



**TC02963**

**Appeal number: TC/2011/08334**

*Common Customs Tariff – Tariff classification – Combined Nomenclature – modular data centre with integrated sensors – designed to house multiple servers in ideal conditions – constant monitoring of atmosphere – information fed to a computer housed in the data centre which is continually monitored from outside – system designed to be failsafe-whether appropriate to Headings 8471 and 8473 – ‘Automatic data processing machines and units thereof’ and ‘Parts and accessories of the machines of heading 8471’ – or to Heading 9406 – ‘Prefabricated buildings’*

**FIRST-TIER TRIBUNAL  
TAX CHAMBER**

**BLADEROOM GROUP LIMITED**

**Appellant**

**- and -**

**THE COMMISSIONERS FOR HER MAJESTY’S  
REVENUE & CUSTOMS**

**Respondents**

**TRIBUNAL: JUDGE J C GORT  
MRS E BRIDGE**

**Sitting in London between 8<sup>th</sup> and 10<sup>th</sup> April 2013**

**Mr Michael Joy, Employed Counsel, appeared on behalf of the Appellant**

**Mr Simon Pritchard of Counsel, instructed by the Solicitor’s Office to HM Revenue and Customs, for the Respondents**

## DECISION

1. The appeal is against a decision of the Commissioners dated 28 July 2011 to  
5 classify the Appellant's BladeRoom product ("the BladeRoom") under Combined  
Nomenclature Code 94.06.0038 for Binding Tariff Information ("BTI") purposes.  
That decision was upheld on review on 13 September 2011.

2. In its grounds of appeal dated 29 October 2011 the Appellant contends, *inter  
alia*, that the decision is wrong and that:

10 "The unit's essential characteristic is to function as an integral part of a  
very large computing system. Headings 8471 or 8473 are considered  
far more appropriate than 9406. HMRC's view that it has been  
"designed" to house servers is consistent with a classification under  
8473."

15 3. The Appellant is a company specialising in the provision of factory-built  
structures designed to house computer systems. Its clients range from large blue chip  
companies to public organisations and military organisations.

4. The BTI appealed against describes the BladeRoom as follows:-

20 "Modular data centre. The data centre breaks down to 10  
interdependent sections or modules when being shipped. Each section  
relies on the remaining sections in order to operate. It has integrated  
sensors embedded within it which constantly and precisely monitor  
digital and physical signals from the information technology (IT)  
infrastructure including server load, power draw, internal and external  
25 air temperature, pressure and humidity. An automatic controlled array  
of fans, cooling coils, ducts, intelligent valves, filters and doors etc  
create a "corridor" of cool air which is directed through the internal  
'IT' infrastructure as required. Heat produced by the servers is  
conducted away or fed back into the system as determined by the  
30 automatic control programme. Service technicians are able to access  
the equipment in the data centre by using spaces referred to as "cold  
aisles". Servers controlling this system are present at the point of  
shipping and, usually, the racks (in this case up to 195), however, the  
networked servers required by the customer would not be present. This  
35 data centre is structured from, mainly, steel, the dimensions of: section  
or module 15m long by 4.5m wide by 3.7m high. The assembled data  
centre would be 15m by 3.7m high by 45m long."

5. The Appellant in its grounds of appeal describes the BladeRoom as essentially a  
40 large box packed with advanced technology and having the following objective  
characteristics:

- (1) It has four sides, a bottom and a top;

- (2) It requires a power connection and a water connection although these are not for human benefit – for example the water is only used in the adiabatic cooling zone;
- (3) It rests on its own weight;
- 5 (4) It is not permanently fixed i.e. the cabling to a unit can be easily disconnected so that it may be re-deployed at another site;
- (5) It can be situated underground, within a building, on top of a building or outside on its own – a unit could be suspended in the air and still perform its function;
- 10 (6) A BladeRoom unit is not designed for humans to use or occupy:
- (i) There are no windows;
  - (ii) There are no work desks;
  - (iii) There are no toilets, sinks or other such amenities;
  - (iv) There are no relaxation areas;

15 (v) Human intrusion can be potentially damaging – it significantly increases the chances of dust or other contaminants entering the system;

  - (vi) The fire suppression system employed is “Argonite”. When smoke is detected this system releases a mixture of Argon and Nitrogen under pressure that forces air out of the unit until there is not enough oxygen for combustion to continue. Whilst not unsafe for humans it is not generally recommended for situations where humans are present. It is an expensive solution employed to protect the extremely sensitive technology that would be ruined by a water or powder based system.
- 20
- 25 (7) It performs its function without any human presence;
- (8) It is monitored remotely;
- (9) The only time humans are required to enter a unit is for maintenance purposes – the unit has access door(s) to allow this to happen but it is for this same purpose that access panels are built into houses or a desk-top. The reasons for facilitating access to the internal workings in each case are the same – it is only the scale that is different;
- 30
- (10) The whole unit is integral. If you took away any part of a BladeRoom (including part of its exterior shield) it would lose integrity and cease to function.
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## **Law on classification**

- (1) *The Community Customs Code*

6. Council Regulation (EEC) No. 2913/92 of 12 October 1992 establishes the Community Customs Code (“the Code”) at the material time provided for an EU-wide system of rules governing *inter alia* goods imported from third countries. Regulation (EC) No. 450/2008 of the European Parliament and of the Council of 23 April 2008 laying down the Community Customs Code (Modernised Customs Code) has now replaced this instrument. But the new Modernised Customs Code was not in force at the material time for the purposes of this appeal. Reference to the Code should be read accordingly.

7. Article 20 of the Code provides for the establishment of a Customs Tariff which in turn provides for certain customs duties to be applied to the importation of goods falling within a given nomenclature. Article 20(3) sets out the facts and matters which comprise the Customs Tariff. Article 20(6) states that:

“The tariff classification of goods shall be the determination, according to the rules in force, of –

(a) the subheading of the combined nomenclature or the subheading of any other nomenclature referred to in paragraph 3(b);

(b) the subheading of any other nomenclature which is wholly or partly based on the combined nomenclature or which adds any subdivisions to it, and which is established by Community provisions governing specific fields with a view to the application of measures other than tariff measures relating to trade in goods, under which the aforesaid goods are to be classified.”

