Aerospace Industry Standards Utilization Survey Results

Jamie Yedinak, The Boeing Company, Aerospace and Defence PLM AG - Standards

Presenter Biography

Jamie Yedinak

Background:

- 18 years at the Boeing Company as Mechanical Structures Engineer, Process Engineer, and Information Technology Engineer. Held positions of Technical Lead Engineer, First Line Manager, and Chief of Staff.
- Experience in Product Standards definition and utilization, Product Data Interoperability, Product Lifecycle Management, Productivity Improvement, Optimal Cost Development and Implementation, and Finance Estimating.
- BS in Materials Science Engineering (Metallurgy) from the University of Washington

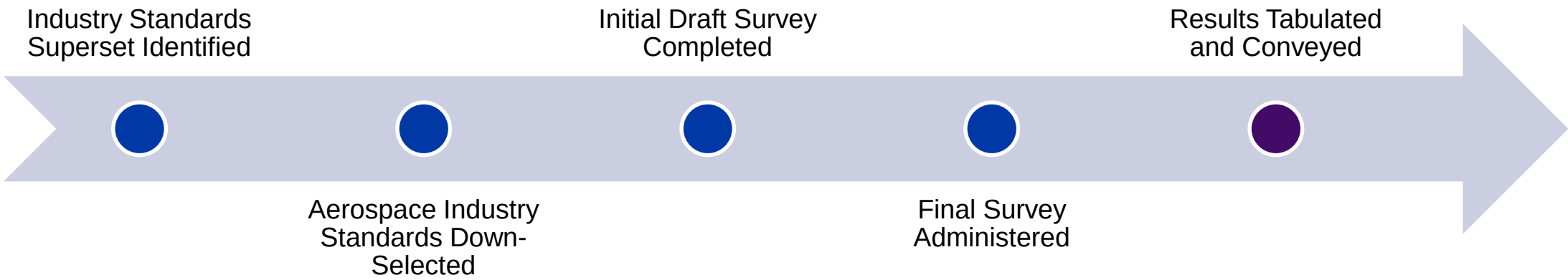
Current Assignment: Interoperability Standards Engineer, Enterprise Interoperability Standard Team involved in Engineering Digital Transformation at the Boeing Company.

Interests: Woodworking, most sports (Go Huskies!), Skiing, Playing Music (Piano, Guitar, Production), Being a good husband, and father to my daughter and son (11 and 9, respectively).

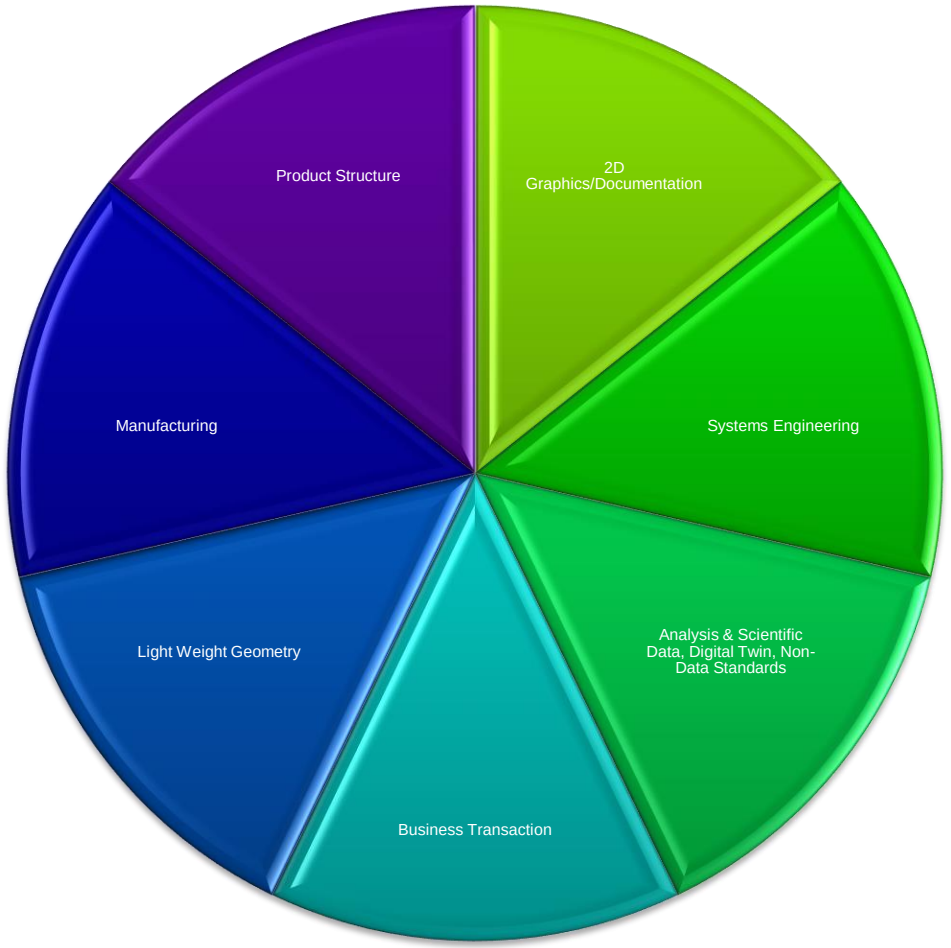
Standards Working Group

Standards Utilization Survey Process – How we administered the survey

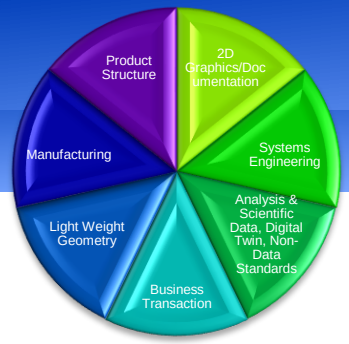
- **Aerospace & Defence Product Lifecycle Management Action Group (A&D PLM AG) Standards team identified superset of standards in the aerospace lifecycle span**
- **Superset of standards were discussed and analyzed to down-select final subset of standards on utilization across team membership**
- **A&D PLM AG – Standards team distributed survey across participating team membership as a test case for initial survey**
- **Upon initial survey results, final survey was adjusted to account for learnings and final version was created and distributed across A&D PLM AG teams.**
- **Results were tabulated across A&D PLM AG team members**



