

“History is not just
the evolution of
technology; it is the
evolution of
thought.”

– James Redfield

Robots in Sports Fields:

Extending Your Crew with Automation

Lorenzo Lopez CSFM

My Background



Survey - Healthy Work Environment

How many here

- Works with a fully staffed crew 10 months a year?
- Has employees leaving due to a lack of resources to support them?
- Shared this info with your supervisors and they are not able to quickly bring the resources to retain those employees
- How many are going to be given complete forgiveness for when the field fails or is too worn for sports play, (or when a potential NIL player hurts themselves?)
- Overall, how many of us are wearing ourselves out due to a lack of help

Quick Story: My first STMA Event and the Student Panel Session

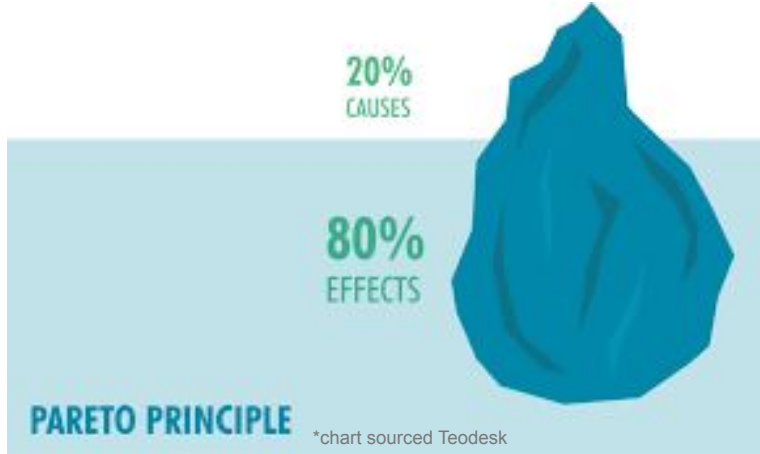
Survey - Healthy Turf

How many here

- Complete all the aeration (or chemical) applications you want on time?
- Want your turf to be a carpet of grass?
- Want to reduce the overall wear and tear on the field of play?
- Want to make worn out Goal Mouths a thing of the past?
- Want to quit searching for corners of your fields or hidden places to pull your strings to?
- Wants to quit stressing about getting all your fields setup in time for the first week of recreation league?

Background

Pareto Principle - 20% of what he did made the biggest difference



Today's Agenda

Introduction to Extending your crew with ROBOTS. Robots 101

- What can be automated?
- How do the Robots work
- Case Studies
- How to Implement Right Away



Why are we here?

Why We Are Here Today

Feeling The Pressure causes us to Break the Mold



Labor Trends are Tough

Shortages leading to difficulty finding & maintaining skilled, consistent labor



Timing is Perfect

Years of innovations and breakthroughs have expanded the automation options and capabilities



Integration is Teamwork

Are you having a camaraderie issue on your crew? Did you know that reasoning is a limited commodity, as we start to wear ourselves out, we start to not think reasonably, "Decision Fatigue".



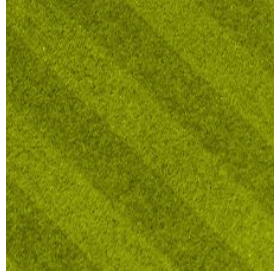
What can be Automated?

What Can Be Automated with Robots?

We Have Already Automated The Irrigation! What's Left



Line Painting



Mowing



Golf Ball Collection

How Do They Work?: *Line Painters*



How Do They Work?

Line Painters

TRANSPORT

SETUP

PAINTING

MAINTENANCE

Transportable

Able to move between sites and adapt to the new site. *different levels on this

Driven thru a Tablet

Apps and Tablets are generally being used, not computers



How Do They Work?

Line Painters

TRANSPORT

SETUP

PAINTING

MAINTENANCE

Robot/Tablet Detects Location

There are a few ways this happens but the robot determines its location via:
Cellular/ GPS / RTK

Work with Customizable Patterns

You don't tell the robot go left or right, You are not coding or programming the robot. You slide/adjust the fields to where you want them.



