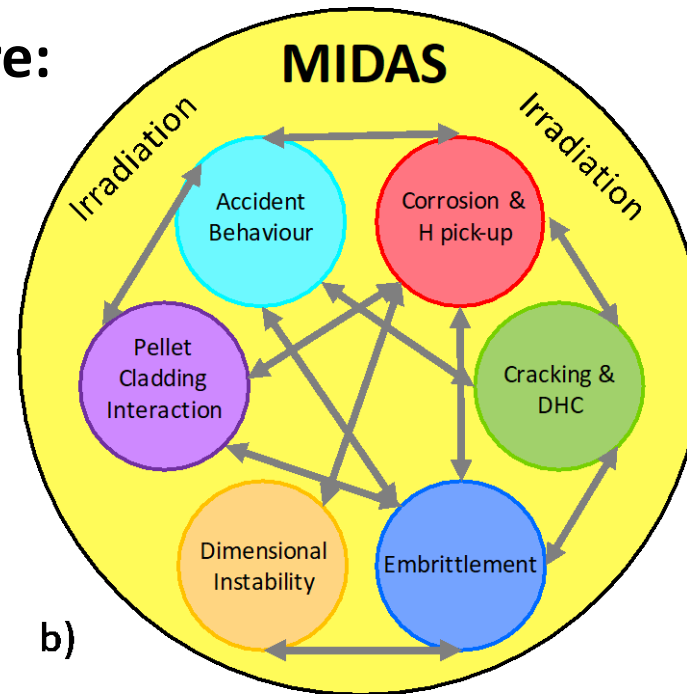
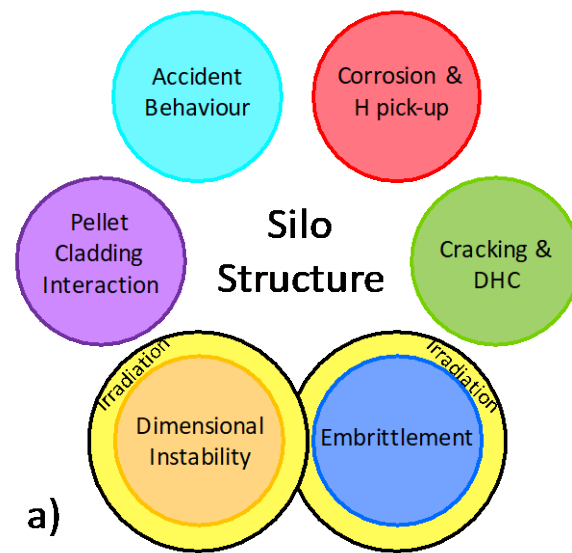
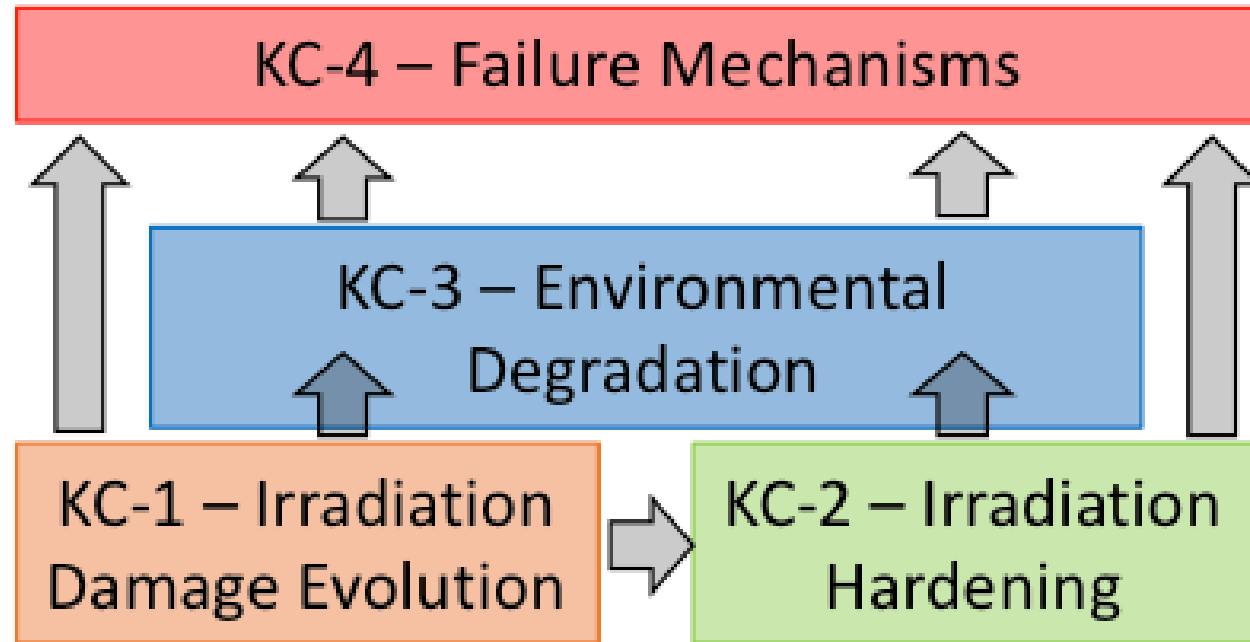


