

# AFRL



THE AIR FORCE RESEARCH LABORATORY  
LEAD | DISCOVER | DEVELOP | DELIVER

## Information Directorate Overview



*Dr. Davy M. Belk, SES  
Director*

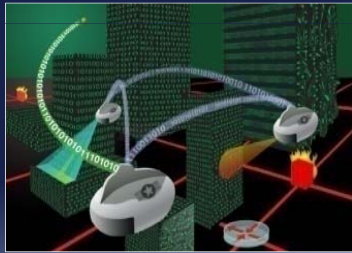
*Information Directorate  
Air Force Research Laboratory*



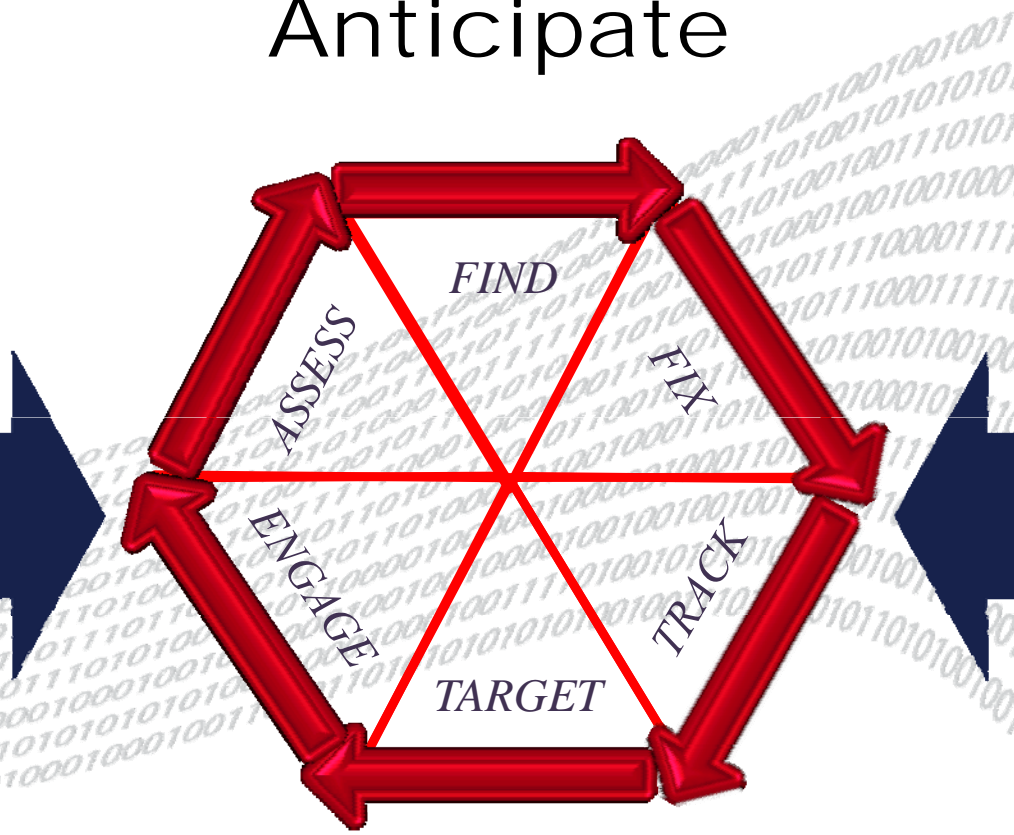
# USAF Science & Technology Vision

## Air

Guides USAF  
S&T Goals



## Anticipate



Cyber

# Anything, Anytime, Anywhere

## Space

Links S&T to  
Warfighter





# Air Force Research Laboratory (AFRL) Mission

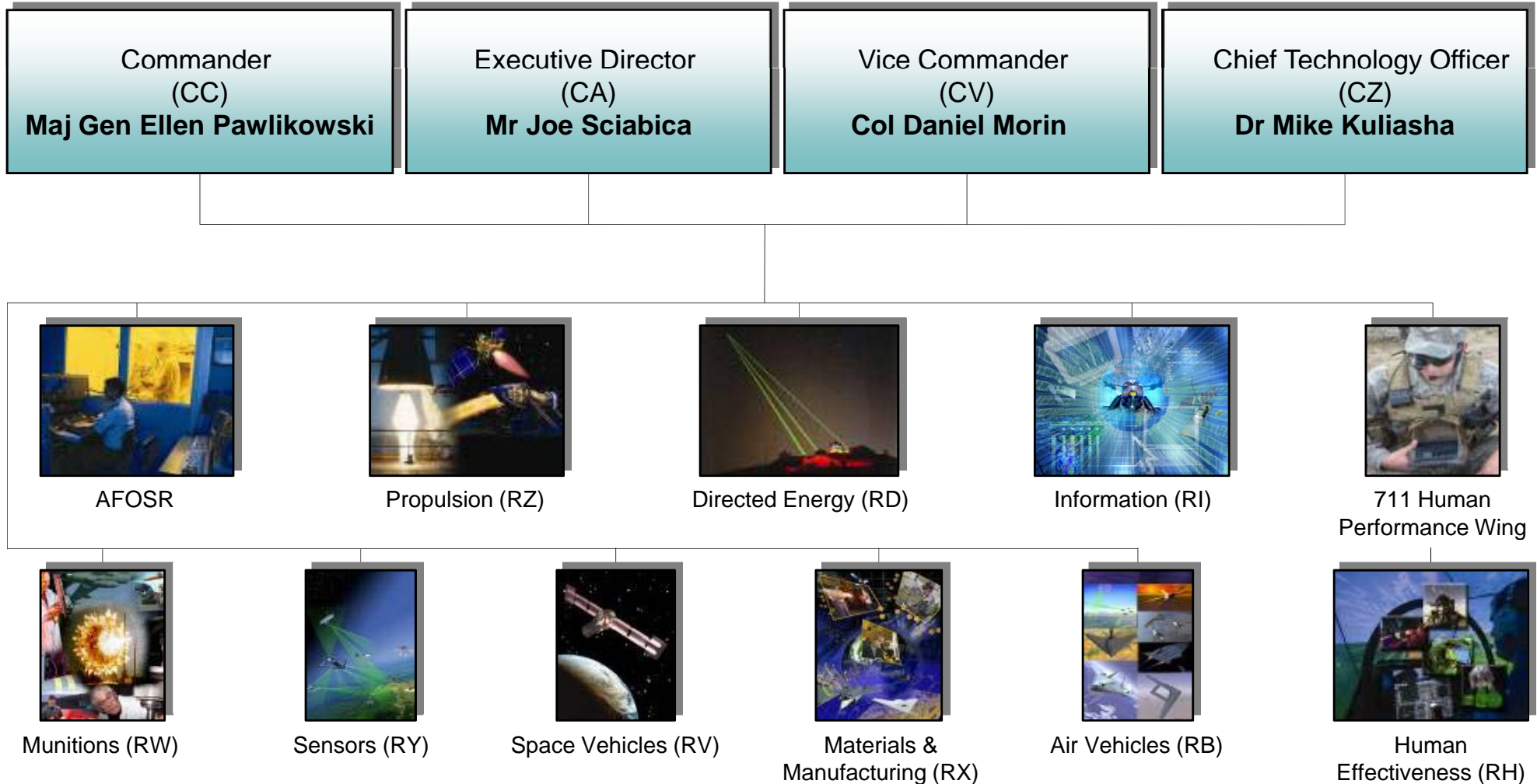
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*Leading the discovery, development, and integration of affordable warfighting technologies for our air, space and cyberspace force*

