

Agriculture Water Management, Surface Drainage and Grading

Laser Land Leveling and GNSS Landforming

WHY
LANDFORM

THE
TECHNOLOGY

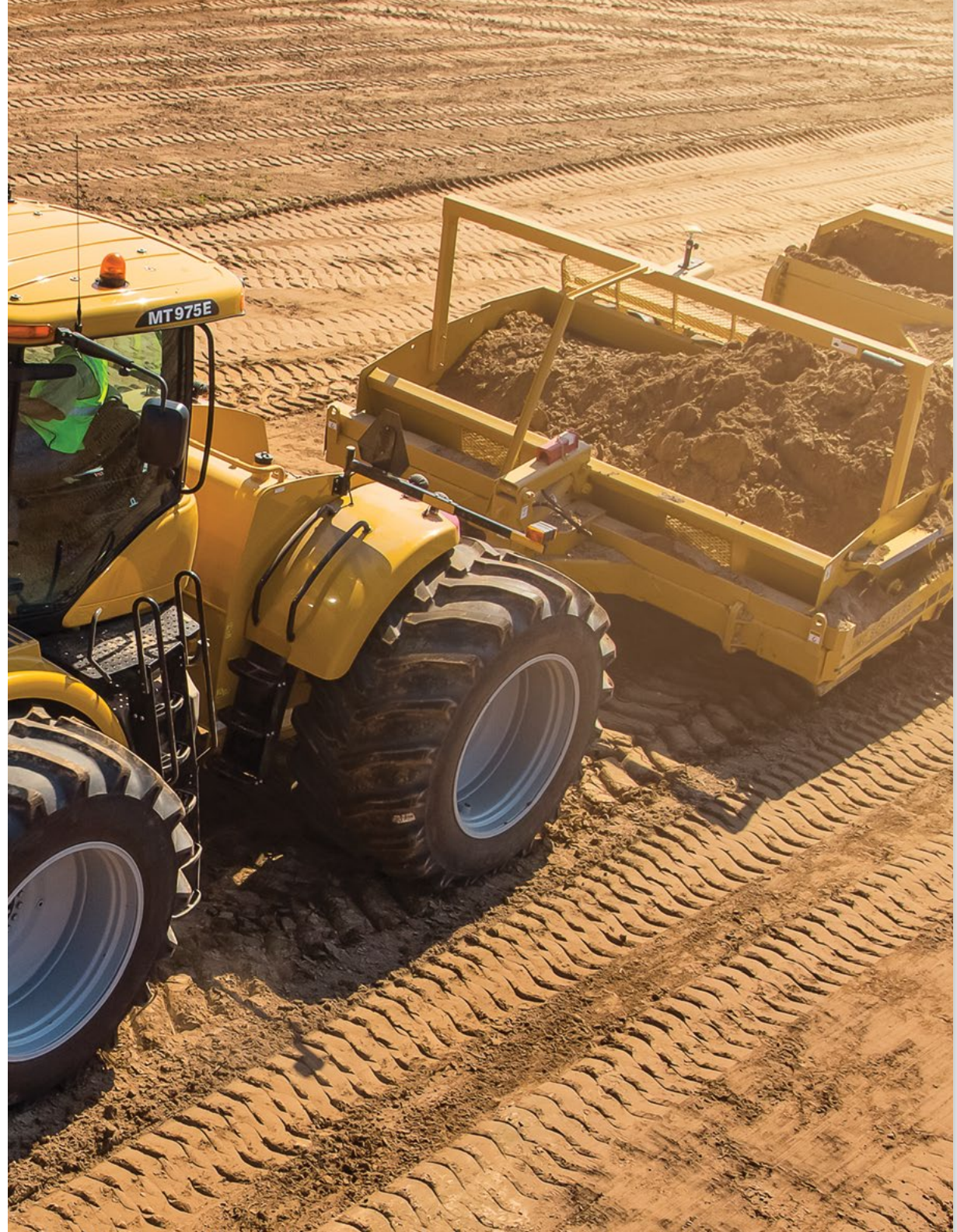
APPLICATIONS

PARTNERS &
INTEGRATION



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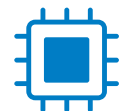
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Topcon Agriculture

High-precision hardware, software and data to bring you efficiency and enhanced productivity to every phase of the farming operation.