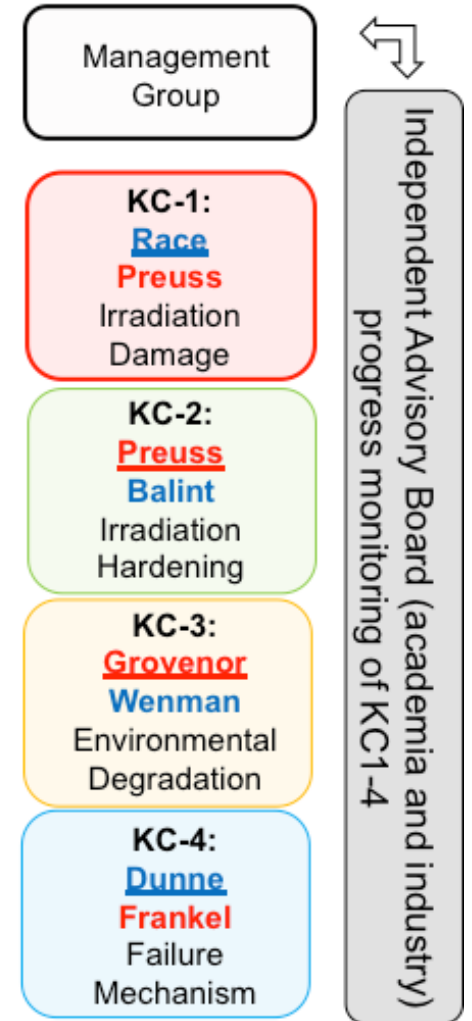
MIDAS – Mechanistic understanding of Irradiation Damage in fuel ASsemblies