How Do They Work?

Line Painters

TRANSPORT

SETUP

PAINTING

MAINTENANCE

Unbranded Quick Demonstration
Everyone seems to have these basic functions in their robots
<https://youtu.be/MNFwsMaj5D8>

Shows:

1. How to add a field
2. How to drag a field location
3. How to make fields bigger or smaller
4. And how it automatically corrects certain lines
5. How to use advanced selections like “build up lines”
6. How to ignore lines
7. Look around of how fields are saved for future use



How Do They Work?

Line Painters

TRANSPORT

SETUP

PAINTING

MAINTENANCE

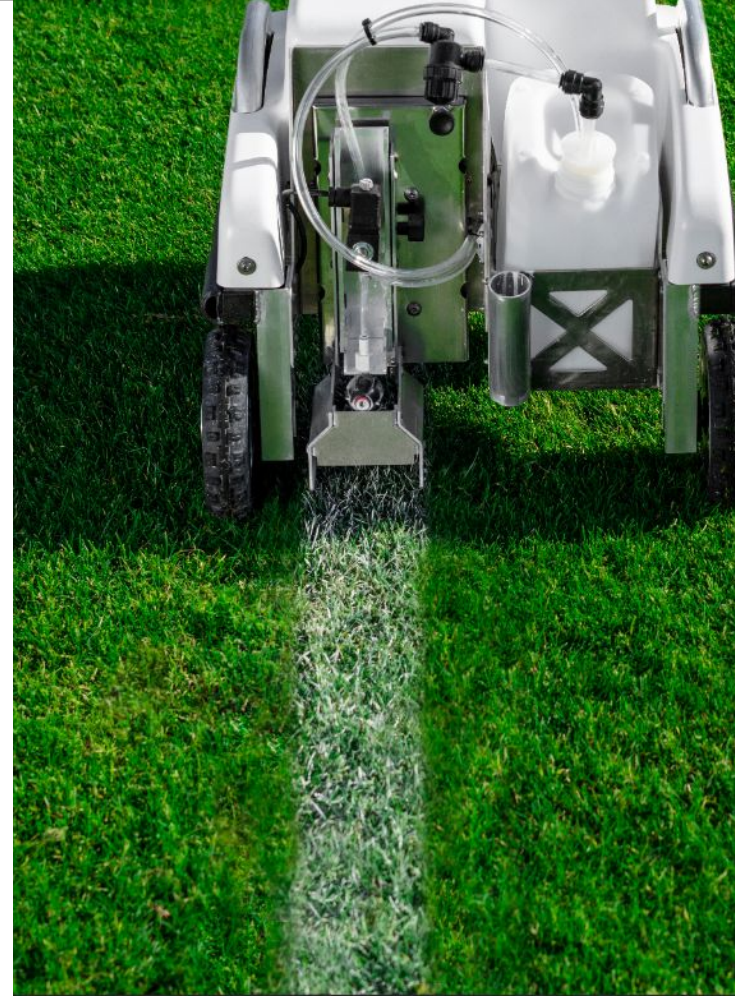
50+ Templates + Custom Logos
Customizable to almost every need

Easy Priming
Prep the system in seconds

Paint in Minutes
One color at a time

Paint is Improving
Newer technology emerging in painting

- We can now paint baseball and softball infields without cans
- Paint is no longer coating and building up in our soil



How Do They Work?

Line Painters

TRANSPORT

SETUP

PAINTING

MAINTENANCE

Easy Cleaning - less than 5 minutes

Dedicated buttons, simpler tubing, cleanable designs & onscreen prompts

Easy Storage

Compact size means out of the way

Swappable Batteries

“No more gas near the grass”

- *Lorenzo Lopez CSFM*





How Do They Work?:
Robotic Mowers

How Do They Work?

Robotic Mowers

QUICK OVERVIEW

DESIGN

SCHEDULE

MAINTAIN

Assign the Robot an Area

It will stay in that area and mow nonstop if it could. YES, you can finally mow Sports Fields multiple times each day

Robot Keeps Themselves Charged

As batteries get low, the robot will return to the charging station to reboot

Routinely Swap out Blades

The grass is cut with smaller blades, we simply replace blades and no longer need to sharpen or balance blades

Assisting the Robot

Sometimes people will get in the robots way or push the stop button or the robot gets stuck in a gopher hole and such



How Do They Work?

