

From spreadsheet to PVs with a click

RegMap – Streamline mapping of device registers to EPICS PVs

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Spallation Neutron Source

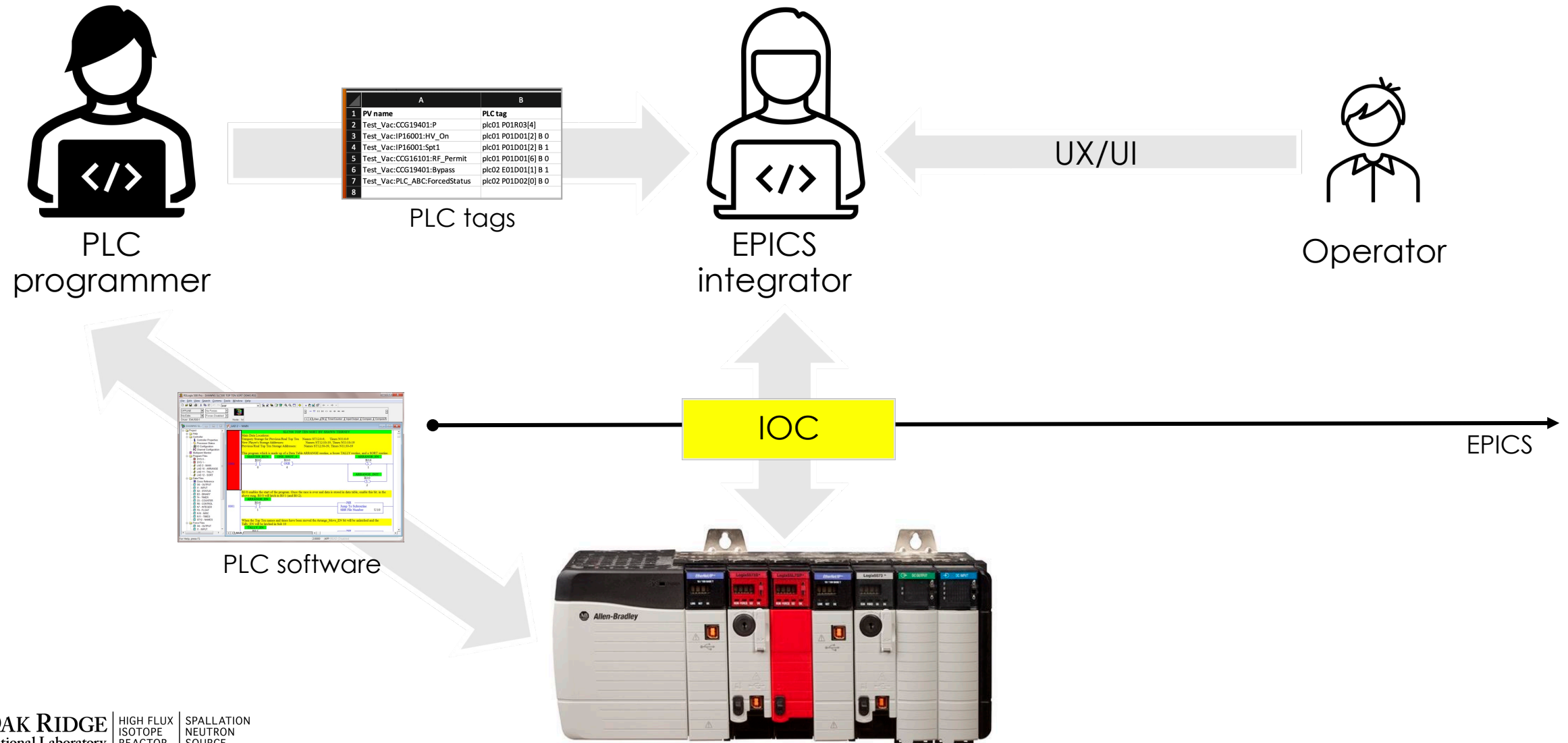
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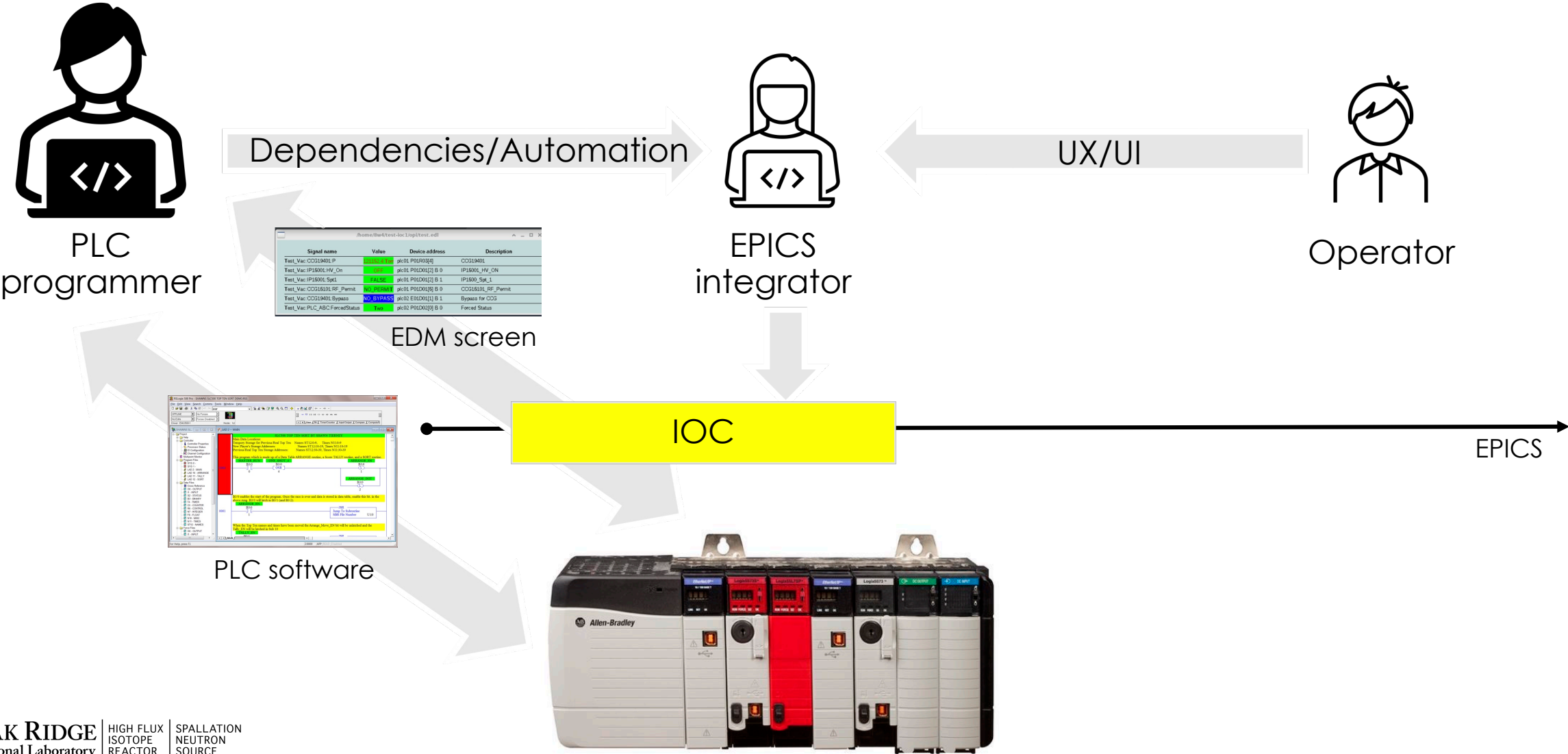


