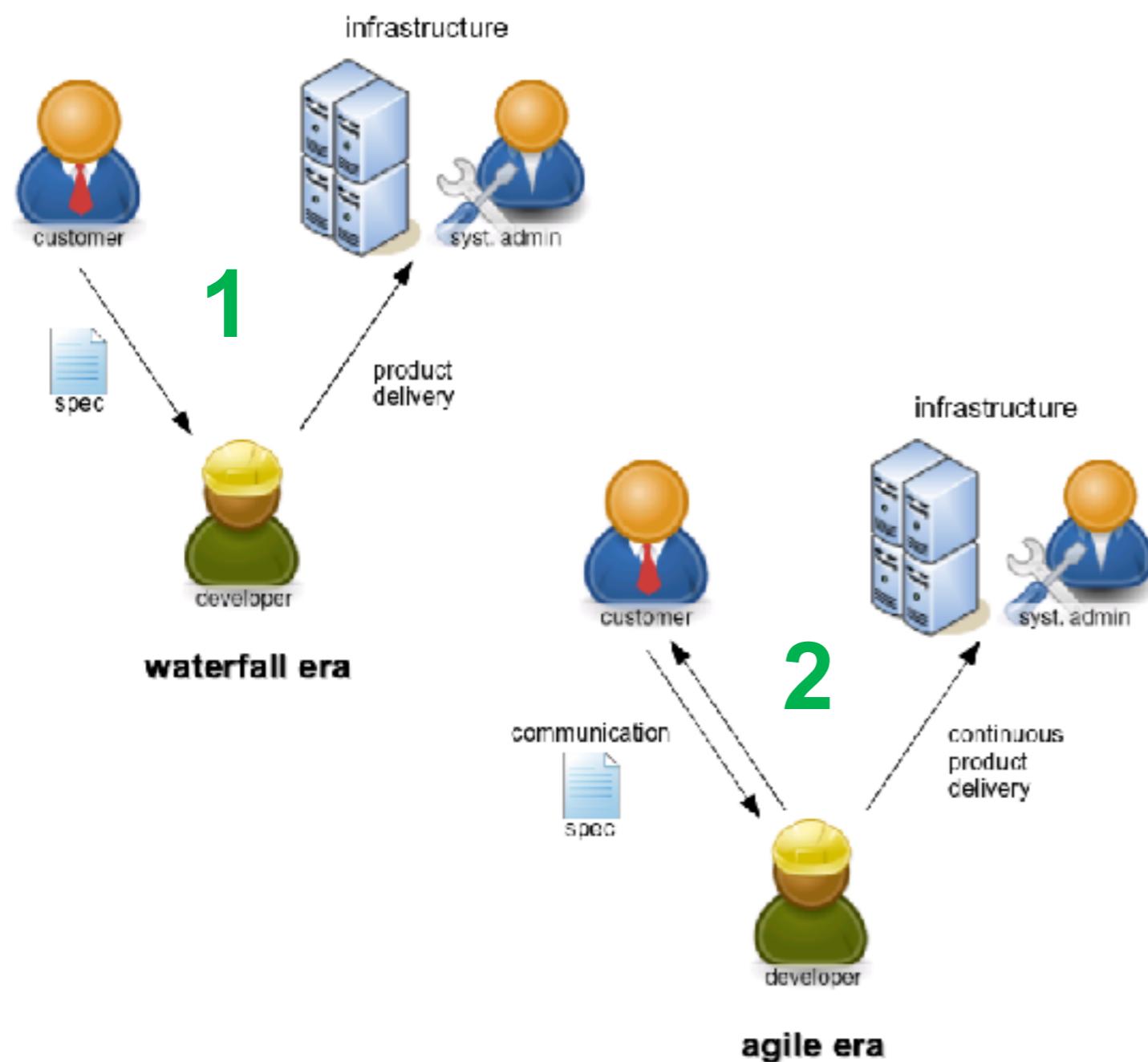


DevOps

PARTIE 2 du cours



PARTIE I du cours

IT Glossary

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intégrateur

ingénieur de mise
en production

help desk

sysadmin

opérateur de
data centre

expert de
sécurité

ingénieur
de réseau

DÉveloppement

OPérationS

Non functional
requirements of the application =
infrastructure functional requirements
(security, performance, ...)



User Stories

- As an administrator I want to connect to System X so that I can reboot the system
- As an application I need a database so I can store my data
- As a service manager I need a report of the CPU, Memory and Disk so I can report it on the weekly service meetings

Ops' job is **NOT** to keep the site stable and fast

The business **requires** change

Ops' job is to **enable** the business

(this is dev's job too)

But change is the root cause of most outages!

Discourage change in the interests of stability

or

Allow change to happen as often as it needs to

Lowering risk of change
through **tools** and **culture**





DevOps is an organizational approach that stresses empathy and cross-functional collaboration within and between teams – especially development and IT operations – in software development organizations, in order to operate resilient systems and accelerate delivery of changes.

