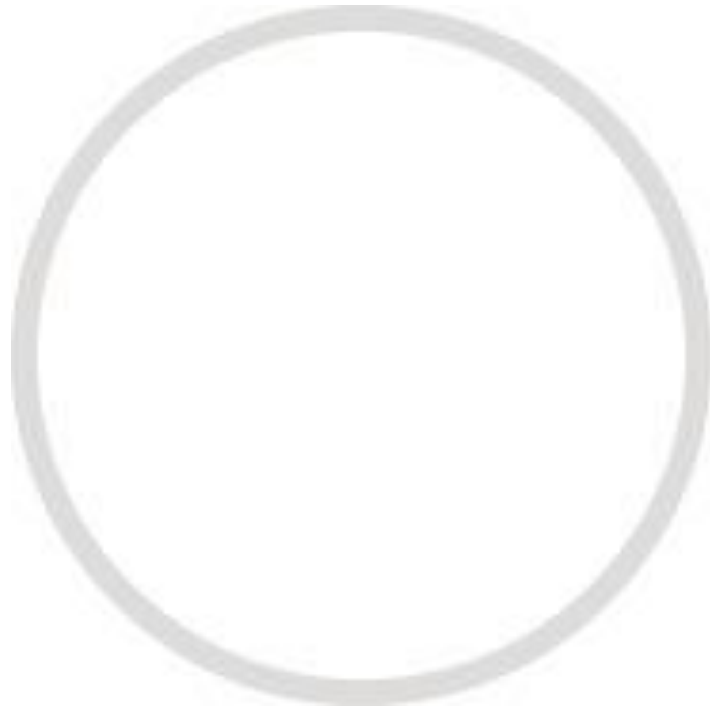
Garbage Collection



Rust



C/C++



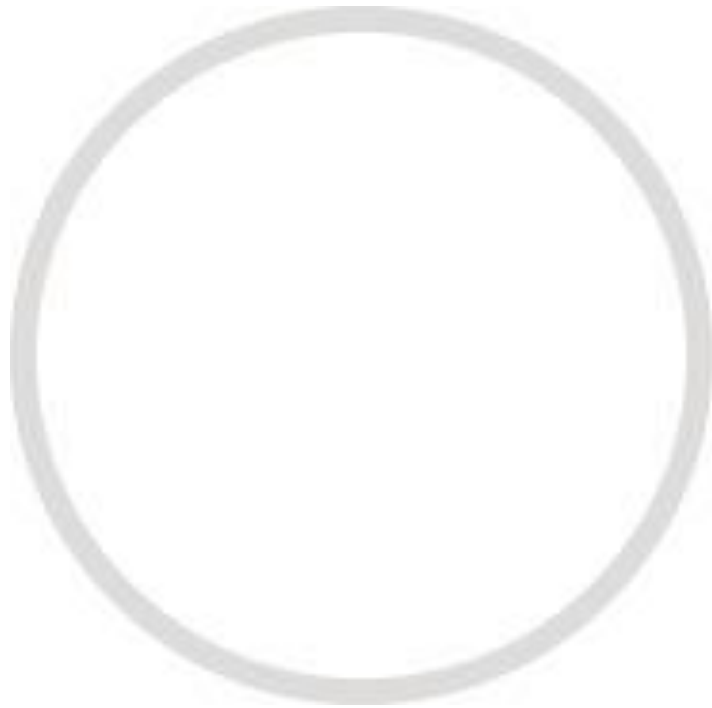
○ Code base

C/C++



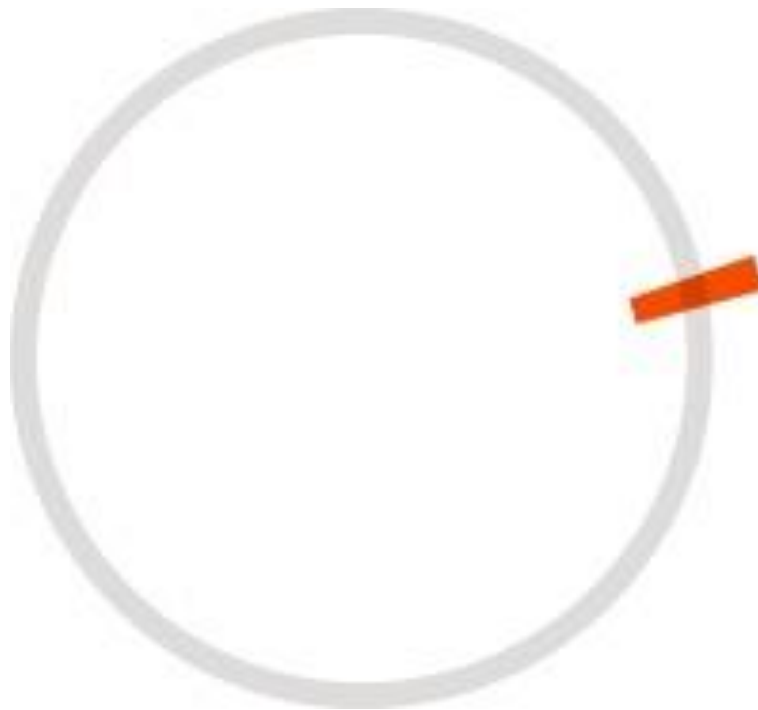
