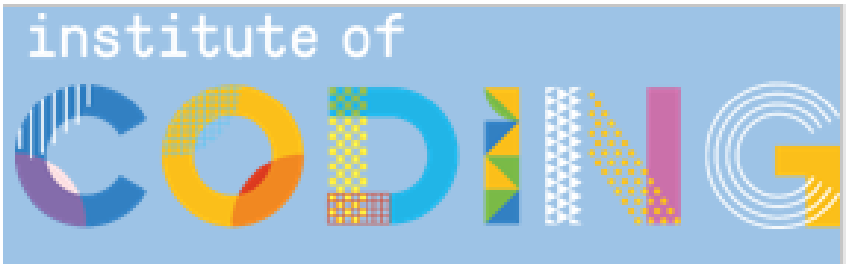

Funded by the Office for Students

An IoC approach to assessing the demonstration of SFIA Generic Responsibility Characteristics.

David S. Bowers
The Open University
Milton Keynes, UK
david.bowers@open.ac.uk

July 2021

Contents

Introduction

There is a growing interest in the IoC accreditation approach from beyond the BCS, but the current approach assumes that the (BCS) scoring mechanism is to be used for assessing demonstration of the generic responsibility characteristics (GRCs). With the publication of SFIA v8-beta on 30th June, which includes some minor amendments to the generic responsibility characteristics, the time is right to develop an IoC approach to assessing a portfolio for evidence of demonstration of the GRCs.

The approach presented in this document seeks to preserve the essence of the BCS approach, but relies only on publicly-available documents rather than on the proprietary assessment matrix.

Furthermore, it seeks to remove the requirement for "professional judgement" to override a failure to demonstrate one or more GRCs deemed to be "core", by setting two simple thresholds.

The resulting approach is captured in two Excel spreadsheets that can be used for mapping from portfolio entries to the GRC for levels 3 (Bacheolor's degree) and 4 (Master's), and which checks automatically that all thresholds are satisfied.

RITTech assessment

The assessment matrix used to assess individual applicants for RITTech registration is based on the GRCs for SFIA v7 Level 3. Around half of the GRCs (9 out of 17) are deemed "core", and applicants are expected to demonstrate all of these across the three projects they describe in their submission.

Unfortunately, the logic of this assessment means that there are nine "failure points" for applicants; assessors are required to use professional judgement to decide whether any omissions in an application can be excused, perhaps on the basis of excellent evidence for other GRCs. It is worth noting that some of the criteria in the matrix actually contain multiple sentences, which some may regard as separate components of the GRCs.

The context for an RITTech assessment is, of course, different from that of a portfolio for an IoC badge: the former will describe three projects selected by the applicant to demonstrate their performance, and the latter is a record of experience in a placement or internship. Furthermore, it is not clear whether or not applicants are advised that some of the GRCs are, essentially, compulsory.

There is already an alternative route to RITTech for students on (BCS) accredited degree programmes. As part of the accreditation exercise, an HEI can provide evidence for the development of a subset of the GRCs during students' placements. The GRCs required are listed in the publicly available application forms for RITTech accreditation. This list includes all of those deemed "core" in the individual assessment matrix.

An IoC assessment approach – SFIA Level 3

The approach described in this document captures the spirit of the RITTech approach, but extends the notion of "core" GRCs to include those which are significant in meeting the frameworks and benchmarks considered in the IoC mapping statements[1].

The publicly available application form[2] for RITTech accreditation lists 14 "competencies", which map to the following SIFA v8 (beta) generic responsibility characteristics:

Autonomy

- Works under general direction.
- Uses discretion in identifying and responding to complex issues related to own assignments.
- Determines when issues should be escalated to a higher level.
- Plans and monitors own work (and that of others where applicable) competently within limited deadlines.

Influence

- Interacts with and influences colleagues.
- May oversee others or make decisions which impact routine work assigned to individuals or stages of projects.
- Has working level contact with customers, suppliers and partners.
- Contributes fully to the work of teams by appreciating how own role relates to other roles.

Complexity

- Performs a range of work, sometimes complex and non-routine, in a variety of environments.
- Applies a methodical approach to routine and moderately complex issue definition and resolution.

Knowledge

[1] IoC Statements of Alignment, https://institute-of-coding.github.io/accreditation-standard/pubs/IoC-D1-1-5.pdf
[2] Registered IT Technician Application form https://www.bcs.org/media/1213/rittech-application-form.pdf

- Has an appreciation of the wider business context.
- Absorbs new information and applies it effectively.

Business skills

- Demonstrates effective oral and written communication skills when engaging on issues with colleagues, users/customers, suppliers and partners.
- Appreciates how own role impacts security and ethics, demonstrates routine security and ethical practices and knowledge required for own work.