(2) *The Tariff Regulation*

8. The proper classification of goods entering the European Union is governed by the provisions of Council Regulation (EEC) No. 2658/87 of 23 July 1987 (“the Tariff Regulation”). Annex 1 to that Regulation sets out the Combined Nomenclature (“CN”). The Annex is amended each year with effect from 1 January. The CN provides a systematic classification of all goods in international trade and sets out the duty payable in relation to each category of goods.

9. Article 1(2) of the Tariff Regulations states that the CN shall comprise:

17.1 The World Customs Organisation’s Harmonised System laid down in the International Convention on the harmonised Commodity Description and Coding System, 1983 to which the Community is a party;

17.2 Community sub-divisions to that nomenclature, referred to as CN subheadings;

17.3 Preliminary provisions, additional section or chapter notes and footnotes relating to CN subheadings.

*General Rules for interpretation*

10. The General Rules for the interpretation of the Combined Nomenclature (“GIRs”) are contained in Section 1 of the Annex to the Tariff Regulation published

in October each year. They set out guidelines for the interpretation of the tariff. Insofar as is presently material, the GIRs provide as follows:

“Classification of goods in the Combined Nomenclature shall be governed by the following principles:

- 5           1.    The title of sections, chapters and sub-chapters are provided for ease of reference only; for legal purposes, classification shall be determined according to the terms of the headings and any relative section or chapter notes and, provided such headings or notes do not otherwise require, according to the following provisions.
  
- 10          2(a) Any reference in a heading to an article shall be taken to include a reference to that article incomplete or unfinished, provided that, as presented, the incomplete or unfinished article has the essential character of the complete or finished article. It shall also be taken to include a  
15           reference to that article complete or finished (or falling to be classified as complete or finished by virtue of this rule), presented unassembled or disassembled.
  
- ...
  
- 20          3.    When, by application of Rule 2(b) or for any other reason, goods are *prima facie* classifiable under two or more headings classification shall be effected as follows:
  - 25           (a)   the heading which provides the most specific description shall be preferred to headings providing a more general description. However, when two or more headings each refer to part only of the materials or substances contained in mixed or  
30           composite goods or to part only of the items in a set up for retail sale, those headings are to be regarded as equally specific in relation to those goods even if one of them gives a more complete or precise description of the goods.
  
  - (b)   mixtures, composite goods consisting of different materials or made up of different components, and goods put up in sets for  
35           retail sale, which cannot be classified by reference to 3(a), shall be classified as if they consisted of the material or component which gives them their essential character, insofar as this criterion is applicable.
  
  - (c)   when goods cannot be classified by reference to 3(a) or (b), they shall be classified under the heading which occurs last in numerical order among those which equally merit consideration.

Goods which cannot be classified in accordance with the above rules shall be classified under the heading appropriate to the goods to which they are most akin.”

(Rule 5 allows for cases, boxes and packing materials to be classified together with the goods they contain.)

...

6. For legal purposes, the classification of goods in the subheadings of a heading shall be determined according to the terms of those subheadings and any related subheading notes and, *mutatis mutandis*, to the above rules, on the understanding that only subheadings at the same level are comparable. For the purposes of this rule, the relative section and chapter notes also apply, unless the context requires otherwise.

### *The Harmonised System*

11. The CN is derived from the Convention on the Harmonised Commodity Description and Coding System (“the Harmonised System”). The Harmonised System is administrated by the Customs Co-operation Council which issues and updates explanatory notes known as HSENs on the various headings and subheadings in the Harmonised System. Although HSENs are not legally binding, they are a relevant aid to the interpretation of the CN because they provide an important means of ensuring the uniform application of customs tariffs by the customs authorities of Member States.

### **Relevant CN headings**

12. The following headings (and accompanying notes) are relevant to this appeal: 9406, 8471 and 8473.

13. Heading 94.06: “Prefabricated buildings”

(a) Note 4 to chapter 94 explains that, for the purposes of heading 94.06, ‘prefabricated buildings’ means “buildings which are finished in the factory or put up as elements, presented together, to be assembled on site, such as housing or worksite accommodation, offices, schools, shops, sheds, garages or similar buildings.”

(b) The HSEN under heading 94.06 explains that the heading “covers prefabricated buildings, also known as ‘industrialised buildings’, of all materials.” The buildings can be designed for a variety of uses and the particular uses given are: housing, worksite accommodation, office, schools, shops, sheds, garages and greenhouses. The Note adds that the buildings of the heading may be supplied with equipment built-in and lists *inter alia* as examples, electrical fittings, heating and air conditioning equipment.

(c) The heading includes “other [buildings] of iron or steel.”

(d) Subheading 9406 00 relates to prefabricated buildings, 9406 00 20 -  
- of iron or steel, 9406 00 31 - - - greenhouses, and finally, the  
heading under which the BladeRoom has been classified, 9406 00  
38 - - - other.

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14(1) Heading 84.71 relates to: “Automatic data processing machines and  
units thereof; magnetic or optical readers, machines for transcribing data on to  
data media in coded form and machines for processing such data, not elsewhere  
specified or included.”

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“8471 49 00 - - Other, presented in the form of systems

8471 60 Input or output units, whether or not containing storage units in the  
same housing, such as keyboards

8471 90 00 – Other”

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(a) “5(A) For the purposes of heading 8471, the expression  
‘automatic data-processing machines’ means machines,  
capable of

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(i) storing the processing program or programs and at least  
the data immediately necessary for the execution of the  
program;

(ii) being freely programmed in accordance with the  
requirements of the user;

(iii) performing arithmetical computation specified by the  
user; and

25

(iv) executing, without human intervention, a processing  
program which requires them to modified their  
execution, by logical decision during the processing  
run.”

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(b) Note 5(B) to chapter 84 provides that “automatic data processing  
machines may be in the form of systems consisting of a variable  
number of separate units.”

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(c) Note 5(C) provides that: “Subject to paragraph (D) and (E) below, a  
unit is to be regarded as being part of an automatic data-processing  
system if it meets all of the following conditions: (i) it is of a kind  
solely or principally used in an automatic data-processing system;  
(ii) it is connectable to the central processing unit either directly or  
through one or more units; and (iii) it is able to accept and deliver  
data in a form (codes or signals) which can be used by the system.”

