CyberDefenceDynamics

Corporate Policy

Environment & Energy

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Revision History

Revision Date	Previous Revision Date	Summary of Changes	Changes Marked
07/01/22	01/07/21	No important changes (NATO/Hague etc.)	
04/01/23	07/01/23	Structural Update	
06/01/24	04/01/23	Crypto/Aircon Adjustments (Weather Conditions)	

Approvals

This document requires the following approvals. A signed copy should be placed in the project files.

Name	Signature	Title	Date of Issue	Version
D.Strudwick		Managing Director	06/01/24	1.02

Purpose

The policy is intended to describe the outline policy deployed within CDD in relation to minimisation of environmental impact and energy consumption by the commercial activities of the business. Considerable strides have been made in the area of reducing our energy utilisation by the replacement of older computing resource. The new research facilities machine architecture upon which the firm relies for development resource has resulted in a huge reduction in power consumption and the machines deploy an enormous computational throughput.[1] This policy is part of a library of commercial management approach including:

- Quality Assurance & Audit
- Safety Criticality in Software Engineering
- Health and Safety
- Ethics and Behaviours
- Cyber Security & Contingency Planning
- Government Security Management
- Special Projects
- Board Management
- Equality Diversity
- Development PolicyCommercial Contractual Engagement
- Commercial/Professional Insurance

[1]The replacement of SUN Micorsystems V880 and the SUN Microsystems SPARKStations both resulted in huge reduction in Energy costs. (A single V880 has 8CPUs with 16GB RAM three 2.65KW power supplies, whereas 1 MacMini has six Intel i7 CPUs with 64GB RAM and utilises 2W of power!) All 12 Apple computers utilise a tiny fraction of the power of a single SUN V880.

Overview

Contents

The report should encompass the following topics.

Advice

The report should be read in relation to the policies covering:

- *Ethics & Behaviours*
- *Health and Safety*
- *Development Policy*

Executive Summary

The business practices should generate as little impact on the environment as possible. That is to say, the business activities should produce the minimum possible pollution, generate a lowest possible levels of refuse, and utilise the minimum amount of energy in any form.

If there is any possibility to reduce and of these factors, these must be discussed with the management group. All opportunities to reduce CDD's environmental impact must be considered with the highest priority and all possible practical measures should be implemented (at least in a test mode) and examined to make sure that waste and pollution are minimised.

Energy Policy

Computer Architecture: CDD must always use computers that employ the lowest possible amount of power. This is generally achieved by regular review of the available technology. Energy use is measured and reported so that the business can monitor its total power utilisation. Machine architecture must be switched off when not in use, and only machine architecture that is critical for the process or verification methods may be running.[2]

Display Technology: The principal display models provide a considerable display real estate but these employ 63W. When not in use, they can be safely switched off to save power and prolong screen life.

[2] The MAXIMA Stack can be used in the following processing configurations including 1,2,3,5,7,9 machines. Always use the minimum machine load possible.

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UPS architecture: The removal of the legacy UPS has reduced power consumption vastly, but the new Jackery Powerstations are far more efficient. Where ever possible, the use of the photo-voltaic system must be used to replenish power. Always take a PowerStation when using computers in the car; the CAN and USB facilities in vehicles are not to be relied upon. The PowerStations can run the main Stacks for 2 days at least, and this must be adopted as a first option.

COMMS architecture: The corporate N/W are designed to be 'always on', however, if possible, it is perfectly reasonable and a good security measure, to power down unnecessary communications apparatus. It will always recover to a known, best operable state and reduce risk of attempted attack.

Video Conference: Always use software based video conference facilities to minimise the opportunity for lowering energy consumption (by travel) and risk of security beach. Use of the conference telephony also provides an efficient method of multiple parties participation in technical/business discussion.

Printing and Refuse Policy

Printing: If hardcopy has to be produced, it must be kept to an absolute minimum. Paper and ink is expensive and reports often requiring shredding or represent a possible security risk. CDD should always consider facilitating systems deployment to wide-screen, thus deterring printing on A4; this is especially important in the preparation of high-sensitivity or higher classification materials.

Refuse: All refuse must be properly categorised for recycling including 9 categories:

- Light plastics
- Firm plastics
- Cardboard
- Paper (only having been appropriately shredded in accordance with CDD_CS
- Metals
- Glass
- Batteries
- Redundant Equipment (arranged for destruction – but not storage media)
- Organics/Compostables

Travel Policy

Generally, it is best to avoid travel altogether.

Attendance at Client Premises: This must be minimised at every opportunity. All clients have access to extensive videoconference facilities and the time wasted attending client sites makes successful delivery (on time, on budget and to specification – metrics) very challenging.

Public Transport: If business travel has to be undertaken, then public transport options have to be the first consideration, but it must be justifiable in terms of time. Travel time can be utilised on UNCLASSIFIED work.

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Vehicle Transport: Use of vehicles represents a huge sunk cost, a waste of time, highly polluting, reducing service intervals through mileage utilisation, damaging to roads and often, completely unnecessary. It is not a sufficient justification to suggest that the client needs to see a person sitting at one of their workstations just for the sheer pleasure of doing so. Merely because a client is paying for the privilege, is again, entirely insufficient justification; the cost to the environment (in carbon dioxide) is where this attitude is paid for.

Ship/Ferry: This is much slower, and best achieved over-night. Always see if this travel option is available (E.g. Harwich to Hoek van Holland – NATO/HAGUE)

Flying: This is often the quickest way to travel a great distance but by a huge extent, the most polluting. Travelling by aircraft is the very last possible option to adopt.

Computational Process Efficiency

EDF and PEDDLE will ensure that the most efficient processes are engineered.

Every CPU cycle counts in some of the more advanced and computationally demanding process. Therefore it is highly environmentally considerate to identify the most efficient method.

Advanced computationally intensive systems may be operating for many years, so the most efficient algorithm is imperative, and especially important when considering that a slow system can be highly antagonistic to a user community.

PEDDLE and PASCAL design and development methodologies specifically address these ares in the following administrative processes governing the quality regime:

Project Quality Management Strategy
Processing Resource Analytics
Detailed Technical Design Prototyping
Operational Design Architecture Verification
Design Ethics, System Safety and Legality
Coding Standards Conformance and Efficiency

Air Conditioning

Where heat becomes a problem, air conditioning must be used in order to maintain safe operations and to preserve the life of equipment.

This is especially important where excess heat generated by computationally intense cryptographic algorithms can damage delicate electronic apparatus that may be running such programs.