
B AquaLush Case Study

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B.1 AquaLush Irrigation System Overview

Introduction

MacDougal Electronic Sensor Corporation (MESC), an electronic sensor manufacturer, has decided to start a new company to exploit a newly perfected soil moisture sensor. The company, called Verdant Irrigation Systems (VIS), will develop and market lawn and garden irrigation systems.

Timers regulate most irrigation or sprinkler systems: They release water for a fixed period on a regular basis. This may waste water if the soil is already wet or not provide enough water if the soil is very dry. VIS products will use the new soil moisture sensors to control irrigation. Irrigation will still take place on a regular basis, but now it may be skipped if the soil is already wet or continued until the soil is sufficiently moist.

VIS's first product is the AquaLush Irrigation System. It is targeted at high-end residential or small commercial properties.

A small team is charged with developing the software driving this product.

Opportunity Statement

Create an irrigation system that uses soil moisture sensors to control the amount of water used.

B.2 AquaLush Project Mission Statement

1. Introduction

Timers regulate most non-agricultural irrigation or sprinkler systems: They release water for a fixed period on a regular basis. This may waste water if the soil is already wet or not provide enough water if the soil is very dry. MacDougal Electronic Sensor Corporation has developed a new soil moisture sensor that can be used to fundamentally change the way that irrigation systems work. Irrigation can be controlled by the soil moisture sensors so that irrigation is skipped or suspended if the soil is

sufficiently moist or extended if the soil is too dry. It is expected that this will make more efficient use of water resources as well as making irrigation more effective.

MESC hopes that this change in irrigation systems will spur the sale of its new sensor. MESC would also like to sell moisture-controlled irrigation systems.

To take advantage of these two opportunities, MESC has created a new company called Verdant Irrigation Systems. VIS will develop and market moisture-controlled irrigation systems. The first product to be fielded by VIS is the AquaLush Irrigation System, a demonstration product establishing the viability of moisture-controlled irrigation systems.

2. Product Vision and Project Scope

Product Vision Statement—The AquaLush Irrigation System will use soil moisture sensors to control irrigation, thus saving money for customers and making better use of water resources.

Major Features—AquaLush will

- Monitor water usage and limit usage to amounts set by users.
- Allow users to specify times when irrigation occurs.
- Be operated from a simple central control panel.
- Have a Web-based simulator.

Project Scope—The current project will create the minimal hardware and software necessary to field a viable product, along with a Web-based product simulator for marketing the product.

3. Target Markets

The first version of AquaLush is for high-end residential and small commercial users needing automated irrigation systems for plots ranging from about half an acre up to about five acres. The product is aimed at both first-time buyers and customers ready to replace their current timer-controlled systems with a more economical system.

4. Stakeholders

Management—The Board of Directors of MacDougal Electronic Sensor Corporation, as the controlling interest in Verdant Irrigation Systems, and the CEO of Verdant Irrigation Systems.

Developers—The four-member AquaLush development team, which includes three software engineers and a mechanical engineer specializing in non-agricultural irrigation systems. Besides developing the product, this team will also support it in the field.

Marketers—The two-person VIS marketing department. There is also a contractor paid by the marketers to develop and maintain the VIS Web site, which will host the AquaLush simulator.

Purchasers—Homeowners, groundskeepers, lawn and garden service professionals, irrigation system professionals, and small business purchasing agents.

Users—Homeowners, groundskeepers, lawn and garden service professionals, irrigation system professionals, and small business maintenance personnel.

5. Assumptions and Constraints

Assumptions—The developers may take the following for granted:

- AquaLush will use the new moisture sensor developed by MESC.
- AquaLush may use standard irrigation valves, pipes, fittings, and control hardware.

Constraints—The product must conform to the following restrictions:

- AquaLush will support only the MESC moisture sensor.
- The fielded product and Web simulator will use the same core irrigation control software.

- The product will implement moisture-controlled irrigation, but its design will not preclude eventual incorporation of timer-controlled irrigation.

6. Business Requirements

AquaLush must establish moisture-controlled irrigation as a viable technology.

The first version of AquaLush must be brought to market within one year of the development project launch.

AquaLush's retail price must be no more than 10% greater than the average cost of timer-controlled irrigation products for the same market segment.

AquaLush must achieve at least 5% target market share within one year of introduction.

AquaLush must establish base irrigation control technology for use in later products.

AquaLush must provide a Web-based simulation that at least 70% of users agree provides an accurate representation of the actual product and its use.

AquaLush must demonstrate irrigation cost savings of at least 15% per year over competitive products.

B.3 AquaLush Stakeholders-Goals List

Stakeholder Category	Goals
Management	Achieve business requirements
Developers	Achieve business requirements
	Create a high-quality, maintainable product
	Create a code base reusable in later products
Marketers	Achieve business requirements
Purchasers	Pay the least for a product that meets irrigation needs
	Purchase a product that is cheap to operate
	Purchase a product that is cheap to maintain
Installers	Have a product that is easy and fast to install
Operators	Irrigation can be scheduled to occur at certain times
	Irrigation schedules can be set up and changed quickly
	Irrigation schedules can be set up and changed without having to consult instructions
Maintainers	It is quick and easy to tell when the product is not working properly
	It is quick and easy to track down problems
	It is quick and easy to fix problems
	The product is able to recover from routine failures (such as loss of power or water pressure) by itself
	One sort of failure (such as loss of power or water pressure) does not lead to other failures (such as broken valves or sensors)
	The product and its parts have a low rate of failure
Webmaster	The simulation is easy to install and maintain

Table B-3-1 AquaLush Stakeholders-Goals List