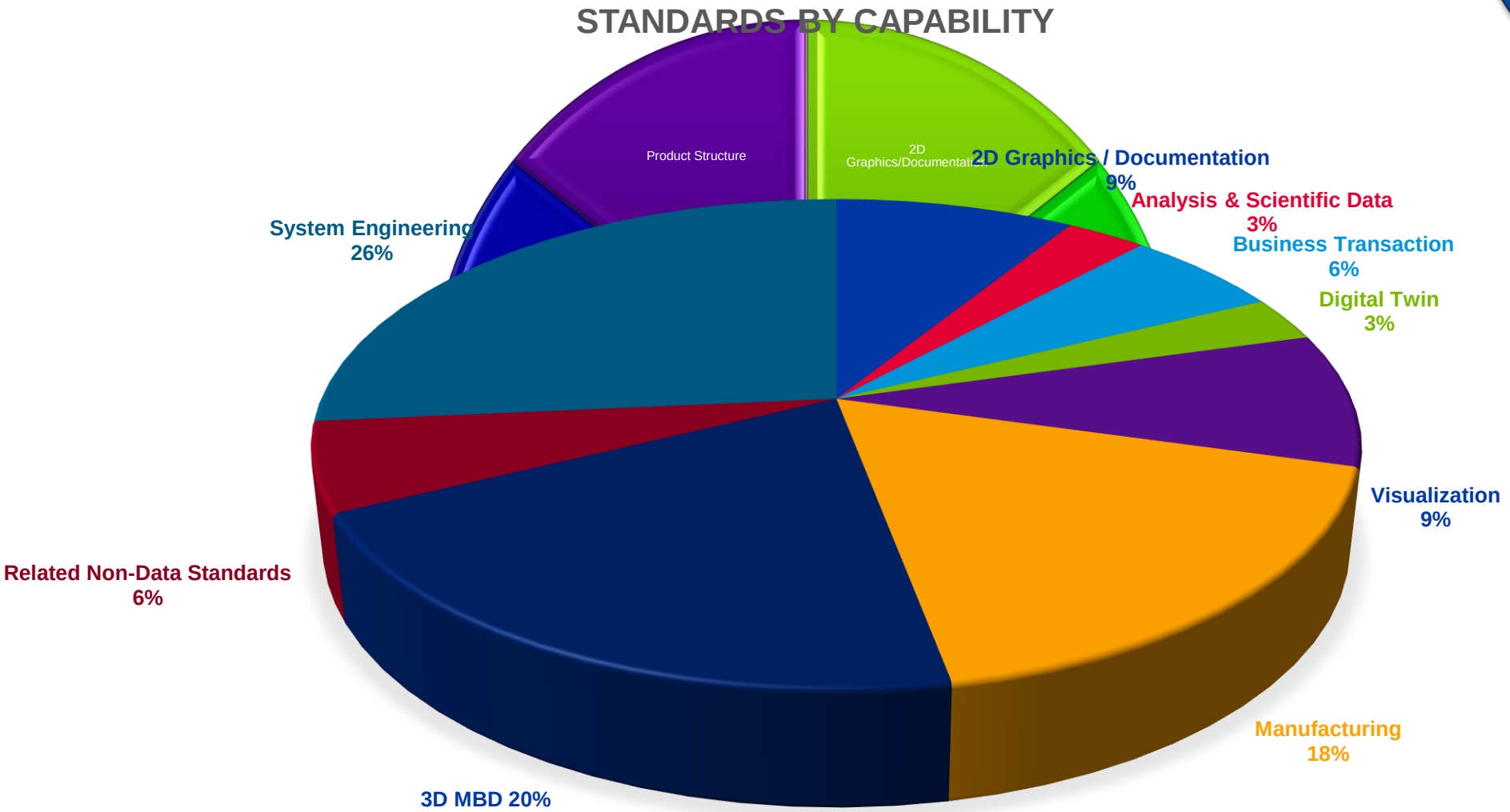
Product Lifecycle



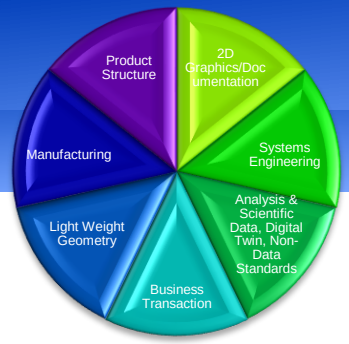
Areas of standards that were surveyed



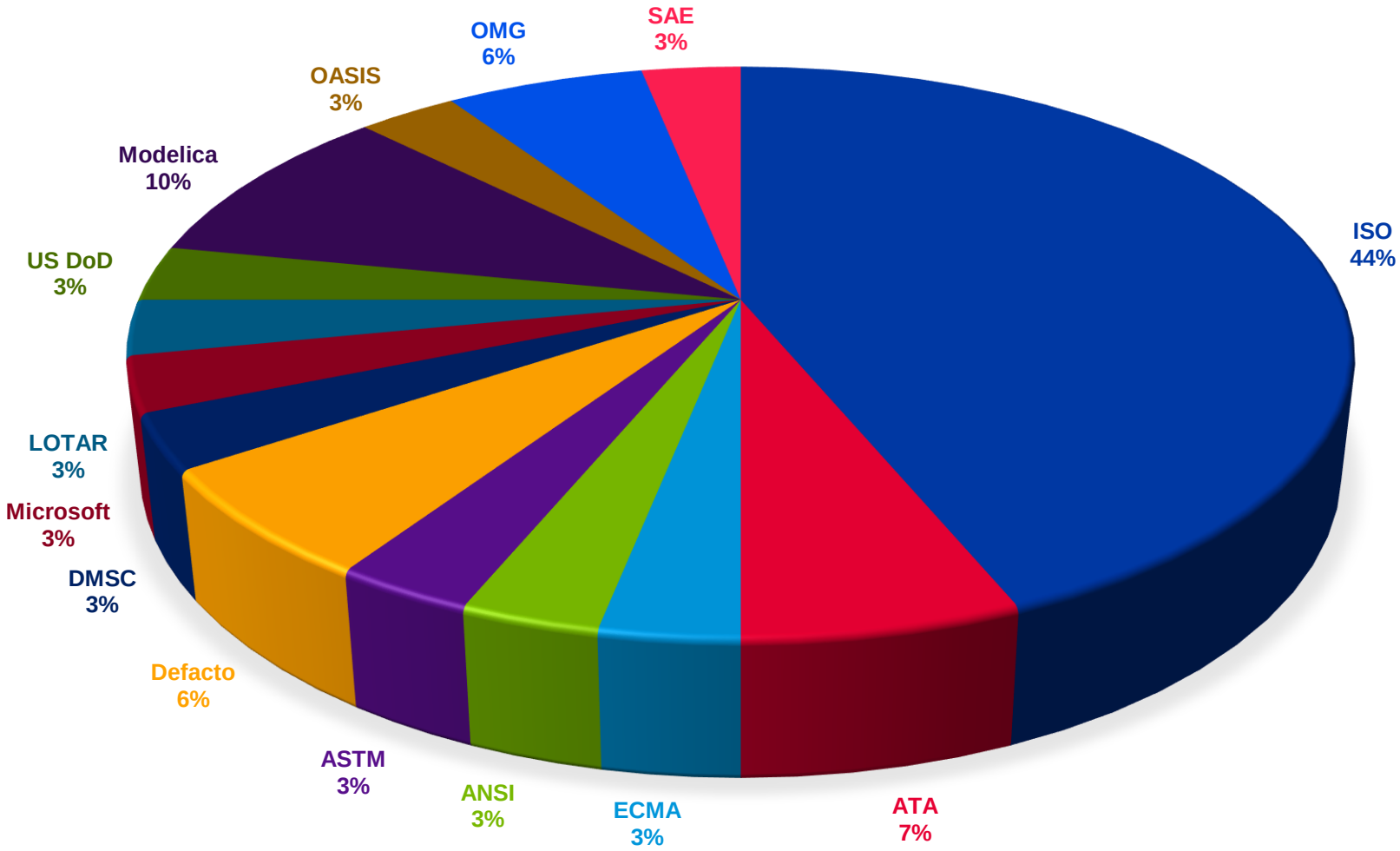
- **Final Survey Standards List by Capability**



