



SMART DENTASSIST

Interactive System for Dental Support and Patient Management



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Home Page



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SMART DENTASSIST

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Patient Registration



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Personal Information


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Patient Registration

Dental History


PERSONAL INFORMATION

 First Name

 Gender


☐ Male

☐ Female

 Known Allergies

CONTACT INFORMATION

 Surname

 Occupation

PATIENT DETAILS

 RESET

 REGISTER

 CANCEL





Contact Information

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



Patient Registration

Dental History

PERSONAL INFORMATION

	Home
<hr/>	
	Mobile
<hr/>	
	Work
<hr/>	
	Email
<hr/>	

CONTACT INFORMATION

	Postal No
<hr/>	
	Address 1
<hr/>	
	Address 2
<hr/>	
	City
<hr/>	

PATIENT DETAILS

 RESET

 REGISTER

 CANCEL

Health Information

PERSONAL INFORMATION

CONTACT INFORMATION

PATIENT DETAILS



Main reason for today's visit



Medical Health History

☐ Diabetes

☐ High cholesterol

☐ High blood pressure

☐ Low blood pressure

☐ Heartburn(reflux)

☐ Anemia/blood problems

☐ Swollen ankles

☐ Depression/Anxiety

☐ Thyroid problems

☐ Shortness of breath

☐ Tonsillitis

☐ Asthma

☐ Stroke

☐ Sinus problems

☐ Arthritis

☐ Cancer

☐ Ulcers/colitis

☐ Gastric irritation

☐ Heart disease/Murmur/Angina

☐ Kidney/Bladder problems

☐ Lung problems/cough

☐ Liver problems/Hepatitis

☐ Headaches/Migraines

☐ Neurological problems

☐ Eye disorder/Glaucoma

☐ Ear problems

☐ Seasonal allergies



Other

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Dental Health History



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Medical Health

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Patient Registration

Dental History

HEALTH HISTORY

WOMEN'S HEALTH

PAST TREATMENTS

TREATMENTS

DENTAL EXAMINATION



Dental Health History

- | | |
|--|--|
| <input type="checkbox"/> Do you have difficulty in chewing your food? | <input type="checkbox"/> Are your teeth sensitive? |
| <input type="checkbox"/> Do you chew on only one side of your mouth? | <input type="checkbox"/> Does it hurt when you chew or open wide to take a bite? |
| <input type="checkbox"/> Do you avoid brushing any part of your mouth because of pain? | <input type="checkbox"/> Have you ever noticed slow-healing sores in or about your mouth? |
| <input type="checkbox"/> Do your gums bleed when you floss? | <input type="checkbox"/> Have you had a blow to the jaw (trauma)? |
| <input type="checkbox"/> Do your gums feel swollen or tender? | <input type="checkbox"/> Do you have pain in the face, cheeks, jaws, joints, throat, or temples? |

Are you a habitual

- | | | | |
|--------------------------------------|---------------------------------------|--|--|
| <input type="checkbox"/> Gum chewer? | <input type="checkbox"/> Pipe smoker? | <input type="checkbox"/> Betel chewer? | <input type="checkbox"/> Cigarette smoker? |
|--------------------------------------|---------------------------------------|--|--|

Do you feel twinges of pain when your teeth come in contact with

- | | | | |
|--|---------------------------------|---|----------------------------------|
| <input type="checkbox"/> Hot foods or liquids? | <input type="checkbox"/> Sours? | <input type="checkbox"/> Cold foods or liquids? | <input type="checkbox"/> Sweets? |
|--|---------------------------------|---|----------------------------------|



Other

RESET

SAVE

CANCEL

Women's Health

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Patient Registration

Dental History

HEALTH HISTORY

WOMEN'S HEALTH


PAST TREATMENTS


TREATMENTS

DENTAL EXAMINATION


☐ Are you pregnant?


☐ Nursing?


 Number of weeks

 Date of last menstrual period if you are still menstruating

 Total number of pregnancies

 Age at beginning of periods (menstruation)

 Number of births

 Age at end of periods (menopause)

 RESET

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Past Dental Treatments

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Patient Registration

Dental History

HEALTH HISTORY

WOMEN'S HEALTH

PAST TREATMENTS

TREATMENTS

DENTAL EXAMINATION

- ☐ Removal
- ☐ Wound treatment

- ☐ Fillings
- ☐ Sealants
- ☐ Retainers
- ☐ Braces

- ☐ Cleaning
- ☐ Polishing
- ☐ Bridges
- ☐ Dentures
- ☐ Implants

↻ RESET

💾 SAVE

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Required Treatment

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Patient Registration

Dental History

HEALTH HISTORY

WOMEN'S HEALTH

PAST TREATMENTS

TREATMENTS

DENTAL EXAMINATION



Treatment Needed

- ☐ Urgent Treatment
- ☐ Restorative Care
- ☐ Preventive Care
- ☐ Other



Drugs Prescribed

- ☐ Antibiotic
- ☐ Sedative
- ☐ Anti-inflammatory
- ☐ Other

↺ RESET

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Dental Examination Observations