LANDFORMING

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Why Landform

It's no mystery that water is essential to every farming operation. Research indicates field drainage has the greatest impact on yield relative to any other factor. It boils down to distribution uniformity, because crops require adequate and equal resources to thrive.

With global uncertainty in allocation, not to mention constant environmental and even political factors, farmers need proven solutions that maximize inputs and land sustainably. Landforming is the practice of manipulating soil to optimize water management and drainage. Modern solutions utilizing laser and GNSS (aka GPS) conform land to best suit operational demands. Technology is the foundation for an effective precision management strategy, from basic flat and single to advanced multi and variable-slope surfaces.



Increase yield through design and uniformity

Landforming technology manipulates soil to better compensate for environmental factors and complement crop requirements. Through planning (surveying), design, and precision execution, farmers can optimize water management, improve drainage, and even increase arable land.

Solutions not only eliminate catastrophic issues such as flooding and excessive runoff, they promote even-resource distribution. Balanced inputs lead to uniform emergence and development, maximizing available water and reducing applications later down the crop cycle. Symmetry enables higher yields and reduced inputs.



Crop Optimized



Promote Uniformity



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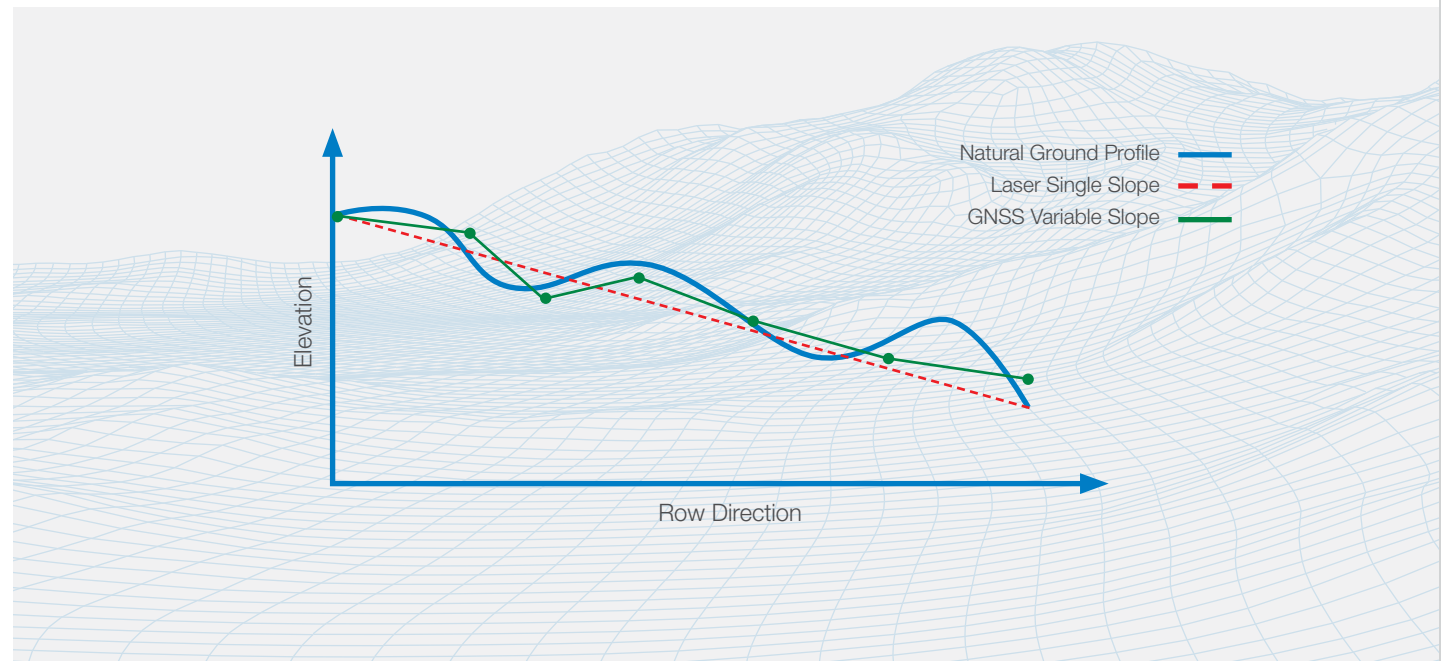
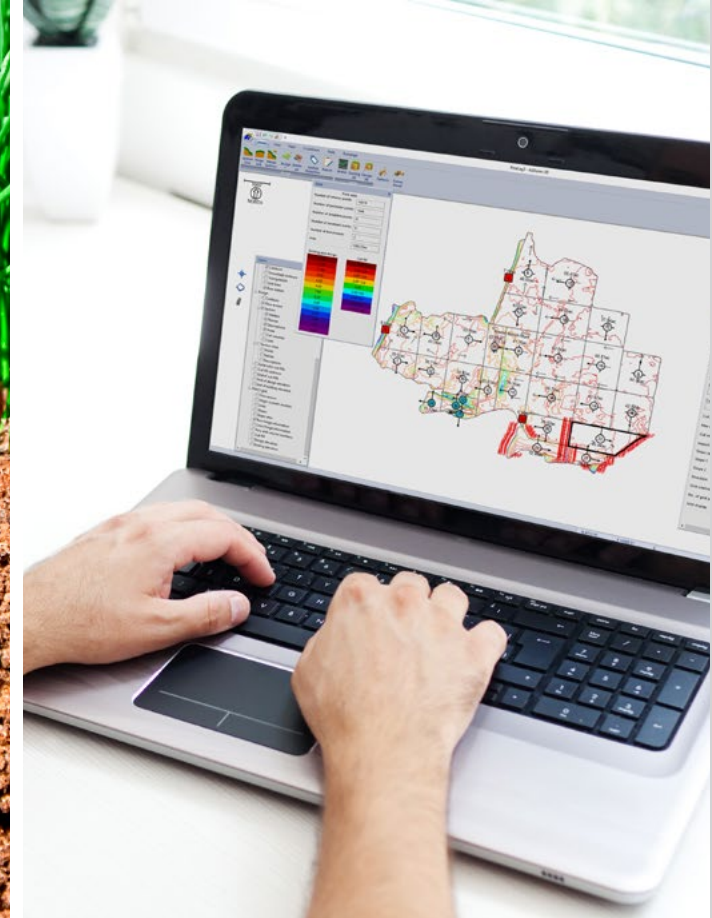
Reduce inputs through precision

