Dictation Technology in Healthcare

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Healthcare Technology Award

2005

F R O S T & S U L L I V A N

Competitive Strategy Leadership Award

Dictaphone Healthcare Solutions
Why Speech?

- Connecting For Health - £6-30 Billion NHS IT Project
- AKA “The Biggest Computer Programme in the world ...Ever!”
- A National programme designed to deliver effective management, storage and analysis of electronic patient data

Q. BUT HOW DO YOU GET THE DATA IN?

A. Speech will play an increasingly pivotal role in inputting data into 21st Century electronic healthcare systems
Why Speech?

- Many NHS Trusts in financial crisis
- Admin and Secretarial resource targeted
- Clinical reporting labour intensive and slow
- Increasing demand for speech based solutions
- Speech delivers significant productivity benefits (TAT)
- Speech delivers significant admin savings (ROI)
- Increasingly, NHS Trusts are turning towards speech as an enterprise wide solution
Speech is Ubiquitous

Speech Solutions:
- The Healthcare Professional
- Departmental
- Hospital-wide
- Trust-wide
- Cluster-wide
- Nationwide
Speech is Modular

Modular Solutions:
- Desktop Recognition
- Digital Dictation
- Server based recognition
- Server/Desktop recognition
- ASP
Speech is Mobile

Input Solutions:
- Handheld microphones
- Wireless headsets
- Telephony
- Digital recorders
- PDA’s
- Notebooks
- Tablets
Benefits:

- Improved Data Access (CfH)
- Reduced Transcription Costs
- Improved TAT

- Improved Morale!
Two types of speech dictation

Speech Recognition

Transcription Assisted

Desktop driven
Productivity Gains

Transcription Assisted

- 50% avg. productivity gain from best practice customers

Desktop Driven

- 60% - 100% transcription cost reduction through direct bypass
Dictaphone Healthcare Solutions

All Powered by Dragon technology:

- Dragon Medical Solutions (UK)
- Dictaphone PowerScribe
- Dictaphone EWS
- Dictaphone iChart
Flagship LVCSR technology:

- DNS has 90% share of desktop based dictation market
- 25 years of leadership in the field of desktop SR
- Desktop & Server based recognition models
- Integrates into any Windows application
- Maximises Microsoft Office Productivity
- NO initial speaker adaptation required
- Desktop = Maximum ROI
Dragon Offerings

Dragon NaturallySpeaking Professional Solutions V9

- MAJOR NEW FEATURES INCLUDE:
  - No Enrolment Training
  - 15% More Accurate
  - Enterprise Ready–Install and manage across Network
  - Facilitates Roving Profiles
  - Supports Citrix Thin Client Environments
  - Broader Application Support
Dragon Medical Solutions V9

- No Enrollment Training
- Broad Compatibility with Clinical Systems
- Contains 14 Medical Specialties:
  Radiology, Pathology, Cardiology, General Medicine, Paediatrics, Emergency, Mental Health, Ob/Gyn, Oncology, Orthopedics, Surgery and others
- Includes over 60 sub-specialties
Dragon Healthcare Penetration

- 200 + NHS Trusts
- 40% Pathology Labs
- 40% Radiology Depts
- 40+ Secondary Care Specialty Departments
- Broad GP Practice Coverage
SE London Cancer Network

Cancer report turnaround times reduced from:

- 6 days to 3 days (Histopathology) Kings College Hospital
- 5 days to 1 day (Radiology) Kings College Hospital
- Reduced patient waiting times, accelerated diagnosis, better outcomes
- 50% less typing time needed by consultants PA’s
- £11K cost savings per consultant pa
Comparison of conventional dictation against voice recognition
West Suffolk Hospital

<table>
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<tr>
<th></th>
<th>Total cases</th>
<th>Laboratory phase</th>
<th>Pathologist phase</th>
<th>Absolute turnaround time</th>
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<td>March</td>
<td>487</td>
<td>2.4 days</td>
<td>7.8 days</td>
<td>10.2 days</td>
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<tr>
<td>June</td>
<td>373</td>
<td>2.2 days</td>
<td>1.2 days</td>
<td>3.4 days</td>
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</tbody>
</table>
Dragon Healthcare Case Studies

