**IITB Standard definition of a DevOps team**

**DRAFT**

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# Document Purpose

To have a common understanding and expectations across IITB as to the description, roles, and minimum responsibilities for a team labelled as “DevOps”.

Because the [Target IT Solution Delivery Model strategy](https://sara-sabr.github.io/ITStrategy/strategy-target-solution-delivery-model.html) grants privileges to “DevOps teams” (e.g. deploying directly in production), there is a need to set expectations so the term is not misused.

# Definition

## Description

A [**DevOps team**](http://everything.explained.today/DevOps/) is a cross functional, multidisciplinary team that emphasize the collaboration and communication of both software developers and information technology (IT) professionals while automating the process of software delivery and infrastructure changes.

DevOps include everything between Development and Operation of IT Products (the combination of software and infrastructure hosting the software)

DevOps teams are fully responsible for the product that has been delivered to production, they built it and support it fully" no handoffs to another team to operation and monitor, they are the first person that gets called when it goes wrong.

The DevOps team comprises various sets of necessary skills allowing them to deliver, operate and maintain a secure, reliable and accessible IT products. These skills are provided by the team as a whole, not by a single individual.

## Roles

A DevOps team comprises of, at minimum, the following roles:

1. **Product Manager**: responsible to manage the evolution of the IT Product based on its feature list and IT Products technical stack maintenance, and managing the rollout of new features. The IT Product Manager prioritizes the work for the DevOps team, phases solution delivery to reduce impact to end-users, and manages changes by coordinating with the end-user community (sometimes proxied via an IT Product Owner)
2. **Software Development**: codes and tests software using various programing languages based on the technical needs.
3. **Operation Expert:** codes and/or configures infrastructure hosting the software, builds the non-functional requirements such as availability to operate the software in its multiple environments
4. [**Security Champion**](https://resources.infosecinstitute.com/how-to-become-your-own-security-champion/)**:** job is to upscale the team’s security expertise. acts as the primary advocate for IT Security, leads efforts in identification and remediation of bugs and vulnerabilities, develops security unit and integration tests, and acts as the primary point of communication with the IT Security team.
5. **Interoperability Champion:** job is to upscale the team’s interoperability literacy and expertise. Acts as the primary advocate for Data Exchange Communications (i.e. APIs) and Data Governance. DevOps teams are expected to expose data as APIs, those APIs are expected to provide end-users (other developers) with a consistent view of ESDC’s enterprise data by conforming to ESDC’s Enterprise reference data model and standards .
6. **User Experience (UX) Champion:** acts as the primary advocate for the end-user experience, whether that end-user is the IT Product user or another developer (in the case of API development). Leads efforts in identifying quality assurance issues, remediate bugs affecting end-users, and developers user journey maps.

It is expected that the DevOps team as a whole unit performs these roles and do not delegate a particular role to a single member of the team. Each team member is therefore expected to have the required set of skills for the team as a whole to function.

## Responsibilities

DevOps team members perform the following specific tasks according to their roles (reminder that Product = software + infrastructure):

1. Coding IT Product
2. Configuring IT Product
3. Testing IT Product
4. Securing IT Product
5. Architecting IT Product
6. Deploying IT Productin production
7. Providing a level of support for the IT Productin production
8. Remediating bugs and patching IT Product
9. Managing backlog of features for an IT Product
10. Prioritizing work of team members
11. Documenting IT Productrequirements and specifications
12. Interacting with end-users
13. Managing the rollout of IT Productfeatures and its coordination with end-users
14. Managing IT Productchange requests
15. Monitoring [IT Product Service Level indicators](http://everything.explained.today/Application_performance_management/)
16. Engaging with other IT professionals, outside of the DevOps team, to fulfill IT Productrequirements (e.g. IT Continuity team)
17. Managing Source Code (branching, versioning)
18. Building and Managing release pipelines
19. Automating toil
20. Data Modeling
21.

# Checklist

The following minimum checklist can be used to evaluate whether an IT team is recognized by IITB as a “DevOps team”:

1. It has the roles listed in section 2.2
2. It performs the tasks listed in section 2.3
3. It uses [build automation](http://everything.explained.today/Build_automation/)
4. It uses, at minimum, API-driven [testing automation](http://everything.explained.today/Test_automation/)
5. It uses a git-based version control system
6. It uses [Application Release Automation](https://www.techopedia.com/definition/31061/application-release-automation-ara) across various environments
7. Most of its [software performance monitoring](http://everything.explained.today/Application_performance_management/) practice uses automation
8. The team size is maximum 9 members

# Meritocracy

The following section sets maturity levels for DevOps teams to improve their meritocracy within ESDC and, as such, their trustworthiness with other IT Professionals and senior leaders. This section is based on [Red Hat’s experience](https://opensource.com/open-organization/16/8/how-make-meritocracy-work), in particular their [Open Decision Maturity Model](https://github.com/red-hat-people-team/open-decision-framework/blob/master/maturity-model/Maturity-model-ODF.pdf).

Note: something about upscaling the team as a whole.

