



ISC

Information Systems Center

Goddard's New Approach to IT

The Information Systems Center
An Overview

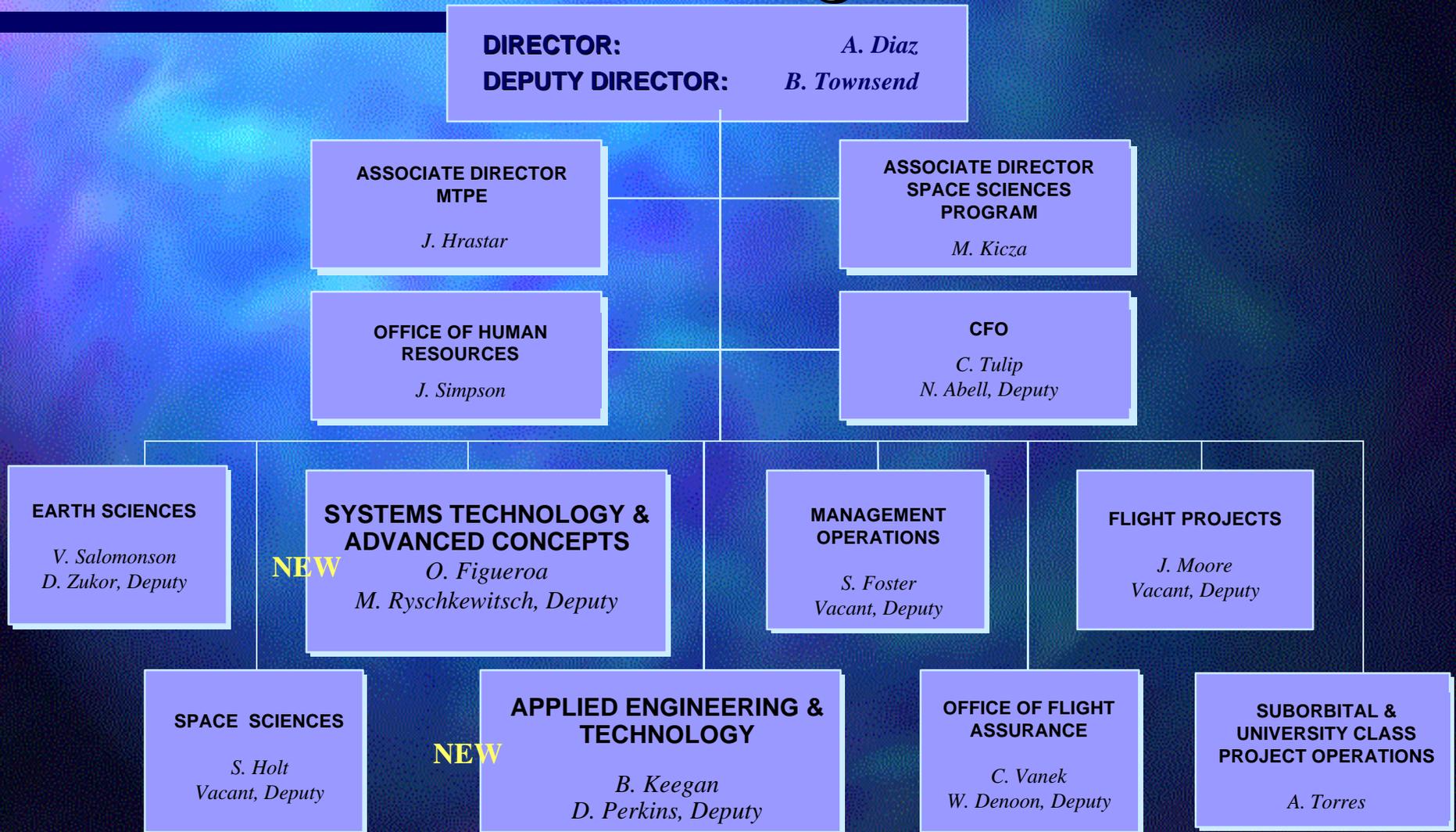
The 23rd Annual Software
Engineering Workshop

