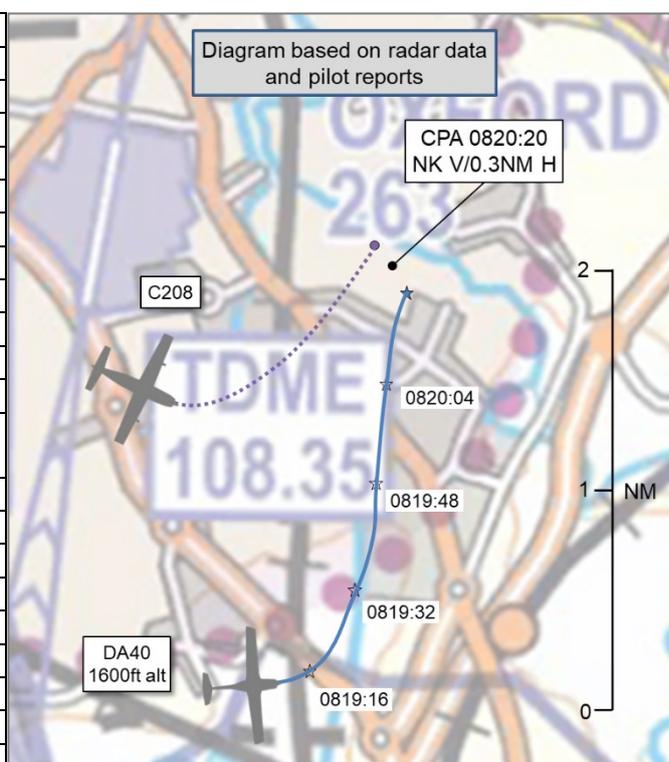


## AIRPROX REPORT No 2022240

Date: 11 Oct 2022 Time: 0820Z Position: 5150N 00117W Location: Oxford ATZ

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA40	C208
Operator	Civ FW	Civ FW
Airspace	Oxford ATZ	Oxford ATZ
Class	G	G
Rules	VFR	VFR
Service	ACS	ACS
Provider	Oxford Tower	Oxford Tower
Altitude/FL	1600ft	NK
Transponder	A, C, S+	None <sup>1</sup>
Reported		
Colours	White	White
Lighting	'Full'	Nav, Strobe, Taxi, Beacon, Landing
Conditions	VMC	VMC
Visibility	>10km	NR
Altitude/FL	1500ft	1000ft
Altimeter	QNH (NK hPa)	QNH (NK hPa)
Heading	010°	NR
Speed	100kt	NR
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	200ft V/300m H	Not seen
Recorded	NK V/0.3NM H	



**THE DA40 STUDENT PILOT** reports that they were on the climb-out, turning left into the circuit. A Cessna Caravan with the registration [C208 registration] was lined-up on RW19. The C208 pilot was cleared to take-off but was warned the circuit was active left-hand with a DA40 [the reporter's aircraft]. As they turned downwind they were doing their before landing checklist when the pilot of the Cessna turned left immediately after take-off without requesting an early left turn. The [C208] pilot climbed straight in front of them through the circuit pattern at 1500ft. They immediately noticed and pulled a steep turn to the right to take avoiding action as they would have been on a very close colliding course. The pilot of the other aircraft didn't follow the correct departure route, considering the circuit was active. They made ATC aware of the dangerous route the [C208] pilot took. After landing from their flight, on the taxi back in, the controller broadcast over the radio that they would like them [the DA40 pilot] to call the Tower after they landed which they did and left their number. Half an hour later the controller who was working at the time of the incident phoned and said they would like to apologise as they [the DA40 pilot] didn't do anything wrong. The controller said the other pilot was at fault for flying a direct route straight into the circuit pattern and cutting right in front of [the DA40 pilot's] path at such a close distance. The controller also apologised and said that they should've paid more attention to that pilot's route and stopped them before they flew in front of the DA40. The controller ended the call saying thank you for paying close attention and taking the necessary avoiding action like they did. They believe the pilot of the other aircraft was [unwise to follow] the routing they had and not the standard traffic pattern out, and for routing on a colliding course. The DA40 pilot reports that they followed all the standard procedures and opines that if they hadn't taken the necessary avoiding action things could have ended a lot worse, as the other pilot made no effort to change from a conflicting course even though they were the one who chose a routing that was [unwise] in the first place.