(d) Note 5(E) provides that: “Machines incorporating or working in conjunction with an automatic data-processing machine and performing a specific function other than data-processing are to be classified in the headings appropriate to their respective functions or, failing that, in residual headings.”

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14(2) The subheading notes in relation to 8471 49 (“other, presented in the form of systems”) at Note 1 provide:

“For the purposes of subheading 8472 49 the term ‘systems’ means automatic data-processing machines whose units satisfy the conditions laid down in Note 5(C) to Chapter 84 and which comprise at least a central processing unit, one input unit (for example a keyboard or a scanner), and one output unit (for example, a visual display unit or a printer).”

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14(3) The general notes to Chapter 8471 provide that the chapter covers machinery and mechanical apparatus. In relation to the conditions laid down in Note 5(A) to the Chapter under the heading ‘Automatic Data-Processing Machines’ (see above) it provides that:

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“Thus, machines which operate only on fixed programs, i.e. programs which cannot be modified by the user, are excluded even though the user may be able to choose between a number of such fixed programs”;

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“These machines have storage capability and also stored programs which can be changed from job to job”;

“The data input is usually automatic ... There may also be arrangements for named input by means of keyboards or the input may be furnished directly by certain instruments (e.g. measuring instruments)”;

25

“The input data are converted by the input units into signals which can be used by the machine, and stored in the storage units”; and

30

“Automatic data-processing machines may comprise in the same housing, the central processing unit, an input unit (e.g. a keyboard or a scanner) and an output unit (e.g. a visual display unit), or may consist of a number of interconnected separate units. In the later case, the units from a ‘system’ when it comprises at least the central processing unit, an input unit and an output unit ... The interconnections may be made by wired or wireless means.”

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14(4) In relation to data-processing machines a separate note provides that heading 8471 excludes machines ... incorporating or working in conjunction with an automatic data-processing machine and performing a specific function.

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15. Heading 84.73 relates to: “Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with the machines of headings 84.69 to 84.72.”

5 15(1) Heading 84.73 30 relates to “Parts and accessories of the machines of heading 8471:

8473 30 20 - - Electronic assemblies

8473 30 80 - - Other”

10 15(2)The HSEs to this heading describe accessories a: “the accessories covered by this heading are interchangeable parts or devices designed to adapt a machine for a particular operation, or to perform a particular service relative to the main function of the machine, or to increase its range of operations.” The HSEs to heading 84.73 explain that “accessories covered by this heading are interchangeable parts or devices designed to adapt a machine for a particular  
15 operation, or to perform a particular service relative to the main function of the machine, or to increase its range of operations.”

### **The Legislation**

14. The Tribunal’s jurisdiction in this appeal is conferred by section 16 of the FA 1994. The powers of the Tribunal are contained in section 16(5). The relevant parts of  
20 that section provides as follows:

“In relation to other decisions, the powers of an appeal tribunal on an appeal under this section shall also include power to quash or vary any decision and power to substitute their own decision for any decision quashed on appeal.”

25 15. Section 16(6) FA 1994 provides as follows:

“(6) On an appeal under this section the burden of proof as to [matters inapplicable to this appeal] shall lie upon the Commissioners; but it shall otherwise be for the appellant to show that the grounds on which any such appeal is brought have been established,.”

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### **The evidence**

16. We heard evidence from Mr Tom Kingham, the senior engineer, and Mr Paul Rogers, Chief Executive Officer of the BladeRoom Group Ltd, on its behalf. We were provided with a bundle containing inter alia a large number of photographs and  
35 specifications relating to a BladeRoom.

17. Whilst neither the BTI description nor the objective characteristics listed in the grounds of appeal contain any inaccuracies, neither of them provide the full picture of what the BladeRoom is and does. The Tribunal paid a site visit to Swindon to see a BladeRoom in action. Our first impression was of the high level of security in the area  
40 of the BladeRoom and then the enormous size of that particular BladeRoom which

consisted of several linked components which rested on feet to allow the free-flow of air beneath. There was only one door to access all the conjoined units and, whilst there were no windows, there were hatches and shuttered screens to allow the air to be pumped out at pressure. All the services, namely water and electricity, were supplied via piping and cabling suspended from the ceiling of the building in which the BladeRoom was sited. To enter the BladeRoom it was necessary to pass through two time-locked doors, the first closing behind you before the second could be opened. Once inside there was a noticeable difference in temperature between the different areas inside the BladeRoom, the cold corridors were uncomfortable because of the movement of pressurised air moving from the cooling zone into the racking corridors containing the servers. An engineer was working on one of the servers at the time of our visit, and it was possible for people to access all of the different areas inside the BladeRoom, but it was not a comfortable environment to be in. On exiting the area where the servers were, which was done via an internal door, we came into a corridor through which hot air was circulating at an uncomfortable temperature. We saw points which monitored air pressure and flow, sensors for fire and noise, and a system of buzz bars which provided power to two duplicate systems of supply. All these sensors provided information to screens both within the BladeRoom as well as to external monitors. Indeed on arrival we had seen an external monitor with an observer nearby.

18. There were no fire exits or emergency exits to the BladeRoom which was very clearly not designed for human occupation, having no form of seating anywhere, not even in the control room which was the only area where it was possible to remain for any length of time with any degree of comfort. In that area was sited the BladeRoom's main computer which was housed above its own backup computer. This computer functions continually, receiving all the data from the sensors in the BladeRoom, making the necessary adjustments and feeding the information out to monitors outside the BladeRoom. Whilst it was possible for a number of people to stand in this area at one time, this was not recommended because of the interference with the dust levels and atmosphere inside the BladeRoom, which were being constantly monitored. Adjacent to the control room there was a section called the 'air optimiser' which housed the adiabatic cooling system (a description of which is set out below) and also the large number of Argonite canisters which comprise the fire suppression system (see para. 5(6)(vi) above).

19. Subsequent to the hearing we were supplied by HMRC with a tariff advice (advance ruling) for a BladeRoom which had been provided by the Australian National Trade Advice Centre. The 'claimed reasons' for the BladeRoom to be classified under heading 8471 given on that occasion we consider to be relevant and they conform with the impression we had of the BladeRoom unit gained at our site visit although we will consider below what the relevant classification should be. The description in the tariff advice application is as follows:

"A BladeRoom unit is a machine designed to function as a modular data centre and this satisfies the far more specific definition of an automatic data-processing machine or part of a system thereof as contained in heading 8471 and the notes thereto.

