**Teamwork**

**Project Management**

* **Included a description of the company (overview or company profile):**

**Company Overview: E-JUST Robotics Club**

Founded in 2021 at Egypt-Japan University of Science and Technology (E-JUST) with the vision of fostering a strong robotics community among students, the club started with introductory courses and expanded to hands-on workshops, supporting both beginner and intermediate learners. As members gained more experience, they were encouraged to participate in large-scale projects, ultimately leading to the formation of specialized teams for national and international competitions.

A key milestone was the **formation of the first ROV team in 2023**, which competed in **MATE ROV 2023** and earned the **"No Pain, No Gain"** award for its promising efforts. The team advanced significantly in **MATE ROV 2024**, excelling in underwater tasks.

Bringing together students from various engineering and technology fields, the club follows a structured training process, ensuring continuous knowledge transfer to new members and ongoing skill development.

The training process consists of:

1. **General Training:** All new members receive foundational knowledge in robotics, including mechanical design, electronics, programming, and control systems.
2. **Evaluation & Assessment:** After training, students undergo evaluations to identify their strengths and best-fit roles.
3. **Team Selection:** Based on performance and interests, members join the **ROV team** or other specialized teams within the company.

The **E-JUST ROV team** consists of **47 members**, divided into:

* **Technical Sector:** Handles ROV design, development, and integration of the ROV.
* **Non-Technical Sector:** Manages operations, outreach, and project sustainability.

This year, we developed **Kamikaze**, our custom **ROV**, using a **structured workflow, Agile methodology, and cloud-based collaboration**.

* **personnel (individual members and their roles and responsibilities)**

**Personnel & Team Structure**

**Leadership Team**

* **Chief Executive Officer (CEO)** – Oversees all activities and high-level decision-making.
* **Chief Financial Officer (CFO)** – Manages the club’s budget, funding, and financial operations.

**Technical Sector**

The technical sector is structured into three **core divisions**, each led by a **Chief Technology Officer (CTO)** and their **Vice CTOs**:

1. **Mechanical Division** – Responsible for designing and manufacturing the physical structure of **Kamikaze**.
   * **Mechanical CTO** – Leads mechanical design and manufacturing.
   * **Vice Mechanical CTOs (x2)** – Assist in managing sub-teams.
   * **Mechanical Team Members** – Handle material selection, structural assembly, and component integration.
2. **Electrical Division** – Develops and integrates **power distribution, control systems, and communication networks**.
   * **Electrical CTO** – Leads power and control system development.
   * **Vice Electrical CTO** – Supports electrical design and testing.
   * **Electrical Team Members** – Design PCBs, wiring, and power management systems.
3. **Software Division** – Focuses on **control algorithms, vision processing, and system automation**.
   * **Software CTO** – Oversees software development and integration.
   * **Vice Software CTO** – Assists in automation and AI implementation.
   * **Software Team Members** – Develop control logic, image processing, and data communication systems.

**Non-Technical Sector**

Beyond technical development, the **Non-Technical Team** plays a key role in logistics, outreach, and team operations:

* **Logistics** – Manages event planning, scheduling, and resource coordination.
* **Public Relations (PR)** – Handles communications, partnerships, and external relations.
* **Media & Marketing** – Documents activities, creates promotional content, and manages social media.
* **Sponsorship & Fundraising** – Secures funding and engages with sponsors.
* **Event Management** – Organizes workshops, exhibitions, and outreach programs.
* **Design Team** – Creates branding materials such as T-shirts, posters, and forms.
* **Developed a schedule to aid in building the vehicle**

The vehicle development schedule consists of four main phases (Detailed in Appendix XX):

1. **Training Phase (12 weeks, Aug 1 - Oct 16, 2024)**
   * Covers foundational topics across teams, followed by specialized training in software, mechanical, and electrical systems.
   * Includes ROV-specific training, task automation, and mock challenges.
2. **Planning Phase (2 weeks, Oct 17 - Oct 31, 2024)**
   * Teams finalize designs, select components, and define software and electrical frameworks.
3. **Prototype Build & Testing (19 weeks, Nov 1, 2024 - Mar 14, 2025)**
   * Begins with mechanical assembly, electrical integration, and software implementation.
   * Moves to underwater testing, debugging, and full system integration.
4. **Final Preparation & Mock Competitions (Feb 21 - Mar 14, 2025)**
   * Simulates competition tasks, finalizes adjustments, and prepares for transport and setup.

The schedule ensures a structured development process leading to a fully tested ROV ready for competition.

* **Described how resources, procedures, and protocols were managed to meet mission objectives and solve day-to-day operational problems**

**Resource Management:**

* **Custom vs. Commercial Solutions:** Instead of relying on commercially available components, we **developed custom** ESCs, a USB Hub, a Square Canister, and manipulators, ensuring **better integration, performance, and cost efficiency**, all optimized for **Kamikaze’s** spatial and operational needs.
* **Cloud-Based Collaboration:**
  + **Cloud storage** enabled seamless sharing of **design files, task submissions, and corporate knowledge**, allowing for **remote collaboration**.
  + **Altium shared models** ensured that all team members had access to the **latest PCB designs** for accurate development.

**Procedures & Workflow:**

* **Agile Development Approach:**
  + We followed an **Agile methodology**, promoting **collaboration, modularity, and flexibility** in development.
  + **Notion** helped manage sprint planning, track tasks, and document our work, ensuring structured execution of each phase.
* **Communication & Coordination:**
  + **Weekly Online Meetings**: We conducted **weekly virtual meetings** via **Discord**, allowing real-time updates and discussion of progress.
  + **Miro for Visualization:** Used for mind maps, flowcharts, and brainstorming.
  + **Overleaf for Documentation**: Enabled efficient collaboration and review.
  + **GitHub** for **development: Managed** **(CI/CD)**, version control, and issue tracking, ensuring smooth and **conflict-free software development**.

**Protocols & Problem-Solving:**

* **Safety & Reliability:** Strict testing ensured Kamikaze’s safe underwater operation.
* **Code & Hardware Optimization:**
  + **GitHub enabled parallel software development and version tracking.**
  + **Custom-built hardware components** optimize **power efficiency and integration**, avoiding the **high costs and design limitations** of commercial alternatives.
* **Issue Tracking & Contingency Planning:**
  + **Notion** helped document **technical challenges and solutions**, ensuring efficient **problem resolution** and smooth project execution.
  + **Miro’s visualization tools** assisted in analyzing issues through **flowcharts and decision trees**, streamlining our troubleshooting process.

By integrating **Agile workflows, cloud-based collaboration, real-time communication, and custom-built hardware**, we ensured that **Kamikaze** met its mission objectives while efficiently solving day-to-day operational challenges.