

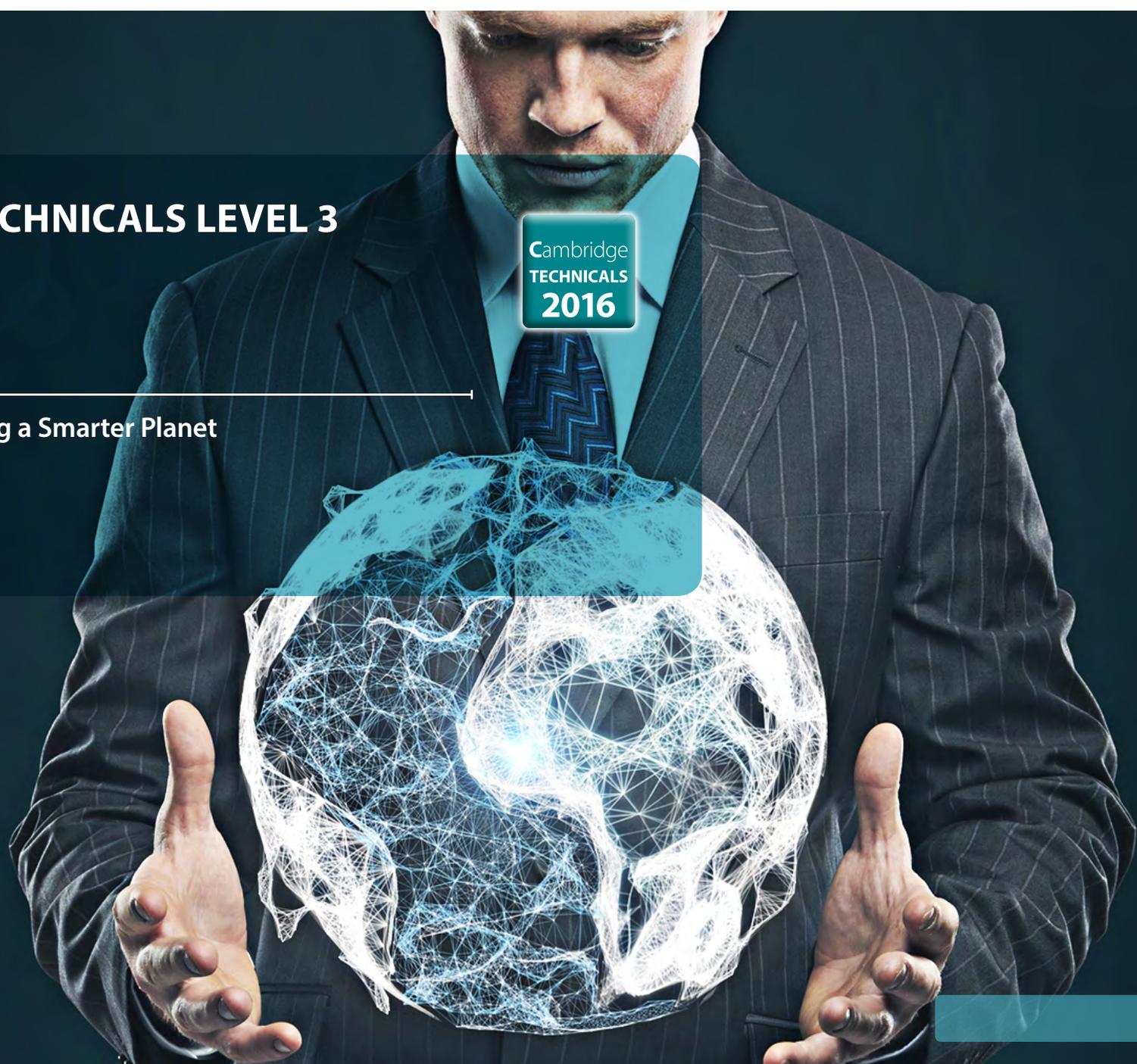
Cambridge **TECHNICALS LEVEL 3**

IT

Cambridge
TECHNICALS
2016

Unit 16 – Developing a Smarter Planet
DELIVERY GUIDE

Version 2



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INTRODUCTION

This Delivery Guide has been developed to provide practitioners with a variety of creative and practical ideas to support the delivery of this qualification. The Guide is a collection of lesson ideas with associated activities, which you may find helpful as you plan your lessons.

