



Algiers Workshop (28-29 May 2005)

Three African countries, namely Algeria, South Africa and Nigeria, has taken part in the ARM workshop, which was organised by ASAL from the 28th to the 29th May 2005, to discuss and assess the feasibility of a satellites constellation for the monitoring and management of African resources and environment.

The workshop was a first step in the assessment of common users requirements and defined the milestone of the constellation

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The objectives of the workshop were to define the:

- Scope of ARM;
- Users requirements;
- Infrastructure;
- Capacity building;
- Governance structure for ARM:
 - Partnership an roles;
 - Financial model;
 - Role of the private sector and other stakeholders.

Algiers Workshop (28-29 May 2005)

ARM Users Requirements:

The summary of priority of African needs are:

1. Food security (Agriculture, Map vulnerability, Fishing,)
2. Water resources assessment
3. Mineral, Oil and gas exploration
4. Land use mapping
5. Disaster monitoring (Prevention and mitigation):
 - Earthquake;
 - Floods ;
 - Forest and settlements fires;
 - Drought and Desertification (North Africa and Sahel,)
 - Oil spilling (Nigeria)
 - Entomological risk (locust peril, ...)
 - Deforestation
 - Epidemiological risk
6. Peace keeping.

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Ground segment infrastructure:

During the discussion the ground facilities of each country has been presented and the possibility of an ARM constellation ground station adaptations has been discussed.

Ground segments networking

- Participants have agreed that the networking between different ground segments will be
- provided by three different ways:
 1. Vsat stations using the future African communications satellite (Nigcomsat-1, Rascom, Alcomsat-1),
 2. Broadband internet with an FTP website.
 3. Optical fibre connection.

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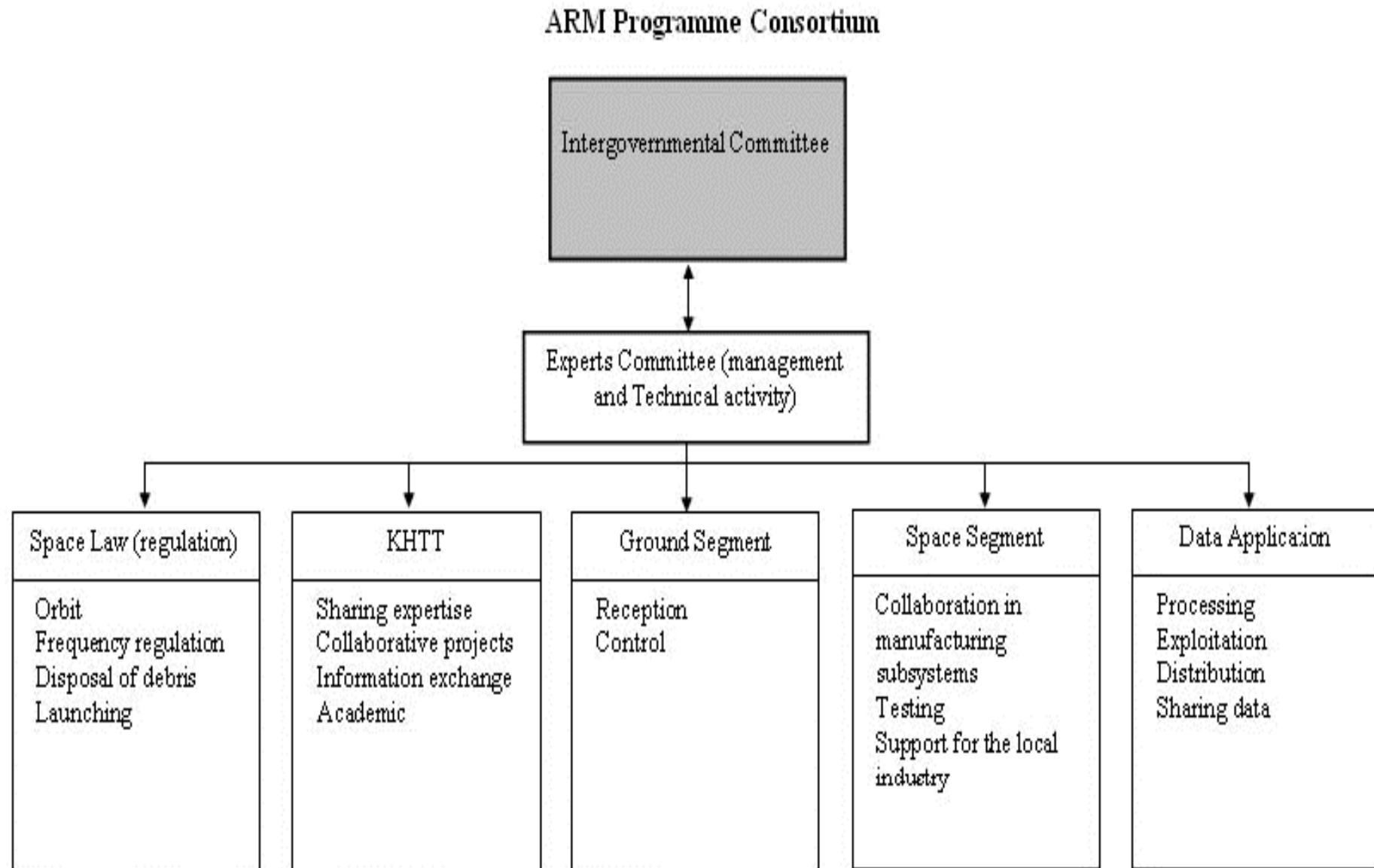
ARM Space segment

