

# Tools and Technology: From the Developer to the User Community in the 21<sup>st</sup> Century

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# Recommendation 3



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“The process of tool use, comparison, selection, acquisition, training, implementation, evaluation, support *needs national administrative focus*, guidance, and support”



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Who's responsible?



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“There needs to consistent, compatible formats for input and output between models”

“... a model comparison environment should be created... to post test landscapes on the Web that contains the data needed to run their models.”

“Models should be peer-reviewed and adequately tested prior to widespread distribution.”

“A Catalogue of Fire-Related Models, complete with instructions and capability assessments ... with standard versions available for downloading and use”



## Recommendation 4

“Technology development, transfer, and communication need to be improved between developers and user communities”



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“Technology development, transfer, and communication need to be improved between developers and user communities”

## Recommendation 5

“Collaborative approaches to research, development, and implementation of new information and decision support tools need to be encouraged”



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Technology – rapid advances, but ad hoc

Governance – very slow advances



# JFSP Problem Statement - 2006

Application scope



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### Application scope

- Redundant functionality
- Missing functionality



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### Application scope

- Redundant functionality
- Missing functionality
- Not interoperable
- Availability sometimes a function of agency



# JFSP Problem Statement - 2006

Data



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### Data

- Availability a function of agency and location



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- Availability a function of agency and location
- Acquiring and preparing data time consuming



## JFSP Problem Statement - 2006

### Data

- Availability a function of agency and location
- Acquiring and preparing data time consuming
- No integrated, authoritative data environment



# Problem Statement - 2006

Analysis



## Problem Statement - 2006

### Analysis

- Lack of data on model performance
- Lack of consistent analysis framework



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- Lack of data on model performance
- Lack of consistent analysis framework
- Analyses seen as too complicated



# JFSP Problem Statement - 2006

Software users



## JFSP Problem Statement - 2006

### Software users

- Too much time spent learning new interfaces



## JFSP Problem Statement - 2006

### Software users

- Too much time spent learning new interfaces
- Difficult to share work and lessons learned
- Access to metadata fragmented



# JFSP Problem Statement - 2006

Governance



# JFSP Problem Statement - 2006

## Governance

- No framework to support governance



## JFSP Problem Statement - 2006

### Governance

- No framework to support governance
- Too expensive to maintain systems
- Lifecycle management fragmented



# JFSP Software Tools and Systems Study

- Phase I – Strategic assessment
- Phase II – Solution design
- Phase III – IFTDSS proof of concept
- Phase IV – IFTDSS implementation
- Phase V – IFTDSS evaluation



# STS Study – Phase 1 Lessons

- We are not alone – not a unique problem



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- Model and data integration framework using a service-oriented architecture



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- BlueSky as exemplar
- System-of-systems by business domain



