



Instructional Game Design: Bridging the Gap Between Instructional Design and Game Design

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What we will talk about today...

- First, a little background
 - Who we are dealing with
 - Do we understand
 - Generational button gap
 - Game and learning characteristics
- Game production model
- ADDIE model
- ARCS model
- Dick & Carey model
- Where do we go from here?



First...

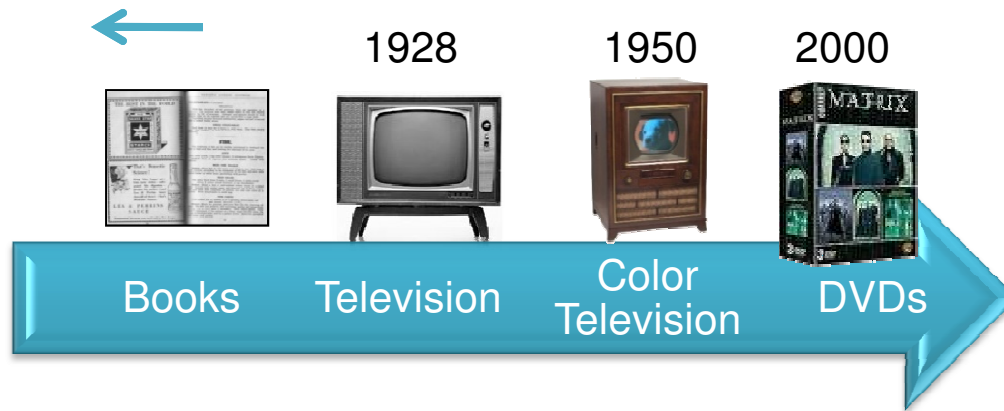
...a little bit of
background.

Who we are dealing with?



An arsenal of consumer electronics

Do we understand who we are dealing with?



The generational button gap

PS-3



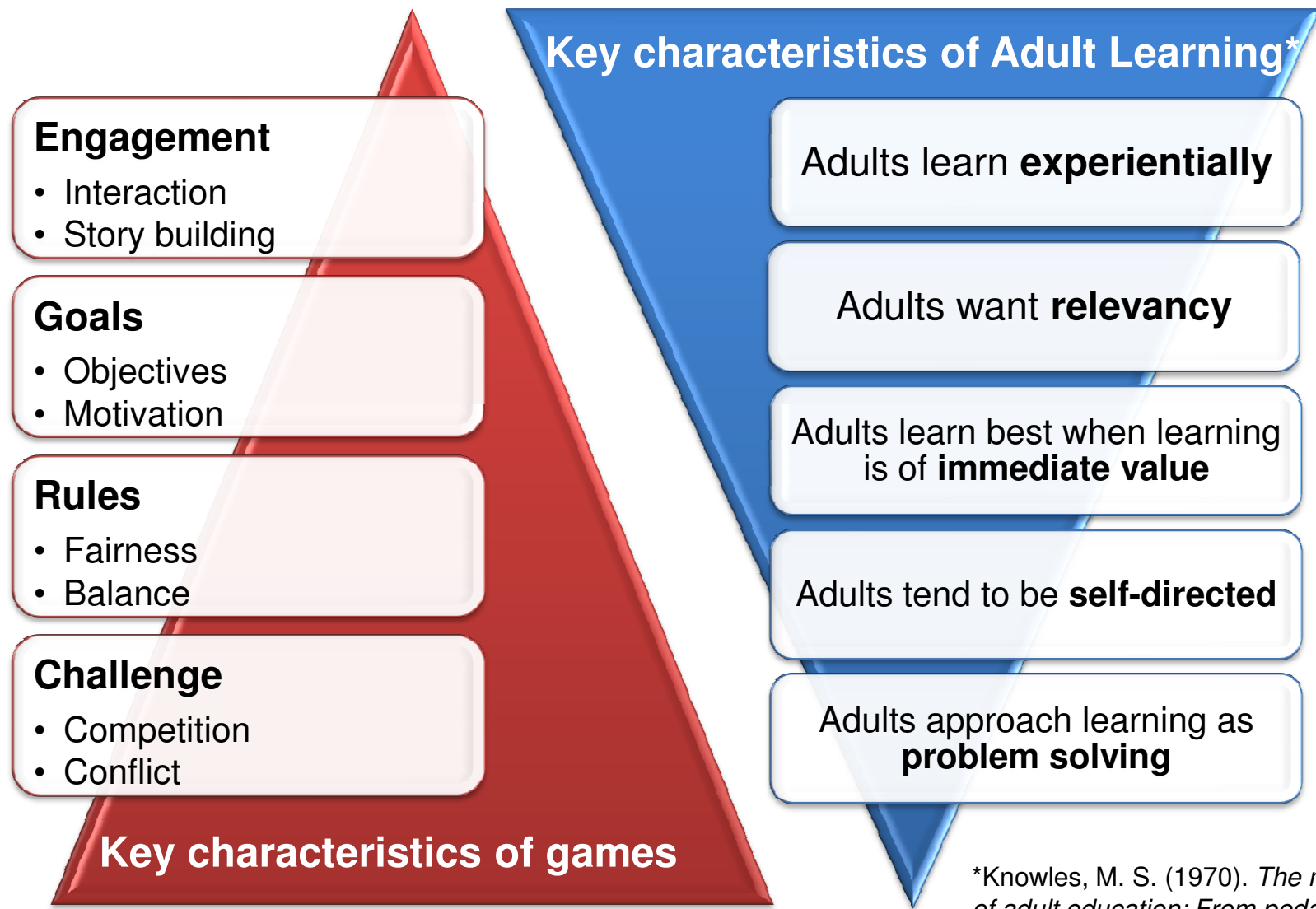
40 inputs



F-16

28 inputs

Game and learning characteristic are complimentary



*Knowles, M. S. (1970). *The modern practice of adult education: From pedagogy to andragogy*. Englewood Cliffs: Prentice Hall.