Satellite configuration options

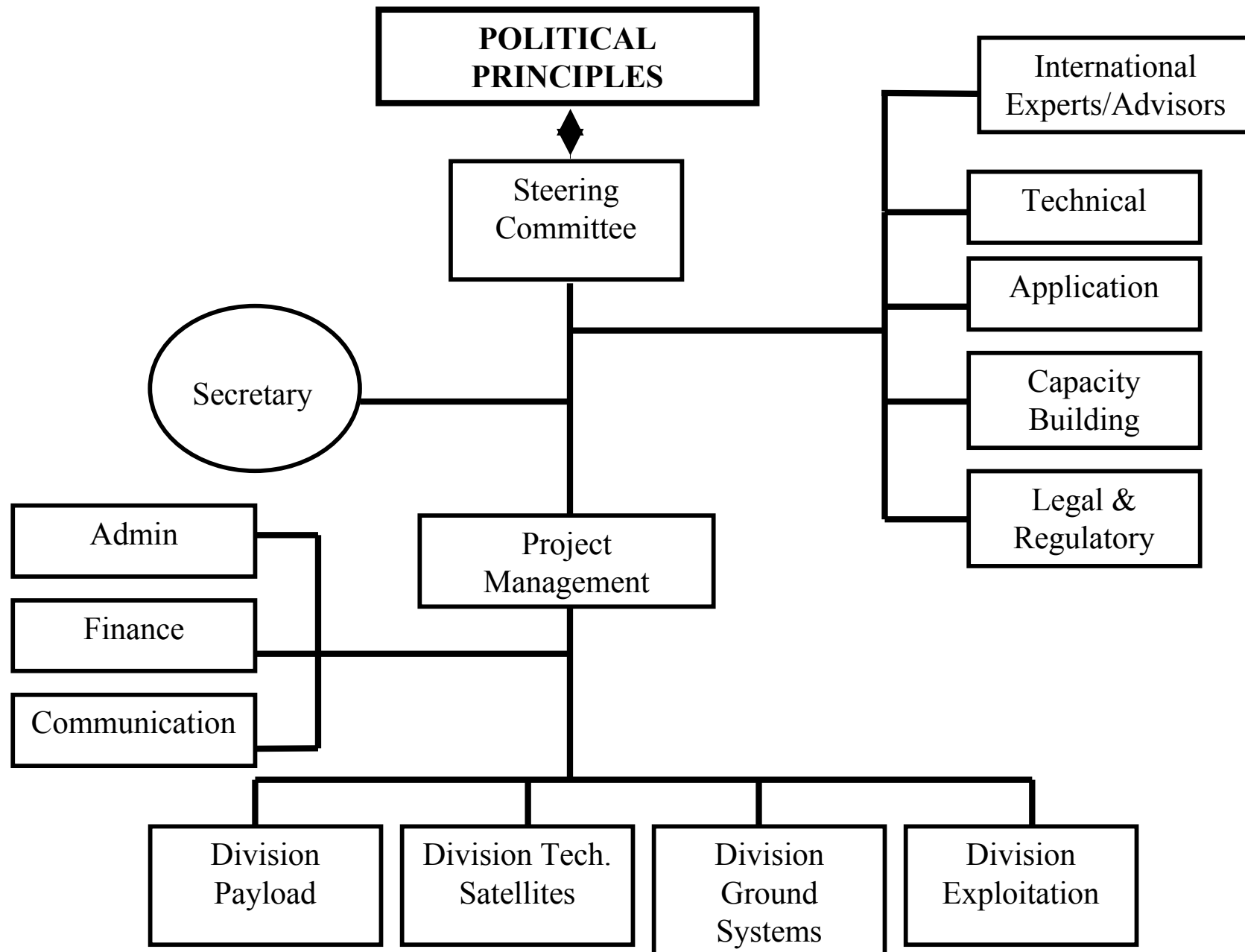
- Option 1: 60 kg satellite:
 - 6.5 m GSD, 45 km swath
 - 90 kg satellite:
 - 6.5 m GSD, 4X 45 km swath, 4 cameras
- Option 2: 140 kg satellite :
 - 2.5 m pan (24 km swath)
 - 5 m M/S (27km, 6 bands)
- Option 3: 200 kg satellite:
 - 2.5m pan (24 km swath),
 - 5m M/S (27 km swath; 6 bands),
 - 15 m hyperspectral, 15 km swath, 100 to 200 bands.

