

Elevator Pitches

Satellite Finance Network Conference
19th March 2014

TISICS Elevator Pitch

Biography Stephen Kyle-Henney

Stephen Kyle-Henney is Managing Director of TISICS Limited, a management owned SME that he formed with colleagues in 2005 through a management buy-out from QinetiQ

Stephen has been working on silicon carbide (SiC) fibre reinforced metal composites since a University placement to the BP Research Centre in 1988. From 2000 he was responsible for business development, transitioning the business from a defence base into civil aerospace. Stephen led the MBO to take an R&D pilot production capability through to industrial scale production.

TISICS has now developed opportunities in space, civil aerospace, defence and energy sectors where the light weight, high performance, corrosion resistant metal composites add value to customers products. The next phase is to partner customers for product development and to establish serial production capability with industrial partners to deliver qualified products. The initial market is space, for lower volume higher value components which we will then expand into into the other sectors.

TISICS has a regional growth fund bid for £9M of grant in review. This is supported by various government departments. TISICS needs to find the matching investment to support this bid.





Sotira Trifourki
Director and Founder,
ARTEMIS Space
www.artemis-space.com

Sotira Trifourki is an astrophysicist, and founder and director of ARTEMIS Space, a new start up which paves the way for civil society to access space. She is a social entrepreneur with the belief that space can be used as a tool for addressing today's social challenges. A keen STEM educator and science communicator, Sotira has participated in a number of space education initiatives for global development. As director and founder of ARTEMIS Space, Sotira leads an enthusiastic team

of space scientists and engineers who have experience in working for National Space Agencies, industry and academic institutions. ARTEMIS Space is currently participating in the Google Lunar X Prize as a team member of Synergy Moon. Sotira is also founder of the Cyprus Space Office.

ABSTRACT

ARTEMIS Cubesat Constellation

ARTEMIS Space builds and launches micro satellites that provide low cost access to space. We are developing the world's largest constellation of 70 Earth observation satellites and space-based observatories to provide timely, high-definition imagery, near real-time video, and data of our changing planet.

By incorporating open-source software and hardware into the Cubesat design, we are developing a user programmable imaging and sensor platform which will empower commercial and government customers to take full advantage of mission-specific customisation, and will be able to integrate customer requests in the design of the sensor suite for each cubesat payload.

The ARTEMIS CubeSat Constellation provides the opportunity to keep up with Moore's Law, advancing on a six to twelve month development cycle. We have acquired higher orbital slots from partners at Kypros Satellites which will extend the lifetime of the Cubesats from three to eighteen months.

The ARTEMIS Cubesat Constellation will serve customers who wish to use the constellation as a platform to demonstrate a range of new technologies to test these in a space environment, and to gain flight heritage. This effectively drives down the cost for companies wishing to use such a platform to demonstrate high Technology Readiness Level (TLR) products, saving customers considerable resources, and providing an attractive proposition as an affordable option.

ARTEMIS Space is currently undertaking R&D into an advanced material composite to develop a prototype of radiation shielding for testing in space environments which will be applicable to future manned launchers.

Our competitive advantage lies in our partnership with a new launch provider, Inter Orbital Systems who will provide launch capabilities starting from Autumn 2014.



iSat SFN briefing note
19th March 2014

iSat is a turnkey satellite systems integrator with unique skills in RF which has made its unique products and services attractive to a range of customers. The company is actively bidding for uplink stations and VSAT networks in targeted synergistic markets.

It is ISO9001:2008 registered and hold contracts with defence and satellite operator customers. The first three years has been invested in developing customer relations and creating/developing unique systems solutions, some of which are now arising as tenders. The increased production activity will require working capital support, but to take advantage of the positions its created, it also needs to invest more deeply in its direct sales and technical resources.

iSat is focused on X-band and Ka bands which have high growth potential in the markets its customers are in. The satellite operators in these areas have, and continue to launch new capacity – which in turn must mean more terminal and earth station sales for suppliers like iSat.

iSat has developed its pipeline of orders consistently over the past 3 years, with it now standing at a record high, and the opportunities are spread across the short, medium and long term.

The products iSat develop get approvals from satellite operators which are hard for other suppliers to duplicate a) because the satellite operator doesn't want to duplicate what it paid to iSat to another supplier, b) because satellite bandwidth and technical resource is limited.

Projections indicate a year of further investment in to April 2015 with increase revenue and costs, which bear fruit from 2016 onwards.



your mission
our software
reliably fast

bright ascension ltd

Bright Ascension is a space technology company. Whilst we have experience with a wide range of space engineering projects, software, especially for nano-satellites, is our main focus.

The NanoSat market is booming. A rapidly growing number of people want the ability to fly their equipment in space for scientific, commercial or educational reasons. To help with this, a substantial market for off-the-shelf hardware has emerged, allowing organisations to build and launch spacecraft rapidly with limited specialised knowledge. Unfortunately there are no corresponding software products, presenting a difficult, risky and expensive barrier for NanoSat users. Some vendors provide limited software support but even then, building a spacecraft needs significant, skilled custom software engineering, typically requiring 1 to 2 man-years of development effort.

Bright Ascension's industry-leading Gen1 software product addresses this problem by providing an environment for rapidly constructing reliable, tailored onboard software from a library of proven components. Our companion Mission Control Software product helps provide an end-to-end solution for satellite development and operations. Feedback from our existing customers has been extremely positive, giving us the confidence to build on the product features and compatibility, and expand our offering, to enable access to larger markets across the world.



Peter Mendham
Managing Director
peter@brightascension.com

Moreton Hall Associates

Moreton Hall Associates

Founded in 1982, this UK-based SME consultancy company continues to provide services to the Space Community. Its focus throughout has been on Risk and how it affects business in the Space Sector. It affects all phases from design, manufacture integration, testing to launch, in-orbit commissioning and in-service duty once in orbit. Only in the last 20 years or so has disposal at end-of-life become a matter of serious concern. ISO standards are being developed for all space mission phases including end-of-life disposal.

Successfully Delivered Mission Products are the key aim of spacecraft endeavours. Moreton Hall Associates has long association with Quality and Product Assurance, In-Orbit Operations, Advising on Risks to the Insurance Community. Over the years we have compiled and continue to maintain extensive databases of anomalies and failures in orbit and during launch phases.

Users of such mission products now increasingly dominate the 'space endeavour' landscape. Depending on the terrestrial application, user technologies can bring huge benefits – but only if properly developed, marketed, sold and protected.

We also use Risk as a driver for change, strategy development and decisions in space projects and for businesses generally.

Geoffrey E Hall CEO

info@moreton-hall.com

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TravelAI

Web cookies for the real world

TravelAI is a context-sensing platform to help developers build better Smartphone apps. While also generating new and rich data for transport planners and service providers.

The Problem

The capabilities of smartphones are allowing developers to create a new generation of apps that automatically react to the preferences and environment of the user. This complexity and cost is beyond a developer's core skill set.

The Solution

TravelAI's software platform gives developers a drop-in solution to provide personalisation and context awareness for travel to enhance the experience for their users. It cuts development time, gives one solution for multiple OS, saves battery, CPU and RAM, and is maintenance free. Our smartphone software runs in the background studying speed, location and pattern of movement to automatically detect the user's route and method of transport.

Addressable Market

Projections for the mobile location-based-services market range from growth of 13% to 18% Y/Y reaching \$2.4bn to \$10.4bn by 2017, depending on source (Berg Insight, Pyramid Research, Strategy Analytics, Visiongain). Smartphones are the perfect vehicle for our platform, with 1.3bn already in use and 1bn unit sales expected in 2015 alone.

Please contact

Andreas Zachariah CEO zac@travelai.co.uk 07976717909



Peter Lindgren COO peter@travelai.co.uk 07817167442



Technology Highlights

- First to market
- Automated, low power, multi-modal
- Unique on-phone processing
- Highly scalable and flexible by design
- Multiple privacy options
- Multi-award winning, beating teams from Google, MIT, Nokia & Stanford
- Easy to deploy and integrate

Business Highlights

- Saves developers time and pain
- Gives transport industry better data at lower cost
- £155k from BBC, BT, Deutsche Post, Forum for the Future, The Times, UK Govmt
- Beat SAP and Logica in client tests
- Multiple revenue sources: developer licenses, own products, transport data
- Active sector: \$37m early stage funding, Waze exit to Google for \$1.3bn

About Us

£420k in grants, 3.5yrs unpaid and £90k by founder, and £10k team.

Andreas Zachariah *CEO*. Goldman Sachs analyst, €1bn Telco portfolio manager, designer. BEng, MBA Fin, MA RCA.

Peter Lindgren *Business Development*. FTSE250 product manager, financial analyst. Oxford alumni. MEng.

Alex Jarvis *Software Engineer*: iPhone expert+Java, full stack, location based services and App author. BSc

Bryn Cooke *Developer*: FTSE100 System architect, multi-platform coder. BSc.

www.travelai.info

Elevator Pitches

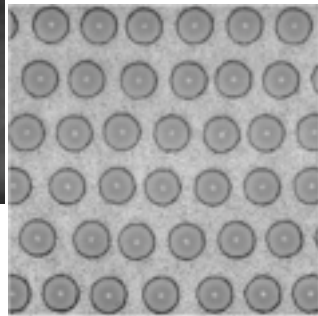
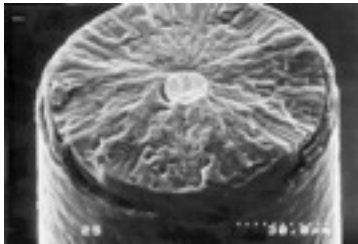
*Chair – Richard Brook, Co-founder, E-Synergy
and
Nigel Walker, Access to Finance, Technology
Strategy Board*

- Stephen Kyle-Henney, TISICS Limited
- Sotira Trifourki, ARTEMIS Space
- David Harper, iSat Networks
- Peter Mendham, Managing Director, Bright Ascension Ltd
- Mike Hart, Director, Pico Services Ltd
- Geoff Hall, Moreton Hall
- Zac Zachariah, CEO, TravelAI Ltd and Peter Lindgren, COO, TravelAI Ltd

TISICS High performance Metal Composites for Space

TISICS
Titanium composites

Satellite Finance Network Conference March 2014



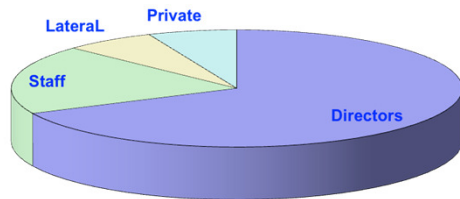
by Stephen Kyle-Henney

19th March 2014

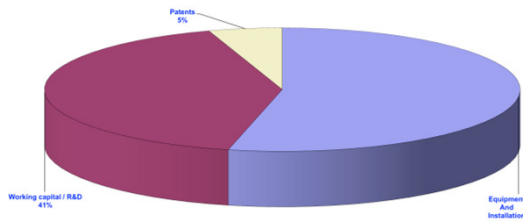
TISICS

TISICS
Titanium composites

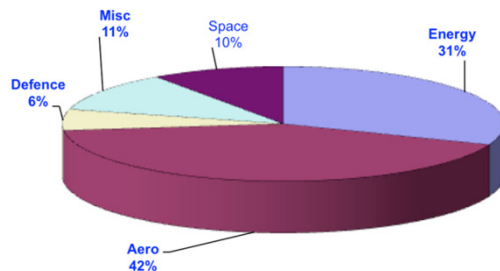
Share Structure



Investment

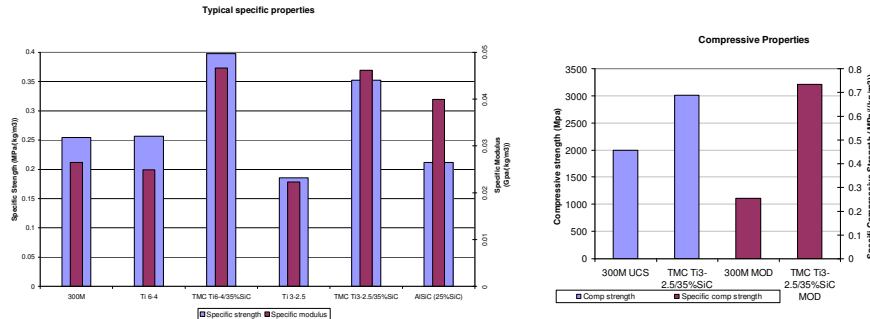


Income by Market



- Management Owned SME
- Established 2005 through MBO from QinetiQ
- Acquired 20 years of technology
- >£2.2M invested to date
- Aerospace focus but also defence, Energy and automotive opportunities
- Space business is growing
- £800k order book
- £1M high probability opportunities

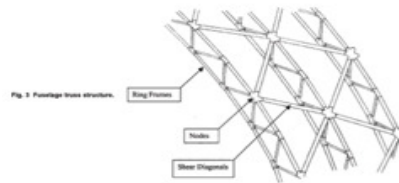
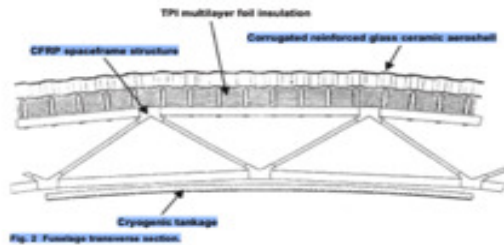
Performance Benefits



Specific strength ~ twice conventional metals
 Compression strength and corrosion resistance provide new options in difficult environments

- Lighter and more compact parts reduce energy and or increase payload to structure ratio. (Space value, £20k/kg, Aerospace £500/kg, Defence up to £5k/kg)
- **Competition**
- One American competitor. Subject to ITAR export controls.
- ESA preference for non-dependency
- European civil aerospace and defence prefer ITAR free technology
- Compliments carbon composites not competitive.
 - Better for elevated temperature and compression.
 - Metallic matrix provides electrical and thermal conductivity compared to carbon composites

Applications



Pictures courtesy of Reaction Engines

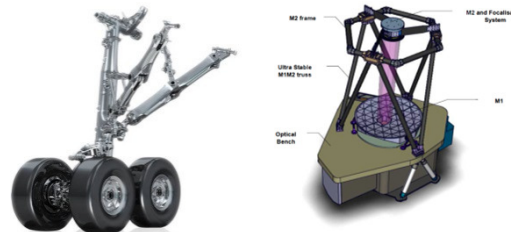


Would require 40,000 TMC struts ~300mm long x 20mm diameter. (~£16M/plane)

Struts are in development, cost and performance targets are positive



Pressure vessel and tank technologies



Actuator and strut technologies

Components such as bolts and robotic arms applicable in space, terrestrial and sub sea systems.

Strategy

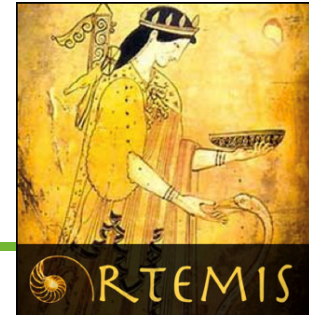
- TISICS has a number of opportunities within different sectors and customers to use metal composite and related technologies.
- To exploit these markets we must grow faster than organic growth from R&D incomes will allow.
- Space represents a strong entry market with higher value and lower volumes than civil aerospace.
- Access via partnerships/licence in the future but we need to demonstrate a supply chain.
- TISICS has a bid for regional growth funding of £9M under review by BIS.
- We are seeking investors to support this bid with our partners and to develop a UK lead in this technology across all markets and accessible international territories
- Investments will enable matched grant programme funding £3M to £5M projects in the UK and Europe.

Thank You Any Questions?

- TISICS Limited
- Contact Stephen Kyle-Henney
- 01252 516678 x220
- 07798 656761
- www.tisics.co.uk

- Contact skylehenney@tisics.co.uk

We are ARTEMIS Space

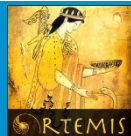
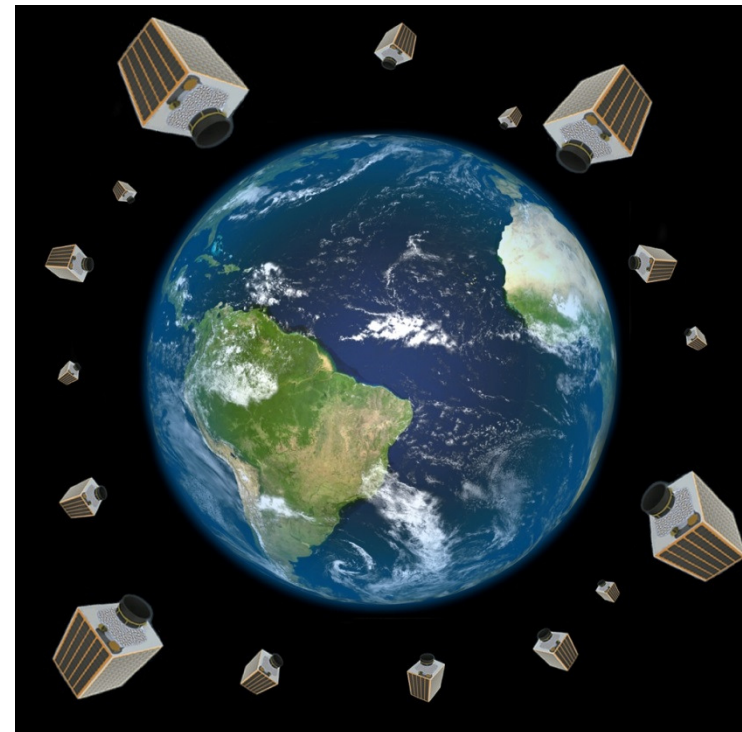


A user programmable imaging and sensor platform enabling mission-specific customisation

ARTEMIS Space builds and launches micro satellites that provide low cost access to space.

We are developing the world's largest constellation of 70 Earth observation satellites and space-based observatories to:

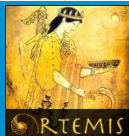
- provide timely, high-definition imagery
- near real-time video
- and data of our changing planet.



