



Orientation et Formation Professionnelle
Tertiaire et Développement Informatique



Conception et Développement Logiciel
Intégration & Déploiement Continu (CI/CD)

CI/CD

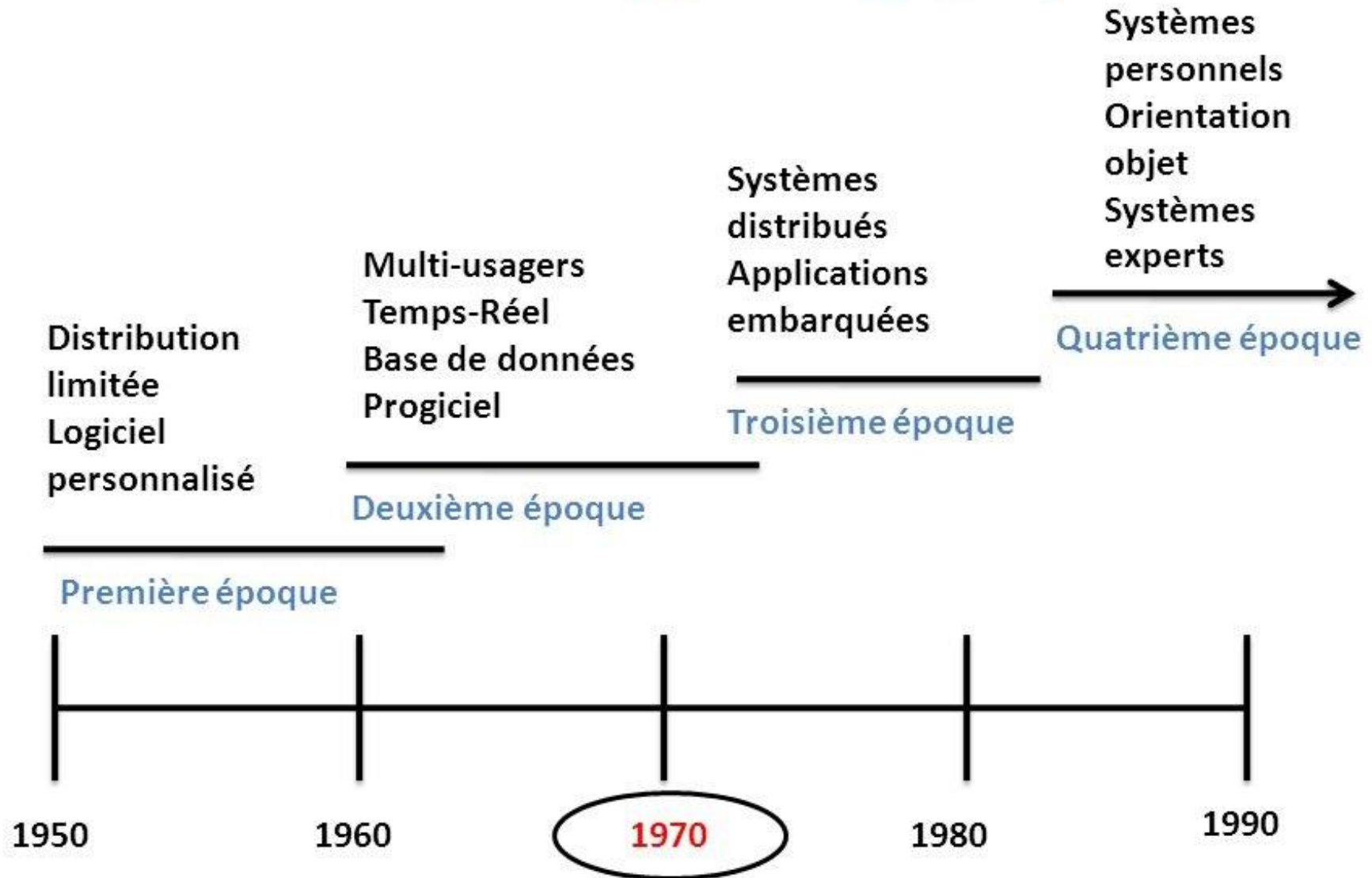


1. La crise du logiciel
2. Déploiement manuel
3. CI : Intégration Continue
4. CD : Déploiement Continu
5. CI/CD : DevOps

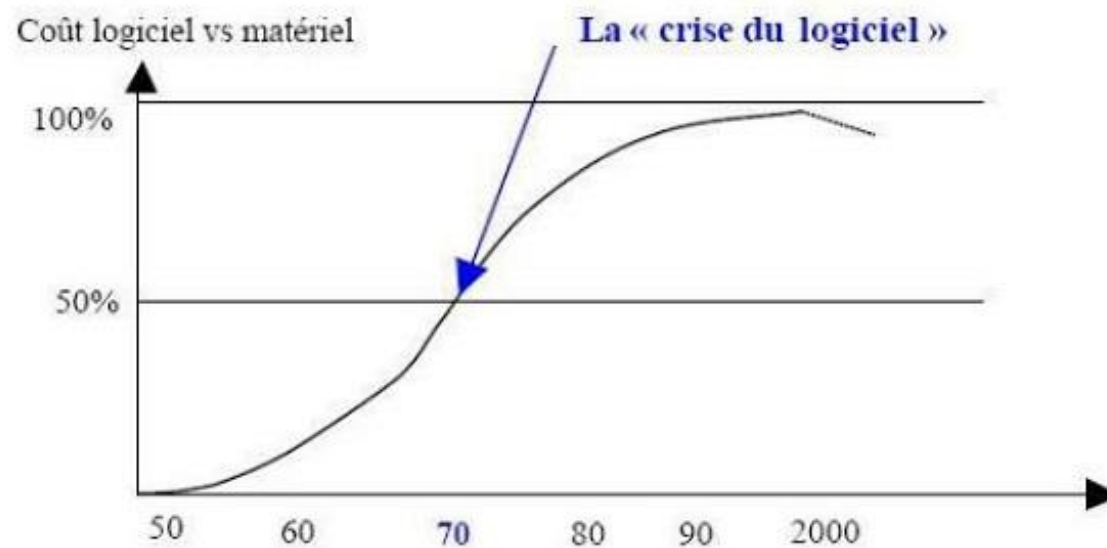
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Un peu d'histoire

Crise du logiciel (1/4)



