



DermaMentors

Your skin health - Now in your palms

“

*Early diagnosis of disease
is the business of the
general public even more
than of the medical
professionals.*

- J.B.S. Haldane

ELEVATOR STATEMENT



DermaMentors is a mobile application designed to help our users identify a skin disease at an early stage with the help of an image of the infected skin area and thereby act as a tool for the early diagnosis of the same.

THE CLINICAL NEED



4th

Most common cause of human illness



80%

Treatments fail solely due late diagnosis



11.5%

Of the world's population suffers from at least one skin disease



36.4 million

YLDs annually (greater than Diabetes Mellitus and Migraines)



0.49

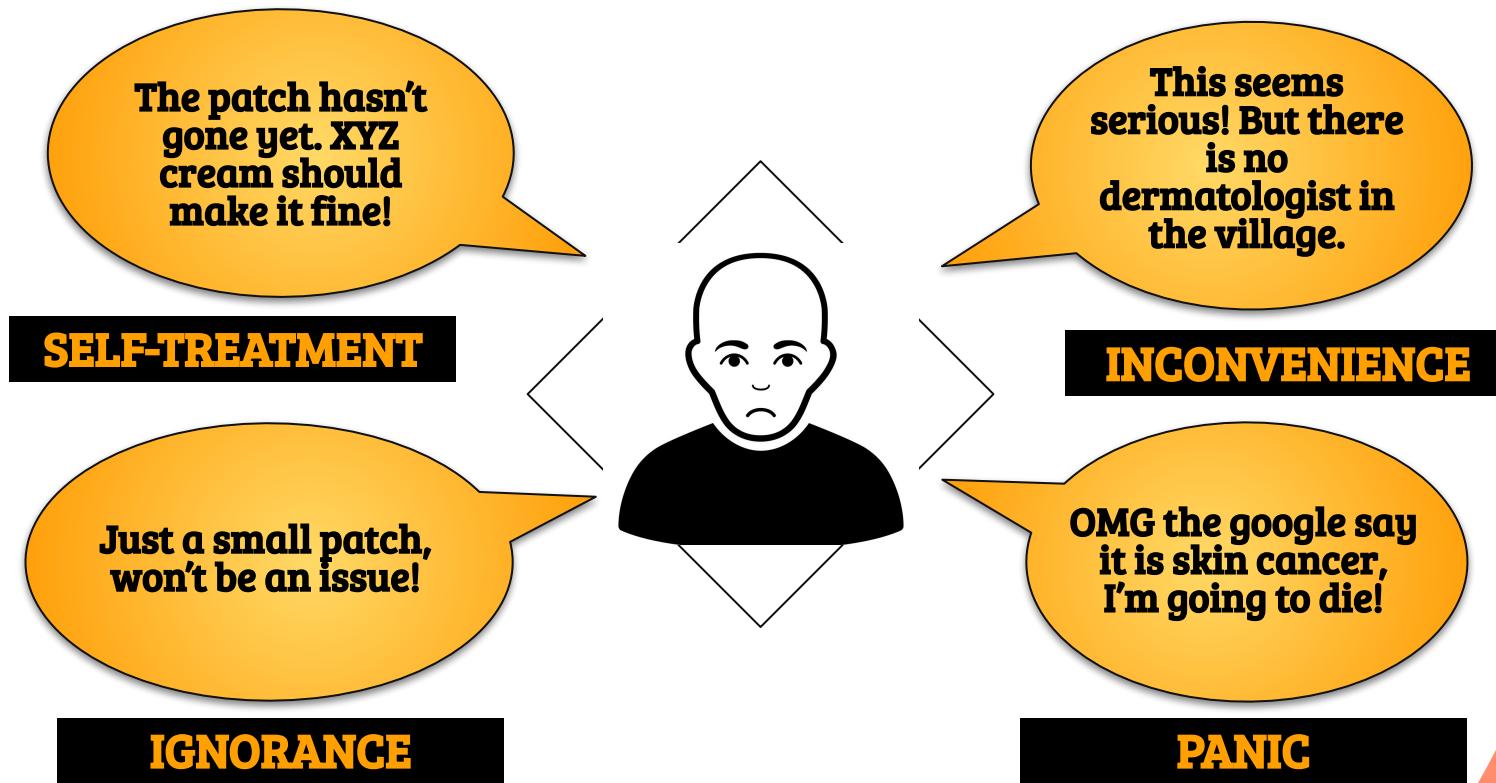
Dermatologists are available for every 100,000 people in India



73%

Of the affected people live with the disease without even discovering it

PRESENT SCENARIO



CLINICAL NEED

SOLUTION

IMPLEMENTATION

BUSINESS ANALYSIS

IMPACT & FUTURE PLANS

EXPERT OPINIONS

"There is need for better recognition of the extent of the problem of skin diseases, further due to the fact that the first signs of certain diseases, including HIV/AIDS, leprosy and onchocerciasis, tend to appear as skin problems."

-Professor Rod Hay, Head of the School of Medicine and Dentistry, Queen's University Belfast

"Many skin diseases have always been there in high numbers, and in many cases they are so common that they are part of the local culture."

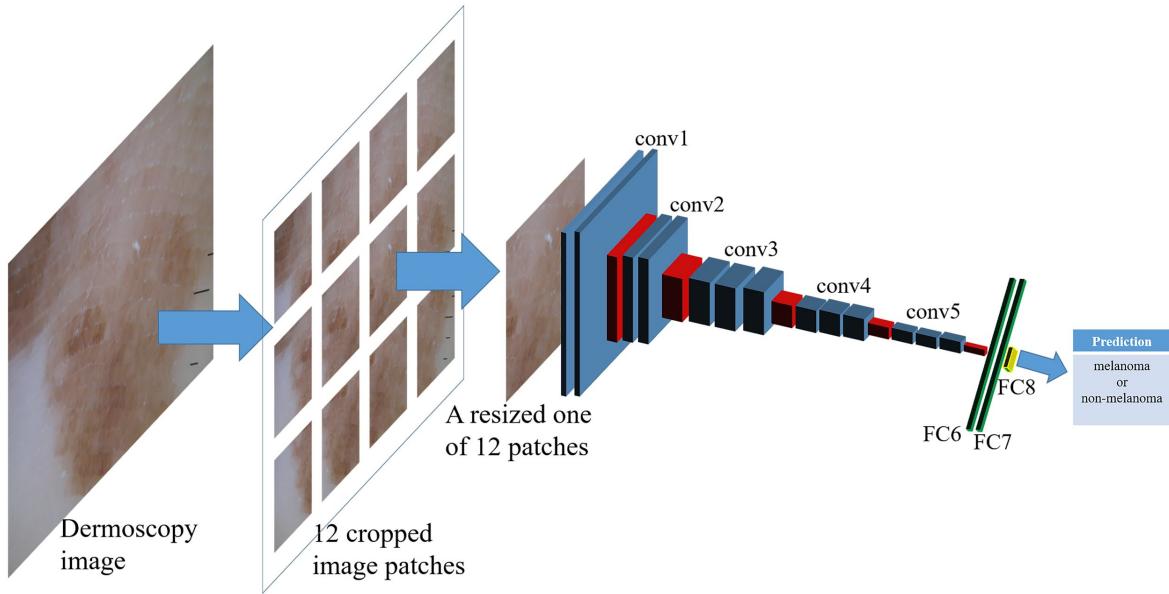
-Dr José Figueroa-Munoz,
Medical Officer, Stop TB
Department, WHO

"More than half of people worry less about getting skin cancer than other cancers. Skin cancer kills seven people in the UK every day and rates of malignant melanoma continue to rise faster than any other type of common cancer."

