

Lloyd's Register: Transportation

Independent Safety Assurance for Fast Developing Railways in China



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Agenda

- 1) Background
- 2) The challenge
- 3) Facing the challenge

Background – Mainline Railway Development: Speed Enhancement

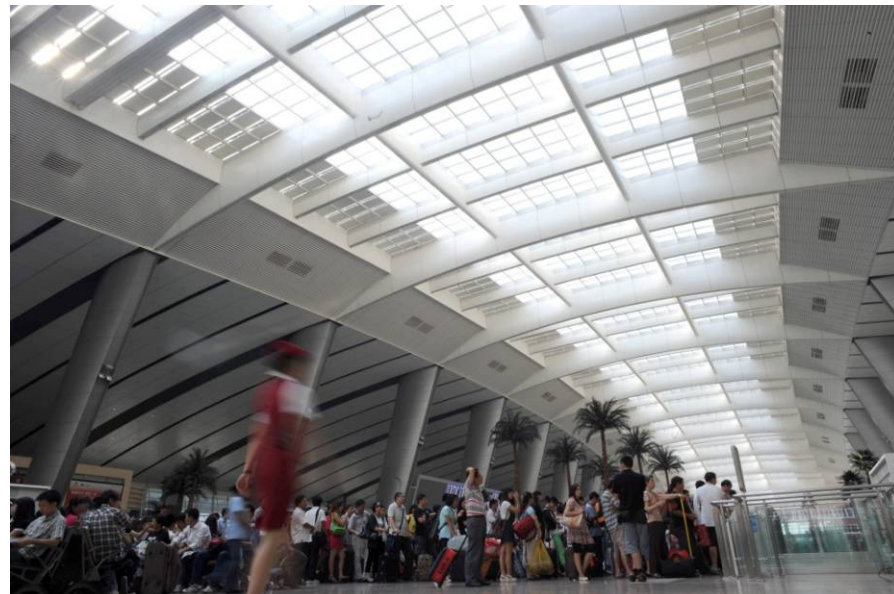
- Existing lines have undergone 6 general speed enhancement developments between 1997 and 2007
 - First: April 1997, top speed 140Km/h
 - Second: October 1998, top speed 160Km/h
 - Third: October 2000, more routes enhanced
 - Fourth: October 2001, more routes enhance
 - Fifth: April 2004, top speed 200Km/h
 - Sixth: April 2007, more routes enhance

Background – Mainline Railway Development: Planned Rail Network

- MOR planned rail network
- Mid-long term: shaped by 4 cross and 4 through high speed passenger line skeleton
 - Speed: >200Km/h
 - Total length: >12,000Km
- New lines of >16,000Km in West region
- Total length of 100,000Km by 2020

Background – Mainline Railway Development: Passenger Dedicated Lines

- First PDL line commissioned in 2003: 200Km/h
- Olympic Line, Beijing-Tianjin Intercity PDL: CTCS-2, 350Km/h, commissioned just before Olympics
- High profile Wuhan-Guangzhou PDL: CTCS-3, 350Km/h commissioned end of last year
- Further PDL lines since commissioned or to be commissioned soon
- The Beijing-Shanghai PDL line: 400Km/h, expected to be commissioned end of next year



Background – Metro Construction:

- Before 1994, only Beijing and Tianjin had metros
- By 2008, 10 cities had metros
- At the moment Beijing alone has four lines under construction and more lines planned, with the vision that anywhere in Beijing will be within 10min walk from a metro station

- From 2011 to 2020, 5,500km will open in China
- In 2015 alone, 1000Km will open in China
- By 2020, 210 new lines will open and 45% of the worlds metro track will be in China
- These will be a combination of underground, light rail and maglev

Challenges:

- Higher speed
- Shorter headway
- Experience requirements
- Short of people
- Programme pressures



Challenge: New Technology

- Mainline, Chinese Train Control System (CTCS)
- Metro, Communication Based Train Control system (CBTC) moving block signalling system



