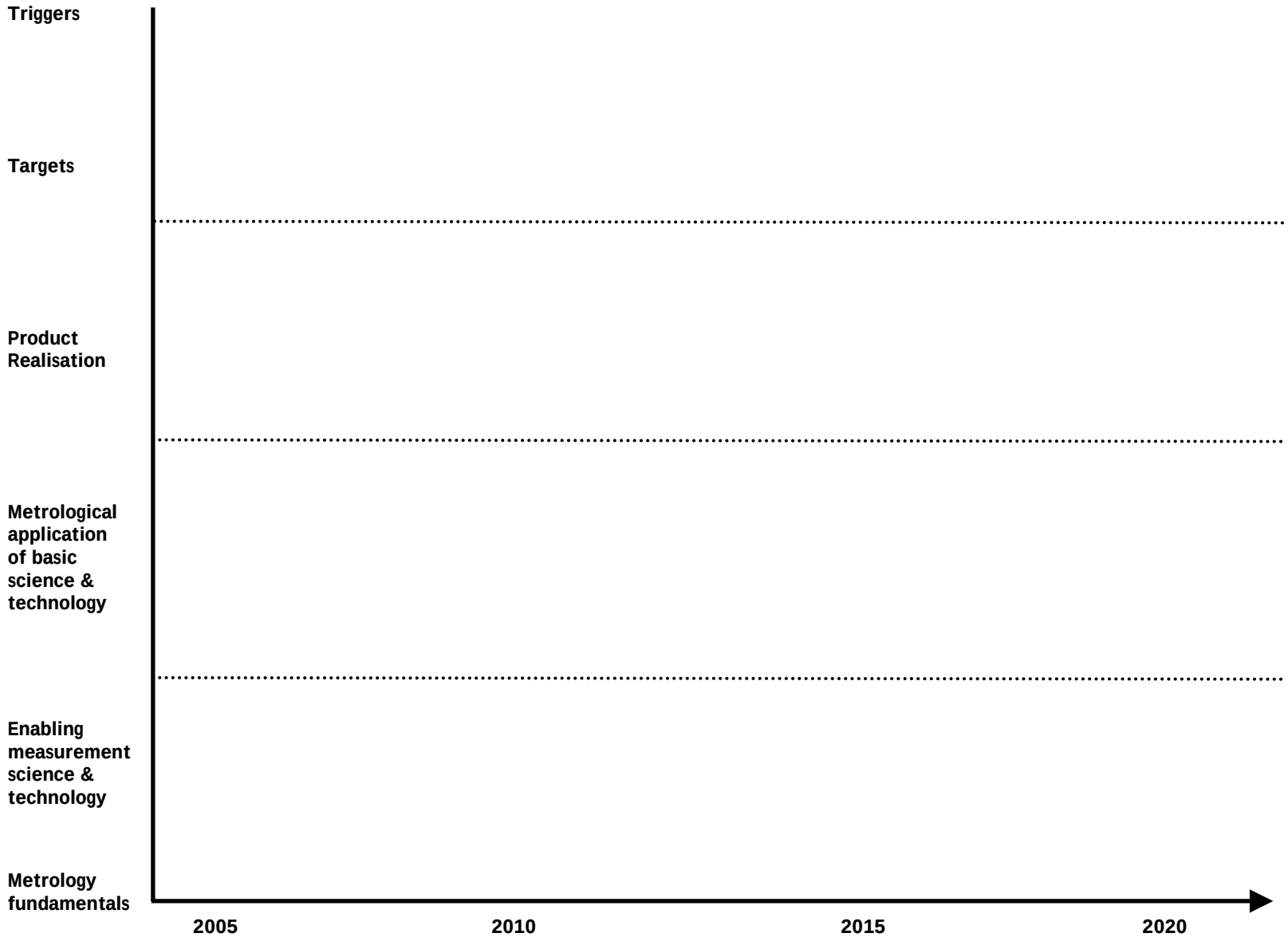
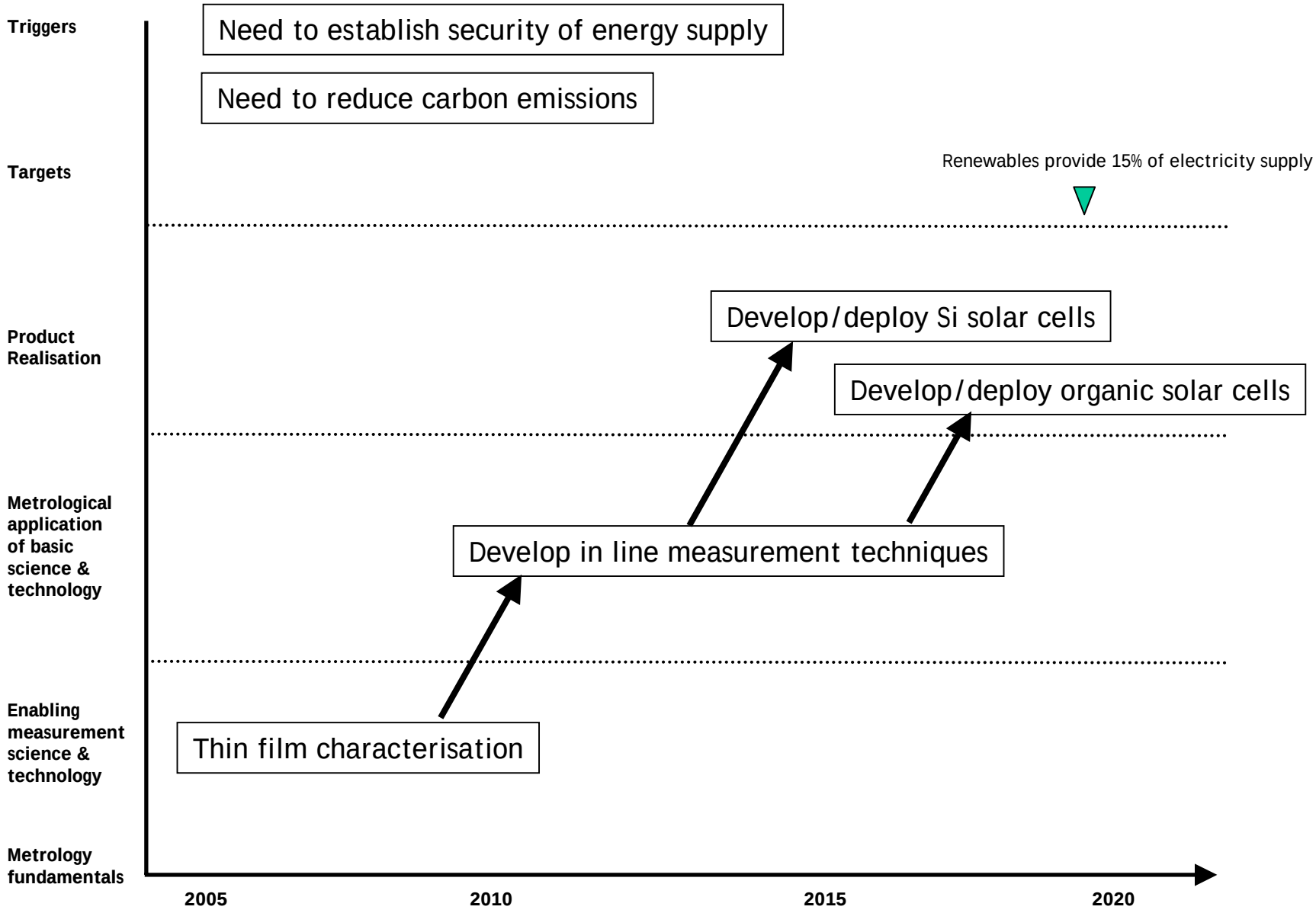
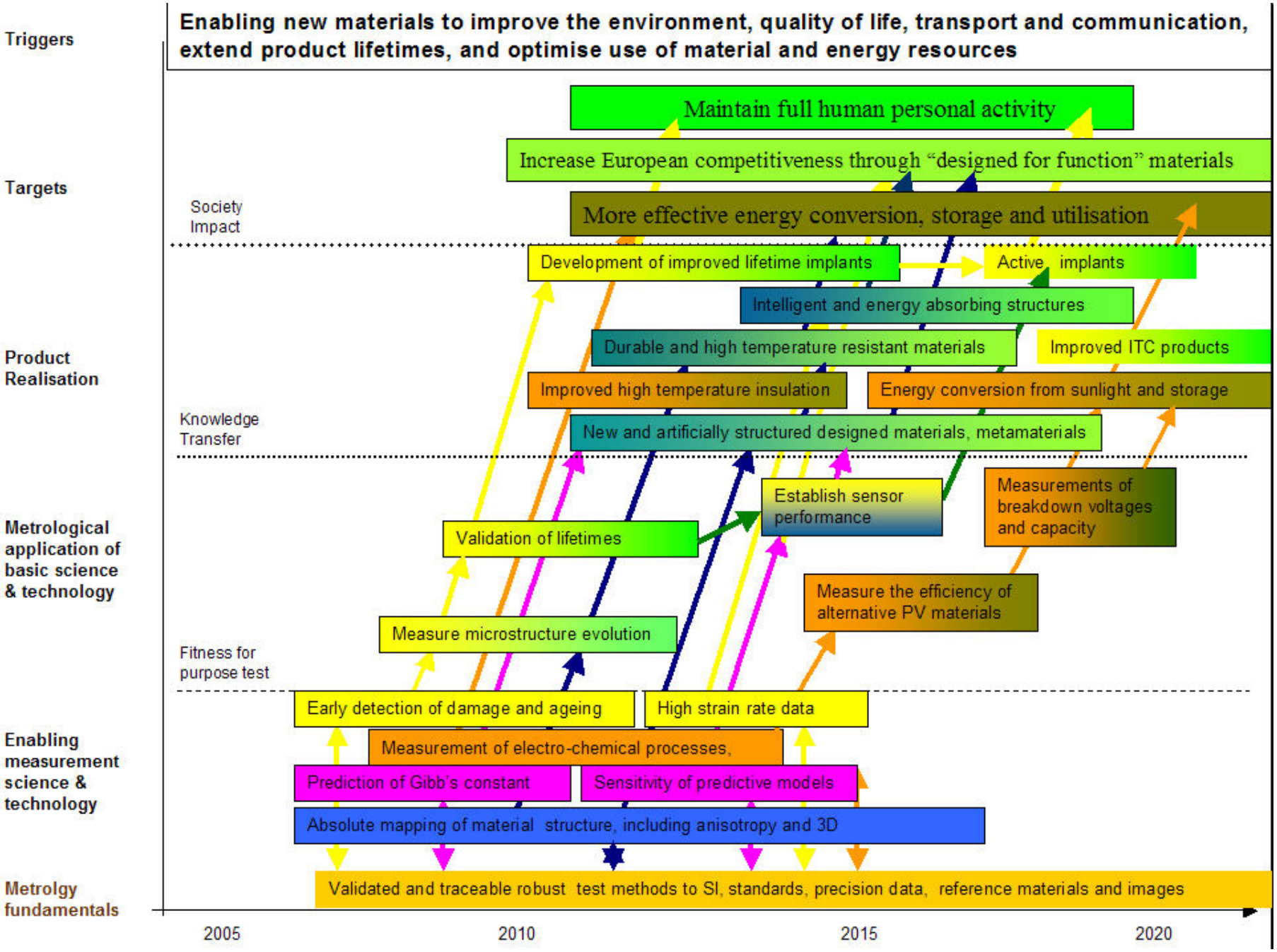
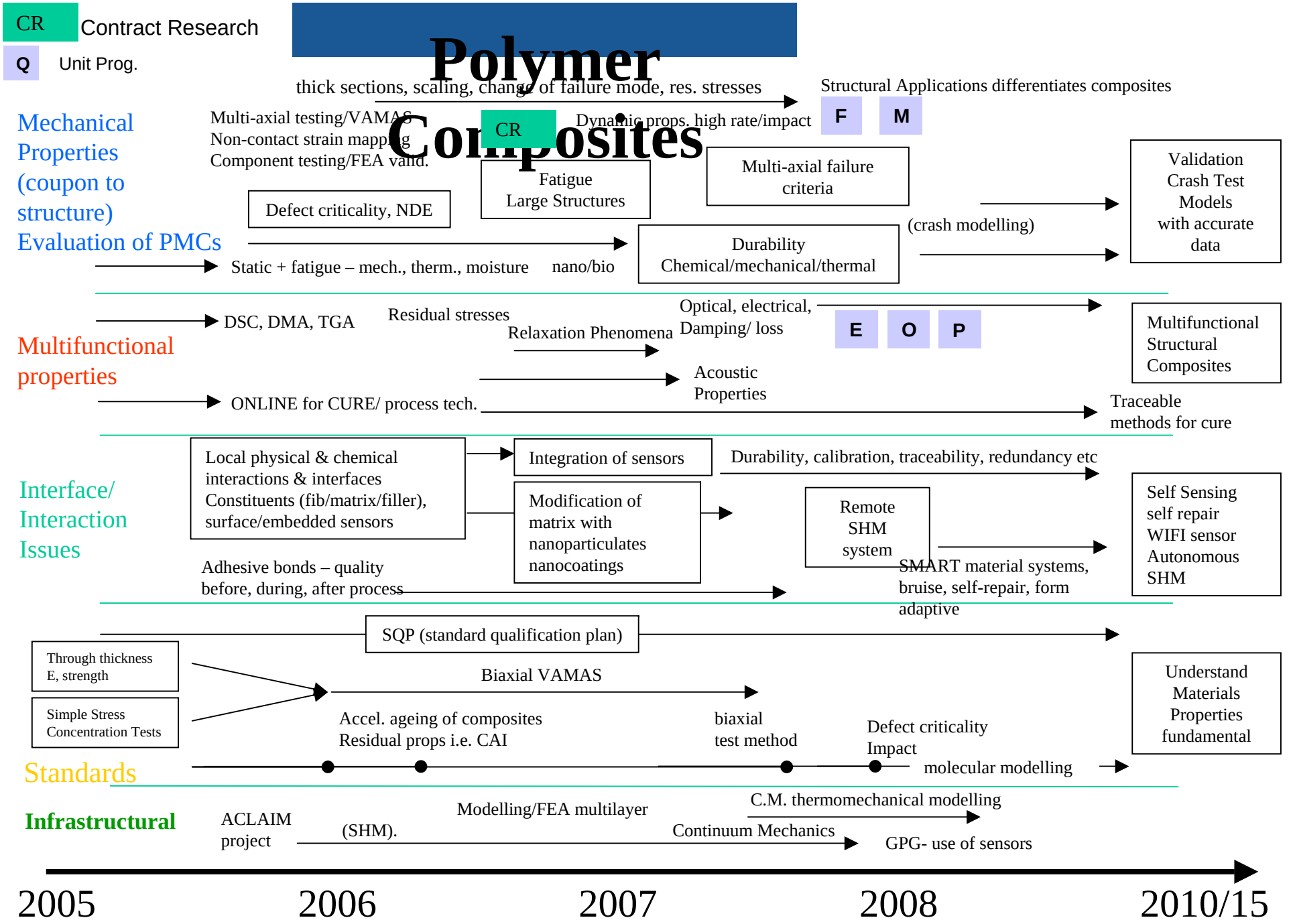
Roadmap Template




Triggers
Need to establish security of energy supply
Need to reduce carbon emissions
Targets
Renewables provide 15% of electricity supply
Product Realisation
Develop/deploy Si solar cells
Develop/deploy organic solar cells
Metrological application of basic science & technology
Develop in line measurement techniques
Enabling measurement science & technology
Thin film characterisation
Metrology fundamentals
2005
2010
2015
2020


Triggers
Enabling new materials to improve the environment, quality of life, transport and communication, extend product lifetimes, and optimise use of material and energy resources
Targets
Maintain full human personal activity
Increase European competitiveness through "designed for function" materials
Society Impact