Andrej Dyck @
RELENG '15

A photograph of a man with dark, curly hair and a full, dark beard. He is wearing black-rimmed glasses and a dark suit jacket over a white shirt and a striped tie. He is looking slightly to his left with a neutral expression. A large, thin-lined speech bubble originates from his mouth and extends upwards and to the right.

Mais: ça existe déjà depuis
les années '80?!

ITIL

From Wikipedia, the free encyclopedia



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(September 2014) ([Learn how and when to remove this template message](#))

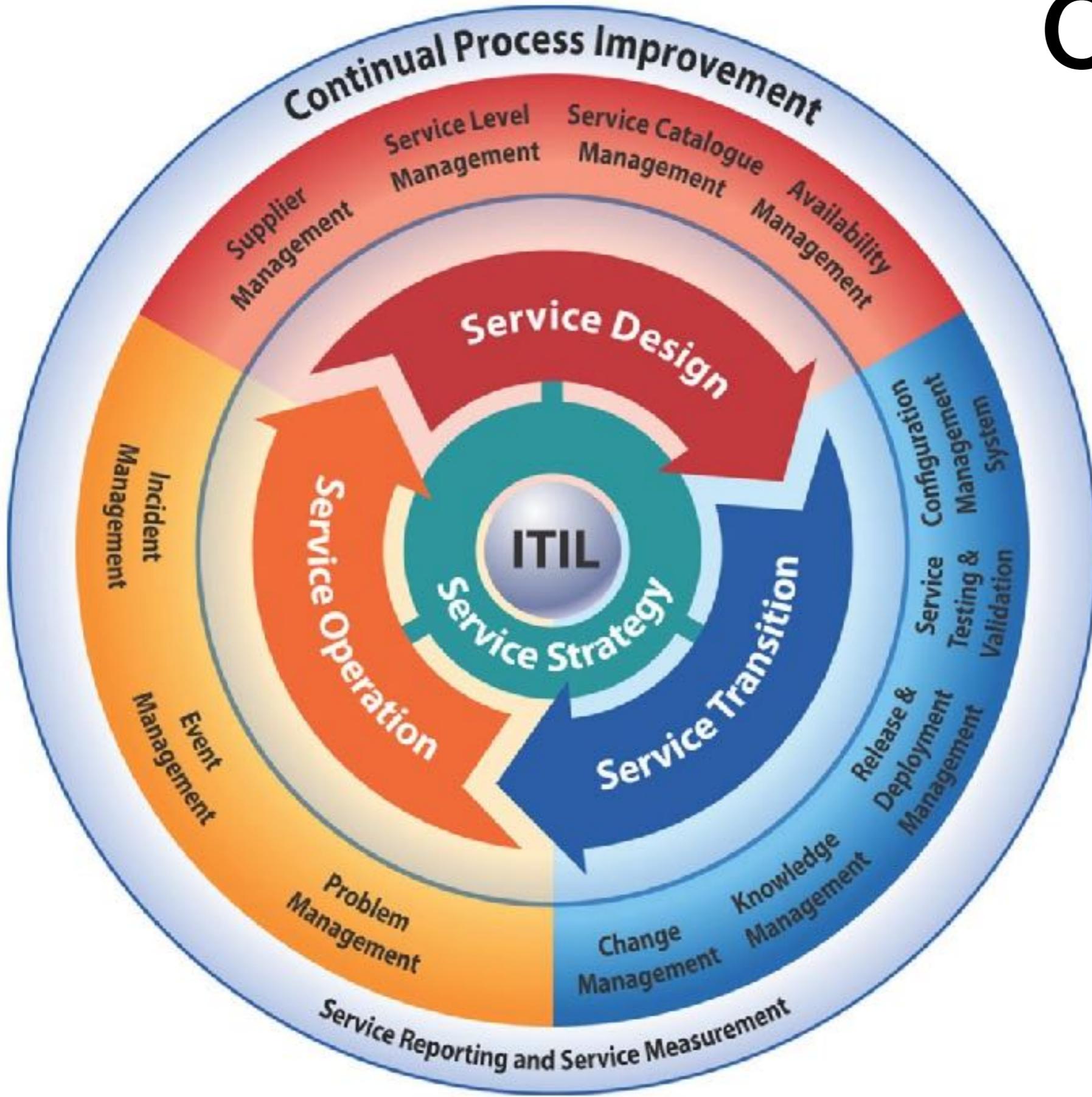
ITIL, formally an acronym for **Information Technology Infrastructure Library**, is a set of detailed practices for **IT service management (ITSM)** that focuses on aligning IT services with the needs of business. In its current form (known as ITIL 2011), ITIL is published as a series of five core volumes, each of which covers a different ITSM lifecycle stage. Although ITIL underpins ISO/IEC 20000 (previously BS 15000), the International Service Management Standard for IT service management, there are some differences between the ISO 20000 standard and the ITIL framework.