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Patient Registration

Dental History

HEALTH HISTORY

- ☐ Caries
- ☐ Initial
- ☐ Dentine
- ☐ Pulp exposed

- ☐ Fluorosis
- ☐ Missing Teeth
- ☐ Dry Mouth
- ☐ Extra Oral
- ☐ Facial issues
- ☐ Swellings
- ☐ Other

WOMEN'S HEALTH

- ☐ Periodontal diseases
- ☐ Gingivitis
- ☐ Periodontitis

PAST TREATMENTS

- ☐ Sensitivity
- ☐ Tooth decay
- ☐ Fractured teeth
- ☐ Worn fillings
- ☐ Gum disease
- ☐ Worn tooth enamel
- ☐ Exposed tooth root

TREATMENTS

- ☐ Lesions
- ☐ Premalignant
- ☐ Cancerous
- ☐ Non Cancerous

DENTAL EXAMINATION

- ☐ Malocclusion
- ☐ Class 2 Division 1
- ☐ Class 2 Division 2
- ☐ Class 3
- ☐ Oropharyngeal Cancer
- ☐ Sores that bleed easily or do not heal
- ☐ Thick or hard spot or lump
- ☐ Roughened or crusted area
- ☐ Numbness, pain or tenderness
- ☐ Change in the way your teeth fit together when you bite down



Comments

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Patient History Profile

Maresh Rathnayaka : M : 25 Years old : Queue 1

Past Treatments

Teeth Removal

Clean Cavity

Drugs Prescribed

1. Anti-inflammatory drugs

2. Anesthetics

3. Chloraseptic

4. Xylocaine

1. Chloraseptic

2. Xylocaine



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Hardware Interfaces



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Laptop computer

Intraoral camera

Tablet PC

Bar code reader



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Software Interfaces



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- The system - **Java version 1.7**
- The webpages - **php, HTML, CSS, JavaScript and jQuery.**
- The database - **MySQL version 5.5**



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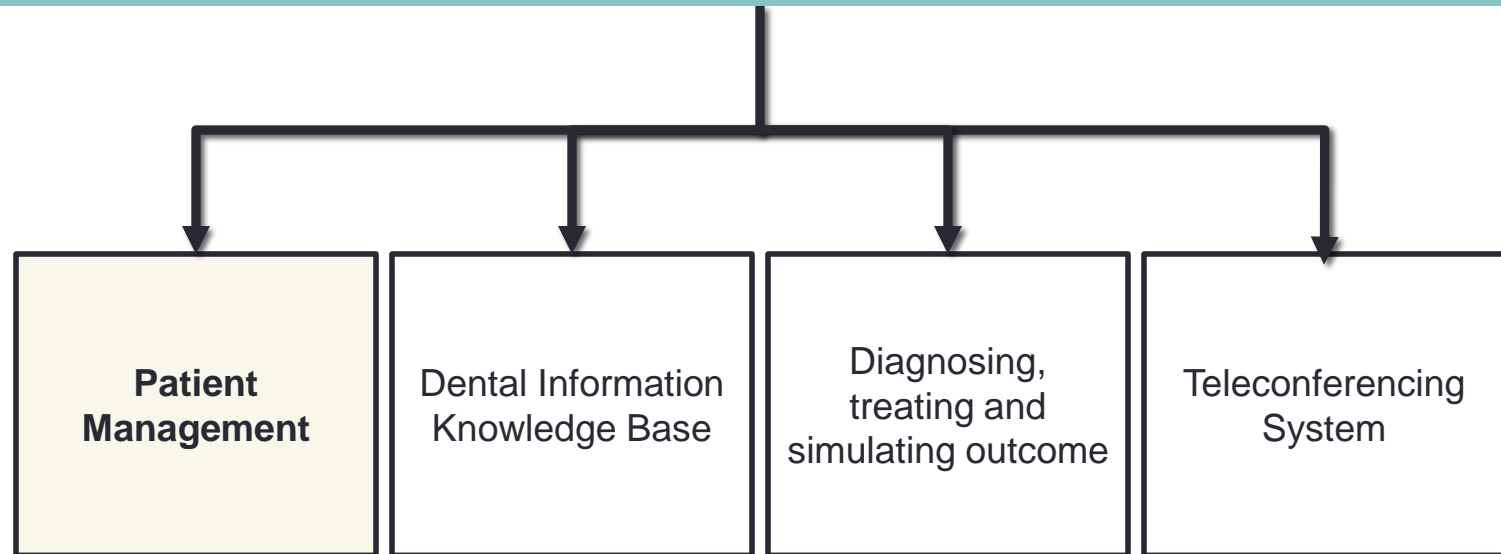
Interactive System for Dental Support and Patient Management

