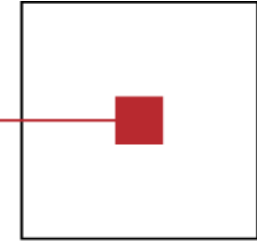




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The Impact of Product Development on the Lifecycle of Defects

Rudolf Ramler

Software Competence Center Hagenberg, Austria

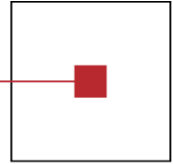
rudolf.ramler@scch.at

<http://www.scch.at>



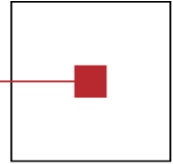
JOHANNES KEPLER
UNIVERSITÄT LINZ

Netzwerk für Forschung, Lehre und Praxis

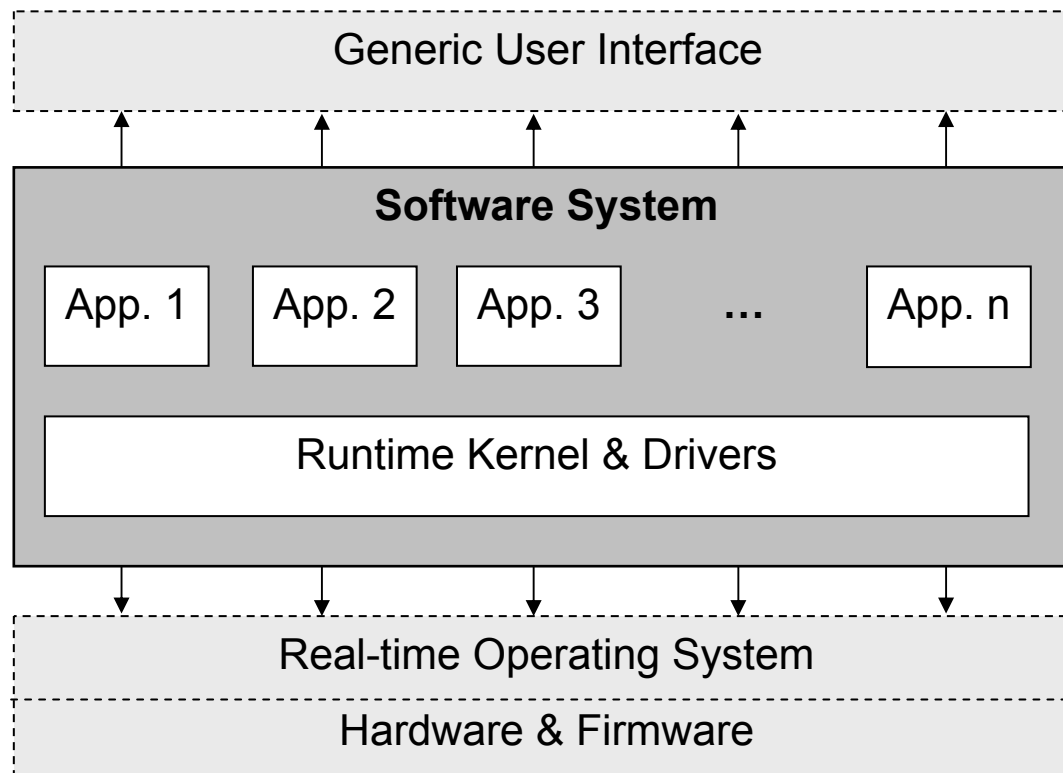


- Project Background
- Defect Lifecycle
- Product Development
- Defect Lifecycle - in Context of Product Development
- Impact of Product Development
- Summary & Further Questions