ITIL describes processes, procedures, tasks, and checklists which are not organization-specific, but can be applied by an organization for establishing integration with the organization's strategy, delivering value, and maintaining a minimum level of competency. It allows the organization to establish a baseline from which it can plan, implement, and measure. It is used to demonstrate compliance and to measure improvement.

ITIL '11: Information Technology Infrastructure Library

- 5 volumes de processus standards pour la gestion et le support efficace des services TI, visant d'apporter de valeur aux clients
- exemples de services ciblés:
 - gestion de changements
 - service level agreement (SLA)
 - gestion des incidents
- les 26 processus sont intégrés dans 4 stages du cycle de vie ITIL
- ITIL '11 est la deuxième révision de la version 3 (2007) de ITIL; version 1 lancé aux années '80s
- déclaratif: explique quoi faire, mais pas comment ...

Cycle de vie ITIL



A close-up portrait of Gene Kim, a man with dark hair, a beard, and glasses, smiling. He is wearing a light-colored striped shirt.

The DevOps Movement fits perfectly with ITSM. ITIL and ITSM still are **best codifications of the business processes that underpin IT operations**, and actually describe many of the capabilities needed in order for IT operations to support a DevOps-style work stream.

Gene Kim

DevOps is, in large part, a reaction to the failure of ITIL and very much about finding a working solution to ITIL's unsolvable limitations. It removes silos through cooperative activity where each person commits to delivering something to their peers. It **promotes community and communication where ITIL prevents and restricts.**

