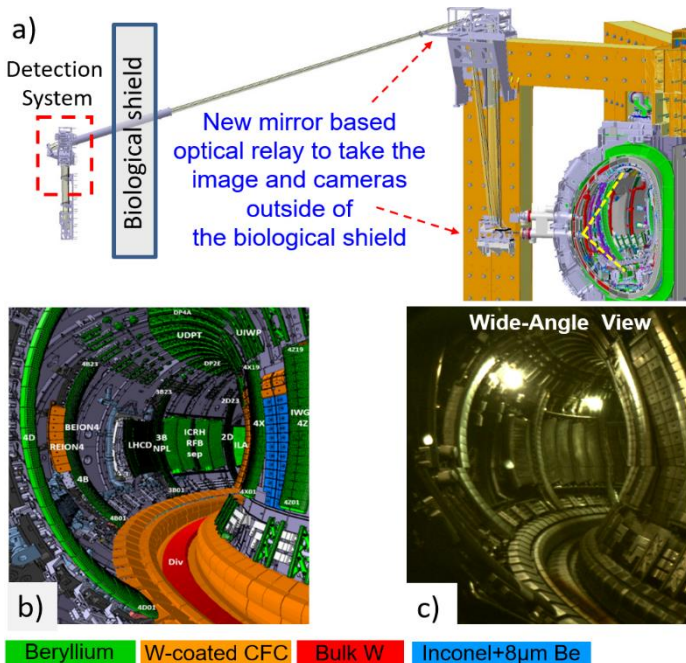


The Software and Hardware Architecture of the Real-Time Protection of In-Vessel Components in JET-ILW



Imaging Protection System and Software relevant for ITER



- ❑ D-T operation at JET will cause failure of camera electronics within the Torus hall => new project was launched to provide new optical relay to take the cameras outside of the biological shield
- ❑ Long distance optical relay ($\approx 40\text{m}$ long) to take imaging cameras outside of the biological shield
- ❑ Mirror based optical design
- ❑ Optimised wavelength for T_{surf} measurements (NIR λ -range, $\lambda=1.25\mu\text{m}$):
 - Temperature independent spectral emissivity for W
 - Less sensitivity of the measurements to the surface roughness
 - Reduced max. relative error for the T_{surf} measurements
 - Drawback: detection limit is $T_{\text{surf}} \approx 600^\circ\text{C}$
- ❑ Improved protection cameras
 - InGaAs sensor – more sensitive in the range from $0.9\mu\text{m}$ to $1.7\mu\text{m}$
 - Logarithmic output- high dynamic range

- ❑ JUVIL graphical interface for analysis of imaging data
 - Powerful, user-friendly, robust platform independent modular object-oriented framework
 - Highly configurable and extensible environment that could be easily adapted to new cameras and data formats
- ❑ Hotspot Editor is a new tool developed on JET for the investigation of the formation and evolution of hot spots

