

# BCS Certificate in Integrating off-the shelf Solutions

**NOTE:**

These are sample questions, with marking guidelines, for each of the BCS Diploma certificate modules. Each sample question has been written to help candidates prepare for the module examination by providing an example of the general approach adopted by these questions. Therefore, the total marks assigned to the sample questions will vary depending upon the certificate module.

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# INTEGRATING OFF-THE SHELF SOLUTIONS

## COTS, requirements, customisation, integration and implementation questions

### Scenario 1

Tablet Technologies Europe (TTE) is a new company launched to develop and market a new ground-breaking tablet computing device. TTE is independent but a wholly owned subsidiary of a supplier of high quality audio equipment who has developed a stock control system for their single centralised warehouse in Milton Keynes. In view of the narrow window for taking advantage of technological innovation before the marketplace becomes saturated, TTE has decided that it cannot afford to set up its own manufacturing and supply chain infrastructure, and hence, will operate as a virtual company from leased offices based in Manchester. This decision was also influenced by the Chief Executive's desire to be able to back out of the marketplace quickly should the venture not be successful. This effectively means that investment in long-term development of physical infrastructure (buildings and other assets, including IT infrastructure) should be avoided where possible and TTE do not want to develop or maintain their own software systems

Contracts have already been signed between a manufacturing partner based in China and a network of independent dealers, who sell to the general public. Furthermore, TTE has negotiated a warehousing and distribution deal with a UK-based logistics partner who will hold TTE's products in their regional warehouses. Appendix A contains a model of the high-level business process for the new business model.

The TTE project team has agreed that the following core business functions must be available when they commence trading:

- Order processing and stock control
- Customer relationship management (CRM)
- Procurement and purchase ledger
- Financial accounts
- HR and payroll

TTE wish to use the parent company's software systems where possible, but where this is not possible, a COTS (Commercial Off-The-Shelf) solution should be sought. The chosen solution(s) will need to interface with TTE's partner systems that will deal with manufacturing, logistics and sales to end customers. A deadline has been set (6 months hence) to complete the integration of information systems between all of the various parties so that they can launch the product via a European-wide TV marketing campaign in time for the Christmas market.

It is intended that the supply chain will be automated where possible as TTE must be able to turnaround orders within 48 hours to meet their SLA (Service Level Agreement) with the dealer network. It is anticipated that this automated process will work as follows:

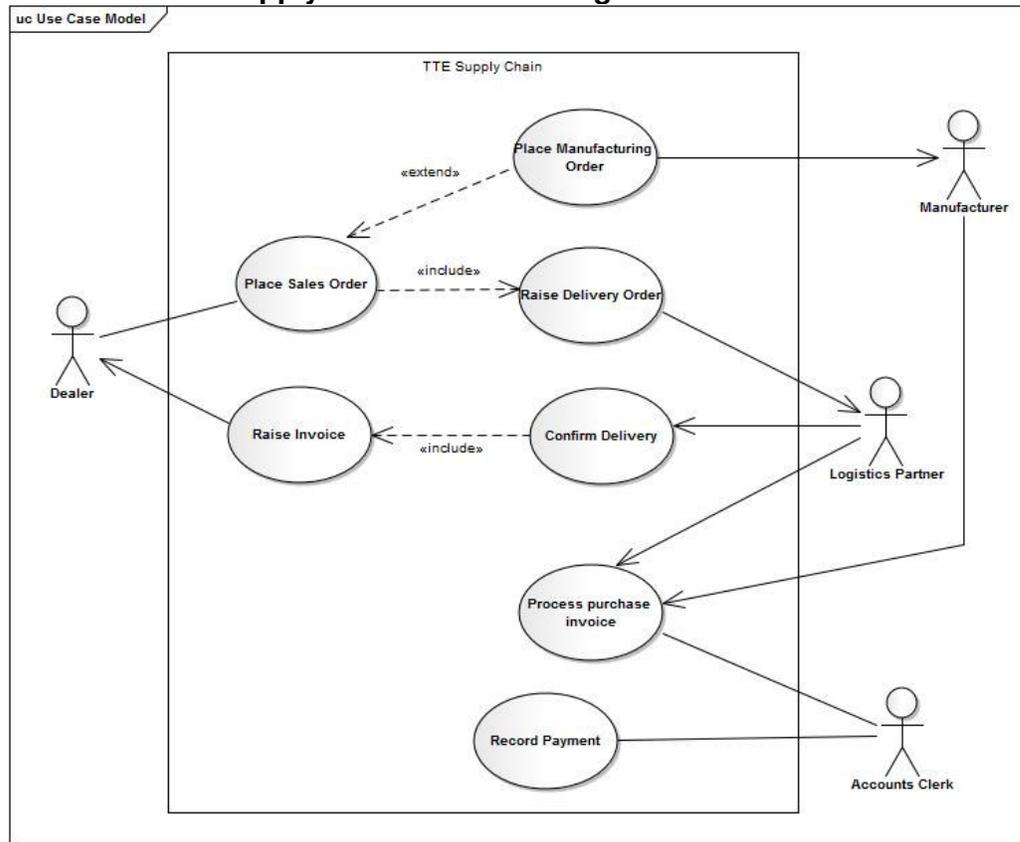
1. The dealer will place their orders online via a secure web site.
2. The TTE back-office system will send a message to the logistics partner's system requesting delivery of the goods ordered direct to the dealer.
3. If the TTE back-office system detects a stock shortage then it will send a message to the manufacturer's system to order more stock, which the manufacturer will deliver direct to the logistics partner's warehouses.
4. When the manufacturer has delivered the new stock to the logistics partner they will send an electronic invoice to TTE.
5. Once the logistics partner has delivered the goods to the dealer they will send a message to TTE confirming delivery, followed by an electronic invoice.
6. Upon receipt of confirmation of delivery by the logistics partner TTE will raise an electronic invoice to the dealer.