- A BladeRoom is designed as a data centre to house IT infrastructure and to provide, via complex automatic processes, the optimum working environment for the IT to function;
- 5 • It performs its function without any human presence. In the industry this is referred to as a “lights out” data centre;
- It is monitored remotely;
- The only time humans are required to enter a functioning BladeRoom room is for maintenance purposes. For example:
  - (i) There are no toilets, sinks or other such amenities;
  - 10 (ii) There are no work desks;
  - (iii) There are no relaxation areas;
  - (iv) The fire suppression system employed is “Argonite”. When smoke is detected this system releases a mixture of Argon and Nitrogen under pressure that forces air out of the unit until there is not enough oxygen for combustion to continue. Whilst not unsafe for humans it is an expensive solution employed to protect the extremely sensitive equipment and machinery that would easily be damaged by a water or powder based system.
  - 15
- The whole unit is integral. If you took away any part of a BladeRoom (including part of its exterior shield) it would lose integrity and cease to function.”
- 20

20. The network servers which the BladeRoom houses form part of a ‘cloud computing’ system, which are used by both governments and big businesses for remote storage of quantities of information which can then be accessed via the Internet or through a web browser. The performance of the networked servers is ‘mission critical’, that is at no time must the service be allowed to fail. The BladeRoom is designed to ensure that the conditions for the networked servers housed within it were never other than optimal, i.e. the humidity and the temperature must be constant and the atmosphere must be dust free. To ensure this, there must be a continual source of electricity and the BladeRoom seen by us had two power supplies sourced directly from the national grid in order to ensure that there was never a power failure. The power system itself is designed to ensure, insofar as it is possible, that the power can be delivered without loss of function at all times. This is achieved not only by the BladeRoom (in the UK at any rate) being connected directly to the National Grid, but also by its being connected to a source of back-up power independent of the grid, which would typically be dedicated generators or battery banks. The BladeRoom’s power distribution system manages the back-up power supply and connects into an uninterruptable power supply which ensures continuity of power between the utility failing and the back-up supply taking over. The servers can thus be kept running throughout.

21. We learnt from the evidence of Mr Paul Rogers that the impetus behind the BladeRoom was to improve the efficiency of the data industry, in particular, by

reducing the power consumption which, in a conventional data store is considerable. The BladeRoom achieves savings of energy to such an extent that a BladeRoom unit operating in London would only use 14kw of energy for every 100kw energy used by the servers it houses, whereas a traditional bricks and mortar data centre would use 100kw of extra energy for every 100kw of IT energy use.

22. The system works by the air entering the BladeRoom via a set of intake vents (or dampers) from in the exterior wall. The amount of air intake is controllable by adjusting the vents from fully open to fully shut, and the controls operate in conjunction with an array of fans within the ‘air optimiser’ section of the BladeRoom. The air passes through a series of filters to remove dust and other damaging particles, the filtered air then passes directly through a mechanical cooling system. In the UK environmental conditions are such that the direct mechanical cooling is only needed for around two days per annum. This is one of the variables which can be adjusted according to the geographical location of the BladeRoom.

23. The cooling system itself is in the ‘adiabatic section’ which is specifically designed to cool air without the necessity of using any energy. The air passes through a specially designed glass-fibre matrix on which the water saturation levels can be precisely raised or lowered depending on the amount of evaporative cooling required. Air which is either too dry or too damp has to be avoided by the sensitive electrical systems. After cooling, the air is drawn through fans into the main supply, or “cold” zone. The cool air passes through the servers from front to back, and is kept at a positive pressure such that the cool air always moves from the front to the back of the servers, being warmed as it goes through the servers, and lowering the temperature within the servers themselves.. The backs of the servers are in the warm zone, and the air there leaves the BladeRoom through exhaust vents built into the exterior of the unit wall. The various parts of the BladeRoom are designed to ensure that the cool air coming from the adiabatic system and the hot air produced by the servers do not intermingle, the corridors are sealed with door locks to prevent this. However, on occasion, such as particularly cold days the amount of warm air leaving the BladeRoom can be controlled and it can be diverted to mix with the intake air before being recycled through the air optimiser section. This reduces running costs. It is also a feature that for the majority of the time there is no light in the BladeRoom, although there are lights for the occasions when people need to enter.

24. There are 60 sensors in the BladeRoom which electronically report the variables they measure at a speed of up to 2 per second. Any change in humidity or temperature or air quality is fed by the sensors to the BladeRoom’s main computer which responds instantly by making adjustments. The information is monitored continually and is recorded on as many monitors as the client requires. There is normally a dedicated observer of one monitor, but there may be others, and whilst the system will correct any component failure as necessary, it also sends an alarm to the observer if there is a malfunction, such as a blocked air filter. People are normally employed on a 24-hour basis to carry out this function, however it is possible to set up the system to send automatic messages by text or e-mail to a mobile phone. The BladeRoom group itself can use an Internet connection to “look” inside the

BladeRoom computer anywhere in the world and can itself make any necessary adjustments if the client so requires.

25. The BladeRooms are shipped with dedicated computing equipment running the bespoke software which is pre-installed, and often the server racks as well. However,  
5 the remaining computing equipment (servers, network switches) that go into the racks, has, to date, always been installed by the client.

26. Prior to selling its first BladeRoom, considerable time and resources were invested by the Appellant in constructing a “climate emulator”. This is a large machine capable of moving 25 cubic metres of air per second but can also simulate a  
10 wide range of climatic conditions ranging from minus 5 degrees to plus 48 degrees centigrade in temperature and 5 degrees to 100 degrees relative humidity. The first BladeRoom manufactured by the BladeRoom Group was tested using the climate emulator. The main computer in the BladeRoom has tables on which are recorded facts (‘data’) which have been built up from the climate emulator. It computes exactly  
15 how much cooling is needed depending on the temperature and humidity of the external and internal air available and whether to achieve this by adiabatic cooling or by alterations to the internal air pressure. Whilst the clients cannot adjust the look-up tables themselves, they can decide various matters such as whether to use less water or more energy. The system is so sensitive that the BladeRoom senses the very  
20 smallest drop in pressure by means of passing air across a tiny hole at a constant rate of .23m per second. The BladeRoom itself has 20 processing units all of which are inter-connected and all of which connect up to the main brain of the BladeRoom.