-Dr Bav Shergill, Dermatological Surgeon, Manchester, UK

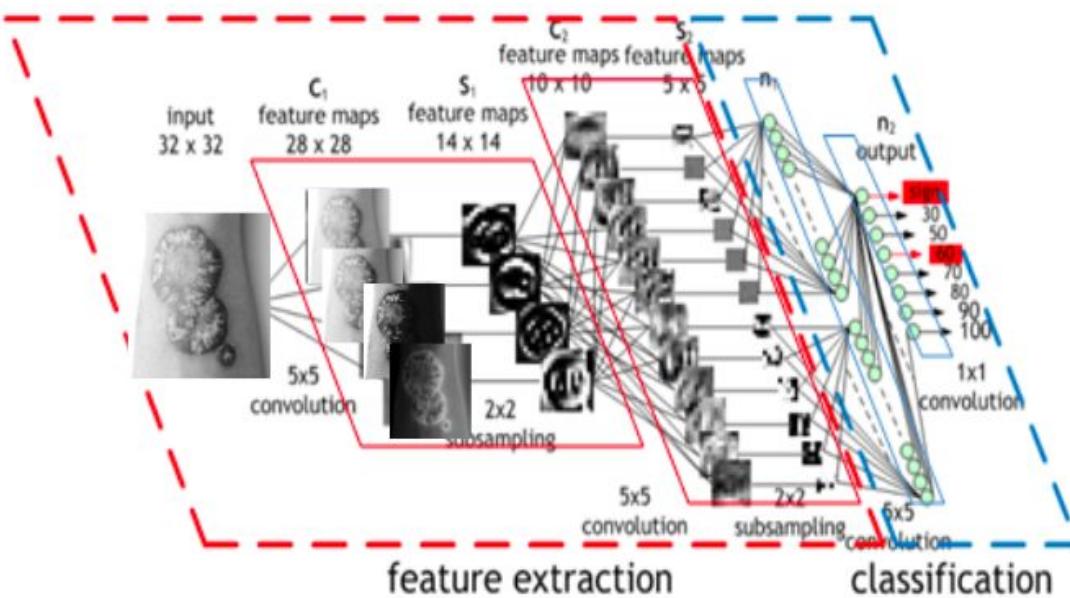
OUR SOLUTION

Convolution Neural Networks - What are they?



- Color
- Texture
- Spread
- Shape
- Size
- Buldge

OUR SOLUTION



- Each feature contributes to a certain extent for the final classification
- To learn the features and the respective contribution, we need to train

TECHNICAL FEASIBILITY



Nature Article | Skin Cancer

Dermatologist-level classification of **Skin Cancer** with deep neural networks - Andre Esteva et al.



Skin Lesion | Computational Methods

Computational methods for pigmented **Skin Lesion** classification in images - Roberta B. Oliveira et al

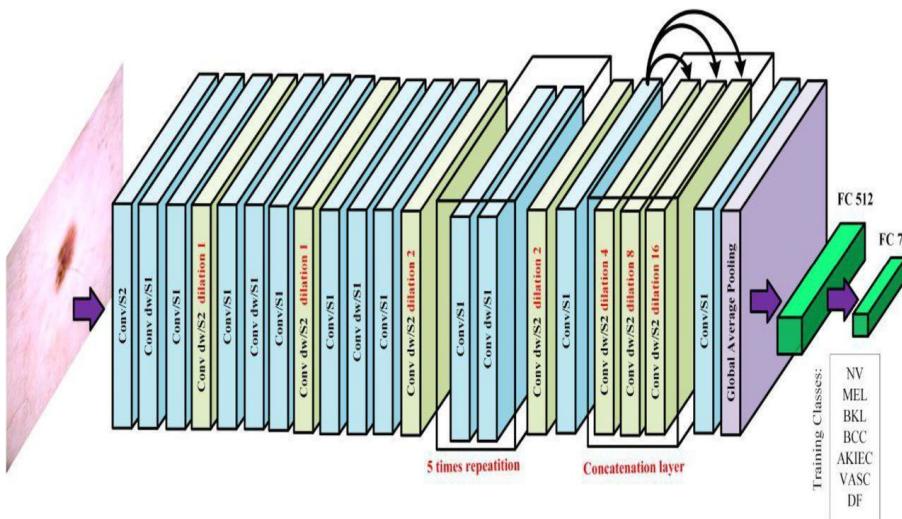


Skin Lesion | Convolution Neural Network

A Dense Convolution Neural Network approach for skin lesion classification

OUR SOLUTION

Novelty of the Solution



Data Collection:

AtlasDerm, DermlS, the ISIC Archive, Derm101 and Dermnet.

Model Architecture:

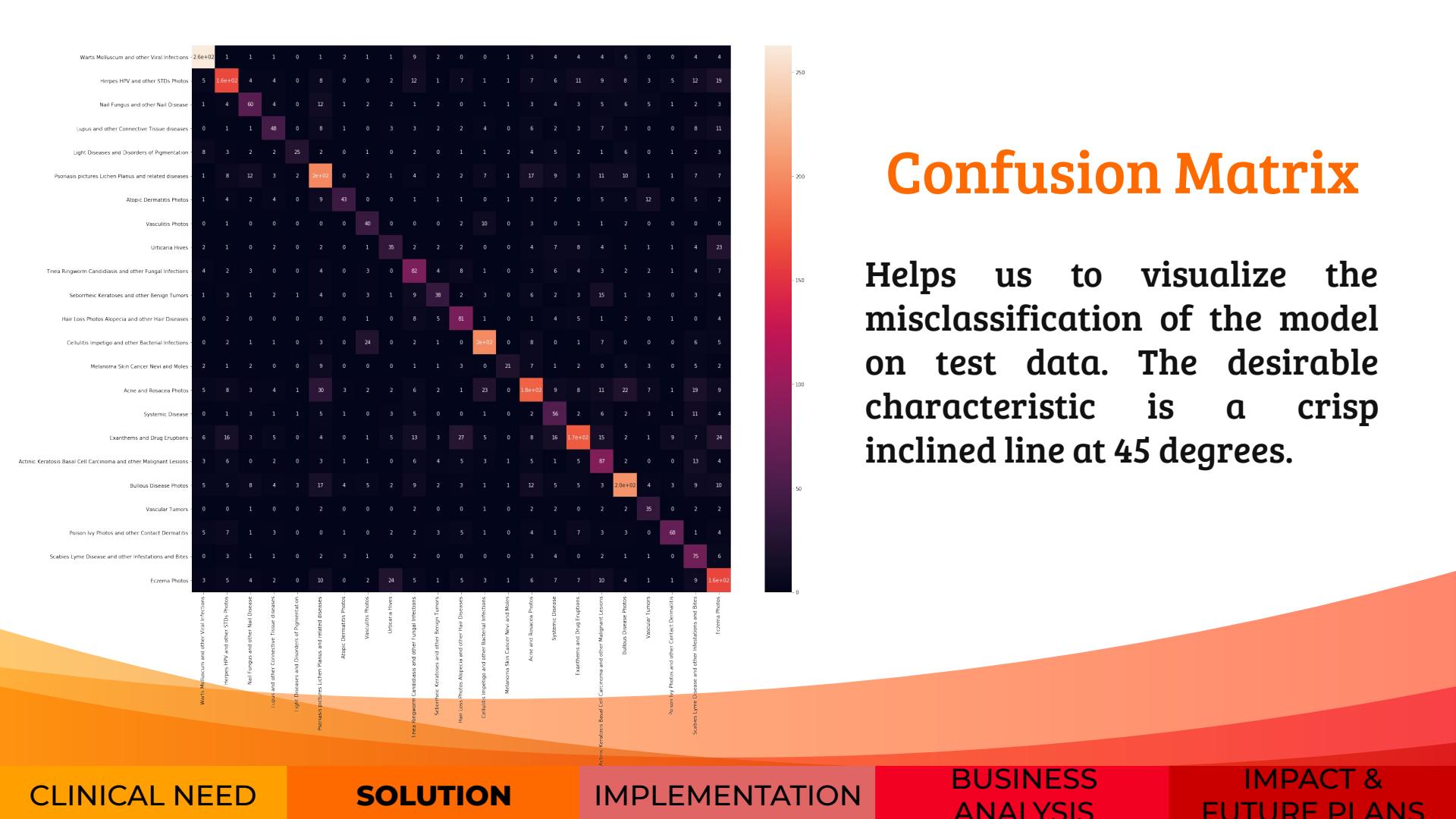
Xception Network customized for skin analysis.

Results:

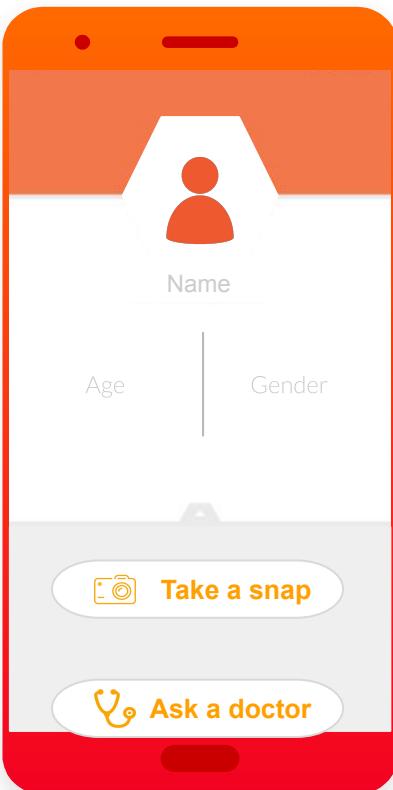
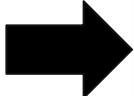
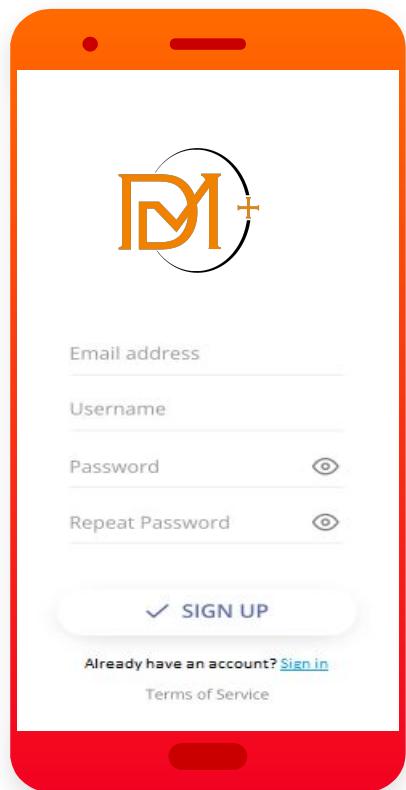
Model top-3 accuracy reaching over 73% for 23 disease classes.

Implementation:

Easy to use android app based application



WORKFLOW



CLINICAL NEED

SOLUTION

IMPLEMENTATION

BUSINESS
ANALYSIS

IMPACT &
FUTURE PLANS

DEMONSTRATION



CLINICAL NEED

SOLUTION

IMPLEMENTATION

BUSINESS
ANALYSIS

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FUTURE PLANS

MARKET ANALYSIS

TARGET CUSTOMERS

PRIMARY CUSTOMERS: Health-conscious smartphone users

SECONDARY CUSTOMERS: Researchers in the field of Dermatology, Advertisers

MARKET SIZE

(In terms of the application downloads)



