Veterinary Expert System for Remote Use

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Recap: My Expert System

- Veterinary diagnosis expert system
- Mobile interface
  - Accessible in remote areas
- Possible extensions
  - Mechanism for addition of further knowledge
  - Feedback taken into account by the system

Focus on Cattle

- Aim to avoid encroaching on vets' place
- Many developing farmers, rural people are owners of cattle
- Grahamstown's streets demonstrative of this

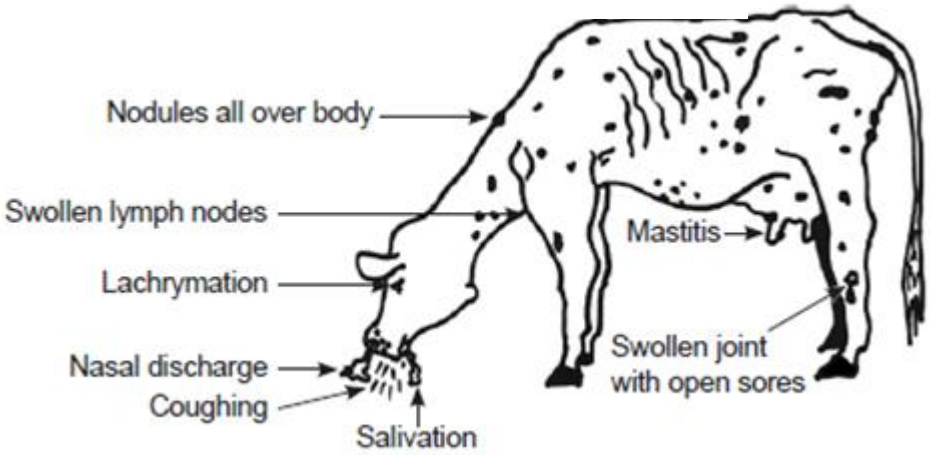
- **Provide a basic diagnostic resource to people who would otherwise be unable/struggle to consult a vet**

Knowledge Source

- National Department of Agriculture publications ('InfoPaks')
  - Freely available
  - Aimed at developing farmers
  - Introductory point for basic animal health
  - No jargon or complex terms and language

Sick animals

- There are two types of redwater, namely Asiatic redwater and African redwater
- Asiatic redwater is the more serious disease, although African redwater is probably more important as it is more widely spread. The signs are the same, although nervous signs also occur with Asiatic redwater
- Fever (40-41,5 degrees C)
- Pale to yellow eyes and gums
- Red-coloured urine
- With Asiatic redwater there could be nervous signs, with difficulty in walking and convulsions (can look like heartwater)
- Death
- Calves are resistant for the first 6 to 9 months of life



These anmials were not vaccinated and are now sick. This spells disaster for the farmer and his herd

These anmials have been vaccinated and are protected. The farmer will benefit economically from his cattle

Typical Information

- Basic info about disease, how it affects livestock
- Which animals it affects & susceptibility factors
- Factors affecting likelihood
- Means of infection
- Possible symptoms
- Means of diagnosis
- Similar diseases
- Treatment and vaccination

