From Databooks to Online Dictionaries and Parts Catalogues

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NIST's mission is to develop and promote measurements, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life.

- 3,000 employees
- $760 million annual budget
- $570 million current R&D partnerships with industry
- 900 industrial partners
- 2,000 field agents
- 1,600 guest researchers
- NIST Laboratories -- National measurement standards
- Baldrige National Quality Award

Electronic and Electrical Engineering Laboratory

Laboratory Mission:

To strengthen the U.S. economy and improve the quality of life by providing measurement science and technology, and by advancing standards, primarily for the electronics and electrical industries.

Project Goals:

To actively contribute to the technical development of neutral Product data exchange specifications, manufacturing specifications, and component information infrastructure for the electronics industry.

The Electronics Industry and Databooks

- Companies used to produce “databooks” that would contain detailed lists of their parts.
- Each company would include (or reference) a dictionary (glossary) of terms used to describe the parts listed in the databook.

Inherent Problems with Databooks

- Data Transcription Errors
- Reduced Part Visibility
- Rapid Obsolescence
- Incorporation Problems
- A Recycling Issue

Business Reasons Driving Electronic Commerce of Components

- First 5% of work commits 70-80% of costs (components), therefore it's critical to have enough information to get it right!
- Up to 25% of a design engineers time is spent in component selection
- Up to 50% of a components engineers time spent searching, documenting components
- Turn around time (time to market) is critical
- Adding a new component to internal database is a bottleneck
  - » New part setup costs $10K-$25K
  - » 10 years ago this took 6 weeks
  - » Today it takes 48 hours
  - » Future - ZERO!

PCA Manufacturing Trends

- Paper-intensive information exchange and old/incomplete standards
  - an EMS can spend an entire day with a customer extracting needed data.

Impact: Inadequate information exchange cuts into thin EMS margins (~ 3%).

- Manufacturers guess on 80% of customer requirements.
  - < 20% of new customers provide complete data
  - < 60% of existing customers provide complete data
  - 0% of customers provide data that requires no modifications
  - Designs getting too sophisticated for CAM tools to reverse engineer.

Impact: Supply-chain forecasts are 40% off, on average

- Outsourcing growth
  - OEM's pushing more responsibility onto subcontractors and contract manufacturers (e.g. mfg, design services, engineering, SCM, distribution, ...)

Impact: Time-to-market vs cost of outsourcing trade-off decisions .

Impact: Complex, distributed supply web. Importance of efficient Supply Chain Management, Collaboration, Alliances, Partnerships.

Benefits to Electronic Databooks (Parts Catalogues) and Electronic Dictionary Formats

- Easier to add new parts to preferred parts list.
- Reduced data transcription errors.
- Reduced costs associated with introducing new parts.
- Reduced time to market (TTM) for new products.
- Make parts information available real time.
- Allows more dynamic comparisons between potential parts.

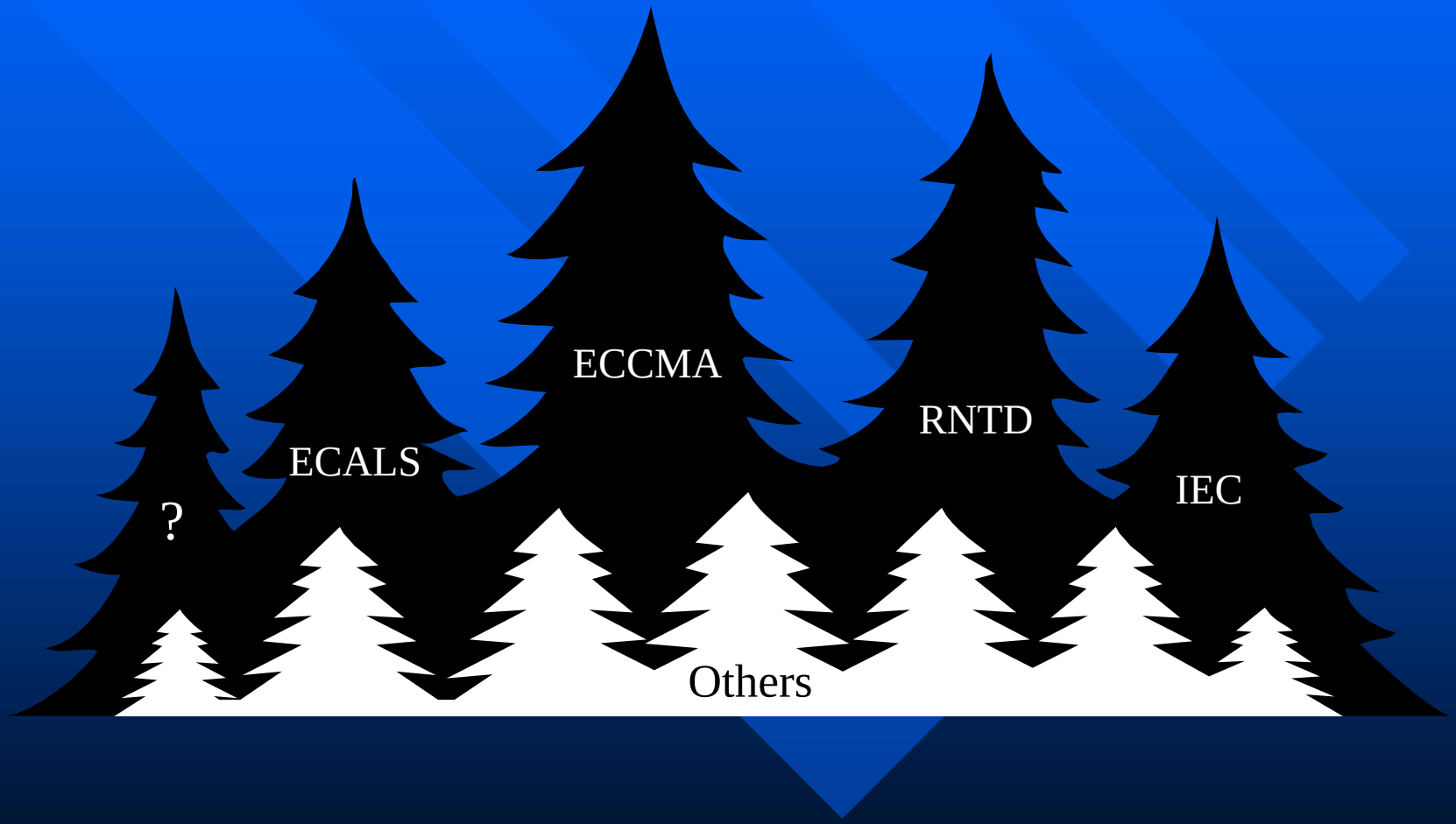
A Sampling of Parts Catalogues and Dictionary Efforts

