

1403-N1 Printer Controller Kick-Off

8 October 2014

Project Objective

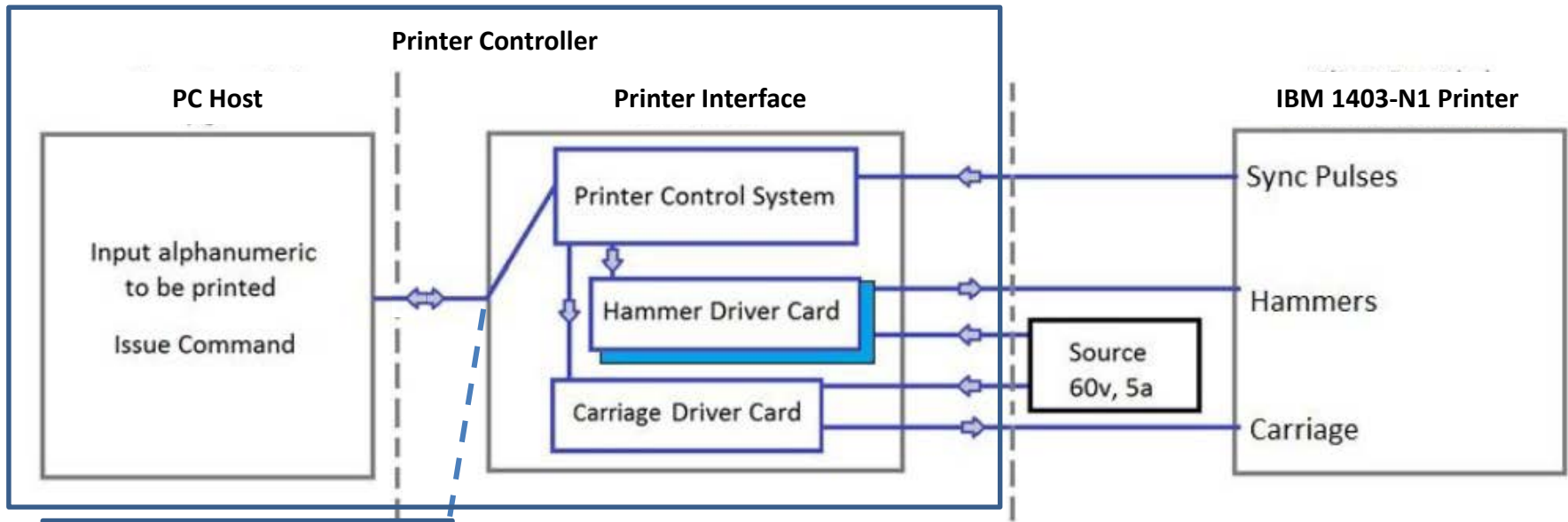
- Build a Printer Controller that interfaces to a PC and drives a 1403-N1 printer



Background

- Received printer Spring, 2013
- Printer undergoing refurbishment
- Prototype printer controller developed under 2013-2014 WCP

