RUST MEETUP COLOGNE – FEB 2016 – PASCAL HERTLEIF

RUST WITH CONFIDENCE

PASCAL HERTLEIF

- Web dev by day - come talk to me about that, too!
- Following Rust since 2014
- eBook versions of *The Rust Programming Language*
- You should `cargo install cargo-edit` (this includes `cargo add` and `cargo list`)

SYSTEMS PROGRAMMING IS SCARY

HELPFUL ERRORS, THE GOOD KIND OF ERRORS

```
e.rs:46:14: 46:23 error: `node.elem` does not live long enough
e.rs:46             &node.elem
                    ^~~~~~~~~
note: in expansion of closure expansion
e.rs:45:23: 47:10 note: expansion site
e.rs:44:38: 48:6  note: reference must be valid for the
anonymous lifetime #1 defined on the block at 44:37...
e.rs:44      [code excerpt]
e.rs:45:30: 47:10 note: ...but borrowed value is only valid
for the scope of parameters for function at 45:29
e.rs:45      [code excerpt]
```

OUR HUMBLE GOAL

PROGRAMM

REFACTOR WITHOUT FEAR

COLLABORATE

PROGRAMM

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MEMORY SAFETY		GARBAGE COLLECTION
CONCURRENCY	WITHOUT	DATA RACES
ABSTRACTION		OVERHEAD
STABILITY		STAGNATION

Rust Core Team, August 2015

```
use rayon::par_iter::*;

fn sum_of_squares(input: &[i32]) -> i32 {
    input.par_iter()
         .map(|&i| i * i)
         .sum()
}
```

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AUTOMATED TESTS?

- Use type system to prevent ‘structural’ bugs (incl. memory unsafety)
- Write tests for business logic
- Write documentation for people
  - Code snippets in documentation are executed like tests!
  - Suggestion: Trivial test cases as docs, edge cases as `#[test]`s

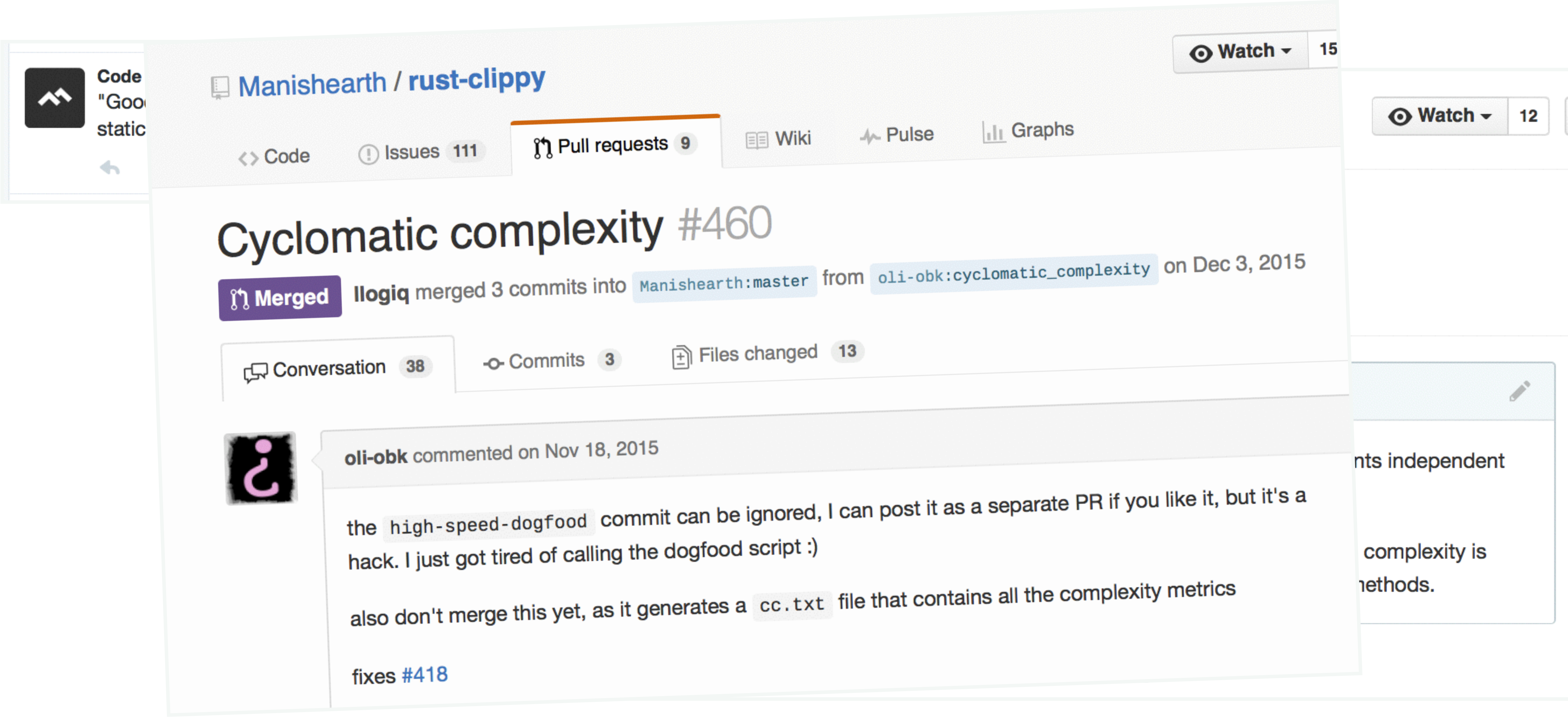
> TO ERR IS TO BE HUMAN, BUT COMPILERS NEVER FORGET

The Rust Programming Language (1.5)

LET THE COMPILER DO MORE WORK

- Lints are compile-time checks
- Some are enabled by default
- `#![deny(missing_docs)]` makes every crate better
- *Clippy* adds ~~80~~ ~~96~~ ~~100~~ 109 more lints

HOW FAR DOES THIS GO?



Cyclomatic complexity #460

Merged llogiq merged 3 commits into `Manishearth:master` from `oli-obk:cyclomatic_complexity` on Dec 3, 2015

oli-obk commented on Nov 18, 2015

the `high-speed-dogfood` commit can be ignored, I can post it as a separate PR if you like it, but it's a hack. I just got tired of calling the dogfood script :)

also don't merge this yet, as it generates a `cc.txt` file that contains all the complexity metrics

fixes #418

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MAKE YOUR CODE BASE INVITING TO NEW DEVELOPERS

- Follow the default structure for Cargo projects
  - `Cargo.toml` with lots of metadata, incl. authors and license
  - `src/`
  - `tests/`
  - `examples/`

MAKE YOUR CODE BASE INVITING TO NEW DEVELOPERS

- Format your code sanely
  - Just use *rustfmt* for everything
- Have a Readme that gives an abstract overview of the project
- Run automated tests for every commit and pull request

THANKS FOR LISTENING

ANY QUESTIONS?

REFERENCES

- Cover image by Keith Misner https://unsplash.com/photos/v99lFTVp_ws
- Clippy https://github.com/Manishearth/rust-clippy
- Rayon https://github.com/nikomatsakis/rayon
- Rust in 2016 http://blog.rust-lang.org/2015/08/14/Next-year.html