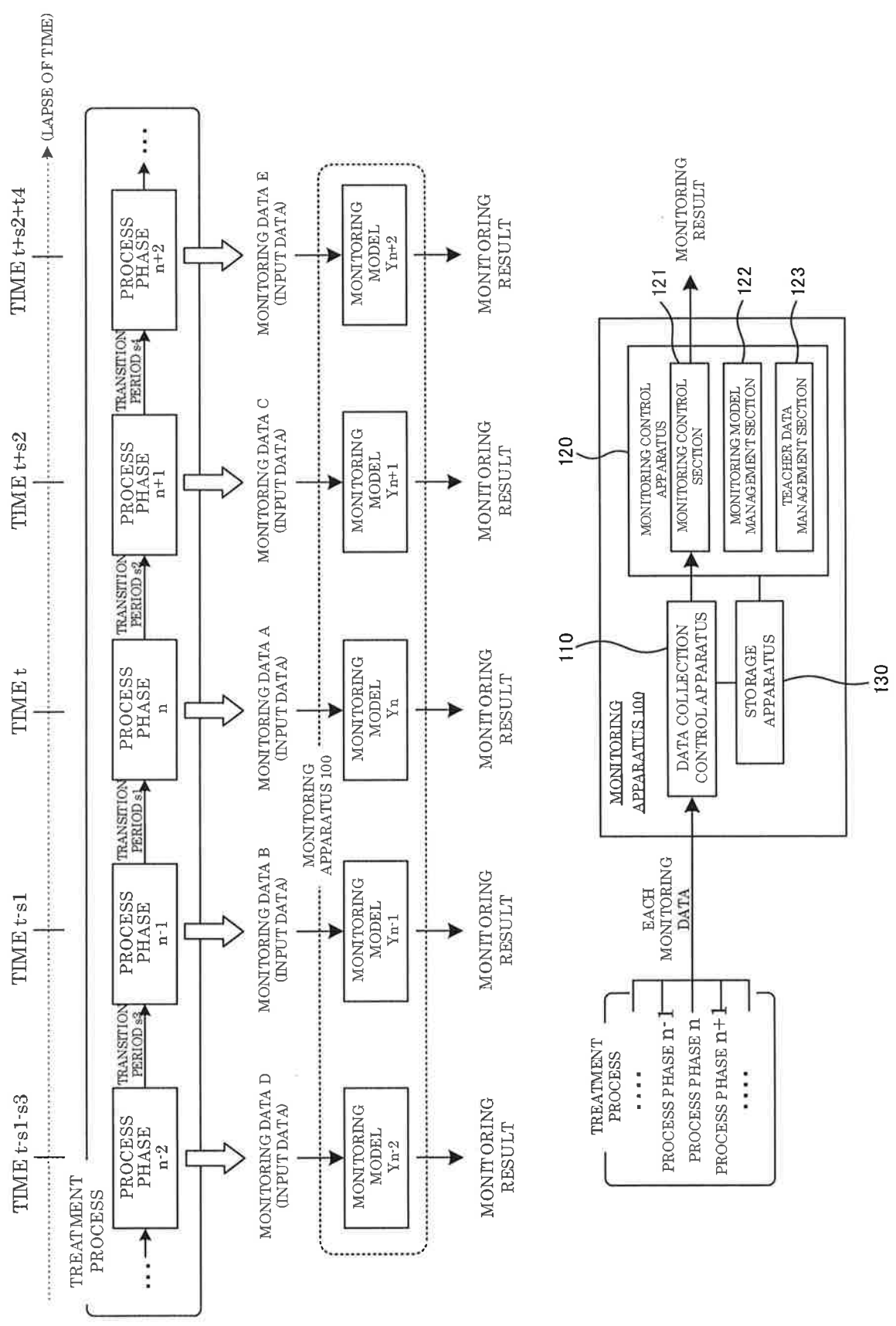
