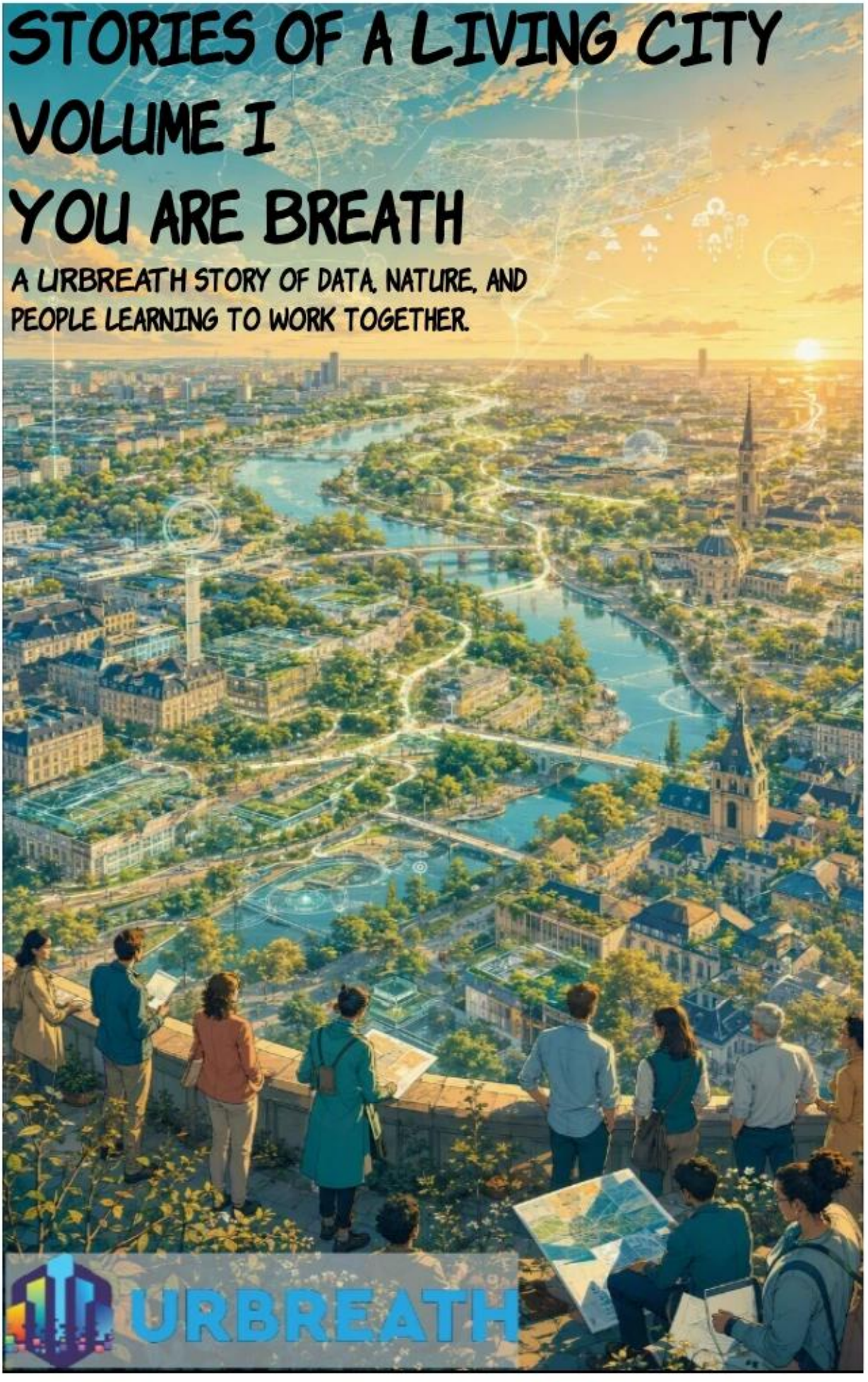
# STORIES OF A LIVING CITY
# VOLUME I
# YOU ARE BREATH

A URBREATH STORY OF DATA, NATURE, AND PEOPLE LEARNING TO WORK TOGETHER.



# PREFACE - BEFORE THE FIRST BREATH

IT IS A LIVING NETWORK OF PEOPLE AND PLACES, ROOTS AND WATERWAYS, MEMORIES AND POSSIBILITIES. IT HAS A PULSE. IT HAS A VOICE. AND, AS THE STORY YOU ARE ABOUT TO READ SUGGESTS, IT ALSO HAS A BREATH.

"YOU ARE BREATH" BEGINS WITH A SIMPLE REQUEST: A BENCH NEAR A BUS STOP. YET THAT SMALL REQUEST SOON REVEALS A MUCH LARGER STORY. A FADED SIGN LEADS TO A MISSING DRINKING FOUNTAIN. A NEARBY PARK LEADS TO A DANGEROUS ROAD. A FLOODED UNDERPASS LEADS TO QUESTIONS ABOUT HEAT, PUBLIC SPACE, ACCESSIBILITY, AND THE ABSENCE OF NATURE. WHAT FIRST APPEARS TO BE A COLLECTION OF SEPARATE INCONVENIENCES IS, IN FACT, A SINGLE INTERCONNECTED URBAN REALITY.

THIS IS THE CENTRAL PURPOSE OF THE GRAPHIC NOVEL: TO SHOW THAT CITIES CANNOT SOLVE COMPLEX CHALLENGES BY TREATING THEM AS ISOLATED PROBLEMS. HEAT IS CONNECTED TO GREENERY. FLOODING IS CONNECTED TO SOIL AND MAINTENANCE. A BENCH IS NEVER ONLY A BENCH WHEN SOMEONE NEEDS AN ARMREST TO STAND UP. A DRINKING FOUNTAIN IS NEVER MERELY A DETAIL WHEN THE DISTANCE TO IT DETERMINES WHETHER A PERSON CAN COMFORTABLY REMAIN OUTDOORS.

TO TELL THIS STORY, THE CITY ITSELF BECOMES A CHARACTER: AT FIRST, IT IS HOLDING ITS BREATH. ITS ROADS, BUILDINGS, DATABASES, DEPARTMENTS, AND INHABITANTS SPEAK DIFFERENT LANGUAGES, UNABLE TO HEAR ONE ANOTHER. THROUGH THE WORK OF PLANNERS, TECHNICIANS, COMMUNITIES, AND CITIZENS, THESE DISCONNECTED VOICES GRADUALLY BEGIN TO FORM A CONVERSATION. DATA MEETS LIVED EXPERIENCE. SCIENTIFIC MODELS MEET EVERYDAY NEEDS. PLANS ARE TESTED AGAINST THE REALITIES OF THE PEOPLE WHO WILL INHABIT THEM. NATURE MOVES FROM THE MARGINS OF URBAN DESIGN TO ITS VERY FOUNDATIONS.

THIS NARRATIVE APPROACH TRY TO TRANSFORM CONCEPTS THAT CAN SOMETIMES SEEM DISTANT OR HIGHLY TECHNICAL INTO HUMAN CHOICES WITH VISIBLE CONSEQUENCES. DIGITAL TWINS, ENVIRONMENTAL INDICATORS, SIMULATIONS, CLIMATE PROJECTIONS, AND MONITORING SYSTEMS DO NOT APPEAR AS MACHINES THAT MAGICALLY PROVIDE THE CORRECT ANSWER. THEY ARE PRESENTED AS INSTRUMENTS THAT HELP PEOPLE ASK BETTER QUESTIONS, COMPARE POSSIBLE FUTURES, RECOGNISE UNCERTAINTY, AND MAKE MORE INFORMED DECISIONS. THE TECHNOLOGY MATTERS, BUT IT MATTERS ONLY WHEN IT HELPS A CITY LISTEN.

THE STORY ALSO REFUSES TO OFFER A PERFECT ENDING. TREES NEED TIME TO GROW. RAIN GARDENS NEED CARE. INDICATORS NEED TO BE REVISED. PUBLIC SPACES MUST BE EVALUATED NOT ONLY ACCORDING TO THEIR INTENDED DESIGN, BUT ACCORDING TO HOW PEOPLE ACTUALLY EXPERIENCE THEM. EVEN A WELL-PLANNED INTERVENTION CAN FAIL IF IT CANNOT BE MAINTAINED. EVERY SOLUTION, THEREFORE, BECOMES THE BEGINNING OF ANOTHER QUESTION: EVERY SETBACK CAN BECOME KNOWLEDGE THAT BENEFITS THE NEXT STREET, THE NEXT NEIGHBOURHOOD, AND THE NEXT CITY.

BEHIND THIS JOURNEY STANDS URBREATH, A HORIZON EUROPE PROJECT EXPLORING HOW CITIES CAN BECOME HEALTHIER, GREENER, MORE INCLUSIVE, AND MORE RESILIENT THROUGH THE COMBINED USE OF DATA, DIGITAL PLANNING TOOLS, NATURE-BASED SOLUTIONS, ENVIRONMENTAL MONITORING, AND CITIZEN PARTICIPATION. ITS TOOLS HELP URBAN COMMUNITIES UNDERSTAND PLACES MORE COMPLETELY, EXPLORE ALTERNATIVE SCENARIOS, EVALUATE THE BENEFITS AND TRADE-OFFS OF INTERVENTIONS, INVOLVE RESIDENTS IN SHAPING PROPOSALS, AND LEARN FROM RESULTS OVER TIME.

BUT URBREATH IS NOT REPRESENTED HERE AS A TOOLBOX DROPPED INTO A CITY FROM ABOVE. ITS DEEPER PRINCIPLE IS INTEGRATION: BRINGING TOGETHER KNOWLEDGE THAT IS TOO OFTEN SCATTERED ACROSS DIFFERENT SYSTEMS, DISCIPLINES, AND INSTITUTIONS. ENVIRONMENTAL DATA MUST CONNECT WITH URBAN PLANNING. MODELS MUST CONNECT WITH LOCAL EXPERIENCE. EXPERTS MUST CONNECT WITH RESIDENTS. DESIGN MUST CONNECT WITH MAINTENANCE. AND THE LESSONS LEARNED IN ONE PLACE MUST BE SHARED SO THAT THEY CAN CREATE VALUE ELSEWHERE.

THIS GRAPHIC NOVEL INVITES US TO IMAGINE URBAN TRANSFORMATION NOT AS A SINGLE HEROIC ACT, BUT AS A COLLECTIVE PRACTICE OF LISTENING, TESTING, CARING, AND LEARNING. IT REMINDS US THAT NATURE IS NOT AN ORNAMENT ADDED AFTER THE IMPORTANT DECISIONS HAVE ALREADY BEEN MADE. IT IS INFRASTRUCTURE. CITIZENS ARE NOT MERELY THE FINAL USERS OF A COMPLETED PLAN. THEY ARE PART OF THE KNOWLEDGE THAT MAKES THE PLAN POSSIBLE. DATA IS NOT THE CITY'S VOICE. IT IS ONE OF THE WAYS THROUGH WHICH THAT VOICE MAY FINALLY BE HEARD.

THE CITY IN THESE PAGES DOES NOT LEARN TO BREATHE BECAUSE IT BECOMES FLAWLESS OR ALL-KNOWING. IT LEARNS TO BREATHE WHEN PEOPLE STOP SEEING IT AS A COLLECTION OF DISCONNECTED PROBLEMS, AND BEGIN TO RECOGNISE IT AS A SHARED LIVING SYSTEM.

AND PERHAPS THAT IS WHERE EVERY MORE RESILIENT CITY BEGINS. NOT WITH THE CERTAINTY THAT WE ALREADY HAVE EVERY ANSWER, BUT WITH THE COURAGE TO LISTEN, THE IMAGINATION TO SEE WHAT COULD CHANGE, AND THE WILLINGNESS TO SHAPE THAT CHANGE TOGETHER.

GIUSEPPE CIULLA
TECH MANAGER URBREATH PROJECT

# MEET THE CHARACTERS

THE CITY IS UNDER PRESSURE. HEAT RISES. WATER NEEDS NEW PATHS. STREETS DEMAND CHANGE. AND WHEN A CITY REACHES A TURNING POINT, HEROES DO NOT ARRIVE WEARING CAPES.

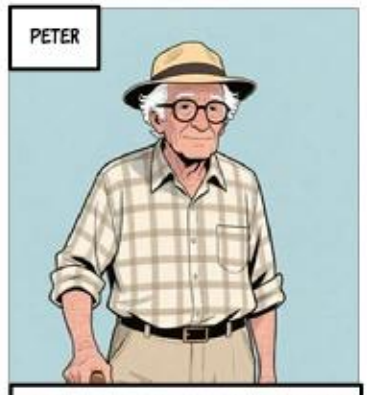
THEY ARRIVE WITH PLANS. DATA. EXPERIENCE. DETERMINATION. SOME CHALLENGE THE WAY THINGS HAVE ALWAYS BEEN DONE. SOME FIGHT FOR BETTER IDEAS.

SARAH



CURIOUS, INTELLIGENT, AND OBSERVANT. THROUGH HER EYES, THE CITY IS SEEN FROM THE GROUND UP.

PETER



SARAH'S GRANDFATHER. HE WALKS SLOWLY AND STRUGGLES WITH THE HEAT. HE EMBODIES THE EVERYDAY REALITY OF URBAN VULNERABILITY.

MARY



OFFICIAL AT THE URBAN SERVICES DEPARTMENT. SHE KNOWS THE CITY THROUGH REQUESTS, PHONE CALLS, COMPLAINTS, AND COUNTLESS EVERYDAY PROBLEMS.

LUCAS



URBAN PLANNER. SKILLED AND CREATIVE, YET FRUSTRATED BY FRAGMENTED DATA AND FRAGMENTED RESPONSIBILITIES.

ELISE



ENVIRONMENTAL ANALYST. SHE TURNS DATA AND MEASUREMENTS INTO INSIGHTS PEOPLE CAN UNDERSTAND.

ANNE



HEAD OF URBAN PLANNING. THE FINAL DECISION RESTS WITH HER, BUT SHE WANTS EVERY DECISION TO BE GROUNDED IN BOTH KNOWLEDGE AND LIVED EXPERIENCE.

ROBERT



DIRECTOR OF FINANCE AND HUMAN RESOURCES. PRAGMATIC AND MINDFUL OF RESOURCE ALLOCATION, HE EVALUATES THE COSTS, BENEFITS, AND ORGANIZATIONAL CAPACITY OF EVERY INTERVENTION.

SOME SPEAK FOR THE PEOPLE. SOME MAKE THE TOUGH CALLS WHEN EVERY CHOICE MATTERS.

THEY COME FROM DIFFERENT BACKGROUNDS, AND DIFFERENT WALKS OF LIFE.

BUT THEY ARE ALL ABOUT TO FACE THE SAME CHALLENGE:

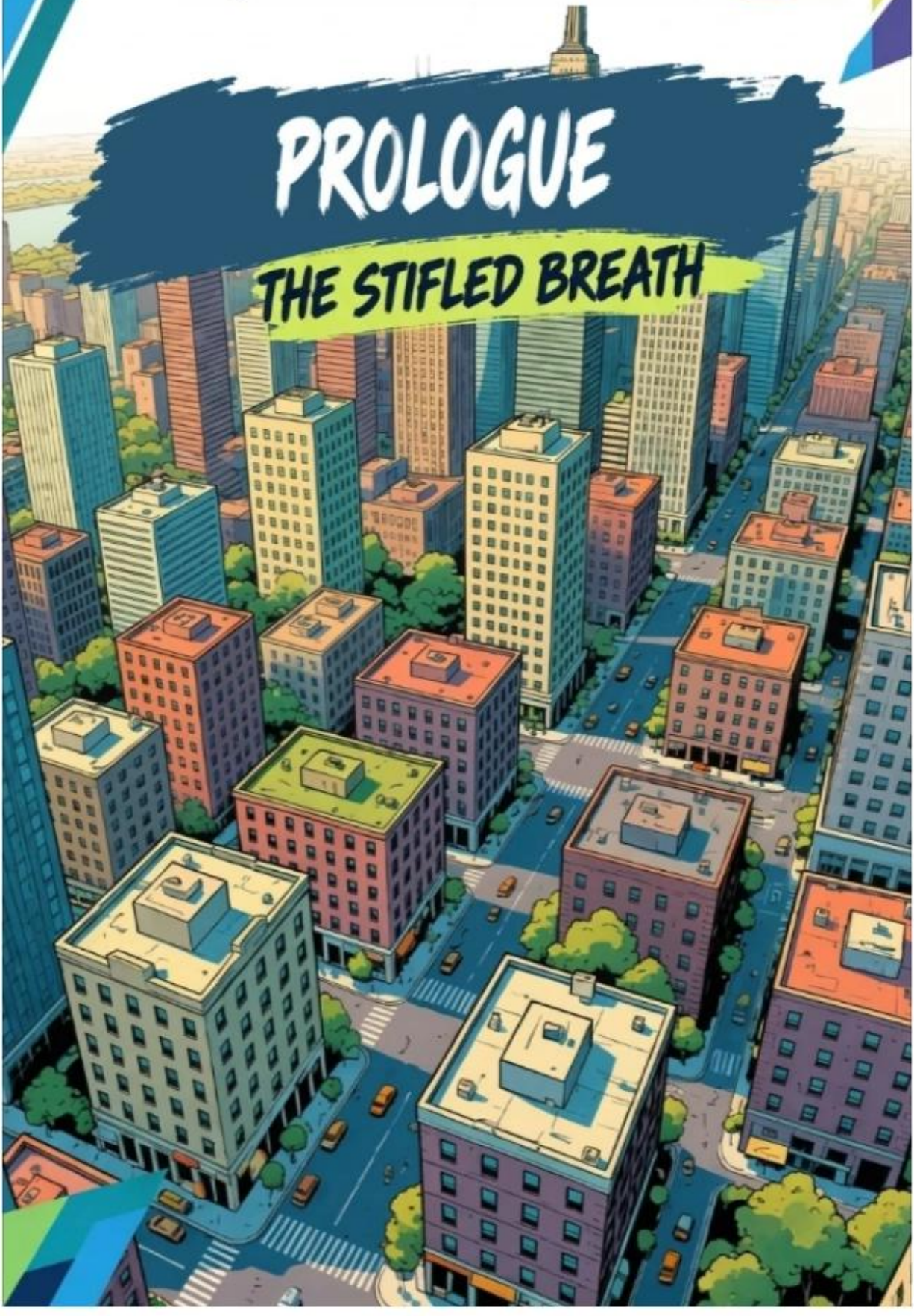
HOW DO YOU HELP A CITY BREATHE AGAIN?