Accuracy

140 reports

Voice
- Minor errors = 31
- Major errors = 0

Tape
- Minor errors = 16
- Major errors = 6

References from Radiology Dept at Norfolk and Norwich Hospitals
Accuracy

500 reports

<table>
<thead>
<tr>
<th>Mode</th>
<th>Minor errors</th>
<th>Major errors</th>
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</thead>
<tbody>
<tr>
<td>Voice</td>
<td>86</td>
<td>12</td>
</tr>
<tr>
<td>Tape</td>
<td>143</td>
<td>23</td>
</tr>
</tbody>
</table>

References from Radiology Dept at Norfolk and Norwich Hospitals
Clinical Productivity Demonstration

Dragon V9 Demo
Server Based Recognition

The Workflow Process
Measurable increases in productivity - digital dictation only

| MT Productivity – Industry Average | 130 lines per hour |
| MT Productivity – Dragon MT Average | 180 lines per hour |

Average productivity increase 30%

Figure 1: MedRemote MT Productivity By MT Group

Each group represents 10% of MTs, from most productive to least productive
Impact of server based speech recognition

- The average (mean) transcriptionist types 1 minute of dictation in about 4 minutes.
- The best editors can edit 1 minute of dictation in less than 2 minutes.
Server Based Workflow

- Desk Based Reporting
- Portable Reporting
- Transcription Pool
- Remote Dictation
- Workstation
- Remote Transcription
- Digital Dictation
- Print/Fax
- E-mail
- Portable Reporting
- Telephone Reporting
- LAN
- Speech Recognition
- Speech Recognition
- Speech Recognition
- RIS / PACs / HIS / EPR Integration
- Remote Dictation Workstation
- Remote Transcription
- Print/Fax
- E-mail

Speech Recognition

Digital Dictation

Nuance
Importance of Server Based Recognition:

- No change in User experience
- Encourages widespread adoption
- Silently eliminates ‘growing pains’ of Desktop
- Introduces user to Desktop in optimal condition
- Best route to maximising ROI through higher self-edit adoption
A unique Dragon feature

Dragon Inference Engine

Through careful analysis and review of secretarial transcription, Dragon technology can, by repeated inference, develop a set of pre-processing, author dependent rules to accelerate the transcription process.
Server Based Recognition

Importance of Server Based Recognition:

**ANESTHESIA** was General endotracheal by Dr. Rogers.

**EVL** was 800 cc.

**IV FLUIDS** were 1600 cc.

**COMPLICATIONS** were None.

**MEDICATIONS**: Amdrine, remifentanil 2 mcg was given.

**FINDINGS**: There is an Viable female infant in a double footling breech presentation. Appear to be 5 at one and time at five minutes. Weight 3265 g. mm.

**PROCEDURE**: The surgery was performed as follows: patient was taken to the operating room, where an ultrasound was performed and the ultrasound and vaginal exam were performed to confirm non-viability. General endotracheal anesthesia was then introduced.

A skin incision was made 2 cm above the pubis symphysis in a transverse fashion in the midline. The skin incision was extended down to the fascia using the Bowie cautery device. The fascia was incised with a peritoneal incision. The incision was then extended bilaterally using the curved Mayo scissors. The fascia was dissected sharply and bluntly away from the rectum underlying rectum sinus. The peritoneum was entered sharply.

The peritoneal incision was extended superiority and inferiorly, with good visualization of the bladder. A bladder blade was inserted, as was a Richardson retractor. All the bladder wall was made in a blunt and sharp fashion. All the bladder blade was removed. The bladder was then entered using a scalpel and entered bluntly. The incision was extended blindly.

