



Webinar

Long Term Project Based Skill Development



भाग 1

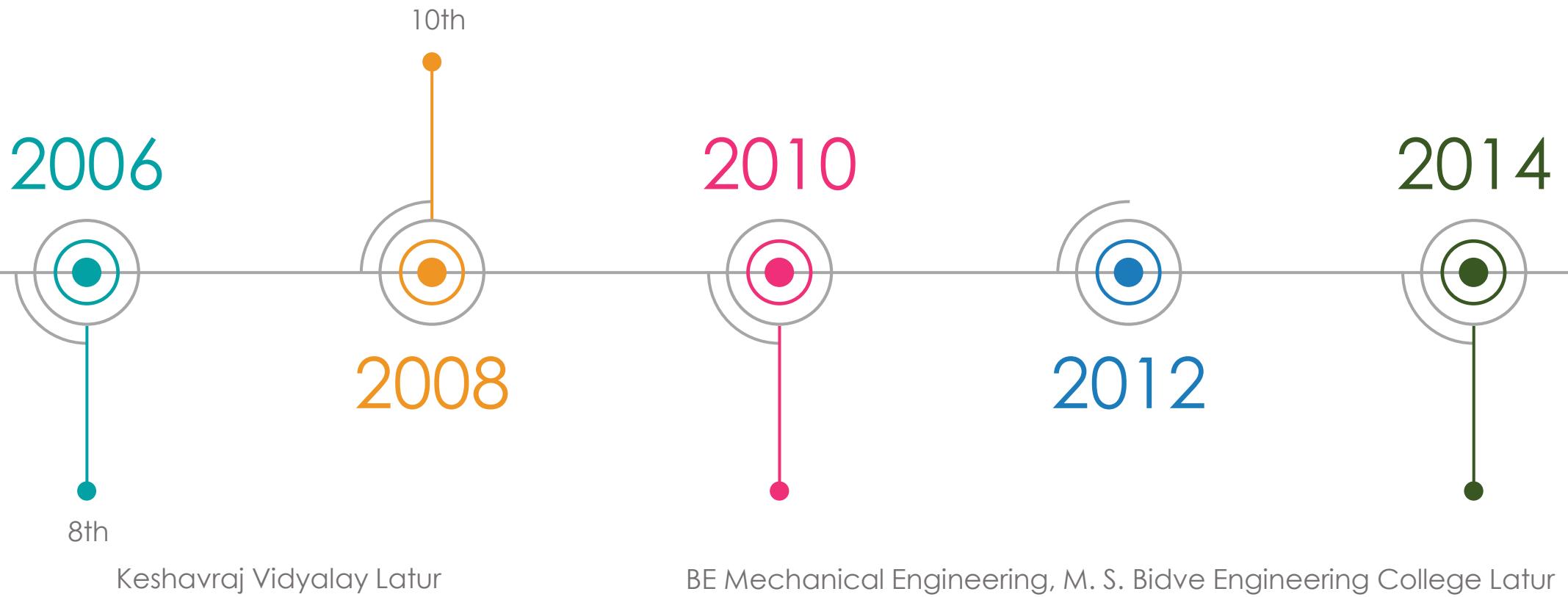
Background



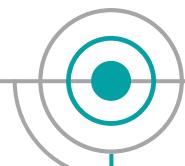
भाग 2

Project based skill development

Shatad Purohit



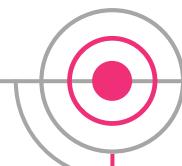
2014



2016



2018



R&D Quality Assurance Engineer, Dassault Systèmes

2020



Master of Science in Systems
Architecting and Engineering,
University of Southern California

Ph.D. in Astronautical Engineering
with Specialization in Systems
Architecting and Engineering,
University of Southern California

2021

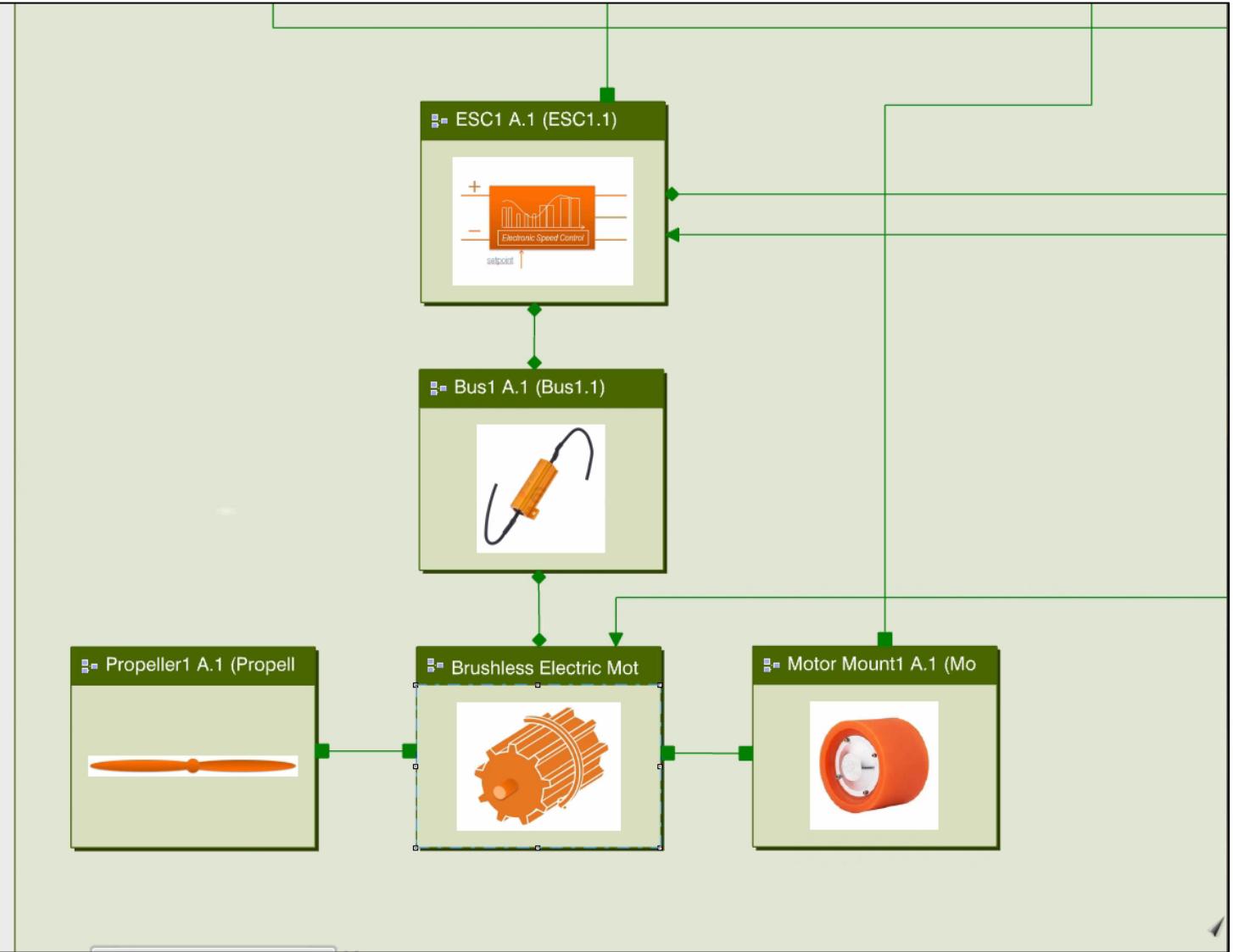


All the information presented in the webinar is in public domain

Views presented in the webinar are of presenters and do not represent any other entity.



Research: Systems Architecture



- S. Purohit and A. M. Madni, "Model-Based Systems Architecting and Integration Approach Using Inter-Level and Intra-Level Dependency Matrix", accepted for IEEE Systems Journal 2021
- A. M. Madni, S. Purohit, D. Erwin, and R. Minnichelli, Analyzing Systems Architectures using Inter-Level and Intra-Level Dependency Matrix (I2DM), submitted to 2019 IEEE International Conference on Systems, Man and Cybernetics, Bari, Italy.
- S. Purohit, and A. M. Madni, Presentation on Latent IP to Thurston Garrett (Dassault Systèmes), Gau Pagnanelli Christi (Boeing), on Aug 2019





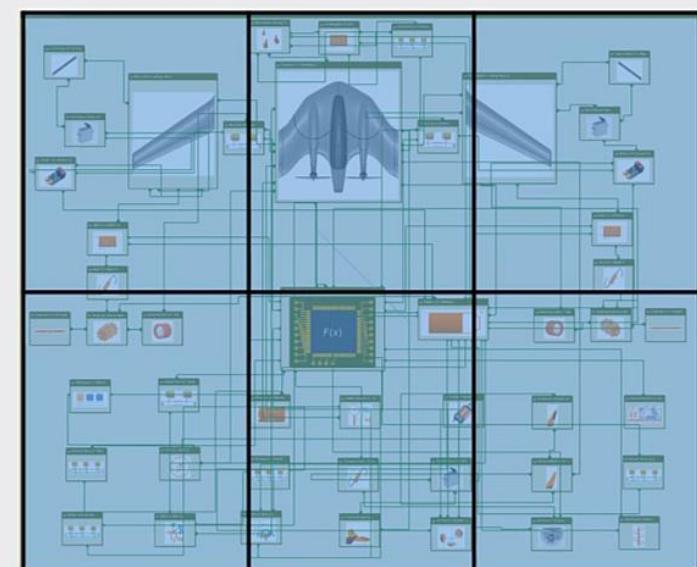
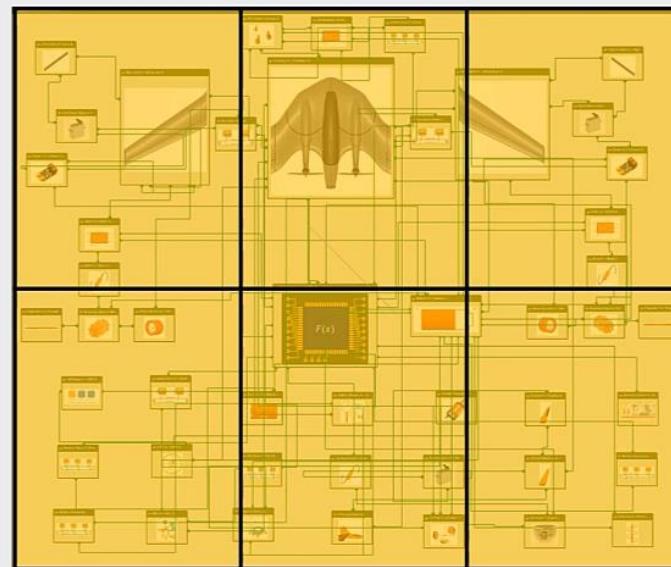
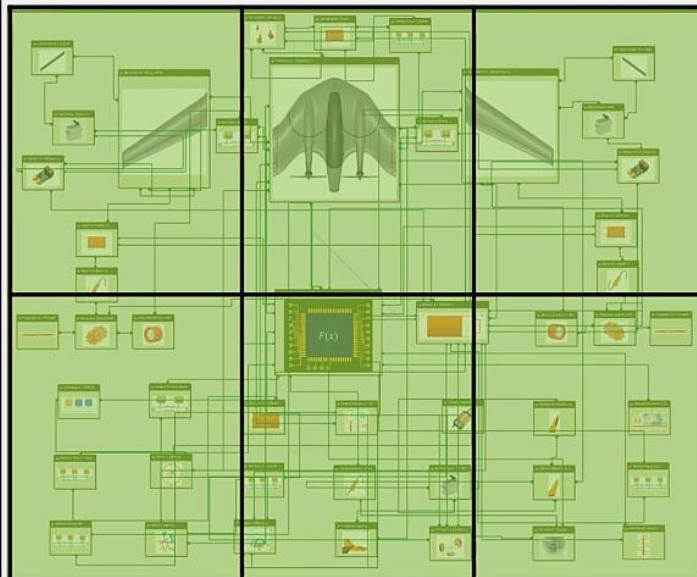
How to best divide the work within a team?

एक टीम के भीतर काम को सर्वोत्तम तरीके से कैसे विभाजित करें



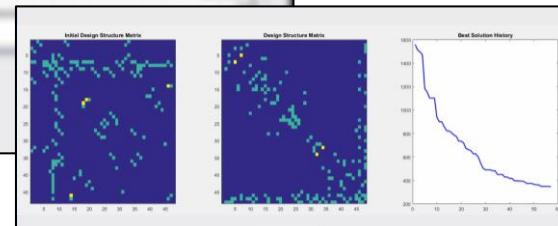
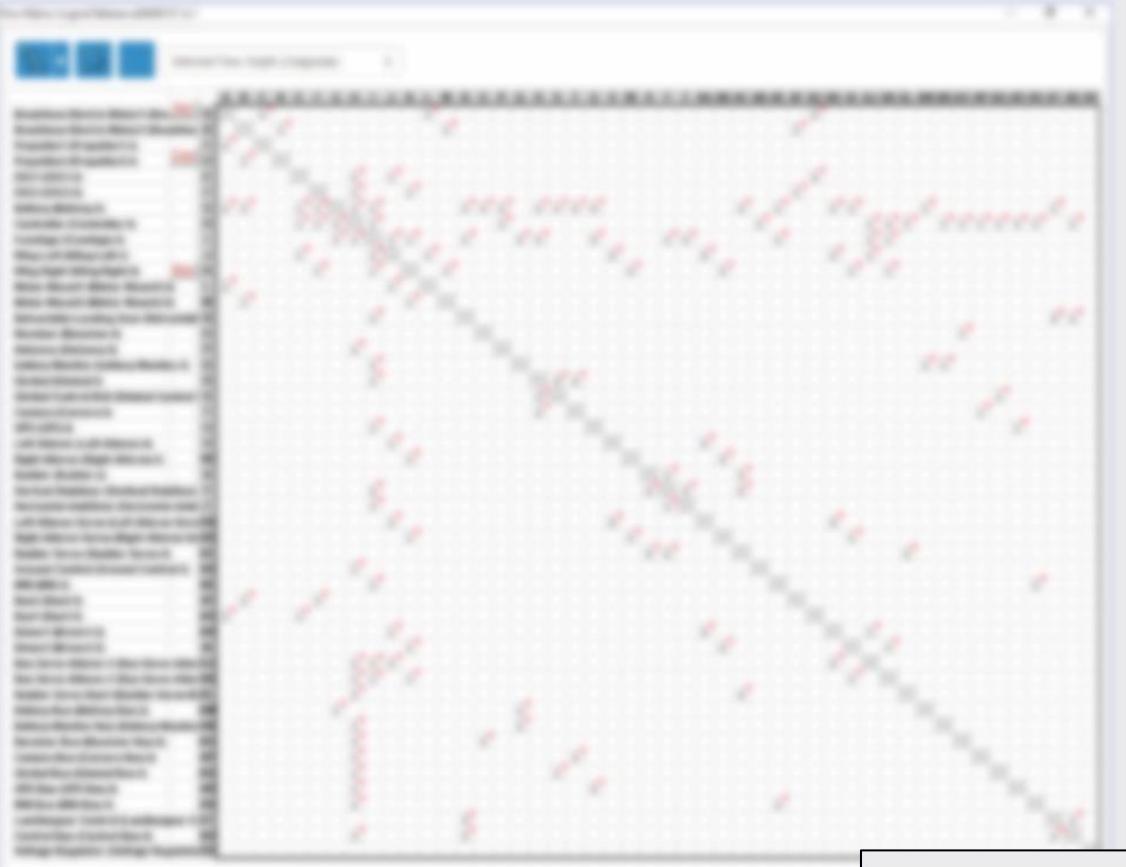
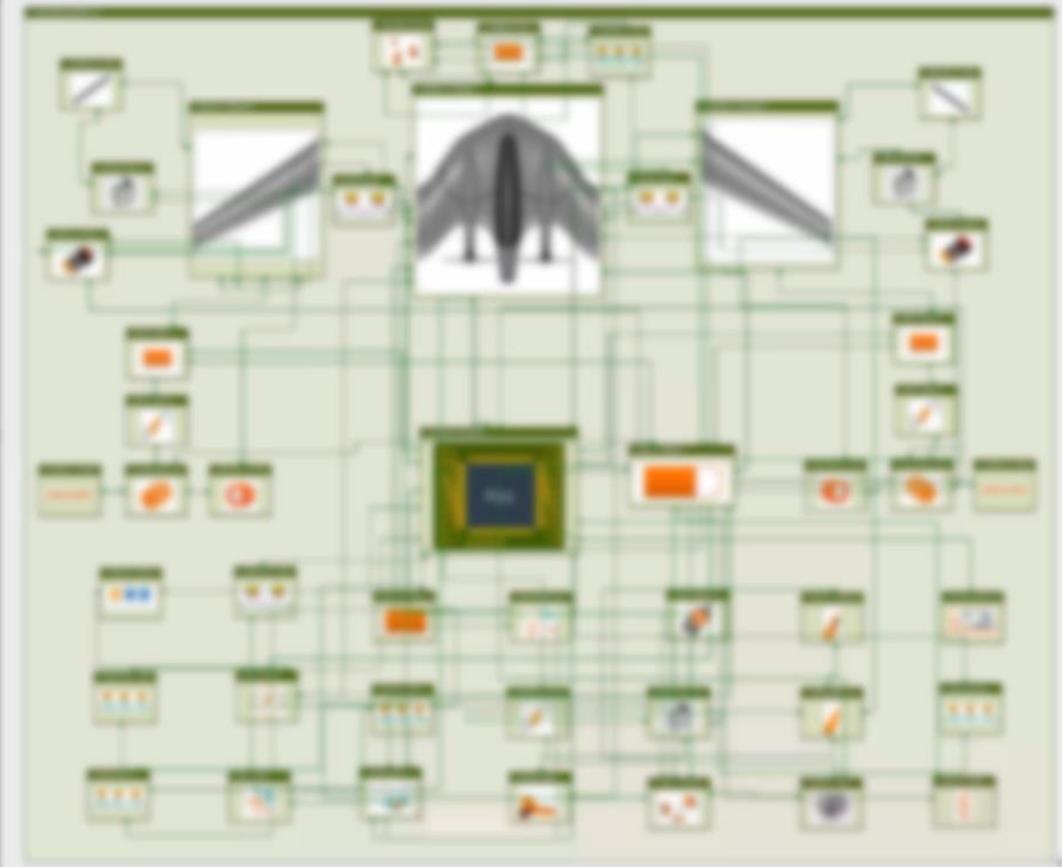
Research: Systems Architecture

What is best approach to divide?



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- A. M. Madni, S. Purohit, D. Erwin, and R. Minnichelli, Analyzing Systems Architectures using Inter-Level and Intra-Level Dependency Matrix (I2DM), submitted to 2019 IEEE International Conference on Systems, Man and Cybernetics, Bari, Italy.
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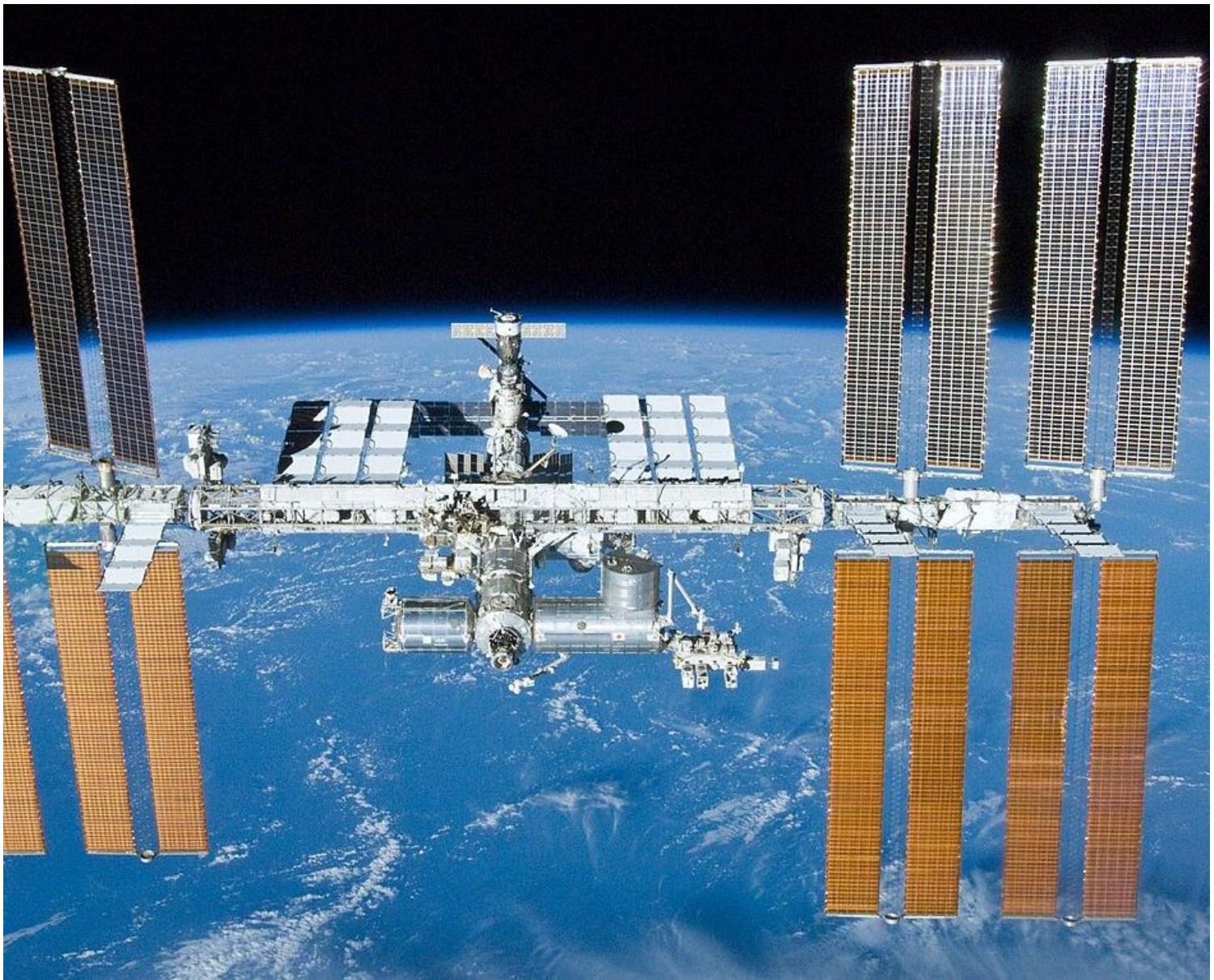
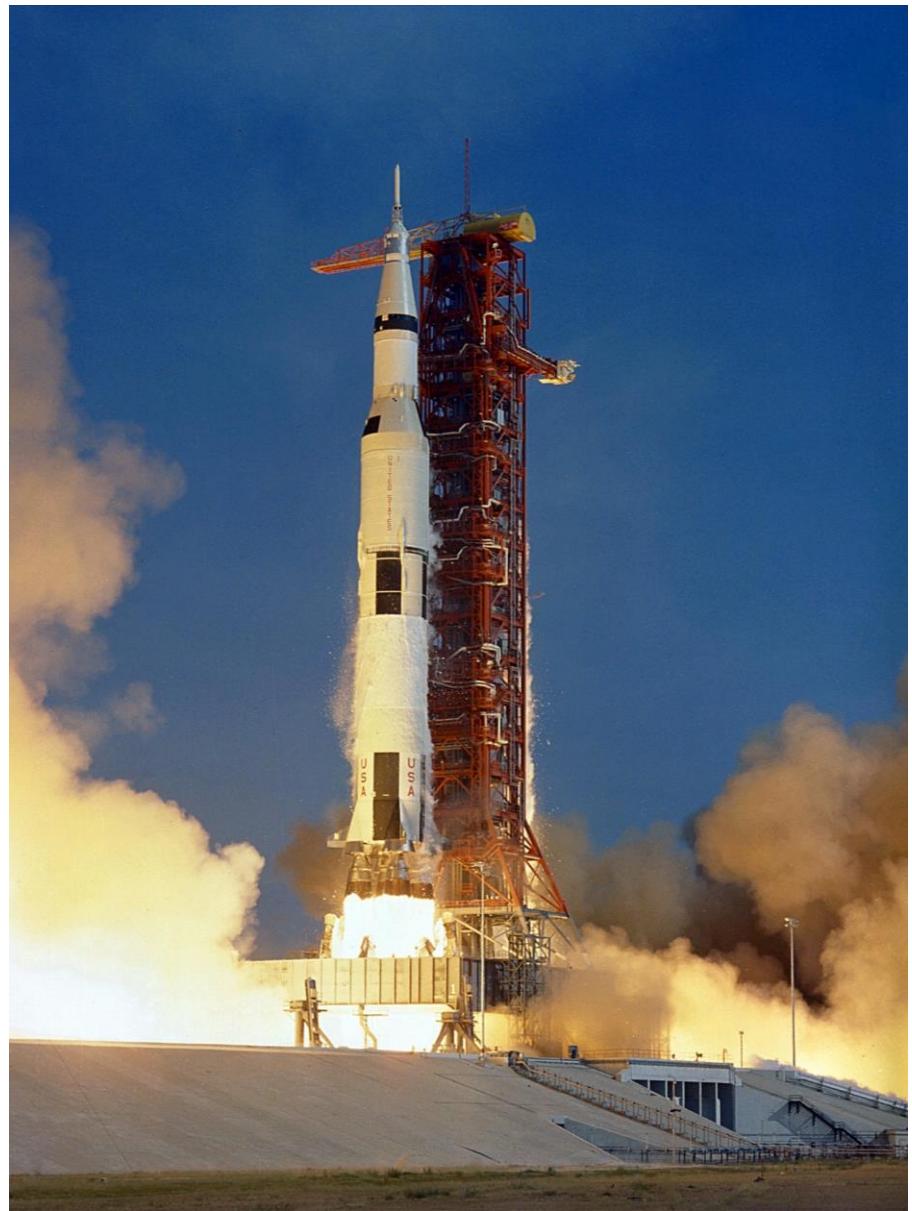
Research: Systems Architecture



