

More Than Just Growing Grass: Enhancing the Superintendent's Role Using Software

Dr. J. Tim Vanini

www.ndturf.com

Buffalo, NY

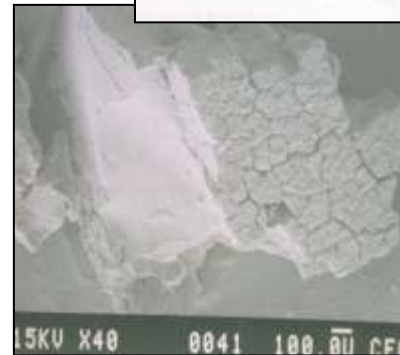
Background

- Cornell University -1991

- Bachelor of Science – School of Agriculture
- Four-Year Varsity Letterman – Ice Hockey

- Michigan State University

- Ag. Tech Degree – 1992
- Masters of Science – 1995
 - 1994 World Cup
 - U.S. Patent – Topdressing crumb rubber
- Doctorate – 2005
 - Evaluated management systems







How this talk came about?

- Started with a conversation with Dr. John Sorochan (UTK) to Karen Cooper (GCSAA)
- I believe in technology
 - NDTurf Clippings – Automated
 - My own business
- Recycle, Reuse, Reduce and RETHINK!!

Technology

- What is it? - Something that changes your viewpoint AND can be efficiently or practically applied. Otherwise, it's just a great idea or "half-baked idea".
- The application of scientific knowledge for practical purposes, esp. in industry

USGA Green



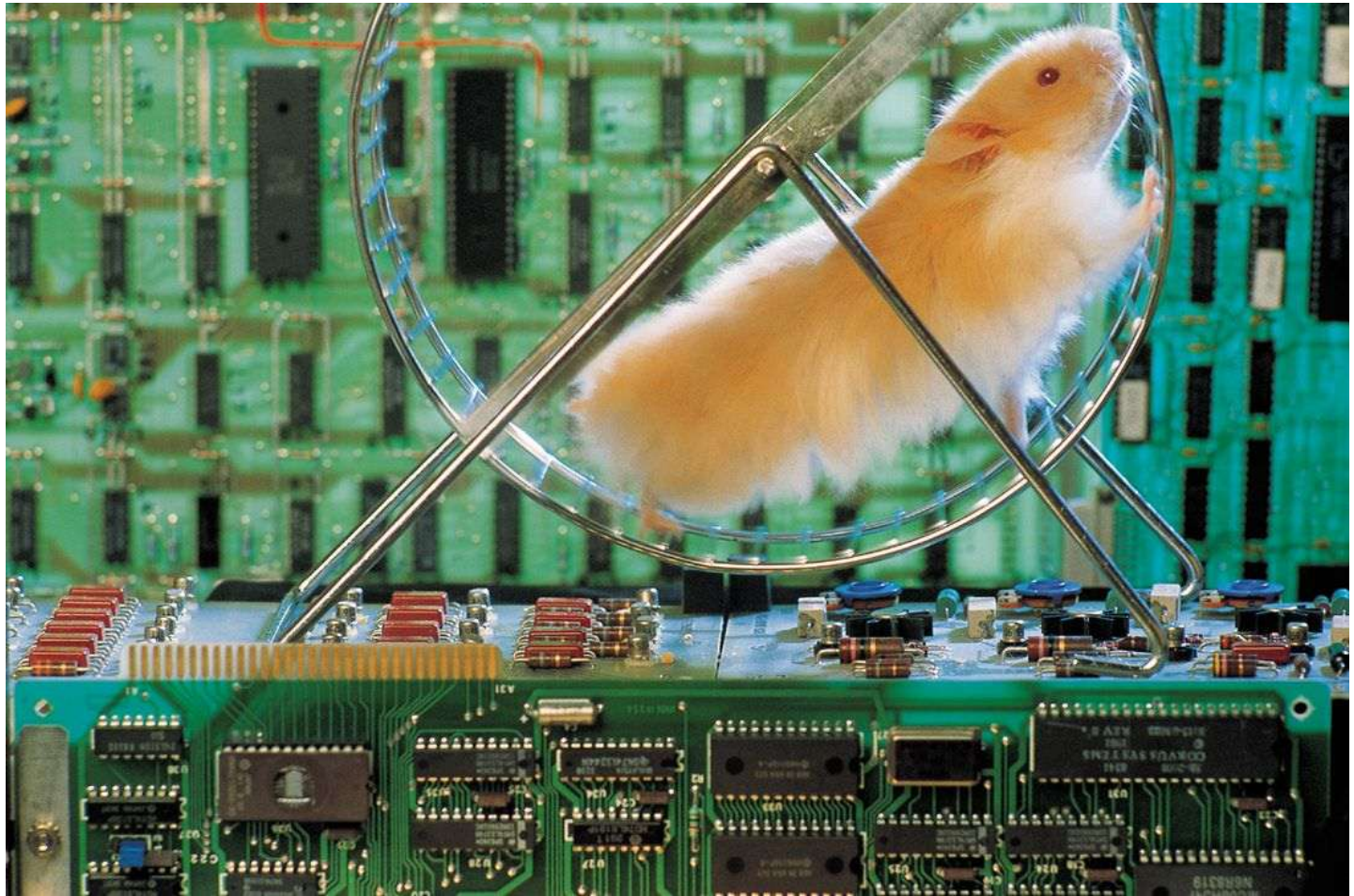
I like it when a flower or a little tuft of grass grows through a crack in the concrete. It's so f*** heroic.**

- George Carlin



Google Data

- Petabyte – 1,000,000,000,000,000 bytes
- Internet: Google processes about 24 petabytes of data per day.
- Telecoms: AT&T transfers about 19 petabytes of data through their networks each day.





When I can into the business?



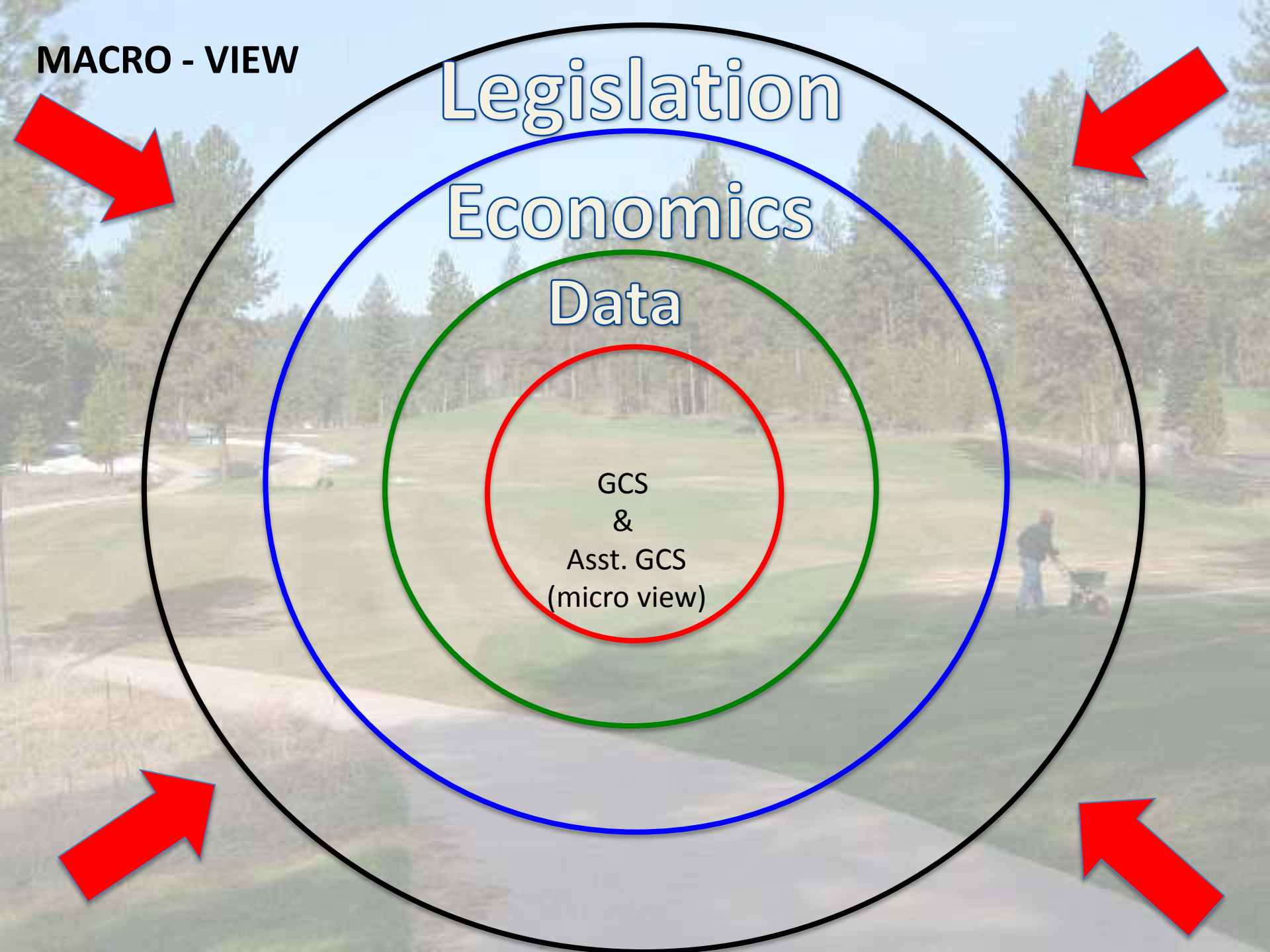
MACRO - VIEW

Legislation

Economics

Data

GCS
&
Asst. GCS
(micro view)



New York State Law Restricts Use of Phosphorus Lawn Fertilizers Beginning January 1, 2012

The **NYS Dishwasher Detergent and Nutrient Runoff Law** went into effect on August 14, 2010 after being signed by Governor Paterson on July 15, 2010. Through restrictions on dishwasher detergents and fertilizers that contain phosphorus, the law will reduce the quantity of phosphorus entering the State's waters.

Fertilizer Provisions

Beginning January 1, 2012:

- Use of phosphorus fertilizer on lawns or non-agricultural turf is restricted. See box at right.
- Application of any fertilizer on lawns or non-agricultural turf is prohibited between December 1st and April 1st.

Picking the Right Fertilizer

Fertilizer labels have three bold numbers. The number in the middle is the percentage of phosphorus in the product, e.g. 22-0-15. Use of products with 0 .67 or lower in the middle is not restricted. Products with a number higher than 0 .67 in the middle may only be used if a new lawn is being established or a soil test indicates that it is necessary.

Getting a Soil Test



Today's Office



```
graph TD; A[Today's Office] --- B[Webmaster]; A --- C[Administrative Asst.]; A --- D[Quickbooks Online]; A --- E[Social Media/Research]
```

The diagram is an organizational chart. At the top level is the text "Today's Office", which is enclosed in a blue semi-circular arc above and below it. A horizontal line extends from the center of "Today's Office" to the left and right. From this horizontal line, four vertical lines descend to connect to four separate nodes. Each node is also enclosed in a blue semi-circular arc above and below it. The nodes, from left to right, are: "Webmaster", "Administrative Asst.", "Quickbooks Online", and "Social Media/Research".

Webmaster

Administrative
Asst.

Quickbooks
Online

Social
Media/Research

MACRO - VIEW

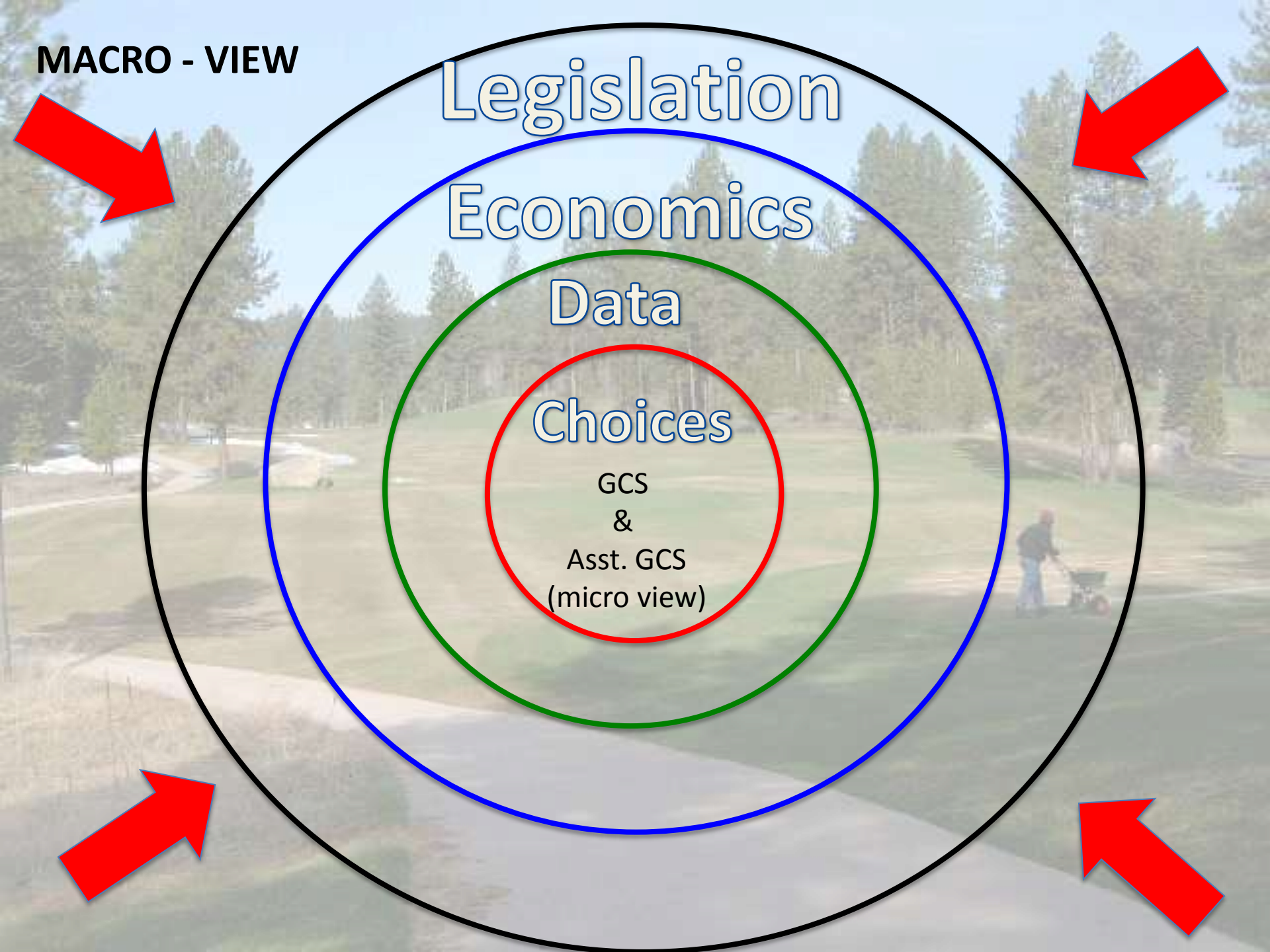
Legislation

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Choices

GCS
&
Asst. GCS
(micro view)