Challenge: Exporting

- Gaining experience of international practice



Arnold Schwarzenegger, Governor of California USA, on a recent trip to Shanghai to inspect Chinese Highspeed Railway Technology

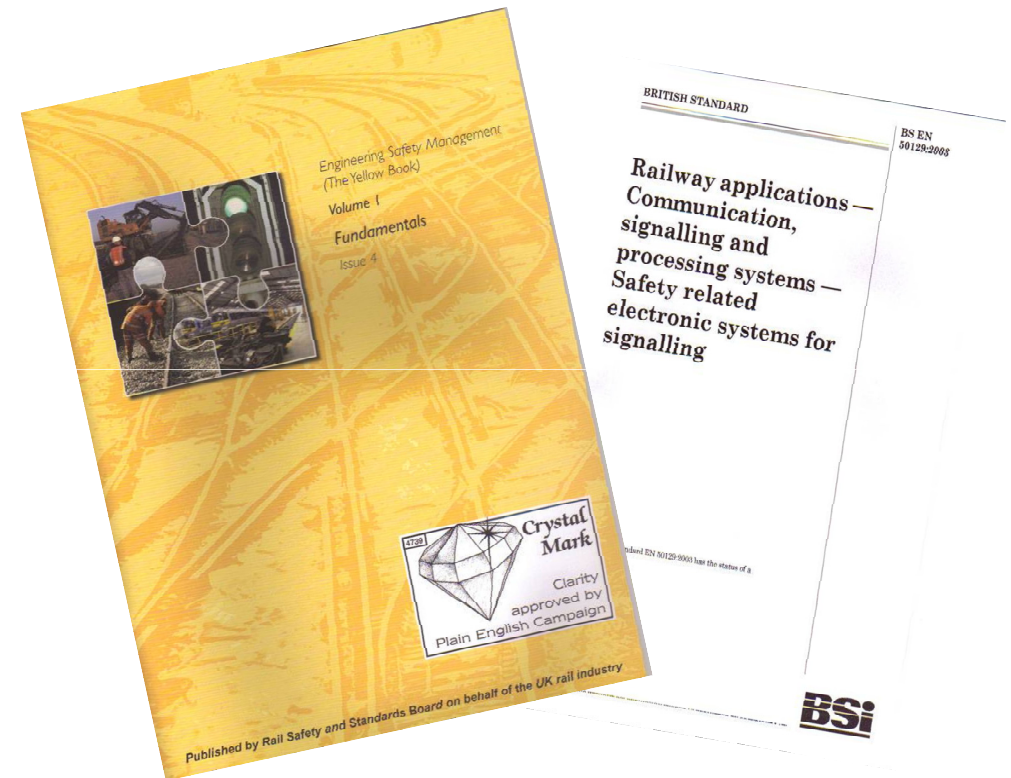