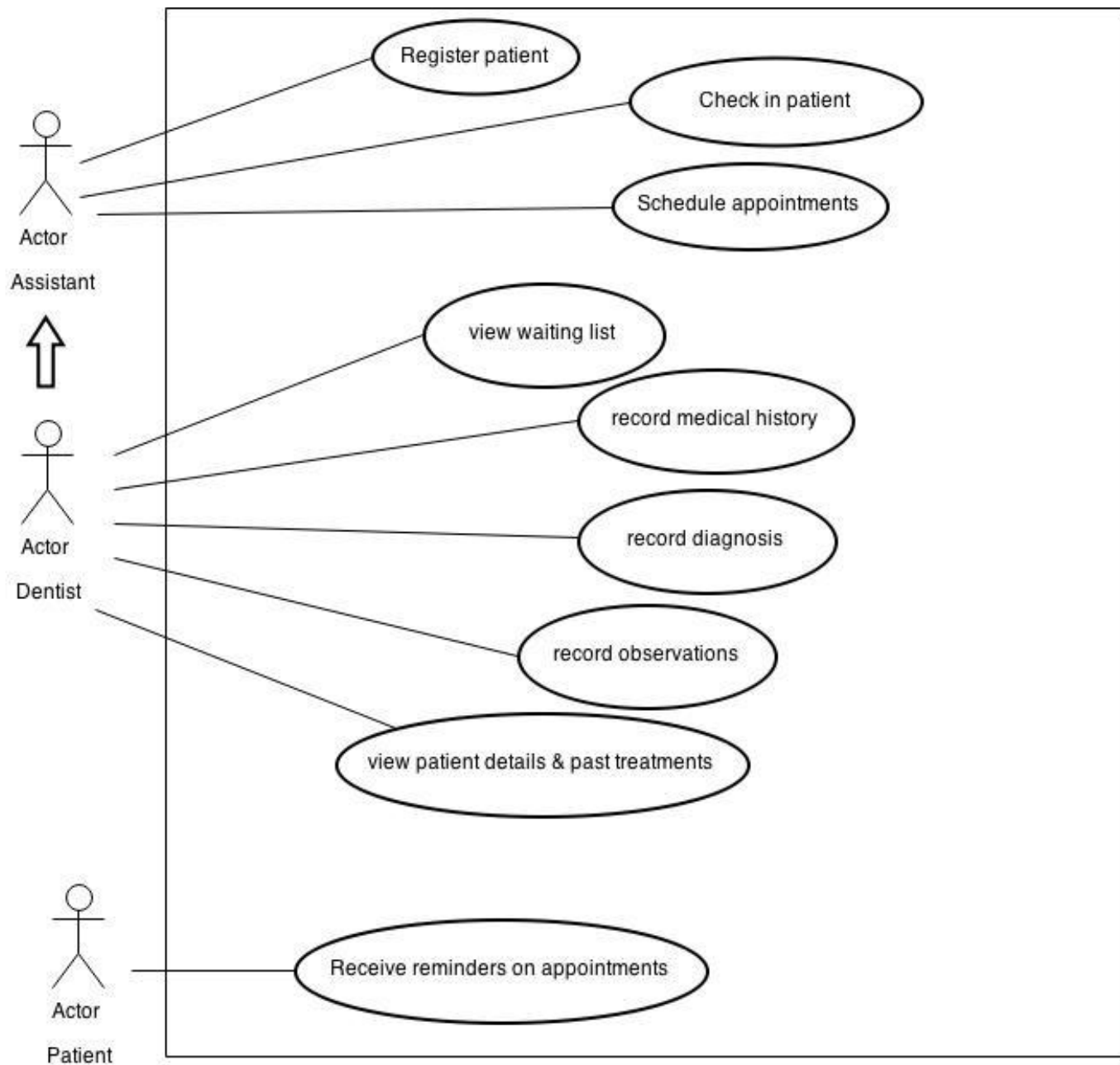
Use Cases



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Use case

Register Patient

Pre-condition

- 1. Application is up and running
- 2. Database connection is active

Actor

Assistant / Nurse

Main Success Scenarios

- 1. Enter patient basic personal information
- 2. Enter patient contact details information
- 3. Enter patients' general medical history