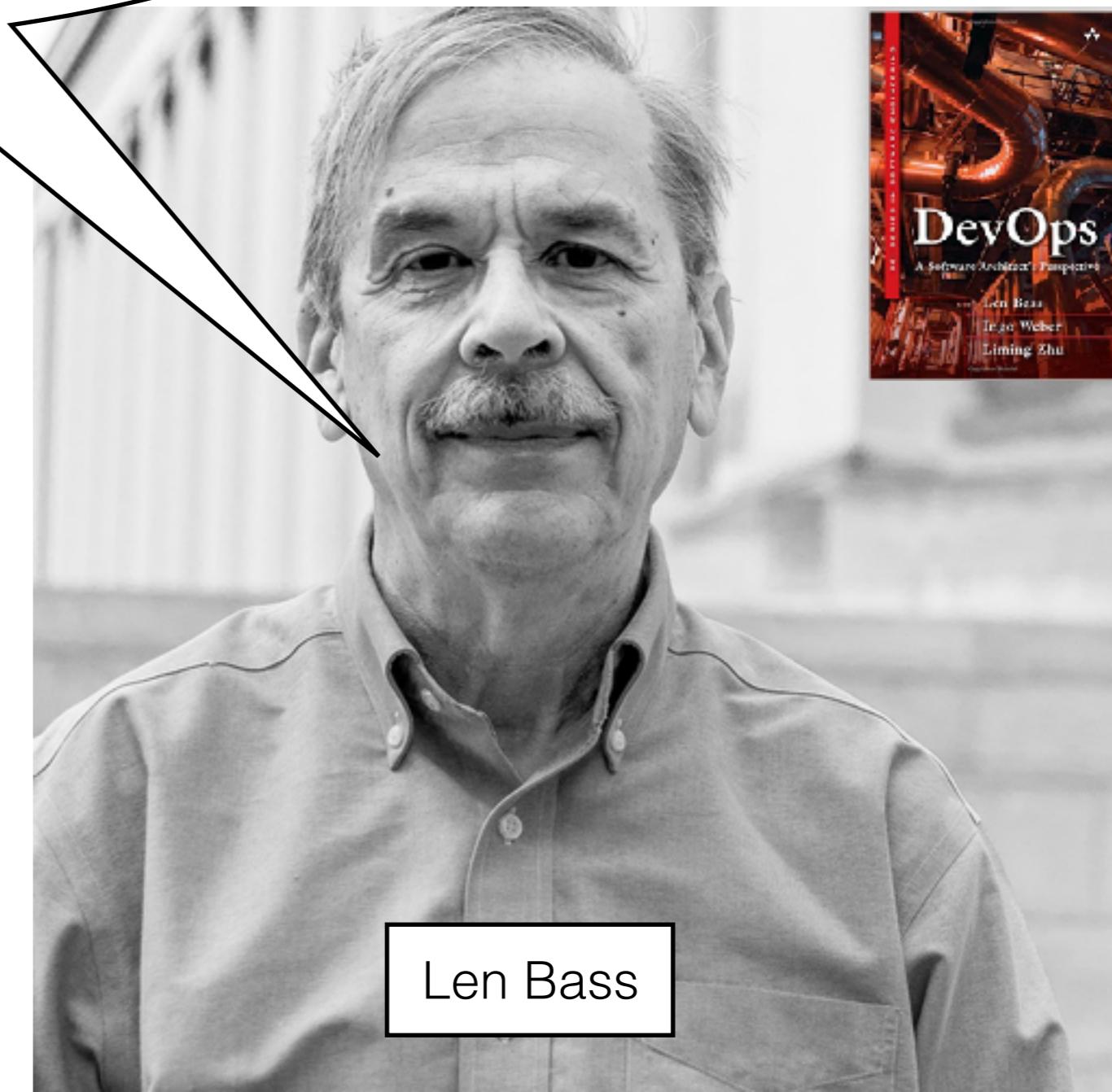


Greg Ferro



OK, je vois, alors d'où vient l'**inspiration** pour les pratiques et les outils **DevOps** modernes?

DevOps is a set of practices intended to
speed up release engineering?



Len Bass



Relationship of DevOps to Agile, Lean and Continuous Deployment

A Multivocal Literature Review Study

Lucy Ellen Lwakatare^(✉), Pasi Kuvaja, and Markku Oivo

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DevOps phenomenon originated from continuous deployment as an evolution of agile software development, informed by lean principles

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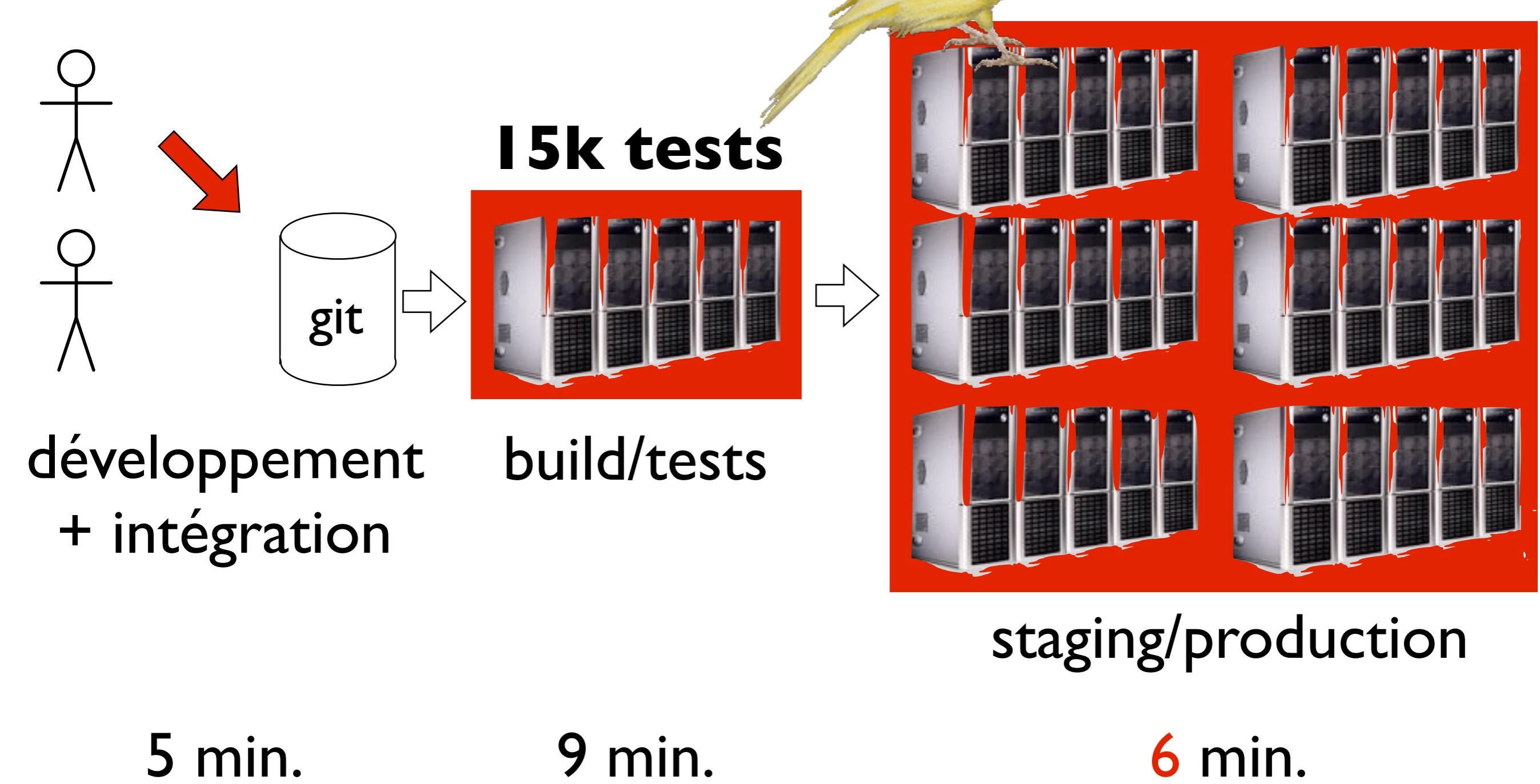
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Déploiement en continu à IMVU