Appendix B contains a Use Case diagram showing the high-level functions required in the new TTE system.

TTE have appointed a new IT director who has introduced a policy that all server technology shall be provided by IBM, that IBM's DB2 database management system shall become the standard for data management and that TTE should use the parent company's stock control system.



## APPENDIX B – supply chain use case diagram



## Question

- a) Upon further investigation, the project team have identified that the parent company's existing sales order processing system will not support the unique nature of the virtual organisation, and hence, it has been decided to procure a COTS solution to handle this aspect of the business. Identify, in the scenario, **two** advantages and **two** disadvantages to TTE of procuring a COTS solution to manage the sales order processing function. (4 Marks)
- b) Identify a general requirement that should be included in the Invitation To Tender for the COTS solution. (1 Mark)
- c) Identify a technical requirement that should be included in the Invitation To Tender for the proposed COTS solution. (1 Mark)
- d) Identify a potential risk to the project posed by the new IT Director's policy to standardise on IBM technology, and explain how the risk could be mitigated. (2 Marks)

## Question

TTE's parent company is a supplier of high quality audio equipment which they distribute to dealers themselves from their centralised warehouse in Slough. A simplified view of the structure of the Product table used within their DB2-based stock control system is shown below.

ATTRIBUTE NAME
ItemCode
ItemName
QtyInStock
ReOrdLvl
ReOrdQty

- a) Identify, from the information you have, one fundamental reason why this system is unsuitable for TTE in its present form, and state the changes that would need to be made to integrate it into their proposed development. (4 Marks)
- b) What interfaces will TTE have to provide between their system components and their partners. (4 Marks)
- c) What interfaces will their partners require to provide to TTE. (4 Marks)

## Question

- a) Identify FIVE externally generated business events that the proposed system must be able to respond to. (5 Marks)
- b) Identify ONE system event that the system must be able to respond to. (1 Mark)
- c) Define **two** integration protocol issues you would need to resolve to successfully complete this development. (4 Marks)
- d) For each issue:
  - i) State who the stakeholders would be in the resolution. (4 Marks)
  - ii) Identify a factor which will impact upon its resolution. (4 Marks)

## Question

- a) The Chief Executive is concerned at the potential risk of teething problems with the proposed new IT solution and has proposed a phased approach to the roll-out.
  - i) Explain why a phased approach would **NOT** be suitable in this case. (2 Marks)
  - ii) Which roll-out approach would you recommend and why? (4 Marks)
- b) Identify THREE separate data take-on issues that must be considered before the systems can go-live. (6 Marks)

**Question 1**

- a) Award ONE mark for each advantage up to a maximum of TWO marks and ONE mark for each disadvantage up to a maximum of TWO marks. Total of FOUR marks for the question.

Possible advantages include:

- TTE has a very tight timeframe within which to implement a working solution. A COTS solution would be quicker to deploy than developing a bespoke solution. (1 Mark)
- There is a need to avoid long-term investment in infrastructure (including IT) to support the Chief Executive's desire to be able to back out of the marketplace should the venture not be successful. Procuring a COTS solution will minimise up-front development costs and enable ongoing costs (licences, maintenance and support) to be fixed within the contract with the COTS provider. It may also be possible to opt for a completely hosted solution. (1 Mark)

Possible disadvantages include:

- COTS solutions are developed to meet the needs of a wide range of customer organisations, and hence, tend to be very generic. It is highly likely that the solutions available will not meet the precise needs of this new venture, especially given the expectation to integrate seamlessly with TTE's supply partners' systems. (1 Mark)
- Furthermore, due to the fact that TTE will not own the rights to modify the COTS solution, any bespoke tailoring required to build the required interfaces may not be possible, or may invalidate the decision to take the COTS route in the first place (see advantages above). (1 Mark)

Award marks for justified alternatives.

- b) Award ONE mark for identifying the following general requirement:  
The integration of information systems must be completed within 6 months.  
(1 Mark)
- c) Award ONE mark for identifying ONE of the following technical requirements:
- The solution must be deployed using IBM server technology.
  - The COTS solution must utilise an IBM DB2 database management system for data management.
- (1 Mark)
- d) Award ONE mark for identifying a relevant risk and a further mark for explaining how the risk could be mitigated.