Practical Solutions for Today's Global Challenges

Products & Markets

Imagery & Video Easy access to sub-meter satellite imagery and high-definition video	Access Global Ground Stations Network and Ground Segments	Analytics Analytics Platform to transform imagery and data into insights about the world around us	Apps Store - Games - Apps - Grab the API	Mission Control Centre - Upload experiments and missions - download data
Education Programme Schools and Outreach, acquisition of skills and training	Data Visualisation - Big Data - Planetaria - Science Centres - Visitor Attractions - Entertainment	Technology Demonstration - New technologies for testing to gain flight heritage - Advanced Materials for radiation shielding	Payload Hosting - Cut down costs of research missions	Mission Specific Customisation - User programmable imaging and sensor platform

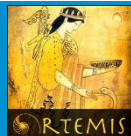


Practical Solutions for Today's Global Challenges

Financials

	Year 1 (2014)	Year 2 (2015)	Year 3 (2016)	Year 4 (2017)	Year 5 (2018)
Satellites	3	15	30	40	30
Customers	5000	20,000	55,000	70,000	100,000
Revenue	£1.4M	£19.6M	£38M	£82M	£140M
Costs	£950,000	£4.6M	£7M	£15M	£22M
Profit	£450,000	£15M	£31M	£67M	£118M

→ Exit 1
Big Data



Practical Solutions for Today's Global Challenges

Management Team

- **Sotira Trifourki - Director**
 - Founder and owner
 - 12 years in social enterprise and STEM Education/Outreach & Space Industry, ESO, ESA, Cyprus Space Office
 - Business Manager for Synergy Space/#GLXP Team Synergy Moon
- **Kevin Myrick - Director**
 - Founder and owner Inter Planetary Ventures & Synergy Space
 - 25+ years of space industry experience
- **Pat Barthelow - Technical Director**
 - Ground Stations & Telecommunications Specialist

Advisory Board & Partnerships

- **Joerg Kreisel - Advisor**
 - Co-founder of Rapid Eye, Consultation and Investment Strategy
- **Angelos Pieri - Partner**
 - Founder and MD of Kypros Satellites
- **Organisational Partners**
 - Nanosatisfi
 - Urthecast
 - Cyprus Space Office
 - ECSITE
 - EUSEA
 - Astronomers Without Borders



Practical Solutions for Today's Global Challenges

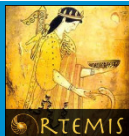
Thanks for your interest!

Sotira Trifourki,
Director

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Tel: 07585027980

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Practical Solutions for Today's Global Challenges



isat

“Building Networks to Deliver more”

Information for investors

March 2014

The iSat Company

- Experienced technical and commercial with 3 years proven track record for complex systems integration.
- Vendor neutral but working closely with technology partners.
- Customer application focussed organisation.
- Full turn key solution providers.

Background Overview

- iSat is a satellite earth station provider with installations covering the EMEA region.
- Primary focus is to provide voice, data, video conferencing, video streaming, where terrestrial infrastructure is unavailable.
- iSat use their knowledge to configure unique assemblies.
- Customers are satellite operators, government/military organisations, and broadcast but could be extended to oil and gas or other large corporates.

Background - Clients

- Long standing “blue chip” customers include
 - Airbus, supplier to UK MoD using X-band
 - Es'hailsat, UK Government department using Ku-band
 - GCHQ, Gulf State National Entity using Ka-band
 - DMOD, European Ministry of Defence multi-band
 - Airports using the Sadis2G equipment.
- Once a customer approves a certified terminal, they are likely to re-use a supplier due to the cost and time of certifying another supplier’s terminal.
- Currently, the top 3 customers usually account for 90% of turnover with individual projects between £50K to £500K of revenue over a period of 3- 6 months which can obviously create working capital pressures and significant swings in trading results.

Background Competition

- iSat consistently win in these areas due
 - Specialist RF knowledge to design the solution
 - Strong relations with preferred quality suppliers
 - ISO9001:2008 procedures for production control
 - MOD security clearances for people and building.
- iSat is less successful where competition arises in less specialist areas direct from suppliers.

Review of first 3 years trading

- In April 2011, iSat raised £405K from investors.
- Of the £405K raised, nearly half the cash was used to start the company.
 - £50,000 for company
 - £94,324 professional fees for acquisition and lease negotiation.
 - £25,000 Retaining supplier good will
 - £25,260 Rent deposit
- Total £194, 584 for working capital

Results

Latest Accounts	Mar 12 (Audited) £'000	Mar 13 (Audited) £'000	Mar 14 (Forecast) £'000
Financials			
Sales	1,630	1,484	894
GP %	32.5%	41.3%	35.9%
EBITDA*	(205)	82	(161)

Background to Financials

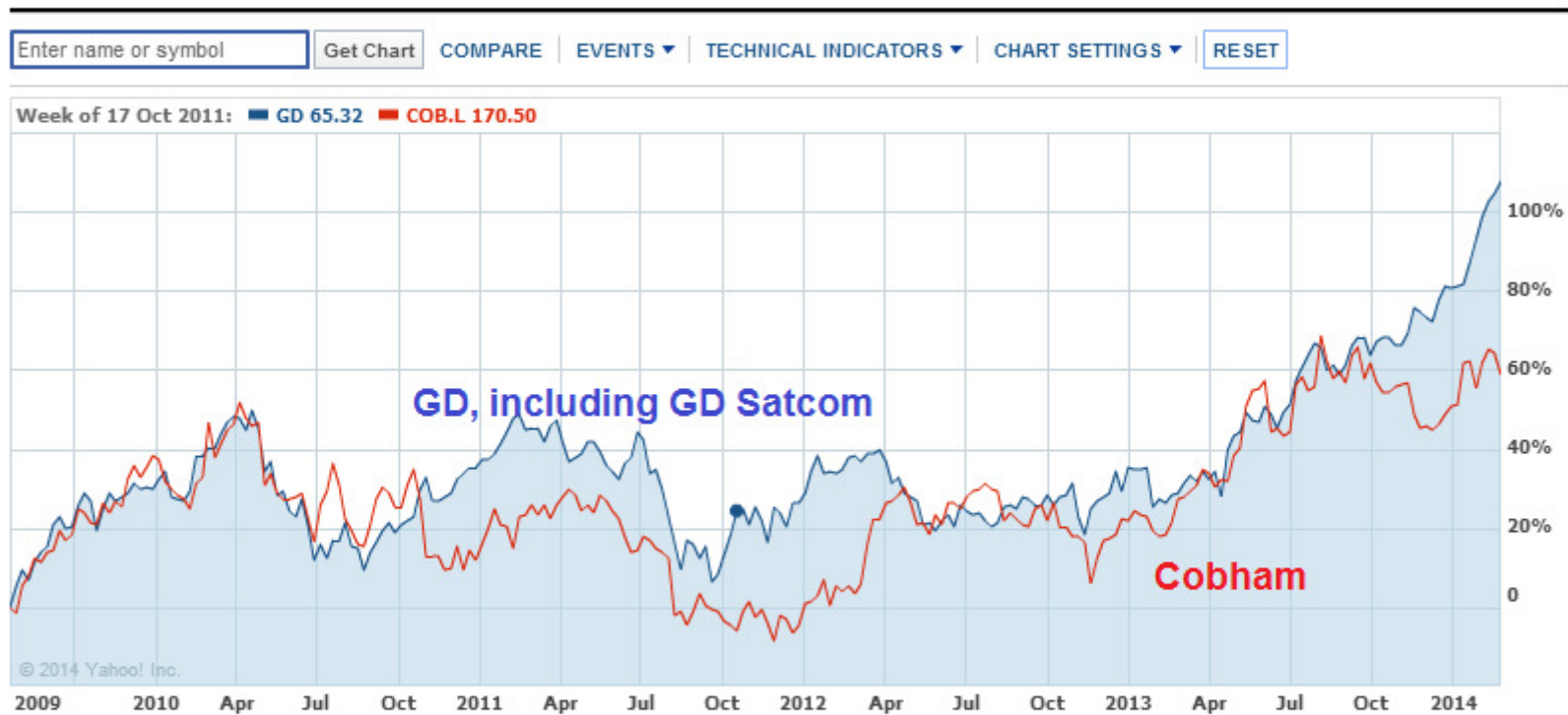
- The loss in the first year was as a result of the sudden and unexpected downturn in defence spending following the election of the Coalition government and the drawdown from Afghanistan.
- Management realigned their cost base while maintaining the core abilities outlined above resulting in a profit in the second year.
- The third year performance is attributable to delays in MOD of procurement policy, resulting in changes at Airbus and delaying their purchases.
- The contracts from Airbus and Es'hailsat reflect iSat capitalising on the change in policy.

The sudden unexpected downturn was reflected in our customers share price.

Share price trends in

General Dynamics Corp. (GD) - NYSE 27 Feb 21:01

Cobham PLC (COB.L) - LSE Ticker: 07KD36/ISIN: GB00B07KD360



↑
iSat created

↑
Breaking their Apr 2010
share price

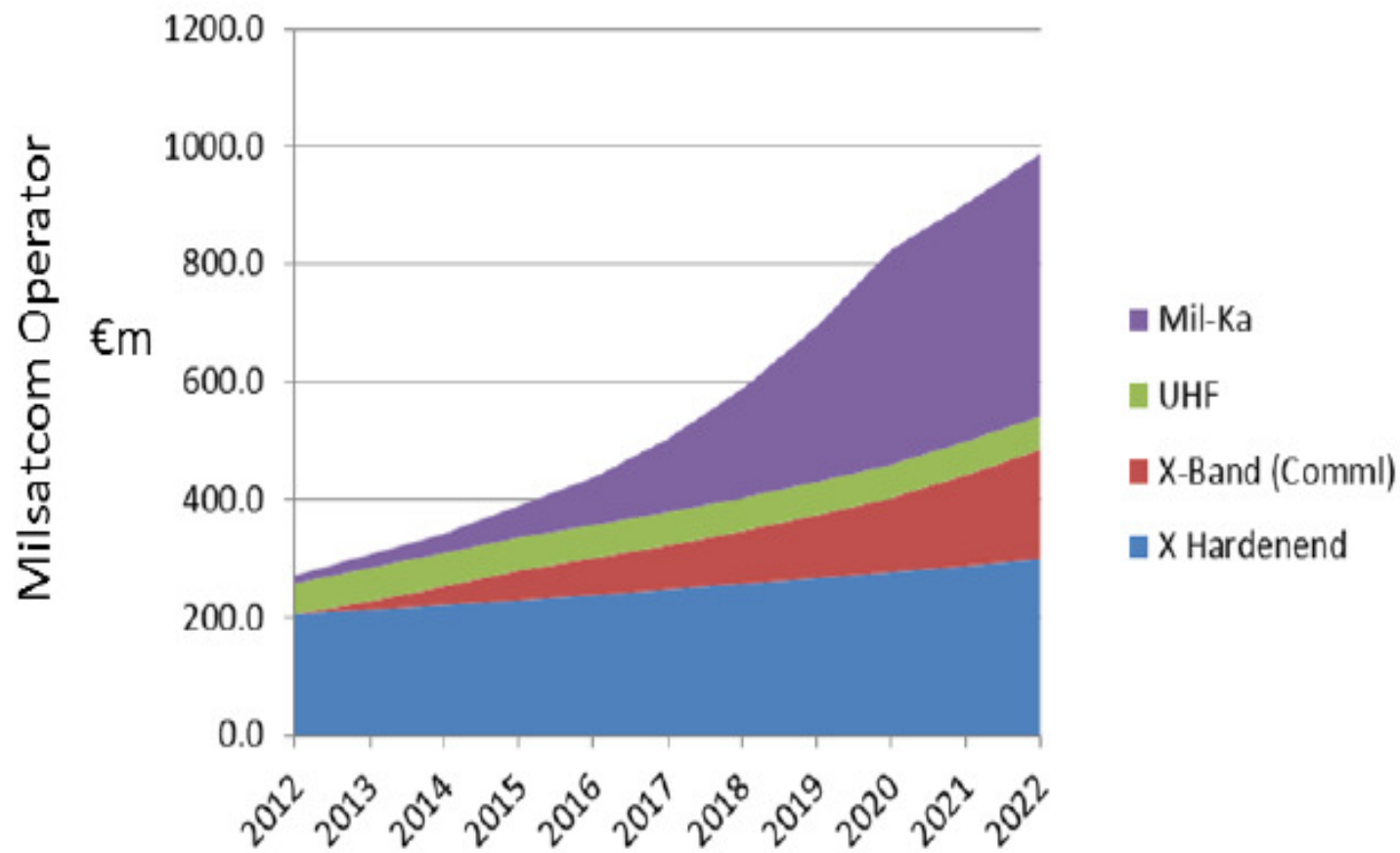
Background Market and Future developments

- Ku and C are the traditional high-use bands and iSat is concentrating on the commercial terminals on X, and Ka bands which are high growth potential in iSat's customer base.
- In particular, existing Airbus and Es'hailsat, and future STE and BFBS have assemblies which plays to iSat's strength.
- These new bands increase the capacity for the network operators to delivery more services to their close institutional government customers where currently no service has been developed.
- New specialist ground stations are required to be installed- which is where iSat will be utilised.
- Satellite operators continue to launch new satellites extending their reach and increasing demand for iSat.

Market opportunities

- Current pipeline/ tenders for 2014/5 amount to £4.5M. Anticipated revenue incorporated into the financial projection is £2.7M
- Looking beyond the next years trading, iSat is aiming to capitalise on their terminal approvals and increasing track record to mine deeper into existing accounts and become the integrator of choice.
- Also iSat is looking to expand the customer base with an increased front-end sales operation which repeats small variations of the niche VSAT area within other satellite operators.
- iSat's projection for earth stations expected in the next 5 years 300-500 units.

The Market for Government and Military Satellite Communications



NSR and EuroConsult Data

Market opportunities

- iSat is growing the customer base
 - We are a loaded account at Es'hailsat and have our first contract- expecting a second contract in March.
 - Singapore Technologies Engineering have enquired for kitting up to 200 assemblies per year- the value is about £2K per VSAT to iSat – just 10 a month would give 240K/ year; easily covering our building cost of £127K per year- which has been heavily under-utilised as an asset.
 - BFBS have enquired for 5 VSAT sites including cabins.

Market opportunities

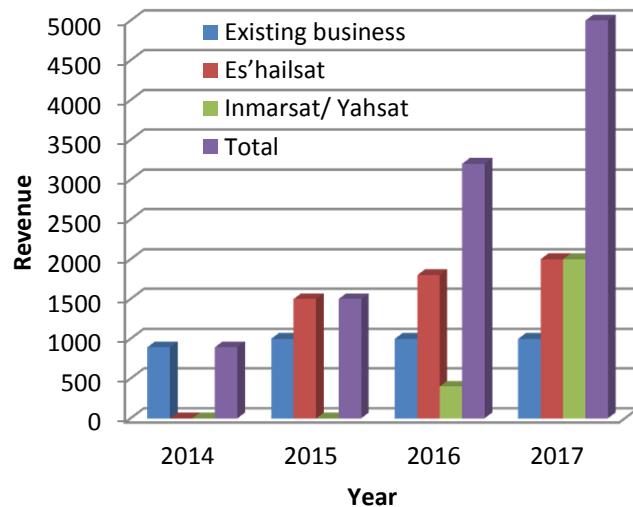
- Future Inmarsat - we have achieved a status as a potential supplier, and now identified a credible product partner in SIS to whom T3 are very receptive.
- Es'hailsat - all their institutional National customers expect this satellite operator to deliver turnkey projects, and Es'hailsat are in the process of selecting iSat as a strategic integration partner as part of their sovereign capability.

Market opportunities

- Yahsat company in an institutional customer like Es'hailsat. iSat would target to position itself in a similar manner to Es'hailsat.

Summary projections

The projections demonstrate the huge potential for iSat in the niche RF VSAT export market.



	2014	2015	2016	2017
	£'000	£'000	£'000	£'000
Turnover				
Existing business	894	1,000	1,000	1,000
Es'hailsat	-	1,500	1800	2,000
Inmarsat/ Yahsat	-	-	400	2,000
Total	894	1,500	3,200	5,000
Gross Profit	320	962	1083	1730
EBITDA	- 161	240	340	850

Comparing the next 3 years with the last 3 years.

2011	2014
Had to start from practically zero credit.	Credit terms agreed with all suppliers
Lost the Arabsat and ASBU customers	Existing running contracts with Airbus, GCHQ and orders from DMOD and Es'hailsat
Plans only to attack O3b and Ka markets.	Terminal certification orders from Airbus and Es'hailsat for new product cycles.
UK Election held in 2010, austerity and Afghanistan drawdown impending.	2015 UK Election on horizon and signs of increasing spend in MOD Maritime, and our projects; - Welcome projects - HITS projects.
None.	UK Space program to expand in space Satellite Catapult Satellite Finance Network
Target losing staff to save costs.	Target increasing staff; - Phil Haines - Sales person

Conclusion

- iSat is at the beginning of a number of product life cycles finding success with Airbus and Es'hailsat.
- iSat and it's history have a proven track record of managing a product life cycle profitably.
 - Airbus Defence and Space Sat-comm are expanding their product portfolio and creating the new services required by Government and Military.
 - Es'hailsat already have permission for 2nd satellite and it aims to launch 6.
 - Need to invest in Sales Director to serve the interests of Inmarsat and Yahsat to build in the medium term.

Options

- Into admin now- protecting the company while customer business is re-located in a controlled manner
- Do nothing- wait and see
- 400K equity- build a product portfolio for Es'hailsat, Airbus and Inmarsat and invest in sales generation.

Recommended £400K option

- £400K will transform the company and will be used as follows
- For more product development in particular
 - Flyaway terminal for Es'hailsat
 - Vehicle mounted self-pointing terminal for Es'hailsat.
 - X-band small weight and power terminal for Astrium.
 - These are small incremental developments well within iSat's capability.
- For a Sales Director to grow and manage the pipeline and expand the customer base especially Yahsat and Inmarsat.
- For a commercially orientated CTO (P/T).
- In the short term to provide cash-flow support to bridge the product development phase.