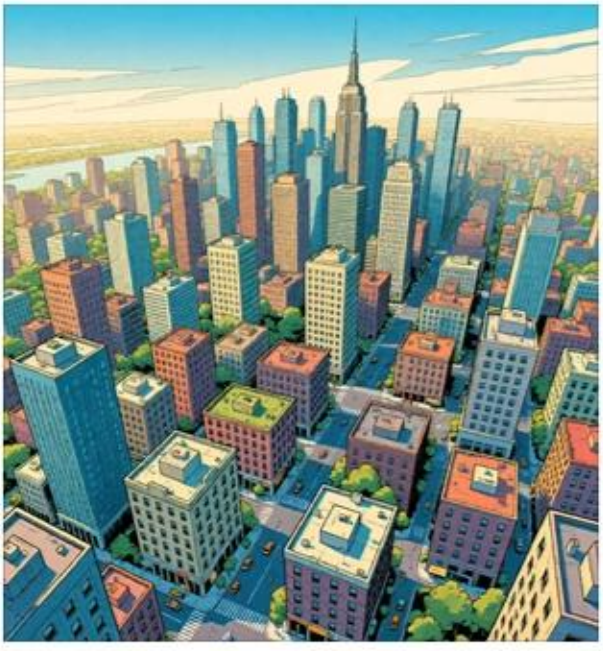
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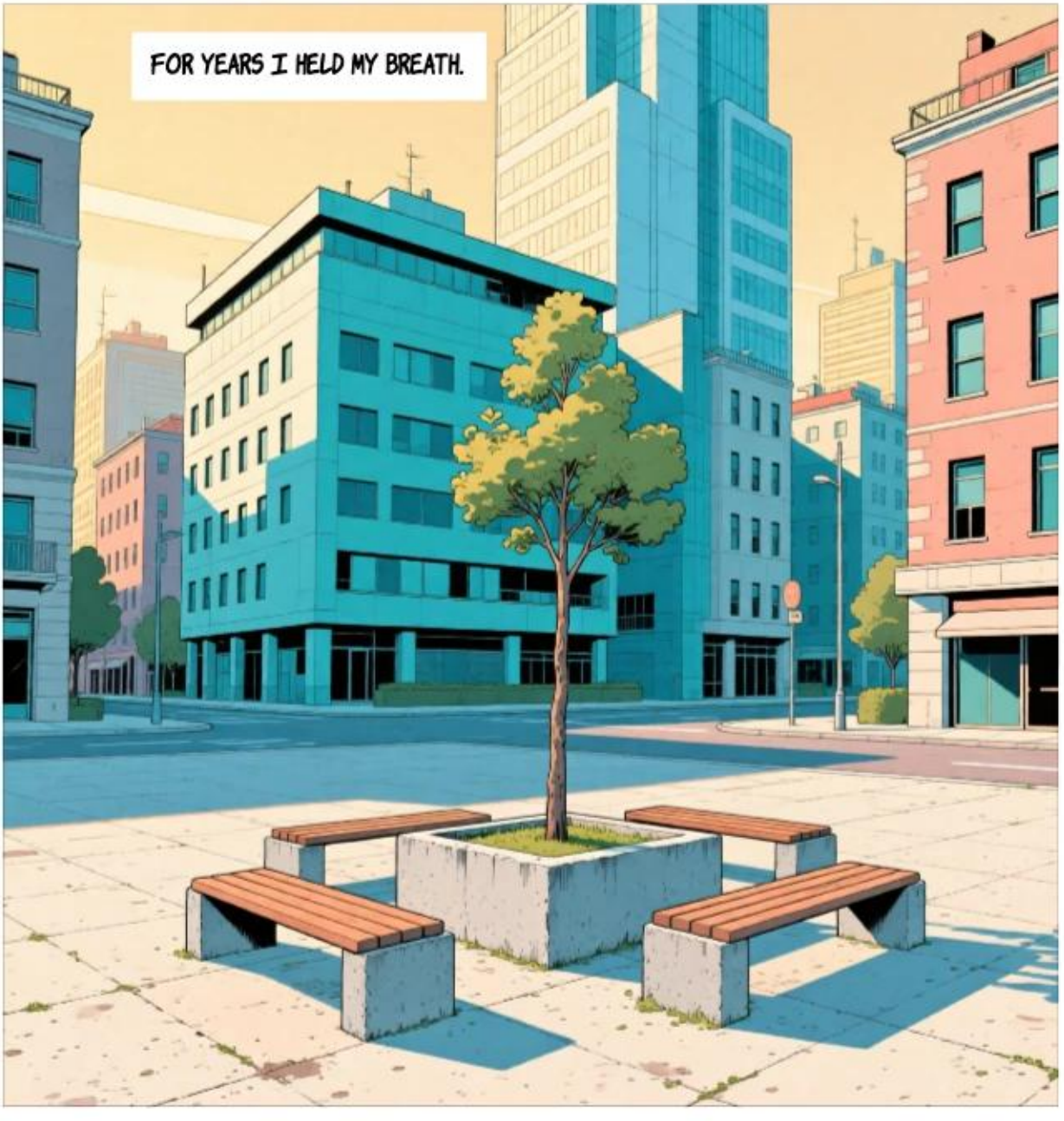
# PROLOGUE

## THE STIFLED BREATH



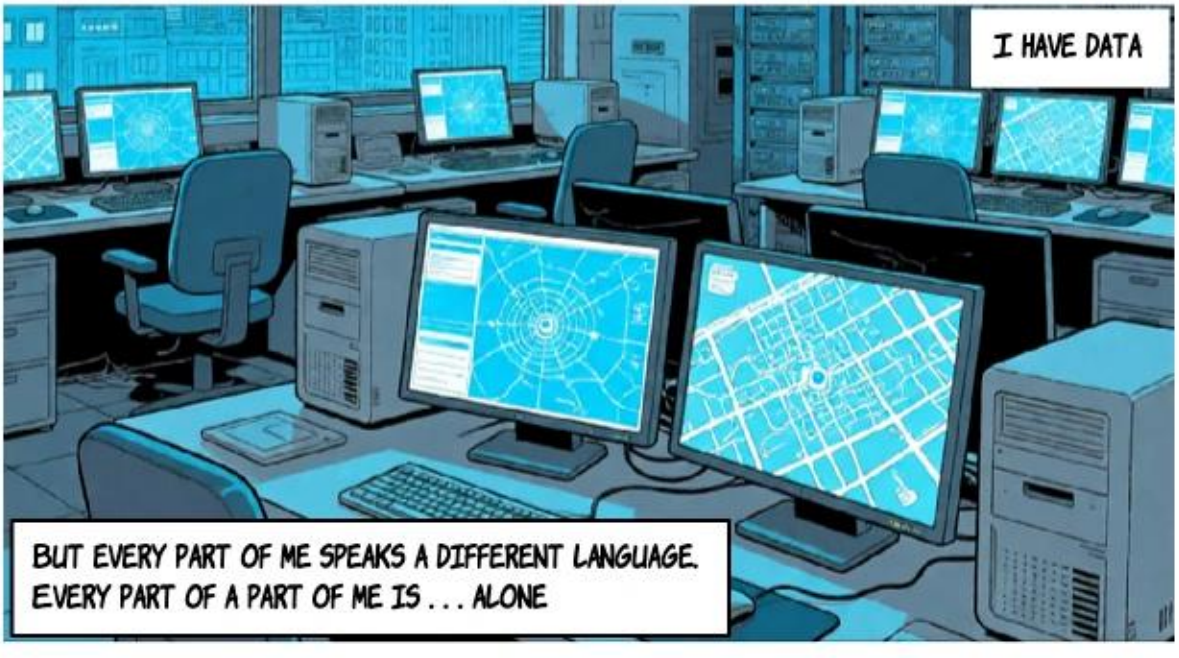





FOR YEARS I HELD MY BREATH.


I HAVE ROADS


I HAVE BUILDINGS


I HAVE DATA
BUT EVERY PART OF ME SPEAKS A DIFFERENT LANGUAGE.
EVERY PART OF A PART OF ME IS . . . ALONE





AND NO ONE CAN HEAR WHAT I'M TRYING TO SAY ANYMORE. . . .

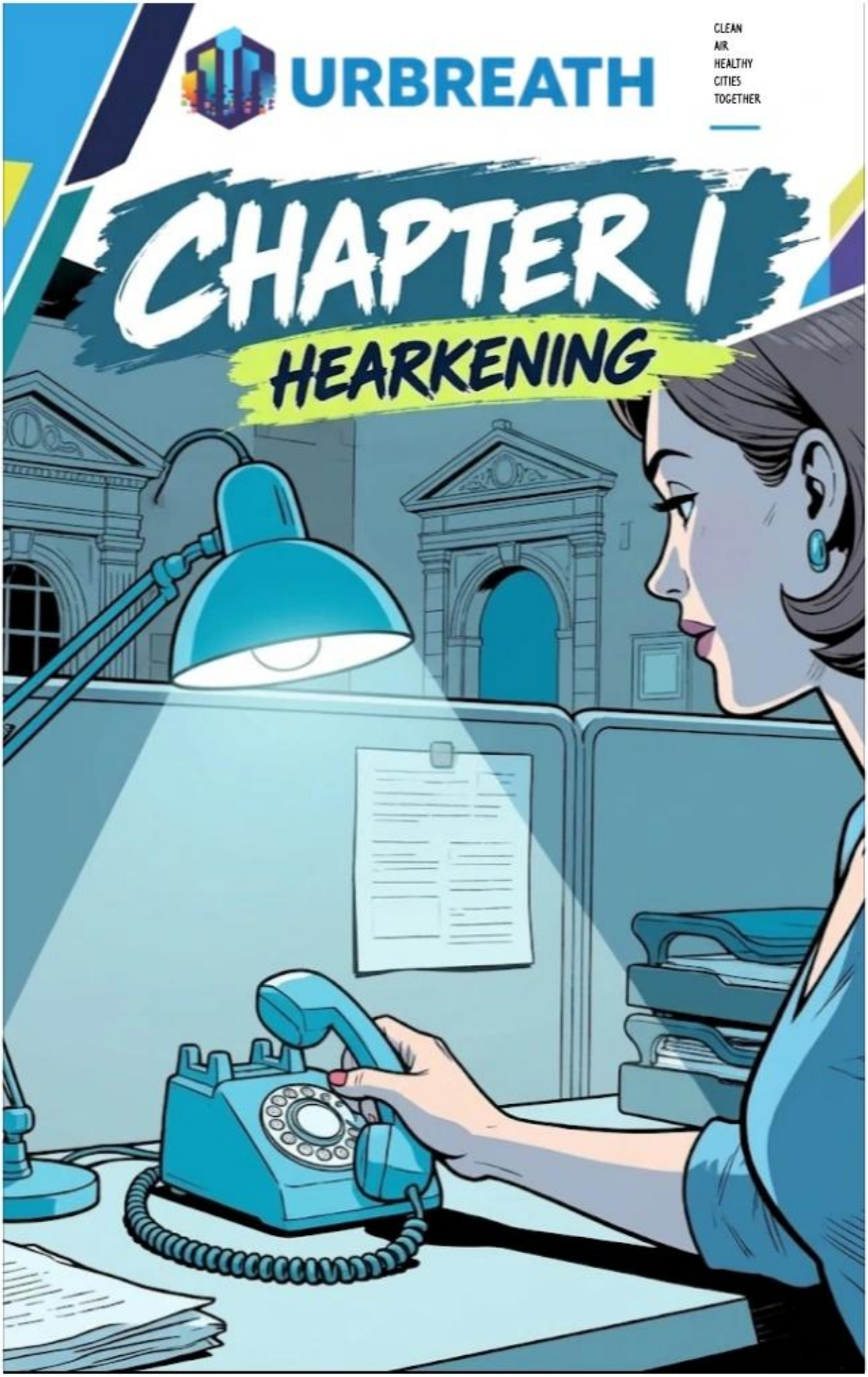


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# CHAPTER I

## HEARKENING




PUBLIC
GOOD MORNING, URBAN SERVICES OFFICE.


GOOD MORNING. I WANTED TO ASK IF IT'S POSSIBLE TO ADD A BENCH NEAR COBBLE CREEK ROAD BUS STOP
COULD YOU PLEASE TELL ME THE BUS STOP NUMBER?
I CAN'T READ IT. THE SIGN IS FADED.
GRANDPA, TELL HER THERE'S NOT EVEN A DRINKING FOUNTAIN HERE.
MY GRANDDAUGHTER SAYS THERE'S NOT EVEN A DRINKING FOUNTAIN.
OKAY. I'LL CHECK RIGHT AWAY.
Error!
SORRY, THE DATABASE ISN'T RESPONDING CORRECTLY. CAN YOU GIVE ME ANY OTHER CLUES?




WHY IS IT SO DIFFICULT TO STAY OUTSIDE HERE?


I'LL CALL YOU BACK
LET'S SEE WHAT'S THERE
SERACHING . . .
• PARKS
• BUS STOPS
• WATER FOUNTAINS
• FLOODING RISK?
THE GEOCACHER ALLOWS EVEN NON-SPECIALIST USERS TO COMBINE GEOREFERENCED DATA, SELECTING AN AREA AND OBTAINING A COMPLETE AND INTEGRATED VIEW OF THE RELEVANT INFORMATION.
SARAH WAS RIGHT . . .

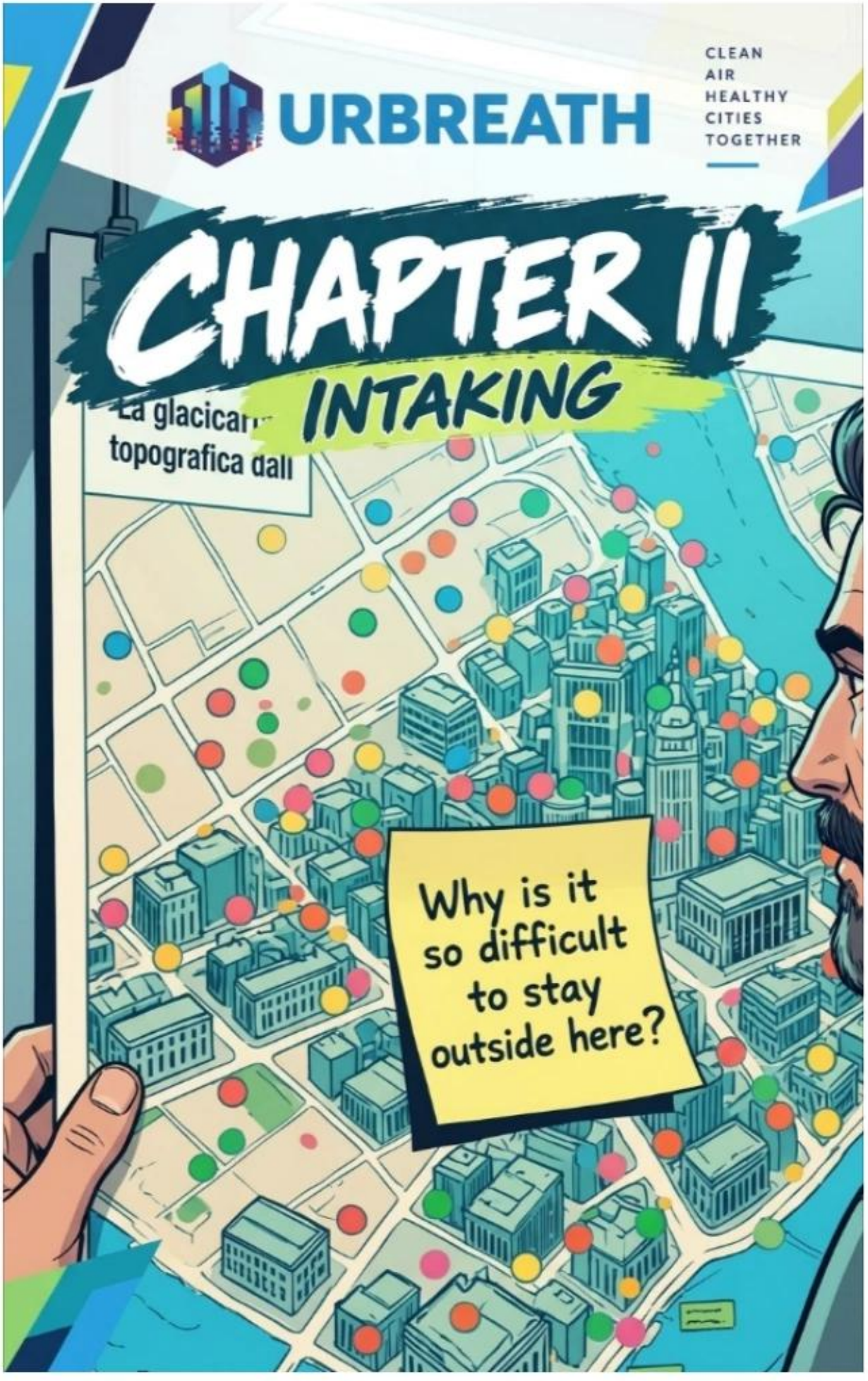

Lucas
I think we're dealing with something much bigger than a Bench.
Urgent: Deep-rooted issues in our city.
THE FIRST THING THEY DID WAS NOT TO HEAL ME
IT WAS TO TUNE INTO ME...

