

ERTS20

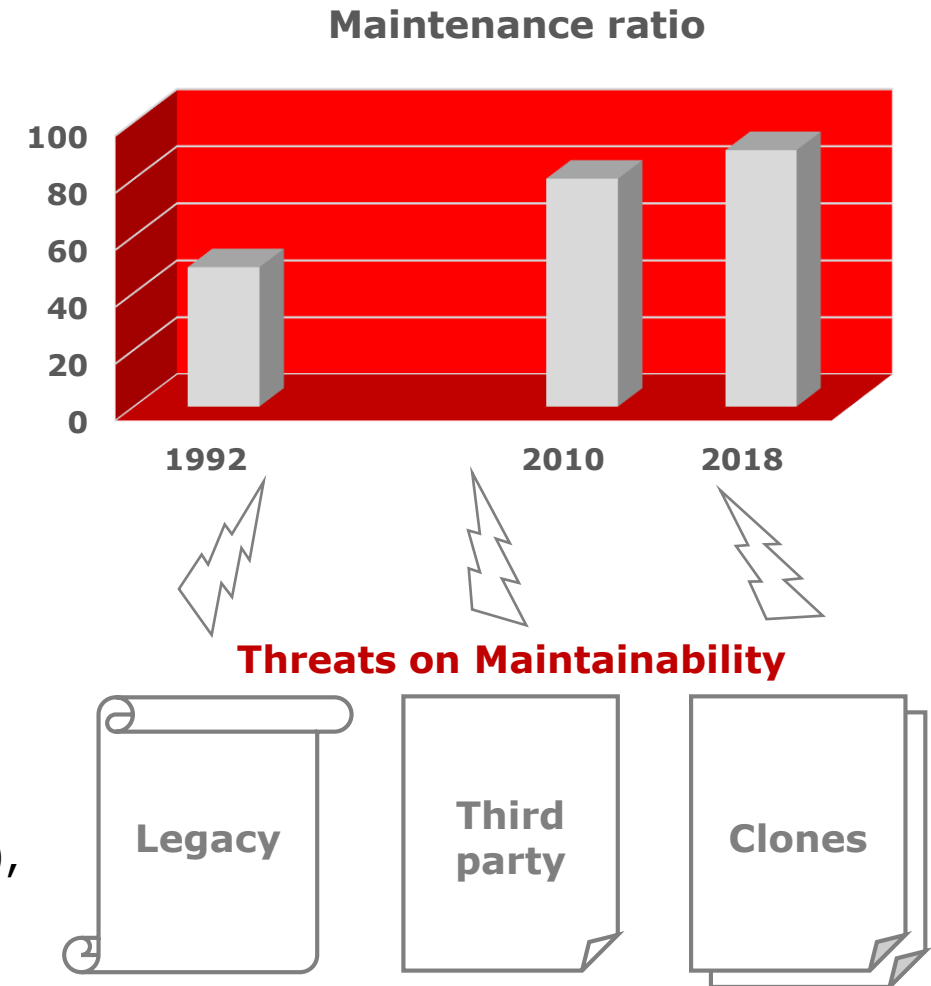
Efficient refactoring in industrial projects

Flavien Huynh - R&D Programs Manager, Vector Informatik

Cyril Benkimoun - Senior Consultant, Vector Informatik

Cloning as a threat on Maintainability

- ▶ Maintenance rates have been steadily increasing for the last decades
 - ▶ Development teams spend more time fixing than innovating
- ➔ **Concepts such as Coding Standards, Traceability, Technical Debt have been introduced**
- ▶ **Today industrial projects often contain:**
 - ▶ Legacy code (risky to modify),
 - ▶ Third-party modules (using different coding principles),
 - ▶ Cloned code (blocks, functions, or even files).



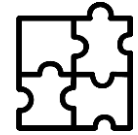
Cloning detection for efficient factorization

- ▶ Our proposed **cloning detection** method is based on:
 - ▶ **Flexibility**: Multiple languages support, and provide extensible grammars
 - ▶ **Time resilience**: Track cloned code from one version to another
 - ▶ **Adaptability**: Ability to tailor cloning detection (detect name changing, exclude comments, adjust detection thresholds)
 - ▶ **Dual mode**: Ability to detect both textual or algorithmic clones
- ▶ Based on our cloning detection, **efficient refactoring** can be elaborated according to several strategies:
 - ▶ **Minimum effort factorization**
Fewer issues to solve, highly similar, easier to factorize clone
 - ▶ **Improved Maintenance factorization**
Solve issues on clearly cloned components, improving Maintainability
 - ▶ **Improved Reliability factorization**
Same as before, but restricts focus to components taking into account their associated tests, test coverage ratio.