- S. Purohit and A. M. Madni, "Model-Based Systems Architecting and Integration Approach Using Inter-Level and Intra-Level Dependency Matrix", accepted for IEEE Systems Journal 2021
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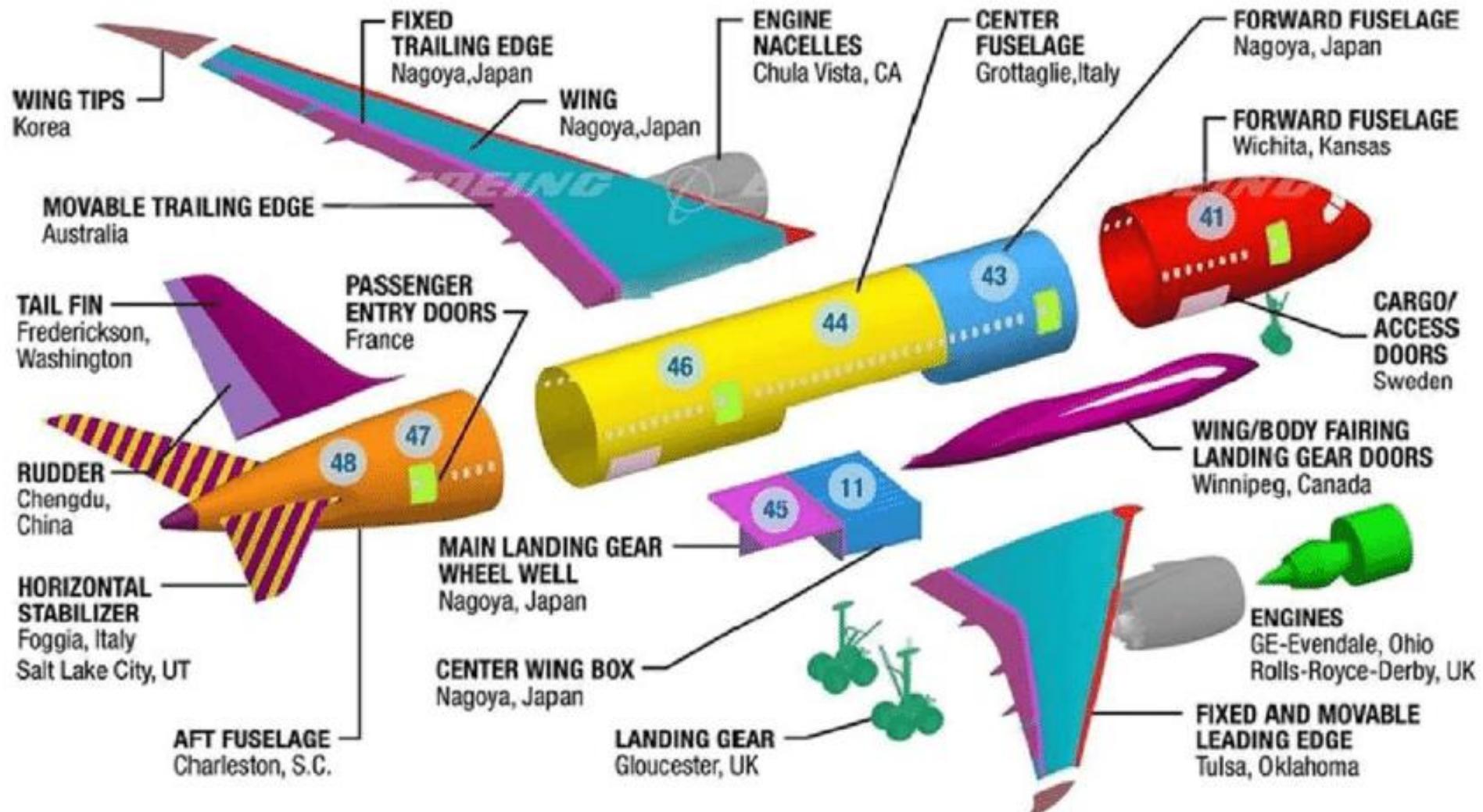
Computers can help decide how to partition complex systems

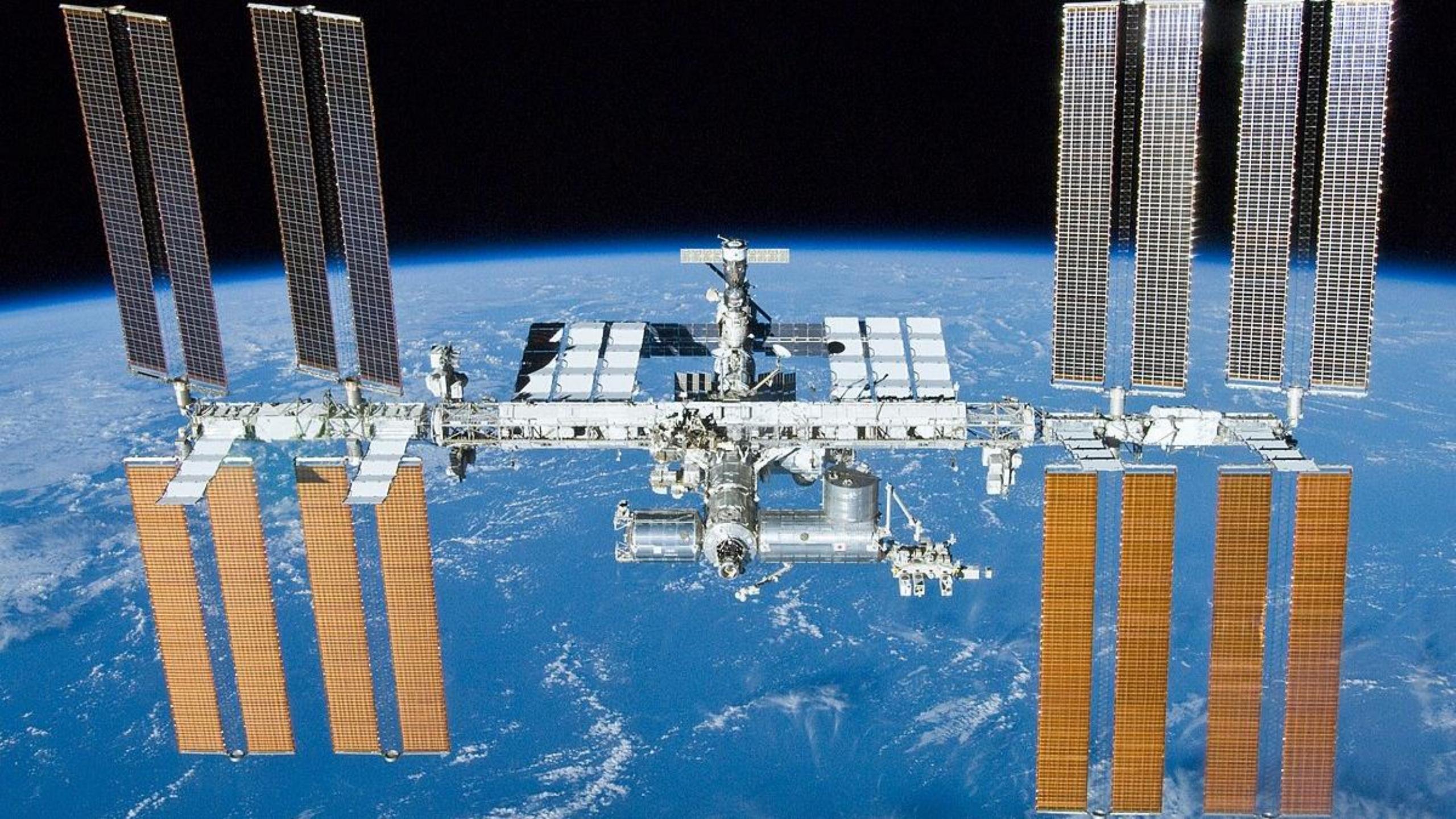
कंप्यूटर जटिल सिस्टम को विभाजित करने का निर्णय लेने में मदद कर सकते हैं

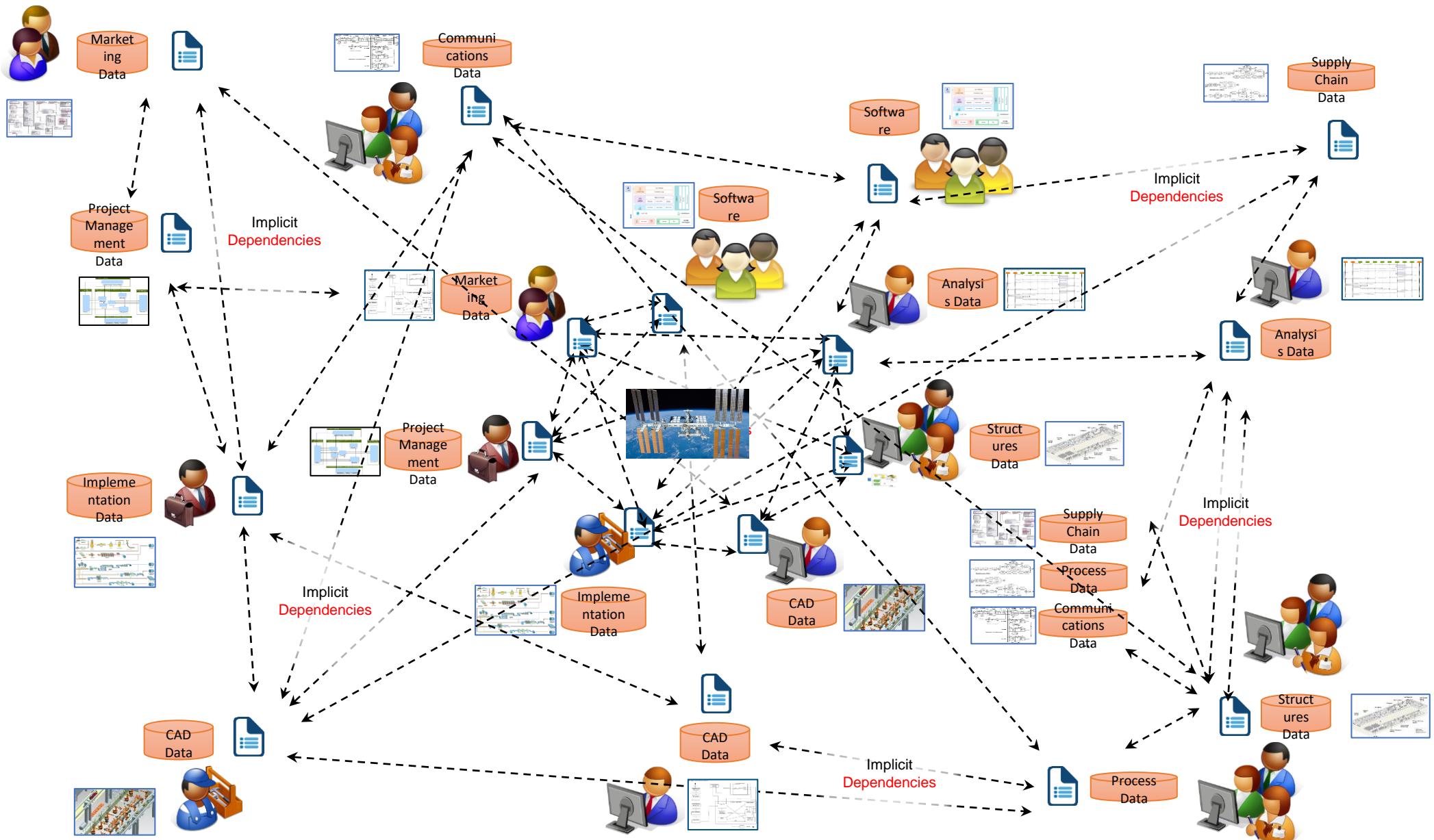


THE COMPANIES

U.S.	CANADA	AUSTRALIA	ASIA	EUROPE
Boeing	Boeing	Boeing	Kawasaki	Messier-Dowty
Spirit	Messier-Dowty		Mitsubishi	Rolls-Royce
Vought			Fuji	Latecoere
GE			KAL-ASD	Alenia
Goodrich			Chengdu Aircraft Industrial	Saab





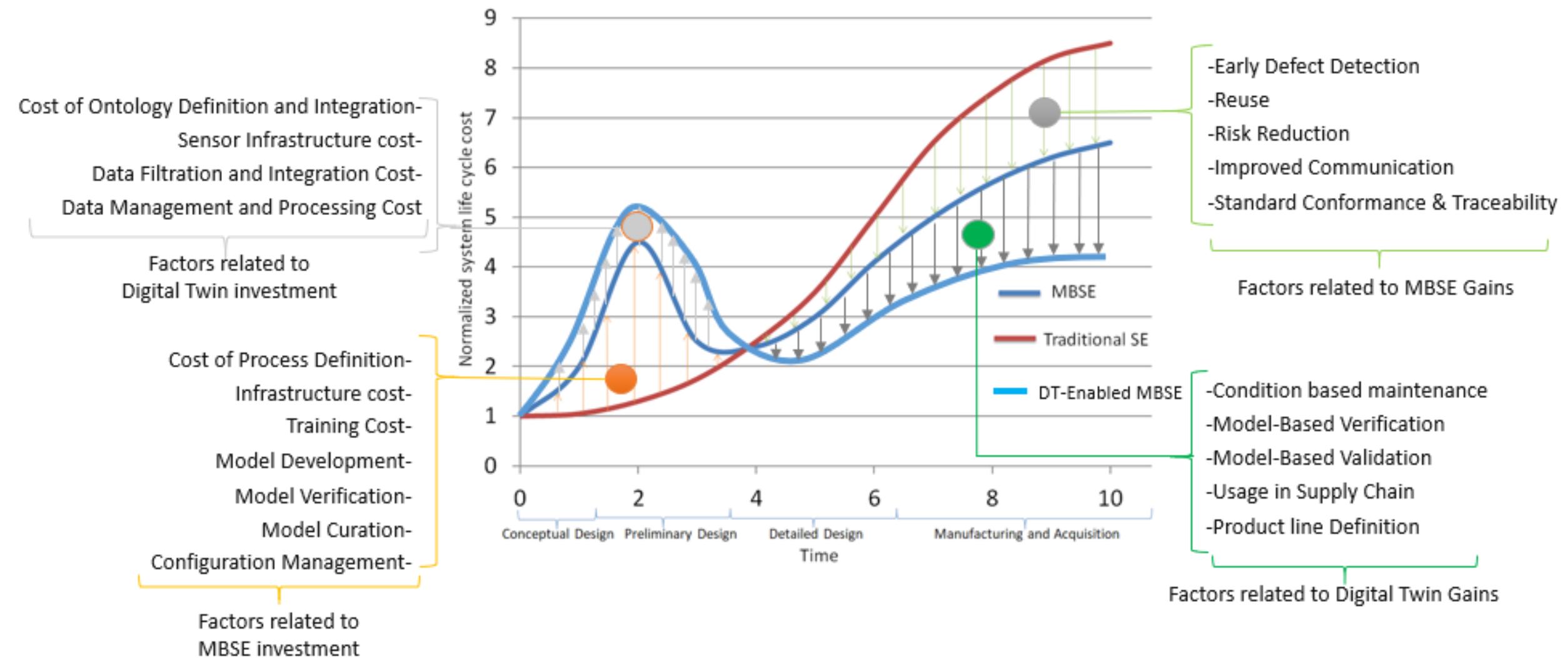


**Economics &
Politics**

Science

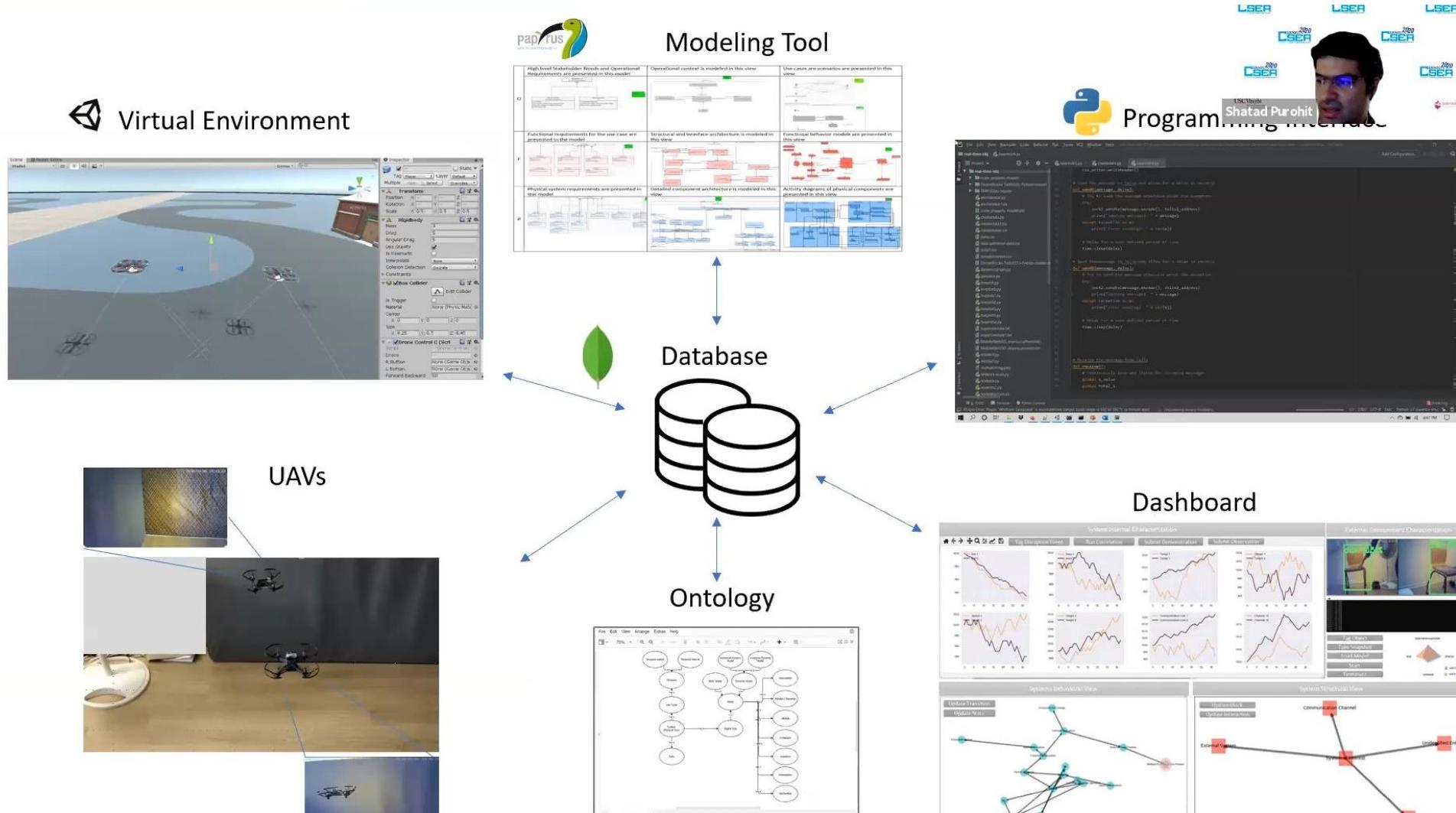
Engineering

Research: Economics



- S. Purohit and A. M. Madni, "Towards Making the Business Case for MBSE," accepted at CSER 2020, 18th Annual Conference on Systems Engineering Research, Redondo Beach, California, USA.
- A. M. Madni and S. Purohit, Economic Analysis of Model-Based Systems Engineering. Systems 2019, 7, 12.

