DEVELOPMENT OPERATIONS POLICY

I.   INTRODUCTION

This development operations policy sets forth the processes under which Cloud Foundry.org Foundation, Inc. (the "**Foundation**") software development will function. Consensus shall be the normal operating model for Cloud Foundry development decisions. However, when consensus cannot be reached, decisions will be made as described in the Development Governance Policy Document.

II.   PROJECT MANAGEMENT COMMITTEES.
The list of Foundation PMCs and Projects are documented in the "PMC and Project List" document.

A.   New PMCs. Proposals for new PMCs can be put forward by any Foundation member for public review and comment. Once the proposal has been socialized, it should be submitted to the PMC Council for review. New PMC proposals must include the name of the proposed PMC Lead(s), the proposed scope, technical approach, initial member (developer) headcount, and identification of the initial Projects to be managed under the proposed PMC. PMC proposals are reviewed by the PMC Council, and if accepted, a PMC will be created. Thereafter, new Projects may be created within that PMC following the normal Project proposal process.

B.   Governance by Contribution Voting. The PMC Chair shall report monthly, by project, the number of current Dedicated Committers. Each PMC must establish and publish the criteria and rules for becoming a Dedicated Committer within that PMC. For avoidance of doubt, the flexibility around what constitutes a Dedicated Committer is at the discretion of each PMC. Taking the Foundation's recommendations into consideration, each PMC determines which members are Dedicated Committers. At the time of its forming, a PMC may choose to permanently delegate the decision of what constitutes a dedicated committer to its individual projects.   The   Recommendation   is   as   follows:

- A committer or Project Lead who
- Performs Cloud Foundry OSS work for no less than 75% of FTE and no less than 50% of FTE on Active Projects
- Works on Stories in the Backlog

III.   PROJECTS.
The Projects and Project Leads are documented in the "PMC and Project List" document.

A.   Project Roles.

1.   Project Lead. Each Project will have a Project Lead who represents the Project on the associated PMC. The Project Lead shall have ultimate responsibility for setting Project direction, coordinating work amongst that Project's Dedicated Committers, resolving disputes within that Project, communicating status to the PMC and Foundation Membership, and running Project inception meetings. Project Leads must be a member of the PMC to which that

Project belongs.

        a.   **Selecting a New Project Lead.** If a Project Lead is removed, or decides to step down for any reason, any Foundation member can nominate a replacement to the out-going project lead. If consensus is not reached among the Project Members on the selection of a new Project Lead, the PMC Chair shall call for a Governance by Contribution vote within that PMC. If the project exists within a PMC that has delegated project level decisions to the individual projects, that PMC's Lead, not the PMC Chair, will call for a Governance by Contribution vote within that Project.

        b.   **Dedicated Committers.** Dedicated Committers have commit rights to the Project's repository and may merge pull requests, at the Project Lead's discretion. Dedicated Committers take direction on a day-to-day basis from their Project's Project Lead. Dedicated Committers can be developers, testers, documenters, designers or others as determined by the PMC.

        2.   **Contributors.** Contributor's contributions are made via pull requests, and may be merged by a Dedicated Committer at the discretion of a Project Lead.

        3.   **Project Members.** Project members include that Project's Dedicated Committers and the Project Lead.

        B.   **Project Decision Appeals.** The Project Lead or at least 25% of the Project Members may appeal a Project decision to the PMC. If the project exists within a PMC that has delegated project level decisions to the individual projects, decisions are to be made by a Governance by Contribution vote within that Project.

        C.   **Project Incubation**. The purpose of the incubation process is to ensure that Projects have a successfully operating open and collaborative development community, follow development and quality guidelines as established by the PMC Council, have clear intellectual property oversight of the code base of the Project, adopt Foundation policies and are an architectural fit for the PMC.

        1.   **Project Proposals.** A new Project proposal can be put forward by any Foundation Member and is reviewed by the associated PMC. Projects that incorporate existing material or have dependencies on third party materials require legal review and approval before being accepted. A new Project proposal must include the name of the proposed Project Lead, proposed scope, approved PMC Development Operating Model, technical approach, and initial team committed to working on the Project. The PMC shall conduct or authorize to be conducted a due diligence review on any intellectual property or related issues on any such Project. Programming language selection for new Projects is determined at the time of Project formation, based upon the Project team's decision with guidance of the PMC Council.