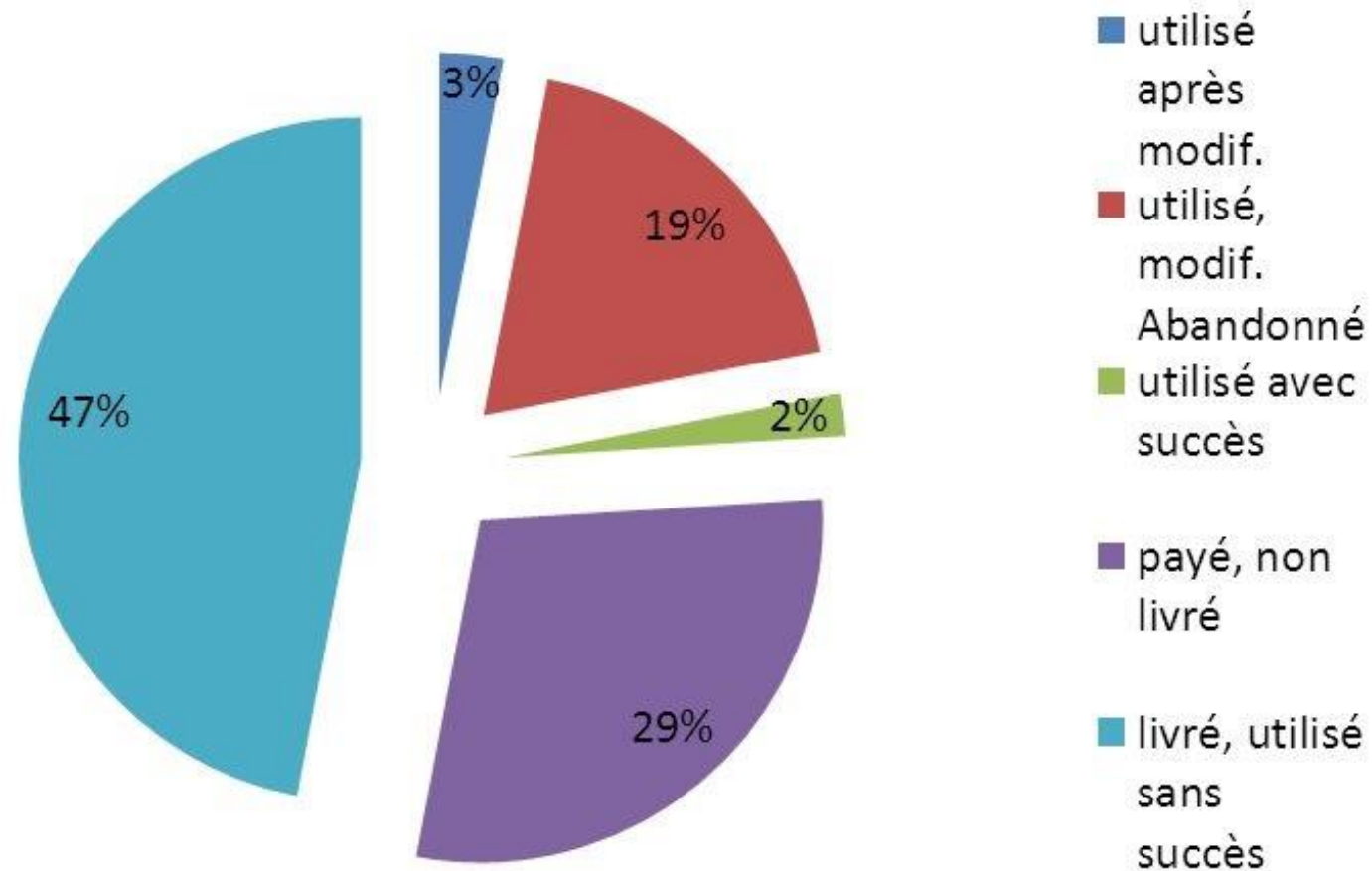
Crise du logiciel (2/4)



Crise du logiciel (3/4)

- Difficulté de maîtrise **des coûts** (200 millions de dollars pour fabriquer OS-360)
- Difficulté de maîtrise **des délais** de réalisation (2 ans de retard pour les premiers compilateurs PL/1, Algol 68, ADA)

Crise du logiciel (4/4)



