

# Simplification of Lighting and Light-Signalling Technical Requirements Stages 2 and 3

## The Opportunity of a Lifetime

### Transform the regulations to become Performance Based / Technology Neutral

- Installation
- Road Illumination Devices
- Light Signalling Devices
- Retro-Reflective Devices

Timing: Expect that GRE IWG-SLR will start working on Stage 2 in September 2017

## UN WP.29

Stage 1 - Entry into force – January 2019

Stage 2 - work expected to start in September 2017

- GTB presented first ideas in December 2016

## China

Programme to simplify the GB mandatory standards by the end of 2020. GTB has been chosen as China's partner of choice and is expected to act as the bridge between the Chinese expert group (C-GTB) and GRE.

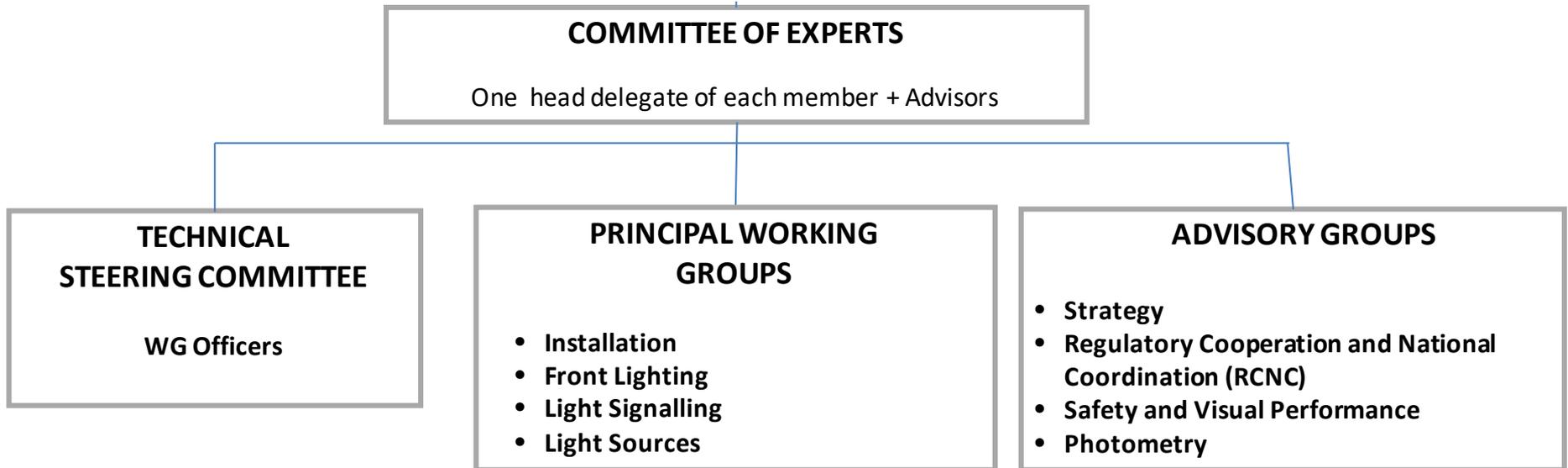
## USA

Ground-breaking work by NHTSA and SAE to develop requirements for ADB. This provides a good basis for development of a GTR.