Challenge: Safety

- Maintaining Safety

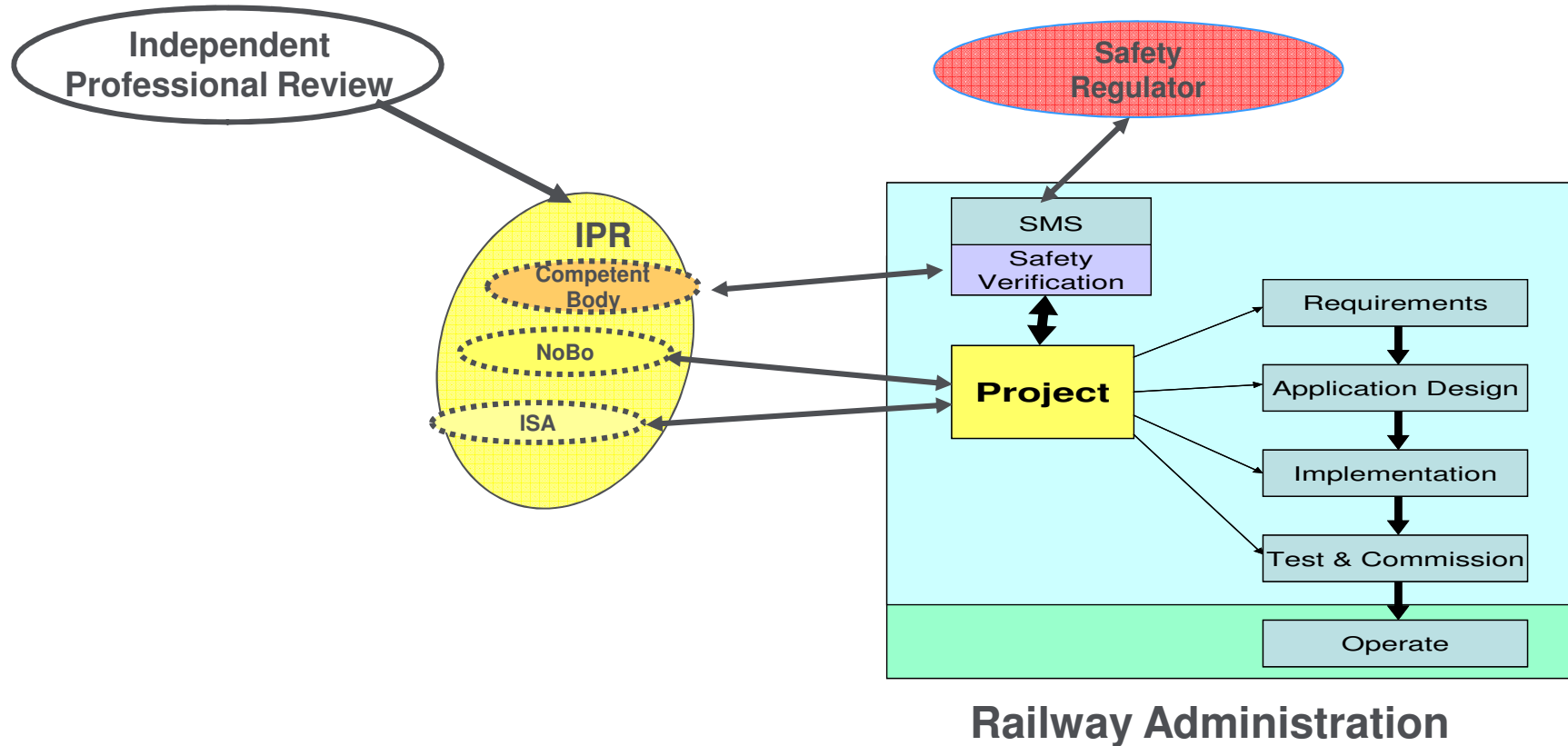


Meeting the Challenge: Training, mentoring

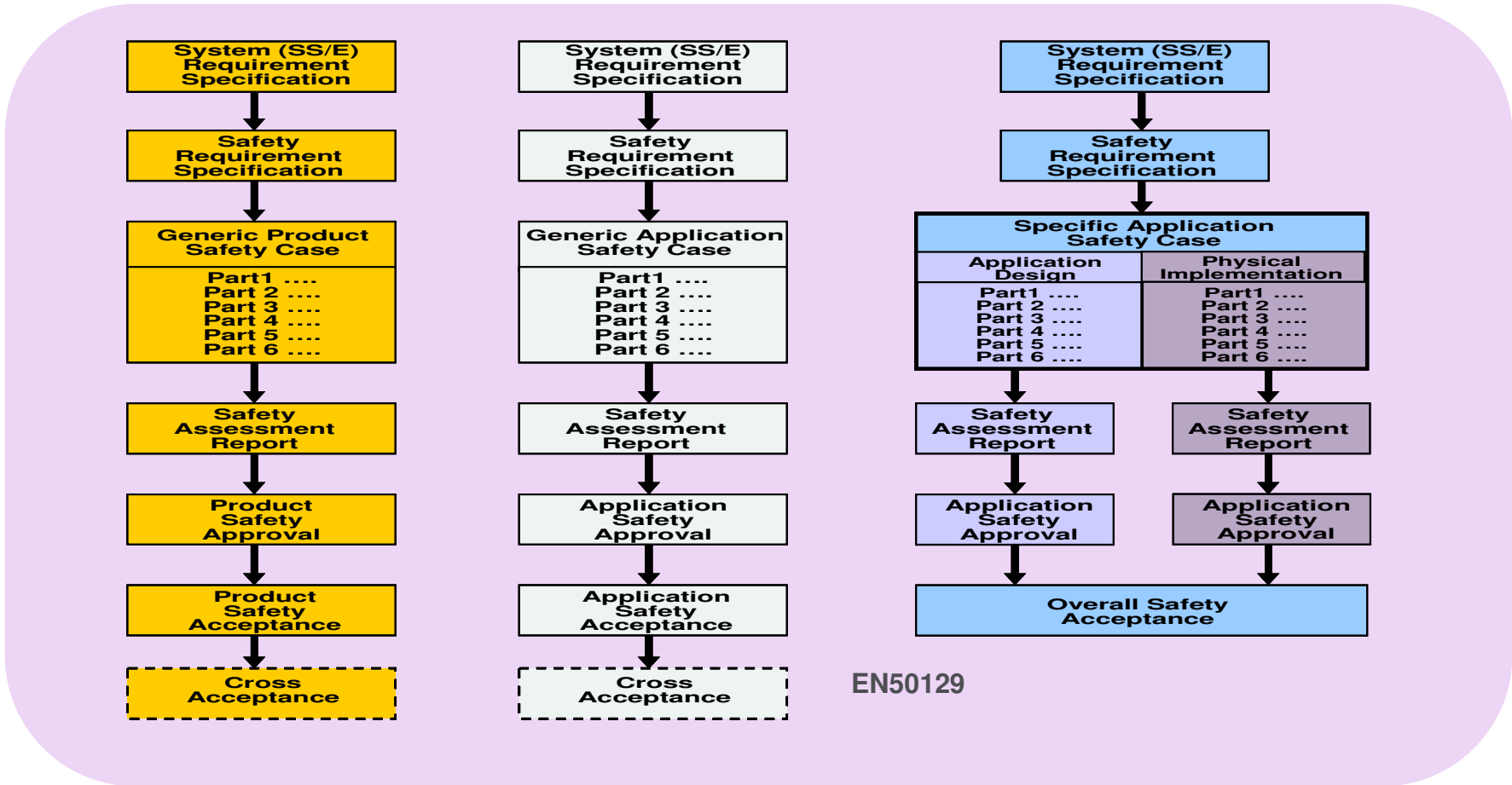
- Bring International best practices and standards to China
 - EN50129 series of standards
 - Yellow Book
- Help to set up Safety Assurance System for suppliers
- Help to set up safety requirement procedure for metro administration
- Give advice to Chinese railway certification body



