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### Large scale continuous integration and delivery

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Propositions

Accompanying the PhD dissertation

# **Large Scale Continuous Integration and Delivery**

Making Great Software Better and Faster

by

Daniel Ståhl

1. Not only is continuous integration experienced to have a positive effect on inter-team and intra-team communication, developer productivity and project predictability, but experiences vary significantly from case to case, suggesting differences in interpretation and implementation of the practice in industry.  
(Chapter 2 of this thesis)
2. Implementation of agile practices, among them continuous integration, are found to correlate with a more balanced use of internal software documentation, contribute to knowledge sharing, correlate with increased project visibility and coordination effectiveness and reduce the need for other types of coordination mechanisms.  
(Chapter 3 of this thesis)
3. There are seven areas, each of which can be directly mapped to one or more cornerstones of continuous integration practice, where software-intensive embedded systems development poses particular challenges to adopting continuous integration.  
(Chapter 4 of this thesis)
4. Developer behavior in industry cases practicing continuous integration, and indeed the continuity of those integrations, correlates with organizational size and composition.  
(Chapter 5 of this thesis)
5. Sixteen points of divergence can be identified in continuous integration practice as described in literature, all of which can be uncovered and documented in a given case used modeling techniques specifically designed for this purpose.  
(Chapter 6 of this thesis)
6. Modeling of continuous integration systems can be used to document and analyze differences between cases in interpretation and adoption of the practice.  
(Chapter 7 of this thesis)
7. The two continuous integration modeling techniques of Automated Software Integration Flows (ASIF) and Continuous Integration Visualization Technique (CIViT) can be favorably combined to describe a single continuous integration system from multiple viewpoints and at multiple levels of abstraction.  
(Chapter 8 of this thesis)

8. A continuous integration and delivery architecture framework, Cinders, designed to combine the strengths of and improve upon the modeling techniques of ASIF and CIViT, can be shown to constitute an improvement over these techniques.  
(Chapter 9 of this thesis)
  
9. The industry developed continuous integration and delivery framework Eiffel can be shown to dramatically improve upon traditional manual traceability processes by addressing multiple traceability challenges in software engineering in general, and in a continuous delivery context in particular.  
(Chapter 10 of this thesis)
  
10. Application of the Eiffel framework opens up opportunities for further optimization of continuous integration and delivery systems, not least in the area of automated real time dynamic selection of test cases to execute in the continuous delivery pipeline, through the analysis of real time traceability data.  
(Chapter 11 of this thesis)
  
11. True glory consists in doing what deserves to be written;  
in writing what deserves to be read;  
and in so living as to make the world happier for our living in it.  
(Pliny the Elder)

*These propositions are considered to be defensible and as such have been approved by Prof. J. Bosch.*