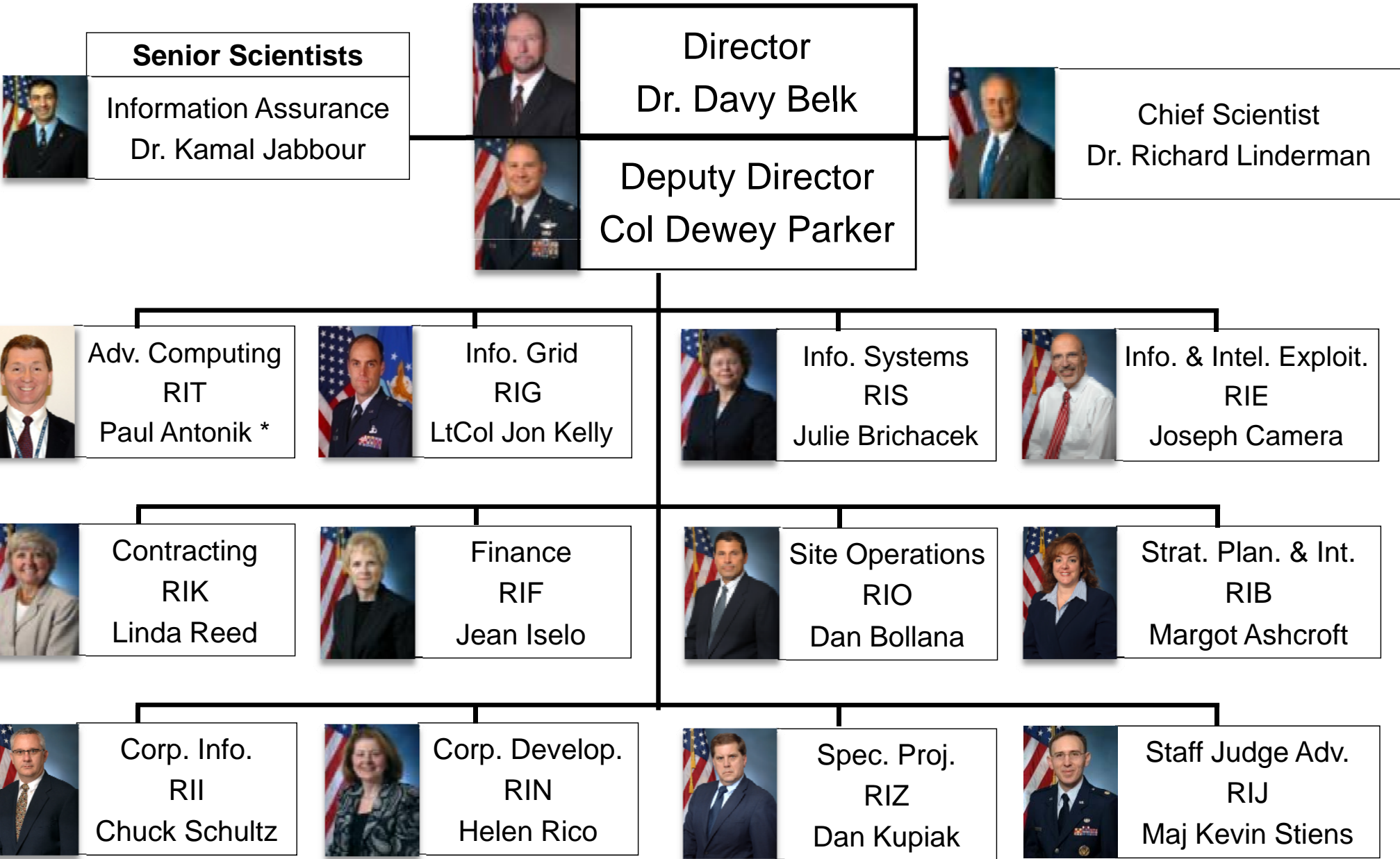


# AFRL Organization





# Information Directorate Organization



# Rome Research Site





# Rome, NY: A Rich Heritage



**Fort Stanwix:** The fort that never surrendered and where the American flag first flew in the face of enemy fire.



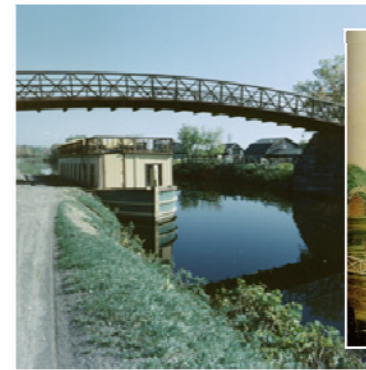
**Battle of Oriskany:** The bloodiest battle of Revolutionary War. The retreat of General St. Leger prevented the British from taking NY, which led to their surrender at Saratoga, and ended the British invasion of the Northeast.



**Francis Bellamy,** author of the Pledge of Allegiance was a Rome native, pastor, and is buried in a local cemetery.



**Site of the Tomb of the Unknown Soldier** of the Revolutionary War.

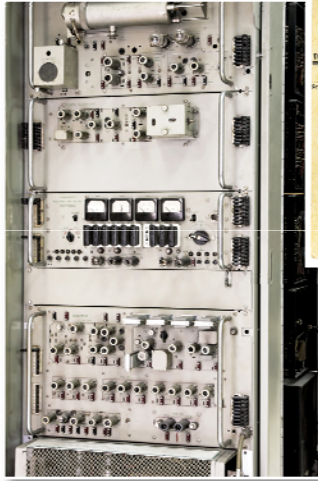


**Erie Canal:** Started in Rome, NY and became the most famous and successful of America's early towpath canals, connecting the Northeast to mid-America.



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# Rome, NY: A Rich Technology Heritage