Rapports au congrès américain sur les logiciels

2

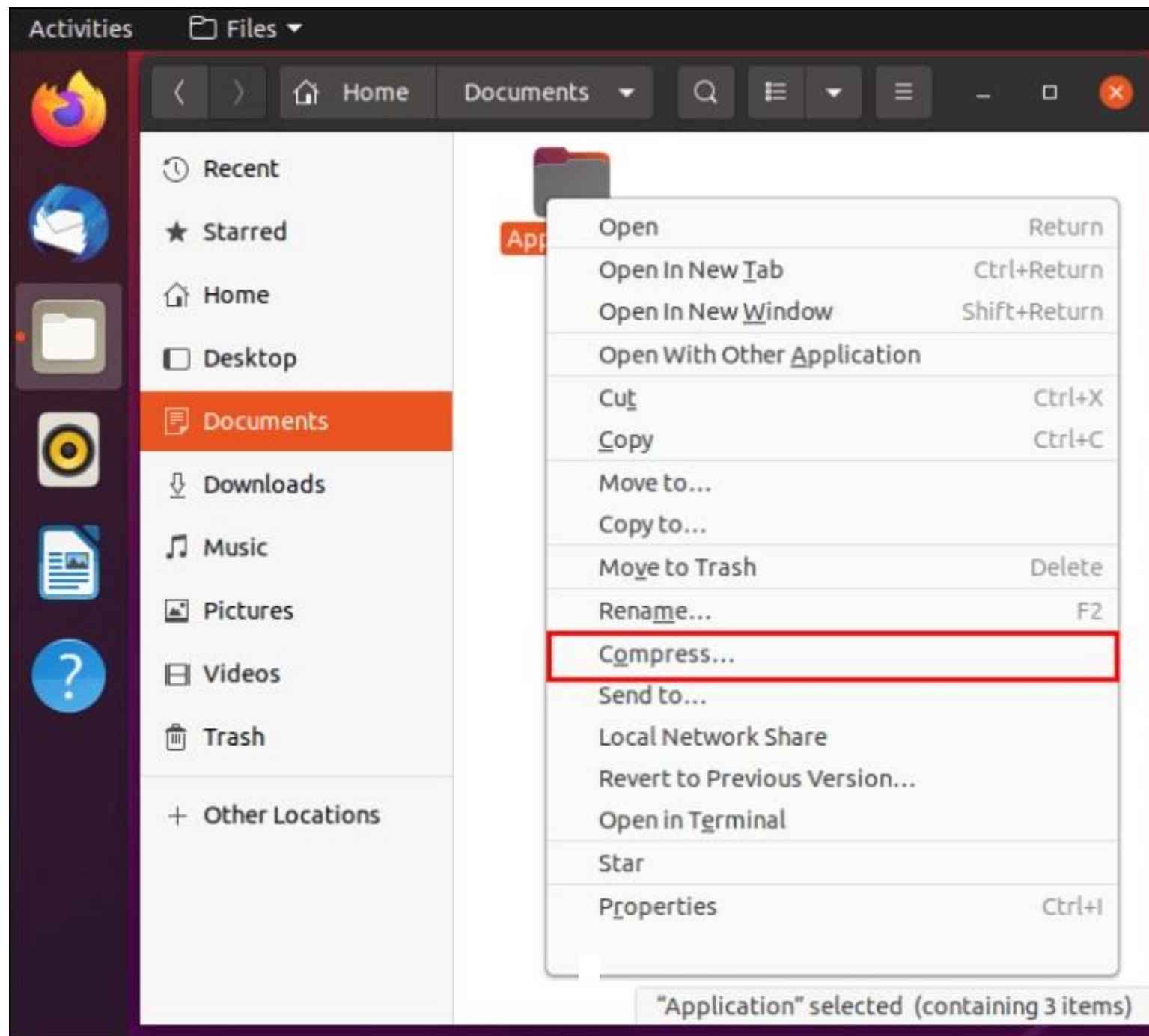
Déploiement manuel

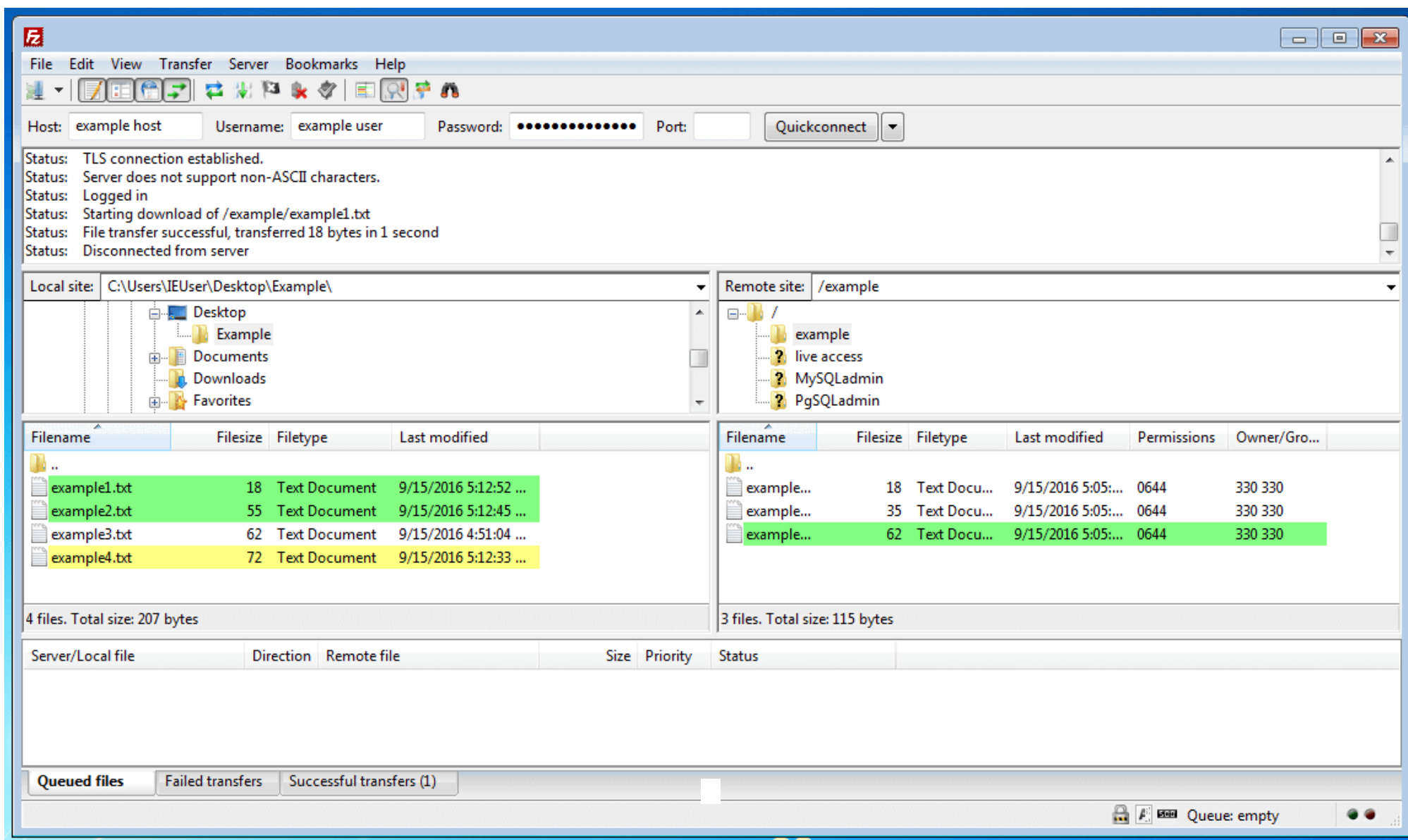
☐ Domain	TTL	Type	Target	↺
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☐ mydomain.ovh.	0	NS	ns19.ovh.net.	
☐ mydomain.ovh.	0	MX	10 mx1.mail.ovh.net.	⋮
☐ mydomain.ovh.	0	MX	1 mx0.mail.ovh.net.	⋮
☐ mydomain.ovh.	0	MX	20 mx2.mail.ovh.net.	⋮
☐ mydomain.ovh.	0	MX	30 mx3.mail.ovh.net.	⋮
☐ mydomain.ovh.	0	MX	40 mx4.mail.ovh.net.	⋮
☐ mydomain.ovh.	0	A	111.222.333.44	⋮
☐ vps.mydomain.ovh.	0	A	66.777.888.99	⋮