MACRO - VIEW

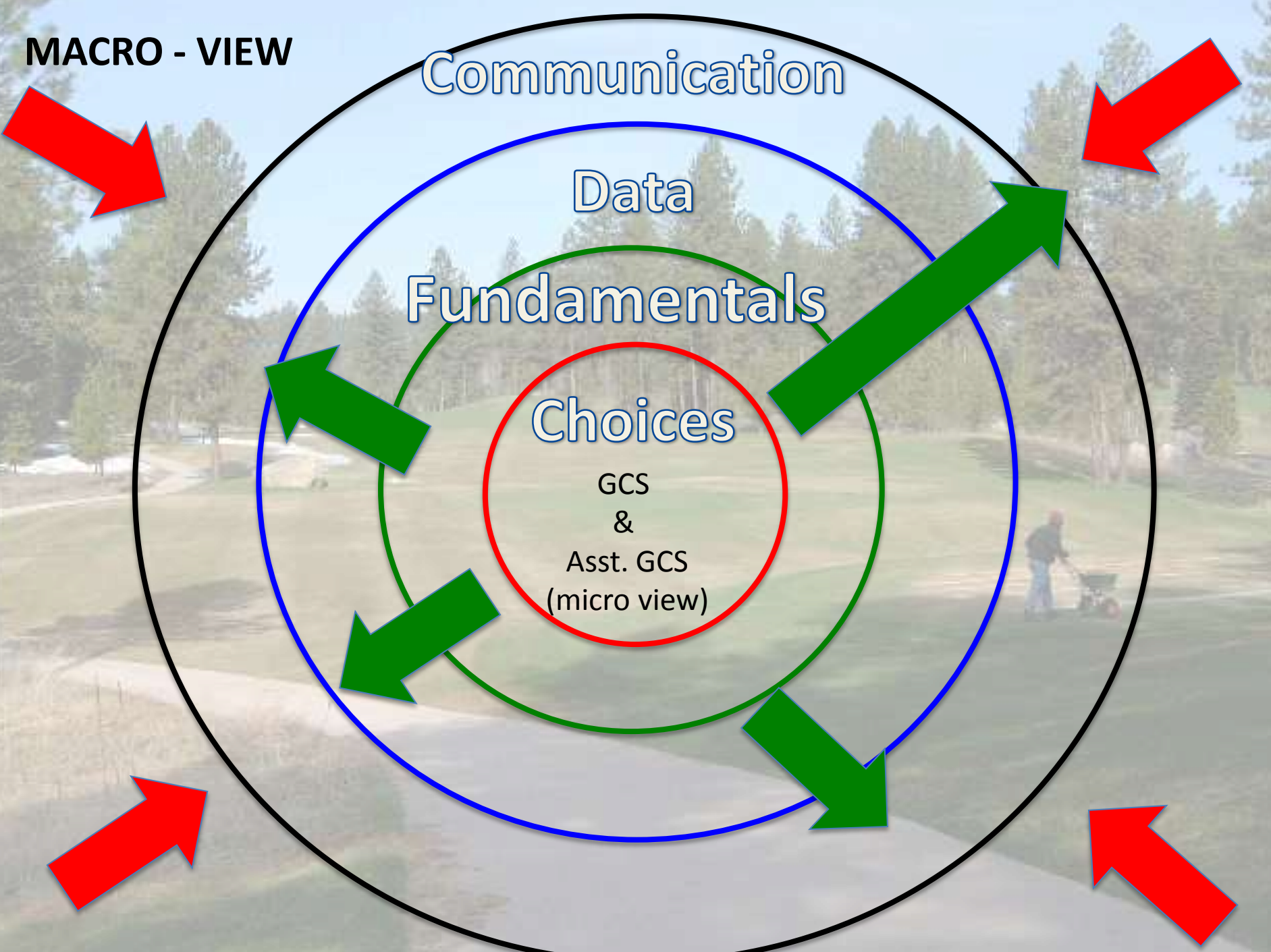
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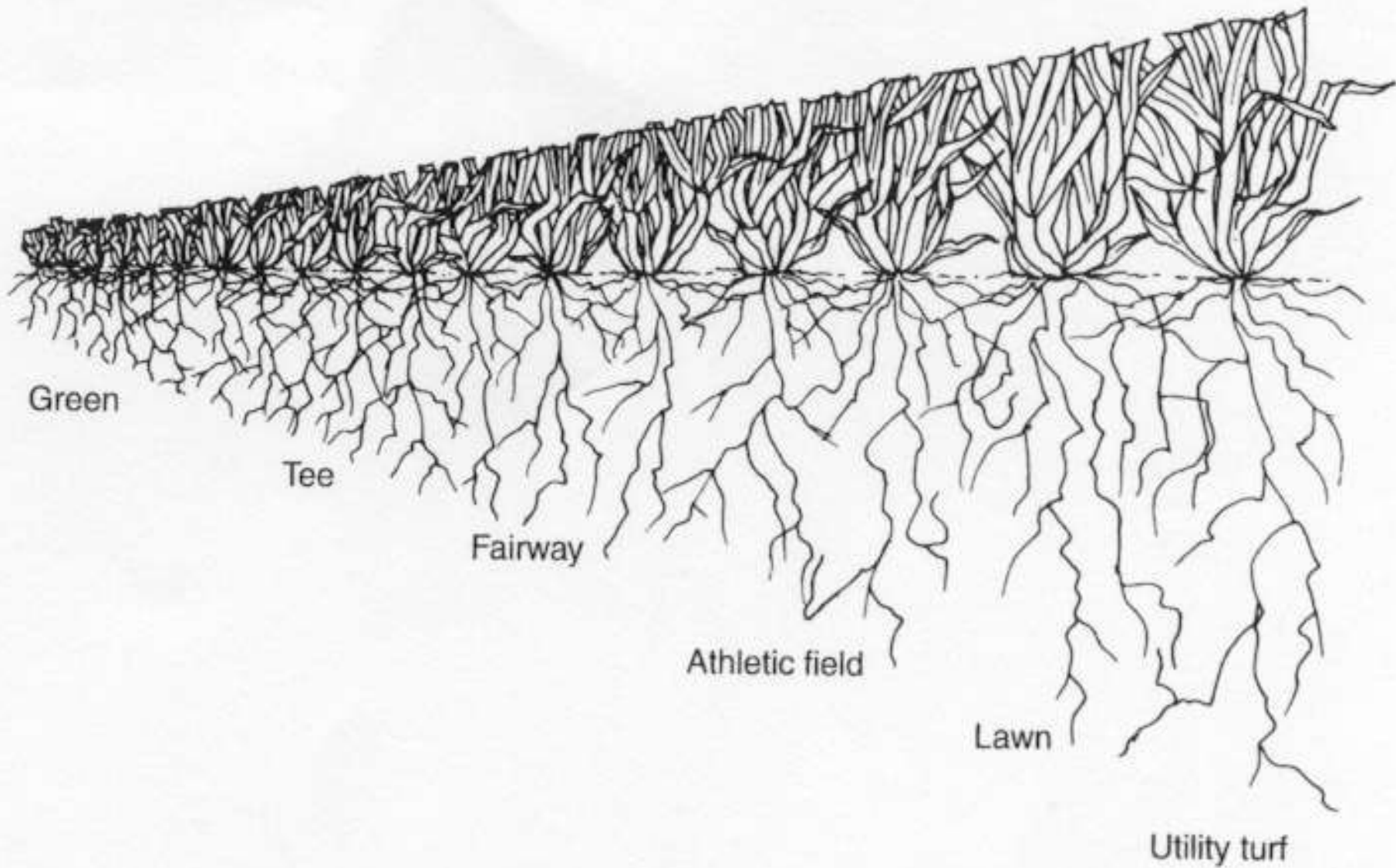
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CULTURAL INTENSITY SPECTRUM

High

Low





Clean-up pass from Precise Path's RG3 [Hide](#)

Clean-up pass from Precise Path's RG3

by wendellgee



[Robotic Mowing](#)

Data Loggers



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Rainfall Loggers



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Search results for 'n pen'

Search results for 'n pen'

Z955 N-Pen

Measures relative nitrogen content by means of light reflectance from the leaf and correlation between calculated NDGI and total Nitrogen.



[Full Story](#) ➔

Z950 PRI-Pen

PlantPen that measures Photochemical Reflectance Index (PRI) by comparing leaf reflectance in two narrow wavelength bands centered close to 531 nm and 570 nm.



[Full Story](#) ➔

Z951 NDVI-Pen

Measures the Normalized Difference Vegetation Index (NDVI), an important indicator of chlorophyll content in plants, as calculated from measurements of reflected light at two distinct wavelengths, Red (635nm) and NIR (760 nm)



[Full Story](#) ➔



585-472-6515

Soft Technology Solutions



MEASURE

Choose a Measure Tool:

Measurement:
 Area: 15,691.091 Square Feet
 Perimeter: 616.393 Feet

Display Units:

COURSE INFORMATION

Holes:

Feature:

Total Acres: 1.5473

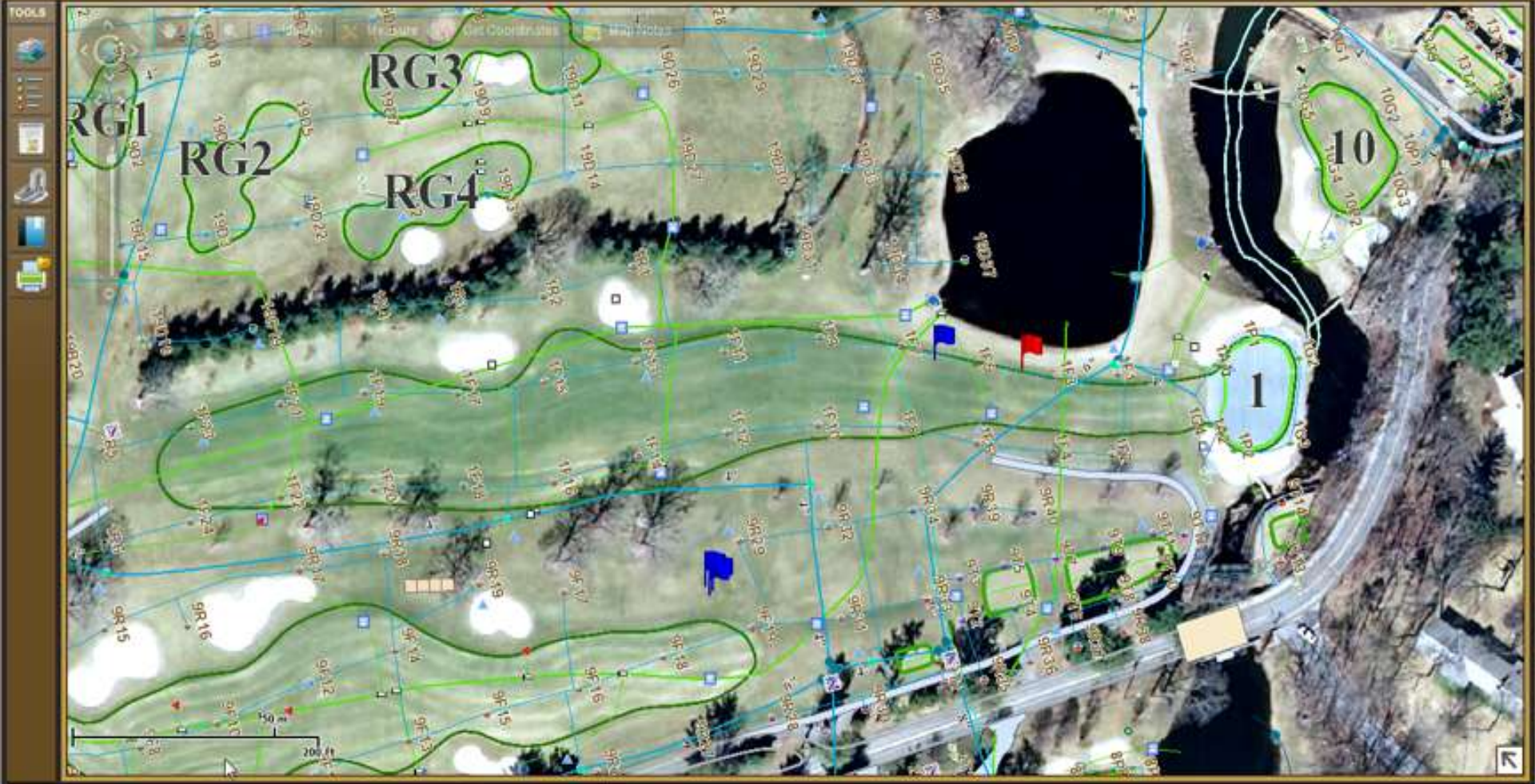
Total Sq Ft:

Cost / Sq Ft:

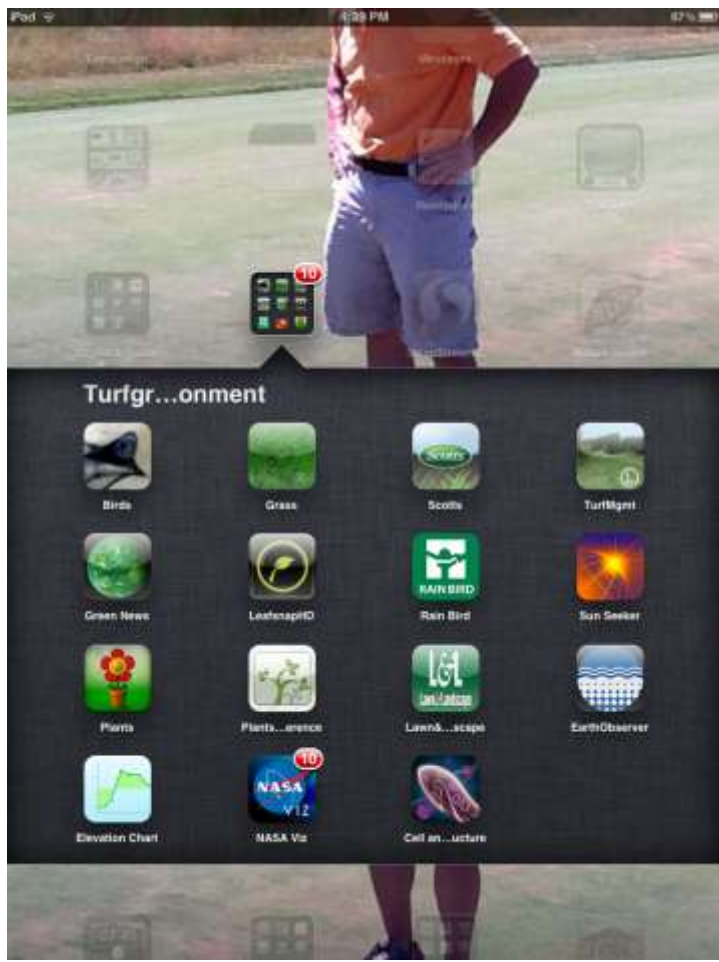
Total Cost:

Hole: 9
 Area: 1.5473 acres
 Finish: 67,400.40 sqft
 Perimeter: 2,046.50 ft

Note:









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New Dimensions Turf Clippings

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01 Feb 2012

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NEW DIMENSIONS TURF BLOG



Today's Golf Course
Superintendent

Smartphone

Web-based
programs

Weather Station

Data
collectors/sensors

Social
Media/Research



An aerial satellite map showing a golf course area. A vertical road labeled 'Youngs Rd' runs through the center. To the right of the road, a red pin with the letter 'A' is placed near a building labeled 'Buffalo Country Club'. In the bottom right corner, there is a building labeled 'Daemen College Bookstore'. The map shows green fairways, brown paths, and some buildings.

Everything we do is about getting people to be more open, more creative, more courageous.”

Jack Dorsey, Inventor of Twitter and Founder of Square

MACRO - VIEW

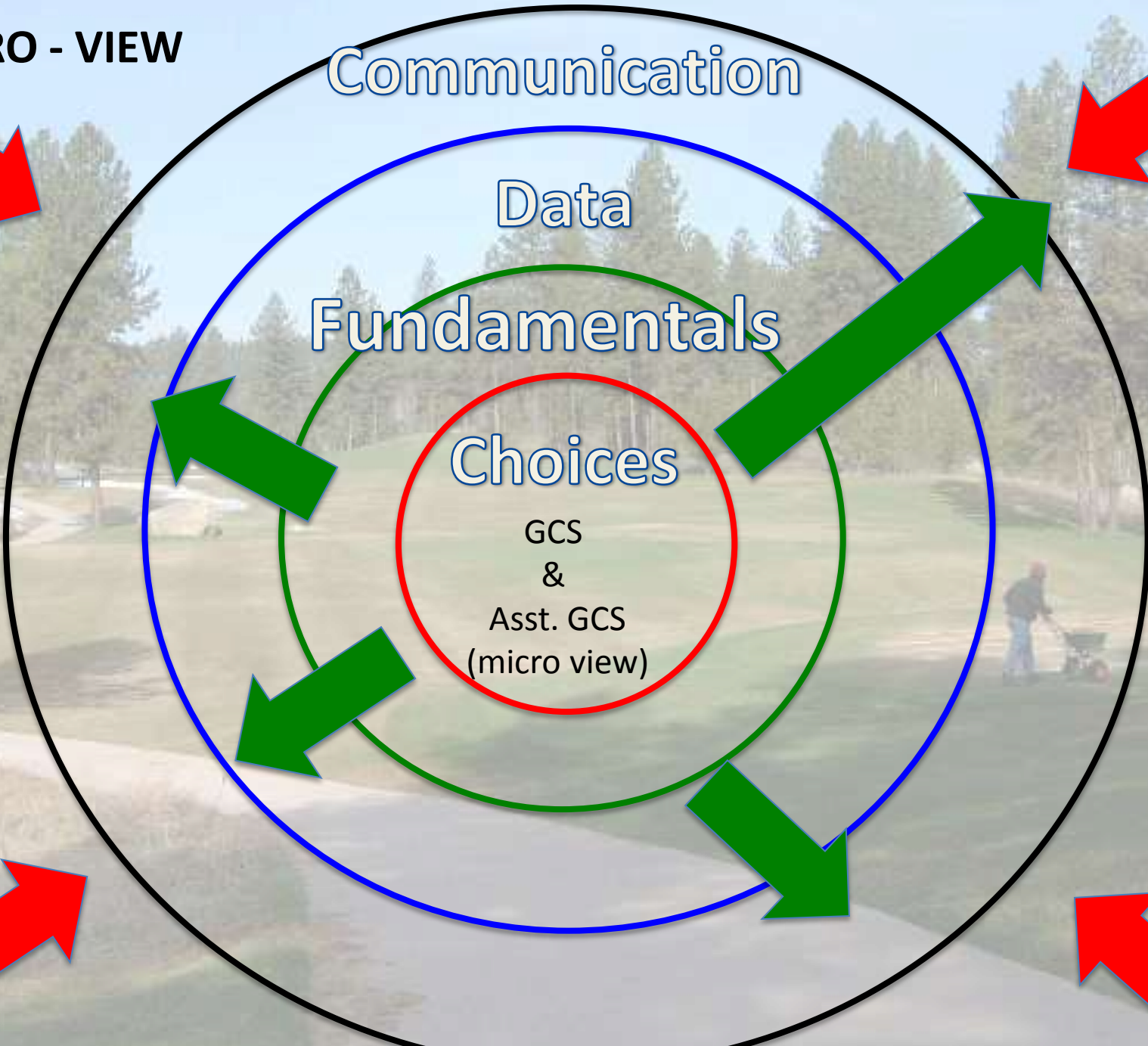
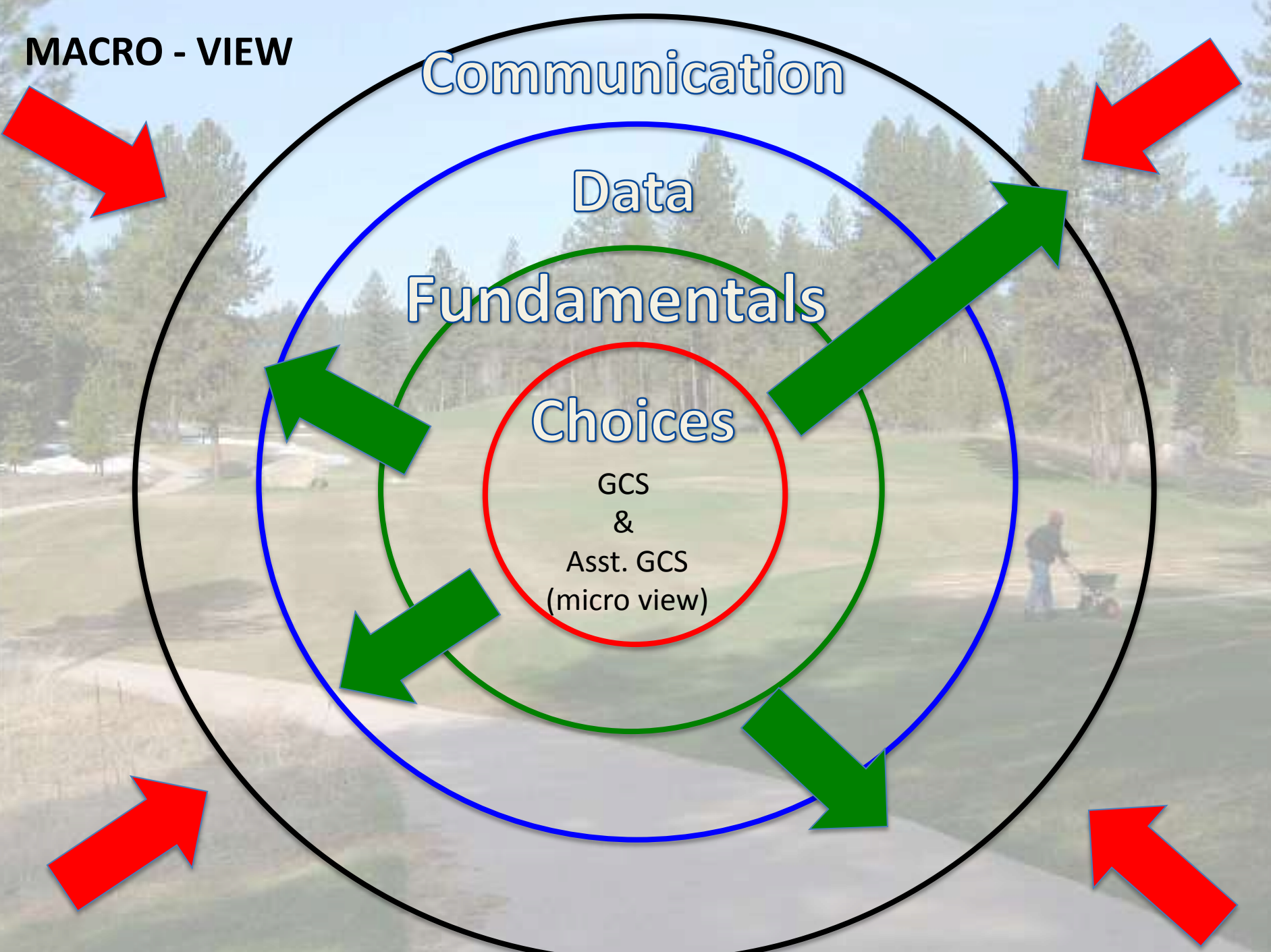
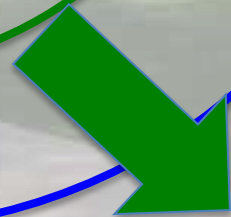
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Read how Class A member Gary Myers, CGCS, has benefitted from GCSAA professional development resources throughout his career.



MY GCSAA STORY

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Keeping up with GCSAA TV



What's in Your Cart? -- Steve Anderson, CGCS at Inverness Club

Posted Feb. 10



Interseeding at Lawrence (Kan.) Country Club

Posted Feb. 7

News

GCSAA announces four new research projects for 2012

The projects are made possible through support from the Environmental Institute for Golf.

Final H-2B programmatic rule published

Stay tuned for an action alert asking for support of a resolution in opposition to the rule.

Watson Fellowship winners named

Recipients of the grants are students working toward postgraduate degrees in the field.

Florida legislators proclaim "Florida Golf Day"

Golf was honored for its contributions to the state, including \$13.8 billion of direct, indirect and induced economic output.