- IEC 61360 dictionary.
- JEDEC Dictionary from the EIA.
- CAD Framework Initiative (CFI) and NIST hold the 1st Annual Dictionary Workshop.
- ISO 13584 Part Library (PLIB).
- IEC TC93 (Design Automation) formed Working Group 6 (Library of Reusable Components).

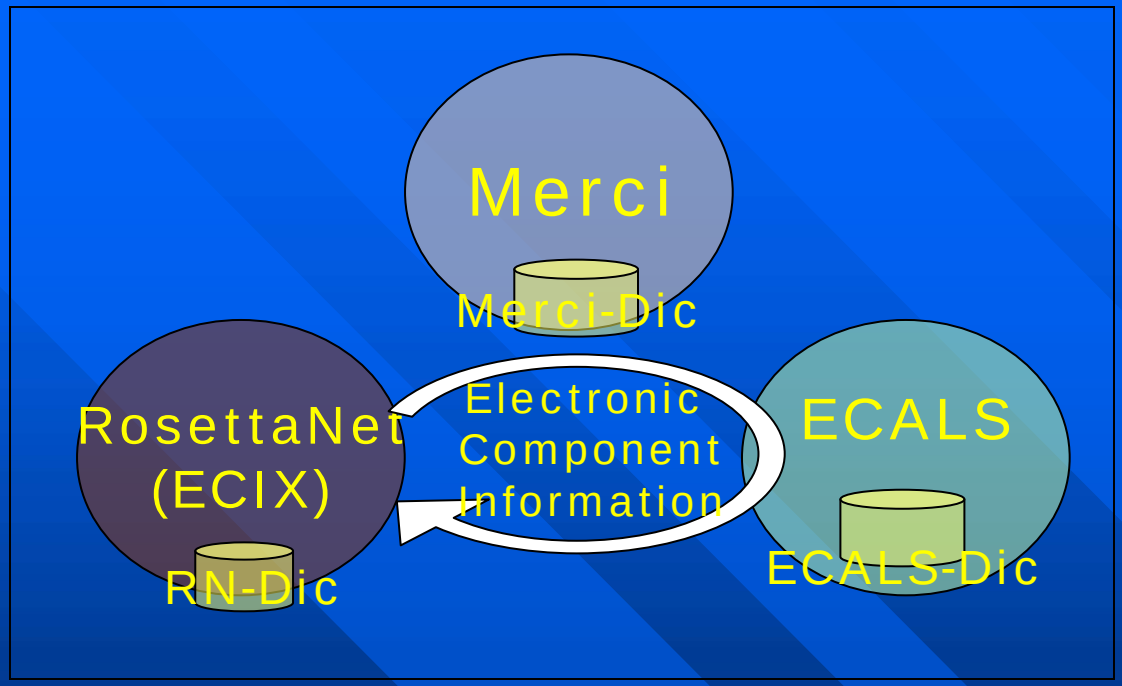
A Sampling of Parts Catalogues and Dictionary Efforts

- EIAJ creates their ECALS dictionary.
- RosettaNet creates their RNTD dictionary.
- Si2 and RosettaNet collaboration to create an electronic specification to search on-line parts catalogues. (PIP 2A9).

Present Day Dictionaries and Part Catalogues



Interoperability Problems



Problems:

1. Different dictionary class structures.
2. Dictionaries that are focusing on different domains.
3. Naming convention problems.
4. Business exchange protocols issues across catalogues.
5. Different ways of measure attributes.

Interoperability Benefits (Looking Forward)

- Economic benefits to meeting delivery schedule.
- Lowering costs by selecting optimal components.
- Expanded Markets
- Remain competitive in global market.
- Integration with CAD/CAM/CAE/DFM tools and associated cost savings.

Looking Forward

- Increasing awareness of efforts in electronic commerce for components.
- Dictionary harmonization efforts between the major dictionaries.
- Query mapping between different types of parts catalogues and dictionaries.
- Interoperability of measurement of component attributes.