Extension

Use case	Check in Patient
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active3. Patient must be already registered
Actor	Assistant / Nurse
Main Success Scenarios	<ol style="list-style-type: none">1. Go to check in interface2. Scan patient barcode with bar code reader3. Doctor's waiting list & schedule are automatically updated
Extension	

Use case	Schedule appointment
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active3. Patient must be already registered
Actor	Assistant / Nurse
Main Success Scenarios	<ol style="list-style-type: none">1. Scan patient barcode / search patient2. Select time and date3. Enter reason for appointment / patient complaint4. Add appointment
Extension	

Use case	View waiting list
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Open daily schedule2. View list of upcoming appointments
Extension	

Use case	Record medical history
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active3. Patient is already registered
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Scan patient barcode / search patient2. Open dental health history interface3. Check/tick options and make comments if necessary4. Save to the system
Extension	

Use case	Record diagnosis
Pre-condition	<ol style="list-style-type: none"> 1. Application is up and running 2. Database connection is active 3. Patient is already registered 4. Patient history is saved
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none"> 1. Scan patient barcode / search patient 2. Open treatment interface 3. Check/tick treatment types, drugs and treatment priority 4. Add comments 5. Save to the system
Extension	3a. if there are any other details to be stored, the dentist can store them as comments.

Use case	Record observations
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active3. Patient is already registered4. Patient history is saved
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Scan patient barcode / search patient2. Open observations interface3. Check/tick observations, signs, symptoms4. Add comments5. Save to the system
Extension	

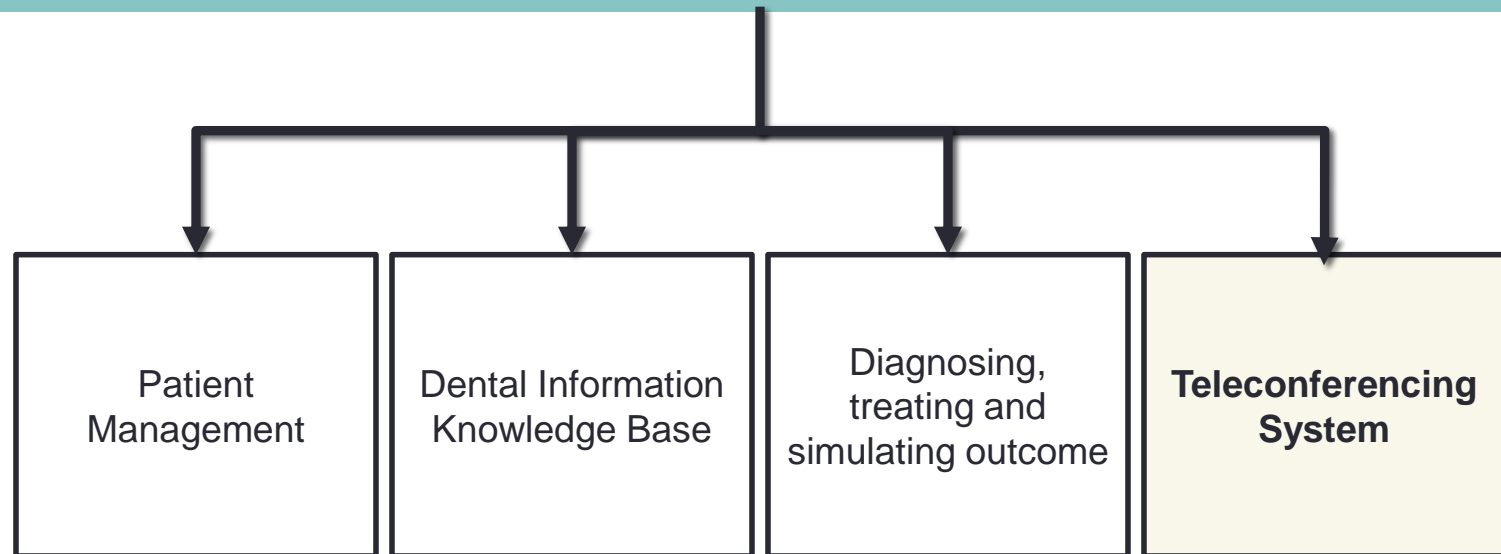
Use case	View patient details & past treatments
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active3. Patient is already registered4. Patient history is saved5. Patient diagnosis & observations are saved
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Scan patient barcode / search patient2. Open patient profile interface3. View past treatments, methods, drugs used, outcome
Extension	3a. If the patient is new, only the registration details will be displayed