**First commercial telegraph:** The first commercial telegraph company was founded in Utica, NY and is currently known as the Associated Press. The first commercial telegraph transmission was from Union Station in Utica, NY.



**Erie Canal:** Began just outside Rome, NY and has been called the "birth of American engineering". This was the first project of this size that used solely American engineers. Prior projects required engineering talent from Europe.



**NYS Thruway:** This was the forerunner to the U.S. interstate highway system. Engineers from this region literally wrote the book on U.S. highway design, and today's standards are still based upon that work.

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# Information Directorate A Rich Technology Heritage

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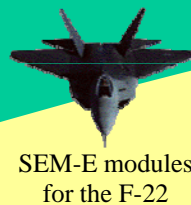
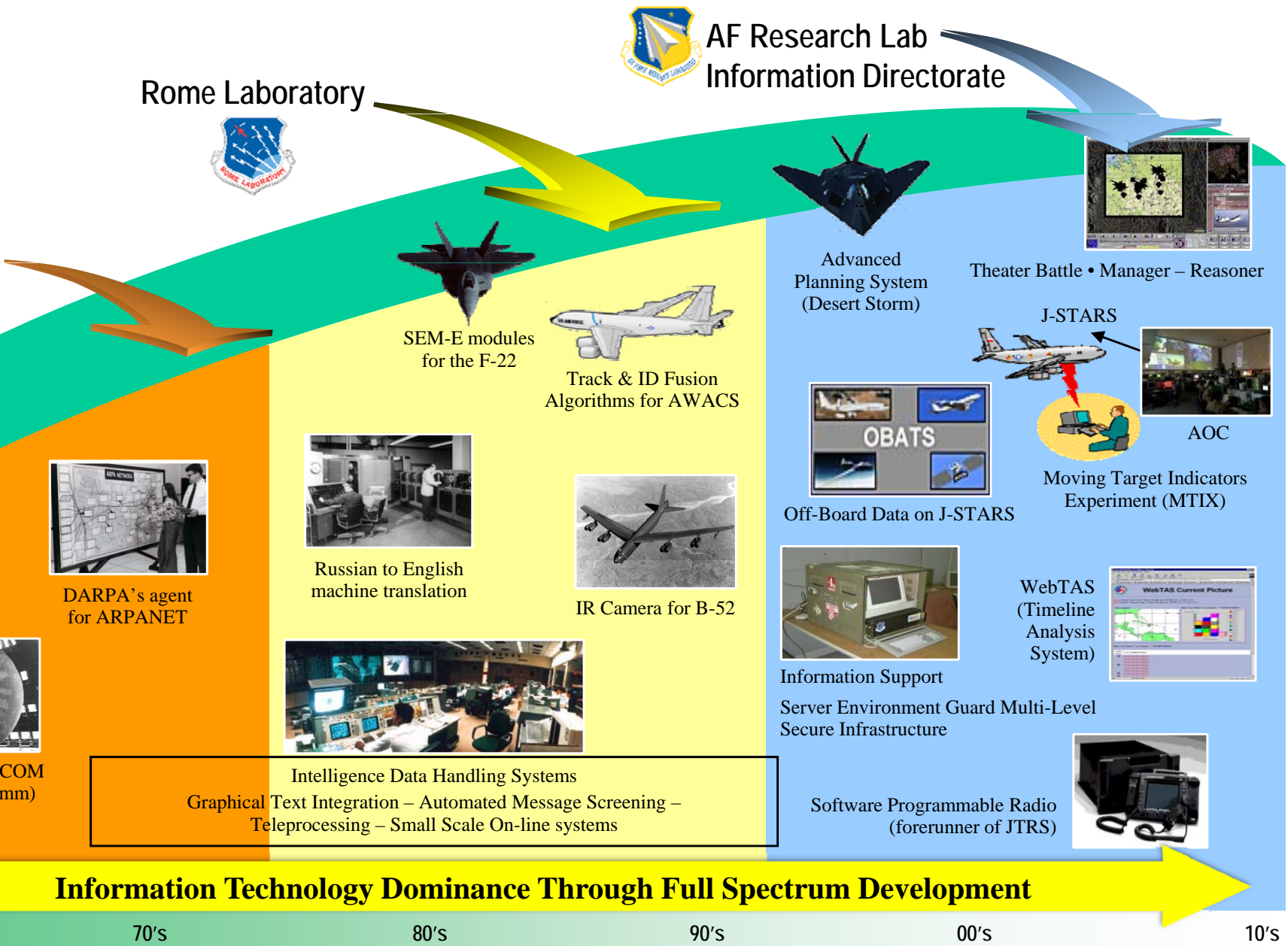