While laser land leveling can be relevant in areas with impacted reception (such as canopy cover), satellite-based landforming brings entirely new input reduction benefits. It is easier to set up and operate for improved in-field efficiency, and solutions promote sustainable practices.

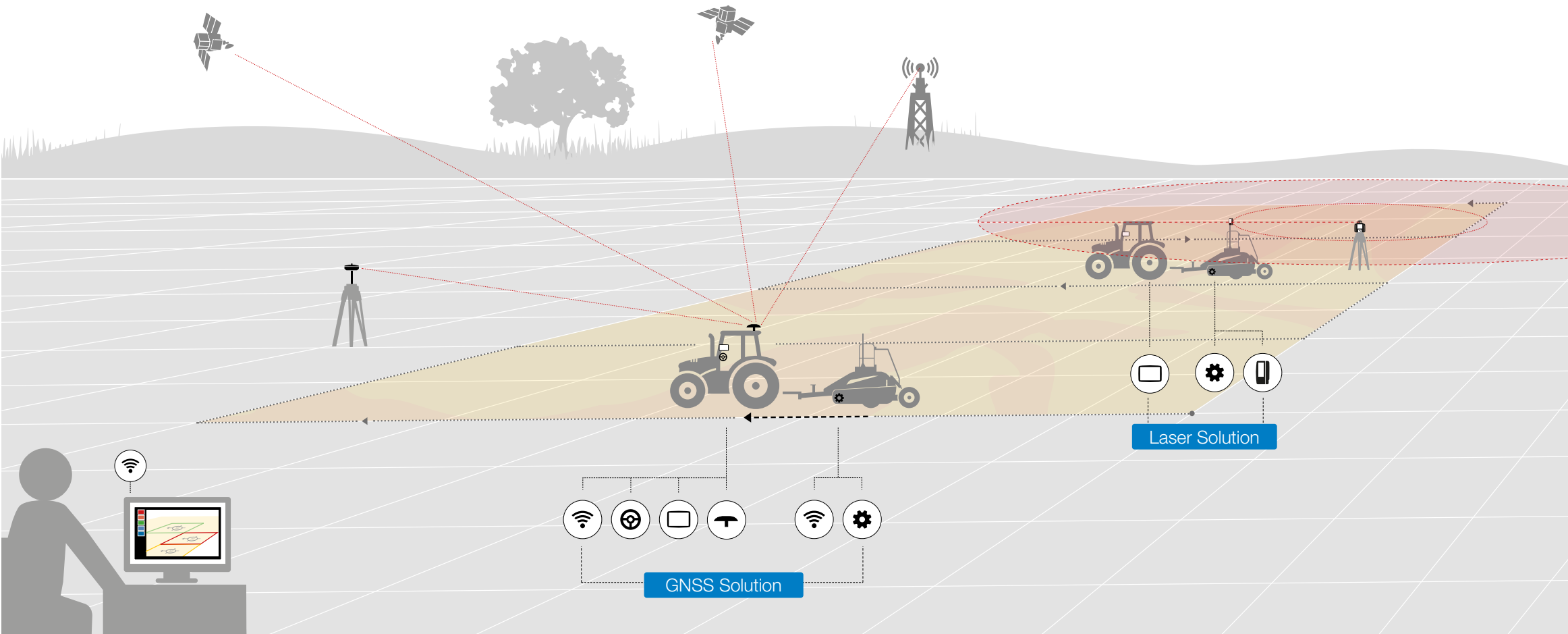
From basic flat, single- and dual-slope planar surfaces to innovative variable slope, satellite positioning enables optimized route planning. In landforming, that means moving the least soil possible, reducing fuel and machine maintenance. Limiting soil disturbance also retains fertility, which is essential to farming longevity.

GNSS Benefits

- 50%+ less soil moved
- Proactive (GNSS) versus reactive (Laser)
- Fertility maintained adhering to natural design profile



We offer Laser and GNSS Landforming Solutions



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Laser Land Leveling

From basic flat to single-slope, Topcon Laser Land Leveling provides proven automatic single scraper implement control, leveling to a defined elevation. The solution is ideal for smaller, more economical operations and basic applications including flat-plane crops and building foundations.

Laser technology can be useful in heavily covered areas (e.g., tree canopies) where satellite can't penetrate.

Featuring

Easy-to-use, proven laser technology

Flat, single- and dual- slope, single scraper control

No outside connectivity required

Universal scraper implement compatibility

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GNSS Landforming

From basic flat and single-slope surfaces to advanced multi- and variable slope designs, Topcon GNSS Landforming offers fully customizable water management control. Comprising three key phases: survey, design, and execution, the solution can suit virtually any crop operation plus many niche applications, including ponds, building foundations and roads.

Operators can efficiently survey with proven base station and rover hardware. Data can be relayed via Bluetooth® to AGForm-3D design software to create tailored planar or variable slope designs. AGForm-3D offers unique patterns that move the least volume of soil possible, maintaining fertility and reducing inputs while optimizing water delivery and drainage. Easily execute by importing to Topcon X Family consoles (XE+ or XE35), including a live positioning and cut/fill map on-screen. Tied to the MC-R3 controller/receiver and MC-A1 scraper antennas, the custom AGForm-3D design is automatically executed through the field.



