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## From Buzzing Dragonflies To Interactive Tech Dominance: The TSI Touch Success Story

**By Dave Haynes**

TSI Touch has grown from a start-up so rough and tumble its first facility had open windows and dragonflies sporadically buzzing around inside, to some 13 years later being the dominant U.S. supplier of touchscreen solutions.

While a lot of fast-growing technology companies put a premium on marketing flash and sizzle to promote and sell their products and services, the TSI Touch crew have taken a much quieter approach – growing by building business relationships and operating largely like a big, affable family.



World headquarters is now five times the size of the original space, but it remains the polar opposite, as optics go, of the head offices of many tech companies. It's a warehouse that's seen better days parked in an Appalachian hill country field outside of Uniontown, Pennsylvania,

an old coal and steel town of 10,000 that's about an hour's drive from Pittsburgh.

Or maybe 45 minutes ... if TSI president John Przybylinski has the wheel of his truck.

Despite the outward appearance of a bunch of folks you'd enjoy hanging out with at a backyard barbeque, and there is indeed a giant charcoal smoker and picnic tables by the front entry, TSI Touch is a serious, ISO-certified supplier and backer of sophisticated touchscreen and protective solutions, with a clean room for sensitive electronics and a robotics set-up they're still working out how to best use.

The company crosses a lot of applications and markets, but roughly 70 percent of what it ships and does involves digital signage in some way.

Przybylinski, or JP as he is known around the company, gently made it clear on a visit and tour of their digs last fall that he prefers to call what they do and offer solutions. That's important, he says, because there is much more going on than just making and selling touch overlays and the other components that make screens interactive.

TSI Touch also does solutions that do everything from putting privacy filters on displays much larger than desktop monitors, to designing a now-patented ruggedized glass case and mount system that protects balls, and who knows what else, from damaging the big LED replay and scoreboards mounted up on gymnasium walls.

They've also done things like drafting table set-ups for architects and slick, multi-touch interactive solutions for use-cases like museums and corporate briefing and experience centers.



## Enabling Interaction

The primary technologies now being used in the pro AV and digital signage marketplaces are infrared, or IR, and projected capacitive – more simply called P-Cap. In both cases, they're taking the place of a computer mouse.

IR uses LEDs and photo-detectors to create and manage an invisible grid of light beams cast across a screen. When a user touches the screen, that action interrupts the light beams and tells the system the location of the touch point, which gets translated into user inputs.

P-Cap is very different – a physical layer of nano-thin electrical wires on top of displays that detect and respond to touch interactions. P-Cap is the touch technology used for smartphones, tablets and other personal devices that enable the flicks, scrolls, pinches and zooms that everyone from little kids to seniors has mastered in recent years.

IR is essentially a frame around the edges of a display, driven by a controller, while P-Cap involves more electronics, and is therefore much more costly. While P-Cap might be the preferred option because of its ubiquity in the consumer device market, TSI sells much more IR – driven by lower prices and performance improvements.

Early IR, going back 15 years and more, “just wasn't good,” says Przybylinski. “But now, IR is solid, it's accurate and it just runs.”

Because LED displays are increasingly manufactured with a coating that protects otherwise fragile electronics, TSI is also now enabling touch of fine-pitch LED video walls – including a complicated blend of hardware and math that enables IR touch on a curved LED wall from Planar.

TSI also works with and offers a precision IR product from a Canadian supplier, ShadowSense, that is particularly well-suited for interactive displays that need accurate and fast touch

tracking, and can distinguish between different types of touches, such as finger touches, stylus input, and object recognition.

## Meeting Custom Needs

There are commoditized touchscreen monitors available on the market, but their one-size-fits-all designs often don't fit the more exacting needs of integrators and their end-user clients. So they turn to TSI.

While TSI has a long list of product SKUs it can just sell and ship, much of what the team does is sourcing, developing and customizing the electronics and other components that make displays interactive for a variety of needs that aren't satisfied by cookie-cutter, universal solutions.

“We always say, if we're not designing a couple of things every week, we're failing ... because we need to keep everything fresh,” Przybylinski explains. “Our custom work on a new design can be anything from changing the type of glass on something that we've already built, to coming up with something that's entirely new. We did a little north of 400 new designs just last year.”

That custom work might be sophisticated electronics, or simply finding a new hardware answer to a problem. VP Sales John Bowab, who has been with the company since its dragonfly days, related the story of an athletic wear retailer that has high-brightness displays hanging in store windows, facing out to pedestrians.

The screens were fine, says Bowab, but the back-sides visible inside the store were steadily getting damaged, and the integrator was running up big bills for on-site repairs. So TSI designed and fabricated a protective metal shield for the display's rear that was simple enough to package up and ship to stores, and be dropped into place easily by a store manager. The cost savings were huge, and the damage ended.

TSI designed another solution for a mobile 55-inch touchscreen used by a hospital group in physical therapy sessions. The hospital group didn't think they had the people or training to unbox and assemble the components on site, "so they asked what we could do to make it easy?" recalls Przybylinski.