ALSO IN THE NEWS:

- [Garske grants available for members' children](#)
- [Save money now on Golf Industry Show](#)

Dates & events

Feb. 24-26

National Championship & Golf Classic

Feb. 27

Roadmap to Asia conference

Feb. 27-March 2

GCSAA 2012 Education Conference

Feb. 29-March 1

Golf Industry Show

GCSAA Supplier Guide

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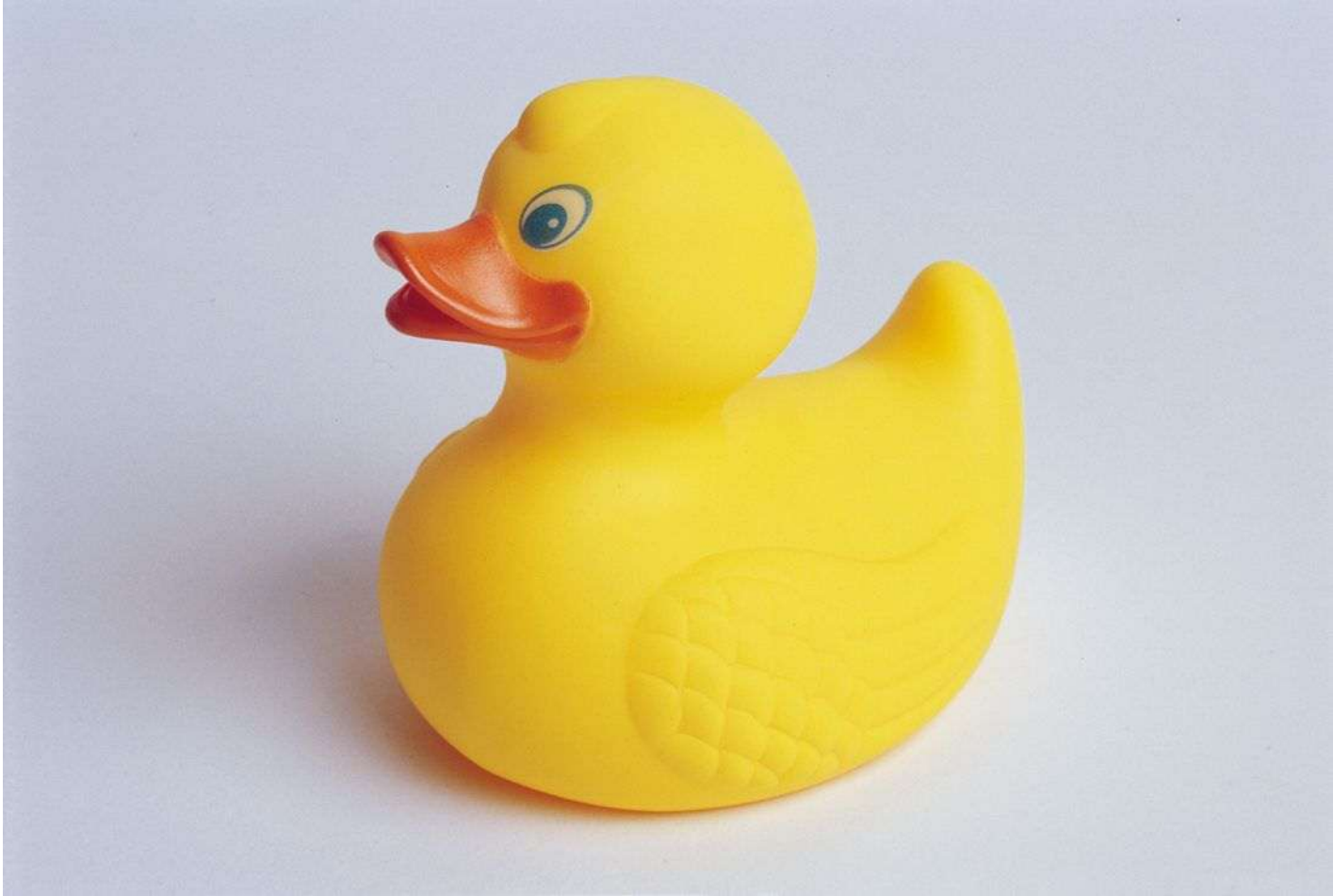
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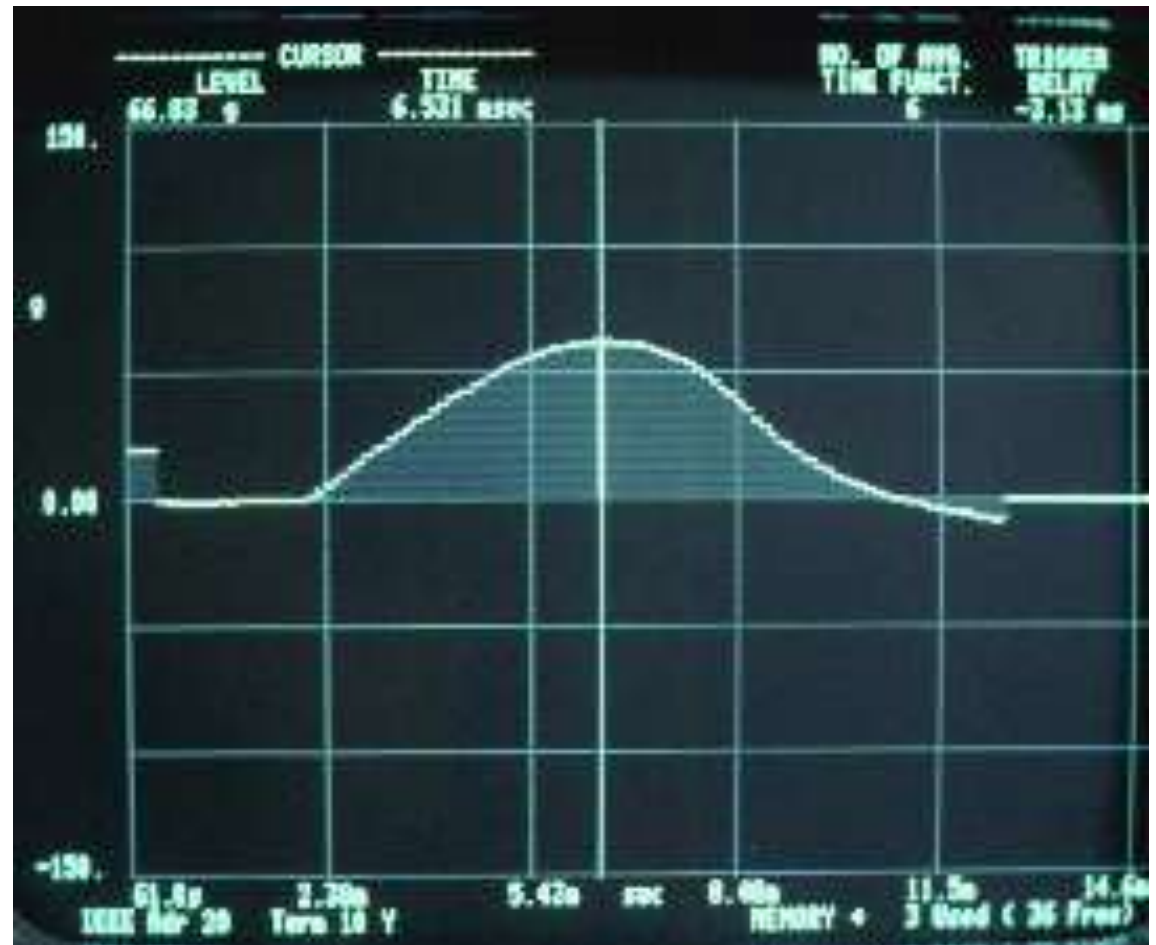
Golf's Drive Toward
Sustainability
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[Sustainable Golf Practices - Winter issue](#)



Clegg Hammer:

surface hardness or peak deceleration



Our VG400 series soil moisture sensor probes enable precise low cost monitoring of soil water content. Because our probe measures the dielectric constant of the soil using transmission line techniques, it is insensitive to water salinity, and will not corrode over time as does conductivity based probes. Our probes are small, rugged, and consume under a milliamp of power.

Compared to other low cost sensor such as gypsum block sensors, our probes offer a rapid response time. They can be inserted and take an accurate reading in under 1 second.

We offer two probes in the VG400 series. The VG400 which has an output range of 0 to 3V and the VG400-LV which has an output range of 0 to 1.8V related proportionally to water content. The VG400-LV is so power efficient that it can be run continuously for over 300 hours from a single coin battery, or over 5 years if the soil is sampled once per minute.

When choosing between the -LV and standard VG400, only use the -LV, if you have to power the probe with less than 3.3V.

Probes come standard with a 2 meter cable.

Also see our high frequency [VH400 series](#) soil moisture sensors, which are more sensitive in the higher VWC regions, at the cost of using slightly more power.

See our [Soil Moisture Sensor Selector](#), to figure out which probe is right for your application.



**VG400 - Soil
Moisture
Sensor Probe**



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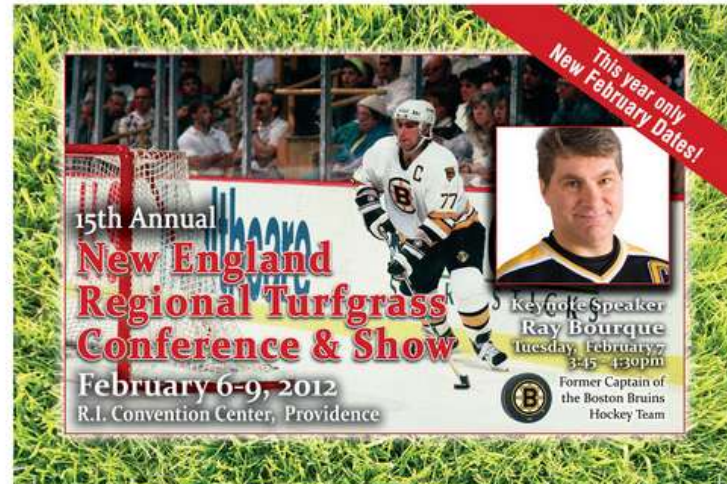
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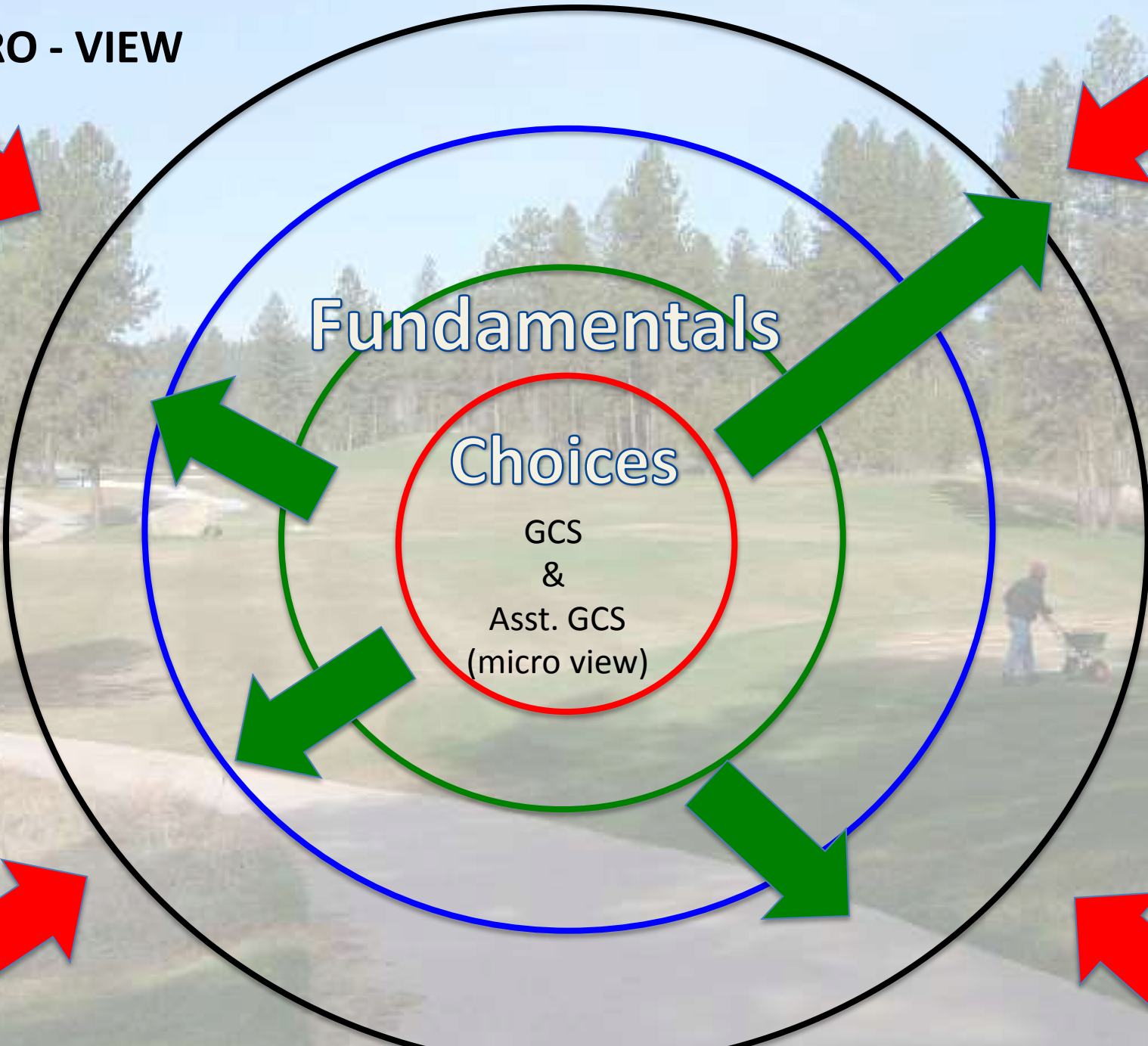
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2012 marks the 15th year of the New England Regional Turfgrass Conference and Show. We are pleased to note that over these years turfgrass professionals from all areas of the industry have participated.