AF Research Lab  
Information Directorate

Rome Laboratory



Rome Air  
Development  
Center



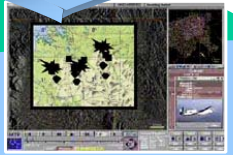
SEM-E modules  
for the F-22



Track & ID Fusion  
Algorithms for AWACS



Advanced  
Planning System  
(Desert Storm)



Theater Battle • Manager – Reasoner



J-STARS



AOC



Off-Board Data on J-STARS

Moving Target Indicators  
Experiment (MTIX)



DARPA's agent  
for ARPANET



Russian to English  
machine translation



IR Camera for B-52

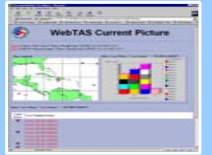


Intelligence Data Handling Systems  
Graphical Text Integration – Automated Message Screening –  
Teleprocessing – Small Scale On-line systems



Information Support  
Server Environment Guard Multi-Level  
Secure Infrastructure

WebTAS  
(Timeline  
Analysis  
System)



Software Programmable Radio  
(forerunner of JTRS)



Information Technology Dominance Through Full Spectrum Development

60's      70's      80's      90's      00's      10's

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# Information Directorate (AFRL) Mission



To *lead* the discovery, development, and integration of affordable warfighting information technologies for our air, space and cyberspace force.

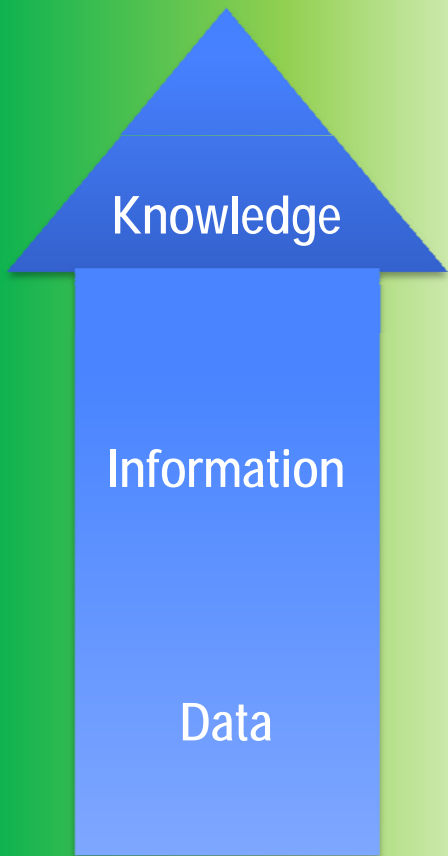




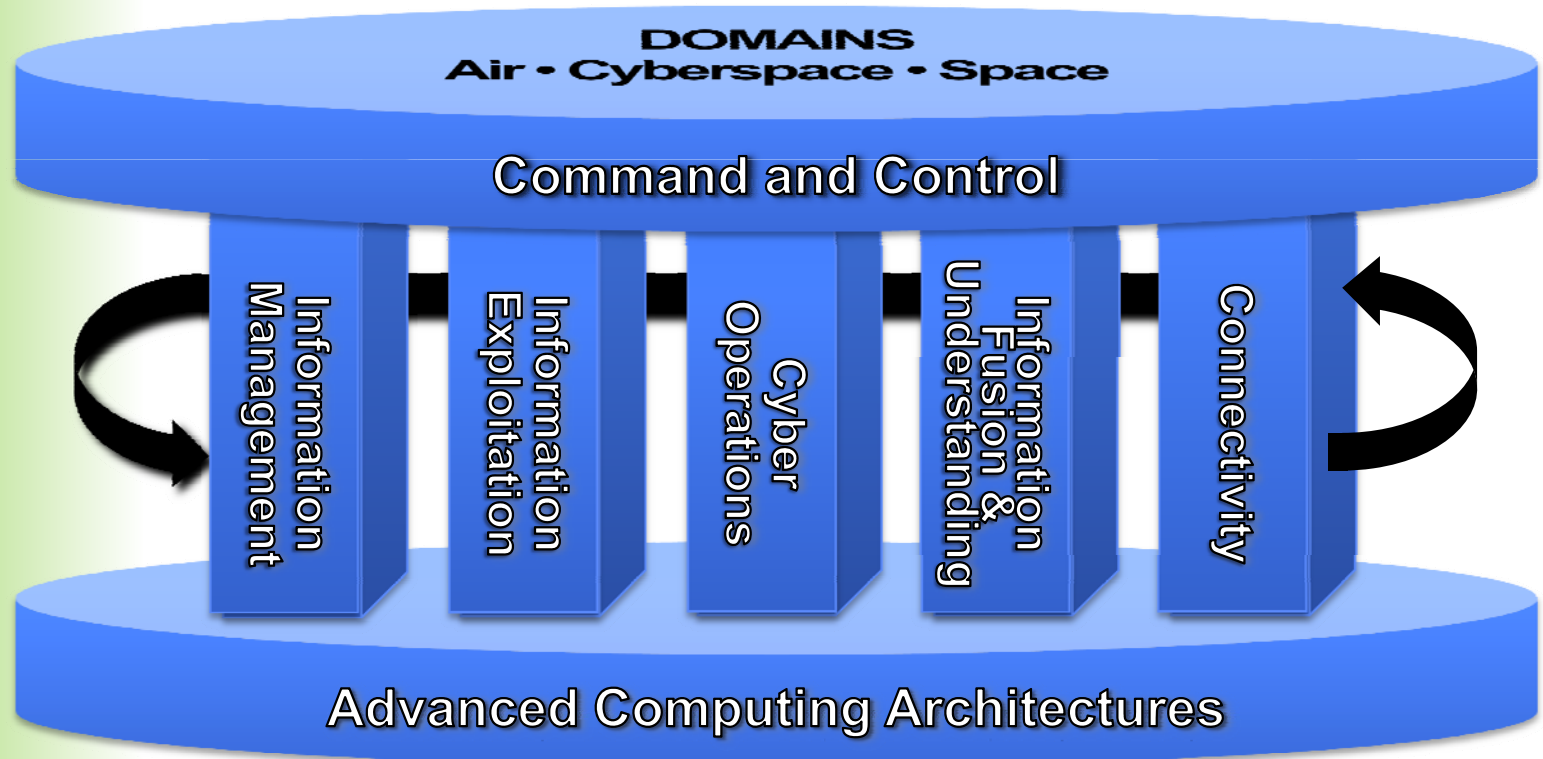
# Information Directorate Core Technical Competency Portfolio