○ Code base ○ Audit %

Rust



○ Code base

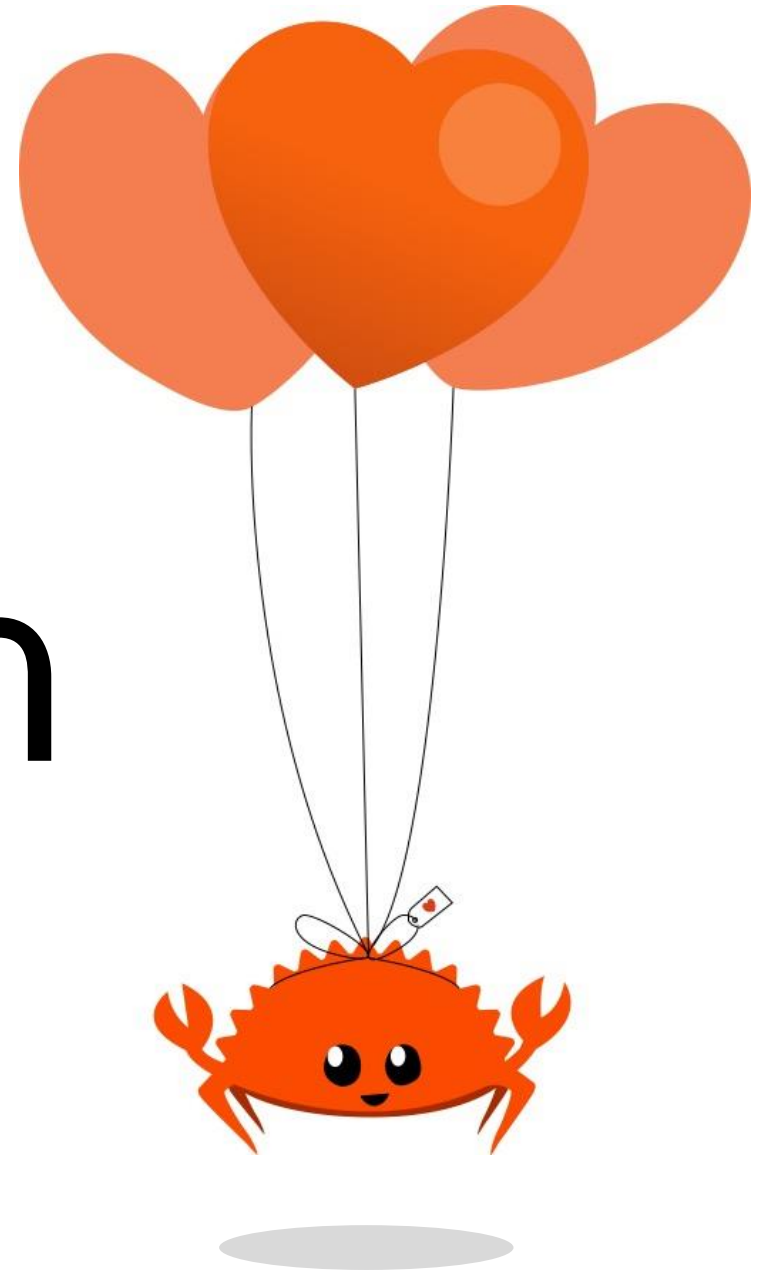
Rust



○ Code base ○ Audit %

Of course, we're
preaching to the choir

Adoption



How do languages
get adopted?