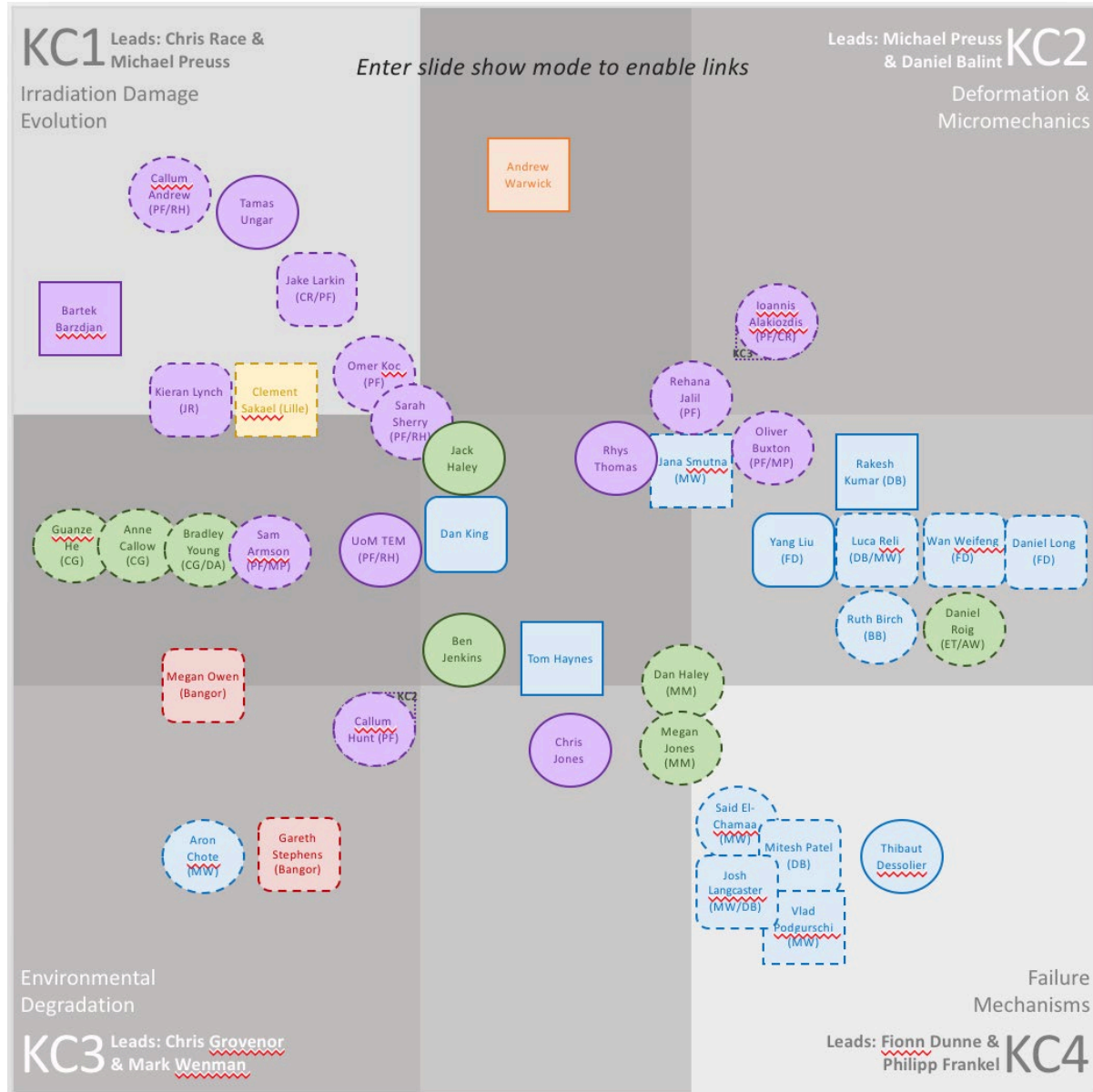
How we worked before:



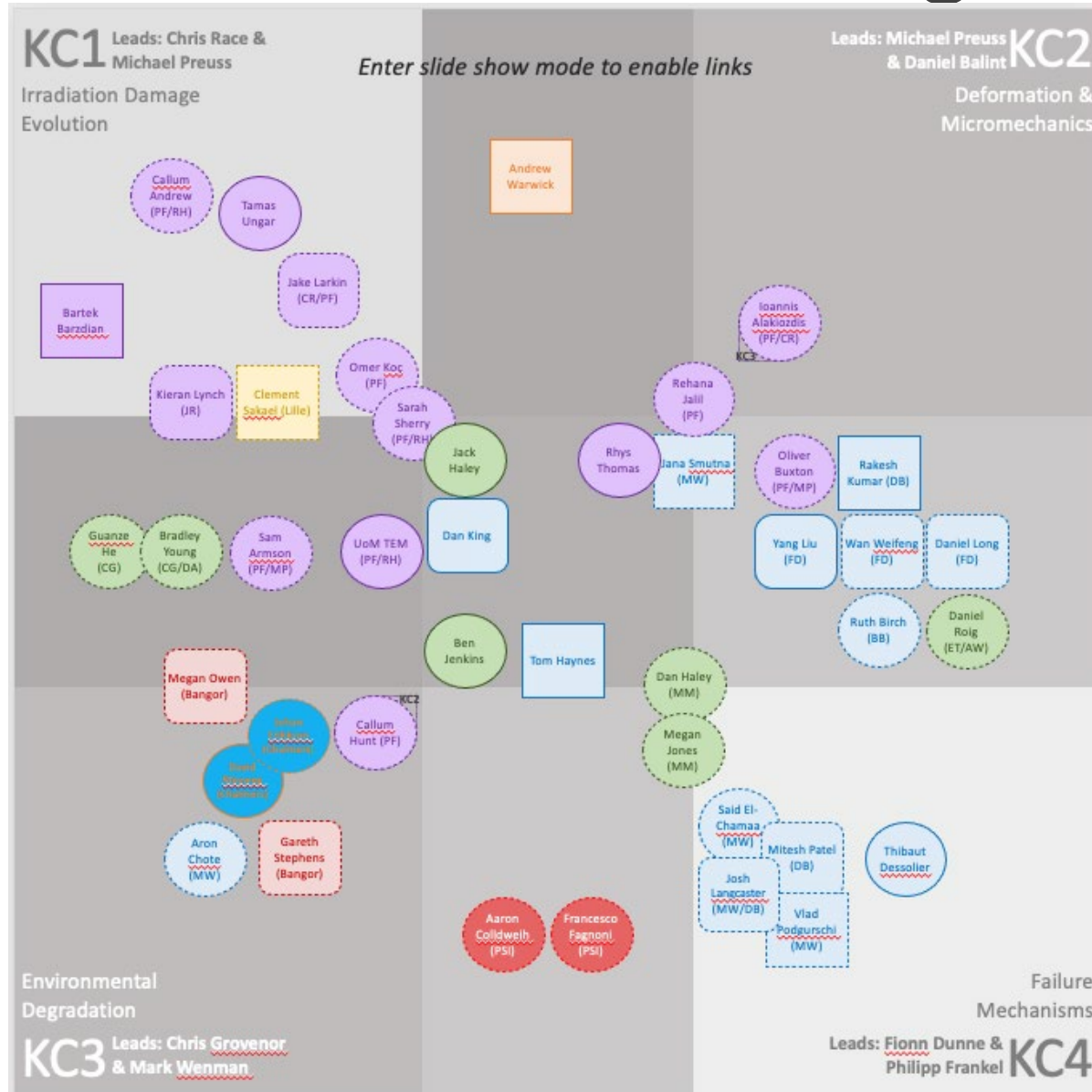


Length Scale	Expertise and People	
	Characteris. Observation	Modelling Understanding
Atomistic description	Moody/ Frankel	Dudarev/ Race
Elemental/H Segregation	Grovenor/ Moore/ Moody	Dudarev/ Wenman/ Race
Dislocations	Preuss/ Grovenor/ Wilkinson	Race/ Balint
Precip./ Matrix	Moody/ Grovenor/ Preuss	Dudarev/ Robson
Strain/ Stress	Preuss/ Frankel/ Wilkinson	Dunne/ Balint
Env./Mech. Perform	Frankel	Dunne/ Wenman