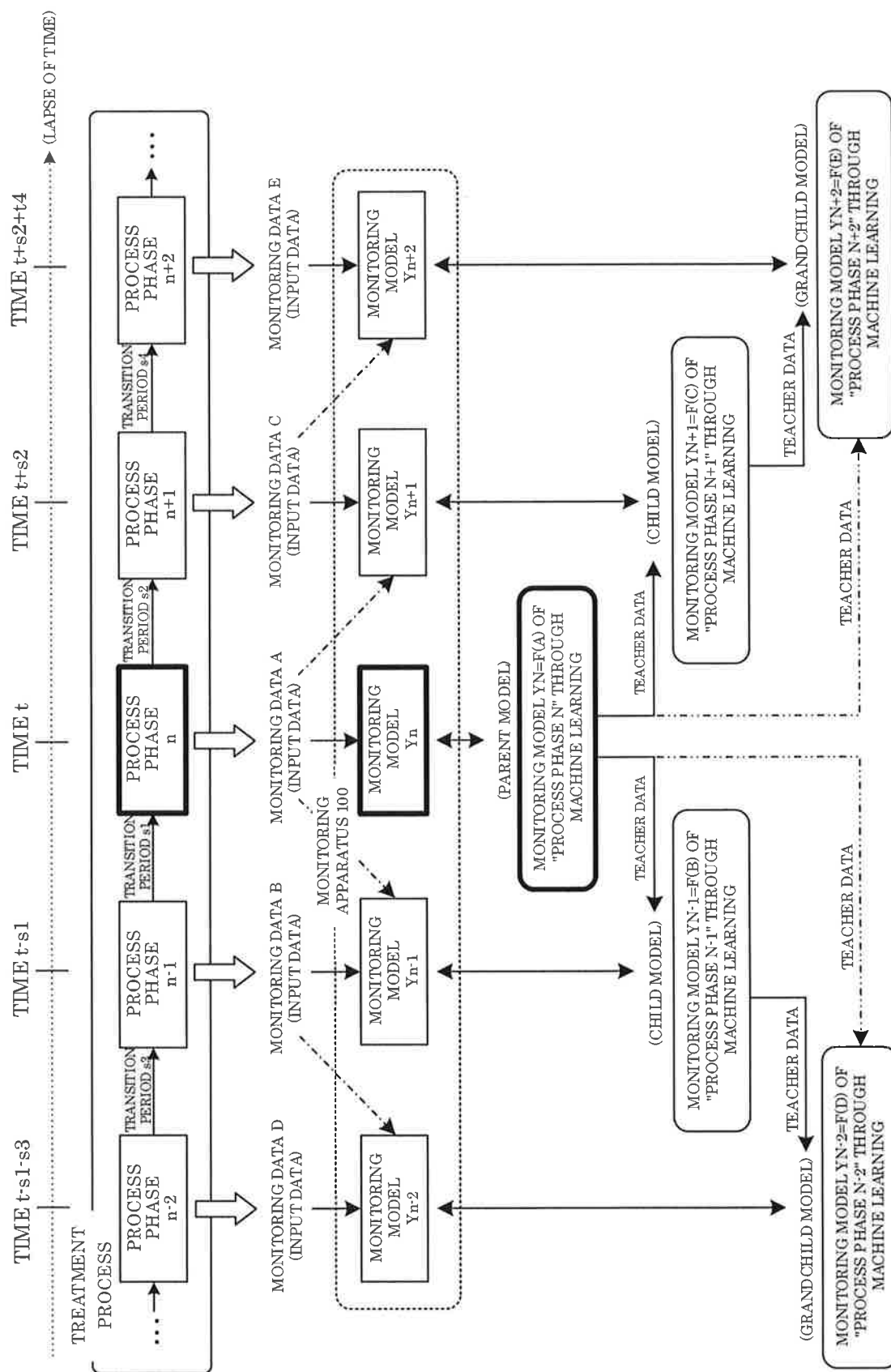