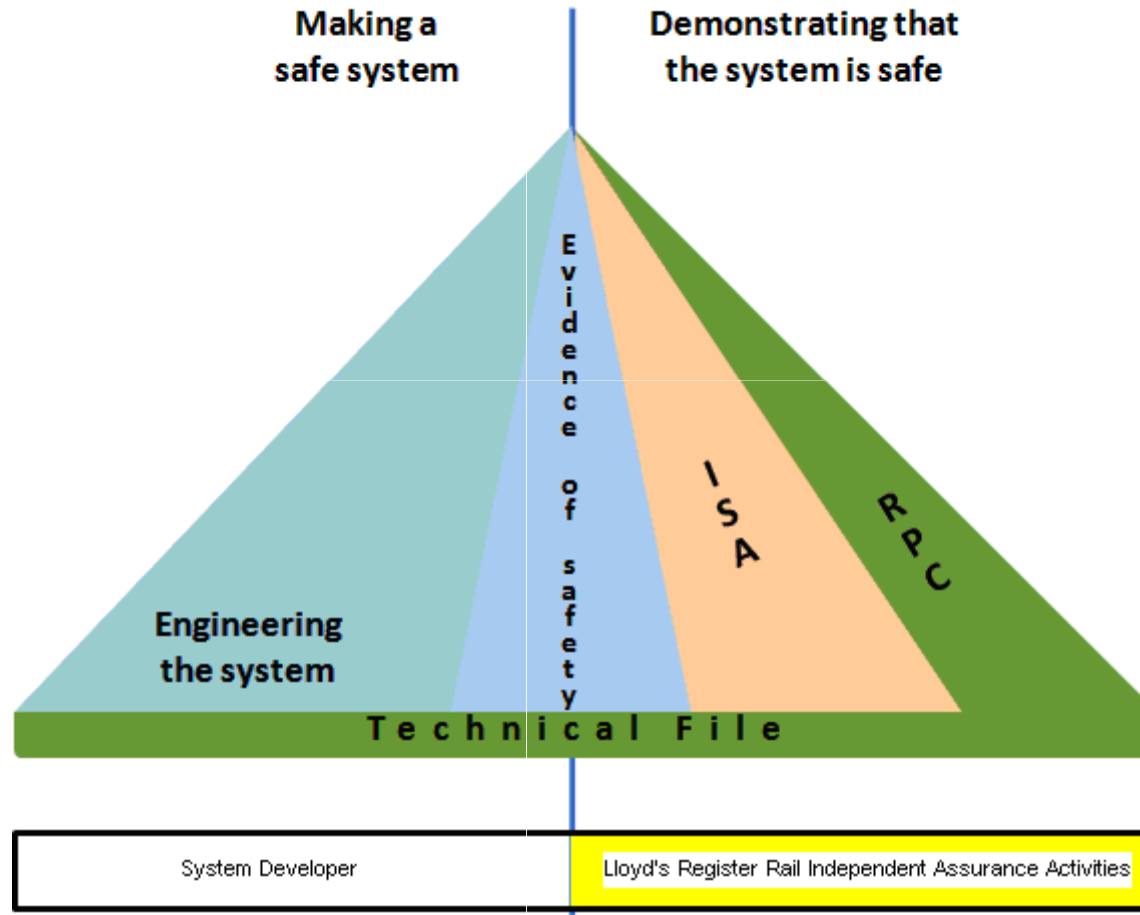
Independent Safety Assurance



RPC and ISA



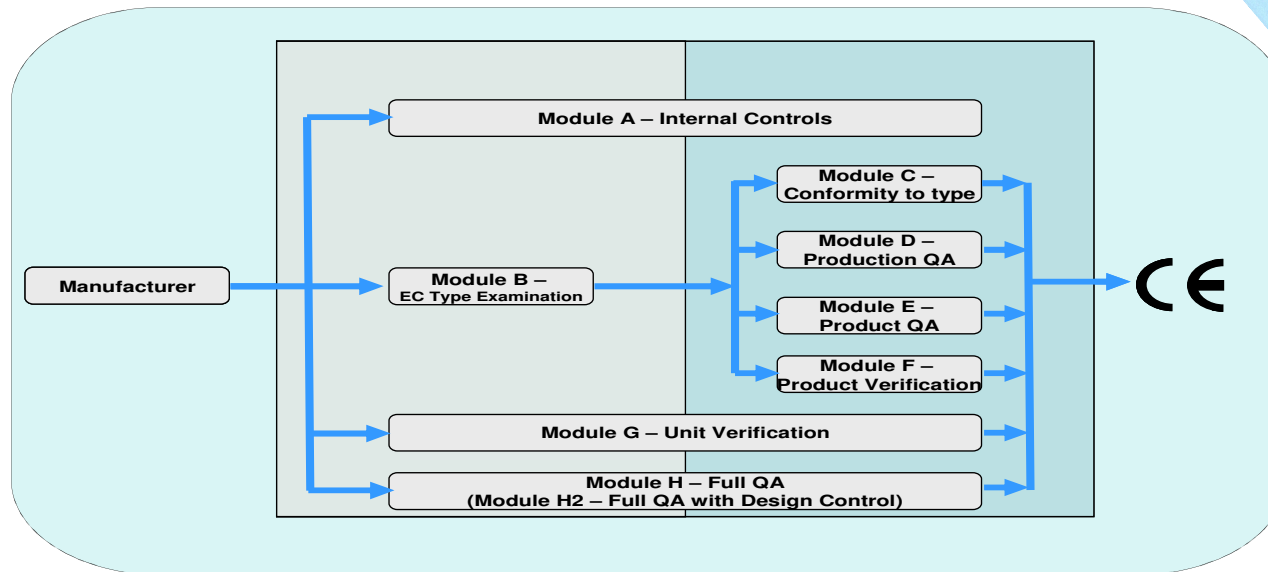
RPC and ISA: Maintaining Independence



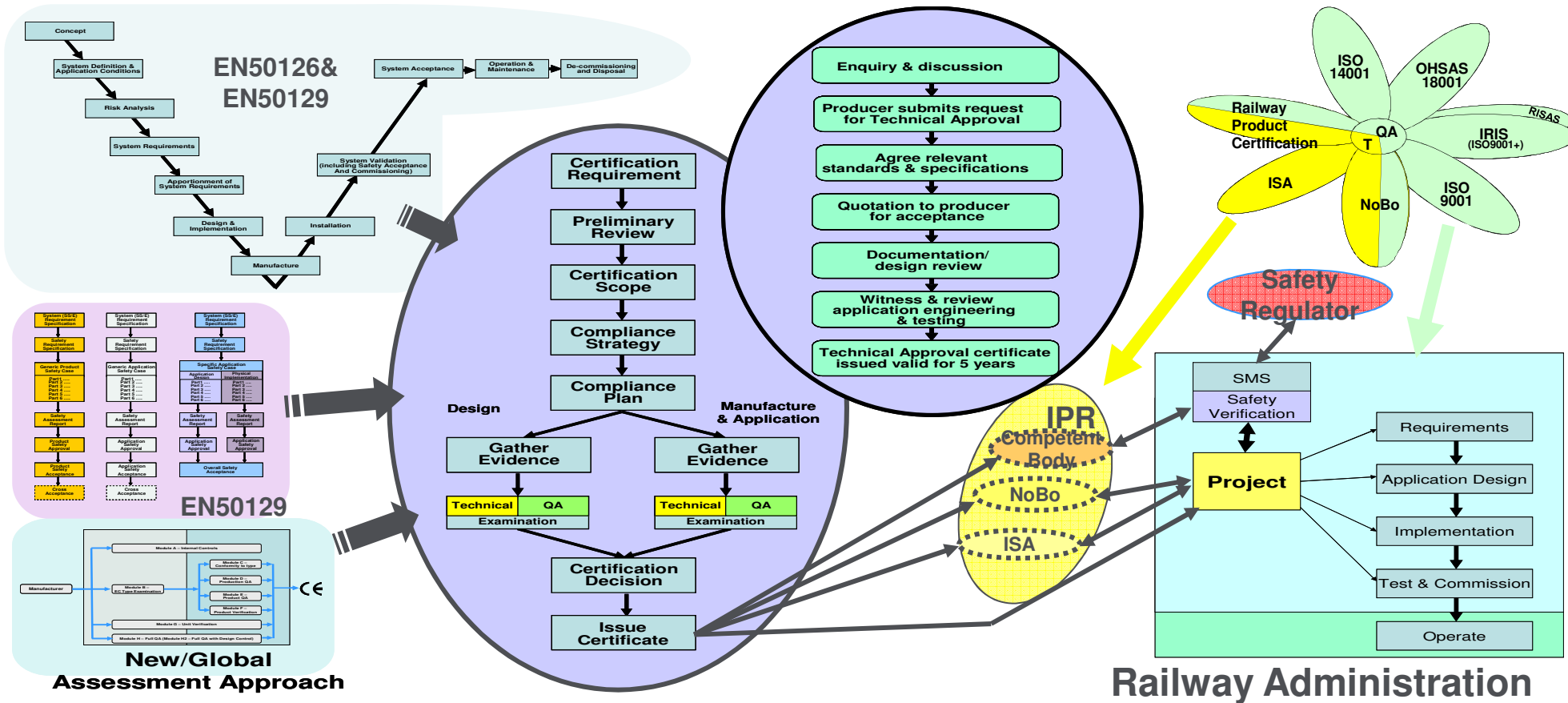