OCR has collaborated with current practitioners to ensure that the ideas put forward in this Delivery Guide are practical, realistic and dynamic. The Guide is structured by learning outcome so you can see how each activity helps you cover the requirements of this unit.

We appreciate that practitioners are knowledgeable in relation to what works for them and their learners. Therefore, the resources we have produced should not restrict or impact on practitioners' creativity to deliver excellent learning opportunities.

Whether you are an experienced practitioner or new to the sector, we hope you find something in this guide which will help you to deliver excellent learning opportunities.

If you have any feedback on this Delivery Guide or suggestions for other resources you would like OCR to develop, please email resources.feedback@ocr.org.uk.

OPPORTUNITIES FOR ENGLISH AND MATHS SKILLS DEVELOPMENT AND WORK EXPERIENCE

We believe that being able to make good progress in English and maths is essential to learners in both of these contexts and on a range of learning programmes. To help you enable your learners to progress in these subjects, we have signposted opportunities for English and maths skills practice within this resource. We have also identified any potential work experience opportunities within the activities. These suggestions are for guidance only. They are not designed to replace your own subject knowledge and expertise in deciding what is most appropriate for your learners.



English



Maths



Work

Please note

The timings for the suggested activities in this Delivery Guide **DO NOT** relate to the Guided Learning Hours (GLHs) for each unit.

Assessment guidance can be found within the Unit document available from www.ocr.org.uk.

The latest version of this Delivery Guide can be downloaded from the OCR website.

UNIT AIM

Changes in technology over the last century now mean that we live in a Smarter Planet. You will consider how the evolution of technology has impacted on everyday life, and why the Smarter Planet is important for a global society. You will investigate the evolution of the Smarter Planet in a variety of contexts, including the impact it is having on society. You will consider potential Smarter Planet developments and put forward a business proposal for a Smarter Planet concept to potential stakeholders, revising the business proposal as necessary following their feedback.

This unit is optional within the Emerging Digital Technology Practitioner and IT Infrastructure Technician specialist pathways. The technology used within these two pathways can have a major impact on the sustainability of the Smarter Planet.

Knowledge gained in the study of this unit will also help prepare you for relevant industry qualifications such as Cisco IoE.

Unit 16 Developing a Smarter Planet

LO1	Understand what is meant by a Smarter Planet
LO2	Be able to propose ways to extend the scope of the Smarter Planet
LO3	Be able to present, refine and evaluate Smarter Planet concepts

To find out more about this qualification please go to: <http://www.ocr.org.uk/qualifications/cambridge-technicals-it-level-3-certificate-extended-certificate-introductory-diploma-foundation-diploma-diploma-05838-05842-2016-suite>

The activities within this teaching and learning resource must not be used for summative assessment purposes. As part of our teaching we expect support to be given to your learners; such support is not permissible for summative assessment and is likely to be considered malpractice.

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2016

2016 Suite

- New suite for first teaching September 2016
- Externally assessed content
- Eligible for Key Stage 5 performance points from 2018
- Designed to meet the DfE technical guidance

RELATED ACTIVITIES

The Suggested Activities in this Delivery Guide listed below have also been related to other Cambridge Technicals in IT units/Learning Outcomes (LOs). This could help with delivery planning and enable learners to cover multiple parts of units.

This unit (Unit 16)	Title of suggested activity	Other units/LOs	
LO1	Evolution of a Smarter Planet	Unit 1 Fundamentals of IT	LO1 Understand computer hardware LO2 Understand computer software
	The impact of a Smarter Planet on individuals Other impacts of a Smarter Planet	Unit 17 Internet of Everything	LO2 Be able to repurpose technologies to extend the scope of the IoE
	A Smarter Planet in education	Unit 2 Global information	LO2 Understand the styles, classification and the management of global information
	Other applications of a Smarter Planet	Unit 12 Mobile technology	LO4 Be able to present solutions for the use of mobile technologies
Unit 13 Social media and digital marketing		LO2 Understand the use of social media in business	
LO2	Extending Smarter Planet developments	Unit 1 Fundamentals of IT	LO3 Understand business IT systems
		Unit 2 Global information	LO2 Understand the styles, classification and the management of global information
	Producing a concept proposal	Unit 6 Application design	LO2 Be able to investigate potential solutions for application development
		Unit 22 Big data analytics	LO2 Be able to process Big Data for business purposes
	Presenting Smarter Planet developments	Unit 2 Global information	LO3 Understand the use of global information and the benefits to individuals and organisations
		Unit 11 Systems analysis and design	LO3 Be able to develop and document models for business systems
Revisiting a Smarter Planet development proposal	Unit 6 Application design	LO2 Be able to investigate potential solutions for application development	
LO3	How to present a concept proposal	Unit 1 Fundamentals of IT	LO4 Understand employability and communication skills used in an IT environment
		Unit 8 Project management	LO2 Be able to initiate and plan projects
	Stakeholder participation	Unit 1 Fundamentals of IT	LO4 Understand employability and communication skills used in an IT environment
	Reducing costs	Unit 10 Business computing	LO2 Be able to capture and store data for analysis
	Extending the scope of a proposal	Unit 6 Application design	LO2 Be able to investigate potential solutions for application development
	How a Smarter Planet proposal may reduce manpower requirements How a Smarter Planet may harness natural resources	Unit 2 Global information	LO5 Understand the process flow of information