Continuum between games, serious games, and simulations

Game

- Engagement (gameplay/interactivity)
- Bounded by rules or sets of rules
- Challenges
- Goals, objectives, conflict, and competition
- Storytelling & narrative
- Outcomes and feedback

Serious Games

- Purpose other than entertainment
- Uses game technology and game design
- Presented as significant/realistic personal challenge
- Seeks sensory or physical authenticity; requiring a suspension of disbelief
- Fun, process oriented, skills based

Simulations

- Always explicit; real world ('authentic') significance, presented as realistic challenge
- More intellectual than physical; even social realism, may be time critical; 'intellectual authenticity'
- Outcome, product oriented; creating a product for future use


Two general categories of game-based learning are context independent and context dependent

Context Independent

- Fact/concept based
- Broad content areas
- Point-in-time decision making
- Non-specific method of dealing with unrelated content


Context Dependent

- Game “simulation”
- Suitable for content that requires visual context and representation
- Context is important for input to decision making
- Accomplishes higher level learning needs & objectives

 How long does it take the human eye to adapt to darkness?

A 30 seconds **B** 1 minute

C 5 minutes **D** 10 minutes

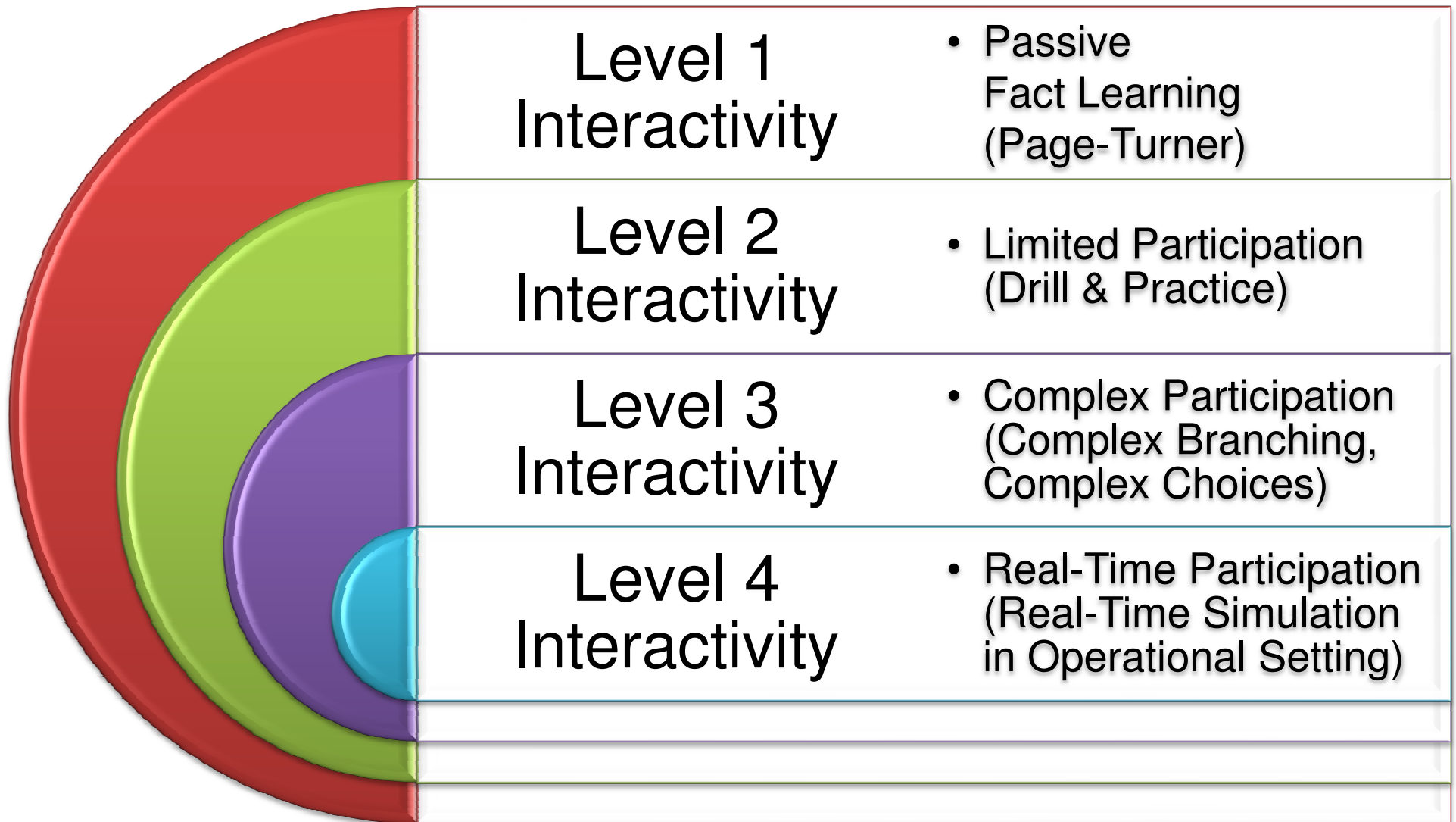




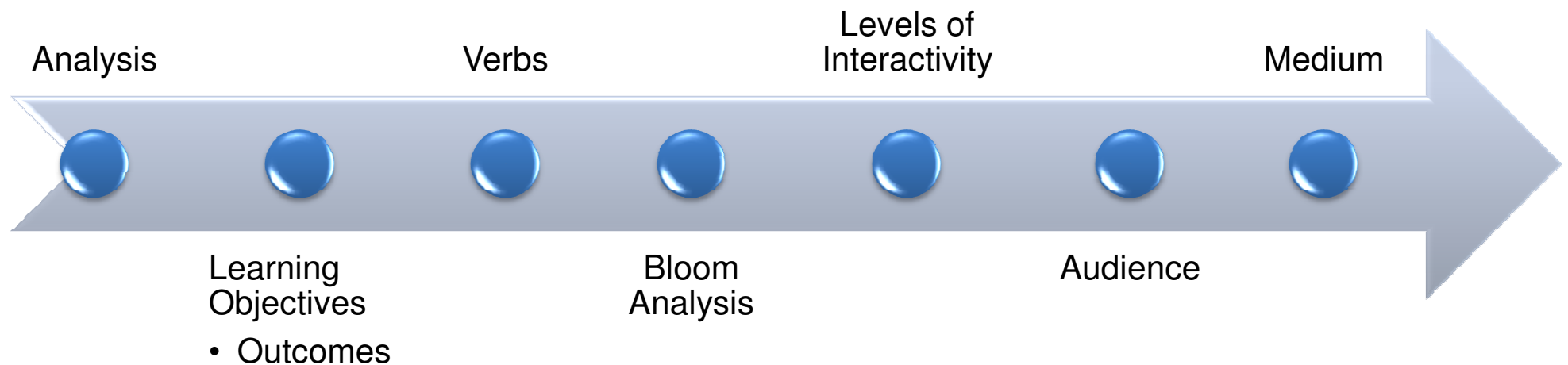
What are the “kinds” of learning? Bloom tells us...

Evaluation	•appraise, argue, assess, attach, choose compare, defend estimate, judge, predict, rate, core, select, support, value, evaluate
Synthesis	•arrange, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, write
Analysis	•analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, distinguish, examine, experiment, question
Application	•apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, write