Funds required to raise £400K for each shareholder group to maintain current percentages

- SBA – £147K
- SYN – £120K
- MAN – £120K

Structure of offer

- £500 per share represents shares at 50% discount to first issue. This is because trading has been considerably lower in the previous 3 years.

Objectives of equity

- The objective of the company is to start paying dividends within the next 3 years consistent with balance sheet and the objectives of the company.
- Beyond the next 3 years, the company would look to be traded on to a buyer looking to capitalise on our trading relationships and geographic reach.

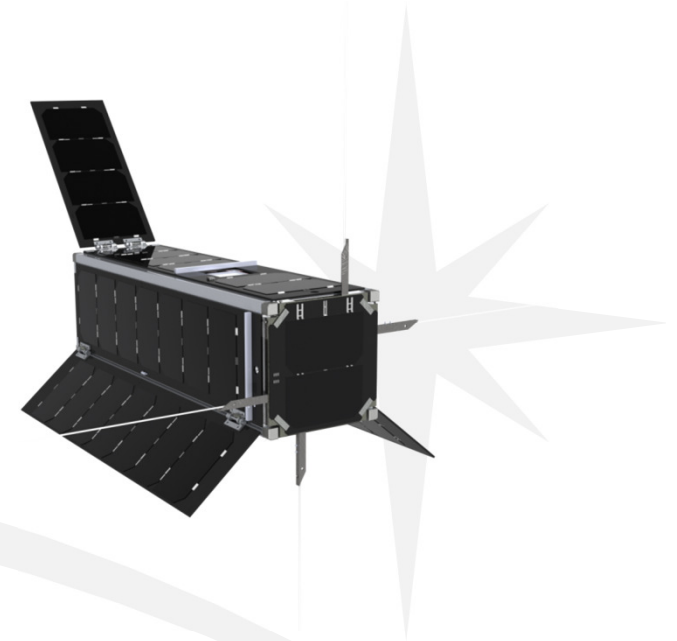
Software for NanoSats

Peter Mendham
peter@brightascension.com

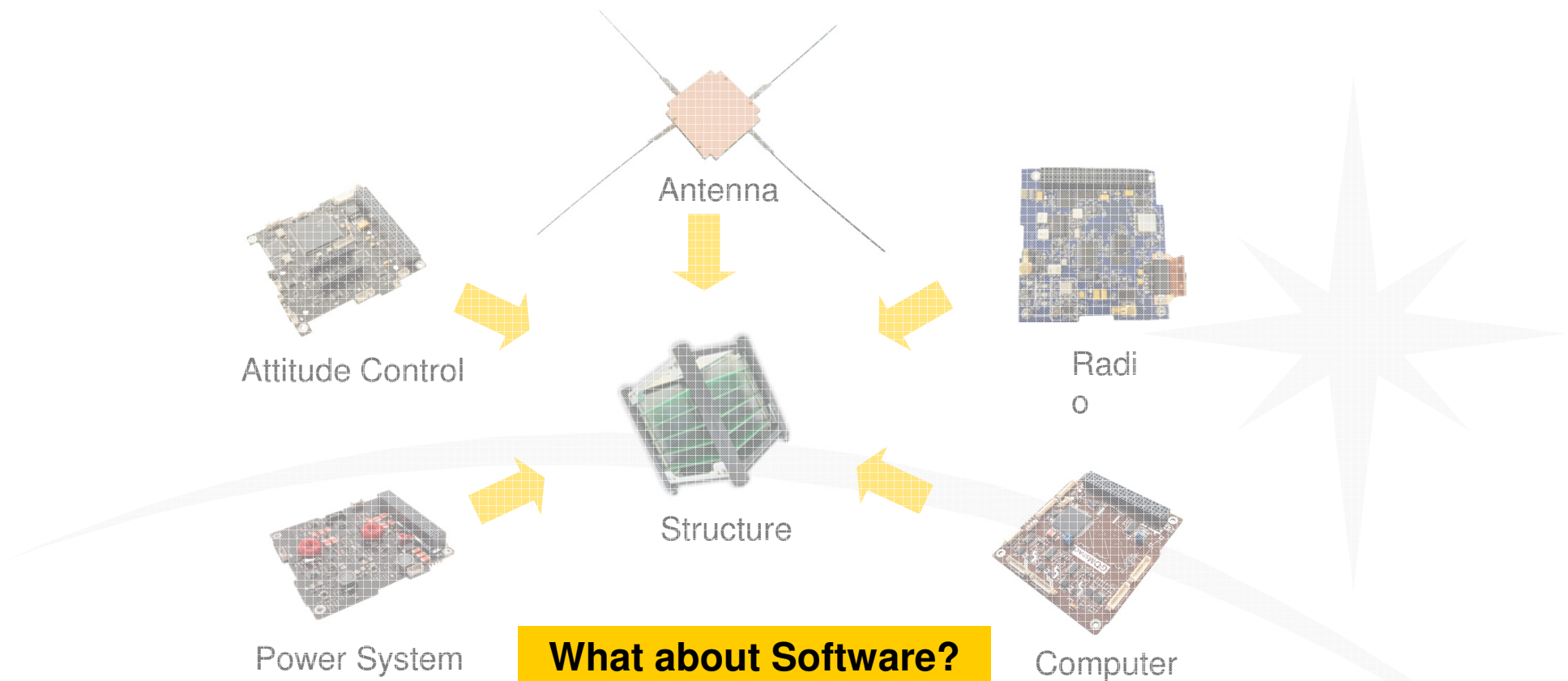


Nano-Satellites

- NanoSats are very small satellites
 - Typically less than 10kg
- The NanoSat market is booming
- NanoSats uniquely useful for
 - Science
 - Commerce
 - Education
- CubeSat form factor an enabling technology
- Projected >500 NanoSats per year by 2020
- Flight market worth around £125M globally



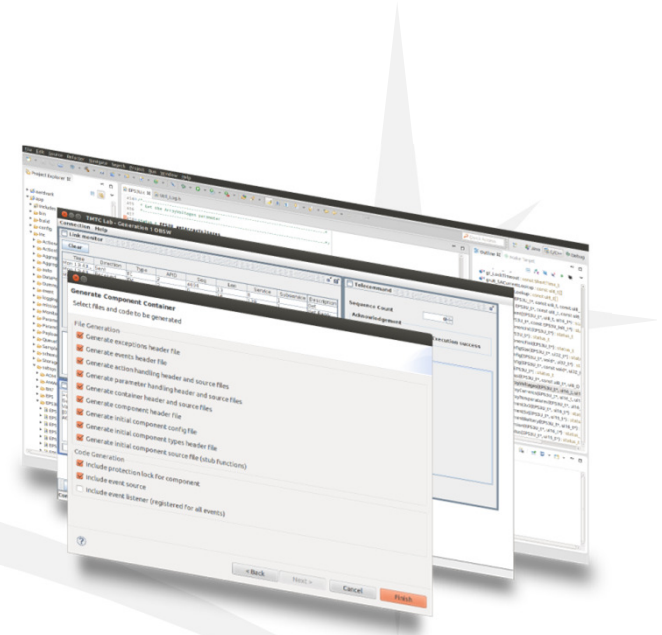
Building a NanoSat




- Operation and behaviour of spacecraft **defined by software**
- Software is a critical element
- Typical development 1-2 man-years

Generation 1 Software

- Off-the-shelf software product
- Complete onboard software development system
- User assembles onboard software
 - Quickly and easily
 - Using proven software components
- Target software development time < 2 weeks
- User doesn't need to write much code
 - All coding assisted by tools
- Limited specialist skills necessary
- Software ready early
 - Assists with satellite development
- Complementary Mission Control Software available
- Also sell services for complete turnkey solution



Selling Generation 1

- Generation 1 selling now
 - 5 onboard software licences sold (plus 2 Mission Control)
 - Good feedback from customers so far
- First launch due Q2 this year
- Potential second launch Q4 this year
- Sold in partnership with 
 - Also direct sales
- Routes to market
 - Partnership with satellite integrator
 - Partnership with computer vendor
 - Partnership with solutions provider
 - Direct sales
- Significant interest from potential partners



Expansion Opportunities

- Greater market share needs
 - Product compatibility improvement
 - Product features improvement
 - Increased sales capacity
- Diversify product range
 - Increase applicability to other satellite classes
- Currently very limited competition (no direct competition)
 - 4 Competitors offer simple software libraries
- Projected turnover of £4M in 5 years
 - Current turnover £100k
- Investment opportunity of £100k
 - Cashflow positive 9 months, break-even 18 months



Summary

- The NanoSat market is expanding rapidly
 - NanoSats often built using off-the-shelf components
- Software is a crucial component when building a NanoSat
 - Software not available off-the-shelf
- Bright Ascension offers software products and services
 - Addresses the need for off-the-shelf software
- Currently selling, good feedback so far
- Flight heritage this year

- Expansion opportunities through investment
 - Potential for significant market share increase



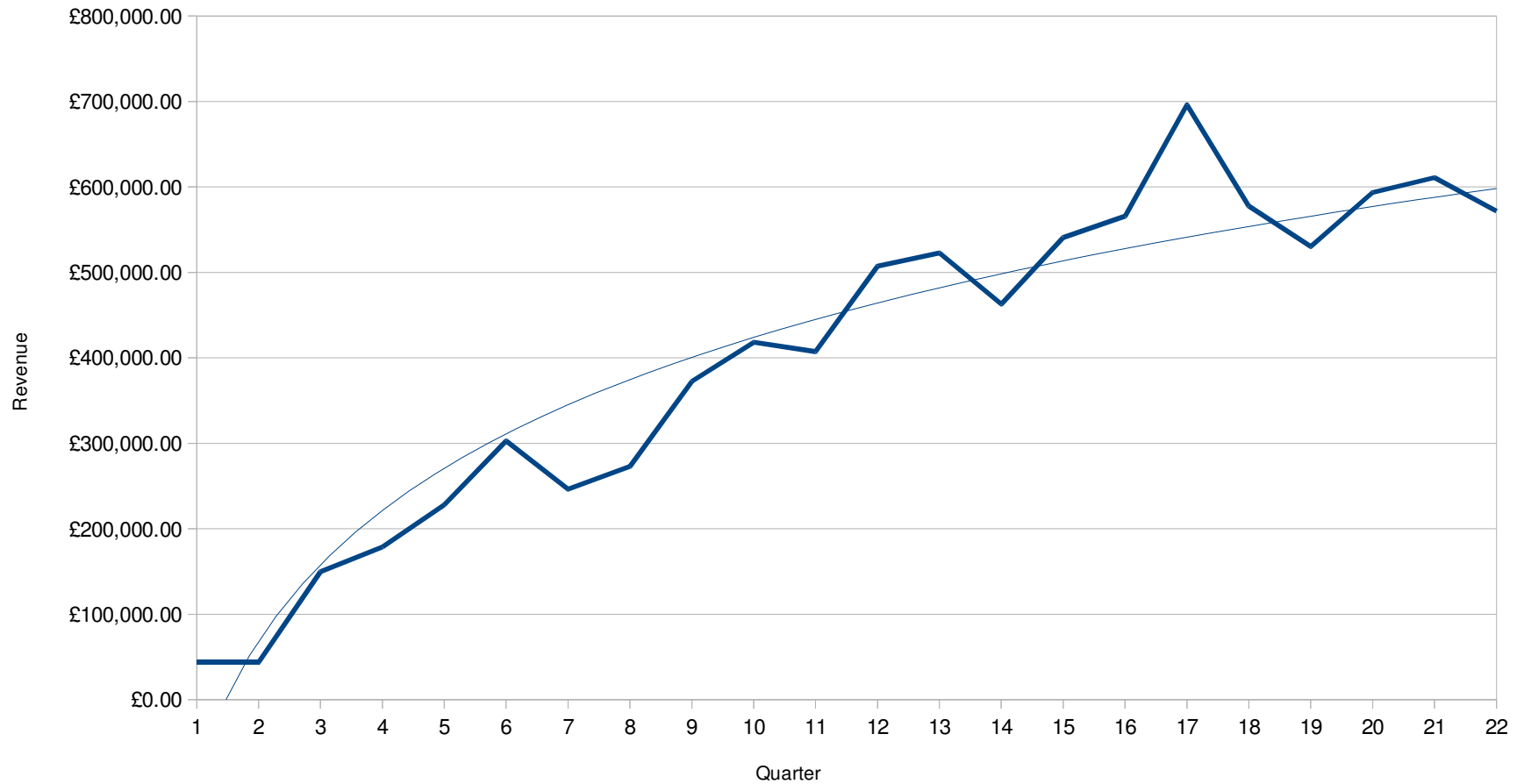
Peter Mendham
peter@brightascension.com



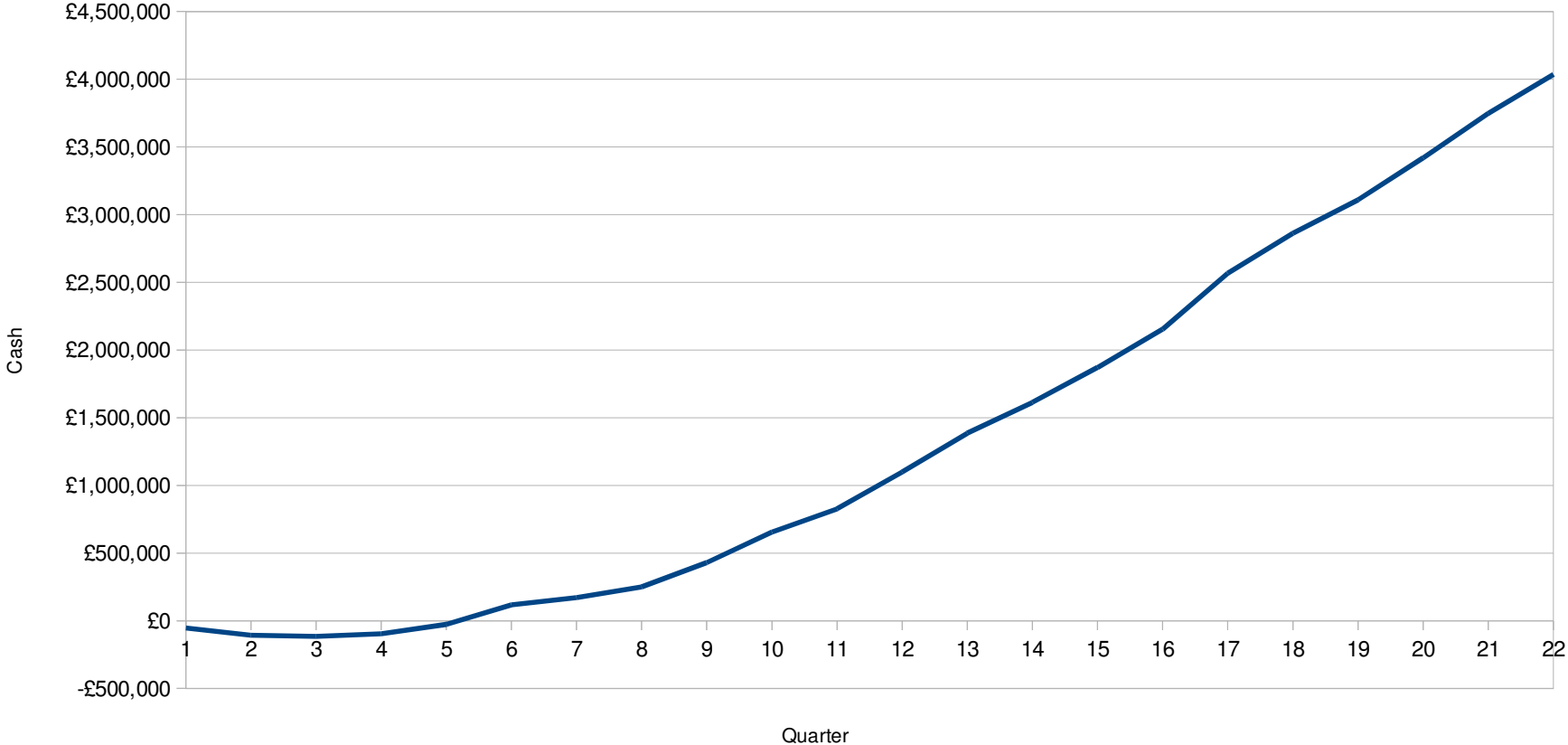
Backup



Revenue



Cashflow





Innovation in Space Applications and Communications

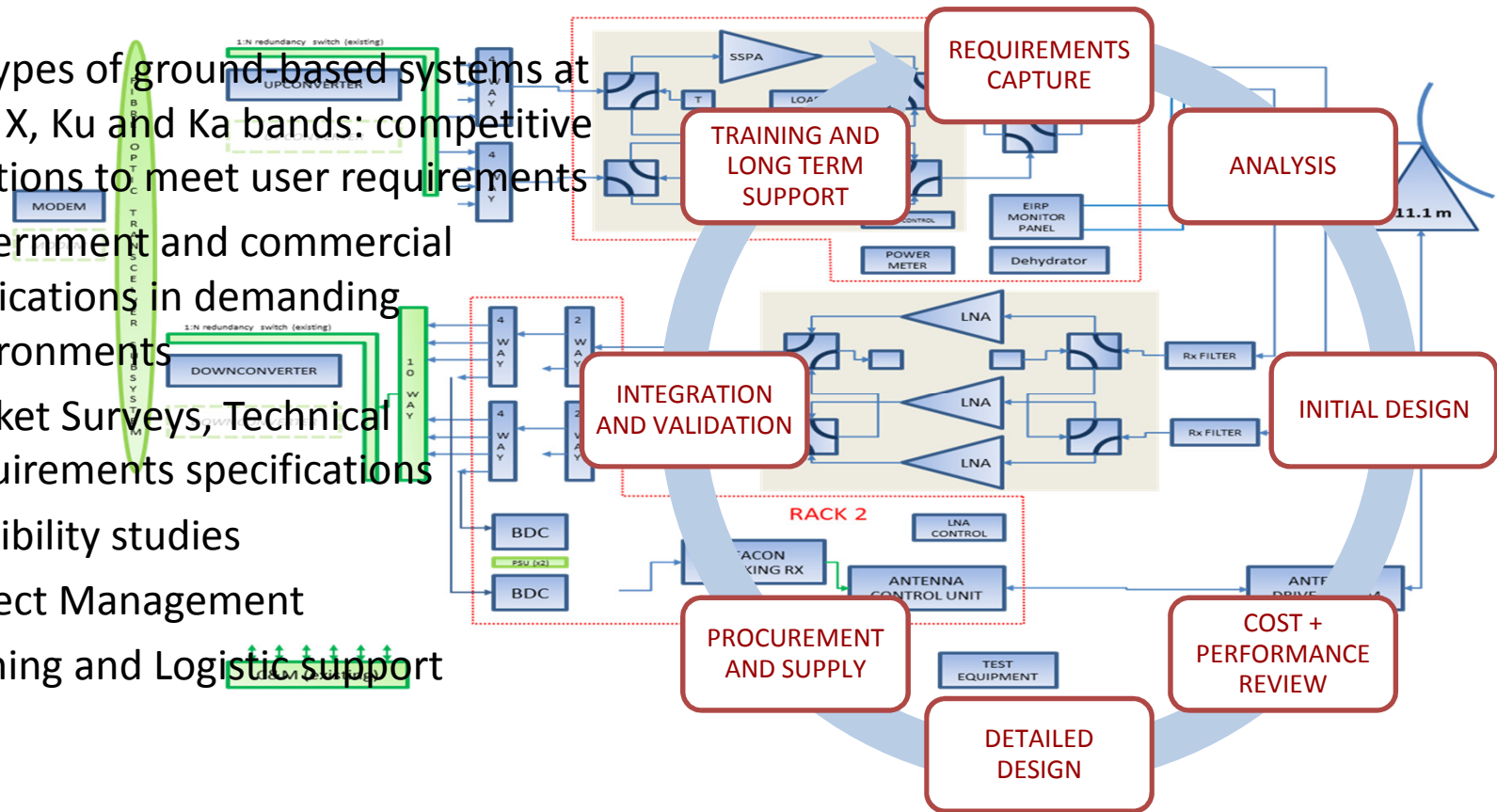
Satellite Finance Network – Elevator Pitch