        2.   **Acceptance.** Following review of the Project Proposal, the PMC shall

determine whether the Project should be accepted as a new Incubating Project within a PMC. If consensus cannot be reached, the PMC Chair shall call a vote to which Governance by Contribution rules apply.

3. **PMC Decision Appeals**. Any three (3) PMC Members (collectively) may appeal a new project decision within a PMC to the PMC Council.

IV. DEVELOPMENT PROCESS.

A. Project Members are responsible for adhering to the Foundation principles in their day-to-day activities. In particular:

1. ensuring that IP cleanliness is preserved at all times.

a. In practice this means ensuring that all incoming code is legally contributed, ensuring that all third-party code included in or referenced (i.e. a dependency) by Projects is compatible with Cloud Foundry licensing requirements, and ensuring that all Dedicated Committers have agreements in place covering each of the Projects on which they have commit rights;

2. ensuring that all Members have an equal opportunity to participate in their Project by:

a. maintaining all source code in a Foundation sanctioned source code repository;

b. keeping a public storyboard up to date to record all work in progress, current epics, and planned releases; The storyboard ensures there are no surprises, and allows Members to advocate for prioritization of, for example, pull requests that are particularly important or urgent. A Project Lead may not always feel able to acquiesce in all such matters, but should always be prepared to provide a justification for decisions made;

c. conducting open and transparent interim project management prioritization meetings that give voice to all Project Members and that consider input from all parties

d. responding in a timely manner to bugs and feature requests raised by the community via the Project's chosen source code repository and issue tracker;

e. actively participating in mailing list discussions relating to the Project;

f. responding to pull requests in a timely manner;

g. using only publicly available tools that are free to use in association

with Projects; and

> **h.** using a transparent process for granting commit rights.

> **3.** ensuring that their action or inaction does not surprise the community by scheduling reviews for major events in the Project's lifecycle; and

> **4.** publish design proposals for public review and feedback for new features and for major refactoring efforts.

B. **Development Operating Models.** The Foundation recommends that a PMC choose one of the following two development operating models to be used for its Projects:

> **1.** **Pairing Model.**

>> **a.** To earn Dedicated Committer status in this Development Operating Model, Project developers may participate in at least a 6-week "Open Dojo" training program, subject to availability, in which: (1) Project developers pair with new developers in order to rapidly come up to speed on the Project; (2) applicants for the Open Dojo program must be capable of effectively participating in paired development; and (3) developers typically graduate and obtain Dedicated Committer status.

>> **b.** Typically code is committed by a Dedicated Committer working in a pair with another developer, either in-person or remote. Pairing ensures that all code is reviewed as it is written. To commit code to a Project repository under this model:

>>> **i.** code may be committed only by a Dedicated Committer after appropriate review;

>>> **ii.** for all submissions, code must be reviewed by a Dedicated Committer (who is not the submitter);

>>> **iii.** Dedicated Committers can commit only when they have (a) been working on a Story/Epic in the Backlog, b) paired with another individual on the team or reviewed the work with another Dedicated Committer

>>> **iv.** Any other circumstance requires the contribution to be submitted as a pull request and processed accordingly (though may be expedited at the discretion of the Project Lead).

> **2.** **Distributed Committer Model.**

>> **a.** To earn Dedicated Committer status in this Development Operating

Model, Project developers should (1) deliver a number of significant pull requests against the Backlog that have been merged with minimal rework, and (2) be nominated by a current Dedicated Committer on that Project, approved by the Technical Lead (Anchor) and the Project Lead.

V.   RELEASE PLANNING

A.   The Foundation encourages continuous weekly, or bi-weekly releases, and all Project teams shall aim to ship working software as frequently as possible. Each Project shall evaluate release scheduling based upon periodic review of Epics and Stories. Project Lead(s) determine release content and priority in consultation with the project's Dedicated Committers.

B.   Releases: Cloud Foundry releases are a collection of Projects with test harnesses, configuration item (**"CI"**) workflows, and self-service certification tools that have a defined PMC release schedule and have passed quality and CI requirements.