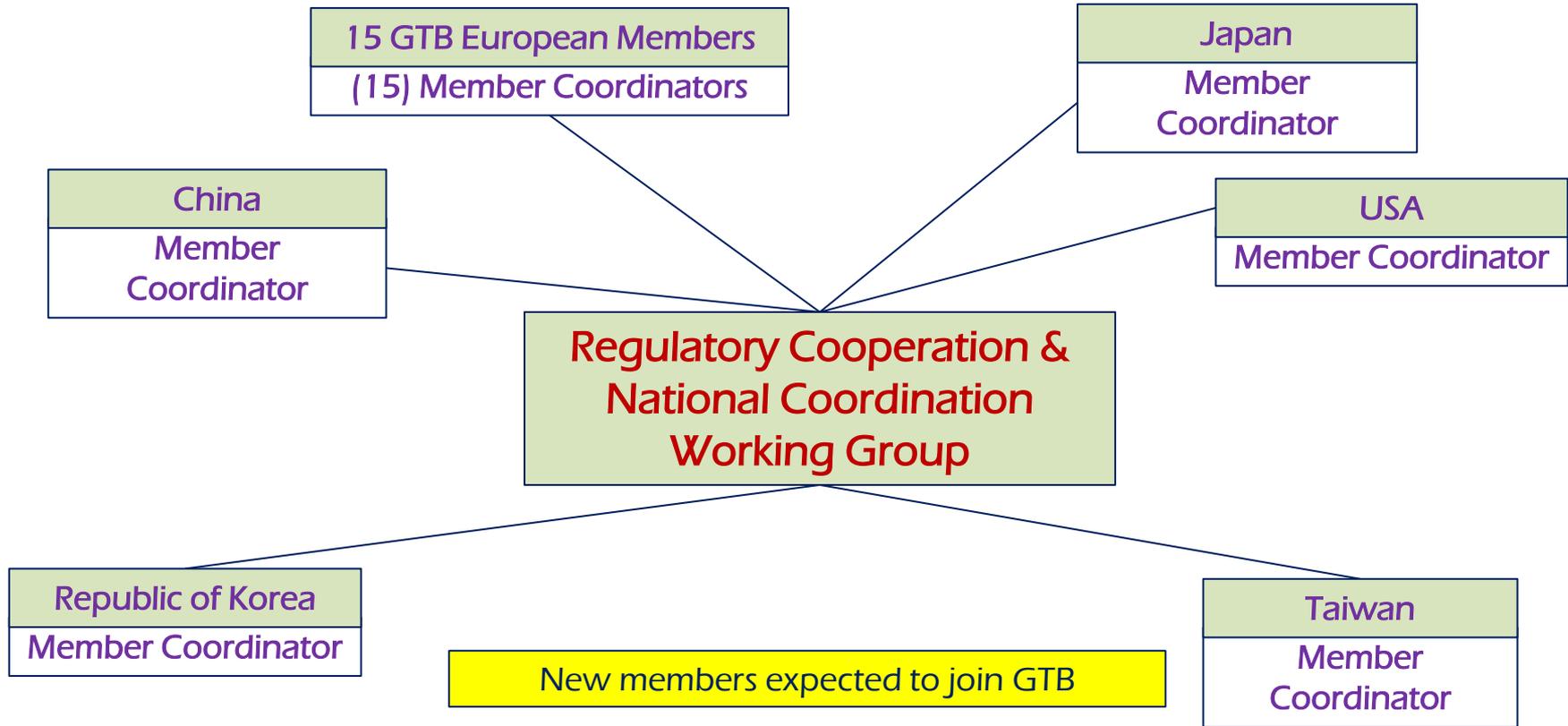
GTB is developing a dialogue with NHTSA, in conjunction with SAE (the GTB member representing the USA Experts)

GTB restructured in November 2016

- to focus on supporting regulatory simplification
- to achieve recognition as a “Partner of choice” of the regulatory bodies.



