

# TAMA



TREATMENT ADVICE BY MOBILE ALERTS

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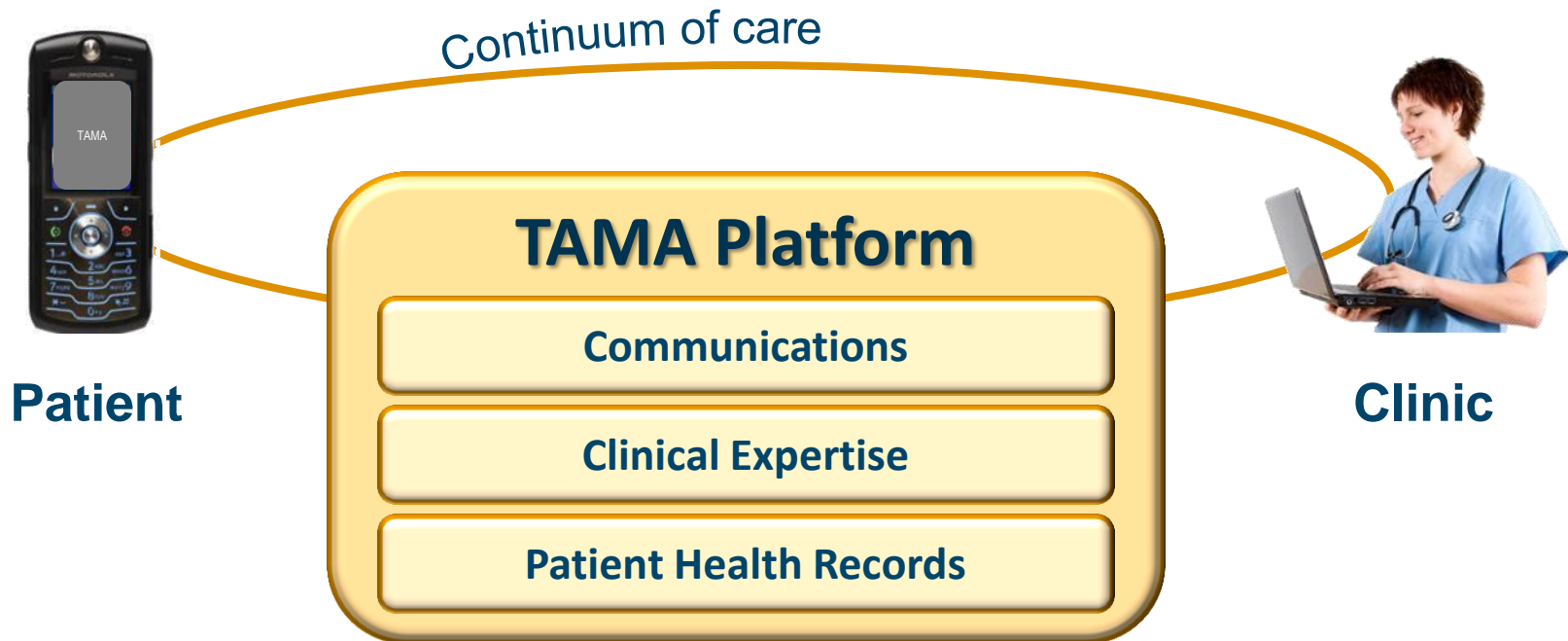
## Functional Overview