KEY TERMS

Explanations of the key terms used within this unit, in the context of this unit

Key term	Explanation
Global society	People from many different countries share common experiences and have much in common due to globalisation.
Smarter Planet	This is a corporate initiative of the information technology company IBM.
Concept proposal	A summary of the overall proposal.
Feasibility study	An assessment of the practicality of an idea.
Sustainability	Looks to balance the financial, social and environmental risks, opportunities and obligations of the Smarter Planet.

MISCONCEPTIONS

Some common misconceptions and guidance on how they could be overcome		
What is the misconception?	How can this be overcome?	Resources which could help
Lack of clarity of understanding about what a Smarter Planet is	Explore some material to introduce the topic at the beginning of the unit.	<p>Smarter Planet – IBM is working with clients to make many aspects of our world ‘smarter’: cities, transportation, power grids, food production for a better way of living: http://www.ibm.com/smarterplanet/uk/en/</p> <p>A Smarter Planet blog. Instrumented. Interconnected. Intelligent: http://asmarterplanet.com/</p> <p>Cognitive business: http://cognitivebusiness.tumblr.com/</p> <p>Behind IBM’s quest for a Smarter Planet: http://www.greenbiz.com/blog/2009/01/03/behind-ibms-quest-smarter-planet</p> <p>Council on Foreign Relations: http://www.cfr.org/world/smarter-planet/p34480</p>
Technology is for a purpose	Explore the idea that technology has evolved so that humans can have an easier life.	<p>7 Ways to Use Technology with Purpose https://globaldigitalcitizen.org/7-ways-use-technology-purpose</p> <p>Code Simplicity – The Purpose of Technology http://www.codesimplicity.com/post/the-purpose-of-technology/</p> <p>7 Ways Teachers Can Use Technology With Purpose Infographic http://elearninginfographics.com/7-ways-teachers-can-use-technology-purpose-infographic/</p>
Technology and IT is just for technical people	Explore the concept that you have to be very technical to be successful in the technology and IT sector.	<p>These 8 founders prove you don’t have to be technical to start a successful tech company http://uk.businessinsider.com/8-successful-tech-startups-founded-by-non-technical-people-2015-3?op=1</p> <p>Why Non-Tech People Should Apply for Tech Jobs http://mashable.com/2014/01/04/tech-jobs/#_7SY9hvHeaqj</p> <p>Can non-technical people start technology businesses in E-commerce? https://www.quora.com/Can-non-technical-people-start-technology-businesses-in-E-commerce</p>

SUGGESTED ACTIVITIES

LO No:	1		
LO Title:	Understand what is meant by a Smarter Planet		
Title of suggested activity	Suggested activities	Suggested timings	Also related to
Evolution of a Smarter Planet	<p>Learners could explore the evolution of a Smarter Planet. Tutors could allocate different examples listed in the Teaching Content to different groups of learners. The learners would investigate the evolution of the improvement to the original development and present the findings to the other groups.</p> <p>Learners should reference the materials that they find so that the source may be revisited if necessary. This emphasises the necessity to reference source material quoted in any assessment task evidence.</p> <p>For example, one group could be asked to investigate the evolution of analogue radio to DAB.</p> <p>One group of learners could be asked to identify other improvements to original developments, not specified in the examples in the Teaching Content. This gives scope to ensure that the examples in the Teaching Content remain up-to-date.</p> <p>Useful resources:</p> <p>Smarter Planet IBM http://www-03.ibm.com/ibm/history/ibm100/us/en/icons/smarterplanet/ The impact of computing advances.</p> <p>Smarter Planet evolution IBM https://www.fi.upm.es/catedra-ibmrational/sites/www.fi.upm.es.catedra-ibmrational/files/ignacio.pdf A presentation showing the evolution of a Smarter Planet.</p> <p>When will DAB replace FM? ebuyer http://www.ebuyer.com/blog/2015/05/when-will-dab-replace-fm/ An article on DAB replacing FM radio.</p>	2 hours	Unit 1 LO1, LO2



