

# **SMART FARMING AT AN AFFORDABLE PRICE**

*“Save Water, Save Energy, Improve Crop Yields, Quality, and Efficiency”*

*By: Paul Gupta, i-Linc Technologies, Inc.*

*“69% of all available fresh water in the world is used for Irrigation (mostly Agriculture)”*

*\*\* Global Water Use & Demand, <http://www.ozh2o.com/h2use.html>*

## **Background**

The U.S. Department of Agriculture (USDA) has identified water management improvements as a primary agricultural policy objective. Water and energy savings of 20-30% through improved use efficiency could offset the ever-increasing demand for these vital resources in the Agriculture industry. Evaluating an affordable, web-based remote monitoring, management, and control solution that can help conserve water, energy, and labor resources, improve crop yields and quality, and increase profits by 20-30% for small as well as large farmers, would be a necessary component of any SMART irrigation system.

## **The Problem**

Historically farmers have had to physically inspect conditions on the farm to determine if an action is needed to be taken, that is “When to irrigate and how long to irrigate?” This process is manual, error prone, inefficient, expensive, and data received is after the fact (sometimes delayed by days or weeks). Besides, it contributes to wastage of water, energy, reduction in crop yield with poor quality, and causes ground water contamination which affects the environment.

Today, farmers are always reacting to a problem instead of proactively planning and making wise irrigation decisions. With the use of advanced real-time remote monitoring solutions: (1) the physical inspections can be eliminated, and (2) such a system will allow farmers to make intelligent decisions with respect to the irrigation that in effect would result in water and energy savings, crop yield and quality improvements, efficiency and productivity improvements, and with would make farmers more profitable and competitive globally.

## **Introduction**

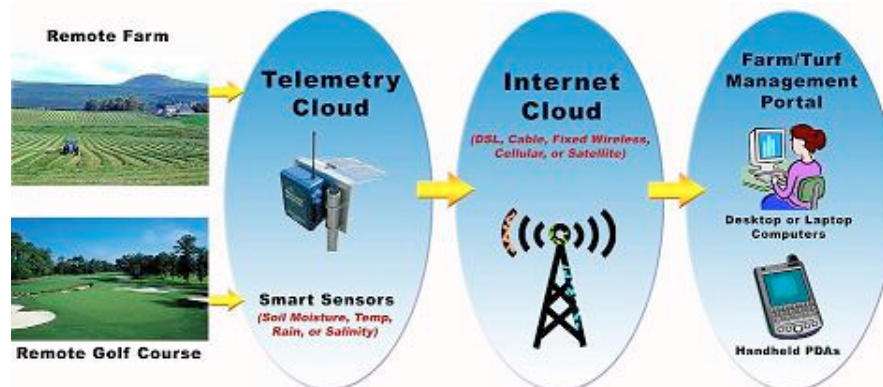
Our research for SMART irrigation systems concluded that the systems available in the marketplace were based on either proprietary hardware, software, and/or communication protocols, or were too expensive and cost prohibitive for farmers to implement such systems. It was evident that these factors were contributing to limited market deployment and acceptance in the farming community worldwide.

These factors led us to believe that unless a new and uniquely different solution was developed, then this very important technology with all its benefits for farmers, particularly small farmers sector which constitutes almost 91%, would be limited.

Similar to the progress and development of Personal Computers (PCs) in the early 80's, the PCs in the marketplace at that time were based on proprietary technologies, expensive, had small market shares, and were not ready for a bigger market. The success of the IBM PC was based on its open architecture, utilization of off-the-shelf components, and it was targeted to a mass market.

## The Solution

**i-Linc Technologies (“i-Linc”)** has developed an innovative solution that helps save water, save energy; improve crop yields, quality, and efficiency/productivity at an affordable price for the Agriculture industry. Its patent pending web-based solution **FarmLinc<sup>®</sup> - The Farm Management Portal**, provides real-time data from sensors (soil moisture, temperature, weather station, water and electric meters) located in remote farms, and provides irrigation scheduling recommendations which a farmer can use to manage/control irrigation system remotely. **i-Linc’s** web-based Portal allows a farmer to conduct his/her business remotely using a desktop/ laptop or a web-enabled Phone (Blackberry, iPhone) at anywhere, anytime (24x7).



Data from sensors and meter reading devices from remote farms is saved in a central database, specific crop models and decision support algorithms are applied, and irrigation recommendations are presented along with alerts, notifications with ability to turn on/off the irrigation systems, as well as allow fertilization and disease management remotely by a farmer. Besides, farmer has ability to view his/her farm via a real-time video streaming data from a WebCam, and in the future would be able to track assets such as equipments and livestock, manage inventory, and manage his/her overall farm business using an easy to use and secured Internet portal similar to “myGoogle” or “myYahoo”.

### Features:

**i-Linc** portal solution is based on open and plug ‘n play architecture (hardware independent) and is designed to be modular, flexible, scalable, and globally deployable. That is, it has capability to integrate with an industry standard hardware (sensor/device) or third party software application, offers multiple functional modules and with **FarmLinc<sup>®</sup>** one can scale-up easily from single to multiple farms located worldwide and in multiple languages. Currently, **i-Linc** is leading the industry in providing a universal portal solution combining data, video, and control capabilities in real-time for small to large farmers at an affordable price.

