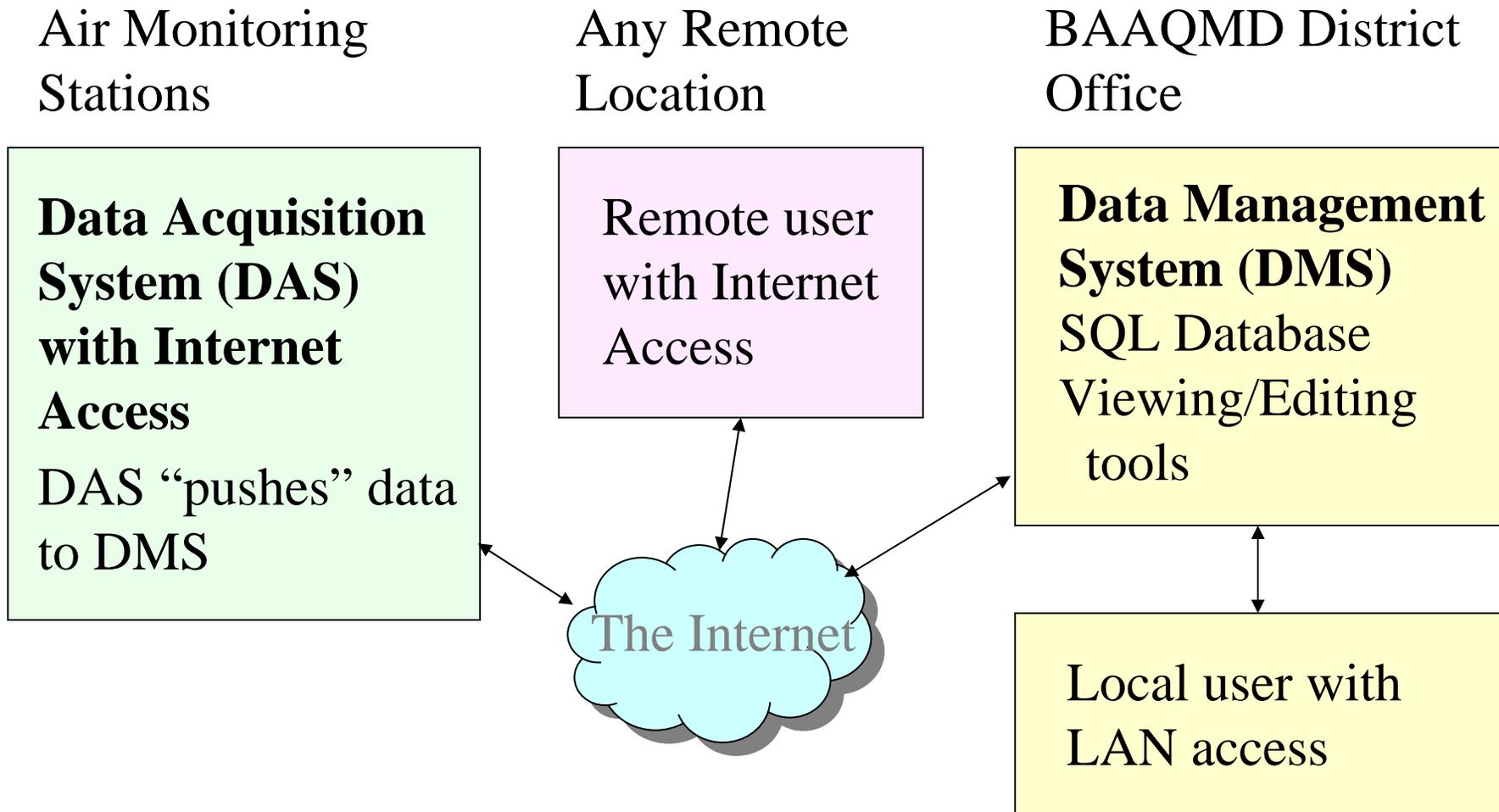# BAAQMD Data Acquisition and Management System (update)