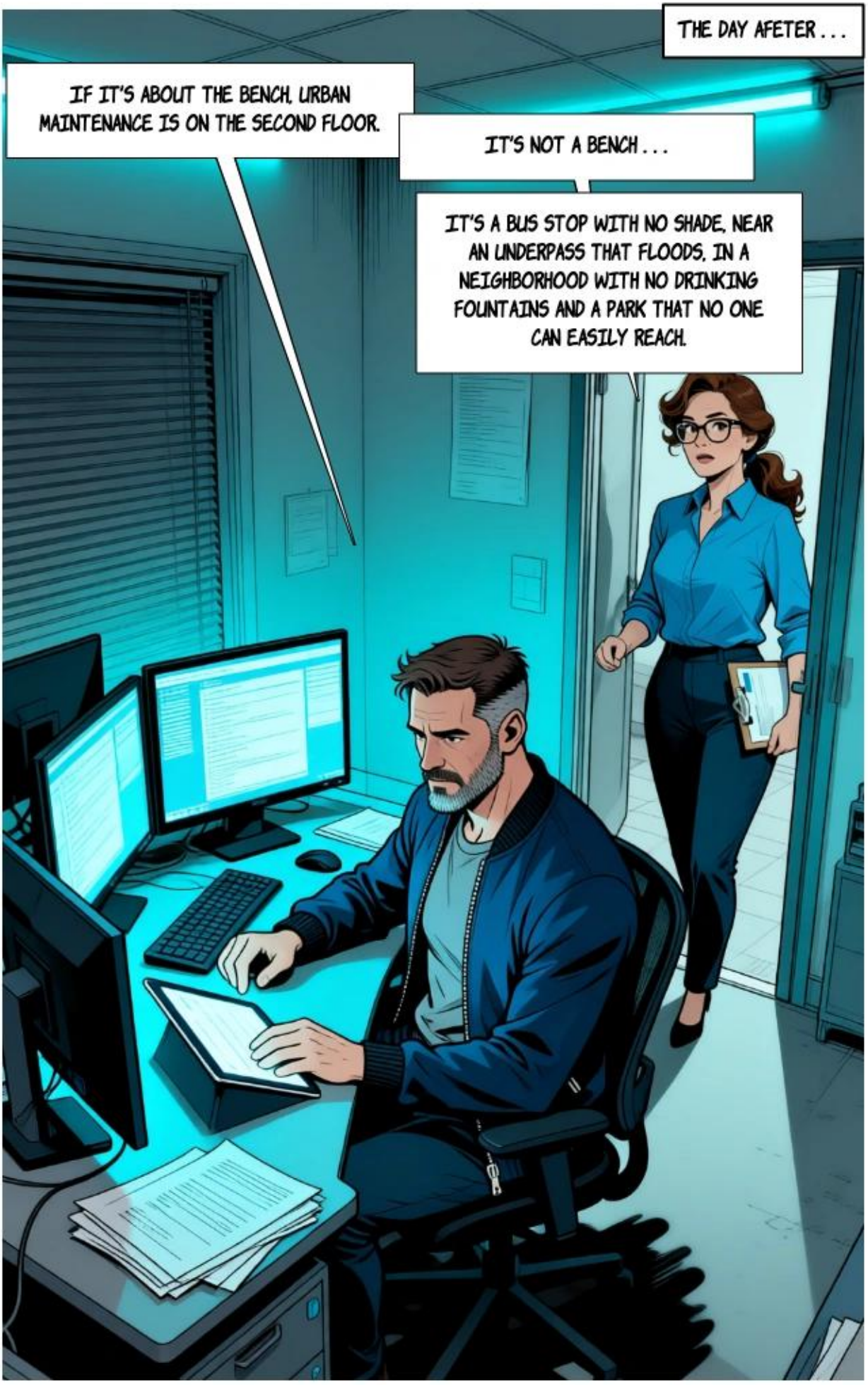
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# CHAPTER II

## INTAKING

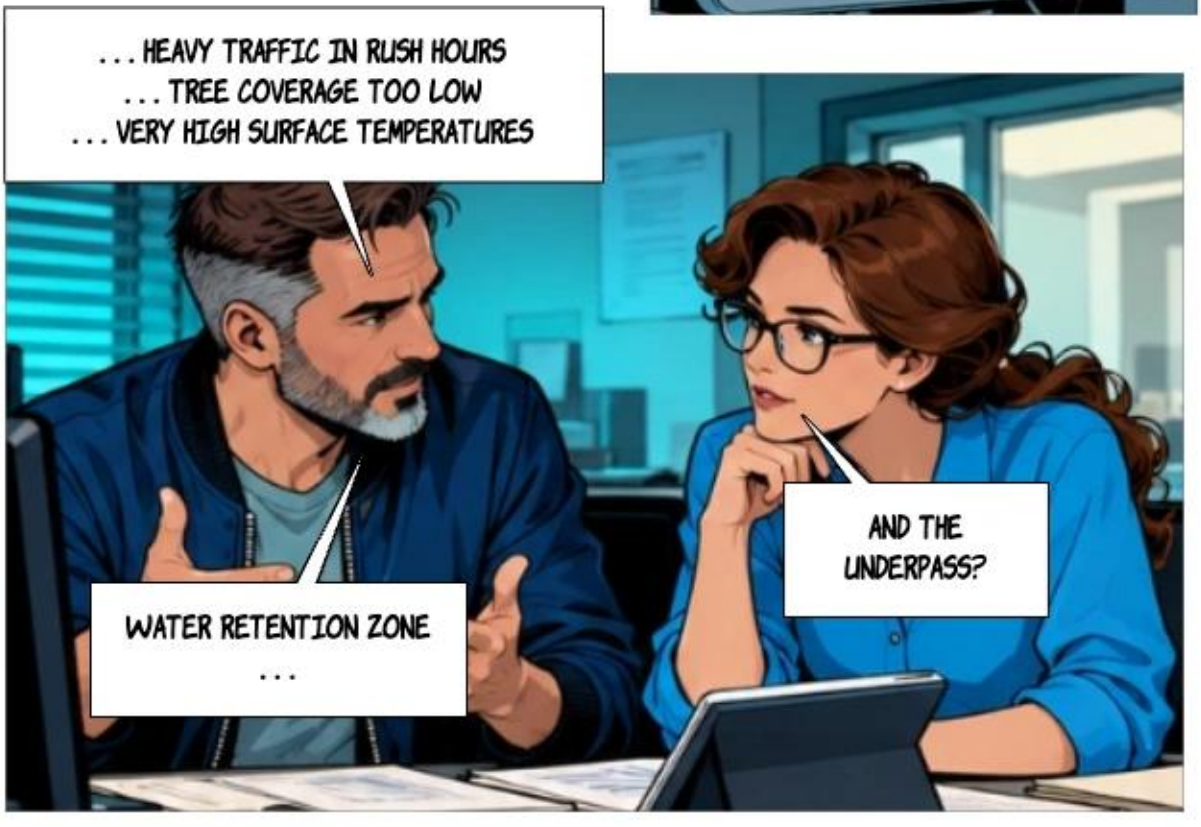



THE DAY AFETER . . .
IF IT'S ABOUT THE BENCH, URBAN MAINTENANCE IS ON THE SECOND FLOOR.
IT'S NOT A BENCH . . .
IT'S A BUS STOP WITH NO SHADE, NEAR AN UNDERPASS THAT FLOODS, IN A NEIGHBORHOOD WITH NO DRINKING FOUNTAINS AND A PARK THAT NO ONE CAN EASILY REACH.


DO YOU HAVE TRAFFIC DATA?
NO
AIR QUALITY?
NO
SURFACE TEMPERATURE?
NOT EVEN
SO WE HAVE FOUR PROBLEMS AND FOUR OFFICES TO CONTACT
AND YET IT'S ONLY ONE NEIGHBORHOOD
OR . . .

URBREATH CATALOGUE IS DESIGNED AS A FEDERATED ACCESS POINT FOR FINDING DATASETS, MODELS, TOOLS, AND SOURCES DISTRIBUTED ACROSS DIFFERENT CATALOGUES, REDUCING THE TIME SPENT SEARCHING AND RECONCILING DATA.






VC MAP BECOMES THE PLACE WHERE DATA, 2D AND 3D SCENARIOS AND ANALYSIS TOOLS CAN OPERATE ON THE SAME SPATIAL REFERENCE.

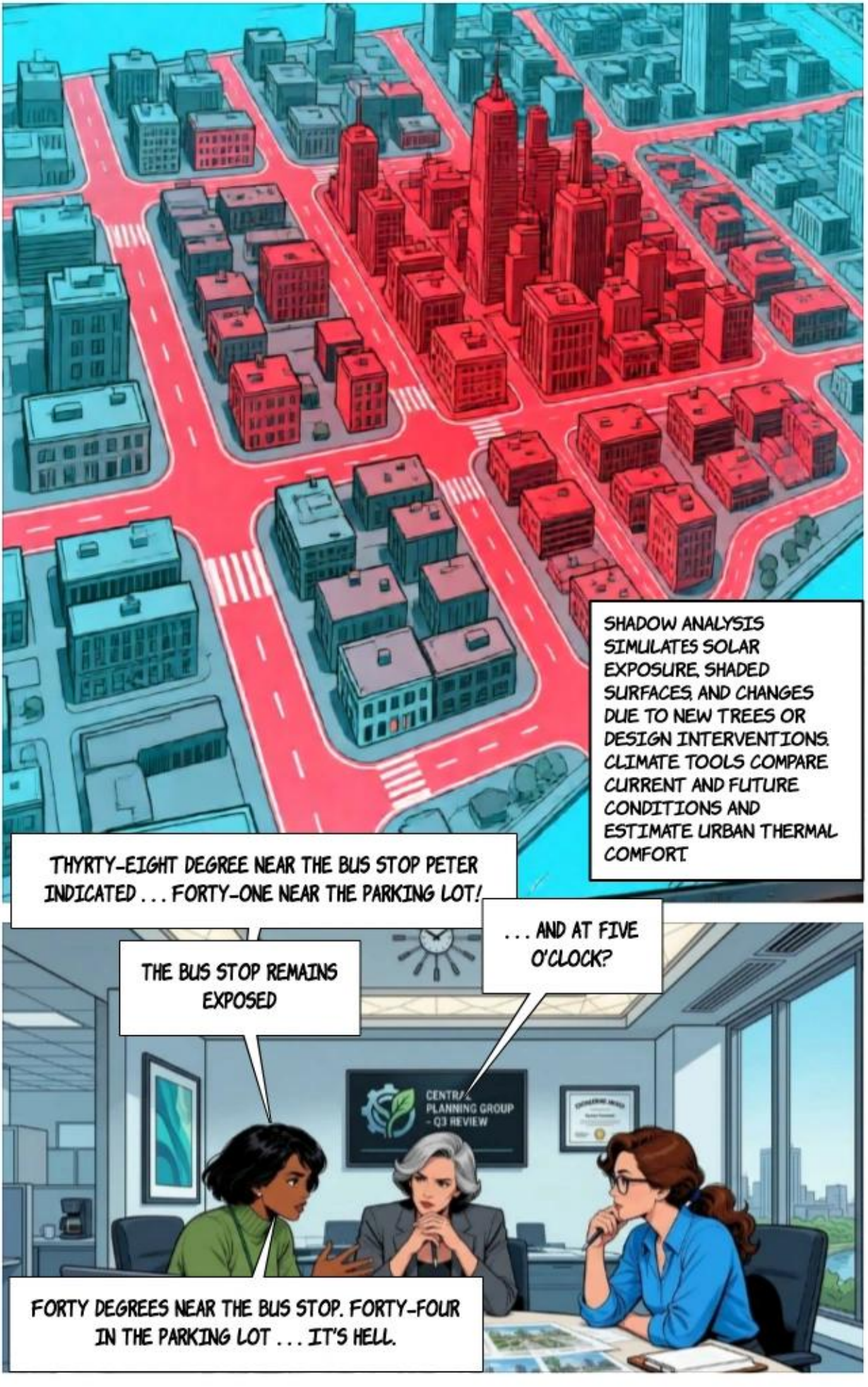
IN GENERAL, TREES, GREEN SPACES, AND PARKS ARE SCARCE: THE NEIGHBORHOOD IS PRACTICALLY A PILE OF ASPHALT AND CONCRETE.
. . . AND MAIN SERVICES ARE NOT EASILY ACCESSIBLE: THE NEAREST PHARMACY IS AN AVERAGE OF 45 MINUTES ON FOOT; THE ELEMENTARY SCHOOL IS ABOUT AN HOUR AWAY. THIS IS DEFINITELY NOT AN EASY NEIGHBORHOOD TO LIVE IN.
HOW IS IT POSSIBLE THAT NO ONE HAS EVER REALIZED THIS?

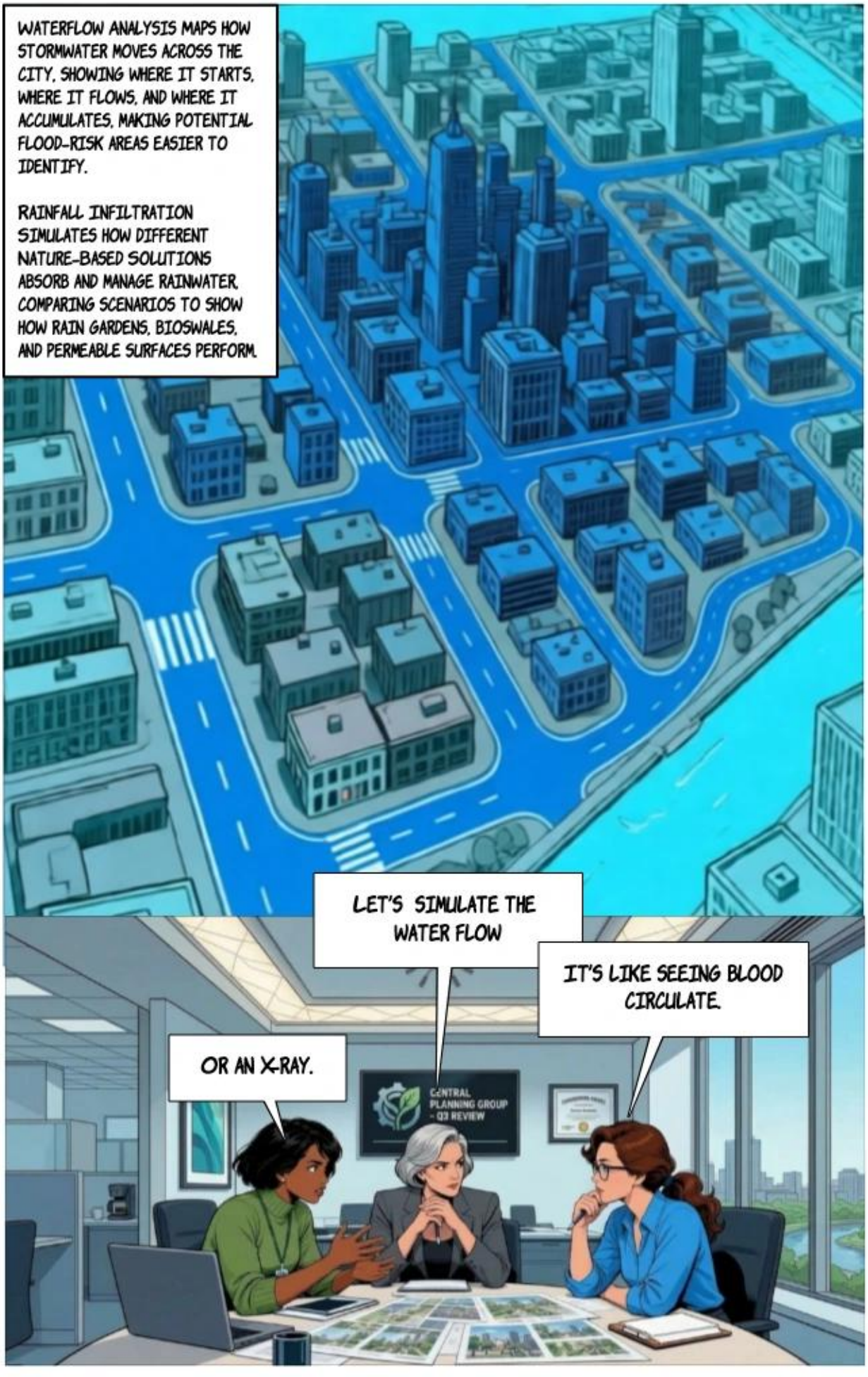


SENSORS REVEAL THE CITY IN MOTION, TURNING AIR QUALITY AND TRAFFIC DATA INTO A LIVING PICTURE OF URBAN LIFE
3-30-300 SHOWS WHERE THE CITY NEEDS MORE GREE, MEASURING VISIBLE TREES, VEGETATION COVER AND ACCESS TO GREEN SPACES
BIOTOPE AREA FACTOR SPECIFIES THE RATION OF AREAS EFFECTIVE IN THE NATURAL ENVIRONEMENT TO THE TOAL LAND AREA
15-MINUTES CITY INDEX MAPS HOW EASILY PEOPLE CAN REACH EVERYDAY SERVICES, REVEALING WHERE THE CITY IS CONNECTED AND WHERE GAPS REMAIN




TWO WEEKS LATER . . .
WHAT YOU SEE IS THE NEIGHBORHOOD AT MIDDAY. NOW I'LL ADD THE GROUND TEMPERATURE
URBAN HEAT ISLAND IDENTIFIES URBAN HOT SPOTS WHERE HIGH TEMPERATURES, DENSE BUILDINGS, AND LIMITED GREENERY CREATE CRITICAL CONDITIONS.
HEAT STRESS ANALYSIS & SIMULATION TESTS HOW TREES, GREEN ROOFS, REFLECTIVE SURFACES, AND OTHER NATURE-BASED SOLUTIONS CAN REDUCE URBAN HEAT.
CLIMATE FORECAST, SEASONAL FORECAST & SHORT-TERM WEATHER FORECAST PREDICTS CLIMATE TRENDS, SEASONAL ANOMALIES, AND UPCOMING WEATHER TO SUPPORT BETTER URBAN DECISIONS.
CLIMATE TOOLS ASSESSES CLIMATE CONDITIONS AND ADAPTATION MEASURES THROUGH INDICATORS, HIGH-RESOLUTION MAPS, AND SIMULATIONS.


