



**3 WAYS 3P EVENTS CAN BOOST EFFICIENCY,
SPEED TIME TO MARKET, AND SAVE COSTS**

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REAL CUSTOMERS ON 3P:

“Very well run!
Worthwhile, detailed,
organized, and prepared.
Makes you dive deep
into aspects of process
that you would not
typically think about,
especially if you’re not
directly involved in
manufacturing.”

FOR MORE THAN A DECADE,
VIANT TEAMS HAVE BEEN
LEVERAGING LEAN PRODUCT
DEVELOPMENT AND
LEAN PRODUCT LAUNCH
TECHNIQUES TO IMPROVE
PRODUCT QUALITY, LOWER
COST, AND SPEED TIME
TO MARKET.

REAL CUSTOMERS ON 3P:

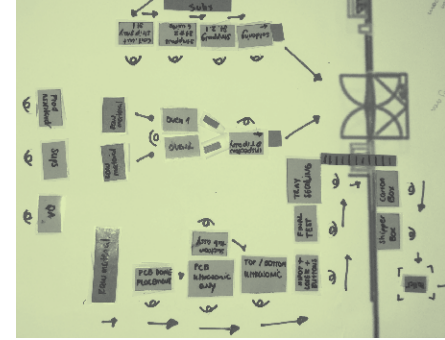
“Labor content was reduced by 50% compared with expectations, which is an incredible accomplishment.”

PRODUCTION PREPARATION PROCESS (3P) IS A LEAN PRODUCT LAUNCH TOOL THAT HAS BEEN PARTICULARLY EFFECTIVE FOR OUR CUSTOMERS.

3P events bring stakeholders together to identify and reduce waste in every step of a process, thereby increasing efficiency, de-risking the manufacturing process, and compressing the timeline. The 3P experience also develops more collaborative, aligned teams that drive success even beyond the 3P event. Viant has conducted dozens of 3P events for customers ranging from startups to large global corporations.

WHEN YOU SHOULD CONSIDER A 3P EVENT:

- ✓ New product development
- ✓ Significant changes in volume
- ✓ Product design changes
- ✓ Manufacturing transfer
- ✓ Capital expenditure approval

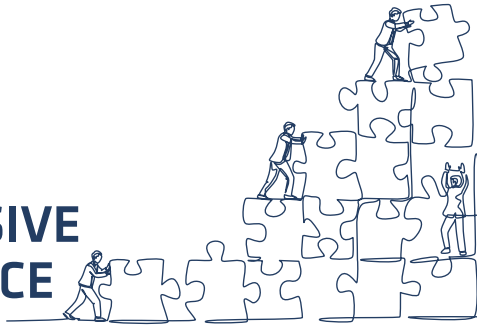


REAL CUSTOMERS ON 3P:

“Very good use of our time. The team did a great job leading us through the week. We came away with actionable plans that will improve our efficiency and output.”

3P REAL-LIFE EXAMPLE

MINIMALLY INVASIVE ORTHOPEDIC DEVICE



3P Helps Reduce Labor by 50% and Launch 2 Orthopedic Surgical Devices in Parallel

CUSTOMER SITUATION



- Global medical device OEM engaged Viant to transfer complex, minimally invasive orthopedic surgical device
- No information available about current manufacturing process
- Timeline became increasingly aggressive due to supply issues
- Six months later, customer added second device to launch in parallel

VARIANT 3P SOLUTION



- 3P team collaborated to define:
 - Manufacturing process
 - Equipment
 - Material flow
 - Cleanroom footprint
 - Cycle time
 - Labor required
- Viant conducted second 3P event to streamline dual launches
- Collaboration, partnership, and trust were key

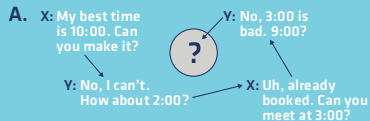
RESULTS



- Reduced labor by 50%
- Compressed timeline by 3 months by increasing resources and adjusting scope
- Eliminated need for additional assembly line
- Decreased takt time
- Minimized capex
- Second device will launch in parallel with first, despite starting 6 months later
- Customer is partnering with Viant on additional projects

HOW 3P EVENTS CAN BOOST EFFICIENCY, SPEED TIME TO MARKET, AND SAVE COSTS

Serial Approach



Set-Based Approach



1. ALIGNING STAKEHOLDERS FOR MORE EFFICIENT, EFFECTIVE DECISIONS

3P events bring together a diverse team of stakeholders from both Viant and the customer's organization.