Action

RI Programs are organized and planned by CTC



Sensing



**Our seven core technical competencies... Command and Control, Information Management, Information Exploitation, Cyber Operations, Information Fusion & Understanding, Connectivity, and Advanced Computing Architectures provide technologies to translate sensed data to actionable knowledge.**



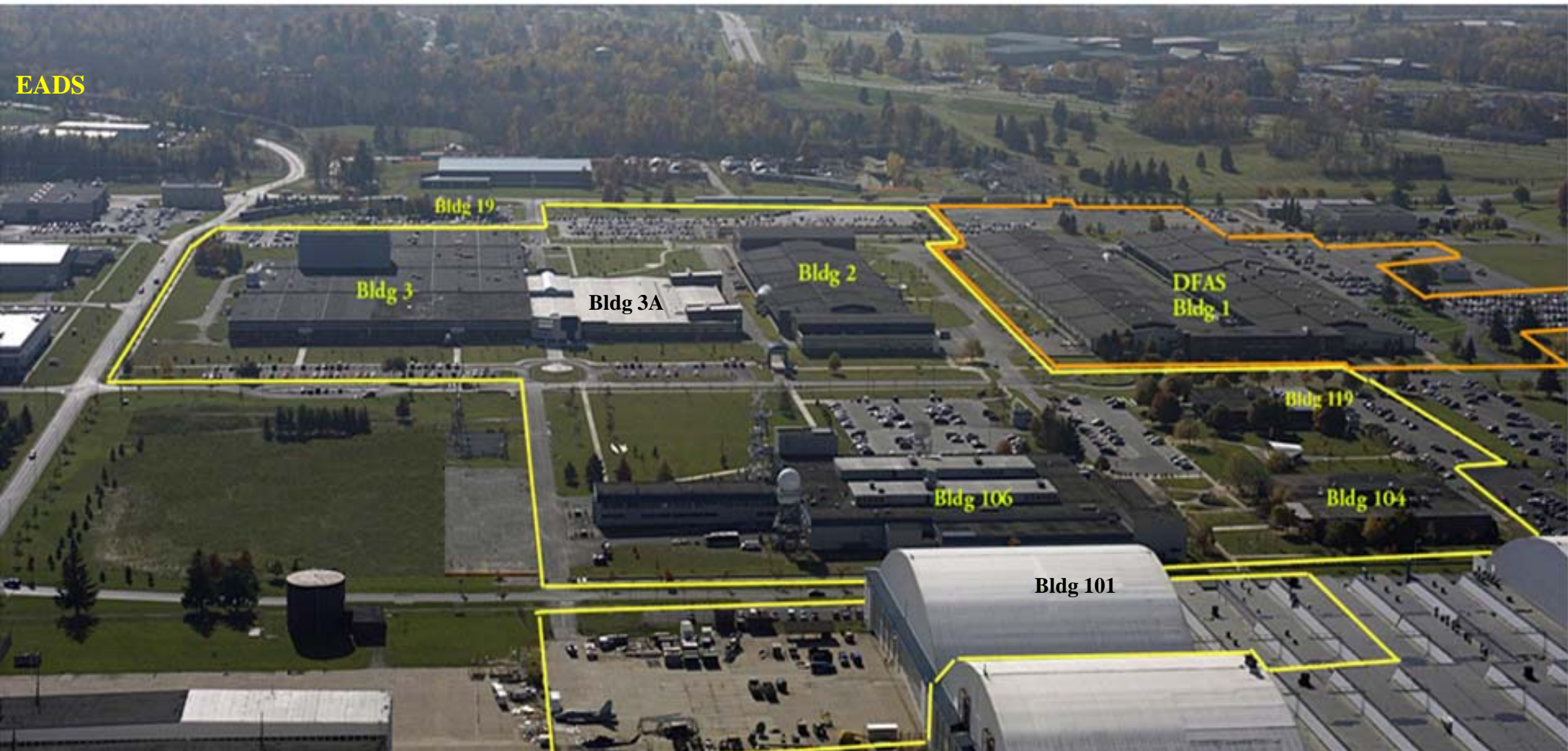
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# Rome Research Site