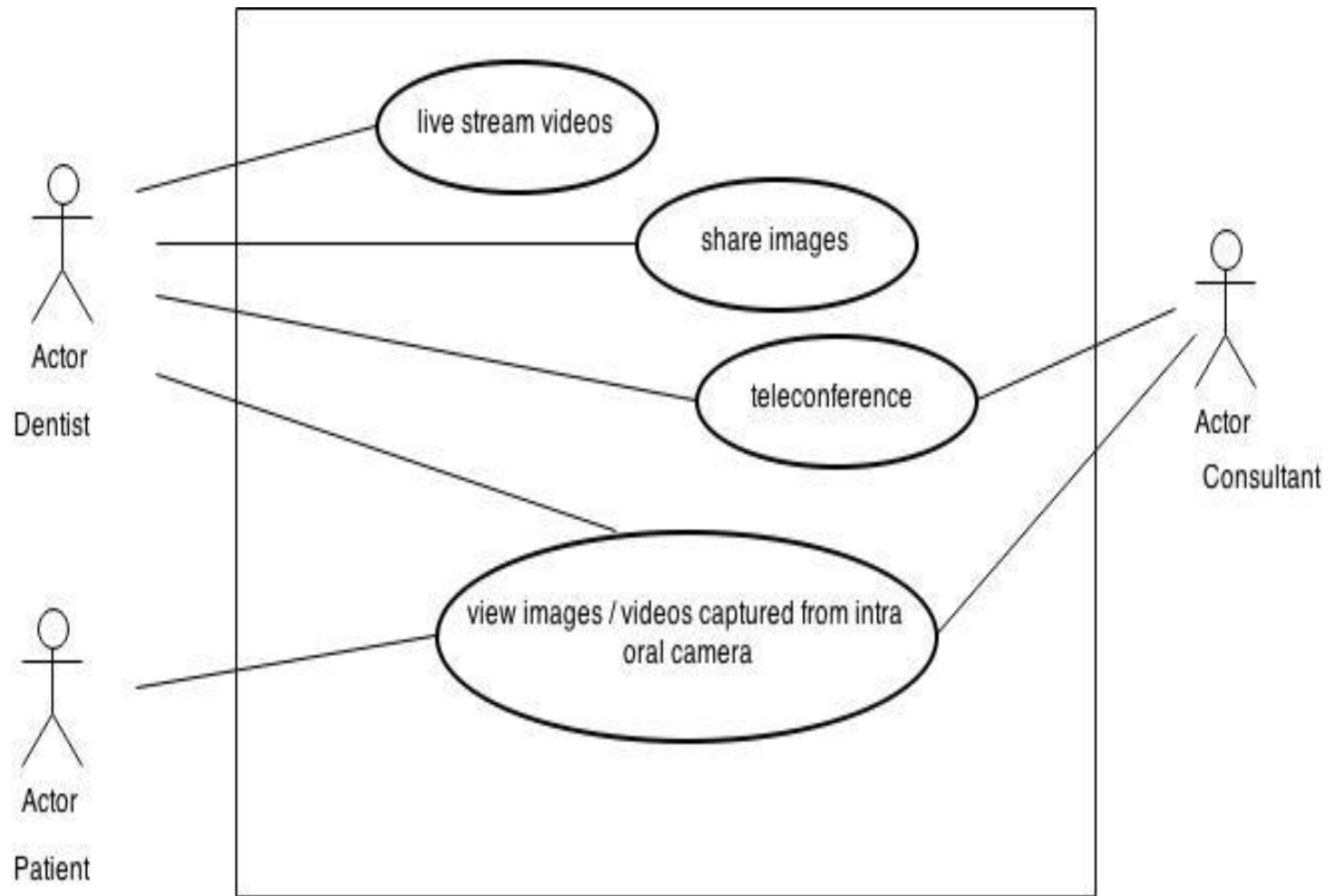
Use case	Receive reminders on appointments
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active3. Patient is registered in the system
Actor	Patient
Main Success Scenarios	<ol style="list-style-type: none">1. Receive text message / mail reminders of upcoming appointments
Extension	



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Use case 01	Live Stream videos
Pre-condition	<ol style="list-style-type: none">1. Healthy internet connection2. Application up and running and working hardware properly
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Get the list of online specialists/consultants2. Send request to one or more specialists/consultants3. Connect with people who accepted the request4. Make online the video via the web application
Extension	<ol style="list-style-type: none">1. a. No specialist/consultant available at the time