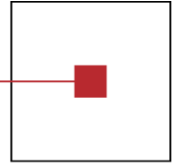


■ Embedded software system



Project Background

Data from the studied project

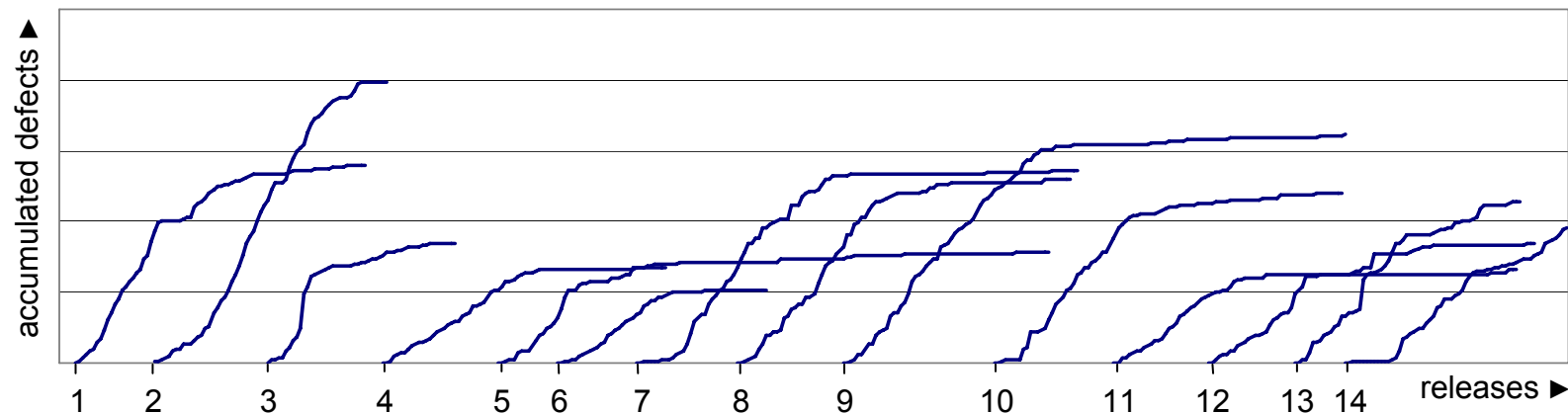


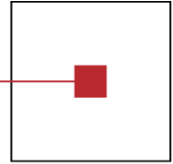
■ Issue repository

- 3.000+ resolved issue reports
- 68% defects, 32% enhancements
- This study considers only defects

■ Release database

- 130+ releases (main releases, integration releases, ...)
- This study: 14 consecutive releases on the main line (ca. 2 years)



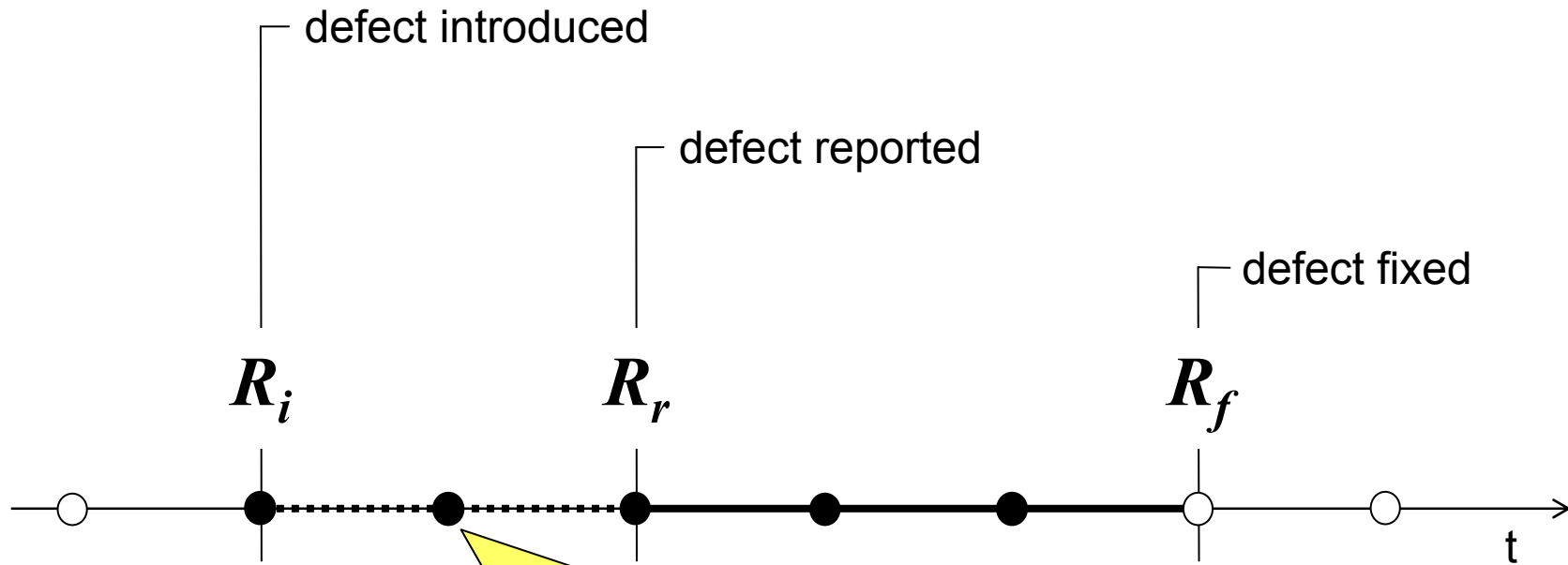
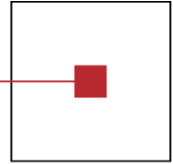


