DOST TNA Form 01

APPLICATION FOR TECHNOLOGY NEEDS ASSESSMENT

Name of Enterprise: Marinduque State College		
Contact Person: EDGARDO R. LARIRIT	Position in the Enterprise: College DEAN CEIIT	
Office Address: Tanza, Boac, Marinduque	Tel. No. 09293410678	Fax No.
	E-mail Address: lariritedgardo@gmail.com	
Factory Address: Tanza, Boac, Marinduque	Tel. No. (042)-332-2028	Fax No.
	E-mail Address: sucpresident.msc@gmail.com	
Website: https://www.mscmarinduque.edu.ph/		

GENERAL AGREEMENTS:

1. The applicant shall, at the earliest opportunity, make available to the DOST Regional Office MIMAROPA (DOST-MIMAROPA) all information (manuals, procedures, etc.) required to establish the technology status of the selected core business functions and management systems;

2. If DOST-MIMAROPA is not satisfied that all the requirements for business registration are complied with, it shall inform the applicant of the observed deficiencies before starting the assessment;

3. When the required inputs to the assessment are already supplied by the applicant, including Attachment A, the DOST-MIMAROPA will assess the firm through the core business functions and management systems, whichever is applicable, to identify technology needs and verify compliance to standards vis-à-vis existing practices;

4. When the DOST-MIMAROPA has completed the technology assessment, a report will be prepared on the results of the assessment with accompanying recommendations and opportunities for improvement. The report prepared will define the scope of activities, functions, management practices and locations assessed. The applicant shall not claim or otherwise imply that the report applies to other locations, product or activities not covered by the report;

5. The applicant agrees that the report will not be used until permission has been granted by the DOST-MIMAROPA;

6. The applicant agrees that the receipt or acknowledgment of the report ends the assessment stage; any technical assistance ensuing from the recommendations of the report will be viewed as a separate project.

UNDERTAKING

I agree to undertake and observe the above General Agreements as stipulated by the Department of Science and Technology Regional Office DOST-MIMAROPA.

EDGARDO R. LARIRIT

Signature over Printed Name

COLLEGE DEAN CEIIT

Position in the Enterprise

_____

Date

Attachment A

Enterprise Profile

Name of Enterprise Marinduque State College

Production Site/Location Tanza, Boac, Marinduque

Business Permit No. _____ Year Registered _____

Brief Enterprise Background

Marinduque State College (MSC) is committed to maintaining the highest degree of excellence in the field of Instruction, Research, Extension and Production towards meeting customer satisfaction by adhering to globally-adopted quality standards. MSC envisioned an advanced and adaptive university pursuing quality education, lifelong gender-sensitive learning environment, transparent governance with sustainable resource generation by 2025 and their mission is to provide excellence in instruction, research, extension and production that magnifies W.I.S.D.O.M. in leadership through a total quality management system responsive to the challenges of 21st century education. Their Core Values, is to Educating People, Enriching Lives, and Expanding Opportunities with:

Wisdom for Truth and Knowledge
Ingenuity in Research, Extension, and Production
Sustainbality of Good Deeds
Dexterity in Management of Resources
Orchestrator of Good Practices in Achieving Goals, and
Magnanimity in Dealing with People and God's Creation

The role of Marinduque State College (MSC) in promoting innovation and value creation as well as achieving socioeconomic development is vital. Through research, development, and innovation (RDI), MSC helps the sector meet its needs in a rising economy. MSC has the skills and knowledge to assure the various project's long-term viability by maximizing the usage of different technology and raw materials available in the province.

The College supports any action and collaboration from public and private sectors in developing scientific solutions to the needs and problems in the communities. MSC and DOST-PSTC Marinduque has a strong collaboration in different projects that aims to develop products and help the lives of people in the province of Marinduque.

Year enterprise was established: _____ Initial capitalization: _____

Type of Organization:
- [ ] Single proprietorship
- [ ] Cooperative
- [ ] Partnership
- [ ] Corporation
  - [ ] Profit
  - [ ] Non-profit
- [/] LGU/SUC

Enterprise Registration No. _____ Year Registered _____

Classification according to capital (PhP) Present capitalization _____

- [ ] Micro (less than 1.5 M)
- [/] Small (1.5 – 15 M)
- [ ] Medium (15 – 100 M)

Classification according to employment (number of employees)

- [ ] Micro (1 – 9)
- [ ] Small (10 – 99)
- [/] Medium (100 – 199)

Number of Employees:

Direct Workers	M:129	F:105
Production	M:n/a	F:n/a
Non-production	M: 129	F:105
Indirect/Contract Workers	M:103	F: 91
Total	M:232	F:196