**Aerial Site photo with Building Numbers and Property Boundaries.**

- DFAS Parcel
- RRS Parcels



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# Our Research Environment



- Supports innovation with state of the art facilities
- Encourages collaboration and teamwork
- Provides basis for stronger emphasis on in-house work
- Provides research environment for industry and academic teams to collaborate with Air Force scientists and engineers





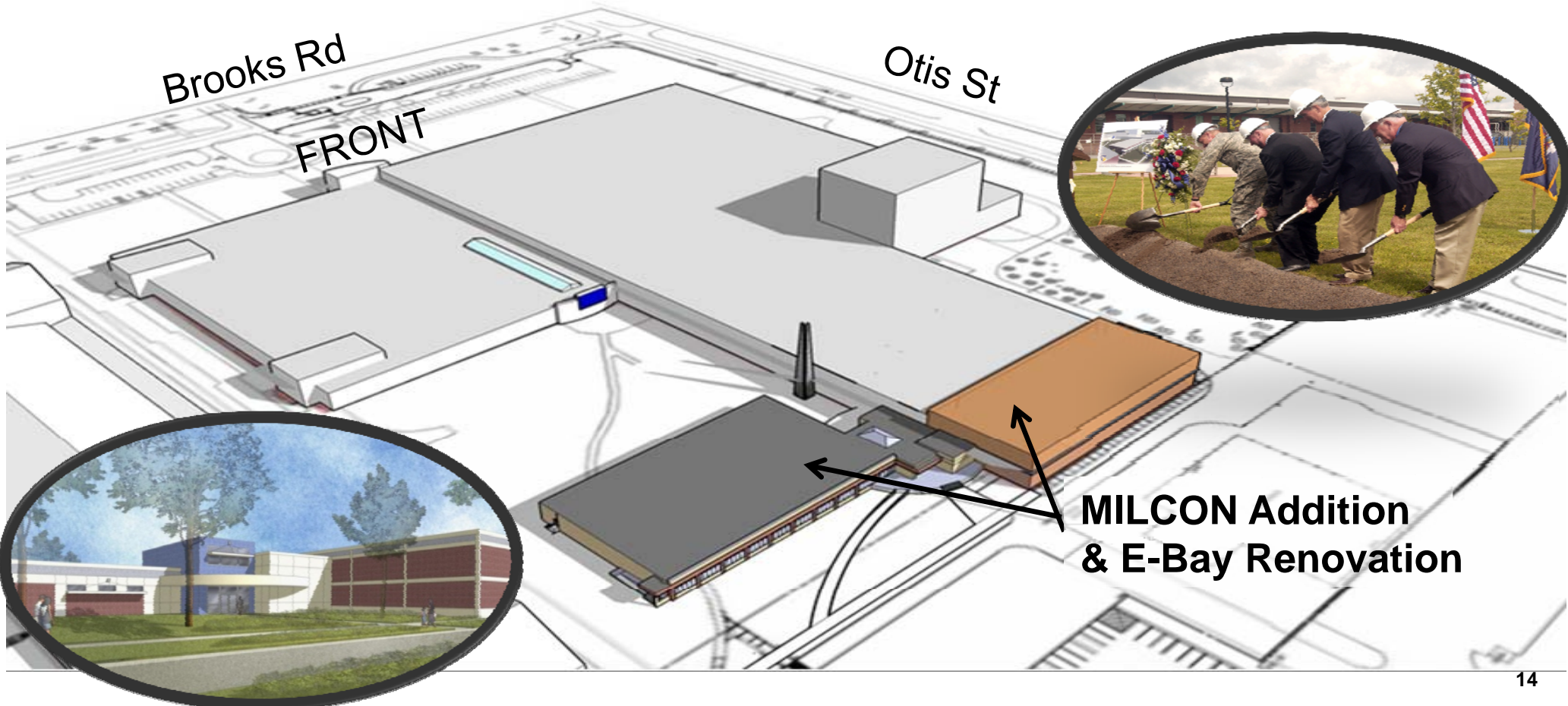
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# BRAC MILCON



Contract was awarded for BRAC MILCON project 5 Feb 09

- \$10.3M for 45,000sf addition/alteration
- 18 month construction period
- AFMC Commander General Hoffman, held ground breaking ceremony on August 11<sup>th</sup> 2009