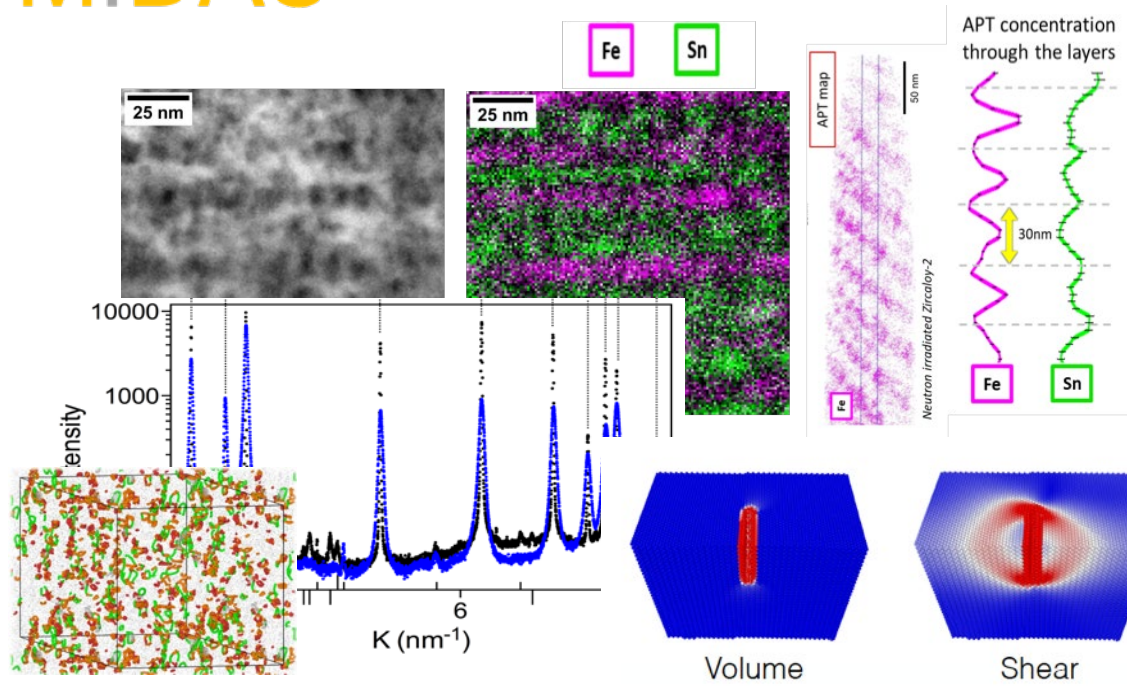
- **11 PDRA**s
 - 1 CCFE, 5 Imperial, 2 Oxford, 3 UoM.
 - 5 Experimental, 4 Modelling, 2 joint.
- **31 related PhD**s
 - 10 Imperial, 6 Oxford, 10 UoM, 5 from other institutions.
 - 18 Experimental, 4 Modelling, 9 joint Mod./Exp.
- 11 directly MIDAS affiliated
 - RR, EdF, WH, Jacobs, self funded



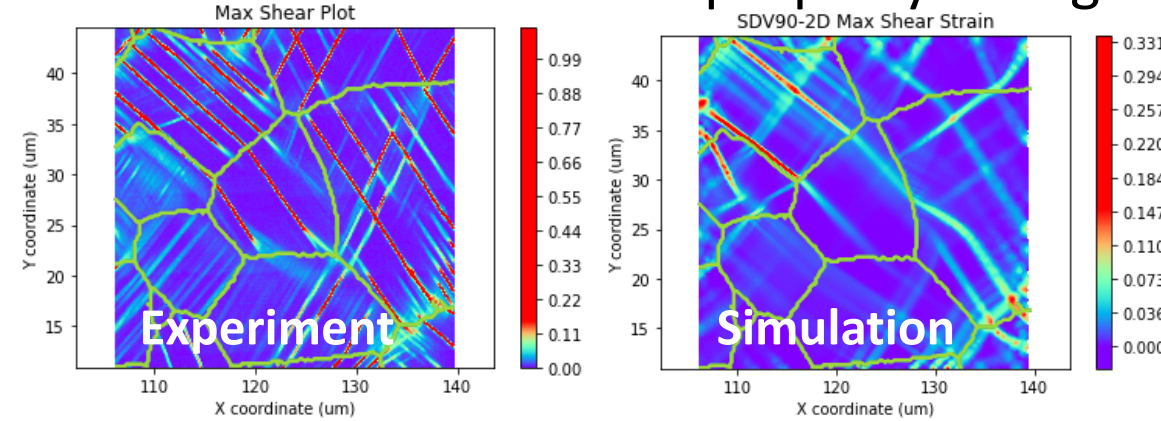
- Affiliated institutions
 - UK → international programme