Outcomes (what maturity elements that will be measured)

* Communication
	+ Indicator: xyz
	+ Indicator: xyz
* Transparency
* Release Early + often
* Collaboration
* Decision Making

Indicators (the below needs to be added as part of outcomes above):

* Time to Open
* PR size
* Review Turnaround
* Use Repeatable infrastructure as code
* Operational configurations are codified whenever possible

# Types of teams

If a team does not fit into one of these four models, it is separate from, and should not interfere with, those working in alignment with the Target Operating Model.

## Stream aligned (most teams fall here)

* Responsible for delivering value to users, quickly, safely, and independently
* Responsible for the “front end” (an API may be a front end, depending on the solution)
* Examples of stream types
	+ Specific customer streams, business-area streams, geography streams, product streams, user-persona streams, or even compliance streams (in highly regulated industries)
* Common skill sets (not exhaustive)
	+ Application security, ​Commercial and operational viability analysis, ​Design and architecture, ​Development and coding, ​Infrastructure and operability, Metrics and monitoring, Product management and ownership , Testing and quality assurance, ​User experience (UX)
		- Each capability does not map on to an individual within the team, these are capabilities within the team. Having only specialized roles leads to bottlenecks every time a piece of work depends on a specialist who may be busy or unavailable. Teams should be composed of mostly generalists, with a few specialists as needed.
* Comprised mostly of generalists

Expected Team Competencies:

* Taken from [CIO Suite list of Competencies](https://www.gcpedia.gc.ca/wiki/CIO_Suite/Competencies) and expected level

## Platform

* Reduces the cognitive load on the Stream Aligned team by off-loading lower level detailed knowledge (provisioning, monitoring, or deployment)
* Provides easy to consume services
* Is not an approval gateway
* Provides internal services to reduce cognitive load on stream aligned teams
* Their knowledge is made available via portals or APIs that are consumed by stream aligned teams
* Ease of use is a fundamental concept
* Service providers to stream aligned teams
* Measured by the value of the services they provide to product teams.

Example:

Platform examples at a lower level of the stack could range from provisioning a new server instance to providing tools for access management and security enforcement. A stream-aligned team can then decide to use these patterns without fearing a lack of in-depth skills or effort available to acquire them.

Expected Team Competencies:

Taken from [CIO Suite list of Competencies](https://www.gcpedia.gc.ca/wiki/CIO_Suite/Competencies) and expected level

## Enabling

* Technical consulting teams (guidance, not execution)
* Teams composed mostly of specialists
* Responsible for research, and making suggestions on adequate tooling, practices, frameworks, and ecosystem choices
* Do not dictate technical choices of other teams
* Help teams comply with organization-wide constraints
* Increase autonomy of stream-aligned teams by growing their capabilities
* Collaboration with a given team is limited to weeks, or months if required
* Facilitates appropriate knowledge sharing inside the organization

Interesting model:

* An enabling team has 8 weeks to improve a stream aligned team on 4 metrics:
	+ Time taken per successful deployment
	+ Absolute number of successful deployments per day
	+ Time taken to fix a failing deployment
	+ Time from code commit to deployment (cycle time)

Expected Team Competencies:

* Taken from [CIO Suite list of Competencies](https://www.gcpedia.gc.ca/wiki/CIO_Suite/Competencies) and expected level

## Complex sub-system (least common form of teams)

* Responsible for building and maintaining parts of a system that depends heavily on specialist knowledge
* Teams are made up of specialists
* Goal is to reduce the cognitive load on the stream-aligned teams
* The least common form of team

Expected Team Competencies:

* Taken from [CIO Suite list of Competencies](https://www.gcpedia.gc.ca/wiki/CIO_Suite/Competencies) and expected level
1. Definitions

**IT Solution**

An IT solution is a combination of one or more IT Products. It produces the environment within which end-users operates. An example of an IT Solution is XYZ

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**IT Product**

The combination of software, infrastructure, and their configuration. An IT Product is akin to an “application” as defined by the Application Portfolio Management (APM) program. An IT Product may have one or many software (e.g. COTS, Open Source libraries, Open Source Software, Custom build software). Each of those software are deployed in one or many infrastructure (on premise, on the public cloud, or a combination of the two making it a hybrid deployment).

A “working IT Product” is a version of the IT Product which allows DevOps teams to collect the maximum amount of validated learning about clients with the least effort. A working IT Product must be able to be used by end-users and provide DevOps teams with observation of end-users behaviours.

For the scope of this Strategy, Operating Systems (OS) are NOT defined as IT products. Therefore should an IT Product depend on an OS to run in production, it is in compliance with this Guiding Policy.

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The following are *not* considered IT Products:

* Operating Systems (OS), such as Windows
* Individual COTS, such as MS Word

**IT Product Manager**

A person who manages the evolution of the IT product based on the IT Product Owner’s features lists, IT Product’s technical stack maintenance, and managing the rollout of new features. The IT Product manager prioritizes the work for the DevOps team, phases solution delivery to reduce impact to end-users, and manages changes by coordinating with the IT Product Owner.