Costs

Benefits

This is what makes
Rust more adoptable



Costs

Benefit

The issue: 

For security critical software,
C++ is no longer acceptable.

The bet:

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Rust allows us to write
performant security critical
components safely

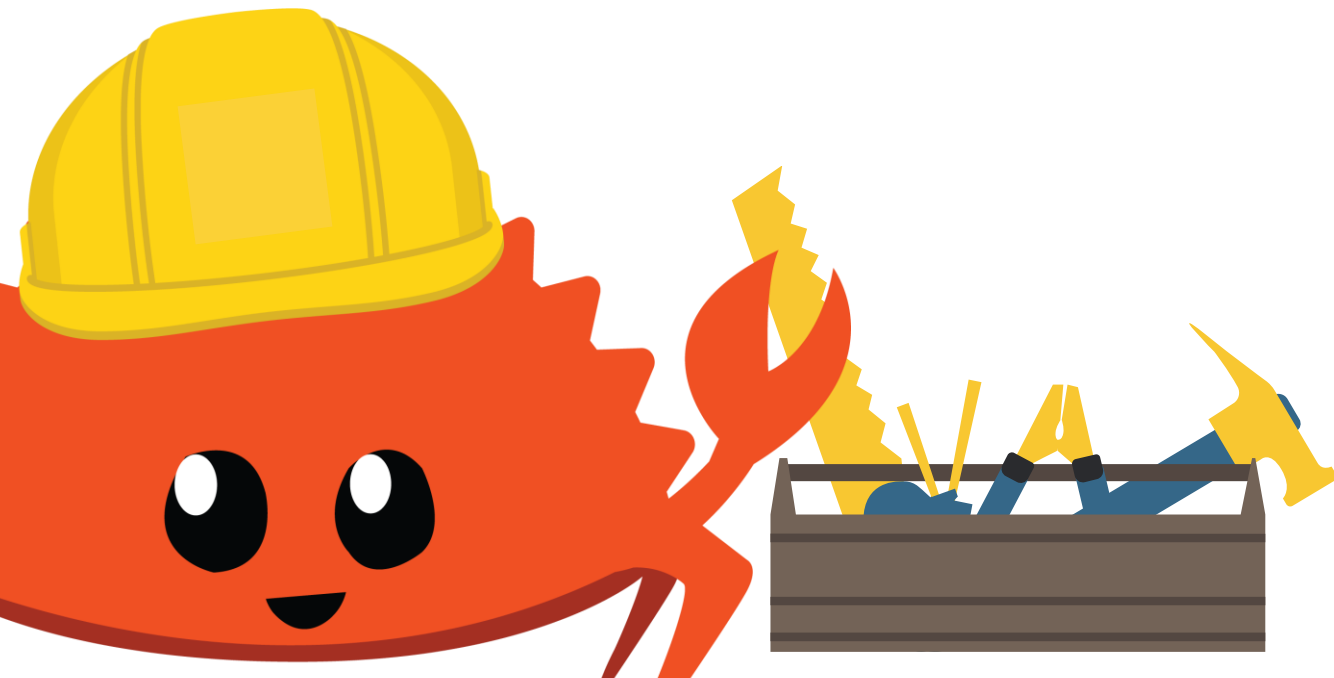
Not rewriting the world

Ok, now what?