Robotic Mowers

QUICK OVERVIEW

DESIGN

SCHEDULE

MAINTAIN

Develop a Boundary

Identify the area it is to take care of

Wired or Wireless Robots

Wireless Robots are ideal for sports fields. Wired Robotic mowers are great for general landscapes.

Choose the Best Robot Mower

Many options available: such as AWD, low cut, high cut, patterned mowing, rollers, etc.

Place the Charging Station

Needs to be plugged in. If there is no chargers, the solar setups work well to create standalone mowers.



How Do They Work?

Robotic Mowers

QUICK OVERVIEW

DESIGN

SCHEDULE

MAINTAIN

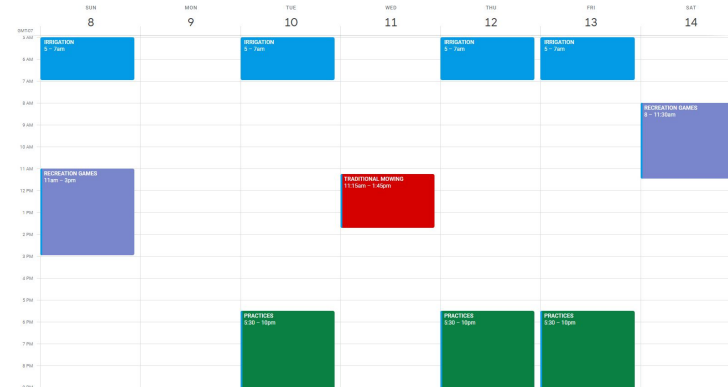
Set and Manage Schedules

Redefine what it means to mow, it is no longer just 'mowed on Wednesdays'

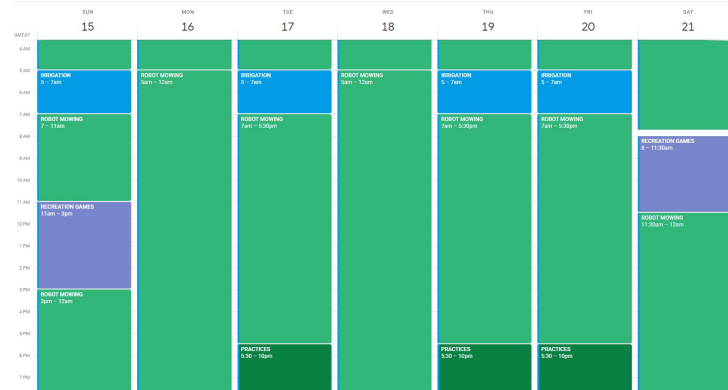
Forget What You Know

No longer worry about the 6 am City Ordinance. These are fairly silent and can mow all night (except during irrigation)

Traditional Mow Schedule



Robot Mow Schedule



How Do They Work?