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Defect Lifecycle

Overview of main points



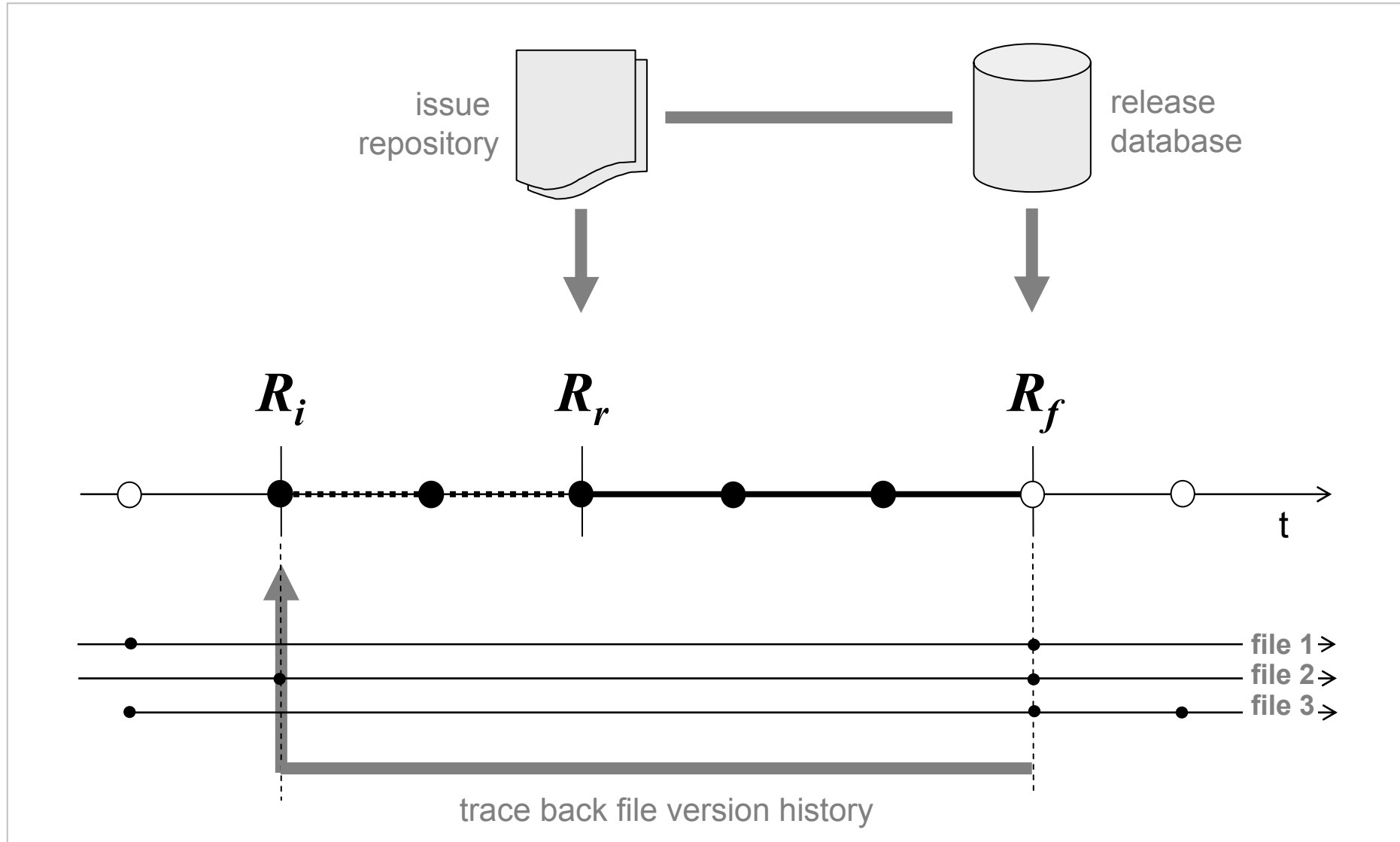
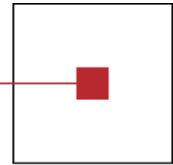
Why is it important to know open defects per release?
→ Accurate historical data, e.g., to construct
defect prediction models

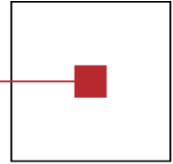
Defect Lifecycle

Where does the data come from?

