HYLAS 1 Programme Overview

David Bestwick

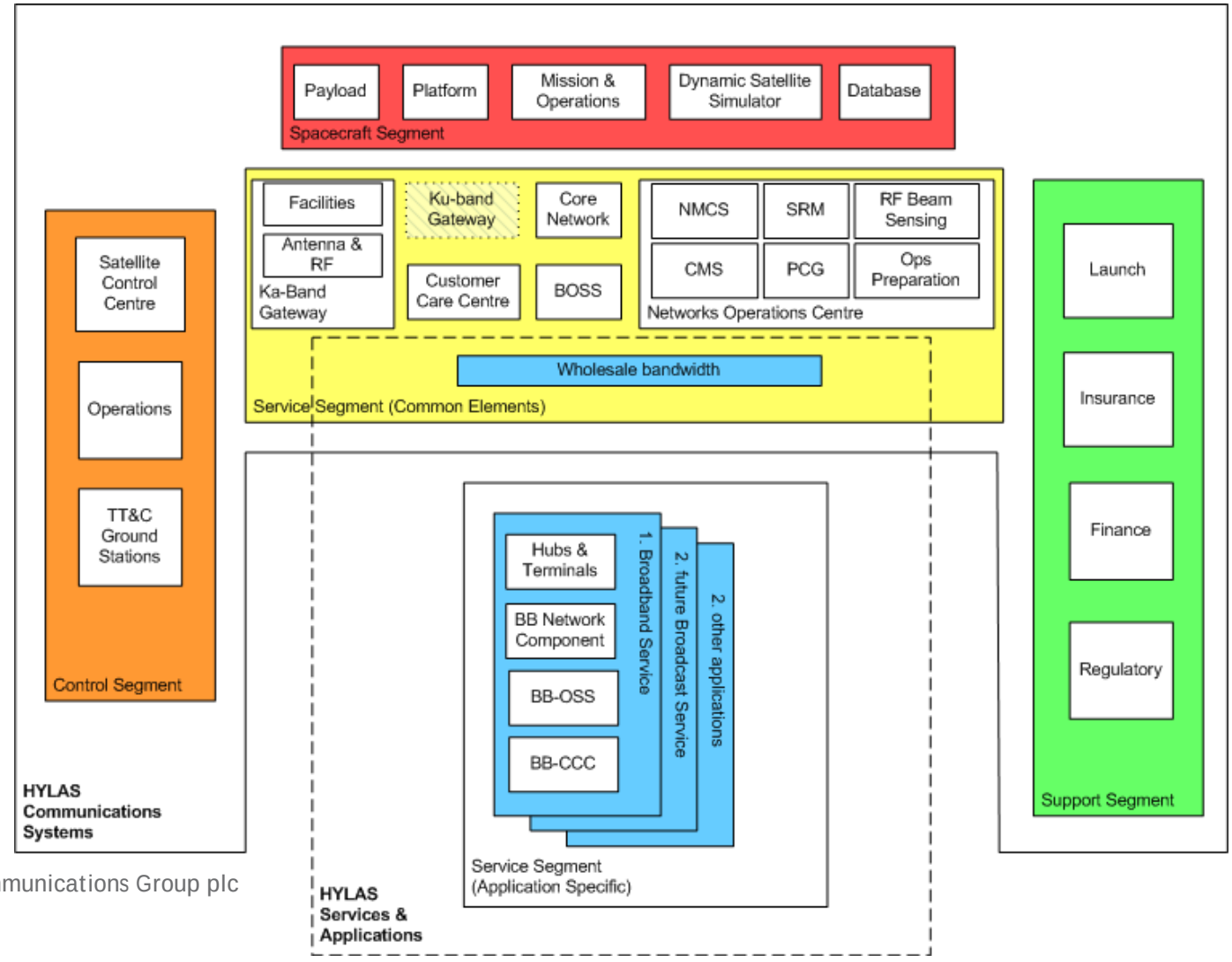
October 2011

AGENDA

1. The HYLAS 1 System
2. Products
3. Application Areas of Interest

THE HYLAS 1 SYSTEM

The HYLAS 1 System Architecture



HYLAS 1 Coverage

A single Ku European beam suitable for DTH TV, HDTV and Multicast services.

Uplink frequency bands	17.3-18.1GHz
Downlink frequency bands	11.7-12.5GHz
Service areas	Western Europe

Up to eight Ka spot beams capable of serving broadband, interactive TV services as well as HDTV.