8/12/2010

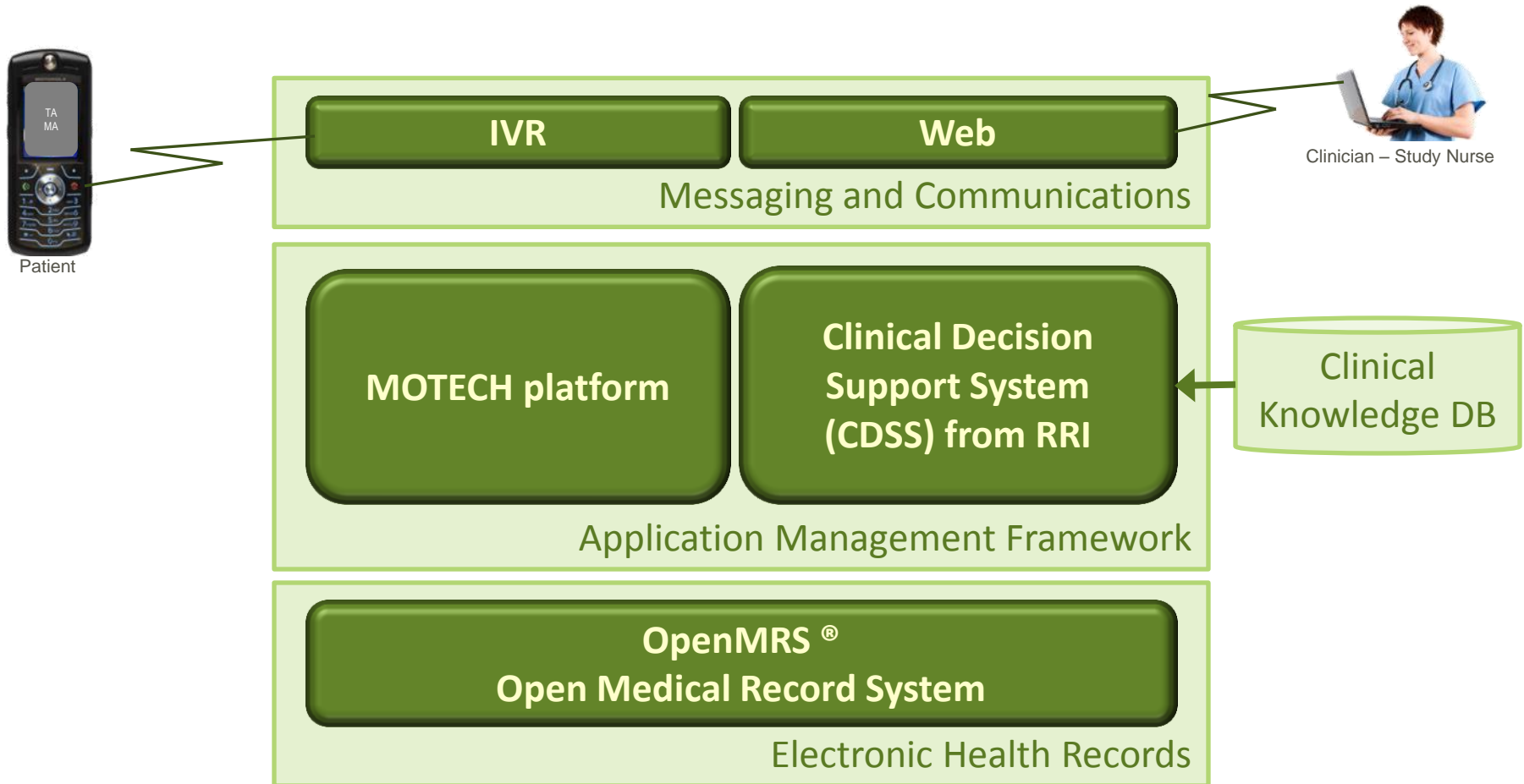
# How does TAMA work?

TAMA has two interfaces:

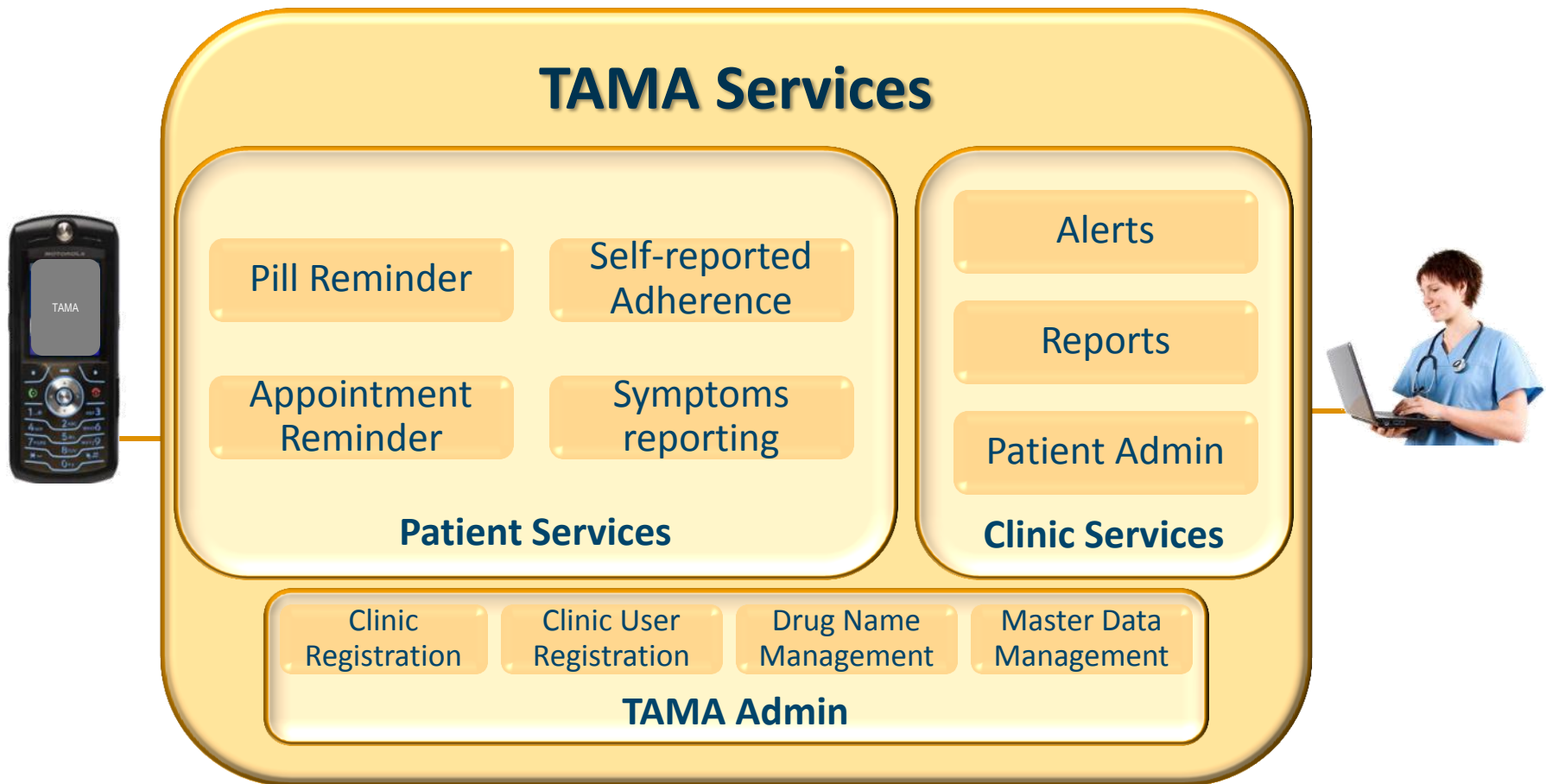
- ❑ a cell-phone, voice-driven interface for patients, and
  - ❑ a web-based interface for clinics
- thus re-enforcing the continuum of care between them.



# TAMA components and interface



# What services does TAMA provide?



# Patient TAMA interactions

## Patient Registration at clinic

- ☐ Upon treatment initiation, the patient record is created in TAMA.
- ☐ Relevant medical record data is entered into TAMA.
- ☐ The patient's individual preferences for system usage are configured in TAMA.
- ☐ The patient is trained on the use of TAMA.

## Patient receives calls from TAMA

- ☐ Pill Reminder OR Self Reported Adherence calls.
- ☐ Health messages calls
- ☐ Appointment reminder calls

## Patient makes calls toTAMA

- ☐ Symptom Reporting
- ☐ Socialization

## Appointment / Clinic Visits

- ☐ Patient comes to clinic for treatment follow up as per Appointments Schedule

During the clinical trial, patient can be in any of the following statuses:

- ☐ ACTIVE
- ☐ INACTIVE
- ☐ STUDY\_COMPLETE
- ☐ PREMATURE\_TERMINATE\_BY\_CLINIC
- ☐ PATIENT\_WITHDRAWS\_CONSENT
- ☐ MOVED\_LOCATION
- ☐ LOSS\_TO\_FOLLOW\_UP

At the end of 1 year, clinical trial is complete.



# Schedule of TAMA calls to patient mobile

In every patient profile record, two times will be identified (selected by patient along with Study Nurse):

- ☐ pillTime: this is the time when patient is expected to take his/her medication and also the time at which TAMA will call patient to remind him to take his medicine and to capture his response whether he has taken etc.