Title of suggested activity	Suggested activities	Suggested timings	Also related to
<p>What is the importance of a Smarter Planet for a global society?</p> 	<p>Learners could explore the importance of a Smarter Planet for a global society. One group of learners could consider that a Smarter Planet is important and another group could consider that it is not important. Each group could then present their considerations.</p> <p>Useful resource:</p> <p>Case Study: IBM Smarter Planet Initiatives MyBizMaster https://www.youtube.com/watch?v=o3FP4zrcrAE A video on IBM 's corporate strategy.</p>	1.5 hours	
<p>The impact of a Smarter Planet on individuals</p> 	<p>Working in small groups, learners could consider the impact of a Smarter Planet on individuals and how this influences lifestyles.</p> <p>Learners could prepare presentations that could be made available to other learners via the centre's VLE, or presented in poster format.</p> <p>Useful resource:</p> <p>Smarter Planet – Cultural impacts IBM http://www-03.ibm.com/ibm/history/ibm100/us/en/icons/smarterplanet/impacts/ The impact of computing advances.</p>	1.5 hours	Unit 17 LO2
<p>Other impacts of a Smarter Planet</p> 	<p>Working from the activity above, learners could consider the positive and negative impacts of a Smarter Planet on the environment, ethics and social interaction.</p> <p>Learners could prepare presentations that could be made available to other learners via the centre's VLE, or presented in poster format.</p> <p>Useful resource:</p> <p>Energy and environment IBM http://www.ibm.com/ibm/green/ Innovations that can make the world become smarter.</p>	1.5 hours	Unit 17 LO2

Title of suggested activity	Suggested activities	Suggested timings	Also related to
A Smarter Planet in education	<p>Learners could be given the opportunity to investigate and explore applications of a Smarter Planet within education. This could range from the use of digital communication, such as wikis and blogs, to the use of teleconferencing and cloud computing. Learners could evaluate how education has evolved, even reflecting on their own period of time in education from primary education through to post-16 education.</p> <p>A project could be produced, for example, and then be displayed in a prominent location within the centre for all learners to review.</p> <p>Useful resources:</p> <p>Education technology solutions IBM http://www-935.ibm.com/industries/education/ Creating models for personalised education.</p> <p>Education for a Smarter Planet: The Future of Learning IBM https://www.ibm.com/smarterplanet/global/files/dk_da_dk_education_the_future_of_learning.pdf Signposts for the future of learning, providing opportunities for transformation.</p> 	4 hours	Unit 2 LO2
Other applications of a Smarter Planet	<p>Having completed the activity above, learners could explore how sectors other than education have been influenced by applications of a Smarter Planet.</p> <p>There is scope for learners to link this with periods of work experience, whether current work experience or previous work experience, or to engage guest speakers from industry who could give presentations on how a Smarter Planet has impacted on their employment sector.</p> <p>Short video clips could be prepared and made available to other learners on the centre's VLE.</p> <p>These activities can be added to the plan for Meaningful Employer Involvement.</p>  	4 hours	Unit 12 LO4 Unit 13 LO2