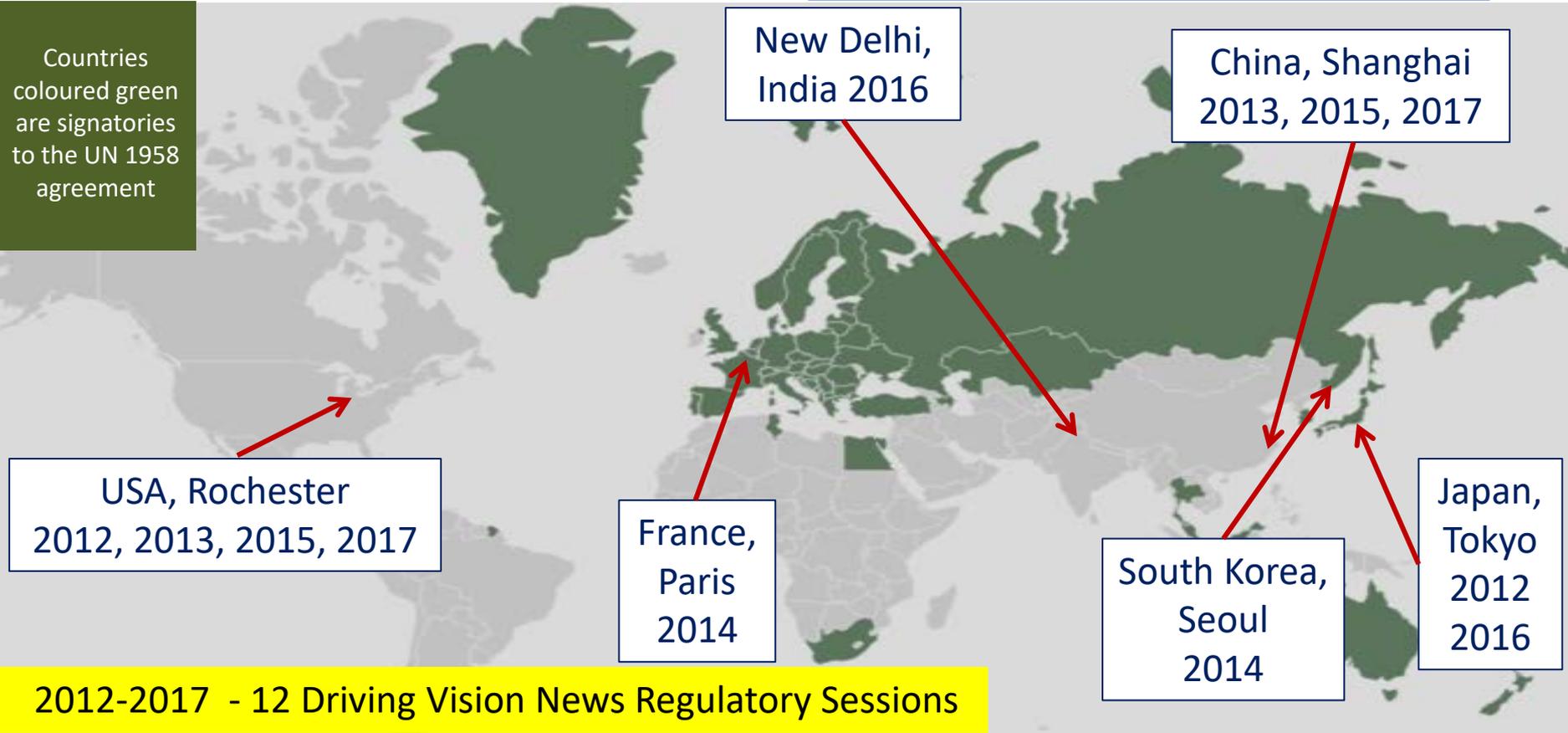
# GTB Regulatory Cooperation and National Coordination (WG-RCNC)



- ❖ Use of regulation as barrier to trade is no longer appropriate
- ❖ Trade Partnerships (e.g. TTIP)– Regulatory Implications
- ❖ Renewed interest by US NHTSA – Focus on adaptive technologies
- ❖ NCAP systems
- ❖ Increasing pace of innovation of adaptive lighting systems - Digitalisation
- ❖ New lighting demands for autonomous vehicles
- ❖ Outcomes of panel sessions at DVN Regulatory Workshops in USA, Japan, China, France, India and South Korea
  - **Recurring theme is the need to harmonise / synchronise the technical requirements of the various type approval / certification/ self certification systems**

## Contribution of DVN Workshops

Countries coloured green are signatories to the UN 1958 agreement



2012-2017 - 12 Driving Vision News Regulatory Sessions

## Focus upon the development of technical requirements

- Based upon an assessment of the potential disbenefits of new technologies, and to define robust objective testing requirements.
- Definition of technology neutral requirements that can be adopted for both type-approval and self-certification systems.