SHADOW ANALYSIS SIMULATES SOLAR EXPOSURE, SHADED SURFACES, AND CHANGES DUE TO NEW TREES OR DESIGN INTERVENTIONS. CLIMATE TOOLS COMPARE CURRENT AND FUTURE CONDITIONS AND ESTIMATE URBAN THERMAL COMFORT
THYRTY-EIGHT DEGREE NEAR THE BUS STOP PETER INDICATED . . . FORTY-ONE NEAR THE PARKING LOT!
. . . AND AT FIVE O'CLOCK?
THE BUS STOP REMAINS EXPOSED
PLANNING GROUP
- Q3 REVIEW
FORTY DEGREES NEAR THE BUS STOP. FORTY-FOUR IN THE PARKING LOT . . . IT'S HELL.


WATERFLOW ANALYSIS MAPS HOW STORMWATER MOVES ACROSS THE CITY, SHOWING WHERE IT STARTS, WHERE IT FLOWS, AND WHERE IT ACCUMULATES, MAKING POTENTIAL FLOOD-RISK AREAS EASIER TO IDENTIFY.
RAINFALL INFILTRATION SIMULATES HOW DIFFERENT NATURE-BASED SOLUTIONS ABSORB AND MANAGE RAINWATER, COMPARING SCENARIOS TO SHOW HOW RAIN GARDENS, BIOSWALES, AND PERMEABLE SURFACES PERFORM.
LET'S SIMULATE THE WATER FLOW
IT'S LIKE SEEING BLOOD CIRCULATE.
OR AN X-RAY.
CENTRAL PLANNING GROUP - Q3 REVIEW

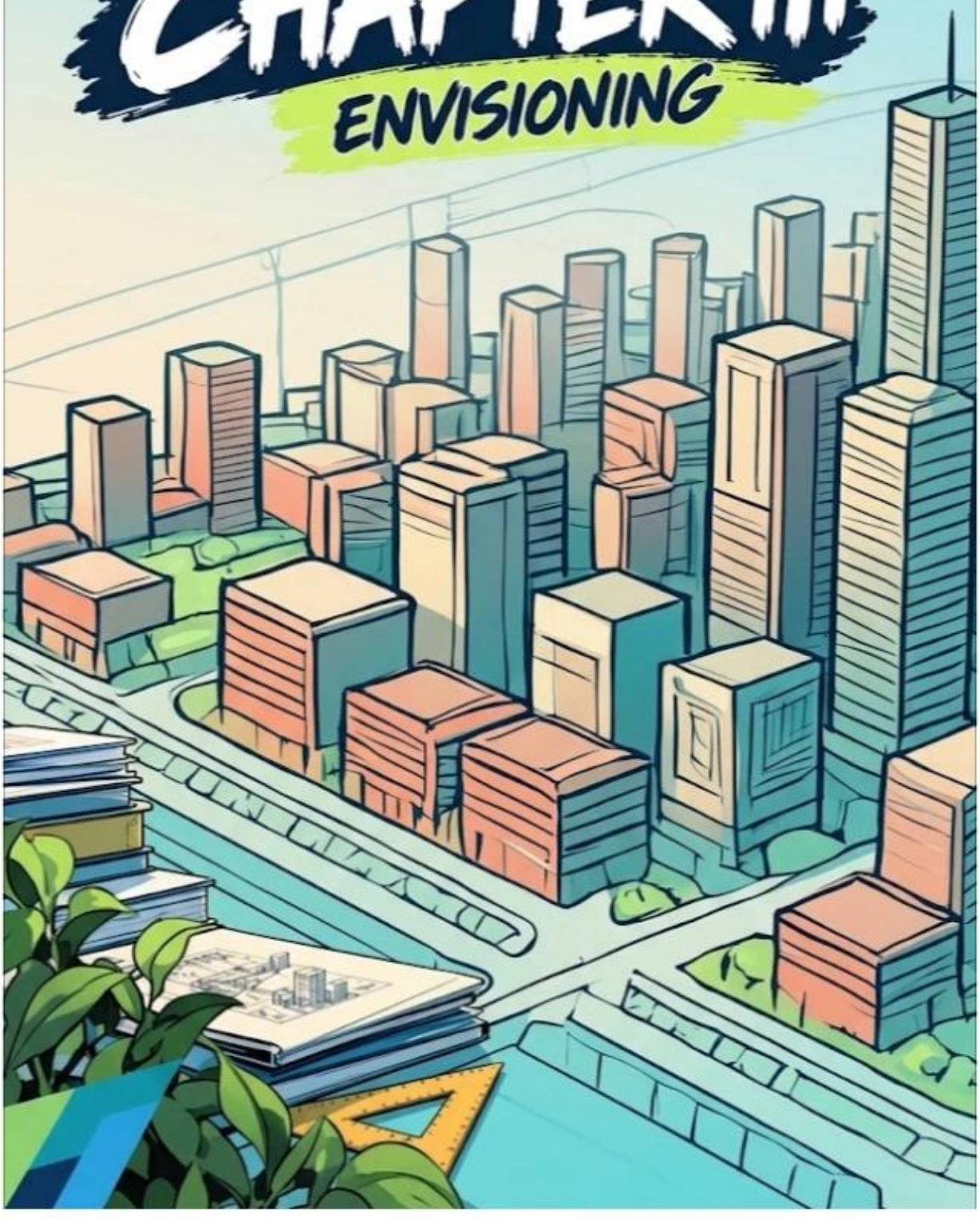

CAN WE PROVE THAT TRAFFIC, HEAT, AND WATER ARE CONNECTED?
WE CAN SHOW WHERE THEY COINCIDE. PROVING CAUSES REQUIRES RIGOR.
I DON'T WANT A MAP THAT LOOKS NICE. I WANT A MAP THAT CAN DISTINGUISH WHAT WE KNOW FROM WHAT WE'RE STILL TRYING TO UNDERSTAND.
COORDINATE WITH LUCAS TO ENSURE WE HAVE A COMPLETE PICTURE OF THE SITUATION
WHY IS IT SO DIFFICULT TO STAY OUTSIDE HERE?

URBREATH

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TOGETHER

# CHAPTER III

## ENVISIONING




LET'S TRY A LARGER PROJECTING ROOF
THE SIMULATION SHOWS SMALL SHADE
WHAT ABOUT A ROW OF TREES?
IT ONLY WORKS FOR A FEW HOURS






THE SEASONS PASS . . . THE CANOPIES GROW.
AFTER TWENTY YEARS, A GREEN CORRIDOR CONNECTS THE BUS STOP, THE SCHOOL, AND THE PARK.




THE GROWING TREES TOOL IS DESIGNED SPECIFICALLY TO SIMULATE VEGETATION GROWTH OVER TIME AND ESTIMATE ITS FUTURE EFFECTS ON SHADING AND COOLING.




LUCAS ARRANGES THE INTERVENTIONS: TREES, SHELTERS, PERMEABLE SURFACES, FOUNTAINS, RAIN GARDENS, PEDESTRIAN CROSSINGS, REDUCTION OF SOME PARKING SPACES . . . THE MAP CHANGES.









THE NATURE VALUE EXPLORER ALLOWS TO COMPARE THE EFFECTS OF TRANSFORMATIONS ON ECOSYSTEM SERVICES, INCLUDING THEIR POSSIBLE SOCIOECONOMIC VALUE.


FOR TOO LONG NATURE HAS BEEN CONSIDERED IN PROJECTS ONLY AT THE END . . . AND ONLY AS DECORATION !
THIS TIME NATURE WILL ENTER FROM THE BEGINNING . . . AS INFRASTRUCTURE !
BEFORE APPROVING I WANT TO KNOW WHAT THE NEIGHBORHOOD THINKS
ME TOO . . .

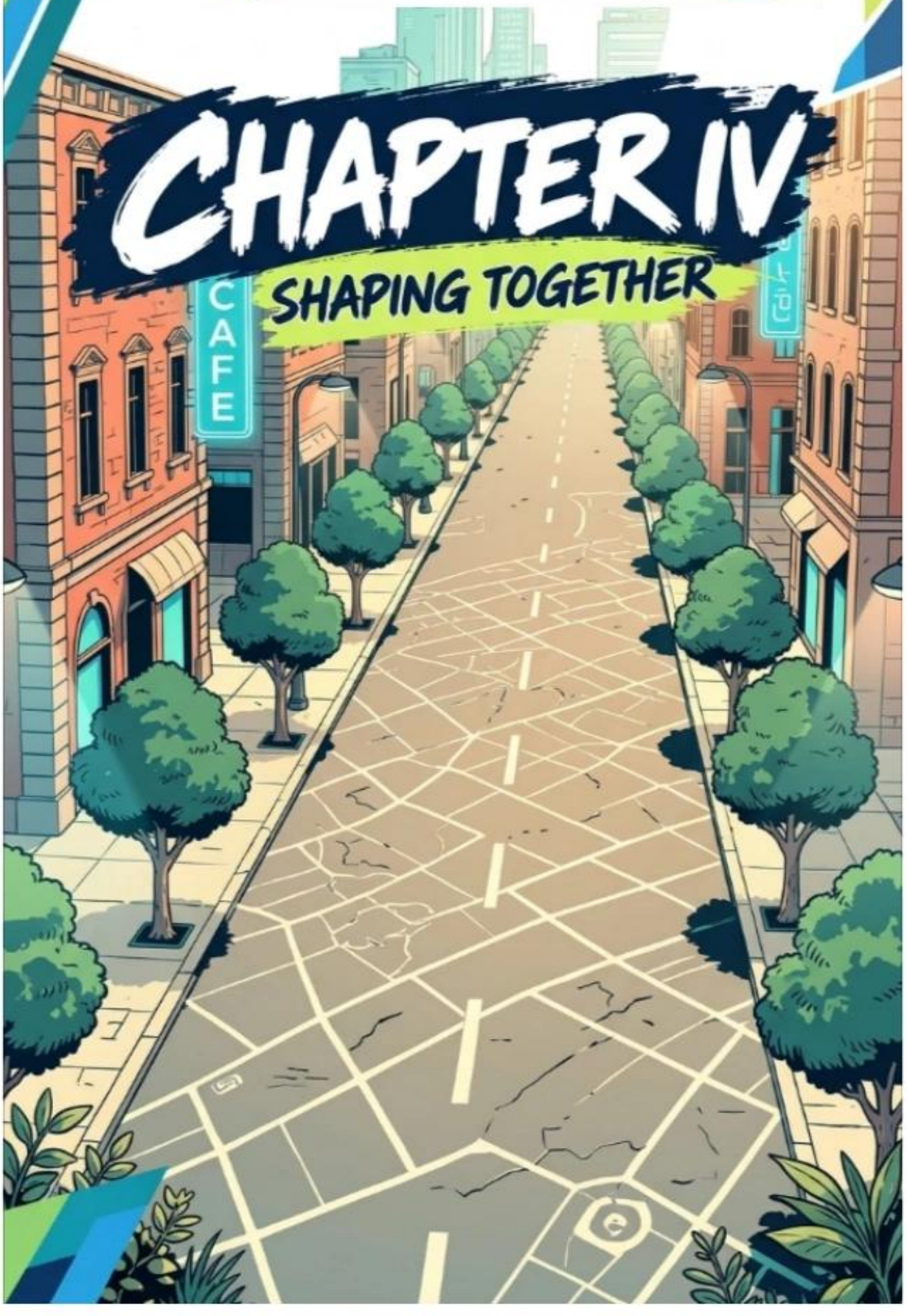

WHY IS IT SO DIFFICULT TO STAY OUTSIDE HERE?

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# CHAPTER IV

## SHAPING TOGETHER



MORE THAN A MONTH HAD PASSED. THE PAPERWORK WAS DONE. THE PLANS WERE READY. NOW CAME THE MOMENT TO OPEN THE DISCUSSION: THE CITY COUNCIL CALLED A PUBLIC MEETING TO PRESENT THE REGENERATION PROPOSALS TO THE COMMUNITY.

WE NOW PRESENT THE THREE PROPOSALS FOR THE REDEVELOPMENT AND MODERNIZATION OF THE NORTHERN AREA OF THE CITY. THE PROPOSALS WERE CREATED BY THE URBAN PLANNING OFFICE. WE THUS OPEN THE PUBLIC CONSULTATION PHASE.

SCENARIO A:
More parking spaces, less greenery.

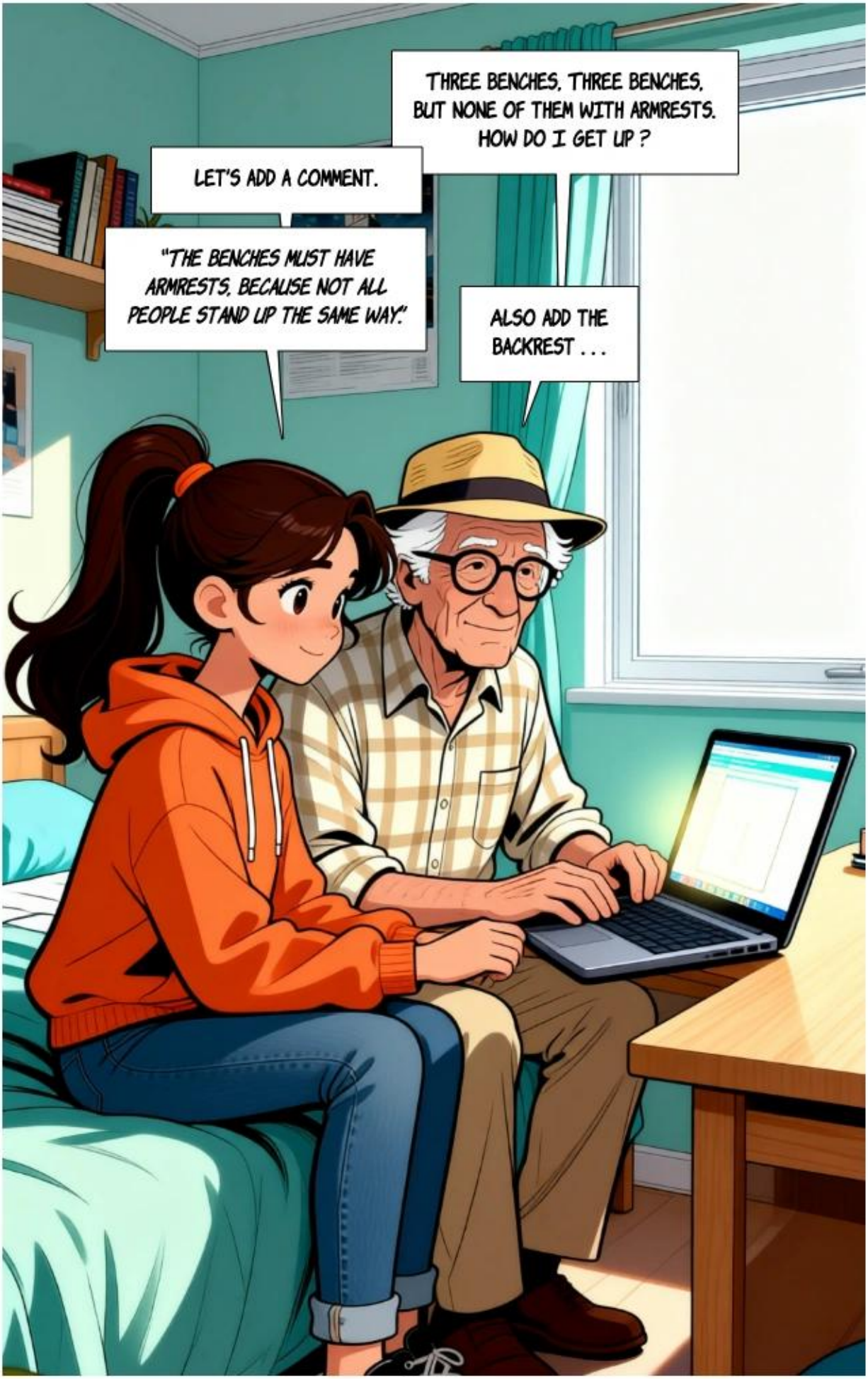
SCENARIO B:
A complete green corridor.

SCENARIO C:
An intermediate solution.





