ISO 80369- Compliant Design of Medical Device Connectors/Standards

Overview
The universal Luer standard adapters that have been used for years are giving rise to medical device misconnections. B Braun has been contracted to generate several new concepts for medical connectors that are incompatible with each other and with the current Luer standard to prevent misconnection. The company has asked Team MAKKD to generate four designs that are easy to manufacture, effective, and safe, and to provide conclusive proof of the non-interchangeability of the four connectors. These concepts may be presented for selection by the ISO 80369 development committee.

Objectives
Team MAKKD set out to design a concept that could be tweaked into several non-interchangeable connectors by varying the shape at the end of the male and female connectors. The four iterations of our final concept were validated through SolidWorks and overlap studies to, indeed, be non-interchangeable.

Approach
- Site visit to B Braun Inc. in Bethlehem, PA clarified the project goal and gave insight into current connector design
- Patent search presented other connectors currently on the market
- Team MAKKD discussed unique customer needs (ie. Medical settings, connector uses, customer description/abilities)
- All team members brainstormed individual ideas for connectors
- Team collaborated to choose the best 4 concepts which were translated into SolidWorks models
- Discussion with B Braun and class presentation feedback helped with final concept selection
- SolidWorks Collision testing and overlap testing with ImageJ software evaluated the non-interchangeability
- Plastic prototypes (2x size) were generated for additional non-interchangeable validation and presentation purposes

Outcomes
- Four non-interchangeable connectors were created to reduce or eliminate medical setting errors
- Misconnection injuries and fatalities will be reduced/eliminated because of categorized standard connectors
- Safety and efficacy were maximized to increase productivity and care quality
- B Braun will have competitive ideas to contribute for the ISO 80369 standard development