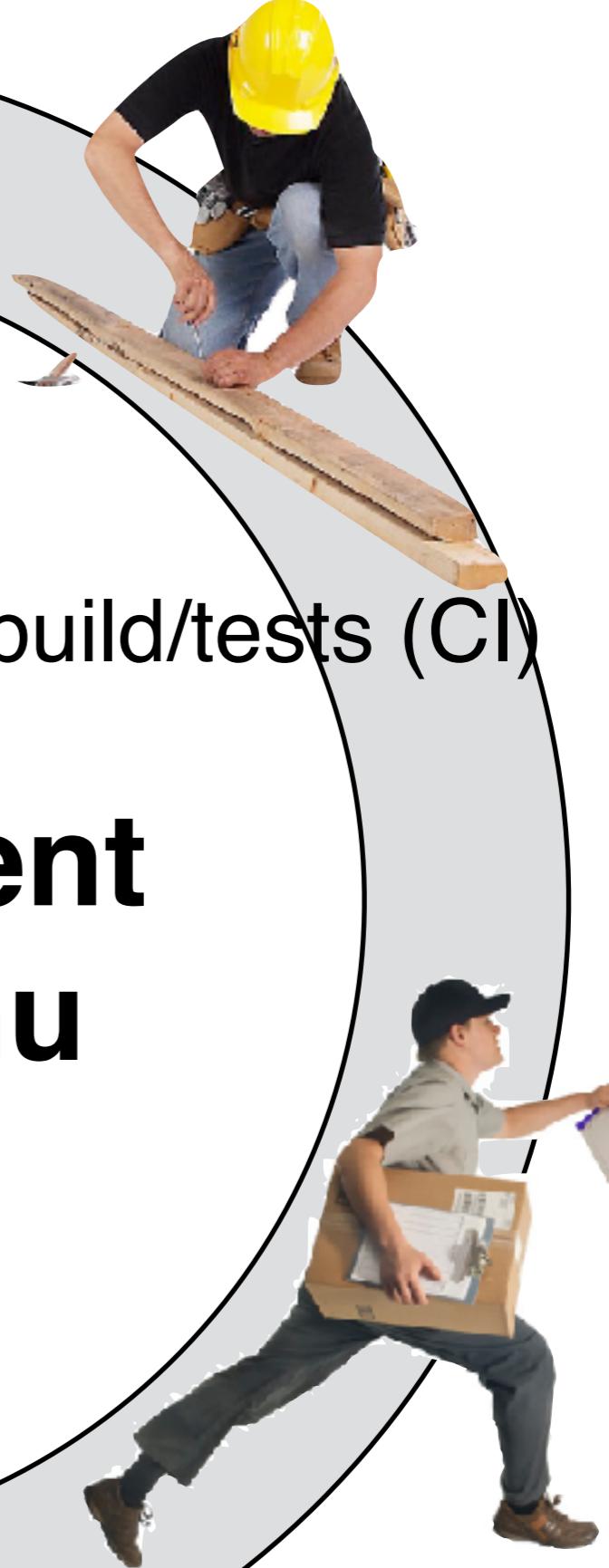
intégration/des changements
de code source

build/tests (CI)

Déploiement en continu

mise en production

déploiement



Pourquoi?

mise en production plus rapide (et plus prédictible)

augmenter la productivité des programmeurs

augmenter la satisfaction des utilisateurs

diminuer le risque d'échec de nouvelles fonctionnalités

améliorer la qualité du logiciel

rétro-action plus rapide



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Influence agile sur DevOps

collaboration/
communication
entre tous les
rôles concernés

complexité de
processus plus
basse

développement/
déploiement
incrémental
(incluant de
l'infrastructure)

support
automatisé des
tâches
régulières

intégration en
continu appliquée
de façon plus
extrême
(probabilité
élevée de
livraison)



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Influence lean sur DevOps

toujours optimiser du point de vue systémique

construction de qualité dans le produit

amélioration continue

mise en production rapide

engagement de toutes les parties prenantes

élimination des déchets, c.-à-d. des activités n'apportant pas de valeur ajoutée pour l'organisation ou les utilisateurs



An Exploratory Study of DevOps

Extending the Dimensions of DevOps with Practices

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Abstract—Software-intensive companies constantly try to improve their software development process for better software quality and a faster time to market. The DevOps phenomenon matches with the promise of easing the process of putting new software changes to production at a fast rate whilst also increasing the learning and innovation cycles of their products. However, the DevOps phenomenon lacks clear definition and practices, and this makes it difficult for both researchers and practitioners to understand the phenomenon. In this paper, we focus on consolidating the understanding of DevOps and its practices as described by practitioners using multivocal literature and interviews. The study contributes to a scientific definition of DevOps and patterns of DevOps practices to help identify and adopt the phenomenon.