Algiers Workshop (28- 29 May 2005)

Governance, the ARM programme consortium



Stellenbosch Workshop (19-21 SEPTEMBER 2005)



Stellenbosch Workshop (19-21 SEPTEMBER 2005)

ARM Workshop Users Requirements

#	Applications	Spatial resolution	Spectral resolution	Temporal resolution	Single Constellation	Proposed Tech Requirements for discussion and consultation by each national delegation	Proposed Instrument	SA 1 (AF)	SA 2 (MD)	Pri SA	Pri Ni	Pri Al	Pri Ke	Sum of priority
1	Agriculture, climate, environment	3-5m	Multi-visible	Monthly, summer/winter	4	I. Monthly (what area needs to be covered?), 3-5m, Multi-spectral, Hyperspectral? (research)	5m colour (3B), NIR, nationally	9	2	4	2	3	1	11.0
2	Environmental Impact Assessment, Farmer Settlement, housing, planning and urban planning, Border Monitoring	0.6 – 1m	PAN, RGB	p.a., every 1-2 wts	2	III. Once every 2 days, very high resolution, Pan and RGB. If cloud cover generation SAR?	0.75m PAN, colour – selected areas	10	1	3	4	1	2	11.7
3	Disaster monitoring	1m - 250m	Pan, VIS, NIR, MIR, TIR	2 per day (night and day)	4	II. 0.5m-5m covered, 10m? Multi-spectral, how often? 2 per day requires 600km swath with 2X4 satellites	10m-30m GSD, in 2 plane constellation with 4 satellites each and swath of 600km each	12	4	5	2	2	1	12.0
4	Land use/ cover mapping	0.5m – 5m	Pan	1 per 2 days (ad-hoc)	2			1	3	5	1	10	1	15.0
5	Water management, Land Use and Land Care	10m	Multi-visible	bi-annual, quarterly	1		20m or 25m colour, NIR, TH, IR, nationally	8	3	9	4	4	1	15.7

Stellenbosch Workshop (19-21 SEPTEMBER 2005)

Technical Requirement Specification

Technical Requirement Specifications		Spatial	Spectral	Temporal	Infrastructure required
A.	ARM 1 constellation	3-5m	multi - spectral	Once per two days(land use), monthly (agriculture)	Space: 4 satellites in constellation with same payload. Ground:TT&C and data reception gnd station.
B.	ARM 2 constellation	20m-30m, swath 600km	multi - spectral	Daily (or twice per day if possible)	Space: 4 satellites (daily) and 8 satellites (twice per day) in constellation with same payload Ground: Upgraded ARM infrastructure
C.	ARM 3 constellation	0.5m - 0.75m	Pan, RGB	Once per annum of all areas of interest	Space: 1 satellite Ground: Upgraded ARM infrastructure

