

ESA Space Weather Programme Study

Final Presentation, ESTEC 6-7 December 2001

WP5200 Report : New structures

Recommendation for the co-ordination of a European Space Weather Programme

ALCATEL LPCE consortium

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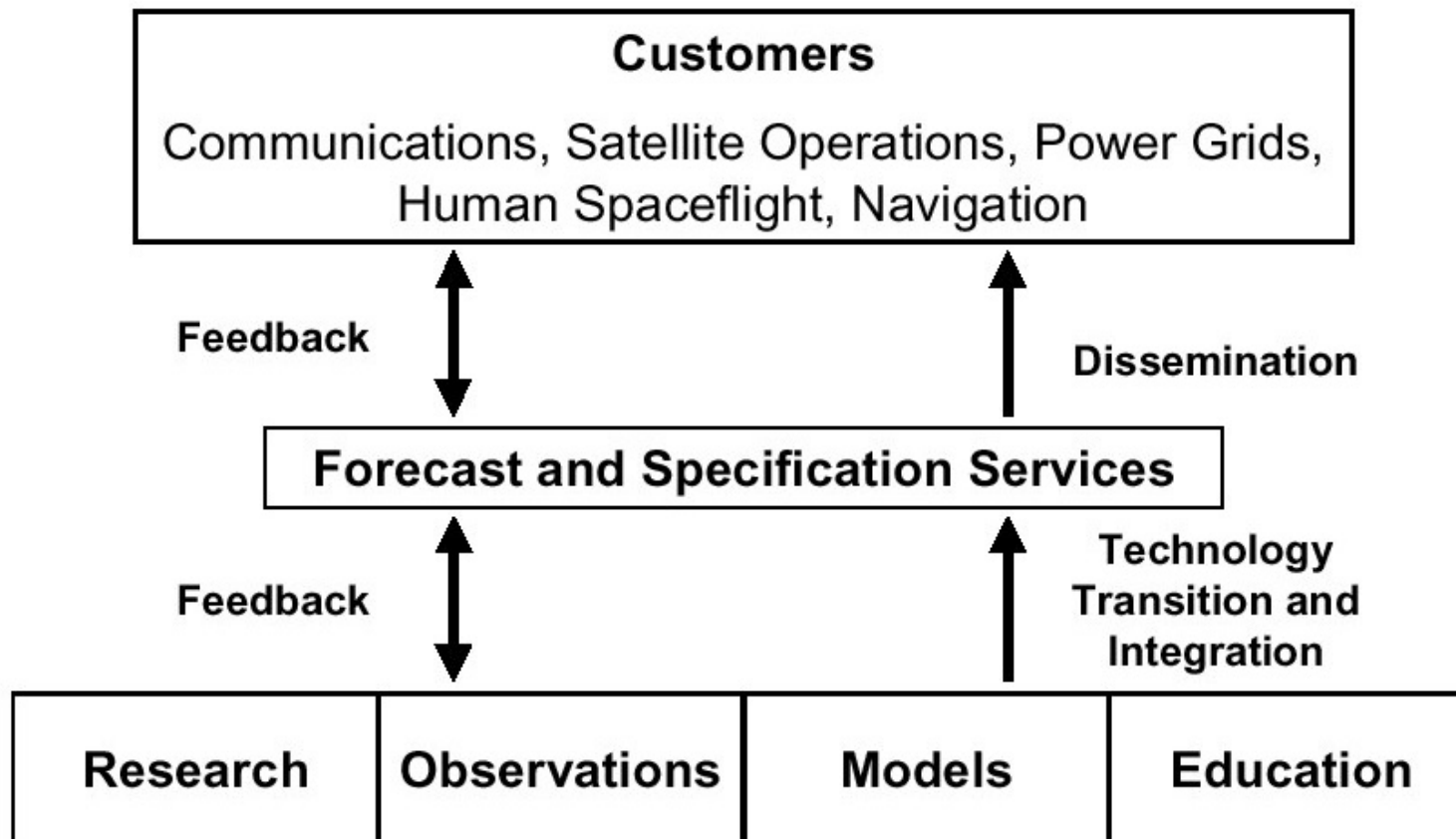
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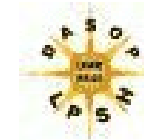


1. USA National Space Weather Program Elements

Ref : National Space Weather Program, The Implementation Plan, 2nd Edition, FCM-P31-2000, Washington, DC, July 2000, <http://www.ofcm.gov>