HiPer VR

XE+

AGForm-3D

MC-R3

Featuring

Flat, single- multi-, variable slope, single or dual scraper control

Complete survey, design, and execution package

Designs move minimal soil

Easy setup and operation. 24/7, dust or fog

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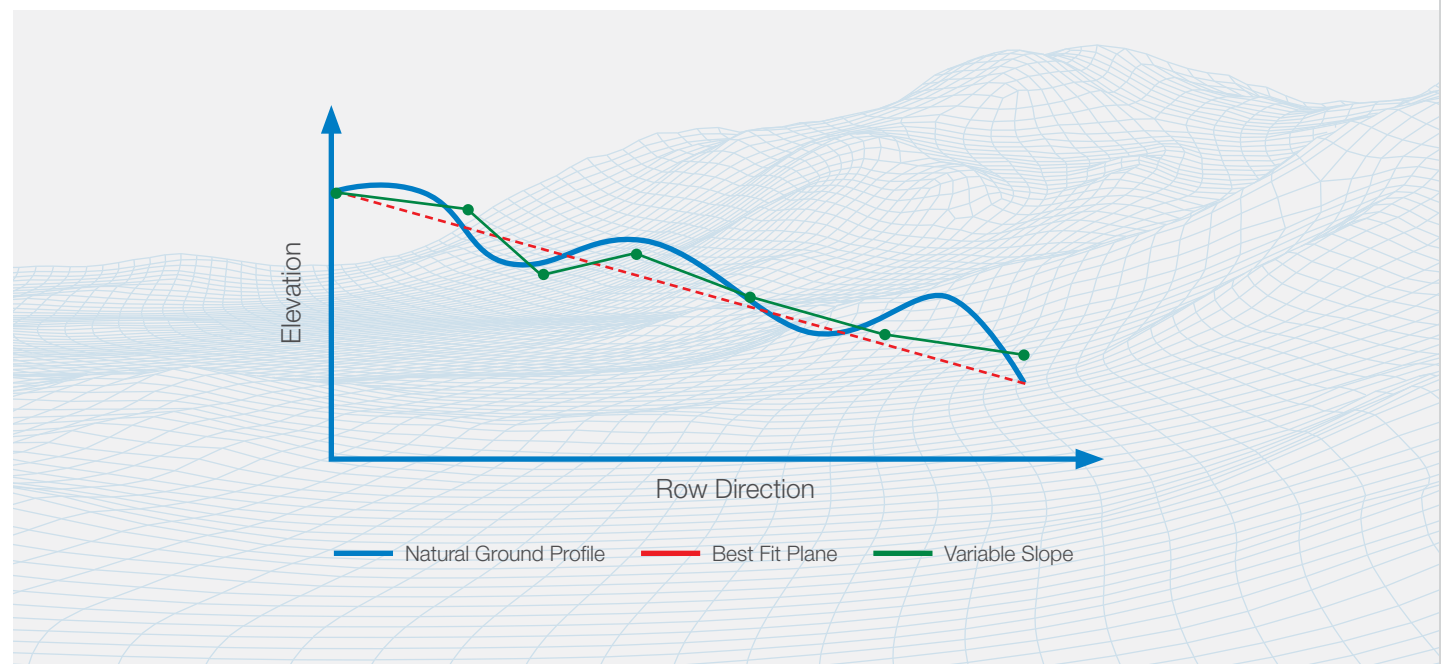
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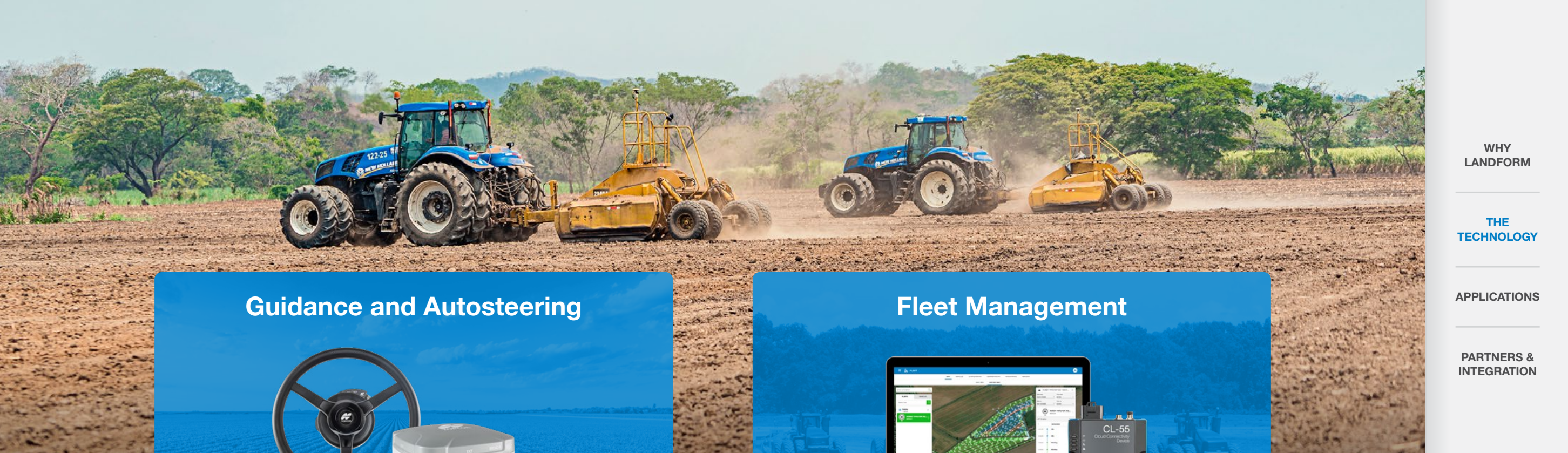
Easy survey. Smart design Effortless execution