【FIG.1】



【FIG.2】



【FIG.3】

"ABNORMALITY" CANNOT BE DETECTED
IN PROCESS PHASE N UNTIL TIME T

	PROCESS PHASE n-2	PROCESS PHASE n-1	PROCESS PHASE n	PROCESS PHASE n+1	PROCESS PHASE n+2
t-s1-s3					
t-s1		<u>MONITORING RESULT = NORMAL</u>	MONITORING RESULT = NORMAL	....	....
t		MONITORING RESULT = NORMAL	<u>MONITORING RESULT = ABNORMAL</u>	....	....
t+s2			MONITORING RESULT = ABNORMAL	....	....
t+s2+s4			MONITORING RESULT = ABNORMAL	....	....

LAPSE OF
TIME

EVEN WHEN MONITORING RESULT FROM PROCESS PHASE N-1 IS "NORMAL," MONITORING
RESULT FROM DOWNSTREAM PROCESS PHASE AFTER LAPSE OF TIME S1 IS "ABNORMAL."

MONITORING MODEL YN-1 OF PROCESS PHASE N-1 DETERMINING "NORMAL" STATUS ONLY FROM
MONITORING DATA B IS TUNED BY USING MONITORING RESULT FROM DOWNSTREAM MONITORING
MODEL YN AS TEACHER DATA (SOLUTION)

	PROCESS PHASE n-2	PROCESS PHASE n-1	PROCESS PHASE n	PROCESS PHASE n+1	PROCESS PHASE n+2
t-s1-s3					
t-s1		<u>MONITORING RESULT = ABNORMAL</u>	MONITORING RESULT = NORMAL	....	....
t		MONITORING RESULT = NORMAL	<u>MONITORING RESULT = NORMAL</u>	....	....
t+s2			MONITORING RESULT = NORMAL	....	....
t+s2+s4			MONITORING RESULT = NORMAL	....	....

MONITORING MODEL YN-1 DETERMINES "ABNORMAL" STATUS BASED ON MONITORING DATA B BEFORE LAPSE
OF TIME S1
⇒(1) MEASURES CAN BE TAKEN BEFORE DOWNSTREAM PROCESS PHASE N IS "ABNORMAL"
⇒(2) RECOVERY FOR DOWNSTREAM PROCESS PHASE N TO RETURN TO "NORMAL" AFTER "ABNORMAL" STATUS
CAN BE REDUCED
⇒(3) MISSED DETERMINATION OF DOWNSTREAM PROCESS PHASE N AS "ABNORMAL" CAN BE SENSED

【FIG.4】

"ABNORMALITY" CANNOT BE DETECTED IN PROCESS PHASE N+1 EVEN WHEN
ABNORMALITY IS ALREADY DETECTED IN UPSTREAM PROCESS PHASE N BEFORE LAPSE
OF TIME S2

	PROCESS PHASE n-2	PROCESS PHASE n-1	PROCESS PHASE n	PROCESS PHASE n+1	PROCESS PHASE n+2
$t \cdot s1 \cdot s3$					
$t \cdot s1$			MONITORING RESULT = NORMAL	MONITORING RESULT = NORMAL	....
t			MONITORING RESULT = ABNORMAL	MONITORING RESULT = NORMAL	....
$t+s2$			MONITORING RESULT = ABNORMAL	MONITORING RESULT = ABNORMAL	....
$t+s2+s4$			MONITORING RESULT = ABNORMAL	MONITORING RESULT = ABNORMAL	....

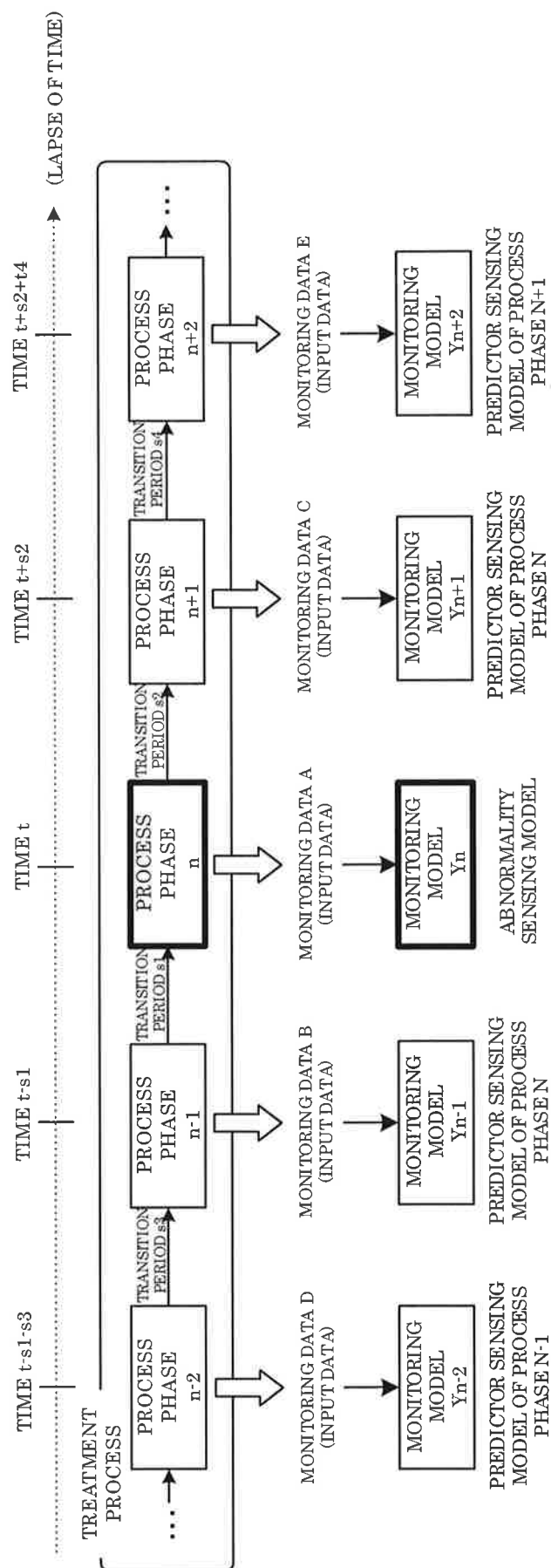
EVEN WHEN MONITORING RESULT FROM PROCESS PHASE N+1 IS
"NORMAL," MONITORING RESULT FROM UPSTREAM PROCESS PHASE N
BEFORE LAPSE OF TIME S2 IS "ABNORMAL."