Research: Digital Twins



- S. Purohit and A. M. Madni, "Employing Digital Twins within MBSE: Preliminary Results and Findings," accepted at CSER 2020, 18th Annual Conference on Systems Engineering Research, Redondo Beach, California, USA.
- A. M. Madni, D. Erwin, S. Purohit and C. C. Madni, "Digital-Twin Enabled Experimentation Testbed for MBSE," 2021 AIAA Scitech, doi:<https://doi.org/10.2514/6.2021-0201>
- A. M. Madni, C. Madni, S. Purohit, and A. Madni, Digital Twin Technology-Enabled Research Testbed for Game-Based Learning and Assessment in Theoretical Issues of Using Simulations and Games in Educational Assessment, O'Neil, H. (Eds.), Taylor & Francis, Spring2020



-
- Model-Based Systems Engineering,
 - Systems Architecting
 - Autonomous UAVs and Ground Robots.

Engineering
Education



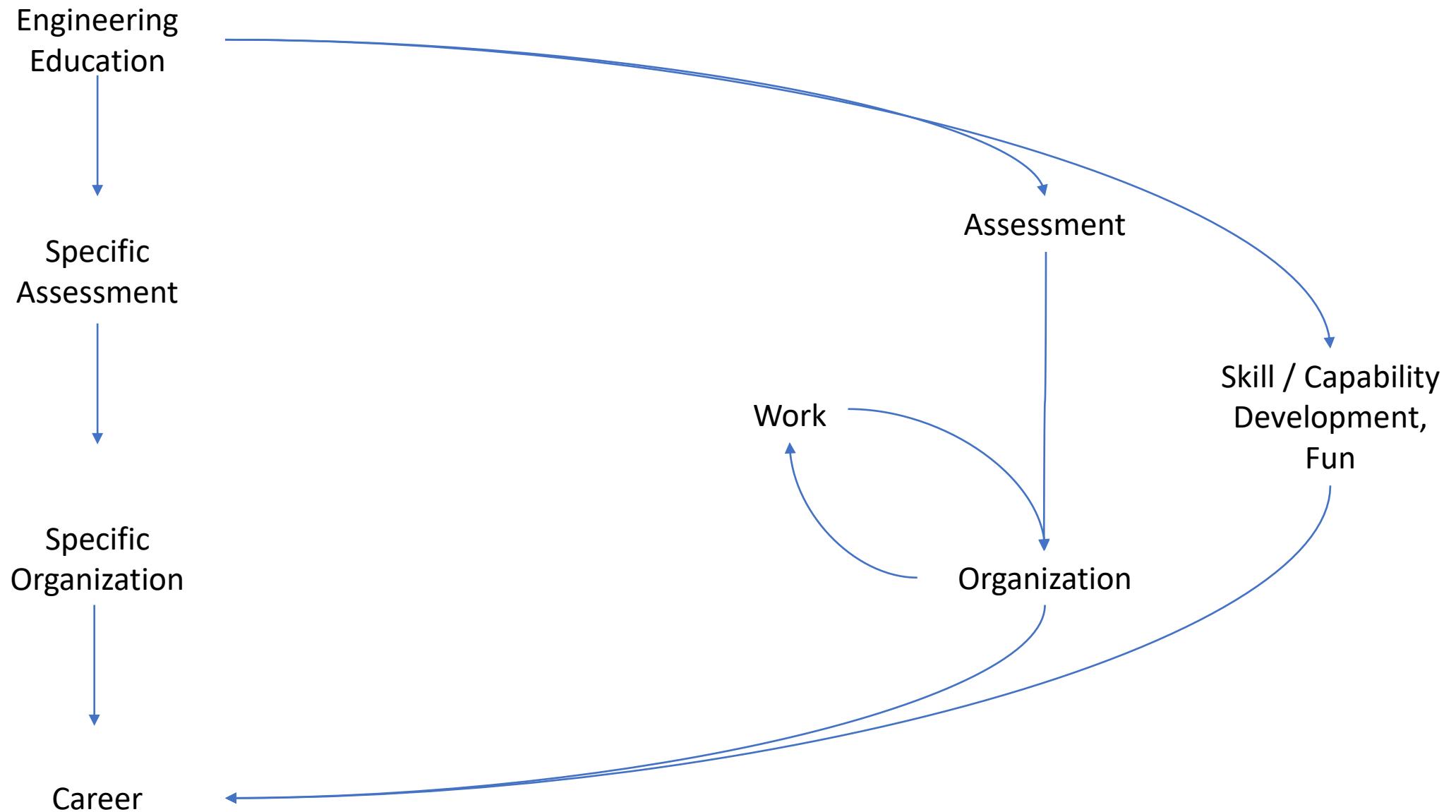
Specific
Assessment

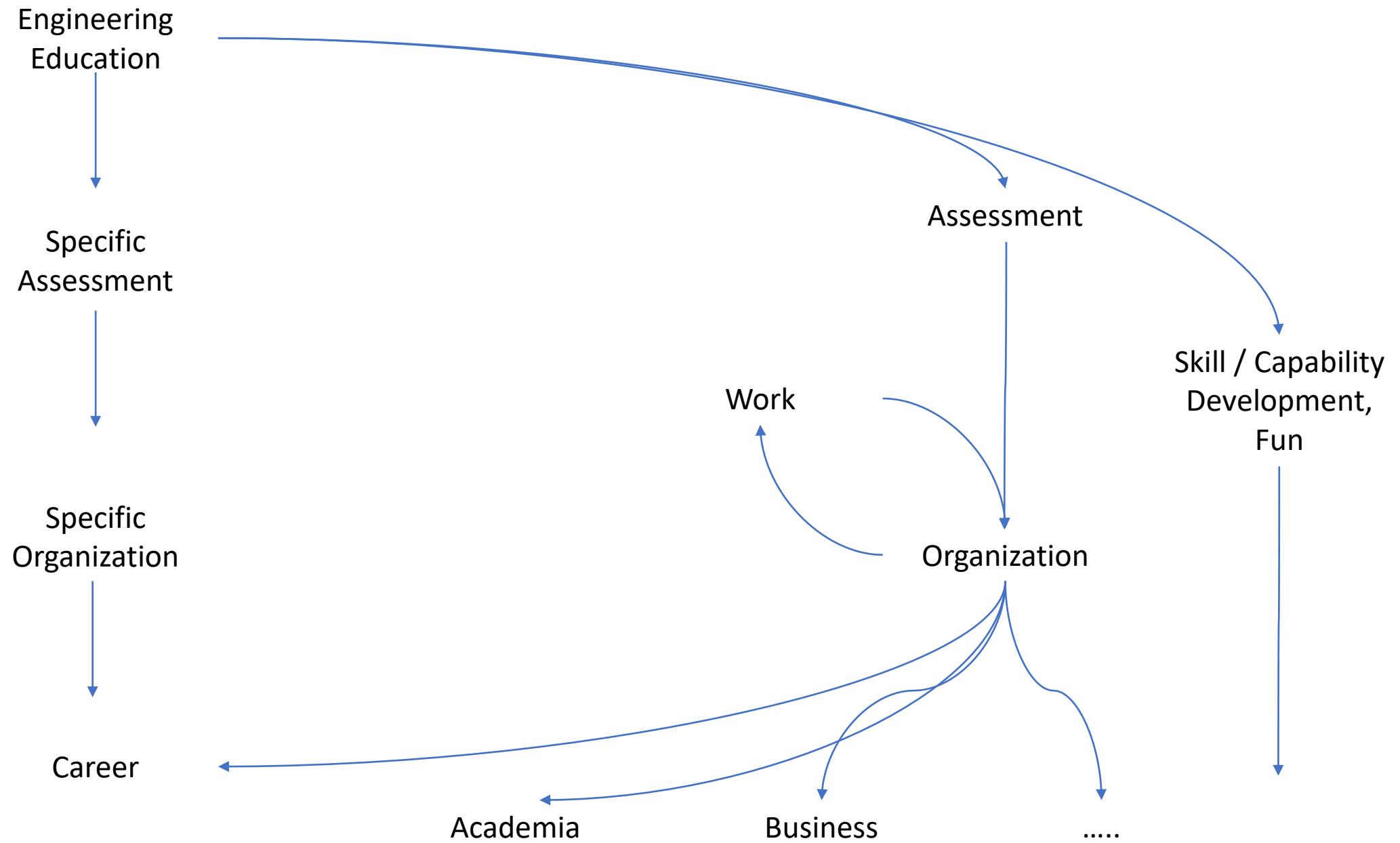


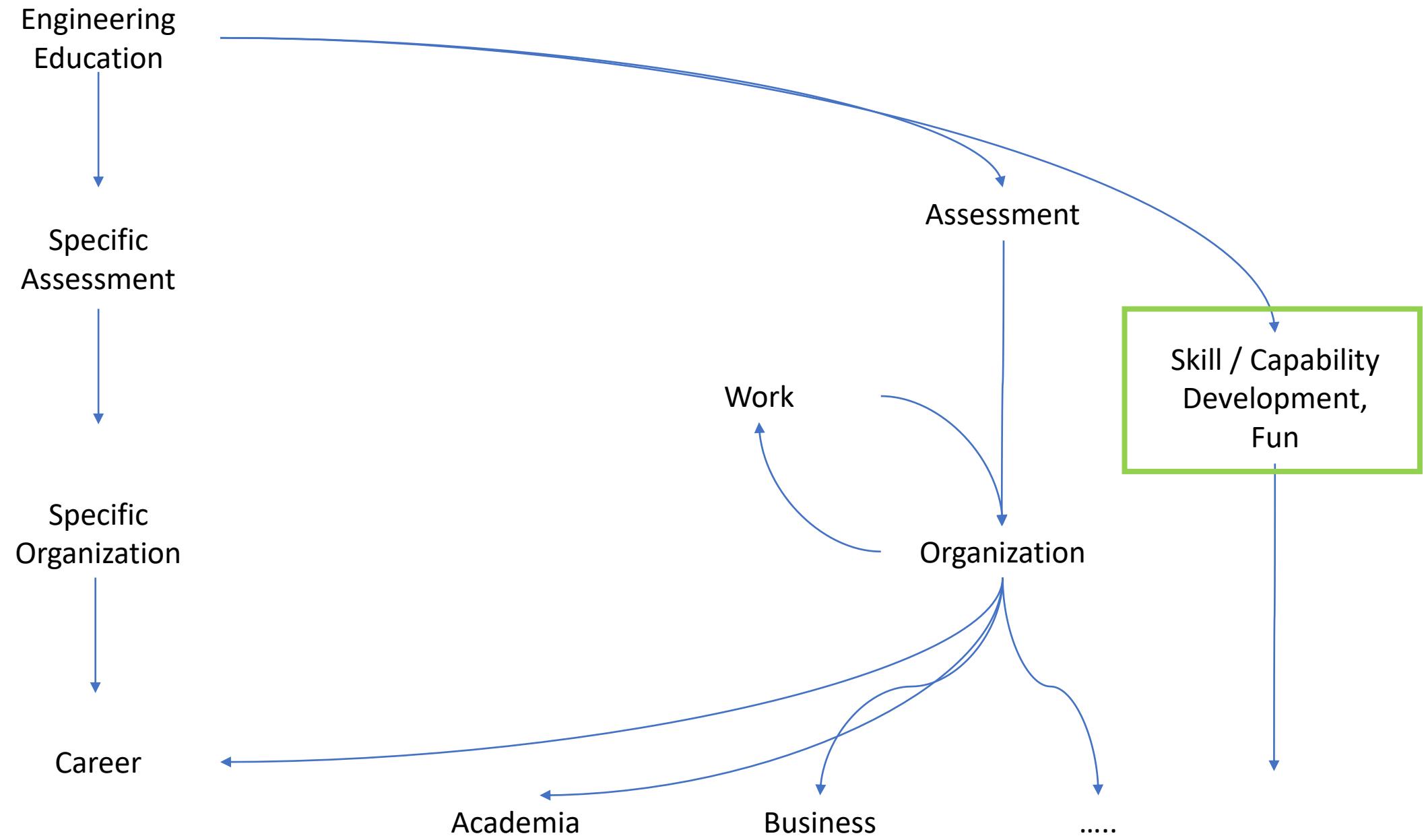
Specific
Organization



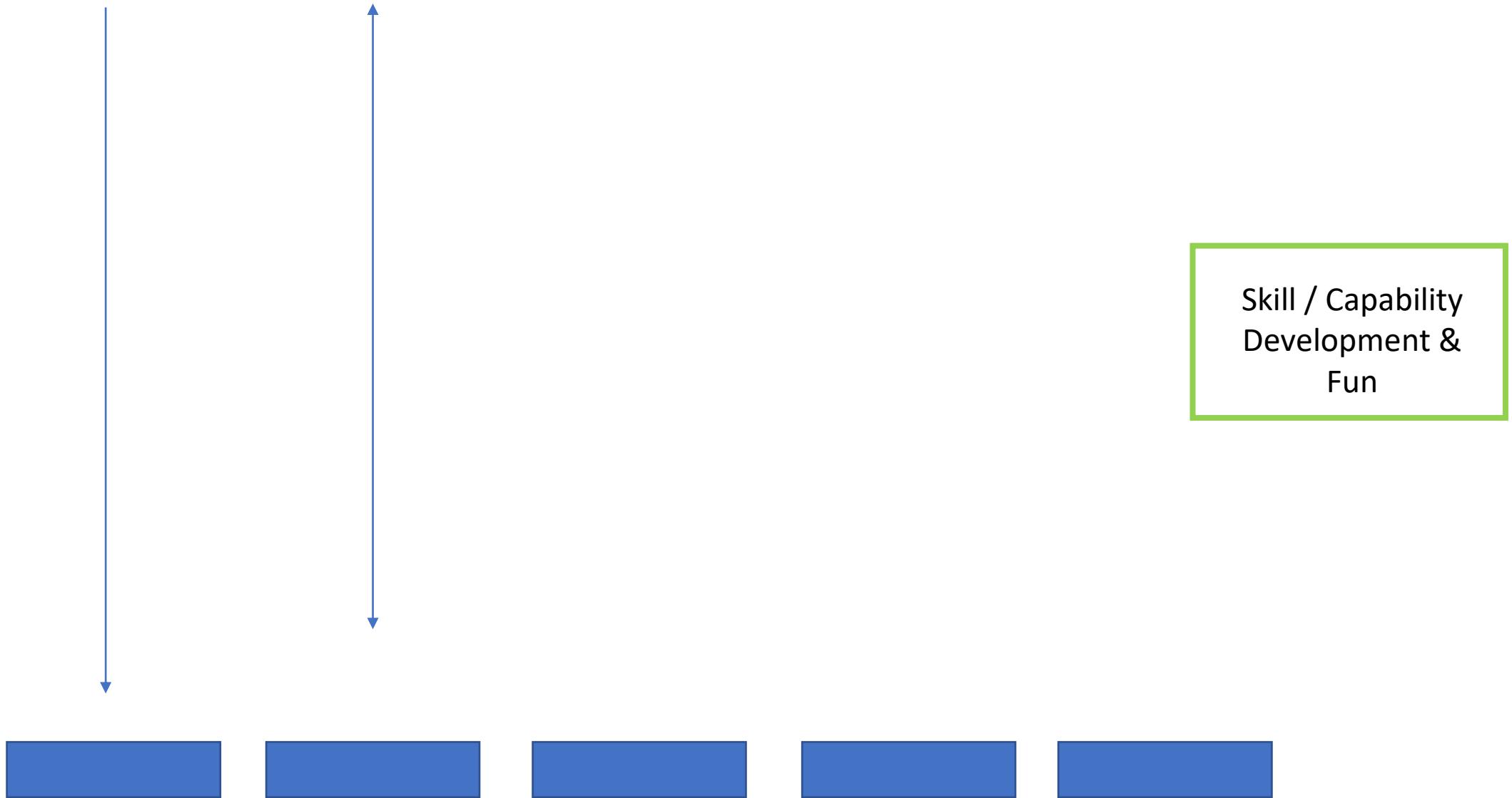
Career







Engineering Education



The Scratch interface is shown, featuring a script editor on the left with various blocks (Motion, Looks, Sound, Events, Control, Sensing, Operators, Variables, My Blocks) and a stage area with a cat sprite in the center.

khanacademy

The Khan Academy website is displayed, showing a user profile for "shatadpurohit". The main menu includes Courses, Search, and Khan Academy logo. The "My courses" section lists various topics such as Computer programming, Electrical engineering, and Differential equations.

Scratch

edx

The edX search results page for "Robotics" is shown, displaying various courses from different universities like ColumbiaX, ETHx, and CurriX.

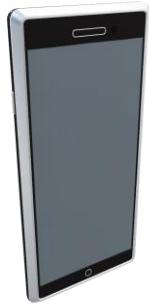
coursera

The Coursera search results page for "Physical Science and Engineering" is shown, listing courses from the University of Colorado Boulder, University of Michigan, and University of California, Davis.

MITOCW

The MIT OpenCourseWare website is shown, displaying a course catalog with a focus on Mechanical Engineering. A table lists various courses with their course numbers, titles, and levels.

Course #	Course Title	Level
2.003	Modeling Dynamics and Control I (Spring 2005)	Undergraduate
2.003J	Dynamics and Vibration (13.013J) (Fall 2002)	Undergraduate
2.003L	Dynamics and Control I (Spring 2007)	Undergraduate
2.003M	Dynamics and Control I (Fall 2007)	Undergraduate
2.004	Modeling Dynamics and Control II (Spring 2003)	Undergraduate
2.004	Dynamics and Control II (Spring 2008)	Undergraduate
2.004L	Dynamics (Fall 2004)	Undergraduate
2.004M	Systems and Controls (Spring 2013)	Graduate
2.12	Introduction to Robotics (Fall 2005)	Undergraduate
2.14	Analysis and Design of Feedback Control Systems (Spring 2014)	Undergraduate
2.141	Modeling and Simulation of Dynamic Systems (Fall 2006)	Graduate
2.154	Maneuvering and Control of Surface and Underwater Vehicles (13.49) (Fall 2004)	Graduate
2.160	Identification, Estimation, and Learning (Spring 2006)	Graduate
2.161	Signal Processing: Continuous and Discrete (Fall 2008)	Graduate
2.171	Analysis and Design of Digital Control Systems (Fall 2006)	Graduate
2.18	Biomechanical Feedback Systems (Spring 2015)	Undergraduate
2.737	Mechatronics (Fall 2014)	Graduate
10.450	Process Dynamics, Operations, and Control (Spring 2006)	Undergraduate
16.07	Dynamics (Fall 2009)	Undergraduate
16.08	Aerospace Dynamics (Spring 2003)	Undergraduate
22.921	Nuclear Power Plant Dynamics and Control (January IAP 2006)	Undergraduate