GNSS Landforming has revolutionized land leveling by streamlining workflows and enabling designs that just aren't possible through previous laser methods. Our surface drainage expertise is produced through decades worth of engineering research to understand optimized patterns based upon operational requirements. We offer an array of and continue to develop unique design algorithms.

Our innovative survey and design software, AGForm-3D, allows farmers to go beyond simple planar designs to variable slope, complementing environmental and crop production factors. The designs not only allow for customized water management and drainage, they enable significantly less soil movement (i.e., only what's necessary) by retaining natural designs. That means fewer development inputs and better soil health for increased production.

	<p>Planar Flat, single, dual, multi, hinged</p>	
	<p>Variable Slope Crop and environment complementary</p>	





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Guidance and Autosteering



Guidance is the key to accuracy and the heart of precision farming. We offer modular solutions to suit virtually any machine and operation.

Each farming operation may have differing accuracy requirements, which is why we offer a full range of correction services via Topnet Live network corrections or localized base stations. Whatever the application, choose flexible options to form the right solution for optimal reception, accuracy, and repeatability.

Fleet Management



Monitor and manage machines through TAP Fleet and CL-55 cloud connectivity device telematics. Beyond a powerful landforming solution to optimize water management, we can help track the benefits too.

Suited for nearly all crops and many niche applications



Commodity Crops

Corn, soybeans, wheat, cotton, rice, etc.



Specialty Crops

Fruit, sugar cane, vegetables, vineyards, orchards, etc.



Niche

Driveways, roads, horse tracks, building foundations, etc.

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Click on the image to watch a video.

Use case

Hacienda Solimar – GNSS Landforming Enabling Vertical Integration

Problem

Hacienda Solimar is a unique operation in Costa Rica focused on sustainable livestock management. Suffering from expensive third-party feed costs and low production on site, a solution was needed to allow continued expansion and scale livestock production profitably.

Solution = Topcon GNSS Landforming

- 1 Enabled vertical integration to produce own feed
- 2 Created arable land where crops wouldn't otherwise grow
- 3 Reduced soil movement and machine fuel consumed
- 4 Enhanced crop quality and quantity
- 5 Boosted livestock production

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Use case

Louisiana Contractor Reaps the Reward of GNSS

Problem

David Bader has been on the front lines of precision landforming and construction sitework for decades. Successful with laser technology in the early 2000s, he needed a way to better scale his services and guarantee reliable results through long working hours.

Solution = Topcon GNSS Landforming

- 1 Improved organization – All software consolidated into one PC
- 2 Improved efficiency; design software reduced overall passes
- 3 Reduced fuel and machine maintenance through design
- 4 Maintained fertility by moving less soil
- 5 Reduced worker fatigue with more reliable output



Click on the image to watch a video.

Use case

Azucarera El Viejo - Boosting Sugar Cane Production in Costa Rica

Problem

Azucarera El Viejo leads the Costa Rica rain-fed sugarcane industry, with roughly one million tons annually. Laser land-leveling survey and design were deemed too inefficient for such a large operation – they needed an alternative.