The challenge:
Integrate with the world



Tooling



Tooling

 Existing tooling

 Assumptions around MSVC

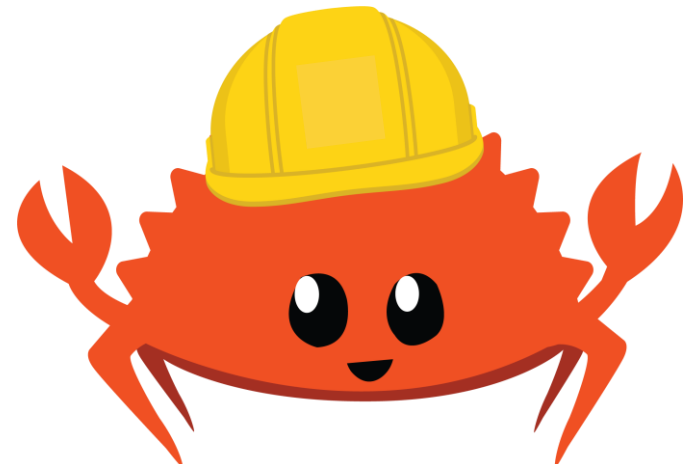


Build systems



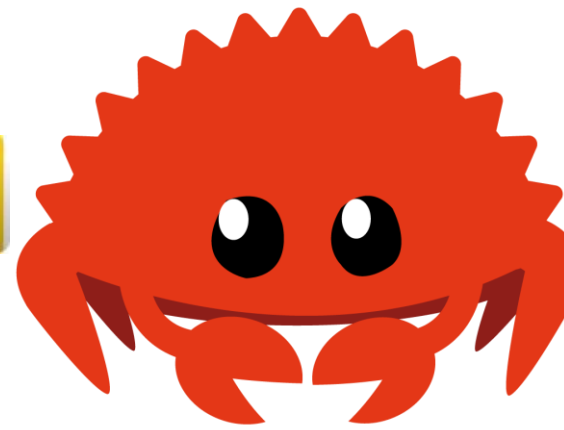
Build systems

- 🦀 Cargo playing along
- 🦀 Existing build systems





Interop

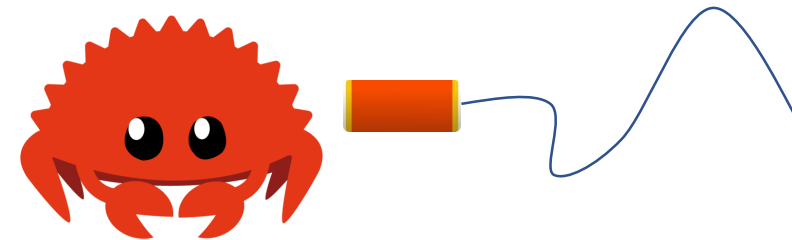


Interop

 Existing C/C++ Code

 Bindgen




 COM, WinRT and Win32



Weird



Weird

-  Trusted toolchain
-  Binary security policies
-  Compliance



Humans



Humans

 Convincing others

 Training others



Governance

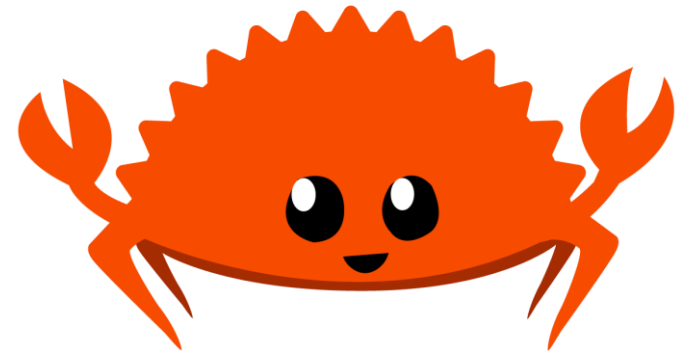
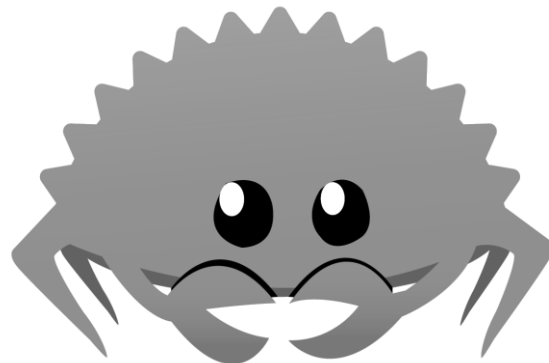
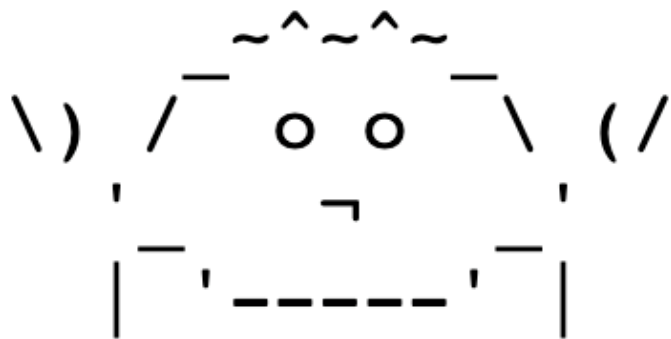