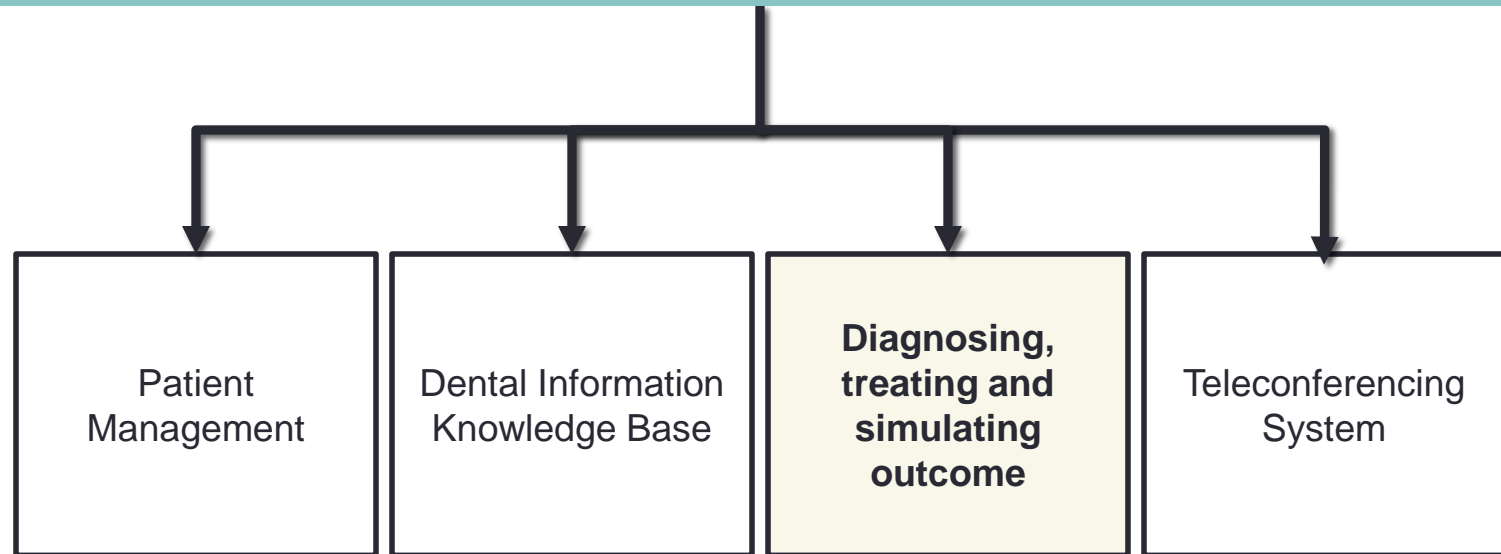
Use case 02	View images/videos captured from intra oral camera
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Hardware device is linked with the application
Actor	Dentist/Consultant
Main Success Scenarios	<ol style="list-style-type: none">1. Select the patient profile2. Connect device and get the inputs from it3. View/save images/videos against the selected patient online4. Share images/videos with other specialists/consultants
Extension	Inputs taken from the device is not recognized