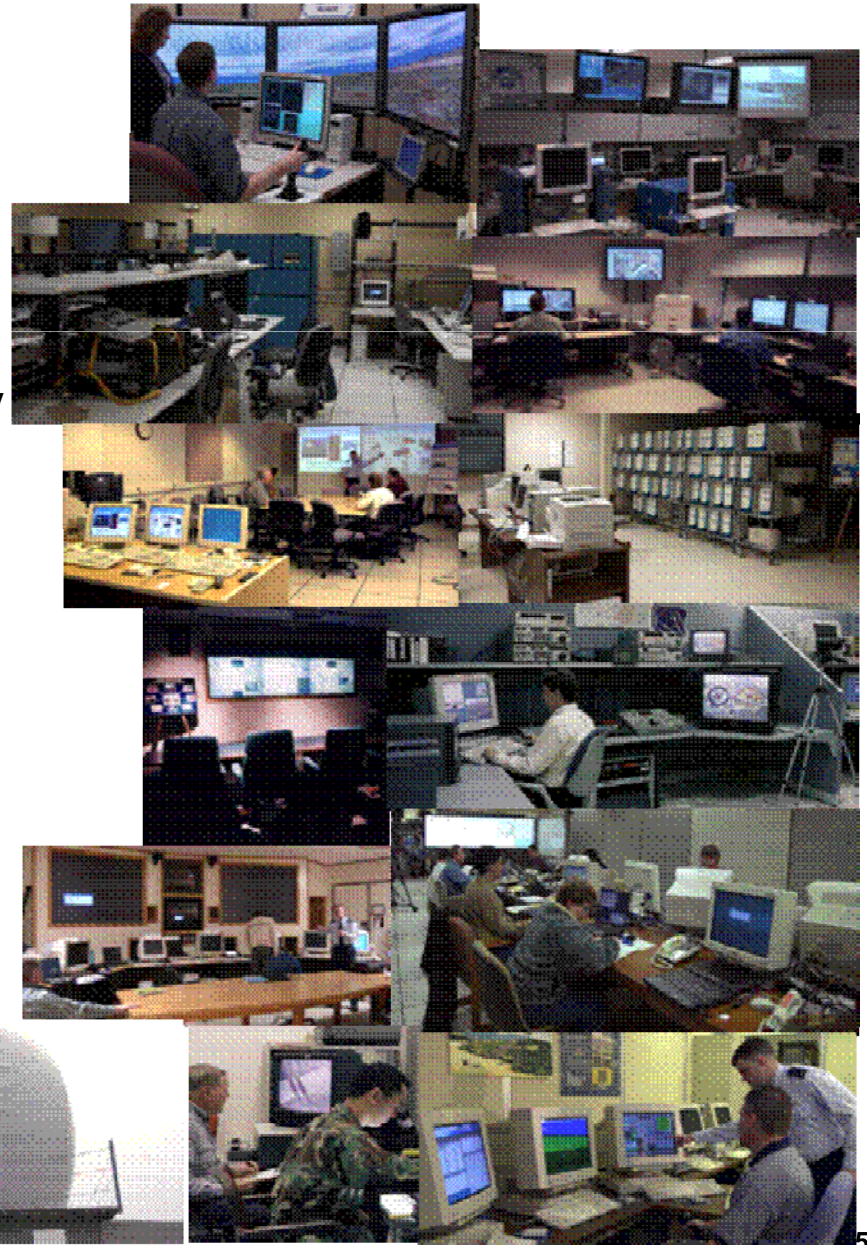


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# State of the Art Facilities

- High Performance Computing
- GMTI Center of Excellence
- Command & Control Concept Center
- Quantum Communications Lab
- Information Assurance Science & Technology Lab
- Forensics Lab
- Cyber Operations Technology Facility
- Defensive Cyber Operations
- Adversarial Science Labs
- Information Management Facility





# Newport Test Site

- Far field antenna measurement facility for evaluation of aircraft platform effects on antennas and airborne systems
- State-of-the-art antenna evaluations to include active phased arrays, transmit/receive (T/R) module arrays, multi-beam arrays and conformal, low radar cross section (RCS) apertures
- Complement of full size airframes including F-35, F-22, F-15 and F-16 on towers w/high load, high accuracy positioning systems
- Largest facility of its kind with most advanced instrumentation and antenna measurement technology in US
- Ideal geography for far field ranges: Two 1600 ft hilltops, 1.5 miles apart with 400 ft valley



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# Offsite Science & Engineering Facilities\*

## Newport Test Facility



Irish Hill

## Stockbridge Test Facility



Tanner Hill



F-35 R&D

\*not all inclusive

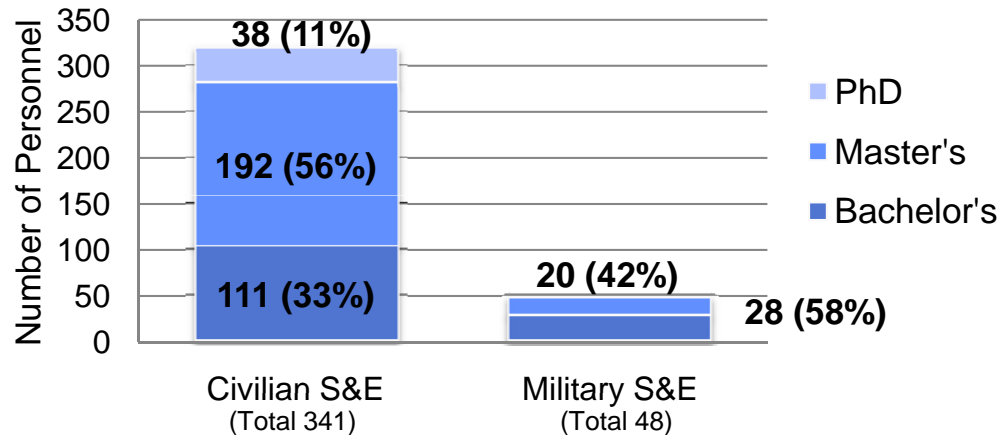
# AFRL/RI Workforce



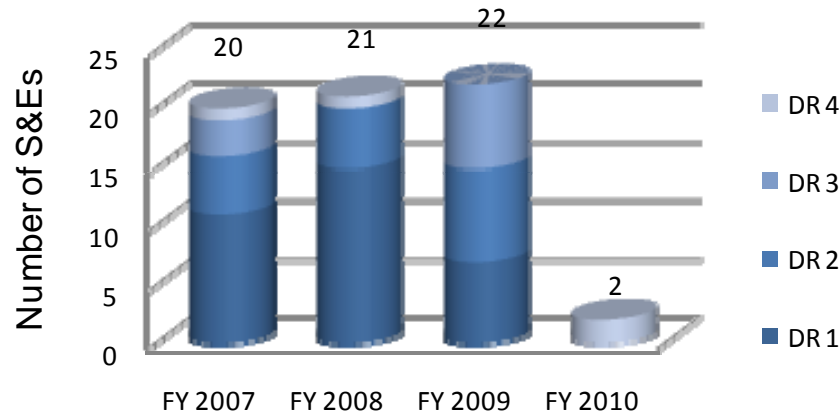
## Total Directorate Staffing

Gov't Civilian S&Es	341
Military S&Es	48
On-Site Collaborating Non-Gov't S&Es	357
<b>Subtotal S&amp;Es</b>	<b>746</b>
Gov't Civilian Support Staff	383
Military Support Staff	18
On-Site Contractor Support Staff	159
<b>Total</b>	<b>1,306</b>