And there's more!

Enhance code cloning results with additional knowledge:
Risk, Induced Costs, or Technical Debt

Flexibility



Time resilience



Adaptability



Dual mode



**Requirements
to control cloning**

Supporting process maturity

- ▶ Applying the proposed detection and strategies, can help a development team **maintain a mature process**:



- ▶ **Continuously** track clones as they appear and are handled



- ▶ **Focus** on clones according to the selected factorization strategy

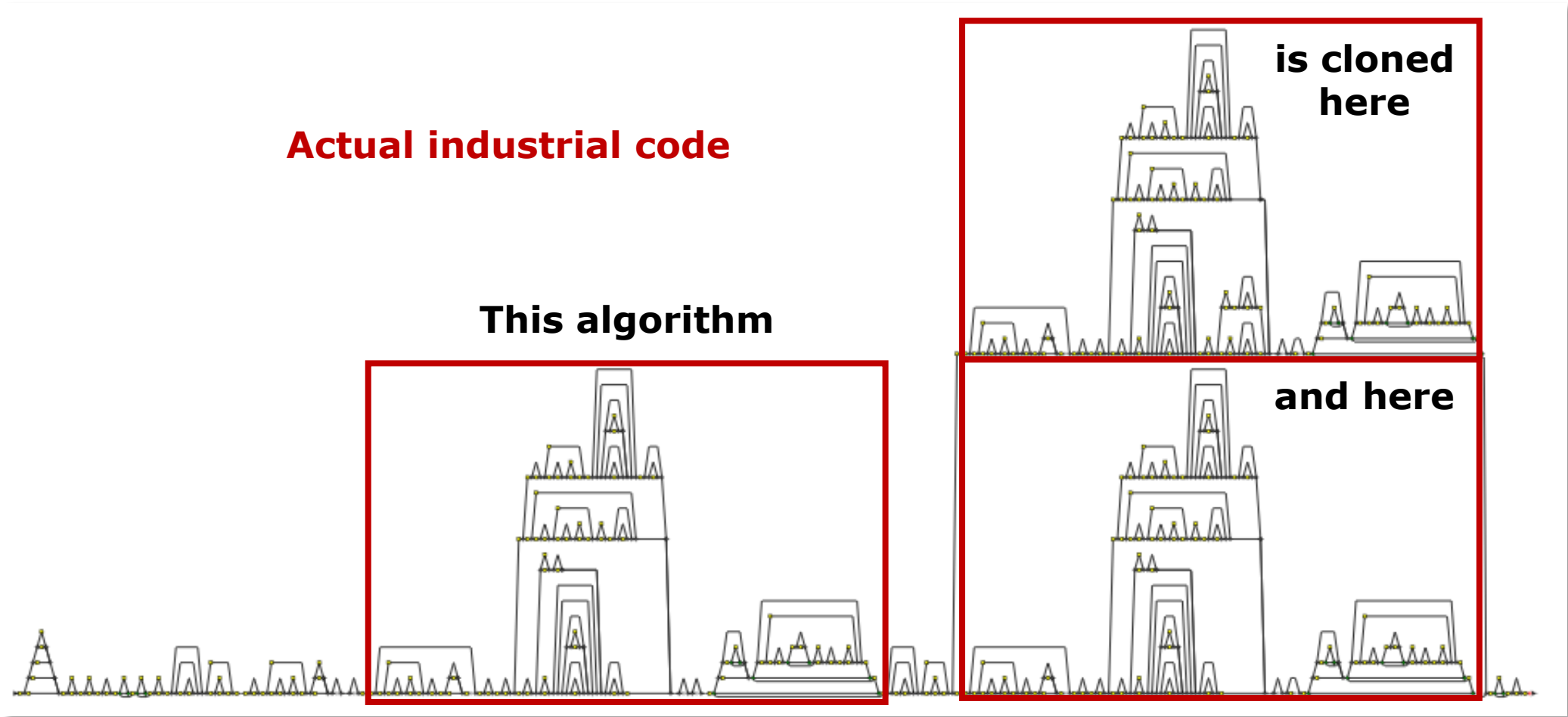


- ▶ **Relax** clones when it is justified



- ▶ **Anticipate** factorization using suspicious clones

Refactoring need is real



To learn more, meet us at our poster and at booth 10

For more information about Vector
and our products please visit

www.vector.com

Author:

Vector Germany