MONITORING MODEL YN+1 OF PROCESS PHASE N+1 DETERMINING AS "NORMAL"
STATUS ONLY FROM MONITORING DATA C IS TUNED BY USING MONITORING
RESULT FROM UPSTREAM MONITORING MODEL YN AS TEACHER DATA
(SOLUTION)

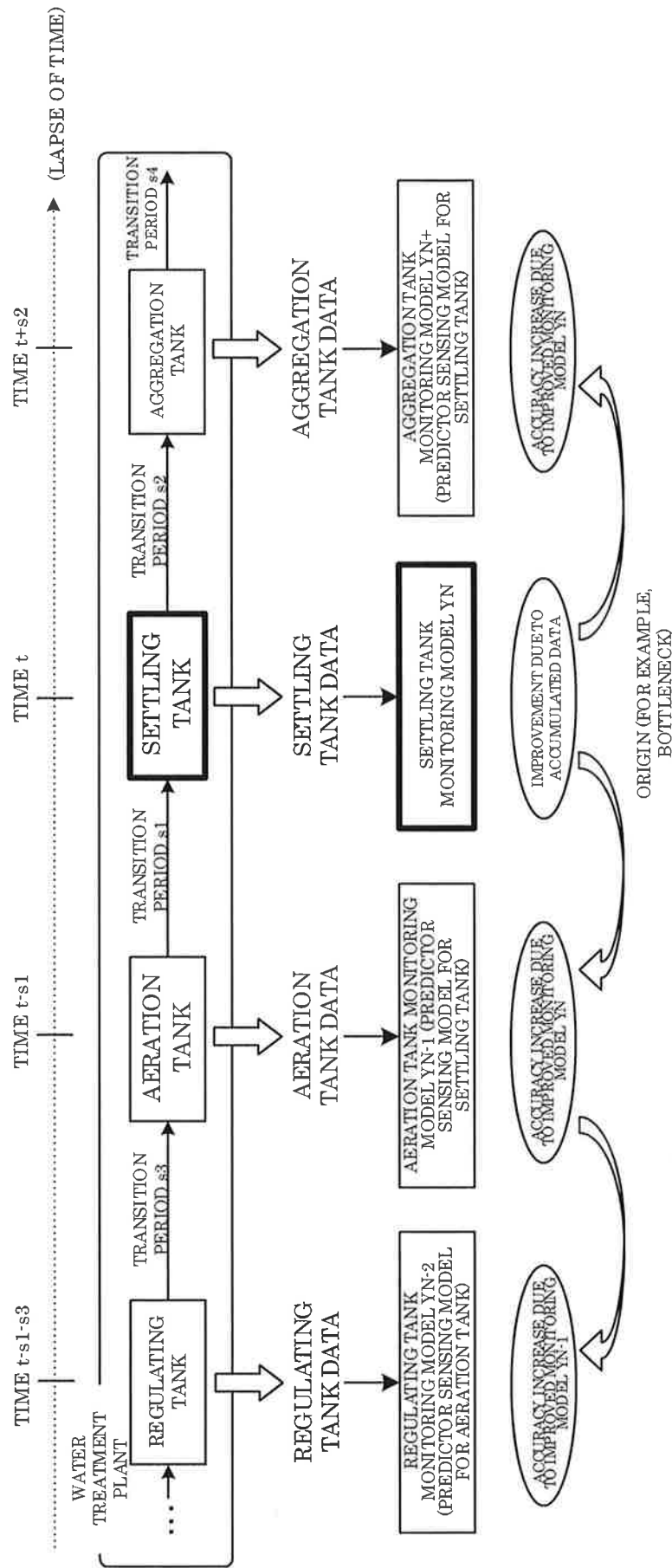
	PROCESS PHASE n-2	PROCESS PHASE n-1	PROCESS PHASE n	PROCESS PHASE n+1	PROCESS PHASE n+2
$t \cdot s1 \cdot s3$					
$t \cdot s1$			MONITORING RESULT = NORMAL	....	....
t			MONITORING RESULT = ABNORMAL	MONITORING RESULT = ABNORMAL	....
$t+s2$			MONITORING RESULT = ABNORMAL	MONITORING RESULT = ABNORMAL	....
$t+s2+s4$			MONITORING RESULT = ABNORMAL	MONITORING RESULT = ABNORMAL	....