27. Although the control strategy was very complex, one of the logical modifications made by the program was when smoke was detected by the intake dampers. There was evidence that the input signal from the sensor equivalent to  
25 “smoke outside” was run through the program the output signal was modified to “close external dampers” with further signals to other parts of the system to “enter recirculation mode”.

28. Mr Rogers in his evidence had referred to the fact that the Australian Customs had provisionally been inclined to apply tariff code 94.06 to the BladeRoom. We  
30 were provided with e-mail correspondence between Mr Joy and the Commissioners, and there was no objection by Mr Joy to the production of these documents to us. The Australian Customs classified the BladeRoom under 9406 and gave the following reasons:

35 “Goods description:

BladeRoom modular data centre, comprising 10 modules to be assembled on-site. Each module is approximately 4.5 metres x 15.2 metres.

The modules are:

40 • Two ‘air optimiser’ (AO) units, located at each end of the assembled centre. The air optimiser provides filtered, temperature and humidity-controlled air to the ‘cold corridor’. Air compressors,

to be mounted on the data centres roof, are imported with the other modules.

- 5 • Two ‘power management’ (PM) units, located adjacent to the air optimisers near each end of the assembled centre. The powered management units include switchboard equipment to monitor and supply power to the data centre, as well control of the fire suppression system.
- 10 • Six ‘information technology’ (IT) units. The IT units have a ‘cold corridor’ at one end, a ‘hot corridor’ at the other, and IT aisles to hold wrapped computers.

Each IT room has a cold aisle, accessible from the cold corridor, faced on both sides with the rear of the racks.

15 Cool air flows from the AO to the cold corridor, through adjustable louvers to the cold aisles, then through the racks, where the now warm air is expelled via the hot aisles and corridor.

The BladeRoom as imported includes pipes and cabling that only need to be coupled to be functional.

20 The BladeRoom as imported does not include power supply; this is supplied externally. The operation of the BladeRoom can be remotely controlled; the BladeRoom as imported does not include any office space.

**Identification of goods:**

Prefabricated building to house a datacentre.

**Headings considered:**

- 25 8415 “Air conditioning machines ...”
- 8471 “Automatic data processing machines and units thereof; ...”
- 8537 ...
- 9406 “Prefabricated buildings”

**Headings rejected:**

- 30 8415, 8537
- The AO and PM are not independent of the other data centre modules; as imported with the other modules they are parts of a whole.
- 35 8471 – The BladeRoom as imported does not include the racks or blades for computing; it provides the accommodation for these units. It does not comply with Ch.84 Note 5(A) as an ADP machine, as it is not capable of
  - (i) storing the processing program or programs and at least the data immediately necessary for the execution of the program;
  - (ii) being freely programmed in accordance with the requirements of the user;
  - (iii) performing arithmetical computations specified by the user; and
  - 40 (iv) executing, without human intervention, a processing program which requires them to modify their execution, by logical decision during the processing run.

5 Heading given: 9406.00.00 ... Ch.94 note 4. The BladeRoom is a set of modules, imported together to be assembled on-site, as a prefabricated building. Macquarie defines 'building' as a 'substantial structure with a roof and walls, as a shed, house, department store, etc.'. When assembled on site the BladeRoom is a substantial structure with a roof and walls.

Chapter 4 note 4 does not require that a prefabricated building be suitable for habitation;....

The BladeRoom is considered to fit note 4 as a similar building.

10 HSEN 9406 allows that prefabricated buildings of 9406 may be equipped with, *inter alia*, electrical fittings, air conditioning equipment, and built-in furniture, which includes the machinery and structures within the BladeRoom.”

15 29. Two BTI decisions were provided by the Appellant, reference GB117764360 was in respect of the outer casing for a tower PC unit which had an air duct and a cooling fan. It was classified under 8473 30800 as “parts and accessories; parts and accessories of the machines of heading 8471; other”. It related to the chassis within which circuit boards are contained. A disk drive housing from Taiwan was classified under 8473.30 of the harmonised tariff schedule of the United States. The third BTI  
20 was provided by the Commissioners and was a classification under 9406 of a freight container which had electrical installations including lighting fixtures. Its description was of a “Mobile laboratory. A standard 20 inch shipping container that has been modified”.

### **The Commissioners' case**

25 30. It was the Commissioners' case that the Tribunal must have regard to the essential character of the object it is classifying. In the case *Turban – Case C - 250/05* the items being classified were ink cartridges for which the European Court on a referral for a preliminary ruling stated:

30 “20. Since the product at issue is composed of different materials and neither of the two subheadings mentioned above is more specific than the other, the sole provision to which recourse may be had for the purpose of classifying the goods is general rule 3(b) (see, to that effect *Case 253/87 Sportex* [1988] ECR 3351, para.7).

35 Under that general rule, in carrying out the tariff classification of goods it is necessary to identify, from among the materials of which they are composed, the one which gives them their essential character. This may be done by determining whether the goods would retain their characteristic properties if one or other of the constituents were removed from them ...

40 ...

23. Even if an ink cartridge, such as that at issue in the main proceedings, is constructed in such a way that the printer does not function in the absence of that cartridge, the fact remains that the ink contained in the cartridge is the most important factor for the purpose

of using the goods at issue. In fact, the ink cartridge is not inserted in the printer in order to make the printer itself function but specifically to supply it with ink. Therefore, the ink must be regarded as determining the essential character of an ink cartridge, such as that at issue in the main proceedings.”

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31. The General Rules of Interpretation (the “GIRs”) provide the process to be followed when goods are *prima facie* classifiable under two or more headings and at Rule 4 provide that goods should be classified under the heading appropriate to goods to which they are most akin. In the present case HMRC contends that the BladeRoom was more akin to a prefabricated structure than a computer. The Appellant had not established that the BladeRoom could be categorised as a data processing machine, or part of one because it had not been established that it could do the tasks set out under Chapter 84 Note 5(A).