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Common Development Scenario



Development Scenario Goal



It takes a mouse click

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	PV name	PLC tag	Type	Sync period	Description	State Choices	Precision	Slope	Offset	Units	critical low threshold	critical high threshold	Archive	Access Security	hold high for	Alarm
2	Test_Vac:CCG19401:P	plc01 P01R03[4]	analog input	1 second	CCG19401		1			Torr	1.30E-09	1.30E-05	Yes	XYZ		Yes
3	Test_Vac:IP16001:HV_On	plc01 P01D01[2] B 0	binary input	1 second	IP16001_HV_ON	0=OFF[MAJOR], 1=ON	Display precision for analog PVs Defines number of decimal places to display on the OPI screen. Only valid for analog PV types.						Yes	XYZ		Yes
4	Test_Vac:IP16001:Spt1	plc01 P01D01[2] B 1	binary input	1 second	IP1600_Spt_1	0=FALSE,1=TRUE							Yes	XYZ		Yes
5	Test_Vac:CCG16101:RF_Permit	plc01 P01D01[6] B 0	binary input	1 second	CCG16101_RF_Permit	0=NO_PERMIT,1=PERMIT							Yes			Yes
6	Test_Vac:CCG19401:Bypass	plc02 E01D01[1] B 1	binary output	Passive	Bypass for CCG	0=NO_BYPASS,1=BYPASS							Yes		3	Yes
7	Test_Vac:PLC_ABC:ForcedStatus	plc02 P01D02[0] B 0	choice input	1 second	Forced Status	Zero, One, Two, Three							Yes			Yes
8																