C.   The Foundation aims to provide a good first experience using: (1) a public listing of free trial experiences on the Foundation website, and (2) continued availability of the "Bosh lite install" utility.

VI.   "REQUIRED" PROJECTS. The list of Required Projects are documented in the "PMC and Project List" document.

A.   **Changing the Definition of "Required" Project.** In order to effect the Foundation's Cloud Foundry Certification Program as set forth in the Development Governance Policy, the PMC Council shall designate a set of Projects as "Required". In order to change the definition of a "Required Project," the following must occur:

1.   a proposal is made to the PMC Council that describes the reason for the change, the proposed new or removed Projects and Project repositories, and a suggested timeframe for the change ("**Proposal**");

2.   Proposals are discussed and voted upon by the PMC Council, with majority approval; and

3.   public review and feedback is provided for changes to required components. Explicit communication of any formal dissent to the proposed change shall be made public, and considered by the PMC.

VII.   DEFINITIONS
Each capitalized term within this document will have the meaning provided below. Unless otherwise set forth herein, each capitalized term will have the meaning set forth in the Bylaws.

1.   **"Active Project"** means a Project that is undergoing active development and is included in the release train process, as set forth in the Development Policy.

2.   **"Archived Projects"** means a Project that reaches the end of its useful life, is retained for prosperity, but is no longer actively developed or eligible for release train inclusion.

3.   **"Backlog"** means a prioritized list of Stories/Epics that serve as the shared work queue for a Project team.

4.   **"Dedicated Committer"** means a developer or Project Lead who (1) performs development work for no less than 75% of FTE on Projects and no less than 50% of FTE on an Active Project as measured by the Board, and (2) works on Stories in the Backlog, or some other definition set forth by the Project Management Committee.

5.   "**Contribution"** means any information or materials, including software source code, documentation, or related materials, provided to the Foundation by a Member or other party and which is, or is proposed to be, included in a Project.

6.   **"Development Governance Policy"** means the development governance policy under which the Foundation will function.

7.   **"Epic"** means a brief description of big picture themes or large software features that consist of multiple Stories.

8.   "**Foundation**" shall mean CloudFoundry.org Foundation, a nonprofit nonstock corporation formed under the laws of the State of Delaware, which shall seek recognition of status as an organization described in section 501(c)(6) of the Internal Revenue Code.

9.   **"Full Time Equivalent" or "FTE"** means, in the United States, the equivalent of one (1) person working full time: eight (8) hours/day, five (5) days/week, fifty-two (52) weeks/year, for two thousand eighty (2,080) hours/year, or the legal definition in the applicable jurisdiction.

10.   **"Governance by Contribution"** is the voting process by which Dedicated Committers vote in Foundation decisions. If a Dedicated Committer works on multiple Projects, he or she may only vote in the PMC in which they spend the majority of their time. In general, an organization or individual's influence within the Foundation should be proportional to the investment that organization or individual is making to support the Foundation's mission. Technical influence over the Projects should be proportional to the number of an organization's Dedicated Committers.

11.   **"Incubation Project"** means a Project that is proposed for inclusion in the Foundation, undergoing active development, but is not included in the release train process.

12.   "**Member**" means a person or entity that is a member of the Foundation in accordance with the Bylaws and any related Membership Agreement.

13.   **"PMC"** means Project Management Committee.

14.   **"PMC Chair"** means the individual responsible for coordinating the activities of their respective PMCs, assisting in prioritizing that PMC's Projects' Backlog, assisting in resolving

disputes within that PMC, and meeting with their respective PMC members.

15.   **"Project"** means one or more of the Foundation's Cloud Foundry open source projects that have been duly approved as set forth in the IP Policy, including Active Projects, Incubation Projects, and Archived Projects.

16.   **"Story" or "Stories"** means a brief description of a requirement for a software.

17.   **"Technical Community Manager"** means a person or entity that is a resource of the Foundation to assist with the development community.

18.   **"Technical Lead (Anchor)"** means the most experienced engineer on a given project and is responsible for ensuring that the development methodology is followed and the technical recommendations for the project are appropriate.

PMC AND PROJECT LIST

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