The final all were delivered by Benech maneuvers were used to deliver the all anterior breast. The head was delivered by a method of gentle traction, along with some traction all manual extraction from the uterus, with the surgeon’s hands. The infant was handed off to the warming bed and then. The cord was clamped and cut. The infant was sent to the nursery. The abdomen was examined. It was clean of all clots and debris. The abdomen, uterus, tubes, and ovaries were found to be normal.
The Process

Clinician dictates into handheld/PC

Speech servers accumulate audio data

Speech servers perform recognition (for select users)

Clinician uses front-end speech recognition

Speech servers learn from transcription

Manual transcription

Speech servers learn from corrections

Speech editing

Speech servers accumulate audio data

Speech servers learn from corrections

Speech editing

Dictation

- 100% Conventional transcription
- 100% Conventional transcription
- 100% Conventional transcription
- 98% Conventional transcription
- 80% Conventional transcription

Transcription

- 10% Front-end speech with MT edit
- 10% Front-end speech with MT edit
- 20% Conventional transcription
- 20% Conventional transcription
- 20% Conventional transcription

Continuous screening, learning, feedback

- Speech servers continue to learn from corrections
- Speech system continues to provide feedback to users
- Administrators continue to perform screening & migrate more clinicians to backend / front-end speech rec
- Speech engine continues to improve

Screening

- Speech servers produce clinician ratings
- Administrators select clinicians for backend speech based upon ratings

Scorecards

- Scorecards identify reasons for poor performance
- Administrator selects candidates for front-end speech recognition
- User profile automatically migrates to clinician desktop

Migration to Speech Recognition
PowerScribe Workstation is optimised for high-accuracy, real-time speech recognition and self-editing to meet the demanding turnaround requirements of the order driven reporting environment.

- Highly accurate speech recognition
- Powerful physician self-editing tools
- PowerScribe Workstation offers dramatic cost savings and speedy report turnaround.
- Web browser based
- Lets physicians dictate, self-complete recognised text, and electronically sign reports from any Internet-connected PC.
- Allows radiologists "once-and-done" control over the report creation process.
- Radiology language model - PowerScribe Workstation offers high recognition accuracy for a broad range of users.
- Enhanced MS Word version
- Enroll and train the system very quickly by reading a few reports.
- Edit speech-recognised reports by voice or keyboard.
- Deferred editing option
- Use speech recognition in batch or real-time mode.
- Create standard reports and fill-in templates quickly with voice-driven "Short Cuts".
- View patient and order information on screen through direct interface to the RIS.
A true all in one Trust wide solution

- Browser-based EWS, lets physicians dictate, self-correct, and electronically sign reports generated by Nuance’s speech recognition applications.

- Leverages a mix of best practice technologies, including
  - Dragon Speech engine
  - Seamless HL7 interfacing
  - Automated document distribution

- Offers Total administrative control over system security (HIPAA), job distribution and prioritisation, MPI (ADT) feeds etc
ASP Based Workflow

▪ Dictaphone ichart from Nuance is a new way for healthcare organisations to acquire leading speech recognition and dictation technology through a comprehensive Internet subscription-based ASP service.

▪ Gain Internet access to industry standard Speech Recognition and Dictation/Transcription software that integrates easily with your present workflow.

▪ Reduce the need for on-site equipment and capital investment.
ASP Based Workflow

- Benefit from the most advanced Digital Dictation, Speech Recognition, and Natural Language Processing technology located remotely at our ichart data centre facility.
Key Healthcare Drivers

Speech Based Dictation Offers:

- Individual clinician to Enterprise wide solutions
- Total Modularity = 100% adoption
- DD, Desktop and Server based recognition
- No enrolment
- Very accurate clinical language models
- Supports mobile dictation opportunities
- Web Browser based workflow
- Powerful automated shortcuts
- Enhanced MS Office productivity
- Seamless interfacing with clinical systems
Key Healthcare Drivers

Speech Based Dictation Offers:
- A compelling business case
  INVOLVING
- Dramatically improved report turnaround times
- Significantly reduced administrative overheads
  ENABLING
- Improved generation of/access to patient data
  MEANING
- Improved delivery and quality of patient care
Questions?
Why not join us on the 2007 Dictaphone Healthcare Battle Bus?