MONITORING MODEL YN+1 DETERMINES "ABNORMAL" STATUS BASED ON MONITORING DATA C IN CONJUNCTION
WITH ABNORMALITY IN UPSTREAM PROCESS PHASE N BEFORE LAPSE OF TIME S2
⇒(4) TENDENCY OF UPSTREAM PROCESS PHASE N TO BE "ABNORMAL" CAN BE KNOWN PREVIOUSLY IN
DOWNSTREAM PROCESS PHASE N+1
⇒(5) SOME MEASURES CAN BE TAKEN FOR DOWNSTREAM PROCESS PHASE N+1 BASED ON "ABNORMAL" STATUS IN
UPSTREAM PROCESS PHASE N
⇒(6) MISSED DETERMINATION OF UPSTREAM PROCESS PHASE N AS "ABNORMAL" CAN BE SENSED

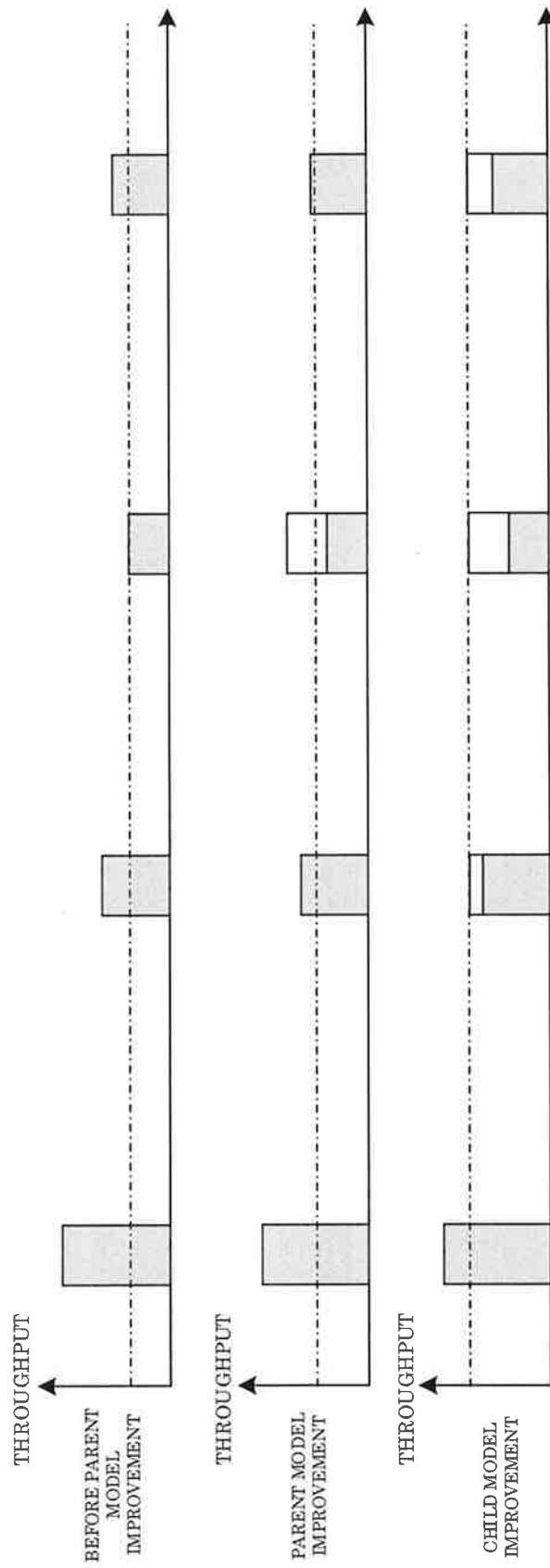
【FIG.5】



【FIG.6】



【FIG.7】



【FIG.8】