A permitted dosage time window will be defined (system wide). If patient takes his/her pills within this window (i.e. pillTime +/- PILL\_WINDOW) only then will it considered as TAKEN\_DOSAGE. Outside this window, TAMA will note it as MISSED\_DOSAGE.

- ☐ bestCallTime: this is some other time in the day when the patient feels (s)he will be free to listen to other messages from TAMA
  - ☐ Appointment Reminders
  - ☐ Health Tips
  - ☐ Self Reported Adherence

To collect these messages in a single place (as and when they are generated) and play them at patient's "bestCallTime", every patient will have his/her own Outbox in TAMA.

Patient will also be able to select language of his/her choice - language in which all TAMA messages will be played to her/him.

# Pill Reminders

Patient has opted for Pill Reminder calls. TAMA makes scheduled Pill Reminder calls to patients at “pillTime”. Patient can give responses by pressing the appropriate phone keypad number as directed by TAMA. For each response the patient can give, a use case is identified :

1. **MEDICINE\_TAKEN**

- ❑ UseCase: TAMA\_IVR\_001\_remCallPatientConfirmsTakingDosage

2. **WILL\_TAKE\_MEDICINE\_IMMEDIATELY\_AFTER\_CALL**

- ❑ UseCase: TAMA\_IVR\_005a\_remCallWindowOverWillTakeMedicineImmediately

3. **MEDICINE\_NOT\_TAKEN\_YET\_PLEASE\_CALL\_LATER**

- ❑ UseCase: TAMA\_IVR\_003\_remCallInWindowDosageNotTakenYetCallLater,
- ❑ UseCase: TAMA\_IVR\_005\_remCallWindowOverDosageMissed

4. **WILL\_NOT\_TAKE\_MEDICINE**

- ❑ Use Case: TAMA\_IVR\_004\_remCallWillNotTakeMedicine



In case the patient's phone is not reachable, TAMA will assume dosage to be a missed dosage.

❑ **NO\_RESPONSE or NO\_CONTACT:**

- ❑ UseCase: TAMA\_IVR\_006\_remCallPatientPhoneNotWorking

The patient can call TAMA before TAMA calls patient and confirm to TAMA that (s)he has taken his pill(s).

❑ **MEDICINE\_TAKEN**

- ❑ Use Case TAMA\_IVR\_002\_patientCallsToConfirmTakingDosage

# Appointment Reminder Module

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A patient is expected to come to the clinic at certain intervals over the one year study period. The schedule is expected to be as :

Week 0

Week 4

Week 12

Week 24

Week 36

Week 48

To help remind the patient of an expected visit to the clinic, the patient will start receiving reminder calls <n> days prior to the due date of his visit.

At the same time, the clinic will also receive alerts on the web UI for the study Nurse. Between the Study Nurse and the patient a fixed Appointment Date must be set for the visit.



# Appointment Reminders

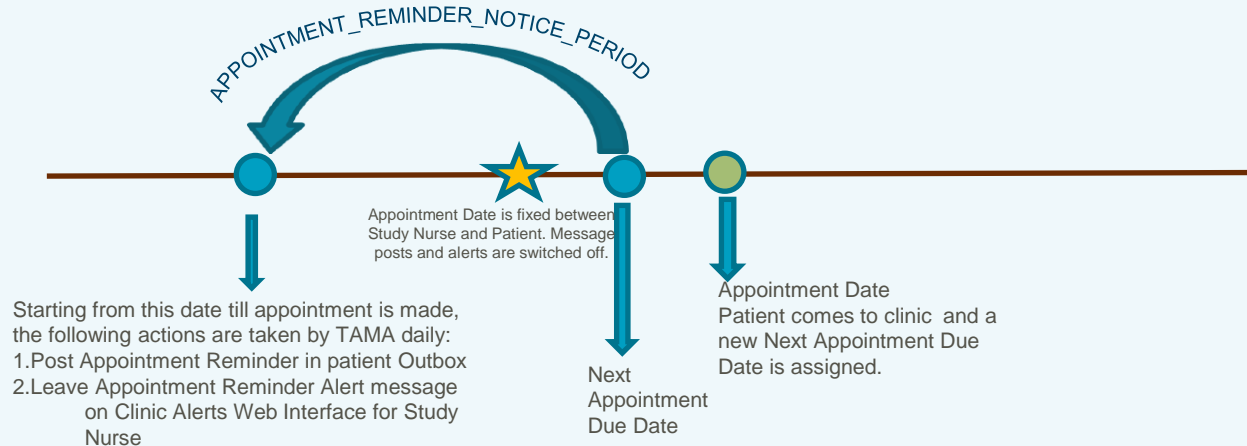
A patient will be reminded of his upcoming next appointment by TAMA <n> days prior to the due date of his visit. Appointment reminder is a two step process:

1. Post appointment reminder message to patient Outbox (as per appointment schedule)
  - ❑ **Use Case: TAMA\_IVR\_011\_scheduler-postAppointmentReminderMessage**
2. Play Appointment reminder message to patient at “bestCallTime” along with other messages in Outbox
  - ❑ **Use Case: TAMA\_IVR\_050\_playGeneralMessages**

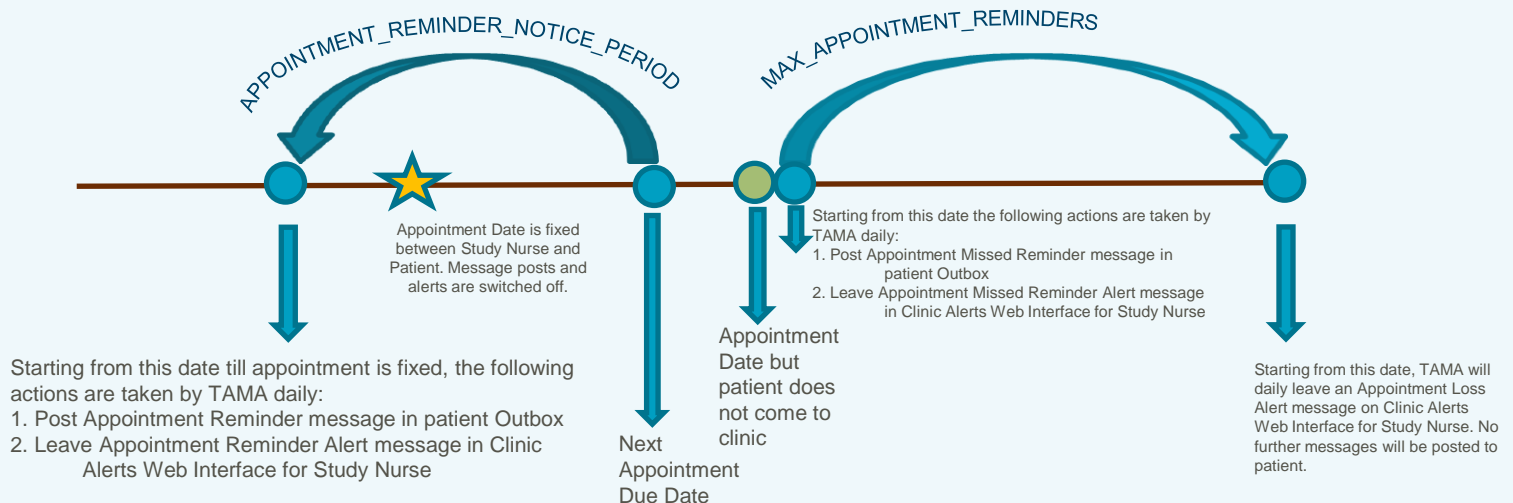


# Appointment Reminders (...cont)

**Scenario 1:**  
Patient and Study Nurse fix appointment date and patient comes to clinic on appointment date

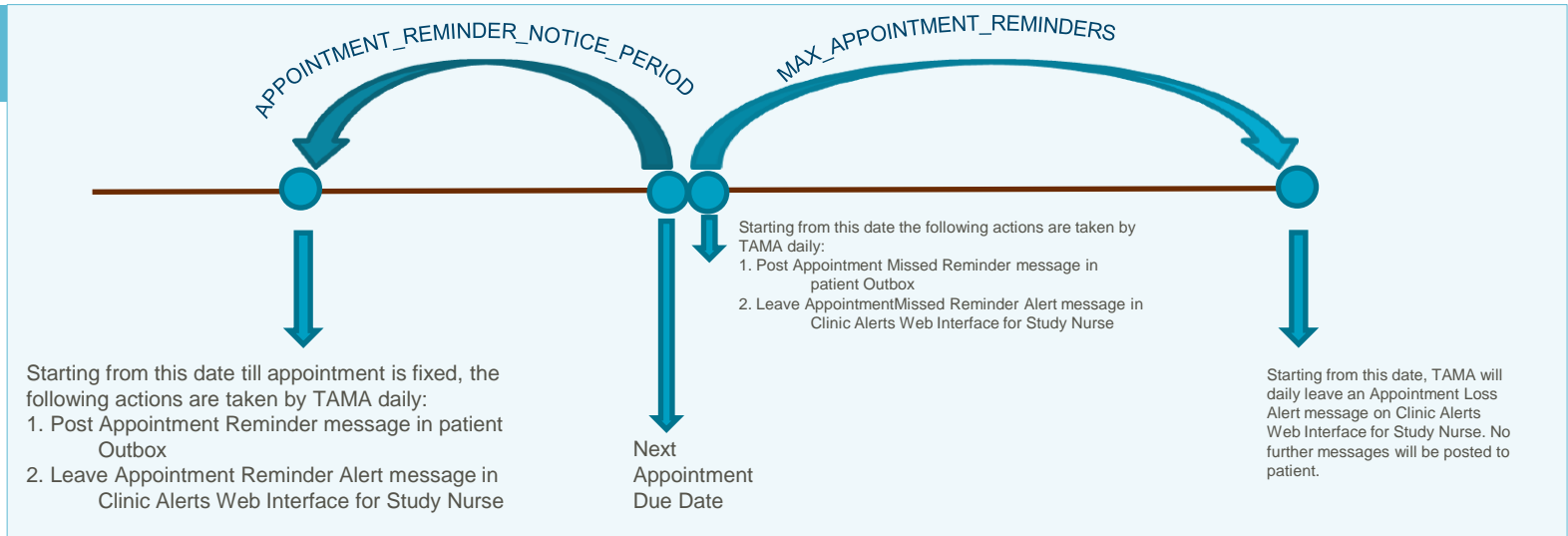


**Scenario 2:**  
Patient and Study Nurse fix appointment date but patient does NOT come to clinic on appointment date



# Appointment Reminders (...cont)

Scenario 3:  
Appointment date  
is not fixed.



## Note:

1. Next Appointment Due Date is updated to next scheduled due date only when a patient visits the clinic.
2. Study Nurse should be able to switch off Appointment Reminders to both patient as well to Clinic Alerts Web UI
3. Study Nurse should be able to switch off Appointment Missed Reminders both to patient as well to Clinic Alerts Web UI
4. Study Nurse should be able to switch off Appointment Loss Reminders to Clinic Alerts Web UI
5. It is presumed that Study Nurse will switch off Reminders only after appropriate action has been taken for the patient at clinic.