SAMWG, May 13, 2004

- Mark Stoelting

System Definitions

Air Monitoring
Stations

Any Remote
Location

BAAQMD District
Office

**Data Acquisition
System (DAS)
with Internet
Access**

DAS "pushes" data
to DMS

Remote user
with Internet
Access

**Data Management
System (DMS)**
SQL Database
Viewing/Editing
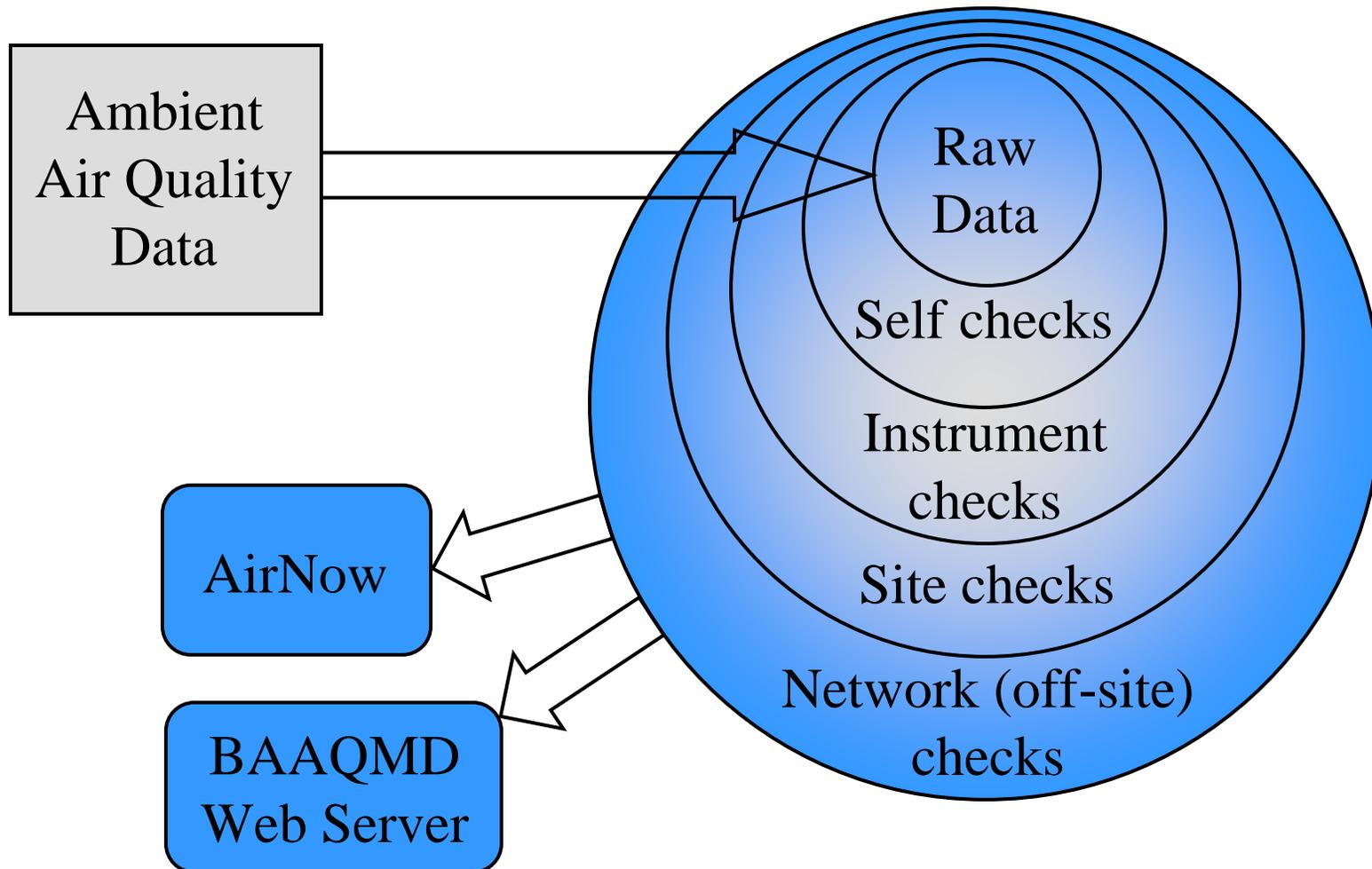tools

The Internet

Local user with
LAN access

Data Acquisition System (DAS)

- PC-based DAS replaces analog dataloggers
- Collects digital data from new, computer-based instruments including QA parameters provided in digital records
- "Pushes" data to server through the Internet in real time to Data Management System (DMS)
- DAS development for BAAQMD use is largely complete

Real-Time DMS Features

- Imports data from DAS to SQL Server 2000 database (Microsoft)
- Performs real-time QC on incoming data automatically setting data QC flags
  - Min/max, 0-drift, rate-of-change, sticking, compare
  - Self-check, instrument, site, region
- QC conditions can activate process/alarm
- Tracks QC code changes (data chain-of-custody)
- Exports QC'd (filtered) data to AirNow and BAAQMD web server

Automated QA Checks

Non-Real-Time DMS Features

- Provides view/edit tools for staff data review

- Tracks all adjustments to QC codes and data values

- Exports "final" data reports for submission to EPA's Air Quality System (AQS) database and BAAQMD web server

Other DMS Features

- Provides data access security
- Air Monitoring instrument equipment database
- Electronic record of instrument performance (zero/span data, etc.)
- Electronic instrument and Air Monitoring site logbooks (planned feature)

DMS Roots

- Combination of features and requirements
  - CRPAQS field study (DAS)
  - AirNow (real-time)
  - Air Quality System (formerly AIRS)
  - EPA regulations for data quality, review, and documentation
- Most features have successful track record in other database applications

DMS Development Funding Phase I

- **$100,000 supplemental EPA 103 Grant funding from EPA Region 9**

- Support real-time (hourly) data collection ($PM_{2.5}$)
  - Task 1: Overall DMS design
  - Task 2: System implementation
  - Task 3: Testing, Validation, Approval
  - Task 4: System Documentation
  - Task 5: Delivery and Training

DMS Development Funding Phase II

- **$279,000 EPA Grant from the National Environmental Information Exchange Network (NEIEN)**

- Data exchange/support agreement with CalEPA Exchange Network database server

- XML support for CDX, Exchange Network

- Parallel DMS deployment at Ventura Co. APCD

- Enhanced view/edit features, data review tracking

- 1-min data import, management, export to web

- Support for toxics, PM filter data, GLM/CEM

Deployment Timeline

- 1Q 2004: DAS revisions complete, DMS design complete
- 2Q 2004: limited DAS deployment, DMS testing
- 3Q 2004: DAS and DMS operational at 5 continuous PM$_{2.5}$ sites
- 2Q 2005: DAS/DMS operational for ozone and all hourly data
- 4Q 2005: DAS/DMS operational for 1-min data

Bay Area Air Quality Management District