भाग १

Background

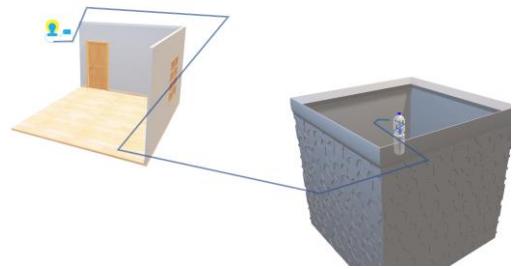


भाग २

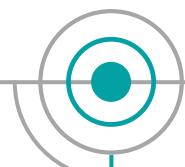
Project based skill development

Long Term Project Based Skill Development

दीर्घकालीन प्रकल्प
आधारित कौशल विकास



2006



8th

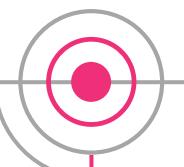
Keshavraj Vidyalay Latur

10th



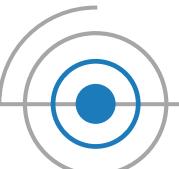
2008

2010

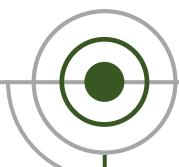


•

2012

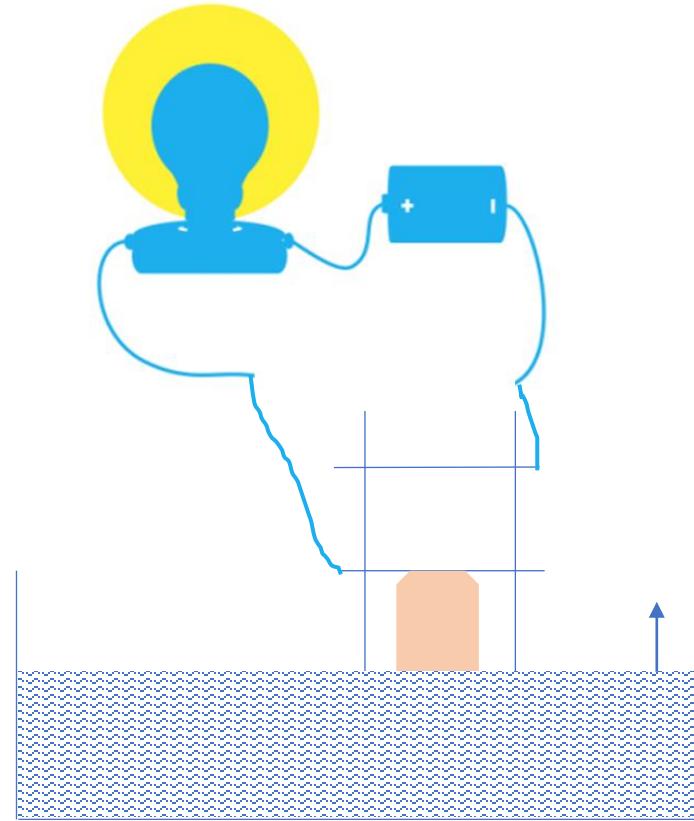


2014

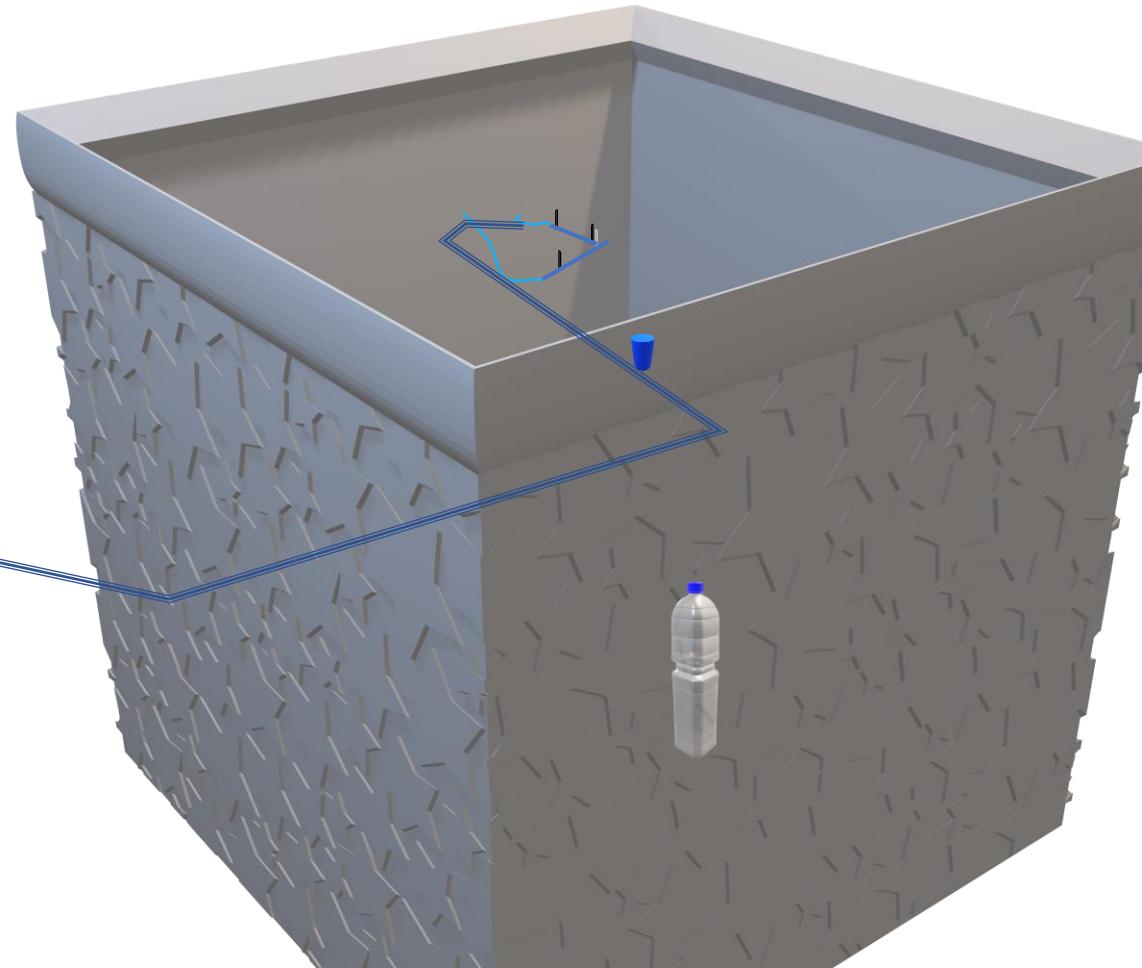
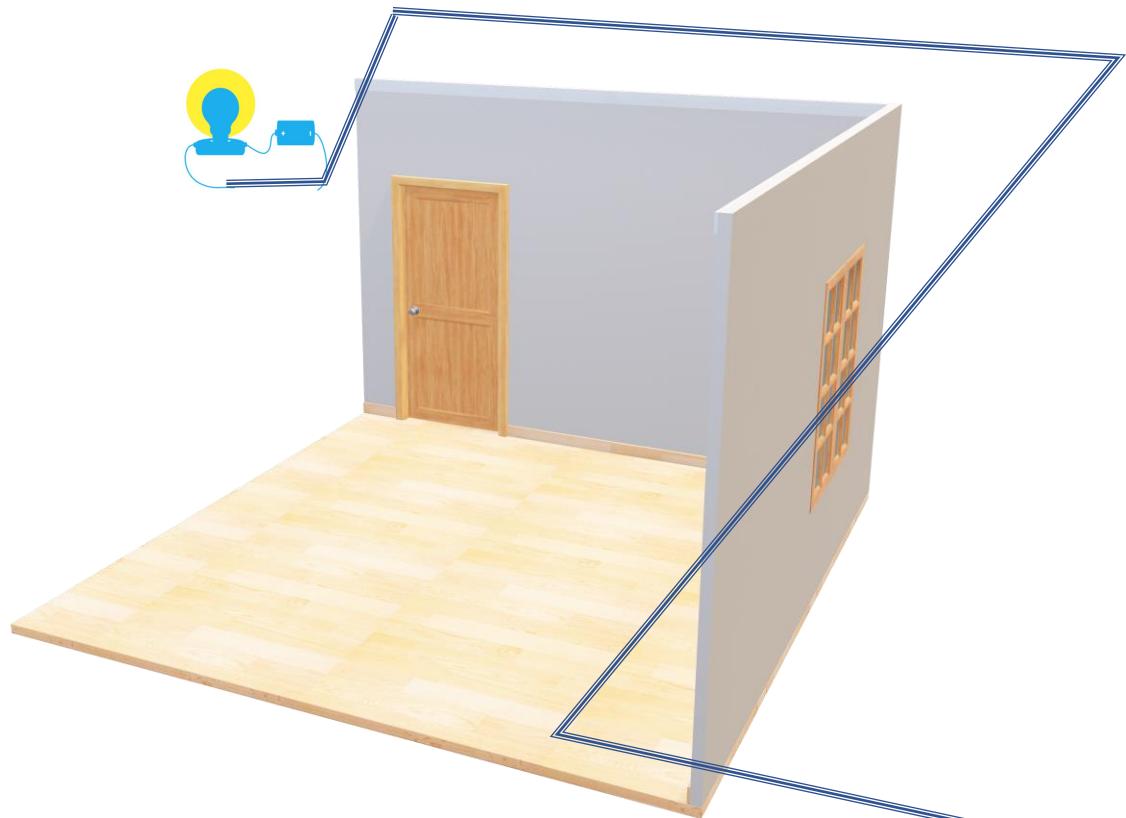


BE Mechanical Engineering, M. S. Bidve Engineering College Latur

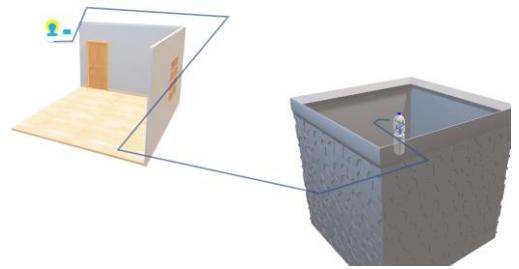
पूर सुचक यंत्र



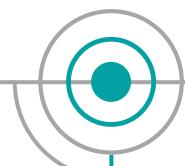
Study Archimedes Principle -> Book Project -> Project Relevant for People Near You -> Simple Commercialization



पूर सुचक यंत्र → पानी की टंकी भरने की सुचना देने के लिए



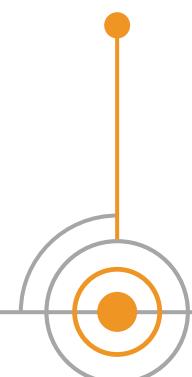
2006



8th

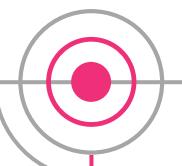
Keshavraj Vidyalay Latur

10th



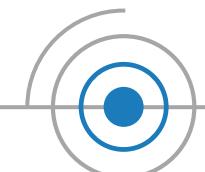
2008

2010



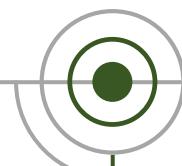
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BE Mechanical Engineering, M. S. Bidve Engineering College Latur

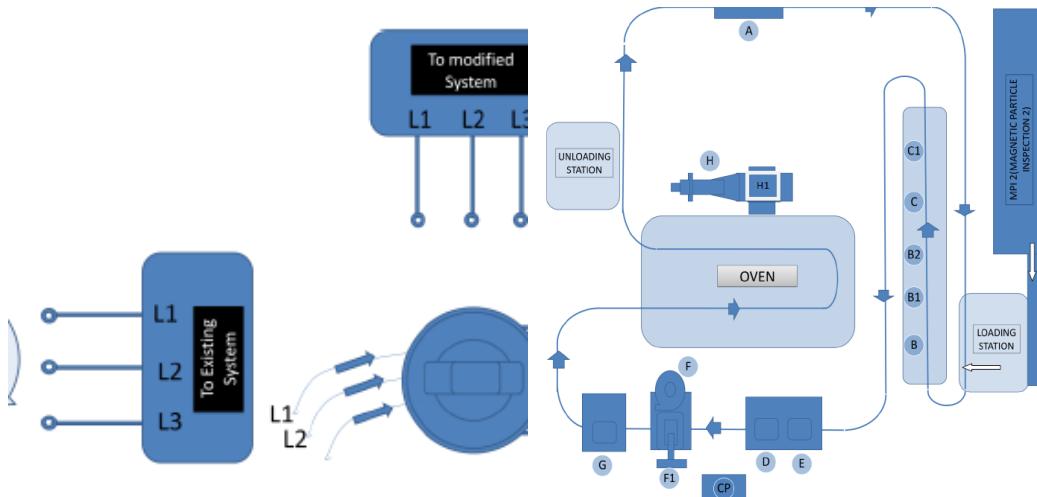
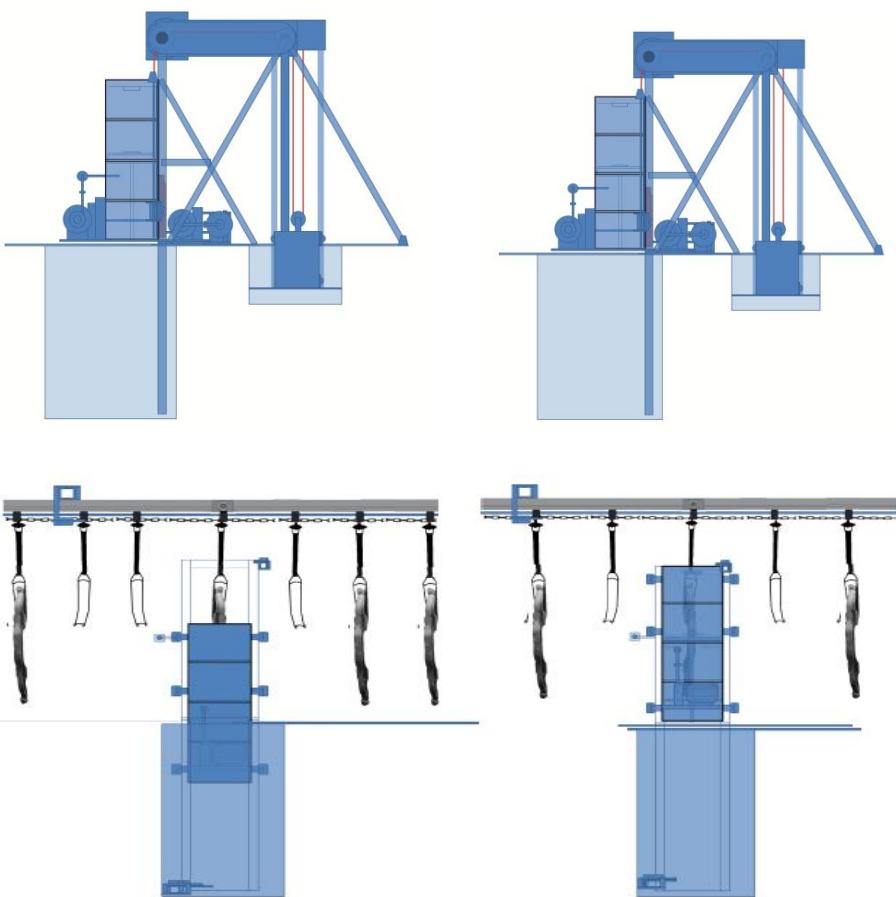
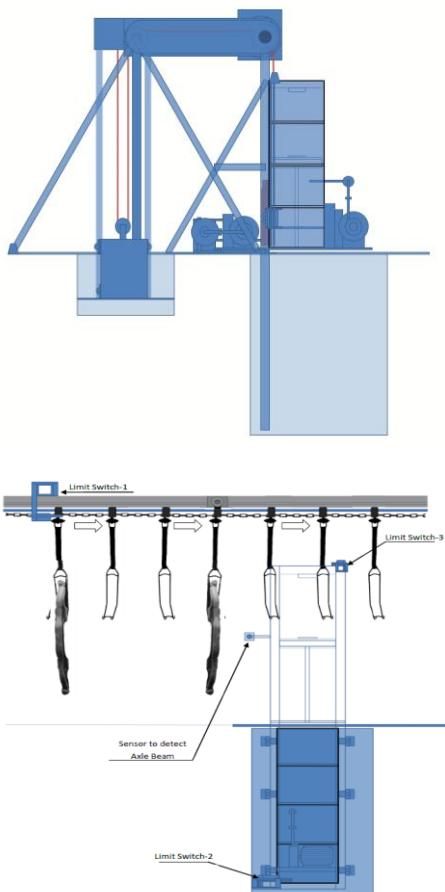
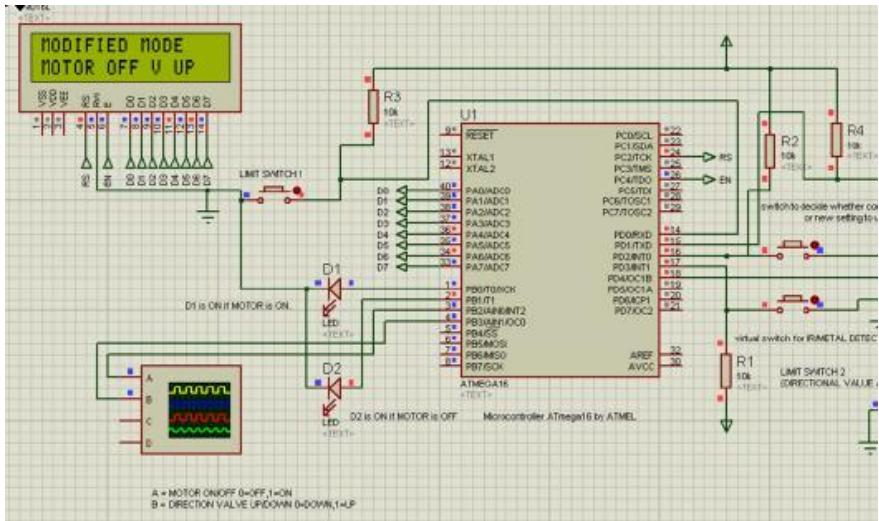
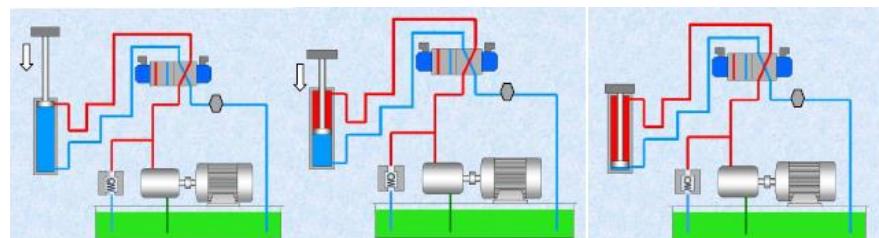


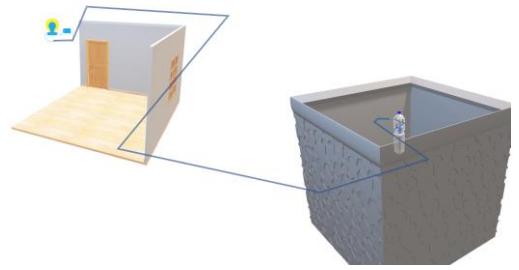
2012

2014



•





2006



8th

Keshavraj Vidyalay Latur

10th



2008

2010

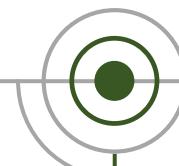


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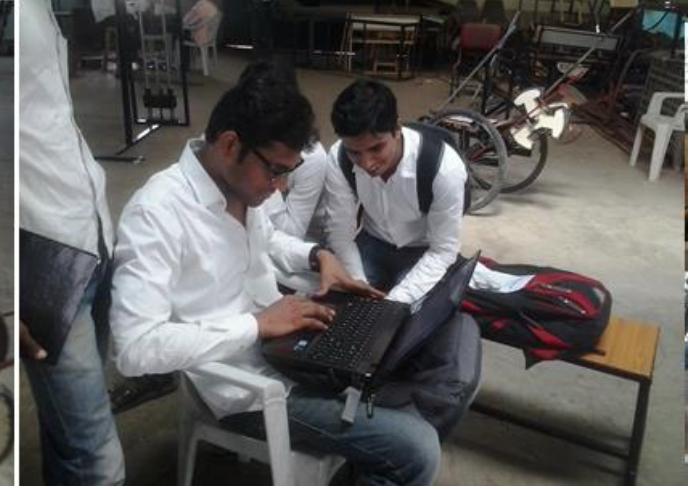
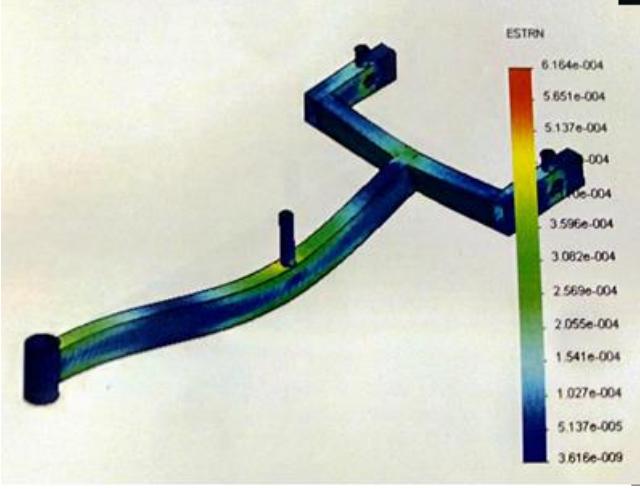
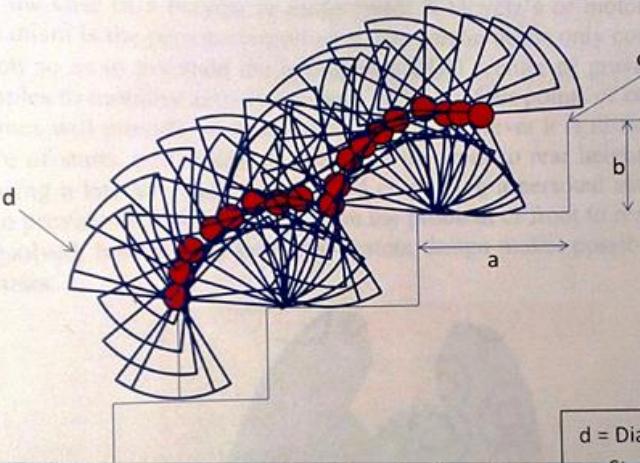
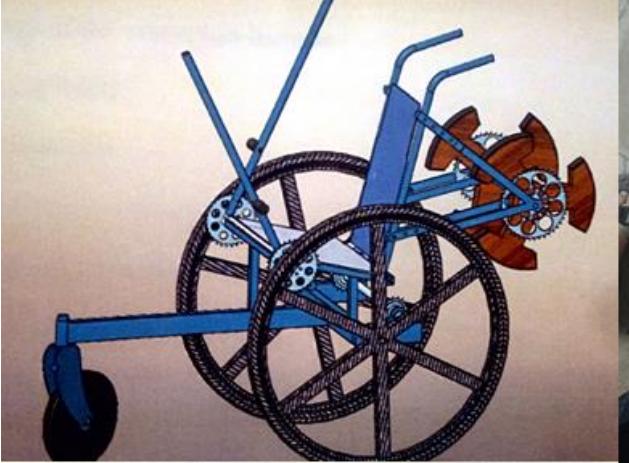
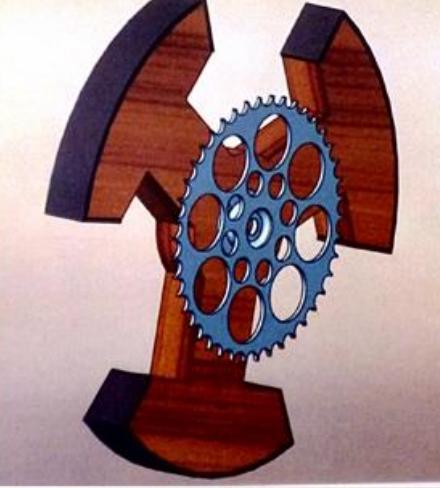
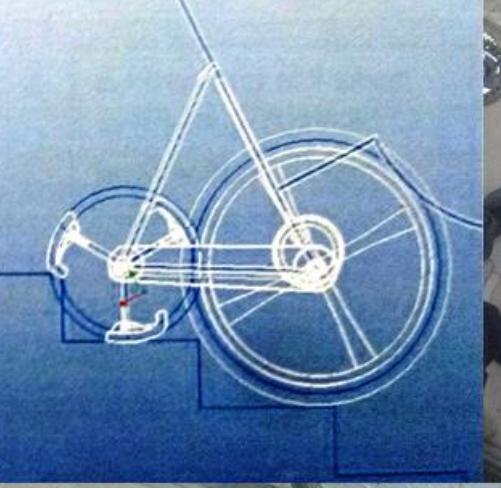
2012