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32. Mr Pritchard suggested that the key question to be decided was whether the BladeRoom was freely programmable within Note 5(A). Whilst the evidence showed that the BladeRoom had a sophisticated design, there had been no evidence as to the extent to which it could be programmed as with a computer. He also submitted that the BladeRoom could not perform ‘arithmetical computations specified by the user’, and there was no evidence as to how a user might program, or reprogram it; changing the parameters, such as the level of humidity, was not programming. If the Tribunal were prepared to accept that it could be freely programmable then Note 5(E) to Chapter 84 becomes relevant and that note explains that machines incorporating an automatic data processing machine and performing a specific function other than data processing must be classified in the headings appropriate to their respective functions. Mr Pritchard gave the example of a car which contains sophisticated automation including cruise control and automated parking, but could not properly be described as an automatic data processing machine.

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33. We were referred to the case of *Ikegami Electronics (Europe) GmbH Case C-467/03*. The European Court state:

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“22. While, as *Ikegami* submits, the machine in question in the main proceedings cannot simultaneously record sound and pictures or record and reproduce moving images, that fact, assuming it to be true, is no obstacle to holding that the machine, which is equipped with components which can store and reproduce both sounds and pictures, performs a function going beyond automatic data processing.”

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The ECJ had noted that the machine in question “*as equipped, cannot be used for purposes other than the recording and reproduction of images and sounds in the course of video surveillance, as it lacks sufficient software.*” Similarly, whilst the BladeRoom must contain a computer system which allows it to operate, it performs a function which goes beyond automatic data processing. Moreover, there was no evidence that its automated system could be used for purposes other than controlling the BladeRoom.

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34. The BladeRoom operates as a data centre designed to house computer hardware (i.e. the servers) and its function is to provide computer servers housed within the

BladeRoom with their required environmental conditions in as energy-efficient a way as possible. That was the specific function of the BladeRoom, not data-processing. Therefore Note 5(E) took the BladeRoom outside 8471.

5 35. In support of his argument that the requirements of Note 5(C) are not met, Mr Pritchard stated that the BladeRoom was not “connectable” to a central processing unit, and that to be connectable to a central processing unit in any meaningful way the BladeRoom would need to be able to communicate with the central processing unit and there was no evidence to suggest it could do that. He referred to Mr Kingham’s  
10 evidence that the BladeRoom was not designed to access the data that has been processed by the servers it houses.

36. Mr Pritchard took the word “system” in Note 5(C)(iii) to mean the system containing the embanked servers.

15 37. With regard to Chapter 8473, the possibly relevant subheading is 8473 30 – parts and accessories of the machines of heading 8471 which itself then goes down to subheading 8473 30 80 - - other. The Commissioners again rely on the case of *Turban* (supra) where the ECJ considered whether an ink cartridge could be said to be a part or an accessory to a printer. The Court at paragraphs 30-32 held that:

20 “30. In that connection, it should be observed that the word ‘part’, within the meaning of CN heading 8473, implies a ‘whole’ for the operation of which the part is essential ... and this is not so in the case of the cartridge at issue in the main proceeding. While it is true that, without an ink-cartridge, a printer is not able to carry out its intended functions, the fact remains that the mechanical and electronic functioning of the printer in itself is not in any way  
25 dependent on such a cartridge. The inability of the printer, in the absence of an ink-cartridge, to transcribe onto paper the work produced with the aid of a computer is caused by lack of ink rather than a malfunctioning of the printer.

30 31. For these reasons an ink-cartridge such as that at issue in the main proceedings, which, in view of its characteristics as described by *Turban International* in its written observations, plays no particular role in the actual mechanical functioning of the printer, cannot be regarded as ‘part’ of a printer within the meaning of CB heading 8473.

35 32. Equally, such a cartridge cannot be classified under heading 8473 as an ‘accessory’ of the printers in question. While the cartridges are interchangeable, they are not designed to adapt the printers for a particular operation, or to perform a particular service relate to their main function, or to increase their range of operations,  
40 within the meaning of the HS explanatory note relating to heading 8473. Such cartridges merely enable ESC printers to fulfil their usual function, namely, the transcription onto paper of work produced with the aid of a computer.”

45 38. We were also referred by Mr Pritchard in connection with heading 84.73 to the case of *Unomedical A/S (C-152/10)* when the ECJ considered whether a drainage bag

could be considered to be a part or an accessory of a catheter or dialyser. Notably, the dialyser was designed such that it would not function unless the drainage bag was connected:

5 “36. Neither the urine drainage bag for catheters nor the drainage bag  
for dialysers is indispensable for the functioning of those instruments or  
apparatus. It is apparent that catheters do not depend on the presence of  
a urine drainage bag in order to function and, similarly, that dialysers  
do not depend on the presence of a drainage bag in order to carry out  
10 dialysis, since the process of cleansing blood is complete at the time  
when the bag is used, that bag serving only to collect the liquid drained  
...

15 37. The latter finding cannot be called into question by the fact that  
dialysers worked only when a bag is attached. In that regard, suffice it  
to state, as the European Commission points out, that, were it not for  
the security mechanism with which the apparatus is fitted, the dialysis  
process could be carried out without a bag, that security mechanism  
being the sole link between the apparatus and the bag ...

20 38. Likewise, those bags do not enable the instruments and  
apparatus to be adapted to a particular operation, nor do they increase  
their range of operations, or enable them to perform a particular service  
connected with their main function. A drainage bag attached to a  
catheter has the sole purpose of collecting liquid drained after the  
catheter itself has fulfilled its own function, which is to drain the urine  
present in the bladder. For its part, a drainage bag for a dialyser does  
25 not enable that apparatus to perform operations other than that for  
which it is designed, namely that of cleansing blood.”

30 39. It was submitted that an accessory must enable an apparatus to perform  
functions other than that for which they were designed whereas the BladeRoom was  
designed to house servers and it does not enable those servers to perform any  
functions other than the functions for which the host-servers were designed and  
intended to be used; the BladeRoom does not adapt the servers.

35 40. The heading contended for by the Commissioners is 94.06 “prefabricated  
buildings”. It was the Commissioners’ case that whilst heading 94.06 is not limited to  
prefabricated buildings which permits access to humans, the BladeRoom is clearly  
designed with the intention of permitting humans access. It was submitted that the  
role the BladeRoom performs in controlling its internal environmental for the benefit  
of the items it houses inside bears striking similarities to the role performed by a  
greenhouse for plants contained within it. It was submitted that both the greenhouse  
and the BladeRoom are self-contained units which can protect their contents from the  
40 external environment, both are designed to create an internal environment suited to  
the items contained inside them. Neither the primary function of the BladeRoom nor  
of the greenhouse was human occupation. Both the BladeRoom and a greenhouse are  
independent of the items stored within them. The greenhouses at the Eden Project  
were cited as an example of a sophisticated greenhouse.