Robotic Mowers

QUICK OVERVIEW

DESIGN

SCHEDULE

MAINTAIN

Notifications On Your Phone

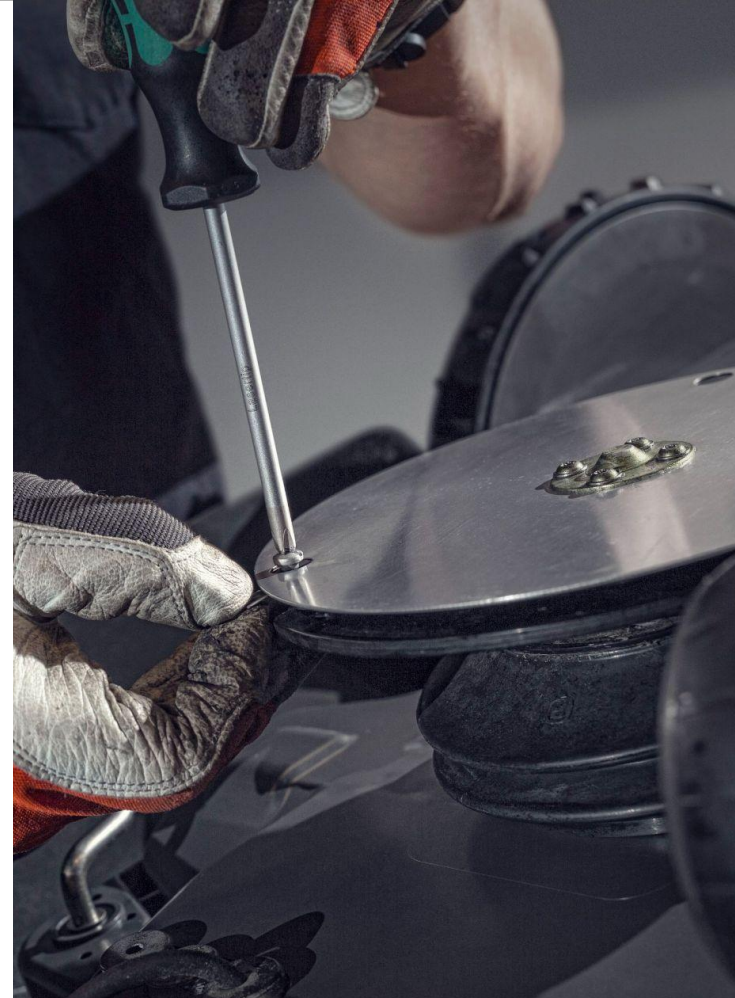
Maintenance reminders, status on charge, when mowing, if it was stopped, stolen (Outside of the Geo boundary)

No More Sharpening Metal

Smaller blades to swap out routinely

Storing

Easy-to-move and Easy-to-store during the off-season



Why is it Worth Considering?



Why is it Worth Considering?

Evolution

Products and Techniques Evolve

We are no-longer attached to the wall for a phone call

We can:

- Run irrigation from home
- Attend meetings from the truck
- Communicate instantly with your crew
- Work real-time with experts from all-over the world

What makes these any different than just the next step in how we manage our turf?



Why is it Worth Considering?