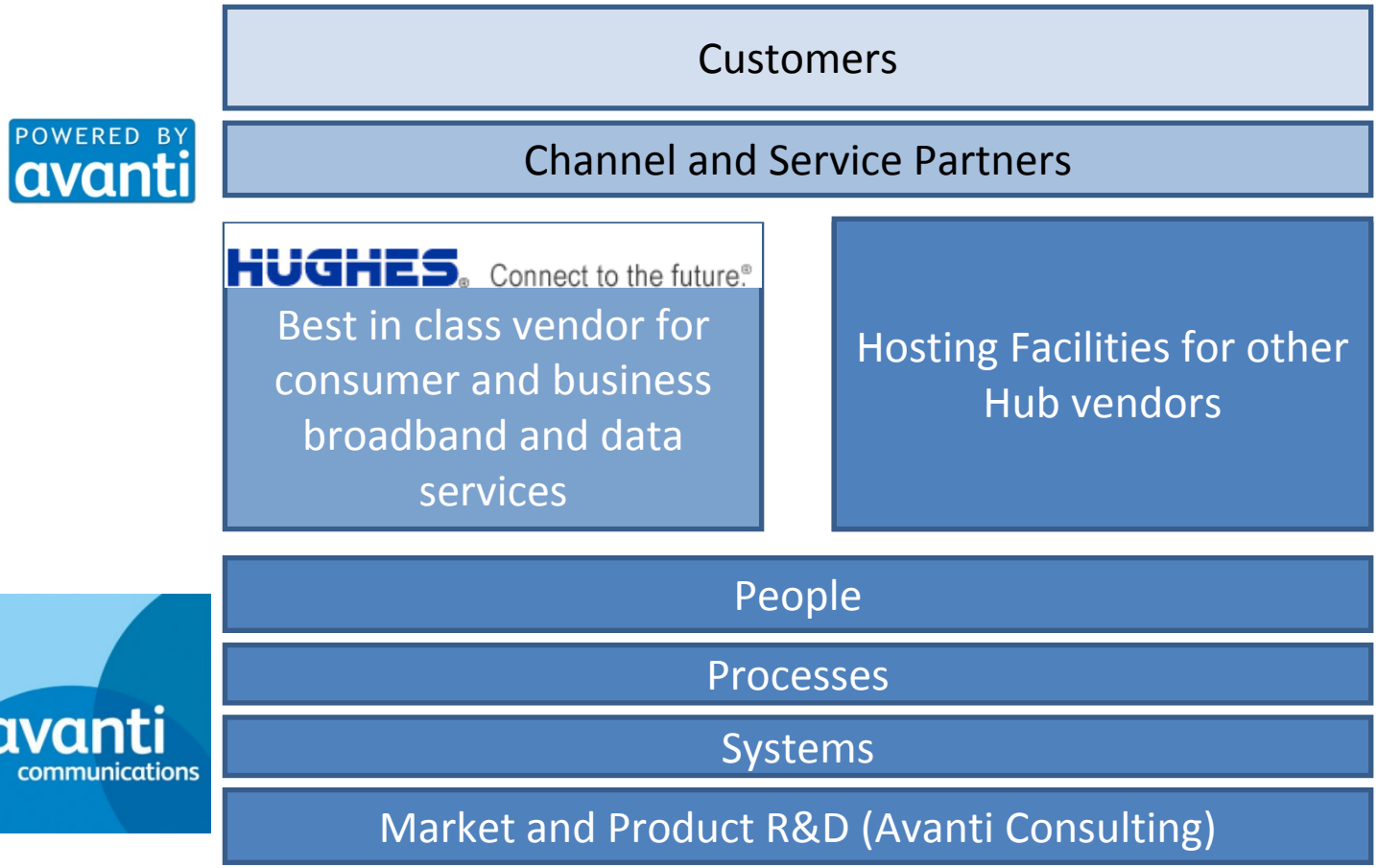
Uplink within	27.5 - 30.0 GHz
Downlink within	18.1 - 20.2 GHz
Service areas	Western Europe

