



A Hands On to Hand Over Program for Systems Integration

Nitandem™ | By ACS

Ntandem is a collaborative program that has been developed and perfected to handle capital projects needing integrated test and process solutions.

Built on subject matter expertise, skilled, disciplined project management, a proven process, and application knowledge, it delivers a validated technical asset that works as intended, on schedule, and on time.

Delivering Complex Production, Test, and Product R&D Facilities

ACS' expertise in testing and process equipment, industrial and automation controls, and industry regulations, as well as our deep knowledge of building design and construction, provides a total resource for your capital equipment and facility solution.

From systems engineering, process equipment specifications, facility-utility interface design and automation, Ntandem will ensure your integrated production facility or technical center will perform at the highest level possible.

That's what makes the teamwork inherent in Ntandem so critical and valuable.

Working together as your partner, Ntandem by ACS will provide an "on-loan" team of experienced professionals who will use time-tested methods and forward-looking vision to support your testing programs and environments. We know your overarching goal is collecting good data for decision making; so, every piece of the system will be designed, engineered, and procured to meet the needs of your test.

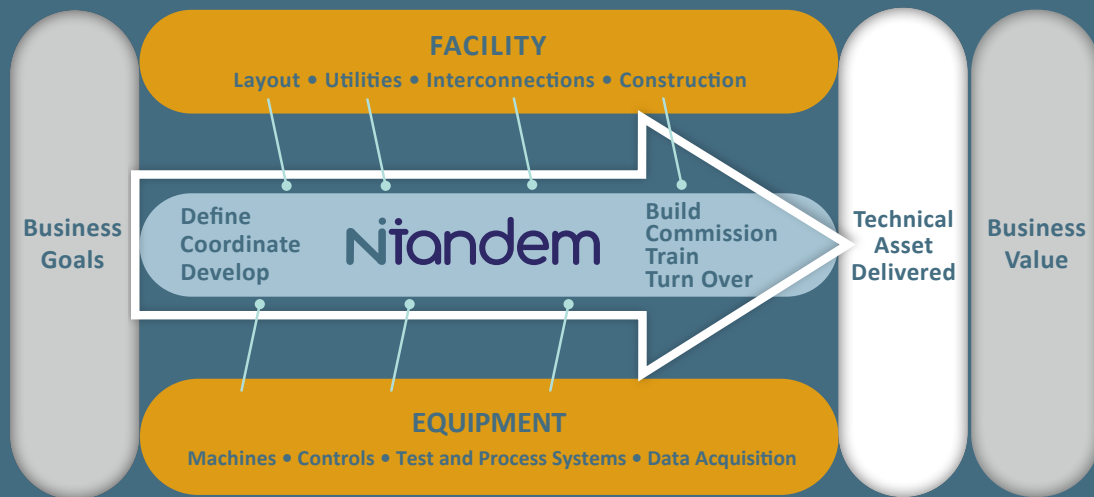
Don't Go it Alone Let's Work Together in Tandem

For an individual, taking on the responsibility for a systems integration capital project and trying to succeed without a qualified partner can be an overwhelming task.



Bringing Vision and Performance Together

Our systems integration program is structured so that, after gaining a complete understanding of your business drivers and then working with you to define your business goals upfront, we deliver a business value at project end. Ntandem's tangible deliverables can range from test rigs, test beds, test benches, test stands, or test cells, all the way up to a complete integrated test facility.



Covering All Levels of Systems Integration



Machine

Interconnecting mechanical, electrical, data acquisition, controls, and safety within a single piece of equipment designed and built as a complete integrated system.



Equipment & Controls

Communicating across multiple discrete pieces of critical test and process equipment and the facility's mechanical, electrical, and control equipment, (upon which they are dependent) so that all equipment functions together as an integrated whole.



Facility

Designing, constructing and commissioning the building and its mechanical and electrical infrastructure to support the critical processes you intend.

