

CI/CD BENEFITS PROPOSAL

WHAT DOES CI/CD STAND FOR?

THE CONCEPTS EXPLAINED

- **CI/CD consist of three major concepts**

- **Continuous Integration**

Continuous Integration describes the process of merging developer branches to the main branch several times a day. CI puts an emphasis on test automation and finally generates a high quality, deployable artifact.

-

- **Continuous Delivery**

- In addition to Continuous Integration, Continuous Delivery makes sure that changes of a software product can be released quickly to customers in an automated way and at any point in time.

-

- **Continuous Deployment**

- Continuous Deployment extends Continuous Delivery in such a way that it allows frequent automated deployments without any human interaction. Typical phases in Continuous Deployment are Infrastructure Provisioning, Smoke Testing, Production Deployments and automated Rollbacks.

WHAT ARE OUR OUR MAIN POINTS?

1. Our manual release process is error-prone and always leads to delays of production deployments
2. This in turn often leads to poor software quality since we don't have time for quality analysis anymore
3. Deployments are pretty complex. Only a chosen few experts are able to understand the whole process and tons of hand crafted helper scripts. No smoke tests and rollback mechanisms.
4. We get late feedback from the business department which prevents us from creating flexible solutions

HOW WE COULD BENEFIT FROM DEVOPS PRINCIPLES

Problem 1:

- (i) Manual and error-prone release process
- (ii) Poor Software quality

Solutions:

- (i) Implement Continuous Integration: automate compiling, testing, code analysis and artifact storage
- (ii) Automate Infrastructure Creation

Benefits:

- (i) Cost reduction due to less human errors and faster deployments
- (ii) Reduce complexity and save manual troubleshooting time

HOW WE COULD BENEFIT FROM DEVOPS PRINCIPLES

Problem 2:

- (i) Complex deployments and handcrafted automation which often fail.
- (ii) Missing smoke tests and rollback mechanisms.

Solutions:

- (i) Automate today's manual deployment steps for smoke tests and rollbacks
- (ii) Add automated infrastructure provisioning

Benefits:

- (i) The truth lies in the source code and not in the heads of one or two experts. This means that regressions and breaking changes in code as well as in infrastructure deployments can be found much quicker and can be resolved for the whole automation process. And as a plus changes are always documented in source code.
- (ii) Automated Smoke Tests and Rollbacks will protect project revenue due to reduced downtimes from deploy-related crashes and fast and automated rebuilding of production ready state

HOW WE COULD BENEFIT FROM DEVOPS PRINCIPLES

Problem 3:

(i) Late customer feedback

Solutions:

(i) Implement Continuous Deployment: automated deployment of changes at any given point in time

(ii) Involve customers and business stakeholders already in deployment process

Benefits:

(i) Faster feedback cycles of customers lead to higher customer satisfaction rates since they are involved right from the beginning of feature development/deployment and not just at a fixed release date

WHAT ARE THE MILESTONES FACED?

1. Establishing CI/CD comes with a high amount of initial cost and learning. At first sight this might seem overwhelming compared to current best practices.
2. Delivering CI/CD pipelines is not a one time effort, but requires constant support and maintenance as well as continuous development and improvement.
3. Even though there are some challenges, CI/CD will improve overall business processes and dramatically reduce costs on the long run

WHAT ARE THE MILESTONES FACED?

1. Establishing CI/CD comes with a high amount of initial cost and learning. At first sight this might seem overwhelming compared to current best practices.
2. Delivering CI/CD pipelines is not a one time effort, but requires constant support and maintenance as well as continuous development and improvement.
3. Even though there are some challenges, CI/CD will improve overall business processes and dramatically reduce costs on the long run

Expected Results: Business Implications

<u>Business Value</u>	<u>How CI/CD achieves this</u>	<u>Result:</u>
Reduces Cost	<ul style="list-style-type: none">- Catches Compile Errors After Merge- Automate Infrastructure Cleanup	<ul style="list-style-type: none">- Less developer time on issues from new developer code- Less infrastructure costs from unused resources
Avoids Costs	<ul style="list-style-type: none">- Catches Unit Test Failures- Detects Security Vulnerabilities- Automates Infrastructure Creation	<ul style="list-style-type: none">- Less bugs in production/testing- Prevent embarrassing or costly security holes- Less human error, faster deployments
Increases Revenue	<ul style="list-style-type: none">- Faster and More Frequent Production Deployments- Deploy to Production Without Manual Checks	
Protects Revenue	<ul style="list-style-type: none">- Automated Smoke Tests- Automated Rollback Triggered by Job Failure	<ul style="list-style-type: none">- Reduced downtime from a deploy-related crash or major bug- Quick undo to return production to working state