Product Features

OPERATION

COMMUNICATION

CAPABILITIES

Intuitive

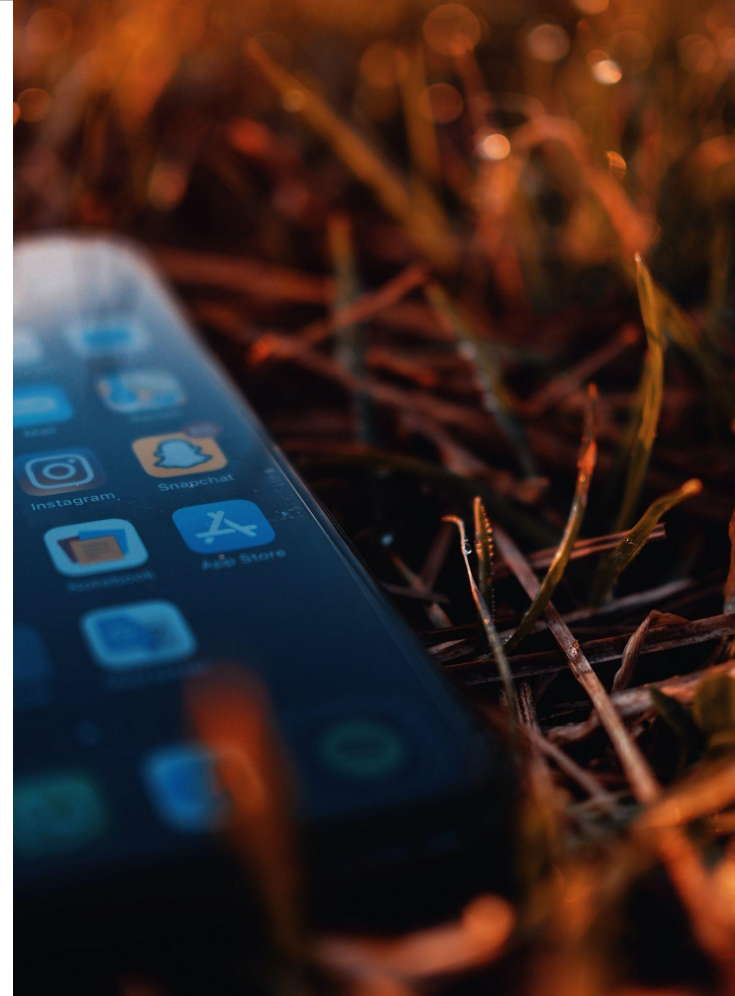
Operations designed around the end-user

Wireless

High-accuracy RTK based products for precision operation

Flexible

Products for different size area or difficult terrain provides options for unique needs



Why is it Worth Considering?

Product Features

OPERATION

COMMUNICATION

CAPABILITIES

Always Connected

GSM Connectivity keeps you up-to-date around the clock

AI Learning

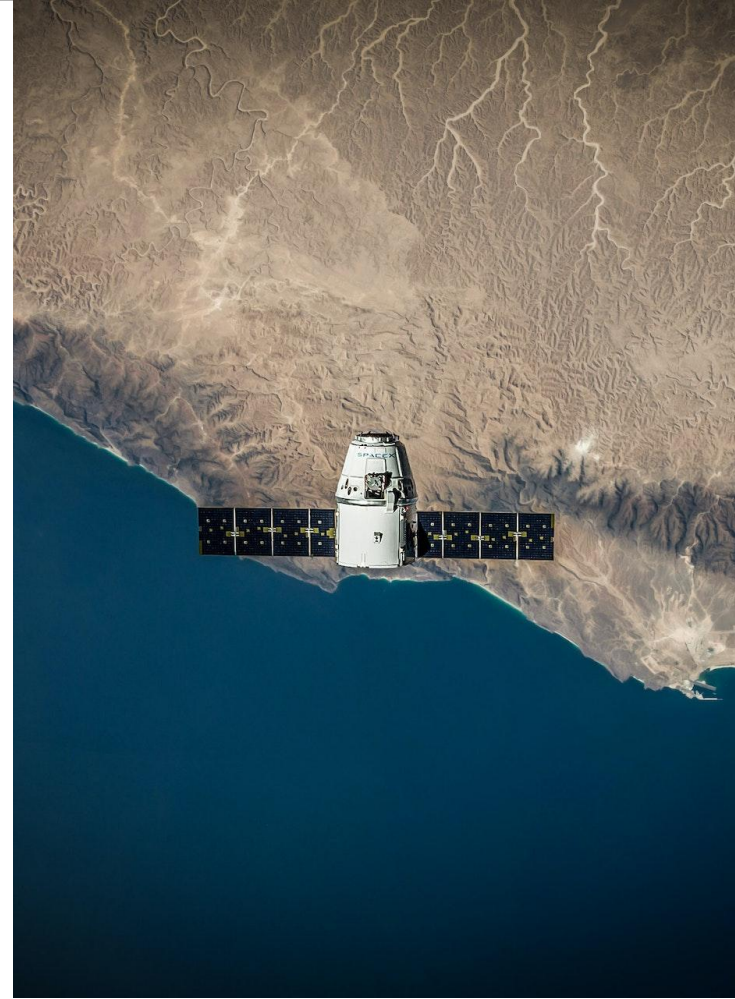
Tools that understand and improve efficiency over time

Cloud Backup

Never lose data or important information

Fleet Monitoring

Observe everything from a single dashboard



Why is it Worth Considering?

