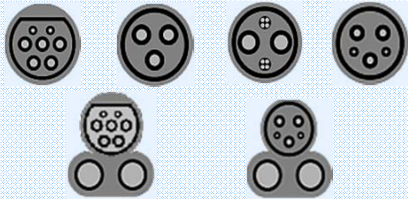


Norms and Regulations

Norms (ISO, IEC)



ECE-Regulations



Norms can be bypassed and are...

- ... established by Industry
- ... „state-of-art“
- ... voluntary
- ... handled by verification
- ... conducted by manufactures and if appropriate by technical service
- ... relevant for product liability, misuse, design, transport, cost benefits, supply chain

Regulations can not be bypassed and are...

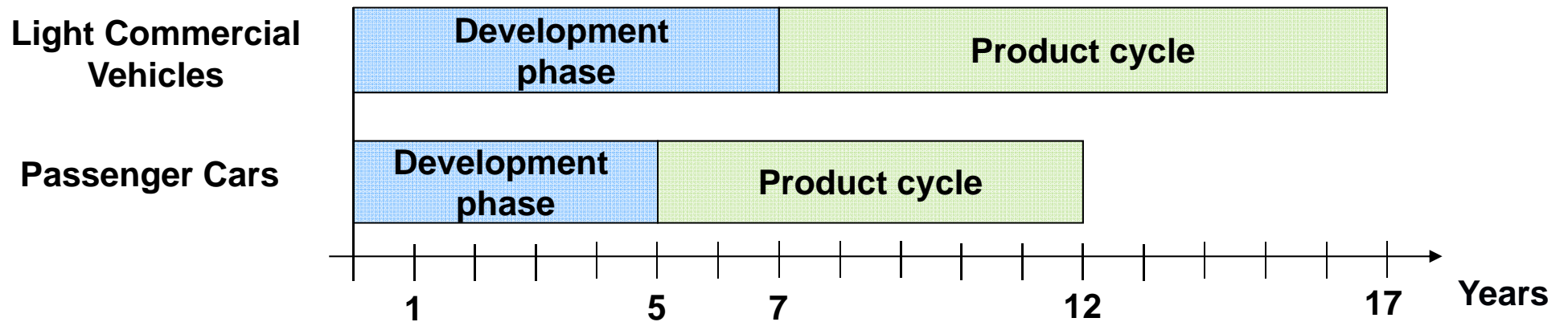
- ... established by Governments
- ... minimum legal requirements
- ... mandatory
- ... handled by homologation
- ... conducted by technical service and approved by governments
- ... relevant for free trade

Norms and Regulations – China new NEV drafts: regulation or norm?