Business Activity:

- [ ] Food processing (please specify commodity) _____
- [ ] Furniture (please specify commodity) _____
- [ ] Gifts, decors, handicrafts (please specify commodity) _____

☐	Metals and engineering (please specify commodity)	
☐	Agriculture/Marine/Aquaculture (please specify commodity)	
☐	Health products and pharmaceuticals (please specify commodity)	
☐	Information and Communications Technology (ICT) products (please specify commodity)	
/	Others, please specify	Disaster Risk Reduction and Management & Climate Change Adaptation

1. Specific product or service the enterprise offers its customers:

Research, Development & Extension Services

2. Reasons why assistance is being sought:

Technical Assistance needed in form of equipment for the implementation of MSC developed

Flood monitoring system that will be incorporated with Long Range Wide Area Network (Lorawan) Technology.

3. Have you consulted any other individual/organization for any assistance?

☐ If Yes, which company/ agency?

Please specify the type of assistance sought

/ If No, why not?

Organizational Structure

See Attached Organizational Structure

4. Enterprise's plan for the next 5 years?

Transfer the technology to Local Government Units adaptors that needs the same system to ensure the safety of the community in flood prone areas

Next 10 years?

Additional research & innovation will be conducted to support continuous innovation.

5. Current agreements and alliances undertaken

N/A

BENCHMARK INFORMATION

- **Production and Supply Chain**

  - Raw Material
    N/A

Raw Material	Source	Unit Cost (₱)	Volume Used/Year
N/A			

  - Production

Product	Volume of Production/Year	Unit Cost of Production (₱)	Annual Cost of Production (₱)
N/A			

- Existing Functional Production Equipment

Type of Equipment	Specifications	Capacity	No. of Units	Year Acquired
N/A				

- Production Problems and Concerns

Limited funds needed for the acquisition of supplies and materials needed to fabricate the flood monitoring system.

Need for sustainable network provider that can be used during calamities even there is no source of internet, and other network providers like globe and smart.