Product Features

OPERATION

COMMUNICATION

CAPABILITIES

Large-scale

Single or Multi-unit machines

Difficult Terrain

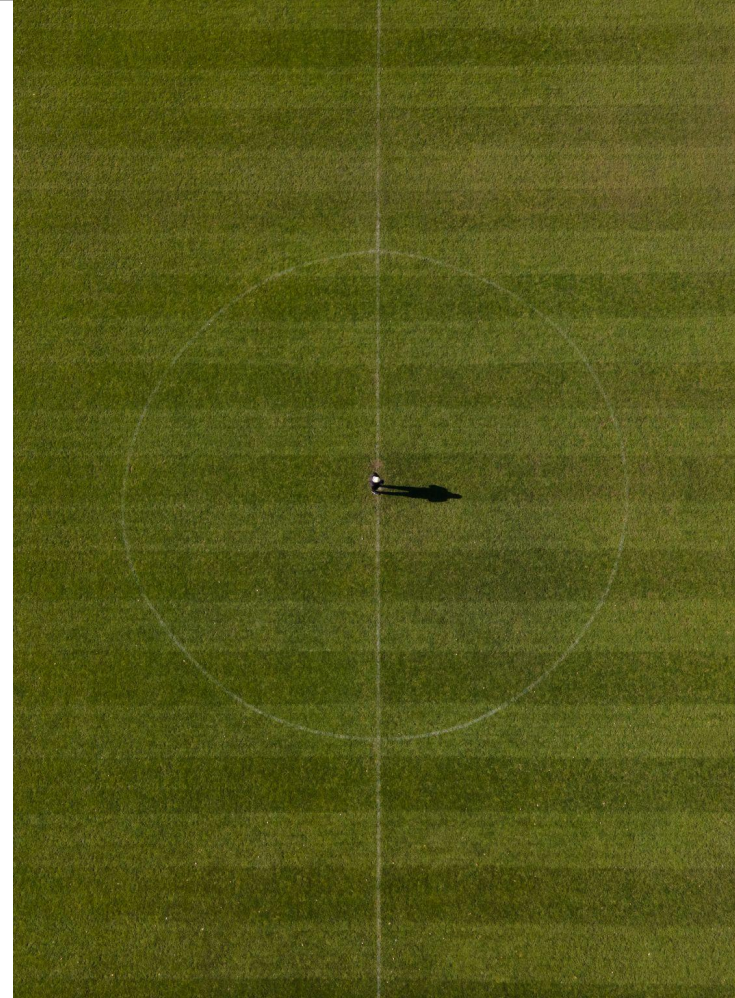
More capable products than before

Pattern Cutting

For robotic mowers

OTA (Over the Air)

Always up to date with the newest features





“It's not that we use technology, we live
technology.”
— Godfrey Reggio

Why is it Worth Considering?

Benefits

REDUCE

INCREASE

ADAPT

Manual Labor

Remove repetitive, tedious tasks

Emissions

No more fuel, fumes or noise pollution

Weeds

Frequent Grass cutting reduces weed pressure

Liability

Less dangerous equipment for crew and pedestrians

Soil Compaction

Light weight equipment

Aeration

Less compaction from weight, frequent cutting to reduce clippings



Why is it Worth Considering?

Benefits

REDUCE

INCREASE

ADAPT

Efficiency

Better allocation of time for more important or delayed tasks

Satisfaction

Less stress from being overwhelmed

Turf Health

Small clippings naturally fertilize

Sustainability

Fulfil sustainability initiatives. Some grants &

Public Relations

Light weight equipment

Overall Finish

Light weight equipment



Why is it Worth Considering?