☐ mydomain.ovh.	0	SPF	"v=spf1 include:mx.ovh.com ~all"	⋮

```
<VirtualHost *:80>
    ServerName example.com
    ServerAlias www.example.com
    ServerAdmin webmaster@example.com
    DocumentRoot /var/www/example.com/public_html

    <Directory /var/www/example.com/public_html>
        Options -Indexes +FollowSymLinks
        AllowOverride All
    </Directory>

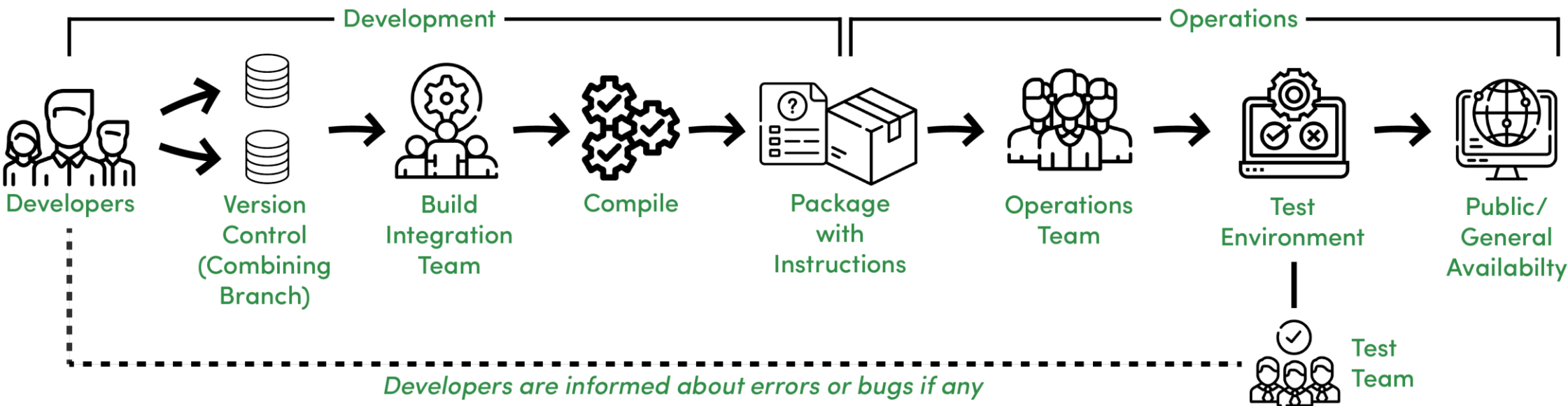
    ErrorLog /var/log/httpd/example.com-error.log
    CustomLog /var/log/httpd/example.com-access.log combined
</VirtualHost>
```

