

Appendix E

The ESATAN Thermal Suite

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Abstract


Overview of the status of the ESATAN Thermal Suite including user support and development plans.

Thermal & ECLS Software Workshop

ESATAN Thermal Modelling Suite

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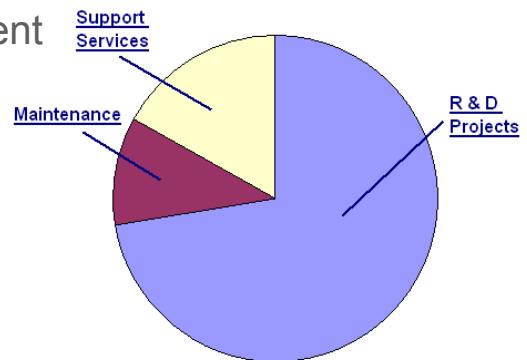


Introduction

- Product Development
 - Development framework
 - Overview of development history
 - Key milestones & developments
- Our Vision & how we are getting there
- Current product suite
 - Announce the forthcoming release
 - Overview of the product

Our Commitment to the Space Community

- Continue to invest in the products
- Year after year we invest heavily in R & D activities
 - New functionality
 - Algorithm/Solver development
 - User interface development



2008/2009 Development Breakdown

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Our Commitment to the Space Community

....but it's not just R & D,

- Invest in the maintenance of the tools & infrastructure
 - Support multi-platforms / test infrastructure
 - Porting to new platforms / operating systems
 - Bug fixing & minor enhancements
 - Invest in the architecture of the software
 - Performance & scalability

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Our Commitment to the Space Community

....but it's not just R & D and maintenance,

- We consider support a vital part of the business
- Provision of high-quality user support infrastructure
 - Web and e-mail support interface
 - Support engineers work closely with the developers
- Work closely with customers
 - Talking to you and visiting your sites
 - Bringing requirements to the project team
- Strong team at this workshop

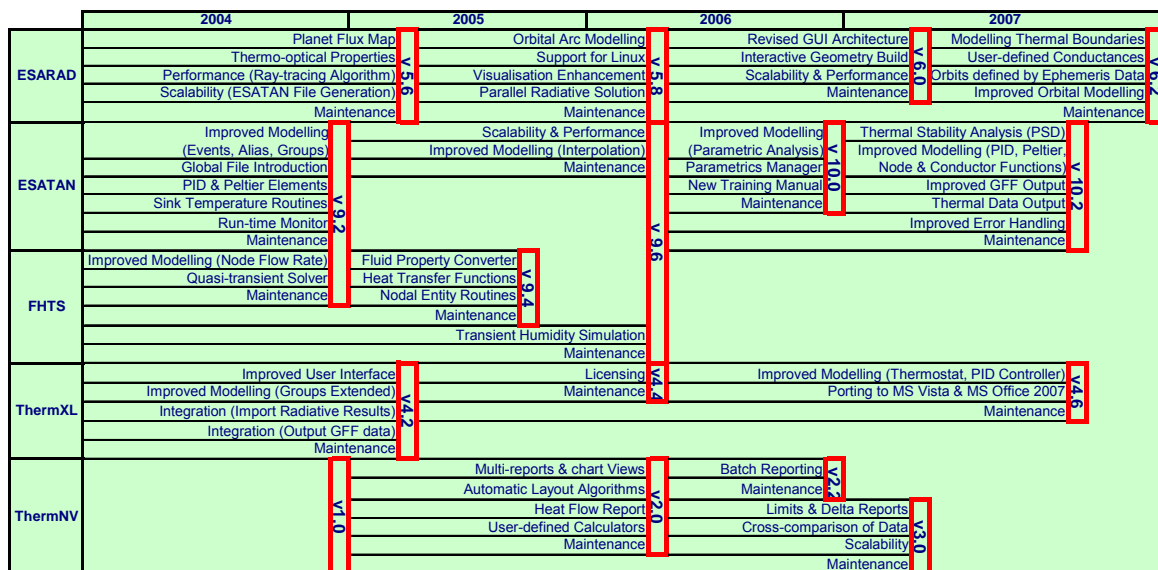
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Product Development History