Comprehension	•classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate
Knowledge	•arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce state

Levels of Interactivity



How you decide on a delivery medium (including game or simulation)

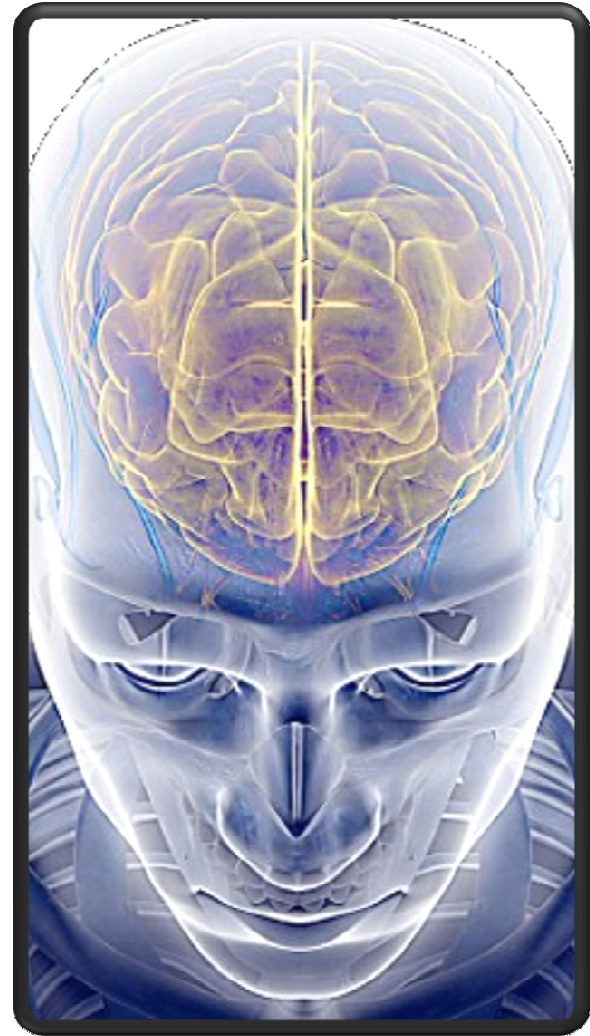


Various types of learning call for the use of various types of game-based approaches

Stage of Learning	Taxonomy with verbs	Learning activities	Game genres	Context Dependent
Evaluation	appraise, argue, assess, attach, choose compare, defend estimate, judge, predict, rate, core, select, support, value, evaluate	arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce state	Game show competition Sports games Flash card games	
Synthesis	arrange, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, set up, write	classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate	Open ended simulation Role-play games Adventure games Strategy games	
Analysis	analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, distinguish, examine, experiment, questions	apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use	Persistent state, Role-play games Adventure games Timed games	
Application	apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, write	analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, distinguish, examine, experiment, question	Strategy games Adventure games Mystery games	
Comprehension	classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate	arrange, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, set up, write	Strategy game Detective games Mystery games Simulation games	Context Independent
Knowledge	arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce state	appraise, argue, assess, attach, choose compare, defend estimate, judge, predict, rate, core, select, support, value,	Strategy games Role-play games Simulation games Mystery games	