MARKET GROWTH

CLINICAL NEED

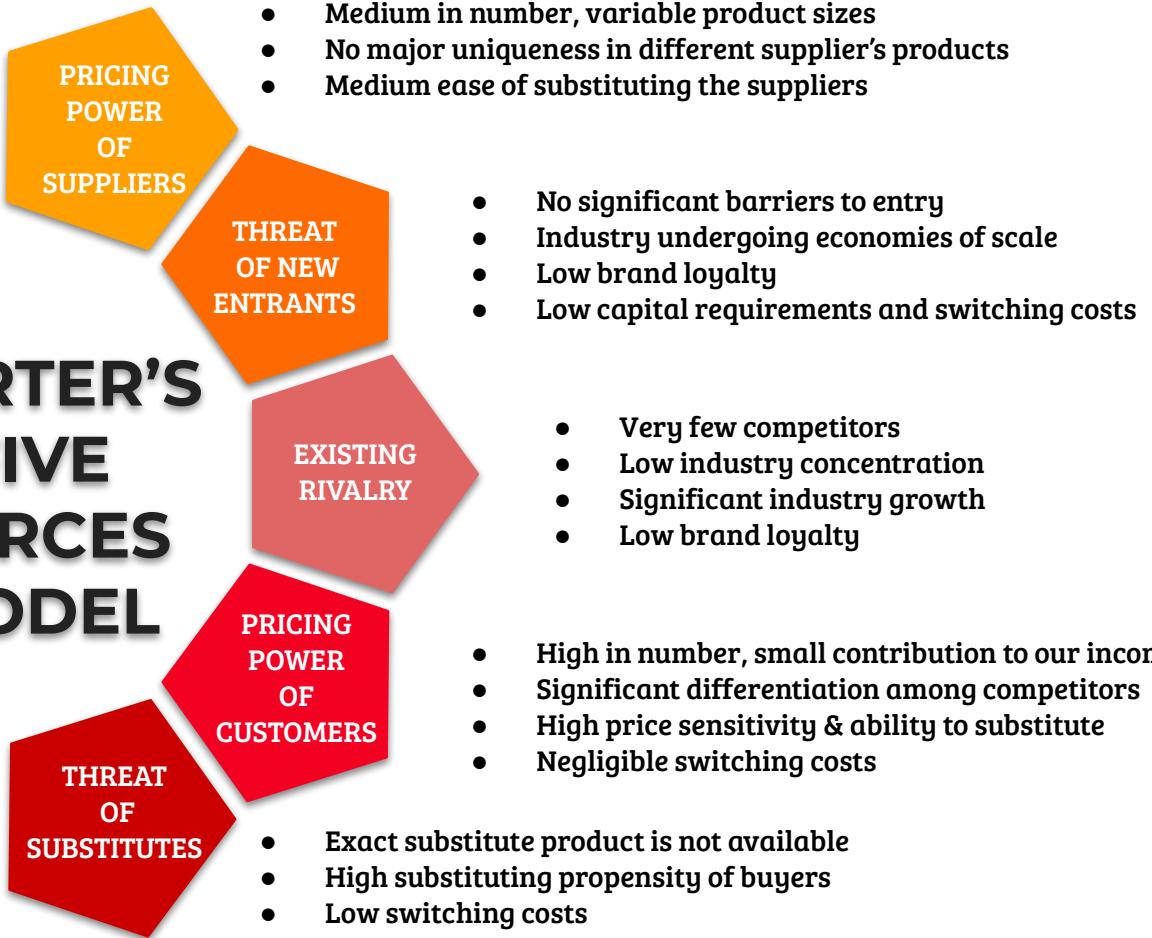
SOLUTION

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BUSINESS
ANALYSIS

IMPACT &
FUTURE PLANS

PORTER'S FIVE FORCES MODEL



CLINICAL NEED

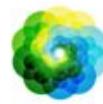
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COMPETITIVE ANALYSIS



SkinVision



DermIA



Triage



DMentors

Detect more than 20 diseases
Few snaps for free
No internet need for detection post installation
Mobile Application available
Multilingual platform
Consultancy available

	SKINVISION	DERMIA	TRIAGE	DMENTORS
Detect more than 20 diseases	✗	✗	✓	✓
Few snaps for free	✗	✓	✗	✓
No internet need for detection post installation	✓	✗	✗	✓
Mobile Application available	✓	✓	✗	✓
Multilingual platform	✓	✗	✓	●
Consultancy available	✗	✓	✓	●

CLINICAL NEED

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RISKS & THEIR MITIGATION

Arrival of a new disease

Feed the model with fresh database from hospitals

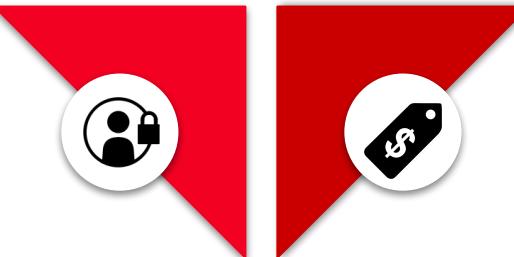


Stringent regulatory compliances

Keep a regular check with the help of a specialized safety officer

Privacy concerns and data theft

Stored data on private AWS servers



Price sensitive industry

Focus on brand loyalty and customer base

VALUE CHAIN



Content Providers

Content Enablers

Device Enterprises

Network Operators

Mobile users

Hospitals

Software
App
Developer

Platform
Providers

Mobile
Network
Operator

Individual

Derma-Clinics

Us

Amazon Web
Services & Google

Internet
providers

Our users

CLINICAL NEED

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BUSINESS MODEL CANVAS

Key Partners <ul style="list-style-type: none">- Hospitals (Derma-Clinics)- Content Providers- Ad agencies- Marketing and sales partners	Key Activities <ul style="list-style-type: none">- Platform Development and Innovation- Data Analysis Key Resources <ul style="list-style-type: none">- DermaMentors Application- DermaMentors Website	Value Proposition <ul style="list-style-type: none">- Facilitate early identification of various skin diseases- Online consultancy if needed	Relationship <ul style="list-style-type: none">- Customer satisfaction- Build customer loyalty Channels <ul style="list-style-type: none">- Website and app- Sales via calls- Sales via invitations	Customer Segment <ul style="list-style-type: none">- Health conscious Internet Users- Researchers in the field of Dermatology- Skin Care product firms- Advertisers & Marketers- Doctor's preliminary tests
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Cost Structure <ul style="list-style-type: none">- Product development & updation- General and Administrative- Marketing and sales- Web hosting costs	Revenue Streams <ul style="list-style-type: none">- Premium packages on the application- Providing advertising space- Selling our database for clinical research
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CLINICAL NEED

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REVENUE ANALYSIS

Free download plus 5 snaps free!

		Year 1	Year 2	Year 3
Basic Statistics	Price per download (USD)	0.00	0.00	0.00
	SOM size	287,000,000.00	321,440,000.00	360,012,800.00
	Market capture(%)	0.20	0.22	0.24
	Downloads	574,000.00	707,168.00	871,230.98
Primary Revenue				
Premium Customers				
Premium 1	Price of Premium1 pack(USD)	2.00	2.00	2.00
	Fraction of downloads(%)	5.00	5.10	5.20
	Premium 1 customers	28,700.00	36,065.57	45,321.44
	Revenue from Premium 1	57,400.00	72,131.14	90,642.87
Premium 2	Price of Premium2 pack(USD)	5.00	5.00	5.00
	Fraction of downloads(%)	5.00	5.25	5.51
	Premium 2 customers	28,700.00	37,126.32	48,026.61
	Revenue from Premium 2	143,500.00	185,631.60	240,133.04
	Primary Revenue	200,900.00	257,762.74	330,775.91
Secondary Revenue				
		Year 1	Year 2	Year 3
	Price for ad space(Pay per click)	0.05	0.06	0.06
	Expected Secondary Revenue	143,500.00	194,471.20	263,547.37
	Total Revenue(USD)	344,400.00	452,233.94	594,323.28

PREMIUM 1

10 more snaps for just \$2!