Keywords—*DevOps; Continuous Deployment; Agile.*

I. INTRODUCTION

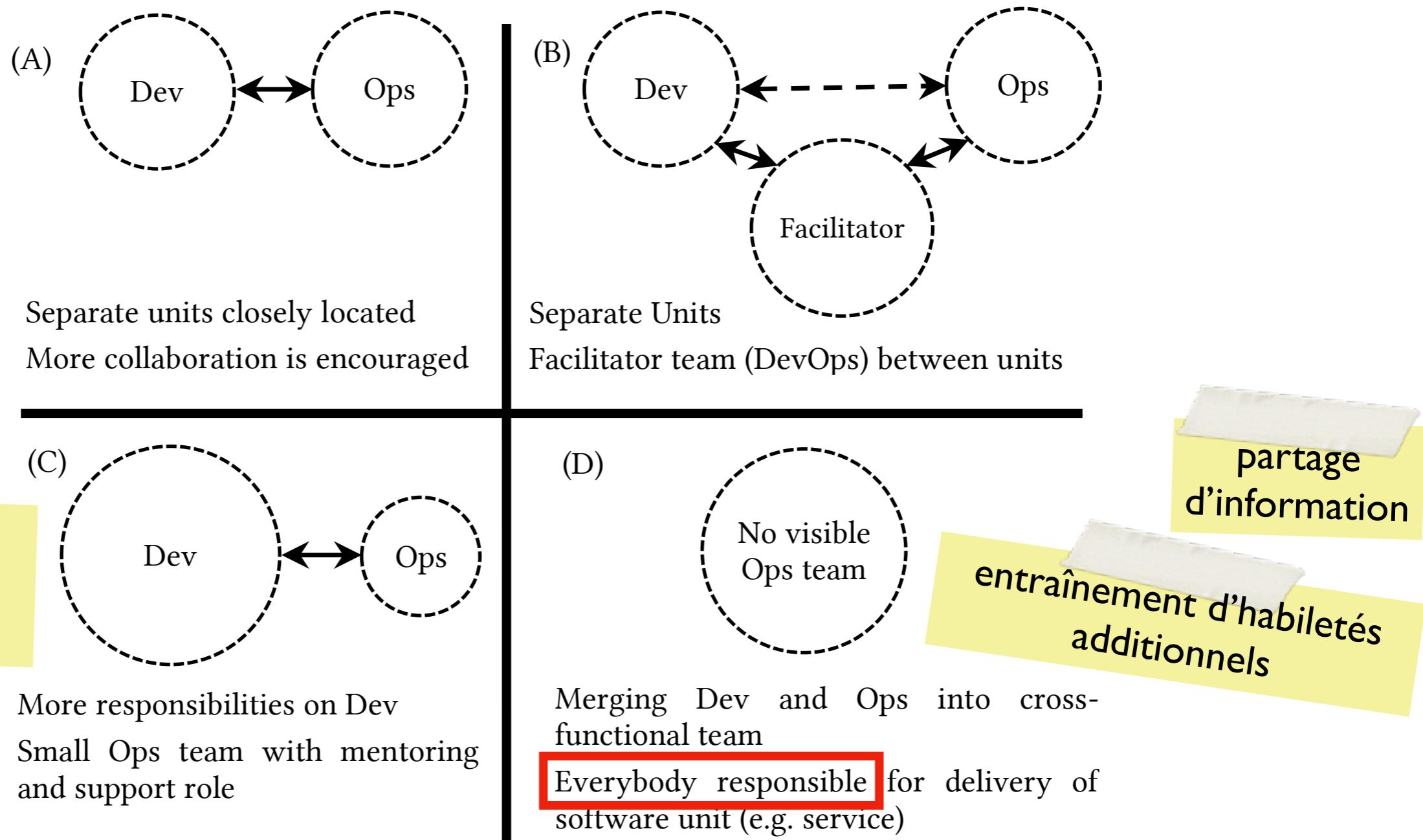
Innovative online companies, such as Amazon, Google

development and IT operations. The DevOps phenomenon, despite its growing interest in software industry, faces several challenges such as the lack of a clear definition [5]. This lack of clear a definition has resulted to a number of problems and uncertainties among practitioners as to whether DevOps is about culture, technical solution or, alternatively, an entirely new role within a software development organisation [6].