Dec. 2-3, 1998

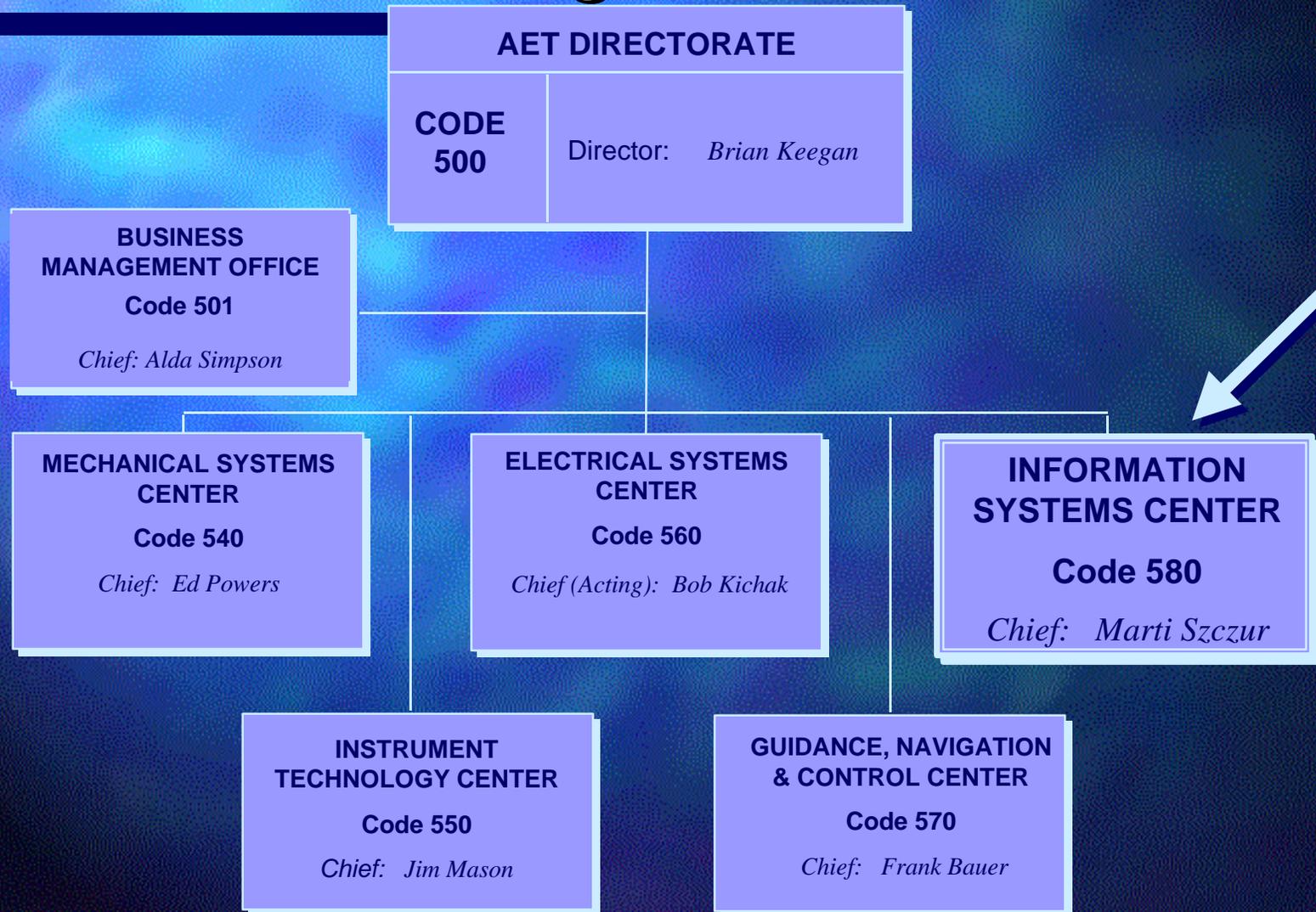
BACKGROUND

- The Goddard Space Flight Center (GSFC) Strategic Implementation Plan (SIP) was published in January 1997.
- Several centerwide activities have been initiated such as "Project Goddard".
- Genesis for the reorganization of Codes 500 and 700

