Instrument Page

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The conceptual design of the instrument was driven by the WEAVE science requirements, as defined by the Science Team, and translated to technical requirements by the Project and Instrument Scientists. The following table summarises the instrument characteristics:

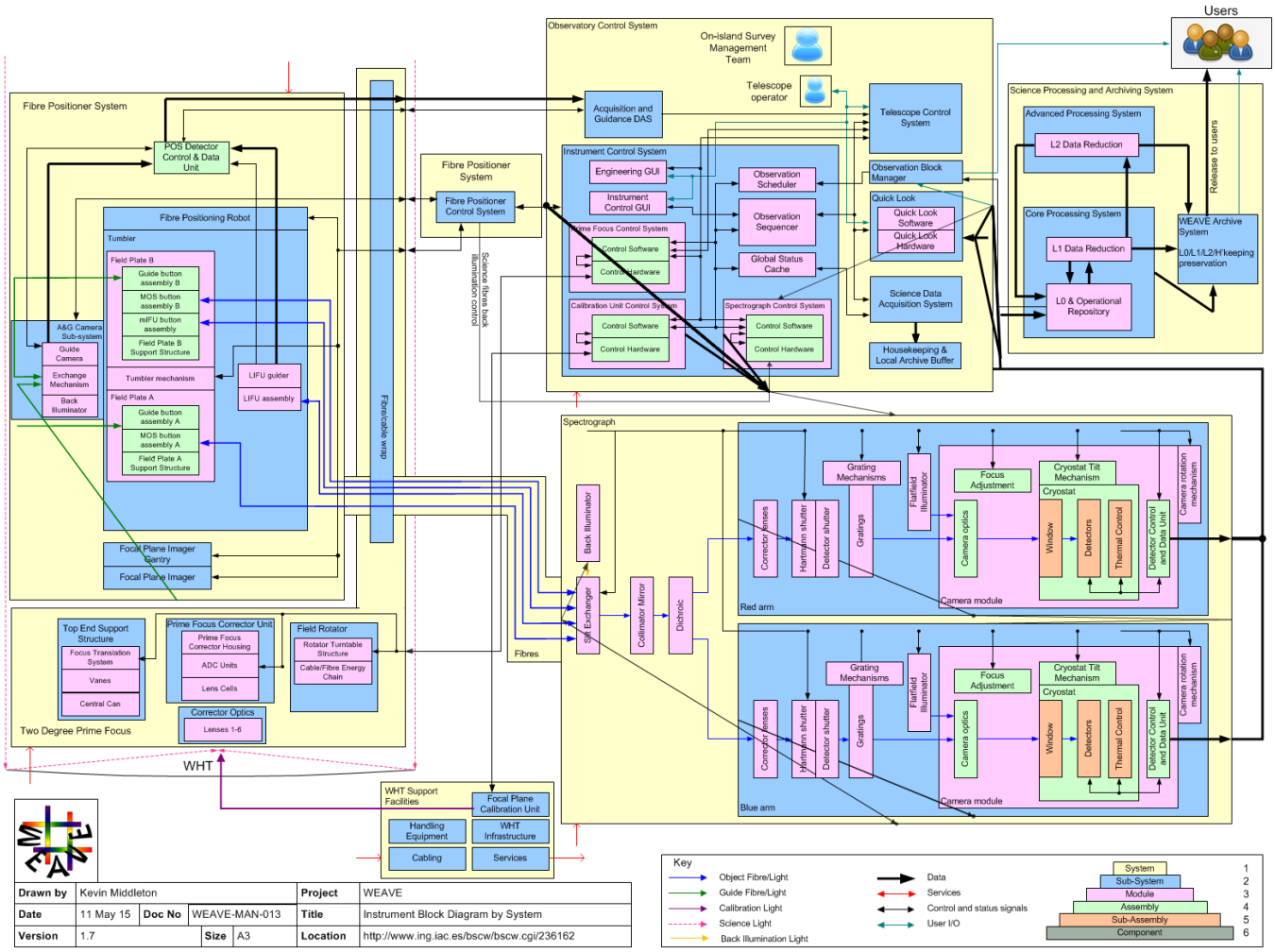
Specification	Requirement	Goal	Design
Field of view diameter	2 degrees	2 degrees	2 degrees
MOS multiplex	800	1000	964/940
Atmospheric dispersion compensation	0.4-1.0 µm, 50^{o}ZD	0.37-1.0 µm, 60^{o}ZD	0.37-1.0 µm, 60^{o}ZD
MOS fibre aperture	>=1.2"	1.5"	1.3"
Open shutter efficiency (1 hour observations)	70%	90%	
Wavelength coverage	400-950nm	370-1000nm	*370-960nm
Spectral resolution (full simultaneous coverage)	5000	5000	5000
Spectral resolution (reduced coverage)	20000	20000	20000
Stray light as function of faintest target	<1%		
Blue system efficiency	20%	25%	25%
Red system efficiency	25%	30%	30%
Multi-IFU multiplex	10	30	20
Multi-IFU FOV	9" x 9"	9" x 12"	9" hex
Multi-IFU spaxel size	0.8"	>1.2"	1.3"
Single IFU FOV	3' x 3'		1.5'
Single IFU spaxel size	2.5"	Inner 1", outer 2.5"	2.6"

*The focal plane of each camera is occupied by two e2V CCD231-C6 CCDs (6kx6k format). The Useful spectrograph focal plane is 8k spectral x 6k spatial. This implies a small gap between the two CCDs. At the central slit position, these gaps span 549.1-553.9nm and 759.0-766.9nm in the low resolution mode and 452.5-453.6nm ; 530.2-531.5nm and 641.2-643.1nm in the high resolution modes. The spectrograph slit is curved to match the low resolution gratings, leaving a residual curvature in the high resolution mode of around 3.5nm shift (~350 pixels) between the central and extreme fibres.

The philosophy behind the construction of WEAVE is to keep it simple but effective. Thus the design exploits the use of COTS (Commercial Off-The Shelf) components which not only reduces project costs and risks but provides an attractive solution for maintaining the instrument throughout its lifecycle.

The Instrument Block Diagram

The Instrument Block Diagram provides an high-level overview of the arrangement of the systems that comprise WEAVE. For readability, detailed component information is not represented here but the flow of data and signals are shown.



Drawn by	Kevin Middleton			**Project**	WEAVE
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The WEAVE Instrument System

The WEAVE instrument consists of nine technical systems each of which is designed to deliver a specific functionality and provide appropriate interfaces to adjacent systems. The following table contains links to these technical systems:

System Name	Description
Two-degree Prime Focus System	This system consists of the Prime Focus Corrector which includes the ADC, the instrument rotator and the focussing mechanism.
Fibre Positioner System	This system consists of the pick-and-place fibre positioner and it's software, the tumbler, the large IFU head and part of the acquisition and guidance subsystem. in addition to this, the Configure Tool is also part of this system.
Fibre Systems	This system consists of the MOS fibres, the IFU fibres and the guide fibres
Spectrograph System	This system consists of the spectrograph and the science detectors.

Observatory Control System	This system consists of the software for controlling all aspects of the instrument, with the exception of the Fibre Positioner, and automating the observations.
Core Processing System	This system consists of the quality control of the science data, the operational repository and full image processing and spectral extraction.
WHT support facilities	This system includes all the modifications that are required at the telescope to accept the instrument and calibration of the focal plane.
Advanced Processing System	This system consists of the software required to carry out high-level science analysis.
WEAVE Archive System	This system consists of the data archive.