The pilot assessed the risk of collision as 'High'.

<sup>1</sup> The pilot reported having a transponder however none was detected by the NATS radar.

**THE C208 PILOT** reports that they requested a left turn out and then departed from RW19, and then carried out a climbing left turn on to a northeasterly track direct to [destination]. They levelled at approximately 1000ft.

**THE OXFORD TOWER CONTROLLER** reports that RW19 was in use, the DA40 was upwind for a left-hand circuit, about to turn crosswind. The C208 pilot lined-up for a VFR departure to [destination] and was told the DA40 will turn left into the circuit and given a take-off clearance in the same transmission. Their expectation was that [the C208 pilot] would follow [the DA40] around the circuit and then turn right from early/mid downwind. On departure, [the C208 pilot] turned early (possibly breaking the Noise Abatement procedures) and cut in front of [the DA40] who was early downwind. [The DA40 pilot] queried the intentions of [the C208 pilot], and was told to make one right-hand orbit for spacing, and was then able to continue in the circuit. [The C208 pilot then] left the frequency.

## Factual Background

The weather at Oxford was recorded as follows:

METAR EGTK 110820Z VRB01KT CAVOK 06/05 Q1028

## Analysis and Investigation

### Oxford ATSU investigation

Oxford ATSU has completed an investigation in to this event, the output from which has been summarised below:

[The C208 pilot] was at Oxford and requested start clearance at 0813, to depart back to [destination airfield]. Start clearance and subsequent taxi clearance were given. The Tower controller had two aircraft in the visual circuit RW19 at the time, [one of which was the DA40 involved].

At 0818, the [C208 pilot] reported ready for departure from C1, no backtrack required and was issued line-up and wait RW19, [which was] readback. [The C208 pilot] requested left turn-out.

The Tower controller [transmitted to the C208 pilot]: "...left turn approved DA40 upwind will turn left into the cct, cleared for take-off". To which the C208 pilot replied: "cleared take-off".

At this point [the unrelated circuit traffic was] late downwind and [the DA40] was late crosswind, turning downwind, their Mode C readout indicated level flight of A016.

At 0820, a primary contact 'popped up' just east of the Oxford overhead. [The DA40] was approximately 0.25NM southeast of this contact, established downwind, still indicating A016. [The DA40 pilot asked the Tower controller]: "*is this departing traffic going right on front of the circuit?*" To which the Tower controller replied: "*err affirm...if you make one right-hand orbit the Caravan is going to [destination]*". [The DA40 pilot] replied: "*roger right orbit*".

The aircraft contacts then diverge as a result of the DA40 taking up the orbit. The contacts were close to merging but, as there is no transponder information [from the C208], no level or vertical information from the replay can be determined.

At 0821 [the C208 pilot] reported leaving frequency, the Tower controller acknowledged this.

### Observations

No acknowledgement of Traffic Information [was received from the C208 pilot] on the circuit aircraft (DA40), although Traffic Information was passed. No Traffic Information was passed to [the DA40 pilot] about the departing Caravan (however this wouldn't normally have been a requirement had the Caravan not made such a tight turn inside the circuit traffic.)

The Tower controller's instruction to [the DA40 pilot] to orbit did diverge the aircraft.

The Tower controller stated that they did recall the event. The controller had been 'surprised' that the Caravan [pilot] had taken such a tight turn towards [destination] and into conflict with circuit traffic that they had been given Traffic Information on before departing.