His team designed and built a shipping system that means the touchscreen and its components come out of the box ready to plug in, even adding a custom, drop-down wooden ramp at one end of the shipping box so that the display just rolls out.

TSI's custom work can also be about simple things, like taking some of the weight out of metal enclosures.

### Filling A Void

The major display manufacturers tend to jump in and out of the touch screen business, and are mostly out of it now – creating a marketplace void that TSI Touch has happily filled.

The challenge for those very large companies, who in theory could crush a small firm like TSI, is scale – or the lack of it.

Large manufacturers like Samsung and LG are chasing business that involves orders of thousands of units, while touchscreen demands tend to be a low volume niche. Building and shipping touch-enabled flat panels can require a big manufacturer to shut down a production line to produce a relatively small number of units, with no certainty they'll sell quickly.

"Between them all," says Przybylinski, "it's just not a big enough venture for them to say, 'Let's invest a lot of money in this.' But ... it **is** big enough for us."

So the major display manufacturers who could have been competitors are instead suppliers and business partners, sending interactive opportunities they can't directly deliver to TSI – staying in the deals because their display panels get integrated with TSI's touch solutions.

That scenario has also seen manufacturers working more closely with TSI and reducing the number of times TSI had to retool when new generations of display panels were released with different dimensions – larger, smaller or thinner. Different sizes often meant TSI's precision engineering was nullified.

"We have stressed so much through the years: If you didn't change the cabinet dimensions again, that would be great," says Przybylinski. And now they get it."

### Culture Matters

With 55 people now on staff, TSI Touch is one of the larger employers in the Uniontown area. The people who've joined the company have tended to stick around, because the incentives are there both financially and socially.

TSI has an Employee Stock Ownership Program, and great benefits that include an open, undefined vacation policy built around trust instead of defined time periods. Staffers take breaks when they need them.

Some members of the production team are guys who years earlier played on youth baseball teams that Przybylinski coached in Uniontown.

Founder Gary Mundrake, who started the company by taking over the touch screen business of a DC-area defense contractor, stepped back from the President's role two years ago, handing the top post over to Przybylinski, who was at the same defense company as Mundrake and was one of the four TSI originals.

Mundrake remains involved, serving as CTO.

One particularly telling aspect of the company's culture and mindset is how it does trade shows. While most hardware suppliers are relentlessly focused on showing and pitching their products on the exhibit hall floor, TSI Touch stands look and operate more like hangout spots - with beer, food, lots of swag and zero sales pressure.

There is product around the stand, but the real mission is building and nurturing relationships.

## Surviving COVID

When the pandemic developed in early 2020, and it wasn't entirely clear what was happening or why, touching public surfaces was seemingly the last thing a lot of people were willing to do - and business prospects abruptly went south for a company in the business of providing touch solutions.

With time, it was evident the bigger concern was with airborne transmission than viruses residing and being transferred by surfaces, but there was a long stretch when end-users were steering clear of touch solutions. The pro AV business, as a

whole, also dipped because of tightened budget and massive supply chain issues.

"We got hit in the face with the pandemic, when, as you know, nobody wanted to touch anything," recalls Przybylinski. "We just kind of looked around and said, 'Okay, we may have to do some other things, too.' And that's worked out."



Handling, consolidating and shipping sensitive electronics in-house was already second-nature to the TSI Touch team, so they accelerated a services side of the business that had already been organically building up pre-pandemic.

"What we found was customers didn't want to have to cut two purchase orders, one for the touchscreen, one from the display. The display would either show up or the touchscreen would show up, and the other item would come in two weeks later, and they'd lose it in their warehouse. Then they had to take them out of the box, and they had to put them together, and hang them on a wall," says Przybylinski.



“So then we started selling the displays. Then we started selling the mounts, and we ended up doing everything for some clients.”

For a retail media network in a big box store, the solutions provider now focuses on what gets to screens and how it looks, having struggled for years to get multiple suppliers to coordinate shipments and integrations.

“We said, ‘We’ll do that. We’ll kit everything. We’ll get the media player, the mounts, the monitors, the projectors, we’ll flash the hardware, program the equipment, include the cables, speakers, everything ... so you don’t have to.’”  
Ironically, and perhaps surprisingly to many observers, the pandemic did not kill the touchscreen business, but actually boosted it. Staffing shortages, operating restrictions and efforts to minimize face-to-face interactions in retail, dining and other scenarios led to a rapid rise in self-service screens.

While touchscreen ordering was already emerging, particularly in the fast food sector, using them allowed operators to minimize

interactions at order and pick-up counters, also reduce staffing needs in the midst of labor shortages.