PREMIUM 2

15 more snaps & Doctor's consultancy for just \$5!

Cost Analysis in the Appendix.

IMPACT

**Reduction in
YLDs**



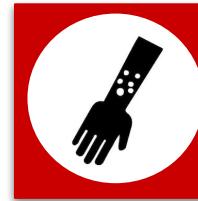
**Creation of
Employment**



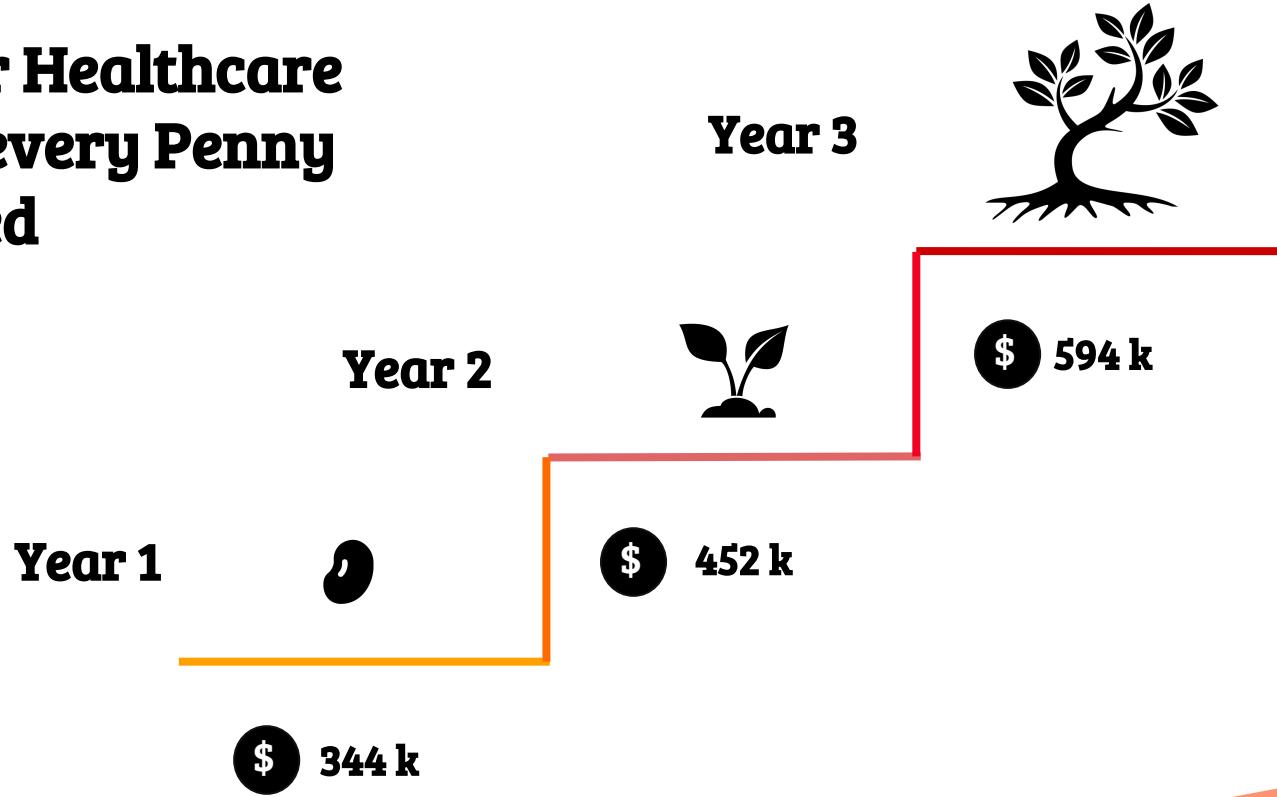
**Saved Medical
Expenses**



**Awareness about
skin health**



Better Healthcare with every Penny Earned



CLINICAL NEED

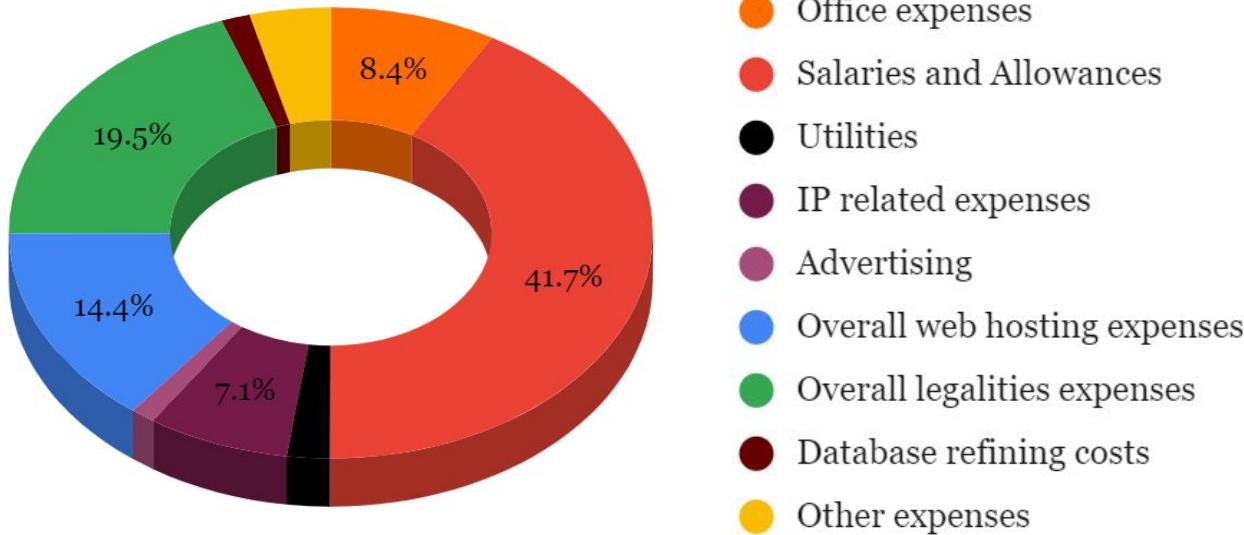
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THE ASK



