

XSP TECHNOLOGY

A Foundation For Integrated Information Access Systems

Integrated information access is a high priority concern of both government and industry. Data is being accumulated faster than information can be accessed. The greatest technical challenge today is being able to extract information from data in the shortest possible time. Antiquated low-level I/O data access methods are not up to the challenge. These thirty year old internal data access technologies were never intended for use on today's high performance hardware platforms.

The government has recently announced critical concern with the deficiency of existing data access technologies and the urgent need to develop '*revolutionary advances* in technology' and not just '*evolutionary improvements* to the existing state of practice'.

XSP: A Revolutionary Technology: Since all internal level data access technologies rely on *pointers*, what could be more revolutionary than a data access technology that does not require pointers? Extended Set Processing (XSP) is just such a technology. XSP technology requires no pointers, indexes, or any other *structure-dependent* internal access mechanism. XSP technology relies on pre-defined generic data access *operations* and not on a constant regeneration of data access *structures* with their associated pointers.

Future Integrated Information Access Systems (IIASs), supported by an *operation-centric* data access technology instead of a *structure-dependent* data access technology, can provide:

- RAPID INTEGRATED INFORMATION ACCESS OF LIVE DATA
- RAPID INTEGRATED INFORMATION ACCESS OF LEGACY DATA
- RAPID INTEGRATED INFORMATION ACCESS OF DISPARATE DATA
- RAPID INTEGRATED INFORMATION ACCESS OF XML & RDM DATA
- RAPID INTEGRATED INFORMATION ACCESS OF DISTRIBUTED DATA
- INTERACTIVE INTEGRATED INFORMATION ACCESS OF ANY READABLE DATA

Clearly, existing Database Management Systems (DBMSs) can not support these capabilities.

Revolution vs. Evolution: If IIASs are ever to replace existing DBMSs, then any adopted *revolutionary technology* must allow *evolutionary advances* to existing systems, such that future IIASs will include all the capabilities of current DBMSs. A familiar precedence is the 1970's revolutionary technology of the Relational Data Model (RDM) which allowed the existing Transaction Data Processing Systems (TDPS) to evolve into Relational Database Management Systems (RDBMSs). Similarly, any potential candidate for the role of the next '*revolutionary technology*' must ensure that today's DBMSs can evolve into tomorrow's IIASs. A preview of some intrinsic *operation-centric* advantages of IIASs over *structure-dependent* DBMSs are:

____IIAS____

- No Data Structure Loading Costs
- Same Access Operations For All Data
- Includes All Low-Level I/O Data Access Structures
- Performance: A Function Of Relevant Data
- Data Updates Add Information
- All Derivable Data Relationships Are Accessible
- Storage Restructuring For Optimized Data Access
- New Data Assimilated Into Query Process
- Disparate Data Integrated By Access Operations
- Enables Real-Time Processing Of Live Data
- Operation-Centric Native XML Support
- Broad Interoperability Between XML Systems

____DBMS____

- Significant Data Structure Loading Costs
- New Access Structures For New Data
- Precludes All Low-Level I/O Data Access Operations
- Performance: A Function Of Total Data
- Data Updates Destroy Information
- Only Predefined Data Relationships Are Accessible
- Storage Structuring Frozen For All Data Access
- New Data Disrupts Query Process
- Disparate Data Treated As Disjoint Structures
- Inhibits Real-Time Processing Of Live Data
- Structure-Dependent Native XML Support
- Restricted Interoperability Between XML Systems

XSP technology enables *structure-dependent* DBMSs to evolve into *operation-centric* IIASs.