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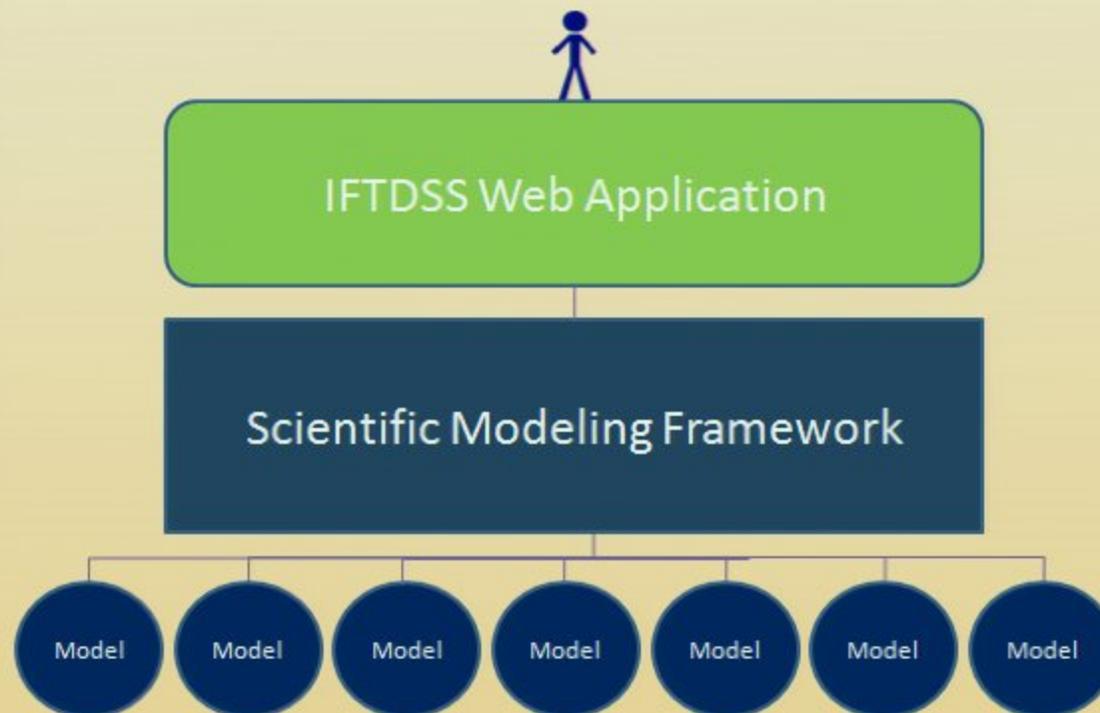
- We are not alone – not a unique problem
- Model and data integration framework using a service-oriented architecture
- BlueSky as exemplar
- System-of-systems by business domain
- Five communities (users, developers, governance, IT, transition)



## Interagency Fuels Treatment Decision Support System (IFTDSS)

**Workflows** – access to and integration of models and data by business need:

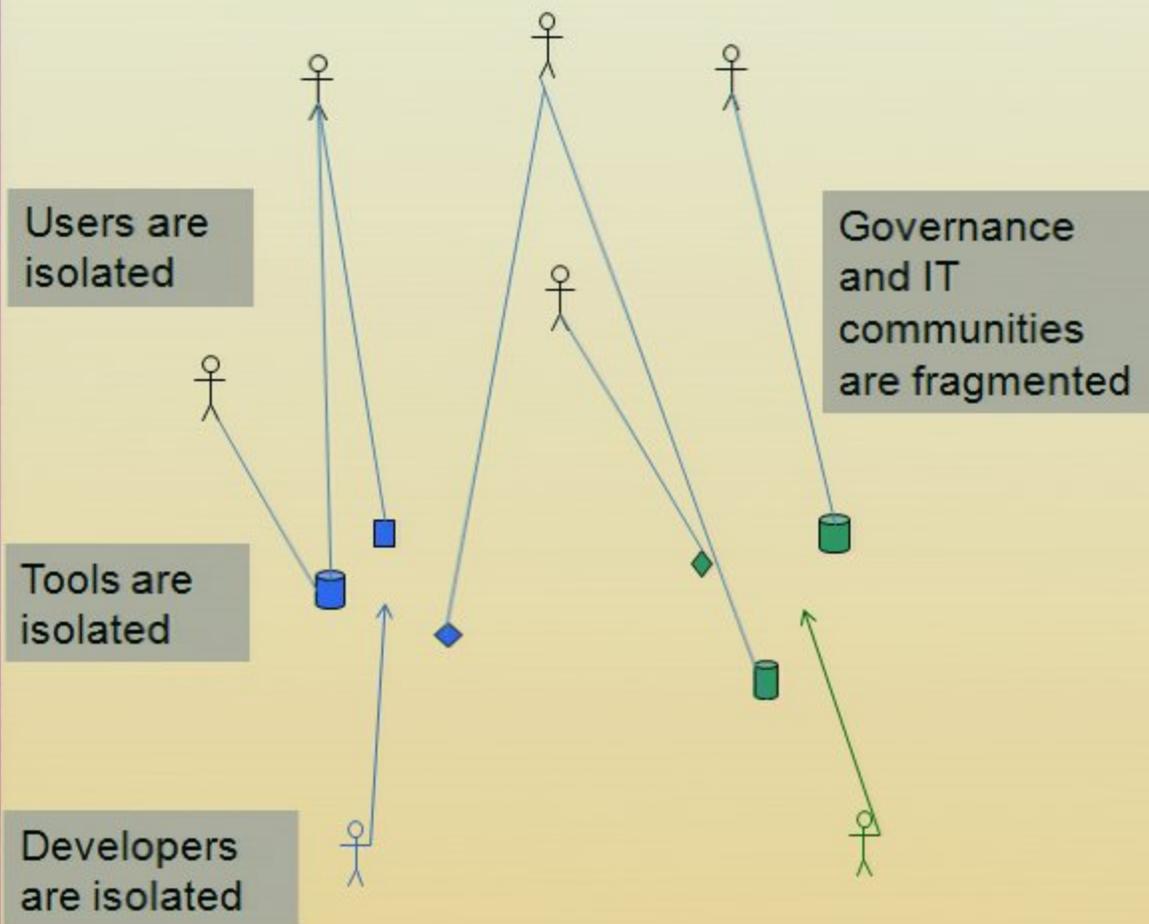
- Hazard assessment
- Prescribed burn planning
- Treatment placement
- Treatment effects analysis
- Risk assessment