**USD 55 thousand
For the 1st year**

CLINICAL NEED

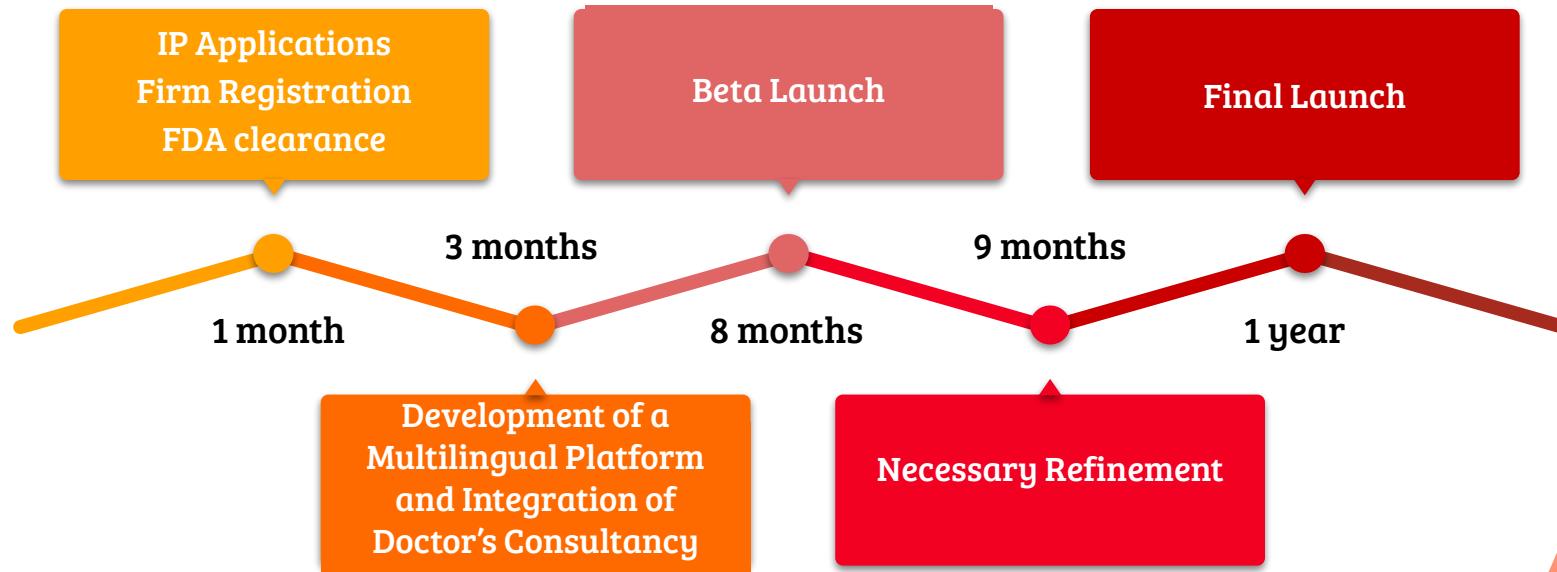
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THE TIMELINE



It's just the beginning!



OUR TEAM

DIVYA GOYAL



SHIVAM SINGHAL



RITVIK PANDEY



- Incoming Associate Product Manager at Procter & Gamble
- CFA Level 2 Candidate
- Former Associate Manager, Entrepreneurship Cell, IIT Kharagpur

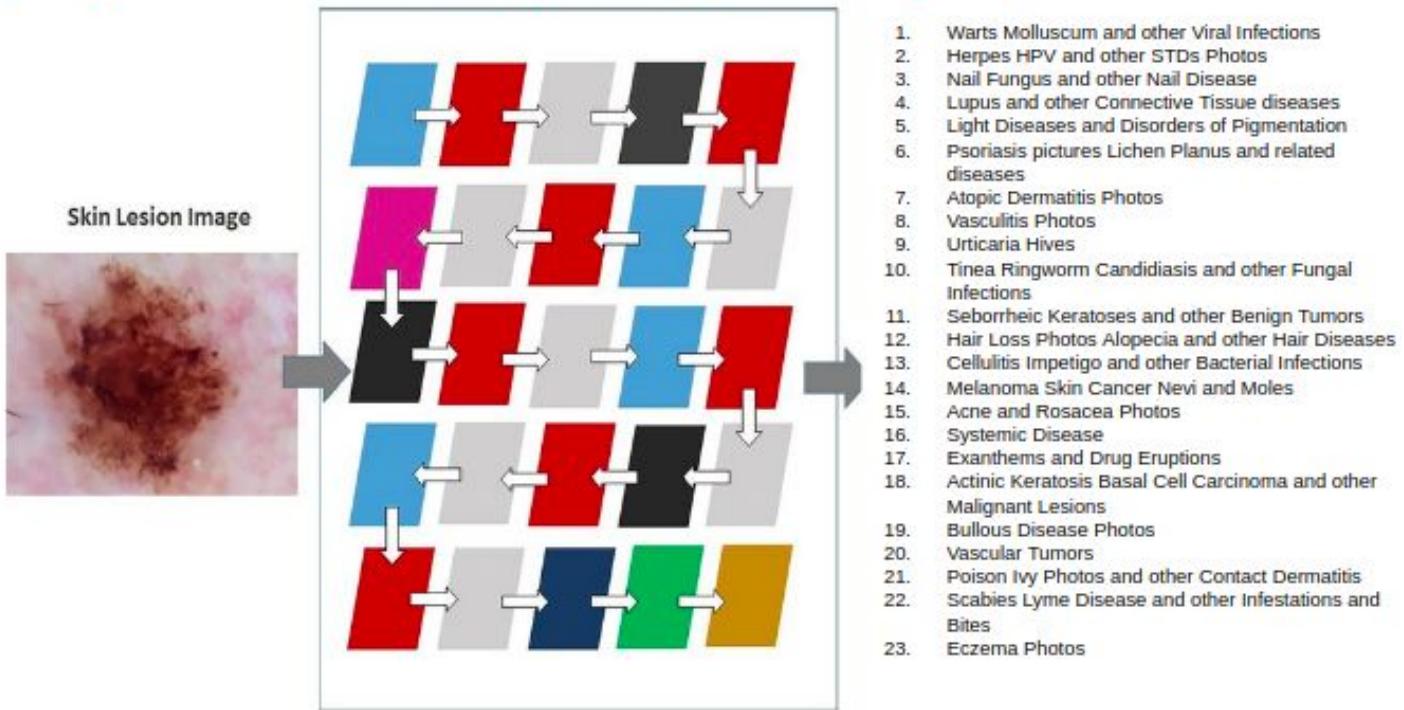
- Incoming Data Scientist at Fractal Analytics
- Technical Analyst Intern at Indian School of Business
- Former Strategic consultant Intern at ACG Worldwide

- Incoming Data Science Intern at Honeywell India.
- Former Artificial Intelligence Intern at Course5 Intelligence
- Former AI and Electronics team member at Autonomous Ground Vehicle Research

Thanks!



Any questions?