The Tower controller didn't get an acknowledgement from [the C208 pilot] about the Traffic Information which the controller accepts. Their attention was diverted after the Caravan was 'wheels up' and they didn't observe the tight turn of the Caravan, (but hadn't (and maybe correctly so) anticipated the turn of the Caravan being so tight and taking a direct path to [destination]) as the controller had passed Traffic Information.

The tight turn of the Caravan pilot couldn't have necessarily been anticipated in this instance and therefore updated Traffic Information was not passed to either pilot.

### **CAA ATSI**

ATSI reviewed the area radar replay and the RTF recording supplied by Oxford as well as reports from both pilots, the Oxford controller, and the Oxford ATC investigation report. The area radar replay displayed the C208 as a primary-only contact, and not until after the aircraft had departed and possibly at the moment of CPA but this cannot be confirmed.

Including the DA40, there were two aircraft in the circuit, plus another departure ahead of both the DA40 and the C208.

The Oxford controller did pass Traffic Information to the C208 pilot on the DA40 which was not acknowledged by the C208 pilot, nor was their lack of readback challenged by the controller, which was highlighted in the Oxford investigation report.

According to the Oxford controller, they weren't expecting the C208 pilot to turn as early as they did, expecting the pilot to follow a similar routing to the DA40 pilot who was in the circuit. The controller admitted that their attention was drawn elsewhere after the C208 became airborne, and they did not see the early turn made by the pilot of the C208. As such, no Traffic Information was passed to the DA40 pilot.

From the DA40 pilot's report, it appears that they took avoiding action first and then contacted ATC.

The Oxford AIP entry for departures requires pilots (for noise abatement purposes) to:

*'After departing from Runway 19, climb straight ahead to 1000ft QNH or 1 DME I-OXF, whichever is earlier, before turning right. Aircraft intending to turn left, climb ahead to 1.5 DME I-OXF (IFR) or until south of Yarnton Village (VFR), .....*

The Oxford Airport website also has more detailed information on the noise abatement requirements including a map of what are effectively the areas to avoid, see Figure 1.

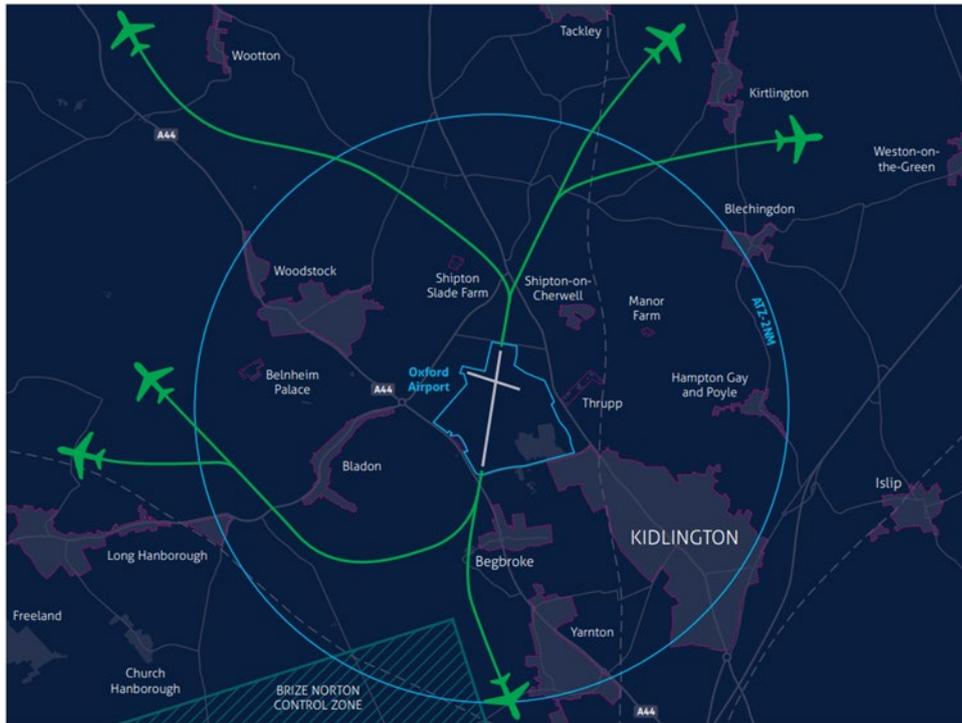


Figure 1.