Dr Mike Hart

19 March 2014

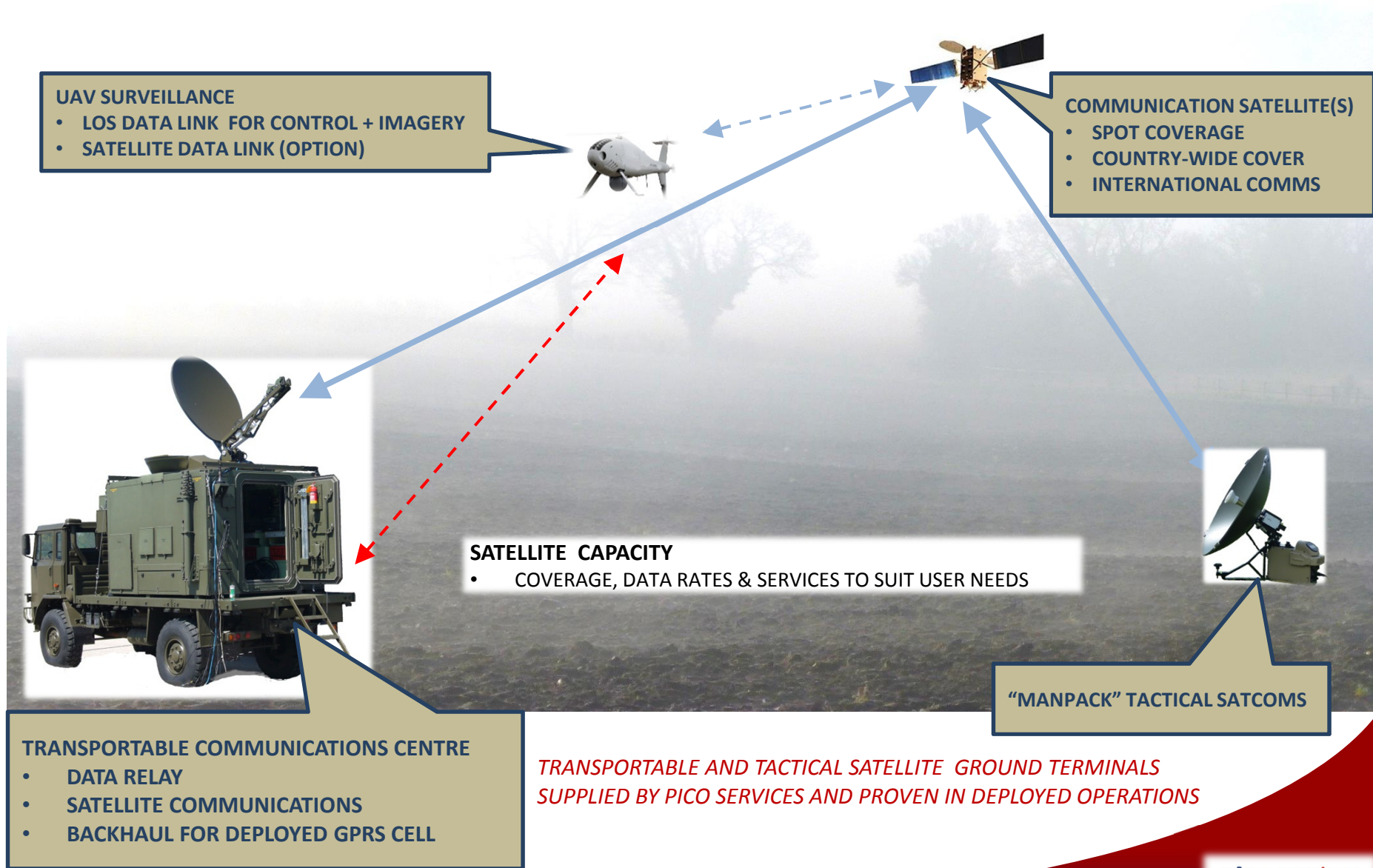
What we do – Space Systems

- All types of ground-based systems at L, C, X, Ku and Ka bands: competitive solutions to meet user requirements
- Government and commercial applications in demanding environments
- Market Surveys, Technical Requirements specifications
- Feasibility studies
- Project Management
- Training and Logistic support



- Getting data to users efficiently -

TYPICAL INTEGRATED COMMUNICATIONS DEPLOYMENT



TRANSPORTABLE AND TACTICAL SATELLITE GROUND TERMINALS SUPPLIED BY PICO SERVICES AND PROVEN IN DEPLOYED OPERATIONS

Export & Marketing Services

- In addition to exports of our own solutions in the space sector, we competitively source products from UK on behalf of our overseas clients. Some recent examples have included:
 - Railway system time / clock systems
 - Ruggedised transport cases
- We actively promote UK (space-related) solutions on behalf of UK clients through our sales network in selected countries
- Our “new projects” team looks for export opportunities – and their specific needs - just as much as domestic projects

pico services- Satcoms Summary:

- > 35 man-years experience in fixed & mobile satcom systems, in different companies & countries, for different clients
- System design; Product development; Project Management
- Independent objective assessment of proposals for clients
- Provision of terminals and solutions

Pico Services Ltd
3 Churchgates, The Wilderness
Berkhamsted
Herts HP4 2UB

Tel +44 7990 737518
info@picoservices.co.uk
www.picoservices.co.uk



Moreton Hall Associates

Founded 1982

Continuing to Serve the Space Community

Geoffrey E Hall CEO

Satellite Finance Network

March 19th, 2014

at: INMARSAT HQ

pico services

Upstream Technologies

- Technologies for Satellites & Launchers:
 - We continue to advise Space Insurers on risks
 - Our In-orbit failures database has 8000 + records
 - Our Launch anomalies database has 500 + records

 - Without good QA & PA your tech. won't fly
 - Make sure that your tech. is a good risk
 - Use Technology Readiness Levels (TRL) as guides
 - TRLs don't deal with 'showstopper' decision points

Downstream Applications

- Technologies that exploit space missions:
 - Is there a niche market for your tech.?
 - Is your tech. better than others already there?
 - Does the tech. rely partly on software?
 - Money isn't the only requirement.
 - Do you understand the project risks?
 - Right skills set is absolutely Essential

Project Management

- Most Projects Fail !
- Is there a Golden Rule? Yes – Many
- Way of Working has to change with phase
- Know when to get started; when to seek help
- Manage Risk throughout – it changes too
- Monitor Markets continuously
- Solve Problems with Lateral Thinking

Moreton Hall Associates

- RISK -

Charting Change

Steering Strategy

Defining Decisions

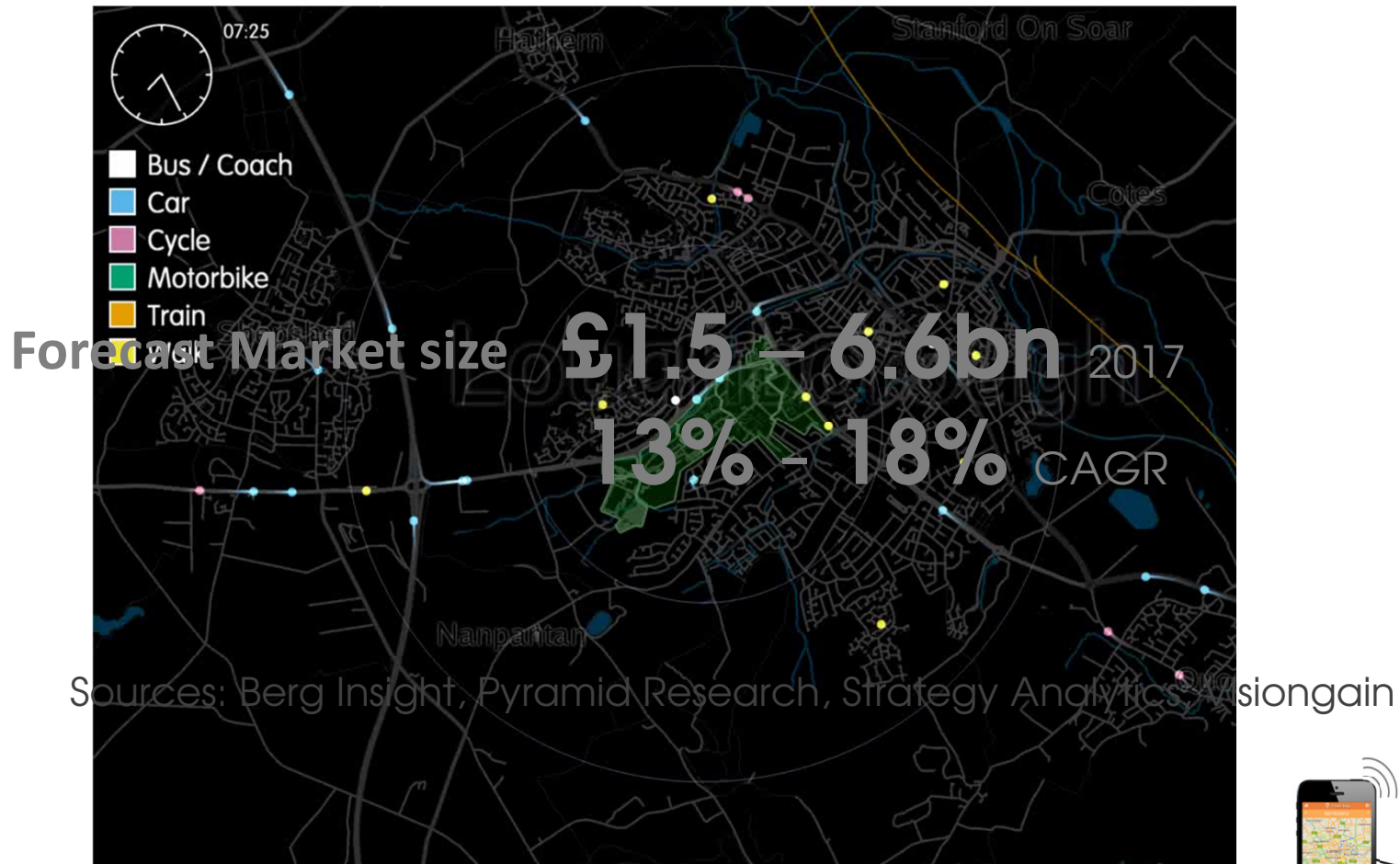
info@moreton-hall.com

+44 (0)1628 783455

THANK YOU

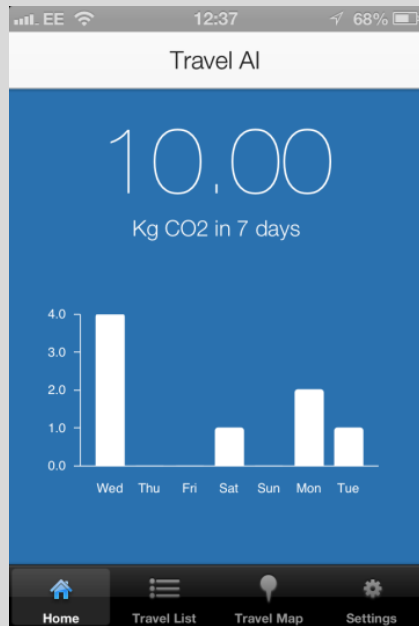


Web cookies for the real world

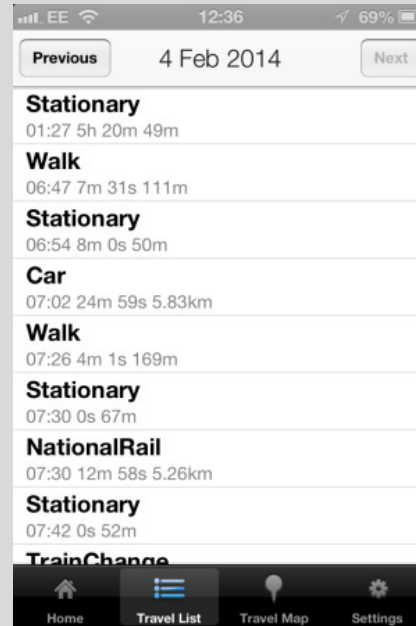




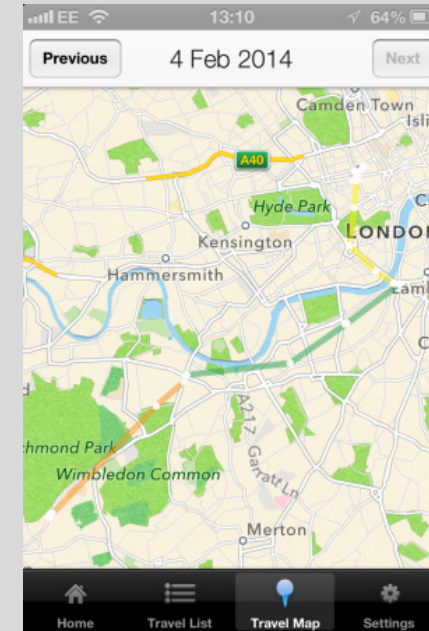
Android & Beta iOS – Hands free, all day context



Aggregate top level view



Per journey breakdown – NO location info



Per journey breakdown – WITH location info

All screenshots actual

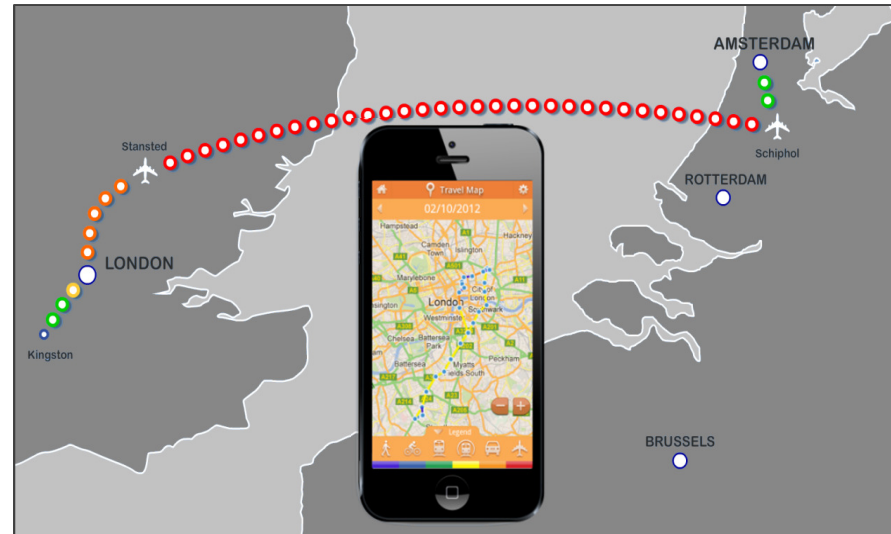
Min share  Max share

TravelAI

Our business: A platform for 3rd party developers

A drop-in solution for app developers to sense the user's travel

Existing business models



For developers:

- Provides unique context
- Saves development time
- One solution for all platforms
- Battery, memory, processor savings
- Maintenance free

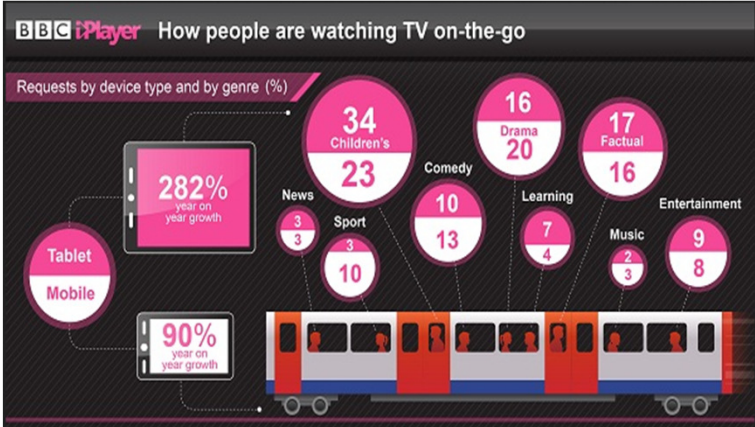


Range of uses cases

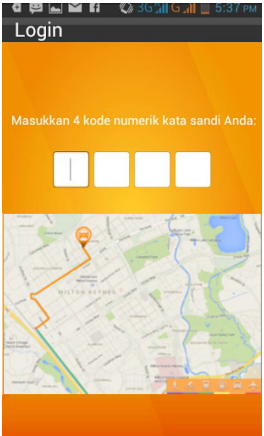
1-click expenses claims



Consumption of content



Carbon emissions



Added Security Layer



Investability

- Experienced team
- Over £1/2m invested
- Award winning IP
- Flexible IP
- Multiple biz models
- Class A Seed investors



- UK government contract
- Future Cities demonstrator
- Gateway to £1m contract



- Largest national travel audit
- Publicity in print & online
- Users, users, users

Recent activity in our space

\$37m

early-stage investments

\$1.3bn

Google acquisition of
Waze – May'13

Google/

Apple

validation

Thank you – Questions over lunch?