APPENDIX

INDEX

- **Model Results**
- **Market Analysis - Details**
- **Cost Analysis - before launch**
- **Financial Analysis - Details**
- **Cost Analysis**
- **Profit and Loss Statement**
- **IP Protection**
- **Organization Structure**
- **Marketing and Sales**
- **References**

MODEL RESULTS

		precision	recall	f1-score	support
	Warts Molluscum and other Viral Infections	0.95	0.91	0.93	840
	Herpes HPV and other STDs Photos	0.94	0.88	0.91	1149
	Nail Fungus and other Nail Disease	0.86	0.89	0.88	489
	Lupus and other Connective Tissue diseases	0.92	0.88	0.90	448
	Light Diseases and Disorders of Pigmentation	0.93	0.84	0.88	288
	Psoriasis pictures Lichen Planus and related diseases	0.90	0.94	0.92	1235
	Atopic Dermatitis Photos	0.94	0.75	0.83	404
	Vasculitis Photos	0.76	0.86	0.81	239
	Urticaria Hives	0.82	0.78	0.80	405
	Tinea Ringworm Candidiasis and other Fungal Infections	0.83	0.90	0.87	568
	Seborrheic Keratoses and other Benign Tumors	0.93	0.84	0.88	420
	Hair Loss Photos Alopecia and other Hair Diseases	0.83	0.96	0.89	463
	Cellulitis Impetigo and other Bacterial Infections	0.89	0.91	0.90	1040
	Melanoma Skin Cancer Nevi and Moles	0.97	0.77	0.86	260
	Acne and Rosacea Photos	0.90	0.86	0.88	1405
	Systemic Disease	0.81	0.97	0.88	431
	Exanthems and Drug Eruptions	0.95	0.84	0.89	1371
Actinic Keratosis	Basal Cell Carcinoma and other Malignant Lesions	0.82	0.94	0.88	606
	Bullous Disease Photos	0.95	0.91	0.93	1300
	Vascular Tumors	0.79	0.97	0.87	212
	Poison Ivy Photos and other Contact Dermatitis	0.96	0.86	0.91	482
	Scabies Lyme Disease and other Infestations and Bites	0.67	0.95	0.79	416
	Eczema Photos	0.86	0.90	0.88	1086
	accuracy			0.89	15557
	macro avg	0.88	0.88	0.88	15557
	weighted avg	0.89	0.89	0.89	15557

DETAILS-MARKET ANALYSIS

TAM(Total Available Market): The total global count of people infected with any skin diseases- **About 900 million as per WHO.**

SAM(Serviceable Available Market): The fraction of TAM as per the proportionate count of the people using a smartphone-about 45.4% and a factor of 0.8 to cater for the demographic and geographic variations.
Estimated to be about **408 million**.

SOM(Serviceable Obtainable Market): The proportionate fraction as per the Android vs ios division among smartphone users which is approximately 73% as per the global statistics - Estimated to be about **287 million**.

COST ANALYSIS-before launch

Expense	Year 0
Office Rent	121,050.00
Other office expenses	200,000.00
Salaries & Allowances	1,600,000.00
Utilities	82,265.00
Advertising expenses	46,870.00
Regulatory expenses	700,000.00
IP Protection expenses	274,050.00
Legal expenses	50,000.00
Cloud Space Costs	548,100.00
Web Hosting Costs	5,000.00
Other Adm. Expenses	6,581.00
Depreciation	80,000.00
Ammortization	69,762.50
Database purchase expenses	55,200.00
Total Funds Needed (INR)	3,838,878.50
Total Funds Needed (USD)	54,841.12



DETAILS-FINANCIAL ANALYSIS

Cost Analysis

- For the first 3 years, function in one office in Bangalore, rent a fully furnished office
- 26 Employees in all(including co-founders); Salaries: 3 co-founders(6lpa); 7 Dept-heads(6lpa); 16 Other Employees(4lpa)
- Office rent: Rs. 1000/day; Inflation rate 4.2%
- Other office expenses: Rs. 60k/employee; 26 employees; 10% yearly maintenance cost. No inflation in maintenance costs
- Salaries: No increment for the first 3 years, Aggregate yearly Bonus amounting to 5% of the annual salary
- Utilities: Approximately 5000 units/month; Price- Rs. 7.15/unit for first 50 units; Rs. 8.15/unit after that; 10% annual increment
- Marketing: 2% of sales revenue
- Regulatory Expenses: 10k USD
- IP Protection: IP-Trademarks: Name, Logo, App Interface; Prices: India(Rs. 8k); US(\$300); Europe(850 Euro)
- Cloud space: \$2610/month; 10% annual increment
- Web hosting: Rs. 5k annually; 5% annual increment
- Audit fee: Rs. 50k/year; 10% annual increment
- Insurance: 1% of Employee salaries
- Other adm.: 5%(IP Protection, Legal and WebHosting costs)
- Depreciation: 40% on other office expenses
- Ammortization: 25% on IP and website

COST ANALYSIS

Fixed Costs	Expense	Year 1	Year 2	Year 3
	Office Rent	365,000.00	380,330.00	396,303.86
	Other office expenses	1,200,000.00	120,000.00	120,000.00
	Salaries & Allowances	8,190,000.00	9,135,000.00	9,135,000.00
	Utilities	146,650.00	161,315.00	177,446.50
	Advertising expenses	281,260.00	360,867.83	463,086.27
	Regulatory expenses	700,000.00	0.00	0.00
	IP Protection expenses	274,050.00	0.00	0.00
	Legal expenses	100,000.00	100,000.00	100,000.00
	Cloud Space Costs	2,192,400.00	2,302,020.00	2,417,121.00
	Web Hosting Costs	5,000.00	5,500.00	6,050.00
	Audit Fee	50,000.00	55,000.00	60,500.00
	Insurance	81,900.00	91,350.00	91,350.00
	Other Adm. Expenses	18,952.50	10,550.00	10,605.00
	Depreciation	480,000.00	823,500.00	823,500.00
	Ammortization	69,762.50	1,375.00	1,512.50
	Total Fixed Costs (INR)	14,154,975.00	13,546,807.83	13,802,475.13
	Total Fixed Costs (USD)	202,213.93	193,525.83	197,178.22

DETAILS-FINANCIAL ANALYSIS

Revenue analysis

- Free download, installation + 5 snaps for free
- A 0.2% market capture assumed(assumed to rise at 10% annually)
- Premium 1: Price 2\$; A bundle of 10 snaps; 5% of total downloads; rising by 2% annually
- Premium 2: Price 5\$; A bundle of 15 snaps; 5% of total downloads; rising at 5% annually
- Revenue from Ad space: \$0.05 per click of ad