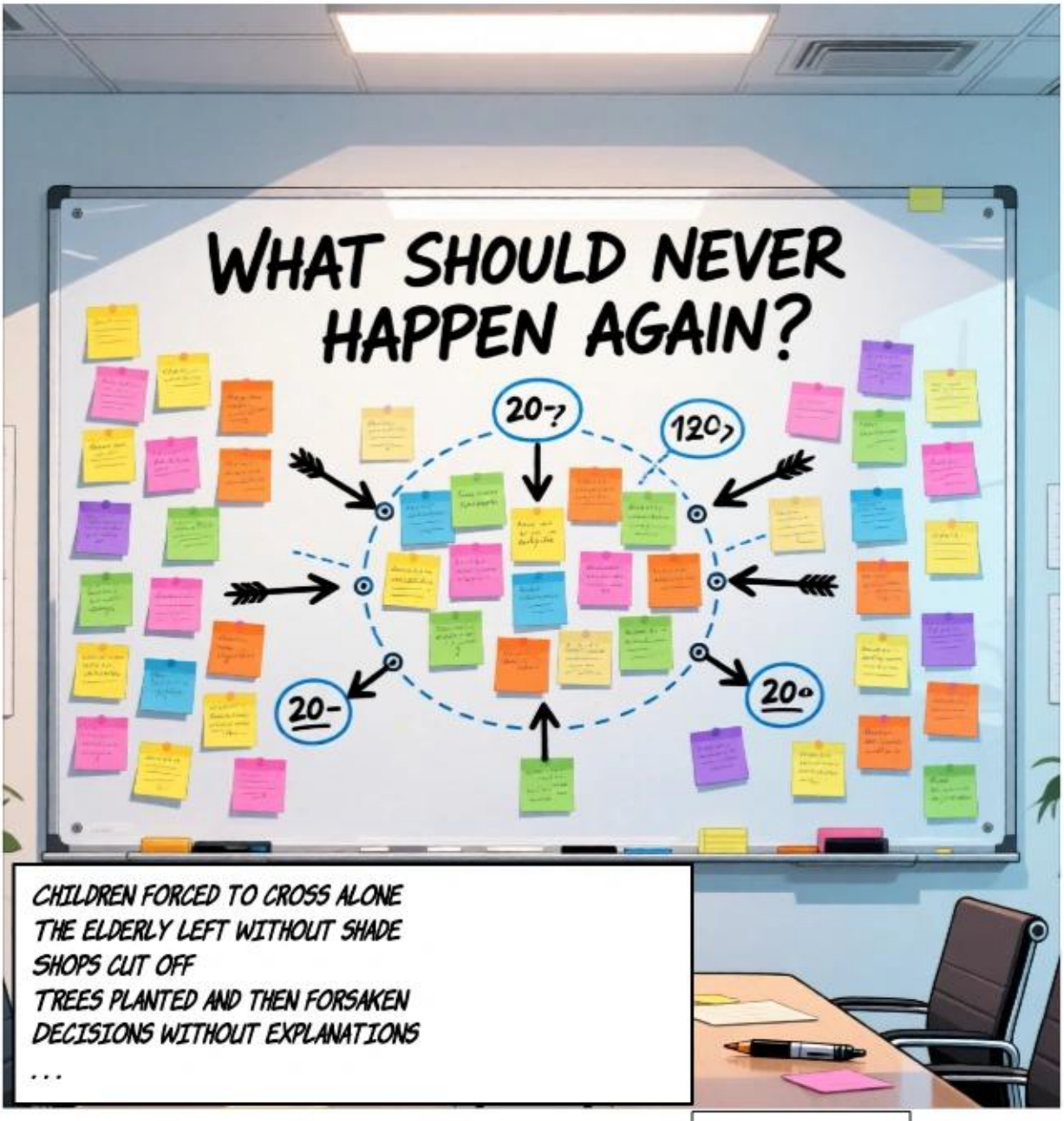

THIS IS THE PROJECT TO MODERNIZE THE STREET WHERE YOU FELT ILL A FEW DAYS AGO. IT'S LIKE YOU'RE WALKING IN IT NOW
I DON'T UNDERSTAND ANYTHING ABOUT IT
THAT'S THE OLD BAKERY
AND THIS IS THE NEW STOP
BUT THERE ARE NO BENCHES
THERE ARE THREE OF THEM GRANDPA


THREE BENCHES, THREE BENCHES, BUT NONE OF THEM WITH ARMRESTS. HOW DO I GET UP ?
LET'S ADD A COMMENT.
"THE BENCHES MUST HAVE ARMRESTS, BECAUSE NOT ALL PEOPLE STAND UP THE SAME WAY."
ALSO ADD THE BACKREST . . .

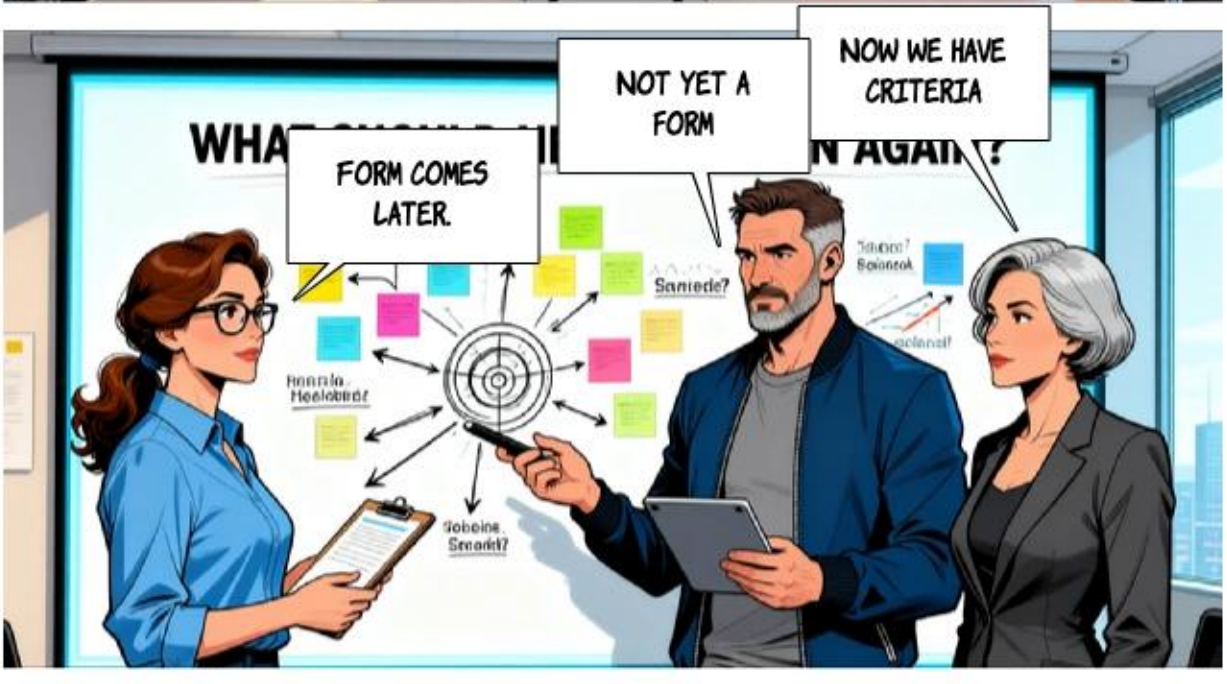

SCENARIO B REDUCES THE SEALED SURFACE, CREATES A SHADED PATH, AND MAKES THE PARK ACCESSIBLE WITHOUT CROSSING FOUR LANES
AND IT REMOVES PARKING IN FRONT OF SHOPS
MY SON CROSSES THAT ROAD EVERY DAY
IF YOU NARROW THE ROADWAY, TRAFFIC WILL END UP IN THE SIDE STREETS
AND WHO WILL CONTROL THE RAIN GARDEN? AFTER A YEAR IT WILL BE FULL OF WASTE.
YOU HAVE ALREADY DECIDED !




E-PARTICIPATION WEB AND MOBILE APPS CONNECTS PEOPLE WHERE IDEAS TAKE SHAPE TOGETHER, WHILE CITIZENS KEEP THEM GROUNDED IN THE PULSE OF URBAN LIFE.




CHILDREN FORCED TO CROSS ALONE
THE ELDERLY LEFT WITHOUT SHADE
SHOPS CUT OFF
TREES PLANTED AND THEN FORSAKEN
DECISIONS WITHOUT EXPLANATIONS
...



NEW COMMENT:

SARAH:
"CAN A CITY MAKE ROOM FOR BOTH TREES AND PEOPLE?"

# WHAT SHOULD NEVER HAPPEN AGAIN?

"THAT'S EXACTLY WHAT WE NEED TO FIND OUT."

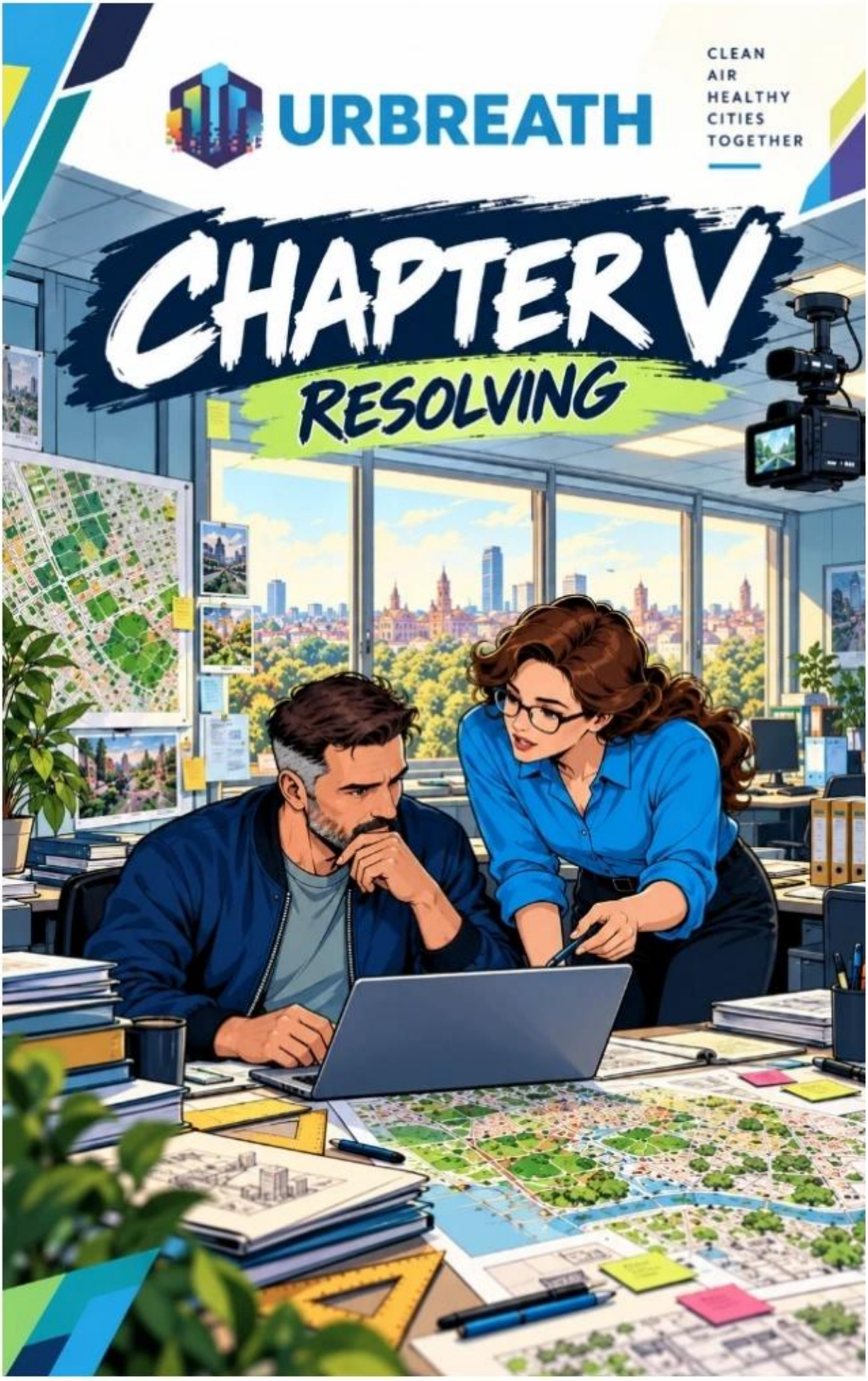


URBREATH

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# CHAPTER V

## RESOLVING






THE DIGITAL TWIN BECOMES THE PLACE WHERE DATA, 2D AND 3D SCENARIOS, AND ANALYTICAL TOOLS CAN OPERATE ON THE SAME SPATIAL REFERENCE. WHILE VC PLANNER ALLOWS FOR THE CREATION, MODIFICATION, AND COMPARISON OF DESIGN ALTERNATIVES.



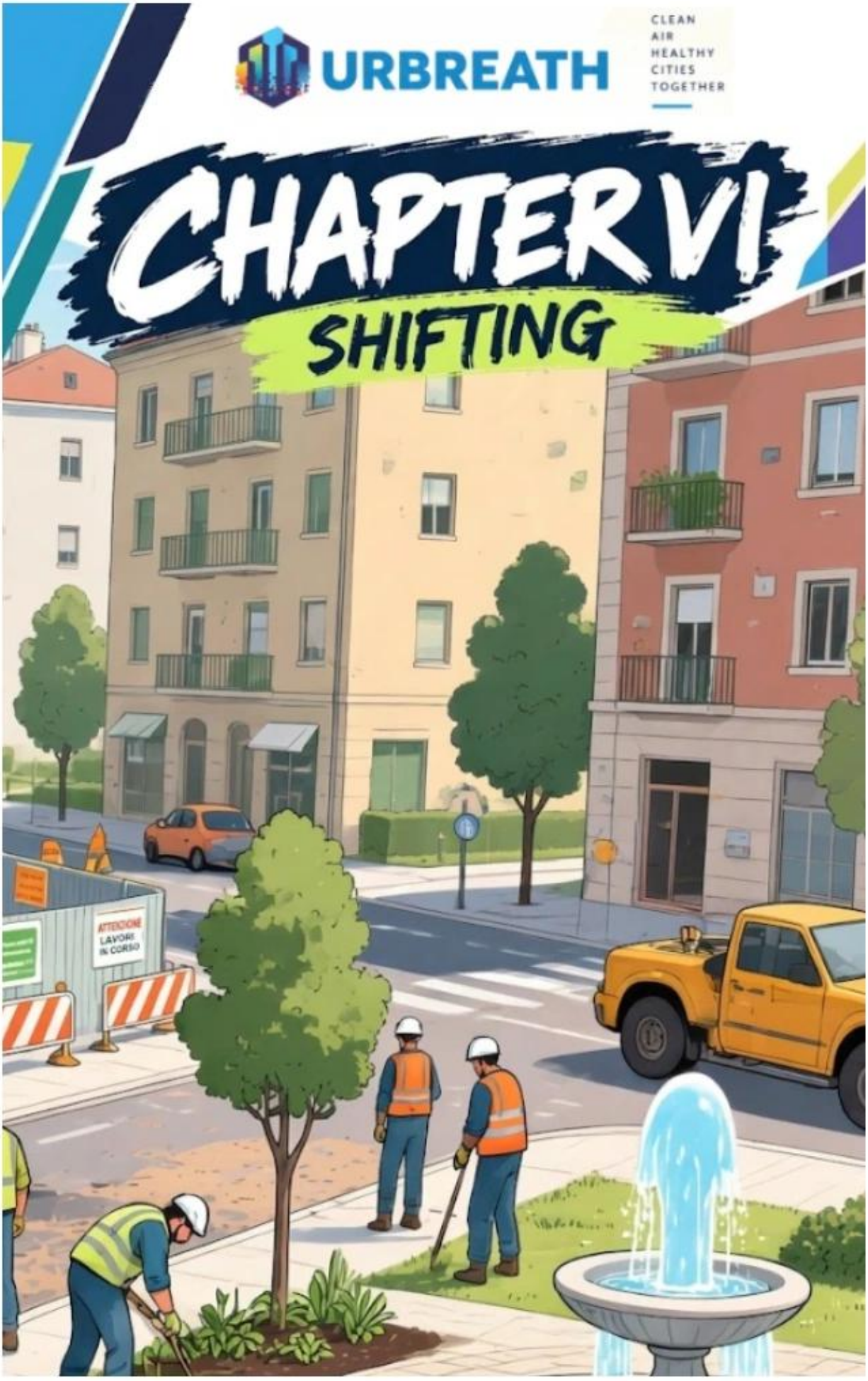

IT DEPENDS ON WHAT WE MEAN BY 'BEST'
THEN . . . IT'S THIS ONE
THE ONE THAT MEETS THE NEIGHBORHOOD'S CRITERIA AND THAT WE CAN SUSTAIN.
APPROVED !