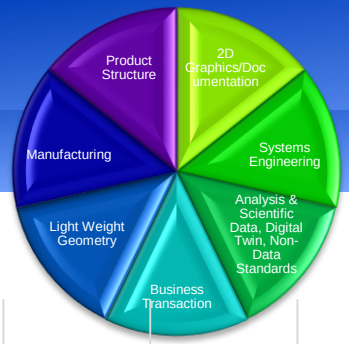
Standards Surveyed by SDO



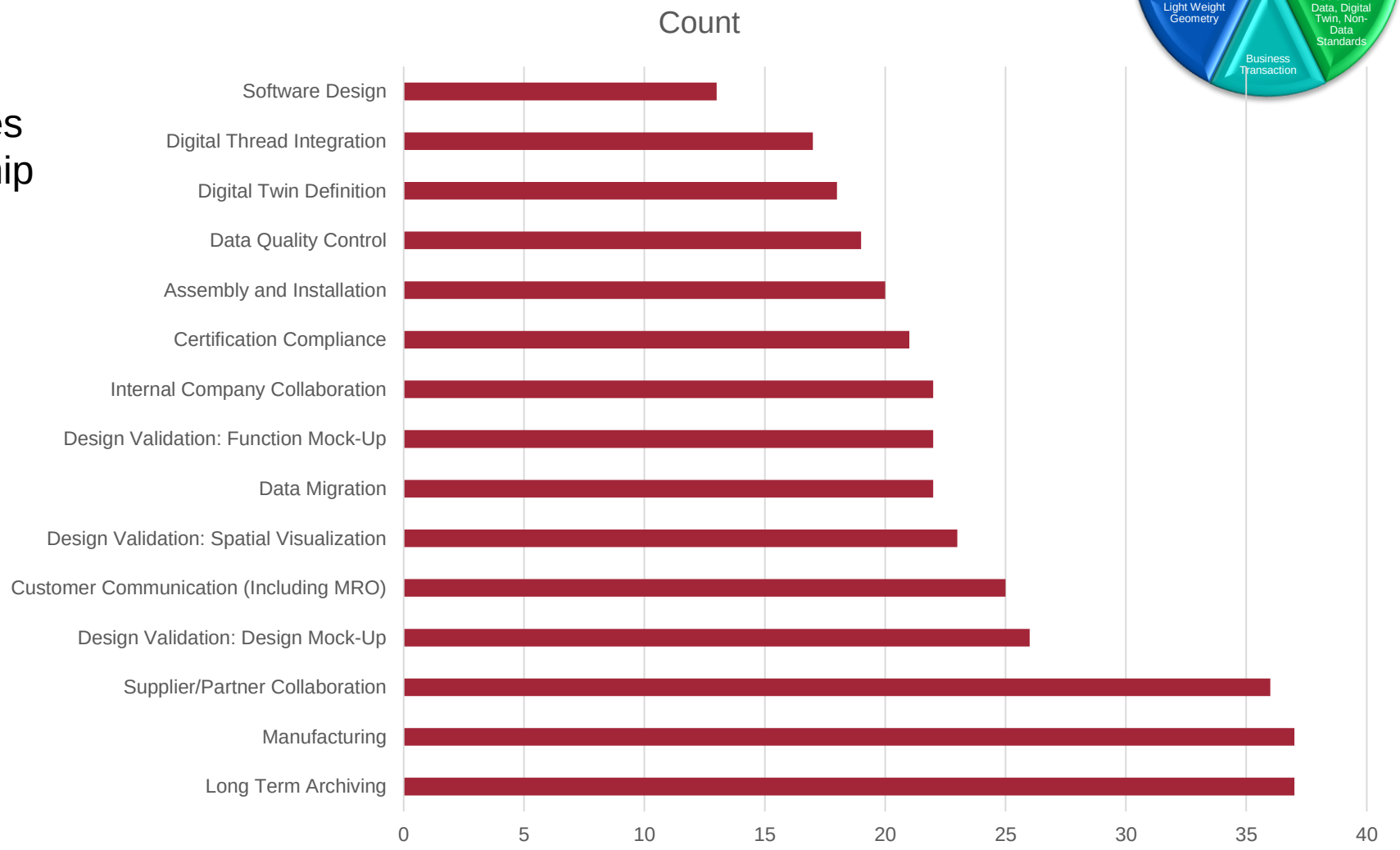
- **Final Surveyed standards listed by owning SDO**



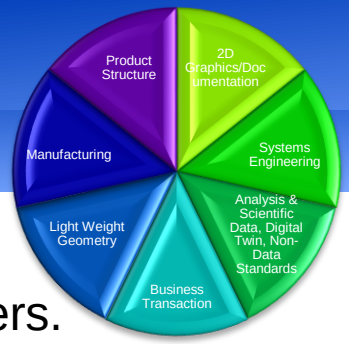
Standards utilized by product lifecycle use-case



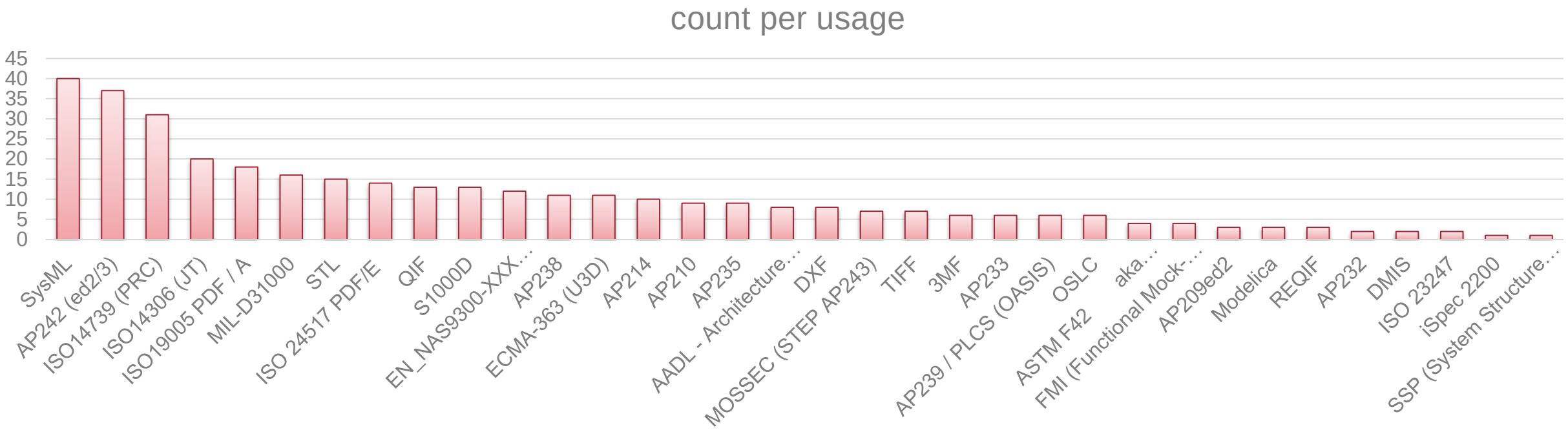
- Product Lifecycle use-case utilization by surveyed companies shows strong usage in partnership and collaboration lifecycle use-cases.