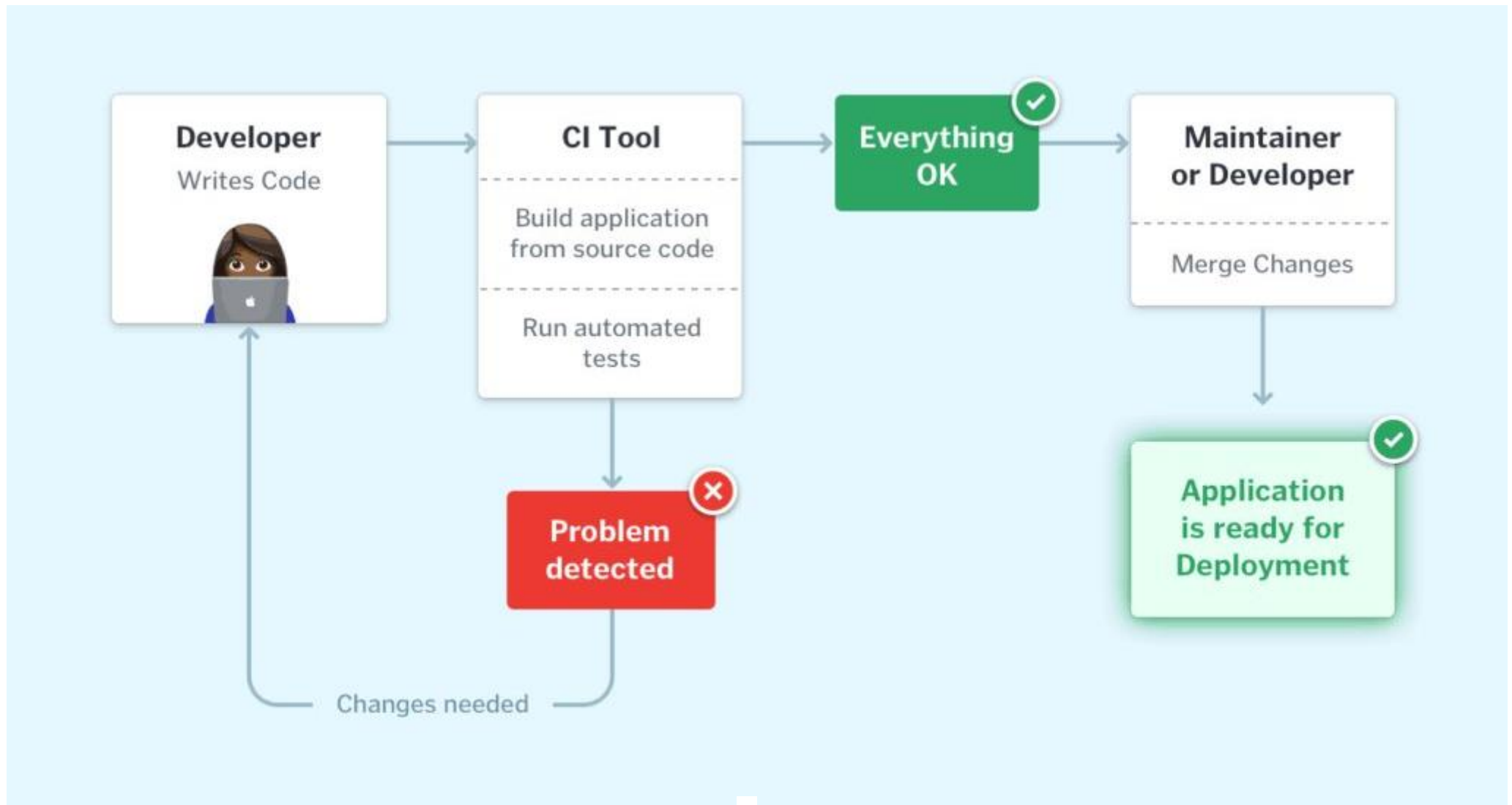


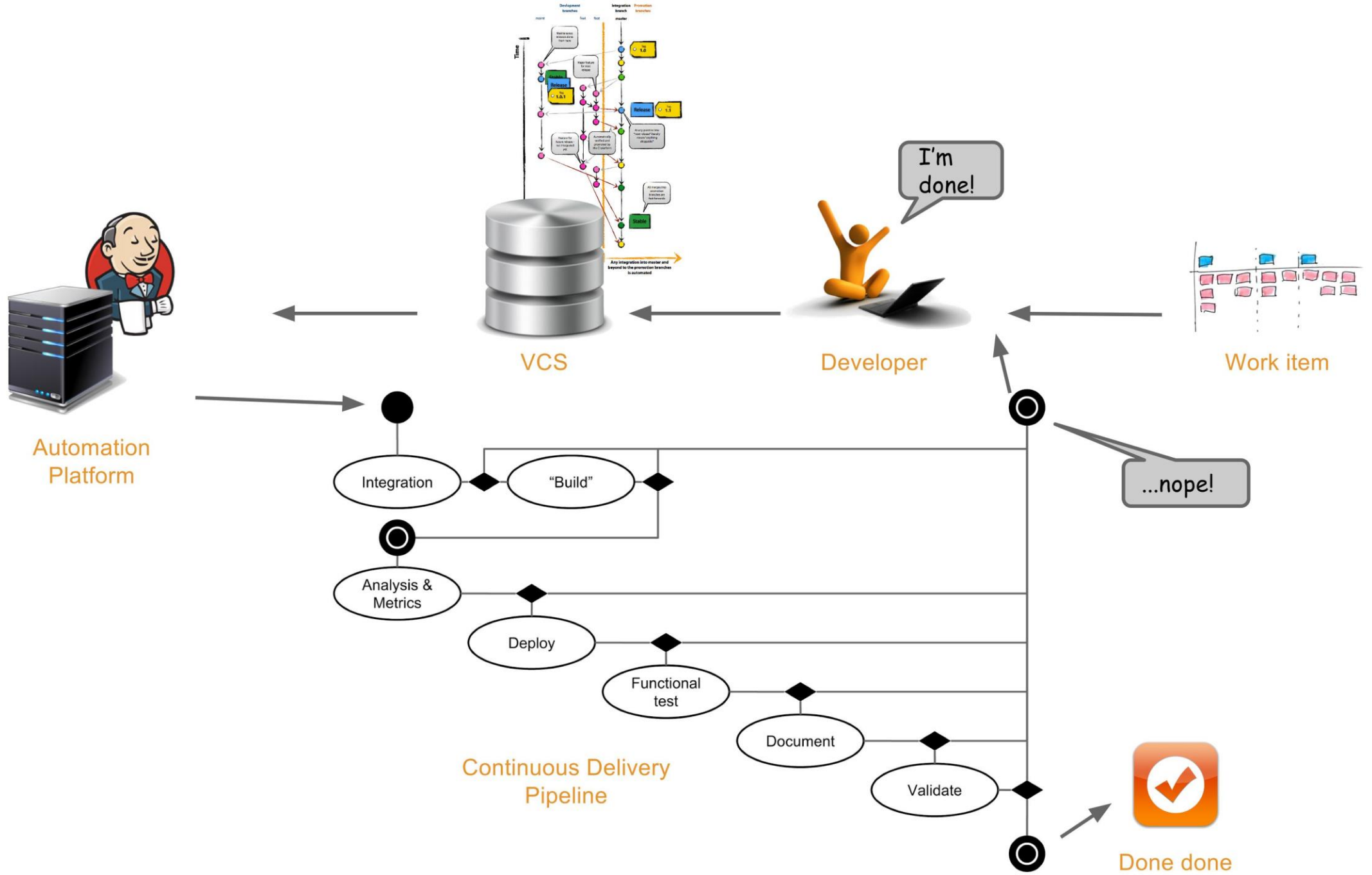


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L'intégration Continue







3



Le Déploiement Continu

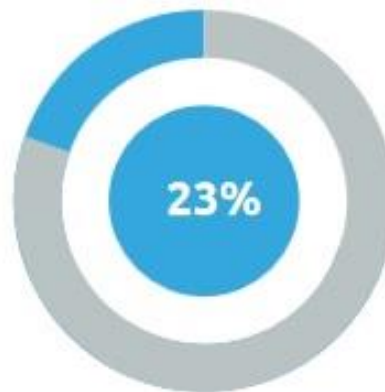
How are Deployments Handled?

The majority of deployments are still **manual**.
Very few organizations have fully automated deployments.



MANUAL AND AUTO

Over 70 percent of deployments use a combination of manual processes and some automation.



