Development of advanced futuristic steels

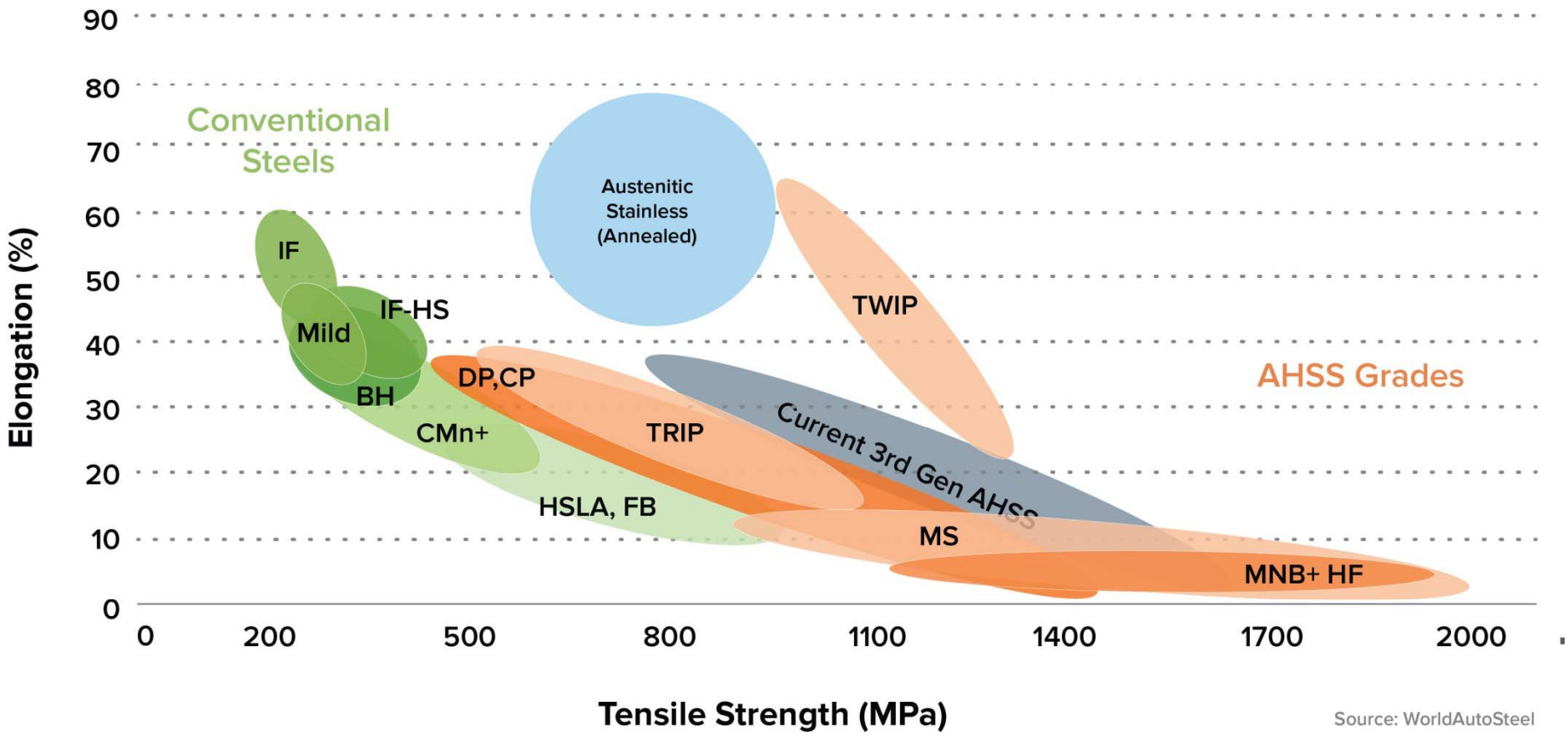
Scope of program

- 3rd generation AHSS
- Nano steels
- Low density high modulus steels

3rd Generation AHSS

- **Increased emphasis on development of AHSS for automotive applications.**
- **New grades such as Quenched & Partitioned (Q&P) steels, combine excellent strength & formability .**
- **Could lead to weight savings of 10-20% in vehicle parts.**
- **These steels are characterised by superior properties (>1000 MPa UTS with 30-40% elongation) compared to 1st and 2nd generations at a lower cost.**

Banana Plot for AHSS



Nano Steels

- **Frontier area of research, where precipitates and phases of nano sizes lead to dramatic improvement in steel properties, to levels hitherto unknown.**
- **All over the world, work is being vigorously pursued in this very specialised area for not only steels but also other materials.**
- **Futuristic area, which will lead to a quantum jump/ advancement in steel research and will lead to newer applications of steels.**

Low density high modulus steels

- **Development of high performance lightweight steels is one of key focus areas of research in steel industry.**
- **For light-weighting of structurals, strengthening by itself is not a sustainable strategy without maintaining structural stiffness.**
- **Low density high modulus steel with Al, Mn additions is a potential way of lowering the dead weight of vehicles by ~10% and hence, a subject of national/ international importance.**

Collaborating Institutes

- **IIT Bombay –** **Q&P Steels**
- **IISc Bangalore &**
  Deakin University – Nano Steels
- **IIT Roorkee –** **Low Density Steels**
- **Steel Industries –** **Participants**

Time-frame

Stage-I	**Academia and R&D Orgs.**	▪ **Fundamental research/ Concept building** ▪ **Lab based work/ Simulation/ Experimental scale trials for validation**
Stage-II	**R&D Orgs. & Industry**	▪ **Pilot scale trials/ Prototype** ▪ **Augmentation of facilities** ▪ **Industrial scale trials & commercialisation**

Stage-I : 3 years
Stage-II : 2 years
Total project duration : 5 years

Thank you.