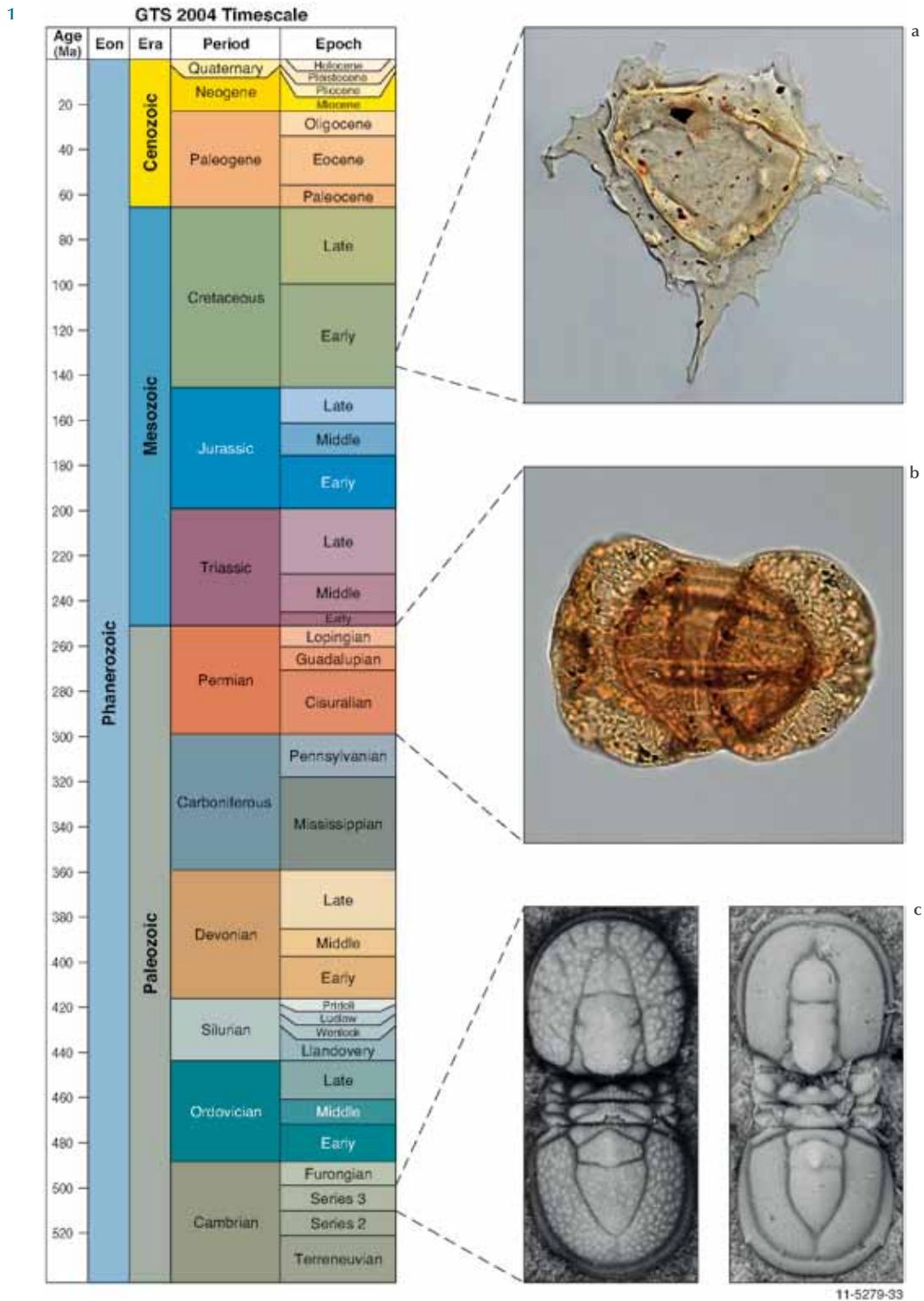


OFFSHORE *Information Management*



1: Examples of Australian fossil markers: (a) *Phoberocysta necomica*; (b) Permian striate pollen; (c) trilobites tied to the internationally accepted Geologic Time Scale 2004, thus allowing meaningful correlation of rock strata on a regional and global scale.