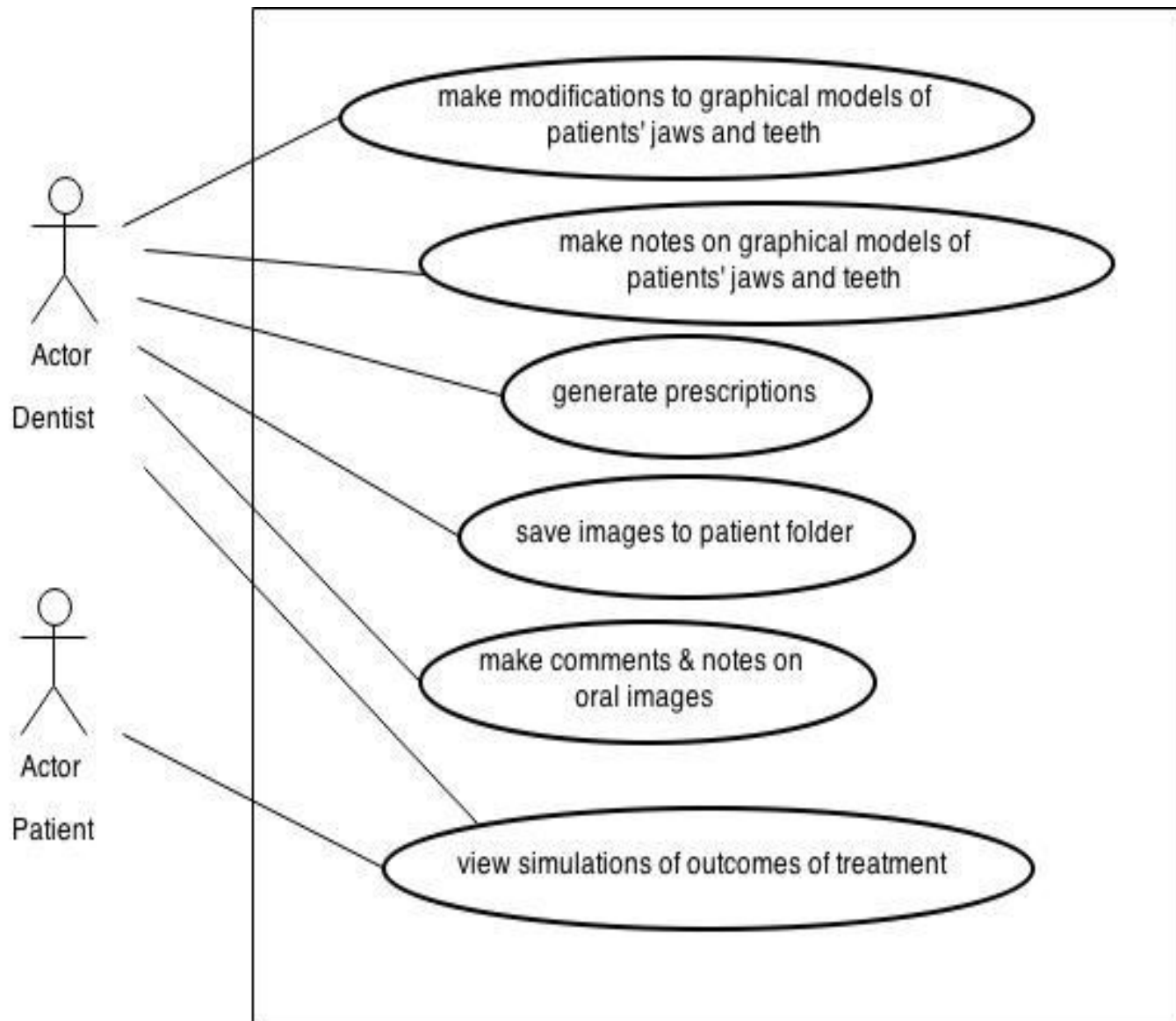
Use case 03	Teleconference
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Healthy internet connection
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Get the list of online specialists/consultants2. Select one or more from the list to start teleconferencing with3. Start the conference with the selected personnel.
Extension	<ol style="list-style-type: none">3.a. share media with the participants if needed.



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Use case	3D modeling
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Images are captured
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Capture images2. Select 2D images3. Select output type
Extension	<ol style="list-style-type: none">1a. Captured images are not clear2a. Select a valid source images

Use case	Simulating outcome
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Images are captured
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1.Select 3D model.2. Select treatment type.3. Select treatment period4. Click “Simulate”.
Extension	<ol style="list-style-type: none">1a. Selected model not compatible