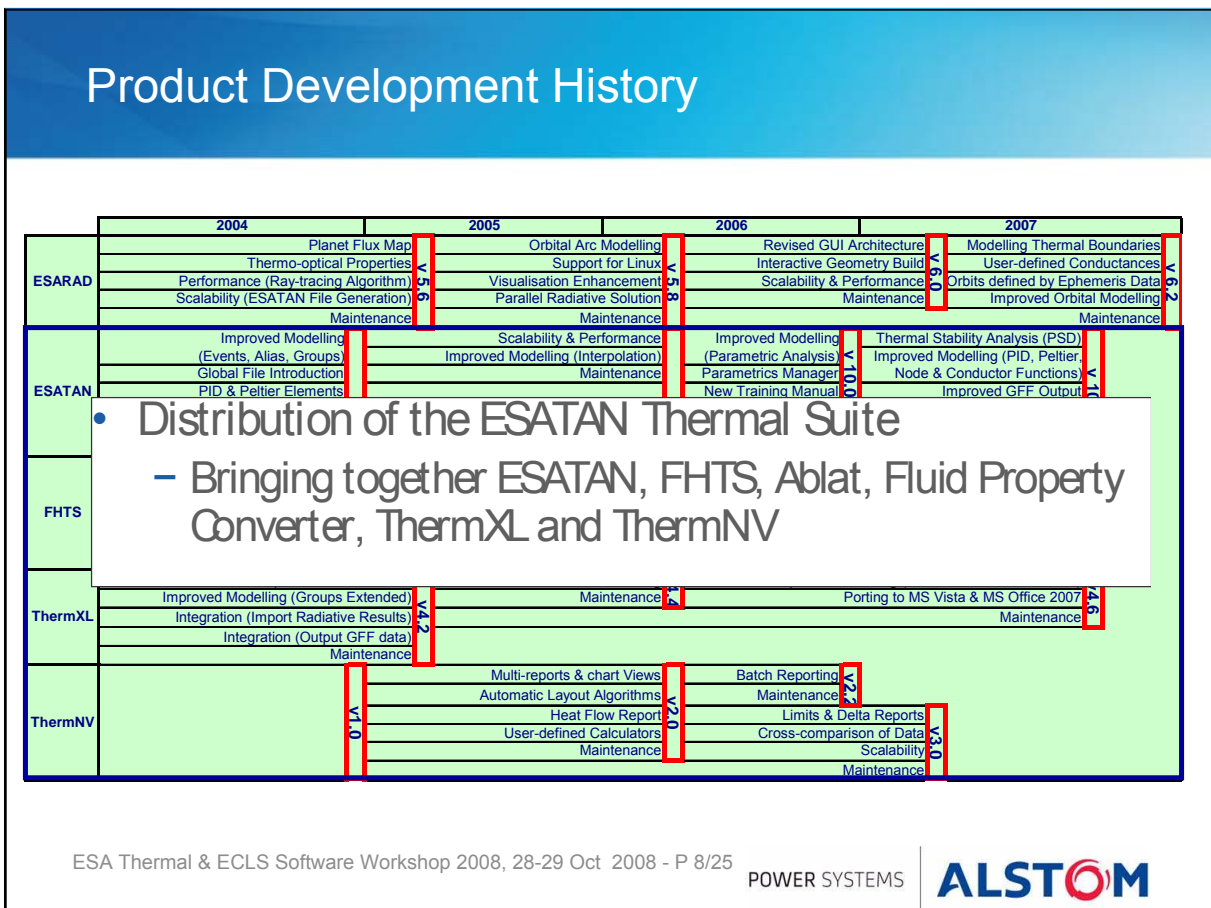