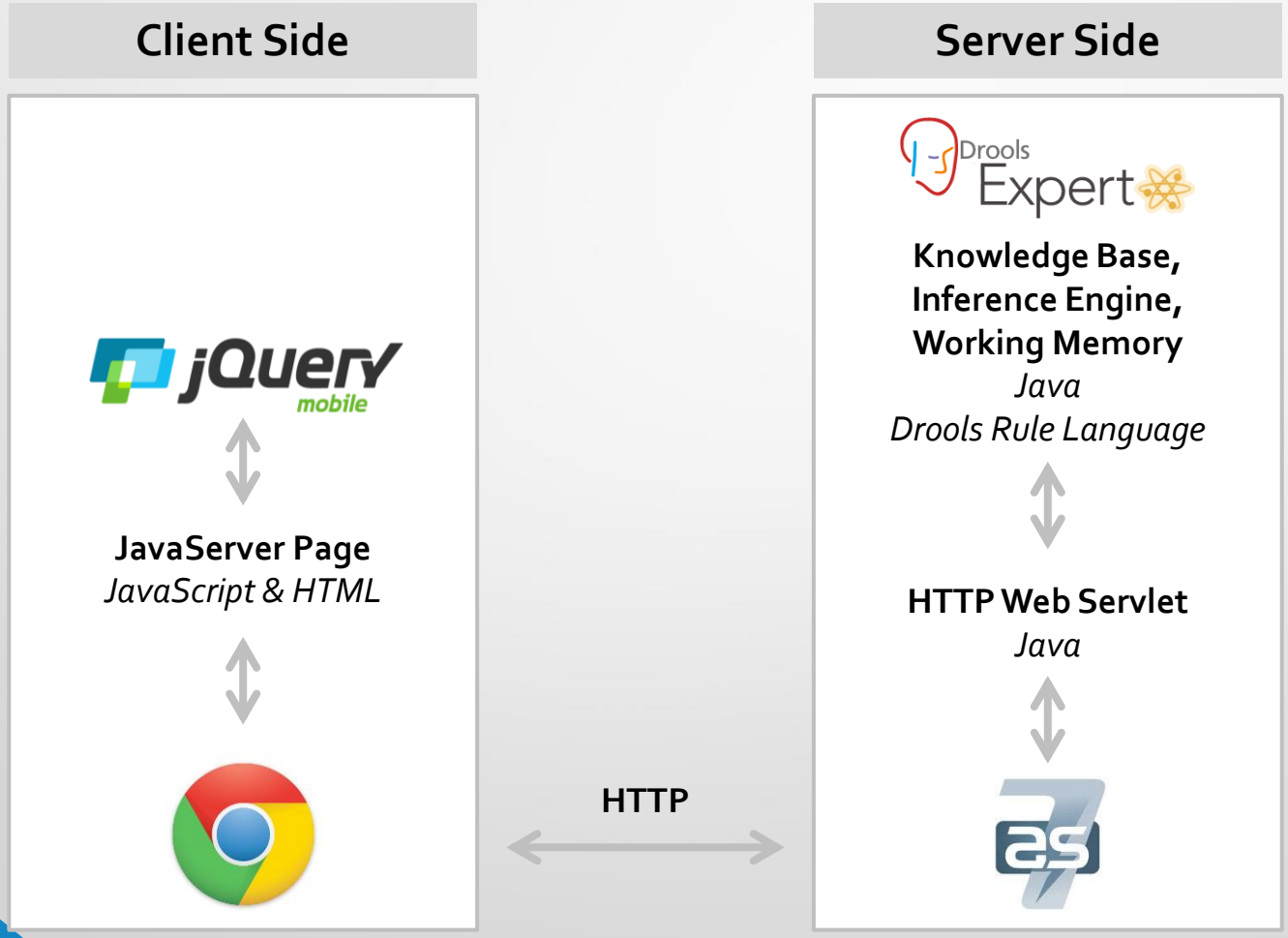
Diagnostic Process

- Basic information about cow
- Immunity, Vaccination, Other ill cattle
- Broad symptoms