We thank you for your support and continue to encourage your input that has helped to make "our" show so successful. Come and enjoy the trade show where you can examine the newest equipment available, inspect new products and converse with industry experts. Plan to spend some time in more than 64 hours of education offered to benefit all turfgrass managers. Get to know other members of the industry to expand your network capabilities that will add to your job performance.

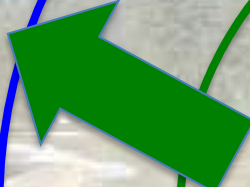
MACRO - VIEW



Fundamentals

Choices

GCS
&
Asst. GCS
(micro view)







New Dimensions Turf Clippings

Published by [Dr. J. Tim Vanini](#) – 253 news spotters today

Next update in about 160 hours

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GCSAA News Release | Nalls earns national award for advocacy efforts

[gcsaa.org](#) - Jay Nalls Jay Nalls, golf course superintendent at Norbeck Country Club in Rockville, Md., has been selected to receive the 2012 Excellence in Government Relations (EGR) Award from the Golf Course

...

NDTurf

Redress support valuable **Government relations: 2012**

Meridan Fields Sports Grounds Revised Master Plan

[mysunshinecoast.com.au](#) - Sunshine Coast Council today adopted a revised master plan for the Meridan Fields Sports Grounds. Division 1 Councillor Anna Grosskreutz said the revised and renamed 'Meridan Fields Sports Grounds ...

NDTurf

Redevelopment plan may see turf grass institute...

[guelphmercury.com](#) - GUELPH — The Guelph Turfgrass Institute may soon be named after another



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Dr. J. Tim Vanini



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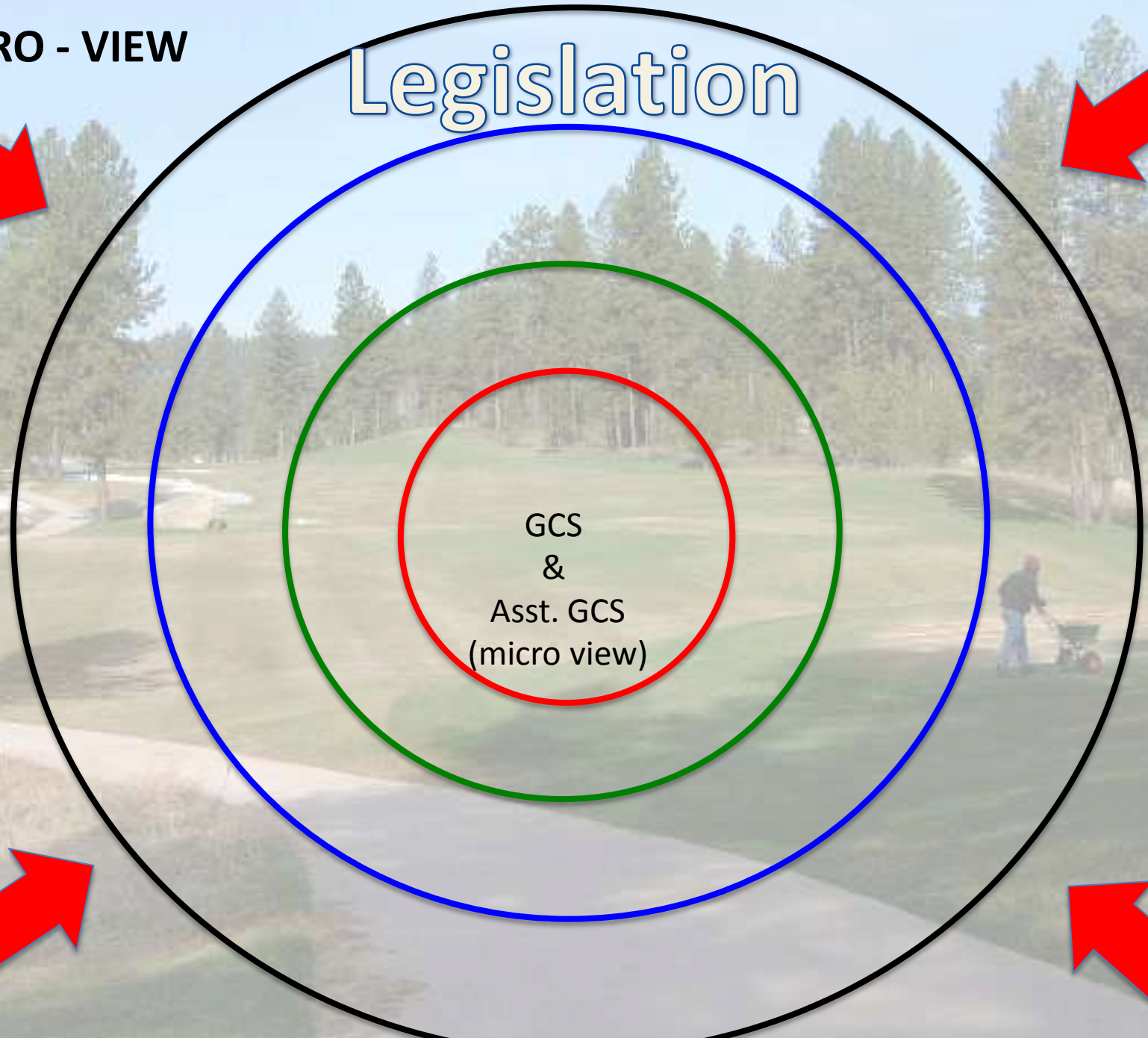
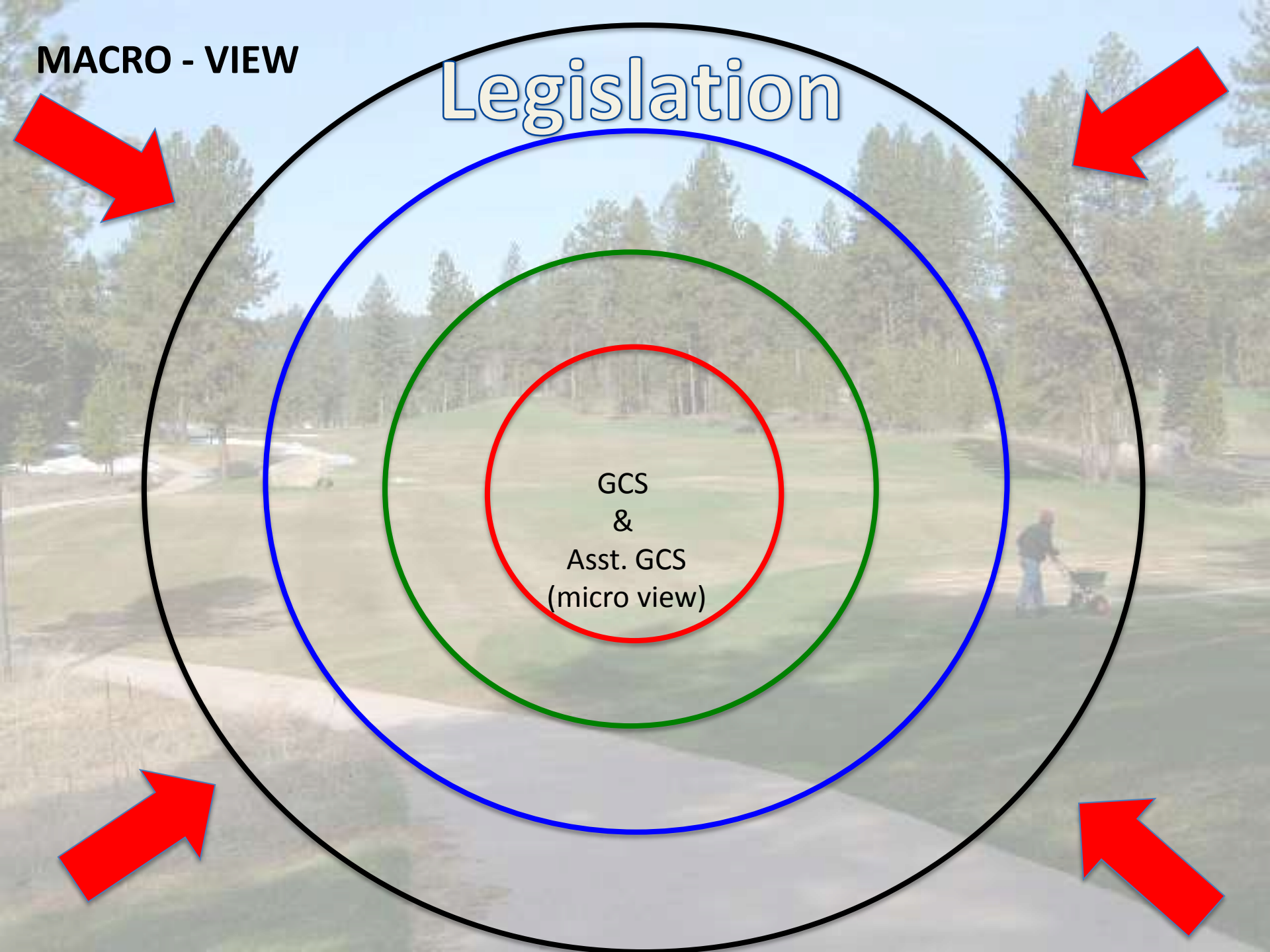
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Get GoPayment

MACRO - VIEW

Legislation

GCS
&
Asst. GCS
(micro view)





