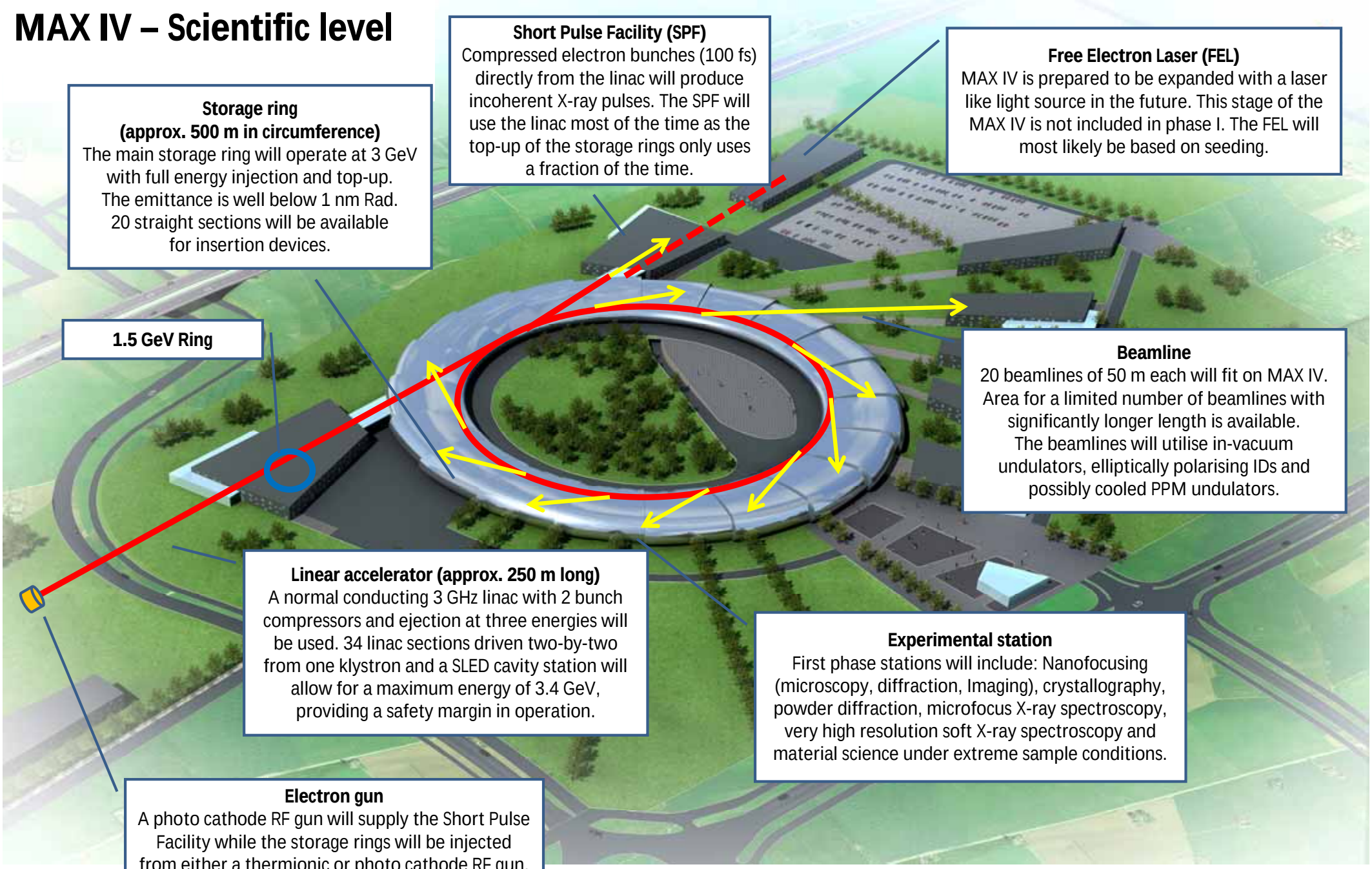
MAX IV – Scientific level



Storage ring
(approx. 500 m in circumference)
The main storage ring will operate at 3 GeV with full energy injection and top-up. The emittance is well below 1 nm Rad. 20 straight sections will be available for insertion devices.

Short Pulse Facility (SPF)
Compressed electron bunches (100 fs) directly from the linac will produce incoherent X-ray pulses. The SPF will use the linac most of the time as the top-up of the storage rings only uses a fraction of the time.

Free Electron Laser (FEL)
MAX IV is prepared to be expanded with a laser like light source in the future. This stage of the MAX IV is not included in phase I. The FEL will most likely be based on seeding.

1.5 GeV Ring

Beamline
20 beamlines of 50 m each will fit on MAX IV. Area for a limited number of beamlines with significantly longer length is available. The beamlines will utilise in-vacuum undulators, elliptically polarising IDs and possibly cooled PPM undulators.

Linear accelerator (approx. 250 m long)
A normal conducting 3 GHz linac with 2 bunch compressors and ejection at three energies will be used. 34 linac sections driven two-by-two from one klystron and a SLED cavity station will allow for a maximum energy of 3.4 GeV, providing a safety margin in operation.

Experimental station
First phase stations will include: Nanofocusing (microscopy, diffraction, Imaging), crystallography, powder diffraction, microfocus X-ray spectroscopy, very high resolution soft X-ray spectroscopy and material science under extreme sample conditions.

Electron gun
A photo cathode RF gun will supply the Short Pulse Facility while the storage rings will be injected from either a thermionic or photo cathode RF gun.