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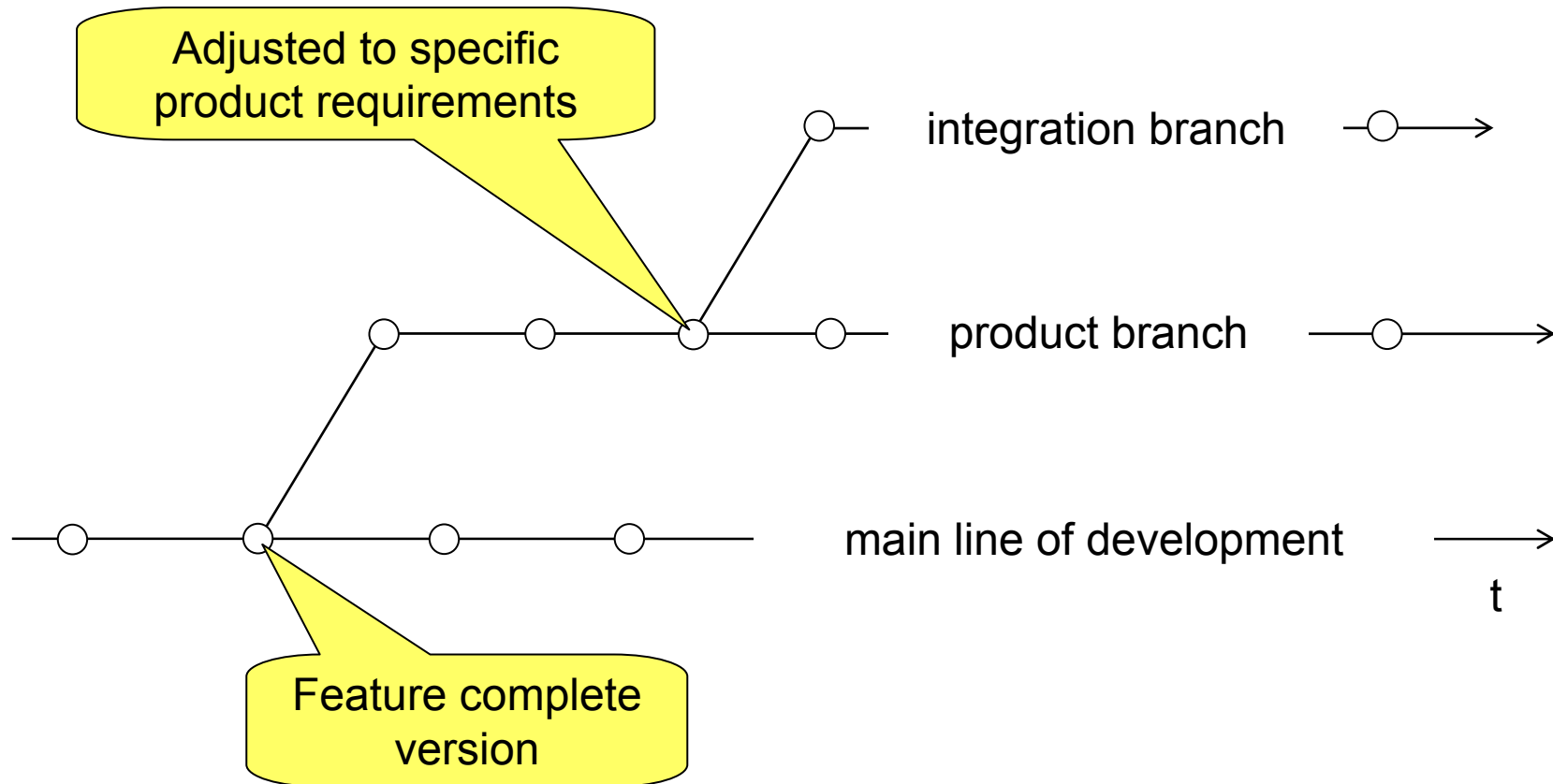
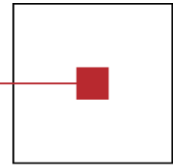