This approach is totally compatible with the existing situation in the US and the “new approach” for the UN Regulations.

## Major Considerations

- ❖ Development of Installation requirements to define performance criteria of the complete system in terms of visibility (see and be seen) and glare
  - possibly based upon the CIE TC4-45 / SAE Pedestrian Visibility approach
  - virtual testing methods
- ❖ Definition of objective testing requirements to verify compliance with performance based requirements at the vehicle /on-road level
- ❖ All requirements shall be verified through independent research

### Major Questions

- ❖ How to avoid the need for interpretations and judgement of the approval authorities currently allowed in UN regulations but unacceptable in a self certification or GTR regime?
- ❖ How to redefine “apparent surface” and “single lamp” in performance based terms?
- ❖ How to define and assess geometric visibility requirements?
- ❖ How to include “ specific national operating / traffic conditions”?

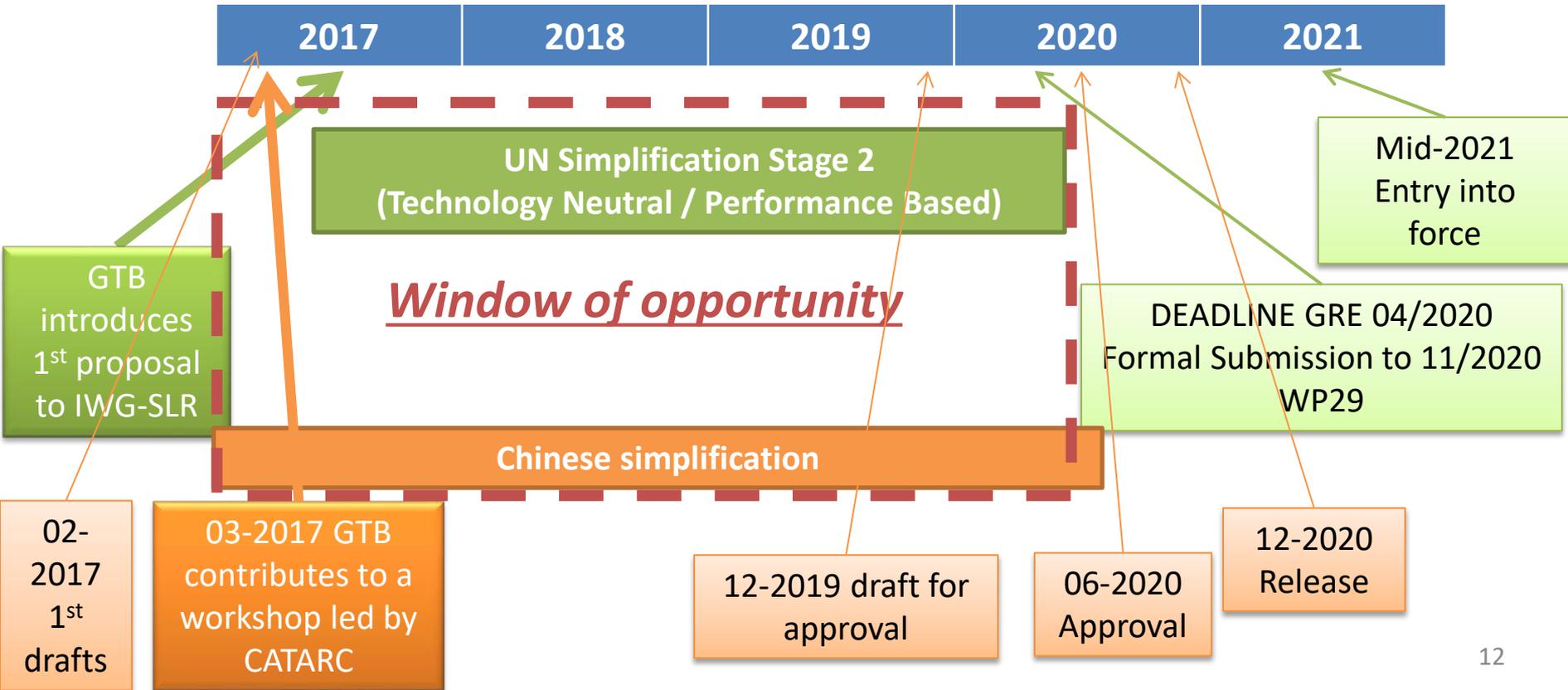
In addition to simplifying the UN Regulations there are wider benefits to be exploited