PRODUCTS

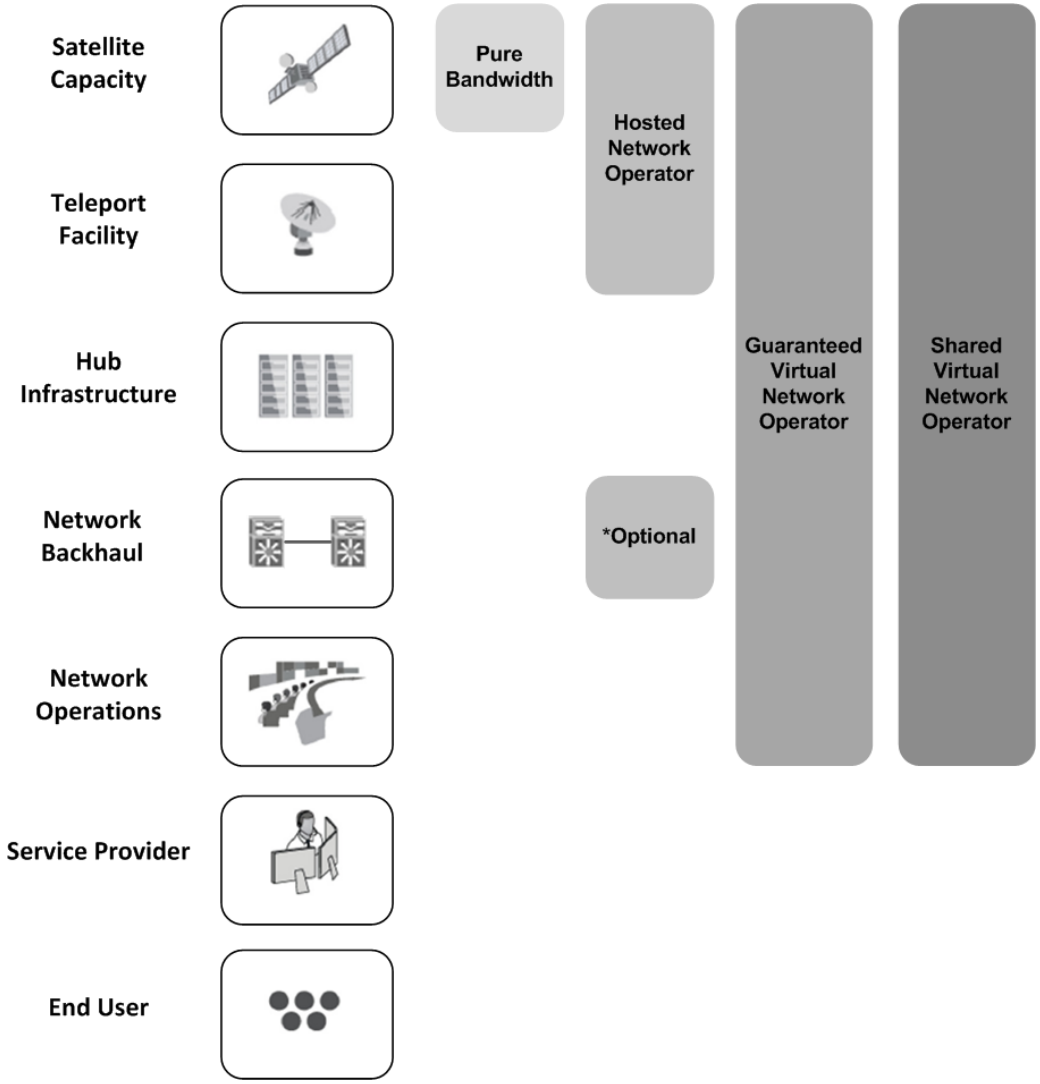
THE AVANTI ADVANTAGE

- Avanti underpins its partner brand – the partner's brand goes to market, Avanti's products make that happen technically and profitably.
- Avanti reduces a partner's financial and operational risk – through our infrastructure investment, Avanti provides a capital free entry into the satellite market.
- Avanti enables its partners to fully manage their services – through our proprietary management software tools.
- Avanti provides ongoing account and marketing support to its partners – their success is our success.

OUR PRODUCT ARE BASED ON BEST IN CLASS VENDORS



AVANTI'S SATELLITE BROADBAND PRODUCTS



AVANTI'S SATELLITE BROADBAND PRODUCTS

- Pure Bandwidth
  - Ku or Ka-band MHz space segment capacity
  - BSS Ku uplink from anywhere within Ku footprint (17.3-18.1GHz uplink)
  - Ku-Band nominally 33MHz bandwidth, multiple transponders
  - Ka uplink from anywhere within beam 2 (Southern UK)
  - Ka up to 250MHz forward channels and 120MHz return per beam

- Hosted Network Operator (HNO)
  - Ka-band MHz space segment capacity, including the use of Avanti uplink facilities
  - Partners free to choose their own equipment, including hubs.
  - Avanti ground station facility at Goonhilly, Cornwall, UK with 9.2M antenna; second diverse antenna at Lands End.
  - Colocation of equipment at Goonhilly data centre, diverse fibre ring to Telehouse East and LINX in London for Internet transit, interconnect & peering.
  - Available from 9 MHz to 54 MHz per beam.

AVANTI'S SATELLITE BROADBAND PRODUCTS

- Shared Bandwidth Virtual Network Operator (SVNO)
  - An end-to-end wholesale broadband service using two-way broadband satellite technology across a shared network.
  - Includes customer premises equipment, space segment, internet connectivity at Telehouse East and management tools.
  - Available across Europe on HYLAS 1.
  - Available from 500kbps/128kbps to 10Mbps/2.5Mbps

- Guaranteed Bandwidth Virtual Network Operator (GVNO)
  - Guaranteed, un-contended bandwidth from multiple terminal sites to the internet.
  - Provides a completely flexible two-way IP data solution.
  - Includes customer premises equipment, space segment bandwidth, internet connectivity at Telehouse East and management tools.
  - Available from 2.5Mbps to over 45Mbps

SVNO APPLICATIONS AND BENEFITS

- Applications
  - Consumer and small business broadband (internet access).
  - Corporate IP network extension (remote offices).