ABUJA Workshop (22-24 NOVEMBER 2005)

Composition of committees and subcommittees

Committee/sub - committee	Algeria	Kenya	Nigeria	South Africa
Steering Committee	1. Oussedik Azzedine 2. Haned Nassim	1. G.k. King'oriah 2. Dr Roy Mugiira	1. R.A. Boroffice 2. J. Akinyede 3. F. Chizea	1. Pontsho Maruping 2. Val Munsami 3. Peter Martinez: (Secretariat)
1. Technical working group	1. Bekh ti Mohamed 2. Ayad Ahmed	1. K. Mwero 2. J.L. Agatsiva	1. H. D. Ibrahim 2. O.S. Sholiyi	1. Sias Mostert 2. Wabile Motswasele 3. Fred Thomas
2. Applications Group:	1. Iften e Tahar 2. Omrane Naceur	1. J.L. Agatsiva 2. TBC	1. J. Akinyede 2. Agbaje	1. Jimmy Weir -Smith 2. Lerato Senoko
3. Capacity building Group	1. Chik ouche Abdelwahab 2. Teffahi Nouredine	1. W.K. Ottichilo 2. TBC	1. F.D. Chizea 2. O.S. Sholiyi	1. Val Munsamy 2. Tshepo Seekoe 3. Peter Martinez
4. Legal & Regulatory Group	1. Louni Ahcen 2. Hallouane Ali	1. Justini Nkoro i 2. Margaret Maimba	1. Tare Brisbe 2. Abimbola	1. Luthando Mkumathela 2. Sandea de Wet 3. Yolandi Dwarika 4. Shaheed Alli

Work plan – Oct 2007

- 1. get DOI signed – contact points by Dec 2007
- 2. Arrange meeting around the same day as the signing of the DOI
- 3. Draft MoA – process agreed to by contact points and delegated to the working groups
 - Draft MoA framework – South Africa – Beginning November 07
 - Sign off on user requirements – agreed to – final doc by Algeria end Oct 2007
 - Sign off on data access policy – Nigeria to supply draft – Oct 07
 - Sign off on technical plan – South Africa – end Nov 07
- 4. Obtain funding?
- 5. Sign international MoA – first half of 2008, allow 6 months of internal government approval process – target date for signing in June 2008

ABUJA Workshop (22-24 NOVEMBER 2005)

Review of Users Requirements

- The user requirements as summarised in the original table of the September 2005 meeting was revisited to assess priority areas.
- It was concluded by the members of the joint Application and Technical working groups that:
 - The high resolution, that is 3m to 5m multi-spectral, is the highest priority capability to establish.
 - That the large swath, hence medium resolution, need was the second most important priority.
 - Other requirements that could be addressed by future missions include Thermal Infra Red, SAR, very high resolution and Short Wave Infra Red.

2nd Algiers Workshop (25-26 July 2006)

The objectives of the workshop was to define the:

- User requirements ;
- Data access policy;
- Organisational structure of the ARMS;
- Multilateral views and agreements on legal and technical areas.

Final declarations of the 2nd Algiers Workshop (25-26 July 2006)

- Type of payloads:
 - One Panchromatic with resolution of 3m
 - One multispectral with a resolution of 12m with the spectral Bands: Blue, Green, Red, NIR.

- A draft Declaration of Intent has been discussed and reviewed. It will be subject to further study and improvements and should be signed during the next ARM meeting to be held in Kenya.

Final declarations of the 2nd Algiers Workshop (25-26 July 2006)

A MoA relating to Legal and financial obligations should be finalised within 6 months after the signature of the declaration of intent.

These documents are to be ratified and to form the annexes of the MoA:

- User requirements;
- Technical requirements;
- Data access policy.

Pretoria workshop (2 October 2007)

ASAL has already presented the ARMS to Government as one of the projects for its National Space Programme and waiting for approval and budget funding.

Thank you