Variable costs-

- Database purchase: Re. 0.1/datapoint; 2000 datapoints per disease, 23 diseases..this in one month
- Consultancy: 2 consultancies/premium 2 customer; Rs. 100 paid to doc
- Performance Bonus: 1% of revenue

Profit and Loss -

Administrative and Operating expenses: All fixed expenses except- other office expenses, Regulatory certification and IP(investment); Depreciation and Ammortization considered

Other selling costs: Includes all variable costs

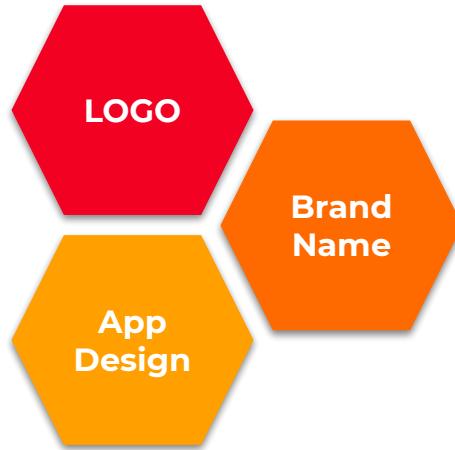
COST ANALYSIS (contd.)

Variable Costs	Expense	Year 1	Year 2	Year 3
	Database purchase expenses	55,200.00	55,200.00	55,200.00
	Doctor's Expenses	5,740,000.00	7,425,264.00	9,605,321.51
	Performance Bonus	241,080.00	316,563.76	416,026.30
	Cost paid to the App Store	4,218,900.00	2,706,508.73	3,473,147.04
	Total Variable Costs (INR)	10,255,180.00	10,503,536.48	13,549,694.84
	Total Variable Costs (USD)	146,502.57	150,050.52	193,567.07
	Total Costs(INR)	24,410,155.00	24,050,344.31	27,352,169.98
	Total Costs(USD)	348,716.50	343,576.35	390,745.29

PROFIT & LOSS STATEMENT

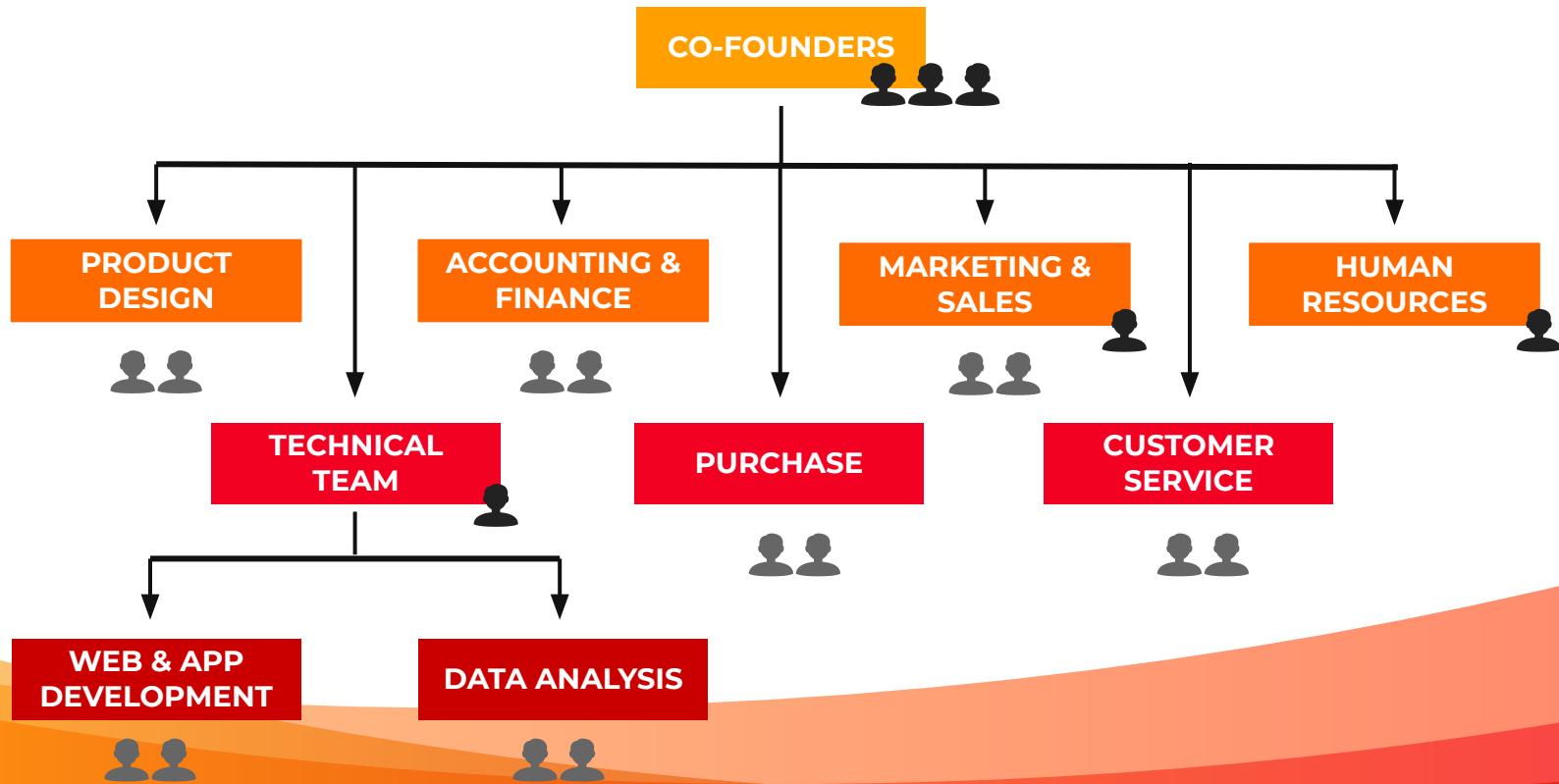
(in USD)	Year 1	Year 2	Year 3
Annual Revenue/Sales	344,400.00	452,233.94	594,323.28
Cost Of Goods Sold	60,270.00	38,664.41	49,616.39
Other selling costs	86,232.57	58,348.51	75,341.24
Gross Profit	197,897.43	355,221.01	469,365.65
Adm. and Oper. expenses	163,302.32	180,027.61	183,678.04
Depreciation	6,857.14	11,764.29	11,764.29
Ammortization	996.61	19.64	21.61
Operating Profit (EBIT)	26,741.36	163,409.47	273,901.72
Interest	0.00	0.00	0.00
EBT	26,741.36	163,409.47	273,901.72
Tax (30% of EBT)	8,022.41	49,022.84	82,170.52
Net Profit	18,718.95	114,386.63	191,731.20

IP PROTECTION



These intellectual properties will be protected through Copyrights and Trademarks.

ORGANIZATION STRUCTURE



MARKETING AND SALES



References

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