More effective energy conversion, storage and utilisation
Product Realisation
Development of improved lifetime implants
Active implants
Intelligent and energy absorbing structures
Durable and high temperature resistant materials
Improved ITC products
Improved high temperature insulation
Energy conversion from sunlight and storage
Knowledge Transfer
New and artificially structured designed materials, metamaterials
Metrological application of basic science & technology
Establish sensor performance
Measurements of breakdown voltages and capacity
Validation of lifetimes
Measure the efficiency of alternative PV materials
Measure microstructure evolution
Fitness for purpose test
Enabling measurement science & technology
Early detection of damage and ageing
High strain rate data
Measurement of electro-chemical processes,
Prediction of Gibb's constant
Sensitivity of predictive models
Absolute mapping of material structure, including anisotropy and 3D
Metrolgy fundamentals
Validated and traceable robust test methods to SI, standards, precision data, reference materials and images
2005
2010
2015
2020


CR
Contract Research
Q
Unit Prog.
Polymer Composites
Mechanical Properties (coupon to structure) Evaluation of PMCs
thick sections, scaling, change of failure mode, res. stresses
Structural Applications differentiates composites
F
M
Multi-axial testing/VAMAS
Non-contact strain mapping
Component testing/FEA valid.
CR
Dynamic props. high rate/impact
Fatigue Large Structures
Multi-axial failure criteria
Validation Crash Test Models with accurate data
Defect criticality, NDE
(crash modelling)
Durability Chemical/mechanical/thermal
Static + fatigue – mech., therm., moisture
nano/bio
Multifunctional properties
DSC, DMA, TGA
Residual stresses
Relaxation Phenomena
Optical, electrical, Damping/ loss
E
O
P
Multifunctional Structural Composites
Acoustic Properties
ONLINE for CURE/ process tech.
Traceable methods for cure
Interface/ Interaction Issues
Local physical & chemical interactions & interfaces
Constituents (fib/matrix/filler), surface/embedded sensors
Integration of sensors
Durability, calibration, traceability, redundancy etc
Modification of matrix with nanoparticulates nanocoatings
Remote SHM system
Self Sensing
self repair
WIFI sensor
Autonomous SHM
Adhesive bonds – quality before, during, after process
SMART material systems, bruise, self-repair, form adaptive
SQP (standard qualification plan)
Through thickness E, strength
Simple Stress Concentration Tests
Biaxial VAMAS
Accel. ageing of composites
Residual props i.e. CAI
biaxial test method
Defect criticality
Impact
molecular modelling
Understand Materials Properties fundamental
Standards
Infrastructural
ACLAIM project
(SHM).
Modelling/FEA multilayer
Continuum Mechanics
C.M. thermomechanical modelling
GPG- use of sensors
2005
2006
2007
2008
2010/15