- Synchronisation of the technical requirements of the individual national mandatory standards with the UN regulations. (e.g. China, Republic of Korea, India, Brazil)
- Overcoming the objections of the US NHTSA to the current UN Regulations that are deemed to be unsuitable as a basis for a self certification system and its enforcement.

(note; current work by NHTSA and SAE to introduce ADB into the FMVSS108)

# Synchronisation - Technical requirements of UN and Chinese Regulations

GTB DRAFT Plan to synchronise UN and GB standards as part of the GRE Stage 2 activity.



## Challenges:

- How to keep UN and China synchronised  
(Assuming China will not join the UN 1958 agreement)
- How to define an approach acceptable to the USA

## Solution:

- Start working on GTR's for M1 and N1 vehicles as Stage 3 of the Simplification agenda
  - Installation
  - Road Illumination Devices (RID)
  - Light-Signalling Devices (LSD)
  - Retro-Reflective Devices (RRD)

- How to manage regulation of simple devices and vehicle systems?
  - Existing regulations satisfy current technologies
  - Difficulty to define vehicle level performance based requirements for individual devices
- The Priority is to develop performance based technical requirements to encourage innovation
- **Should Stage 2 Simplification focus upon Adaptive systems as a first priority?**

- December 2016 GTB proposal
- unique opportunity to develop globally harmonised technical requirements
  - offered its global expert resource to draft a first proposal for consideration by IWG-SLR in September 2017.
  - presented an initial idea to harmonise UN and Chinese GB requirements.
- January 2017 Driving Vision News Regulatory Workshop in USA. Positive response from NHTSA
- February 2017 GTB New Technology Forum and one day Brainstorm on Stage 2
- April 2017 GRE was informed of the outcome of the DVN workshops that show significant support for a new initiative to develop harmonised technical requirements

## GTB proposal for a plan for Stage 2 (Continued)

- April 2017 DVN Shanghai Workshop – Panel of 8 Chinese Stakeholders  
Unanimous support for harmonisation under UN 1998 agreement.
- April 2017 GTB meeting with Chinese Government – Standards Administration of China (SAC). Further meeting expected with MIIT in June.
- May 2017 GTB Plenary session (Bologna Italy) – further development of a proposed approach. – further brainstorming.
- June 2017 Meeting of the GTB RCNC Working Group in Tianjin, China  
Input from Chinese experts and the group developing the simplified GB standards
- July 2017 GTB intermediate WG session (Karlsruhe) to prepare a submission for the IWG-SLR September 2017 session.

## Level 1 - The legal act establishing the administrative requirements

Examples:

(New UN “Top level” Regulation)??

UN R-0 (IWVTA)

EU Framework Directive

China GB / FMVSS108 / Etc.....

Administrative Requirements COP / Markings /

Mandatory functions / devices – Signalling – RID – Retro-Reflectors

Rules for optional functions / devices ( are they only allowed when included in a list?)

## Level 2 - Technical Installation (Could become a GTR)

Examples:

R48 /R53 / R86

FMVSS108

### Technical Requirements – Installation

Definitions

On-Road Performance of the whole vehicle – Signalling / Forward Visibility / Glare to other road users.