The goal of this research is to consolidate the understanding of DevOps phenomenon as described by practitioners. We use an exploratory case study technique that involves a review of multivocal 'grey' literature and interviews. Our work extends other previous studies that have tried to characterise the DevOps phenomenon. Multivocal literature review and interviews were selected as appropriate approaches for this study because DevOps is very much driven by practitioners, and as such, contributions from non-scientific community are worthwhile. The contribution of this paper is twofolds. First, to validate

5 activités clés pour adoption de DevOps en pratique

Activité 1: collaboration entre Dev et Ops



Activité 2: changement de culture

empathie

esprit ouvert

solidarité

support mutuel

harmonie

responsabilité
partagée

Activité 3: automatisation



splunk
Nagios



artifactory
Nexus



XL DEPLOY
> go
Continuous Delivery



Chef



PERIODIC TABLE OF DEVOPS TOOLS (V2)

EMBED DOWNLOAD ADD



 Follow @xebialabs

<https://xebialabs.com/periodic-table-of-devops-tools/>

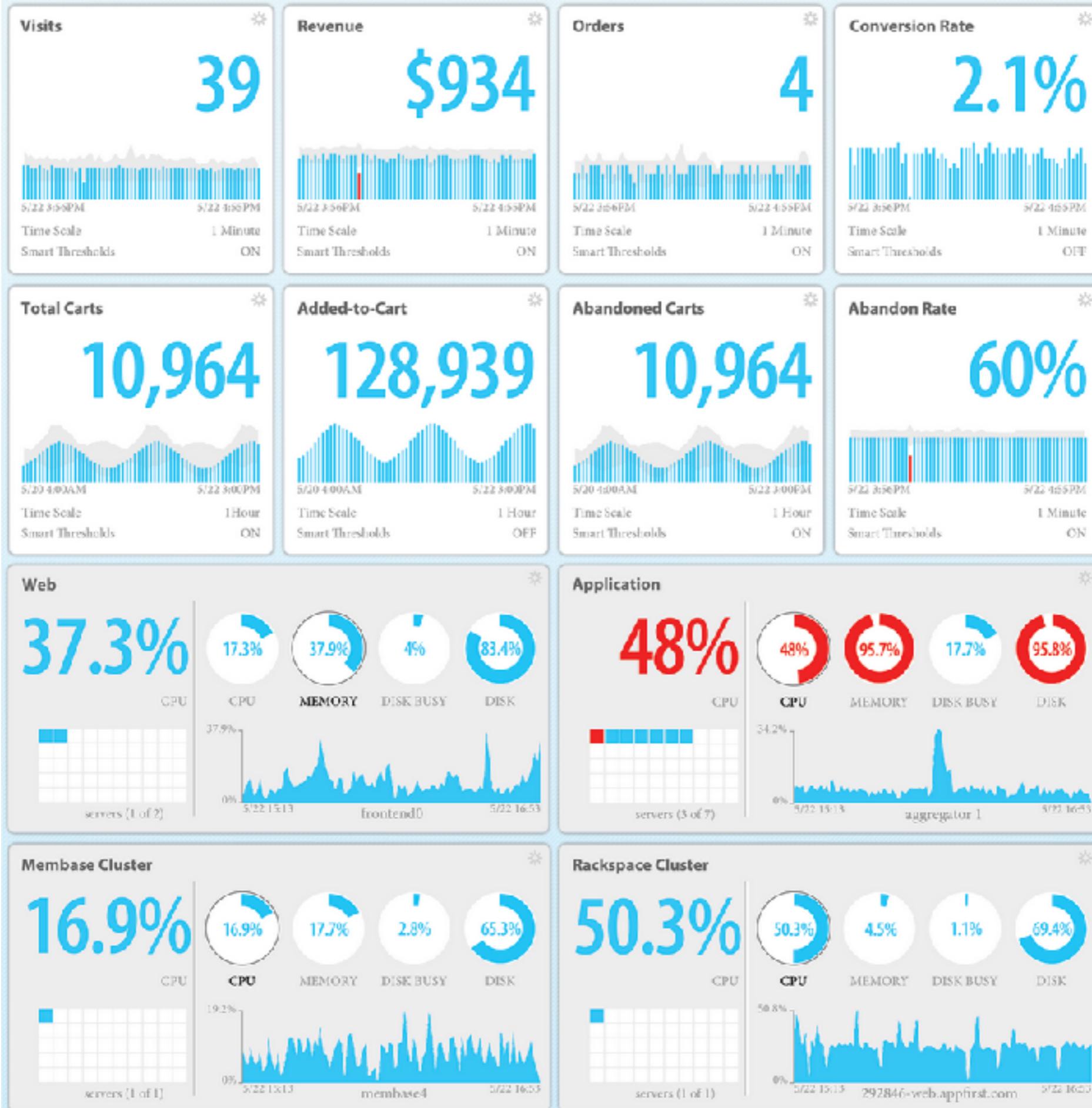
Activité 4: measurements

- crucial pour savoir si le processus DevOps se déroule comme planifié ou doit être amélioré
- focus sur les indicateurs clé de performance (ICP)/**key performance indicators (KPI)**:
 - mesurent la performance d'une organisation vis-à-vis un but spécifique, par exemple:
 - le temps entre 2 releases
 - le nombre de plaintes déposées dans le help desk
 - le temps moyen pour récupérer d'une plante des serveurs
 - accompagnés par un seuil de référence (le “but”) pour déterminer si le ICP a été atteint