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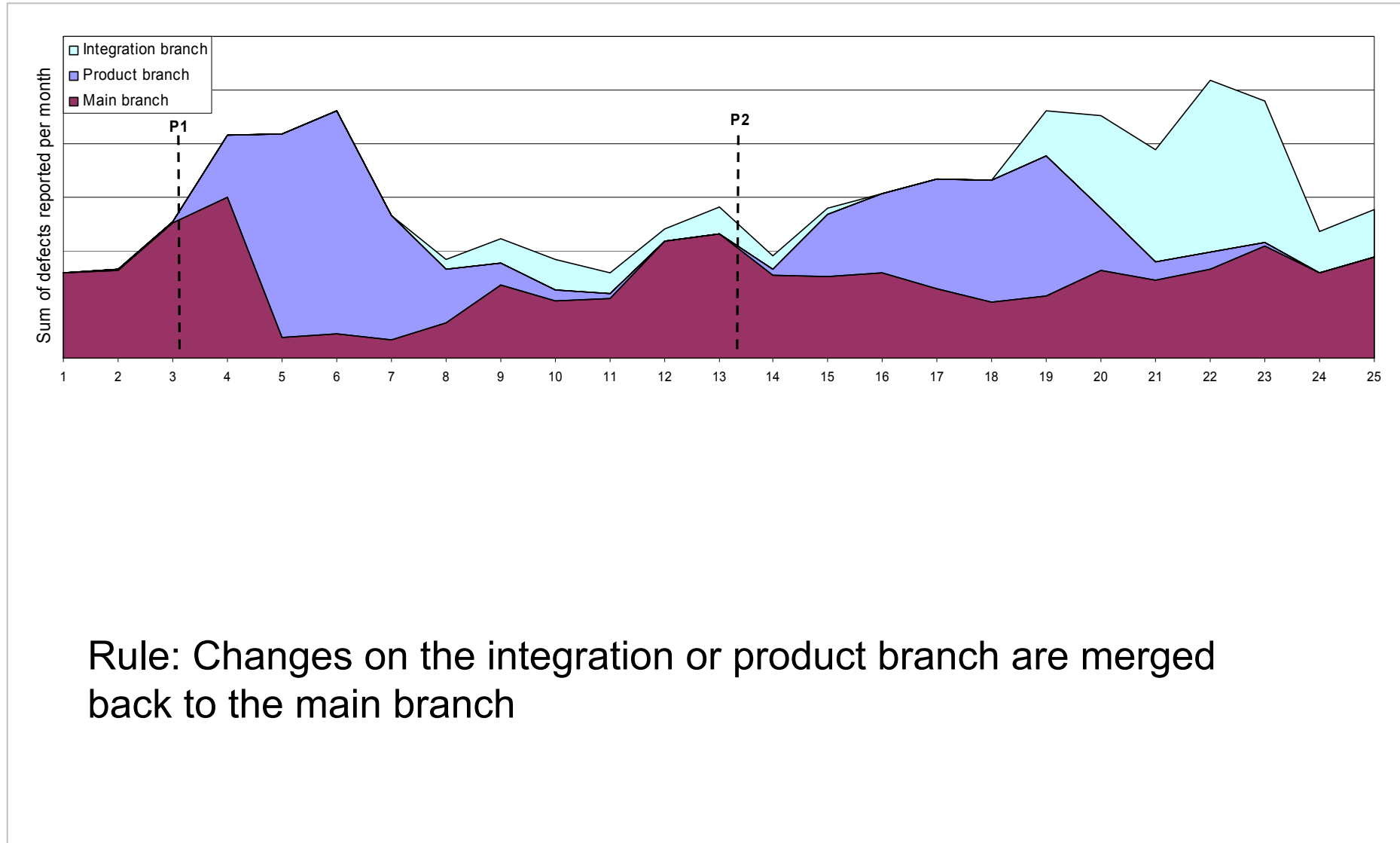
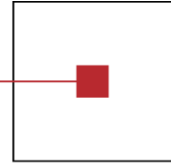
Product Development

Organization of software development

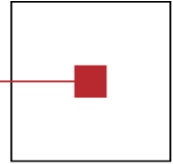


Product Development

Number defects on branches



Rule: Changes on the integration or product branch are merged back to the main branch



