The Top-down Approach in Systems Engineering and Education

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Abstract:
The presentation deals with the Top-down Approach as a strategy aimed at addressing the nowadays effects of the continuous exponential growth of our scientific knowledge. A brief introduction of Systems Engineering, the scientific discipline that embraces the holistic sight over the world which has generated the top-down approach is provided, accompanied by examples issued from Electronics and Greenhouse Industry. Moore's Law is invoked as generic growth model, together with some adaptations from different domains: More than Moore, Moore's Law for Everything, Moore's Law for Knowledge, and Moore's Law for Education. The main consequence of Moore's Laws for Knowledge is the school dropout, students not being able to keep pace with the generalized growth of scientific knowledge.

The proposed solution to mitigate this general phenomenon may be denominated as The Top-down Approach in Education. In this frame the author proposes two main initiatives: the shift of the educational methodologies towards visual methods, which are specific to our species' way of processing information, and a clearer delimitation of mass education versus elite education, in the sense of the Bologna process.

Short CV:
Marius M. Balas is an IEEE Senior Member, Habilitated Professor at The Engineering Faculty of Aurel Vlaicu University of Arad, Romania. His research topics are in Systems Engineering, Electronic Circuits, Intelligent and Fuzzy Systems, Adaptive Control, Modeling and Simulation. He is the author of 16 books and book chapters, 120 indexed papers and 7 invention patents.

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