The group then evaluates a range of options together—rather than serially—to make decisions more efficiently and effectively.

In a 3P event, team members use a Lean tool called set-based design to identify a set of options (rather than a single concept), gather performance data for each, and eliminate choices until the best one emerges.

Having all stakeholders at the table allows for efficient decision-making. This approach reduces the number of serial iterations, which reduces labor and cost, and ultimately, increases the likelihood of a product launching on time.

FIGURE 1. SERIAL APPROACH VS SET-BASED APPROACH

Take a simple example of setting up a meeting. In the serial approach (A), meeting time options are considered individually. In the set-based approach (B), options are presented in sets, which quickly results in finding a mutually agreeable time. (Source: University of Michigan Integrative Systems + Design.)

2. UNDERSTANDING DESIGN REQUIREMENTS

It's essential that team members have a common understanding of how the device functions, its intended use, the impact of improper assembly, and the effects of poor quality.

Understanding the product design and function plays a critical role in reducing risk and saving both time and cost.

Another factor is **cost of change**. Once a manufacturing process is fabricated and built, it becomes extremely expensive to make a change, including re-machining parts, re-installing, re-validating, etc. It's much more cost effective to make changes on the front end, when we can easily modify the design in CAD. In this case, a change takes minutes rather than weeks or even months.

FIGURE 2. COST OF CHANGE DURING DEVELOPMENT PROCESS



3. IDENTIFYING OPPORTUNITIES TO REDUCE/ELIMINATE WASTE

Identifying waste is at the heart of a Lean Product Launch.

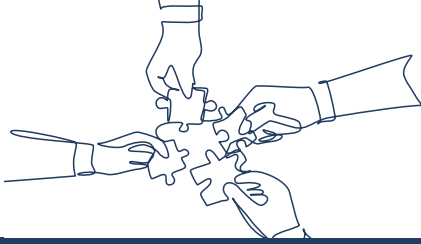
When we're transferring manufacturing to Viant, we always focus on the customer's definition of value and improving the process. To make improvements, the 3P event is scripted to evaluate every step of the current manufacturing process to identify and eliminate waste.

When we're launching new products, we have the opportunity to design a manufacturing process from the ground up, in the "least-waste way." 3P events have a "clean slate" from which to design a scalable process in an efficient way that eliminates operator waiting time or movement, reduces cycle time, and uses one-piece flow instead of batch methodology.

FIGURE 3. FORMS OF WASTE



CARDIAC CATHETER



3P Event Helps Streamline Manufacturing Process, Reduce Waste & Boost Efficiency

CUSTOMER SITUATION



- A leading global structural heart OEM engaged Viant to transfer dip molding process for manufacture of cardiac catheters
- Customer had been running process for > 15 years

VIA NT 3P SOLUTION



- Before 3P event, Viant team mapped current process state:
 - Cleanroom layout
 - Equipment size & locations
 - Component storage locations
 - Movement of operators & materials
- At 3P event, customer's manufacturing supervisor injected actual shop-floor knowledge into mapping exercise
 - Map served as the basis for "spaghetti diagram" (Figure 4) used to identify waste
- Team identified 36 forms of waste in legacy process; reorganized manufacturing process to reduce or eliminate staff and material
 - Rearranging assembly stations sequentially
 - Creating integrated cells for discrete processes

RESULTS



- Streamlined manufacturing process
 - Reduced waste
 - Improved flow
 - Reduced bottlenecks
 - Boosted efficiency
- Customer continues to transfer additional business to Viant

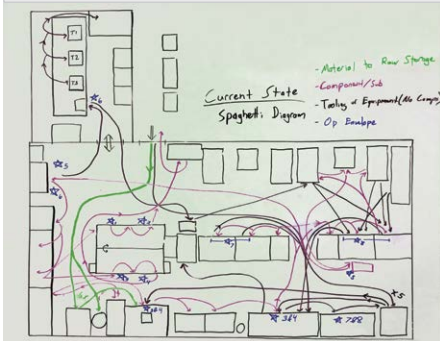


FIGURE 4. SPAGHETTI DIAGRAM

Shows movement of staff and materials throughout the manufacturing process

MAPPING 3P STEPS

Let's take a look at each phase of a 3P event.