National Space Weather Program Elements





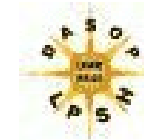
2. Space Weather elements, present status

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<i>SW Elements</i>	<i>US national SW program</i>	<i>Europe : the existing</i>
Research	Solar/Earth interaction studies LWS	Solar/Earth interaction studies
Observations	Research-oriented satellites Operational satellite(s) Networks of ground-based instruments	Research-oriented satellites Networks of ground-based instruments
Models	Research models Operational models CCMC (Goddard) RPC (SEC)	Research models Operational models
Education	Conferences SW meetings Space SW week events Training courses (DOD, SEC)	Conferences SW meetings

2. Space Weather elements, present status

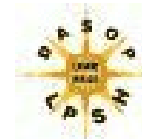
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<i>SW Elements</i>	<i>US national SW program</i>	<i>Europe : the existing</i>
Forecast and specification service	WDC Solar-Terrestrial Physics (SEC) + other data centers	WDC Geomagnetism, Denmark WDC Geomagnetism, Scotland WDC Solar-Terrestrial Physics, England WDC Sunspot Index, Brussels, Belgium + other data centers
	RWC, SEC USAF 50 th Weather Esquadron Internal services Commercial companies	RWC , Belgium RWC, Poland RWC, Sweden ARWC, France Internal services Commercial companies

ARWC, Associate Regional Warning Center
CCMC, Community Co-ordinated Modeling Center
LWS, Living With a Star
RPC, Rapid Prototyping Center

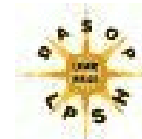
RWC, Regional Warning Center
SEC, Space Environment Centre
WDC, World Data Center



3. Summary of actions for implementing a European SW Programme

<i>SW Elements</i>	<i>Improvement of the existing</i>	<i>New Implementations</i>
Space Observations	Hitch- hikers	ESW space segment (<i>preferentially in the context of International collaborations</i>)
Ground – Based Observations	Equipments Networks	Radio and optic instruments (<i>at 3 different longitudes for radio, 6 for optics</i>)
SW Data Centres	Labelled Data Centres	One ESW Data Centre
SW Forecast Centres	Labelled Forecast Centres	One ESW Forecast Centre
Modelling	Developments in research labs, Co-ordination	One ESW Centre for large scale integrated modelling
Education & User Assistance	Demonstrative modelling and prototyping, Co-ordinated outreach programme, Experts for each Space Weather element	

The main points consist in : a space segment, new ground-based instruments, labelled Centres, and European Space Weather Centres. The status of labelled Centres and of European Space Weather (ESW) Centres have to be defined.



4. Indications on strategic elements to be discussed in the future

<i>EU SW Elements</i>	<i>ESA Involvement</i>	<i>EU Involvement</i>	<i>EUMETSAT Involvement</i>	<i>National Institutions</i>
Space Observations	Optional Program Mandatory program (<i>Instrumental contribution to other programs ?</i>)	To be investigated (<i>research or pre-operational</i>)	To be investigated (<i>e.g. for effects at the troposphere – stratosphere level ?</i>)	To be investigated
Ground-based Observations	To be investigated (<i>Pre-operational measurements</i>)	To be investigated (<i>research or pre-operational</i>)		Supplementary support to be examined
SW Data Centres	To be investigated (<i>Pre-operational Centres</i>)	To be investigated (<i>for continuity of services</i>)		Supplementary support to be examined
SW Forecast Centres	To be investigated (<i>Pre-operational Centres</i>)	To be investigated (<i>for continuity of services</i>)		Supplementary support to be examined
Modelling	Expected support (<i>pre-operational or operational</i>)	To be investigated (<i>research or pre-operational</i>)	To be investigated	Supplementary support to be examined
Education & User Assistance	Expected support	Expected support	To be investigated	Supplementary support to be examined



5. Space Weather Users

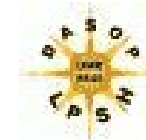
There is no one user community but several ones

The organisation of user communities supposes that one has defined how to take into account of :