# Existing Condition



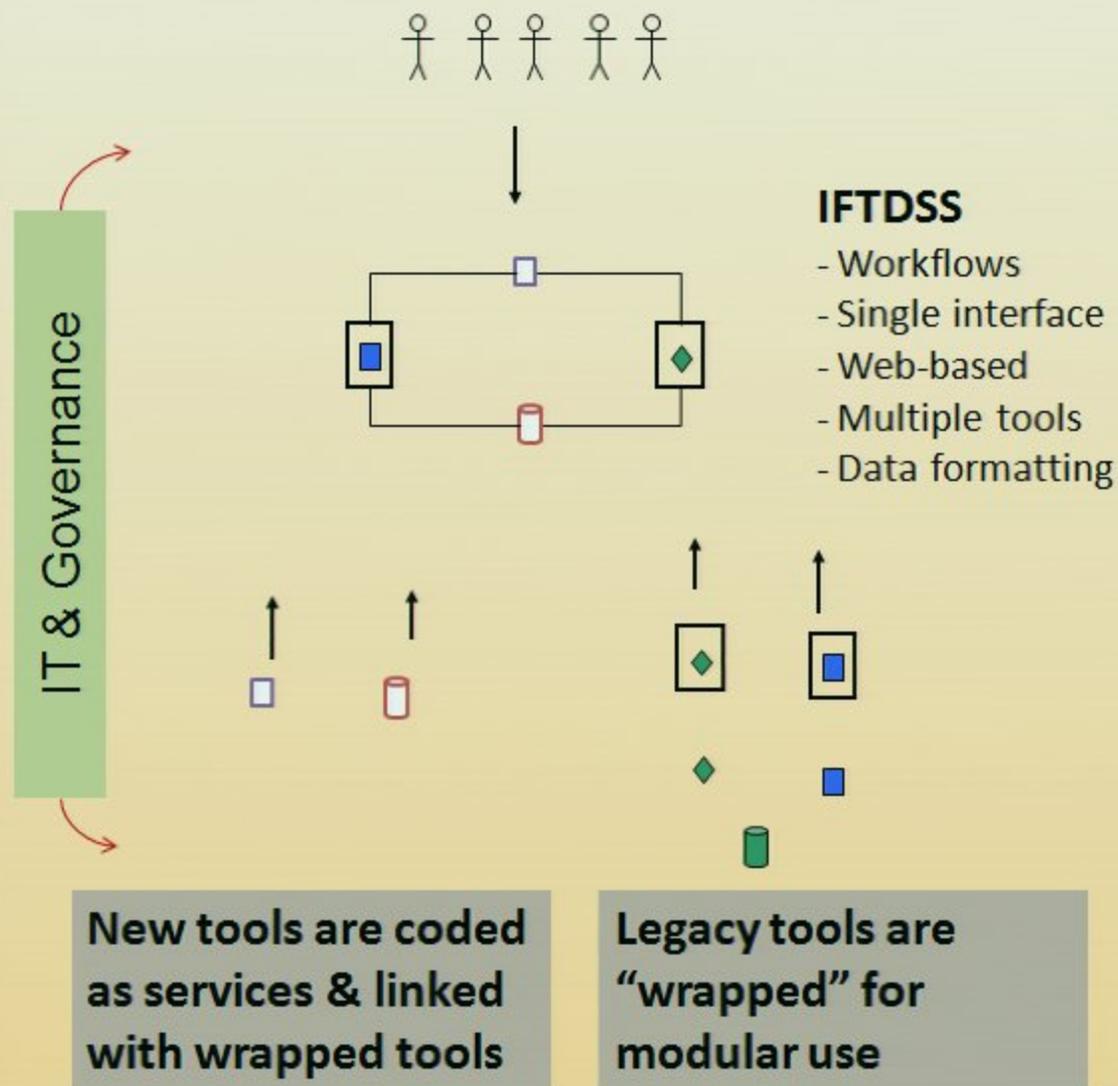
Fuels planners use what they know