1403 Project System Overview



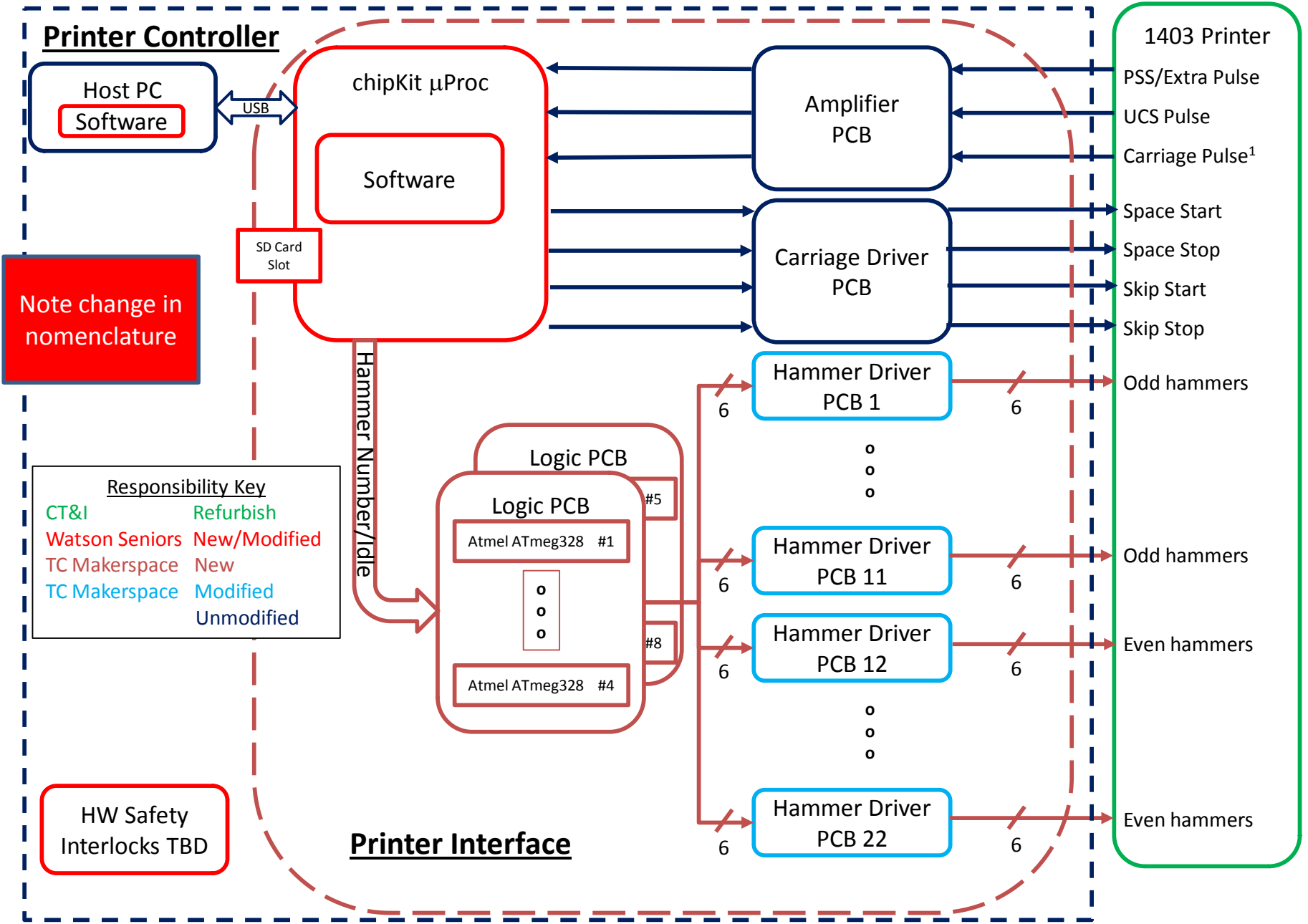
Note change in nomenclature

Team Members

- Center for Technology & Innovation
 - Client
 - Printer refurbishment
 - Technical and Program Management lead
- IEEE Binghamton Section
 - WCP sponsor & Technical Advisor
- Watson School Senior Undergraduates
 - Software
 - Hardware safety interlocks
- Triple Cities Makerspace
 - Hardware development and scaling

Project Components

- Printer Controller Software
 - Upgrade software to achieve printer rated 1,100 lines per minute
 - Add software routines to support printer integration
- Printer Controller Hardware
 - Expand hardware to drive 132 printer hammers
 - Modification to increase hammer addressability
 - Hardware safety interlocks
 - Robust packaging
- 1403-N1 Printer refurbishment
- Integrate Printer Controller with 1403 Printer
- Maximize 2013/2014 WCP knowledge and resources



Project Responsibilities

- CT&I
 - 1403-N1 Printer refurbishment
 - Program Mgmt, Requirements, Integration
- Watson Capstone Project
 - Support printer refurbishment
 - PC Host software
 - Printer Controller Real Time Software
 - Integration support software routines
 - Hardware safety interlock device (option)
 - Support integration
- TC Makerspace
 - Expanded hammer control
 - Packaging, wiring, external interfaces
 - Hammer driver card modification
 - Support integration

Challenges

- Schedule & technical coordination across multiple organizations each with significant responsibilities
- Real-time processing
 - Microsecond tolerances (but on the bright side it's soft real time)
 - Allocation across multiple processors
 - chipKit performance

Schedule

	Oct				Nov				Dec				Jan				Feb				Mar				Apr				May			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SUNY Sched																																
Architecture doc final						X																										
Interim Presentation											X																					
System Acceptance Rvw																												X				
Sys Requirements Doc	X	X	X	X																												
Prototype build																																
Hardware build		X	X	X																												
Software build				X	X	X	X																									
Testing							X	X	X	X																						
Printer Refurb			X	X	X	X	X	X																								
Production HW build					X	X	X	X	X	X	X	X	X	X																		
Production SW build							X	X	X	X	X	X	X	X	X	X	X	X	X													
Sys Integration/Test																	X	X	X	X	X	X	X	X	X							