HXR Undulator EPICS 7 Upgrade

1. **EPICS IOC Prepared**
    a. HXR IOC Configuration:
        i. git repo: Undulator_HXR
            1. branch: epics7-update
        ii. $(git_repo)/configure/**RELEASE**:
            - IOCADMIN_MODULE_VERSION = R3.1.16-1.3.2
              SNCSEQ_MODULE_VERSION = R2.2.4-1.0
              AUTOSAVE_MODULE_VERSION = R5.8-2.1.0
              BUSY_MODULE_VERSION = R1.7.2.1-0.1.2
              CAPUTLOG_MODULE_VERSION = R4.0-1.0.0
              CALC_MODULE_VERSION = R3.7-1.0.1
              SSCAN_MODULE_VERSION = R2.10.2-1.0.0
              SPLINE_MODULE_VERSION = R2.0.2

              ASYN_MODULE_VERSION = R4.39-1.0.1
              #MOTOR_MODULE_VERSION = motor-git-hgvpu
              MOTOR_MODULE_VERSION = motor-git
              #MOTOR_MODULE_VERSION = R6.10.1-2.5.0

              # IPAC
              IPAC_MODULE_VERSION = ipac-git
              IP330_MODULE_VERSION = ip330-asyn-git
              SOFTGLUE_MODULE_VERSION = softGlue-git
              IPUNIDIG_MODULE_VERSION = ipUnidig-git

              XIPIO_MODULE_VERSION = R1.2.0

              # VME
              A16VME_MODULE_VERSION = R1.1.0
              CEXP_MODULE_VERSION = R1.1.2
        iii. $(git_repo)/configure/**RELEASE_SITE**:
            - BASE_MODULE_VERSION=R7.0.3.1-1.0
              EPICS_SITE_TOP=/afs/slac/g/lcls/epics
              BASE_SITE_TOP=/afs/slac/g/lcls/epics/base
              MODULES_SITE_TOP=/afs/slac/g/lcls/epics/R7.0.3.1-1.0/modules
              EPICS_MODULES=/afs/slac/g/lcls/epics/R7.0.3.1-1.0/modules
              IOC_SITE_TOP=/afs/slac/g/lcls/epics/iocTop
              PACKAGE_SITE_TOP=/afs/slac/g/lcls/package
              MATLAB_PACKAGE_TOP=/afs/slac/g/lcls/package/matlab
              PSPKG_ROOT=/afs/slac/g/lcls/pkg_mgr
              TOOLS_SITE_TOP=/afs/slac/g/lcls/tools
              ALARM_CONFIGS_TOP=/afs/slac/g/lcls/tools/AlarmConfigsTop
        iv. $(git_repo)/configure/**CONFIG_SITE**:
            - CHECK_RELEASE = YES

              CROSS_COMPILER_TARGET_ARCHS = RTEMS-mvme3100

              PKG_ARCH=$(T_A)

              SHARED_LIBRARIES=NO
              STATIC_BUILD=YES

              ALGLIB_PACKAGE_NAME = alglib
              ALGLIB_VERSION = 3.14.0
              ALGLIB_TOP = $(PACKAGE_SITE_TOP)/$(ALGLIB_PACKAGE_NAME)/$(ALGLIB_VERSION)
              ALGLIB_LIB = $(ALGLIB_TOP)/$(T_A)/lib
              ALGLIB_INCLUDE = $(ALGLIB_TOP)/$(T_A)/include

              -include $(TOP)/../CONFIG_SITE.local
              -include $(TOP)/configure/CONFIG_SITE.local
2. **HXR Upgrade Test Plan**
    a. Week 1: Practice test on HXU-xxx

        i. Prepare work:
            1. Record current iocSpecificRelease for ioc-b81-mc01:
                a. iocSpecificRelease -> ../../iocTop/users/alexmon/Undulator_HXR/dev_FG/
            2. Discuss with Namrata and James on VME IOC initialization details
            3. Print the checkout sheet
        ii. During the test day:
            1. Currently ioc-b81-mc01 is running, need to check again before test
            2. Before any movement, record all the settings.
                a. Take screenshots from GUI
                b. check IOC status
                c. check network connection: moc-xxx-mc03
                d. Open undulator gap to 40mm
                e. Follow **checkout sheet** to process the practice tests

3. Boot current EPICS 3 based IOC, record settings:
4. Open EDM based Undulator GUI
    a. login lcls-dev3
5. Set up VME network configuration if necessary;
6. Practice with K value and Gap convert
7. According to the checkout sheet, the main motion test should be as follows:
    a. Move gap from 180mm to 100mm
    b. Power off controller and turn off ioc
    c. Power on controller and turn on ioc
    d. Confirm Encoder RBD value
    e. Tests will verify the correct operation of the following motion controls:
    f. Wiring, switch status, ESTOP functionality.
    g. Coordinated motion for gap adjustment.
    h. Encoder read back: available, calibrated.
    i. Limit, tilt, and vacuum switches: single axis, coordinated motion.
8. Take a look on spline
9. Stop the test if encounter any issue/hazard, contact Alex for help.

iii. After all the test, revert ioc to EPICS v3 version, and recover all the settings as same as saved before.

b. Week 2: EPICS 7 Upgrade test