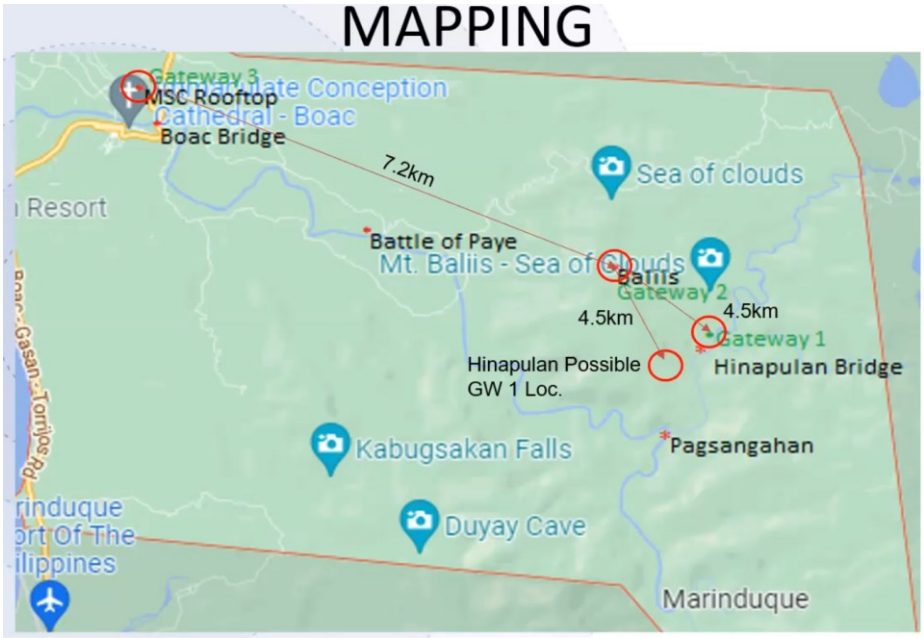
- Production Waste Management System

N/A

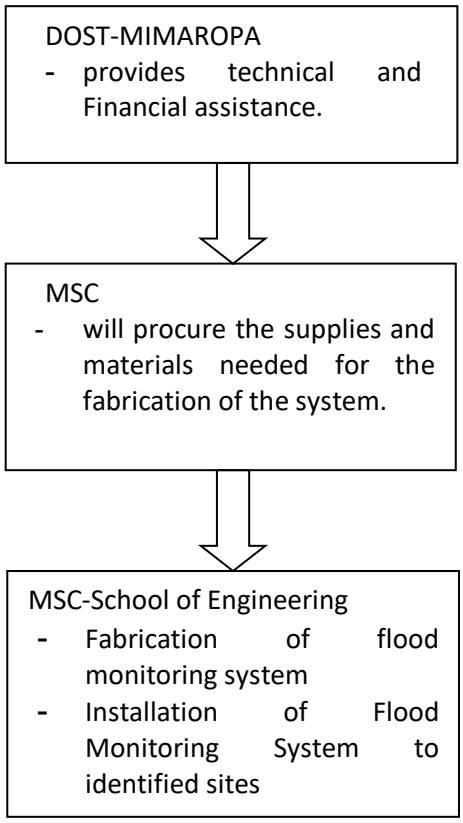
- Production Plan

The DOST-MIMAROPA will provide technical assistance for the acquisition of necessary equipment, supplies and materials. MSC will facilitate the procurement process, fabrication of the flood monitoring system, provide building to inhouse the gateways for the network provider and technical and manpower skills requirements to engage the project.

➢ Plant Lay-Out



➢ Process Flow



➢ Inventory System

N/A

➢ Maintenance Program

The MSC will conduct a monthly project visit to the designated locations of the flood monitoring system.

➢ cGMP/HACCP Activities

N/A

- Supplies/Purchasing System

MSC will follow the Government procurement system in purchasing the supplies and materials and to have contract with the winning network service provider for lorawan technology.

- **Marketing**

- Marketing Plan

Once the project is in place, the MSC will pitch the result of the technology to encourage potential adaptors of the technology.

- Market Outlets and Number

N/A

- Promotional Strategies

Flood Monitoring System will be promoted using flyers, t.v. & radio commercials, and presentation to public forums and meetings

- Market Competitors

No existing competitor within the province who's into production of flood monitoring system

- Packaging
  - Nutrition Evaluation N/A
  - Bar Code N/A
  - Product Label N/A

- Expiry Date N/A

- **Finance**

  - Cash Flow or other related documents

    Finances from the project will be handled by the assigned project leader

  - Source(s) of capital/credit

    MSC has the expertise to conduct project implementation but has the need for technical assistance to purchase the necessary supplies and materials to fabricate the flood monitoring equipment and the needed service provider for lorawan technology.

  - Accounting System

    There is existing budget and accounting department which ensures the proper utilization of the budget.

- **Human Resources**

  - Hiring and Criteria

    MSC thru the College of Engineering, Industrial and Information Technology will assign project coordinator for the management and operations of the project.

  - Incentives to Employees

    N/A

  - Training and Development

    MSC staff that will be assigned in the facility is equipped with necessary skills for the conduct of research and product development.

  - Safety Measures Practiced

    Safety standards will be strictly followed during the fabrication and project implementation

- Other Employee Welfare

N/A

- **Other Concerns**

N/A

Prepared by:

EDGARDO R. LARIRIT

Printed Name and Signature of
Owner/Chair/Representative

Date

Validated by:

BERNARDO T. CARINGAL

Printed Name and Signature of
PSTD/Cluster Manager

Date

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TECHNOLOGY NEEDS ASSESSMENT (TNA) REPORT	
COMPANY:	MARINDUQUE STATE COLLEGE
ADDRESS:	TANZA, BOAC, MARINDUQUE

SCOPE OF ASSESSMENT*

The TNA covered the following areas:

1. Strategic Direction
   a. Vision and mission
   b. Plans and Objectives
   c. Strategic alliances and current agreement

2. Management Aspect
   a. Human resource management
   b. Purchasing
   c. Work environment
   d. Corporate social responsibility
   e. Occupational health and safety management

3. Technical Aspect
   a. Operational and outsourcing practices
      -production system
      -production planning and control
      -production lay-out
      -work improvement
      -equipment management and maintenance
      -quality assurance system
      -outsourcing practices
   b. Product and Process Performance and Improvement
      -reengineering and Research and Development
      -Procedures for continuous improvement
      -Product Quality standards
   c. Environmental Management System
      -Waste management

4. Marketing Aspect
   a. Marketing plan
   b. Market outlets and number

Reported by BERNARDO T. CARINGAL Signature _____ Date February 3, 2021
Name of TNA Team Leader

Attested by JERRY B. MERCADO Signature _____ Date 02-10-2021
Name of ARD

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c. Promotional strategies
d. Market competitors
e. Packaging

5. Finance
   a. Cash flow and other related documents
   b. Sources of capital
   c. Accounting system

*** Scope of TNA is based on Technology Assessment Plan (TAP)**

SUMMARY OF ASSESSMENT

BACKGROUND:

Marinduque State College (MSC) is committed to maintaining the highest degree of excellence in the field of Instruction, Research, Extension and Production towards meeting customer satisfaction by adhering to globally-adopted quality standards. MSC envisioned an advanced and adaptive university pursuing quality education, lifelong gender-sensitive learning environment, transparent governance with sustainable resource generation by 2025 and their mission is to provide excellence in instruction, research, extension and production that magnifies W.I.S.D.O.M. in leadership through a total quality management system responsive to the challenges of 21st century education. Their Core Values, is to Educating People, Enriching Lives, and Expanding Opportunities with:

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Orchestrator of Good Practices in Achieving Goals, and

Magnanimity in Dealing with People and God's Creation

Reported by BERNARDO T. CARINGAL Signature _____ Date February 3, 2021
Name of TNA Team Leader

Attested by JERRY B. MERCADO Signature _____ Date 02-10-2021
Name of ARD

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The role of Marinduque State College (MSC) in promoting innovation and value creation as well as achieving socioeconomic development is vital. Through research, development, and innovation (RDI), MSC helps the sector meet its needs in a rising economy. MSC has the skills and knowledge to assure the various project's long-term viability by maximizing the usage of different technology and raw materials available in the province.

The College supports any action and collaboration from public and private sectors in developing scientific solutions to the needs and problems in the communities. MSC and DOST-PSTC Marinduque has a strong collaboration in different projects that aims to develop products and help the lives of people in the province of Marinduque.

METHODOLOGY

Marinduque State College-School of Engineering (MSC-SEng) shall lead the project as the technical agency that will handle the development, overall installation and maintenance of the Automatic Flood Monitoring System and coordinate with other concerned agencies for the implementation of the project

As Research and Development part of the proposed project, MSC-SEng will develop a system. Control circuit will be installed by Electrical Engineering (EE) group, electronics and programming will be handled by Electronics and Communication Engineering (ECE), Computer Engineering (ComE) and the EE group including installation of Fame IoT Platform system for water level sensor data transmission and messaging. Mechanical parts such as assembly of poles and other steel works will be assigned to the Mechanical Engineering (ME) group. GIS mapping of flood and other parameters will be handled by the Civil Engineering (CE) group. Installation and testing of the system to the site will be a group effort in partnership with DOST-PSTC Marinduque.

The project was planned to construct along Boac River Stretch to monitor and evaluate the condition of the said river and the danger of abandoned Marcopper Dam that may cause flash flood once the retaining wall collapsed. The areas possibly affected of those hazards are those communities along or near the said river. We stationed 5 monitoring system located on Barangay Hinapulan, Sitio Pinagsangahan,

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Barangay Tampus and 2 in between the mentioned barangay which are considered as strategic locations for the project.

Based on the Marinduque Disaster Risk Reduction and Management Plan (2018), most of the community affected by flood are those barangays located near or along the Boac River and consider as High Flood Susceptible, they are the barangays of Malusak(Pob), Mercado (Pob.), Murallon(Pob.), Isok I (Pob.), Isok II(Pob.), San Miguel (Pob.), Tampus(Pob.), Amoingon, Balagasan, Balaring, Balimbing, Balogo, Bamban, Bangbangalon, Bantay, Binunga Boi, Boton, Buliasnin, Bungany, Caganhao, Catubugan, Cawit, Daig, Ihatub, Laylay, Lupac, Maiinit, Maligaya, Ogbac, Pili, Poctoy, Poras, Puyog, Santol, Sawi, Tabi, Tabigue, Tagwac, Tambunan and Tanza. The said barangays will also be considered as the target beneficiaries of the project.

DOST MIMAROPA will provide technical assistance to Marinduque State College that includes the acquisition of technology for data transmission and messaging needed for the said project.

DOST-PSTO Marinduque together with MSC-SEng will be coordinating with concerned agencies regarding the project and implementation. Focal person from MSC SEng and DRR Officer will be assigned to monitor the system and coordinate with the corresponding agency in time of calamity.

The MSC look forward to adopting these strategies in mitigating the adverse effect of nature by different LGUs, and if the fund permits, there are no hesitations to install it also in the municipality of Mogpog and to those low lying areas around the province.

Summary of Findings

1. **Strategic Direction**

   a. **Vision and mission**

   Vision

   An advanced and adaptive university pursuing quality education, lifelong gender-sensitive learning environment, transparent governance with sustainable resource generation by 2025

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Mission

To provide excellence in instruction, research, extension and production that magnifies W.I.S.D.O.M. in leadership through a total quality management system responsive to the challenges of 21st century education.

b. Plans and Objectives

1. To fabricate an Automatic Flood Monitoring System that is simple, easy to install, maintain, and troubleshoot.
2. To install the developed system along the Boac-River stretch.
3. To monitor and evaluate the condition of the Boac river and coordinate with the concerned agencies in the event of adversity.

c. Strategic alliances and current agreements

MSC has existing linkages/collaborations with DOST and other National and Local Government units.