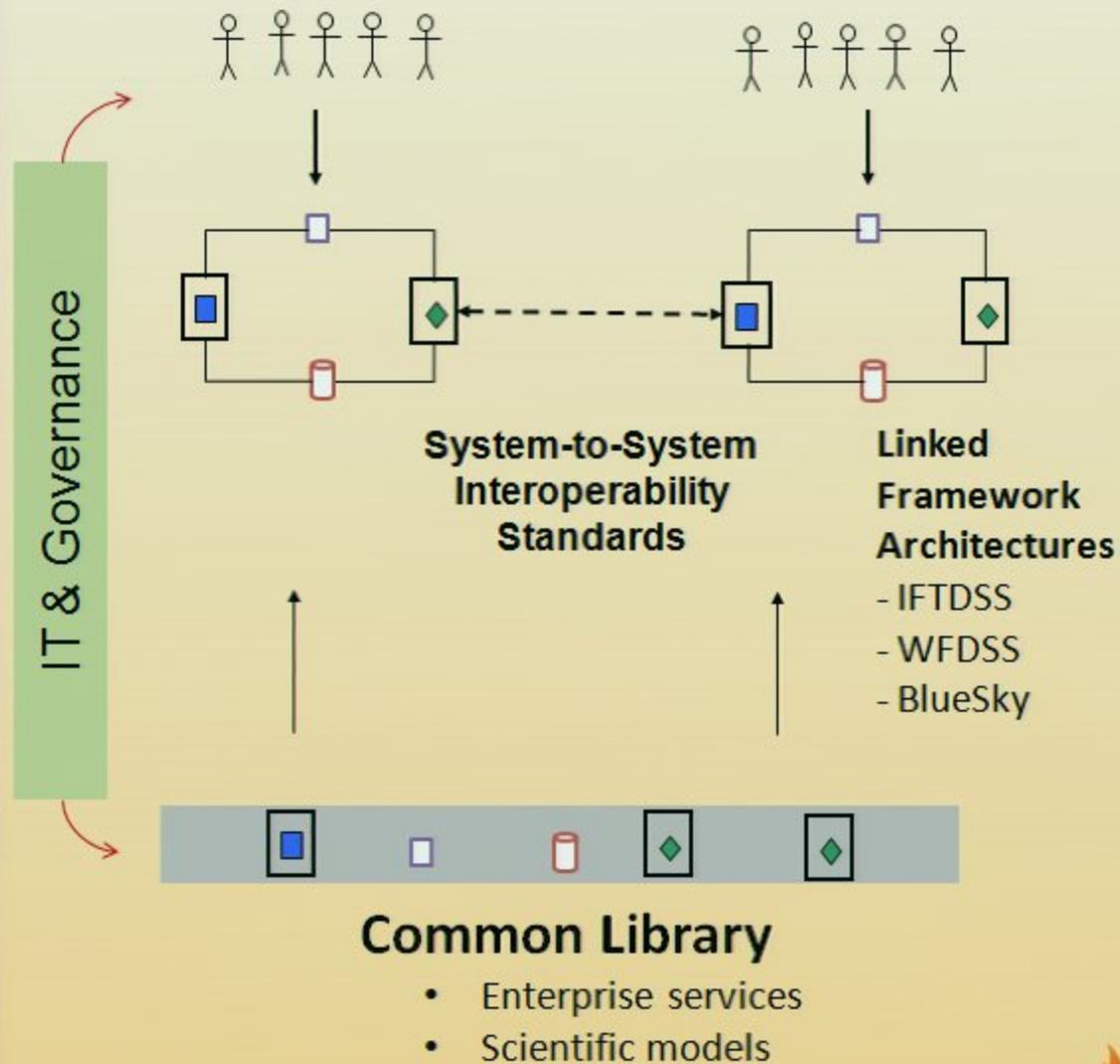
Scientists and data providers create tools