Next stop:
1H2015
£1.2-1.5m Series A
Attract US investors
Expand into US market



Afternoon: Investing in Space

Afternoon: Investing in Space

*Richard Peckham, Business Development
Director, Airbus Defence & Space*

IGS – The plan for growth

*Richard Peckham, Business Development
Director, Airbus Defence & Space*

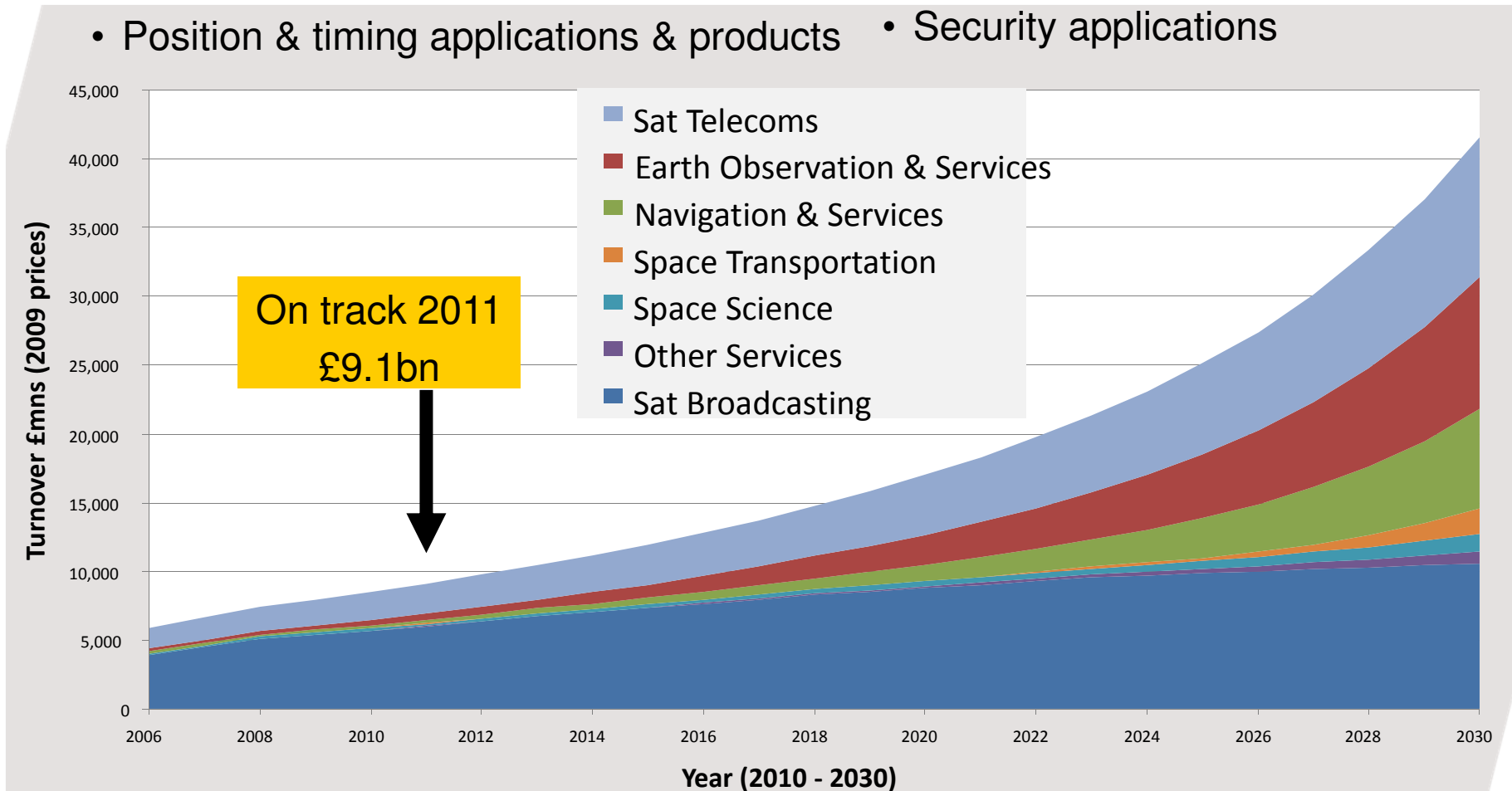
2010 Space “Innovation & Growth Strategy”

- ❑ Cross sector (industry, government, academia) project to plot a strategy to grow the sector
- ❑ Ambition to grow UK space sector from £6bn (2007 data) to £40bn by 2030 and to create 100,000 new high-skilled jobs
- ❑ 16 recommendations made, mostly towards government and most since delivered
 - Space Leadership Council established
 - Space Agency created
 - Creation of National Space Technology Programme
 - 25% increase in ESA subscription to €300M per year
 - Creation of Satellite Applications Catapult
 - Finance & regulation changes (emergence of SFN!)



IGS Growth Markets - 2010

- Satellite telecommunications
- Earth Observations and climate services
- Position & timing applications & products
- Satellite broadcasting continues as the largest sector
- Security applications



2013 IGS re-fresh Space Growth Action Plan

A refresh of the IGS was undertaken last year, resulting in the IGS 2014-2030 “Space Growth Action Plan”

- ❑ Confirmed growth targets (now £9bn to £40bn)
- ❑ Supported by SFN who will continue to support implementation
- ❑ 34 detailed recommendations made across a broad range of topics from skills and R&D to export support and regulation
- ❑ £40bn growth target elaborated as:
 - £25bn Export (from £2bn today)
 - £15bn Domestic (from £7bn today)
- ❑ Formal Government response expected imminently

2013 IGS re-fresh Space Growth Action Plan



Recommendations clearly targeted towards:

UK Space Agency

TSB

Catapult

UKspace (industry association) with SFN

UKTI

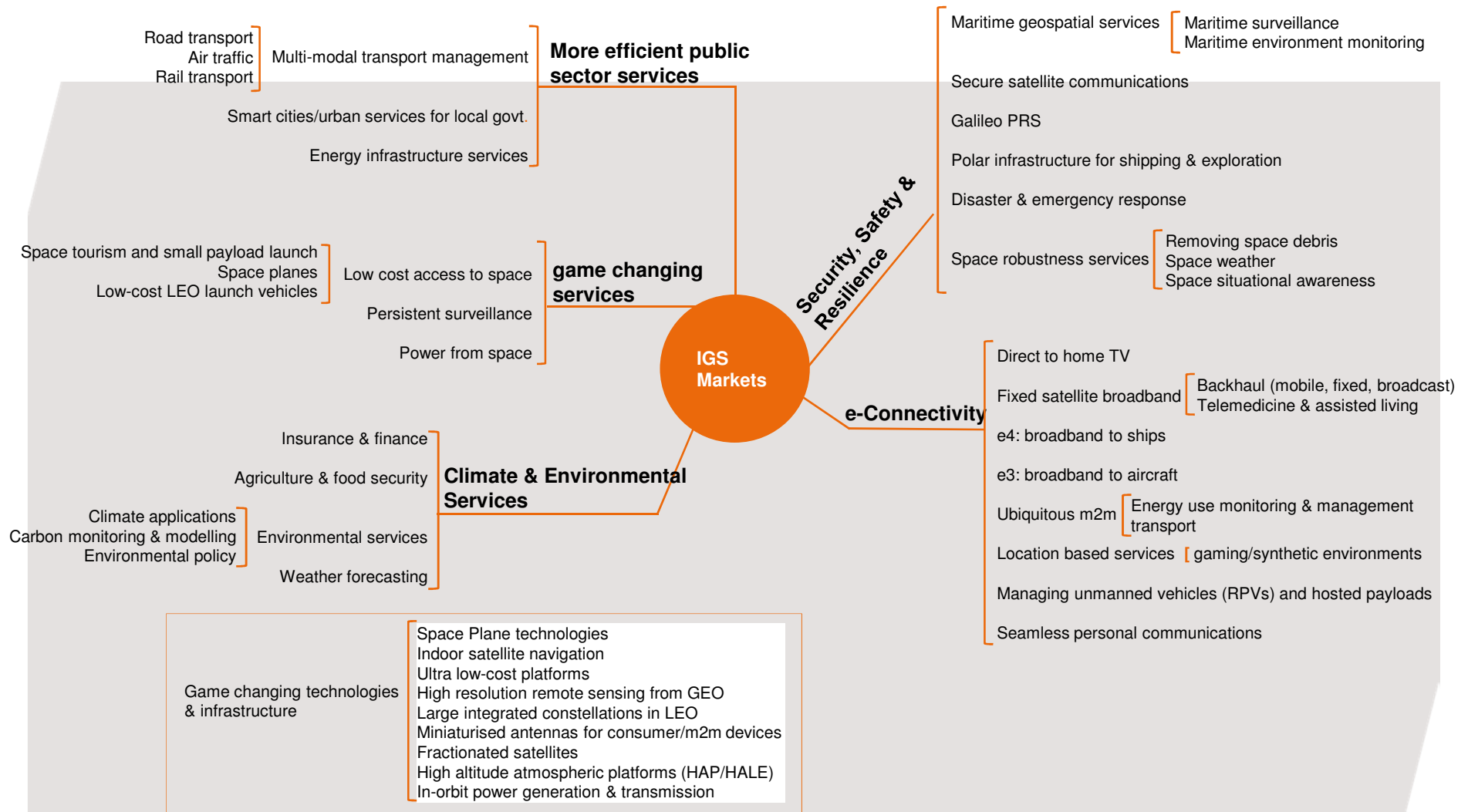
Space Leadership Council

OFCOM

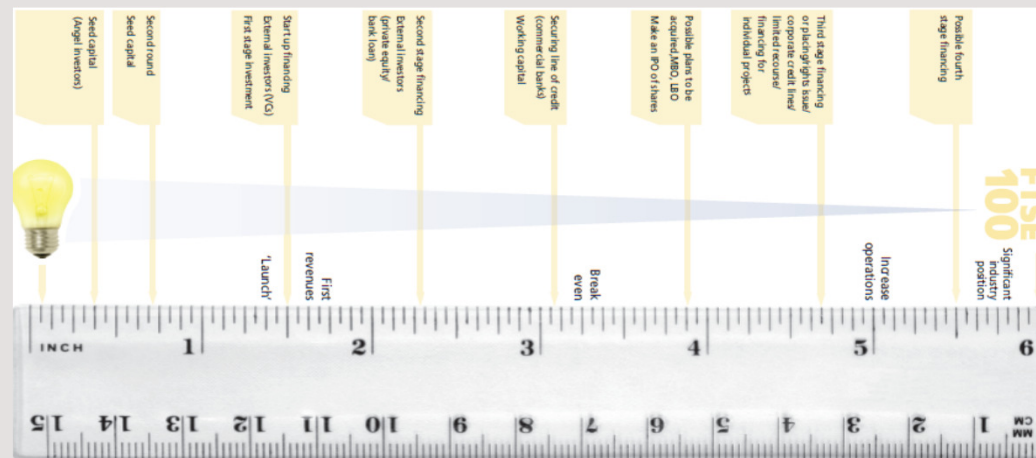
Wide-ranging recommendations:

- Developing new markets
- New R&D mechanisms and additional funding
- Regulatory improvements
- Access to finance / anchor tenancies / PPPs....
- Strategic national space programme
- Export promotion / SME growth measures
- Skills

IGS Markets - 2014



The Satellite Finance Network will support both regulatory changes to make the UK the most attractive place to undertake space business and will work to connect finance to new business ventures and innovations



Please speak to Joanne or Richard to join the SFN.

Joanne Wheeler

Partner

CMS

+44 (0) 20 7367 3723

joanne.wheeler@cms-cmck.com

Richard Peckham

Business Development Director (UK)

Astrium

+44 (0) 2392 705360

richard.peckham@astrium.eads.net



UK Export
Finance



19th March 2014

Satellite Finance Network

Paul Wills
Trade Finance and Insurance Solutions
UK Export Finance



Who we are

- UK Export Credit Agency established in 1919
- Created the private sector trade credit insurance market
- We complement, we don't compete
- 2011 – an expanded role

What we have done

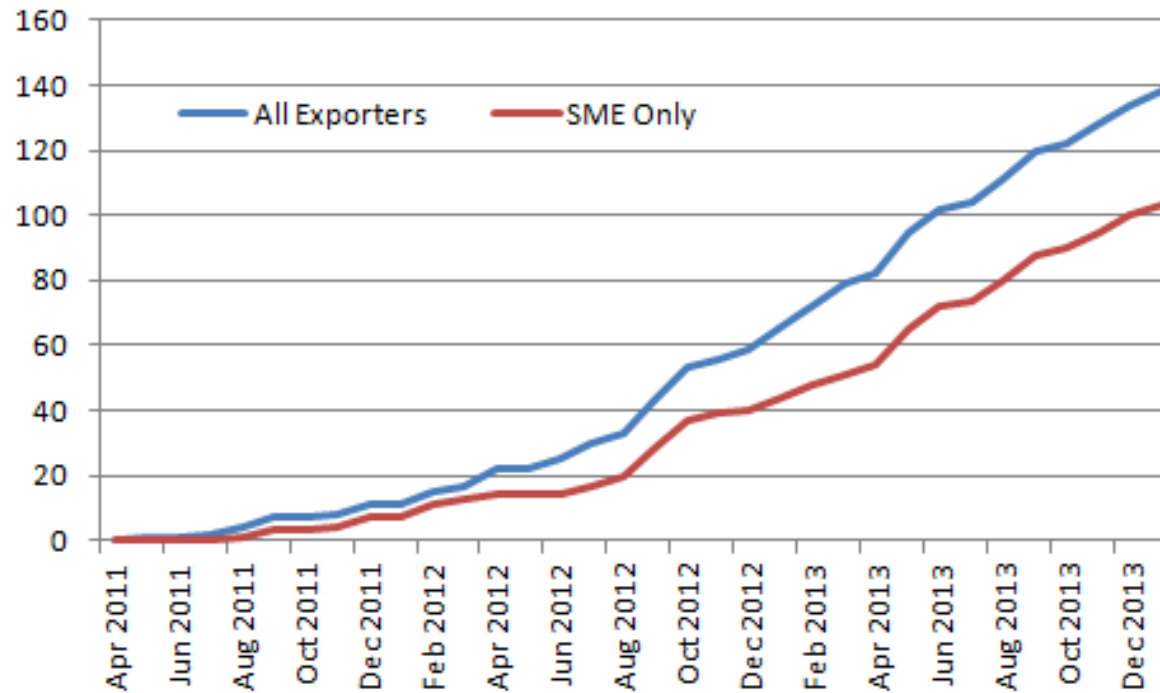


Trade Finance and Insurance Solutions Group

- Guarantees provided to banks to support trade finance
- Insurance to cover payment risk
- Impartial export finance advice



Cumulative number of exporters supported



Business Group

- Buyer and Supplier Credit Facilities
- Direct Lending
- High Value Opportunities

How to contact us

- Regional export finance advisers
<https://www.gov.uk/government/publications/uk-regional-export-finance-advisors>
- [gov.uk/uk-export-finance](https://www.gov.uk/uk-export-finance)



UK Export Finance

TAKE YOUR BUSINESS FURTHER.





UK Trade & Investment

Exporting for Business Growth

Tony Warwick - UKTI

19th March 2014





Topics to cover today

1. The benefits of exporting
 2. Barriers to international trade
 3. Market selection, where to export to
 4. Some strategy decisions
 5. UKTI support
-



The benefits to business & why we do what we do



If you become an exporter, the evidence shows that you are likely to improve your productivity by a third in your first year alone.

Mark Prisk, Minister of State for Business and Enterprise

Companies that export are 11% more likely to stay in business

On average, customers earn £100K in additional sales within 18 months after working with UKTI



What are the benefits of internationalising your business?

- Improve financial performance, and increase the resilience of revenues and profits.
- Achieve levels of growth & economies of scale not possible domestically.
- Spread business risk.
- Increase the returns on investment in R&D.
- Increase the commercial lifespan of products and services.



UKTI not only helped shape my export strategy, but really opened doors."