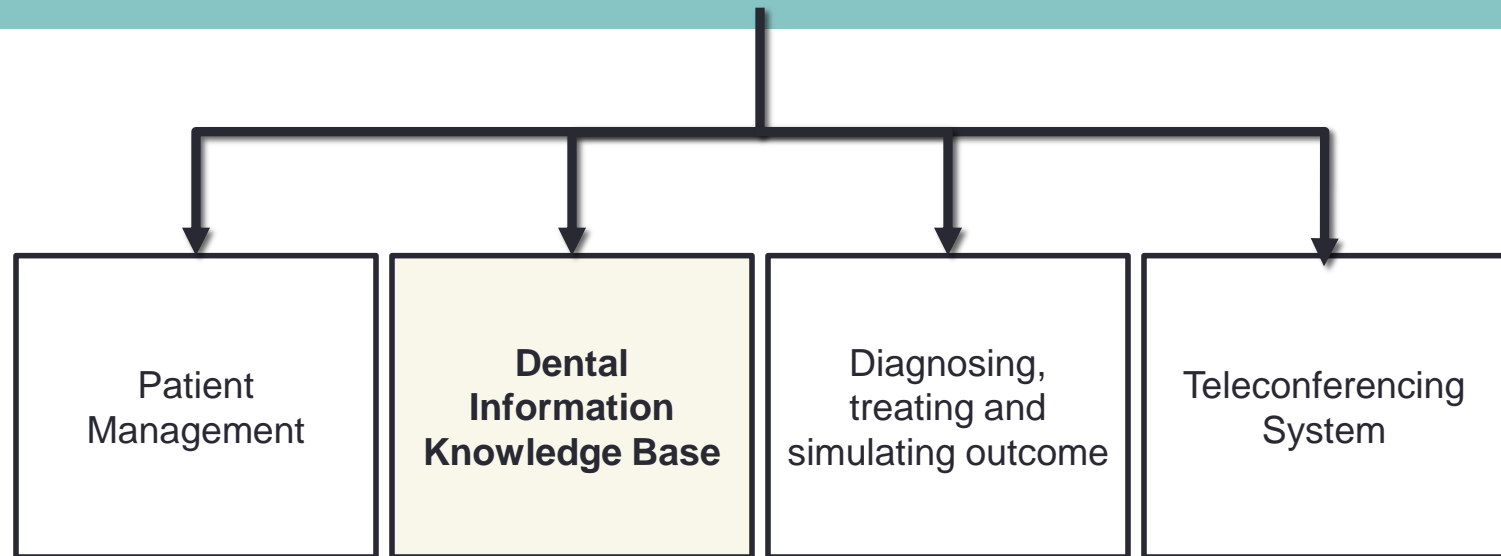
Use case	3D model editing(Manual 3d modeling)
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Images are captured
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Select 3D model.2. Edit 3D model.3. Click “View”.
Extension	<ol style="list-style-type: none">1a. Selected model not compatible

Use case	Create prescriptions
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Images are captured3. Patient's diagnosis is stored
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1 Select patient's teeth images.2. Select treatment.3. Comments images3. Click "Create Prescription".
Extension	<ol style="list-style-type: none">1a. Selected model not compatible



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Actor
Dentist

refer previously treated cases

receive treatment suggestions

browse records by treatment, disease,
comments

share knowledge with other dentists

Use case 01	Refer previous treatments
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Select the patient profile2. Select the patient history3. Patient's previous treatments will load in the web page
Extension	<ol style="list-style-type: none">3.a. Previous treatments page not load for new patients

Use case 02	Receive treatment suggestions
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Select the patient profile2. Add comments to the patient oral health3. Click the 'suggestions/help' button4. Popup suggestions for treatments and drugs
Extension	<ol style="list-style-type: none">3.a. Comments must filled in the web page

Use case 03	Share knowledgebase
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Select the patient profile2. Click the 'Share knowledgebase' button3. Popup knowledgebase details to select4. Share details to central database
Extension	2.a. Knowledgebase can share with profile to profile and also with category wise.

Use case 04	Make comments on oral images
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Select the patient profile2. Click the 'Add Image' button3. Load the intra-oral camera images4. Select relevant image5. Click 'Add Comment' button6. Popup the editor panel7. Add comments to the image8. Save the image
Extension	<ol style="list-style-type: none">3.a. Images are not loaded if the location is empty

Use case 05	Make notes on oral images
Pre-condition	<ol style="list-style-type: none">1. Application is up and running2. Database connection is active
Actor	Dentist
Main Success Scenarios	<ol style="list-style-type: none">1. Select the patient profile2. Click the 'Add Image' button3. Load the intra-oral camera images4. Select relevant image5. Click 'Add Note' button6. Popup the image editing panel7. Add notes on the image8. Save the image
Extension	<ol style="list-style-type: none">3.a. Images are not loaded if the location is empty8.a. Notes are empty image will not saved



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Software System Attributes



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- **Correctness** - The correctness of the details which is in data base should be 100% correct always.
- **Accuracy** – The accuracy of treatment and diagnosis suggestions should be 100% accurate.



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- **Availability** - The dentist can access any data in the database at any time and the dentist should be able to use teleconferencing at any time.
- **Confidentiality** – Information must be kept private from the outside world.



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- **Usability** – The system's user interfaces must be kept simple and easy to handle.
- **Safety** -Database backup is required in case of a database crash or an operating system failure. A backup shall consist of a complete reproduction of every file on the server.



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- **Security** - The system shall implement difference access levels to its users.
- **Performance** – The system should process the images captured and suggest the diagnosis report which has a latency of not more than 45 seconds.



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- **Deployable** - System can be deployed in any platform with the minimal memory, space performance etc. requirements.
- **Scalability** – System can be extended in future i.e. to access it through cloud servers.



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Thank You!