**You could cover the whole earth with asphalt,
but sooner or later green grass would break
through.**

- Ilya Ehrenburg



**Knowing trees, I understand the meaning
of patience. Knowing grass, I can
appreciate persistence.**

- Hal Borland

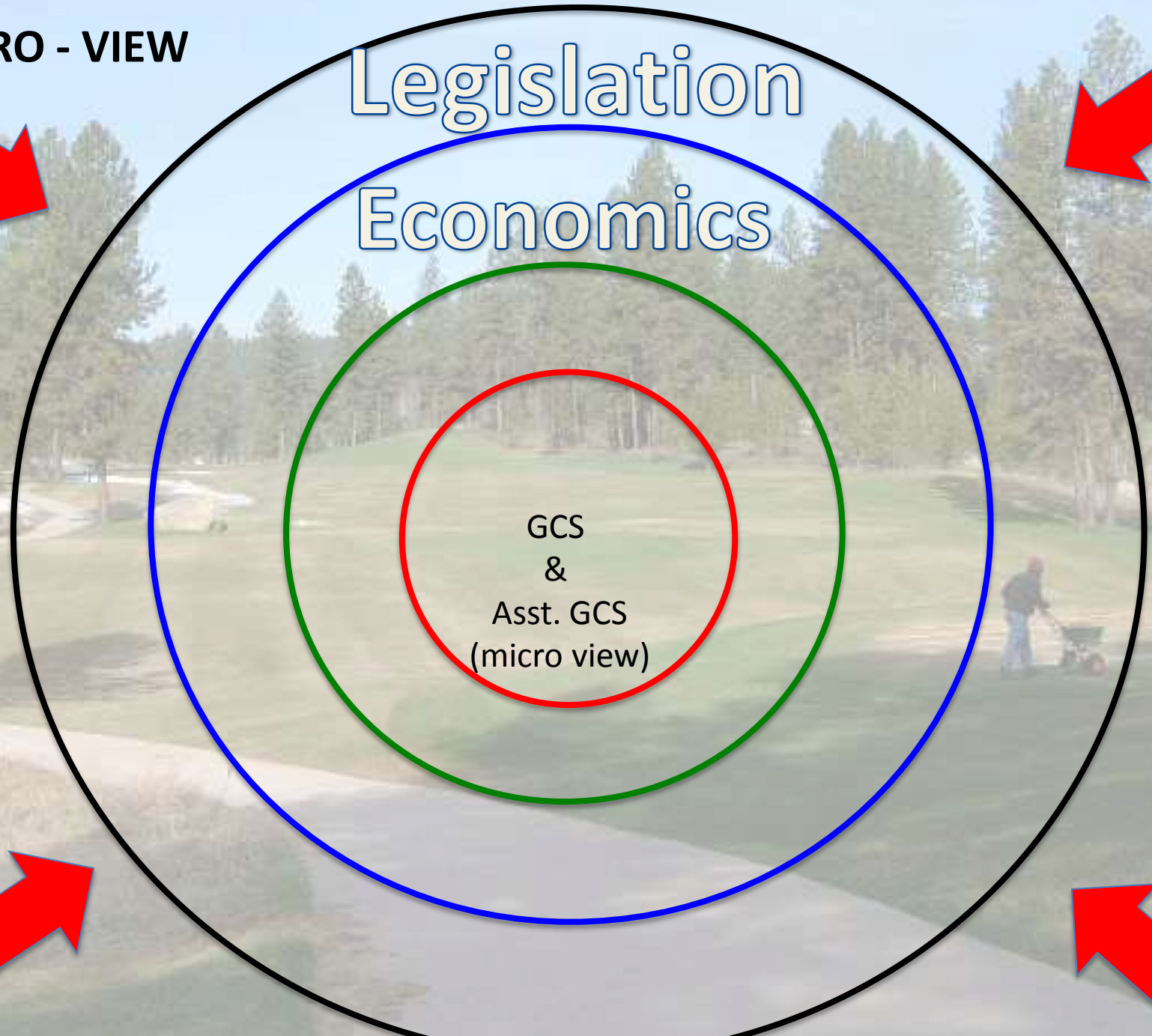
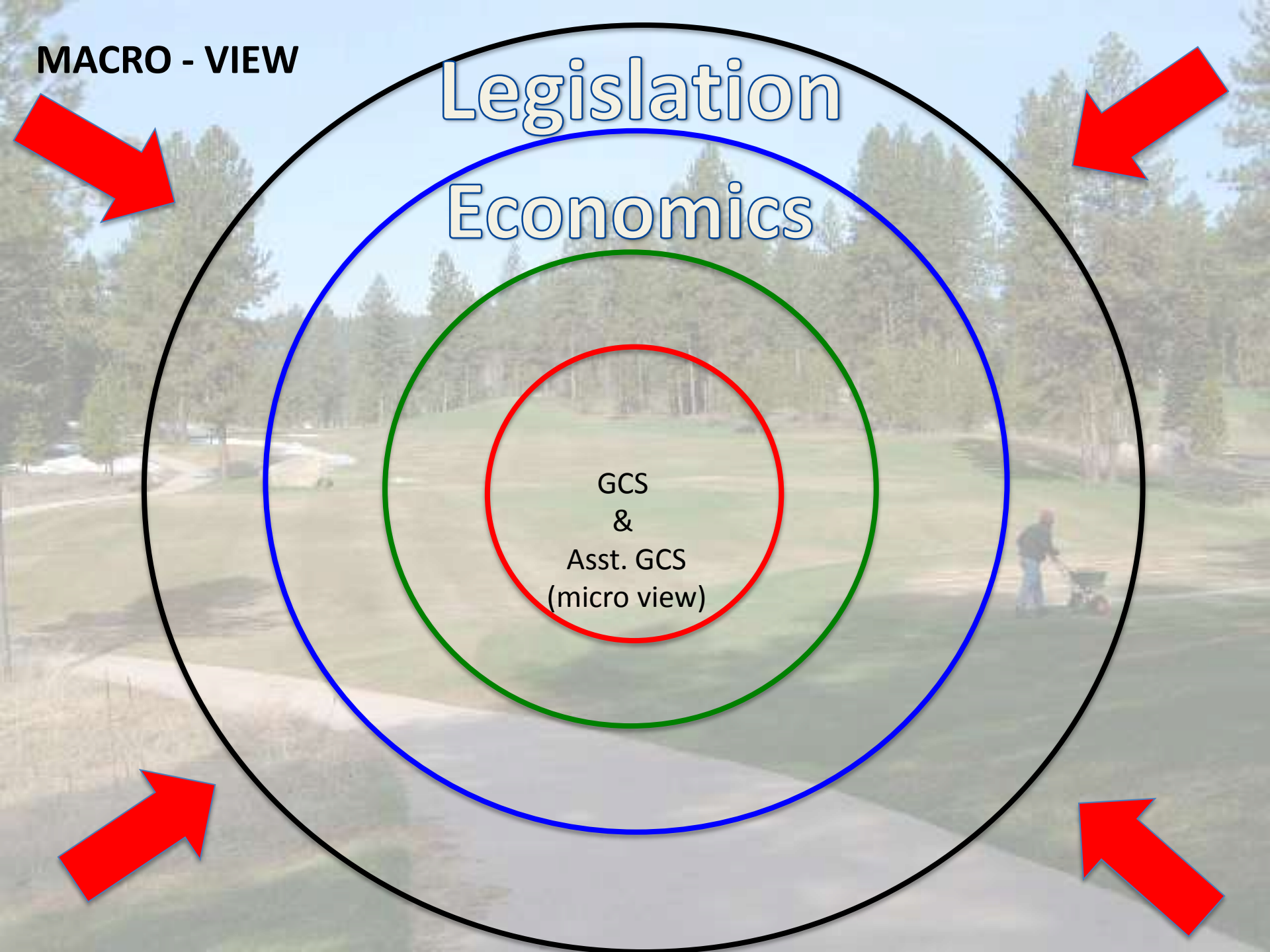


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GCS
&
Asst. GCS
(micro view)

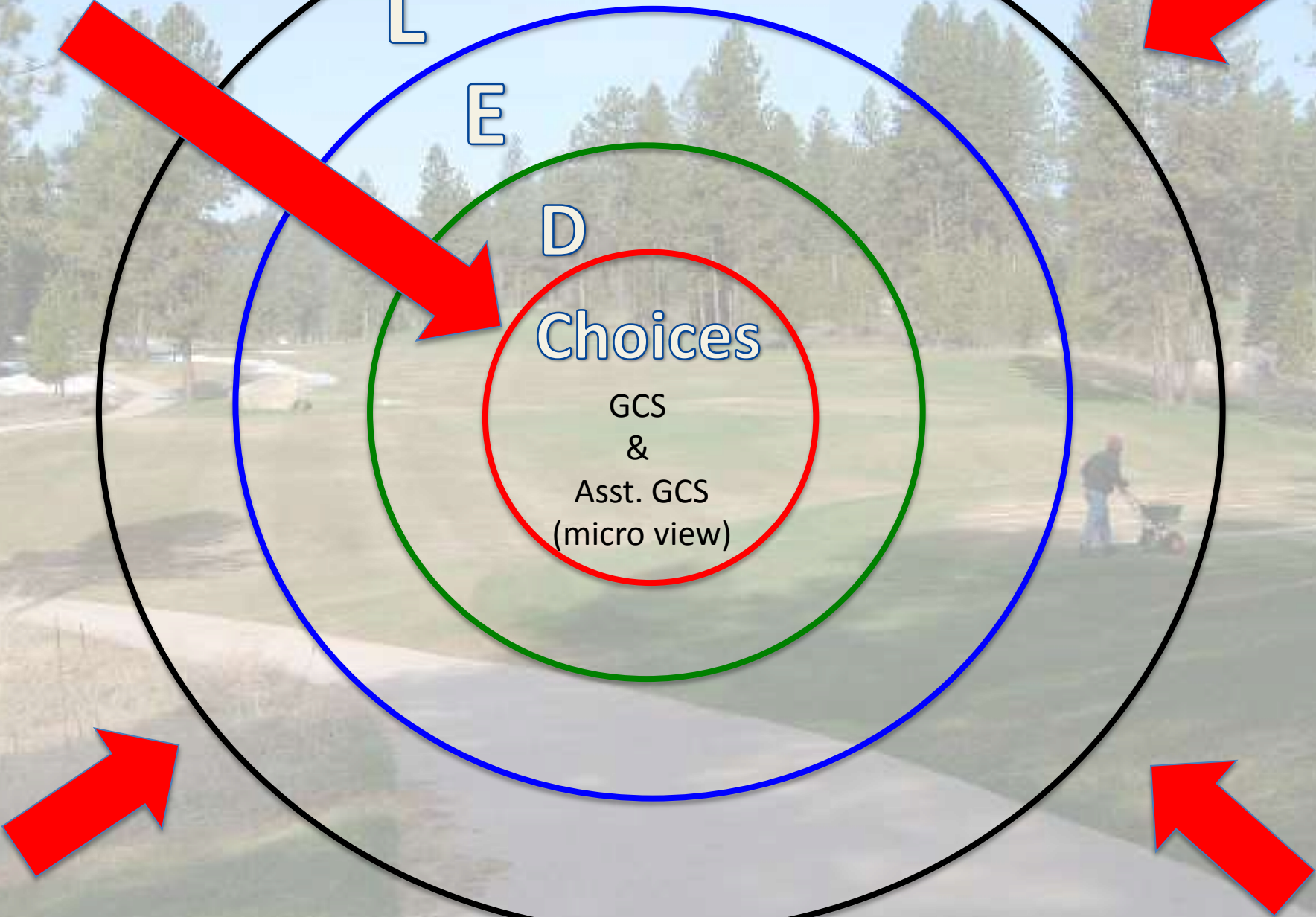


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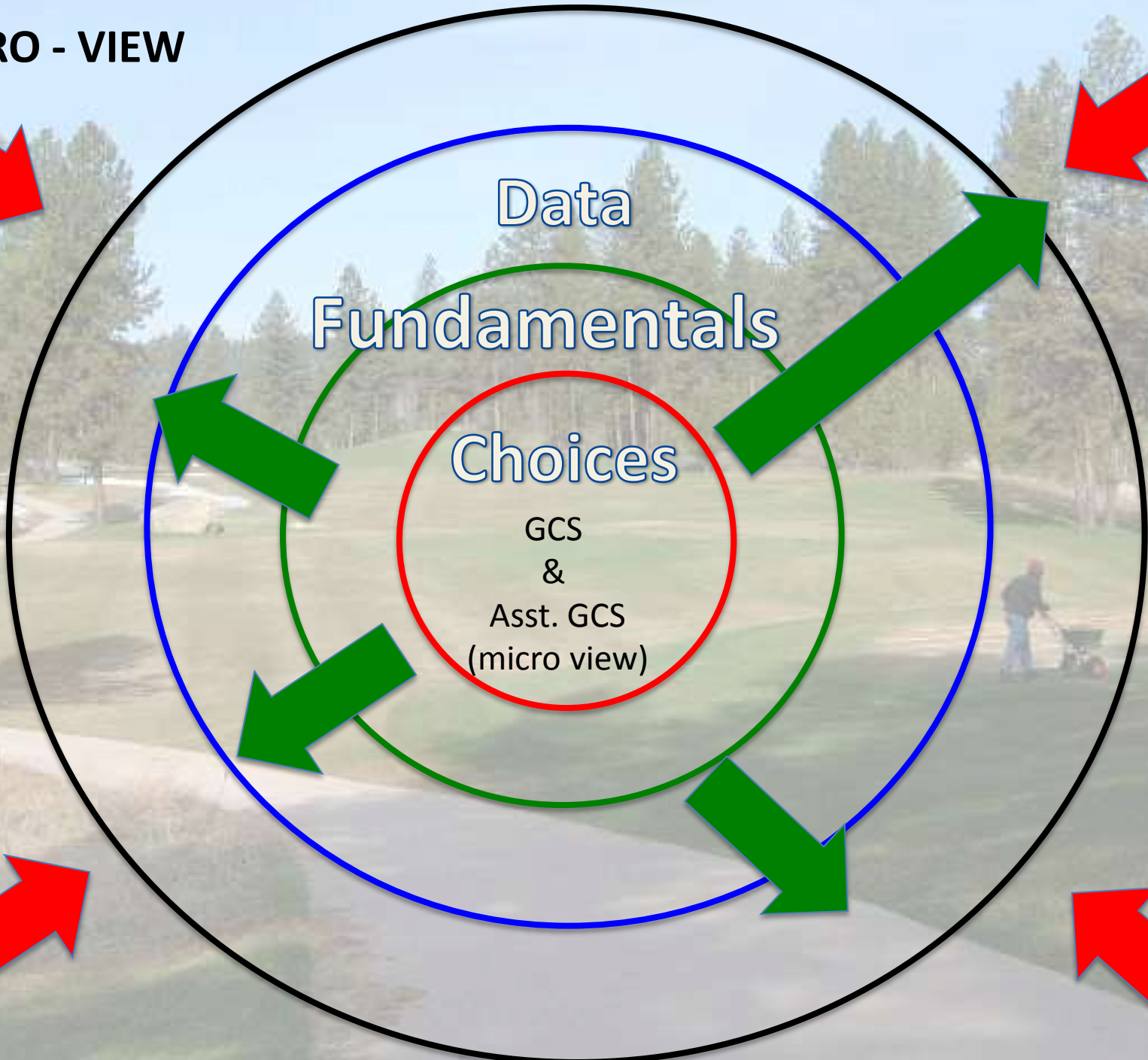
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Choices

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(micro view)



