



Navigation Data Standard

PSF Physical Storage Format

How it started ...
Why we go for NDS

NDS Public Day, Shanghai, 2012-09-19



Initial Situation of Automotive Navigation

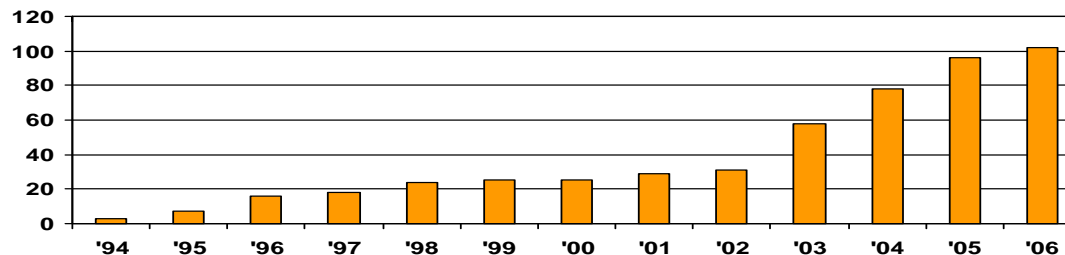
- Enabling Navigation with Limited Technical Resources
 - In the first decade performance was hard to achieve with the technology of that time
 - **Every system supplier developed and maintained an own storage format tailored to optimally fit the application**
 - The proprietary formats had a strong functional dependency to navigation software



Initial Situation of Automotive Navigation

- Worldwide Success of Navigation, but High Effort maintaining Proprietary Formats
 - Constant changes of formats due to new navigation generations and feature evolution
 - Different proprietary database formats flooding the market
 - Map updates across vehicle lifecycles cause map version backlog
 - Navigation rollouts into niche markets push map database production

Inflation of maintenance efforts: Compilers, Databases, Testing



Number of Map data versions per year (single OEM)

1992

2002 Navigation everywhere 2012



Navigation entering Vernon's Maturity Phase

- Cost is the Challenge in a Competitive Market
 - High number of map compilers with limited market sizes
 - High efforts for maintaining compilers and testing databases
 - High process cost per delivered map product
- Decreasing Importance of Map Compilers
 - Increasing performance of navigation platforms reduces the need for format optimization down to the bits
 - Declining differentiation potential:
Map format properties become invisible to the end-user

**Vision of a mature map compilation as an enabler
to bring better quality maps to the end user -
correct, fresh, accurate, detailed and reliable**

1992

2002 Navigation everywhere 2012



Insights that bring us together

- OEMs, Map and System Suppliers realized that they invested too long into

multiple solutions addressing the same challenges

- The need for a mature Navigation Map Business forces us to

Standardization



NDS Business goals

- Ensure Maturity of compiled Map Databases
 - By enabling multiple use of the same solution
 - By common database testing
- Enable a separate Map Compilation Business
 - Alleviate system providers from compilation task
 - Allow international sourcing, including maps for niche markets
 - Promote interoperability for broader market scale
- Create a Win-Win-Win for all Business Segments
 - Broaden business for map providers
 - Ease sourcing for system suppliers
 - Reduce map delivery and maintenance complexity for OEMs
 - Create quality vs. cost advantages for all

1992

2002 Navigation everywhere 2012



Where we are today

- NDS grew up
 - NDS is designed for international use, including Asia
 - Growing number of members, including Chinese companies
 - NDS is open to accept new partners from all around the world
- **2012 - NDS Standard is touching the Markets**
 - OEMs (BMW, Mercedes, Volkswagen) on track with several NDS-based rollouts now beginning to touch the market
 - NDS as a 'must' in future OEM Navigation RFQs
 - Alpine, Bosch, Elektrobit, Garmin, Harman, TechniSat, TomTom are currently developing NDS-based systems

- ▼ **Today:**
- **First NDS Asia Meeting**