- Keen international engagement
 - USA, Switzerland, Sweden, France, Canada, Australia
 - MIDAS gives update to NFIR meetings



KC2: irradiation Induced property changes



KC4: Failure mechanisms

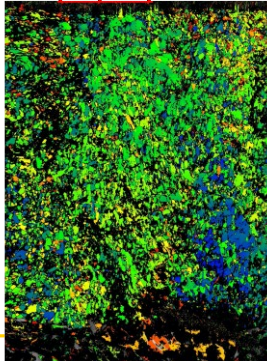
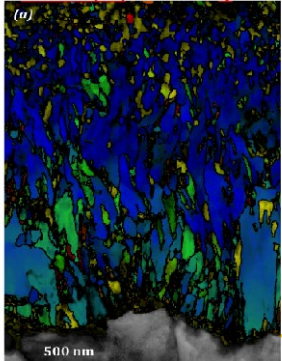
KC3: Environmental degradation

Autoclave exposure

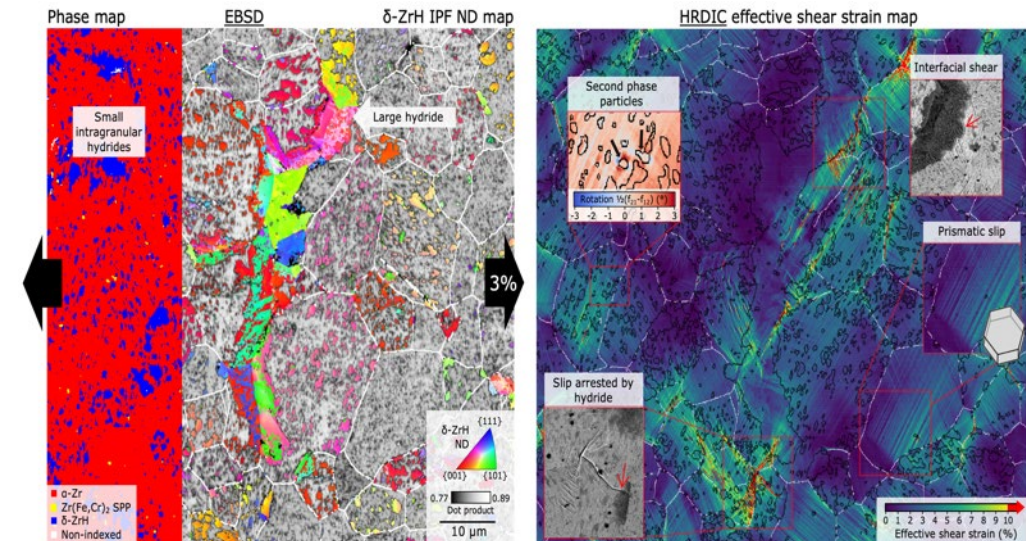
100 days (2544 Hrs)

PWR exposure

(9 cycles)



Active facilities :
NNL, MRF, DCF,
DLS, HRI



PDRA posts

- Recruiting: 3 posts - jobs.manchester.ac.uk
 - **Using theory and simulation to improve x-ray line profile analysis of dislocation loops** - Chris Race
 - **Understanding corrosion & failure mechanisms of irradiated zirconium alloys by advanced microscopy** - Joe Robson
 - **Modelling Second Phase Precipitate Evolution in Zirconium Alloys under Irradiation** - Katie Moore & Phil Frankel