# Self Reported Adherence Calls

Patients will be requested to report a 4 day recall of adherence to taking of medicine. Patient can give responses by pressing the appropriate phone keypad number as directed by TAMA. e.g.:



In the last four days, for how many days did you miss taking all your doses? If you missed even one of your many doses on a day, please report as a missed dose.

- ☐ If you did not miss any dose on any day
- ☐ If you missed any dose on ONE day
- ☐ If you missed any dose on TWO days
- ☐ If you missed any dose on THREE days
- ☐ If you missed any dose on all FOUR days

To collect this information, a two step process is defined:

1. Post the Self Reported Adherence Message in Patient Outbox at defined frequency
  - ☐ Use Case: **TAMA\_IVR\_026\_scheduler-post4DayRecallMsg**
2. Play Self Reported Adherence message to patient at “bestCallTime” along with other messages in Outbox
  - ☐ Use Case: **TAMA\_IVR\_050\_playGeneralMessages**

# Adherence Status Calculation

Calculation of Adherence of patients will differ based on the method used for collecting Adherence Information. Adherence percentage on any particular day will be calculated as follows:

## *Patients activated on Pill Reminder Calls:*

- ☐ Adherence Percentage = (total number of dosages actually taken till date / total number of scheduled dosages till date)%
- ☐ Adherence Status for that day is set as per:

**RED:** Adherence percentage < BAD\_ADHERENCE\_MARK% (low value)

**GREEN:** Adherence percentage > GOOD\_ADHERENCE\_MARK% (high value)

**YELLOW:** BAD\_ADHERENCE\_MARK % < Adherence percentage < GOOD\_ADHERENCE\_MARK%

## *Patients activated on Self Reported Adherence 4 Day Recall Calls:*

Adherence Percentage =

- ☐ If TAMA did not call the patient today about adherence, there is no Adherence Percentage for this patient today, then set the adherenceStatus for that day = **YELLOW**
- ☐ If TAMA called and patient's response is available, then  
Adherence % = (4 - Patient response)/ 4.  
Set adherenceStatus for that day accordingly

**GREEN:** Adherence percentage > XX%

**RED:** Adherence percentage < YY%

**YELLOW:** Otherwise

- ☐ If the patient did not respond to today's call from the Adherence module, then set adherenceStatus for that day =

**YELLOW**

i.e. a "missed call" is not counted as a "missed dosage" in Self Reported Adherence case. i.e. TAMA did try to measure the Adherence today but TAMA has no data

# Symptoms Reporting Calls

Patient calls TAMA to report symptoms he is suffering from. TAMA will try to gather enough significant information from patient and use it to give him some advice on what to do next or whether this is normal e.g.

1. **Come to HIV clinic** – we should probably put you on different treatment regimen that will not have such unpleasant side effects for you
2. **Go to local physician.** The system can either mention the name of a local doctor – which is configured by patient/nurse during system set up, or the system can refer to a specific specialist (like a dermatologist or a gynecologist), or just the family doctor
3. **Go to local pharmacy and pick up OTC medicine** <name of medicine>
4. **Don't worry, keep taking your HIV medication, you should feel better soon**
5. **Please consult your family doctor, and have your family doctor call your HIV clinician** when you're there (system doesn't know what to do).



Following use case are defined to provide this interaction:

- ❑ **Use Case: TAMA\_IVR\_030a\_reportingsymptoms\_Diagnostics**
- ❑ **Use Case: TAMA\_IVR\_030b\_reportingsymptomsContd**

MOTECH and NxOpinion (CDSS from RRI) interaction required for providing this functionality

# Patient Authentication over IVRS calls

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When patient calls TAMA or TAMA calls patient, patient must be authenticated to be a valid user of the system

Following use case is defined to describe various possibilities:

- ☐ **Use Case: TAMA\_IVR\_096\_patientIDNotEntered**
- ☐ **Use Case: TAMA\_IVR\_097\_callFromNonRegPhoneUserValidation**
- ☐ **Use Case: TAMA\_IVR\_098\_inboundCallPatientValidation**
- ☐ **Use Case: TAMA\_IVR\_099\_outboundCallPatientValidation**

# Web User Interface: Patient Admin

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For maintaining patient records in the TAMA database, and updating patient interactions at the clinic, TAMA has a web user interface. Following use cases are defined:

- ☐ Use Case: TAMA\_GUI\_001\_newpatientRegistrationAtClinic-PersonalInfo
- ☐ Use Case: TAMA\_GUI\_002\_patientMedicalHistory
- ☐ Use Case: TAMA\_GUI\_003\_patientPersonalProfilePreferences
- ☐ Use Case: TAMA\_GUI\_004\_clinicVisit
- ☐ Use Case: TAMA\_GUI\_005\_newVisitSummary
- ☐ Use Case: TAMA\_GUI\_006\_clinicVisitPhysicalExam
- ☐ Use Case: TAMA\_GUI\_007\_clinicVisitLabInvestigations
- ☐ Use Case: TAMA\_GUI\_008\_clinicVisit Treatment Advised



# Web User Interface: Clinic Alerts

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Clinic will receive alerts on the TAMA web User Interface for

1. **Symptom Reported Call**
2. **Adherence Level-Red**
3. **Socialization Call**
4. **Appointment Reminder Call, Appointment NoShow Call**

The following use case is defined:

- ❑ **Use Case: TAMA\_GUI\_030\_clinicAlerts**

# Web User Interface: Reports

Patient interaction with TAMA (via IVRS), at the clinic – lab test reports etc. can be viewed on TAMA web User Interface

The following use case is defined:

❑ **Use Case: TAMA\_REP\_040\_patientSummaryReports**

Following basic information is expected. Display month-wise if relevant:

1. **Dosages missed** – along with date, adherence percentage, alerts raised / closed dates
2. **Appointment Reminder Calls**– dates of Next appointment due date, reminder call start date, reminder call stop date, new appointment date, date on which new appointment date is fixed
3. **Adherence Status** – i.e. status = **RED** / **GREEN** / **YELLOW**, adherence percentage, date when measured, delta change from pervious measure
4. **Symptom Reported**– Details of interaction between TAMA and patient (date of call, TAMA messages played and patient responses as well as final advice)
5. **Socialization Requests** – List of socialization request calls made by patient, alert raised for them and date alert is closed

It should be possible to generate other reports based on patient interaction at clinic, such as – lab test reports, treatment advised reports etc.