GSFC - After Reorganization



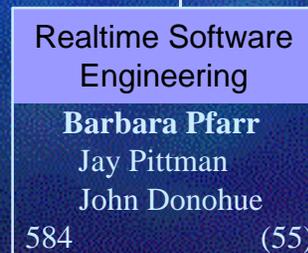
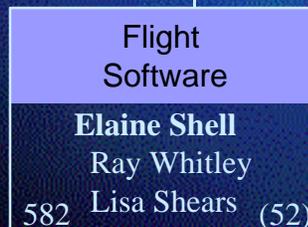
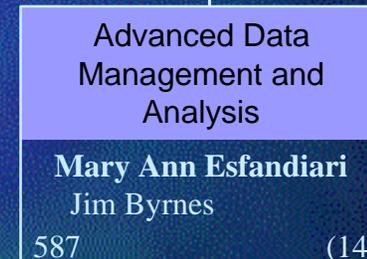
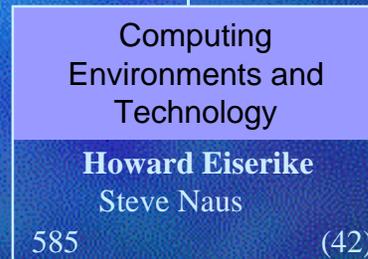
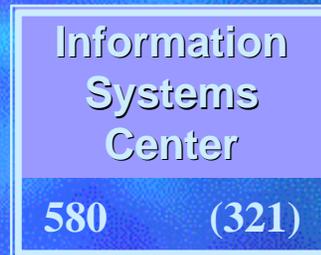
AETD Organization





Information Systems Center

Chief, Marti Szczur
Associates, Joe Hennessy & Doug McCuiston
Secretaries, Jeanie Hall & Tracie McNeilly
Infrastructure Support Manager, Den Giblin
Staff Engineers, Vicki Oxenham & Earl Beard
AO, Kecia Ford



580 / Information Systems Center Branch Structure

Branch	Functional Area/Products	Services	Customer Projects/Org
581 / Systems Integration and Engineering <i>Leslye Boyce, Howard Kea, Margaret Caulfield</i>	End-to-end data systems engineering of ISC mission systems development activities.	Mission directors, ground sys/flight ops management, sys. eng., flight prep support, SW eng, Sys I&T, AO prep	EOSDIS, HST, STAAC, NGST, MAP, IMAGE, TRACE, POES, AGS, on-orbit missions
582 / Flight Software <i>Elaine Shell, Ray Whitley, Lisa Shears</i>	Embedded spacecraft, instrument and hardware component softwares; FSW testbeds	End-to-end FSW development; simulation s/w; spacecraft sustaining engineering	HST, MAP, TRMM, EO-1, SMEX, SMEX-lite, SPARTAN, EOS AM/PM/Chem, GLAS, XRS XDS, POES, NGST, XTE, EUVE, GRO
583 / Mission Applications <i>Henry Murray, Scott Green</i>	Off-line mission data systems (e.g., Command man., s/c mission and science P&S, GN&C, NCC	Sys. eng.& implementation, COTs application, testbeds for concept proof/prototyping in ops environment	NCC SPSR, LS7, EO-1, EOS AM1, HST, TRACE, C930, IMAGE SOC
584 / Realtime Software Engineering <i>Barb Pfarr, Jay Pittman, John Donohue</i>	Real-time ground mission data systems for I&T and on-orbit ops (e.g., s/c command & control, launch and tracking services)	Sys. eng.& implementation, COTs application, simulators, testbeds for concept proof/prototyping in ops env.	HST, WFF, ISTP, IMAGE, MAP, SMEX, TRACE, WIRE, EO-1, LS7, HITCHHIKER, SPARTAN, EOS, NGST
585 / Computing Environments and Technology <i>Howard Eiserike, Steve Naus</i>	Tools and services in support of information management	Hands-on sys admin., network manage., business/support tool develop, WWW application	EOSDIS, IFMP, C630, C930, HST, WSC, C250, C450, HST
586 / Science Data Systems <i>Mary Ann Esfandiari, Mary Reph</i>	Science data systems including data processing, archival, distribution, analysis & info man.	Sys. eng.& implementation, COTs application & integration, testbeds, prototyping	EOSDIS, LS7, TRACE, TRMM, HST
587 / Advanced Data Management and Analysis <i>M. Esfandiari (Acting), Jim Byrnes</i>	Advanced concept development for archival, retrieval, display, dissemination of science data	Next-gen req. development, testbed for sys evaluation, prototype products	FAST, NEAR, WIND, ULYSSES, C632, C686, C694, C930, C922
588./Advanced Architectures & Autonomy <i>Doug McCuiston (Acting), Julie Breed</i>	Technology R&D focused on space-ground automation sys. and advanced architectures	Sys. eng & implementation, human-computer eng., technology evaluations, concept prototypes, sw eng. methods	NCC, STAAC, SOMO, Code SM, EOSDIS, MIDEX, NGST