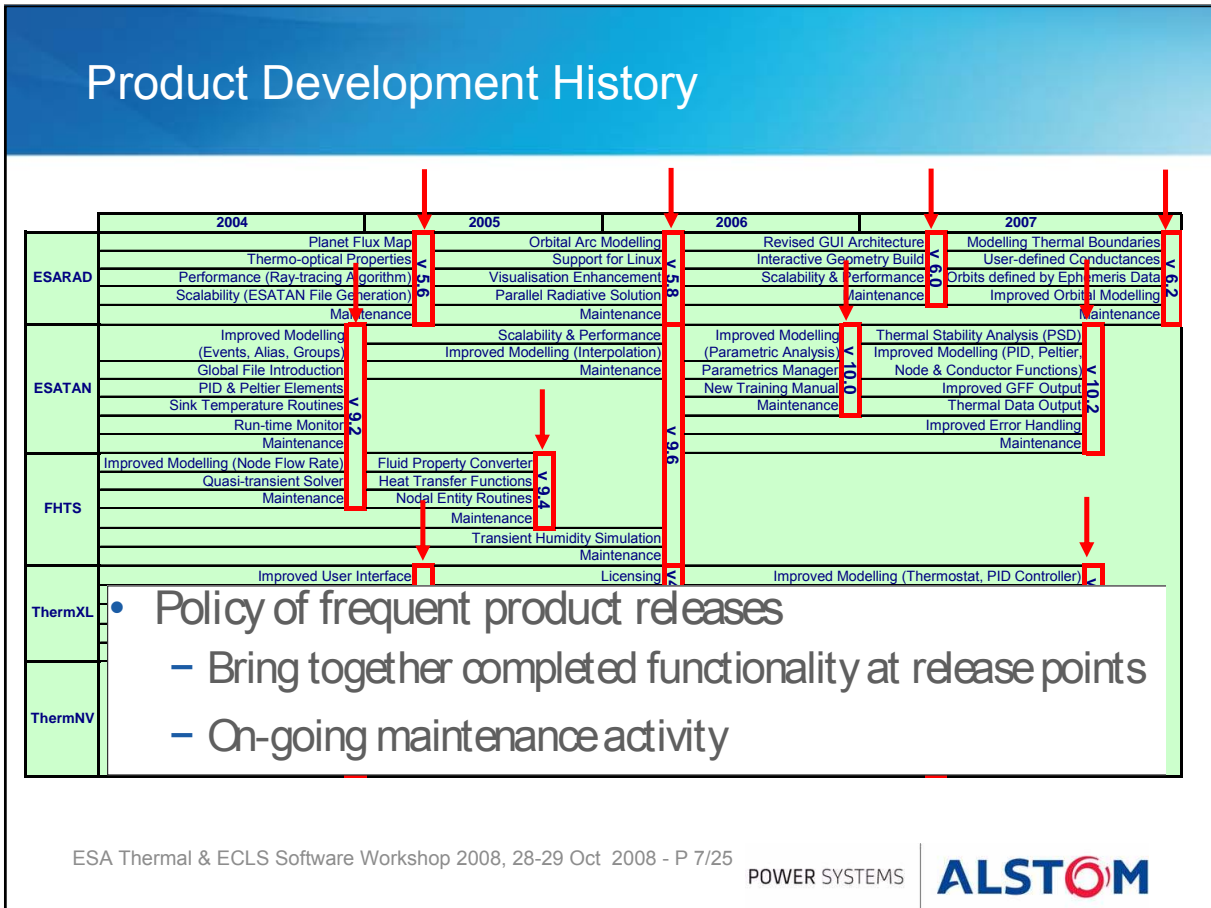
Product Releases 2004 - 2007