41. In respect of three BTI decisions provided by the Appellant, Mr Pritchard submitted that the BTI reference GB117764360 could be distinguished. That BTI reference was in respect of the outer casing for a tower PC unit which had an air duct and a cooling fan. It was classified under 8473 30800 as “parts and accessories; parts and accessories of the machines of heading 8471; other”. This was distinguished on the basis that it related to the chassis within which circuit boards are contained whereas in the BladeRoom the servers already have their own chassis, and their own fans. Furthermore, the BladeRoom was on a much larger scale and was not itself a chassis. The particular BTI was not for a structure which allowed you to walk around in it and therefore was not relevant. A similar argument was used in respect of the tariff classification of a disk drive housing from Taiwan which was classified under 8473.30 of the harmonised tariff schedule of the United States. The third BTI was provided by the Commissioners and was a classification under 9406 of a freight container which had electrical installations including lighting fixtures. Its description was of a “Mobile laboratory. A standard 20 inch shipping container that has been modified”.

### **The Appellant’s Case**

42. It had initially been the Appellant’s case that classification 8471 was the appropriate one, but subsequently submissions were made to the effect that tariff heading 8473 was the more applicable heading. Whilst it was acknowledged that the BladeRoom had some of the characteristics of a building, for example, its size, Mr Joy submitted that the essential characteristic by which it should be judged was consistent with it having been specifically designed and manufactured to be an integral part of a very large computer system, and it should be classified as such. It was initially suggested that the BladeRoom processed signals from the IT servers it housed, and used those to calculate the optimum conditions which were in turn fed back to the IT to enable it to function. This was not borne out by the evidence, and the argument was not pursued by Mr Joy.

43. When considering classification of a product, Mr Joy submitted that regard must be had to the objective characteristics and properties of the product, and the intended use of the product may constitute an objective criterion for classification. He referred us to the case of *Deutsche Nichimen GmbH v. Hauptzollamt Dusseldorf EC 2001 C-201/99*. In that case the ECJ held as follows:

“19. In order to answer question 1, it should be recalled that it is settled case-law that, in the interests of legal certainty, for ease of verification the decisive criterion for the classification of goods for customs purposes is in general to be sought in their objective characteristics and properties as defined in the wording of the relevant heading of the CN ...

20. In addition the intended use of a product may constitute an objective criterion for classification if it is inherent in the product, and that inherent character must be capable of being assessed on the basis of the product’s objective characteristics and properties ...”

Furthermore, if its objective characteristics are consistent with a particular heading, then goods should be classified within that heading. With regard to the BladeRoom it was submitted that its intended use was as a machine.

5 44. With reference to Note 5(A) to chapter 84 where, for the purposes of heading  
8471 the expression “automatic data-processing machines” is stated to mean machines  
capable of storing the processing program or programs and at least the data  
immediately necessary to the execution of the program, it was the Appellant’s case  
that in the BladeRoom such a program is the bespoke program referred to in evidence  
as the “Match” software. This program is stored on the servers and network  
10 controllers. With regard to Note (ii) to 5A, “Being freely programmed in accordance  
with the requirement of the user”, the program in the BladeRoom was freely  
programmed in accordance with the requirements of the user; whilst the mission  
critical nature of a BladeRoom is such that most users would take great care before  
performing any reprogramming, it could be reprogrammed in accordance with the  
15 purchaser’s wishes.

45. In respect of the fourth requirement of an automatic data-processing machine  
under note 5(A), that it is capable of being “executed, without human intervention, a  
processing program which requires them to modify their execution, by logical  
decision during the processing run,” Mr Joy submitted that the evidence showed how,  
20 without human intervention, the BladeRoom’s program would automatically modify  
and execute signals during operation, as it would were smoke detected.

46. Mr Joy referred us to the Notes to Chapter 8471 (see above) where they provide  
that automatic data-processors may comprise in the same housing, or may consist of,  
a number of interconnected separate units and that these form a system when it  
25 comprises at least a central processing unit, an input and an output unit. The notes  
provide that input can be furnished directly by data terminals, keyboards and certain  
instruments such as measuring instruments (and suggests that the sensors in the  
BladeRoom are such) and that output units might be visual display units or remote  
data terminals, and Mr Joy submitted that the screens within the unit itself are such  
30 display units, similarly the output that is displayed on the client’s screens where the  
BladeRoom is monitored are remote data terminals. For those reasons the  
BladeRoom comprised the elements necessary to satisfy heading 8471.

47. It was further submitted that the BladeRoom should be classified according to  
the function that it does perform, which was very similar to many types of computer  
35 housings and therefore it was also appropriate to classify it as such under 8473.

48. The Appellant’s case on 8473 was that if the product being considered was  
suitable for use solely or principally with a computer system, then it satisfied the  
definition of 8473. It had not been disputed that the BladeRoom was suitable for use  
solely or primarily with a computer system. It was integral and essential to the  
40 functioning of the large cloud computer system that it was a part of. If you took the  
BladeRoom away, there would be no power management or distribution to any of the  
servers and the system would be dead. Furthermore, there would be no environmental

management and the servers would be irreparably damaged because there would be no insulation or protection from the outside environment.

49. The Tribunal was referred to the BTI references set out above and Mr Joy's case was that, whilst the scale of the BladeRoom was considerably larger, there were many similarities between what a laptop or server housing does for the hard drive it contains and what a BladeRoom does for the servers it contains.

50. Mr Joy contended that the BladeRoom is a machine, albeit a very sophisticated machine, and a large one. It had not been challenged by HMRC that it was not a machine. As a machine he submitted that it should be classified under Chapter 84. It was only in terms of the scale that it was different from casing under 8473. If the Tribunal were satisfied that it is a machine, and that it can be used together with other machines of 8471, then it should be classified under 8473. 8473 does not require an element of data-processing, only that it should be connected with a machine that is a data-processor under 8471. The BladeRoom is solely or principally for use with others of 8471.