ISC Vision and Mission

- The Vision of ISC is to be a world-class information systems center of excellence serving the needs of GFSC and NASA customers.
 - ❏ ISC has a diverse, talented innovative, energized, internationally recognized, workforce of employees and managers.
 - ❏ ISC is the employer of choice providing a flexible, learning work environment; fair and credible promotions, training, development, and awards; and premier development tools and facilities.
 - ❏ ISC is the leader and focal point for cutting-edge information technology for Goddard's customers in Earth and Space Science and for advanced information technologies to support institutional customers.
 - ❏ ISC delivers innovative, customer-oriented solutions, products and services.
 - ❏ ISC's relationships with customers are open, flexible, collaborative and based on trust and mutual respect.
 - ❏ ISC operates like a business with responsive, efficient, value-added processes, enabling technology infusion/transfer and effective delivery of products and services.

The ISC Strategic Goals

- The ISC has 4 simple but very critical Strategic Goals to achieve in the next 5 years they are to:
 - Advance leading-edge information systems technology.
 - Clearly define the scope of ISC business, and deliver high value products and services that satisfy customer needs.
 - Build a diverse, talented, innovative, energized, internationally recognized, workforce of employees and managers.
 - Establish open, flexible, collaborative relationships with customers and partners

The Software Engineering Lab

- The SEL was created in 1976 for the purpose of understanding and improving the overall software process and products. A partnership was formed between NASA/GSFC, the University of Maryland (UM), and Computer Sciences Corporation (CSC), with each of the organizations playing a key role:
 - NASA/GSFC/FDD as the user and manager of all of the relevant software systems,
 - UM as the focus of advanced concepts in software process and experimentation, and
 - CSC as the major contractor responsible for building and maintaining the software used to support the NASA missions.

New SEL Vision and Mission

- Software Engineering Laboratory Vision: To be internationally recognized as a leader for applied research in Evolutionary Software Engineering Process Improvement.
- Software Engineering Laboratory Mission: "Serve as a World Class Laboratory dedicated to evolutionary software engineering process improvement and serve as a clearinghouse within GSFC for software engineering best practices. And to foster the development of highly skilled software engineers in the ISC and in GSFC and contractor community through continued education and training of software development practices and methodologies."

Current SEL Activities

- The current base of SEL activities include:
 - management of databases and producing monthly reports
 - development of WEB based forms to eliminate file transfer
 - maintenance of SEL Library
 - development of Software Engineering Courses.
- Current research topics include
 - Meta-process, Baseline Process and Core Metrics development.

SEL Short-term Goals

- Software Engineering Workshop
- Complete ISC Baseline
- Update Webpage
- Develop customer focus teams
- Develop Short 1 day courses
- Increase GSFC Visibility and Interaction
- Support ISC Reuse Program in Collaboration with Ames IV&V Center