RegMap

/home/8w4/test-ioc1/opi/test.edi

Signal name	Value	Device address	Description
Test_Vac:CCG19401:P	0.00000000	plc01 P01R03[4]	CCG19401
Test_Vac:IP16001:HV_On	OFF	plc01 P01D01[2] B 0	IP16001_HV_ON
Test_Vac:IP16001:Spt1	FALSE	plc01 P01D01[2] B 1	IP1600_Spt_1
Test_Vac:CCG16101:RF_Permit	NO_PERMIT	plc01 P01D01[6] B 0	CCG16101_RF_Permit
Test_Vac:CCG19401:Bypass	NO_BYPASS	plc02 E01D01[1] B 1	Bypass for CCG
Test_Vac:PLC_ABC:ForcedStatus	Two	plc02 P01D02[0] B 0	Forced Status

Home

Start IOC

Terminal

```

## Register all support components
dbLoadDatabase "dbd/test.dbd"
test_registerRecordDeviceDriver pdbbase
drvEtherIP_init
drvEtherIP_define_PLCL("plc01", "192.168.201.125", 0)
drvEtherIP_define_PLCL("plc02", "192.168.201.125", 0)
EIP_verbosity(4)
## Load record instances
dbLoadRecords("db/test.db")
cd "/home/8w4/test-ioc1/iocBoot"
iocInit
Starting iocInit
#####
## EPICS R7.0.4.1
## Rev. R7.0.4.1
#####
drvEtherIP: Delaying launch of scan task for PLC 'plc01' until database ready
drvEtherIP: Delaying launch of scan task for PLC 'plc02' until database ready
2023/02/23 10:52:14.0254 EIP connecting plc01
2023/02/23 10:52:14.0254 EIP connecting plc02
iocRun: All initialization complete
## Start any sequence programs
#seq sncxxx,"user=8w4"
epics>

```

RegMap Purpose

Assist PLC programmers

- Create EPICS databases for their PLC projects
- Create live EPICS screens for testing and commissioning
- Guide to choose valid PV names

Circumvent learning hurdles

- Linux operating system
- Command line interfaces
- Version control systems (CVS/SVN/Git)
- EPICS

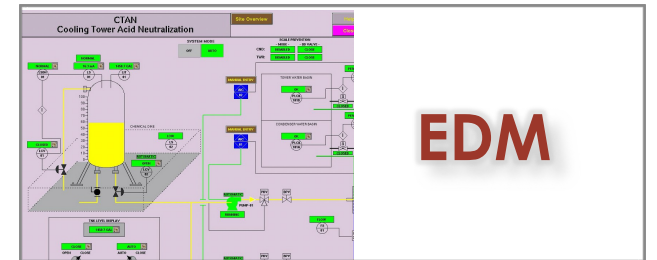
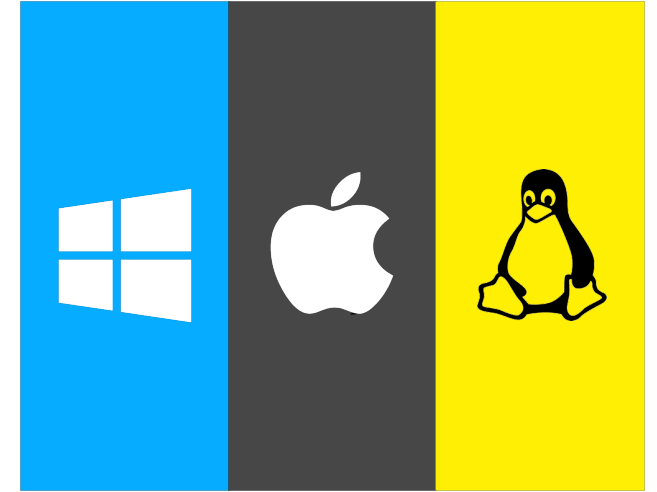
Faster development

- No back and forth



RegMap Features

- Read spreadsheet
 - Templatized and assisted Excel spreadsheet
 - Columns interpreted by specific parsers, ie. PLC
 - Friendly column names and raw record field
 - Ensure PV naming convention
- Output file generators
 - EPICS .db
 - EDM&CSS screen file
 - Access Security
 - Alarms configuration*
 - Archiver configuration*
- IOC skeleton configured once
 - Connect to device



Thank You