As the C208 was not transponding, and the radar replay did not show the aircraft until it came into proximity with the DA40 in the circuit, the exact point and level at which the pilot of the C208 turned cannot be determined.

Oxford is not inside controlled airspace and so VFR departure clearances wouldn't routinely include a direction of turn nor a specific routing.

The DA40 pilot's turn into the circuit appears to give a good indication of a "standard pattern", see Figure 2.



Figure 2.

Working backwards, once the track of C208 became visible, it does appear that the turn was made north of Yarnton, Figure 3.

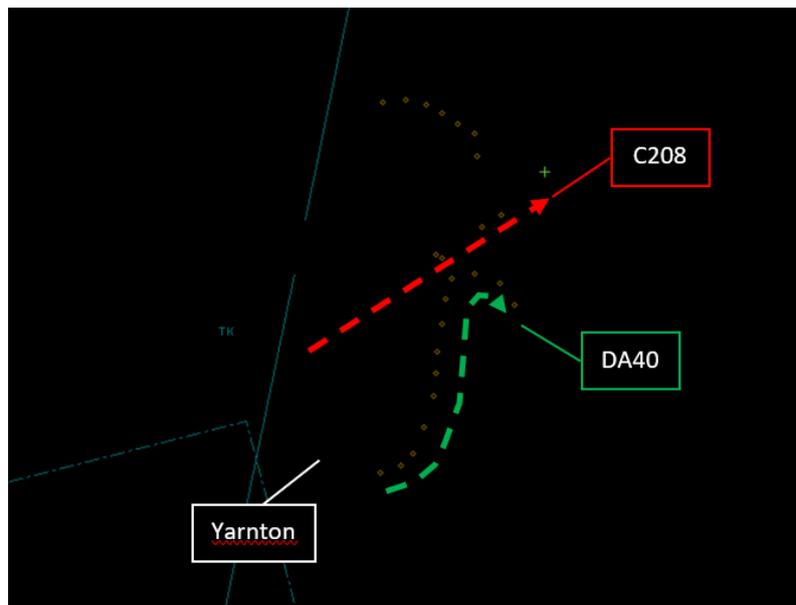


Figure 3.

ATSI wondered if, when the pilot of the C208 requested a “left turn”, they had actually meant an “early left turn”, (which, if requested, could not have been approved).

ATSI agrees with the Oxford investigation report in that, with the benefit of hindsight, the passing of Traffic Information could have been slightly better, but only in the issuance of a warning to the pilot of the DA40 about the presence of the C208 had the C208’s turn towards the DA40 been observed. There was no expectation that the pilot of the C208 might turn as early as they did, and consequently fly through the existing circuit pattern and not in conformity with the published noise abatement requirements at Oxford. Reciprocal Traffic Information to the pilot of the DA40 on the C208 as the C208 was departing would not have been necessarily appropriate.

## UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the DA40 was detected and identified using Mode S data. There was no secondary radar return detected from the C208, however a primary return appeared on the radar one sweep before the orbit carried out by the DA40 pilot was observed, therefore it is likely that this primary return was generated by the C208, Figure 1.

