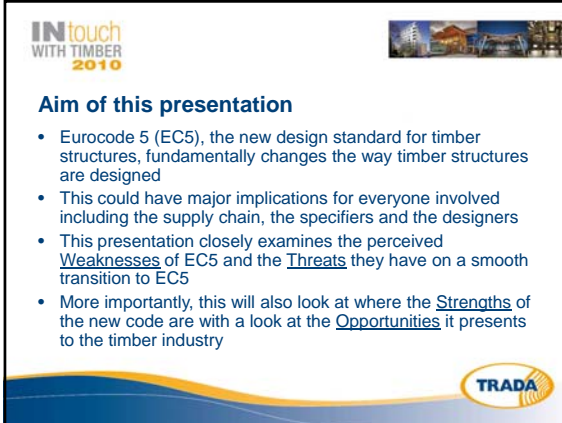


## IN touch WITH TIMBER 2010

### EC5: A SWOT Analysis


The impact of EC5 on the structural timber market

Keerthi Ranasinghe  
Senior Structural Engineer  
TRADA Technology



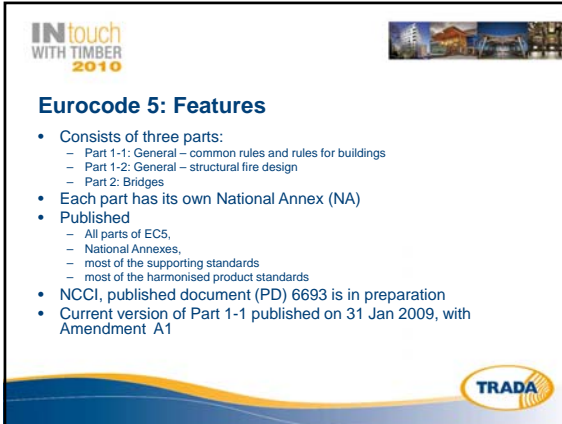
### Aim of this presentation

- Eurocode 5 (EC5), the new design standard for timber structures, fundamentally changes the way timber structures are designed
- This could have major implications for everyone involved including the supply chain, the specifiers and the designers
- This presentation closely examines the perceived Weaknesses of EC5 and the Threats they have on a smooth transition to EC5
- More importantly, this will also look at where the Strengths of the new code are with a look at the Opportunities it presents to the timber industry



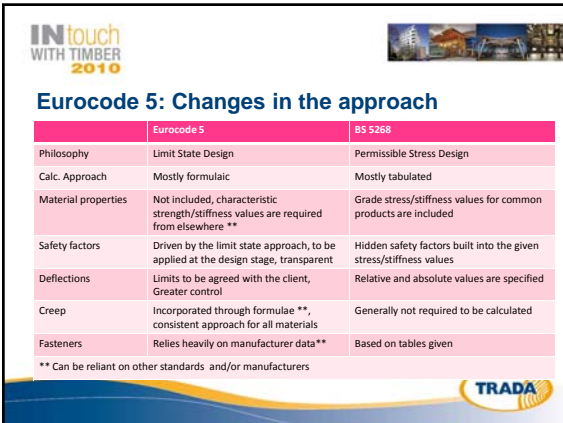
### Aim of the Eurocodes

- Among other things, Eurocodes will;
  - Lead to a common understanding regarding the design of structures among construction professionals, leading to;
  - A common design criteria and methods of meeting necessary requirements
- Eurocodes will also facilitate
  - the marketing and use of constituent products and materials in the member states, the properties of which enter the design calculations, and;
  - Facilitate the marketing and use of structural components and kits in Member States
- Eurocodes also aim to harmonise the technical specifications to eliminate technical obstacles to trade between the member states