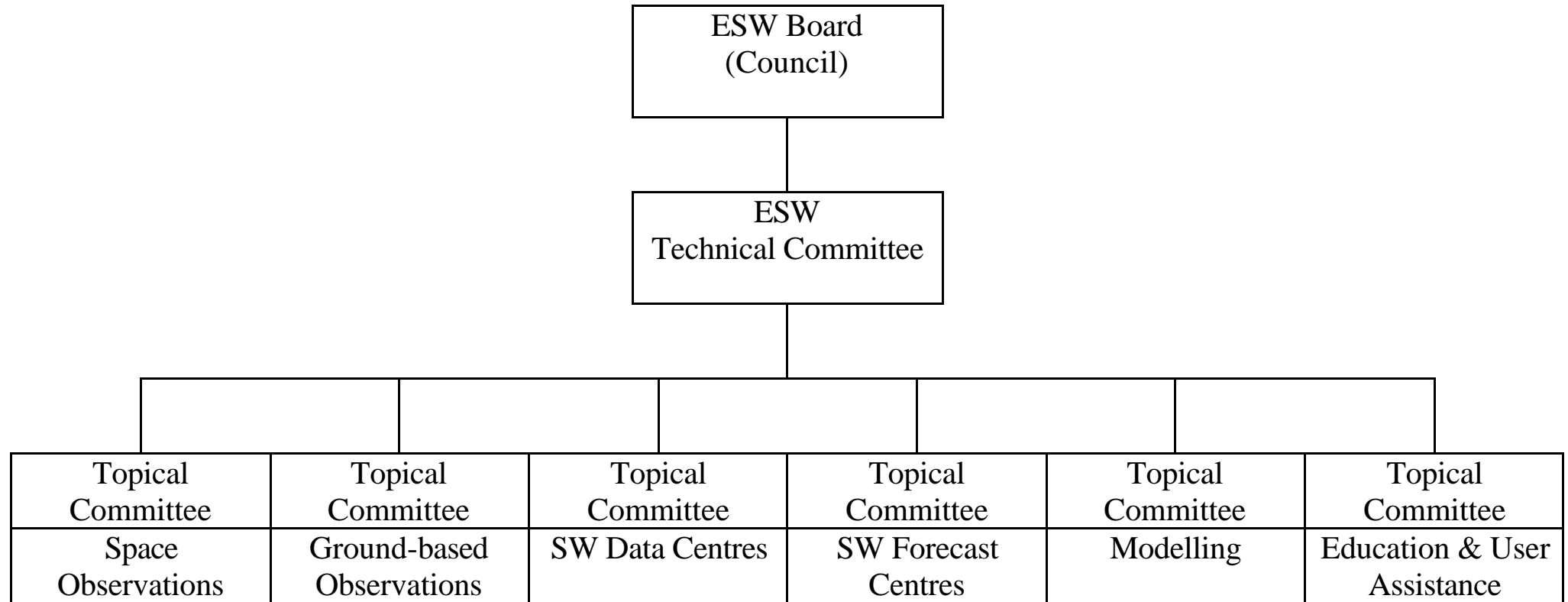
- competition (e.g. for satellite industry),
- complexities (e.g. insurance coverage, legal aspects of satellite communications)

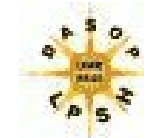
⇒ The decision to start a European Space Weather Programme cannot be taken from user requirements only.

It is a political decision.



6. Recommended structure for a European Space Weather organisation





7. Recommendations to ESA for a European Space Weather organisation

The consortium makes the following recommendations to ESA :

- (1) Initiate a **European Space Weather Board** (or Council), i.e. a multi-entity group, for instance via the joint ESA/EU structures, to give policy and guidelines, particularly as regards to the degree of collaboration to encourage (for instance with projects in preparation in the Living With a Star Programme), and to the status which may be given to labelled Centres and to European Space Weather Centres.
- (2) Set up a **Technical Committee** in order to synthesise and prioritise the proposals, then to prepare a first implementation plan.
- (3) Set up **Topical Committees** in order to examine in details the proposals made by the two consortiums, particularly as regards to the improvement of the existing and to new implementations (see Table 2); the members may be selected from the Consortiums and from the SWWT.

ASPI	LPCE	BAS	IRF	MSSL	LPSH	IC	LPG	WWW	ESYS
Toulouse France	Orléans France	Cambridge UK	Lund Sweden	London UK	Meudon France	London UK	Grenoble France	Greifswald Germany	Guildford UK

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8. Conceptual view of a European Space Weather organisation