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Product Development History


User Survey 2007 ↓

	2004	2005	2006	2007
ESARAD	Planet Flux Map	Orbital Arc Modelling	Revised GUI Architecture	Modelling Thermal Boundaries
	Thermo-optical Properties	Support for Linux	Interactive Geometry Build	User-defined Conductances
	Performance (Ray-tracing Algorithm)	Visualisation Enhancement	Scalability & Performance	Orbits defined by Ephemeris Data
	Scalability (ESATAN File Generation)	Parallel Radiative Solution	Maintenance	Improved Orbital Modelling
	Maintenance	Maintenance		Maintenance
ESATAN	Improved Modelling (Events, Alias, Groups)	Scalability & Performance	Improved Modelling (Parametric Analysis)	Thermal Stability Analysis (PSD)
	Global File Introduction	Improved Modelling (Interpolation)	Parametrics Manager	Improved Modelling (PID, Peltier, Node & Conductor Functions)
	PID & Peltier Elements	Maintenance	New Training Manual	Improved GFF Output
	Sink Temperature Routines		Maintenance	Thermal Data Output
	Run-time Monitor			Improved Error Handling
	Maintenance			Maintenance

- Recent response to the User Survey 2007
 - Reduction in GFF data file size
 - Further improvements to error handling/ simplify model build
 - Release of PSPad language syntax highlighter
 - ThermXL functions for PID controller and thermostat
 - Production of a ThermNV Getting Started Guide

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Product Development History


Workshop 2007 ↓

	2004	2005	2006	2007
ESARAD	Planet Flux Map	Orbital Arc Modelling	Revised GUI Architecture	Modelling Thermal Boundaries
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	Sink Temperature Routines		Maintenance	Thermal Data Output
	Run-time Monitor			Improved Error Handling
	Maintenance			Maintenance
FHTS	Improved Modelling (Node Flow Rate)	Fluid Property Converter		
	Quasi-transient Solver	Heat Transfer Functions		
	Maintenance	Nodal Entity Routines		
	Maintenance	Maintenance		
		Transient Humidity Simulation		
		Maintenance		
ThermXL	Improved User Interface	Licensing	Improved Modelling (Thermostat, PID Controller)	
	Improved Modelling (Groups Extended)	Maintenance	Porting to MS Vista & MS Office 2007	

- ESATAN MDB full double precision
 - Avoid any further confusion
 - Will be contained within the next release

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Product Development History

- Recent focus of development has been on integration
 - Extending support for the thermal definition of the model
 - Non-geometric nodes
 - User-defined conductors
 - Thermal boundary conditions
 - Enhancing the product as a thermal analysis environment
 - Developments moving the products closer together

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Product Development History

- Our business is thermal software development,
 - Committed to investing in R & D of the products
 - Committed to the continual maintenance of the products
 - Making regular releases
 - Functionality available to users in timely fashion
 - ISO 9000 TickIT accredited
 - regularly assessed by external auditors
- Our development history demonstrates this commitment

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Product Vision

Our vision,

- Provide a complete and efficient thermal modelling environment
 - Functionality to meet the current modelling needs of projects
 - High-quality, fully validated products
- Efficient end-to-end integration within multi-disciplinary engineering environment
- Backing this up with professional customer support services

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Product Vision

To achieve the vision,

- Integration of our products
 - Recent developments have moved the products closer
 - We recognise that the process is not a one shot process
 - Bringing the products closer makes iterations more efficient
 - Efficient environment/less error prone/avoid learning multiple interfaces

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Product Vision

- Move the modelling to a higher level
 - but retaining the text model representation
 - retain the flexibility of the tools
 - retain the power of the batch processes
 - Retain compatibility
- Integration with other processes
 - Integration with CAD/FEM continues to be a key driver
 - Our CAD Converter is already in use and well received

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Product Vision

- Supporting CAD/FEM puts requirements on the product infrastructure
 - Significant architectural work completed in support of envisaged process
 - Performance & scalability requirements
 - Enhanced geometry modelling
 - We have now moved the result data store to HDF (compressed binary format)

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Product Vision

- Maintain customer confidence
 - Continue to provide high-quality, validated products
 - Provide effective customer support services
 - On-line reporting system, visiting customers
 - Attending workshops & conferences
 - Provide formal training courses
 - Responsive to customers needs
 - Continual assessment and prioritisation of user requests
 - As shown, releasing functionality in a timely manner

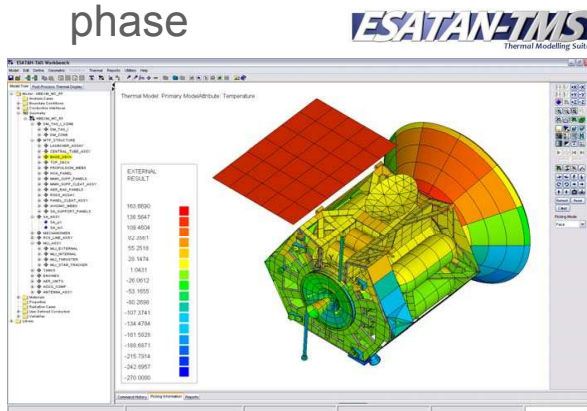
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What Next?