RPC

European Rules for Conformity Assessment

- In September 1999 the European commission published a guide to conformity assessment
- Based on the Global Approach for use with New Approach

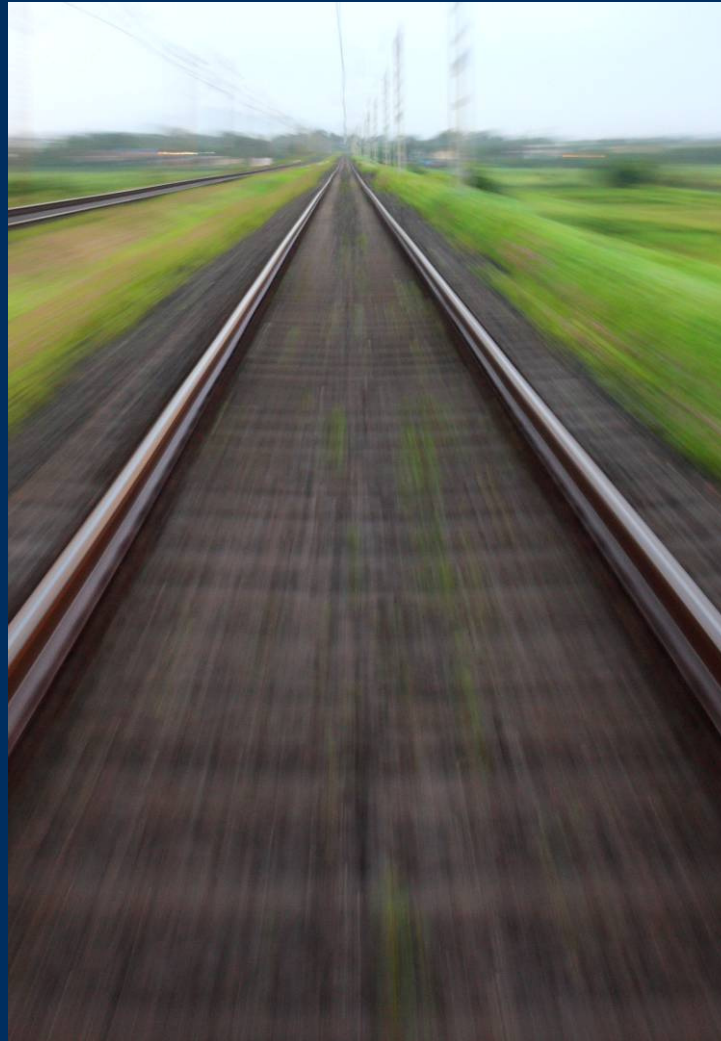


Summary



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Any questions?



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