- Benefits
  - Service packages are set and managed by Avanti, while still providing the partner with monitoring and training tools.
  - End-user pricing is set by the partner.
  - Small commitment with a wide range of service available for consumers and professional broadband users.

GVNO APPLICATIONS AND BENEFITS

- Applications
  - Mixed network traffic (including BIC).
  - Occasional use applications.
  - Corporate multi-site data networks.
  - IP backhaul.
  - Remote monitoring (SCADA).

- Benefits
  - Avanti's most flexible professional product, allowing the partner to simultaneously support a wide range of applications including IP networks, consumer and SME broadband applications, occasional use and BIC
  - Partners set and manage their own pricing and SLAs, supported by Avanti's management tools.

BUSINESS INTERNET CONTINUITY

- Avanti's business internet continuity (BIC) products provide a 100% diverse back-up route for critical data services in the event of the failure of fixed line services. The product range includes:
  - Internet Continuity – A fully diverse two-way data connection to the internet through HYLAS 1 and Avanti's ISP.
  - Office Continuity – A globally patented solution which automatically takes over when a primary fixed line connection fails, Office Continuity restores connectivity and repropagates IP addresses instantly.
  - Enterprise Continuity – A low cost two-way satellite back up for private networks.

OPERATIONAL RESPONSIBILITIES

- Avanti responsibilities
  - Satellite control
  - Frequency planning and payload resource management
  - Interference monitoring
  - Network management
  - Terminal commissioning support (for VNOs)
  - Terminal monitoring
  - Alerting
  - Second line support

- Partner responsibilities
  - Customer acquisition
  - Terminal installation to agreed accuracy
  - Specification and implementation of service levels
  - First line support
  - Billing !

APPLICATION AREAS OF INTEREST

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Avanti has particular interest in:

- Techniques/services for enhancing domestic broadband services;
- High data rate Ka-band terminals including wide band front ends;
- Security applications (static and mobile);
- Applications requiring high return channel utilisation (e.g SCADA);
- High volume Business to Business applications (e.g. media distribution) at Ku or Ka bands.
- Business Continuity and other applications that make satellite broadband applicable to every business, not just rural ones!

Of course, proposals do not need to be limited to these areas!!

OTHER IDEAS

- **Space for Mobile Networks**
- Satellite overlays for multicast of data and/or video for mobile users
- Automatic tools for selection of satellite vs. mobile networks for data transport

- **Space for Transport**
- Coastal and inland waterway applications
- Broadband Internet for passengers (e.g. trains, long distance coaches)
- Traffic monitoring/management (e.g. highways, railways, airports)

- **Space for Safety and Security**
- CCTV and remote monitoring (e.g. industrial plants, isolated airfields)
- Border monitoring
- Environmental monitoring and alarm via sensor networks (e.g. earthquakes, landslides, fires)
- Utility network management (e.g. power grid, oil and gas pipelines)
- Smart sensors/connected home
- UAVs (e.g. patrolling over remote areas)

- **Space for Consumer Media**
- Highly portable Satellite News Gathering
- Hybrid broadband/TV services for rural areas
- Digital cinemas (2D and 3D live events such as concerts, theatre and sport)

- **Space for Government**
- Professional eTraining for Public Administrations (e.g. electoral cycle)
- Information channel delivered in cached mode via satellite (e.g. in post offices)
- Internet kiosks with WiFi access point for isolated locations

- **Space for Health**
- Telemedicine for passengers (e.g. ships, civil aviation, trains, coaches)
- Telemedicine for humanitarian relief and peace-keeping
- eHealth for remote communities (e.g. first medical opinion, primary and secondary prevention)

- **Space for Education**
- ICT support for schools in developing and/or isolated areas
- eLearning and eTraining (teaching of teachers)
- Collaboration networks among remote schools

- **Validation platforms for novel technologies**
- Automatic beam switching techniques for terminals moving between beams
- Accurate satellite tracking
- IP Acceleration techniques
- Self install kits for self installation of consumer terminals
- New protocols over Ka-band
- Specific areas of interest / research priorities

NEXT STEPS

For those organisations interested in participating further:

- Establish an NDA for more detailed information of relevance to a proposal;
  - pricing for VNO, raw MHz, etc;
  - Service level specifications;
  - details and pricing for terminals;
  - detailed coverage info, cost of terminals, service levels;
  - Typical commercial terms and conditions.