## Government S&E Academic Degrees FY 2010 (Total 389)



## Civilian S&E New Hires (FY 2007 – FY 2010)

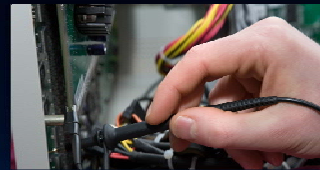


•No Projected Military S&E Inbound Through 30 Sept 2010

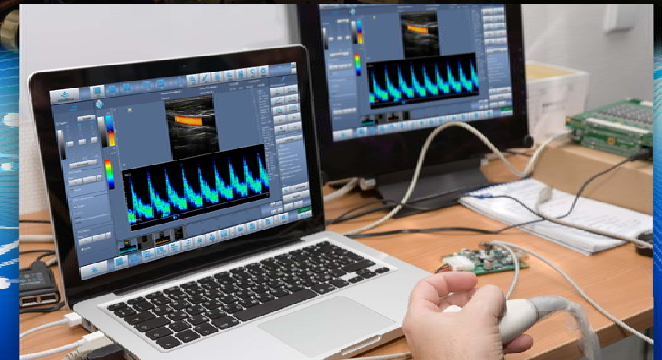
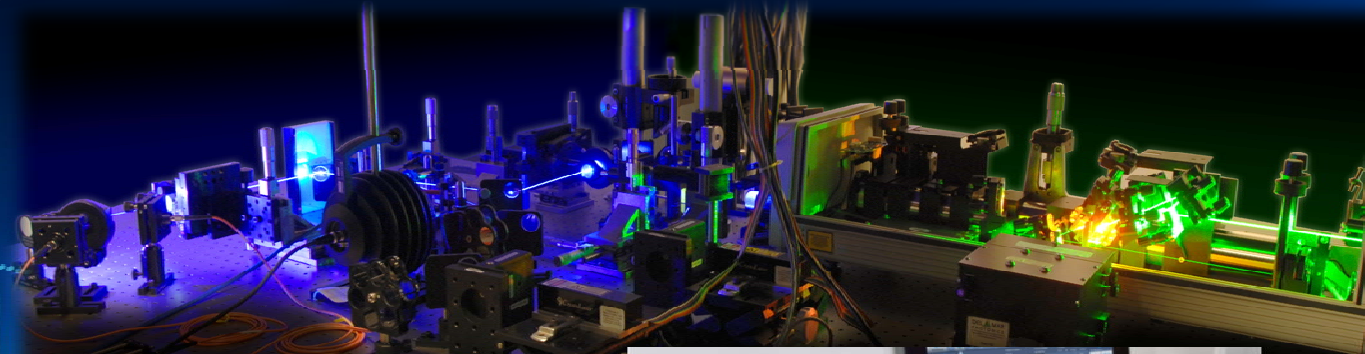
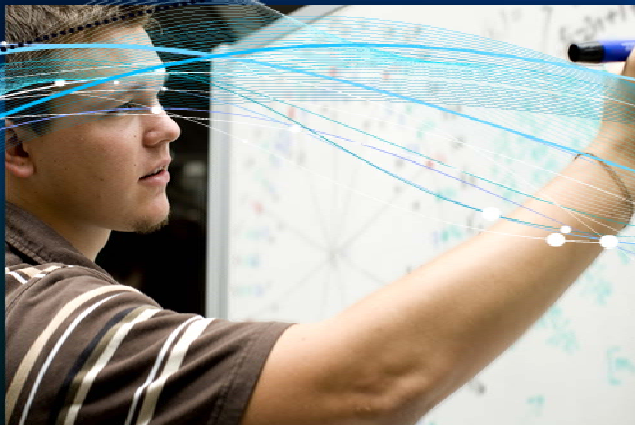
# Who Do We Recruit?



- Computer Scientists
- Electrical Engineers



- Computer Engineers
- Mathematicians
- Business Majors





# RI's Broad Network of Collaborators Outside AFRL

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## JOINT COMMUNITY

JFCOM, STRATCOM, TRANSCOM, NORTHCOM, US Army, US Navy, Marines



## USAF

ESC, ASC, SMC, AFSOC, GCIC, AIA, AMC, ACC



## INTERNATIONAL

UK, Canada, Australia, Russia, Singapore, Czech Republic, TTCP, NATO, EOARD, SOARD



## INDUSTRY



## INTEL COMMUNITY

DIA, CIA, NSA, NRO, DTRA, NASIC



## OTHER DOD AGENCIES

DARPA, MDA, NGA, DIA



## OTHERS

FFRDCs, NASA, NIJ, DHS, NIST, DOE Labs, FAA, FBI



## ACADEMIA



- 60+ Academic Institutions
- Partnerships, EPAs
- Visiting Faculty Research Program

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# Summary



- **We address critical information, science and technology issues for the Air Force and national defense**
- **We hire outstanding Computer Scientists, Electrical Engineers, Computer Engineers, Mathematicians and Business majors**
- **We have state of the art laboratory facilities and are continuing to revitalize our S&T facilities and intellectual climate**

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