Assessment is built-in

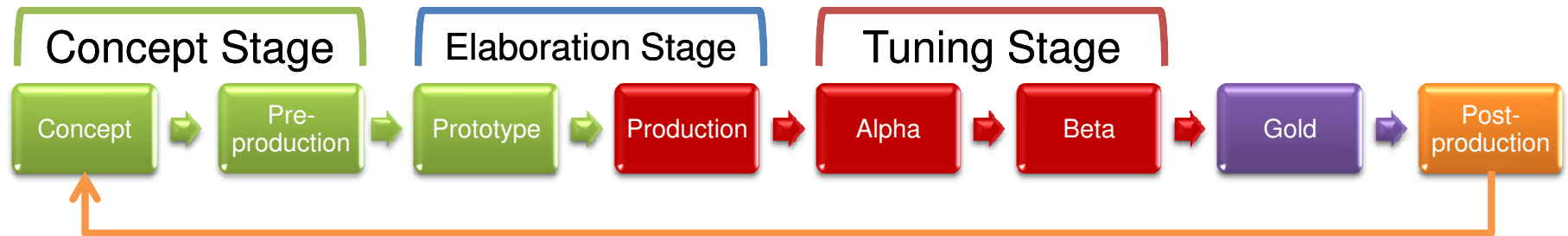
- Games/simulations collect data on every single thing you do
- Can be matched against learning objectives
- Assessment can many times be real-time feedback
- Good AI can provide immediate remediation



Now...

...for Game Design and
Production.

Game Design and Production model



•Concept Document

- Game Treatment Document
- Character Design Document
- World Design Document
- Storyboard
- Story and Level Progression Document
- Game Script
- Art Bible
- Audio Document
- Production Document