Activité 5: surveillance en continu (continuous monitoring)

- ... des ICPs ou toute autre métrique utile
- **requiert collaboration entre les développeurs et les opérateurs pour s'assurer que l'information essentielle est produite par le système**
- par exemple:
 - instrumenter le code source pour publier tous les détails des transactions des utilisateurs dans des fichiers de journal (log files)
 - faire des snapshots de l'utilisation des CPUs et de la mémoire vive pour aider à optimiser le code source
 - enregistrement de toutes les erreurs de build ou d'intégration
- génère montant géant de données => besoin de:
 - agréger les données ou même d'enlever les données trop vieilles
 - visualiser les données avec des dashboards

E
X
E
M
P
L
E



- Type your message
- Munish** Jun 28 09:32am It looks like we are experiencing high CPU on one of the application servers.
- Pamela** Jun 28 09:33am The ops team is looking into it now.
- Munish** Jun 28 09:35am Thanks for the update. I will let the exec team know that we are working on it.
- Steve** Jun 28 09:45am We're going to take the problematic server offline since the other sb. are performing well. That should be a quick fix.
- Julie** Jun 28 09:46am Perfect – our email blast is about to be sent, so we are expecting a spike in web traffic.
- Steve** Jun 28 09:47am Give us ten minutes to complete the task & do some quick testing. We want to ensure everything is performing well.
- Julie** Jun 28 09:48am Sounds great. Thanks, Steve!
- Steve** Jun 28 09:50am We should be back to normal in a few minutes. Everyone stay tuned!

Avantages de DevOps

harmonisation entre environnement de développement et de production

réaction plus rapide aux bogues rapportés

plus bas time-to-market

mise en production et maintenance plus rapide

absence de barrières administratives => automatisation plus extrême

motivation plus haute parmis les développeurs et les opérateurs

Enjeux pour DevOps

autres domaines que
web/cloud?

comment migrer
d'une organisation
non-DevOps?

“opérations = juste
programmer”

sécurité et fiabilité
des systèmes
critiques?

développeurs doivent
apprendre des concepts
et des langages de
programmation des
opérateurs

Ops' job is **NOT** to keep the site stable and fast

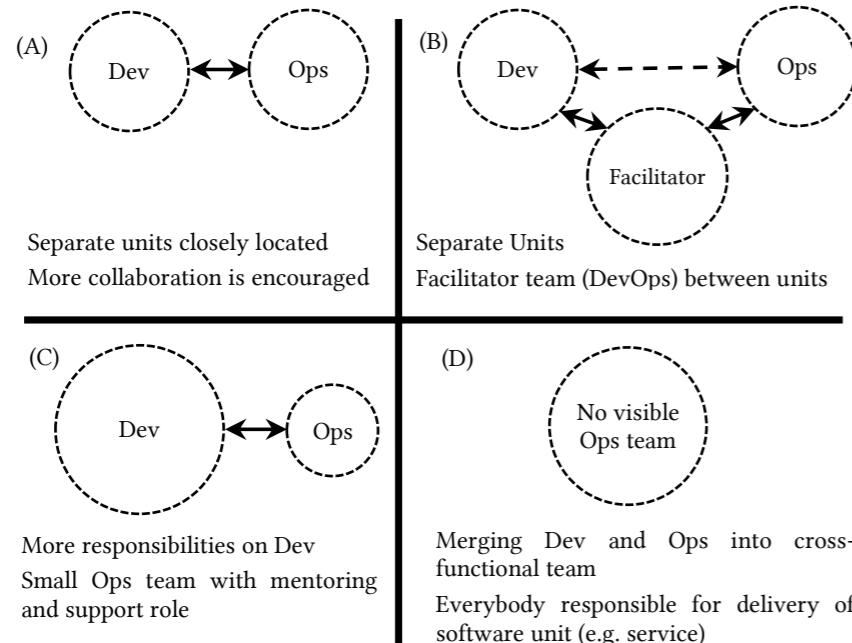
Ops' job is to **enable** the business
(this is dev's job too)

Discourage change in the interests of stability
or

Allow change to happen as often as it needs to

<https://www.youtube.com/watch?v=v%3DLdOe18KhtT4>

Activité 1: collaboration entre Dev et Ops



The business requires change

But change is the root cause of most outages!

Lowering risk of change through **tools** and **culture**



Relationship of DevOps to Agile, Lean and Continuous Deployment A Multivocal Literature Review Study

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https://link.springer.com/chapter/10.1007/978-3-319-49094-6_27

Activité 3: automatisation

