

# ABSTRACT, CONCRETE OR HYBRID PARTICIPATORY TOOLKITS

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## ABSTRACT

The paper describes the use of three-dimensional generative participatory toolkits for modelling different transportation device configurations in a participatory design activity. The activity was carried out with two different kinds of model kits viz. abstract and concrete in four different combinations 1) abstract-only, 2) concrete-only, 3) abstract-concrete and 4) concrete-abstract. The paper aims to enquire into different ways that these toolkits operate and attempts to highlight the significance of each type of toolkit for future design endeavours.

## INTRODUCTION

Participatory Design research at the early stages of the Design Process reveals deep tacit (Polanyi 1983) knowledge of users and issues surrounding the use of product, to inform and inspire designers in the conceptualization stage (Schuler 1993). A participatory design research typically is composed of: Participatory prototyping (to gather collective user knowledge) and Context mapping (for designers' use for concept generation). Bødker (2000), (Hekkert and VanDijk 2001), (Grudin and Pruitt 2002). The participatory prototyping through the use of three dimensional generative participatory toolkits is found increasingly significant for accessing aspirations and expectations for a new product design and development process (Sanders 2000). Through the use of 3D visualization toolkit, users elicit responses by making various configura-

tions of the modules and components of the toolkits. Careful design or selection of the participatory toolkit is important to ensure effective user response elicitation. Therefore, appropriate toolkit with naturalness of use, would be required to align with company's goals and objectives for a particular future product launch.

Author through the case study - '*Participatory research to design a new vehicle that bridges the huge price gap between two wheelers and cars in India*', illustrates four types of participatory toolkits viz. concrete, abstract, concrete-abstract hybrid and abstract-concrete hybrid for near-future, moderately-futuristic, futuristic and very futuristic design projects. The paper describes the use and implications of use of four different toolkits (abstract-only, concrete-only, abstract-concrete and concrete-abstract) in participatory prototyping sessions.

## CASE STUDY

Gap between cars and 2 wheelers in India: In 2008–2009, around 7.5 million two wheelers were sold in India and that accounted for 79% of the total vehicles sold (SIAM 2009). There are mainly compact cars and account for 60% of the total passenger car sales in India (Technology Roadmap 2006). The general price of two-wheelers in India range from 30,000INR–80,000INR and the cheapest car starts from 2,25,000 INR. There has been a long felt gap between a two-wheeler and the car. Over the years in India, two-wheeler manufacturers perceived this gap as an opportunity to launch expensive scooters & motorcycles and the car manufacturers with stripped down cars, both with a limited success. BRIDGING THE GAP

There is an opportunity to design a vehicle that would bridge gap between cars and two-wheelers in India. But, in the increasingly dynamic, diverse and complex environments like India, the challenge to innovate and develop new personal transport vehicles demands a deep knowledge of the users and issues surrounding the use of personal transport products. It has become increasingly important to understand people's aspirations and expectations and to utilize these insights in the vehicle design undertaking. Therefore participatory approach is adapted in this case study to get deeper user insights for

3	Mohan	See, in Rickshaws, two people can sit easily
41	Devekar	Abhi 2 wheeler hai par chaar log baith jaate us mein.. <i>In the two wheelers(scooters and motorcycles) 4 people manage to sit...</i>
82	Mohan	two seater hai...abhi close kar sakte hain...doosra kidhar hai...?bas..close ho gaya...ok..? <i>Two wheelers...you can close...where is the other component...see it is closed now...Ok..?</i>
91	Devekar	3 wheeler hai na.. <i>This is 3 wheeler..</i>
92	Mohan	then what you can do, you can make jeep after this..same with four.. <i>(Jeep as brand)</i>
115	Ruchin	yeha achcha hai...par yeh car nahi hai.. <i>This is nice...but this is not a car..</i>
121	Nancy	gypsey car hai.. <i>This is a Gypsey car (Gypsey as brand)</i>
123	Ruchin	yeh bada adventure type vehicle lagta hai.. <i>This looks like adventure type of vehicle..</i>
126	Mohan	yeh mahindra & mahindra jeep hai...abhi latest.. jungle mein jata hai na... ok...ho gaya...abhi chota jeep bhi bana sakta hai.. <i>This is Mahindra and Mahindra jeep...this is the latest...it can go in the jungle...ok...it is done...now we can make small jeep (Jeep as brand)..</i>
153	Mohan	4w jeep ho gaya.. <i>This is 4 wheeler Jeep (Jeep as brand)..</i>
154	Mohan	car jaisa hona chahiye.. <i>It should be like a car...</i>
210	Devekar	what I find...once I travelled in this veh. WAGON R...bahut chota space hai...comfortable nahi hai...because of packing and material...I prefer it should be less <i>what I find...once I travelled in this veh. WAGON R...space is too small...not comfortable...because of packing and materials...I prefer..it should be less(Wagon R as brand)</i>

Transcript Excerpt 1 – Participatory Prototyping 1: Concrete only.

near future, moderately futuristic, futuristic and very futuristic designs.