•Game Design Document

ALPHA TESTING

- Internal play testing
- Code complete

BETA TESTING

- External play testing
- Features complete

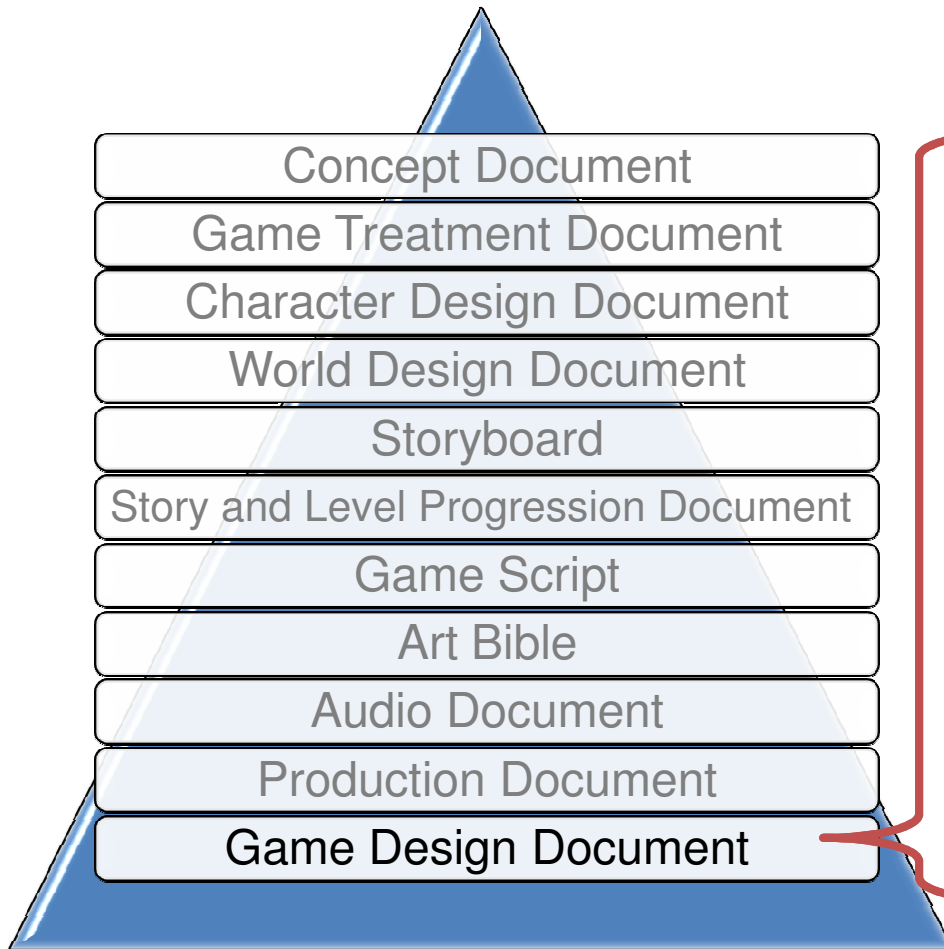
GOLD TESTING

- Full production copy disk
- Release to manufacturing

POST RELEASE

- Community building
- Patches
- Modding

Game Concept & Design



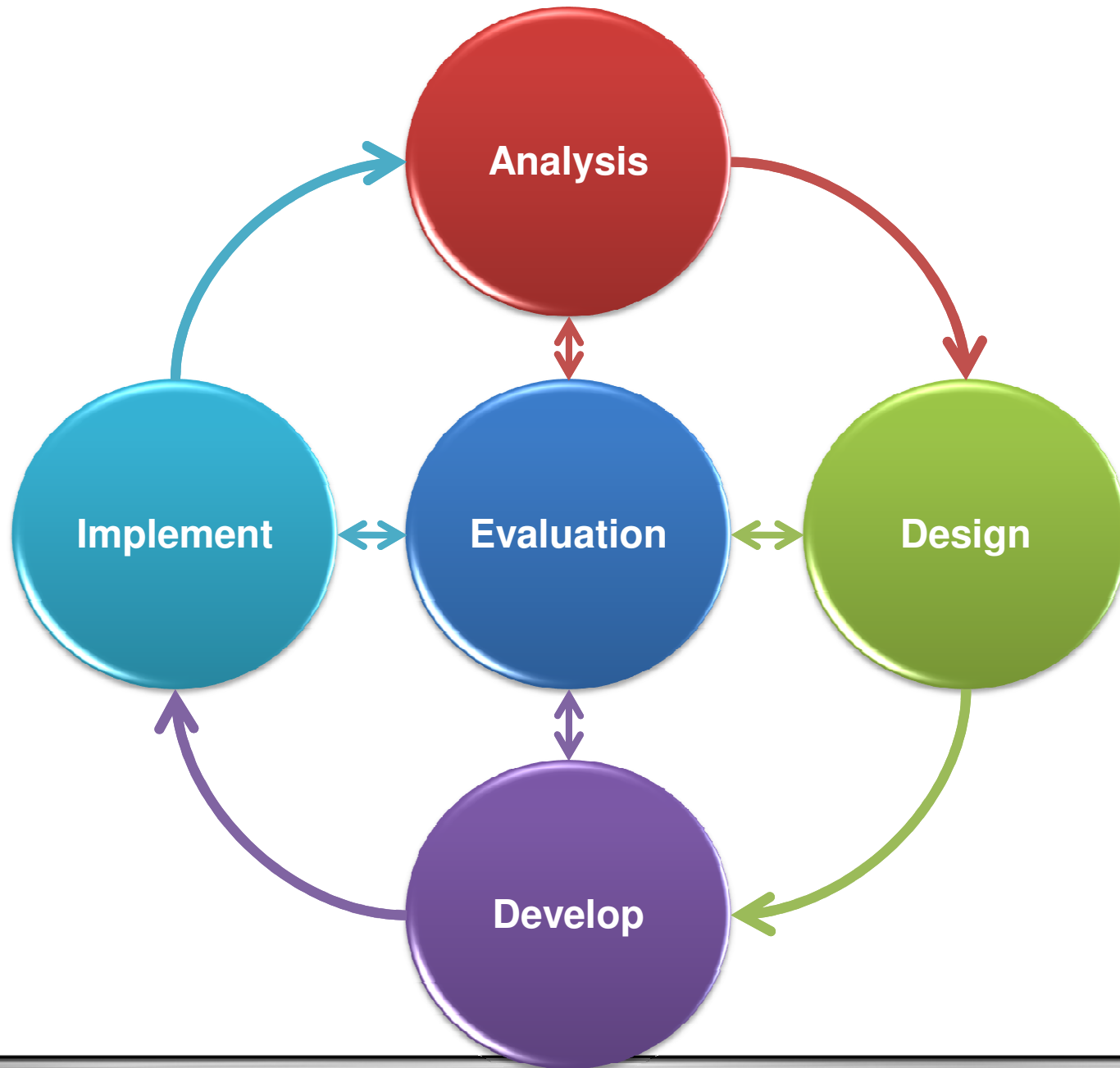
GAME DESIGN DOCUMENT

- Title
- Genre
- Platform