Benefits

REDUCE

INCREASE

ADAPT

Market Direction

New battery and autonomous products are being developed everyday

Your Company

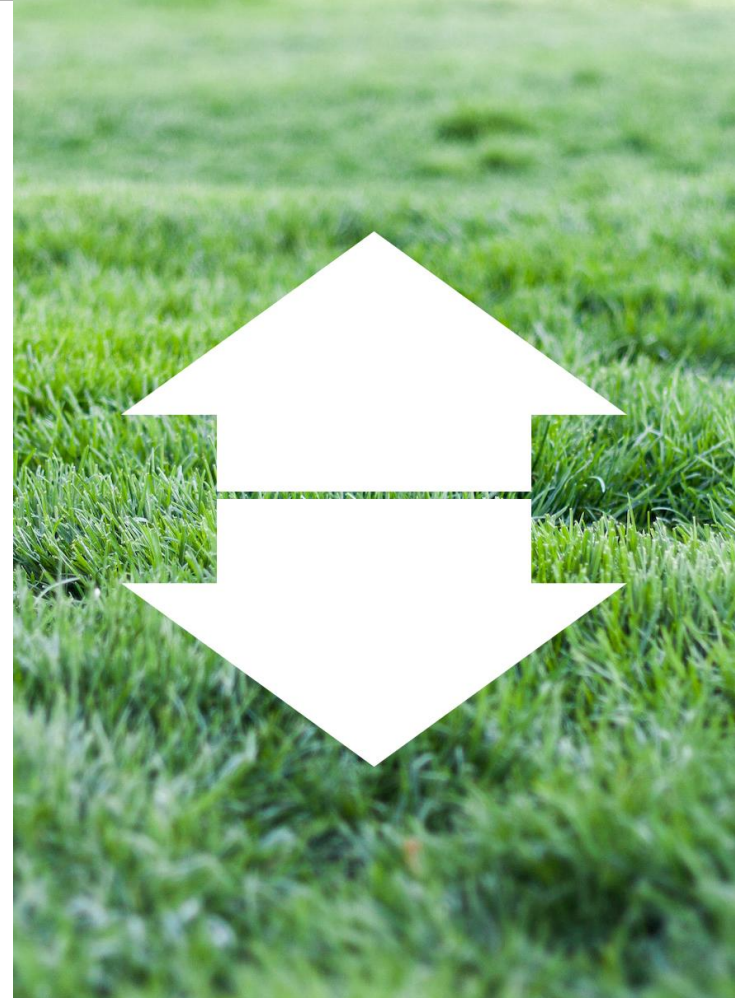
Understand now how you can structure organization for growth

Your Training

Your crew new and old can benefit from using the newest tools available

For the Future

Position your organization for the evolving landscape



Case Studies



Case Study

CCV

It cost **\$1,600** a week to paint all the fields at one sports complex. This includes pulling away people from other activities that don't get delayed.

They paint 40 weeks a year but with these numbers the robot is paid off within 20 weeks.

NOT INCLUDED In the Return on Investment Study:

- Stress of finding people to assist the Groundskeeper
- Less time walking back and forth pulling string in direct 110 degree sunlight
- Fatigue from shaking 132 cans per week
- Improved Field Appearance, improves appeal to parents, coaches and visitors .
- Less Stress to try new things that the Pastors ask of him.

Case Study

Medium Use Complex in Salt Lake Valley - POTENTIAL Return on Investment

FIELD	4 people x 40 hours	Mixing and Cleaning Paint	Average per hour Cost	Aerosol and supplies	Buckets Of Paint	Each time Costs
SETUP	160 hours	6 hours	\$28	\$750	\$900	\$6,058
				Yearly TOTAL	3x a year	\$18,174

RePaint	25 Hours	6 hours	\$28	--	\$900	\$1768
				Yearly TOTAL	7x a year	\$12,376

- This city publicly announced that Painting Costs per year cost them at a minimum of \$30,000 a year

Case Study

Medium Use Complex in Salt Lake Valley - POTENTIAL Return on Investment - continued

	Estimated Man Hours	Mixing and cleaning _g	Average per hour Cost	supplies	frequency	Total Cost
Traditional String	635 hours	60 Hours	\$28	\$11,250	10 weeks A year	\$30,550
Robot User Cost	200** hours	15 hours	\$28	\$7,000*	10 weeks A Year	\$13,020

Cost of Robot	Annual Subscription	Robot + User +Supplies	Time for Return on Investment	Healthy ROI
\$22,050	\$1850	\$36,920	1.2 Years	5 to 7 Years

- **Potential ROI Missed Out** instead the city decided it was too much for their grounds crew and now it falls on users to paint by themselves. Groundskeeper has changed to oversee multiple parks.
- **NOT INCLUDED In the Return on Investment Study:** Placing concrete hidden markers in the grass to designate corners. Weekly weed eating of the concrete markers. Extra turf costs such as sod, seed and hours because the fields can't move, not having concrete markers in the grass would have allowed for more field adjustments and modifications to reduce wear.