### Eurocode 5: Features

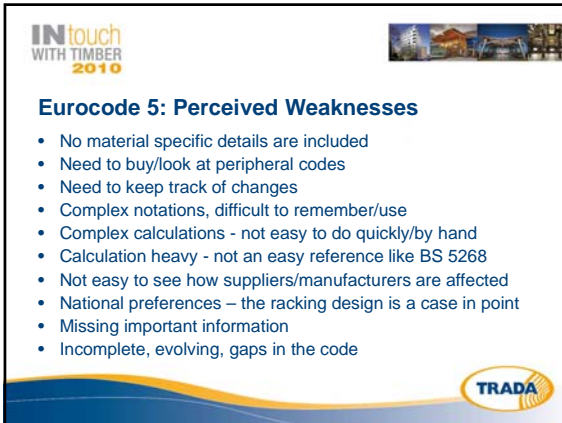
- Consists of three parts:
  - Part 1-1: General – common rules and rules for buildings
  - Part 1-2: General – structural fire design
  - Part 2: Bridges
- Each part has its own National Annex (NA)
- Published
  - All parts of EC5,
  - National Annexes,
  - most of the supporting standards
  - most of the harmonised product standards
- NCCI, published document (PD) 6693 is in preparation
- Current version of Part 1-1 published on 31 Jan 2009, with Amendment A1



### Eurocode 5: Changes in the approach

	Eurocode 5	BS 5268
Philosophy	Limit State Design	Permissible Stress Design
Calc. Approach	Mostly formulaic	Mostly tabulated
Material properties	Not included, characteristic strength/stiffness values are required from elsewhere **	Grade stress/stiffness values for common products are included
Safety factors	Driven by the limit state approach, to be applied at the design stage, transparent	Hidden safety factors built into the given stress/stiffness values
Deflections	Limits to be agreed with the client, Greater control	Relative and absolute values are specified
Creep	Incorporated through formulae **, consistent approach for all materials	Generally not required to be calculated
Fasteners	Relies heavily on manufacturer data**	Based on tables given


\*\* Can be reliant on other standards and/or manufacturers



### Eurocode 5: Perceived Weaknesses


- No material specific details are included
- Need to buy/look at peripheral codes
- Need to keep track of changes
- Complex notations, difficult to remember/use
- Complex calculations - not easy to do quickly/by hand
- Calculation heavy - not an easy reference like BS 5268
- Not easy to see how suppliers/manufacturers are affected
- National preferences – the racking design is a case in point
- Missing important information
- Incomplete, evolving, gaps in the code

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### Eurocode 5: The Threats

- Uncertainty
- Resistance to change – recession
- Differences of opinions
- Perceived lack of direction from the government
  - Not included in the building regulations guidance documents
  - CE marking is not yet mandatory
  - Trained building control officers?
- Costs involved - buying the codes, on going training, clients to bear the costs?
- Open for misinterpretations
- 30 years in development, 1 ½ years is not sufficient to fully understand the code
- Handful of champions – a market monopoly?




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### Eurocode 5: The Strengths

- Represents decades of R & D by an entire continent – no other code is so thorough
- Unchanged design principles, from the old to the new and across materials
- Presents a consistent approach for designs in any material
- Rigorous calculation approach
- More guidance for designs to the extreme – fire, accidents
- Easier repetition of calculations – computer friendly
- Route for new materials/products to come into the markets
- Designs, materials and products can cross borders easily
- Encourage innovation
- Common code/knowledge, member states stand to benefit from each other
- Client involvement encouraged – a case in point is the deflection limits
- New areas of calculations included
- A wealth of guidance/software already available



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### Eurocode 5: The Opportunities

- Allow complex composite constructions – the unified approach makes them adoptable and coherent
- More transparent, yet economic designs
- Opening up of new markets throughout Europe and beyond
- The opportunity to use new materials
- Better support for existing new materials - engineered wood products
- Better use of available materials
- A generation of new engineers embracing EC5
- Some re-training is necessary, but most active engineers adapt quickly



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### Conclusions

- A complex replacement for a simple design manual
- An evolving code, with some shortcomings at the moment
- Challenges include costs, staff training
- Designers should have greater flexibility in design
- Step in the right direction, in terms of opening up of new markets
- Encouragement for innovation



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### Design to Eurocode 5 Introductory and Connections workshops

**Introductory workshops**

- Aimed at engineers, engineering technicians and anyone interested in the design and/or checking of timber structures to EC5.
- This course includes a **FREE** copy of the *Manual for the design of timber building structures to Eurocode 5*.

**Connections workshops**

- Aimed at engineers who have had some design experience with timber structures.
- Includes 2 **FREE** months full access to timberconnectionsPro online software


Book the introductory and connections workshops at the same time and save up to 30%

TRADA members £278 + VAT  
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**SAVE UP TO 30%**



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