FIGURE 5. 3P STEPS

MAPPING 3P STEPS

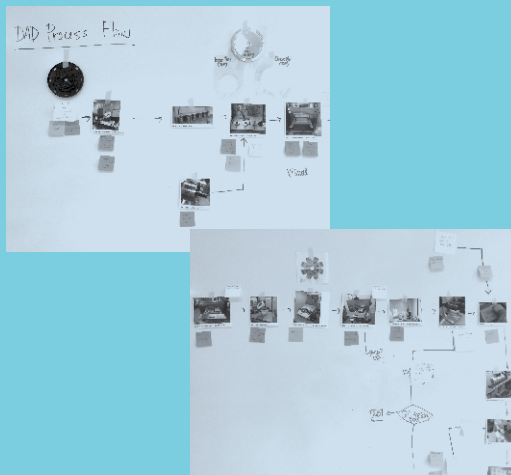


FIGURE 6. CURRENT-STATE PROCESS FLOW DIAGRAM

1. DEFINE PURPOSE AND SCOPE

First, the 3P team discusses the customer’s definition of value to generate a clearly defined purpose statement. Next, we identify the **event scope**, which establishes the boundaries of the team’s focus and efforts. The strategy of the 3P event is then structured around the purpose and scope; the overall business strategy associated with the product.

2. DIAGRAM CURRENT STATE: PRODUCT AND PROCESS

The team must understand how the device is assembled before it can develop a robust manufacturing/assembly process. In this step, we create diagrams that map the sequence of component assembly, including the flow of people and materials and the workstation layout. This serves as the foundation for developing a new process or improving an existing one.

MAPPING 3P STEPS



FIGURE 7. FUTURE-STATE PROCESS CONCEPT

3. GENERATE CONCEPT SKETCHES

Leveraging the diagram of the current state, we spend time individually coming up with “blue sky” ideas for how to reduce waste and improve flow. The facilitator then groups team members with the objective of bringing diverse perspectives together. Each team brainstorms concepts then produces **concept sketches** to capture ideas for the overall process layout. This activity results in multiple concept sketches of how team members envision the optimized process in “future state.”

4. SHARE/BLEND CONCEPTS

Often taking a full day, this step is where the magic happens! The teams share and discuss their future-state concepts with the larger group, then go back to their teams to further refine our concepts. This is an iterative process that progressively improves concepts by blending the diverse experience of the collective team. At the end of the day, the best ideas rise to the top and breakthrough concepts emerge. That’s the magic of a 3P event.

MAPPING 3P STEPS



FIGURE 8. 3P TEAM DISCUSSES CONCEPTS

5. RANK & SELECT CONCEPTS

The group ranks the future-state concepts objectively against the customer's definition of value, the core problem statement, and Lean criteria such as reducing waste in all its forms. We discuss the concepts and gradually weed out less-valuable ideas until we arrive at a single solution that makes the most sense based on the event's purpose statement.

“ This event was well managed. It encouraged internal conversation within [the company] and helped identify immediate wins.”

MAPPING 3P STEPS



FIGURE 9. MOCK-UP OF MANUFACTURING EQUIPMENT WITHIN CLEANROOM FOOTPRINT

6. BUILD A MOCK-UP

The next step is to create a physical to-scale **mock-up** of the future-state process using cardboard boxes, duct tape, two-by-fours, and whatever else is needed to simulate the equipment. We retain this mock-up throughout the process design lifecycle and continually revisit it to verify concepts before process approval.

“ I was very impressed with Viant’s 3P process. It was sufficiently structured to provide a clear roadmap, but allowed for flexibility to adjust on the fly as needed...There was clearly a wealth of experience in the room around manufacturing process, equipment, and overall operations... Great start to our project, giving me even more confidence in our ultimate success”

MAPPING 3P STEPS



FIGURE 10. PROCESS SIMULATION AND TIME STUDIES FOR AN ADHESIVE BONDING PROCESS

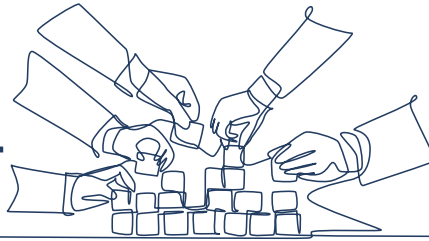
7. SIMULATE PROCESS/DOCUMENT EVENT OUTPUTS

Finally, we run assembly **process simulations** using the mock-up and actual components. Observing the simulation in real time reveals additional opportunities to improve the process. We record cycle times to assess line balance, evaluate ergonomics and safety, and record video for future reference.