- Project Background
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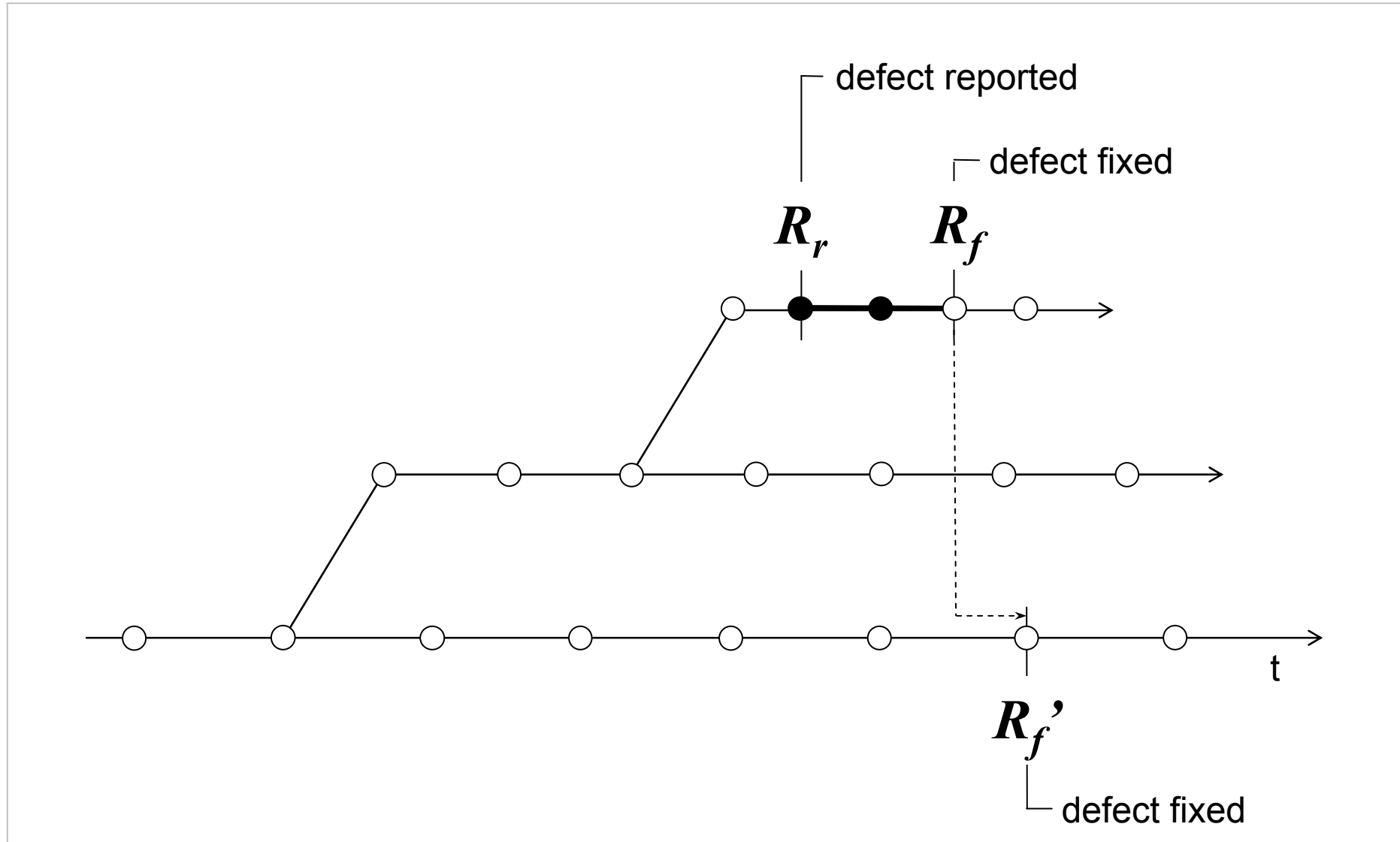
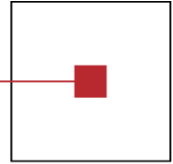