SUGGESTED ACTIVITIES

LO No:	2		
LO Title:	Be able to propose ways to extend the scope of the Smarter Planet		
Title of suggested activity	Suggested activities	Suggested timings	Also related to
What is a feasibility study?	<p>Learners could consider a trip, such as an educational trip, they would like to undertake. They could identify the factors that need to be taken into account to create a proposal for the trip.</p> <p>Learners could create checklists of steps which must be undertaken, and factors which must be considered, when deciding whether it is feasible to proceed with a trip.</p> <p>Useful resources:</p> <p>What is a Feasibility Study? Iowa State University https://www.extension.iastate.edu/agdm/wholefarm/html/c5-65.html Looks at what a feasibility study is and when it should be carried out.</p>  <p>The elements of a good feasibility study Project Smart https://www.projectsmart.co.uk/elements-of-a-good-feasibility-study.php Looks at six parts of a feasibility study.</p> 	2 hours	
Develop a feasibility study	 <p>Working in groups, using the proposal for the trip developed in the activity above, learners could create a feasibility study for the trip.</p>  <p>Learners could present the feasibility study to other groups who could take on the role of a potential stakeholder, identifying weaknesses and omissions in the feasibility study.</p>	4 hours	

Title of suggested activity	Suggested activities	Suggested timings	Also related to
Extending Smarter Planet developments	<p>Leading on from findings in Learning Outcome 1, working in small groups, learners could identify Smarter Planet applications which could be further developed or repurposed (in a similar manner to Teflon).</p> <p>Learners could consider how data could be used, how data could be instrumented, intelligence used and how the data could be analysed and the information which could be generated from the data.</p> <p>Learners could identify ways to present their proposal. Consideration should be given to the medium used to present the proposal and how the nature of the proposal may influence the acceptance of the proposal.</p> <p>Useful resource:</p> <p>Railroads chug down the smart track IBM http://www.ibm.com/smarterplanet/uk/en/rail_transportation/ideas/ How the transportation industry is being reshaped by embedding intelligence, analytics and optimisation.</p> 	3 hours	Unit 1 LO3 Unit 2 LO2
Producing a concept proposal	<p>Learners, working in small groups, could consider what is involved in a concept proposal. This should include the elements which make up the identification of the concept, stakeholders involved, the requirements of the concept and the deliverables of the concept. This could either be generic, considering in broad terms the elements of a concept proposal, or specific to a Smarter Planet application considered in the activity above.</p> <p>Learners could present their findings as a mind map with annotations or a report.</p> 	2 hours	Unit 6 LO2 Unit 22 LO2
Presenting Smarter Planet developments	<p>Learners could construct their proposal from the Extending Smarter Planet developments activity. This should then be presented in a medium which they think is most appropriate for the proposal.</p> <p>There is the opportunity to engage with meaningful employer involvement, to meet with requirements of the qualification, if applicable. This could involve giving the presentation to a small group of employers, who would feed back to the learners on aspects ranging from delivery to clarity of information in the proposal to how the learners engaged with the group of employers. Alternatively, if the format identified by the learners was solely a written document, this could be given to some employers for feedback.</p> <p>If employers are not available, the presentation could be made to tutors or other learners.</p> <p>Whilst presenting proposals is part of Learning Outcome 3, learners need to know what works well and what does not in preparation for Learning Outcome 3 and this contributes to the creation of a concept proposal document.</p>  	4 hours	Unit 2 LO3 Unit 11 LO3

Title of suggested activity	Suggested activities	Suggested timings	Also related to
<p>Revisiting a Smarter Planet development proposal</p>  	<p>Feedback, generated in the Producing a concept proposal activity above, could be considered by the learners with a view to refining the proposal, reducing costs, changing timescales, resources etc, if necessary.</p> <p>The refined proposal could be presented to tutors.</p> <p>Whilst presenting proposals is part of Learning Outcome 3, learners need to know what works well and what does not in preparation for Learning Outcome 3 and this contributes to the creation of a concept proposal document.</p>	2 hours	Unit 6 LO2

SUGGESTED ACTIVITIES

LO No:	3		
LO Title:	Be able to present, refine and evaluate Smarter Planet concepts		
Title of suggested activity	Suggested activities	Suggested timings	Also related to
How to present a concept proposal	<p>Learners, working in small groups, could consider how to present a concept proposal. They need to consider what makes an effective presentation:</p> <ul style="list-style-type: none"> • use of audio/video • use of questionnaires • use of interviews • use of focus groups • format of the pitch. <p>Each group could then present their findings to the other groups.</p> <p>Useful resources:</p> <p>Top Tips for Effective Presentations SkillsYouNeed http://www.skillsyouneed.com/present/presentation-tips.html This covers advice from expert presenters with ideas on how to improve presentations.</p> <p>Fix Your Presentations: 21 Quick Tips Inc.com http://www.inc.com/geoffrey-james/how-to-fix-your-presentations-21-tips.html Easy tips to make presentations more compelling and persuasive.</p> <p>Delivering an effective presentation University of Leicester http://www2.le.ac.uk/offices/ld/resources/presentations/delivering-presentation Exploring personal styles when delivering presentations.</p> 	1.5 hours	Unit 1 LO4 Unit 8 LO2