- Mode
- Premise
- Backstory
- Target rating
- Target market
- Player motivation
- Unique Selling Proposition
- Competitive analysis
- Goals
- Game Overview
- Feature Set
- The Game World
- Rendering System
- Game Engine
- Game AI
- Game Characters
- User Interface
- Weapons
- Musical Scores
- Story
- Victory Conditions
- Saving And Loading
- Character Rendering

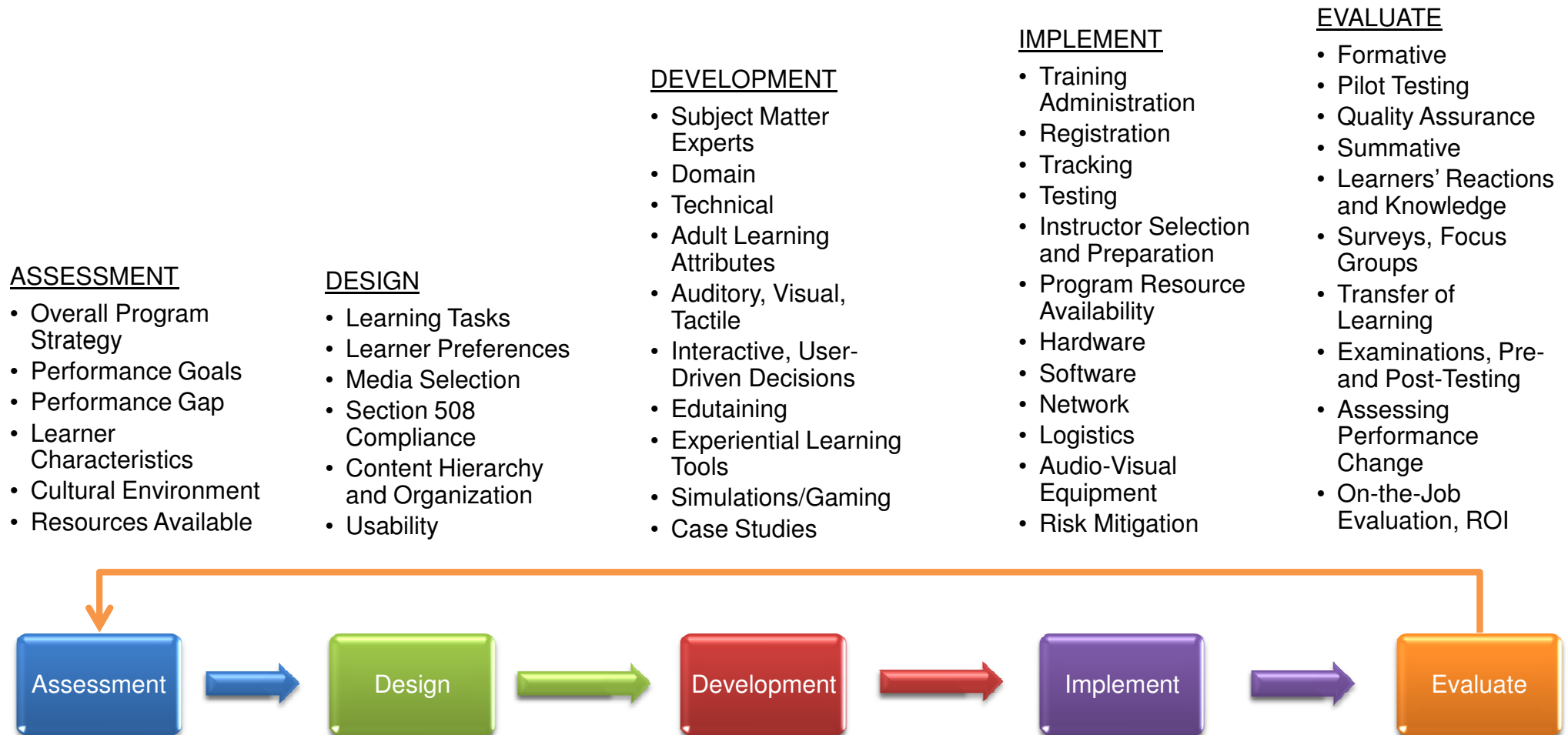
Okay...