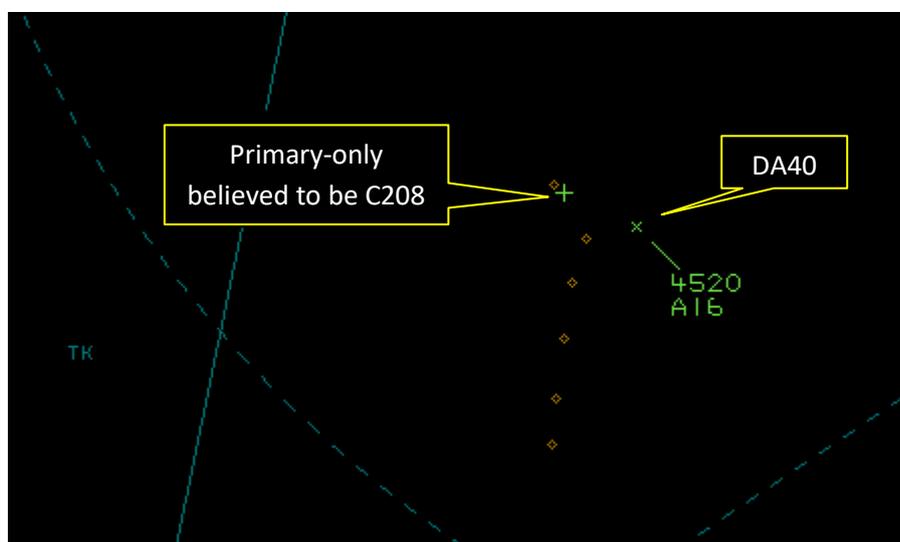


Figure 1 – DA40 and primary return believed to be the C208.

Without radar altitude information for the C208 it has not been possible to measure the vertical separation however, the horizontal separation was measured as 0.3NM.

The DA40 and C208 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.<sup>2</sup> An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.<sup>3</sup> When an aircraft carries a serviceable SSR transponder, the pilot shall operate the transponder at all times during flight, regardless of whether the aircraft is within or outside airspace where SSR is used for ATS purposes.<sup>4</sup>

## Summary

An Airprox was reported when a DA40 and a C208 flew into proximity in the Oxford ATZ at 0820Z on Tuesday 11<sup>th</sup> October 2022. Both pilots were operating under VFR in VMC, both in receipt of an ACS from Oxford Tower.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board first discussed the actions of the DA40 student pilot and members agreed that the pilot had appeared to have been following the standard traffic pattern and complying with the noise abatement routings. Members had been encouraged that the pilot had been utilising the information transmitted over the radio to help build a mental model of the traffic situation, and agreed that because of this the pilot had had a generic awareness that the C208 had been departing behind them, however, the Board concluded that the DA40 pilot would not have had any awareness that the C208 pilot had intended to

<sup>2</sup> (UK) SERA.3205 Proximity.

<sup>3</sup> (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

<sup>4</sup> (UK) SERA.13001. Operation of an SSR transponder.

follow a non-standard routing (**CF8**). A GA pilot member stated that the DA40 pilot would not have expected the C208 to appear on their left-hand side as they had done, and the Board agreed that because the DA40 pilot had been maintaining a good lookout, they had been able to visually acquire the C208 early. The proximity of the C208 had concerned the DA40 pilot (**CF10**) and they had elected to take, what members agreed, had been appropriate avoiding action.

Next, members considered the actions of the C208 pilot along with the geometry of the event. Although not recorded by the radar, members were satisfied that the C208 pilot had made an early left turn after departure, and had not followed the traffic pattern which had been established by the DA40 (**CF6**). Whilst the C208 pilot had reported not being visual with the DA40 at CPA (**CF9**), the pilot had been passed Traffic Information regarding it prior to departure, leading the Board to conclude that the C208 pilot had had an awareness of its presence, but that they had flown close enough to it to have concerned the DA40 pilot (**CF7**). The Board wondered whether the C208 pilot had been restricted on the time they had available to complete their flight, and whether this had impacted on their choice of routing. Members agreed that the C208 pilot had not communicated their intention to make an early left turn out (**CF4**) which, the Board concluded, had not been in accordance with the local procedures (**CF3, CF5**).