2. Management Aspect

a. Human Resources

A project coordinator and team will be assigned by MSC. They will handle the overall operations of the project, including the preventive maintenance of the flood monitoring system and LORAWAN technology.

b. Purchasing

Supplies and materials for fabrication of flood monitoring will be procured by MSC along with the LORAWAN technology service provider.

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Name of ARD

c. **Work Environment**

MSC has a vacant space on the roof top of the Engineering Building. inside the MSC - Main Campus where the gateway of LORAWAN can be placed.

d. **Business Ethics and Social Responsibility**

MSC needs technical support for the supplies and materials to be used in fabrication of MSC developed flood monitoring system and to get the LORAWAN service provider to ensure the

3. Technical Aspect

a. Operational and Outsourcing Practices

Production system

The team headed by Edgardo Laririt will focused on the fabrication of the flood monitoring system. They will also handle the installation of the equipment to the identified site.

Installation of LORAWAN will be assisted by the MSC team to ensure that the installed service network provider can withstand the calamities such as typhoon and flooding.

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Name of TNA Team Leader

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Process/ Existing Practice/Problem	Proposed S&T Intervention	Proposed S&T intervention related equipment / skills upgrading	Impact Expected
During calamities such as typhoon, there is heavy flooding in the Boac river stretch. Moreover, the MARCOPPER Dam can collapse any time that may cause heavy flooding that may cause heavy casualties in the low lying areas.	Flood Monitoring System using LORAWAN Technology	Fabrication and Installation of MSC developed Flood Monitoring System using LORAWAN Technology	The output of the project may lead other government agencies and SUCs to adopt the project for their provincial and regional offices.

Production Planning and Control

The MSC team will follow the technical design and specifications of the MSC developed Flood monitoring system to ensure that the equipment will work according to plan.

Production Layout

The rooftop of the MSC-Engineering building will be used as one of the areas where the LORAWAN gateway will be installed. While the flood monitoring equipment will be placed in identified strategic placed in the Boac river stretched.

Work Study/Improvement

Continuous research will be done for further improvement.

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Equipment Management and Maintenance

MSC Team will follow the scheduled management and preventive maintenance of the flood monitoring system.

Quality Assurance System

The team will ensure that the data from the flood monitoring will be accurate thru thorough testing of the unit before deployment.

Outsourcing Practices

MSC will outsource the LORAWAN technology thru service provider

b. Product and Process Performance and Improvement

Performance Measures and Results – Process

N/A

Performance Measures and Results – Product

N/A

Procedures for Continuous Improvement

MSC will continue to conduct the research on the flood monitoring unit for further improvement.

c. Environmental Management System

Waste Management

N/A

Reported by BERNARDO T. CARINGAL Signature _____ Date February 3, 2021
Name of TNA Team Leader

Attested by JERRY B. MERCADO Signature _____ Date 02-03-2021
Name of ARD

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4. Marketing Aspect

a. Marketing Plan

Once the project is in place, the MSC may pitch the result of the technology in the field to encourage potential adaptors of the technology.

b. Market Outlets

N/A

Promotional Activities

Flood Monitoring System will be promoted using flyers, T.V. & radio commercials, and presentation to public forums and meetings

c. Market Competitors

No existing competitor within the province who's into production of flood monitoring system.

5. Finance

a. Cash Flow and other related documents.

Finances from the project will be handled by the assigned project leader

b. Source of capital/credit

MSC has the expertise to conduct project implementation but has the need for technical assistance to purchase the necessary raw materials to fabricate the flood monitoring equipment and the needed service provider for lorawan technology.

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c. **Accounting System**

There is existing budget and accounting department which ensures the proper utilization of the budget.

CONCLUSIONS

Based on the interview and ocular inspection the TNA team concludes the following;

1. Marinduque State College needs for technical assistance in form of supplies and materials for fabrication of MSC developed flood monitoring equipment and service provider that can provide LORAWAN technology.

2. The needed assistance is timely and would enable the MSC to meet its vision and mission.

RECOMMENDATIONS

The following are recommended by the TNA team:

1. DOST MIMAROPA to provide technical assistance to MSC in form of supplies and materials for fabrication of MSC developed flood monitoring equipment and funds for the service provider that can provide LORAWAN technology.

TNA Team:

Team Leader: BERNARDO T. CARINGAL
Members: KEITH PAOLO A. BUENAVENTURA
ELEAZAR P. MANAOG

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Name of TNA Team Leader

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