### Customer Happiness

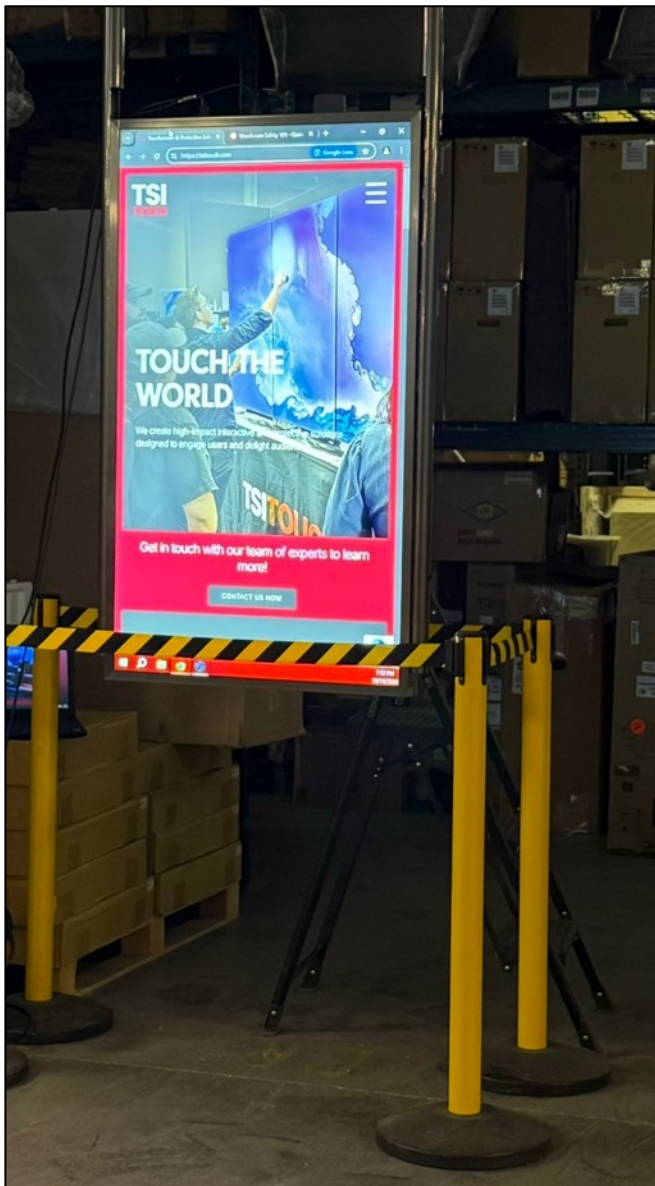
Good customer service is fundamental with just about any technology supplier, but in the context of digital signage and pro AV it’s amplified – because touchscreens highly specialized and less familiar than a lot of the other gear integrators and end-users deploy and manage.

“Our customer service department is just ridiculously good, because they not only do they know touch, but they also know about how to fix monitors, how to fix players, software ... because that’s what we do, right?” says Przybylinski. “We have to know every other part of it, because when someone calls because the touch doesn’t work, the majority of time the touch is actually fine and it is something else. But we have to find that problem.”

That’s helped build up trust and loyalty, and helped grow the business overall. “We’ve gone,

quite frankly, from four people 13 years ago to 55 now, and we have what we believe is a good name in the industry," says Przybylinski. "Yeah, once you lose that, you're pretty much done, as far as we're concerned. So, so let's do the right thing."

It's also brought in different relationships. TSI is now the U.S. repair depot for a Canadian specialty display manufacturer, meaning it has side-step cross-border paperwork and extra shipping costs, and also end a situation that was seeing material taking weeks to come from China.



TSI also work closely with the Portuguese tech firm DISPLAX to handle North American orders for its Projected Capacitive (PCAP) multitouch film technology.

### The World Needs More Touch

One of the tag lines used in company marketing pushes the point that the World Needs More Touch.

The COVID era temporarily chilled touchscreen interest, and touch companies have long had to deal with stories that pop up in the media about the invisible crud found on public-access screens when they were swapped and tested for pathogens. The media coverage tended to ignore the many other surfaces that the public also touch, endlessly and all day, like door handles and rail systems.

There have also been technologies surfacing through the years that were presented as alternatives – most notably gesture interfaces that rely on camera tracking and smartphone web apps that put screen navigation controls on handheld screens.

Both involve a learning curve and, especially with the many variants of gesture, fun and experience tend to be at the expense of accuracy and speed. Voice may have a role in some types of interactions – like drive-thru ordering – but it is still early-stage technology.

Przybylinski doesn't see touch being supplanted anytime soon by other emerging technologies. "As long as people have a phone that they're touching, touch is going to be around."

AI-driven voice, for example, is asking for people to bark out sometimes sensitive information in loud environments – risking information being compromised. "Do you really want everyone hearing your private information?" he asks. "I think voice is for specialized, very niche opportunities."



While the display industry is steadily evolving, touch is somewhat settled. When observers talk about technologies like microLED and OLED, future adoption tends to hang on certain things – like brightness or manufacturing efficiencies – finally being worked out.

The touch business is pretty much there, and development now is more about incremental improvements, making something a little bit better, or at a little less cost.

We are always encouraging our new design team to try new stuff, break things, do something that you think I can't look at. That'd be pretty cool if it could continue to push to the edge to see if we can find that one thing that is that is missing, right?



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### TSI Touch

Uniontown, PA

TSI Touch is a company dedicated to providing one product: commercial grade touch screen solutions. We've built our reputation for customer focus by providing the right touch solution for each customer's applications.

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