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# CHAPTER VI

## SHIFTING













URBREATH

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CITIES
TOGETHER

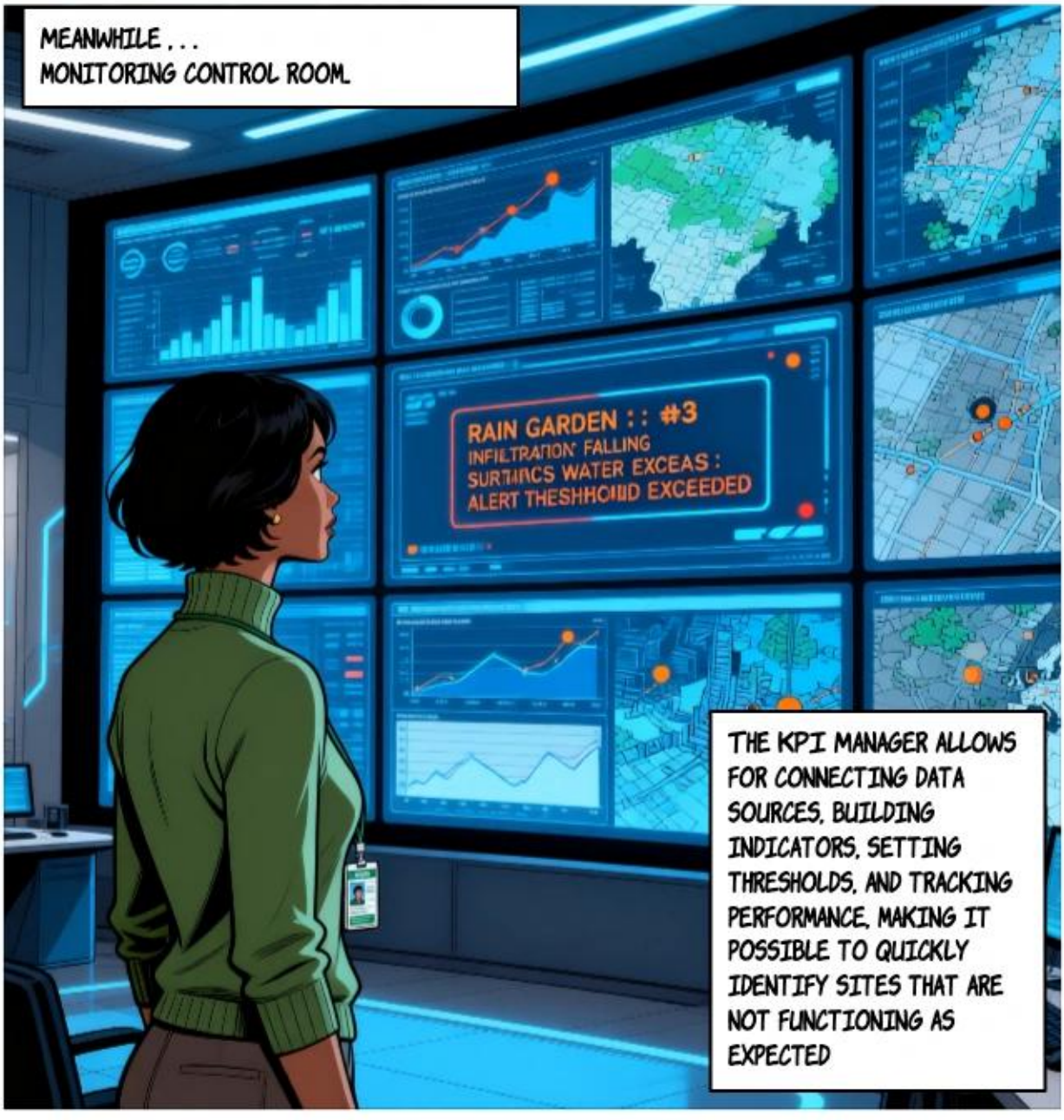
# CHAPTER VII

## NOTHING WORKS ON ITS OWN




THE FIRST DOWNPOUR


EMERGENCY
WEATHER ALERT
FLASH
FLOOD WARNING


MEANWHILE . . .
MONITORING CONTROL ROOM
RAIN GARDEN : : #3
ALERT THESHHOIID EXCEEDED
THE KPI MANAGER ALLOWS FOR CONNECTING DATA SOURCES, BUILDING INDICATORS, SETTING THRESHOLDS, AND TRACKING PERFORMANCE, MAKING IT POSSIBLE TO QUICKLY IDENTIFY SITES THAT ARE NOT FUNCTIONING AS EXPECTED


RAIN GARDEN THREE ISN'T DRAINING ENOUGH WATER
SOMETHING MUST HAVE HAPPENED
DISPATCH A CREW IMMEDIATELY TO CHECK WHAT'S GOING ON





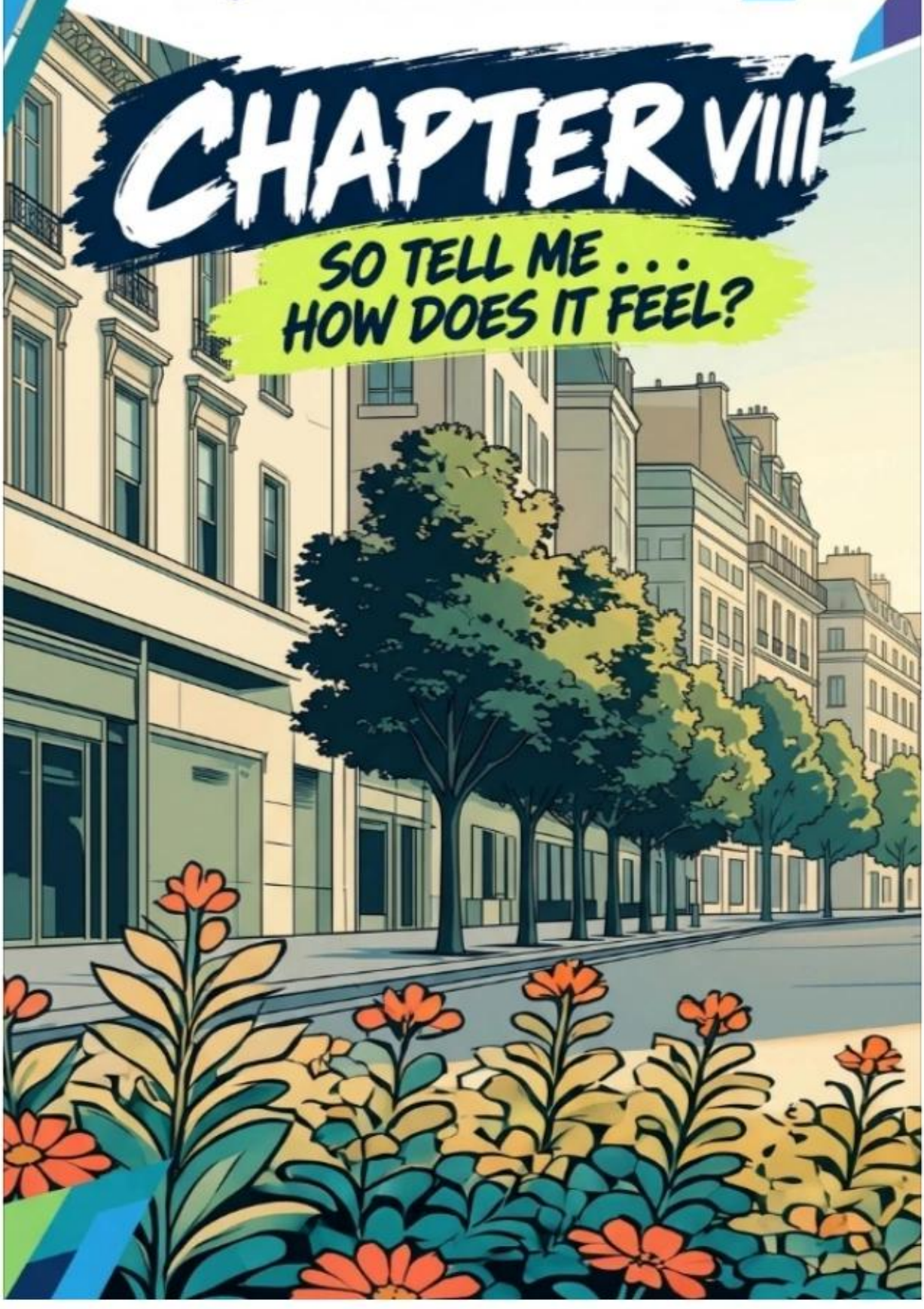

THE SYSTEM WORKED WEEL AFTER THE CLEANUP: MAINTENANCE FREQUENCE IS INSUFFICIENT
THERE IS NO PERSONNEL FOR WEEKLY INSPECTIONS
DID WE DESIGN A SOLUTION WE'RE UNABLE TO MAINTAIN?
WE DEISGNED A SOLUTION THAT TAUGH US SOMETHING
AN EXPANSIVE LESSONS!
LESS EXAMPSIVE THAN E FLOODING!
WE COULD INCLREASE MAINTENANCE DURING CRITICAL MONTHS
I'LL UPDATE INDICATATORS AND WARNING THRESHOLD
NO!
WE'LL UPDATE THE STANDARD DESIGN TOO. IF WE LEARNED SOMETHING . . . IT HAS TO APPLY TO THE NEXT NEWIBORHOD TOO!
NBS REGISTRY OFFERS A STRUCTURED REPOSITORY OF NATURE-BASED SOLUTIONS AND OPERATIONAL LESSONS LEARNED SUITABLE FOR KNOWLEDGE SHARING AND REPLICATION

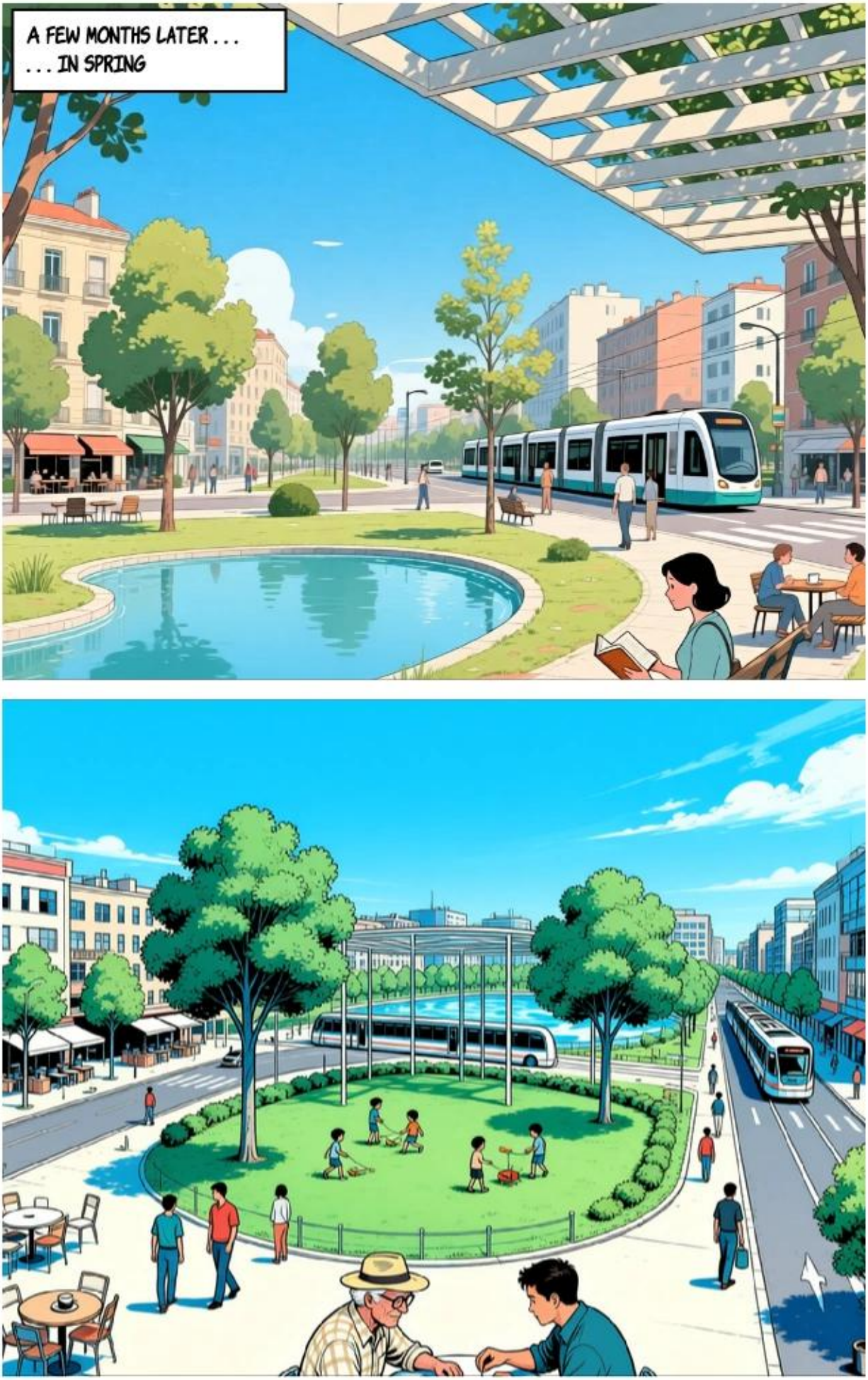
URBREATH

CLEAN
AIR
HEALTHY
CITIES
TOGETHER

# CHAPTER VIII

## SO TELL ME . . . HOW DOES IT FEEL?

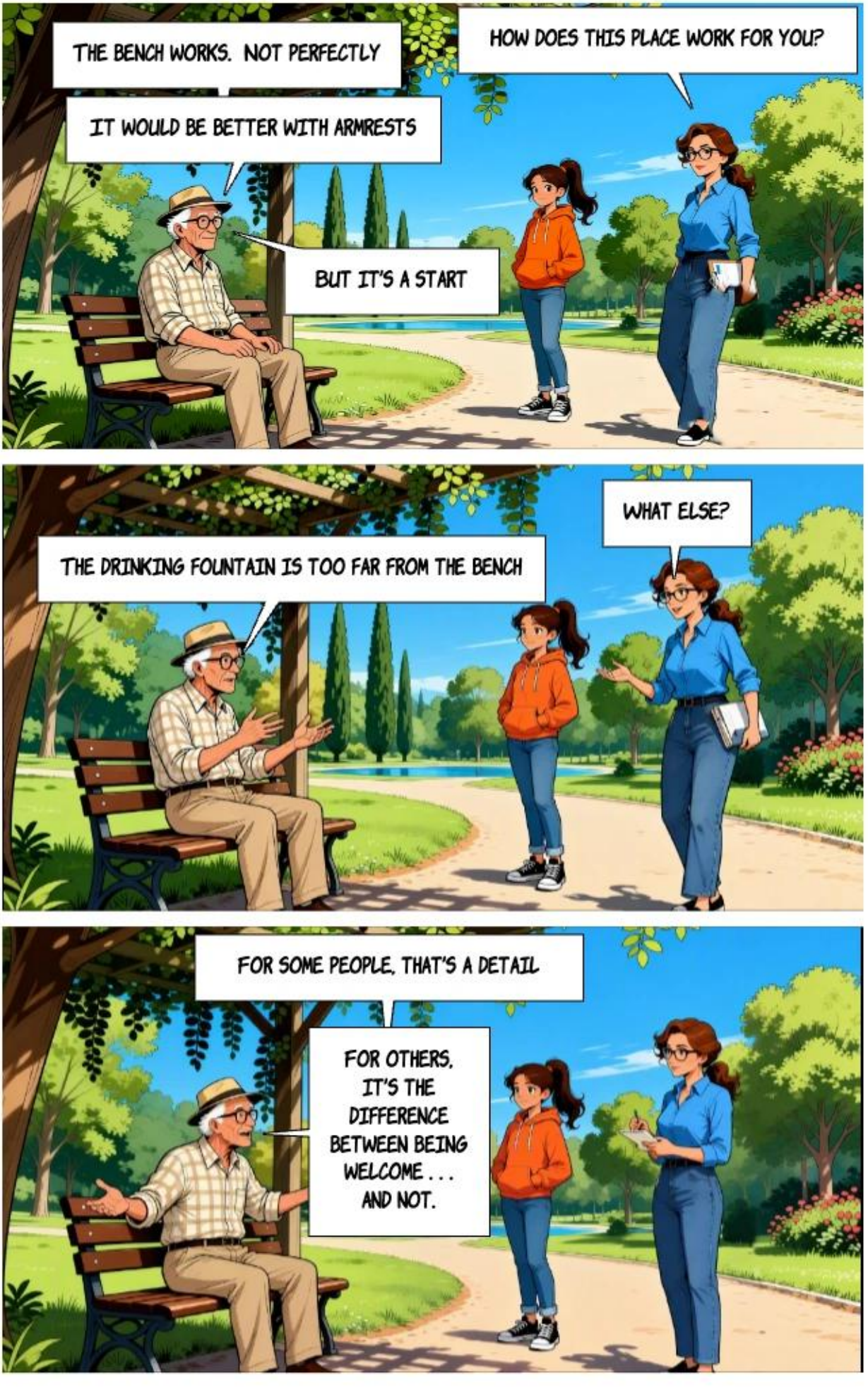



A FEW MONTHS LATER . . .
. . . IN SPRING


THE LIVEABILITY INDEX COMBINES URBAN QUALITY PRINCIPLES USED DURING THE PLANNING PHASE WITH A POST-IMPLEMENTATION EVALUATION BASED ON CITIZENS' PERCEPTIONS, ENABLING A DIRECT COMPARISON BETWEEN DESIGN INTENTIONS AND THE REALITY EXPERIENCED BY PEOPLE EVERY DAY


THE DATA SAYS IT'S COOLER . . .
A LITTLE
. . . THE PARK IS EASIER TO USE . . .
MUCH EASIER !
. . . AND THE STORMWATER IS ABSORBED MORE EFFECTIVELY
MOST OF THE TIME


AND THE PEOPLE?
THE DATA CAN'T ANSWER THAT. WE HAVE TO ASK THEM.


THE BENCH WORKS. NOT PERFECTLY
IT WOULD BE BETTER WITH ARMRESTS
BUT IT'S A START
HOW DOES THIS PLACE WORK FOR YOU?
THE DRINKING FOUNTAIN IS TOO FAR FROM THE BENCH
WHAT ELSE?
FOR SOME PEOPLE, THAT'S A DETAIL
FOR OTHERS, IT'S THE DIFFERENCE BETWEEN BEING WELCOME . . . AND NOT.

AND YOU?

IT'S BETTER

BETTER HOW?

...