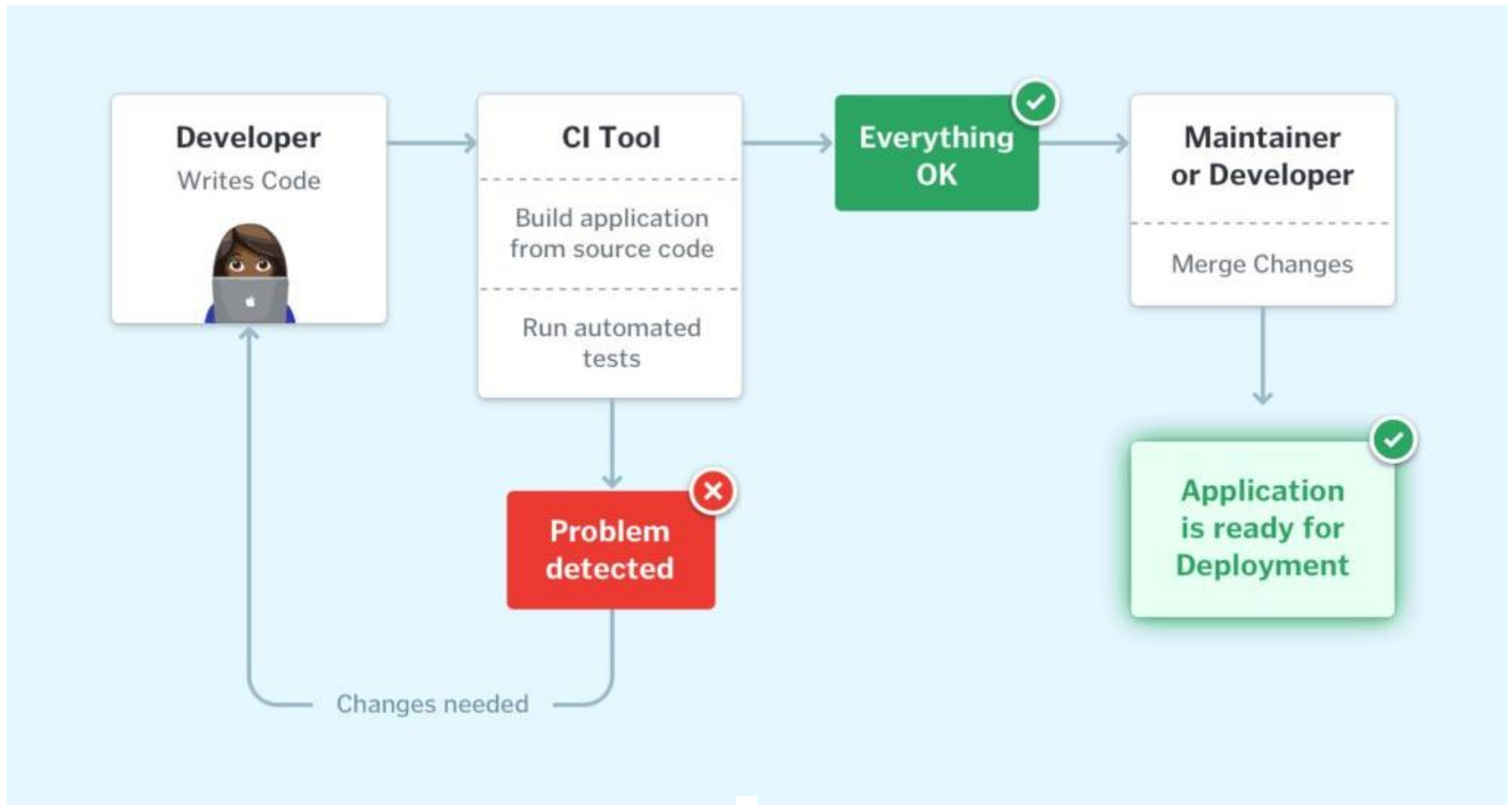
MANUAL

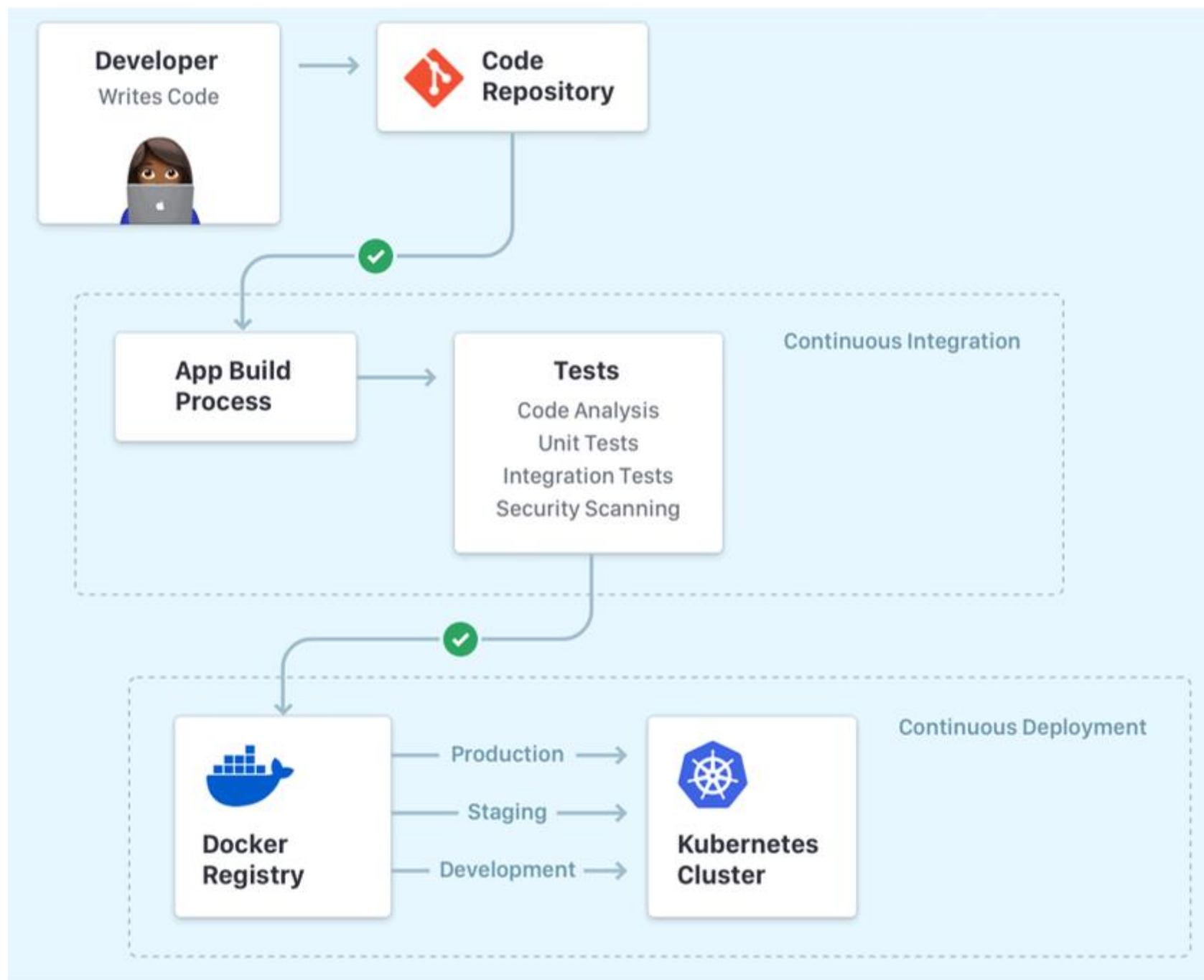
23 percent of deployments are still fully manual.



FULL AUTOMATION

Only 6 percent of deployments are fully automated.