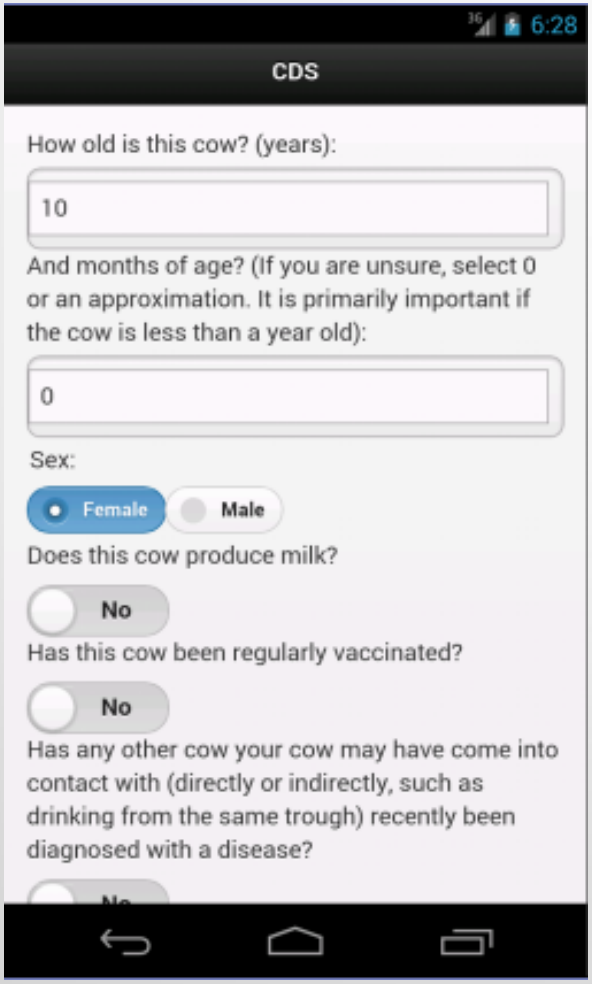
- Query symptoms

- Diagnosis

Developed System



User-Interface



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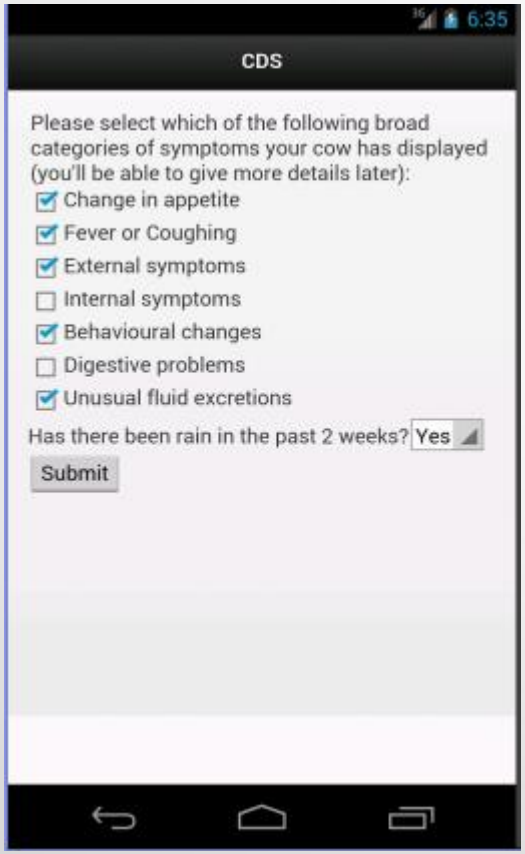
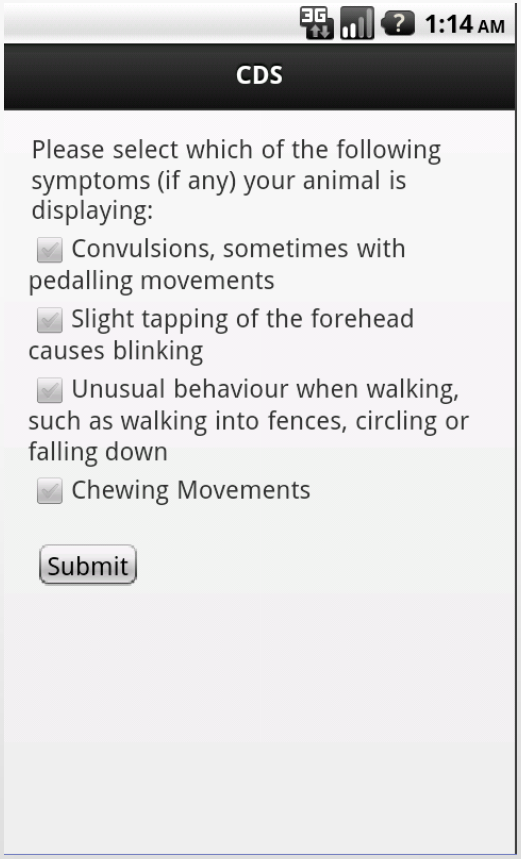




Results

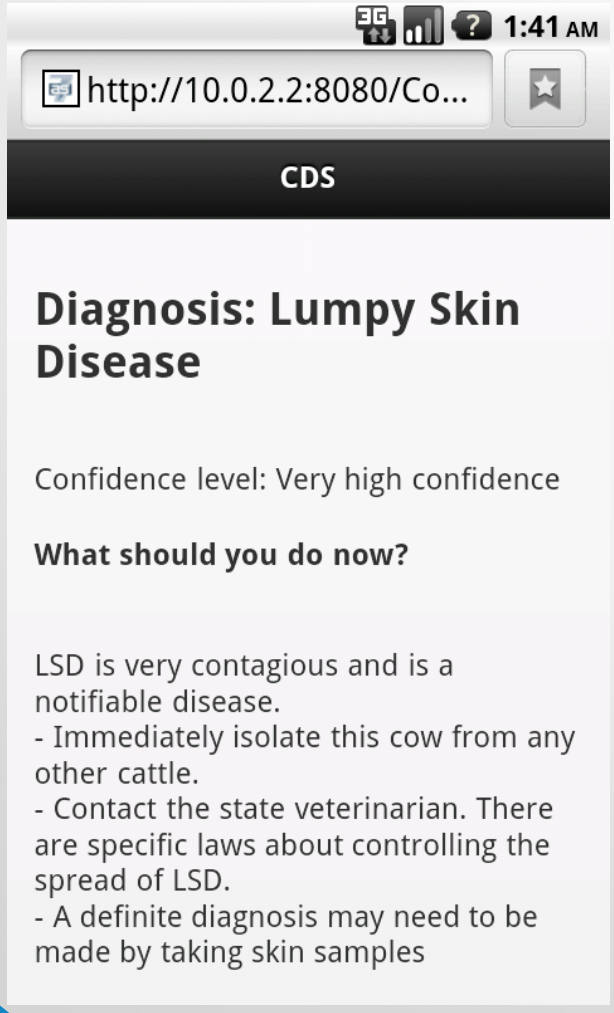
- Diseases:
  - Lumpy Skin Disease
  - Heartwater
  - Asiatic Redwater
  - Gallsickness