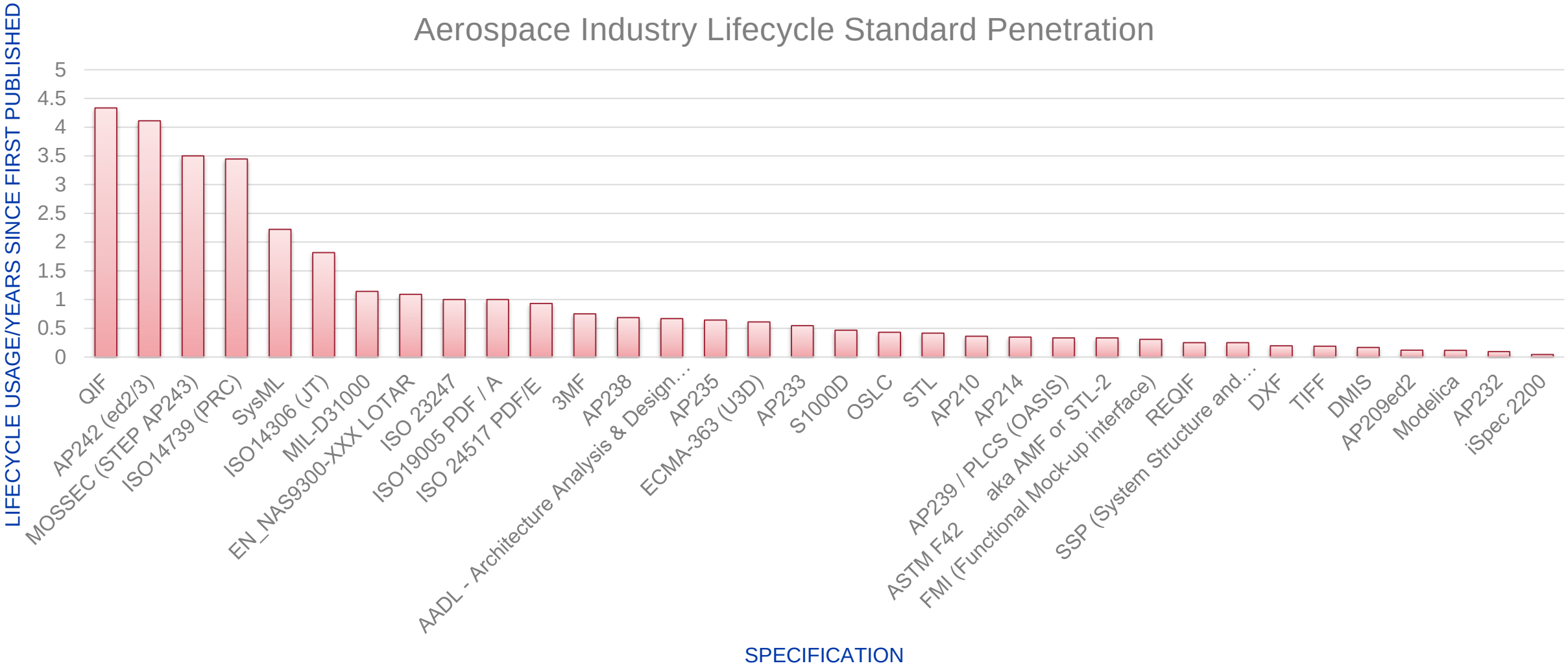
Standards Utilization across the Product Lifecycle Use Cases



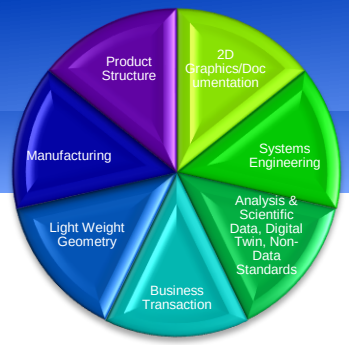
- Summation of lifecycle usage shows total utilizations of standard specifications by various end users.
  - Summation shows extensive use by traditional methods (sysML, JT, PDF-A), with slow adoption rate to some alternatives



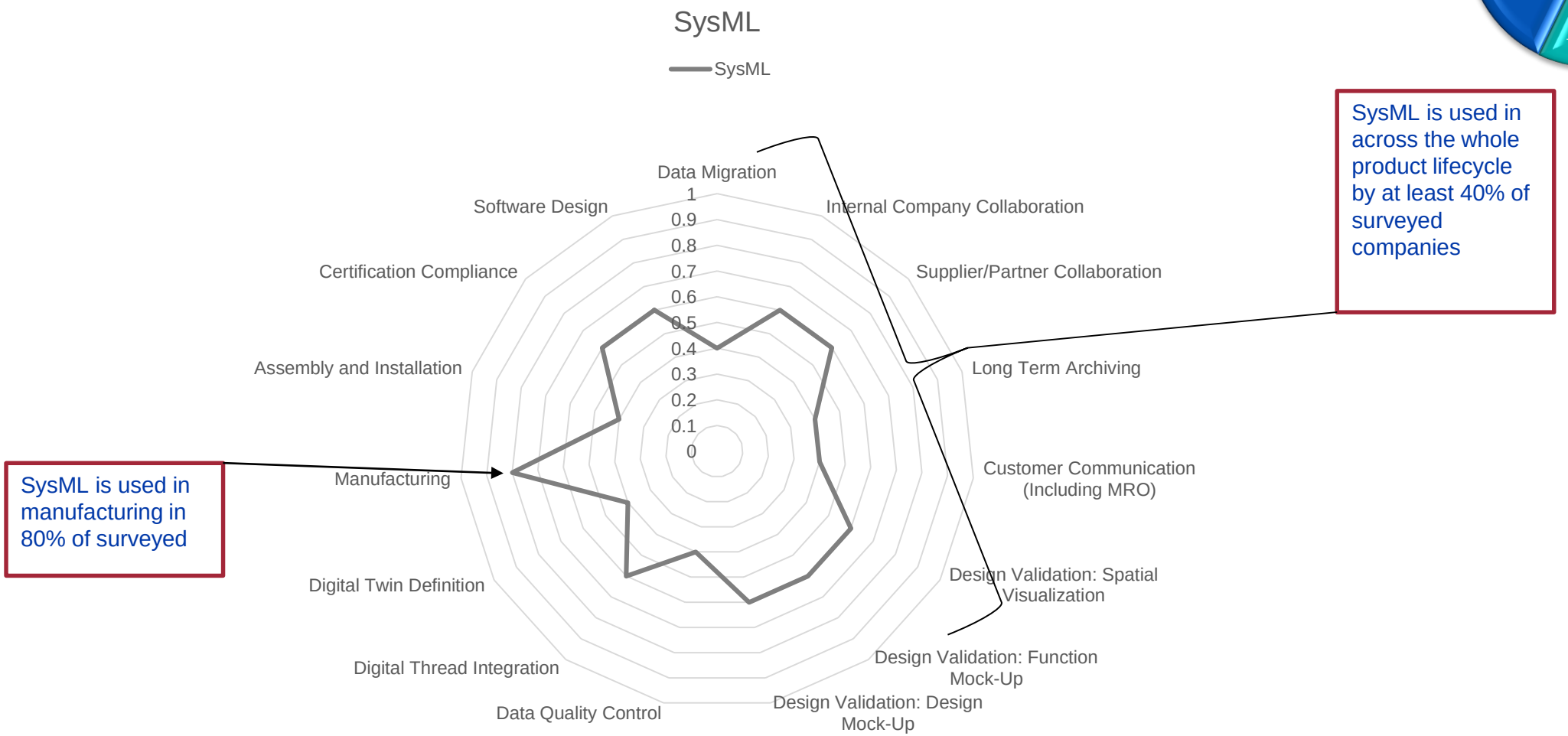
Aerospace Lifecycle Standard Penentration



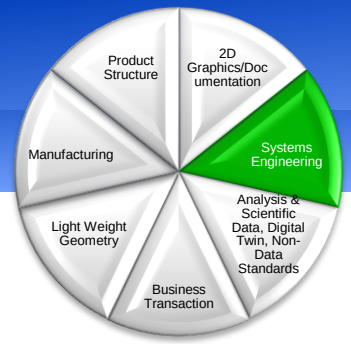
Anatomy of a Standards Usage by Lifecycle (Radar Chart)