Parminder Kalsi, Managing Director, BBC Pharmaceutical Services





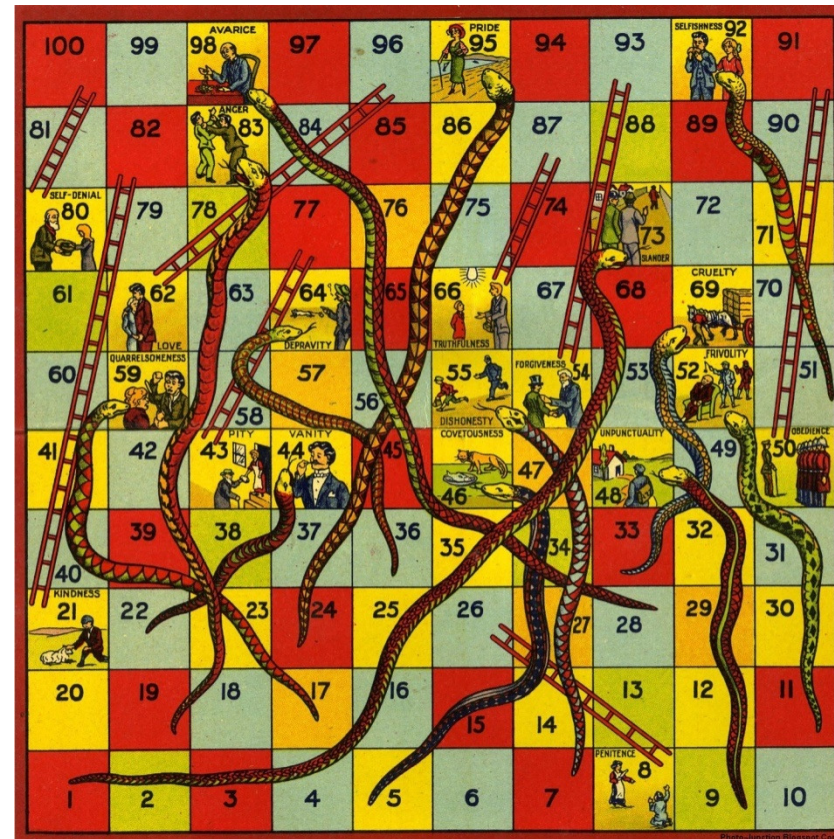
The barriers to export





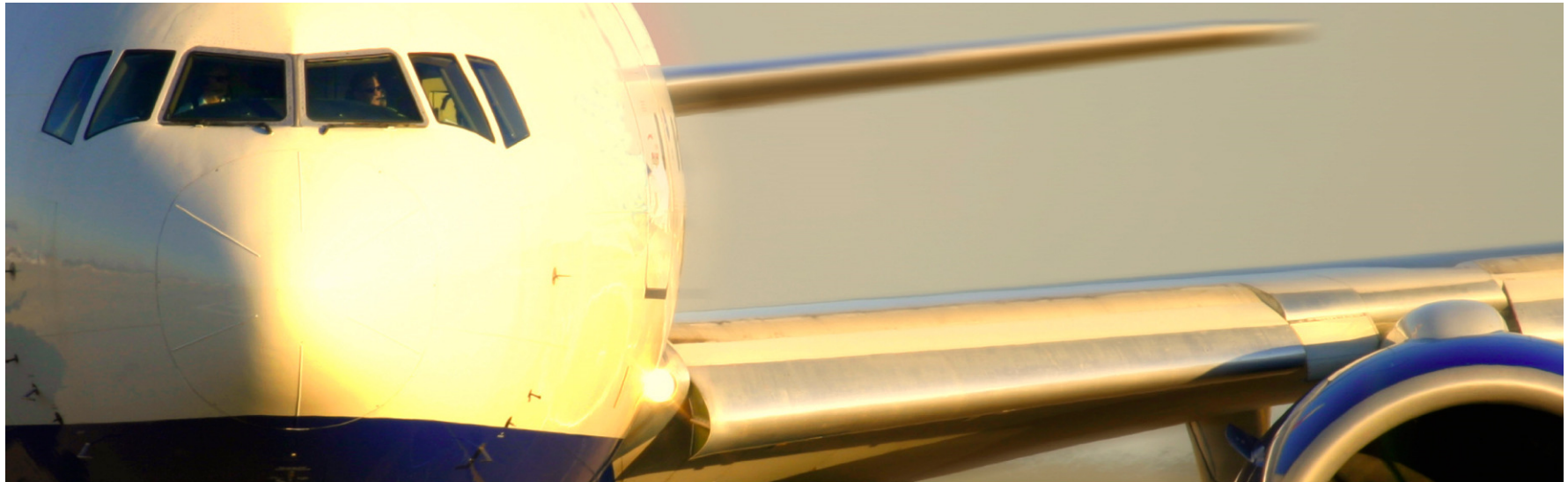
What are the typical barriers to export

- Finding customers
- Getting paid
 - Right amount
 - Right timing
- Legal risks
- Logistics
- Paperwork
- Capabilities in the business
- Capacity in the business
- Costs (cash + time)
- Communications



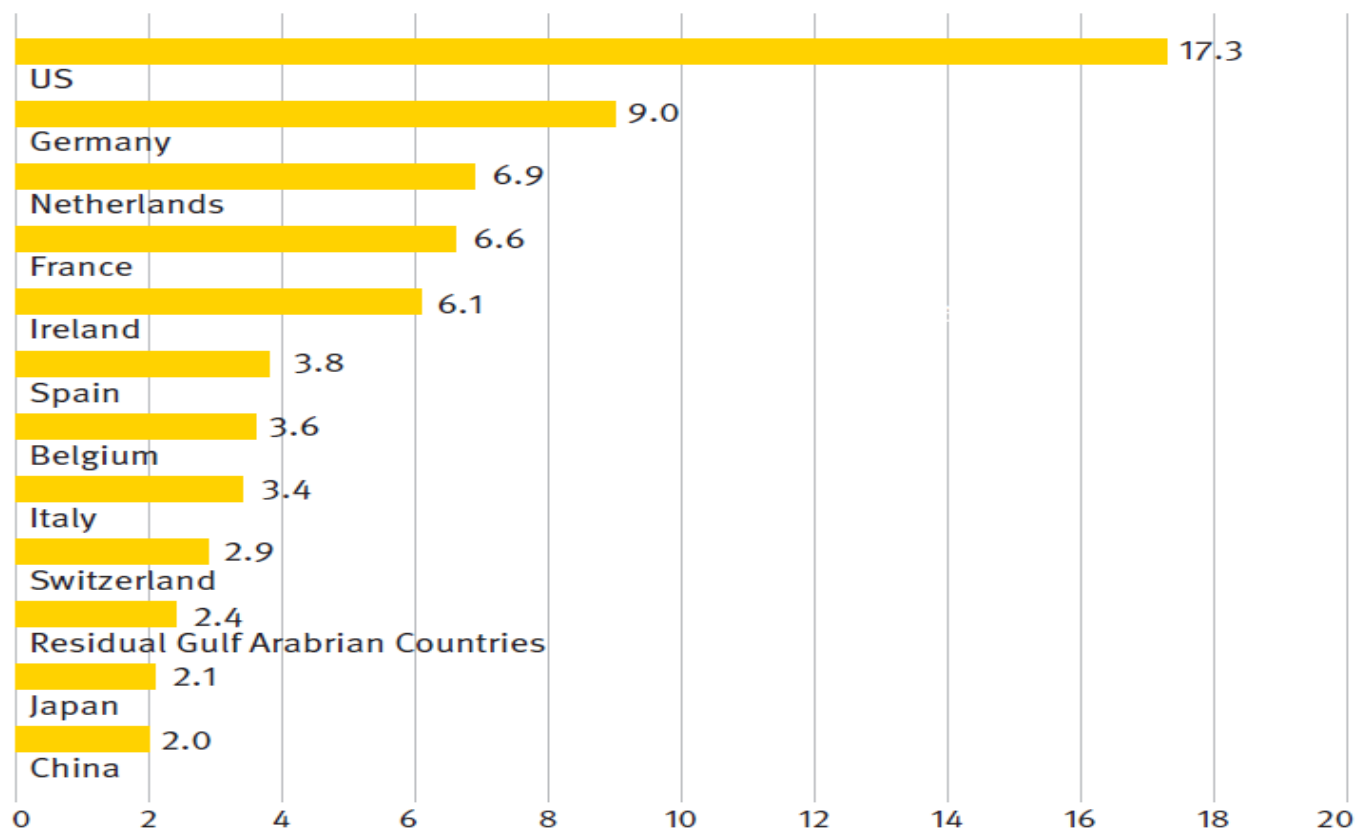


Where to export to



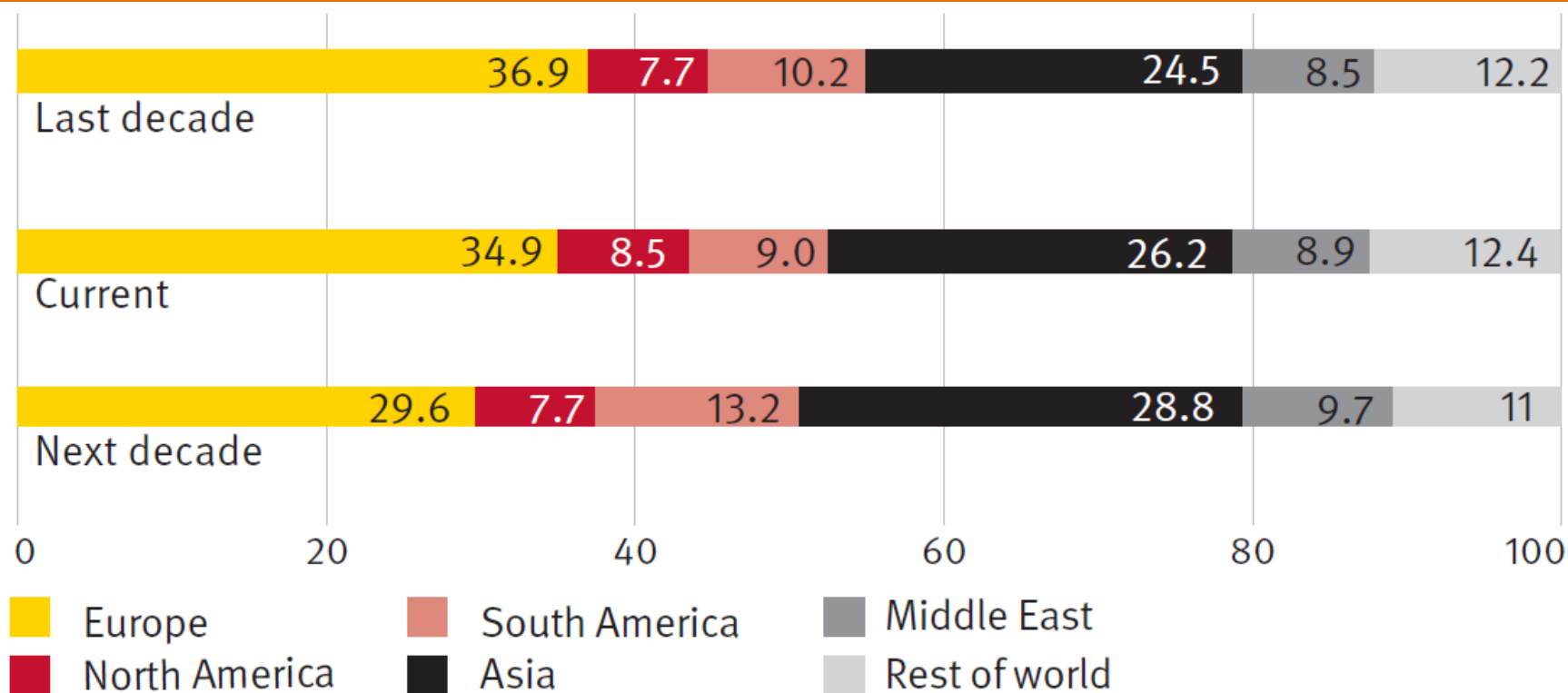


Where to export to : Current UK Export Destinations





Changing Export Market Destinations



Source: CBI sample of UK exporters



Ease of Doing Business Survey 2013

2013 Rank	Country/Region	2013 Rank	Country/Region
1	Singapore	11	Finland
2	Hong Kong	12	Saudi Arabia
3	New Zealand	13	Canada
4	United States	14	Sweden
5	Denmark	15	Australia
6	Norway	16	Georgia
7	United Kingdom	17	Thailand
8	South Korea	18	Malaysia
9	Iceland	19	Germany
10	Ireland	20	Japan

2013 Rank	Country/Region	2013 Rank	Country/Region
166	Iraq	176	Haiti
167	Lao PDR	177	Benin
168	Uzbekistan	178	Guinea-Bissau
169	Ivory Coast	179	Venezuela
170	Timor Leste	180	Congo Dem Rep
171	Burundi	181	Guinea
172	Djibouti	182	Eritrea
173	Zimbabwe	183	Congo Rep
174	Angola	185	Central African Rep
175	Niger	186	Chad