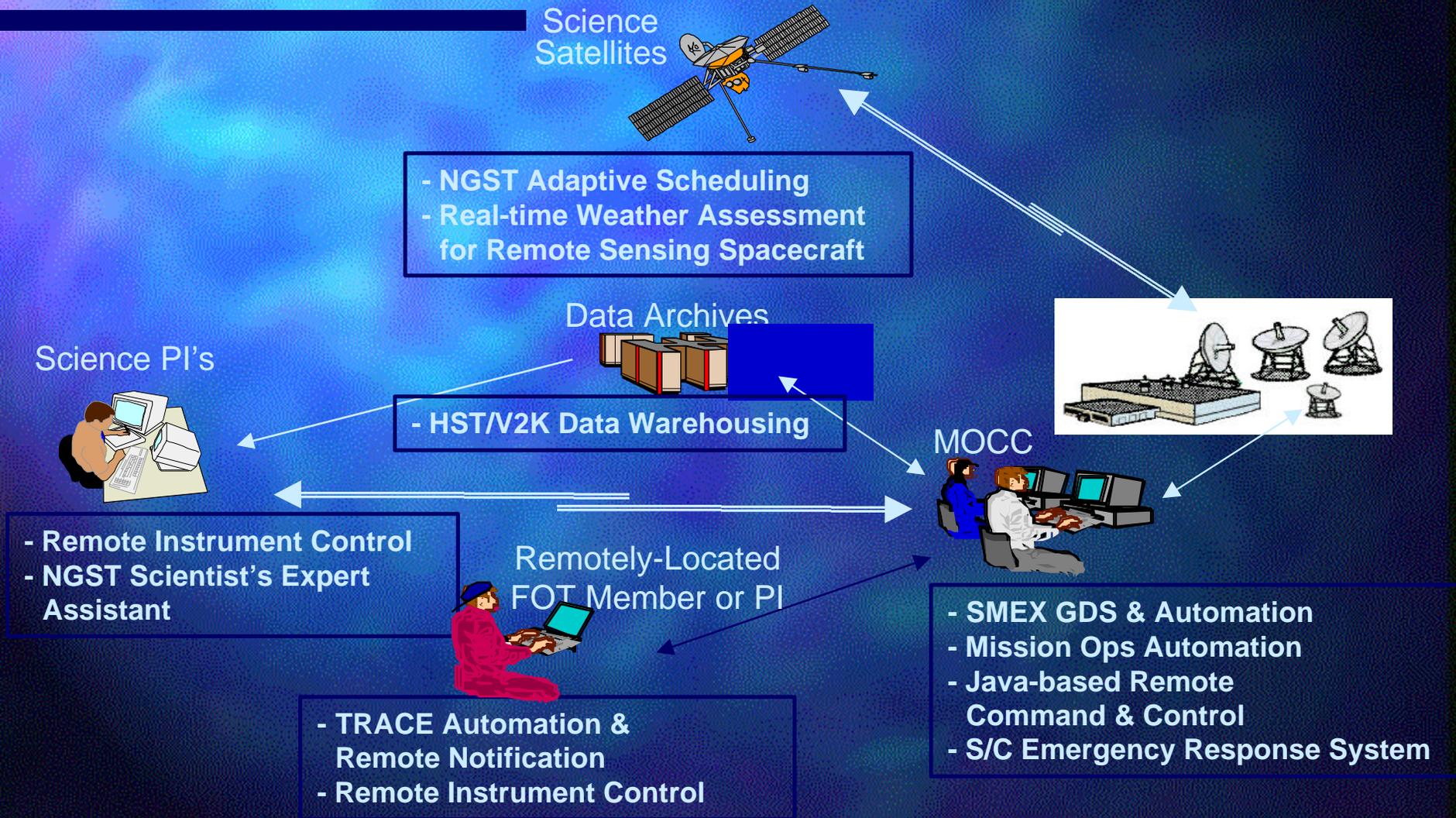
SEL Long-term Goals

- Develop a full Software Engineering Training Development Program
- Investigate benefits for ISC to pursue CMM levels 2 & 3
- Establish Partnerships with other Software Engineering Process Improvement organizations

Role of the SEL in ISC

- Build an improvement organization within the ISC that will increase the competency of its software engineering professionals, thereby increasing the quality of Goddard software systems.
- Model and characterize software systems in use on the ground and onboard spacecraft.
- Transfer and help tailor proven development and maintenance technologies to new domains, internal and external to GSFC.

ISC's End-to-end Mission Role



ISC

Systems Integration & Engineering



Advanced Architectures and Automation

Flight Software

Measures

Refined Process

Measures

Refined Process

SEL

Process Analysts

Designs studies
Performs analysis
Refines processes

Database Support

Documents Processes
Collects and Archives Data
Serves as Repository
Provides Reports

Measures

Refined Process

Mission Applications

Advanced Data Management and Analysis

Measures

Refined Process

Measures

Refined Process

Science Data Systems

Measures

Refined Process

Realtime Software Engineering

Measures

Refined Process

Computing Environments and Technology