# Vision: Fuels Treatment Planning



# Vision: System of Systems



# Wildland Fire I & T Plan Components

- Joint management by FS and DOI



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- Joint management by FS and DOI
- Target enterprise architecture and implementation plan
- Lifecycle management of all IT investments intended for operational use
- Appropriate project management for all IT investments
- Five-year rolling investment plan



# Wildland Fire I & T Plan

## Key Concepts

- Accessibility regardless of organizational affiliation or user location



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- Integrated, modular based applications



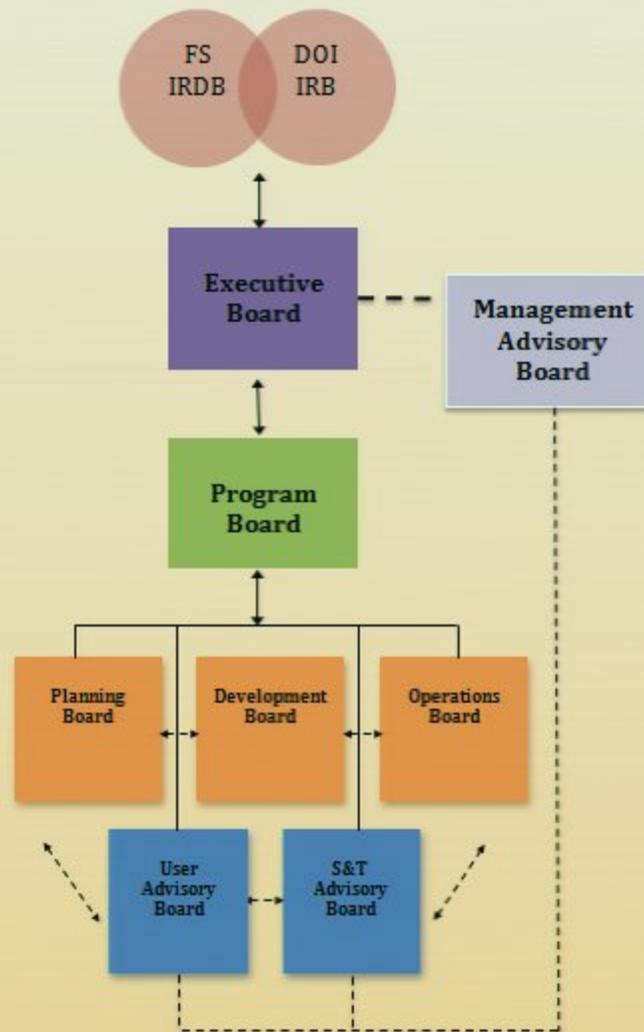
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## Key Concepts