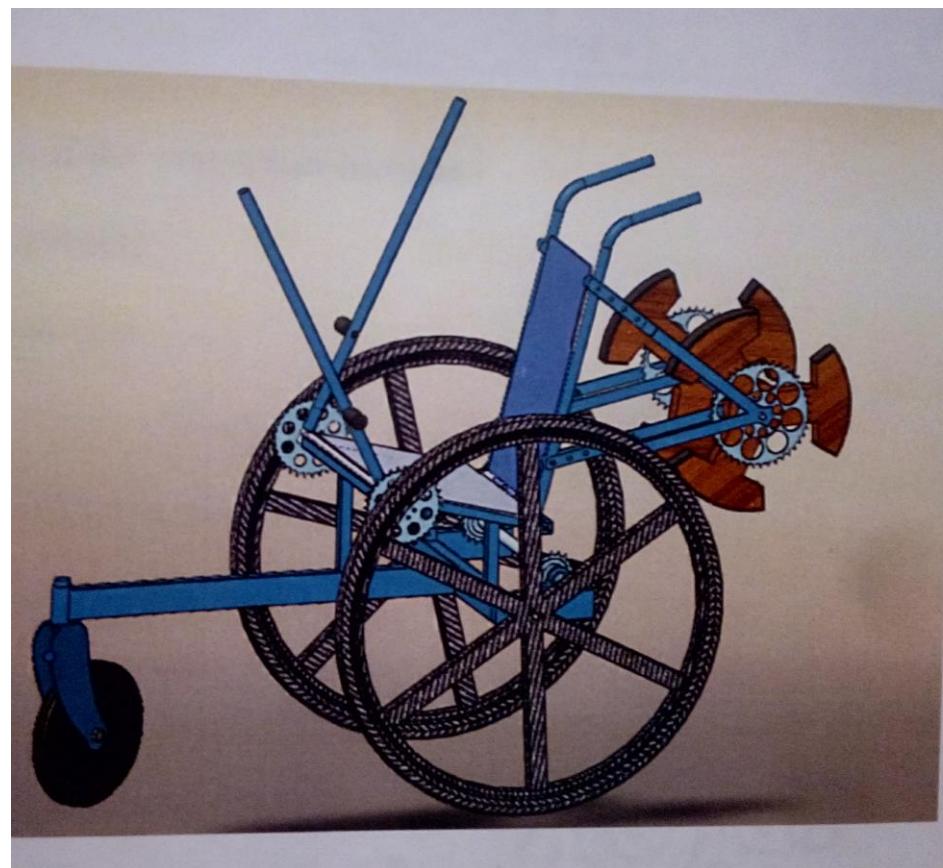


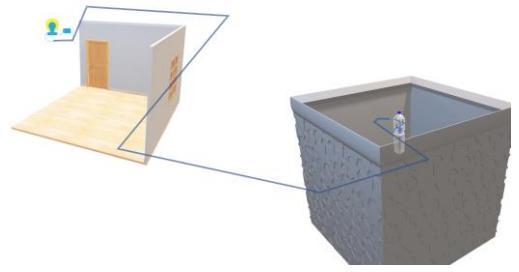
2014



BE Mechanical Engineering, M. S. Bidve Engineering College Latur







2006



8th

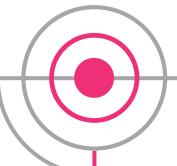
Keshavraj Vidyalay Latur

10th

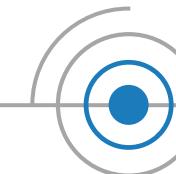


2008

2010



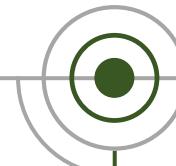
BE Mechanical Engineering, M. S. Bidve Engineering College Latur



2012



2014



**LONG
TERM**

प्रकल्प

Long Term = 12 साल के लिए

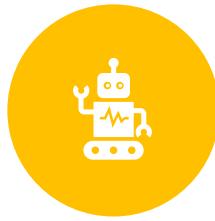
सप्ताह में एक घंटा one hour in a week



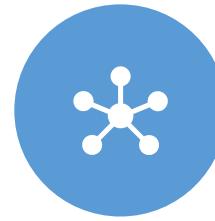
NATURAL FIBER
PROJECT



GAMES AND
ANIMATIONS FOR
ITIHASA



ROBOTS FOR SOCIAL
PROBLEMS



SOCIAL NETWORK
PLATFORM FOR
DIFFERENT LANGUAGE



SYSTEMS FOR ART
FORMS



SPORTS EVENT
MANAGEMENT
SYSTEM

Natural Fiber Project

Long Term Project









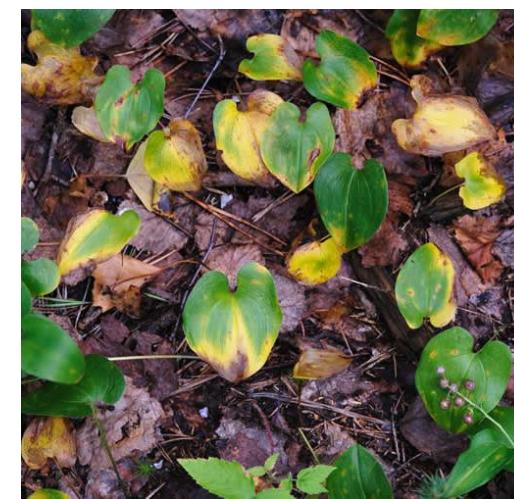




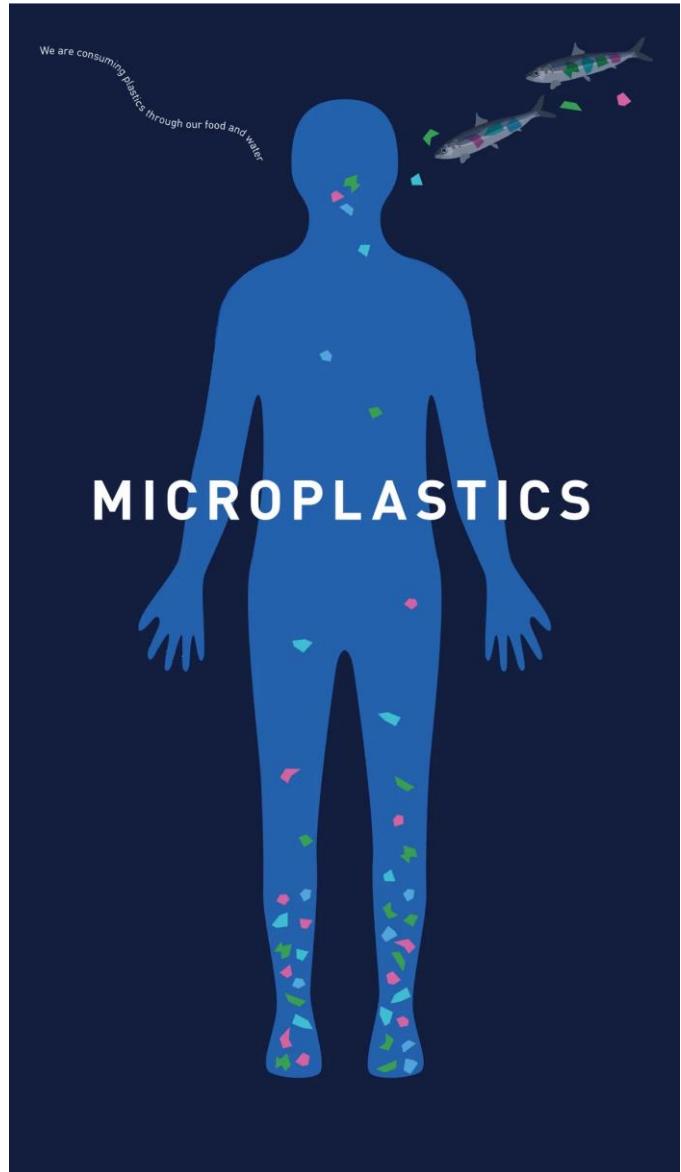
20%

80%









28gm ~ Weight of Credit Card





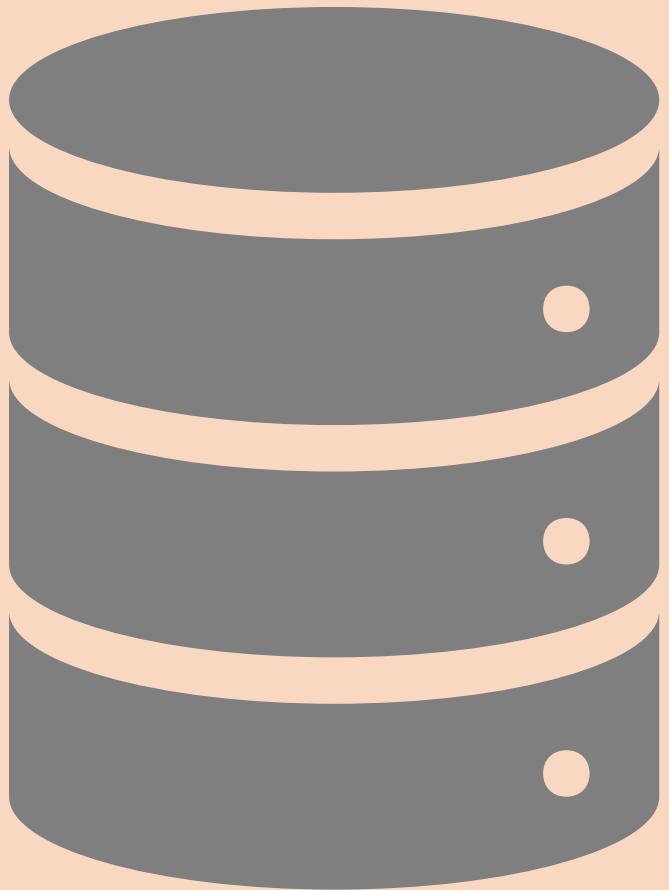


20%

80%







5x



10x

















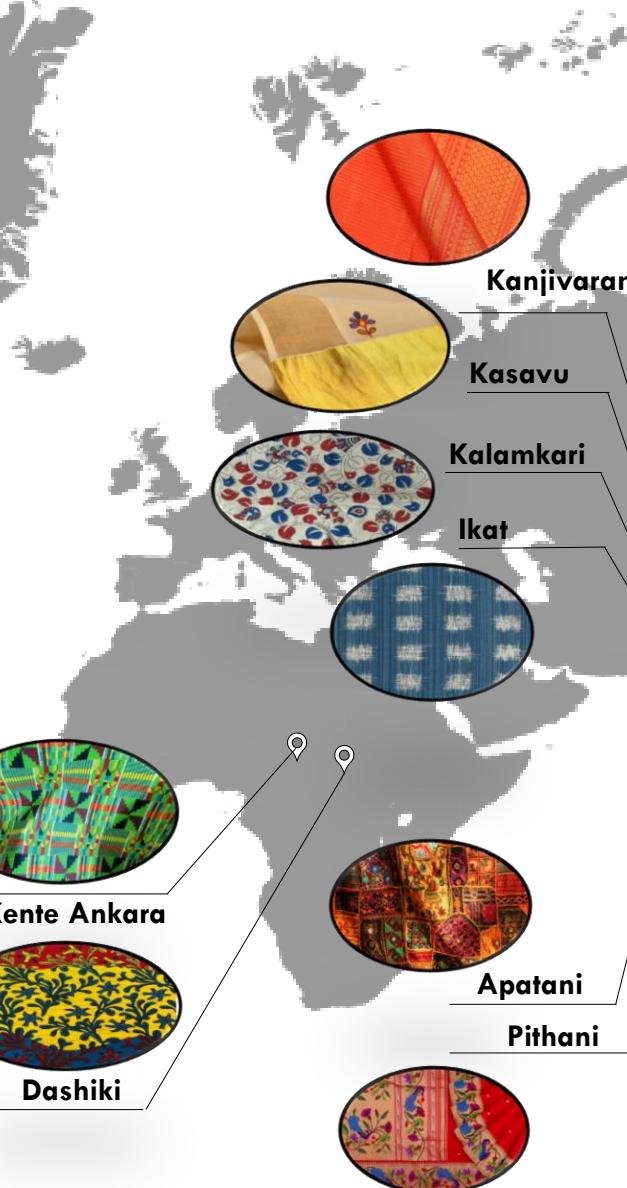
Apparel Designer



Kente Ankara



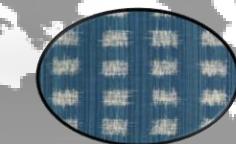
Dashiki



Kanjivaram



Kalamkari



Ikat



Apatani

Pithani



Panchachauli



Pashmina



Kullu shawls



Phulkari



Chikankari



Sanganeri



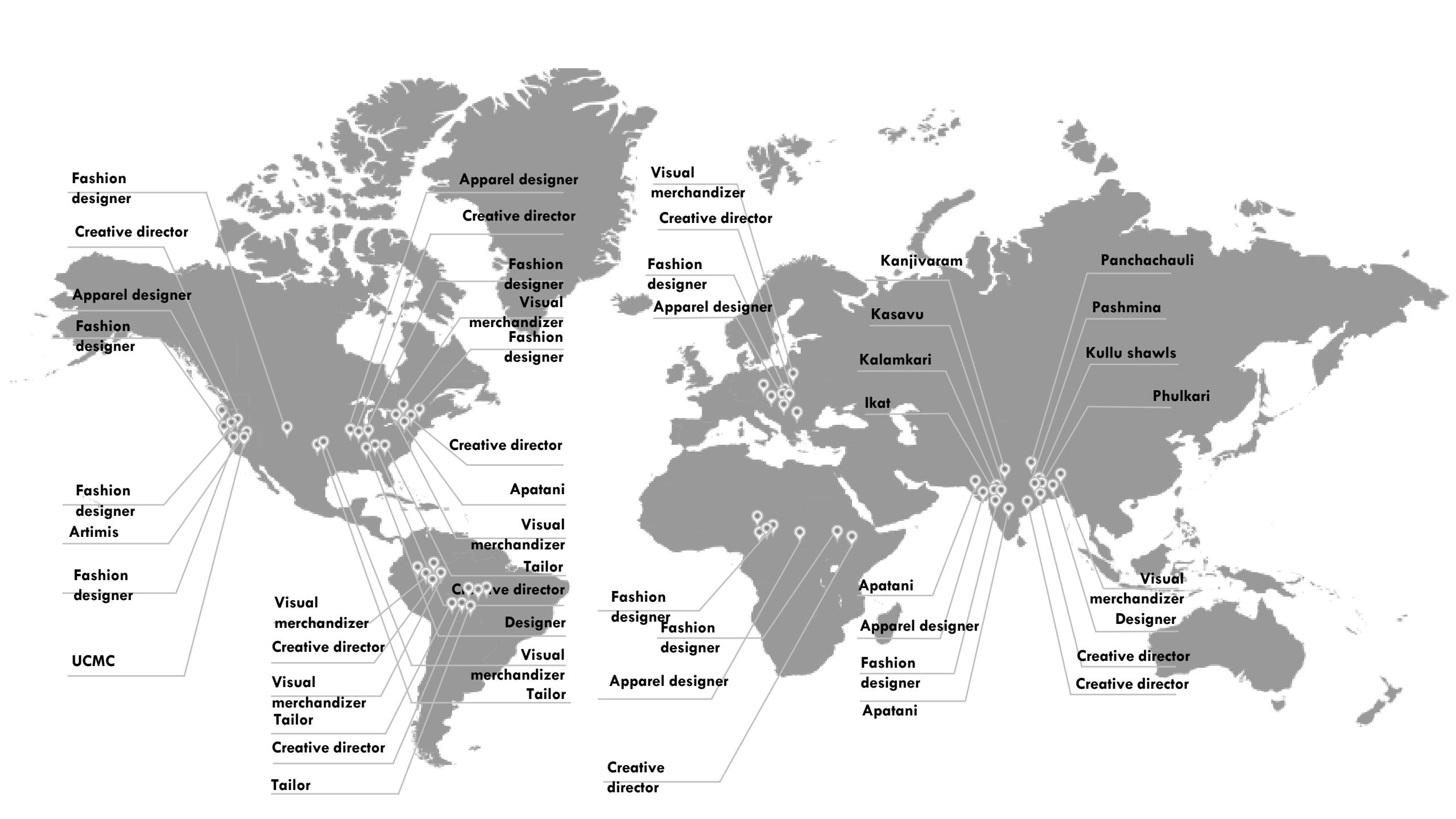
Chanderi

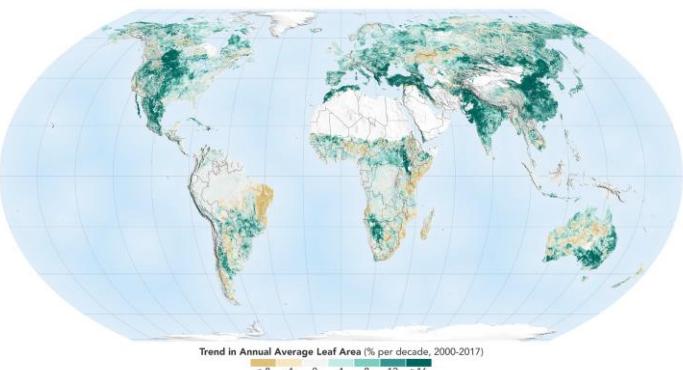


Mashru











WHAT ARE THE DIFFERENT
WEAVES THERE EXIST?



WHERE ARE THE HANDLOOM
CLUSTERS?



CAN WE DOCUMENT THEM?



HOW MUCH OF THE
POPULATION RELY ON
NATURAL FIBER PRODUCTION
AND SALES?



HOW TO CREATE TRENDS?

कौशल Skills



Situational Awareness



Sensor Fusion



Sparse Information Modeling



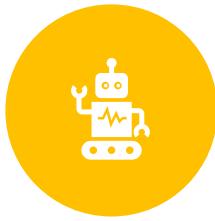
Systems Thinking



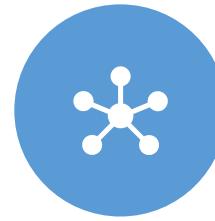
NATURAL FIBER
PROJECT



GAMES AND
ANIMATIONS FOR
ITIHASA



ROBOTS FOR SOCIAL
PROBLEMS



SOCIAL NETWORK
PLATFORM



SYSTEMS FOR ART
FORMS



SPORTS EVENT
MANAGEMENT
SYSTEM

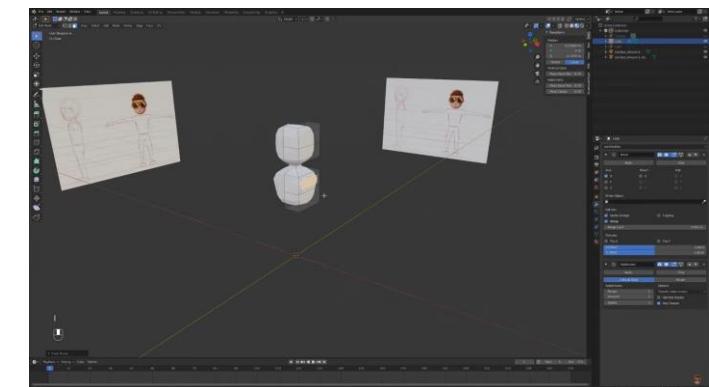
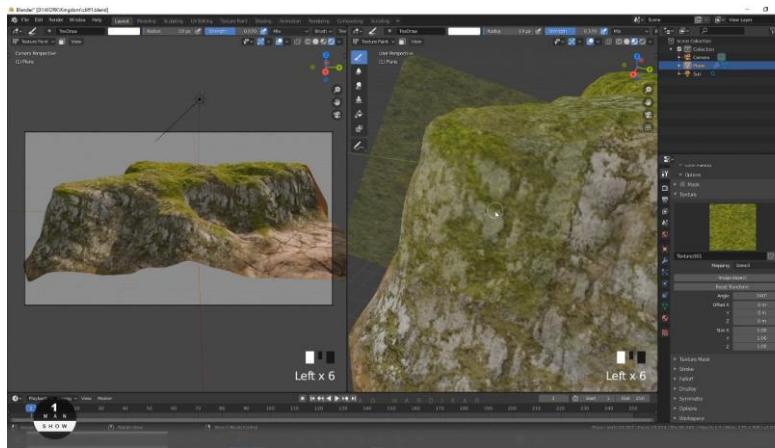
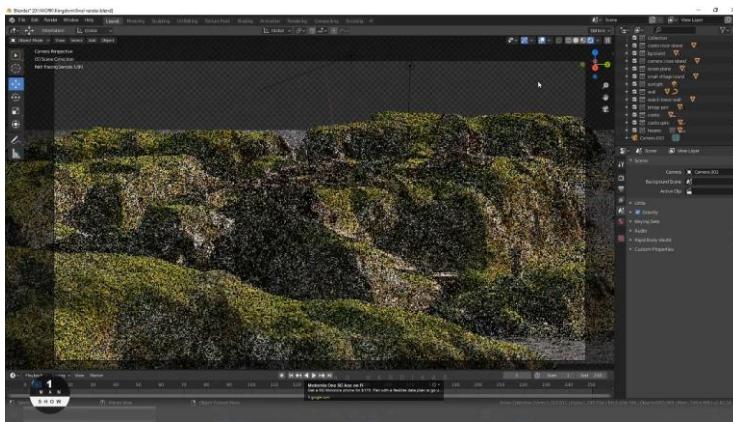
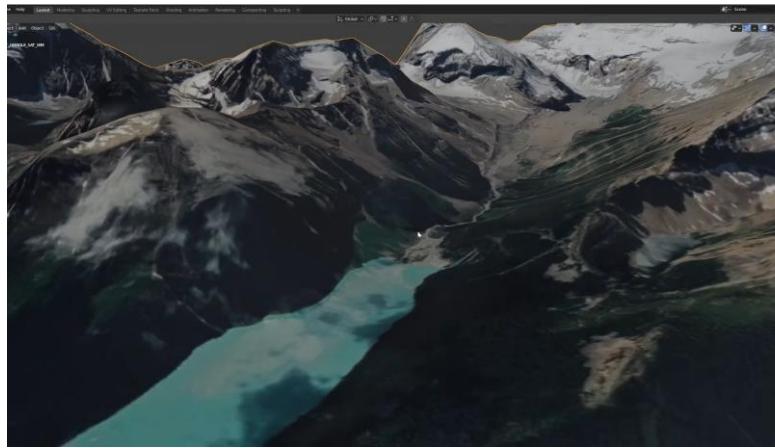
Games and Animations for Itihasa

Long Term Project



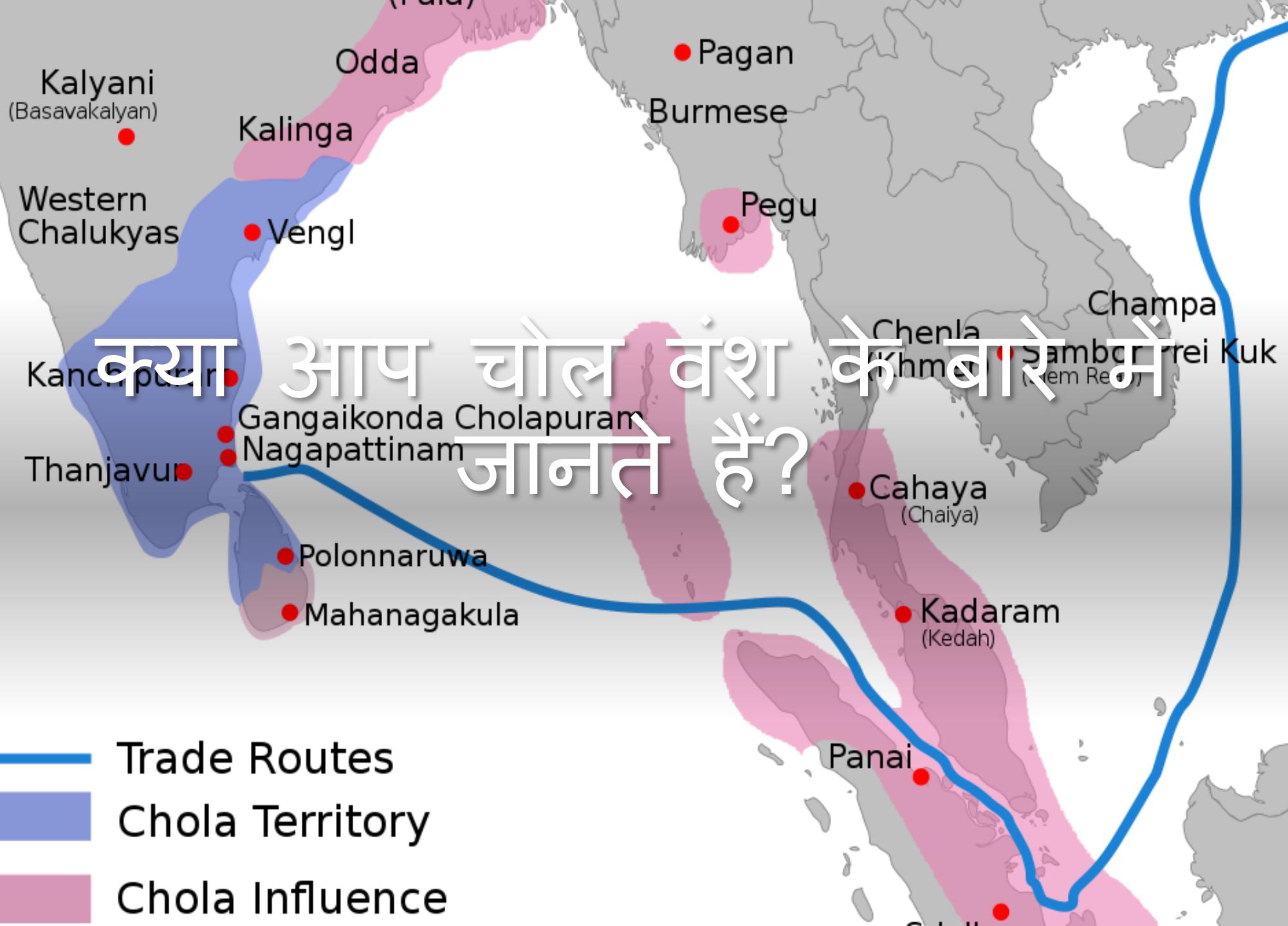
Your favorite video games?
आपकी पसंदीदा वीडियो गेम कौन सी है?