Governance

- 🦀 Ensuring community ownership
- 🦀 Establishing community **principles**



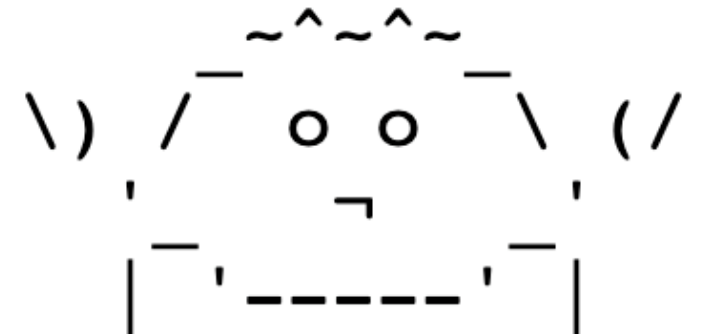
Language Changes



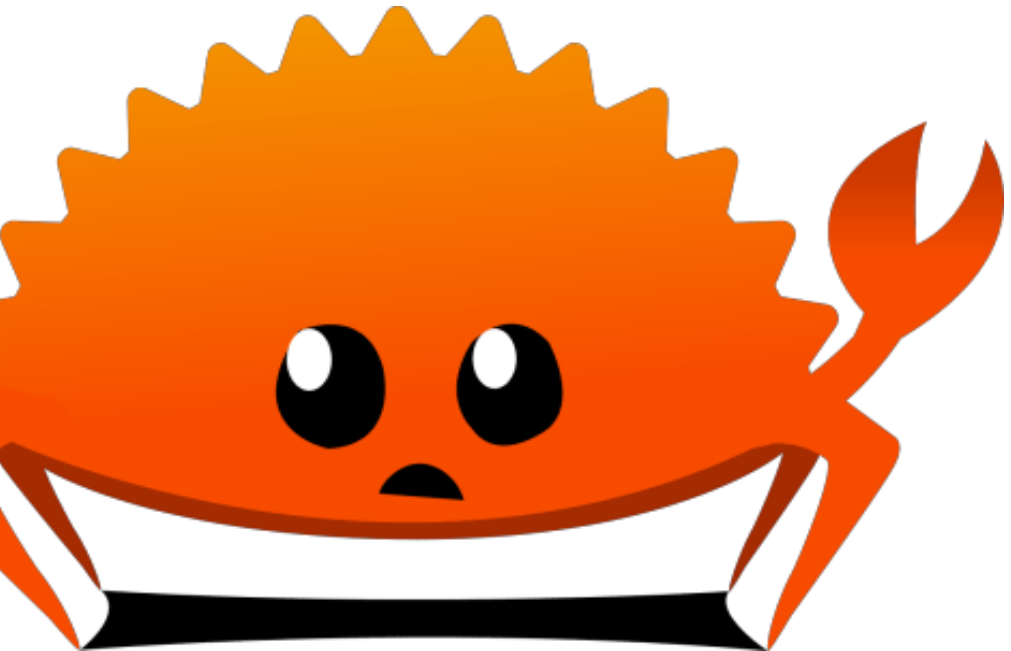
Language Changes

🦀 Changes benefiting **majority**



🦀 **Community** driven design



Reluctant Rustaceans



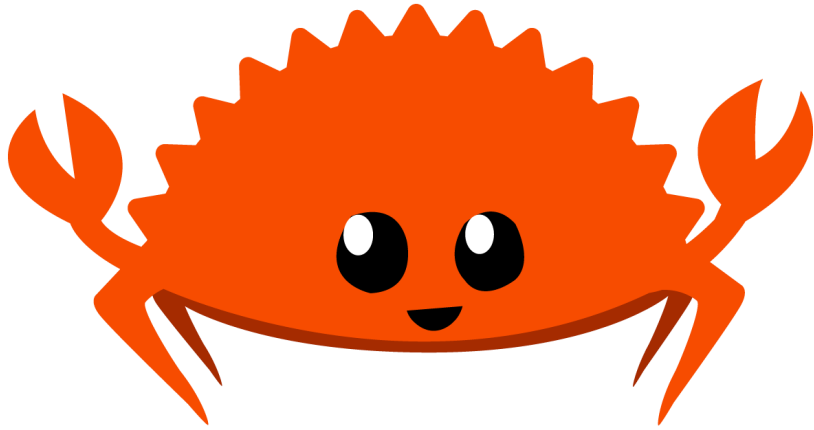
Reluctant Rustaceans

-  Welcoming those who **have** to write Rust
-  Maintaining community **spirit**



The Conclusion





Microsoft

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