Analysis of the mappings in the IoC statements of alignment suggest that four further GRCs be added to this list of "core" characteristics:

Influence:

- Understands and collaborates on the analysis of user/customer needs and represents this in their work.

Knowledge

- Demonstrates effective application and the ability to impart knowledge found in industry bodies of knowledge.
- Takes the initiative to develop own knowledge by identifying and negotiating appropriate development opportunities.

Business Skills

- Demonstrates judgement and a systematic approach to work.

Furthermore, the RITTech list includes "Absorbs new information and applies it effectively", which is not used in the benchmark mappings, and should perhaps be omitted. It would seem that this is, in fact, expressed adequately by the two additional GRCs under knowledge – there would be little point in developing one's own knowledge without subsequently demonstrating its effective application!

For three of the benchmarks/frameworks, the knowledge GRC, "Has sound generic, domain and specialist knowledge…" was also referenced. In the strict context of an IoC degree, this GRC should be covered simply by virtue of the qualification being a degree. Were the assessment of the demonstration of GRCs to be applied outside the context of a degree, then it would probably be appropriate to include this GRC also as core; but in the current context, it is not.

This leads to a total of 17 "core" competencies for an IoC assessment of the generic responsibility characteristics at SFIA Level 3:

Autonomy

- Works under general direction.
- Uses discretion in identifying and responding to complex issues related to own assignments.
- Determines when issues should be escalated to a higher level.
- Plans and monitors own work (and that of others where applicable) competently within limited deadlines.

Influence

- Interacts with and influences colleagues.
- May oversee others or make decisions which impact routine work assigned to individuals or stages of projects.
- Has working level contact with customers, suppliers and partners.

- Understands and collaborates on the analysis of user/customer needs and represents this in their work.
- Contributes fully to the work of teams by appreciating how own role relates to other roles.

Complexity

- Performs a range of work, sometimes complex and non-routine, in a variety of environments.
- Applies a methodical approach to routine and moderately complex issue definition and resolution.

Knowledge

- Has an appreciation of the wider business context.
- Demonstrates effective application and the ability to impart knowledge found in industry bodies of knowledge.
- Takes the initiative to develop own knowledge by identifying and negotiating appropriate development opportunities.

Business skills

- Demonstrates effective oral and written communication skills when engaging on issues with colleagues, users/customers, suppliers and partners.
- Appreciates how own role impacts security and ethics, demonstrates routine security and ethical practices and knowledge required for own work.
- Demonstrates judgement and a systematic approach to work.

Taking these 17 GRCs then to be "core", a threshold is set for the number of these to be evidenced in the portfolio. Currently, the threshold is 80% (which rounds down to 13 out of 17).

A second threshold is also set to emphasise the importance of these "core" GRCs: that, across the portfolio, those core GRCs should be demonstrated more than once. However, rather than requiring each (or, rather, 80%) of the core GRCs to be demonstrated at least twice, the threshold is actually set to twice the threshold for the number of core GRCs to be evidenced in the portfolio – i.e., 26.

Finally, an overall "passmark" is set, against the assumption that the maximum number of entries that can be credited against each GRC is three, in keeping with the original RITTech assessment. With 23 GRCs at SFIA level 3 (v8 beta), this gives a maximum score of 69, and a threshold of 65% would imply a threshold score of 44.

The assessment matrix for Level 3, including thresholds and calculation, is attached as Appendix A. The entries correspond to the portfolio in the "worked example" on the IoC accreditation standard website[3].

IoC assessment for SFIA Level 4

The corresponding spreadsheet for SFIA Level 4 (for IoC Master's degrees) was developed simply by substituting the corresponding GRCs at level 4 for those at level 3. Where a level 3 GRC is identified as "core", the corresponding GRCs at Level 4 are also labelled as "core". This gives a total of 19 "core" GRCs at Level 4, two more than at level 3.

Autonomy

- Works under general direction within a clear framework of accountability.
- Uses substantial discretion in identifying and responding to complex issues and assignments as they relate to the deliverable/scope of work.

[3] Portfolio mapping example: https://institute-of-coding.github.io/accreditation-standard/pubs/IoC-PM-1-0.pdf

- Escalates when issues fall outside their framework of accountability.
- Plans, schedules and monitors work to meet given objectives and processes to time and quality targets.

Influence

- Facilitates collaboration between stakeholders who share common objectives.
- May have some responsibility for the work of others and for the allocation of resources.
- Influences customers, suppliers and partners at account level
- Engages with and contributes to the work of cross-functional teams to ensure that customers and user needs are being met throughout the deliverable/scope of work.
- Makes decisions which influence the success of projects and team objectives.

Complexity

- Work includes a broad range of complex technical or professional activities, in a variety of contexts.
- Investigates, defines and resolves complex issues.