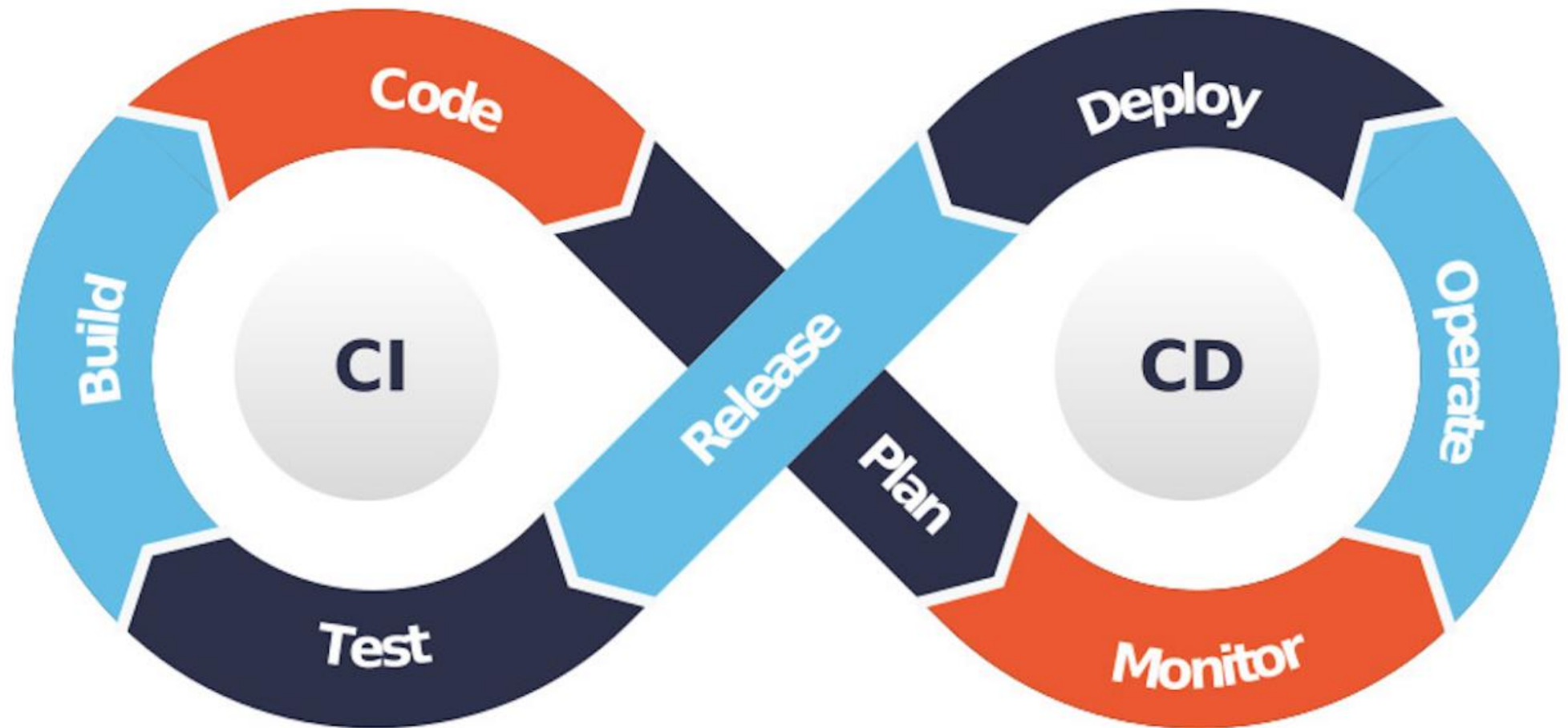




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CI/CD : L'approche DevOps

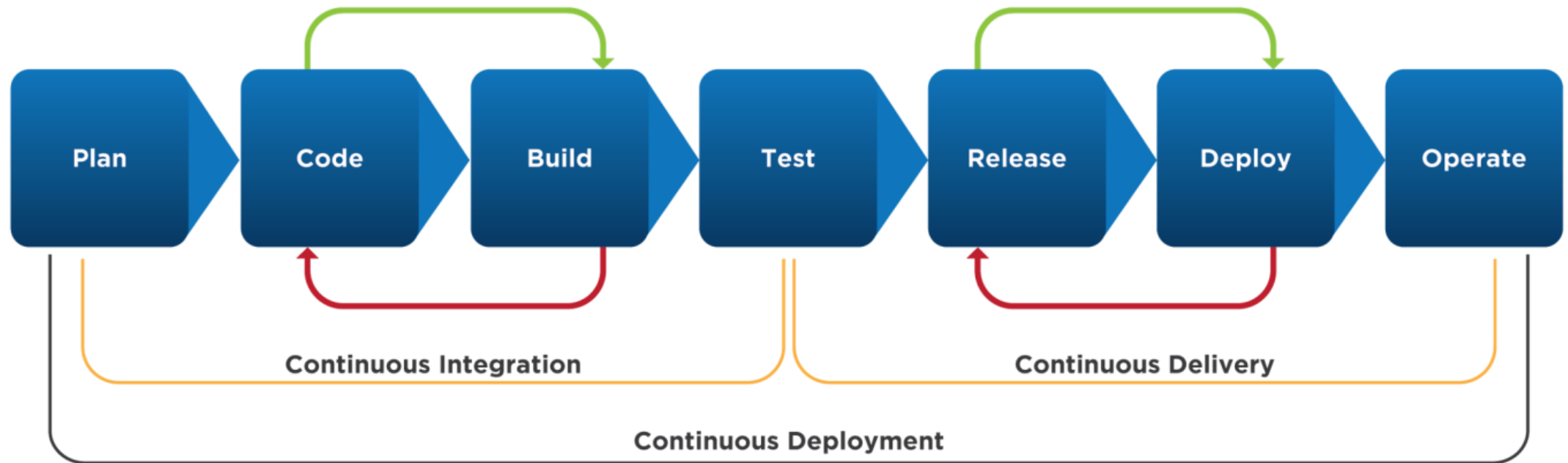


Continuous Integration and Continuous Delivery

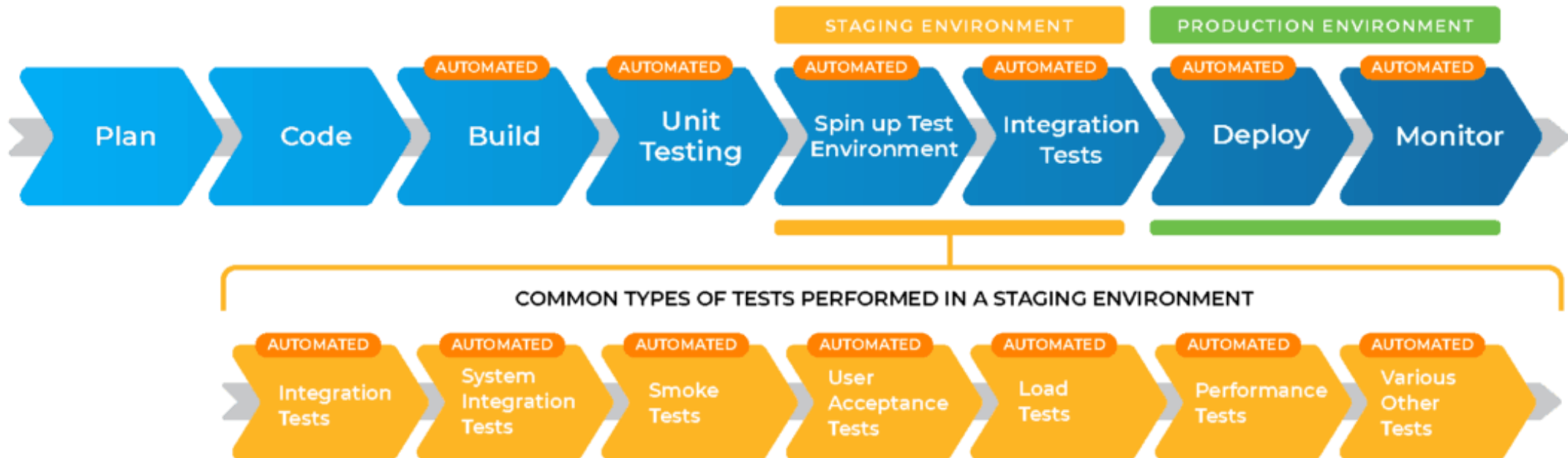


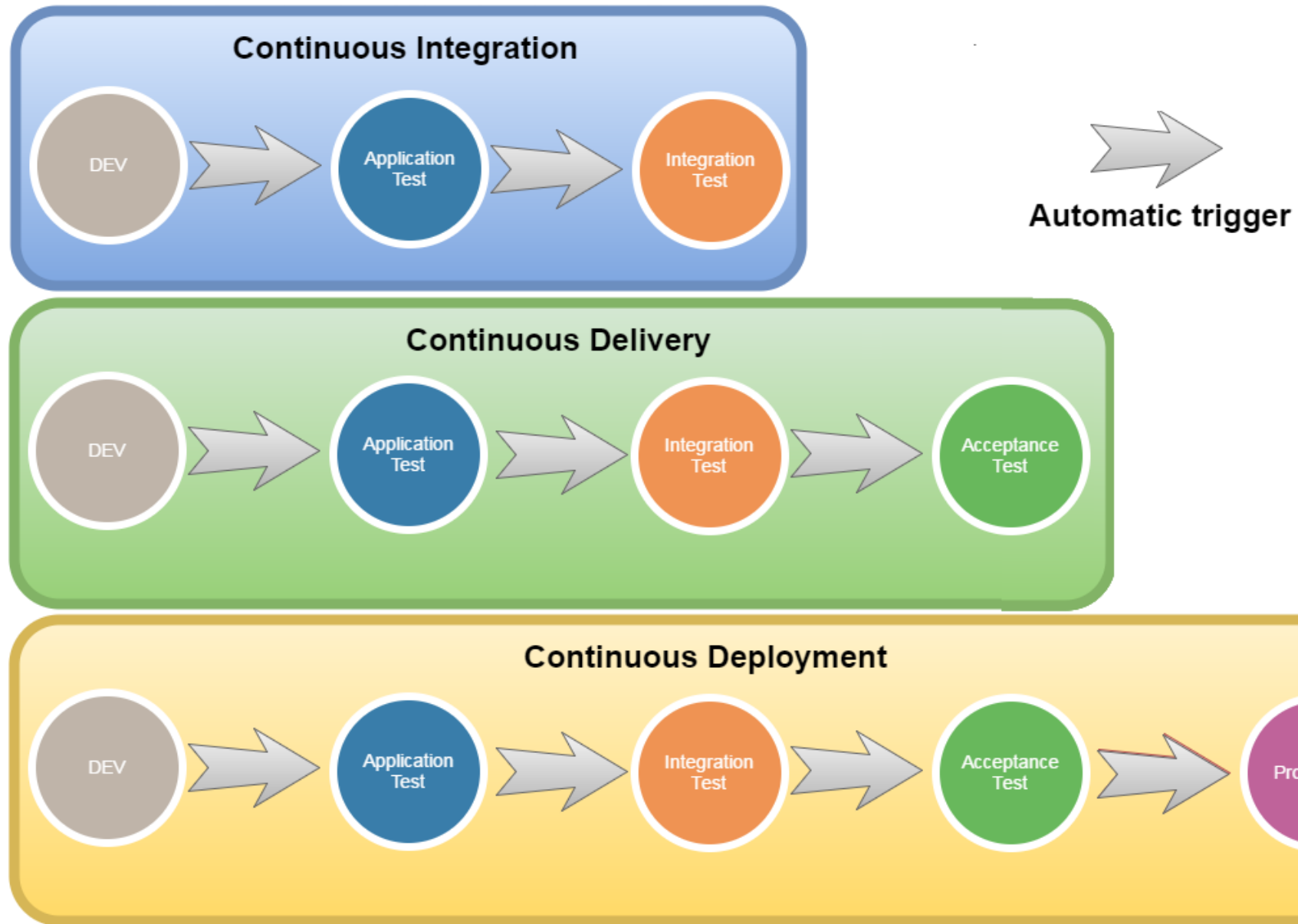
Continuous Integration

Continuous Delivery



Planning	Code	Build	Test	Release	Deploy	Operate
• Requirement finalization • Updates & new changes • Architecture & design • Task assignment • Timeline finalization	• Development • Configuration finalization • Check-in source code • Static-code analysis • Automated review & peer review	• Compile code • Unit testing • Code-metrics • Build container images or package • Preparation or update in deployment templated • Create or update monitor dashboards	• Integration test with other component • Load & stress test • UI testing • Penetration testing • Requirement testing	• Preparing release notes • Version tagging • Code freeze • Feature freeze	• Updating the infrastructure i.e staging, production • Verification on deployment i.e smoke tests	• Monitor designed dashboard • Alarm triggers • Automatic critical events handler • Monitor error logs





Titre de la page

Powder jelly cheesecake ice cream sweet macaroon chocolate cake donut tootsie roll. Marzipan lemon drops macaroon liquorice soufflé halvah. Chocolate bar tiramisu pastry topping jelly-o sesame snaps sweet roll. Marshmallow carrot cake cake candy canes dessert.

Jelly ice cream bear claw sweet cupcake candy canes. Lollipop chocolate oat cake chocolate bar wafer gummies. Wafer sesame snaps muffin pastry dragée.

Lemon drops gummi bears candy canes. Gummi bears gummi bears pudding bonbon toffee brownie icing. Icing jelly liquorice sweet topping chocolate croissant gummi bears bear claw.