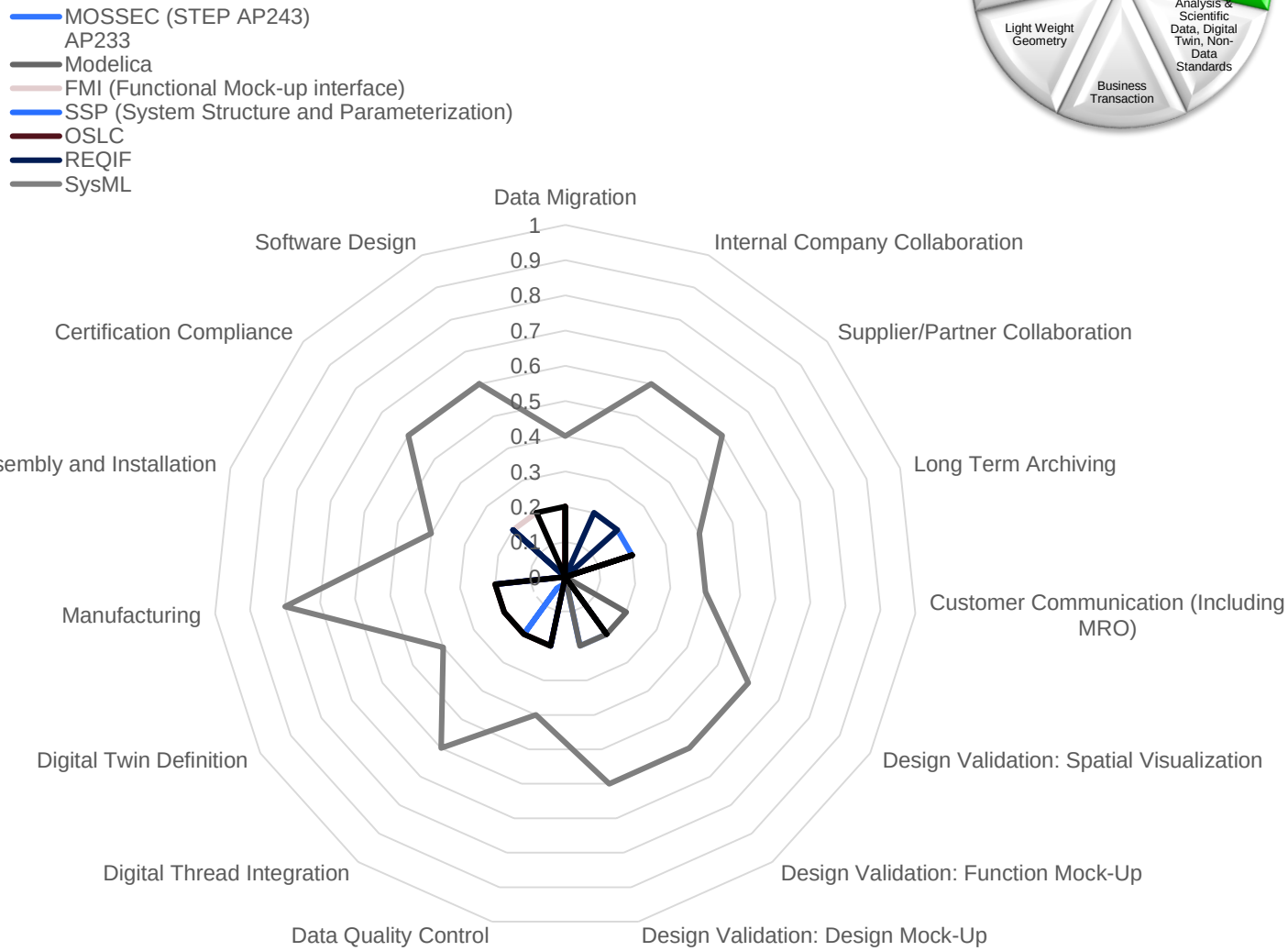
- **How to read the following Charts**



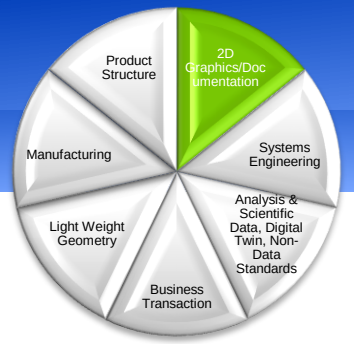
Systems Engineering Survey Results



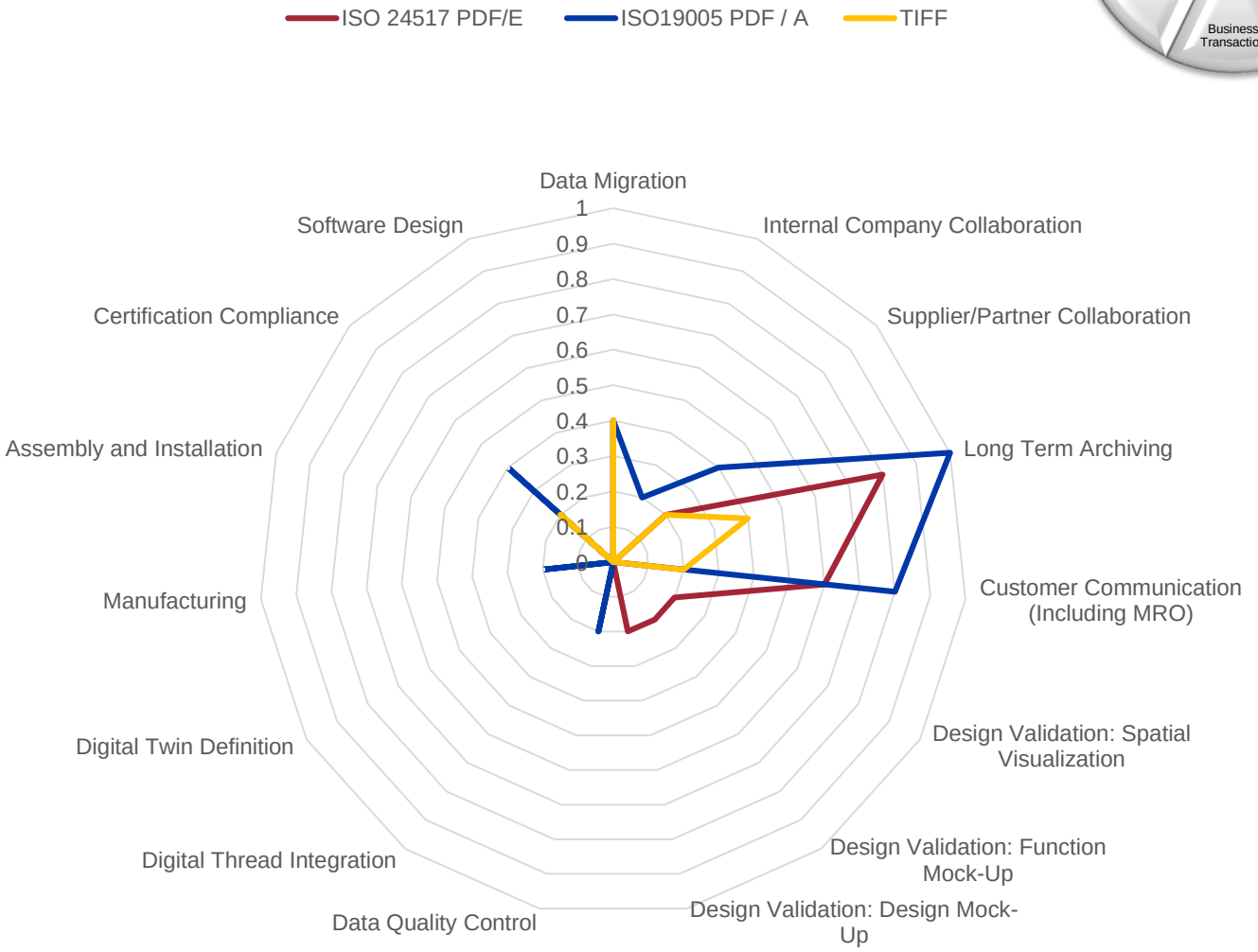
- **Highlights:**
  - **Systems engineering standards show <u>wide</u> adoptions across the lifecycle**
  - **Adoption of the standards is limited at this point however to only a few respondents**