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MACRO - VIEW

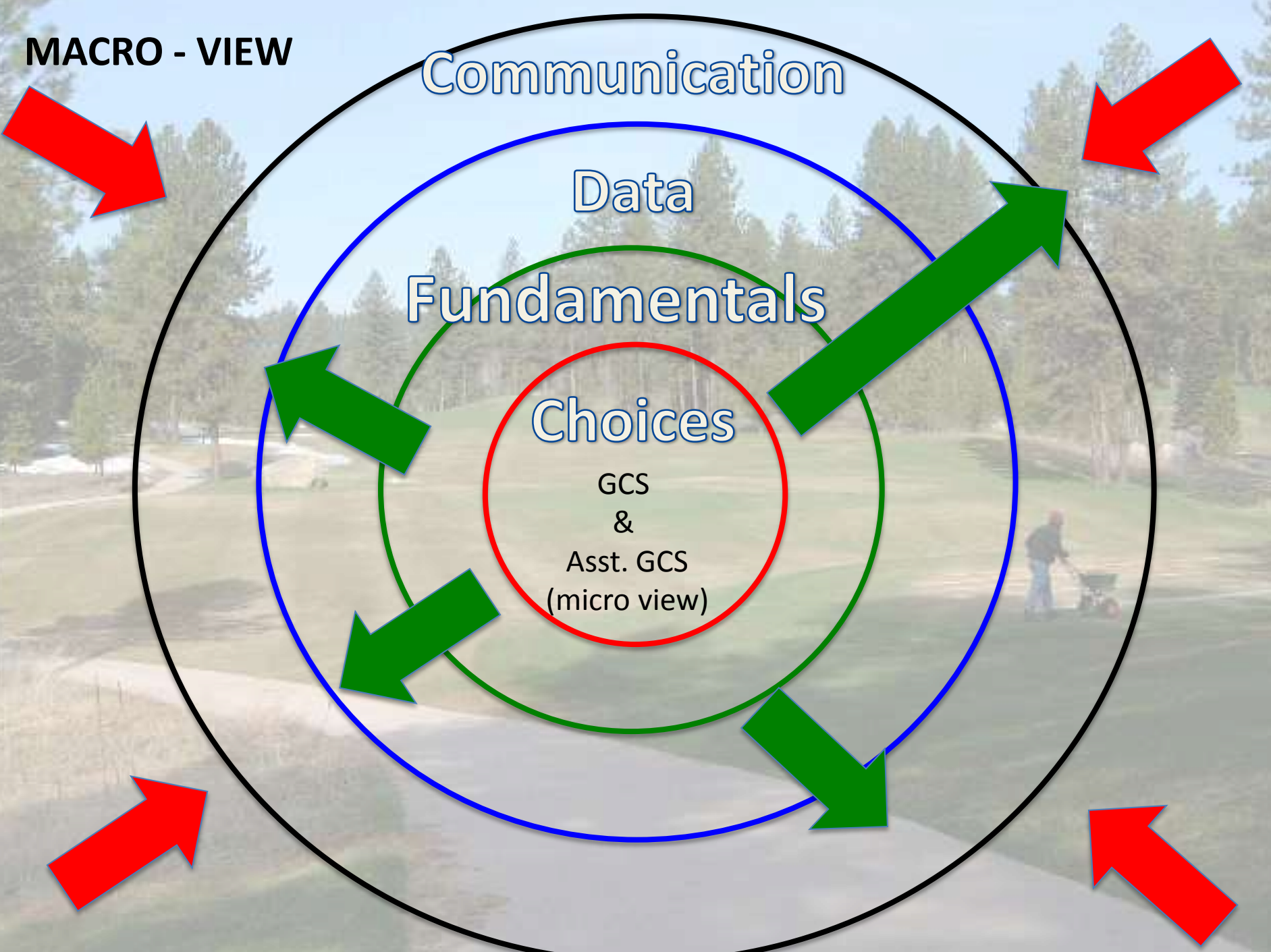
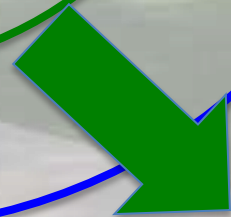
Communication

Data

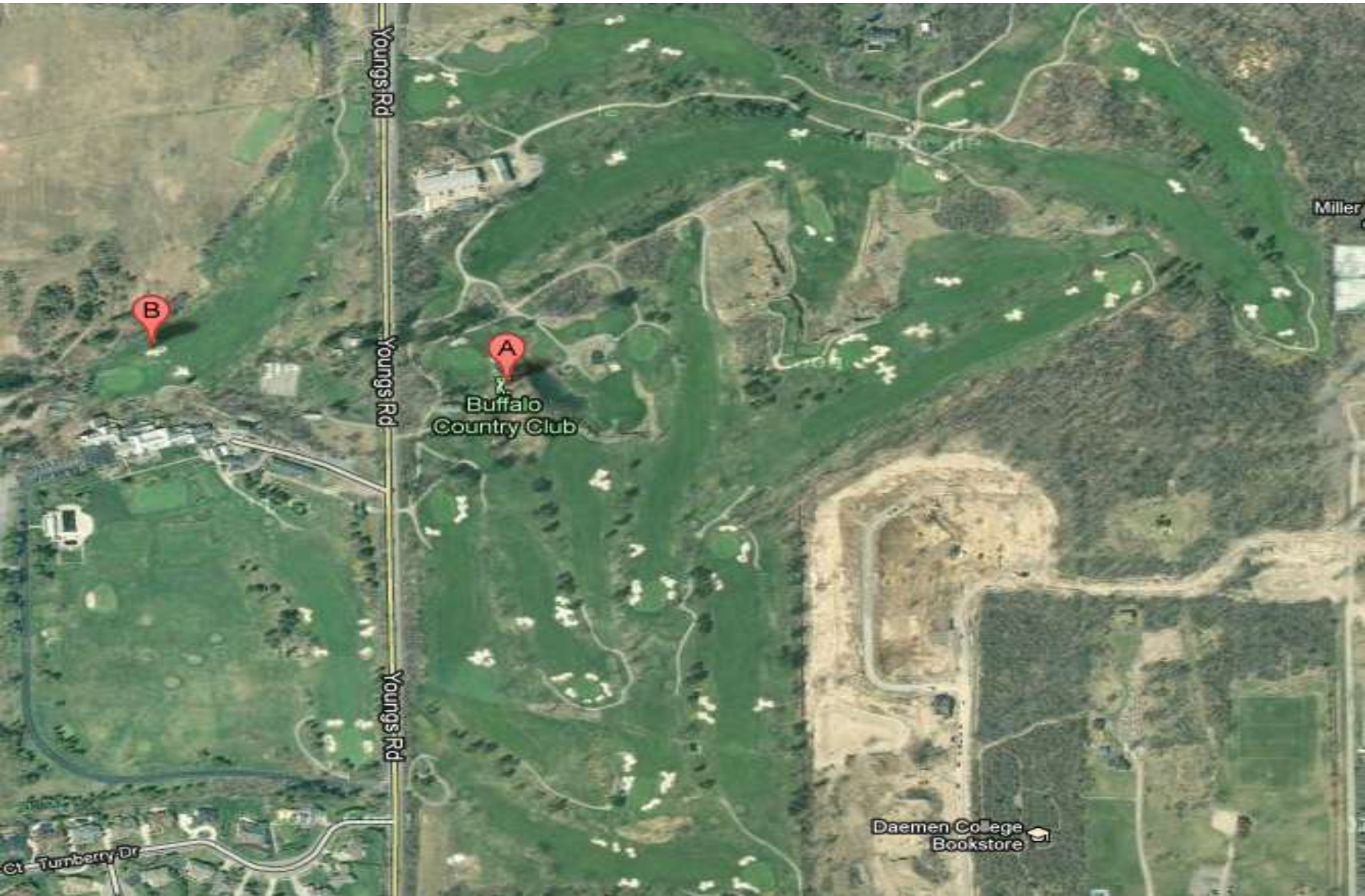
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Choices

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&
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(micro view)



Employee 3	20.5							
Employee 4	16.59							
Employee 5	23.07							
Employee 6	9.07							
Average	14.57							
Not including Benefits								
April 08 - Jun 08	550							
2008 - 09								
	July 1 - Dec 14	Mainten.	Rink	Custodian	Total Hours	Wage/Hr	Total	%
1	Cutting Grass	423	193	259	875	14.57	12748.75	44.1
2	Weed-whipping	191	20	100	311	14.57	4531.27	15.7
3	Raking Leaves	166	14.25	17	197.25	14.57	2873.93	9.9
4	Flowers/Weeding	149	14	17	180	14.57	2622.60	9.1
5	Marking Fields	112		17	129	14.57	1879.53	6.5
6	Trees/bushes	90			90	14.57	1311.30	4.5
7	Fertilizing/Seedling	84			84	14.57	1223.88	4.2
8	Watering	39		17	56	14.57	815.92	2.8
9	1180 Amherst	38			38	14.57	553.66	1.9
10	Baseball/Softball (June)	25			25	14.57	364.25	1.3
		1317	241.25	427	1985.25			100.00
	Hourly wage	14.57	14.57	14.57	14.57			



Youngs Rd

Youngs Rd

Youngs Rd

B

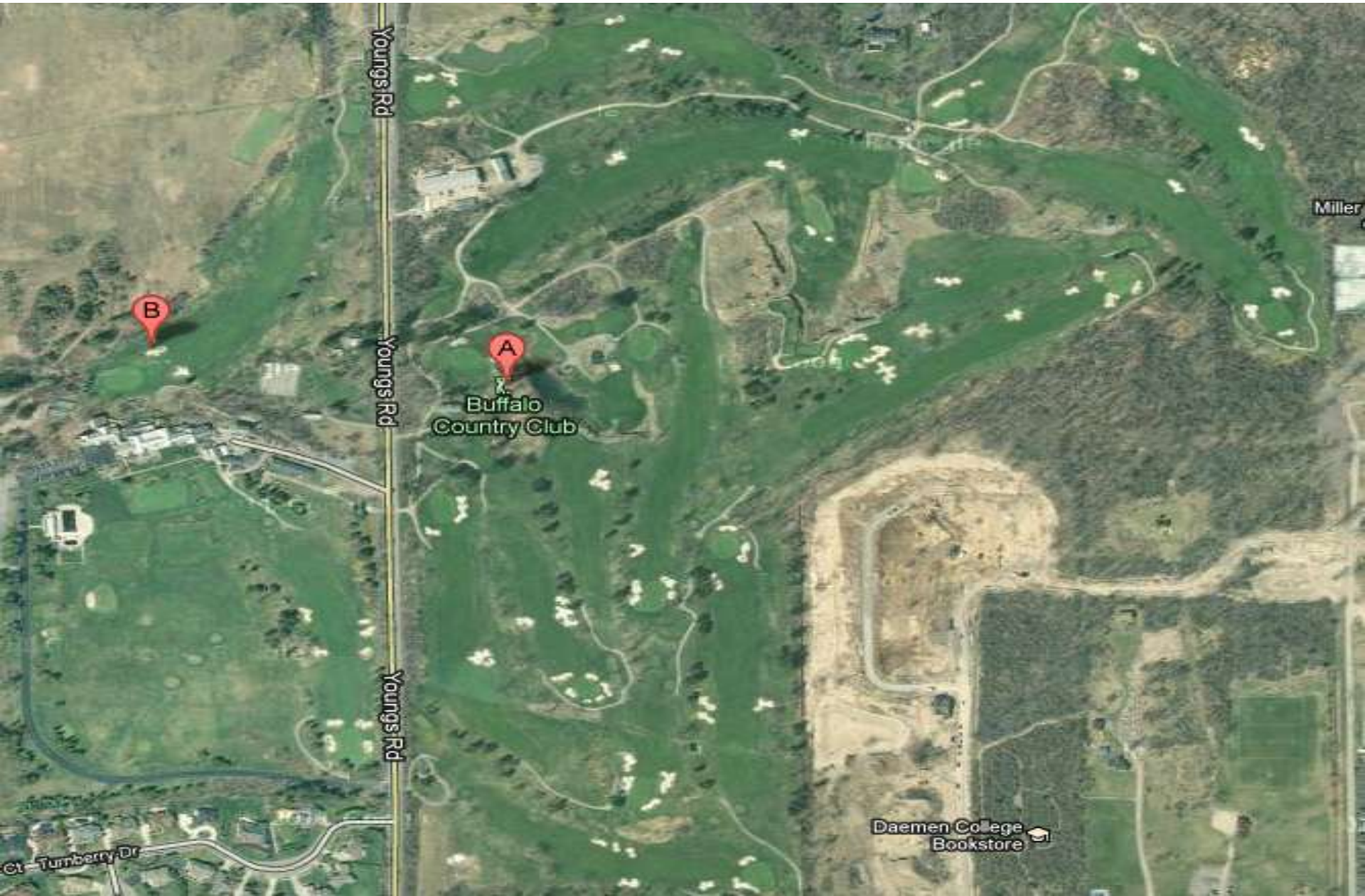
A

Buffalo
Country Club

Miller

Daemen College
Bookstore

Ct Turnberry Dr



Youngs Rd

Youngs Rd

Youngs Rd

B

A

Buffalo
Country Club

Miller

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Bookstore

Ct Turnberry Dr



“The **grass** may be greener on the other side of the fence but you still have to mow it.”

I like it when a flower or a little tuft of **grass** grows through a crack in the concrete. It's so fuckin' heroic.”

George Carlin

Knowing trees, I understand the meaning of patience. Knowing **grass**, I can appreciate persistence.”

Hal Borland

“Every blade of **grass** has its angel that bends over it and whispers, 'Grow, grow.'”

The Talmud

The moment one gives close attention to any thing, even a blade of **grass** it becomes a mysterious, awesome, indescribably magnificent world in itself.”

Henry Miller

You could cover the whole earth with asphalt, but sooner or later green **grass** would break through”

Ilya Ehrenburg

I believe a leaf of **grass** is no less than the journey-work of the stars.”

Walt Whitman

“I asked the waiter, 'Is this milk fresh?' He said, 'Lady, three hours ago it was grass”
Phyllis Dyer

“I would change policy, bring back natural grass and nickel beer. Baseball is the belly-button of our society. Straighten out baseball, and you straighten out the rest of the world.”

Billy Lee, Boston Red Sox Pitcher

Until man duplicates a blade of grass, nature can laugh at his so called scientific knowledge

Grass is the cheapest plant to install and the most expensive to maintain. - Pat Howell

In creating, the only hard thing's to begin; a grass-blade's no easier to make than an oak.

A lawn is nature under totalitarian rule. - Michael Pollan, *Second Nature*, 1991



A U.S. Soldier stationed in Iraq tends his "lawn."