51. It was submitted that the case of *Turban* relied on by HMRC should be distinguished in that unlike the ink cartridge in that case, the BladeRoom plays a vital role in the functioning of the system. Similarly the case of *Unomedical* should be distinguished. The BladeRoom was more akin to dialysis than to the urine bags which were at issue in that case.

52. Finally Mr Joy submitted that the BladeRoom both allows the data-processors to function within it, and it also processes its own data. If the Tribunal finds that data-processing is not the primary function of the BladeRoom, it can still be satisfied that the BladeRoom is a machine which is used to supply power and other aspects to the servers. It was therefore appropriate to classify the BladeRoom under either 8471 or 8473.

## REASONS FOR DECISION

53. We have found this to be a difficult case to decide. On the one hand the BladeRoom has the appearance of a container, or, indeed of several conjoined containers, is itself called a 'room', and has many of the characteristics of a shed or even of a sophisticated greenhouse such as the type at the Eden Project. On the other hand, the BladeRoom contains its own very sophisticated computer (or data processor), which has a symbiotic relationship with the actual BladeRoom structure and is far more than even the most sophisticated of greenhouses. To label it a shed or a greenhouse appears an insult to the engineers who achieved the remarkable feat of designing a system which reduces the amount of electricity needed to cool the servers whose environment it monitors to only 14% of that needed by a traditional bricks and mortar data centre. It is in some respects both a container and at the same time a data processor.

54. We find that the BladeRoom's function is not, as set out in the grounds of appeal, 'to be an integral part of a very large computing system', given that there is no

direct interaction between the BladeRoom itself and the servers which it houses. We find that it is, as per the tariff advice application, ‘a data centre to house IT infrastructure and to provide, via complex automatic processes, the optimum working environment for the IT to function’. However, that does not provide an answer to the question as to its correct tariff classification, pointing as it does to both the housing aspect of the BladeRoom and its sophisticated data processing function.

55. In considering the tariff classification it is necessary to consider both the BladeRoom’s objective characteristics and its intended use, which may itself constitute an objective characteristic, as stated by the ECJ in the case of *Deutsche Nichimen GmbH* referred to at paragraph 43 above. In the case of the BladeRoom from the outside its essential characteristic is that of a container. Once inside, however, its essential characteristic is that of a combination of very complex machines which themselves require the outer walls, the ceiling and the floor to protect them, just as do the banks of servers housed therein. Its intended use is both to house the banks of servers and to maintain them in the optimum environmental conditions, which includes ensuring that they function continually and without interruption using the minimum possible amount of electricity to do so.

56. We do not find the GIRs by themselves enable us to classify the BladeRoom. We find ourselves unable to classify the goods by reference to either Rule 3(a) or Rule 3(b). We therefore must classify them under the heading appropriate to the goods to which they are most akin, taking account of the notes to the respective headings 8471, 8473 and 9406.

57. We accept Mr Pritchard’s submission that the key question to be decided in relation to heading 8471 is whether or not the BladeRoom is ‘freely’ programmable within Note 5(A)(ii). Whilst we heard some evidence that it is programmable by the user, there was little or no evidence that it was ‘freely’ programmable, indeed it would not perform its primary task of providing a safe environment for the servers if users did re-programme it, it having been programmed by the maker to ensure optimum environmental conditions for the servers, parameters which will be pre-determined according to the particular environment in which the BladeRoom is to be situated. On the other hand, it is not excluded by the general notes to chapter 8471 on the basis that it operates only on a fixed program, which is defined as one which cannot be modified by the user.

58. Whilst the BladeRoom is capable of performing many complex computations, it is questionable that it is capable of performing computations specified by the user, as required by Note 5(A)(iii), as opposed to those which it is pre-programmed to perform. The evidence pointed to by Mr Joy as showing that it was so capable is that relating to the way the BladeRoom takes the input signals from the sensors, the values of which are computed within the software to produce an output that is sent to the fans, the dampers, and the coils and other items that are linked to the management system. We do not accept that these are matters which are specified by the user, the way that the ‘management system’ reacts to the information it receives from the sensors is programmed by the maker, not the user.

59. Whilst we are not satisfied on the evidence that the BladeRoom does meet the requirements of Note 5(A)(ii) or (iii), the burden of proof being on the Appellant to satisfy us that it does, if we are wrong in this regard, then we also consider that it does not meet the requirements of Note 5(C)(iii) in that there is no evidence that the data produced by the BladeRoom does not accept and deliver data in a form which can be used by the servers it protects.

60. It is also incumbent upon us to consider Note 5(E). We accept Mr Pritchard’s submission that there is no evidence that the BladeRoom’s automated system can be used for purposes other than controlling the BladeRoom and therefore it must fail to be classified under 8471 on that basis also.

61. With regard to 8473, ‘Parts and accessories....suitable for use solely or principally with the machines of headings 84.69 to 84.72’, which was not initially relied on by the Appellants, this does not seem to us to be an appropriate classification for the BladeRoom. The BladeRoom is not an interchangeable part or device designed to adapt the servers, nor does it perform a particular service relative to the main function of the servers, or increase the servers’ range of operations.

62. In all the circumstances therefore the only heading under which the BladeRoom may be classified is 9406 ‘Pre-fabricated buildings’. Note 4 to chapter 94 refers to ‘housing’ amongst other things, which implies a degree of sophistication beyond that generally considered to be found in a shed. The fact that 9406 00 31 specifically refers to greenhouses, and that the notes to the heading set out that a pre-fabricated building may be supplied with equipment built-in including electrical fittings, heating and air conditioning equipment, persuades us, albeit reluctantly, that the BladeRoom is properly classified under heading 9406 00 38 and we accept Mr Pritchard’s submissions in that regard. For all the above reasons this appeal is dismissed.

63 This document contains full findings of fact and reasons for the decision. Any party dissatisfied with this decision has a right to apply for permission to appeal against it pursuant to Rule 39 of the Tribunal Procedure (First-tier Tribunal) (Tax Chamber) Rules 2009. The application must be received by this Tribunal not later than 56 days after this decision is sent to that party. The parties are referred to “Guidance to accompany a Decision from the First-tier Tribunal (Tax Chamber)” which accompanies and forms part of this decision notice.

**JUDGE J C GORT**  
**TRIBUNAL JUDGE**

**RELEASE DATE: 20 August 2013**