The Board then turned its attention to the ground element involved. Members discussed whether the controller would have been aware that the C208 pilot had intended to follow a non-standard routing, and quickly agreed that the controller would not have had any awareness of the C208 pilot's intention (**CF2**). A civil controller stated that the Oxford Tower controller had assumed that the C208 pilot would follow the DA40, and a more standard routing (**CF1**). The Board agreed that that had been an acceptable assumption which may have contributed to the controller turning their attention elsewhere and therefore not witnessing the event.

Finally, the Board considered the risk involved in this Airprox. Members discussed that the C208 pilot had followed a non-standard routing after departure and had not communicated their intention to do so. The Board agreed that the C208 pilot had not been visual with the DA40 at the time of the Airprox, however, the DA40 pilot had visually acquired the C208, and had taken timely and effective action to avoid. The Board therefore concluded that there had been no risk of collision, however, safety had been degraded. Consequently, the Board assigned a Risk Category C to this event.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### Contributory Factors:

	2022240			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Ground Elements</b>				
<b>• Situational Awareness and Action</b>				
1	Human Factors	• Expectation/ Assumption	Events involving an individual or a crew/ team acting on the basis of expectation or assumptions of a situation that is different from the reality	
2	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
<b>Flight Elements</b>				
<b>• Regulations, Processes, Procedures and Compliance</b>				
3	Human Factors	• Flight Crew ATM Procedure Deviation	An event involving flight crew deviation from applicable Air Traffic Management procedures.	
<b>• Tactical Planning and Execution</b>				
4	Human Factors	• Accuracy of Communication	Events involving flight crew using inaccurate communication - wrong or incomplete information provided	Ineffective communication of intentions

5	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
6	Human Factors	• Monitoring of Environment	Events involving flight crew not to appropriately monitoring the environment	Did not avoid/conform with the pattern of traffic already formed
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
7	Human Factors	• Lack of Action	Events involving flight crew not taking any action at all when they should have done so	Pilot flew close enough to cause concern despite Situational Awareness
8	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
<b>• See and Avoid</b>				
9	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots
10	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C

### Safety Barrier Assessment<sup>5</sup>

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

#### **Ground Elements:**

**Situational Awareness of the Confliction and Action** were assessed as **ineffective** because the Oxford controller had not had any awareness that the C208 pilot had planned to commence an early turn after departure and not follow the DA40.

#### **Flight Elements:**

**Regulations, Processes, Procedures and Compliance** were assessed as **ineffective** because, by commencing an early left turn after departure, the C208 pilot had not followed the noise abatement routing.

**Tactical Planning and Execution** was assessed as **ineffective** because the C208 pilot had not announced their intention to make an early left turn after departure, and they had not conformed with the pattern of traffic that had been established by the DA40.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because, although the DA40 pilot been aware of the presence of the C208, they had not had any awareness that the C208 pilot would be following a non-standard routing.

<sup>5</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

<b>Airprox Barrier Assessment: 2022240</b>		Outside Controlled Airspace						
<b>Barrier</b>		<b>Provision</b>	<b>Application</b>	<b>Effectiveness</b>				
				Barrier Weighting				
				0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓					
	Manning & Equipment	✓	✓					
	Situational Awareness of the Confliction & Action	✗	✗					
	Electronic Warning System Operation and Compliance	○	○					
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✗					
	Tactical Planning and Execution	✓	✗					
	Situational Awareness of the Conflicting Aircraft & Action	✗	✓					
	Electronic Warning System Operation and Compliance	○	○					
	See & Avoid	✓	✓					
<b>Key:</b>		<b>Full</b>	<b>Partial</b>	<b>None</b>	<b>Not Present/Not Assessable</b>	<b>Not Used</b>		
Provision	✓	⚠	✗	○				
Application	✓	⚠	✗	○				
Effectiveness								