Knowledge

- Has gained a thorough knowledge of the domain of the organisation.
- Is able to apply the knowledge effectively in unfamiliar situations and actively maintains own knowledge and contributes to the development of others.
- Maintains an awareness of developing practices and their application and takes responsibility for driving own development.
- Takes the initiative in identifying and negotiating their own and supporting team members appropriate development opportunities.

Business skills

- Communicates fluently, orally and in writing, and can present complex information to both technical and nontechnical audiences when engaging with colleagues, users/customers, suppliers and partners.
- Fully understands the importance and application of security and ethics to own work and the operation of the organisation.
- Demonstrates an awareness to risk and an analytical approach to work.
- Contributes specialist expertise to requirements definition in support of proposals.

There are mroe GRCs at Level 4 compared with level 3 (28 vs 23), and two of these “new” GRCs are identified as “core”, on the same basis as those for level 3:

Knowledge - Maintains an awareness of developing practices and their application and takes responsibility for driving own development.

Business skills - Contributes specialist expertise to requirements definition in support of proposals.

This gives a total of 19 out of the 28 Level 4 GRCs as core. The threshold for demonstration of core GRC is therefore 15, with at least 30 portfolio entries evidencing these core GRCs, and an overall threshold of 54 (out of a possible maximum of 87) portfolio entries evidencing any of the Level 4 GRCs.

The complete matrix is included below as Appendix B.

Discussion

The (confidential) BCS assessment matrix for individual RITTech applicants had an unfortunate total of 10 thresholds. The requirements to demonstrate each “core” GRCs were “ANDed” together, and there was also an overall threshold. In practice, this matrix apparently leads to a need for frequent “professional judgement” in cases where one or perhaps two “core” GRCs are not demonstrated in the descriptions of the three projects in an application.

By contrast, the IoC model, for both levels 3 and 4, has only three thresholds: for demonstration of the majority of the “core” GRCs; for the demonstration of core GRCs more than once, and for the overall breadth of evidence across all the GRCs.

It is argued that the use of these thresholds is an appropriate to reduce the need for academic judgement to determine the outcome in anomalous cases. Furthermore, relaxing the requirement to demonstrate every single core characteristic can be essential in the context of student placements, because it cannot be guaranteed that all students in all placements will have the opportunity to demonstrate all of the core GRCs.

Despite this implicit relaxation, the approach maintains the spirit of the RITTech assessments, since all but one of the GRCs identified in BCS’s accreditation application form for RITTech are treated as ”core” in the IoC approach, and the one RITTech core GRC that is not is probably subsumed into two that are added in the IoC scheme. As an aside, it is interesting to note that the RITTech accreditation application form requires development of more GRCs that are treated as core in their individual assessment matrix.

Finally, the inclusion of the additional GRCs as “core”, on the basis of the mappings to the various frameworks and benchmarks, ensures that the assessment of GRCs is consistent with other aspects of the IoC accreditation model.

Appendix A – Assessment Matrix for SFIA Level 3 Generic Responsibility Characteristics.

SFIA Level 3 generic responsibility characteristics	Core	Entry 1	Entry 2	Entry 3	core OK	core score	supp score
		refs. to portfolio/reflection *dates, urls, page/para nos etc.*					
Autonomy							
Works under general direction.	Y	20-Sep	14-Oct	02-Dec	Y	3	
Receives specific direction, accepts guidance and has work reviewed at agreed milestones.	N	20-Sep	14-Oct	02-Dec			3
Uses discretion in identifying and responding to complex issues related to own assignments.	Y	23-Sep	30-Sep		Y	2	
Determines when issues should be escalated to a higher level.	Y	13-Sep	30-Sep		Y	2	
Plans and monitors own work (and that of others where applicable) competently within limited deadlines.	Y	14-Oct	18-Nov	02-Dec	Y	3	
Influence							
Interacts with and influences colleagues.	Y	14-Oct	11-Nov	11-Nov	Y	3	
May oversee others or make decisions which impact routine work assigned to individuals or stages of projects.	Y	11-Nov	11-Nov		Y	2	
Has working level contact with customers, suppliers and partners.	Y	30-Sep			Y	1	
Understands and collaborates on the analysis of user/customer needs and represents this in their work.	Y	11-Nov			Y	1	
Contributes fully to the work of teams by appreciating how own role relates to other roles.	Y	11-Nov	18-Nov	Ref	Y	3	
Complexity							
Performs a range of work, sometimes complex and non-routine, in a variety of environments.	Y	23-Sep	11-Nov	Sup	Y	3	
Applies a methodical approach to routine and moderately complex issue definition and resolution.	Y	13-Sep	30-Sep		Y	2	
Applies and contributes to creative thinking or finds new ways to complete tasks.	N	23-Sep	30-Sep				2
Knowledge							