ESATAN Thermal Modelling Suite now in beta test phase



Model courtesy of Thales Alenia Space & OHB Systems

- Brings together ESARAD & the ESATAN Thermal Suite
- Logical progression of ESARAD
- Full interface to ESATAN
- Replaces the PC ESATAN interface

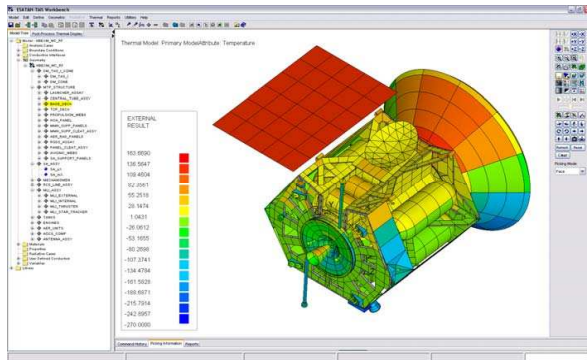
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What Next?

ESATAN Thermal Modelling Suite now in beta test phase



Model courtesy of Thales Alenia Space & OHB Systems

- Interface referred to as ESATAN-TMS Workbench
- All customers will receive the product
- Functionality available through the licence
- Full demonstrations will be given by Henri & Ian

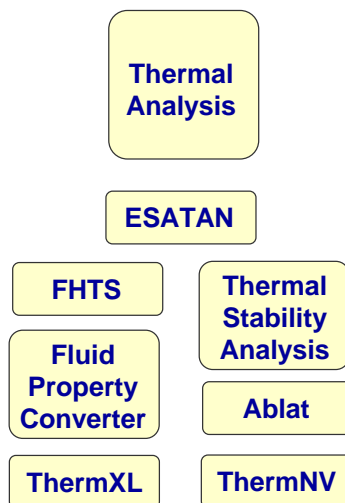
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ESATAN Thermal Modelling Suite

How will this effect you?



ESATAN Thermal Suite

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ESATAN Thermal Modelling Suite

How will this effect you?

ESATAN-TMS Workbench

Thermal Analysis

ESATAN

FHTS

Fluid Property Converter

ThermXL


Thermal Stability Analysis

Ablat

ThermNV

ESATAN Thermal Modelling Suite

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ESATAN Thermal Modelling Suite

How will this effect you?

ESATAN-TMS Workbench

Thermal Analysis

Geometry Modelling

Radiative Analysis

Mission Definition

ESATAN

FHTS

Fluid Property Converter

ThermXL


Thermal Stability Analysis

Ablat

ThermNV

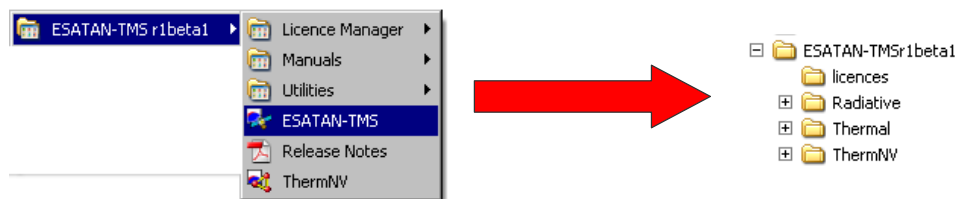
ESARAD / ESATAN

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ESATAN Thermal Modelling Suite

- One product, one installer
 - Simplify installation, rationalise common components
 - On Windows,



- The same structure on Unix/Linux

Conclusion

- Committed to continued investment in the products
- Announce release of ESATAN Thermal Modelling Suite
- Why ESATAN-TMS
 - Logical development step, not a surprise
 - Product developments coming together
 - Fits with our vision of integration of the products/processes
 - Clearer product definition for our customers
 - Common interface (Workbench)

Conclusion

- ESATAN-TMS now in beta test phase
- Full release January 2009
- Demonstration of the product to be presented
- Again, a strong team at the workshop

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