Position, apparent surface, Geometric Visibility, Headlamp aim -----

## Level 3 - Technical Devices and systems (Could become a GTR)

Examples:

UN Regulations / SAE Jxxx / GB

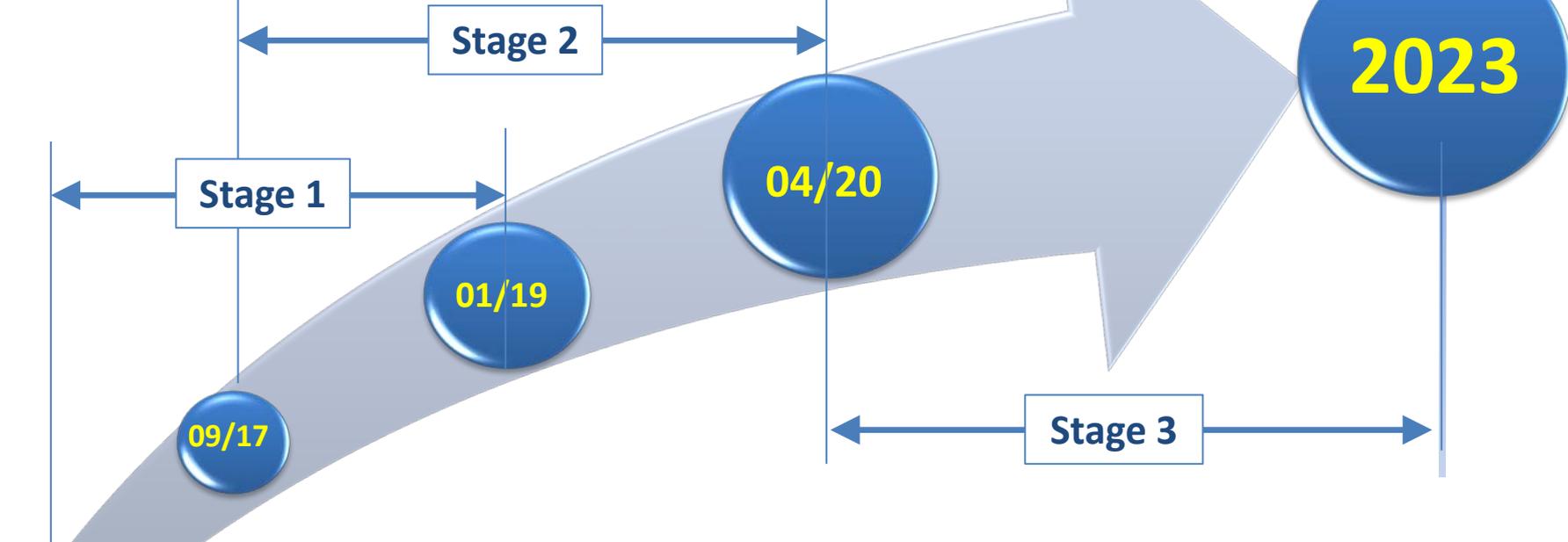
Standards etc.

Technical Requirements for Devices + Light Sources (Mandatory and Optional) and objective testing methods for each device or system.

Photometry / Mechanical / Thermal / -----

- Follow the disciplines associated with development of GTR's
- Fundamental analysis of the existing technical requirements
- Define robust testing regimes  
(suitable for self certification purposes and not dependent upon interpretations and judgement of the type approval authorities).
- Cooperation with research institutes