**PARTICIPATORY PROTOTYPING**

Participatory prototyping for the case study was conducted with four groups of user participants. Each group of users was diverse in terms of age and socio-economic status. Each group was given different toolkit. Prototyping was moderated by the author. Participants were asked to collectively design a vehicle that can potentially bridge gap between two wheelers and cars in India through the toolkits provided.

**PARTICIPATORY PROTOTYPING 1: CONCRETE ONLY**

**CONCRETE PARTICIPATORY TOOLKIT**  
When all the elements viz. wheels, chassis/body, passenger and luggage are replicas of actual product elements. It has a transparent base frame with slots to place wheels. Various vehicle configurations like Two-Wheeler, Three-Wheeler, and Four-wheeler can

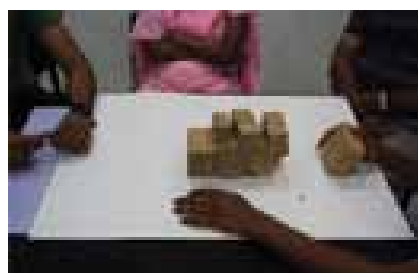


Fig 2: Abstract Participatory Toolkit



Fig 1: Concrete Participatory Toolkit

finitive responses in its natural use.

**APPLICATION**

This form of toolkit can be used for near future design endeavours like re-designing or re-styling existing products.

**PARTICIPATORY PROTOTYPING 2:**

**ABSTRACT ONLY  
ABSTRACT TOOLKIT**

When all the elements viz. wheels, chassis/body, passenger and luggage are abstract or indicative in their appearance. This allows users to devise any form of vehicle product. The blocks could magnetically join with the help of button magnets. Thus gives users easiness to quickly join and visualise.

**APPROACH**

The start is not defined and the kit modules are not well defined. This kind of toolkit allows users to choose their own start and also allows them to interpret results in their own way. Solutions that emerged were more systems oriented and very futuristic. Keywords were not familiar and

be made by use of toolkit.

**PROTOTYPING APPROACH**

Intent of step by step prototyping is explored in this prototyping activity. It would normally start from the wheels, as wheels need to go into slots followed by body/chassis, passengers etc. Key words used in the conversation were normally familiar and had the precedence (Refer Transcript Excerpt 1). These key words were names of vehicle brands, wheel configurations, features, type of vehicles etc. This form of toolkit helps elicits more concrete and de-

22	Touseef	Us lane mein... gaadi ki speed girne ..suppose sab gaadi 80 ki speed se ja rahi hain aur tum 60 se ja rahi hain ...toh kuch announcement ya indication hona chahiye... tum left mein aa jao <i>In the lane...if vehicle speed drops...suppose all vehicles are running at 80kmph and you are running at 6kmph...then some announcement or indication is required...so that you could be on left side</i>
29	Anupama	We can take an example of fan and mixer..abhi hum housewives... ghar ka kaam karte hain to wohi speed mein masala banake hain na... abhi zyada soft chahiye to jyada speed..thoda medium chahiye to medium...to buttons ho to new logon ko problem nai honi chahiye.. ye mein mereliye bol rahi hun ... <i>We can take an example of fan and mixer..see, I am a housewife...the way I do masala for cooking need I should be able to drive the cars also similarly...three buttons for soft, moderate and coarsly masala...So for new people..just few buttons to drive car...so that there is no problem..</i>
38	Yatin	mein aisa soch raha hun ki ye ek rahega individual... yeh yeh ek aur rahega ..aur agar tumhe ye join karna hai...you can just family ke liye ...connecter ..se connect kar diya ...yeh join hoke ...join ho gaya...to family ki family ja sakti hai .... <i>I am thinking that there is this one individual...there is one more..and you have to join it...so for a family ...you can just connect with the connecter ...then whole family can move...</i>
99	Rajan	mera idea hai ki height mein zyada hona chahiye to upar bhi ...so sakte hain to space zyada ki zaroor nahi <i>My idea is that car should be high so that ...in the upper berth one can sleep also...</i>
100	Yatin	to ek bada ... sa engine isko wheels ... bade bade .yeh main, mera dost yahan pe khade hain....to mera vehicle hai wo isko chipak jayega...ye chipak gaya ...aur gaya <i>So one big engine...and its wheels...big ones...see if my friend is standing here...and his vehicle can just stic to my vehicle...see... like this...</i>
121	Touseef	ye samaj le apna train type ho gaya badasa engine... aur yeh battery powered chote chote vehicles hai...kanjur tak aa gaye , kanjur se IIT aana hai to apni battery vehicle se aa jao...kanjur se battery itni charge rahegi ki idhar aa jayega <i>Suppose...this is our train type vehicle...and these are small battery powered vehicles...we came to Kanjurmarg in this big vehicle...From Kanjurmarg to IIT we can use these small battery operated vehicles...you will have enough charge to reach here...</i>

Transcript Excerpt 2 – Participatory Prototyping 2: Abstract only



Fig 3: Concrete-Abstract Hybrid Participatory Toolkit.

mostly had no precedents. These keywords were about modularity, multilevel design, sleeper berths, touch-button controls etc (Refer Transcript Excerpt 2). This form of toolkit helps elicits more abstract responses in its natural use.