वीडियो गेम और एनिमेशन बनाने के लिए सरल सॉफ्टवेयर उपलब्ध हैं



क्या आप चौल वंश के बारें में
जानते हैं?

- Trade Routes
- Chola Territory
- Chola Influence



बृहदीश्वर मंदिर, तेजावर



चोलपुरम में
गंगाईकोडा मंदिर



the Temple of Gangaikonda Cholapuram

ऐरावतेश्वर मंदिर,
दारासुराम



the Airavatesvara Temple at Darasuram

अभियांत्रिकी

the kings who built these engineering marvels

can we tell
their stories
using new
technologies?
क्या हम नई
तकनीक का
उपयोग करके
उनकी कहानियां
बता सकते हैं?

उन्हें किस तरह की चुनौतियों का सामना करना पड़ा?

what challenges they faced?

मानसिकता क्या होगी?

what was their mindset?

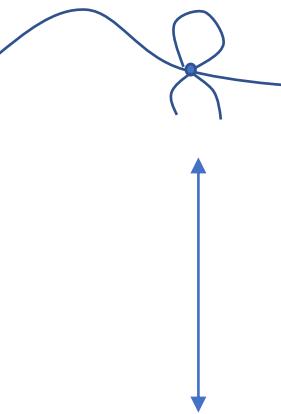
उस समय का सामाजिक-राजनीतिक और आर्थिक वातावरण कैसा था?

what were the socio-political and economic environments of that time?



गेम आणि अॅनिमेशन डेव्हलपमेंट टेक्नोलॉजीज

Game and Animation Development Technologies



\$\$\$

हजारों साल का इतिहास

राष्ट्रकूट वंश	राष्ट्रकूट वंश	चेरा वंश	चेरा वंश	चालुक्य वंश	चालुक्य वंश	पल्लव वंश	पल्लव वंश	सातवाहन वंश	सातवाहन वंश	विजयनगर साम्राज्य	विजयनगर साम्राज्य	पांड्या वंश	पांड्या वंश	यदुवंशी	यदुवंशी	गुहिला राजवंश	गुहिला राजवंश
Rashtrakuta dynasty	Rashtrakuta dynasty	Chera dynasty	Chera dynasty	Chalukya dynasty	Chalukya dynasty	Pallava dynasty	Pallava dynasty	Satavahana dynasty	Satavahana dynasty	Vijayanagara empire	Vijayanagara empire	Pandya dynasty	Pandya dynasty	Yaduvanshi	Yaduvanshi	Guhilas	Guhilas

कौशल Skills



Story telling



Presentation



Development



Planning



Decision Making



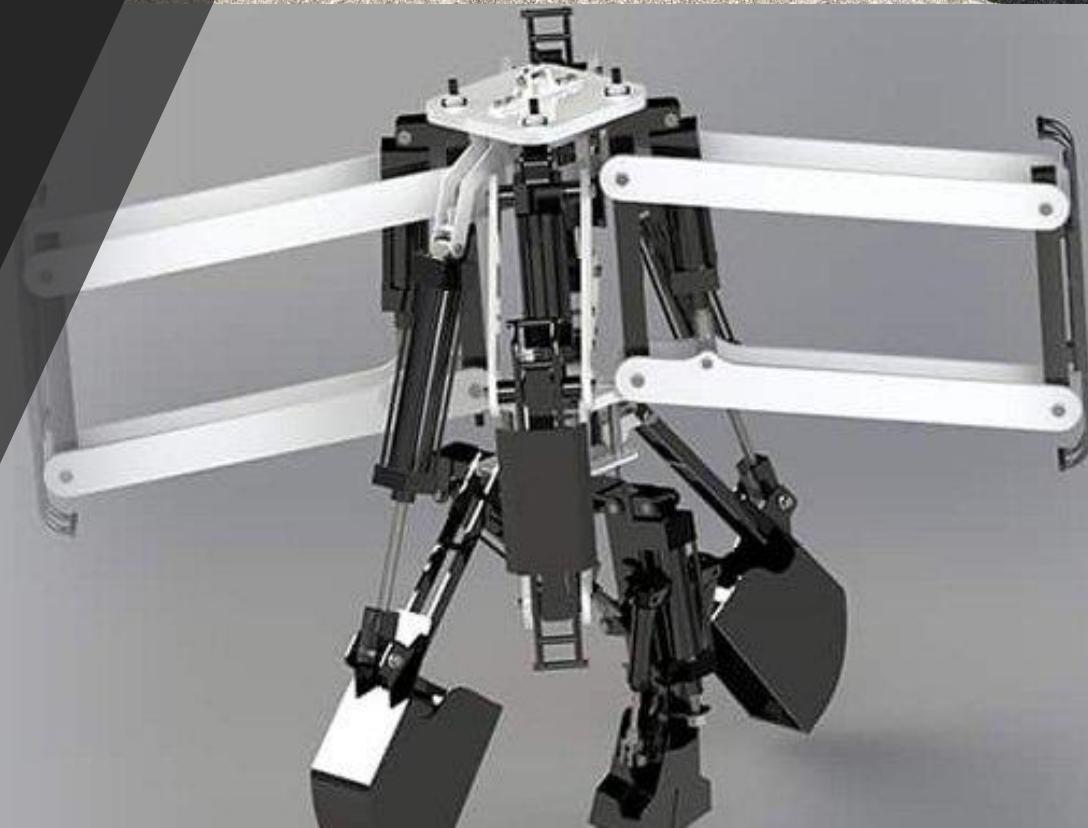
Commercialization

Robots for Social Problems

Long Term Project

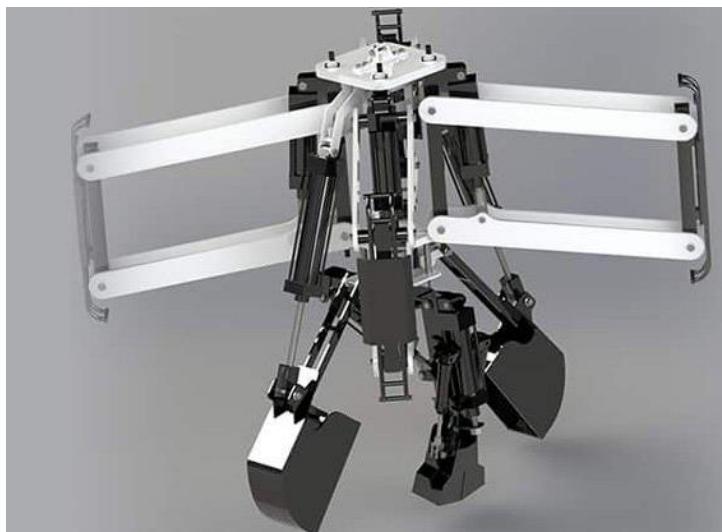
Robotics

- for solving social problems
- सामाजिक समस्याओं के समाधान
के लिए



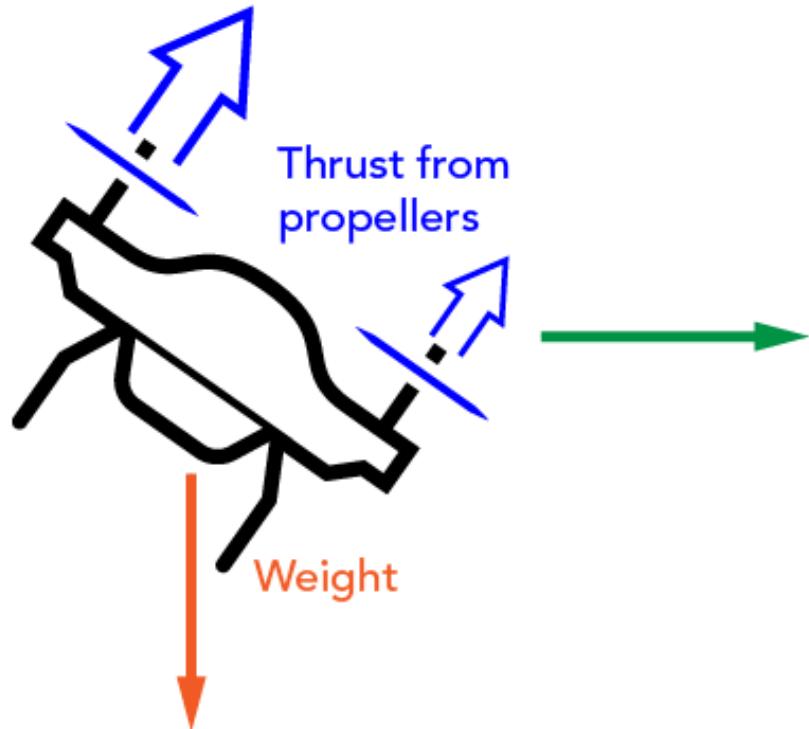
Robotics

- Cleaning
- Surveillance
- Agriculture
- Old age care



Robot

- Mathematics
- Physics
- Programming

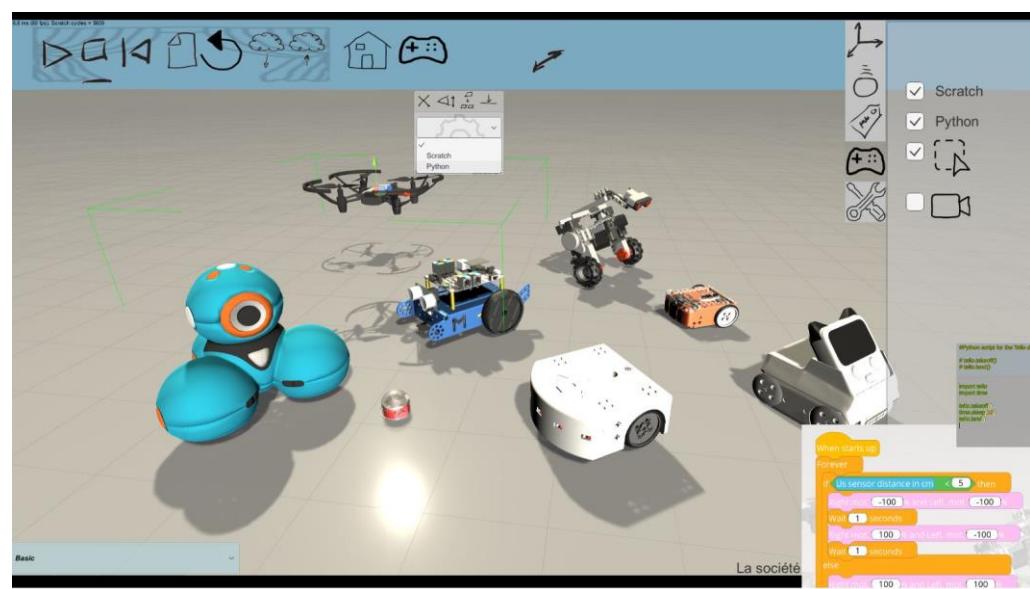
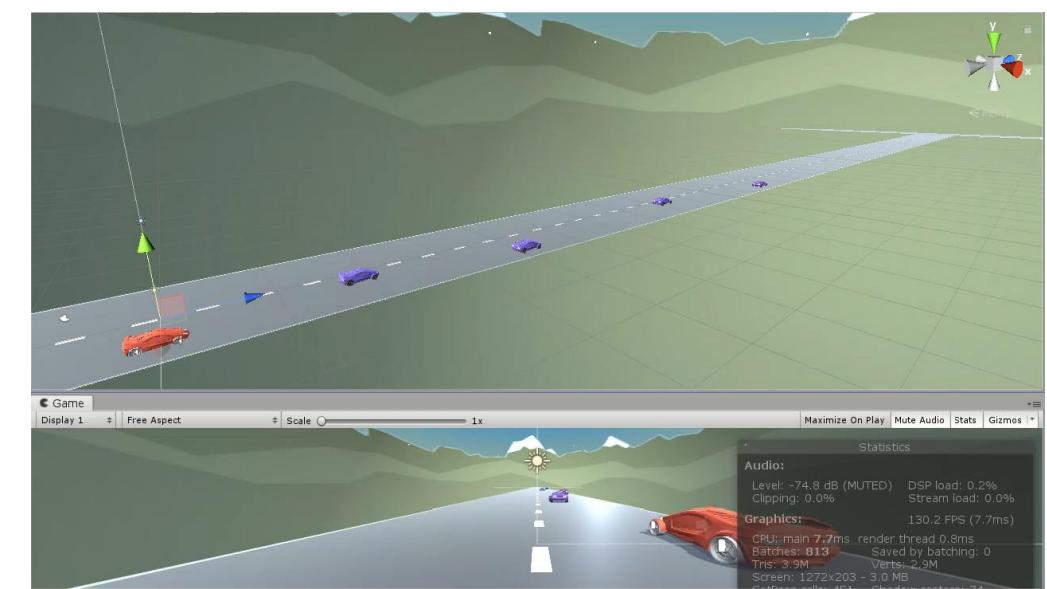
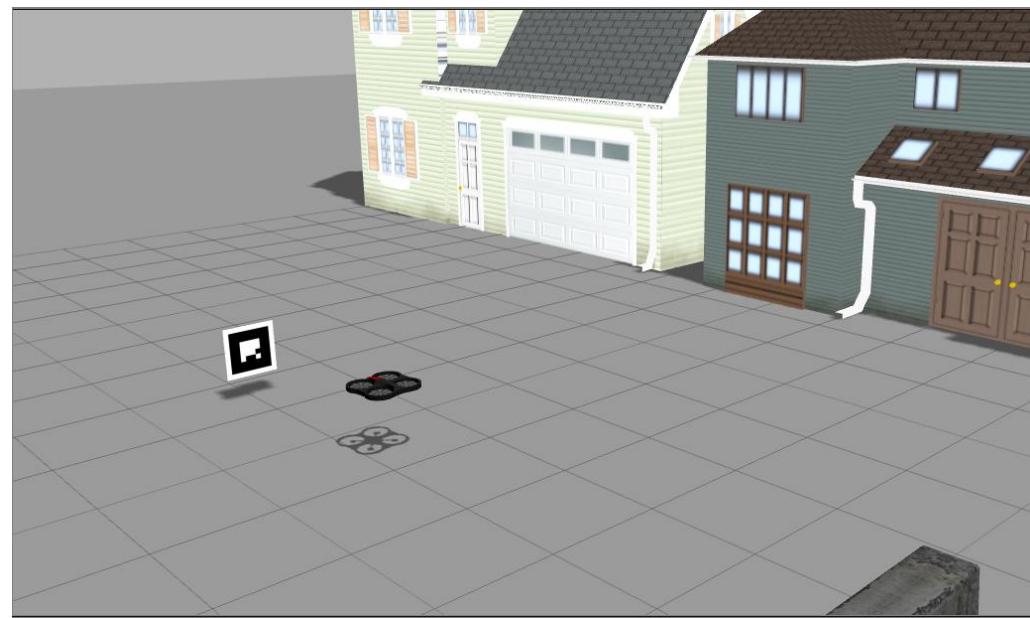
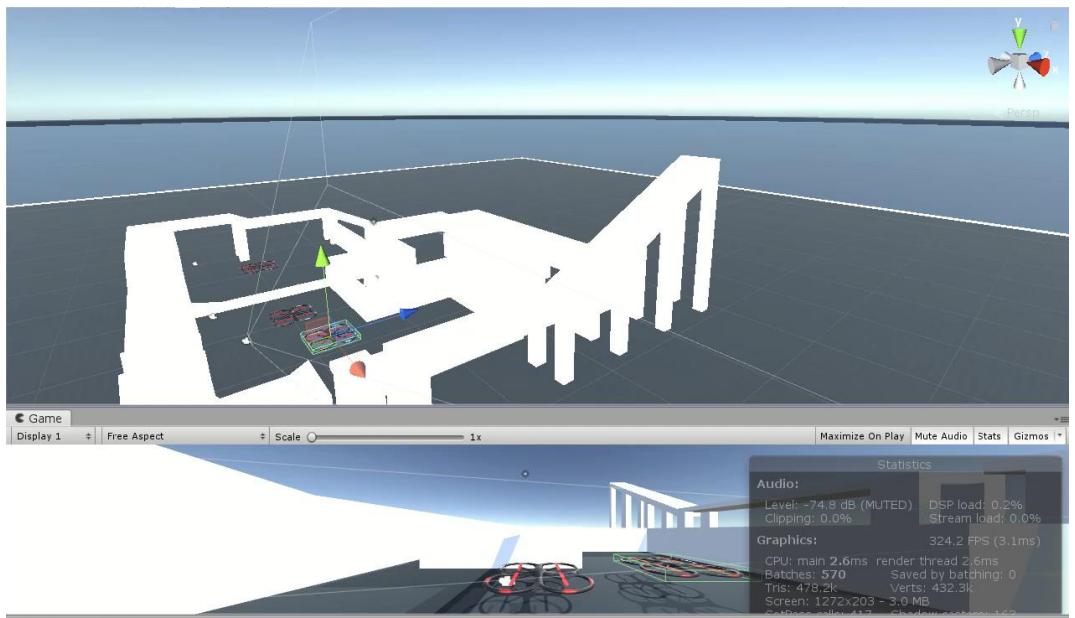


आपके पास कोई हार्डवेयर
नहीं है

We don't have hardware

यदि रोबोट बनाना संभव नहीं है,
तो क्या हम सिमुलेशन में डिजिटल
रोबोट बना सकते हैं?

if we cannot make physical robots, can we make digital robots in simulation?



कौशल Skills



Simulation



Experimentation



Economy



Decision Theory



Strategy

Social Network Platform

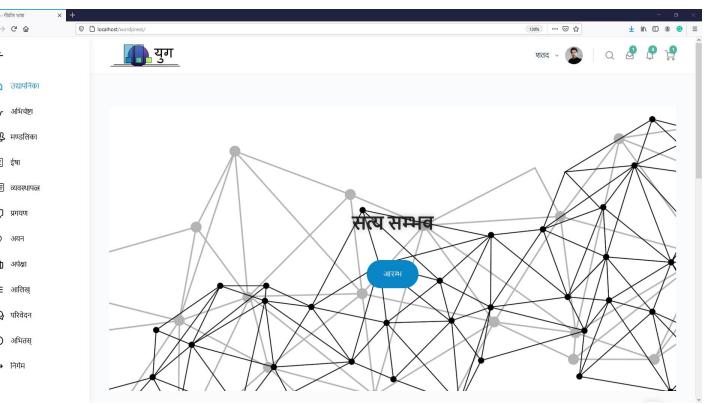
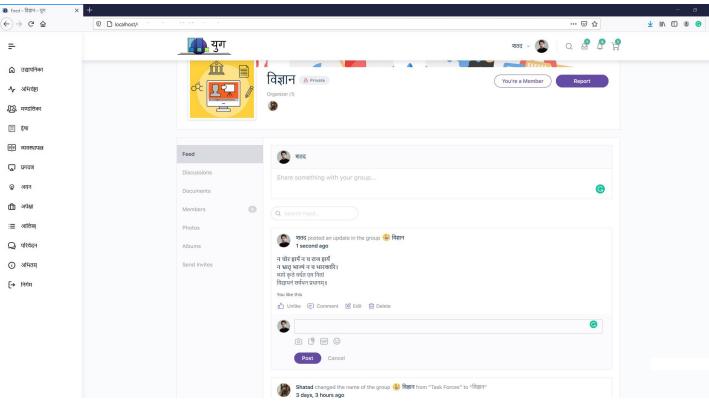
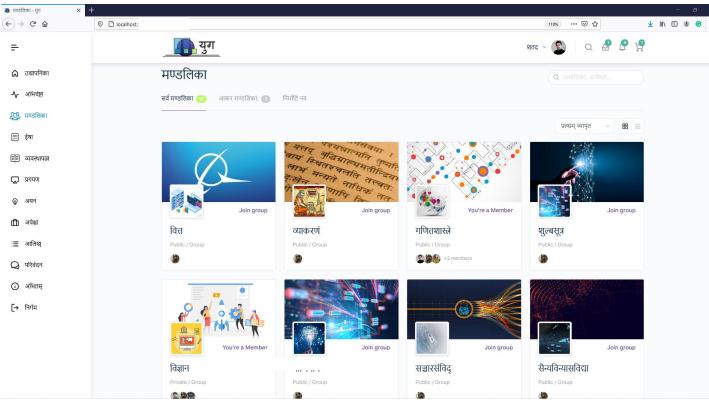
Language

Long Term Project



क्या आप सोशल नेटवर्क प्लेटफॉर्म
पर हैं?

are you on social network
platforms?