# The Path to UN GTR's (UN1998 Agreement)



03/17

Stage 1

Simplified UN Regulations – No technical change

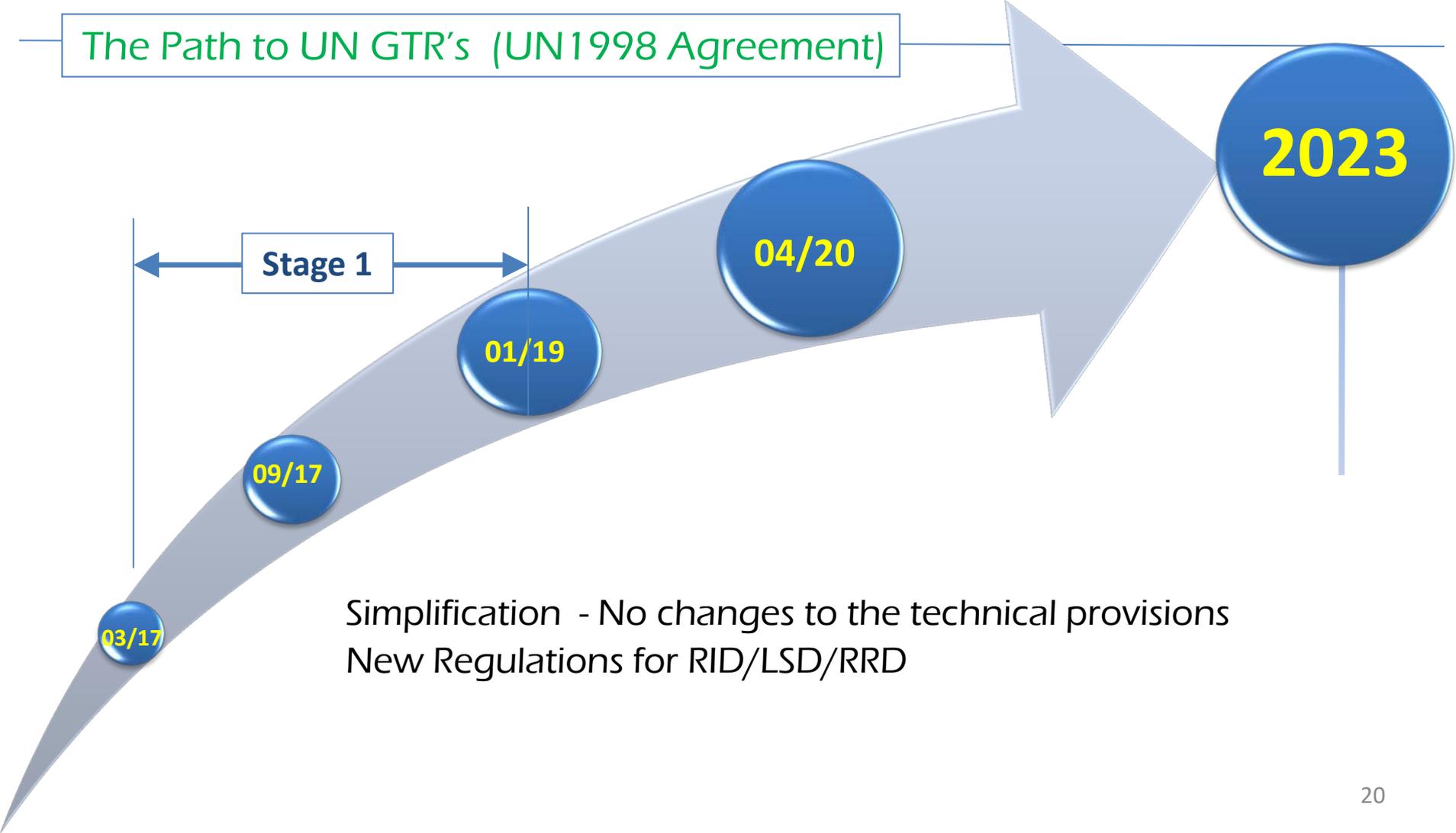
Stage 2

Introduce performance-based requirements for adaptive systems

Stage 3

Global Technical Regulations (GTR) – Performance Based

# The Path to UN GTR's (UN1998 Agreement)



# The Path to UN GTR's (UN1998 Agreement)

Stage 2

2023

04/20

01/19

09/17

03/17

- Revision of the New Regulations for RID/LSD/RRD
- Revision of R48

Technical requirements for discrete devices

Vehicle-Performance based technical requirements for vehicle systems

➤ **Alignment of UN and Chinese GB Standards**

## The Path to UN GTR's (UN1998 Agreement)

03/17

09/17

01/19

04/20

2023

Stage 3

- Global Technical Regulations for Installation / RID / LSD / RRD
- Vehicle-Performance based technical requirements for discrete devices.
- Vehicle-Performance based technical requirements for vehicle systems
  - **Ongoing harmonisation of UN, China and USA**

Advantages for China and USA to introduce the GTR's alongside the existing Mandatory GB Standards and the US FMVSS 108

Harmonisation of technical requirements without disturbing existing legislation.