Defect Lifecycle

... in context of product development

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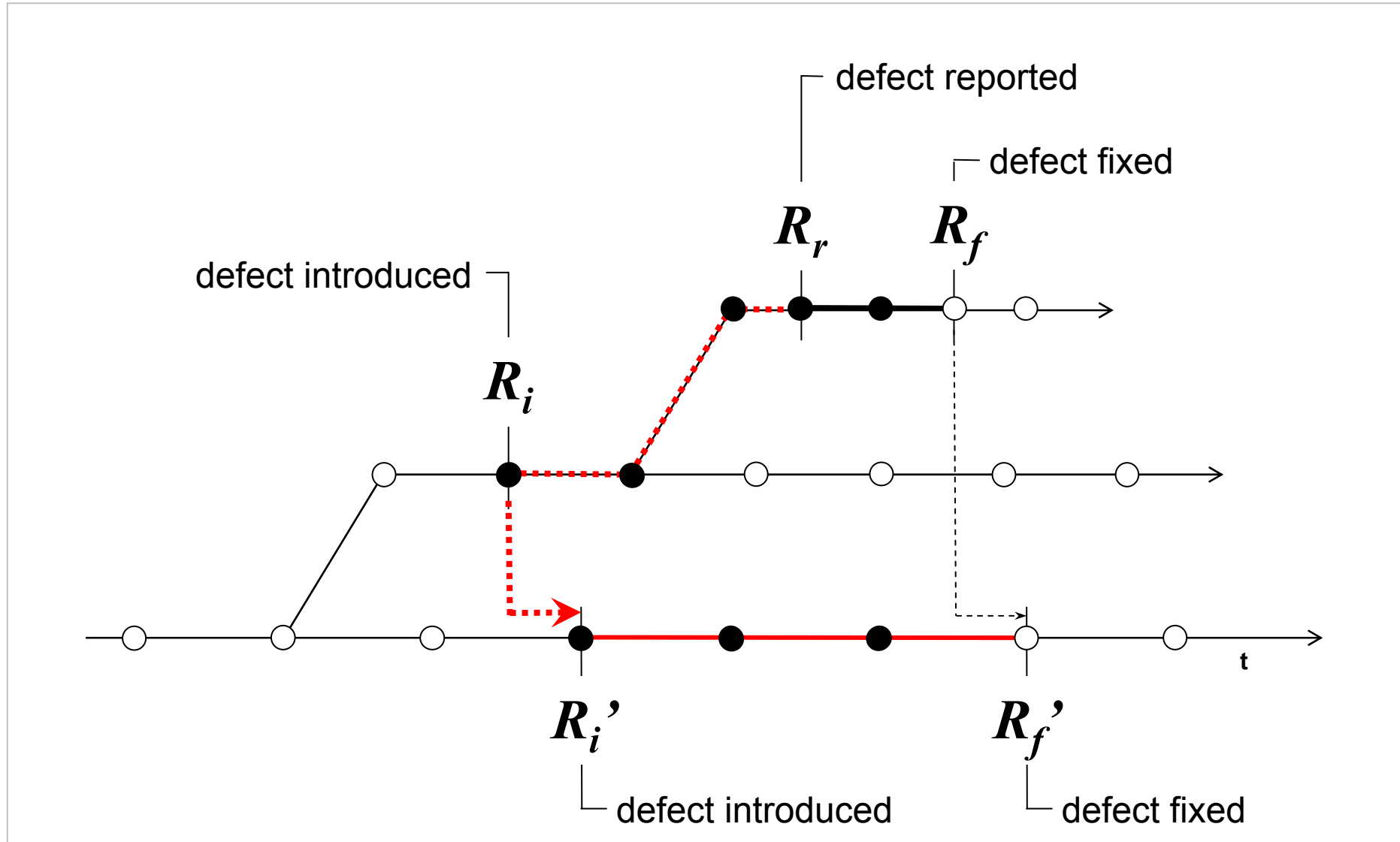
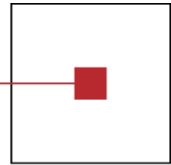


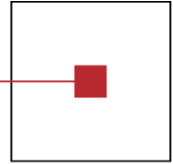
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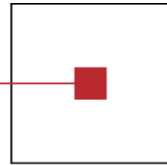


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Impact of Product Development