Results

- Given all the symptoms for LSD
- No symptoms for another disease (not shared with LSD)
- Not vaccinated for any disease
- Not previously diagnosed with a disease
- No other cow has been sick recently

- **Diagnosis: LSD with Very High Confidence**

Results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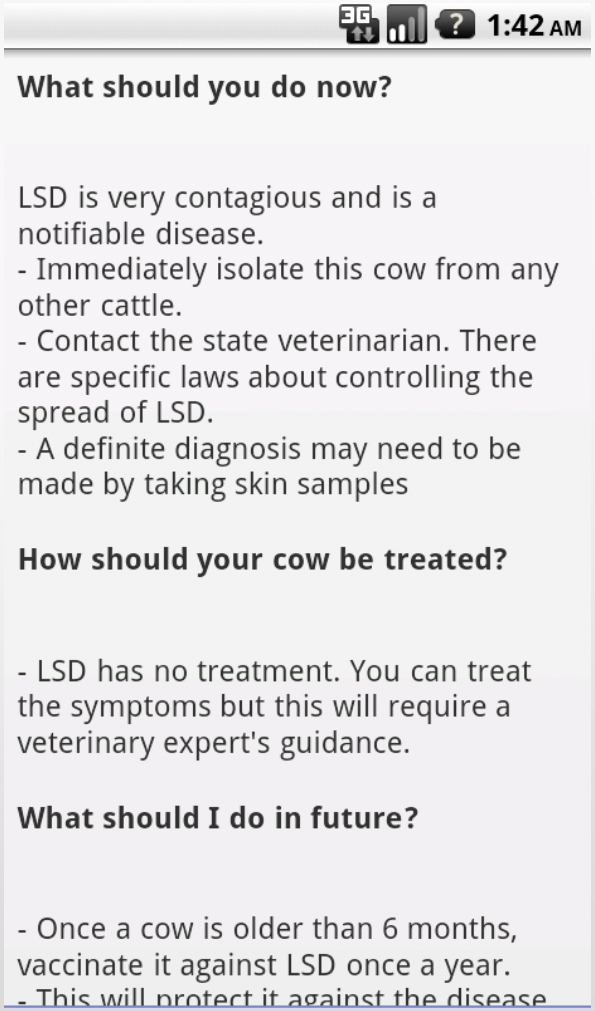
http://10.0.2.2:8080/Co...
CDS
Diagnosis: Lumpy Skin Disease
Confidence level: Very high confidence
What should you do now?
LSD is very contagious and is a notifiable disease.
- Immediately isolate this cow from any other cattle.
- Contact the state veterinarian. There are specific laws about controlling the spread of LSD.
- A definite diagnosis may need to be made by taking skin samples


1:42 AM
What should you do now?
LSD is very contagious and is a notifiable disease.
- Immediately isolate this cow from any other cattle.
- Contact the state veterinarian. There are specific laws about controlling the spread of LSD.
- A definite diagnosis may need to be made by taking skin samples
How should your cow be treated?
- LSD has no treatment. You can treat the symptoms but this will require a veterinary expert's guidance.
What should I do in future?
- Once a cow is older than 6 months, vaccinate it against LSD once a year.
- This will protect it against the disease

Results

- Given 4 shared symptoms for Heartwater and Redwater
- Heartwater vaccine recently given
- Given red urine as a symptom

- Initially: Heartwater, Redwater and Gallsickness

- Likely: Heartwater and Redwater

- Differentiation: Redwater

- **Diagnosis: Redwater with High Confidence**

Results

- Given 4 shared symptoms for Heartwater and Redwater
- Given red urine and chewing movements as a symptom
- Heartwater vaccine recently given

- Initially: Heartwater, Redwater and Gallsickness

- Likely: Heartwater and Redwater

- Differentiation: Undecided

- **Diagnosis: Heartwater with Low Confidence, Redwater is a distinct possibility**

Results

- Given 5 shared symptoms for Gallsickness and Redwater
- Given no differentiating symptoms
- Redwater vaccine given annually

- Initially: Redwater and Gallsickness

- Likely: Redwater and Gallsickness

- Differentiation: Undecided

- **Diagnosis: Gallsickness with High Confidence**

Questions