** based on taking 20 hours to completely paint the complex or 2.5 days with the Robot Only. Note: You could speed up painting time by painting nearby fields with a push painter while the robot paints 2 to 8 fields consecutively. *estimates are based on 13 - Five Liters jugs a week for 10 weeks plus extra for supplies.



Implementation

Implementation

Working together

START SMALL

UNDERSTAND

TEACH

Get a Demo

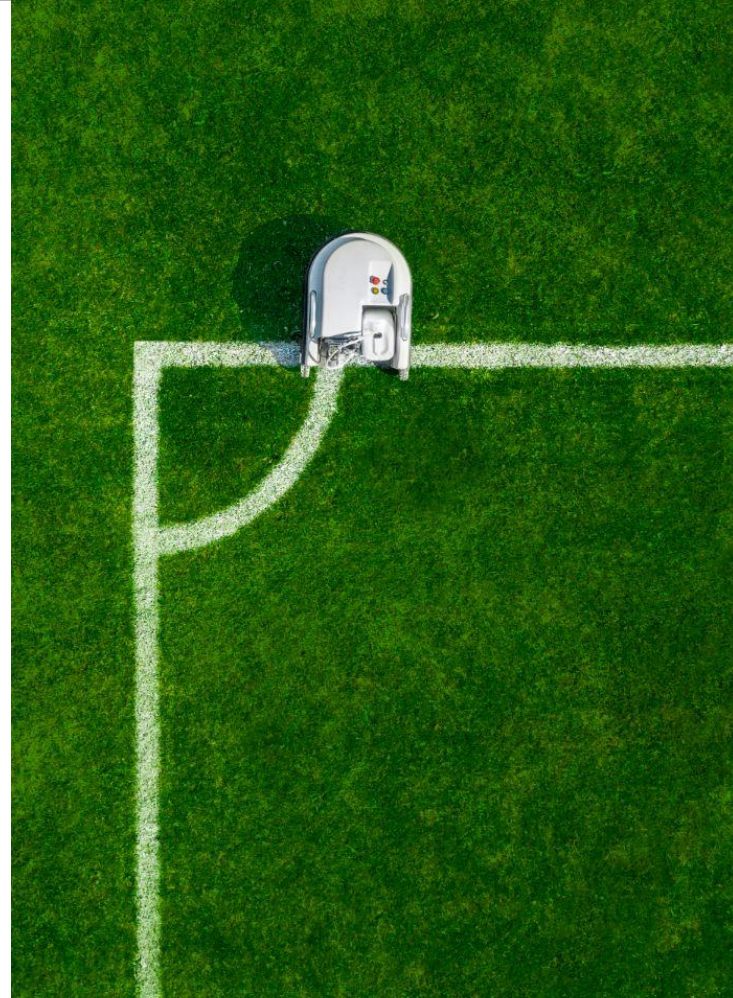
See them in person, ask questions

Identify

Areas for testing, tasks you could be doing, ask how and where you could start.

Pilot Program

Install in an area to test for a limited time. See how they work and how they could change your routines.



Implementation

Working together

START SMALL

UNDERSTAND

EDUCATE

How to Operate

Get comfortable with settings, operation and capabilities.

How to Troubleshoot

All equipment can run into problems. Problems can be resolved.

Where Problem Areas Are

Anticipating and adapting to where they perform well and come short removes surprises.

How it Affects Operations

Do you need dedicated resources?
What processes can be established for smooth operation?



Implementation

Working together

START SMALL

UNDERSTAND

EDUCATE

Your Crew

Make them comfortable with operation, upkeep and related responsibilities.

Customers & Pedestrians

What to expect for operation. They're safe, send or post communications on how and when to interact with them.

Employers

On any savings, the operation or how your time is being better utilized to improve the grounds.



Our future success is directly proportional
to our ability to understand, adopt and
integrate new technology into our work
— *Sukant Ratnakar*





Questions?

Lorenzo Lopez CSFM

Call or Text:

801. 658.9734

Email:

Lorenzo@SouthWestSportsfields.com