The Viant team may spend a week or more documenting the 3P event and the details of the simulation. The output from a 3P event can cut quote lead time in half and greatly increase the accuracy of a quote, which ultimately reduces time to market.

3P REAL-LIFE EXAMPLE

COMPLEX SURGICAL INSTRUMENT



3P Event Reveals Highly Novel Approaches to Deliver at Scale While Assuring Product Quality

CUSTOMER SITUATION



- Multinational medtech OEM was considering manufacturing transfer; engaged Viant for 3P event
- Customer set targets for shorter cycle time & lower cost
- Needed ability to scale to higher volume
- Material flow was key due to bulky device
- Limited information available about current manufacturing process

VIANT 3P SOLUTION



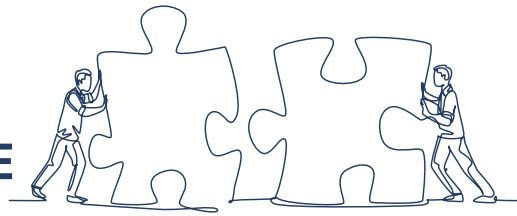
- 3P team collaborated, designed, and simulated manufacturing processes and line layout to achieve challenging customer goals
- Defined strategy for material flow for bulky components to achieve target production rate
- Developed custom semiautomated equipment using highly novel approaches
- Deployed range of approaches to assure quality, including in-line testing, optical inspection, and poke yoke concepts

RESULTS



- Achieved target capacity of 4 million units/year, with future plans to scale
- Met targets for takt time and production output
- Successfully deployed approaches including custom semiautomation to deliver assured quality and reduced labor

ENERGY-BASED DELIVERY DEVICE



Actual Line Time Study
Showing Reduced Cycle Time
Demonstrates that 3P Tool can be
Predictor of Real-World Results

CUSTOMER SITUATION



- Surgical robotics startup considering a manufacturing transfer engaged Viant for 3P event to boost quality and identify opportunities for process improvements
- 3P team got line tour and training in customer's process

VIA NT 3P SOLUTION



- 3P event held at customer site
- Challenges included:
 - Customer requested that 3P be completed in a compressed timeframe
 - Viant team worked through weekend to get most of the mock-up done in advance
 - Client's scope limited proposed improvements to those that could be implemented in 1 month. Team focused on Lean improvements:
 - Line balance
 - Re-layout
 - One-piece flow
- Team duplicated current output (from 2000 to 4500) with same number of operators (6)
 - For future state, quadrupled each operator's output (9600) by increasing from 6 to 9 operators
- Simulated cycle time decreased from 140 minutes to 73 minutes

RESULTS



- Cut cycle time by nearly 50%
- Actual line time study resulted in 78-minute cycle time (very close to 3P time of 73 minutes)
- Demonstrated that 3P tool was close predictor of real-world results

A 3P EVENT ALLOWS US TO DEVELOP A ROBUST MANUFACTURING PROCESS WITH PRODUCT QUALITY AT THE FOUNDATION, WHILE ALSO EMBEDDING THE CUSTOMER'S DEFINITION OF VALUE INTO THE PROCESS SOLUTION. WITH THE 3P TOOL WE CAN OPTIMIZE CAPITAL SPEND, CYCLE TIME, AND MANUFACTURING LABOR, RESULTING IN INCREASED SPEED TO MARKET.



Whether we're launching a new product or transferring manufacturing of a legacy product, the 3P tool helps us to de-risk and filter out waste. Our customers have regularly voiced that an investment in 3P has reaped benefits including increased product quality and process efficiency, more aligned teams, and reduced time to market.

INTERESTED IN HOW VIANT'S LEAN APPROACH AND BEST-IN-CLASS 3P DEPLOYMENT CAN SUPPORT YOUR LAUNCH? REACH OUT AT INFO@VIANTMEDICAL.COM.



REAL CUSTOMERS ON 3P:

“Very good investment. I was impressed with how prepared the Viant team was and how hard they worked. They took this 3P very seriously and made it a lot of fun.”