Title of suggested activity	Suggested activities	Suggested timings	Also related to
Stakeholder participation	<p>Learners, working in small groups, could consider how to manage stakeholder participation. They need to consider:</p> <ul style="list-style-type: none"> • interacting with a stakeholder • how to manage questioning • how to deal with positive feedback • how to handle negative feedback. <p>A mind map could be created to record the findings of all the groups.</p> <p>Useful resources:</p> <p>Top tips to build and manage your stakeholder relationships Brightwave Group http://www.brightwavegroup.com/our-thinking/top-tips-to-build-and-manage-your-stakeholder-relationships/index.html Explores engaging and communicating with stakeholders.</p> <p>Stakeholder Analysis, Project Management, templates and advice Stakeholder Map http://www.stakeholdermap.com/stakeholder-engagement.html Explores how to engage with stakeholders.</p> 	2 hours	Unit 1 LO4
Reducing costs	<p>Learners, working in small groups, could investigate why it is necessary to reduce costs and consider approaches to achieve this. Learners could consider how to evaluate if the cost savings are viable.</p> <p>This could be linked to the Develop a feasibility study activity in Learning Outcome 2, creating a feasibility study for an educational trip.</p> 	2 hours	Unit 10 LO2
Extending the scope of a proposal	<p>Learners, working in small groups, could consider situations where it may be necessary to extend the scope of a concept proposal. Learners could consider some of the circumstances that may arise when the opportunity may be given to extend the scope of a proposal. Learners should consider what additional materials may need to be produced when the scope of a project is extended. This could be explored by looking at public projects or system builds, for example.</p> <p>A mind map could be created to record the findings of all the groups.</p> 	2 hours	Unit 6 LO2

Title of suggested activity	Suggested activities	Suggested timings	Also related to
<p>How a Smarter Planet proposal may reduce manpower requirements</p>	<p>Learners, working in small groups, could consider examples of when a Smarter Planet proposal may result in the reduction of manpower requirements.</p> <p>As well as identifying examples of such proposals, learners could consider the advantages and disadvantages of a reduction in manpower requirements and produce a reasoned argument as to why it is an advantage or disadvantage.</p> <p>There is scope for having meaningful employer engagement in such group work, where an employer could prompt and explore arguments being presented by the groups. Employers could identify cases of where a reduction in proposed manpower requirements did not actually materialise and the implications this had for the company.</p> <p>Useful resources:</p> <p>Smarter Cities: Creating opportunities through Leadership and Innovation IBM https://www.ibm.com/smarterplanet/global/files/Budapest_MarchMF_12.pdf Includes an example relating to reducing manpower, expense and time.</p> <p>Smarter Cities IBM http://www.ibm.com/smarterplanet/us/en/smarter_cities/solutions/solution/planning_mgt_solutions/K177808H05987F38.html Explores reducing manpower and assets.</p>	4 hours	Unit 2 LO5



Title of suggested activity	Suggested activities	Suggested timings	Also related to
<p>How a Smarter Planet proposal may harness natural resources</p> 	<p>Learners, working in small groups, could consider examples of when a Smarter Planet proposal may harness natural resources.</p> <p>As well as identifying examples of such proposals, learners could consider the advantages and disadvantages of harnessing natural resources and produce a reasoned argument for both.</p> <p>Learners could evaluate how the proposal will contribute to the sustainability of the Smarter Planet.</p> <p>There is scope for extending this activity further to cover other essential components of sustainability. This could include speed processes, improving efficiency, reducing waste and inefficiency, harnessing natural resources, reducing manpower requirements and improving quality of life.</p> <p>There is scope for having meaningful employer engagement in such group work, where an employer could prompt and explore arguments being presented by the groups. Employers could identify cases of where harnessing natural resources encountered unforeseen problems.</p> <p>Useful resource:</p> <p>Introducing IBM Health Corps IBM http://citizenibm.com/2016/03/crozier_healthcorps_launch.html How communities around the world can help build a Smarter Planet.</p>	3 hours	Unit 2 LO5



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