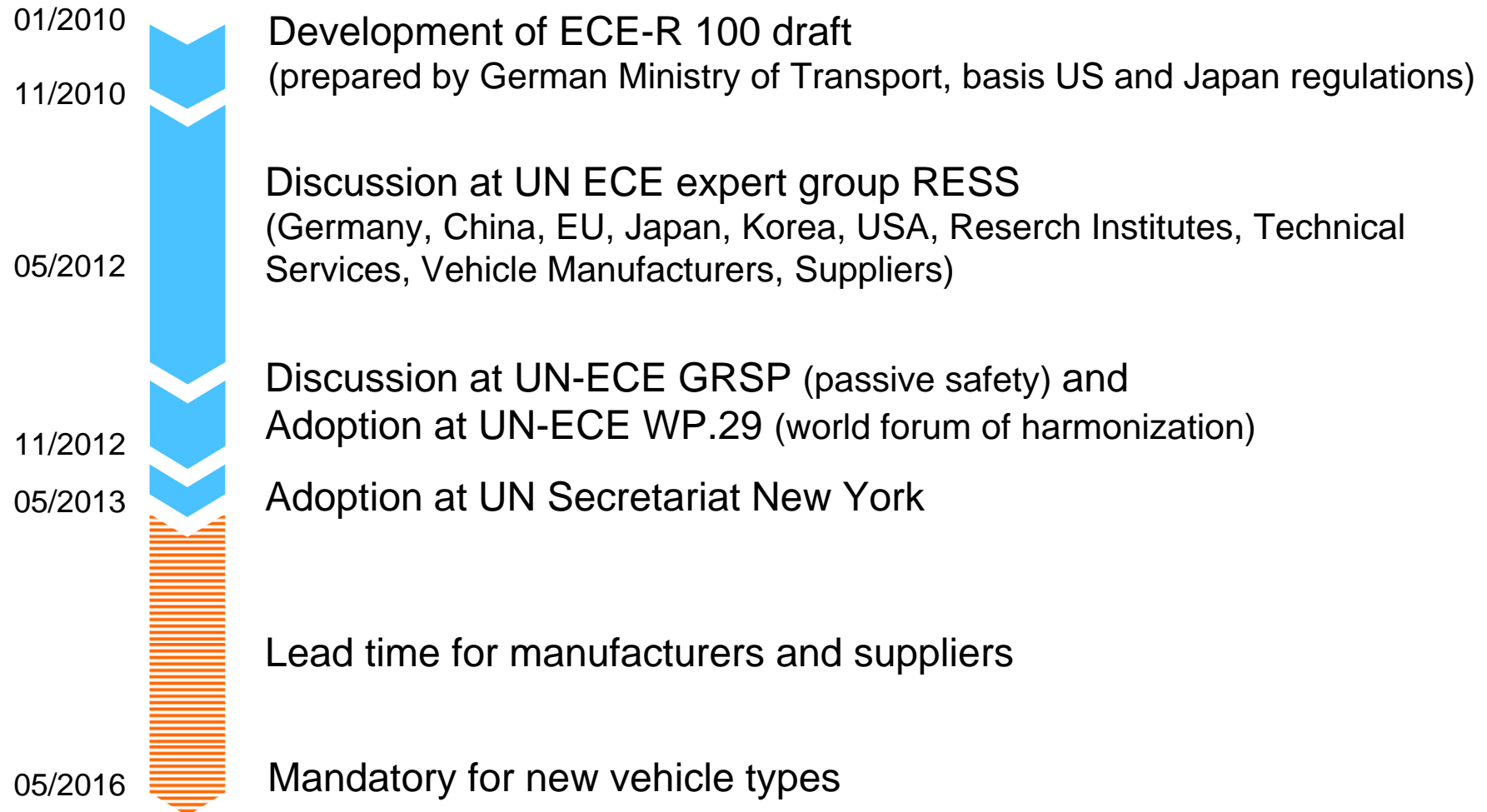
--	QC/T 840-2010 Battery dimensions	16	GB/T xxxx-xxxx Design code for charging station	32	GB/T xxxx-xxxx General requirements for EV battery swap vehicles	48	GB/T xxxx-xxxx Charging equipment inspection and testing spec. 2: EV AC charging spot	64	GB/T xxxx-xxxx Limits for energy consumption of PHEV and range extended EV
1	GB/T xxxx-xxxx Battery electric passenger cars – Specifications	17	GB/T 4094.2-201x EVs – Symbols for controls, indicators and tell-tales	33	GB/T xxxx-xxxx Measuring methods for emissions from light-duty HEVs	49	NB/T xxxx-xxxx Code for construction and acceptance of EV charging infrastr. engineering	65	GB/T xxxx-xxxx EV – voltage class of equipments
2	GB/T xxxx-xxxx Rules of the code for EV type	18	GB/T 18384.1-xxxx EV Safety Specifications - Part 1: On-board Energy Storage	34	GB/T xxxx-xxxx Test methods for energy consumption of light-duty HEVs	50	NB/T xxxx-xxxx Communication protocol betw. Monitoring syst. In EV station/battery	66	GB/T xxxx-xxxx Terminology of EV
3	GB/T xxxx-xxxx Communication protocol of network of control system for EVs	19	GB/T 18384.2-xxxx EV Safety Specifications Part 2: Functional safety means	35	QC/T xxx - xxxx Types of hybrid electric vehicles	51	NB/T xxxx-xxxx Techn. Guide for EV charging / battery swap infrastructure construction	67	GB/T xxxx-xxxx EV – evaluation and test methode of brake energy recovery
4	GB/T xxxx-xxxx Electric vehicle charging station – General requirements	20	GB/T 18384.3-xxxx EV Safety Specifications Part 3: Protection of persons against electric hazards	36	GB/T xxxx-xxxx Test methods for power train system of HEV test bench	52	NB/T xxxx-xxxx General requirements for EV battery pack swap equipment	68	GB/T xxxx-xxxx EVs – technical parameters, formats and symbols
5	G/T xxxx-xxxx Connection set for conductive charging of EV Part 1: General requirements	21	GB/T 18488.1 & 2 -200x General Specification for Drive Electric Machines Systems of EV	37	GB/T xxxx-xxxx Fuel cell EV – On-board hydrogen system - Specification	53	QC/T 743-xxxx Lithium-Ion Traction Battery for EV	69	GB/T xxxx-xxxx EV communication protocol (CAN)
6	G/T xxxx-xxxx Connection set for conductive charging of EV Part 2: AC Charging Coupler	22	QC/T xxx - xxxx The Reliability Test Methods for Power-train of Light-duty HEVs	38	GB/T xxxx-xxxx FCEV- Max. speed – Test method	54	QC/T 743-xxxx Lithium-Ion Traction Battery for EV	70	GB/T xxxx-xxxx EV- radio disturbance characteristics
7	GB/T xxxx-xxxx Connection set for conductive charging of EV Part 3: DC Charging Coupler	23	QC/T xxx - xxxx Failure Classification of Drive Motor System of EV	39	GB/T xxxx-xxxx Fuel cell EV – Energy consumption measurement	55	GB/T xxxx-xxxx Safety requirements for EV in the event of frontal collision	71	GB/T xxxx-xxxx EV- immunity to electromagn. radiation
