***CROW* – *V0.1***

***CROW***

项目总体说明书

版本号 V0.1

**2024年4月20**

**三月雨开发团队**

# 文档变更历史记录

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| 序号 | 变更日期 | 变更人员 | 变更内容详情描述 | 变更后的版本号 |
| 1 | 20240420 | 白稹 | 创建项目总体说明书，添加项目概述，一般性描述，需求描述，开源协议声明。 | V0.1 |
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# **1. 项目概述**

## 1.1 软件项目概述

**项目名称**：CROW无人机系统

**简称或代号**：CROW

**开发单位**：三月雨开发团队

**开发人员名单：**张国玺 白稹

**大致功能和用途**： CROW系统是一款无人机系统，包括无人机的硬件设计与组装，软件的设计与开发，通过该系统，用户可以方便快捷地进行无人机的组装与使用。

## 1.2 术语定义

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| --- | --- | --- |
| 序号 | 术语名称 | 术语定义 |
| 1 | 无人机 | 可以通过远程通信进行操纵的飞行器，包括但不限于四轴飞行器，单飞行器等。 |
| 2 | 飞控系统 | 用于控制飞行器飞行姿态和运动的系统。包括软件系统和硬件系统 |
| 4 | 通信系统 | 用于在终端机之间负责信息传递的系统 |
| 5 | 模块 | 具有功能独立 能被调用的信息单元叫做模块 |
| 6 | 内部接口 | 软件系统内部各子系统指点，各部件之间，各模板之间的接口叫做内部接口，接口描述包括：调用方式，入口信息，出口信息等。 |
| 7 | 相关文件 | 相关文件是指当本文件内容变更后，可能引起变更的其他文件，如需求分析报告，详细设计报告等 |
| 8 | 开发单位 | 负责开发该项目的个人或者组织成为开发单位 |
| 9 | 用户界面 | 与用户进行交互的可视化部分称为用户界面，包括但不限于导航栏，菜单，按钮，图标等 |

# **2. 项目的一般性描述**

## 2.1软件产品与其环境

1.飞行器硬件环境：飞行器的硬件环境包括但不限于主板，电子调速器，螺旋桨，机架，各类传感器，通信模块，摄像头。

2.飞行器软件环境：飞行器的测试和运行环境当前还未确定。

3.服务器硬件环境：服务器使用debian12操作系统的软件服务器

4.控制端环境：测试阶段控制端选用web端控制。

## 2.3假设与前提条件

在开发和使用CROW系统时，我们基于以下假设和前提：

* 用户具备基本的计算机操作和互联网使用能力。
* 用户拥有稳定的网络连接和适当的浏览器环境。
* 用户具备基本的经济水平用于部署该系统。
* 外部软件系统和数据资源能够稳定、可靠地提供所需的服务和数据。
* 用户使用该系统会遵守有关法律法规，不扰乱社会秩序。

# **3. 系统功能需求描述**

## 3.1 软件功能概述

硬件功能概述：

1. 飞行器可以进行正常的飞行，包括上升，下降，前进，后退，转弯等。
2. 飞行器可以与控制终端进行远程通信，接收控制终端的指令进行对应的操作

软件功能概述：

1. 控制终端软件可以与飞行器进行通信，发送操作指令。
2. 通信服务器可以进行信息转发，为控制终端和飞行器建立通信线路

## 3.2 可行性分析

为了软件项目开发的流程顺利进行，我们对CROW做了如下的可行性分析

**战略可行性**：该项目对于无人机产业具有一定的推进作用，通过用户自己组装无人机，降低使用成本和入门门槛，达到间接增加无人机玩家的目的，具有良好的战略可行性。

**操作可行性**：无人机飞行技术在软件方面目前日趋成熟，有丰富的经验用于借鉴，硬件方面也有众多厂家进行生产，具有良好的操作可行性。

计划可行性：该项目的开发周期长，学习周期长，不具有良好的计划可行性，为此我们选择使用螺旋开发，提高项目的计划可行性。

**技术可行性**：该项目需要大量的软件开发和硬件设计的基础，具有较高的技术难度，目前不具备良好的技术可行性，为此我们选择一边学习技术一边进行项目研发。

**社会可行性：**该项目满足法律要求，具有良好的社会可行性。

**市场可行性：**该项目为开源项目，不具有经济市场可行性。

**经济可行性：**该项目的为开源项目，无经济收入，开发、升级和维护需要的经济条件大，具有很差的经济可行性。

**风险可行性：**该项目后续可能会因为资金问题，时间问题导致项目中止，风险可行性较差。

可行性研究结论：应使用螺旋开发模型进行开发，每个开发周期要再做详细的可行性分析，确保每个周期都可以顺利进行，最后推进整个项目的进行。如果周期可行性分析结论不尽人意，需要尽快考虑终止项目，确保经济和时间的损失降到最小。

# 4.系统版本记录

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| 版本号 | 父版本号 | 立项日期 | 发布日期 | 更新内容 | 功能介绍 | 测试情况 | 已知问题 |
| V0.1 | Null | 20240420 | 未发布 |  |  |  |  |
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