Solution = Topcon GNSS Landforming

- 1 Reduced labor with GNSS survey and design software
- 2 Increased production with customized variable slope design
- 3 Reduced fuel and maintenance, moving 50% less soil compared to the previous laser approach
- 4 Improved efficiency with easy-to-use workflows

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Use case

Ingenio Taboga - Expanding Capabilities in Rice and Sugarcane

Problem

Ingenio Taboga, a large sugar producer in Costa Rica, began land leveling their rice ground with our laser solution in the 1980s. After the success of field leveling rice, Taboga began to level their sugar cane fields. Although field leveling was improving production, too much labor was spent on survey and design.

Solution = Topcon GNSS Landforming

- 1 Reduced labor through GNSS survey and design software
- 2 Improved furrow development and production by integrating autosteering
- 3 Ensured quality through post-survey verification

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Committed to Partners and the Industry

We are the ideal partner for developing advanced solutions for your positioning, agriculture and machine control challenges. Our experience, technical expertise, and overall company strength make us uniquely qualified to provide enhanced automation technology. Ultimately, this will drive your customers' productivity - and your market share - to ever-higher levels.

SPEED TO MARKET | GLOBAL NETWORK | EXPERIENCED OEM TEAM

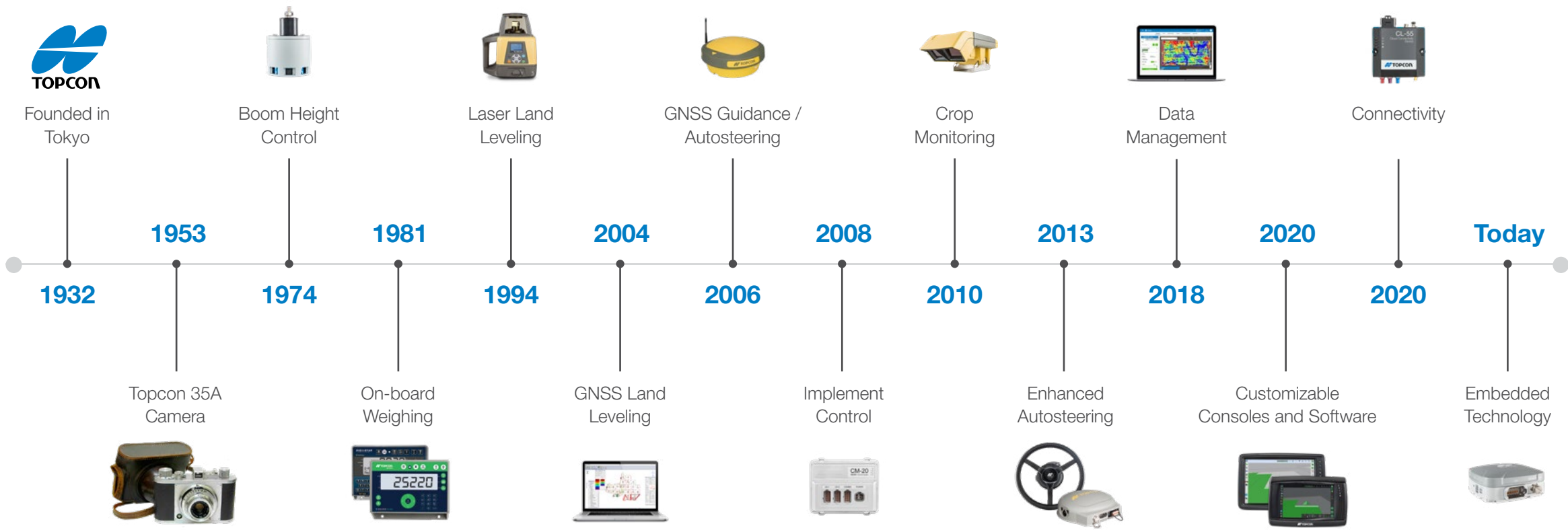
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A History of Topcon Corporation in Agriculture



Note, displays current product images in reference to when development began.

Trust Topcon to get you there faster with high-quality positioning and automation solutions tailored to your product strategy.

Independent solutions

In an industry with many contractual alliances, we remain independent. We have the freedom to develop technologies that best fit your unique goals. Our custom OEM solutions are all clean-sheet designs, providing more opportunities to differentiate your product from the competition.