संस्कृतम्

क्या हम दुनिया का पहला
संस्कृत सोशल नेटवर्क प्लेटफॉर्म
बना सकते हैं?

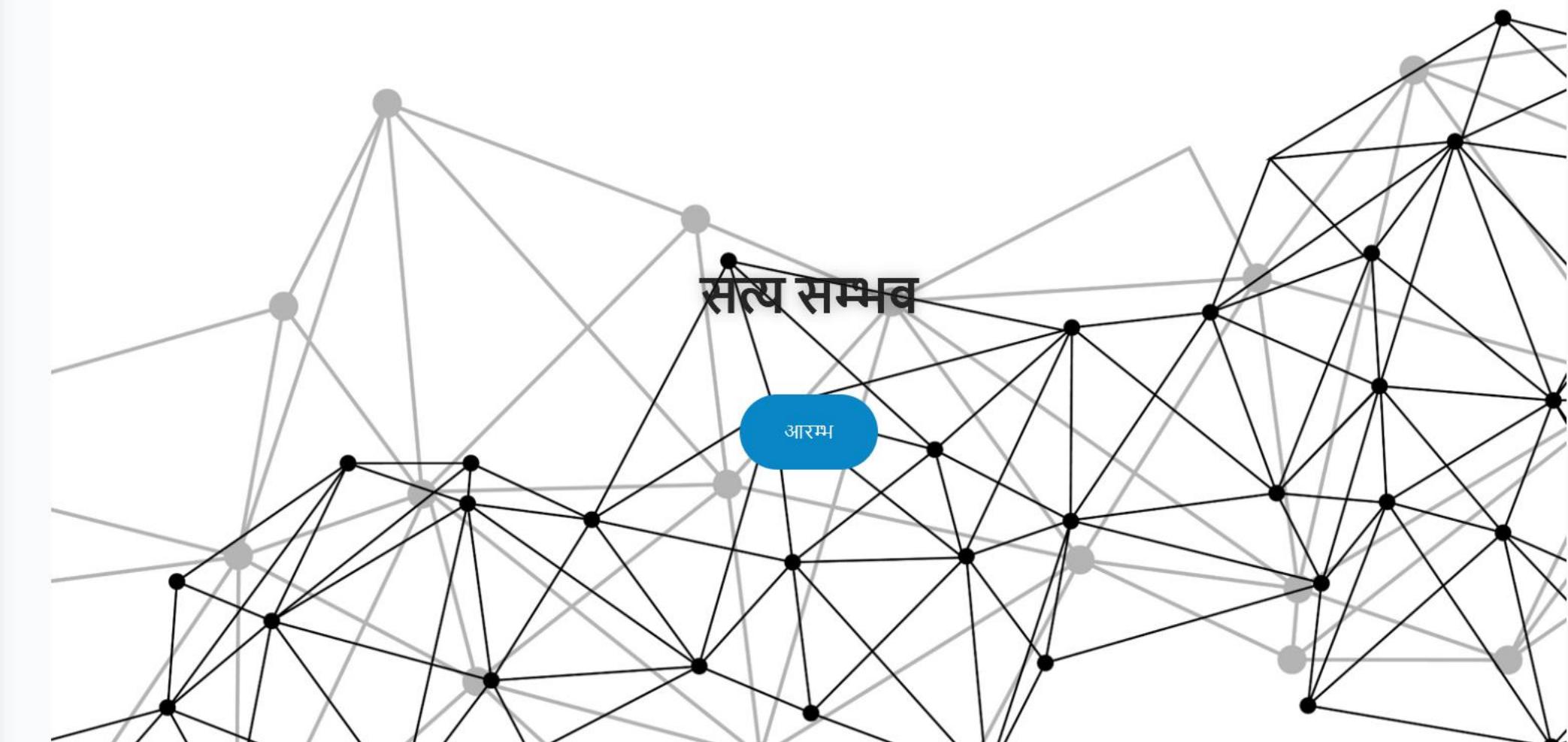
can we make world's first Sanskrit social network platform



शतद 



- 🏠 उद्यापानेका
 - ↗ अभिवृत्ति
 - ➡ मण्डलिका
 - ☰ इंषा
 - ▤ व्यवस्थापत्र
 - ▣ प्रगयण
 - ▢ अयन
 - ▢ अपेक्षा
 - ☰ आलिख्
 - ▢ परिवेदन
 - ⓘ अभितस्
 - ➡ निर्गम





विज्ञान

Private

Organizer (1)



शतद



You're a Member

Report

Feed

Discussions

Documents

Members



शतद

Share something with your group...



Search Feed...

Photos

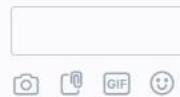
Albums

Send Invites

शतद posted an update in the group विज्ञान
1 second ago

न चोर हार्य न च राज हार्य
न भातु भाव्यं न च भारकारि।
व्यये कृते वर्धत एव नियं
विद्याधनं सर्वधन प्रधानम्॥

You like this

[Unlike](#) [Comment](#) [Edit](#) [Delete](#)

Post

Cancel

Shatad changed the name of the group विज्ञान from "Task Forces" to "विज्ञान"
3 days, 3 hours ago

कौशल

Skills



Computation



Analysis



Articulation



Marketing



Sales

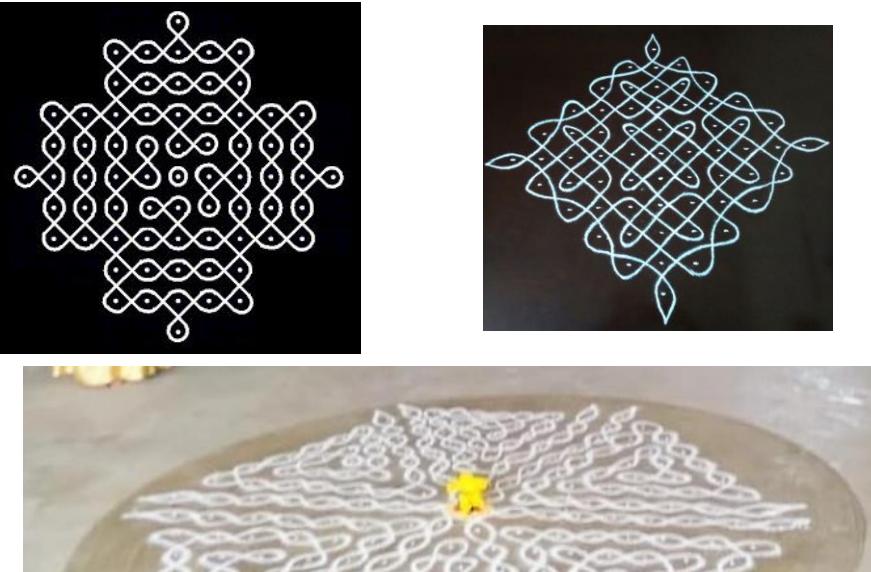
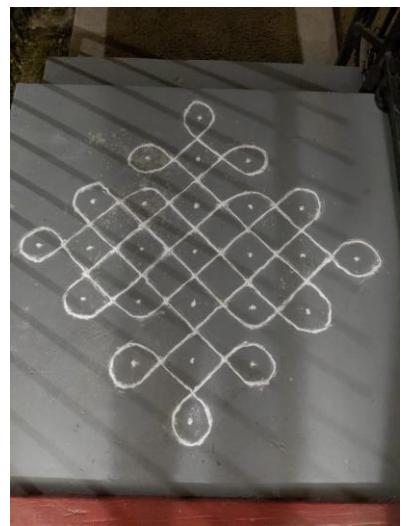
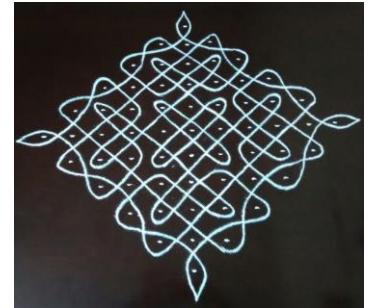
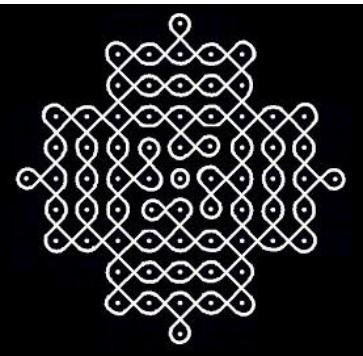
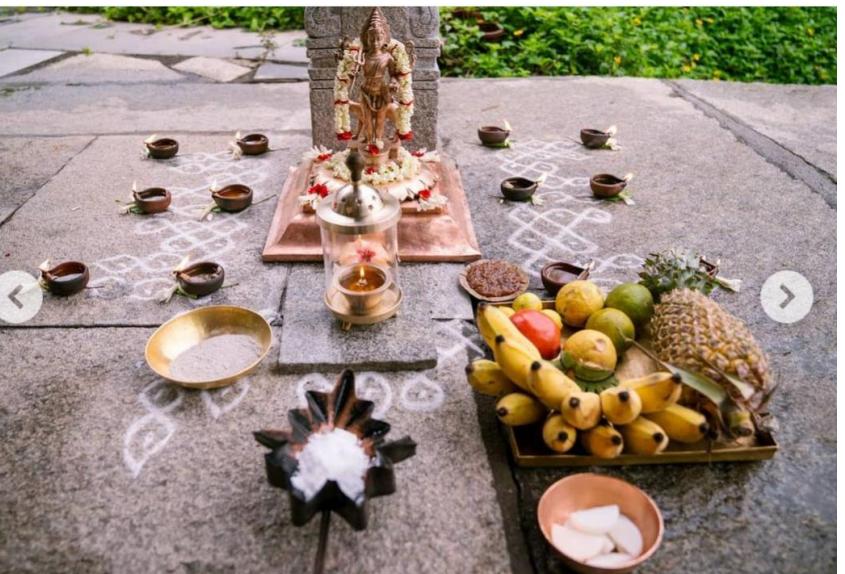


Security

Systems for Art Forms

Long Term Project

காலம் Kolam கோலம் முரு



कोलम् Kolam

चावल का आटा rice
flour

गणितीय Mathematical
patterns

प्रत्येक डिजाइन का
एक अलग अर्थ होता
है

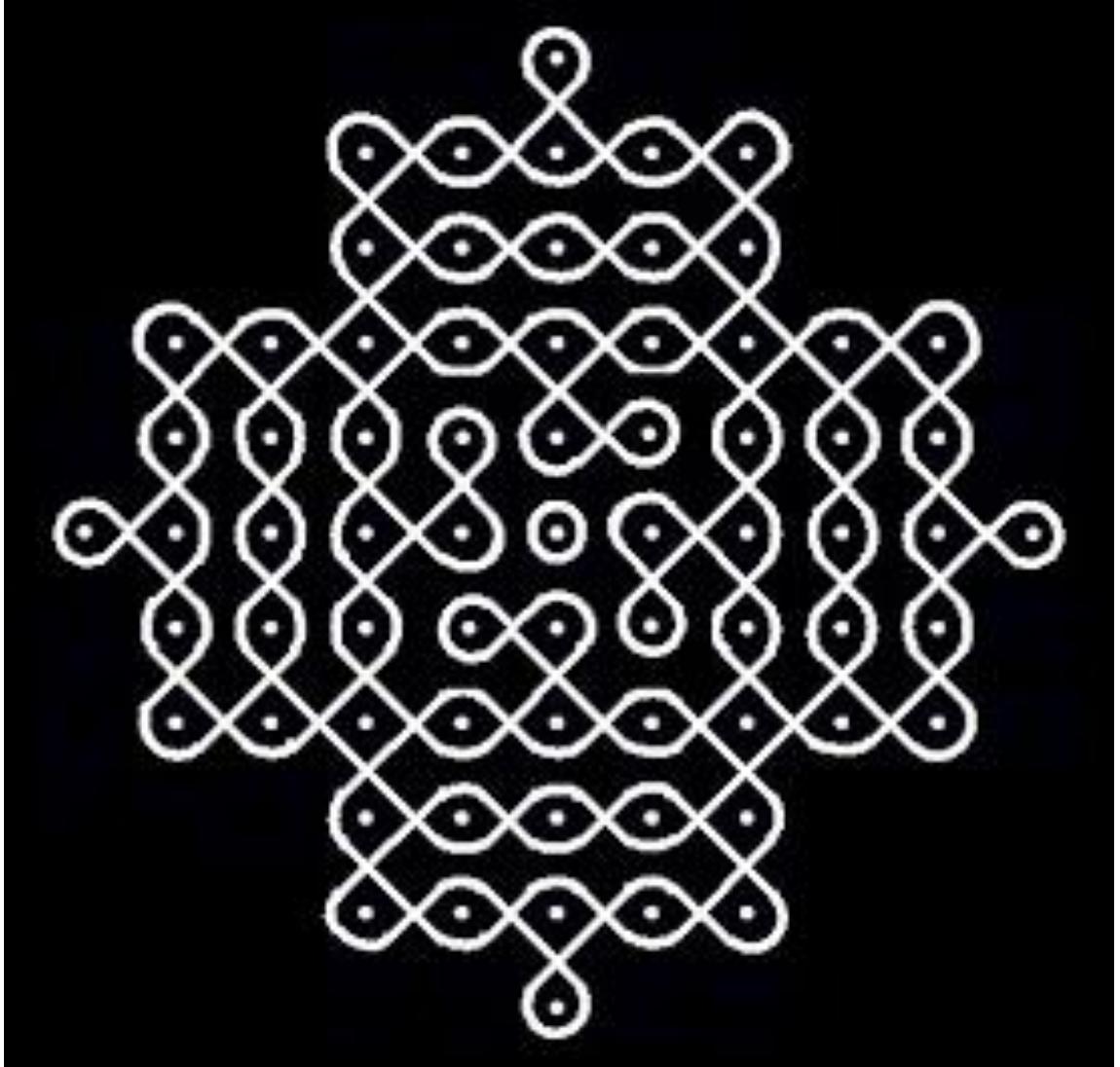
Each design has a
different meaning

अलग-अलग मौकों के
लिए अलग-अलग
डिजाइन

Different designs for
different occasions

कोळम् Kolam

- बहुत से लोग इसके बारे में नहीं जानते लेकिन सीखने में रुचि रखते हैं Many people don't know about it but interested in learning
- कुछ लोग इसके बारे में जानते हैं Some people know about it
- क्या हम इसका दस्तावेजीकरण कर सकते हैं? और क्या हम लोगों को जोड़ सकते हैं? Can we document it? And can we connect people?







समय के साथ कई कलाएँ विलुप्त हो रही हैं

many artforms are dying

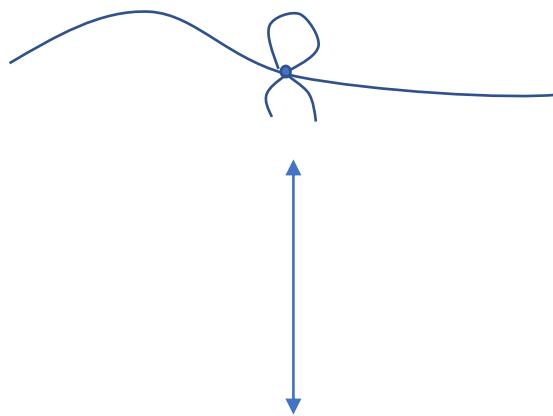
पुरानी कला और नई पीढ़ी के बीच की कड़ी ग्रामीण बुजुर्गों की है
rural elderlyies are the link between old arts and new generation



Rural Elderly And
Their Quest For Health



Edited by Abhijeet Jadhav
Foreword by Deanna Jejeebhoy



\$\$\$



विलुप्त हो रही कला के बारे में जानने वाले लोग वृद्ध हैं और ग्रामीण इलाकों में रहते हैं People who know about dying arts are old and live in rural parts

ये वही लोग हैं जिन्हें सामाजिक ध्यान देने की जरूरत है
These are the same people who need societal attentions

क्या इस तरह के सिस्टम का व्यावसायीकरण किया जा सकता है Can the Systems like these be commercialized

पूँजी जुटाना और जरूरतमंदों की मदद करना to raise capital and help needy

कौशल Skills



Communication



Culture



Data analysis



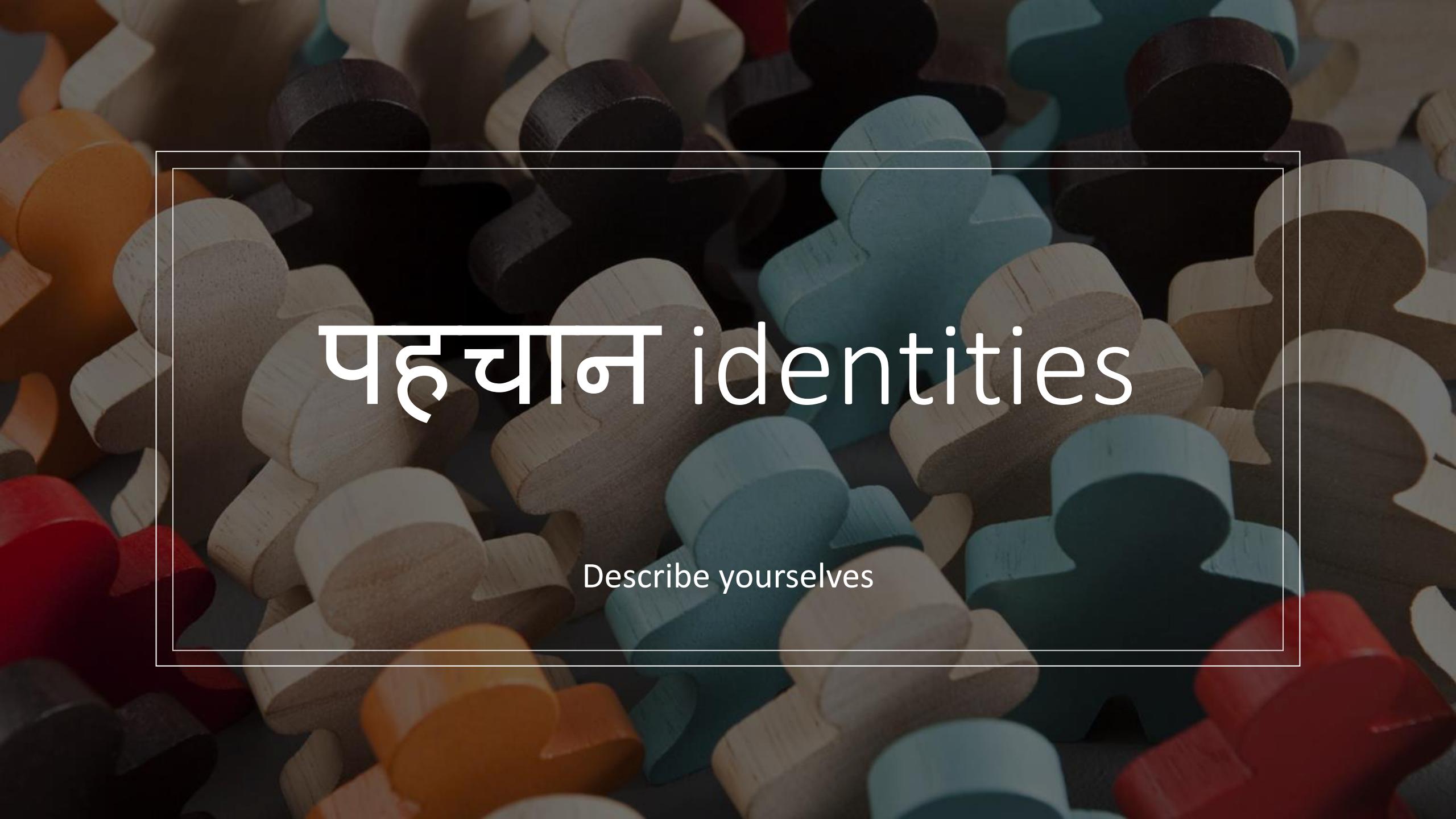
Stakeholder Need Analysis



Value Networks

Sports Event Management System

Long Term Project



पहचान identities

Describe yourselves

Occupation

Religion

Cast

Race

Skin color

Region

Money



सीमित पहचान को पार करने के साधन के रूप में खेल

Sports as a means to go beyond limited identities



खेलों को कैसे बढ़ावा दें

How to promote
outdoor games

- हर जगह कैमरे Cameras every where
- कार्यक्रम व्यवस्थापन Event management
- समन्वयित प्रसारण Coordinated Broadcasting