TIMESCALES PROJECT

Geological timescales provide a global means of understanding the Earth's history. Geoscience Australia has adopted the 2004 Geologic Time Scale, accepted by the International Commission on Stratigraphy as the global standard through its International Stratigraphic Chart. The Timescales Project relates local fossil biozones to the international scales. Plant microfossils, including spores, pollen and marine dinoflagellate algal cysts are widely used by the Australian petroleum industry as zonal markers. Many zones are yet to be formally defined and through a collaborative Virtual Centre for Economic Micropaleontology and Palynology, Geoscience Australia works with the British Geological Survey to formally define these zones. Modern radio-isotopic dating techniques also deliver increasingly accurate numeric ages, which contributes to the ongoing revision of the International Stratigraphic Chart.

Based on these studies, an extensively revised Australian Biozonation Chart (2010) was produced showing the fossil zones against the timescale. Compilations were produced for each of the major petroleum basins showing sedimentary successions and hydrocarbon occurrences. The sedimentary rock packages are related to the timescale, mostly by microfossil occurrences, which allows for precise and consistent correlation at a basinal, regional or global scale. Microfossils remain one of the most important tools used by hydrocarbon exploration companies to correlate within and between basins, and can be used to aid detailed hydrocarbon-reservoir mapping.

ACHIEVEMENTS:

- Related the Australian biozonation schemes to the Geologic Time Scale 2004—the accepted global standard reference. This allows for meaningful correlation of rock strata on a regional and global scale.
- Revised biozonation and lithostratigraphy charts for Australia's major offshore hydrocarbon producing basins. These charts depict the standardised biozones, formation names and hydrocarbon occurrences for each basin against the global standard timescale.
- Review of the chronostratigraphic ages of the Triassic-Jurassic palynological zones of the North West Shelf. These fossil zones are a major correlation tool used by the hydrocarbon exploration industry.

NEW OPPORTUNITIES:

- The petroleum exploration industry can now produce stratigraphic and timescale charts using a readily available datapack of standardised Australian biostratigraphic and lithostratigraphic data in conjunction with the TimeScale Creator software.

KEY PRODUCTS:

Australian Datapack for TimeScale Creator Software 2010. www.ga.gov.au/products/servlet/controller?event=GEOCAT_DETAILS&catno=68802

Basin Biozonation and Stratigraphy Charts 2010. www.ga.gov.au/products/servlet/controller?event=GEOCAT_DETAILS&catno=70371

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1



b

2



1: Warehousing of data tapes from industry and Geoscience Australia seismic surveys requires labour-intensive retrieval and handling.

2: New Robotic Data Store contains 1.5 Petabytes of readily accessible data to service industry and Geoscience Australia requirements.

ROBOTIC STORAGE AND DELIVERY OF SEISMIC DATA

In support of the Offshore Energy Security Program, Geoscience Australia undertook an extensive program of seismic data concatenation from low density media to high density media (IBM3592 500 Gigabyte tapes). This has improved the efficiency of data storage by reducing the volume of media needed for the collection. Benefits include: improved preservation of the existing collections, faster access to data, and greater ease of copying using industry standard media. In addition, the remastering of seismic data collected by Geoscience Australia in the 1980s and early 1990s on older media and in older formats continued from 2007 to 2010. These surveys are important because they frequently provide a regional framework of key tie lines which link more localised industry seismic surveys.

In conjunction with these initiatives, Geoscience Australia has purchased and installed a Robotics Data Store to house the collections of processed and field seismic data submitted by industry under legislative requirements. Migration of the entire collection of publicly available processed seismic data has been completed and the migration of field seismic and in-confidence data is expected to be complete by the beginning of 2012. The volume of the migrated data is anticipated to be in excess of 1.5 Petabytes (1.5 million Gigabytes).

The benefits of this program include enhanced data preservation, more rapid access to data for clients and improved quality control on data holdings. New data delivery mechanisms have been instituted to provide seismic data on digital hard drives and tape. This has reduced the delivery time for data to clients and seen data borrowings increase from less than 100 Terabytes to more than 300 Terabytes annually over the past three years. Disaster recovery has been improved by the creation of an offsite back-up of this key data collection. The migration process is leading to new quality control mechanisms for submitted seismic data which will improve the overall management of the offshore seismic data collection.

ACHIEVEMENTS:

- Creation of a near on-line digital data store for seismic data from existing, re-mastered tape collections.
- Enhanced preservation and off-site backup of seismic data collections submitted under the *Offshore Petroleum and Greenhouse Gas Storage Act (2006)*.
- Improved efficiency of data delivery mechanisms.