Speed to market

Product development carries an inherent pressure to do everything faster and better than before, particularly since technology is only viewed as innovative if it arrives before the competition. Our experience helps simplify and shorten the design process, allowing you to go to market with your product faster – and with the utmost confidence.



Topcon Training Center,
Livermore, CA

Topcon Technology
Roadshow Truck

Topcon Positioning Systems Headquarters,
Livermore, CA

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4900+ Employees | 2150+ Patents

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Global Network

With an extensive worldwide network of corporate offices, R&D centers and technical groups, we have an unmatched capability to assist any manufacturer, no matter where they are located, with fully integrated machine automation solutions. This also positions us to create programs to assist and support dealer networks, directly or through extensive training programs.

Experienced OEM Team

Our experienced OEM team knows what questions need to be answered first and the potential pitfalls to be avoided along the way. Their first objective is to make sure our technology is the right fit for your application and be your partner every step of the way.

Easily Integrated Modular Technology



Guidance

Consoles

Steering



ACU-1



EHi Valve



Correction Services

GNSS Receivers

Base Stations & Reference Stations Network



MC-R3



Digital Farm Management

Data Software

Connectivity

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Click a product block to be directed to the respective web page.

Customizable Solutions for Every Application













Soil Preparation

Landforming and Drainage		Tillage	
		 <p>Strip Till Control</p>	
Hardware			
 <p>MC-R3 Receiver/Control</p>	 <p>TM-1 Electric Mast</p>	 <p>HCM1 Controller</p>	
 <p>System 5 Series Controller/Display</p>		 <p>UC7 Ultrasonic Sensor</p>	
Software			
 <p>AGForm-3D Survey/Design</p>		 <p>ISO BUS</p>	












Seeding

Seeding	Planting	Transplanting
Hardware		
 <p>Apollo CM-40 Controller</p>	 <p>Artemis AM-1 Controller</p>	 <p>Apollo CM-20 Controller</p>
 <p>MFDC 100 Seed Drill Monitor</p>		 <p>CAN Motor</p>
Software		
 <p>ISO BUS</p>	 <p>ISO BUS</p>	 <p>ISO BUS</p>
 <p>ISO BUS</p>		




Crop Care

Spreading	Spraying	Crop Monitoring
Hardware		
 <p>SL2 Convertor (Weigh)</p>	 <p>Apollo CM-40 Controller</p>	 <p>HCM1 Controller</p>
 <p>Apollo CM-20 Controller</p>	 <p>LMS-20 Sensor</p>	 <p>UC7 Ultrasonic Sensor</p>
Software		
 <p>ISO BUS</p>		 <p>ISO BUS</p>
 <p>ISO BUS</p>		

Click a solution/product block to be directed to the respective web page.

Customizable Solutions for Every Application









Harvest


Yield Monitoring


Grain Cart Weighing


Hardware

 YM-1 Controller	 Optical Sensor	 YM-2 Controller	
 Moisture Sensor		 Load Sensor	 Load Sensor

Software


 ISO BUS


 ISO BUS









Weighing

Material Handling / Onboard Weighing

Universal Weighing

Hardware

 Pressure Sensor	 SL2 Converter
	 Cab Control App Indicator
 Pressure Sensor	 Load Sensor









Feed Management

Livestock Weighing

Feed Mixing

Hardware

	 Load Sensor	 2810BT / 3410B Indicator	 TAP FEED App
 Weighing Platform		 SL2 Converter	 Load Sensor

Software

Click a solution/product block to be directed to the respective web page.

Committed to Sustainability

The work we do as an organization complements and supports the sustainable development goals adopted at the UN Summit in 2015.

“The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice.”

To learn more about our commitment to sustainability visit:
topcompositioning.com/sustainability

2 ZERO HUNGER



Zero Hunger

Our tools improve the management and measurement of cropping areas and sustainable agriculture. Through automation, we are helping create more productive crops and increase harvests, which leads to an improved food system and less food shortages.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Industry, Innovation and Infrastructure

We help farmers be more productive through proven, innovative agricultural precision measurement technology, resulting in increased productivity, larger yields and reduced labor.





topconpositioning.com

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