8	GB/T xxxx-xxxx General Requirements of Traction Battery System for EV	24	2009-2410T-QC Interface of Electrical Machine and Electrical Machine Controller for EV	40	GB/T xxxx-xxxx Fuel cell EV – Refueling receptacle	56	GB/T xxxx-xxxx Pure EV for urban operation	72	GB/T xxxx-xxxx EV- air conditioning
9	GB/T xxxx-xxxx General Requirements for Battery Box for EV Power Battery System	25	QC/T xxx - xxxx Specification of low speed EV	41	GB/T xxxx-xxxx Specification for hydrogen fuel cell vehicles demonstration	57	GB/T xxxx-xxxx EV – complete vehicle noise	73	GB/T xxxx-xxxx EV – evaluation and test methode of brake energy recovery
10	GB/T xxxx-xxxx Test specification for Li-ion traction battery system Part 1: High power applications	26	2010-1844T-QC Specifications of the on-board charger for EVs	42	GB/T xxxx-xxxx Fuel cell EV demonstration running – Specification of facilities	58	GB/T xxxx-xxxx EV – water proof requirements		GB, GB/T , QC/T, NB/T
11	GB/T xxxx-xxxx Test specification for Li-ion traction battery system Part 2: High energy applications	27	2010-1853T-QC Cycle performance of traction battery for EVs	43	GB 7258-xxxx Safety Specification for Power-driven Vehicles Operating on Roads	59	GB/T xxxx-xxxx EV – warning sound		
12	GB/T xxxx-xxxx Safety requirements of traction battery for EVs	28	GB/T xxxx-xxxx Technical requirements for power quality of EV charging infrastructures	44	GB/T xxxx-xxxx Gen. Requirements for EV battery swap station	60	GB/T xxxx-xxxx EV – Techn. Requirements HV wiring		
13	GB/T xxxx-xxxx The Communication protocol Between BMS and charging system	29	GB/T xxxx-xxxx Terminology of EV charging infrastructure	45	GB/T xxxx-xxxx Terminology of EV charging / battery spap station	61	GB/T xxxx-xxxx EV – type coding rules		
14	GB/T xxxx-xxxx Communication protocols between EV onboard charger and AC charging spot	30	GB/T xxxx-xxxx Power metering standard for EV A.C. charging point	46	GB/T xxxx-xxxx Electric energy metering for EV off-board charger	62	GB/T xxxx-xxxx Techn. Spec. range extended EV		
15	2010-1849T-QC Technical specification of battery management system for EVs	31	GB/T xxxx-xxxx Power metering standard for EV off-board conductive charger	47	GB/T xxxx-xxxx Charging equipment inspection and testing spec. 1: EV off-board charger	63	GB/T xxxx-xxxx Test methods for energy consumption of PHEV and range extended EV		

Lead time

- Development phase about 5-7 years → additional requirements (durability, mileage, etc.) require longer test times & more engineering work
- Investments in platforms higher thus longer pay-back time
- Engineering and production capacities already allocated at manufacturer and supplier level



Lead time – example of ECE-R 100 series of amendments 02



Enforcement list

		Norm or Regulation	enforcement
examples	ECE-R 100 / 02	R	2016
	ISO 12407	N	...
China	QC/T 743-xxxx Lithium-Ion Battery	R	?
	GB/T 28382 EV Safety	R	?
	...	N or R	...
	.	.	.
	.	.	.
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