Defined Goals Lead to Integrated Solutions

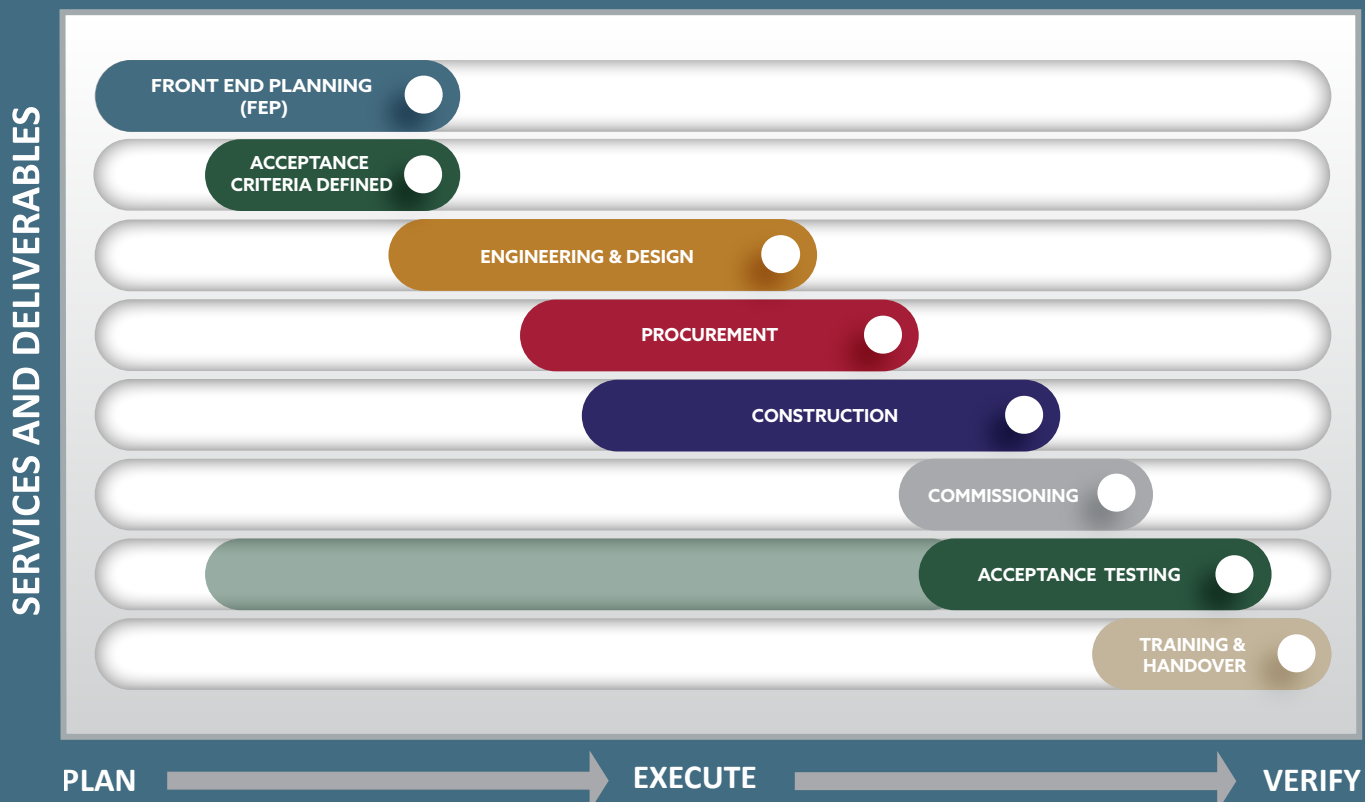


Our “Inside Out” approach to a project uses a workflow that runs counter to starting with the building first, trying to fit everything in and perhaps compromising your goals because the building won’t accommodate. Instead, by first asking, “what do you want your facility to do?,” the requirements of your process, whether that is prototype development, R&D test, or manufacturing and production, drive the facility design.

Armed with a solid definition of your process goals – technical features, utilization, flexibility, growth – we can establish equipment design criteria and project acceptance criteria based on performance; facility support equipment can be designed to support those goals and work seamlessly together; and building functions and operational workflow can be designed to support the core process capabilities.

At project end, your vision is validated and performance is guaranteed.

Ntandem Offers a Straightforward Approach to Operational Readiness:





ACS' Responsibilities During Each Phase of the Project

PLAN

The planning phase is where we determine what you want your facility to do, while at the same time developing acceptance criteria to determine what “done” will look like.

Front End Planning (FEP)

- Early project definition
- Feasibility analysis
- Conceptual engineering
- Preliminary schedule and budget

Acceptance Criteria Defined

- Answer the question, “What does ‘done’ look like?”
- Define testing or process requirements
- Specification development
- Equipment vendor analysis

EXECUTE

The design and engineering phase is where we document how the building and process equipment will fit and work together; concurrent with the procurement and build phase where we ensure that high-level activities are performed according to the vision and plan.

Engineering and Design

- Final design based on design intent
- Equipment specification
- Facility needs
- Estimating
- Constructability analysis
- Schedule development
- Virtual design and 3D modeling

Procurement

- Purchase long-lead process and test equipment
- Design and build custom equipment
- Bid and award contracts
- Facilities systems
- Materials management

Construction

- Early release construction
- Facility and infrastructure construction
- Equipment installation
- Subcontractor management
- Cost and schedule management
- Safety

VERIFY

The guarantee phase is where we comprehensively perform commissioning and acceptance testing according to the acceptance criteria developed during the early planning stages of the project.

Commissioning

- Develop commissioning procedures
- Factory Acceptance Testing (FAT)
- Test equipment commissioning
- Start-up and balancing
- Facility commissioning

Acceptance Testing

- Final development of Acceptance Testing Procedures (ATP)
- Execution of ATP
- Equipment and systems integration

Training and Handover

- Final documentation
- O&M documentation
- Operator education and training
- Operational readiness

ACS is the perfect partner to manage every aspect of a systems integration capital project. We assume the risk on behalf of our clients and deliver the facility that meets all their requirements. We take on the responsibility for construction planning, equipment design, controls programming, bidding, permitting, commissioning, final acceptance, and managing all the milestones in between.



Ntandem

The name **Ntandem** is inspired by the necessity of working together when riding a tandem bike and arriving at a destination. By definition, “in tandem” means “in partnership or working in conjunction with each other.” Thus, as we partner with our client on any **Ntandem** project, the goal is altogether better systems integration.



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