...let's start getting into
ISD and Game modeling.

ADDIE Model of ISD

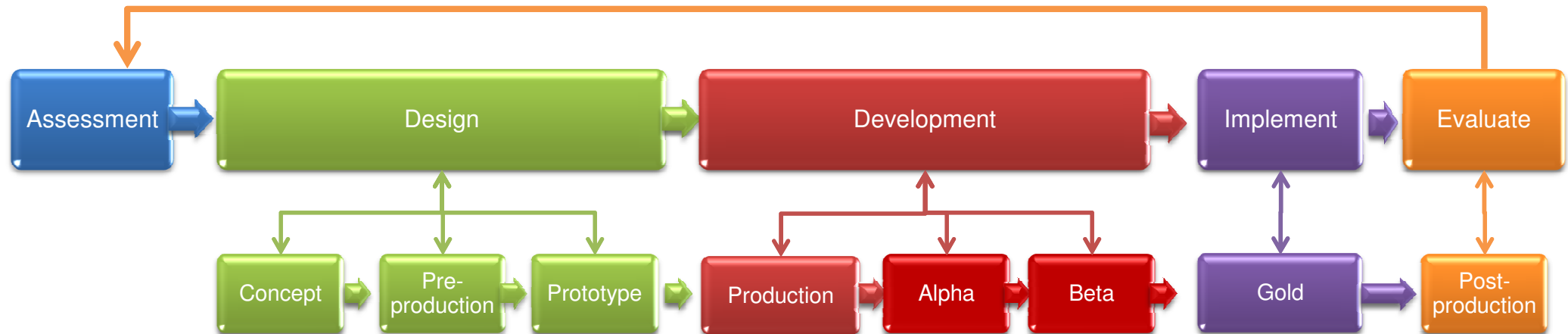


ADDIE Model of ISD



ADDIE and Game Design/Production

ADDIE

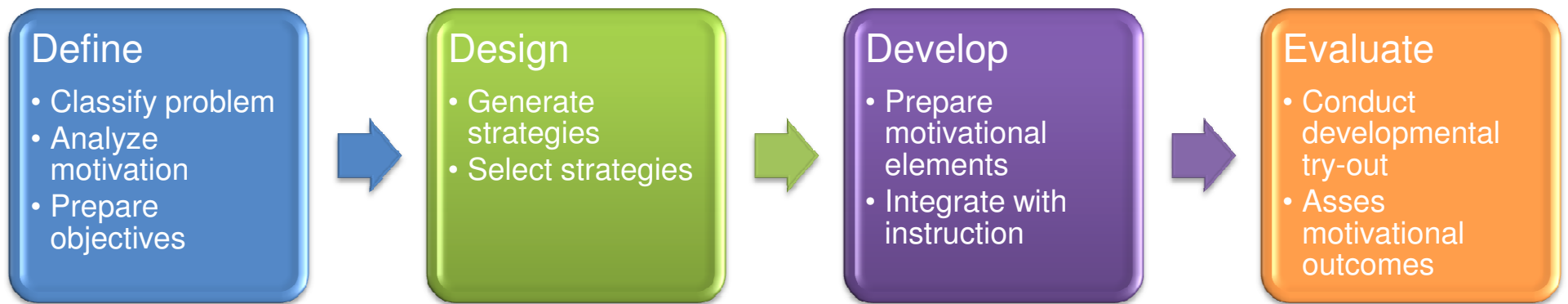


GAME PRODUCTION

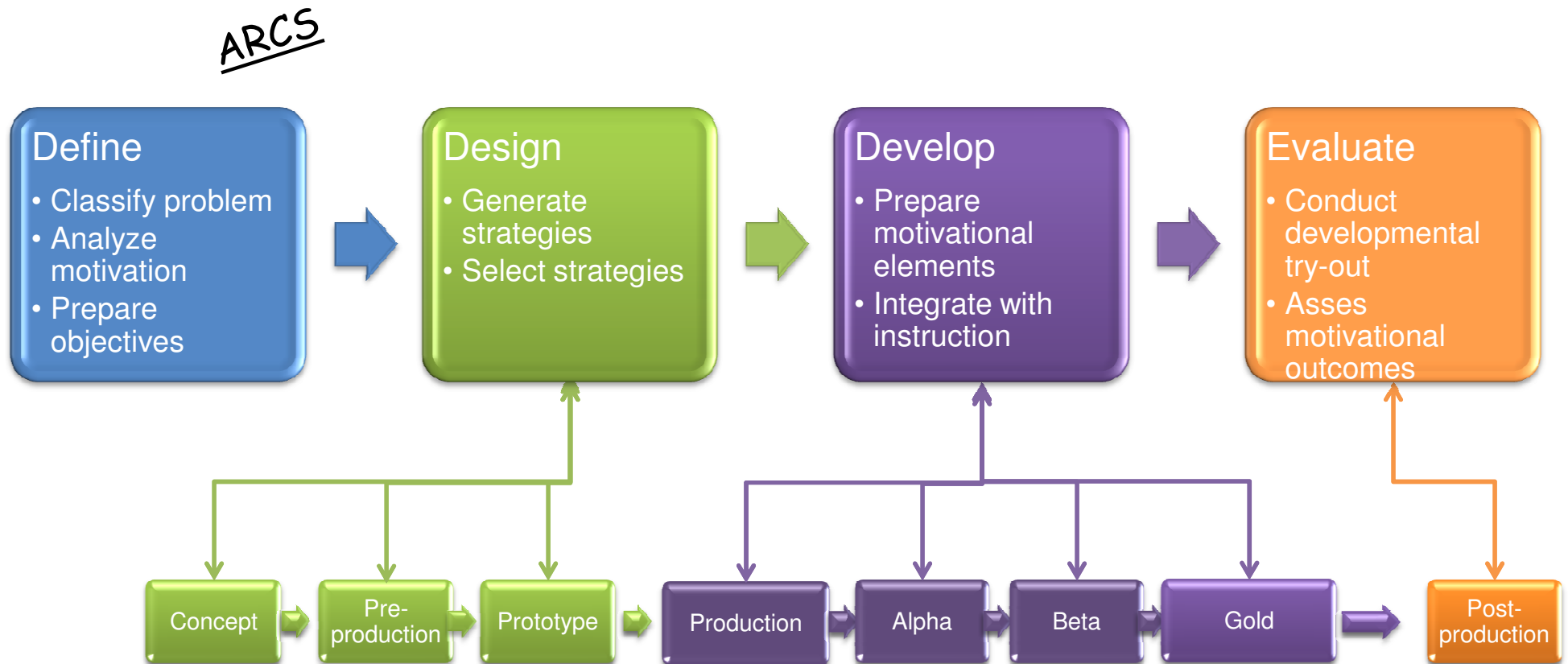
Keller's ARCS ISD Strategy



Keller's ARCS Motivational Instructional Design Model



Keller's ARCS Motivational Instructional Design Model

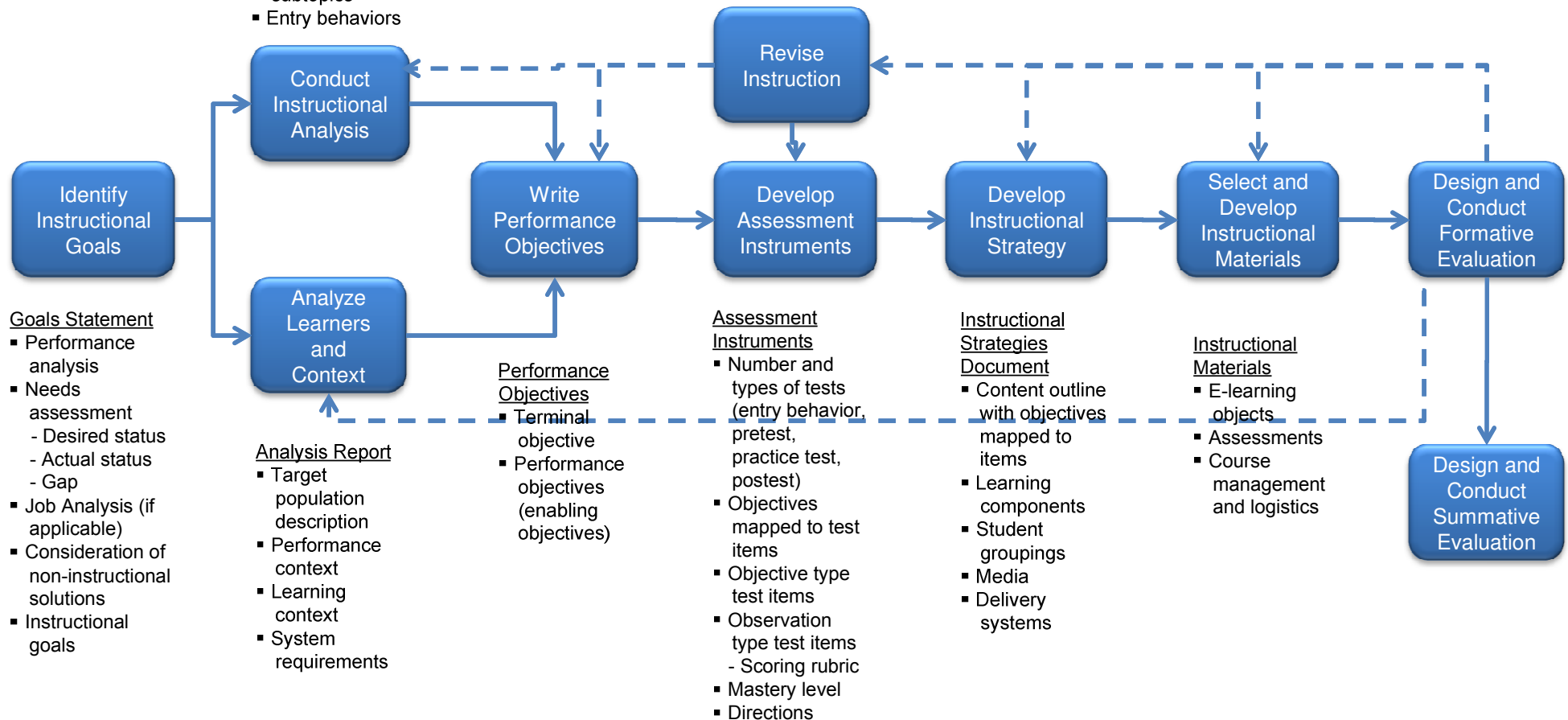


GAME PRODUCTION

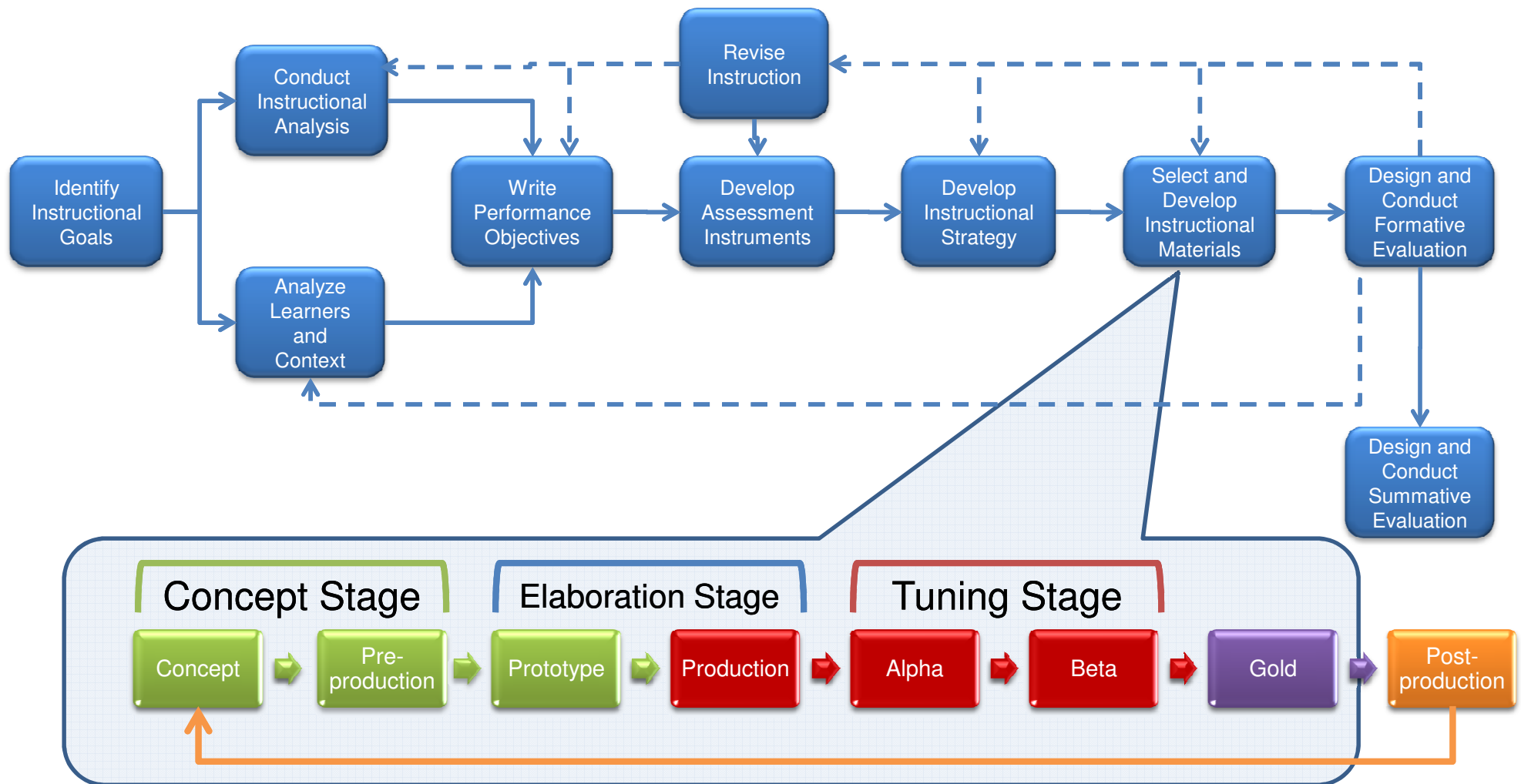
Dick and Carey Systematic Design of Instruction

Instructional Analysis Chart

- Goal type classification
 - Attitude
 - Intellectual skill
 - Psychomotor skill
 - Verbal info)
- Major steps or topics to achieve goals
- Substeps or subtopics
- Entry behaviors



Dick & Carey and Game Design/Production



What I hope you take-away from this...



- Serious Games are just another tool in the learning toolbox
- Instructional Systems Design (ISD) and Game Design are two respectable professions
- Both can play well together in the sandbox to produce great Serious Games and Simulations



*Where do we go
from here?*

*It's more about nudging games a bit towards
learning rather than trying to nudge learning
towards games.*

— Tim Holt