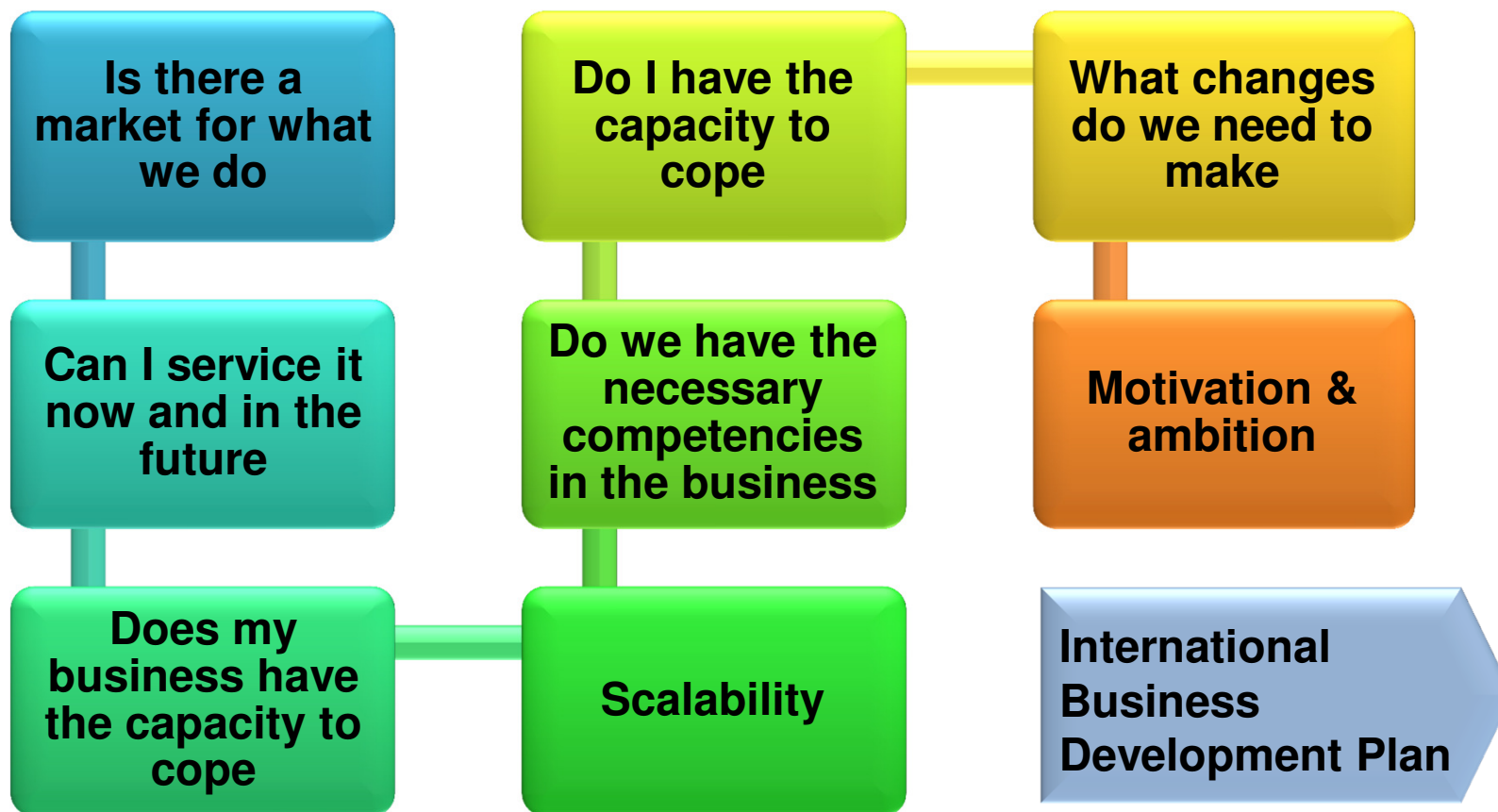


Key considerations for your business





Key considerations for businesses we work with





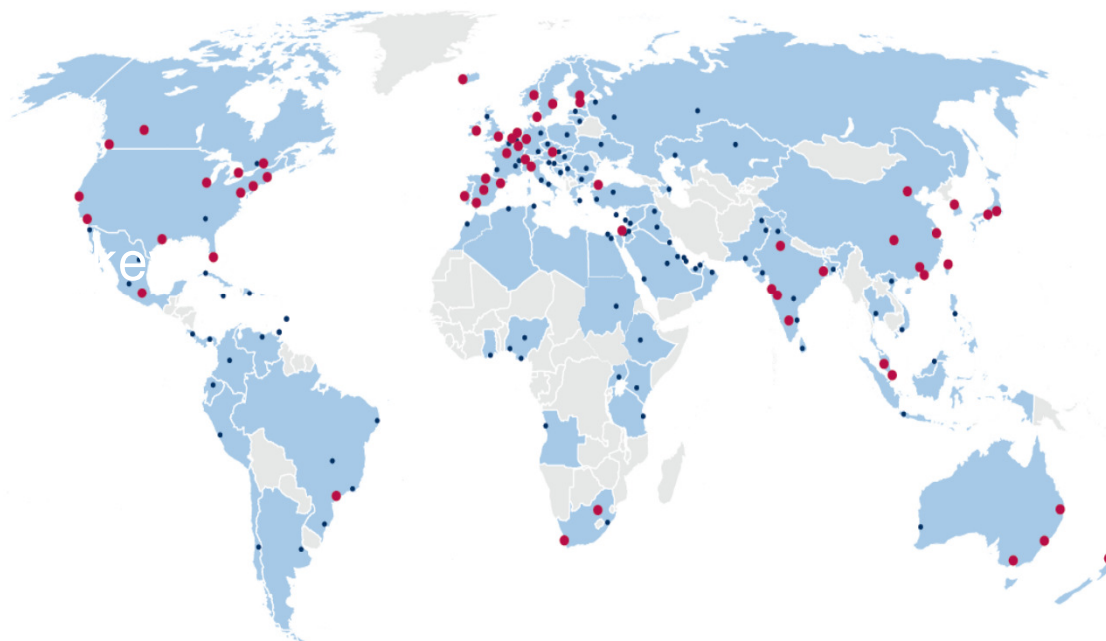
UKTI – How can we help





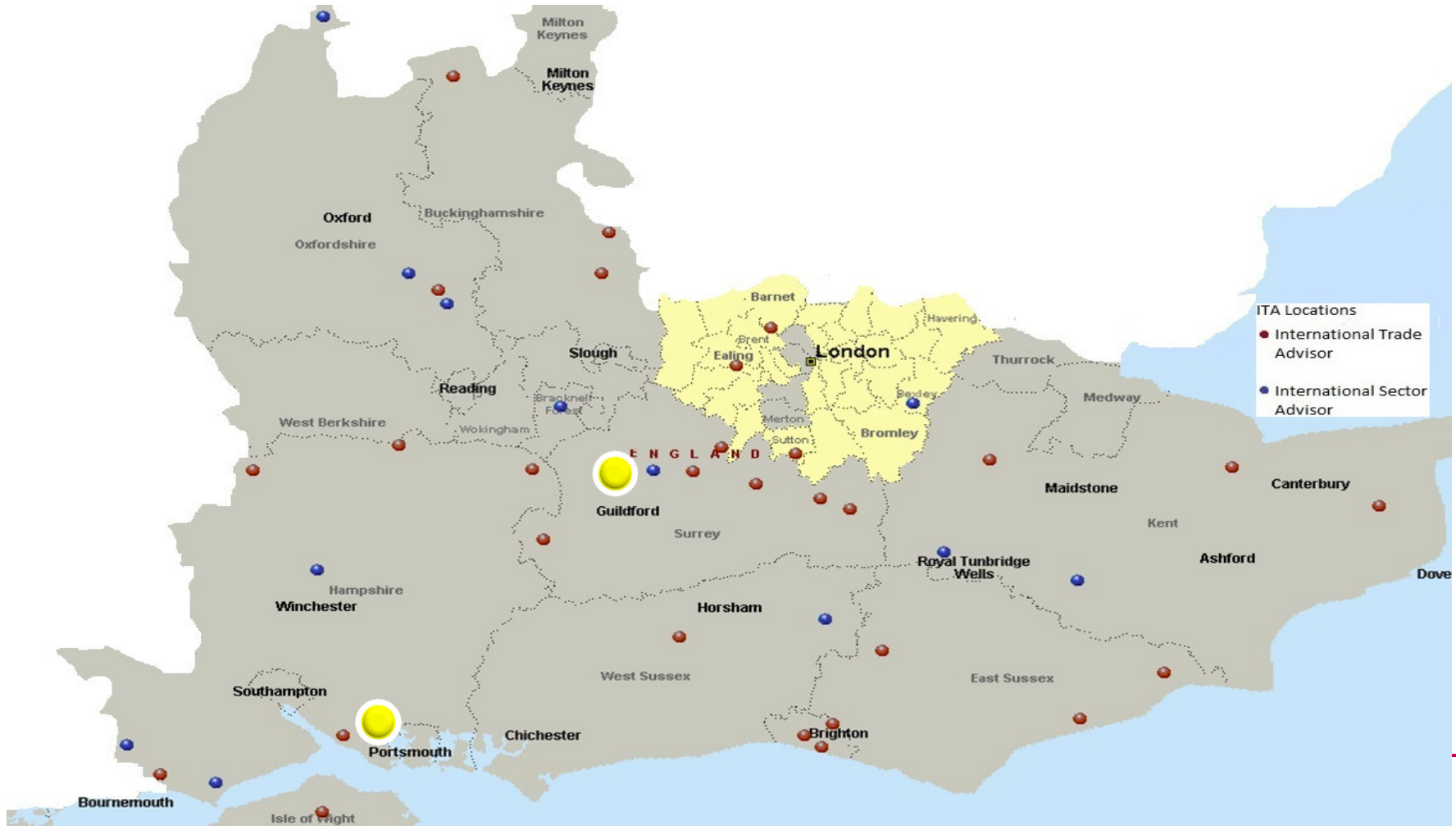
UKTI Overview

- 2,400 staff
- 1,300 overseas
- 99 UK Embassies in markets
- 400 Advisers in UK





South East International Trade Advisor Locations





UKTI Impartial advice & strategic support





UKTI trade services

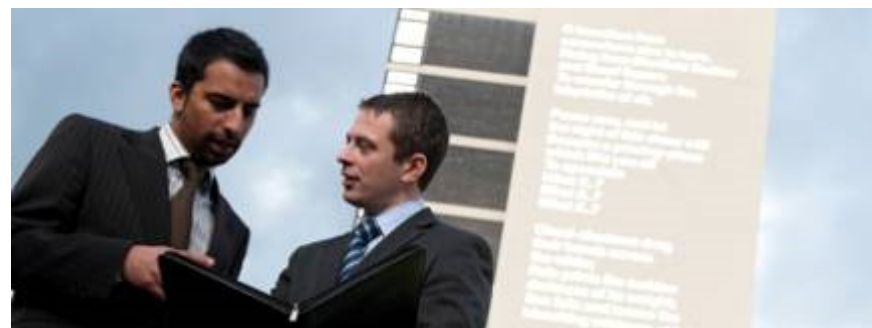
UKTI can help by:

- developing an export plan;
- Finding the right markets, and people to deal with in those markets;
- advising on grants for trade missions or overseas trade fairs;
- setting up meetings;
- and generally helping to make business happen.



UKTI really opened doors for us, and we knew we were engaging with exactly the right person at each organisation."

Gary Mawer, Founder and Chairman, UPL





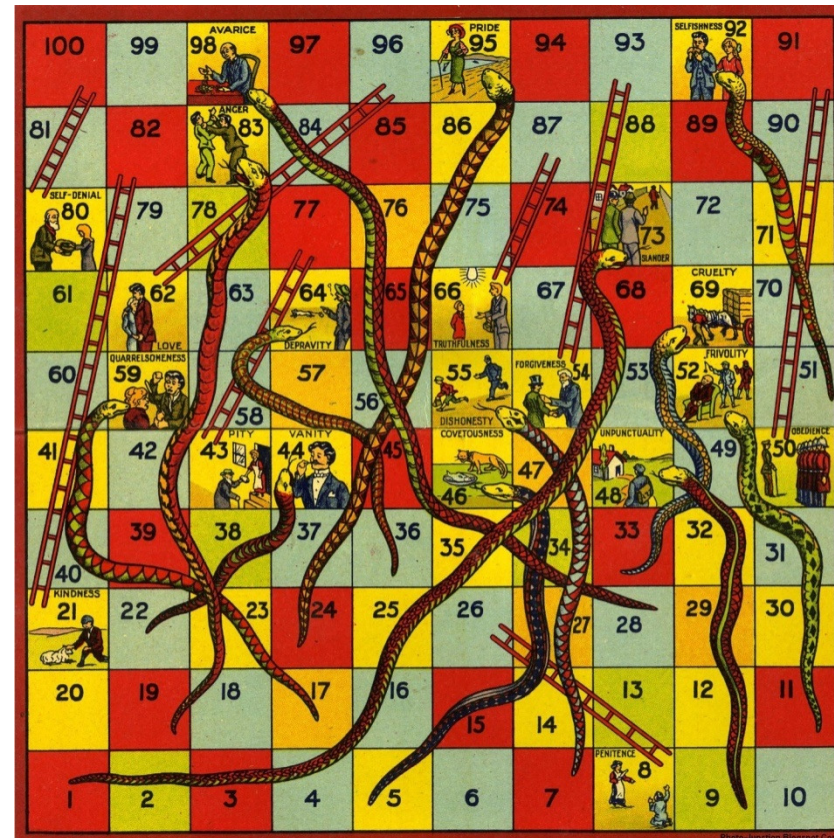
Summing up





What are the typical barriers to export

- Finding customers
- Getting paid
 - Right amount
 - Right timing
- Legal risks
- Logistics
- Paperwork
- Capabilities in the business
- Capacity in the business
- Costs (cash + time)
- Communications





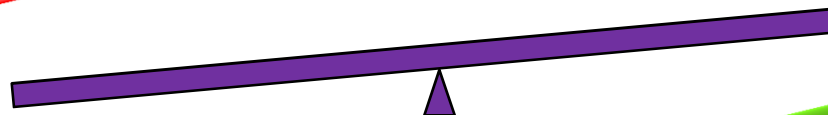
Summary of pros & cons for trading internationally

Negatives for exporting



- **Legal** - IP, liabilities
- **Financial** – Payment & margin guarantees
- **Hassle factor** – documentation, logistics
- **Communication & cultural barriers**
- **Cost to business** – people, time etc

- **Risk offsetting** (legal, payment protection)
- **Less domestic dependability**
- **Market diversification**
- **Higher margins**
- **Better ROI**



Positives for exporting



SUMMARY & CLOSE

Contacts:

Tony Warwick

tony.warwick@uktisoutheast.com

Tel 07958 056470

Customer Services Team 08452 789 600

www.ukti.gov.uk

Investing in the Space Industry

*Sam Adlen, head of Business Innovation,
Satellite Applications Catapult*

Investing in the Space Sector

19th March 2014

Markets

Game changing services

Security, safety & resilience

Climate and environmental services

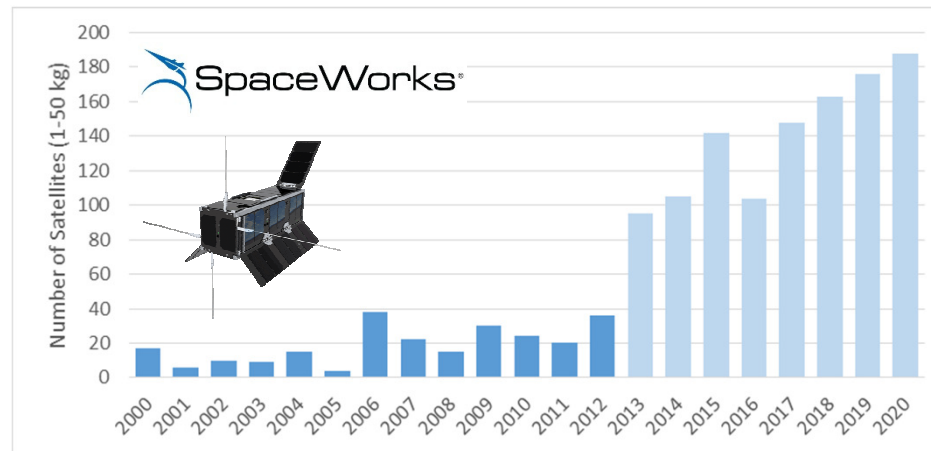
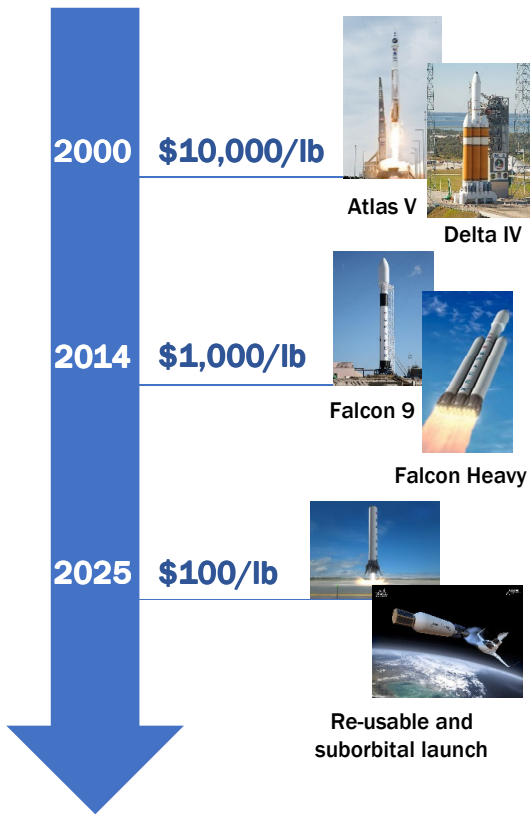
E-connectivity

More efficient public services



Market trends

Reduced launch costs, miniaturisation of technology, and standardisation are bringing the space sector within the reach of startups.



We are just now beginning to see the **disruptive role** that entrepreneurs will play in this sector.

Higher risk appetite resulting in **unprecedented space data & applications.**

SpaceWorks forecasting 1000+ nanosatellites to be launched between 2014-2020; More than 4x 2000-2012

75 nanosatellites launched in last three months (incl. 28 for Planet Labs)

NewSpace Global analysts have heard from reliable sources that Google will launch constellation of 160 satellites in near-future (up to 1600); other industry players will follow

Tipping point

Historically closed market is ripe for innovation;
we are at the front-end of an innovative new “S curve”



Incumbent Space

Mature/declining market

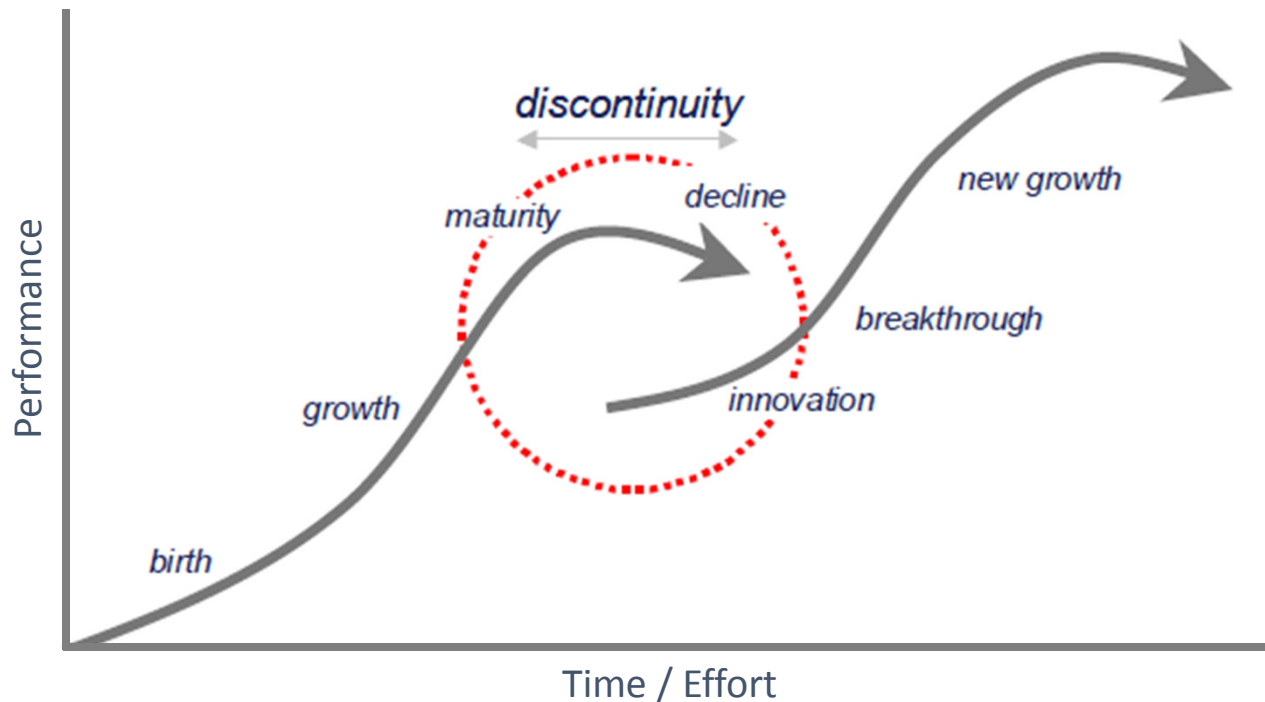
Established players, limited competition

Low-risk appetite, limited innovation

Primarily government funded/contracted

High capability, high cost

Custom product, limited reach



New Space

Increased innovation through higher risk tolerance

New entrants & business models, increased competition

Commercial solutions, focused on cost-reduction

Low-cost, data on demand; targeting new customers

Earth Observation

Underpinning new information services

Applications	Details
Optical Imagery	Up to 50cm image resolution
Radar imagery	Up to 1m resolution, Independent of Cloud Cover Wave Height Vertical Ground Movement (+/- mm)
Other	Climate and Weather Services Infrared Heat Detection Sea Surface Temperature, Ocean Colour, Land Cover, Sea Level, Sea Ice, Fire, Glaciers, Greenhouse Gases, Ozone, Aerosol, Clouds, Wind Speed Underground Water Table, Soil Moisture, Ocean Salinity, Earth's Magnetic Field, Space Weather (Solar Storms)