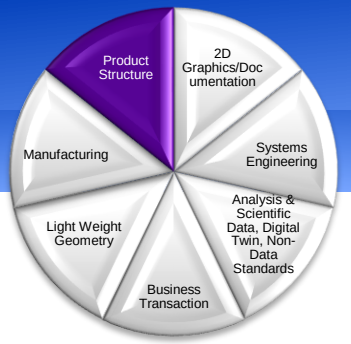
2D Graphics & Documentation Survey Results



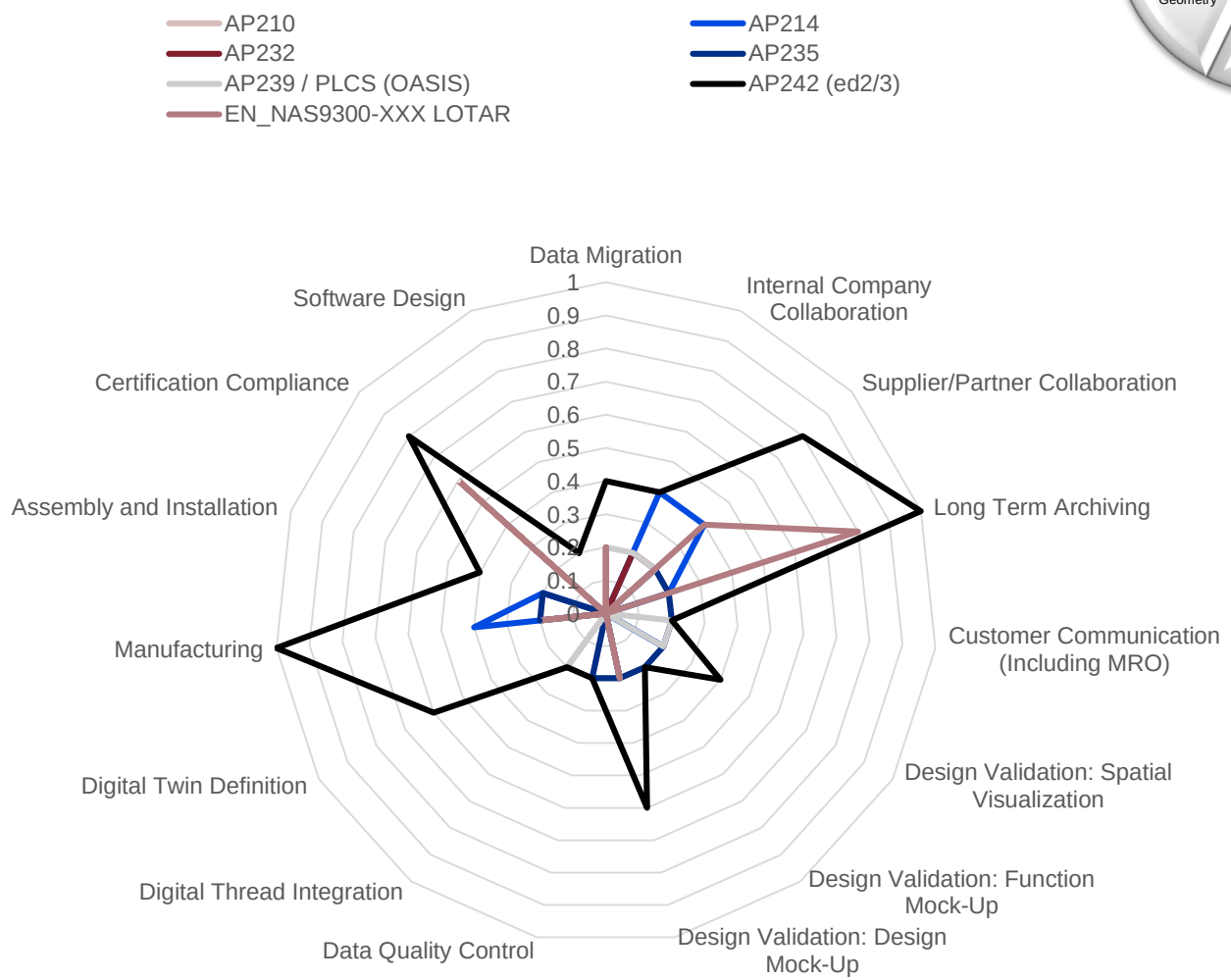
- **Highlights:**
  - **Extensive consumption of PDF standards in documentation space**
  - **TIFF and PDF/E shows close overlaps**
  - **PDF-E shows some movement into the Design validation space.**



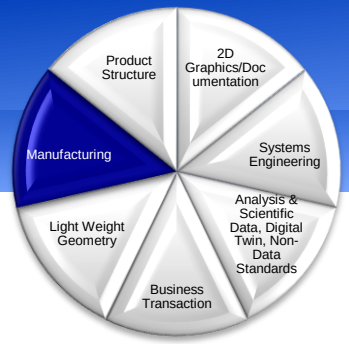
Product Structure Survey Results



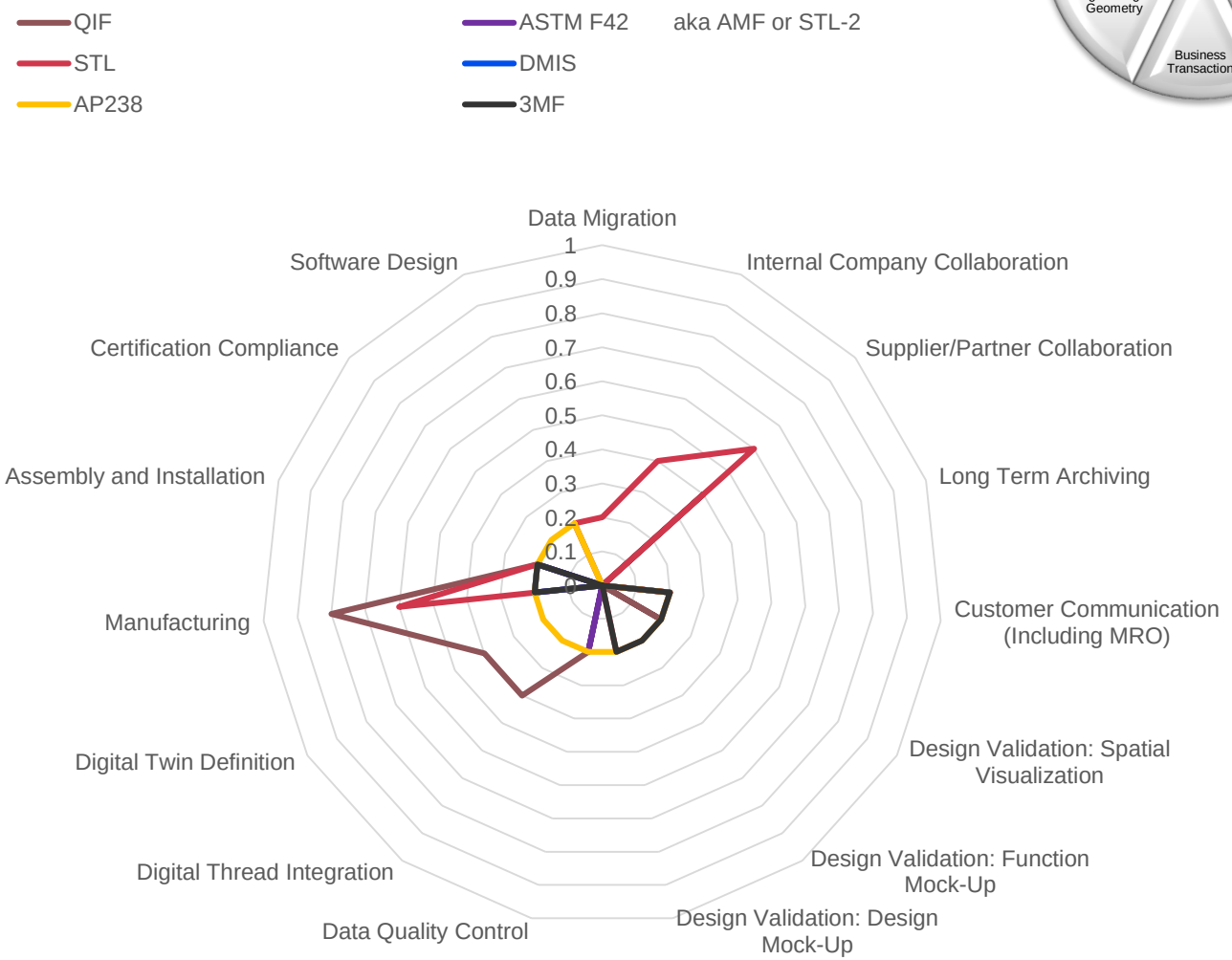
- **Highlights:**
  - **Overall extensive coverage of the product lifecycle by product structure standards**
  - **AP242 shows usage through the product lifecycle**



