NEW FRONTIERS

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KEYNOTE ADDRESS TO CIS RIT

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NEW FRONTIERS

NEW PLAYERS

- IR SANTA BARBARA
- BIOMETRICS CANADA
- OPEN SOURCE INTEL
NEW OPPORTUNITIES

- 3D VOLUMETRICS
- SIMULATION/MODELING/VR
- 3D ROBOTIC SURGERY
NEW APPLICATIONS

- MOSAICING
- 3D VOLUMETRICS FOR SECURITY
- 3D PHOTOGRAPHY LFM
NEW FRONTIERS

SOFTWARE

- MATURE CODE (VIPER)
- JAI FOR ALL APPS
- EVOLVING REQUIREMENTS FOR
  - MODELING
  - SIMULATION
  - BATTLEFIELD MANAGEMENT
DOES THE WEB MATTER

- SERVER SIDE IMAGES
- WEB3D CONSORTIUM
- SCIENTIFIC RESEARCH
NEW FRONTIERS

- HARDWARE DIRECTIONS
  - DSP VERSUS FPGA CHALLENGE
- COTS BECAUSE THE COLONEL SAYS SO
- IMAGE FUSION
  - NIGHT VISION
  - MULTISPECTRAL
NEW FRONTIERS

FILTERING

- OBEYING NYQUIST
- LOCKIN AMPLIFIER
- NOISE REDUCTION
NEW FRONTIERS

- ALL WAVELENGTHS
- SHORT MID RANGE IR
- X-RAY
- UV
THE ELECTRONIC IMAGING UNIVERSE

IMAGE ACQUISITION

IMAGE ANALYSIS

IMAGE PROCESSING
NEW FRONTIERS

- WHERE HAVE WE BEEN
- WHERE ARE WE GOING
- WHY DOES X + Y = Z
NEW FRONTIERS

EI IS A CURIOUS BLEND OF

- MATH
- CHEMISTRY
- PHYSICS
NEW FRONTIERS

EI CONTRIBUTIONS TO SOCIETY

- TITANIC
- HUBBLE TELESCOPE
- 3D ULTRASOUND
- GENOMIC
NEW FRONTIERS

NEW DIRECTIONS

(LIMITED BY NDA)

- NANO MATERIALS
- BIOMEDICAL
- INTERNATIONAL SECURITY
NEW FRONTIERS

NEW TECHNOLOGIES

- SEMICONDUCTOR COMPOUNDS
- DNA MICROARRAYS
- GENOMIC CHIPS
NEW FRONTIERS

- STORAGE IS ALMOST FREE
- HARD COPY IS STILL A TOUGH ISSUE
- DISPLAYS
  - HMD
  - ELT
  - LARGE SCREEN FOR PRESENTATION
NEW FRONTIERS

STILL UNDER THE LOOKING GLASS

- REAL TIME 3D VOLUMES FOR BIOMETRICS
- REMOTE ROBOTS WITH VISION FOR DETECTING LANDMINES
- CCDs TO INSPECT DNA MICROARRAYS
NEW FRONTIERS

WHY ARE WE UNIQUE

- >>70% OF EI VENDORS HAVE <<$20m SALES
- TOO MANY PROMISES FOR AI AND MV
- MUCH MORE THAN ROCKET SCIENTISTS
NEW FRONTIERS

- WHO ARE THE PLAYERS
  - Fortune 500 Kodak, Sun, HP, etc
  - Medical training hospitals
  - Government agencies
  - National Research Labs
WHO ARE THE REAL PLAYERS??

- Government Research Labs
- University Funded Research
- Military
- NASA
- Defense Infra-Structure
NEW FRONTIERS

WHERE IS APPLE, IBM, THE IT CROWD

- APPLE WILL DRIVE VIDEO
- IT WILL LAG BY TWO-THREE YEARS
- LESS EXPENDITURE, MORE MICROSOFT
- FINANCE NEEDS MORE IMAGING
NEW FRONTIERS

BEYOND THE LOOKING GLASS

- SKIN DETECTION BY REMOTE BIOMETRICS
- CAVE CUBES AND COMMUNICATIONS
- CHIPS CAMERAS COMPLETE SOLUTIONS
NEW FRONTIERS

WHERE ARE WE GROWING ($$)

- COMPUTER VISION
- MEDICAL IS IMPROVING BY 3 FOLD
- SATELLITE HEATS UP WITH SECURITY
- LIFE SCIENCES BEGIN DOUBLE DIGIT GROWTH
NEW FRONTIERS

- ASTRONOMY
- PHYSICS
- CHEMISTRY
DATABASE IS TOO IMPORTANT TO IGNORE

BIOMETRICS FRONTEND, UNTAPPED BACKEND
NEW FRONTIERS

- INFOIMAGING +50% CAGR
- MEDICAL +25% CAGR
- LIFE SCIENCES 150% CAGR
- BIOMEDICAL +125% CAGR
- OPHTHAMOLOGY +75% CAGR
- 3D DENTAL 150% CAGR IN THREE YEARS
- SCIENTIFIC R&D 75% CAGR
NEW FRONTIERS

LEADING THE TECHNOLOGY CURVE

- SEISMIC PROCESSING
- DIGITAL RADIOGRAPHY
- COMMERCIAL CAMERAS