Finance

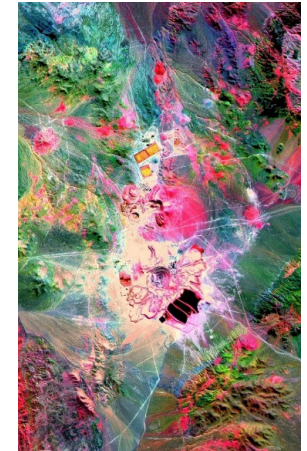
Agriculture

Environment

Cities

Transport

Mass Market



EO Data © DigitalGlobe, 2011

Earth Observation



Market

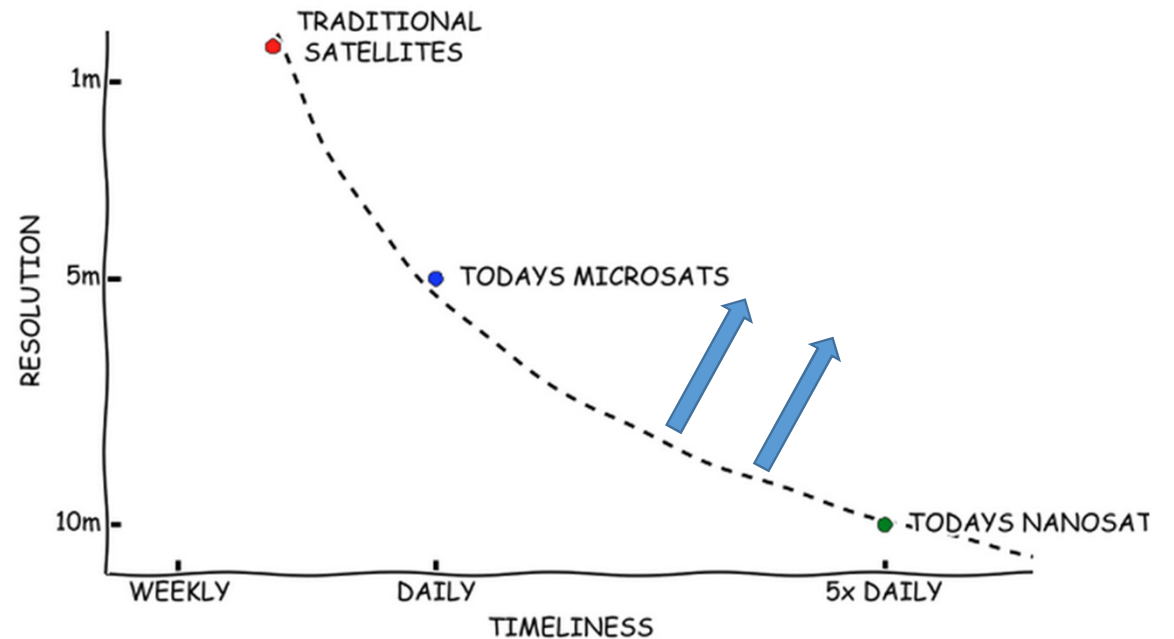
- Optical at up to 50cm image resolution
- Pricing targeted at high-end users
- Fragmented value-adding sector
- **Lack of timeliness and access to data**

Trends

- Smaller, more responsive constellations
- Push toward mass-market offerings
- Real time, continuous data



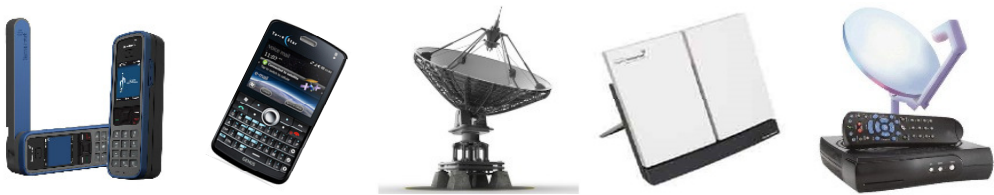
Resolves global business problems caused by environmental change



Opportunities

- Smaller, low-cost constellations
- Persistent HD video from space
- Ground stations to support data downlink
- Integration with information technology
- Consolidation of value-adding sector

Communications



Market

- Mature, commercial, dominated by broadcast
- Strengths in remote areas, resilience
- **Expensive** vs. terrestrial solutions

Trends

- Larger, more capable satellites working w/ smaller, low-cost constellations
- Machine to machine comms (M2M)
- Integration w/ terrestrial services, 5G

Opportunities

- Developing nations w/ out infrastructure
- HD penetration in developed markets
- M2M and terrestrial integration



Mobile satcomms hub connecting medical equip. in remote locations

Navigation



Market

- Successful mass-market platform adoption through mobile phones
- **Most signals are free**

Trends

- Improved redundancy
- Premium services w/ higher resiliency and accuracy
- Improved trust, accuracy, resilience and integration with complementary solutions

Opportunities

- Autonomous vehicles
- Security and accreditation



iGeolise turns distance into time with customers like Bing maps, dating sites, property agents, tourism, etc.



Tracking solutions for elderly and offenders.

Private investment

Over **£200 million** raised by early-stage space companies in 2013

Crowd



Angels



Venture Capital



Private Equity



Public Offering



Acquisition



Opportunity

A diverse portfolio



Time/Risk

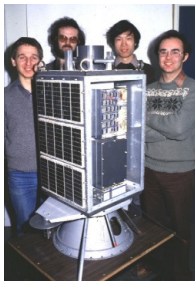
Space offers a range of investment opportunity, from disruptive innovations in existing markets to radical innovation and new markets. And it's not all rocket science: SpaceX, for example, is not using any new technology, but is disrupting the launch market by applying basic business principles, focussing on cost.

Surrey Satellite Technologies

Case study



SSTL has been delivering small satellite missions for over 25 years. They offer flexible solutions for payloads under 1,000 kg including: design, build, and operations.



Pioneered COTS in the late 1970's



Designed & built Disaster Monitoring Constellation in 2002



Surrey University spinout, sold 10% to SpaceX in 2005

£50 million

Acquired by Astrium (Airbus) in 2008 for £50M



£92M turnover in 2011, 450 employees

SSTL has been delivering small satellite missions longer than anyone else in the World, giving them the experience to justify their reputation as the World's premier provider of operational and commercial satellite programmes.

Clyde Space

Case study



Clyde Space is a World-leading CubeSat vendor and pioneer of the CubeSat Shop, where you can buy a satellite using your credit card.



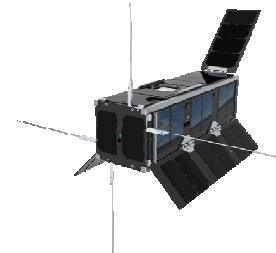
**Founded in 2005 w/
money from family
and leveraged
mortgage**



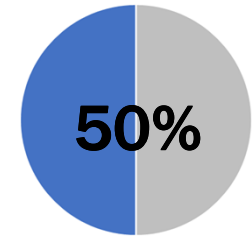
**Primary supplier of
professional CubeSat
components, systems**

**£1
million**

**In 2011, received
investment from two
Scottish VCs**



**Designed & built
UKube-1, UKSA's first
CubeSat mission**



**Of the 75 CubeSats
recently launched,
50% powered by Clyde
Space**

Clyde Space is named after the River Clyde, the main river running through Glasgow. At one point in the past, 25% of all the World's ships were made on River Clyde; in the future, perhaps the Clyde will be equally successful with spaceships.

Geospatial Insight

Case study



Geospatial Insight provides business intelligence solutions utilising satellite derived data along with other proprietary information to a range of clients



Founded in 2012 by team of highly experienced experts



Developed range of services for financial services and corporate clients



In 2013, featured in the financial times



Supported by the Satellite Applications Catapult




Currently seeking investment to fund an expansion

Geospatial Insight are utilising satellite imagery to create products and services to meet real customer needs across a variety of sectors.

Investing in Space

The Virgin Galactic Story

Will Whitehorn, Former President of Virgin Galactic and Chairman of Speed Communications and The Transport Systems Catapult



**“Houston, we’ve had
a problem...”**

**Is Space an investment
opportunity or the final
frontier?**

X 15 Development programme 1960s



1927 – The Whitehorn Fiat Prototype



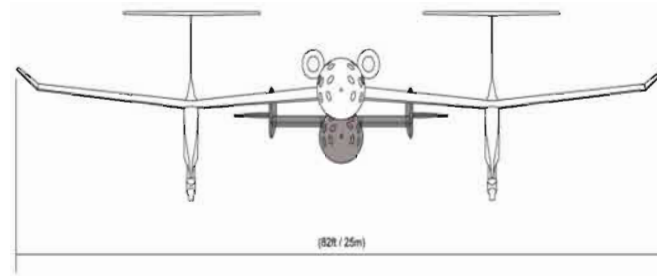
70 years later – the commercial version



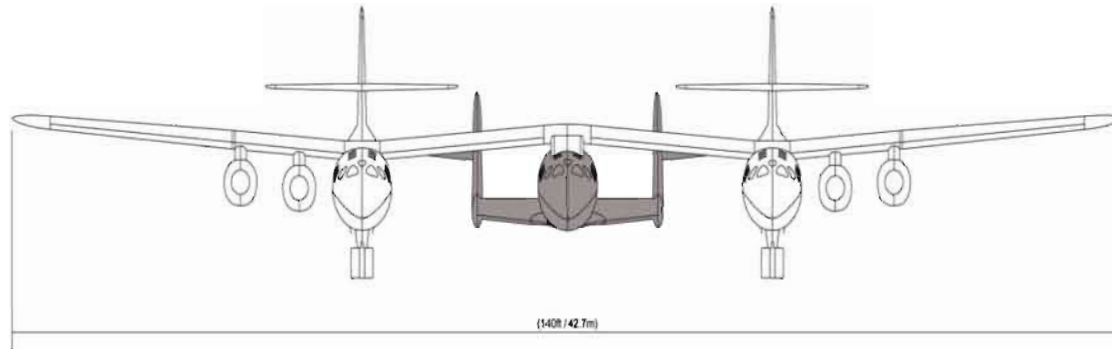




SCALE COMPARISON



WHITEKNIGHT/SPACESHIPONE



VIRGINMOTHERSHIP EVE/SPACESHIP TWO



And having paid \$200,000 they are all happy customers with their own social media site...Spacebook!

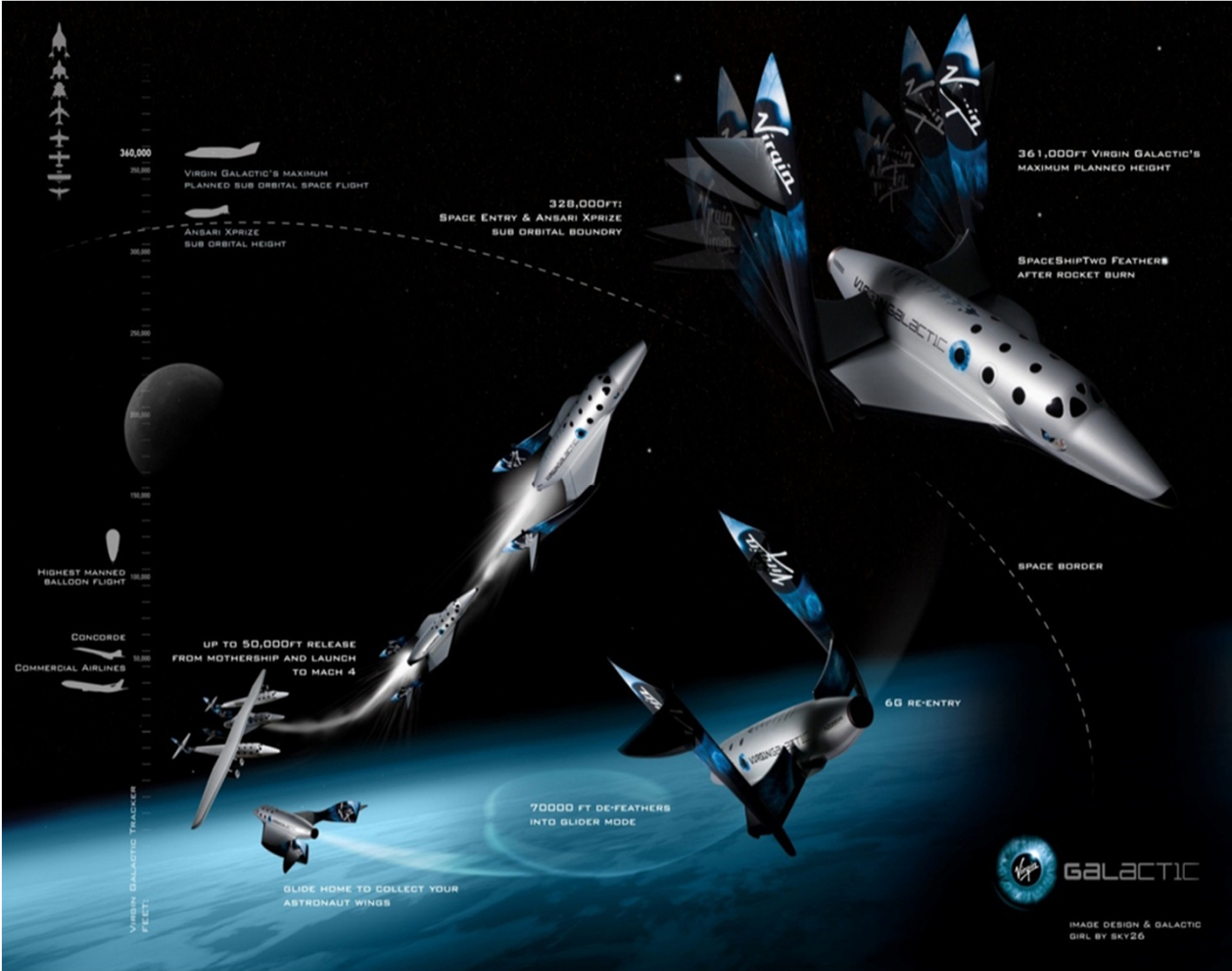




**Carbon Composites Are The Future Of Aviation,
Automotive, Rail...in fact many products and maybe one
day nanocarbon robots inside our bodies!**



Virgin Galactic: An Investment Opportunity



“It’s very big Burt!”



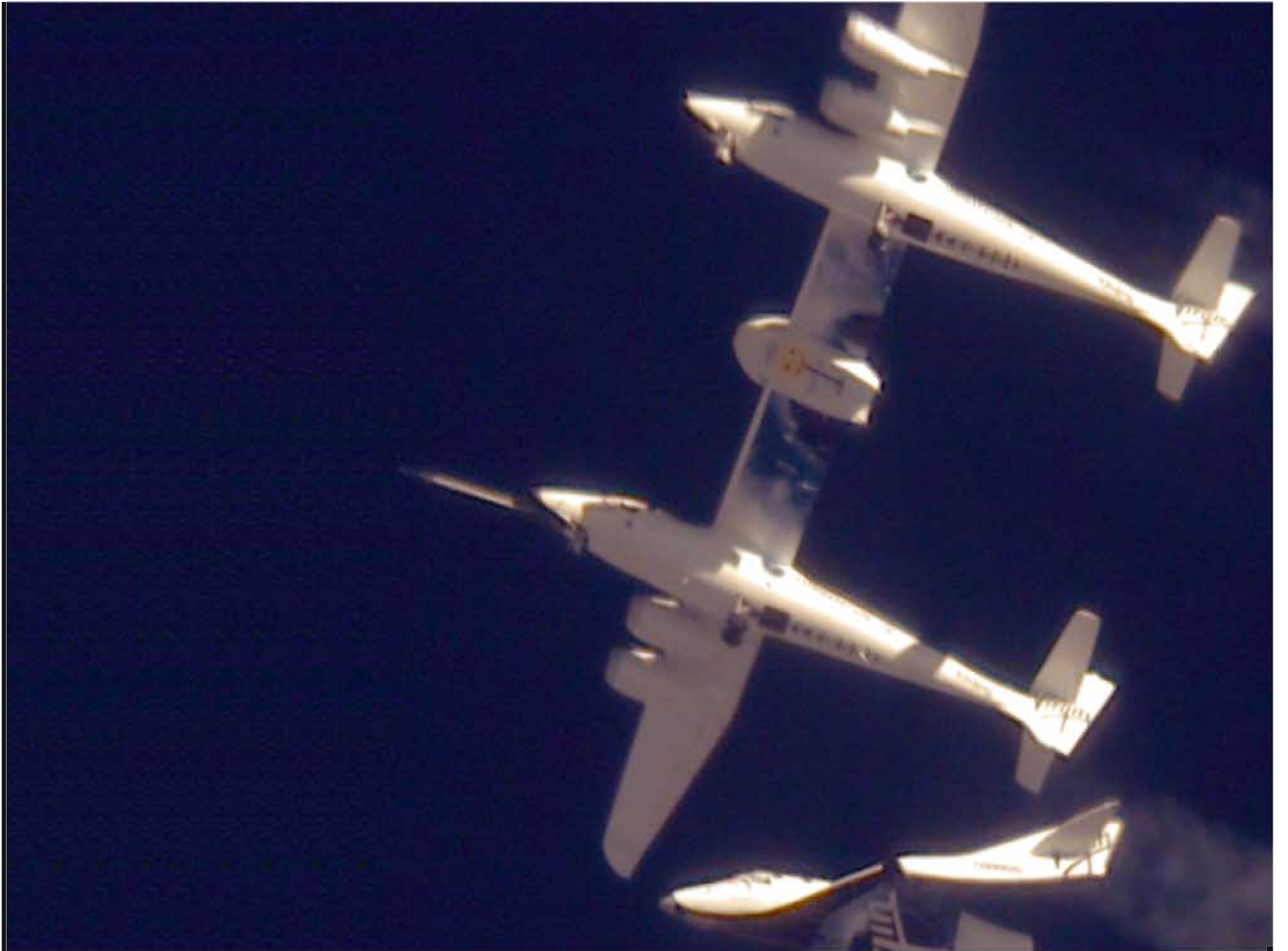
Test flights underway!





“Where’s the ! * ? * logo ?”







Spaceport opened 2012







VIRGIN GALACTIC
space tours



VIRGIN GALACTIC
science services



VIRGIN GALACTIC
cargo



VIRGIN GALACTIC
world travel

Virgin Galactic – A Team Effort Kelly's Rules Rock!



moving into licensed spaceflight





Coffee Break

Sponsored by Access Partnership

Finance Panel Discussion

*Chairmen – Nick Flitterman, Head of Telecoms, Portland
Advisers*

and

John Aldred, Relationship Director, Barclays

Panel:

Marcus Plumley, Director, Project and Export Finance, HSBC

Mark White, Investment Director, Midven

Mark Boggett, Managing Partner, Seraphim Capital

Jean Miller, CEO, Investing Zone

John Aldred, Relationship Director, Barclays

Closing Remarks

Rupert Pearce, CEO, Inmarsat



Trade Show and Reception

Sponsored by JPP and Ashby House