An important design factor in **i-Linc**'s portal solution is support for the Internet and its "ecosystem", such as Wi-Fi, WiMAX, Cellular, and Satellite. All these features make **i-Linc**'s solutions unique in the market, and not so much revolutionary, but evolutionary.

### **Benefits:**

- 20% - 30% savings in water, energy, and labor resources
- Up to 30% improvement in crop yield with better quality
- Major improvements in efficiency, productivity, and profitability, and
- A farmer will be able to recover his/her investment within one year (*ROI < 12 Months*)

### **Systems Deployed**

**i-Linc** has deployed multiple beta/pilot systems in US (Georgia, California, Idaho), and International (Chile, S. America) with its basic soil moisture and temperature monitoring capabilities. Further deployments with the ability to read water and electric meters, control irrigation systems, and provide crop and fertilization recommendations are scheduled to be deployed in the current year and beyond.

### **Customer Testimonials**

*"**FarmLinc**<sup>®</sup> is very user-friendly, fast, and provides data from my farm in real-time on the Internet – its very nice and exciting!" - **Randy Grant, Owner, G&H Farms, Hazelton, ID***

*"**FarmLinc**<sup>®</sup> represents a new generation of remote monitoring, data collection, and analysis tool that offers the user a whole new way at looking at water conservation and management. In addition, they are affordable and effective, especially important in today's economic climate." - **John Overley, Director, Digitel Wireless, Atlanta, GA***

*"Today's farmers don't have as much time as they would like to monitor their crops; real time sensors can help them out. The **FarmLinc**<sup>®</sup> portal on the web is available 24/7 and can give farmers a distinct advantage when scheduling irrigation. The portal is easy to use and so far has been reliable. These are critical points in getting more adoption of soil moisture sensors on the farms of Southwest Georgia" - **Rad Yager, County Agent, UGA, Dougherty Country & Stripling Irrigation Research Park (SIRP), GA***

*"We are glad that i-Linc has developed an exciting suite of Internet based applications that help farmers and Turfgrass managers to irrigate more efficiently, improve yield, quality, and provide water savings." - **Tom Penning, President, Irrrometer Company, Riverside, CA***

*"We are currently using **FarmLinc**<sup>®</sup> for the purpose of Data Acquisition in our research work; we are using it to access data from various type of field units" - **Diganta Adhikari, Research Scientist, Fresno State, CIT, Fresno, CA***

## Target Market

**i-Linc**'s current target market is Agriculture and Turfgrass (Golf Course) industries. Its core technology once fully developed can easily be adapted for other industries, such as Dairy, Poultry, Aqua, etc.

## Business Model

**i-Linc**'s annuity based scalable business model is financially very attractive. It includes a non-recurring revenue component from the sale of third party hardware (sold as OEM), and recurring revenues from **i-Linc**'s patent pending software as a service ("*SaaS*") application subscription. Pricing is based on number of farms, sensors & systems deployed, functional modules subscribed, and number users.

## Competition

**i-Linc**'s competitive advantage is its affordable yet unique and universal hardware independent (open and plug 'n play architecture) portal solution which allows a farmer to learn once but use this user-friendly tool, **FarmLinc**<sup>®</sup>, for industry standard hardware (sensor/devices) and/or software\*. Based on surveys conducted at various trade shows, **i-Linc**'s patent pending **FarmLinc**<sup>®</sup> solution, currently leads the industry in terms of integration of technologies that help conserve water and energy, improve crop yields and quality, and reduce costs associated with energy, water, labor, fertilizer, pesticides, and improving overall profitability for small to large farms.

\*' *i-Linc validated hardware and software.*

## Conclusion

**i-Linc** believes that its SMART yet affordable water and energy saving solutions will lead to much broader acceptance by farmers that can help reduce variable costs associated with energy, water, labor, fertilizer, pesticides, and improve overall profitability for small to large farms globally. With **FarmLinc**<sup>®</sup> farmers can remain competitive or become more competitive globally. With **i-Linc**'s real-time solution **FarmLinc**<sup>®</sup>, farmers will not only conserve vital natural resources such as water and energy, but improve crop yields with better quality, and help manage their farms better (Pro-active Vs Reactive) so they can remain competitive or become more competitive worldwide!

**The bottom-line is to improve a farmer's profitability in the current global economic climate, and conserve our planet's precious natural resources, "Water & Energy".**

**About Author:**



*Paul Gupta, President & CEO, i-Linc Technologies, Inc., brings over 28 years of experience at the divisions of GE, GM, Allied Signal, and Hitachi Corporations, and managing businesses in the software, automation, and telemetry areas. With the industry leading **FarmLinc**<sup>®</sup> & **TurfLinc**<sup>®</sup> products, **i-Linc** provides the “missing link” for the Agriculture and Turfgrass (Golf Course) businesses and enables them to become more efficient, productive, and therefore more competitive and profitable.*

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