**APPLICATION**

These responses through this kind of method may be used for very futuristic design projects where thoughts through actions flow freely and can take any direction through the use of any module of the toolkit.

**PARTICIPATORY PROTOTYPING 3: CONCRETE-ABSTRACT (HYBRID) CONCRETE-ABSTRACT (HYBRID) TOOLKIT**

When the artificial world is concrete and man world is abstract. In this case artificial world like base plate and elements of wheels and body are from concrete toolkit and man world like passengers and luggage is from abstract toolkit. Vehicle configurations begin by placing wheels in the slots and then manipulation with abstract and concrete elements is done.

**APPROACH**

Dual way is intended to regulate start

15	Patkar	Advantage over existing bike or...
...		
16	Laxmi	Two wheeler which is covered
...		
18	Laxmi	Three wheeler to personal... wheel ...mage....boots space..You must take a rickshaw to the station .... <i>Three wheeler for personal use...in front there should be bootspace...you should be able to take it to Railway station...</i>
...		
32	Laxmi	Two wheeler where three people can sit comfortably
...		
38	Rahul	lots of accidents in Bombay...regular accidents
...		
51	Rishi	This is one mono wheel, you an join one side by side or can joined together to be a family
...		
53	Rishi	Haan ..... Haan Two people are going in the same route A...B common location kitna to join karlo taki ka engine to doosra ka engine sir ketch rah hen <i>Yes.....two people are going in the same route...from A to B...They can join together and use one engine instead of both...</i>
...		

Prototyping 3: Concrete- Abstract

and then freely use abstract elements for man world to get more insights. Keywords were familiar and solution oriented towards current vehicle problems. These keywords were space efficiency, safety, storage space, vehicle footprint etc (Refer Transcript Excerpt 3). This form of toolkit helps elicit controlled abstraction in its natural use.

**APPLICATION**

The response generated through this kind of toolkit may be used for design of *moderately futuristic* projects where practicality is more important.

**PARTICIPATORY PROTOTYPING 4: ABSTRACT - CONCRETE (HYBRID) ABSTRACT - CONCRETE (HYBRID) TOOLKIT**

When the man world is concrete and artificial world is abstract. Abstract blocks of wheels & chassis/ body and concrete elements of passengers & lug-

gage were used.

**APPROACH**

This dual way is indented to first allow users to freely choose any starting point and then control it with concrete elements. Keywords emphasised on passengers, issues surrounding comfort & safety, accidents, personal mobility etc (Refer Transcript Excerpt 4). This form of toolkit yields more free-flow creativity with practicality in its natural use.

**APPLICATION**

The responses generated through this kind of toolkit may be used for *futuristic* design projects, where free flow creativity is more important

**CONCLUSION**

Depending on design lead time and business goals, four types of participatory toolkits viz. concrete, abstract, concrete-abstract hybrid and abstract-concrete hybrid can yield concepts for near-future, moderately-futuristic, futuristic and very futuristic design projects in prototyping activity. Step by Regulation is possible with concrete elements for more practical responses. When used with all types of toolkits,

3	Triveni	main kya soch rahi thi ki,two wheels hota , to yahan par ek pahinya aur laga kar.... To may be jagah kam lagegi our passengers bhi zyada ho sakte hai <i>What I was thinking was...in this two wheeler, if we have one more wheel...we can have better space and accommodate more passengers...</i>
...		
31	Vinay	ek aadmi ke liye ho sakta hai...magr space jyada lega... <i>This can be done for a single man but will take more space...</i>
...		
114	Devanuj	suppose I am not carrying four people.. I want to make it for one person... jab zaroorat nahin ho to the person ke liye kitna _kiya ja sakt ahi... kitna infrastructure... <i>Suppose I am not carrying four people...I want to make it for one person...whenever there is a need...what can be done and how much can be done in terms of infrastructure...</i>
...		
136	Vinay	detach ho sakte hain... only thing is ki... yeh space nahin hona chahiye <i>This can be detached...but the only thing is space should not reduce...</i>
...		
148	Devanuj	haan... yeh 1/4 length hai iska.. Aise lagate hain ... lets play with forms... iska counter part kidhar hai? <i>Yes...this is 1/4th of it length...lets play with forms... where is its counterpart?</i>
...		
173	Devanuj	one more thing ... chalo theek hain.... Can we have better protection against accidents? .. In some way?waise to yeh hota hi hai aapka crumple zone itna bada .... Lekin kya hai aadmi ko yahan biha sakte hai.. <i>One more thing...that's alright...can we have better protection against accidents? ..In some ways? This anyway heppens to be a big crumple zone...but can we make a person sit here...</i>
...		
214	Devanuj	4 log baith gaye to aaramse.. Plus storage space bhi aa gayee.. They can divide into woh... kya..

Prototyping 3: Concrete- Abstract



Fig 4: Abstract-Concrete Hybrid Participatory Toolkit.

designers/researchers can map possible directions for near-future, moderately-futuristic, futuristic and very futuristic design projects and further use in the design process.

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