Jason Henderson

Bigger and bigger deal – data matters- decision making on and off the course

Disease mgt

Irrigation

Toro – volumetric soil water content

Hand-held TDR probe

NDVI

Stress

Pallets

Stimpmeter - frustration

Hand held vs systems

Chat rooms – social media, blogs

TGIF – Applied Turfgrass

Ontario – World is changing

Technology

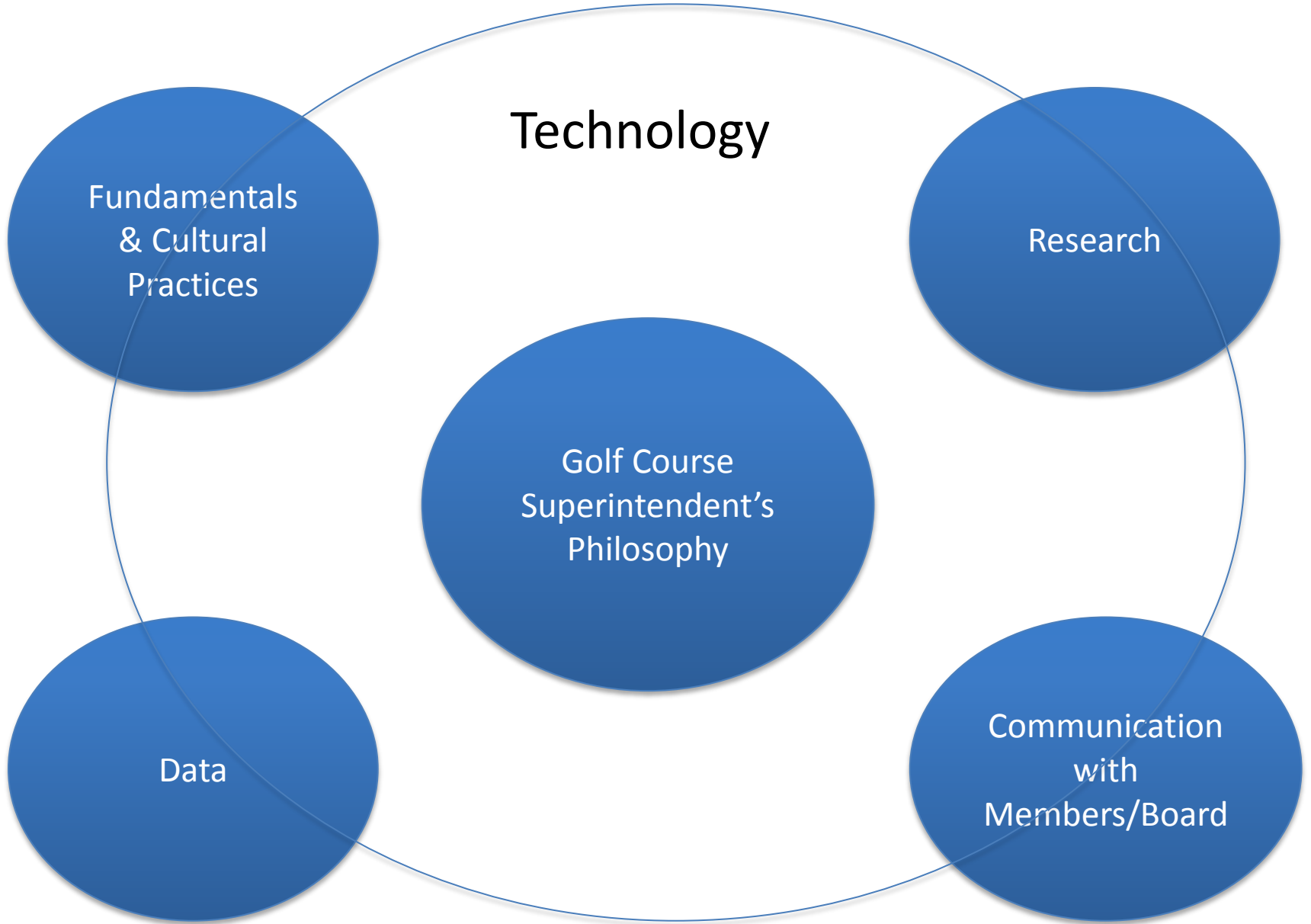
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& Cultural
Practices

Research

Golf Course
Superintendent's
Philosophy

Data

Communication
with
Members/Board



Technology

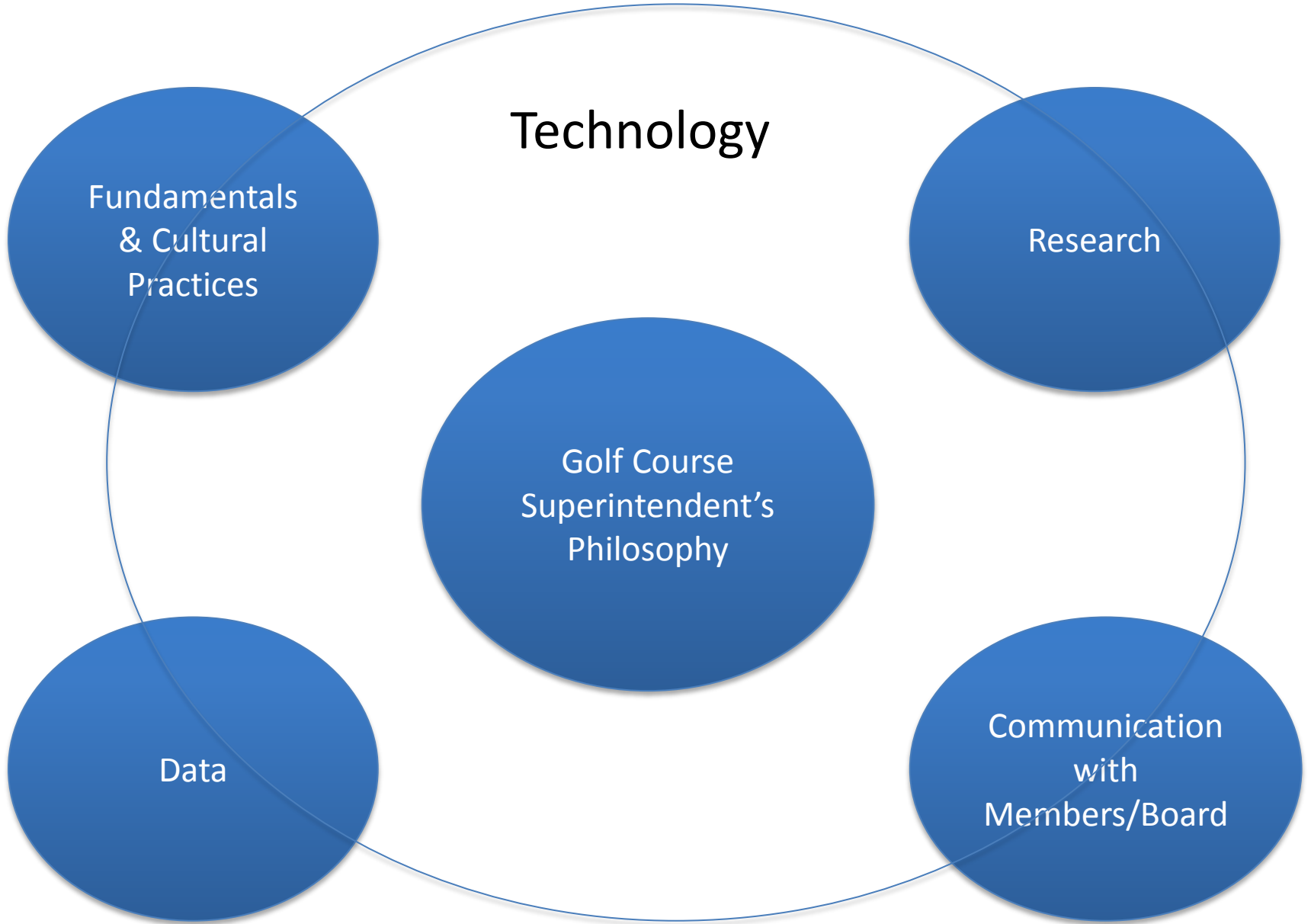
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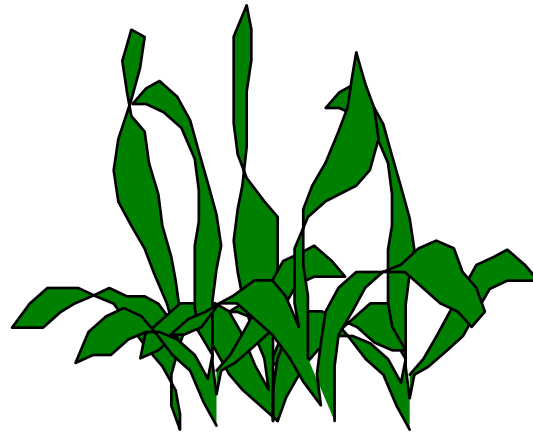
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Turfgrass Fundamentals





Technology

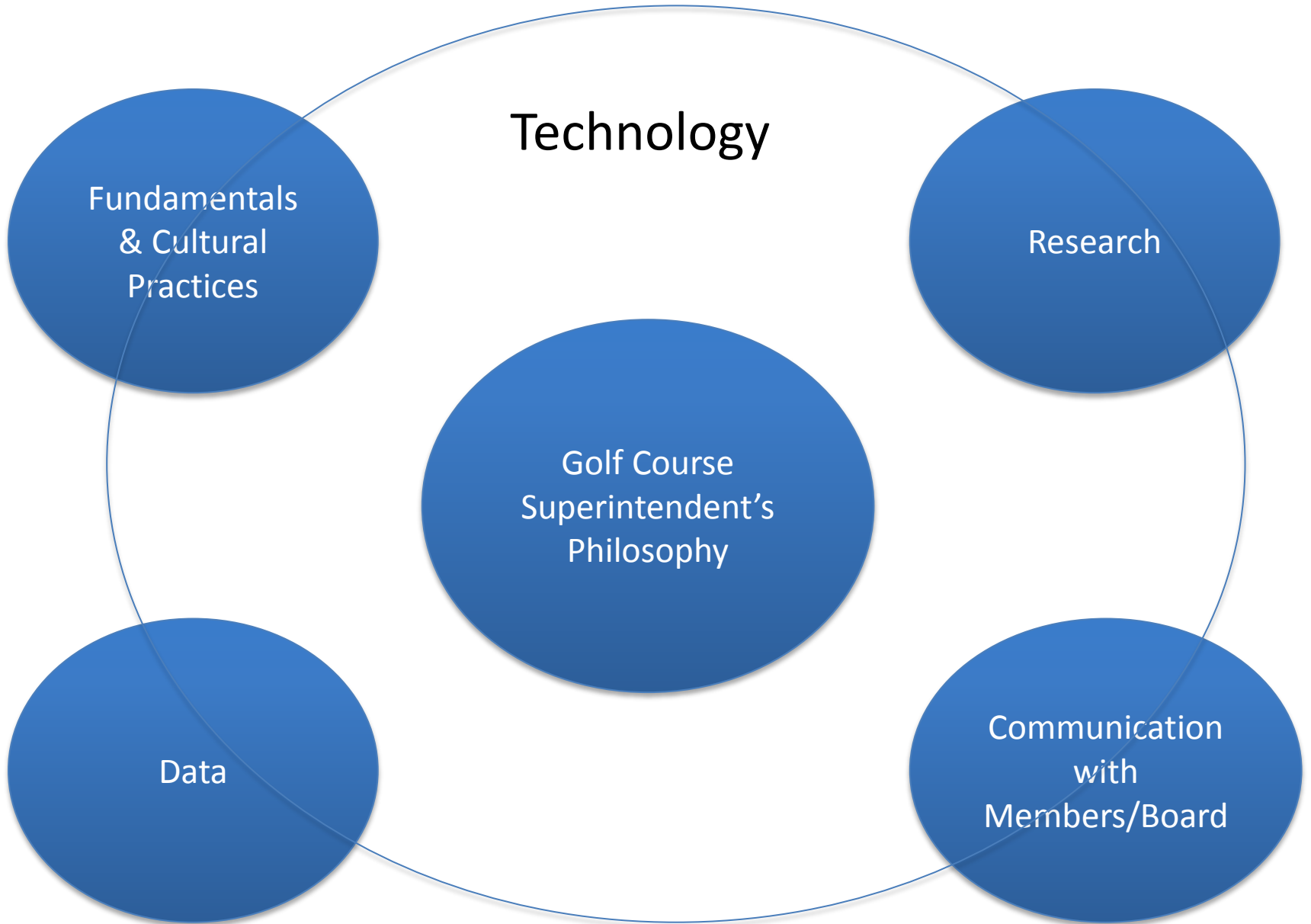
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- ET
- Water budgets





Peak Deceleration Values Averaged Across Particle Sizes in the Trafficked Areas for the Topdressing Study (BTE) at the HTRC, 1994.

----- 17 Oct -----

<u>Rates</u>	<u>Gmax</u>	<u>Duration of Impact</u>	<u>Time to Peak</u>	<u>Rebound</u>
	-- g --	----- ms -----	-----	---- % ----
0.0	67	8.9	5.0	21.0
1/8"	70	8.9	5.0	24.4
1/4"	71	9.4	5.2	28.8
3/8"	69	9.8	5.3	31.7
<u>3/4"</u>	<u>68</u>	<u>11.0</u>	<u>5.8</u>	<u>40.1</u>
LSD (0.05)	NS	0.4	0.3	3.0

Games simulated - 34 games
Soil moisture - 12.2%