कौशल Skills



Project management



Conflict Resolution



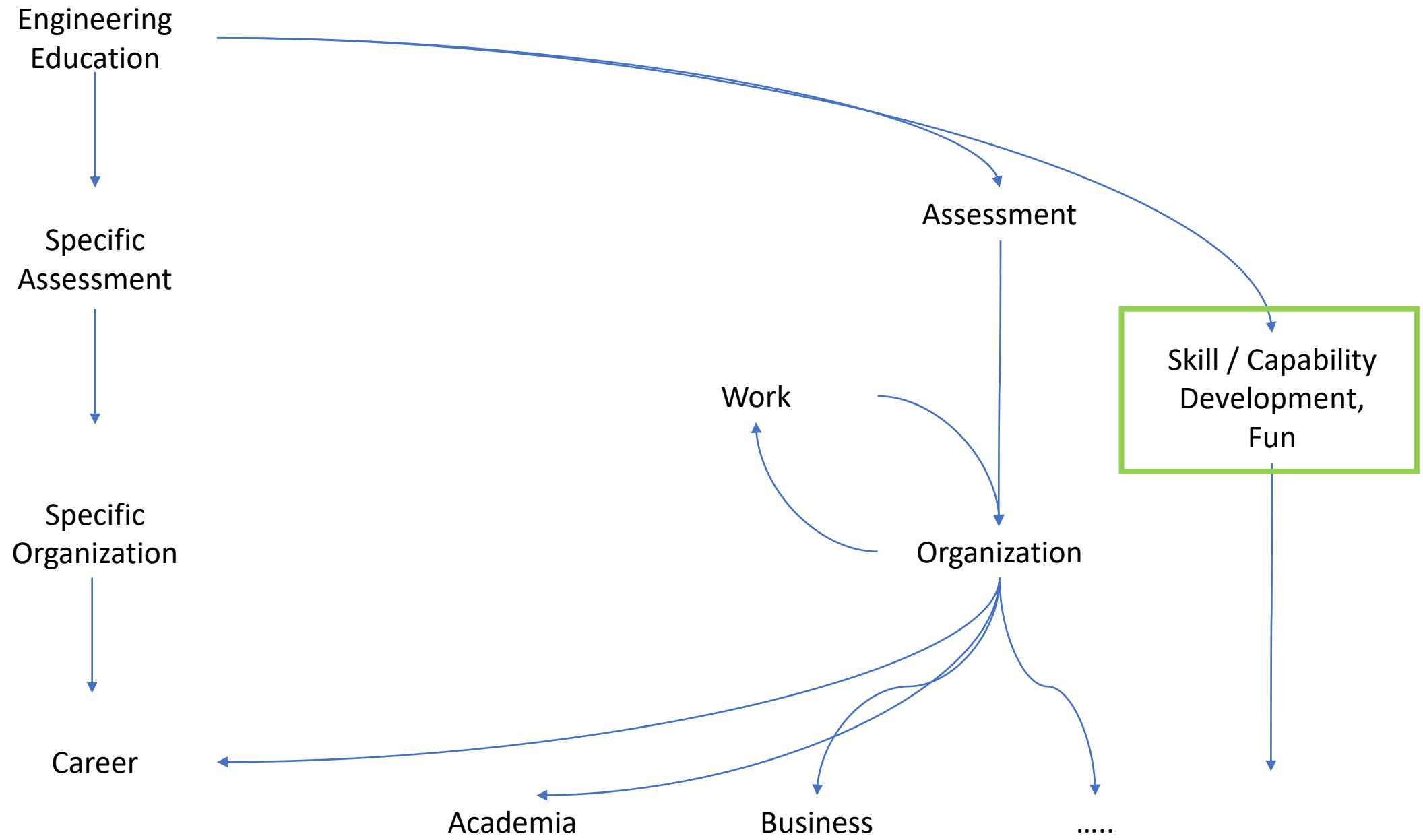
Digitization

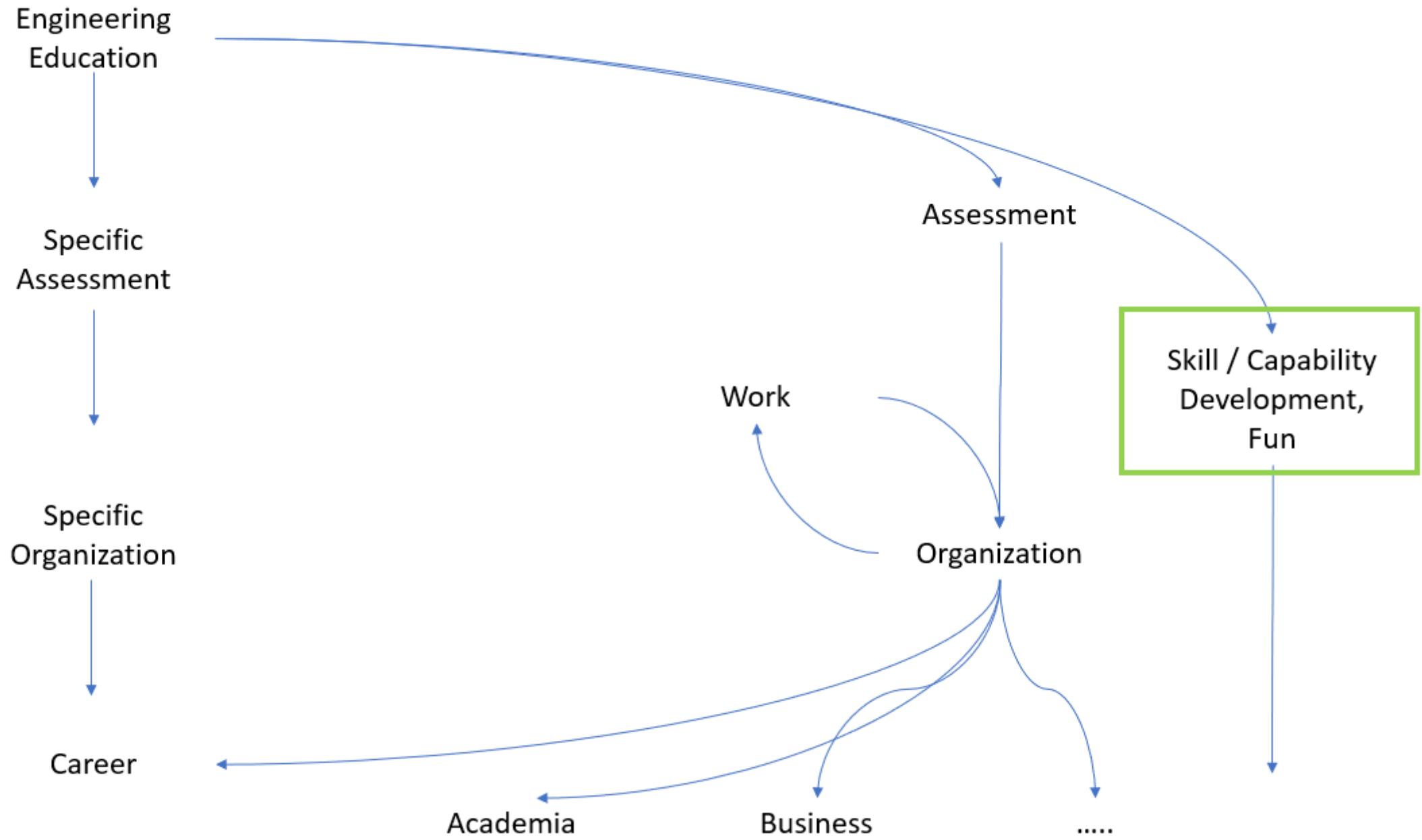


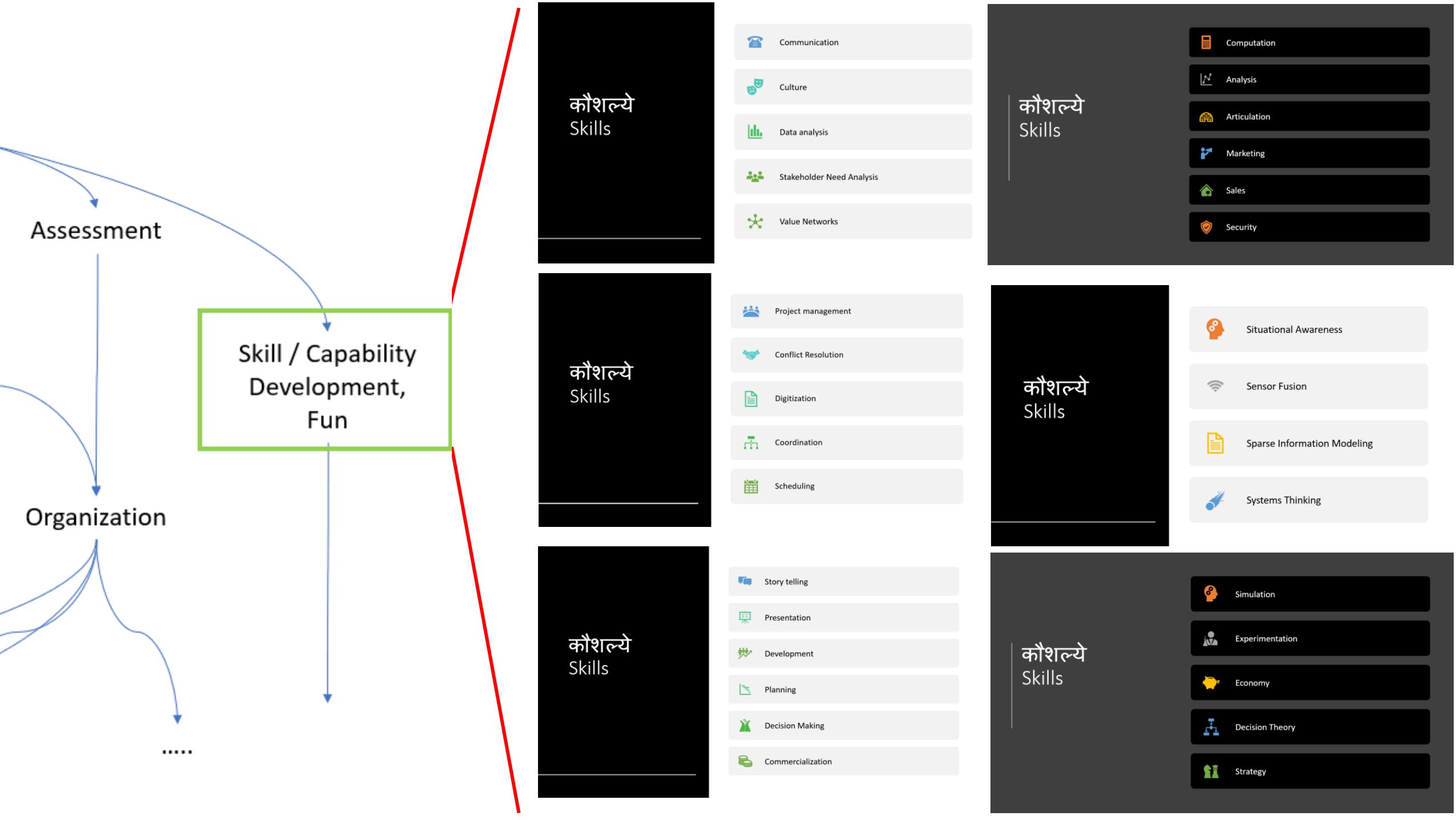
Coordination



Scheduling







कौशल्ये Skills

- Communication
- Culture
- Data analysis
- Stakeholder Need Analysis
- Value Networks

कौशल्ये Skills

- Computation
- Analysis
- Articulation
- Marketing
- Sales
- Security

कौशल्ये Skills

- Project management
- Conflict Resolution
- Digitization
- Coordination
- Scheduling

कौशल्ये Skills

- Situational Awareness
- Sensor Fusion
- Sparse Information Modeling
- Systems Thinking

कौशल्ये Skills

- Story telling
- Presentation
- Development
- Planning
- Decision Making
- Commercialization

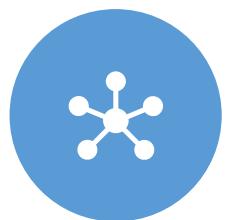
कौशल्ये Skills

- Simulation
- Experimentation
- Economy
- Decision Theory
- Strategy

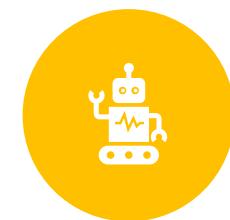
NATURAL FIBER PROJECT



GAMES AND ANIMATIONS FOR ITIHASA



ROBOTS FOR SOCIAL PROBLEMS



SANSKRIT SOCIAL NETWORK PLATFORM



SYSTEMS FOR ART FORMS



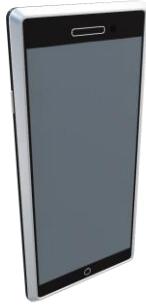
SPORTS EVENT MANAGEMENT SYSTEM

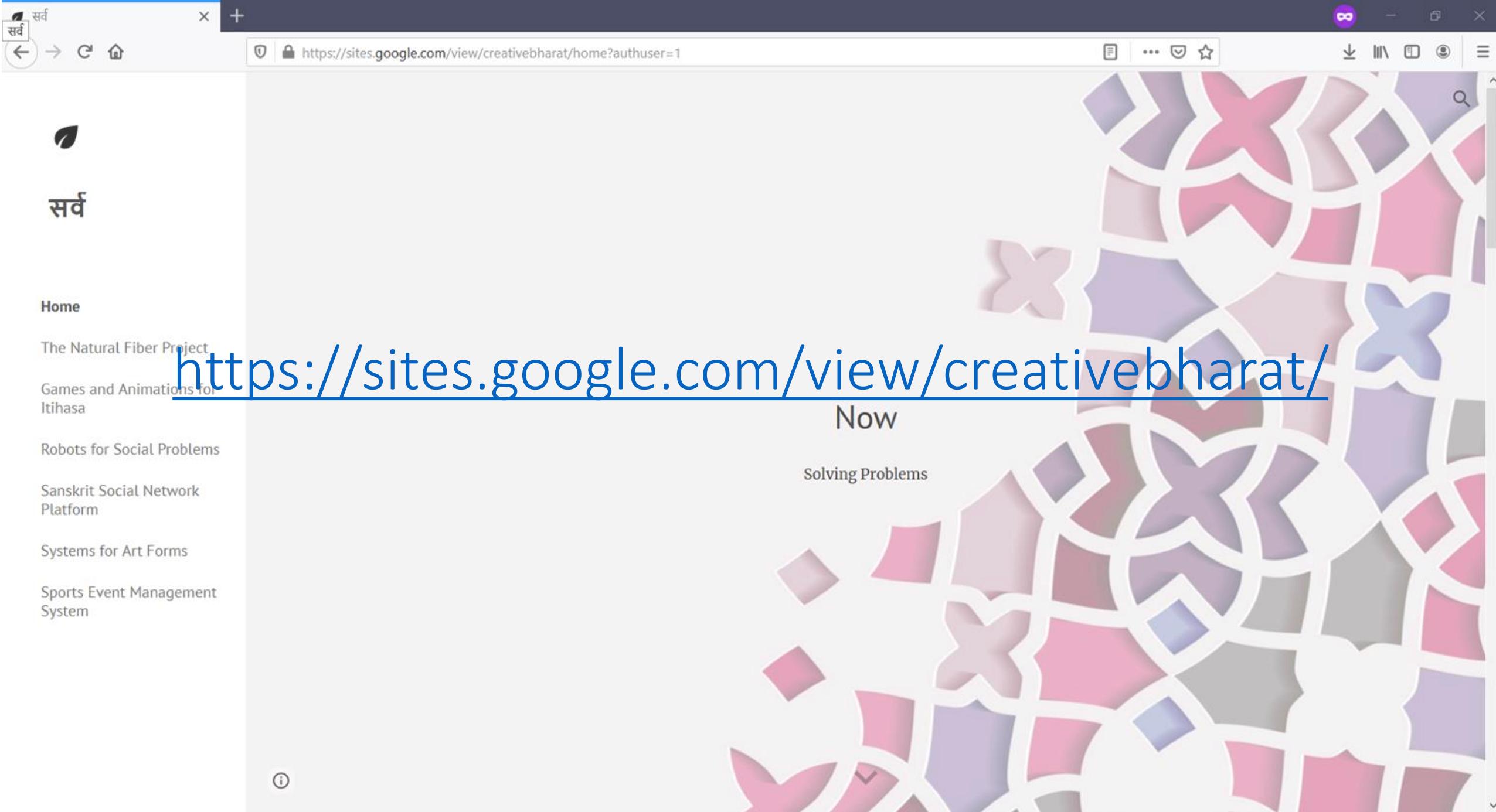


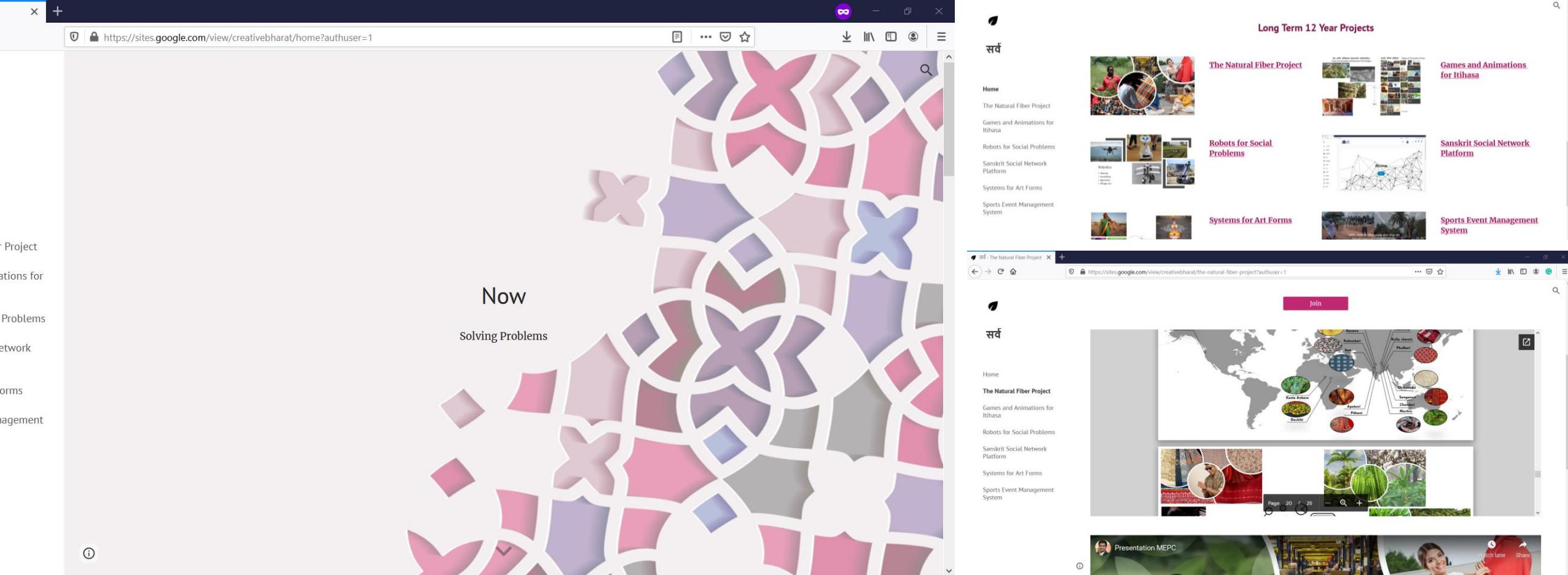
जानकारी का उपयोग Content Consumption



मूल्य निर्माता Value Creation







Webinar

Download Presentation

Questions?

Objective of the initiative

Provide participants an opportunity to work on interesting projects. All the projects have aspects of science, technology, business, strategy, sociology, economics, and politics. Participants can join one or more projects based on their interests. Please click on the respective link to know more about the projects. These are long-term projects, so we will move slowly, but we would like to convey that the projects will become challenging as we move ahead. Participants can join or drop anytime during the project.

The projects allow participants an opportunity to create something for their community, solve problems, and build skills and competencies. In today's world, where more and more focus is getting shifted to content consumption on social media, this could be a medium for you to create something new (content creation).

All members working on the initiative and projects are encouraged to work on projects in their free time as a fun activity. Participant who wants to contribute could be from any age group and educational background. Let's crowdsource innovation!

Home
The Natural Fiber Project
Games and Animations for Itihasa
Robots for Social Problems
Sanskrit Social Network Platform
Systems for Art Forms
Sports Event Management System

Long Term 12 Year Projects

सर्व

Home
The Natural Fiber Project
Games and Animations for Itihasa
Robots for Social Problems
Sanskrit Social Network Platform
Systems for Art Forms
Sports Event Management System

The Natural Fiber Project

Games and Animations for Itihasa

Robots for Social Problems

Sanskrit Social Network Platform

Systems for Art Forms

Sports Event Management System

Join

A world map showing global distribution of various fiber projects, including Kotte Akshaya, Pithasi, and others. Below the map are images of people working with fiber and a presentation slide titled 'Presentation MEPC'.

Robots for Social Problem Solving

- rules
- # moderator-only

+ INFORMATION

- # actions
- # announcements
- # resources

+ TEXT CHANNELS

- # general
- # meeting-plans
- # off-topic

+ VOICE CHANNELS

- Lounge
- Meeting Room
- Shatad

+ PARTICIPANT INPUTS

- # chess_ipl 32
- # rjoshi-45

Voice Connected
Meeting Room / Robots for ...

Video Screen

Shatad #!

general

Welcome to #general!

This is the start of the #general channel.

[Edit Channel](#)

→ Welcome, **Uday kulkarni**. We hope you brought pizza. 05/13/2021

May 16, 2021

→ Good to see you, **Chess_Iplayd4**. 05/16/2021

→ ★TMR★DYNA★MΟ★ hopped into the server. 05/16/2021

May 17, 2021

→ Vishwesh Hanchate just slid into the server. 05/17/2021

May 18, 2021

Shatad 05/18/2021

Namaskaram!! (edited)



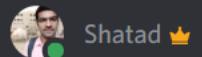
Message #general



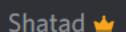
Search



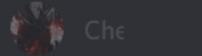
ONLINE — 1



Shatad



OFFLINE — 6

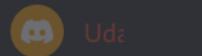


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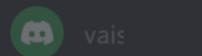


RJo



Uda

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Visl

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★TI

AMO★

Rationale

The role of technical institutes in giving technical and advisory services to the surrounding community need not be emphasized. It is desirable that each faculty member and student be involved in rendering services to community and economy. Moreover, as per Section (4) of the Act of this University, technical services to community, particularly the backward areas, is one of the basic objects of the University. In view of this, "Technical Project related to Community Services" has been included in the curriculum. This will ensure the participation of each student as well as faculty in this activity.

The weekly contact hours and the evaluation scheme for this project are as stated above. The nature of project work should be as given below in the course contents.

List of Practicals/Experiments/Assignments

The projects may be of varying nature such as a technical study/survey, design/development of a technology solution for an identified need, infusion/transfer of technology, etc. All this will be within the ambit of technology and expertise available within the University.

The student may form small groups, typically of 2 to 3 students, and carry out the project under the supervision of a faculty member.

Technical Project for Community Services

BTMEM611	Project 3	Technical Project for Community Services	0-0-4	2 Credits
----------	-----------	--	-------	-----------

Examination Scheme:

Continuous Assessment: 30 Marks
End Semester Exam: 20 Marks

Pre-Requisites:

None

Course Outcomes:

At the end of the course, students will be able to:

CO1	Visit nearby places to understand the problems of the community
CO2	Select one of the problems for the study, state the exact title of the project and define scope of the problem
CO3	Explain the motivation, objectives and scope of the project
CO4	Evaluate possible solutions of the problem
CO5	Design, produce, test and analyze the performance of product/system/process
CO6	Modify, improve the product/system/process



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