

## Statement of Work, Cost, and Schedule

### *Activity I: Planning/Architecture*

*Goals: To provide a robust foundation for further software planning and development; To completely plan and design the technical systems used in the X-Ita Control System; to model and design UI/UX.*

- Task 1: Project Foundation
- Task 2: Technical Specification
- Task 3: User Manual
- Task 4: Basic Software Framework

### *Activity II: XCSL Cross-Compiler (ARM64)*

*Goals: To develop software frameworks for converting XCS Language Syntax to hardware-independent logic; To develop frameworks for conversion of intermediary logic to processor-specific assembly code.*

- Task 5: Skeletal XCSL Parser
- Task 6: Assembly Framework
- Task 7: Primitive Literals
- Task 8: Conditional Expressions
- Task 9: Type System
- Task 10: Functional Expressions
- Task 11: Direct Memory Access
- Task 12: External Modules/Imports
- Task 13: Regular Expression

### *Activity III: XCS Run-time Environment (ARM64 , Raspberry Pi)*

*Goals: To develop an initial run-time environment for practical use of XCS semantics; to enable intrinsically secure and high-assurance programming on bare metal for Internet of Things development.*

- Task 14: Bootloader (Raspberry Pi)
- Task 15: General-Purpose I/O (e.g. print)
- Task 16: Host Controller Interfaces (firmware data access)
- Task 17: Long-term storage and File I/O
- Task 18: Network Sockets

### *Activity IV: Graphical Coding Interface*

*Goals: To develop an interface that eases development of XCS compliant software and broadens access to functional programming.*

- Task 19: Basic Application Framework
- Task 20: XCSL Text Editor
- Task 21: XCSL Graphical Code Editor
- Task 22: Documentation & Usage Information