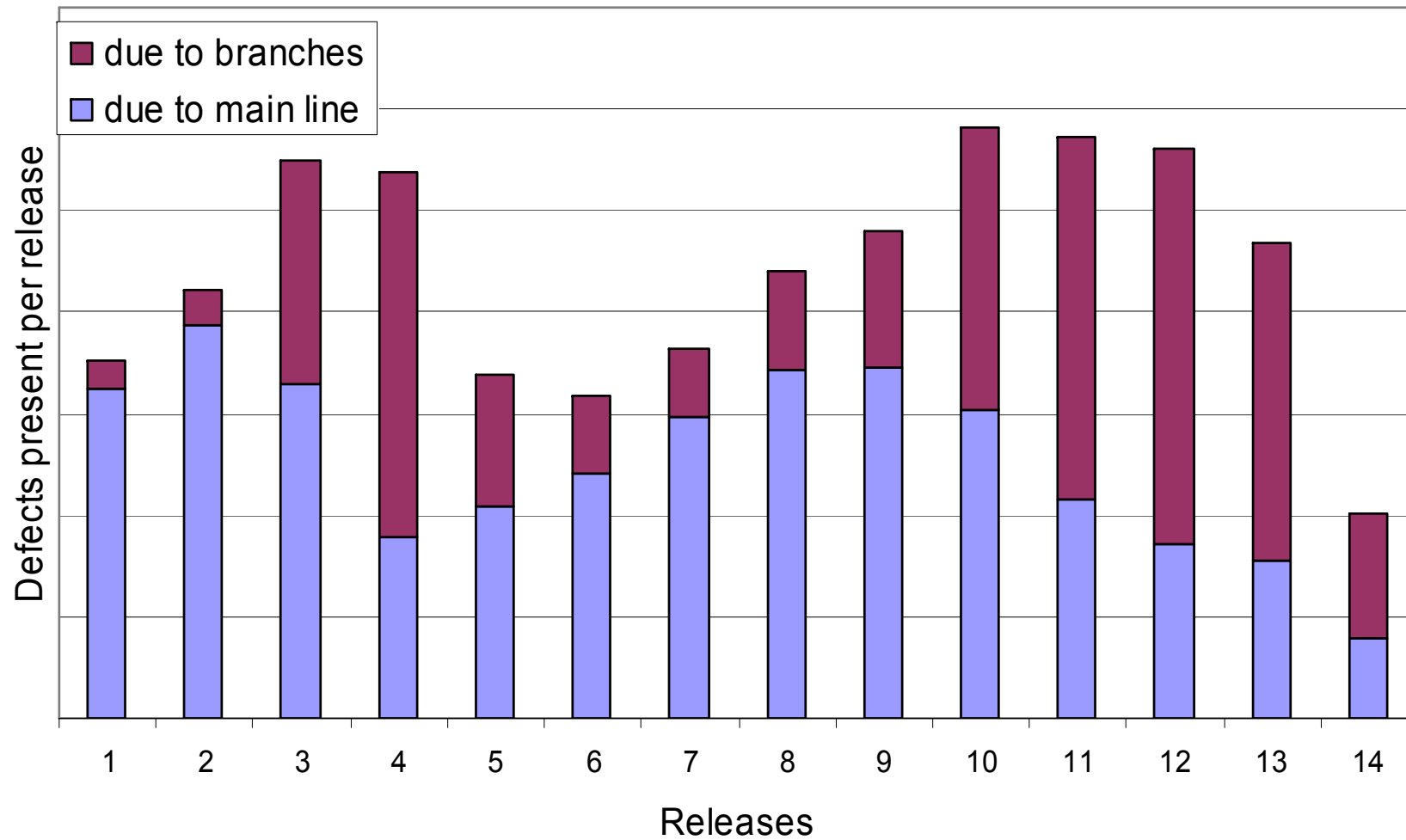
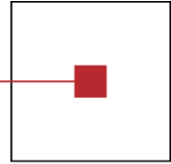
Number of defects ...

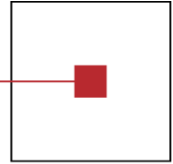


Release	Defects introduced	Defects reported	Defects fixed	Defects open
1	3%	0%	0%	8%
2	5%		0%	8%
3	58%		0%	40%
4	82%		57%	67%
5	44%		80%	38%
6	23%		64%	24%
7	15%		26%	19%
8	19%		3%	22%
9	23%		5%	28%
10	56%		12%	48%
11	72%		32%	62%
12	80%		57%	69%
13	63%		70%	67%
14	65%		70%	62%

Impact of Product Development

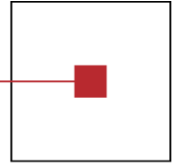
Number of open defects per release





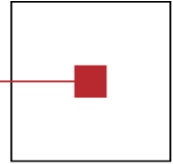
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- Accurate historical data on open defects considered important, e.g., for creating defect prediction models
- Open defects were derived from the defect lifecycle
- Defects reported on product and integration branches impact the number of open defects on the main line
- Accurate historical data requires to include the defects reported on product and integration branches
- Product and integration branches are a consequence of the product development strategy

Further Questions



- Is the presented case representative?
- How to cope with incomplete defect data (before product development and integration)?
- Can prediction work in this context at all?

Thank you!