# Web User Interface: Event Logs

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All interactions between TAMA and patient will be logged. Clinician should be able to view details:

1. **Call Detail Records** – detail of every call made or received by TAMA – time, duration, TAMA module etc.
2. **Pill Reminder Call Response Log** – log of response given by patient to any pill reminder call (MEDICINE\_TAKEN, WILL\_NOT\_TAKE, NOT\_TAKEN\_YET\_CALL\_LATER, WILL\_TAKE\_IMMEDIATELY\_AFTER\_CALL)
3. **General Messages Call Log** – log of messages (message IDs) played to patient at “bestCallTime”
4. **Appointment Reminder Call Log** – log of appointment reminders posted to patient Outbox, type of reminder (Appointment reminder, appointment NoShow) and the corresponding Alert number raised
5. **Self Adherence Report Call Log** - log of messages played to patient and patient response every time such a call is made by TAMA
6. **Health Tips messages Log** – log of health tip messages (message ID) posted to patient Outbox
7. **Symptom Report Call Log** – Log of all Symptoms calls made along with messages played by TAMA and responses given by patient
8. **Patient Status Change Log** – log of change in patient status (ACTIVE / INACTIVE/STUDY\_COMPLETE/ PREMATURE\_TERMINATE\_BY\_CLINIC/ PATIENT\_WITHDRAWS\_CONSENT/ MOVED\_LOCATION/ LOSS\_TO\_FOLLOW\_UP) along with date
9. **Adherence Status Log** – log of AdherenceStatus and AdherenceDate (date on which adherence status is calculated)
10. **Clinic Alerts log** – log of all alerts raised – alert number, type of alert, date alert posted to Alert Dashboard, Date alert status changed to VIEWED, date alert status changed to CLOSED.

# TAMA Admin

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Certain functionalities are required that only a TAMA Administrator / representative can perform as part of system administration:

- ☐ **Manage (Add/ modify / delete) Clinics**
- ☐ **Manage (Add/ Modify / Delete) Clinician(Doctors / Study Nurse)**
- ☐ **Manage (Add / Modify Delete) ART Drug Names**
- ☐ **Configurable Parameters**
- ☐ **Master Data Upload – e.g. Lab Test names(CD4 count, PVL count etc), Opportunistic Infection names, Ailments, etc. – either Web UI driven or via csv file upload or both**

# TAMA Scheduled Routines

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In order to be able to perform its functionalities, TAMA will require certain scheduled jobs:

## 1. Call initiating routines

1. **Pill Reminder Routine** – to initiate pill reminder calls via the IVRS to the patient at “pillTime”
2. **General Messages Routine** – to initiate call patient at his/her chosen “bestCallTime” and play all messages in his/her Outbox

## 2. Message post routines

1. **Appointment Reminder Routine** – to post appointment reminder messages starting <n> days from next appointment due date till such time Study Nurse deactivates (via web UI) such calls for this appointment
2. **Health Tips Routine** –
  1. To assign health tips category / topic based on calendar (e.g. festival time)
  2. To post health tip messages to patient Outbox based on the assigned Health Tips Category / Topic for him/her
3. **Self Reported Adherence Call Routine** – to post a self Adherence Call message in patient Outbox as per schedule (e.g. weekly, monthly)

## 3. Internal processing routines

1. **Adherence Status Calculation Routine** – to calculate the level of adherence of patient based on his response to Pill Reminder Call or Self Reported Adherence. Typically this will be once every day.
2. **Adherence Alert Routine** – to leave an Alert message in Clinic’s Alerts Dashboard for Study Nurse to view and take action as appropriate whenever Adherence Status of any patient turns RED.
3. **Symptom Reported Call Alert Routine** – to leave an Alert message in Clinic’s Alerts Dashboard for Study Nurse to view and take action as required.

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Thank You