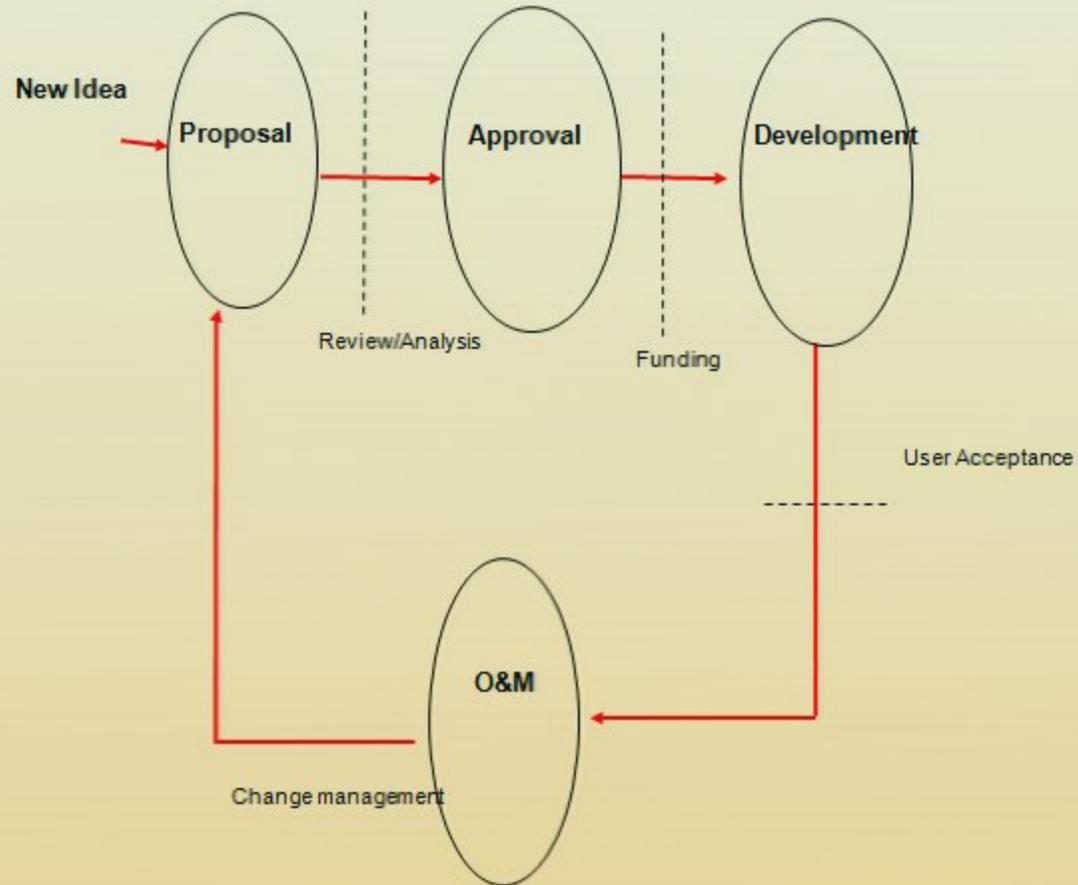
- Accessibility regardless of organizational affiliation or user location
- Integrated, modular based applications
- Access to authoritative data
- Technology, research and innovation are enabled to enhance mission accomplishment



# Wildland Fire IT Plan Governance



# Simplified Life-Cycle Management



# STS Study – Phase V IFTDSS Evaluation

- Task 1 – Relationship to Wildland Fire I&T Plan



# STS Study – Phase V IFTDSS Evaluation

- Task 1 – Relationship to Wildland Fire I&T Plan
- Task 2 – Software lifecycle management



# STS Study – Phase V

## IFTDSS Evaluation

- Task 1 – Relationship to Wildland Fire I&T Plan
- Task 2 – Software lifecycle management
- Task 3 – User evaluation



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- Enabling services (e.g., IDaaS) and service interface protocols
- Robust community environment
- Open innovation platforms
- Cloud based computing and storage