I USED TO LEAVE THIS NEIGHBORHOOD WHENEVER THE HEAT BECAME UNBEARABLE

NOW, SOMETIMES . . .
I DON'T HAVE TO

COMMENTS LIKE THESE DON'T FIT EASILY INTO A METRIC

MAYBE NOT

BUT YOU CAN TURN THEM INTO BETTER DECISIONS

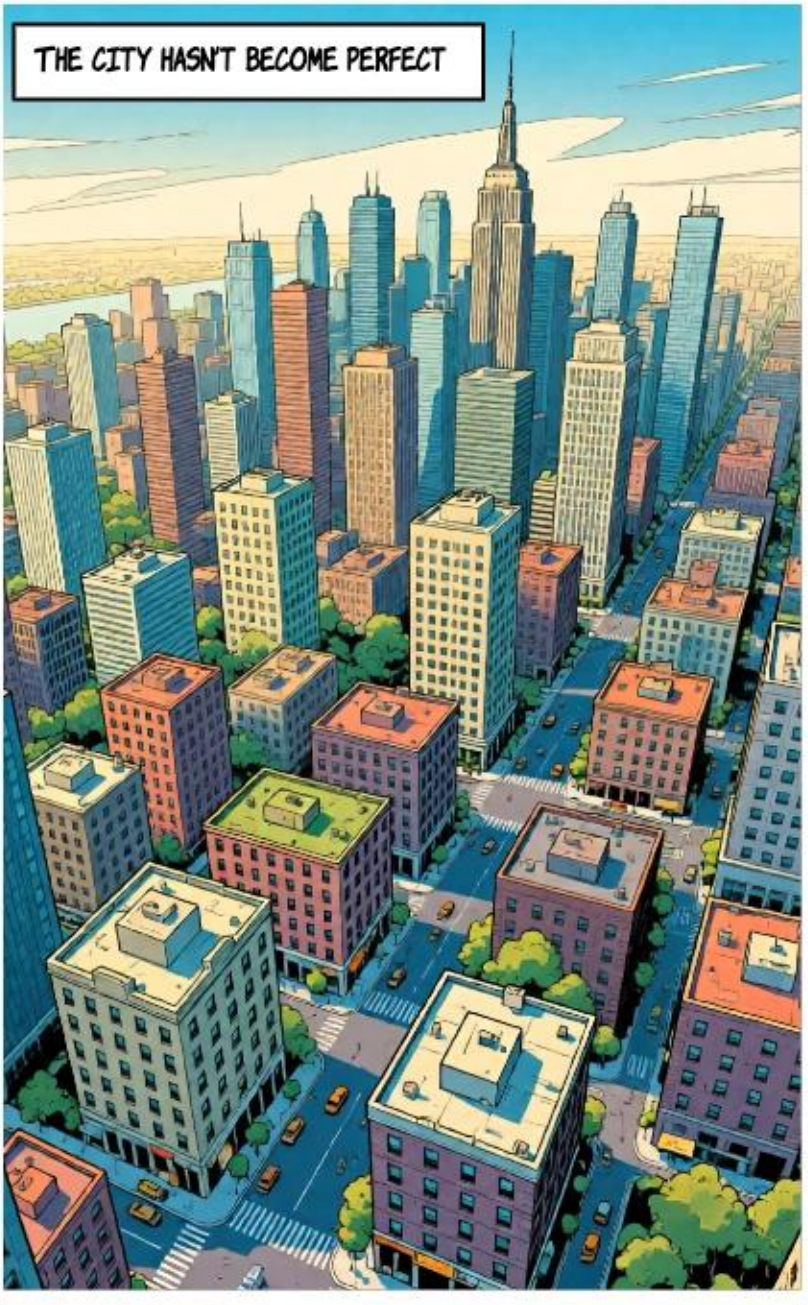
URBREATH

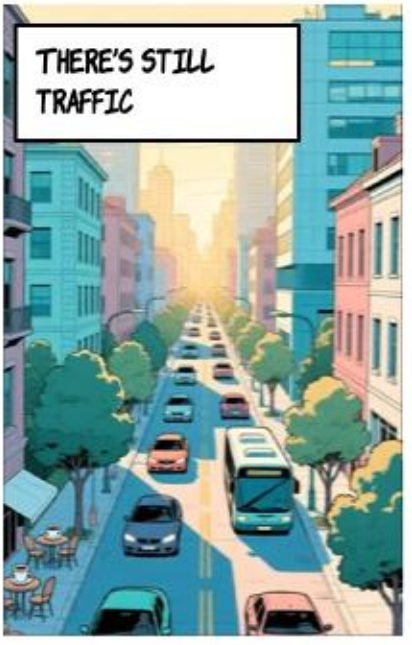
CLEAN
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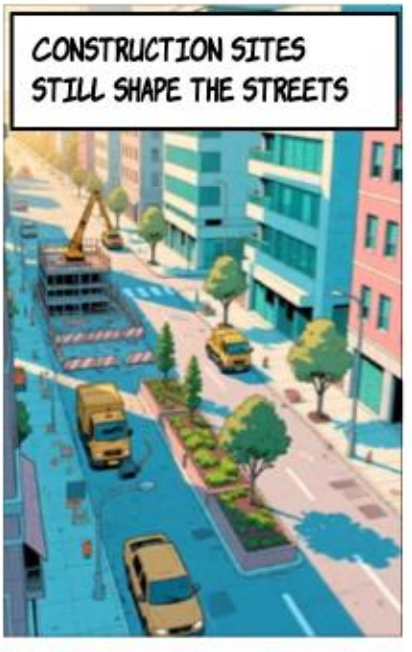
# EPILOGUE

## THE FREED BREATH




THE CITY HASN'T BECOME PERFECT


THERE'S STILL TRAFFIC


CONSTRUCTION SITES STILL SHAPE THE STREETS


AND SOME ROADS ARE STILL GRAY . . .


BUT NEW GREEN CORRIDORS NOW CONNECT PLACES THAT ONCE STOOD APART
YOUNG TREES ARE CARED FOR, NURTURED TO GROW STRONG AND FLOURISH.
CHILDREN CROSS STREETS SHADED BY GROWING CANOPIES AND FLOWERING GARDENS
CYCLISTS RIDE THROUGH A GREEN CORRIDOR WINDING ACROSS THE PARK.



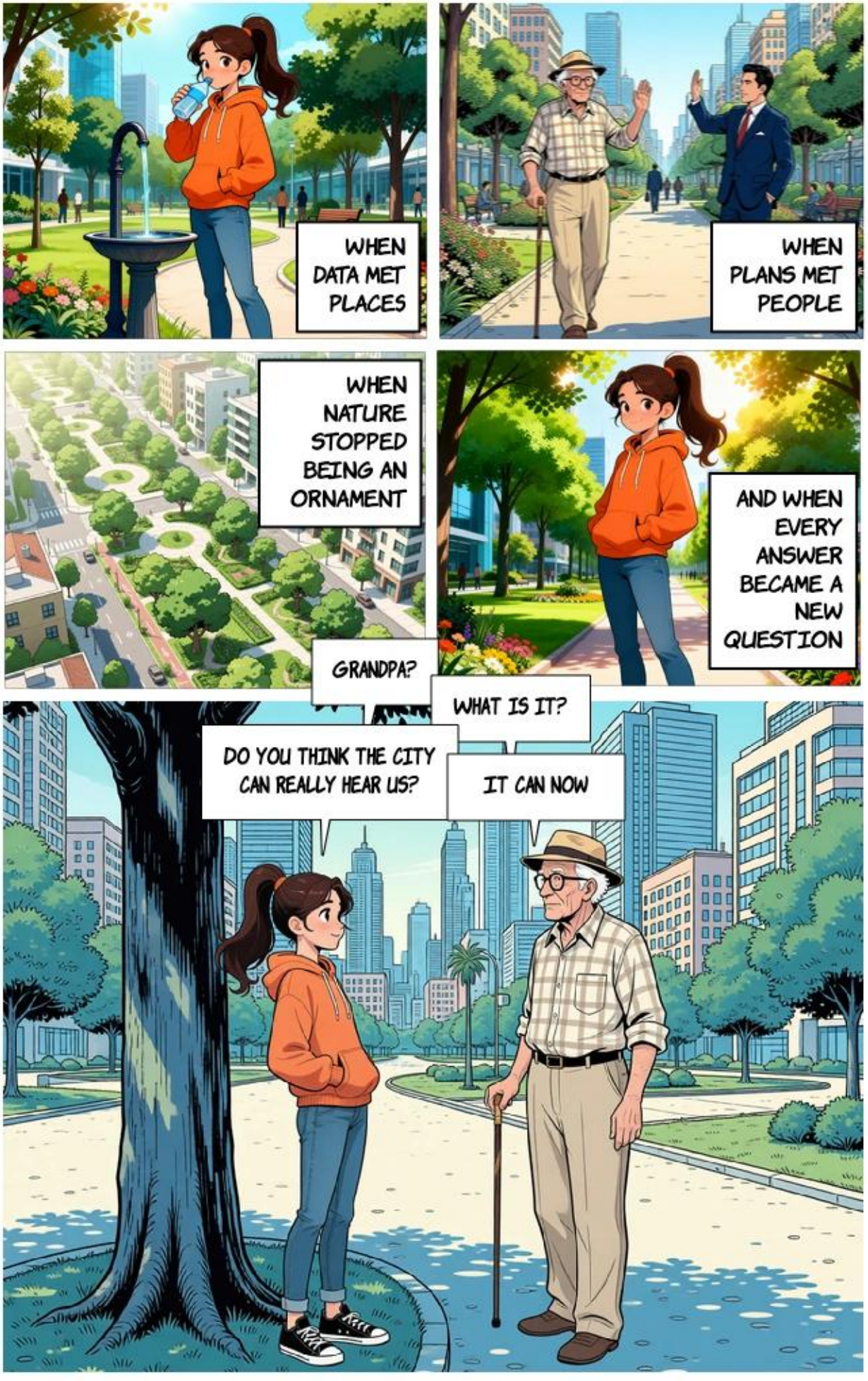


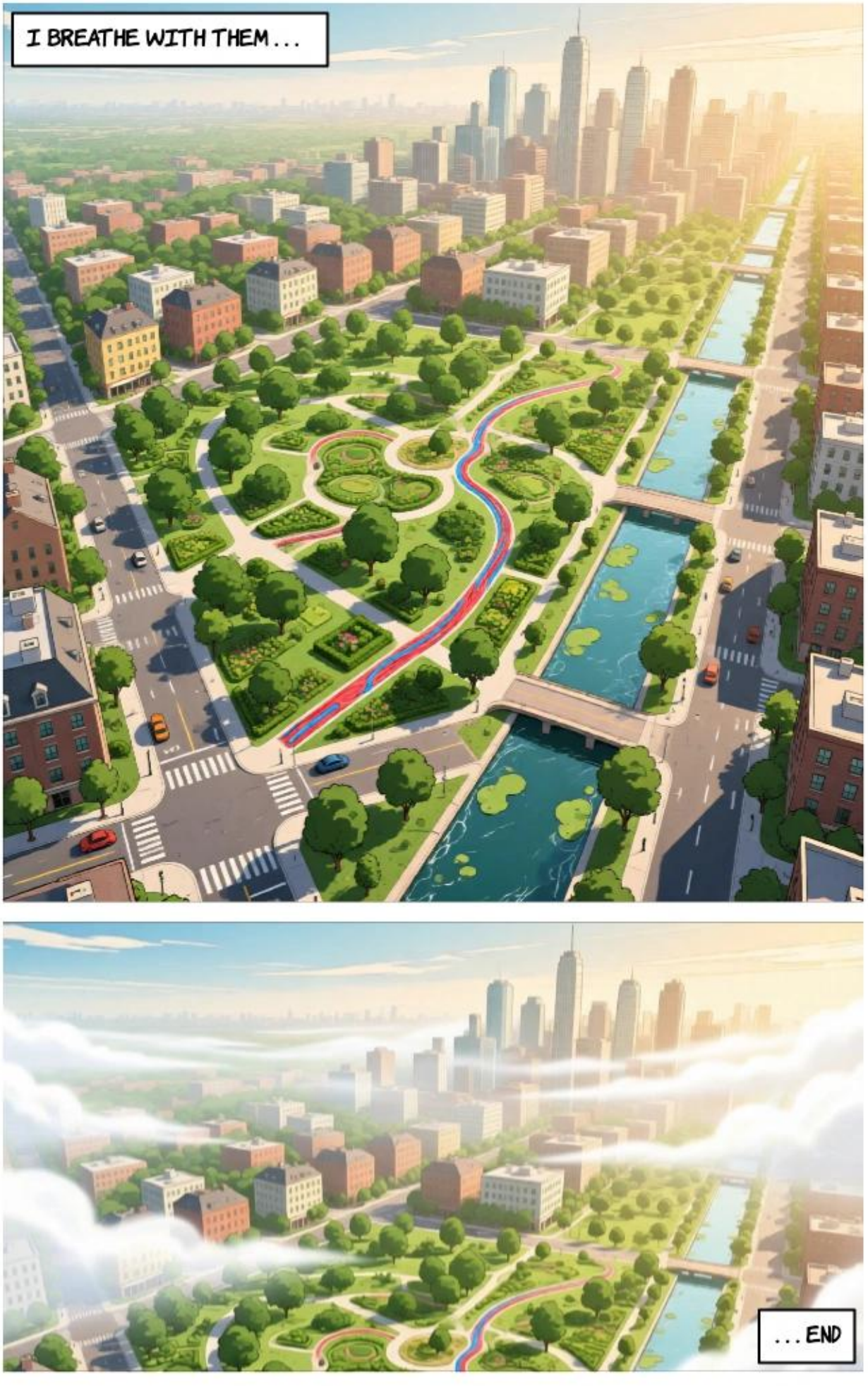

I DIDN'T LEARN TO BREATHE BECAUSE SOMEONE MADE ME INTELLIGENT . . .
Su a Scena
. . . I LEARNED WHEN THEY STOPPED LOOKING AT ME AS A COLLECTION OF DISCONNECTED PROBLEMS



WHAT HAVE WE LEARNED?




WHEN DATA MET PLACES
WHEN PLANS MET PEOPLE
WHEN NATURE STOPPED BEING AN ORNAMENT
AND WHEN EVERY ANSWER BECAME A NEW QUESTION
GRANDPA?
WHAT IS IT?
DO YOU THINK THE CITY CAN REALLY HEAR US?
IT CAN NOW


I BREATHE WITH THEM...
...END

# THE STORY BEHIND URBREATH

CITIES ARE ALIVE.

THEY BREATHE THROUGH THEIR TREES, RIVERS, STREETS, PARKS, AND THE PEOPLE WHO MOVE THROUGH THEM EVERY DAY. BUT OVER TIME, THAT BREATH CAN BECOME STRAINED. POLLUTION RISES. HEAT LINGERS. BIODIVERSITY FADES. FLOODS AND DROUGHTS GROW MORE FREQUENT. AND THE DATA THAT COULD HELP US UNDERSTAND THESE CHALLENGES REMAINS TRAPPED IN SEPARATE SYSTEMS, UNABLE TO TELL THE WHOLE STORY.

URBREATH WAS CREATED TO CHANGE THAT.

URBREATH BRINGS TOGETHER CITIES, RESEARCHERS, PUBLIC AUTHORITIES, AND TECHNOLOGY EXPERTS TO HELP URBAN COMMUNITIES SEE THE HIDDEN CONNECTIONS BETWEEN ENVIRONMENTAL PROCESSES, HUMAN ACTIVITIES, AND URBAN INFRASTRUCTURE. BY COMBINING DATA, DIGITAL TWINS, ARTIFICIAL INTELLIGENCE, LOCAL COMMUNITIES, AND NATURE-BASED SOLUTIONS, URBREATH TRANSFORMS FRAGMENTED INFORMATION INTO A LIVING PICTURE OF THE CITY.

ITS GOAL IS NOT SIMPLY TO COLLECT MORE DATA, BUT TO HELP PEOPLE MAKE BETTER DECISIONS. DECISIONS THAT PROTECT ECOSYSTEMS, STRENGTHEN RESILIENCE, IMPROVE PUBLIC SPACES, AND CREATE HEALTHIER PLACES TO LIVE.

ACROSS ITS PILOT CITIES, URBREATH EXPLORES A NEW WAY OF UNDERSTANDING URBAN ENVIRONMENTS: ONE WHERE TECHNOLOGY LISTENS TO NATURE, WHERE KNOWLEDGE IS SHARED INSTEAD OF ISOLATED, AND WHERE COMMUNITIES BECOME ACTIVE PARTICIPANTS IN SHAPING THEIR FUTURE.

BECAUSE A CITY IS MORE THAN BUILDINGS AND ROADS.

IT IS A LIVING SYSTEM.

AND BEFORE WE CAN HEAL IT, WE MUST LEARN HOW TO HEAR IT BREATHE.

# THE CITIES THAT TAUGHT US

OUR CITIES ARE WHERE THE STORY OF URBREATH BECOMES REAL. ACROSS DIFFERENT LANDSCAPES, THEY EXPLORE A SHARED QUESTION: HOW CAN DATA, NATURE, AND PEOPLE LEARN TO WORK TOGETHER TO CREATE HEALTHIER, MORE RESILIENT PLACES?

EVERY CITY FACES CHALLENGES THAT SEEM DISCONNECTED: POLLUTED AIR, HEATWAVES, FLOODING, BIODIVERSITY LOSS, AGING INFRASTRUCTURE, AND GROWING PRESSURE ON PUBLIC SERVICES. YET BENEATH THESE PROBLEMS LIES A COMMON TRUTH: CITIES FUNCTION LIKE LIVING ORGANISMS, WHERE EVERY DECISION AFFECTS COUNTLESS OTHERS.

THE URBREATH CITES ARE LIVING LABORATORIES WHERE THIS TRUTH IS PUT TO THE TEST. FROM BUSY URBAN DISTRICTS TO FRAGILE NATURAL ENVIRONMENTS, EACH CITY INVESTIGATES HOW DIGITAL TECHNOLOGIES, ENVIRONMENTAL INTELLIGENCE, AND HUMAN KNOWLEDGE CAN WORK TOGETHER TO UNCOVER HIDDEN CONNECTIONS, SUPPORT BETTER DECISIONS, AND RESTORE BALANCE BETWEEN CITIES AND NATURE.