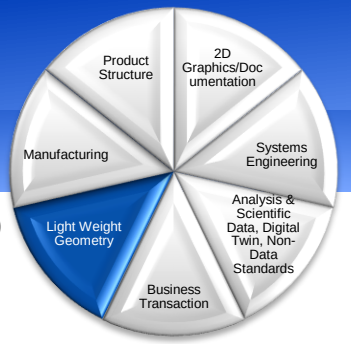
Manufacturing Survey Results



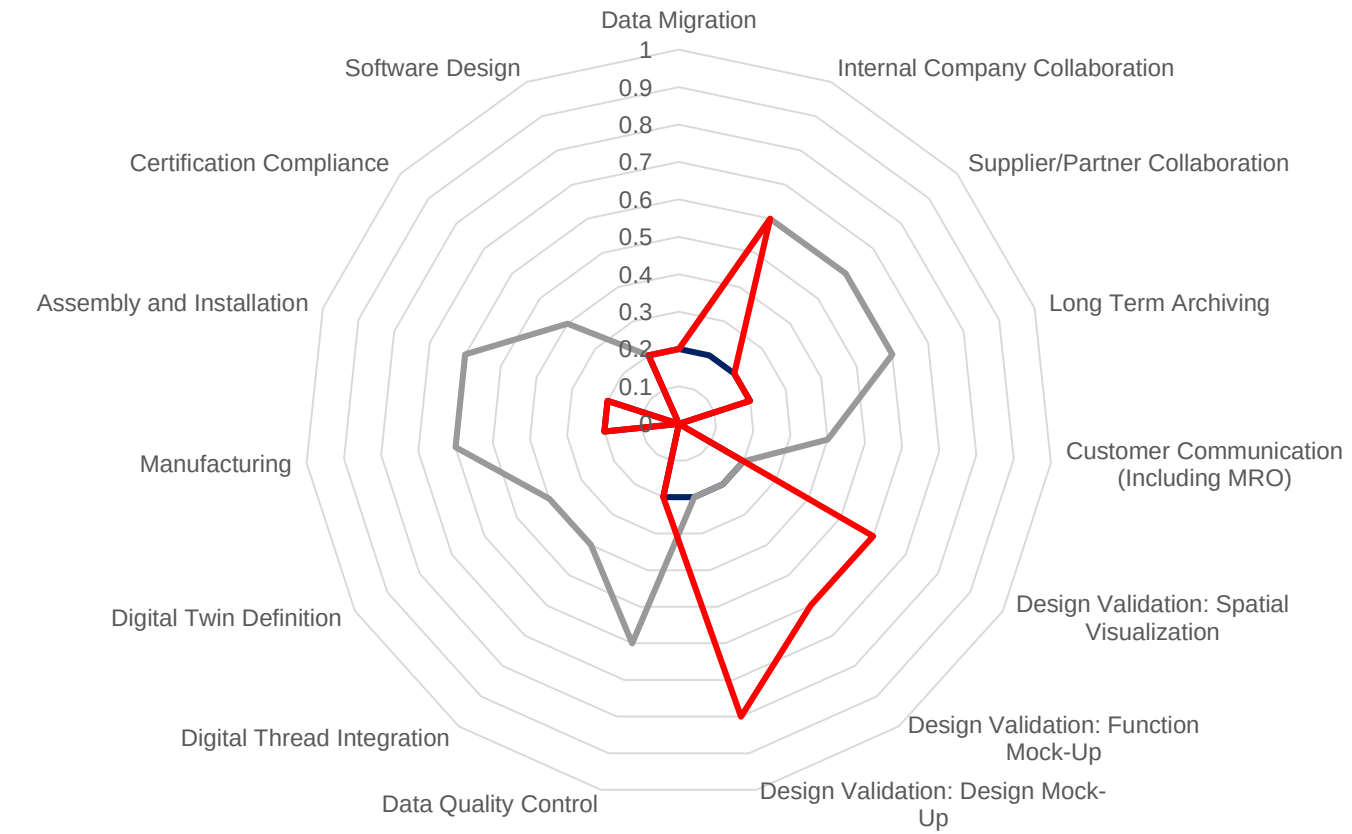
- **Highlights:**
  - **Heavy exposure in manufacturing and collaboration**



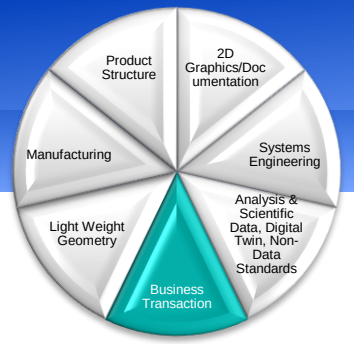
Light Weight Geometry Survey Results



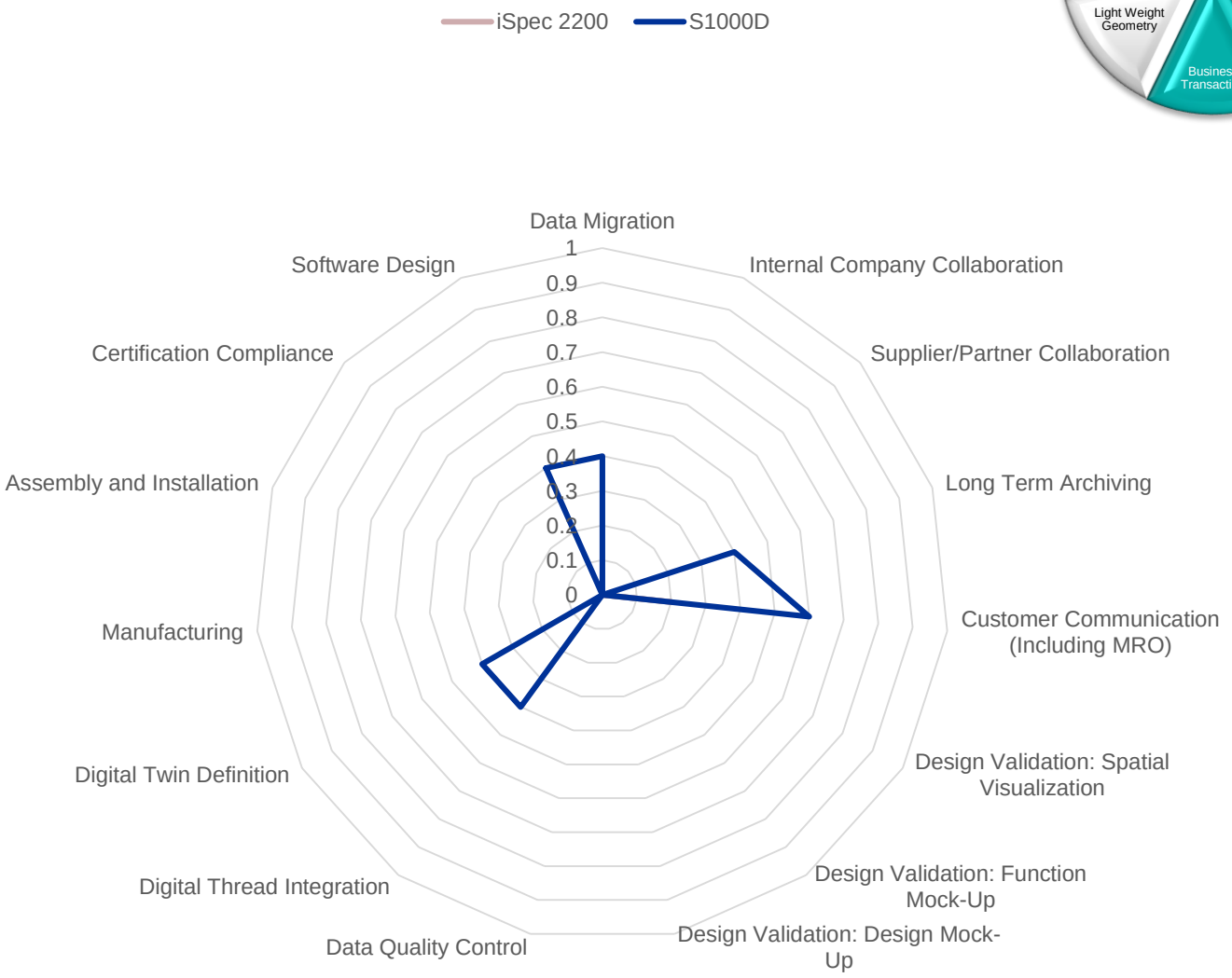
- **Highlights:**
  - **Broad usage for light weight geometry across almost all areas of the product lifecycle**
  - **PRC an JT seem to not overlap much by respondents**