Has sound generic, domain and specialist knowledge necessary to perform effectively in the organisation typically gained from recognised bodies of knowledge and organisational information.	N	20-Sep	18-Nov	02-Dec			3
Has an appreciation of the wider business context.	Y	14-Oct	18-Nov	Ref	Y	3	
Demonstrates effective application and the ability to impart knowledge found in industry bodies of knowledge.	Y	30-Sep	18-Nov	Ref	Y	3	
Absorbs new information and applies it effectively.	N	11-Nov					1
Takes the initiative to develop own knowledge by identifying and negotiating appropriate development opportunities.	Y	09-Sep	23-Sep		Y	2	
Business skills							
Demonstrates effective oral and written communication skills when engaging on issues with colleagues, users/customers, suppliers and partners.	Y	11-Nov	02-Dec	Sup	Y	3	
Understands and effectively applies appropriate methods, tools, applications and processes.	N	23-Sep	18-Nov				2
Appreciates how own role impacts security and ethics, demonstrates routine security and ethical practices and knowledge required for own work.	Y				N	0	
Demonstrates judgement and a systematic approach to work.	Y	30-Sep	Sup		Y	2	
Effectively applies digital skills and explores these capabilities for their role.	N						0
Total core	17						
Total supplementary	6						11
Total all	23						
Thresholds							
Threshold proportion of core competencies to be demonstrated	80%	13			16		
Average score for demonstrated core competencies	2	26				38	
Overall threshold	65%	44					49
Demonstration of core characteristics					**OK**		
Core characteristics score						**OK**	
Overall result							**Pass**

Appendix B - Assessment Matrix for SFIA Level 4 Generic Responsibility Characteristics.

SFIA Level 4 generic responsibility characteristics	Core	Entry 1 refs. to portfolio/reflection *dates, urls, page/para nos etc.*	Entry 2	Entry 3	Core OK	core score	supp score
Autonomy							
Works under general direction within a clear framework of accountability.	Y				N	0	
Exercises substantial personal responsibility and autonomy	N						0
Uses substantial discretion in identifying and responding to complex issues and assignments as they relate to the deliverable/scope of work.	Y				N	0	
Escalates when issues fall outside their framework of accountability.	Y				N	0	
Plans, schedules and monitors work to meet given objectives and processes to time and quality targets.	Y				N	0	
Influence							
Facilitates collaboration between stakeholders who share common objectives.	Y				N	0	
May have some responsibility for the work of others and for the allocation of resources.	Y				N	0	
Influences customers, suppliers and partners at account level	Y				N	0	
Engages with and contributes to the work of cross-functional teams to ensure that customers and user needs are being met throughout the deliverable/scope of work.	Y				N	0	
Makes decisions which influence the success of projects and team objectives.	Y				N	0	
Participates in external activities related to own specialism.	N						0
Complexity							

Work includes a broad range of complex technical or professional activities, in a variety of contexts.	Y		N	0	
Investigates, defines and resolves complex issues.	Y		N	0	
Applies, facilitates and develops creative thinking concepts or finds innovative ways to approach a deliverable.	N				0
Knowledge					
Has a thorough understanding of recognised generic industry bodies of knowledge and specialist bodies of knowledge as necessary.	N				0
Has gained a thorough knowledge of the domain of the organisation.	Y		N	0	
Is able to apply the knowledge effectively in unfamiliar situations and actively maintains own knowledge and contributes to the development of others.	Y		N	0	
Rapidly absorbs and critically assesses new information and applies it effectively.	N				0
Maintains an awareness of developing practices and their application and takes responsibility for driving own development.	Y		N	0	
Takes the initiative in identifying and negotiating their own and supporting team members appropriate development opportunities.	Y		N	0	
Business skills					
Communicates fluently, orally and in writing, and can present complex information to both technical and nontechnical audiences when engaging with colleagues, users/customers, suppliers and partners.	Y		N	0	
Selects appropriately from, and assesses the impact of change to applicable standards, methods, tools, applications and processes relevant to own specialism.	N				0

Fully understands the importance and application of security and ethics to own work and the operation of the organisation.	Y			N	0	
Demonstrates an awareness to risk and an analytical approach to work.	Y			N	0	
Maximises the capabilities of applications for their role and evaluates and supports the use of new technologies and digital tools.	N					0
Seeks specialist security or ethical knowledge or advice when required to support own work or work of immediate colleagues.	N					0
Contributes specialist expertise to requirements definition in support of proposals.	Y			N	0	
Coaches colleagues in own specialism.	N					0
Total core	19					
Total supplementary	9					0
Total all	28					
Thresholds						
Threshold proportion of core competencies to be demonstrated	80%	15		0		
Average score for demonstrated core competencies	2	30			0	
Overall threshold	65%	54				0
Demonstration of core characteristics				Fail		
Core characteristics score					Fail	
Overall result						Fail