EACH LOCATION TELLS A DIFFERENT STORY. TOGETHER, THEY PURSUE THE SAME OBJECTIVE: HELPING COMMUNITIES UNDERSTAND THEIR ENVIRONMENT, ANTICIPATE RISKS, AND BUILD HEALTHIER, GREENER, AND MORE RESILIENT FUTURES. THESE CITIES ARE NOT JUST DEMONSTRATING TECHNOLOGY. THEY ARE GLIMPSES OF A WORLD WHERE CITIES LEARN TO LISTEN, ADAPT, AND FINALLY FIND THEIR BREATH.

THE STORY DOESN'T END ON THIS PAGE.

SCAN THE QR CODE IN THE NEXT PAGES

STEP INTO THE NBS STORYTELLINGS BASED ON URBREATH CITIES' DIGITAL TWINS, AND EXPLORE HOW NATURE-BASED SOLUTIONS ARE RESHAPING THEM.









IN MADRID, WE ARE TRANSFORMING PUBLIC SPACES IN SAN CRISTÓBAL (VILLAVERDE) INTO COOLER, GREENER AND MORE WELCOMING PLACES.
THROUGH THE RENATURALISATION OF SCHOOLYARDS, STREETS AND NEIGHBOURHOOD SPACES, WE ARE PLANTING TREES, CREATING SHADE, IMPROVING WATER MANAGEMENT AND CONNECTING SCHOOLS WITH THEIR SURROUNDINGS.
TOGETHER WITH CHILDREN, FAMILIES AND LOCAL COMMUNITIES, WE ARE TURNING SCHOOLYARDS SUCH AS CEIP NAVAS DE TOLOSA AND CEIP SAGUNTO INTO HEALTHIER, SAFER AND MORE INCLUSIVE SPACES WHERE PEOPLE CAN MEET, PLAY AND GROW TOGETHER.

FOR CENTURIES, AVENUES CONNECTED THE STORIES OF ATHENS. TEMPLES, GARDENS, AND MONUMENTS STOOD SIDE BY SIDE, WHILE HEAT, TRAFFIC, AND CONCRETE SLOWLY PUSHED NATURE AWAY. NOW, A GREEN CORRIDOR IS TAKING SHAPE AT THE HEART OF THE CITY. TREES CAST NEW SHADOWS OVER ANCIENT PATHS. RAINWATER NOURISH THE GROUND INSTEAD OF RUSHING AWAY. VASILISIS OLGAS AVENUE BECOMES MORE THAN A ROAD: A LIVING LINK BETWEEN HERITAGE AND NATURE, WHERE PAST AND FUTURE BREATHE TOGETHER.





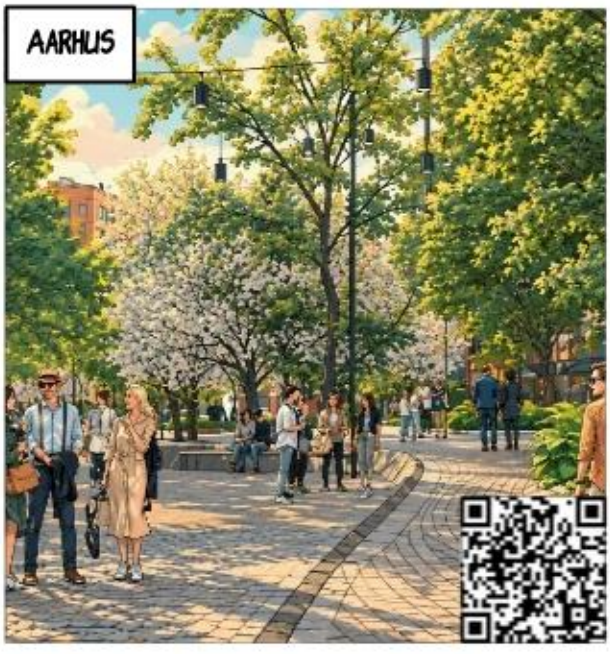


SAN LEONARDO HAS ALWAYS BEEN A PLACE OF MOVEMENT, CULTURES, AND POSSIBILITIES. HEAT, TRAFFIC, LACK OF GREEN SPACES BEGAN TO WEIGH ON DAILY LIFE. NOW, A DIFFERENT FUTURE BAGINS. TREES GROW WHERE CONCRETE DOMINATED. GARDENS AND GREEN STREETS BRING PEOPLE CLOSER TO NATURE AND TO ONE ANOTHER. CLIMATE RESILIENCE IS NOT JUST ABOUT ADAPTING TO CHANGE. IT IS ABOUT TRANSFORMING CHALLENGES INTO OPPORTUNITIES AND HELPING A COMMUNITY GROW STRONGER, TOGETHER.




AT THE HEART OF CASABLANCA, KRAKAU SQUARE HAD BECOME A SEA OF PAVEMENT, WHERE NATURE STRUGGLED TO FIND A PLACE. NOW, NEW TREES, FLOWERS, AND GREEN SPACES WILL BRING LIFE BACK TO THE NEIGHBORHOOD. BIRDS, INSECTS, AND PEOPLE WILL SHARE A LANDSCAPE DESIGNED TO COOL THE CITY, CAPTURE RAIN, AND RECONNECT FRAGMENTED HABITATS. FROM HAL 5 TO LOLANDEN, A NEW GREEN CORRIDOR IS TAKING ROOT, PROVING THAT BIODIVERSITY CAN FLOURISH EVEN IN THE HEART OF THE CITY.

WHERE EIGHT STREETS ONCE RUSHED PAST ONE ANOTHER, VESTERBRO TORV BECAME A PLACE TO CROSS, BUT NOT A PLACE TO STAY. WATER DISAPPEARED BENEATH THE ASPHALT, AND THE CITY HURRIED ON. NOW, RAIN SHAPES THE LANDSCAPE. GARDENS AND GREEN CORRIDORS SLOW THE WATER, GUIDE IT, AND GIVE IT ROOM TO BREATHE. AT THE MEETING POINT BETWEEN HILL AND VALLEY, A CROSSROADS IS BECOMING A LIVING SQUARE, WHERE THE CITY CAN PAUSE, GATHER, AND RECONNECT.





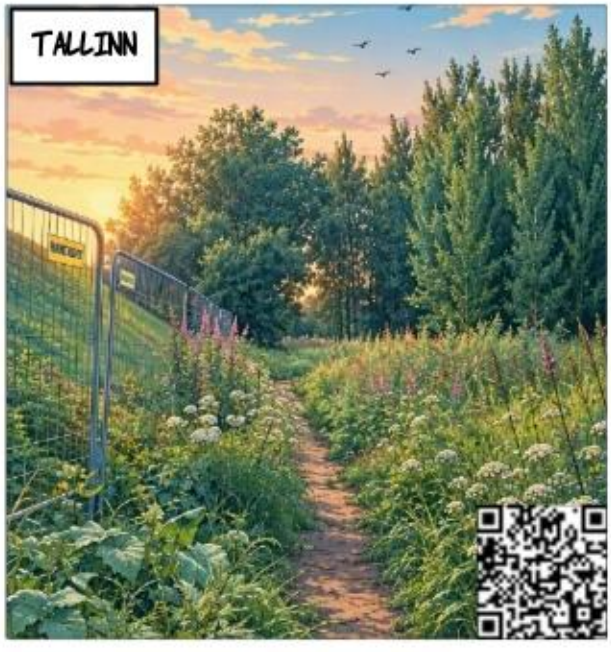


NOT EVERY TRANSFORMATION BEGINS WITH A GRAND PROJECT. SOMETIMES, IT STARTS WITH A FORGOTTEN PATCH OF GREEN BESIDE THE RIVER. IN CLUJ-NAPOCA, SMALL AND OVERLOOKED SPACES BECAME LIVING LABORATORIES WHERE NATURE, PEOPLE, AND IDEAS CAN GROW TOGETHER. WILDFLOWERS, TREES, AND COMMUNITY ACTIONS TRANSFORM NEGLECTED CORNERS INTO WELCOMING PLACES FOR EVERYDAY LIFE. STEP BY STEP, PROVING THAT EVEN THE SMALLEST SPACES CAN HELP A CITY BREATHE.




THE SQUARE HAD STOOD AT THE HEART OF THE CITY FOR CENTURIES. STONE. SUN. CROWDS. SEASONS. BUT AS SUMMERS GREW HOTTER AND RAIN ARRIVED IN SUDDEN BURSTS, THE OLD SQUARE FACED NEW CHALLENGES. TREES WOULD RISE WHERE SHADE WAS SCARCE. RAIN WOULD NO LONGER RUSH AWAY, BUT SLOW DOWN, SINK INTO THE GROUND, AND NOURISH THE SPACE AROUND IT. NATURE WOULD RETURN TO THE HEART OF PILSEN. NOT TO REPLACE THE SQUARE'S HISTORY, BUT TO HELP IT ENDURE.

FOR YEARS, THIS UNDERUSED COASTAL AREA BESIDE THE NATIONALLY PROTECTED LINNAHALL BUILDING HAS REMAINED DISCONNECTED FROM THE SURROUNDING CITY. THE SITE HAS ALSO BEEN USED FOR STORING SNOW COLLECTED FROM CENTRAL TALLINN DURING WINTER. THROUGH URBREATH, IT IS BEING TRANSFORMED INTO A WELCOMING PUBLIC SPACE THAT IMPROVES ACCESS TO THE SEA AND SUPPORTS URBAN BIODIVERSITY. A TECHNICAL DESIGN FOR A NATURE-BASED SNOWMELT TREATMENT SYSTEM HAS ALSO BEEN DEVELOPED FOR POSSIBLE FUTURE IMPLEMENTATION.







FOR GENERATIONS, WINTER LEFT ITS MARK HERE. SNOW PILED HIGH THROUGH THE LONG NORTHERN MONTHS, AND WHEN SPRING FINALLY ARRIVED, THE MELTING WATER CARRIED AWAY MORE THAN ICE. IN KAJAANI, A DIFFERENT FUTURE IS BEGINNING TO TAKE SHAPE. NATURE IS BECOMING THE FIRST LINE OF DEFENSE. AS SNOW TURNS TO WATER, LIVING SYSTEMS SLOW IT, FILTER IT, AND GIVE THE LAND TIME TO HEAL. WHAT WAS ONCE A HIDDEN SOURCE OF POLLUTION CAN BECOME A PLACE OF LEARNING AND RENEWAL.

# MEET THE URBREATH TEAM

THIS GRAPHIC NOVEL WAS MADE POSSIBLE BY THE CREATIVITY, DEDICATION, AND SHARED EFFORT OF EVERYONE WHO BROUGHT THEIR IDEAS TOGETHER IN URBREATH PROJECT:

ALESSANDRO DESERTI
ALEX GLUHAK
ALEXANDRA POLIEC
ALICIA CARVAJAL
ALISA KRUMM
ANDRONIKI MARIA PAPADOPOULOU
ANTONELLA TOZZI
ANU ELFVING
ARTUR STAŠKEVITŠ
ATHANASIOS DALIANIS
BASTIAN BEKIRI
BEATRICE MARIA BELLE
BENJAMIN LANSSENS
CARLOS PRADO LÓPEZ
CARMINE FEDERICO DI ZENZO
CHIARA SAVOLDI
CHRISTINA NICHIFOROV
CLAUDIA VICARI
CODRUT PAPINA
CONSTANZA VERA
CORNELIA JAKOBSEN
CRISTINA PELLEGRINI
DAFNI GIAKOUMAKI
DARIA DUTU
DARÍO REDOLAT NEGRO
DIMITRIS DRAKOULIS
DIMITRIS KASSIMIS
DOMENICO PELLITTERI
ELENA CHRYSIKOU
ELENA CARRAFIELLO
EMMA GAITÁN FERNÁNDEZ
ENRICO TURINI
ENZO BERTOLOTTI
ERIKA NIKA
ETTORE ETENZI
FABIAN DEMBSKI
FAEZEH KAZEMIHATAMI
FELICE SALIM
FRANCESCO MUREDDU
FRANCESCO TOGNONI
FRANCESCO NUDO
GABRIEL SIMON
GEORGE ATHANASIOU
GERMO AUSIN
GIORGIOS KOPSIAFTIS
GIOVANI LUCA D'ACIERNO
GIOVANNI GIACCO
GIULIA DEGLI ESPOSTI
GIUSEPPE CIULLA
HANNA PASULA
HANS-PETER EGLER
HENNA-MARI LAURILA
INNA ZHURAVLOVA
IRENE GARCÍA
IRINA PANAIT
ITZIAR BAYON
JARI KAUPPINEN
JIŘÍ BOUCHAL
JURGEN SILENCE
KRISTOFFER BRINGØ
LAURA DENS
LENA POSSELT
LILL SARV
LORENA GALIANO SÁNCHEZ
LUCA MONTANARI
LUCÍA TORRES
LUDĚK ŠANTORA
LUISA MARIA MÄNNILAAN
LUTZ ROSS
MAARTEN VAN LOO
MANTHOS BIBAS
MANUEL ALMÉSTAR
MANUEL POLANCO
MARCELLA BONANOMI
MARIA SPANOU
MARILIIS NIINEMÄGI
MARINA KLITSI
MARIO LOVRIC
MARTINA FORCONI
MARTINA SURYNKOVÁ
MATHILDE BECH EPSTEIN
MAX BEIJNEVELD
MAXIMILIEN DEIBER
MICHAEL MULQUIN
MICHALIS AGGELOPOULOS
MIRO MOILANEN
MÓNICA GUTIÉRREZ
NEFELI KOUSTA
NICOLA CRACCHI BIANCHI
NIKLAS EFFENBERGER
NIKOS BAKALOS
OUTI LAATIKAINEN
PIERGIORGIO CIPRIANO
RITA GAETA
ROBERTO DI BERNARDO
SABRINA SACCO
SARA NYBERG
SEPPO HAATAJA
SØREN LUNDSGÅRD JØRGENSEN
STELLA LAASI
STIJN VRANCKX
THOMAS ADOLPHI
TIM GUILY
TOMÁŠ BENEDIKT
TONI RUBIO
ZEHRA KOÇ

# BUILD A RESILIENT FUTURE AGAINST CLIMATE CHANGE CHALLENGES WITH EFFECTIVE TOOLS AND IMPACTFUL STRATEGIES

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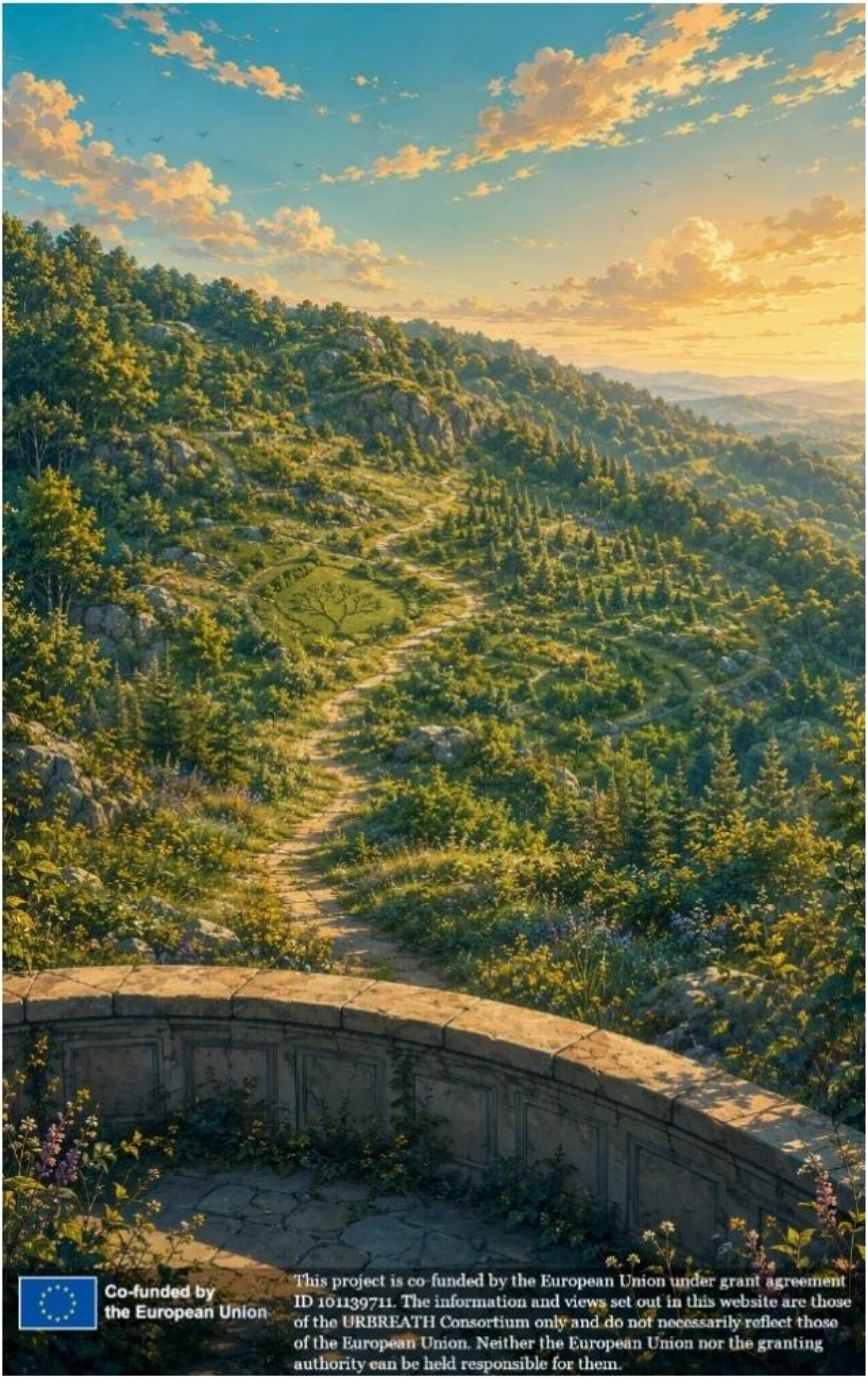


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