Business Transactions Survey Results

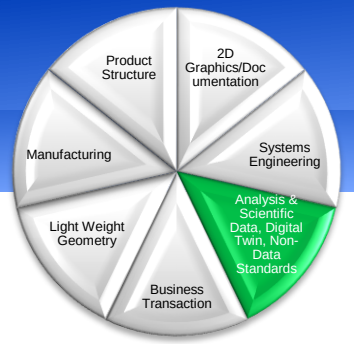


- **Highlights:**
  - **Specific areas of software design, Digital Twin/Digital Thread, and Customer communication show high usage by respondents.**

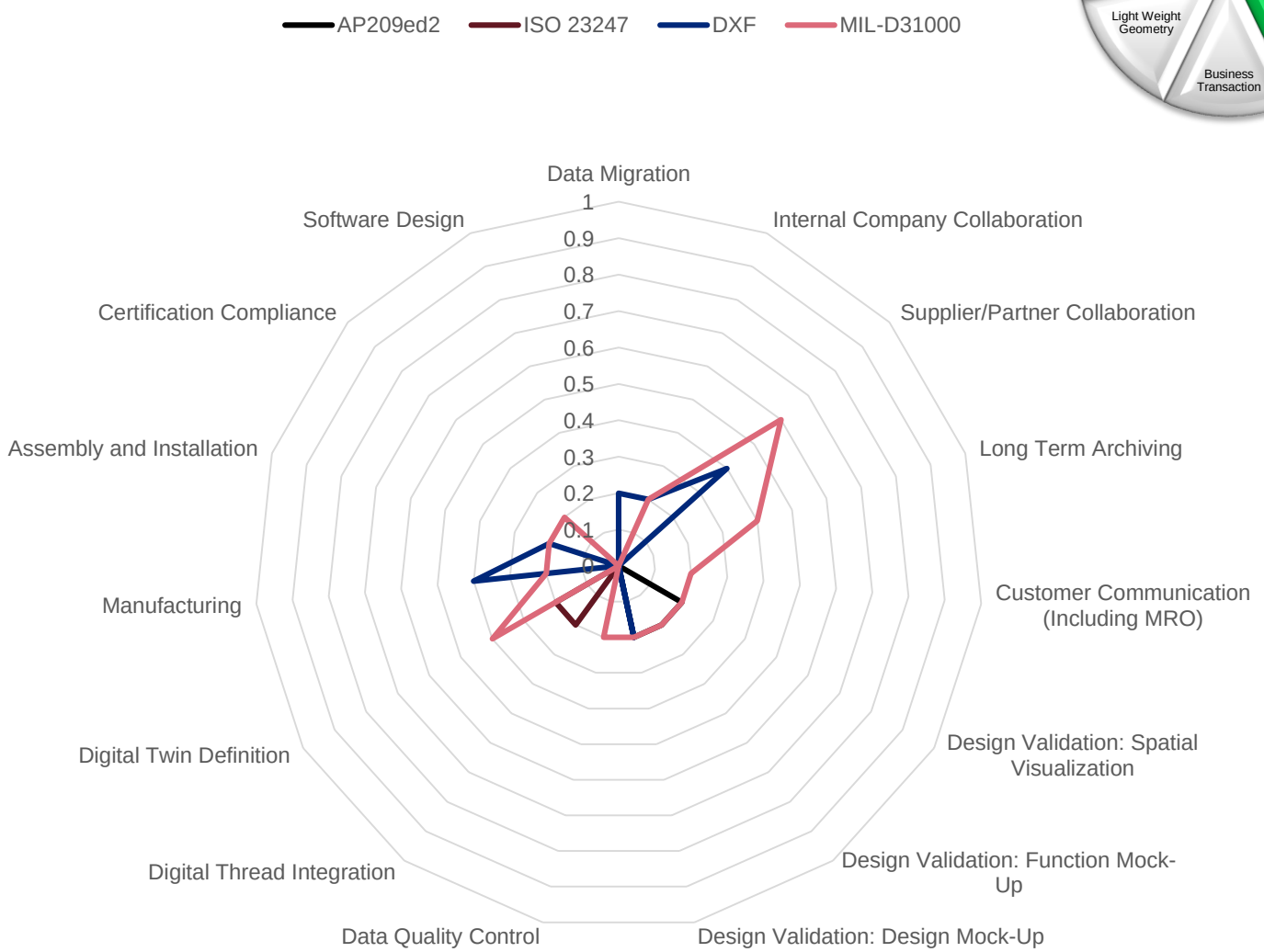


Analysis & Scientific Data, Digital Twin, Non-Data Standards Survey Results

Global Product Data Interoperability Summit | **2023**



- **Highlights:**
  - **Supplier/Partner Collaboration using MIL-D31000 shows broad adoption by respondents.**
  - **Little adoption for others standards in this product area.**



Standards Utilization Survey Learnings

- **Conducting Industry research on standards utilization across aerospace requires anonymity and collective ownership to remain neutral**
- **Determining Standards that are utilized in large companies/organizations will require time and effort to collect usage information to lifecycle**
- **Ambiguity of lifecycle definitions will exist and efforts to reduce ambiguity are required to maintain good data**
- **Utilization of interoperability standards experts is vital to understanding and alleviating incorrect data**
- **While this shows a glimpse of the space, more data is needed and growth over time will require a concerted effort to learn barriers to standards adoption.**

Next Steps

- There is interest in expanding the research to include more industry partners to obtain more data on industry standards utilization
- Interoperability forums in conjunction with industry adoption of standards can give software vendors clear pictures of their usage

- Questions to the audience:
  - Is continuous (yearly) surveying of industry standards adoption valuable to you? What are your concerns?
  - Artificial Intelligence could drastically impact data interoperability standards and their business models. Where do you see business impacts in standards creation/maintenance/adoption as a function of AI adoption?
  - Any other questions?