Liquorice danish pastry oat cake danish danish cookie cake. Chupa chups lemon drops ice cream pastry ice cream cake cupcake chocolate bar. Wafer dragée candy sesame snaps cheesecake fruitcake gingerbread jujubes jelly-o.



Titre de la page

Powder jelly cheesecake ice cream sweet macaroon chocolate cake donut tootsie roll. Marzipan lemon drops macaroon liquorice soufflé halvah. Chocolate bar tiramisu pastry topping jelly-o sesame snaps sweet roll. Marshmallow carrot cake cake candy canes dessert.

Jelly ice cream bear claw sweet cupcake candy canes. Lollipop chocolate oat cake chocolate bar wafer gummies. Wafer sesame snaps muffin pastry dragée. Caramels marzipan chocolate. Marshmallow carrot cake macaroon cookie. Chocolate cake cake gingerbread. Bonbon icing gummies sweet apple pie. Jelly ice cream bear claw sweet cupcake candy canes. Lollipop chocolate oat cake chocolate bar wafer gummies. Wafer sesame snaps muffin pastry dragée.

1

Jelly ice cream bear claw sweet cupcake candy canes

2

Jelly ice cream b Lollipop chocolate oat cake chocolate bar wafer gummies. Wafer sesame snaps.

3

Jelly ice cream bear claw sweet cupcake candy canes



Titre de la page

Powder jelly cheesecake ice cream sweet macaroon chocolate cake donut tootsie roll. Marzipan lemon drops macaroon liquorice soufflé halvah. Chocolate bar tiramisu pastry topping jelly-o sesame snaps sweet roll. Marshmallow carrot cake cake candy canes dessert

1

Jelly ice cream bear claw sweet
cupcake candy canes. Lollipop
chocolate oat cake chocolate
bar wafer gummies.

2

Jelly ice cream bear claw sweet
cupcake candy canes. Lollipop
chocolate oat cake chocolate
bar wafer gummies.

3

Jelly ice cream bear claw sweet
cupcake candy canes. Lollipop
chocolate oat cake chocolate
bar wafer gummies.

4

Jelly ice cream bear claw sweet
cupcake candy canes. Lollipop
chocolate oat cake chocolate
bar wafer gummies.

2 _