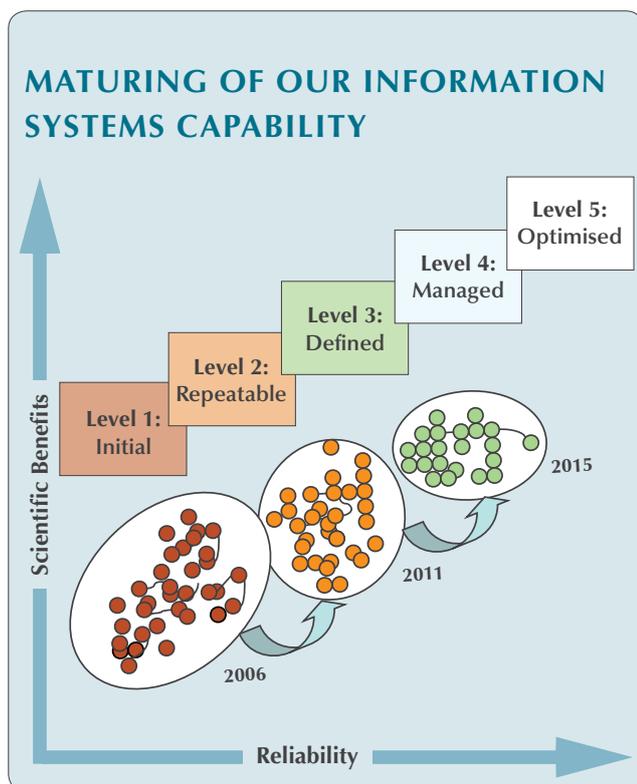
NEW OPPORTUNITIES:

- Migration of data from tape storage to near on-line digital storage on the robotic system will have future benefits as self-service of data becomes possible and web delivery increases.

KEY PRODUCTS:

E-mail address (ausgeodata@ga.gov.au) through which data can be requested.

OFFSHORE *Information Management*



- 1: The ability to access multiple data sets aids interpretation of complex problems.
- 2: The new Geoscience Australia Website contains upgraded petroleum data and information about Australia's sedimentary basins.
- 3: The Virtual Data Room application is designed to facilitate the discovery and delivery of pre-competitive geoscientific data.
- 4: Maturing of our information systems capability is an ongoing priority to meet ever-increasing demands for data.

PETROLEUM DATABASES AND INFORMATION MANAGEMENT

The Offshore Energy Security Program provided the resources to improve the management of petroleum data and information held by Geoscience Australia. In collaboration with the States and Territories, Geoscience Australia initiated a move to an environment in which the nation's digital assets on petroleum resources are managed within a federated architectural framework with clearer lines of responsibility, custodianship and consistency.

With a better understanding of the data and information being held by Geoscience Australia, it is possible now to rationalise these datasets and move towards achieving a Single Point of Truth framework for petroleum and associated data. This is being achieved by progressively upgrading Geoscience Australia's systems and linking them together in a more modular and integrative architecture.

In 2008, Geoscience Australia set up a number of taskforces to drive improvement in the capability and maturity of the agency's project management and software development practices. This is now an embedded process which will be used for future development strategies.

Development of the Virtual Data Room was undertaken by Geoscience Australia's Petroleum and Marine Division as part of the Energy Security Initiative. This application is aimed at facilitating the discovery and delivery of pre-competitive geoscientific data to assist petroleum exploration within Australia at a national level.

It is envisaged that, in the near future, industry will be able to transfer its operational data seamlessly into Geoscience Australia's data stores as the agency moves towards a service delivery model more in line with Gov 2.0 Taskforce principles. Data and information will become more easily discoverable and accessible and Geoscience Australia will leverage off contemporary technologies and information management practices to free up its scientists and engineers so they can add value to the raw data which has been acquired on Australia's natural resources.

ACHIEVEMENTS:

- Initiated a move away from a compartmentalised approach to systems development and data management, to a more effective, federated architectural framework.
- Development of better integrated petroleum databases with reduced duplication.

NEW OPPORTUNITIES:

- Better integrated data management system will allow seamless delivery of high quality petroleum data via a streamlined, web-enabled data discoverability and delivery service.

KEY PRODUCTS:

Petroleum Information Management System (PIMS). www.ga.gov.au/oracle/npd/

Virtual Data Room (VDR). www.vdr.ga.gov.au