

**IRRIGATION
COMMAND
& CONTROL
PLATFORM
MODERNIZATION**

Industry: Agriculture / Irrigation Systems

TWO-SIDED SHIFT STEPS



1. Readiness



2. Assess



3. Land

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CLIENT OBJECTIVES

- Overcome great difficulty adding enhancements to a complex, poorly documented monolithic application
- Reduce high maintenance costs driven by tangled dependencies in legacy Python/Windows stack
- Modernize command and control software to support multi-generation hardware controllers and field communications
- Establish a maintainable, extensible platform the development team could own and evolve

CHALLENGE

The legacy application had no documentation and deeply hidden dependencies requiring exact functional replication across complex irrigation control workflows. Integration with radio, cellular, and multiple generations of field hardware controllers added significant technical complexity. Organizationally, executive management had brought in an outside firm under delivery pressure, requiring careful development of buy-in and trust with the existing internal team.

WHAT WE DID

- Conducted user story mapping sessions with internal SMEs to capture and document undocumented functionality
- Built separate microservices per hardware controller generation to isolate and manage legacy integration complexity
- Integrated radio and cellular communication protocols into the new microservices architecture
- Migrated from legacy Python monolith and old Windows frontend to .NET middle tier and Angular frontend
- Co-located Capstone IT Solutions and client development teams to build collaboration, trust, and shared ownership

BUSINESS OUTCOMES DELIVERED

- New microservices architecture delivered with significantly improved maintainability and enhanceability
- Comprehensive documentation produced for the first time, capturing previously tribal workflow knowledge
- Combined development team trained and ready to continue modernization on the new stack independently
- Foundation established for continued incremental modernization beyond the 2-year engagement

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