Risk:

There is a risk that the most suitable COTS solution is not compatible with the IBM technology.

(1 Mark)

Mitigation:

Approach the IT Director to include a clause in the policy that states that 3rd-party hosted solutions are exempt from the policy and include the requirement to provide a hosted solution as an alternative to the requirement for the solution to work with the IBM technology within the Invitation To Tender document issued to potential suppliers.

(1 Mark)

## Question 2

- a) Award TWO marks for identifying the issue, as follows:  
The logistics company will hold stock in regional warehouses and there is no field to indicate which warehouse the QtyInStock refers to as the system in its present form is used for a single centralised warehouse.  
(2 Marks)
- Award a further TWO marks for identifying ONE of the following changes:  
The solution could be to hold an additional field; to create a location table linked to the Item Table or to modify ItemCode to include location.  
(2 Marks)
- NOTE: Award TWO marks only for alternative, less fundamental answers.  
e.g. Absence of a field to show that a replenishment order has been place;  
absence of an item price field for invoicing.  
Stock Control & Procurement will require an interface with Manufacturing Order Receipt.*
- b) Interfaces TTE must provide:
- i) Purchase Invoice Processing must provide an interface to the Manufacturer's systems and to the Logistics Partner's system.  
(2 Marks)
  - ii) Sales Invoicing/ Delivery confirmation must provide an interface to the Logistics Partner's system.  
(2 Marks)
- c) Interfaces the partners must provide:
- iii) The Logistics Partner's order acceptance system must provide an interface to TTE's Sales Order Processing/ Raise Delivery Order system.  
(2 Marks)
  - iv) The Manufacturing Partner's system must provide an interface to Sales Order Processing/ Manufacturing Order system.  
(2 Marks)

### Question 3

- a) Award ONE mark for each of the following business events:
- Receipt of a sales order
  - Receipt of a payment
  - Receipt of a Purchase Invoice
  - Logistics confirms delivery
  - Replenishment stock received
- (5 Marks)
- b) Award ONE mark for the following system event:  
Item reaches/goes below re-order level.
- (1 Mark)
- c) For each integration issue award:
- up to TWO marks for the issue itself
  - up to TWO marks for identifying relevant stakeholders
  - up to TWO marks for identifying an impacting factor
- up to a maximum of SIX marks for each issue.

#### Integration issue 1

The use of the existing Stock Package which must <<include>> the Procurement process

(2 Marks)

Stakeholders:

- Parent Company Software Service Providers
- Procurement Software Service Providers
- Manufacturing company

(2 Marks)

Impacting factor:

The constraint to use the existing stock control software which requires modification may be unrealistic.

(2 Marks)

#### Integration issue 2

The interface with the logistics company's order receipt system and the Component for Order Receipt/Delivery.

(2 Marks)

Stakeholders:

- Logistics Company
- TEE

(2 Marks)

Impacting factor:

- The stakeholders must agree formats for order data transmission;
- The stakeholders must agree protocols for maintenance, backup, security

(2 Marks)

#### Question 4

- a)
- i) Award up to TWO marks for a plausible reason why a phased approach would not be suitable in this case. Possible suggestions could be:

A phased approach is where solution functionality is released in stages (phases) rather than all at once. Due to the inter-connected nature of the required solution for TTE it would not be possible to use part of the functionality on its own whilst the remaining functionality was being developed, as this would necessitate a part-manual process, which would increase the turnaround time for orders, which, in turn, would threaten the 48 hour SLA.

(2 Marks)

- ii) Award up to TWO marks for a reasonable explanation of a pilot approach:

e.g. A pilot approach whereby all of the functionality is 'live' from day one but trading is limited to a sub-set of dealers only would be suitable.

(2 Marks)

*Marks may also be awarded for a 'big-bang' (direct changeover) approach if suitably justified.*

Award up to TWO marks for an explanation of why the approach suggested in answer to part i) would be appropriate in this scenario:

e.g. The pilot approach would limit the exposure of TTE to unforeseen issues during 'go-live', such as a failure in one or more of the interfaces between supply partners. If only a sub-set of dealers were introduced initially, then such a failure would cause less of an impact to the business and would be easier to resolve than if the entire dealer network were affected.

(2 Marks)

- b) Award up to TWO marks for each plausible data take-on issue identified up to a maximum of SIX marks for THREE issues. Possible issues are:

- Need to generate a list of available products and develop a coding system that will be mapped to the manufacturer's product codes.  
(2 Marks)
- Need to provide a list of products to each logistics provider to set up and map to stock items within their own systems.  
(2 Marks)
- A decision would need to be made as to whether a list of dealers should be set up in advance of 'go-live' or whether their details should be captured when they place their first order.  
(2 Marks)

A further issue could be the consideration of whether to pass dealer information (contact details and delivery address) to the logistics providers along with the order details or to provide a separate feed of dealer details so that the logistics providers can maintain these within their own systems.